

**CURRY'S FORK WATERSHED BASED PLAN  
WATER QUALITY DATA ANALYSIS TEAM MEETING  
FEBRUARY 16, 2010**

**INTRODUCTION:**

Curry's Fork watershed is located in Oldham County, Kentucky. Water quality data was collected as a part of the Oldham County Fiscal Court watershed planning process to augment existing data. This meeting on water quality analysis will focus on pathogens to address the primary contact recreation impairment in the watershed. To introduce the analysis, the existing data, sampling approach, and water quality analysis methods are presented. Water quality data was collected throughout the Currys Fork watershed at the sampling stations shown in Figure 1-1 and Figure 1-2. Water quality analysis was completed and organized on a sub-watershed level. The intent of this meeting is to review the data and data analysis.

**EXISTING SAMPLING DATA:**

KDOW, USGS and Salt River Water Watch (SRWW) collected bacteria samples between 1999-2008. Table 1-1 summarizes the existing bacteria data from these agencies. Flow measurements were not taken concurrently with the majority of these samples. Load calculations require flow measurements. Data without flow measurement was not included in the load duration curves. The SRWW is collected without a Kentucky DOW approved Quality Assurance Protection Plan (QAPP) and can be used to support data trends but not as stand alone data.

Source	Site	Date	Subwatershed	Fecal (cfu/100mL)*		E.Coli (colonies/100mL)**		Samples That Exceed WQS (%)
				Samples	Geometric Mean	Samples	Geometric Mean	
SRWW	S62	2002-2007	Currys	2	3,347	3	810	100%
SRWW	S130	2002-2007	North Currys	2	377	4	1,748	33%
SRWW	S139	2004-2007	North Currys	1	2,640	2	950	100%
SRWW	S140	2004-2007	South Currys	1	1,360	2	473	67%
EPA Storet	SRW008	1999	Currys	8	481			50%
USGS	AR-1	2007-2008	Asher's Run			5	2,717	100%
USGS	CF-1	2007-2008	Currys			15	595	47%
USGS	NFCF-1	2007-2008	North Currys			15	942	80%
USGS	SFCF-1	2007-2008	South Currys			14	75	21%
USGS	SFCF-2	2007-2008	South Currys			14	406	64%
			North Currys Total	3	1,131	21	1,096	73%
			South Currys Total	1	1,360	30	256	44%
			Asher Total			5	2,717	100%
			Currys Total	10	1,054	18	631	61%
			<b>TOTAL</b>	<b>14</b>	<b>1,093</b>	<b>74</b>	<b>752</b>	<b>60%</b>

\* Fecal WQS= 400 cfu/100 mL

\*\* E. Coli WQS =240 cfu/100 mL

**Table 1-1 Historical Bacteria Data Summary**

The existing data includes eight samples collected by USGS that had corresponding flow measurements with results shown in Table 1-2. The USGS data samples were not included in the load duration curves due to conflicting method of bacteria testing, fecal versus e coli.

USGS Project ID	Nearest SAI Site	Year	Flow	Flow Duration Interval	Flow Regime	E. Coli Value	WQS**
CF-1	CF1	2007	2.1	95%	Low Flow	250	Above
CF-1	CF1	2008	4.4	83%	Mid to Low Flow	440	Above
NFCF-1	NC1a	2007	1.5	70%	Mid to Low Flow	580	Above
NFCF-1	NC1a	2008	3.2	69%	Mid to Low Flow	640	Above
NFCF-1	NC1a	2008	30.3	43%	Mid Range	14,000	Above
SFCF-1	SC1*	2007	0.1	95%	Low Flow	16	Below
SFCF-1	SC1*	2008	0.8	79%	Mid to Low Flow	550	Above
SFCF-2	SC2*	2007	0.3	70%	Mid to Low Flow	450	Above

\* Sample site closest to USGS site but not at same location

\*\*E. Coli WQS = 240 cfu/100 mL

**Table 1-2 USGS Bacteria Data with Flow Data**

**SAMPLING APPROACH:**

Water quality data was collected by SAI during the recreational contact season in 2007. 2007 was particularly dry with below average rainfall amounts and drought conditions throughout the Curry's Fork Watershed. Additional sampling was collected during the recreational contact season of 2009 to examine bacteria levels during a more typical season. Sampling was conducted on a bi-weekly basis between May and October in 2007 and 2009, regardless of weather. See Table 1-3 for the sampling locations and parameters.

Sampling Site	Subwatershed	X-Coordinate	Y-Coordinate	Biweekly Sampling		Storm Event Sampling
				Year 1 (2007)	Year 3 (2009)	
CF1	Curry's Fork	38.3059	-85.4504	X	X	X
CF2	Curry's Fork	38.3094	-85.4516	X	X	X
TB1	Ashers Run	38.3089	-85.4443	X	X	X
CF3	Curry's Fork	38.3555	-85.4405	X	X	X
NC1	North Currys	38.3593	-85.4394	X	X	X
SC1	South Currys	38.3568	-85.4386	X	X	X
NC2	North Currys	38.4003	-85.3672	X	X	
SC2	South Currys	38.3681	-85.3746	X	X	X
NC1a	North Currys	38.3772	-85.4275		X	X
NC1b	North Currys	38.3887	-85.3970		X	
TB1a	Ashers Run	38.3317	-85.4122		X	X

**Table 1-3 Sampling Locations and Parameters**

Sampling was also performed during two separate storm events in 2009, one on September 20<sup>th</sup> and the other on October 30<sup>th</sup>. Storm samples were collected at Hour 0 (start of the storm), Hour 4 (four hours after the start of the storm) and Hour 12 (twelve hours after the start of the storm) to determine wet weather influences on stream water quality. See Table 1-4 for a summary of bi-weekly and storm samples at each subwatershed.

Subwatershed	Sample Sites	Bi-weekly Sampling		Storm Sampling		All Samples			
		Samples	Geometric Mean	Samples	Geometric Mean	Samples	Geometric Mean	% of Samples That Exceed WQS PCR*	% of Samples That Exceed WQS SCR**
North Curryys	4	63	586	12	3,045	75	763	67%	33%
South Curryys	2	45	1,017	12	1,759	57	1,142	68%	35%
Asher's Run	2	32	895	12	1,619	44	1,052	73%	34%
Currys Fork	3	71	844	18	3,565	89	1,129	70%	34%
Entire Watershed	11	211	795	54	2,469	265	1,001	69%	34%

\*Primary Contact Recreation Water Quality Standard is 400 (cfu/100mL)  
 \*\*Secondary Contact Recreation Water Quality Standard is 2,000 (cfu/100mL)

**Table 1-4 2007 and 2009 Bacteria Samples**

Flow data was collected from the four ISCO units located at NC1, SC1, CF2, and TB1. Flow measurements were also taken concurrent with biweekly and storm sampling. Fecal coliform data was collected in the field by Strand Associates and lab tested by Microbac.

**WATER QUALITY ANALYSIS:**

Load duration curves were used in the analysis of the SAI fecal coliform data. The load duration curve approach allows for characterizing fecal coliform concentrations at different flow regimes. The method provides a visual display of the relationship between stream flow and loading capacity. Using the duration curve framework, the frequency and magnitude of water quality standard exceedances and allowable loadings are easily presented and can be better understood.

To create a WQS fecal coliform load duration curve, flow data is multiplied by the water quality standard. These resultant loadings are then sorted in descending order. See the example load equation below. Using this convention, load duration intervals are expressed as a percentage. By plotting the load duration interval on the x-axis and the corresponding load on the y-axis, a load duration curve is created. Two load duration curves were plotted for each site, one representing the water quality standard for primary contact recreation (400 cfu/100 mL) and one representing the water quality standard for secondary contact recreation (2,000 cfu/100 mL).

<p>Load = Flow (cfs)* Bacteria Concentration (cfu/100 mL) * unit conversion factor          Example:          Primary WQS Load = (20 cfs) *(200 (cfu/100/mL) * 24,465,525 (mL*s)/(ft<sup>3</sup>*day)          = 9.79 x 10<sup>10</sup> bacteria tons/day</p>
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Measured bacteria concentrations were multiplied by the corresponding flow values to determine loadings. These results were plotted on the graph, with flow duration interval on the x-axis and bacteria loading on the y-axis. The measured loads were compared to primary and secondary water quality standards. Measurements above the load duration curve exceed the water quality standards.

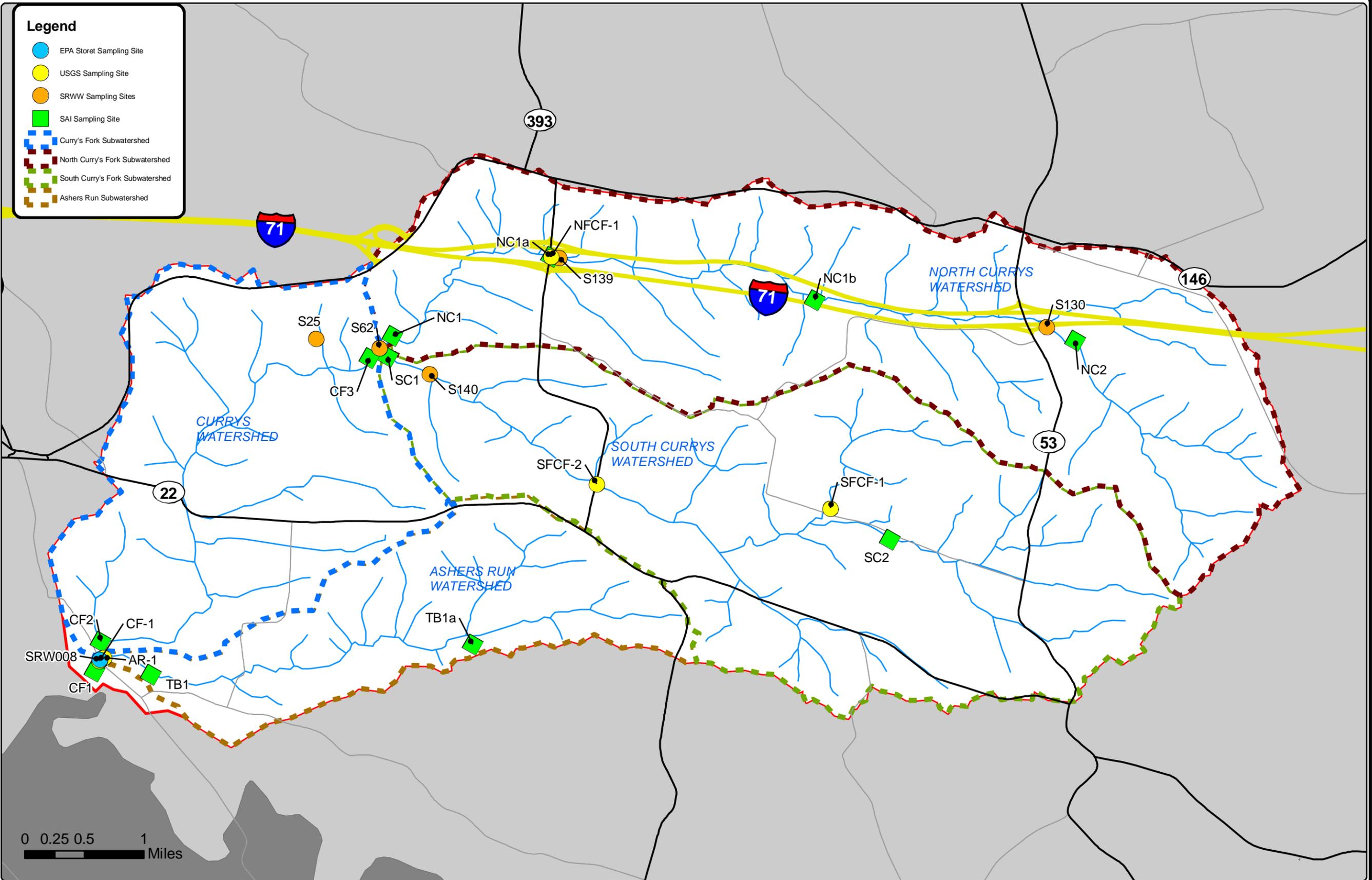
Duration curves also provide a means to link water quality concerns with potential pollutant sources. Duration curve intervals were used as an indicator of general hydrologic condition. The duration curves were split into five zones: high flows , high to mid conditions, mid-range flows , mid to low flows, and low flows (See graphs in subsequent sections). A high number of exceedances at low flow regimes may indicate the presence of a point or direct source of pollutants, whereas a high number of exceedances at high flow regimes may indicate a non-point source of pollutants.

**ATTACHMENTS:**

1. Figure 1-1: Comprehensive Currys Fork Sampling Sites
2. Figure 1-2: Comprehensive Currys Fork Aerial

**Legend**

- EPA Stret Sampling Site
- USGS Sampling Site
- SRWW Sampling Sites
- SAI Sampling Site
- Curry's Fork Subwatershed
- North Curry's Fork Subwatershed
- South Curry's Fork Subwatershed
- Ashers Run Subwatershed



0 0.25 0.5 1 Miles

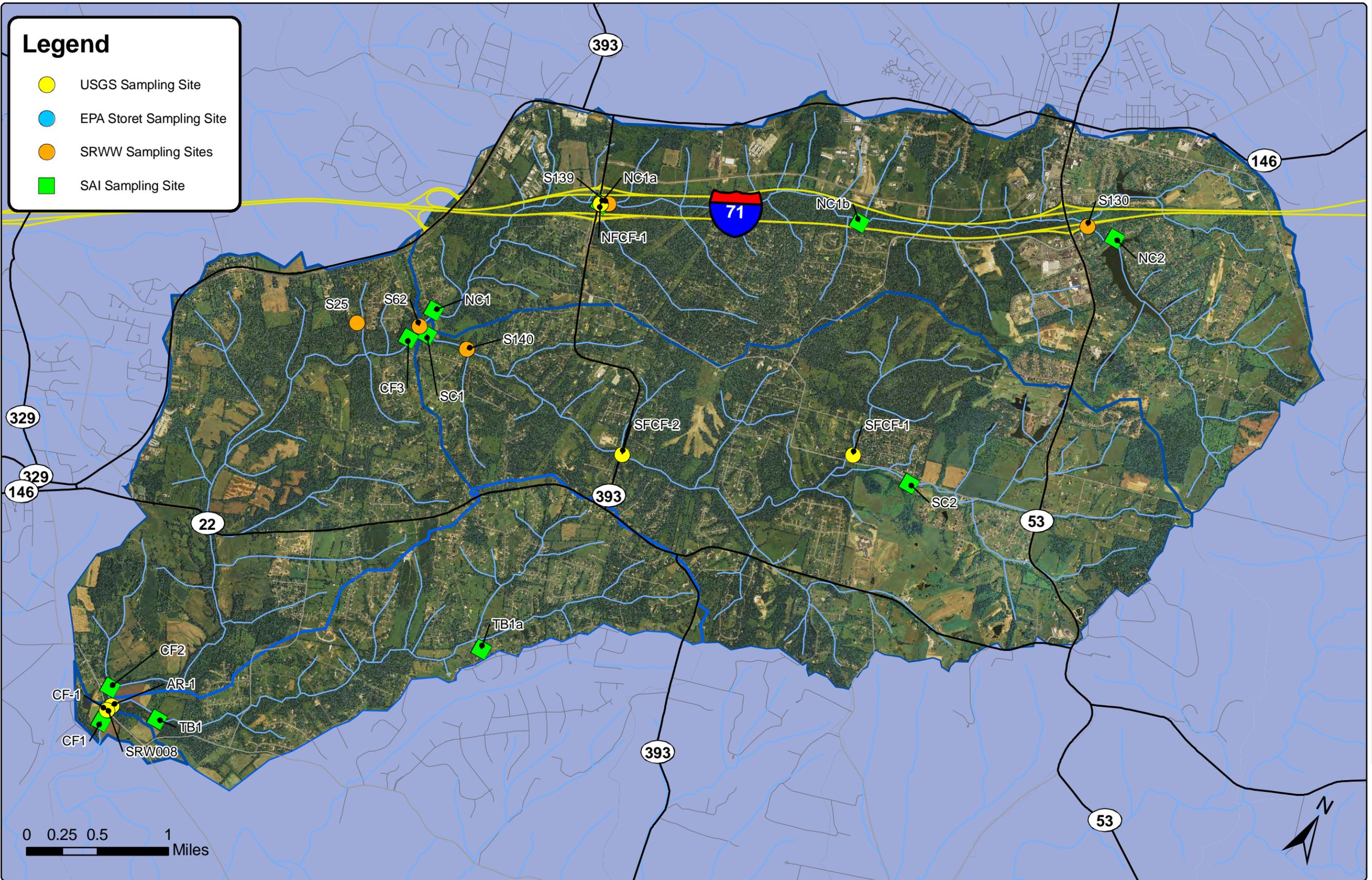
**CURRY'S FORK SAMPLING LOCATIONS**  
**WATER QUALITY DATA TEAM MEETING FEBRUARY 16, 2009**  
 CURRY'S FORK WATERSHED BASED PLAN  
 OLDHAM COUNTY FISCAL COURT  
 LA GRANGE, KY



**FIGURE 1-1**  
5994.106

# Legend

- USGS Sampling Site
- EPA Storet Sampling Site
- SRWW Sampling Sites
- SAI Sampling Site



COMPREHENSIVE CURRY'S FORK  
AERIAL 2006  
CURRY'S FORK WATERSHED BASED PLAN  
OLDHAM COUNTY FISCAL COURT  
LA GRANGE, KENTUCKY



FIGURE 1-2  
5994.106

**CURRYS FORK WATERSHED BASED PLAN  
NORTH CURRYS  
WQ TEAM MEETING  
FEBRUARY 16, 2010**

**SUMMARY:**

The North Currys subwatershed has the largest area and highest percentage of developed land of all subwatersheds in Curry's Fork. This subwatershed includes the City of La Grange. There are four sampling sites in this subwatershed (listed in upstream to downstream order) – NC2, NC1b, NC1a and NC1 (See Figure 2-1 and Figure 2-2).

