

October 29, 2013

Monitoring Data Analysis for September 20 – October 21, 2013

#### Gills Creek Monitoring Sites

Over the course of the monitoring period (September 20 through October 21, 2013), an overall decrease in water temperature was observed, as well as a corresponding increase in dissolved oxygen levels at all stations. These trends are typical of fall months. Within the monitoring period, diurnal patterns in water temperature, pH, and dissolved oxygen were observed; these patterns were disrupted during storm events but resumed shortly thereafter. Due to the low volume of rainfall during this monitoring period, the stage at Gills Creek A was very low for two stretches of time, exposing several of the sensors to air and resulting in the data gaps observed at this station.

During this monitoring period, there were a handful of notable deviations from typically observed patterns. These deviations were responsible for the maximum observed specific conductivity at both Gills Creek B and C, the minimum observed dissolved oxygen level at Gills Creek B, and the maximum pH level at Gills Creek C.

On September 22nd, the specific conductivity at Gills Creek A increased rapidly and then returned to typically observed values, suggesting the occurrence of an illicit discharge.

For unknown reasons, on October 7th, October 14th, and October 15th, there were three notable deviations from typical base flow conditions at Gills Creek C, all of which showed the same characteristics of a sudden increase in pH and specific conductivity as well as a drop in ammonium readings<sup>1</sup>. The October 7th event resulted in the maximum observed pH and maximum observed specific conductivity values at Gills Creek C of 9.3 and 0.093 mS/cm, respectively.