**OBSERVATIONS:**

1. The geometric mean of all fecal coliform concentrations at sampling sites NC2, NC1b, NC1a and NC1, as well as total number of samples, is shown in Table 2-1.
2. Fecal coliform primary contact standard (400 colonies /100ml) excursions at NC2 occurred over all but mid-range flow regimes in both 2007 and 2009. Storm sampling was not performed at NC2. See Table 2-2 and Figure 2-3.
3. Fecal coliform primary contact standard (400 colonies /100ml) excursions at NC1b occurred at all but low flow regimes in 2009. Sampling was not performed at site NC1b in 2007 or during storm events. See Table 2-2 and Figure 2-4.

	<b>Geometric Mean of All Samples (Colonies/100 ml)</b>	<b>Total Number of Samples</b>	<b>% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)</b>	<b>% of Samples That Exceed Secondary Contact Standard (2000 Colonies/100 ml)</b>
<b>NC2</b>	267	17	47%	12%
<b>NC1b</b>	673	10	60%	40%
<b>NC1a</b>	935	18	72%	39%
<b>NC1</b>	1,276	30	77%	40%

**Table 2-1 North Currys Fecal Coliform Data Summary**

4. Fecal coliform primary contact standard (400 colonies /100ml) excursions at NC1a occurred over all flow regimes. Sampling was not performed at NC1a in 2007. See Table 2-2 and Figure 2-5.
5. Fecal coliform primary contact standard (400 colonies /100ml) excursions at NC1 occurred at all but low flow regimes (bi-weekly and storm sampling) in 2007 and 2009. See Table 2-2 and Figure 2-6.
6. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred primarily at low flows at NC2. See Table 2-2 and Figure 2-3.
7. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred at all but low flows at NC1b. See Table 2-2 and Figure 2-4.
8. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred primarily at mid-range to high flows at NC1a. See Table 2-2 and Figure 2-5.

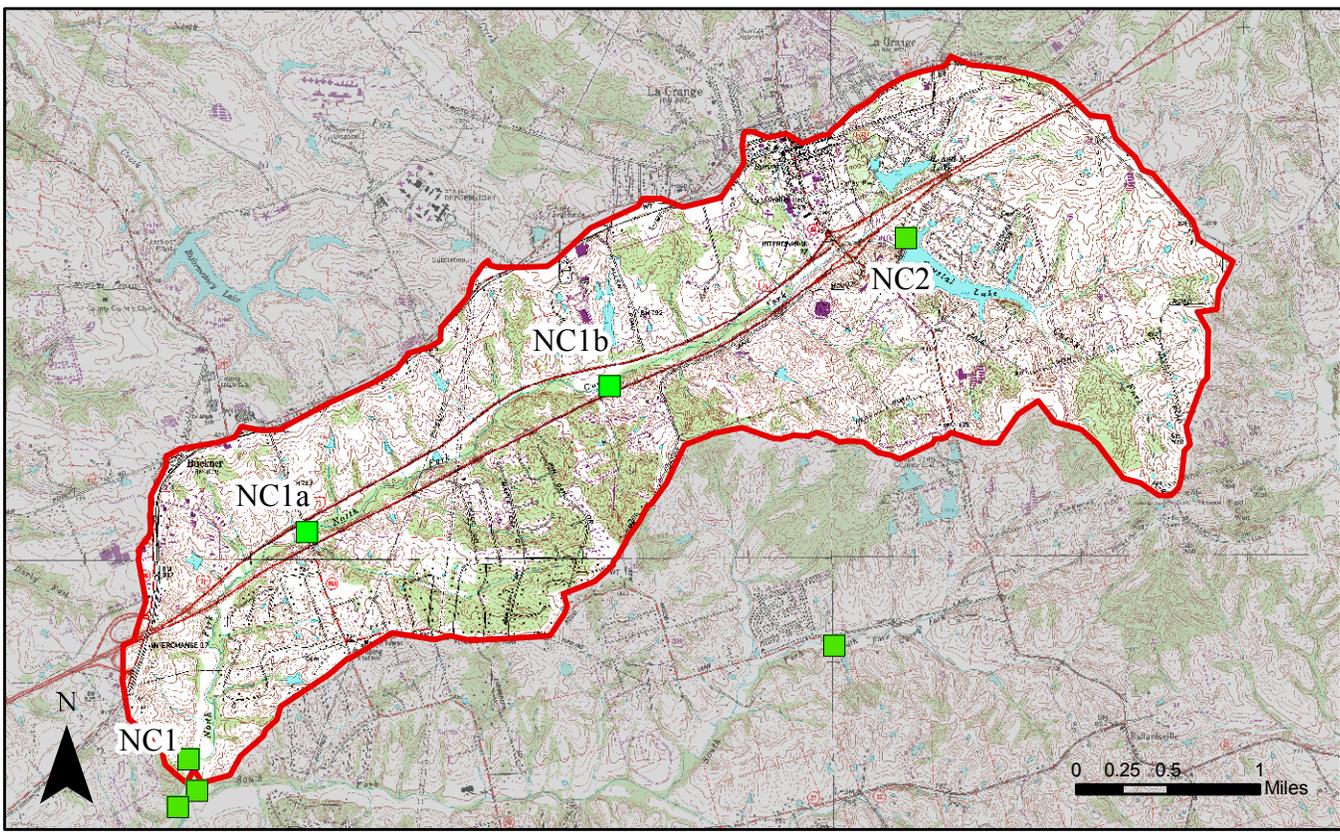
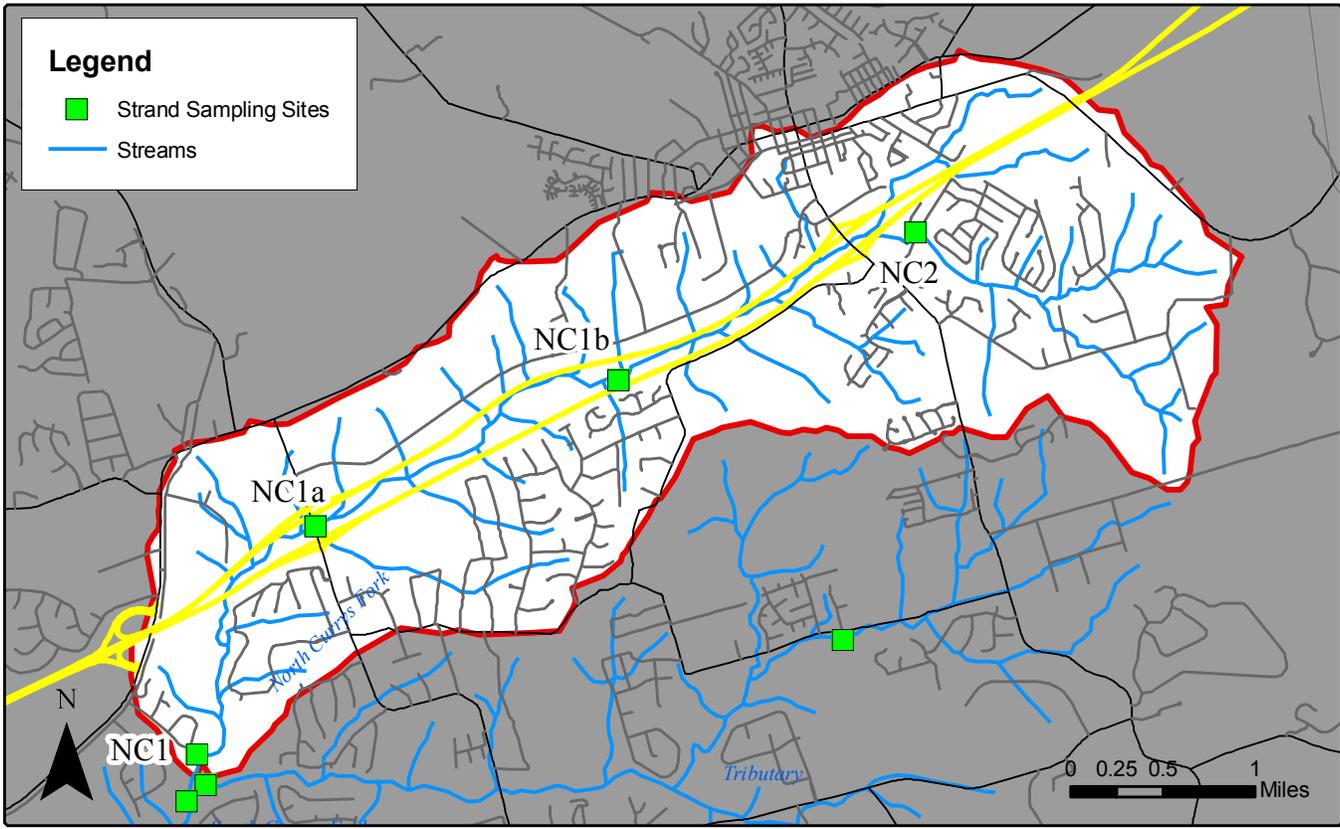
9. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred at all but low flows at NC1. See Table 2-2 and Figure 2-6.
10. Wet weather event sampling in 2009 shows significant increases in fecal coliform concentrations as a result of rainfall and runoff at NC1a and NC1 (wet weather sampling was not performed at NC2 and NC1b). See Figures 2-5 and 2-6.

	Flow Category	Low Flows	Low to Mid Flows	Mid-Range Flows	Mid to High Flows	High Flows
	Flow Interval	90-100	60-90	40-60	10-40	0-10
NC2	Number of Samples	2	6	2	5	2
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	100%	33%	0%	40%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	100%	0%	0%	0%	0%
NC1b	Number of Samples	1	4	1	3	1
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	0%	75%	100%	33%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	0%	25%	100%	33%	100%
NC1a	Number of Samples	2	5	4	5	2
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	50%	40%	75%	100%	100%
	% of Samples That Exceed Secondary Contact Standard (2000 Colonies/100 ml)	0%	0%	25%	80%	100%
NC1	Number of Samples	1	9	6	9	5
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	0%	56%	100%	78%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	0%	11%	33%	44%	100%

**Table 2-2: North Currys Fecal Coliform Contact Standard Exceedance Summary**

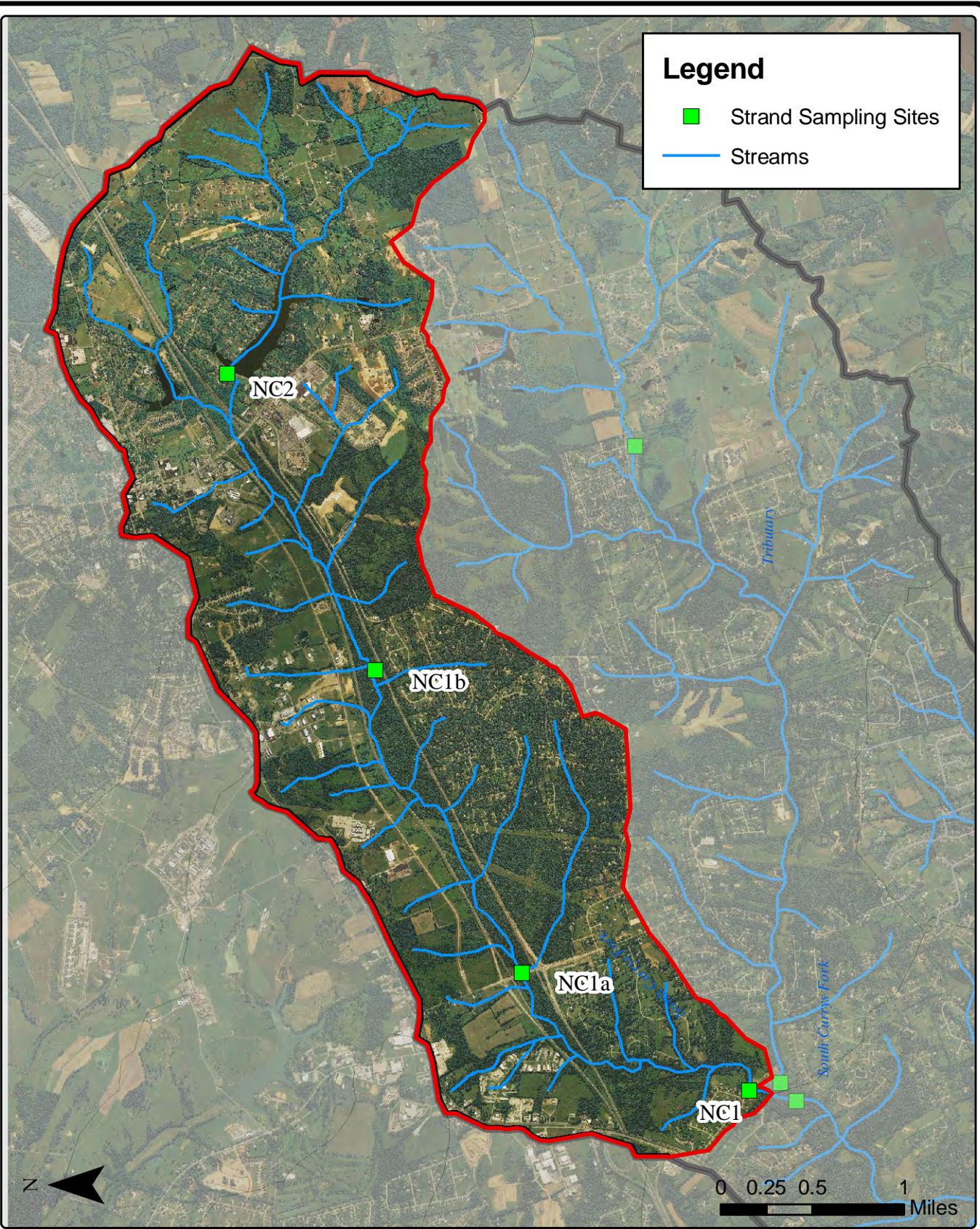
**ATTACHMENTS:**

1. Figure 2-1: North Currys Sampling Locations
2. Figure 2-2: North Currys Run Aerial
3. Figure 2-3: NC2 Graphs
4. Figure 2-4: NC1b Graphs
5. Figure 2-5: NC1a Graphs
6. Figure 2-6: NC1 Graphs



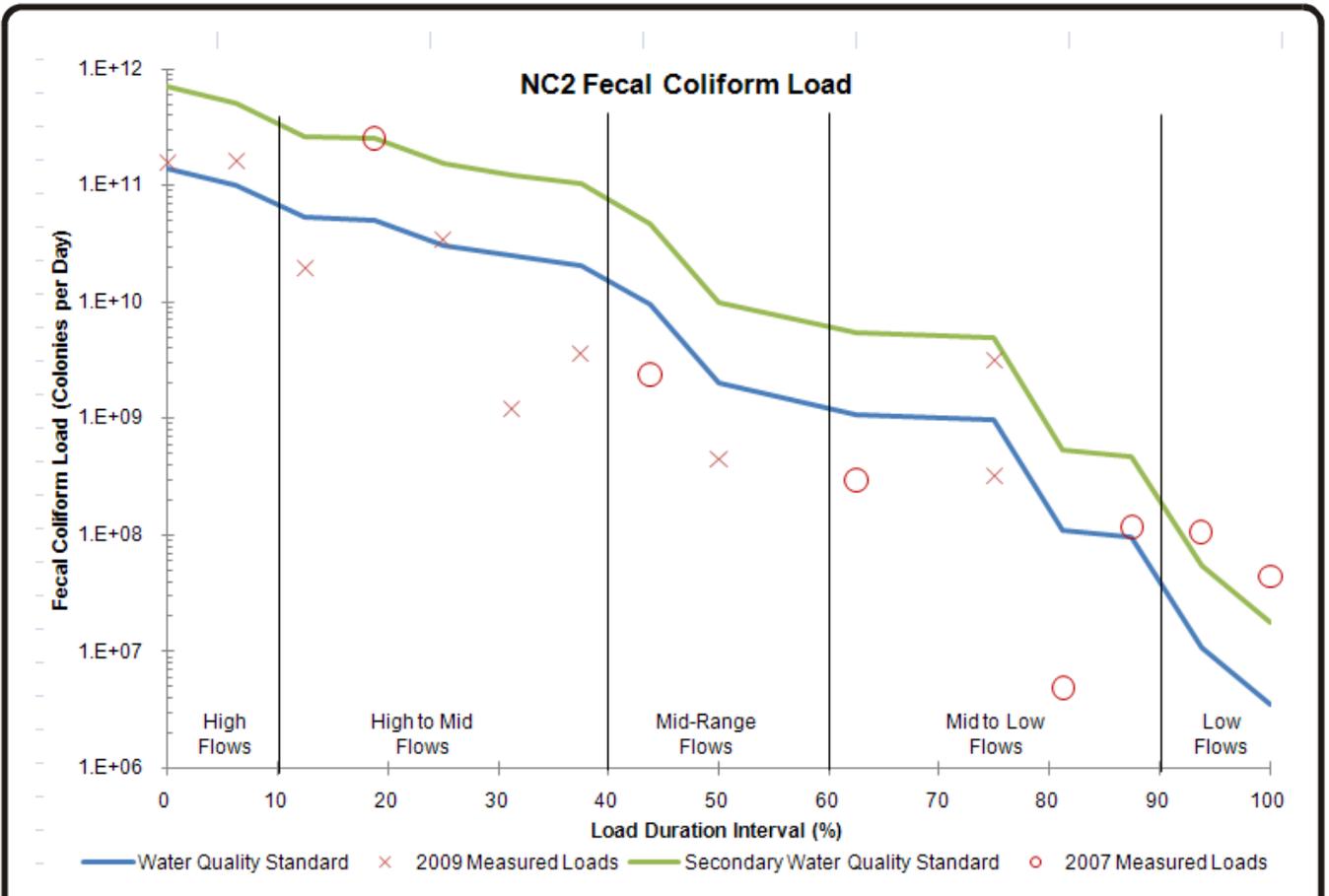
**NORTH CURRYS  
WQ TEAM MEETING FEBRUARY 16, 2010  
CURRYS FORK WATERSHED BASED PLAN  
OLDHAM COUNTY FISCAL COURT  
LA GRANGE, KY**

**Figure  
2-1**



**NORTH CURRYS AERIAL 2006**  
**WQ TEAM MEETING FEBRUARY 16, 2010**  
**CURRYS FORK WATERSHED BASED PLAN**  
**OLDHAM COUNTY FISCAL COURT**  
**LA GRANGE, KY**

**Figure**  
**2-2**

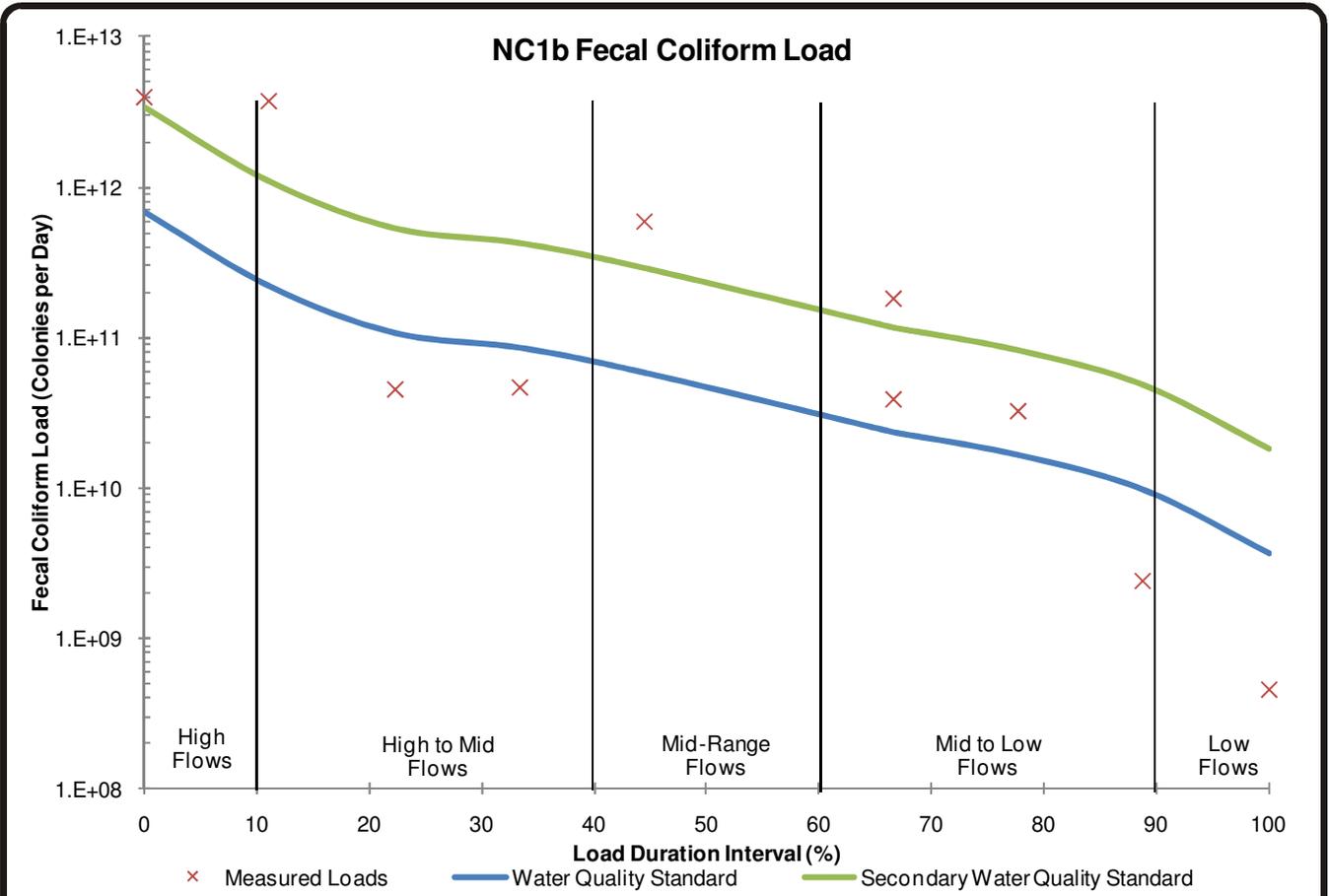


\*Data was not collected during 2009 storm events at NC2.

**NORTH CURRYS – SITE NC2**  
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 CURRYS FORK WATERSHED BASED PLAN  
 OLDHAM COUNTY FISCAL COURT  
 LA GRANGE, KY



**Figure 2-3:**  
**NC2 Graph**

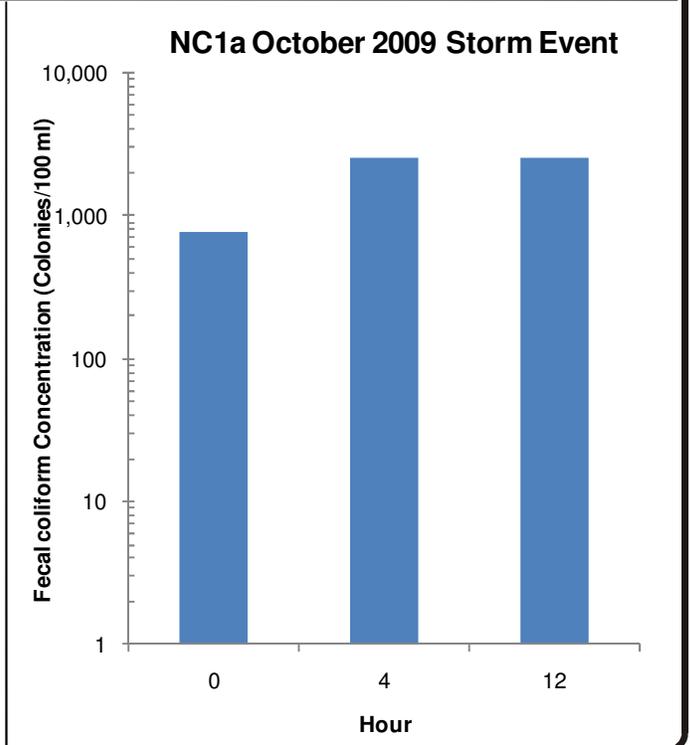
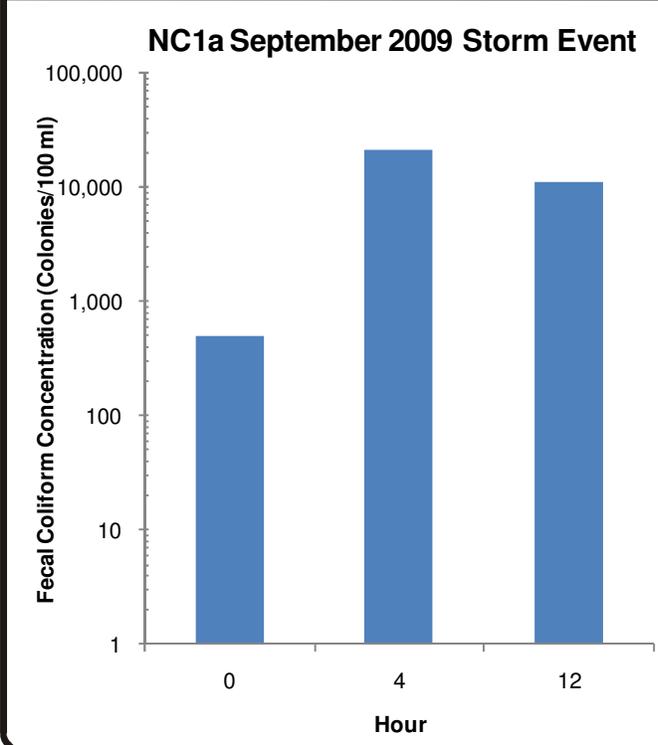
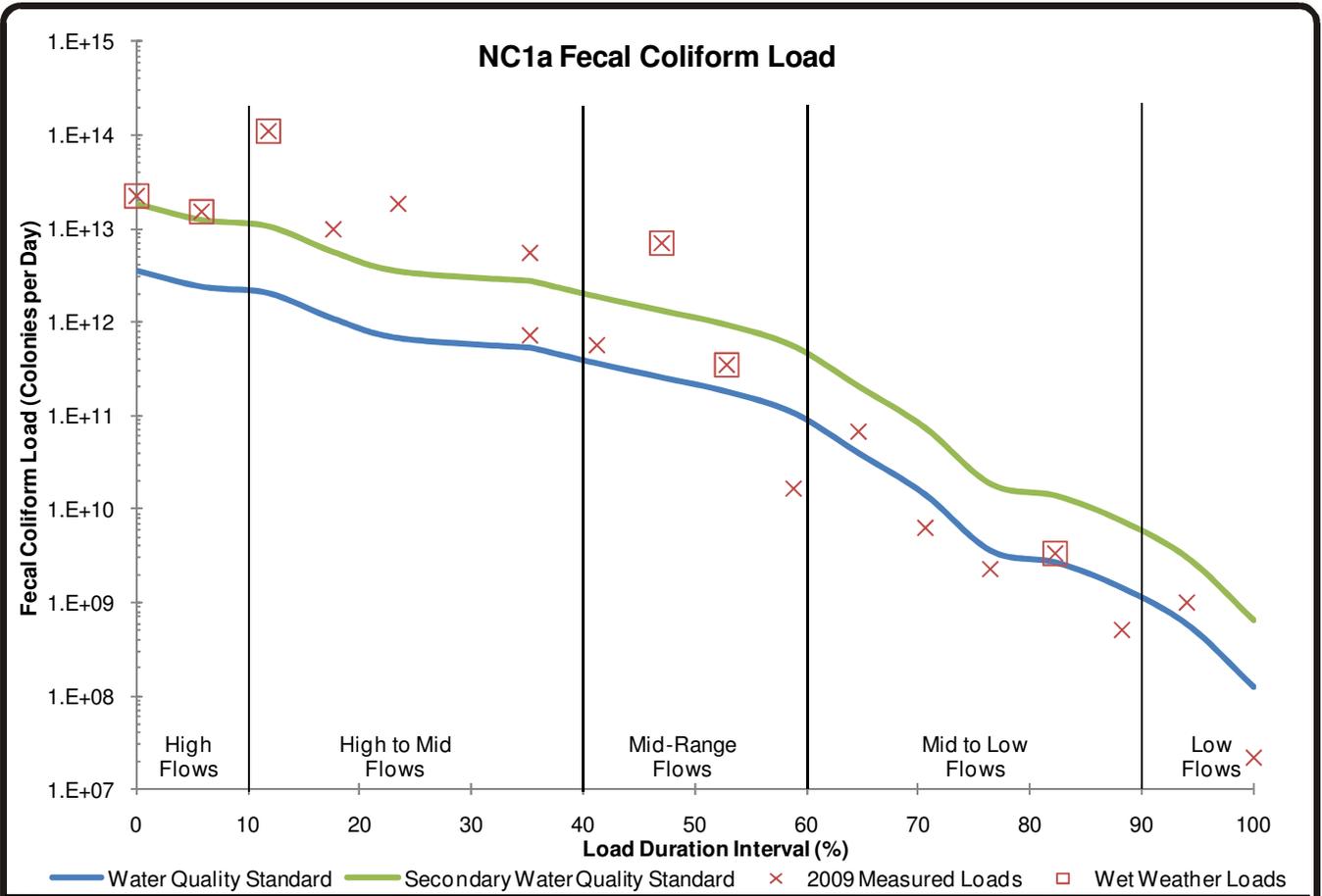


\*Data was not collected in 2007 or during 2009 storm events at NC1b.