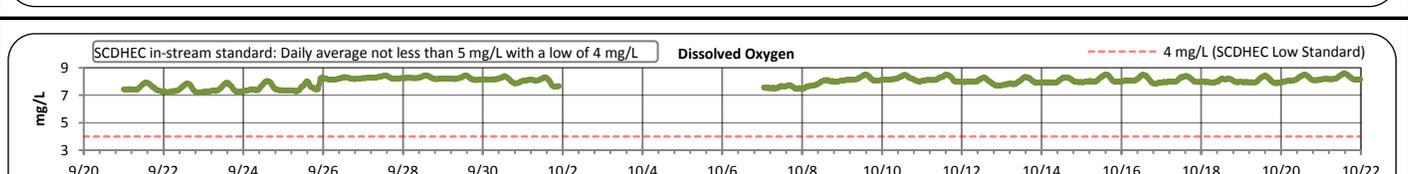
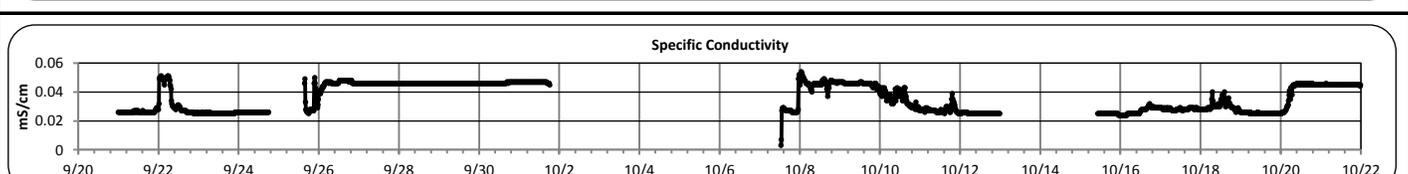
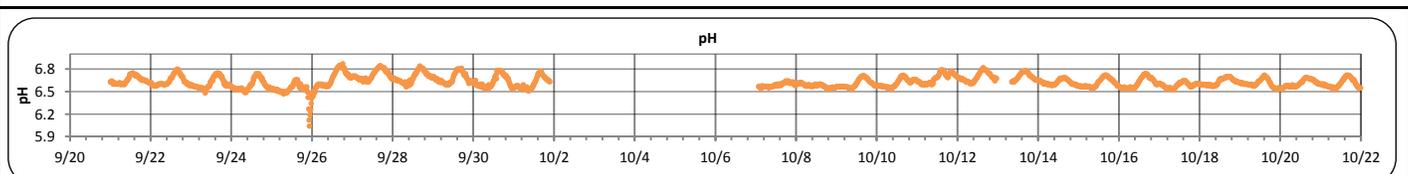
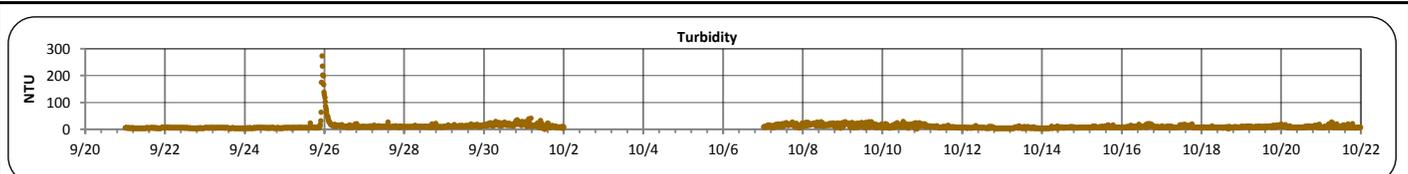
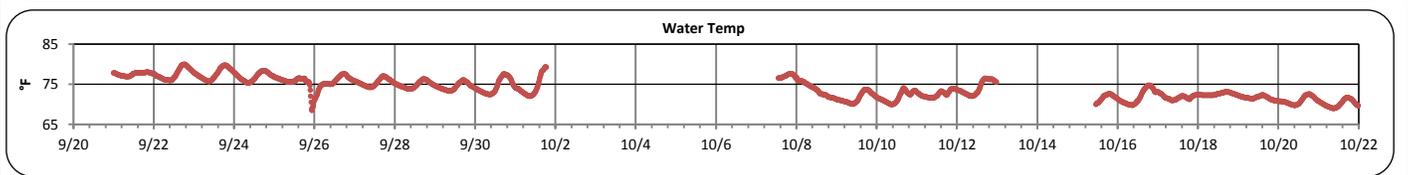
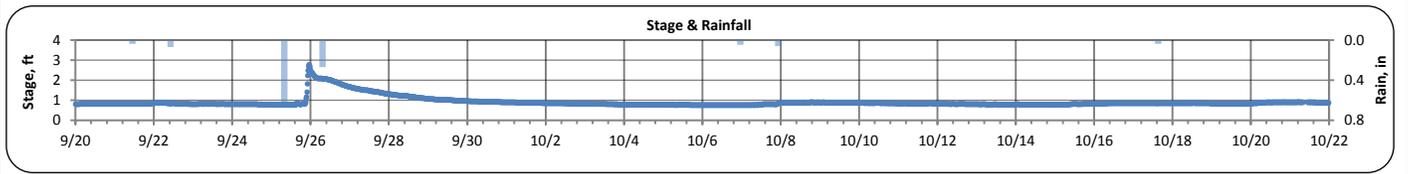
Between October 8th and October 10th, an unusual declining trend in water temperature was observed at all three stations. This decrease in temperature, accompanied by a slight increase in stage, was observed at all three stations and may be explained by releases from upstream impoundments.

<sup>1</sup> Note: ammonium data is not contained in this report because of the difficulty in maintaining the probe's calibration. However, the trends described above were observed in the ammonium data.

On October 14th, the specific conductivity at Gills Creek B increased rapidly while the dissolved oxygen concentration dropped rapidly, reaching the minimum observed monthly value of 5.5 mg/L and the maximum observed specific conductivity value of 0.078 mS/cm. This may have been the result of an illicit discharge.