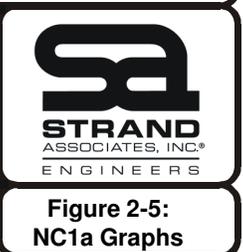
**NORTH CURRYS – SITE NC1b**  
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**LA GRANGE, KY**

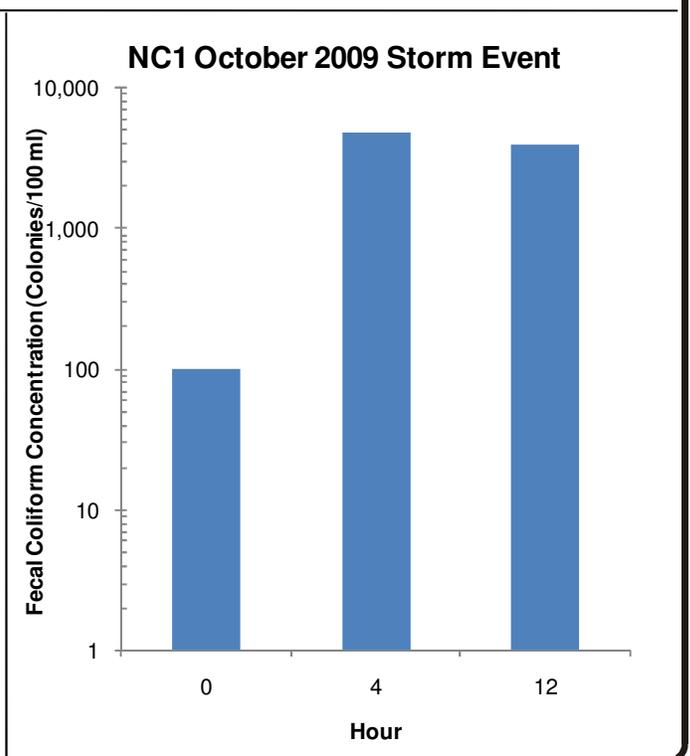
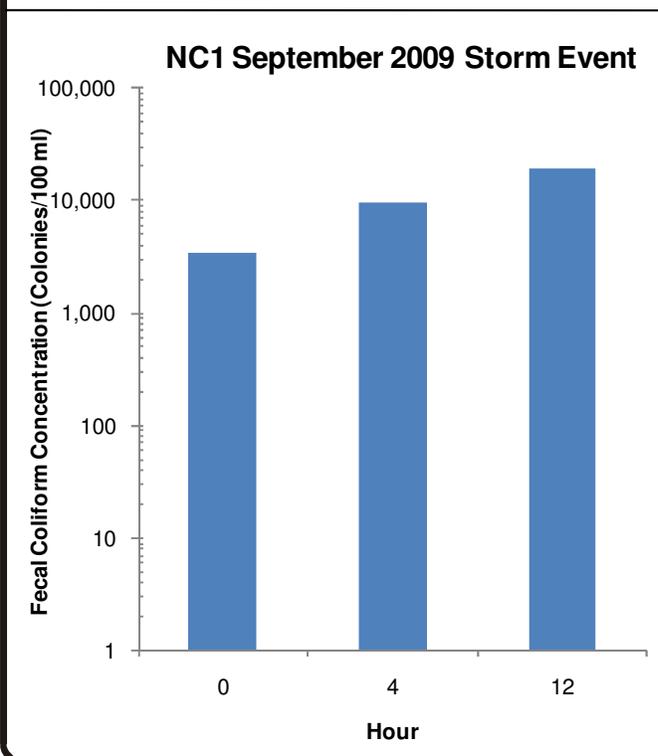
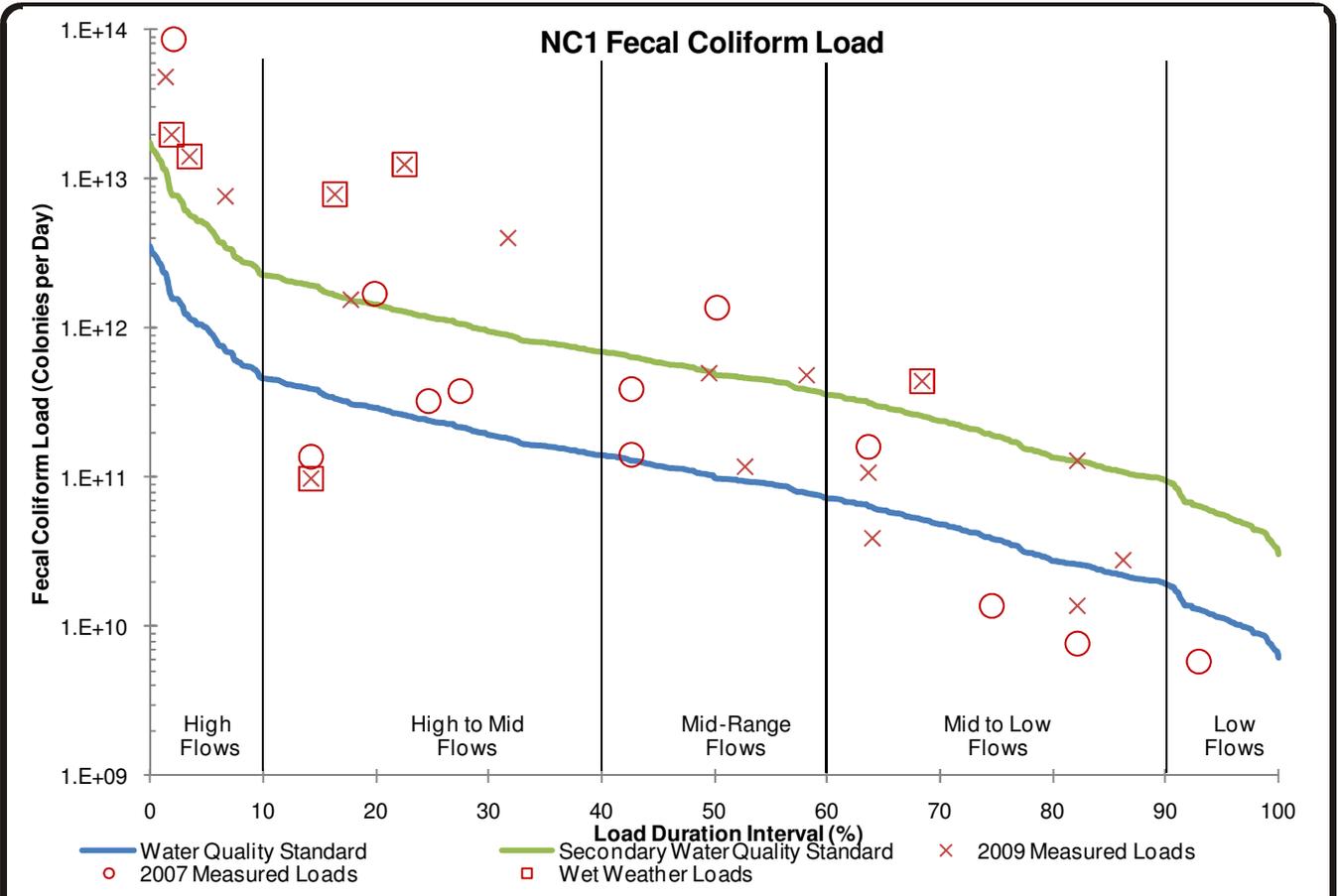


**Figure 2-4:**  
**NC1b Graphs**

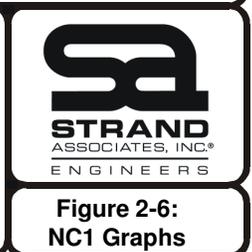


**NORTH CURRYS – SITE NC1a**  
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**CURRYS FORK WATERSHED BASED PLAN  
SOUTH CURRYS  
WQ TEAM MEETING  
FEBRUARY 16, 2010**

**SUMMARY:**

The South Currys subwatershed has the largest total subdivision area of all subwatersheds in Curry's Fork. There are two sampling sites in this subwatershed – SC1 and SC2. (See Figure 3-1 and Figure 3-2).

**OBSERVATIONS:**

1. The geometric mean of all fecal coliform concentrations at sampling sites SC2 (upstream station) and SC1 (downstream station), as well as total number of samples, is shown in Table 3-1 below.
2. Fecal coliform primary contact standard (400 colonies/100ml) excursions occurred over all but low flow regimes (bi-weekly and storm sampling) at sample site SC2. See Table 3-2 and Figure 3-3.
3. Fecal coliform primary contact standard (400 colonies /100ml) excursions at SC1 occurred over all flow regimes (bi-weekly and storm sampling) in both 2007 and 2009. See Table 3-2 and Figure 3-4.

	<b>Geometric Mean of All Samples (Colonies/100 ml)</b>	<b>Total Number of Samples</b>	<b>% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)</b>	<b>% of Samples That Exceed Secondary Contact Standard (2000 Colonies/100 ml)</b>
<b>SC2 (Upstream)</b>	789	30	53%	33%
<b>SC1 (Downstream)</b>	1,722	27	85%	37%

**Table 3-1 South Currys Fecal Coliform Data Summary**

4. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred over all but low flow regimes at SC2. See Table 3-2 and Figure 3-3.
5. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred at all but low flow regimes at SC1. See Table 3-2 and Figure 3-4.
6. Wet weather event sampling in 2009 shows significant increases in fecal coliform concentrations as a result of rainfall and runoff at both sample stations. See Figures 3-3 and 3-4.

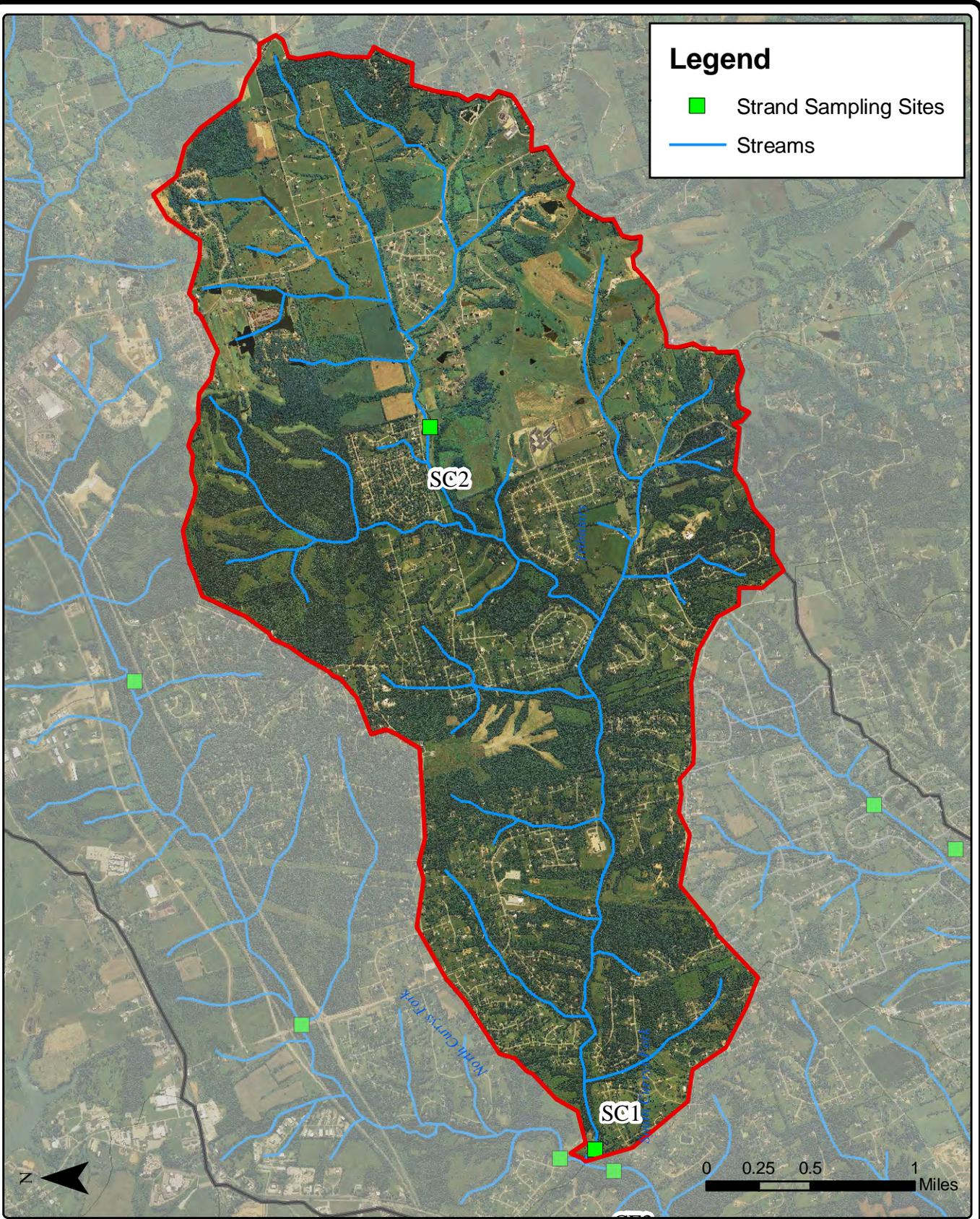
	Flow Category	Low Flows	Low to Mid Flows	Mid-Range Flows	Mid to High Flows	High Flows
	Flow Interval	90-100	60-90	40-60	10-40	0-10
SC2 (Upstream)	Number of Samples	3	9	6	8	4
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	0%	33%	50%	88%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	0%	22%	17%	50%	100%
SC1 (Downstream)	Number of Samples	1	11	4	8	3
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	100%	73%	100%	88%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	0%	27%	25%	38%	100%

**Table 3-2: South Currys Fecal Coliform Contact Standard Exceedance Summary**

**ATTACHMENTS:**

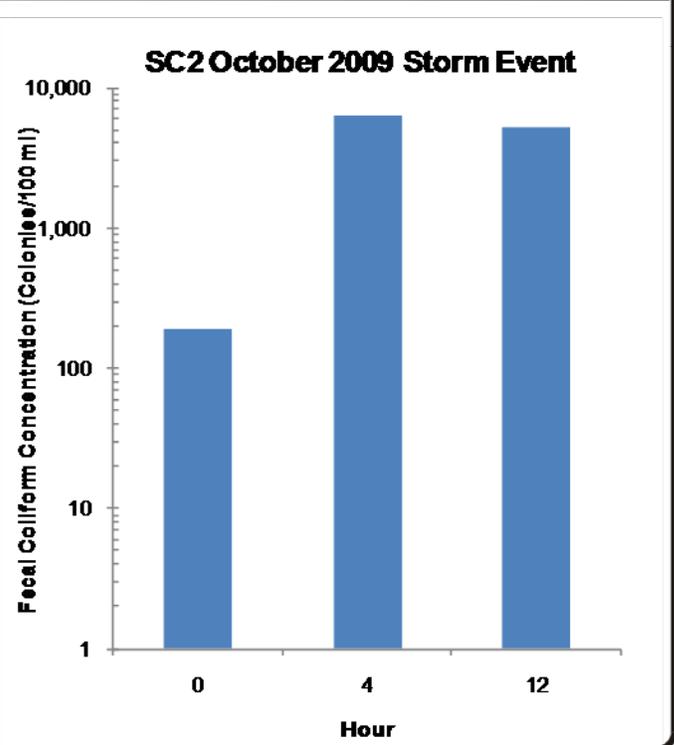
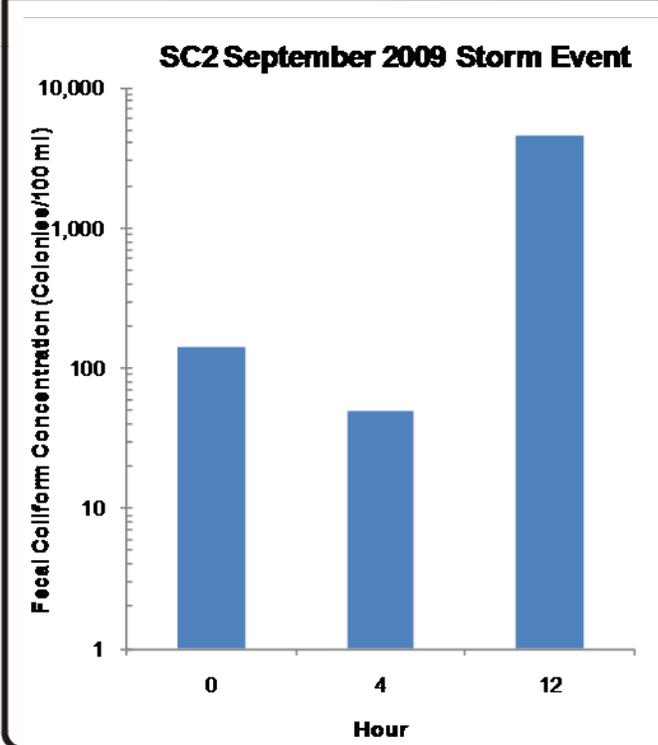
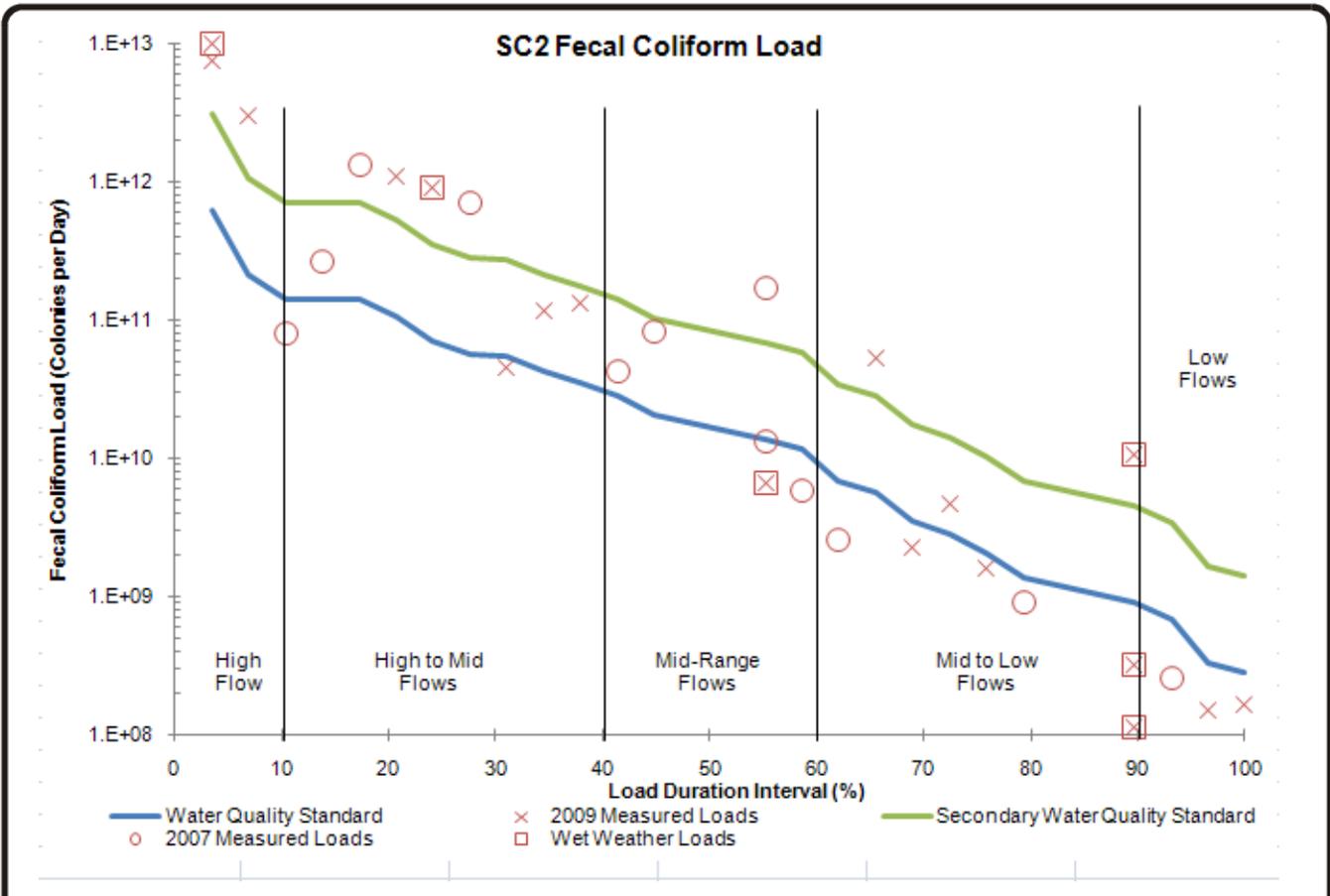
1. Figure 3-1: South Currys Sampling Locations
2. Figure 3-2: South Currys Aerial
3. Figure 3-3: SC2 Graphs
4. Figure 3-4: SC1 Graphs





**SOUTH CURRYS AERIAL 2006**  
**WQ TEAM MEETING FEBRUARY 16, 2010**  
**CURRYS FORK WATERSHED BASED PLAN**  
**OLDHAM COUNTY FISCAL COURT**  
**LA GRANGE, KY**

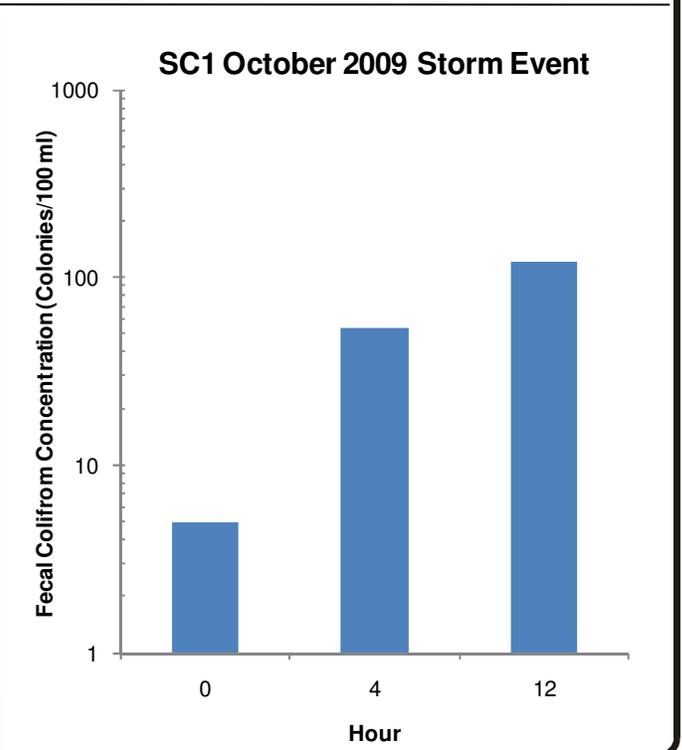
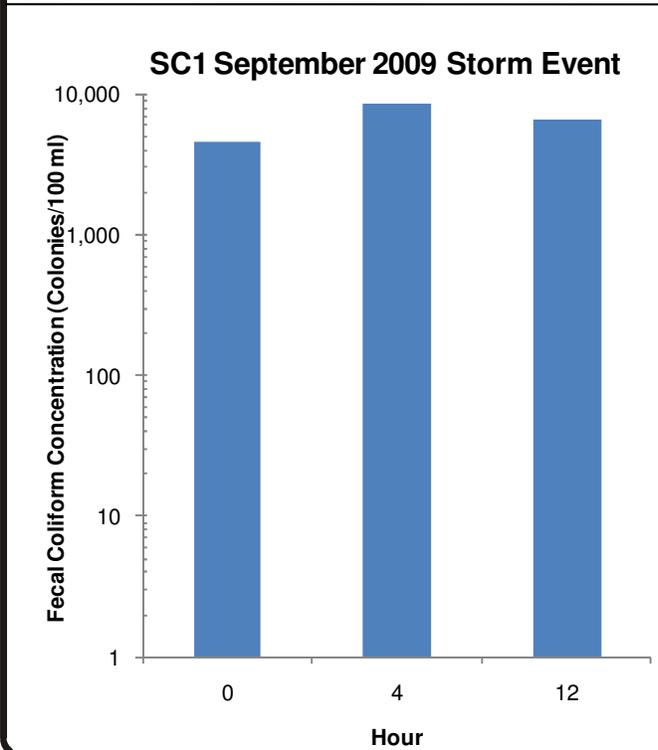
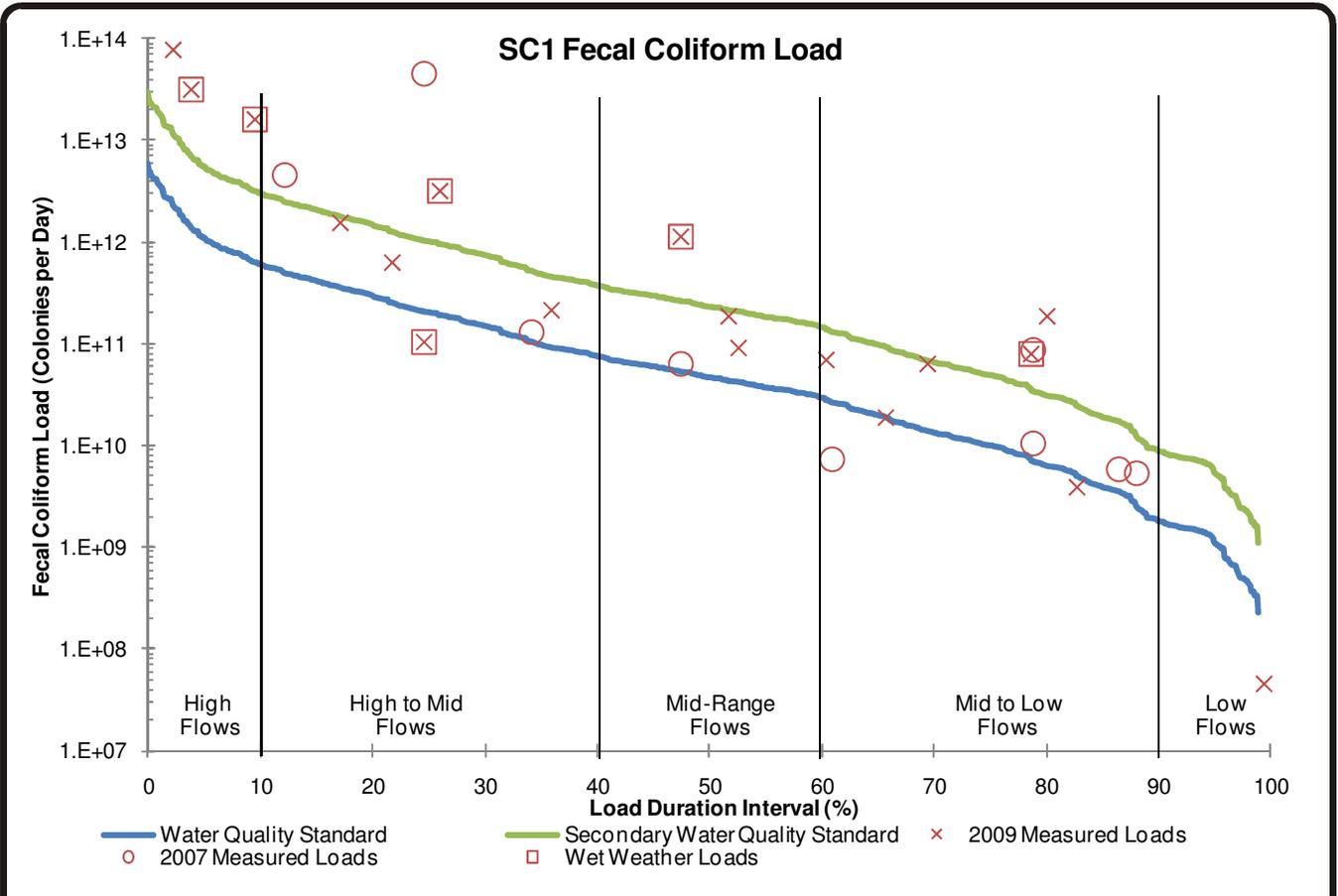
**Figure 3-2**



**SOUTH CURRYS – SITE SC2**  
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**Figure 3-3:**  
**SC2 Graph**



**SOUTH CURRYS – SITE SC1**  
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**Figure 3-4:**  
**SC1 Graph**

**CURRYS FORK WATERSHED BASED PLAN  
 ASHERS RUN  
 WQ TEAM MEETING  
 FEBRUARY 16, 2010**

**SUMMARY:**

The Ashers Run subwatershed is the smallest subwatershed in Curry's Fork. There are two sampling sites in this subwatershed – TB1a and TB1 (See Figure 4-1 and Figure 4-2).

**OBSERVATIONS:**

1. The geometric mean of all fecal coliform concentrations at sampling sites TB1a (upstream station) and TB1 (downstream station), as well as the total number of samples, is shown in Table 4-1 below.
2. Fecal coliform primary contact standard (400 colonies/100ml) excursions occurred over all flow regimes at sample site TB1a. Samples were collected at this station only in 2009. See Table 4-2 and Figure 4-3.
3. Fecal coliform primary contact standard (400 colonies /100ml) excursions at TB1 occurred over all flow regimes in both 2007 and 2009. See Table 4-2 and Figure 4-4.

	<b>Geometric Mean of All Samples (Colonies/100 ml)</b>	<b>Total Number of Samples</b>	<b>% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)</b>	<b>% of Samples That Exceed Secondary Contact Standard (2000 Colonies/100 ml)</b>
<b>TB1a (Upstream)</b>	1,301	18	83%	44%
<b>TB1 (Downstream)</b>	908	26	65%	27%

**Table 4-1 Asher's Run Fecal Coliform Data Summary**

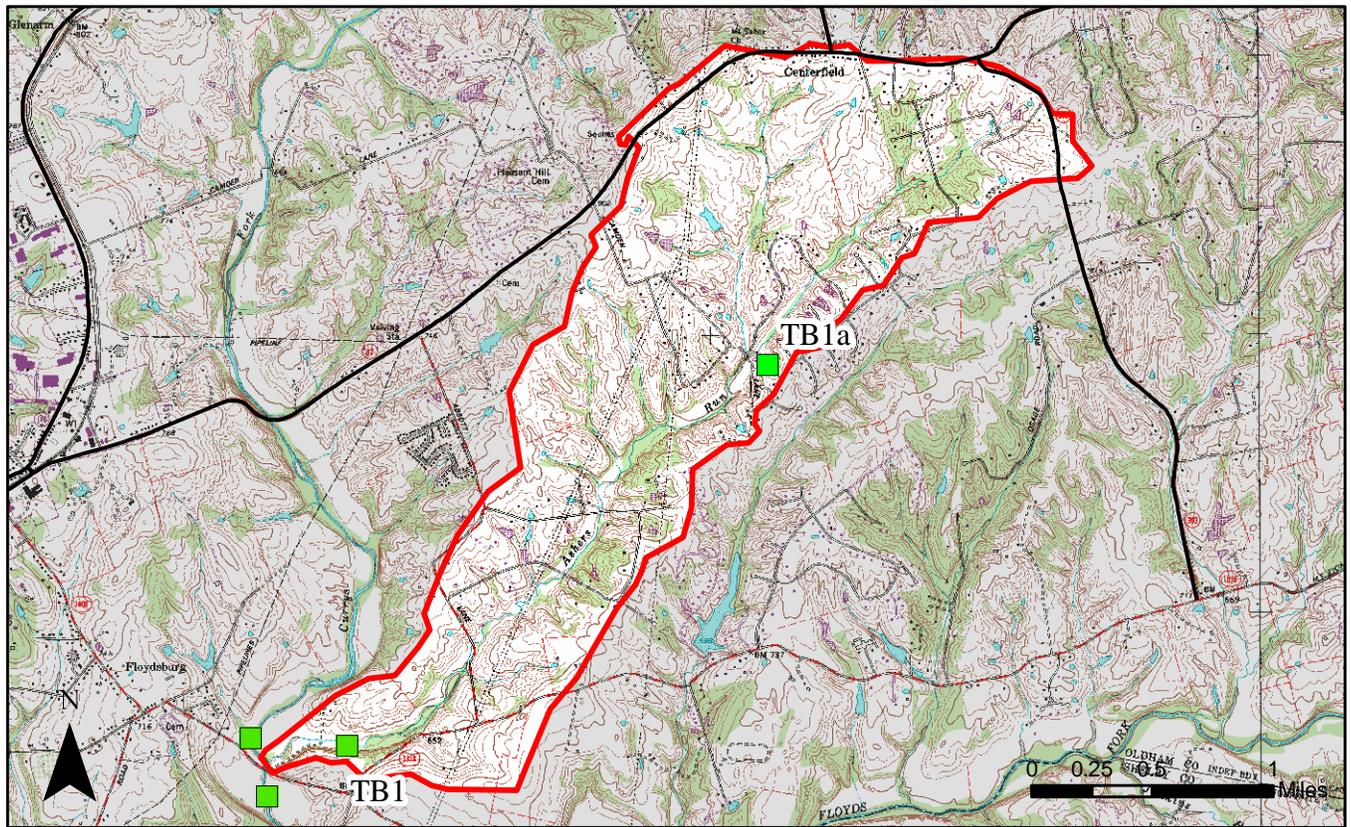
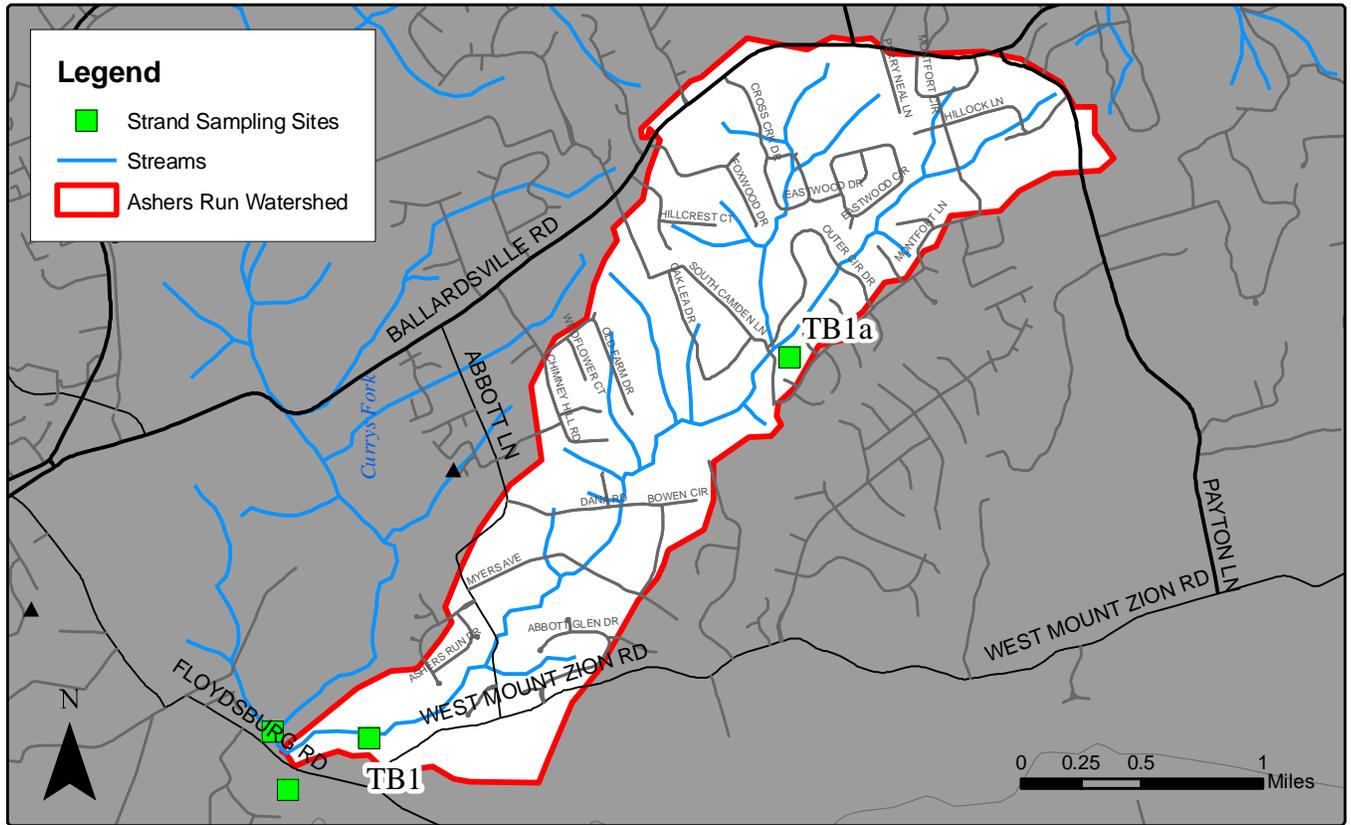
4. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred over a range of flow regimes at TB1a. There were no secondary contact standard excursions at low flows. See Table 4-2 and Figure 4-3.
5. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred at very low flows and over mid to high flow to high flow regimes at TB1 in both 2007 and 2009. See Table 4-2 and Figure 4-4.
6. Wet weather event sampling in 2009 shows significant increases in fecal coliform concentrations as a result of rainfall and runoff at both sample stations. See Figure 4-3.