**Gills Creek A (Sep 20 -- Oct 21, 2013)**

PARAMETER	DESCRIPTION	CONTINUOUS WATER QUALITY PARAMETERS:	SUMMARY STATISTICS				
			MINIMUM OBSERVED	MAXIMUM OBSERVED	MEDIAN OBSERVED	MEAN OBSERVED	STANDARD DEVIATION
STREAM NAME:	Gills Creek	STAGE (FT):	0.7	2.8	0.8	0.9	0.3
LOCATION:	Forest Drive Bridge	TEMPERATURE (°F):	68	80	74	74	3
ADDRESS:	4840 Forest Drive, Columbia, SC 29206	TURBIDITY (NTU):	1	274	8	10	12
COORDINATES:	34.019826, -80.963566	pH:	6.0	6.9	6.6	6.6	0.1
TMDL/IMPAIRMENT:	Fecal & Dissolved Oxygen	SPECIFIC CONDUCTIVITY (mS/cm):	0.003	0.054	0.032	0.036	0.010
NEIGHBORING LANDUSE:	Residential and commercial	DISSOLVED OXYGEN (mg/L):	7.2	8.6	8.1	8.0	0.3
APPROX. DRAINAGE AREA:	48 square miles						
SPATIAL LOCATION:	Most upstream site						
TOTAL NO. STORMS OVER 0.1 INCH:	2						
MAX. DAILY RAINFALL:	1.6 inches						
TOTAL RAINFALL (FOR PERIOD):	2.2 inches						



Note: Data gaps appear when the sonde is removed for calibration or when the flow depth is below the sensors

**Continuous Water Quality  
Monitoring Periodic Report**

**Gills Creek A (Sep 20 -- Oct 21, 2013)**

**Explanation of Statistics:**

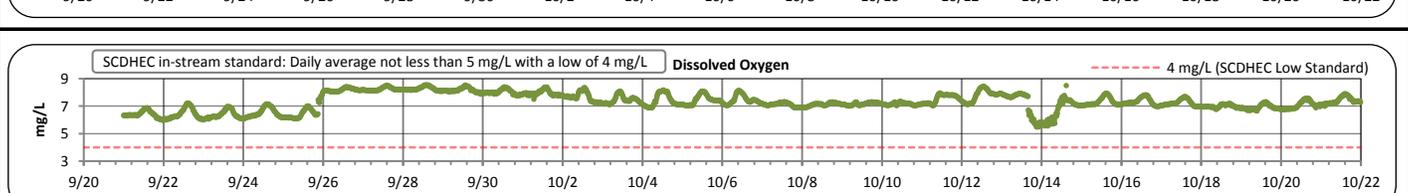
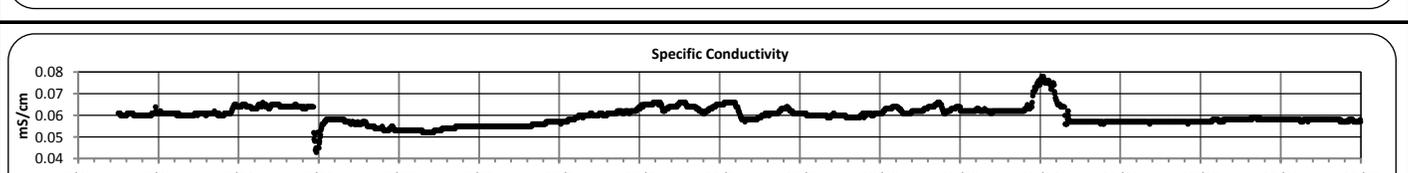
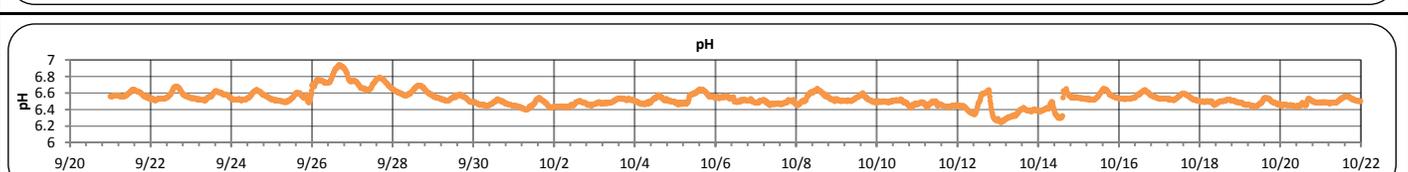
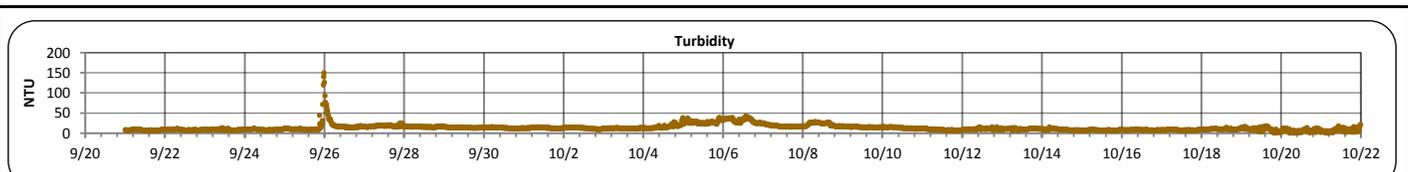
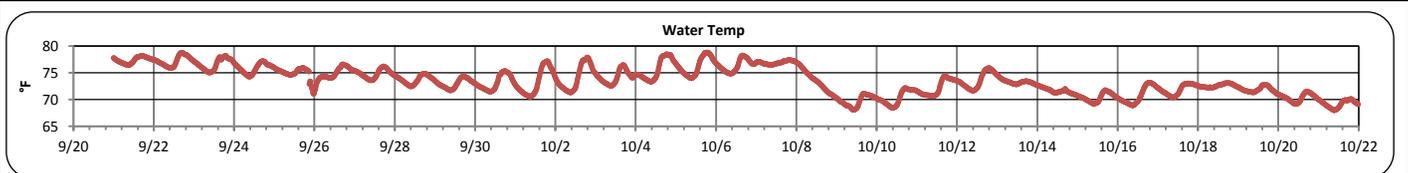
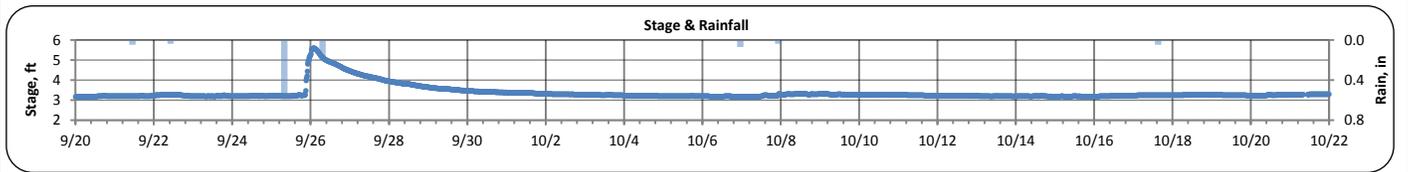
<b>MINIMUM OBSERVED</b>	The minimum of the values recorded by the datasonde in 15 minute intervals.
<b>MAXIMUM OBSERVED</b>	The maximum of the values recorded by the datasonde in 15 minute intervals.
<b>MEDIAN OBSERVED</b>	The median of all the values recorded by the datasonde in 15 minute intervals.
<b>MEAN OBSERVED</b>	The average of all the values recorded by the datasonde in 15 minute intervals.
<b>STANDARD DEVIATION</b>	The standard deviation of all the values recorded by the datasonde in 15 minute intervals.