	Flow Category	Low Flows	Low to Mid Flows	Mid-Range Flows	Mid to High Flows	High Flows
	Flow Interval	90-100	60-90	40-60	10-40	0-10
TB1a (Upstream)	Number of Samples	2	5	4	5	2
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	100%	80%	75%	80%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	0%	40%	25%	60%	100%
TB1 (Downstream)	Number of Samples	9	1	5	8	3
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	44%	100%	40%	88%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	22%	0%	0%	38%	67%

**Table 4-2 Asher’s Run Fecal Coliform Contact Standard Exceedance Summary**

**ATTACHMENTS:**

1. Figure 4-1: Ashers Run Sampling Locations
2. Figure 4-2: Ashers Run Aerial
3. Figure 4-3: TB1a Graphs
4. Figure 4-4: TB1 Graphs

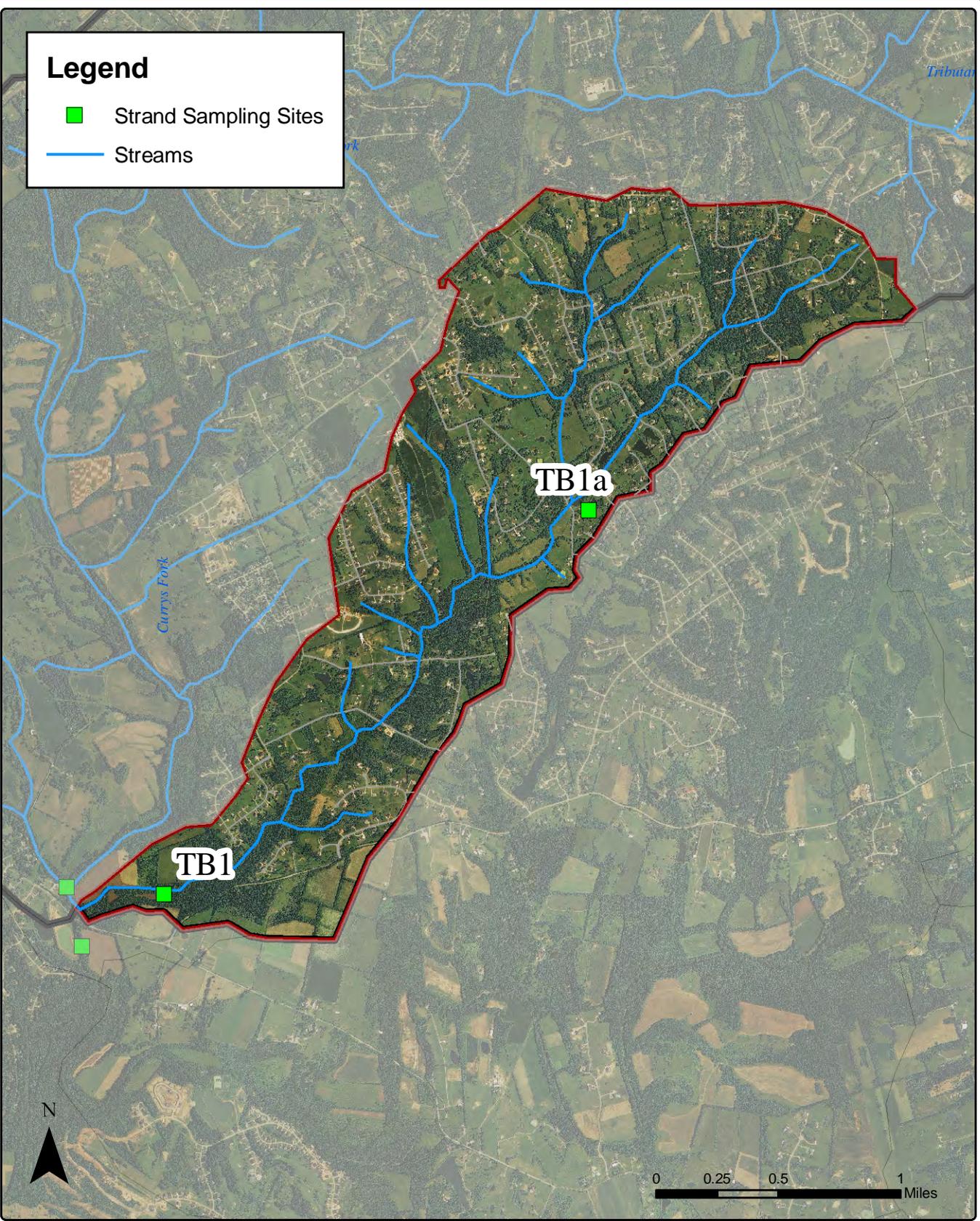


**ASHERS RUN  
WQ TEAM MEETING FEBRUARY 16, 2010  
CURRYS FORK WATERSHED BASED PLAN  
OLDHAM COUNTY FISCAL COURT  
LA GRANGE, KY**

**Figure  
4-1**

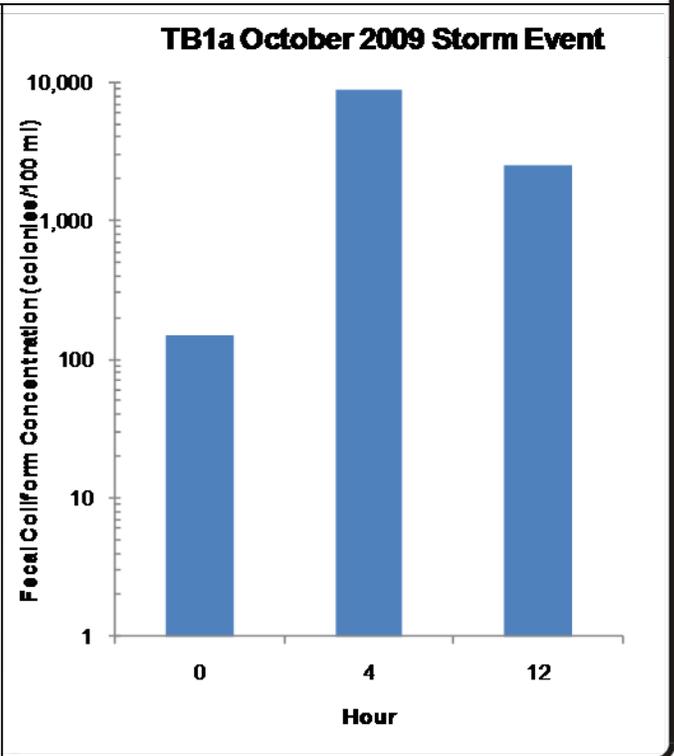
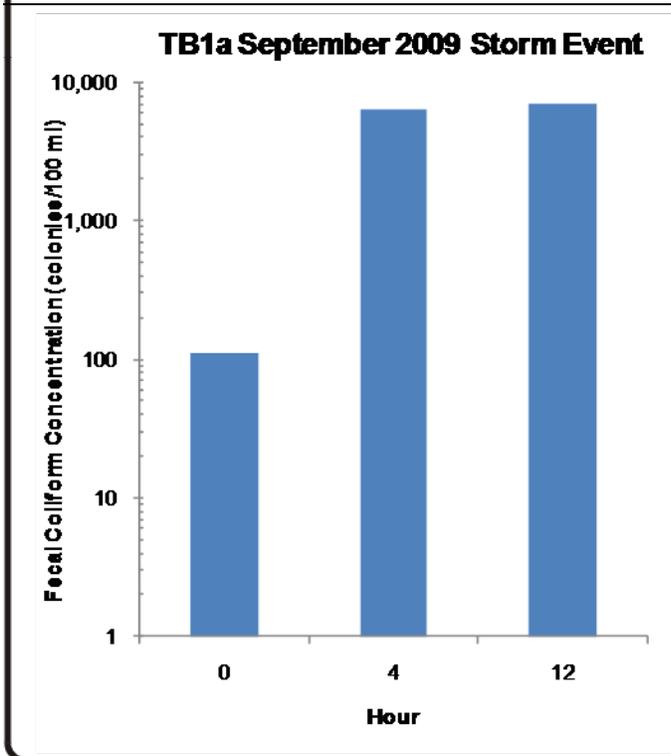
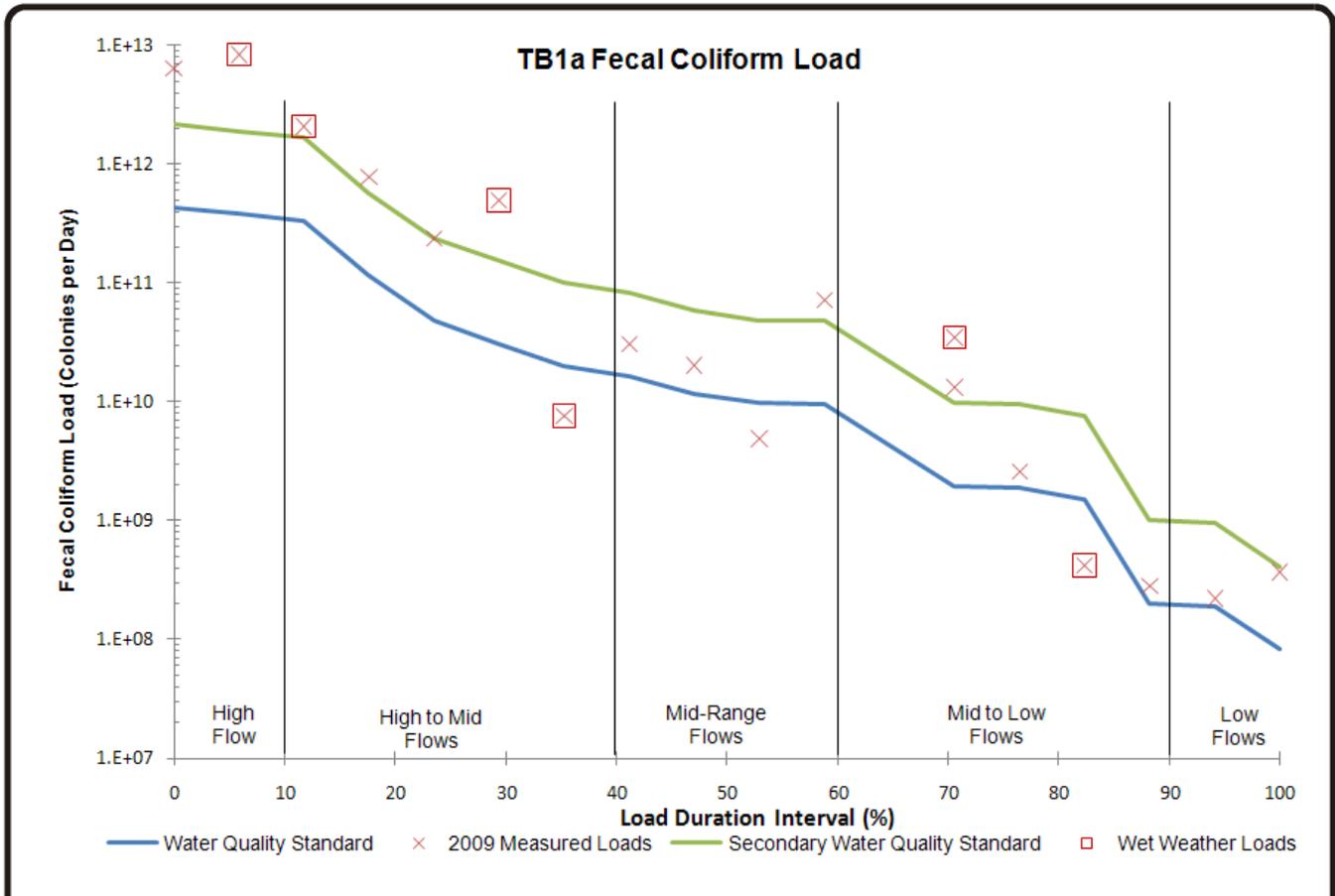
**Legend**