Note: Data gaps appear when the sonde is removed for calibration or when the flow depth is below the sensors

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**Gills Creek B (Sep 20 -- Oct 21, 2013)**

PARAMETER	DESCRIPTION	CONTINUOUS WATER QUALITY PARAMETERS:	SUMMARY STATISTICS				
			MINIMUM OBSERVED	MAXIMUM OBSERVED	MEDIAN OBSERVED	MEAN OBSERVED	STANDARD DEVIATION
STREAM NAME:	Gills Creek	STAGE (FT):	3.2	5.6	3.2	3.4	0.4
LOCATION:	Devine Street bridge	TEMPERATURE (°F):	68	79	73	74	3
ADDRESS:	4716 Devine Street Columbia, SC 29209	TURBIDITY (NTU):	1	150	11	13	8
COORDINATES:	33.989656, -80.97433	pH:	6.2	6.9	6.5	6.5	0.1
TMDL/IMPAIRMENT:	Fecal & Dissolved Oxygen	SPECIFIC CONDUCTIVITY (mS/cm):	0.043	0.078	0.06	0.060	0.004
NEIGHBORING LANDUSE:	Residential and commercial	DISSOLVED OXYGEN (mg/L):	5.5	8.5	7.2	7.3	0.6
APPROX. DRAINAGE AREA:	59 square miles						
SPATIAL LOCATION:	Middle site						
TOTAL NO. STORMS OVER 0.1 INCH:	1						
MAX. DAILY RAINFALL:	1.4 inches						
TOTAL RAINFALL (FOR PERIOD):	1.9 inches						



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**Continuous Water Quality  
Monitoring Periodic Report**