- Strand Sampling Sites
- Streams



**ASHERS RUN AERIAL 2006**  
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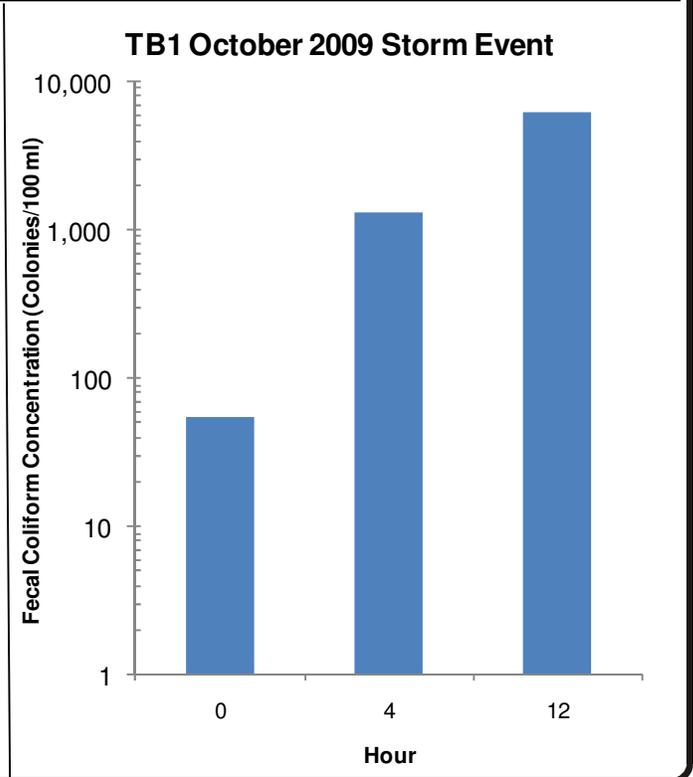
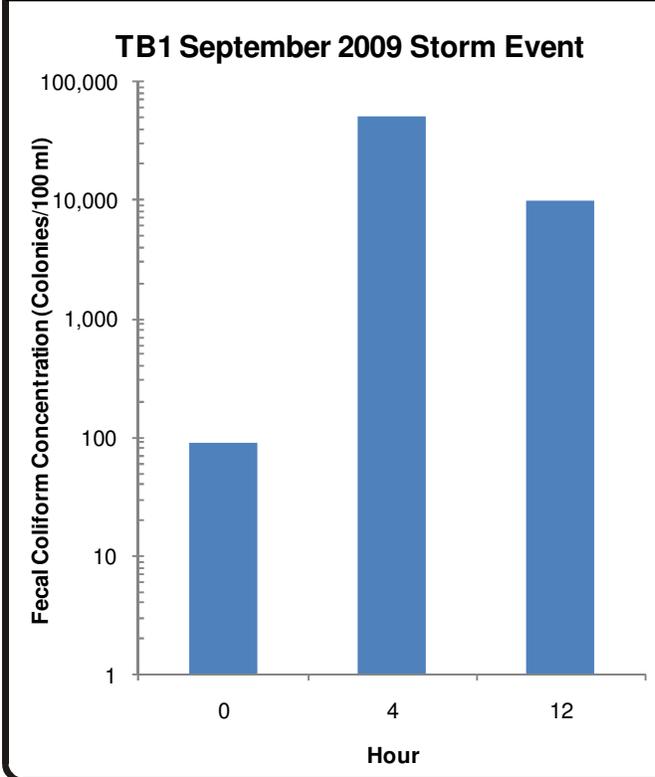
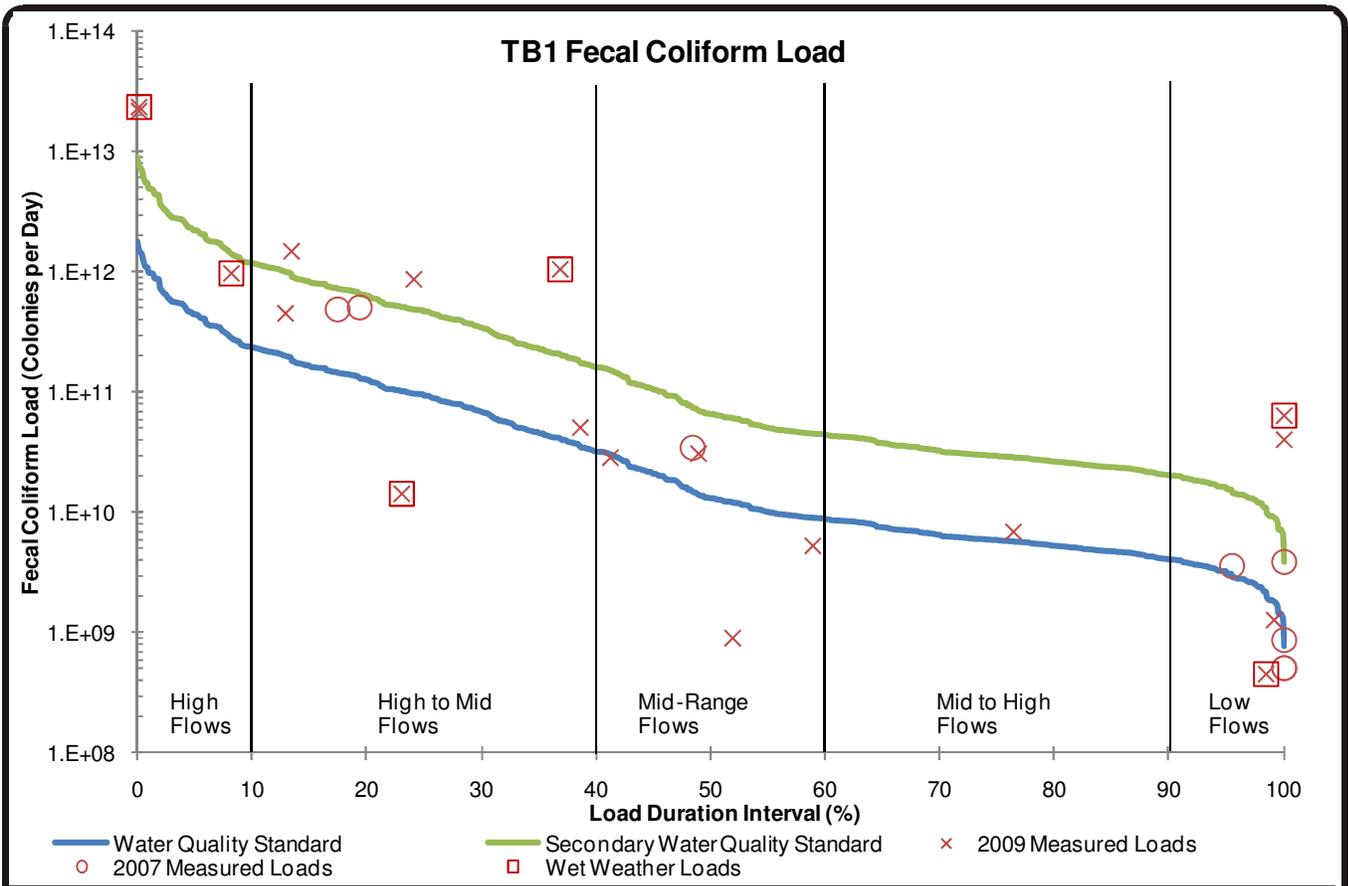
**Figure 4-2**



**ASHERS RUN – SITE TB1a (UPSTREAM)**  
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**Figure 4-3:**  
**TB1a Graphs**



**ASHERS RUN – SITE TB1 (DOWNSTREAM)**  
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**Figure 4-4:**  
**TB1 Graphs**

**CURRYS FORK WATERSHED BASED PLAN  
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FEBRUARY 16, 2010**

**SUMMARY:**

The Currys Fork subwatershed has the largest area and highest percentage of cultivated crops of all subwatersheds in Curry's Fork. There are three sampling sites in this subwatershed – CF3, CF2 and CF1 (See Figure 5-1 and Figure 5-2).

**OBSERVATIONS:**

1. The geometric mean of all fecal coliform concentrations at sampling sites CF3, CF2 and CF1, as well as total number of samples, is shown in Table 5-1.
2. Fecal coliform primary contact standard (400 colonies /100ml) excursions at CF3 occurred over all flow regimes in both 2007 and 2009. See Table 5-2 and Figure 5-3.
3. Fecal coliform primary contact standard (400 colonies /100ml) excursions at CF2 occurred over all flow regimes in both 2007 and 2009. See Table 5-2 and Figure 5-4.
4. Fecal coliform primary contact standard (400 colonies /100ml) excursions at CF1 occurred over all flow regimes in both 2007 and 2009. See Table 5-2 and Figure 5-5.

	<b>Geometric Mean of All Samples (Colonies/100 ml)</b>	<b>Total Number of Samples</b>	<b>% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)</b>	<b>% of Samples That Exceed Secondary Contact Standard (2000 Colonies/100 ml)</b>
<b>CF3</b>	1,371	30	73%	30%
<b>CF2</b>	1,264	30	73%	40%
<b>CF1</b>	8,22	29	62%	31%

**Table 5-1 Currys Fork Fecal Coliform Data Summary**

5. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred primarily at mid to high flows and high flows at CF3 in both 2007 and 2009. See Table 5-2 and Figure 5-3.
6. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred at all but low flows at CF2. All but one excursion occurred in 2009. See Table 5-2 and Figure 5-4.
7. Fecal coliform secondary contact standard (2,000 colonies/100 ml) excursions occurred primarily at mid to high flows and high flows at CF1. All but one excursion occurred in 2009. See Table 5-2 and Figure 5-5.
8. Wet weather event sampling in 2009 shows significant increases in fecal coliform concentrations as a result of rainfall and runoff at all three sample stations. See Figures 5-3, 5-4 and 5-5.

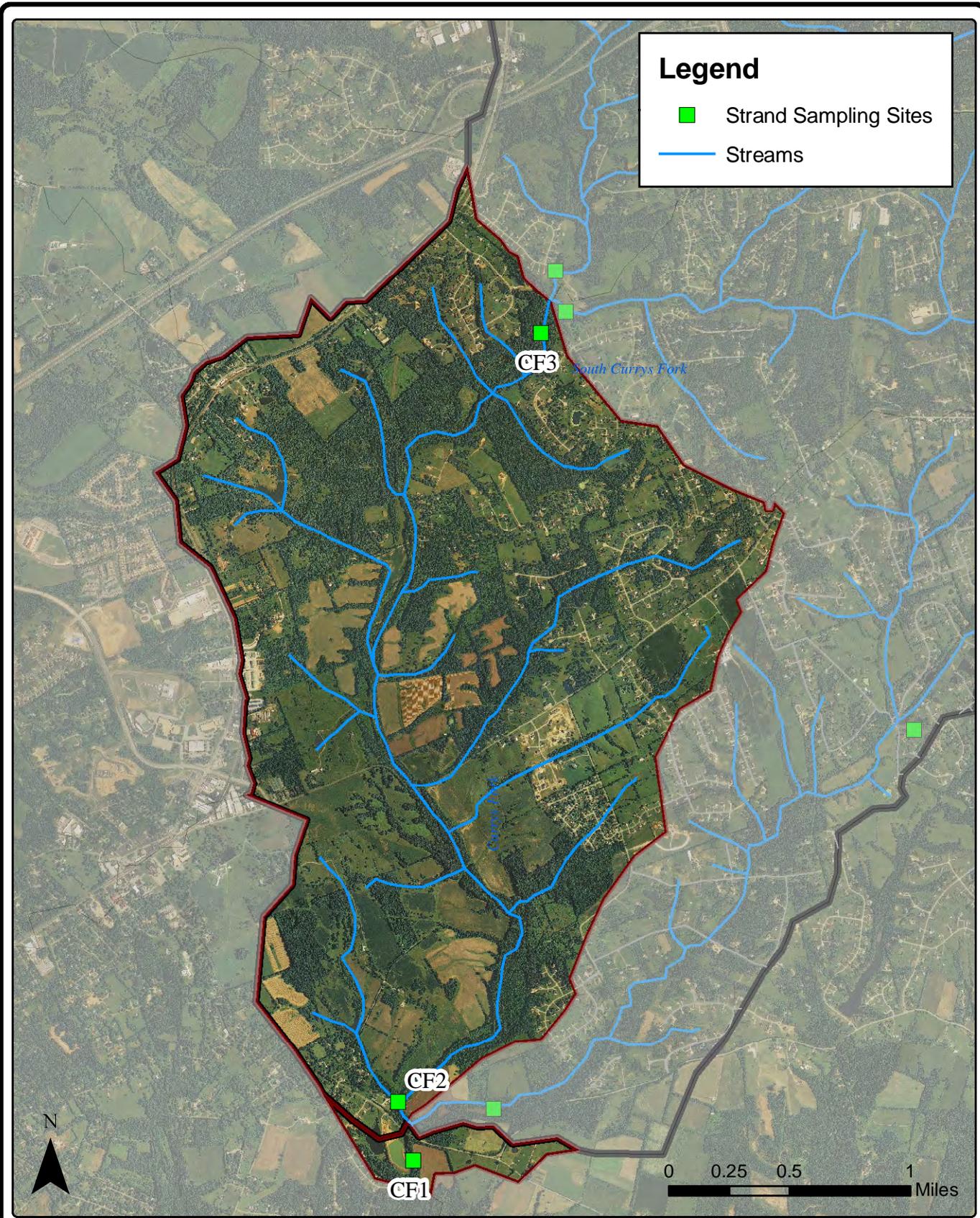
	Flow Category	Low Flows	Low to Mid Flows	Mid-Range Flows	Mid to High Flows	High Flows
	Flow Interval	90-100	60-90	40-60	10-40	0-10
CF3	Number of Samples	3	9	7	8	3
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	33%	67%	57%	100%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	0%	11%	0%	63%	100%
CF2	Number of Samples	3	7	4	10	6
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	33%	86%	100%	40%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	0%	14%	75%	33%	83%
CF1	Number of Samples	4	8	5	9	3
	% of Samples That Exceed Primary Contact Standard (400 Colonies/100 ml)	50%	38%	40%	89%	100%
	% of Samples That Exceed Secondary Contact Standard (2,000 Colonies/100 ml)	0%	25%	0%	44%	100%

**Table 5-2: Curry's Fork Fecal Coliform Contact Standard Exceedance Summary**

**ATTACHMENTS:**

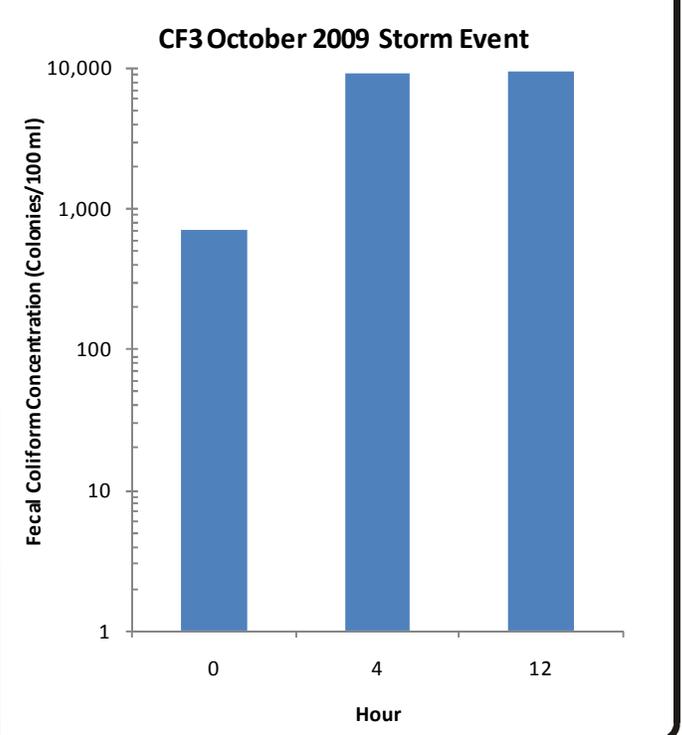
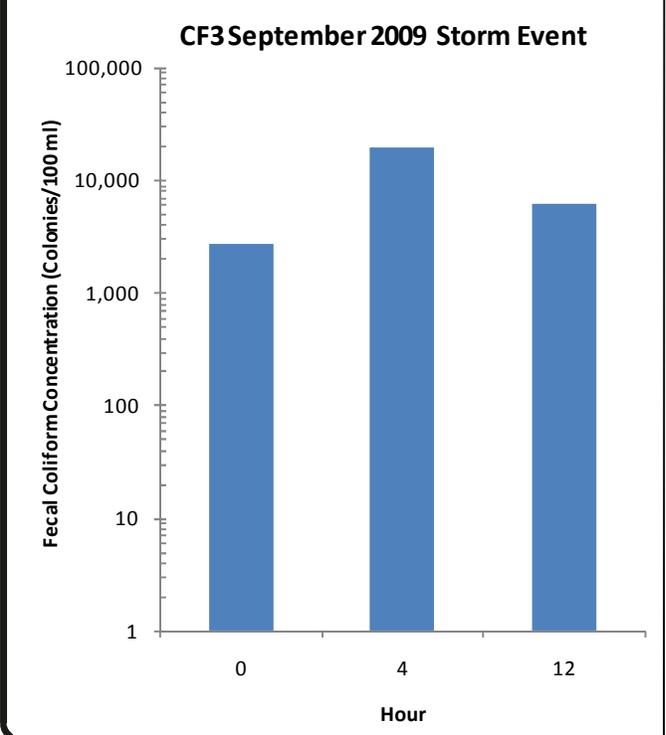
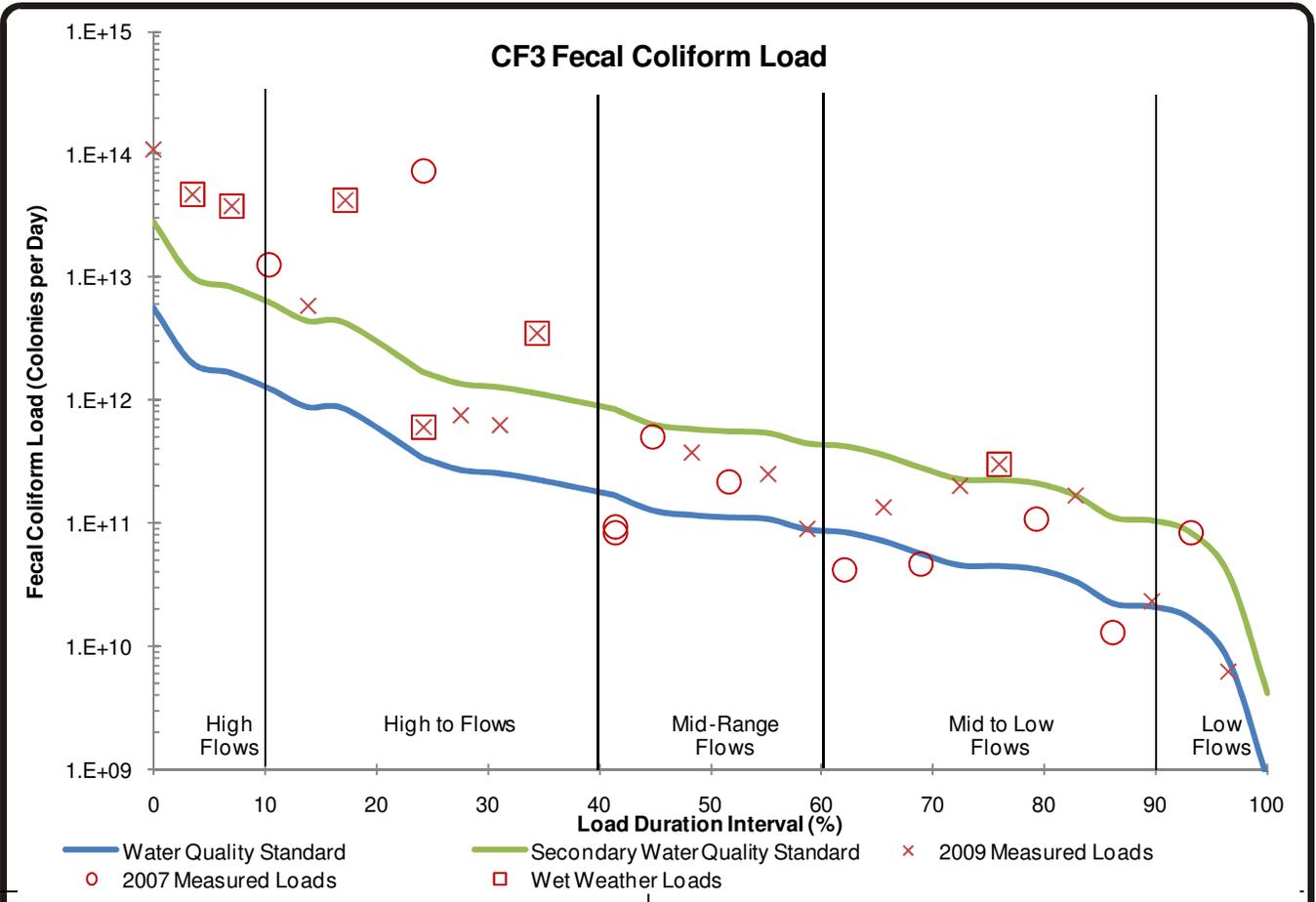
1. Figure 5-1: Curry's Fork Sampling Locations
2. Figure 5-2: Curry's Fork Run Aerial
3. Figure 5-3: CF3 Graphs
4. Figure 5-4: CF2 Graphs
5. Figure 5-5: CF1 Graphs





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**Figure 5-2**

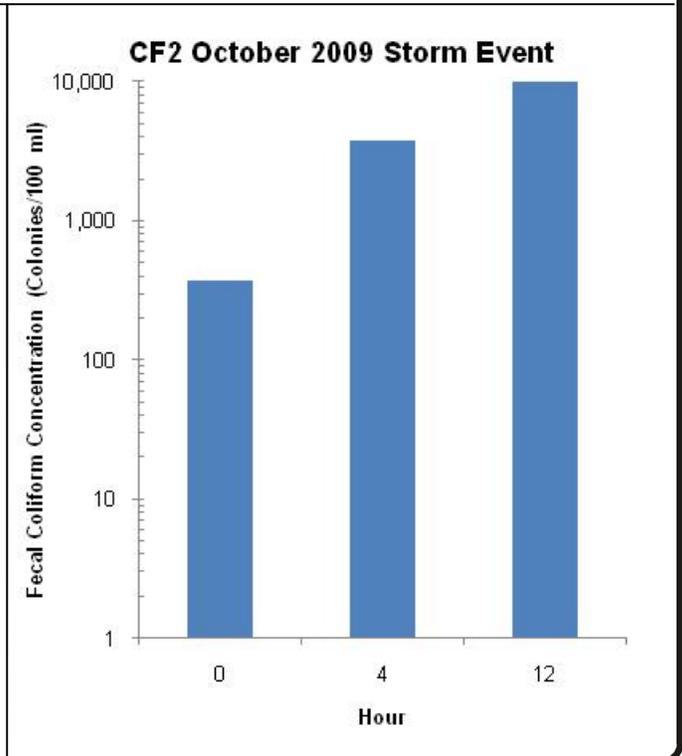
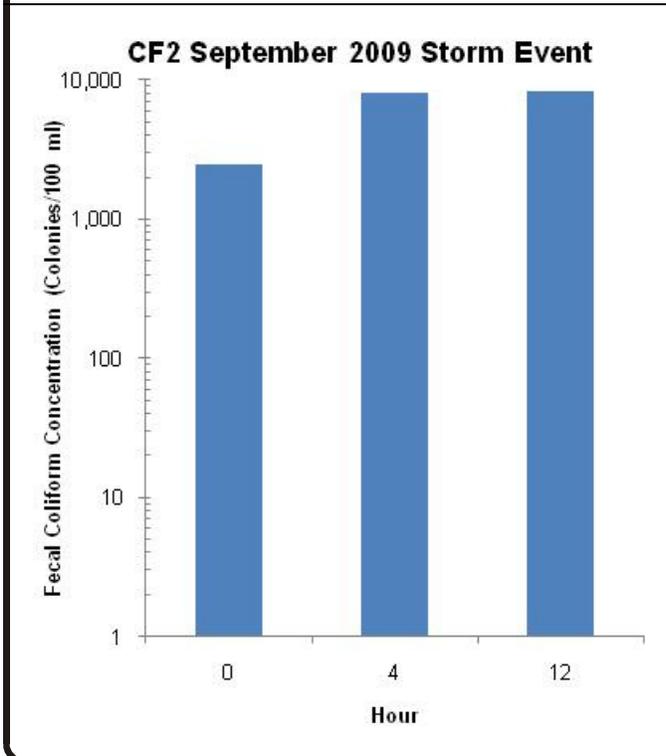
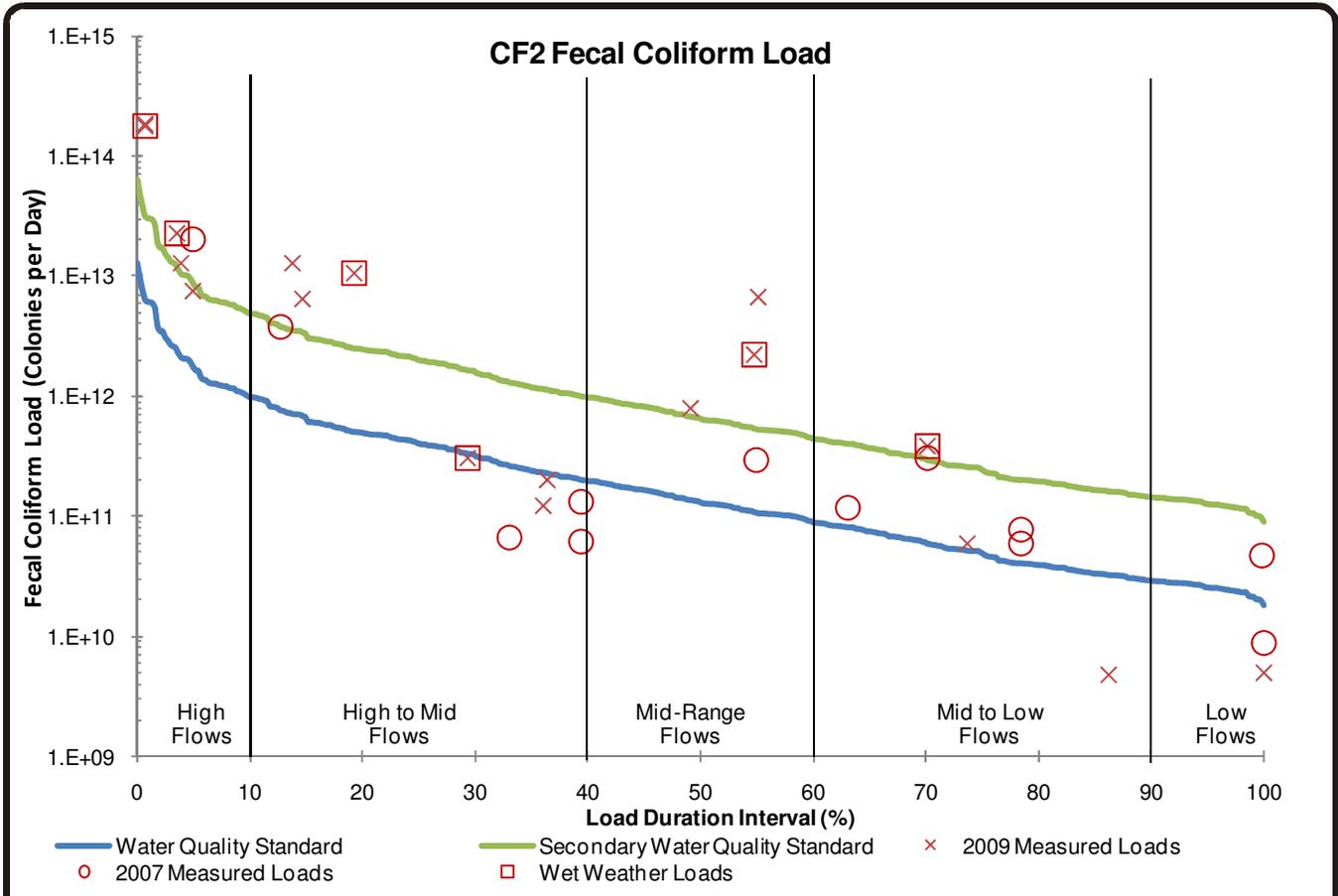


**CURRYS FORK – SITE CF3**  
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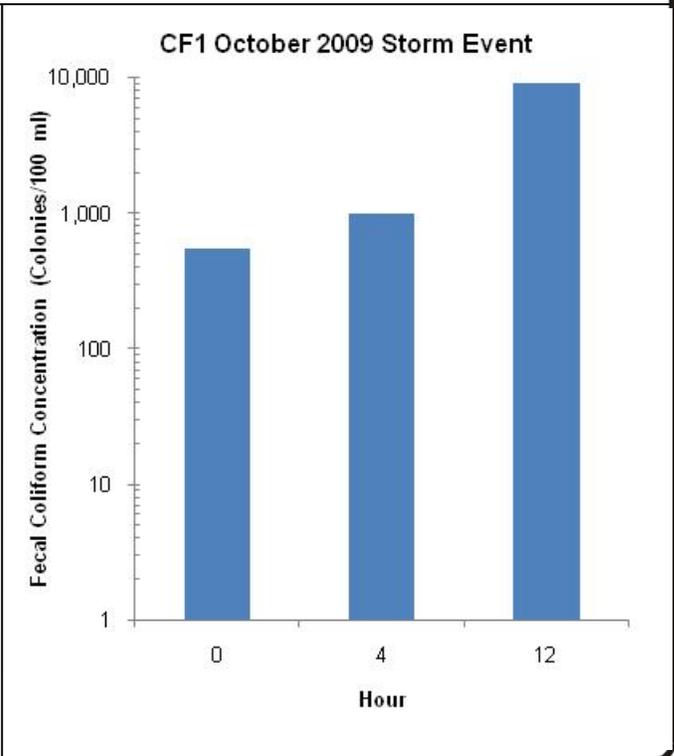
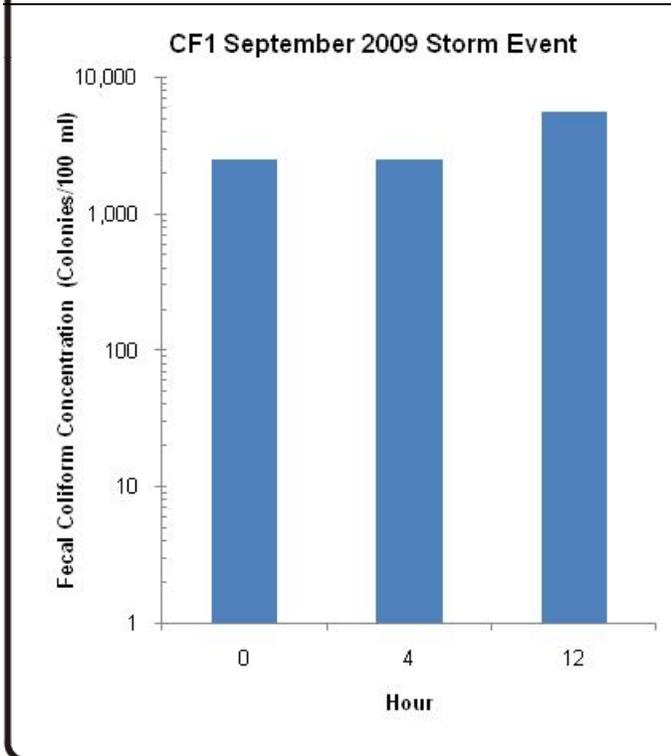
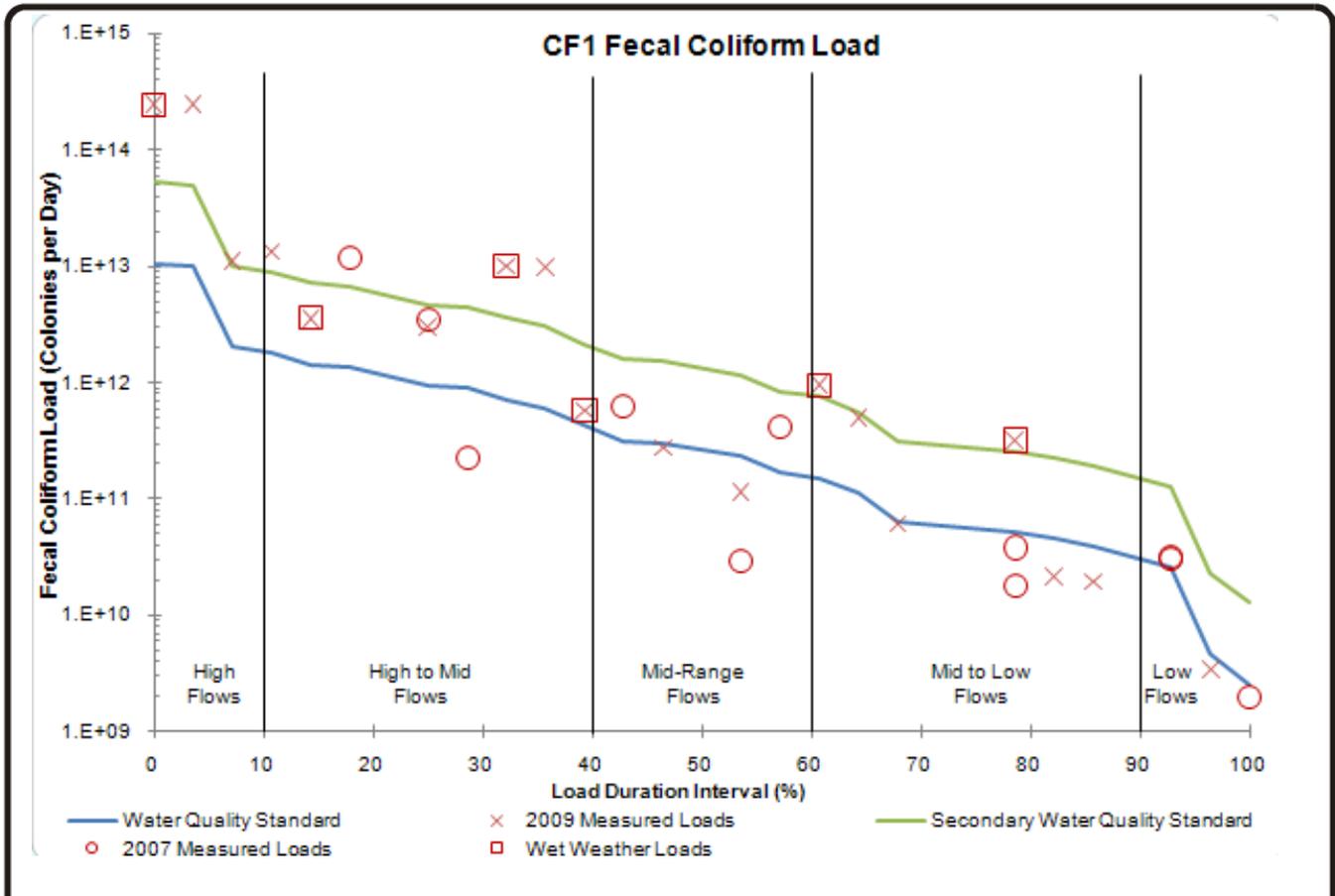
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**Figure 5-3:**  
**CF3 Graphs**



**CURRYS FORK – SITE CF2**  
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**CURRYS FORK – SITE CF1**  
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