**Gills Creek B (Sep 20 -- Oct 21, 2013)**

**Explanation of Statistics:**

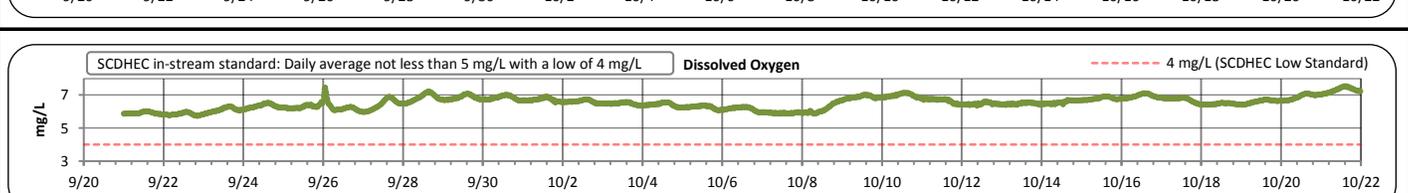
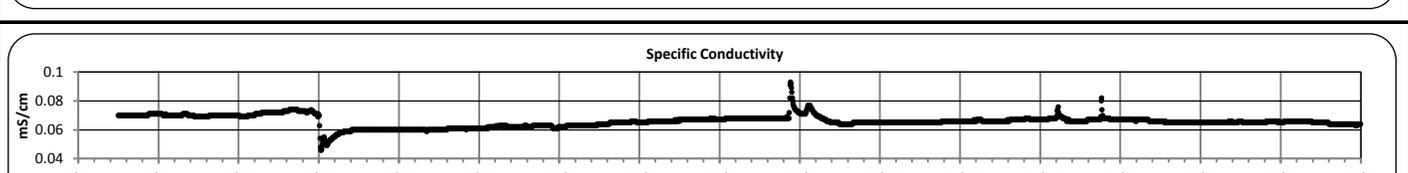
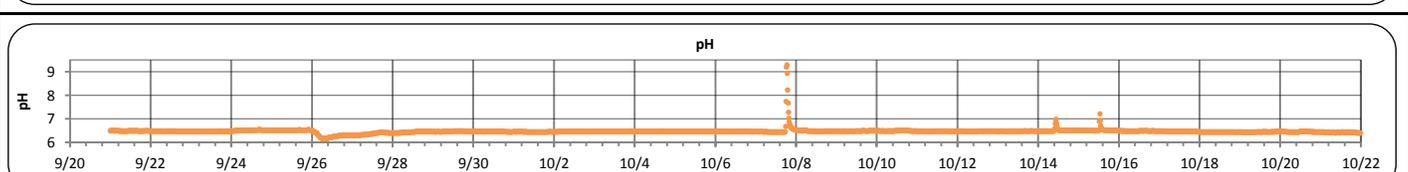
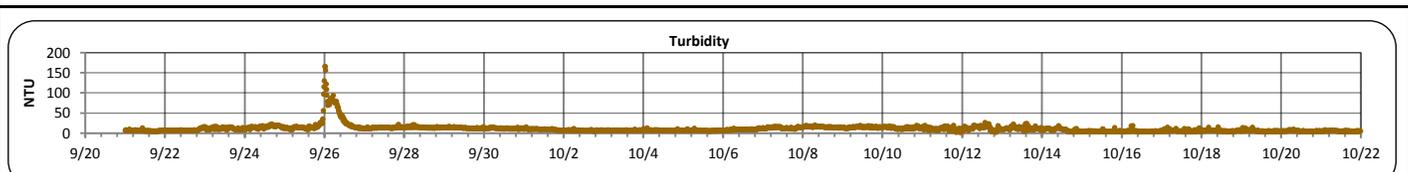
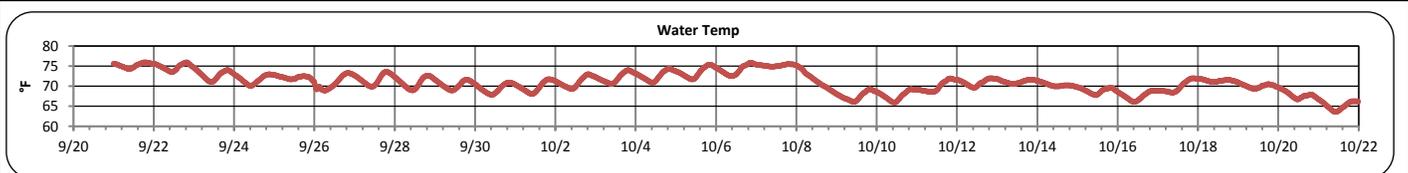
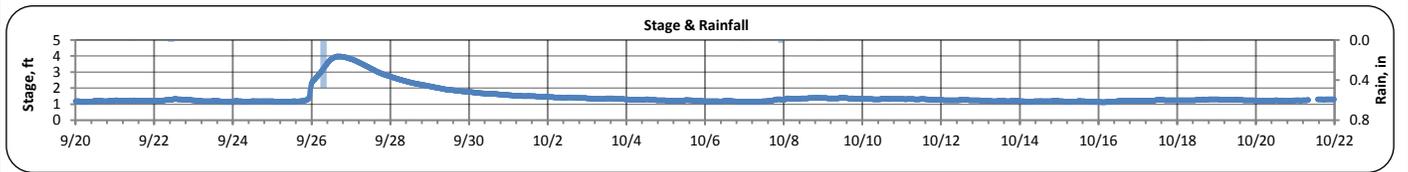
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**Gills Creek C (Sep 20 -- Oct 21, 2013)**

PARAMETER	DESCRIPTION	CONTINUOUS WATER QUALITY PARAMETERS:	SUMMARY STATISTICS				
			MINIMUM OBSERVED	MAXIMUM OBSERVED	MEDIAN OBSERVED	MEAN OBSERVED	STANDARD DEVIATION
STREAM NAME:	Gills Creek	STAGE (FT):	1.1	4.0	1.3	1.5	0.6
LOCATION:	Bluff Road bridge	TEMPERATURE (°F):	64	76	71	71	3
ADDRESS:	3009 Bluff Rd. Columbia, SC 29209	TURBIDITY (NTU):	2	166	10	11	11
COORDINATES:	33.948043, -80.9889	pH:	6.2	9.3	6.5	6.5	0.1
TMDL/IMPAIRMENT:	Fecal & Dissolved Oxygen	SPECIFIC CONDUCTIVITY (mS/cm):	0.046	0.093	0.066	0.066	0.004
NEIGHBORING LANDUSE:	Residential and commercial	DISSOLVED OXYGEN (mg/L):	5.7	7.54	6.5	6.5	0.4
APPROX. DRAINAGE AREA:	64 square miles						
SPATIAL LOCATION:	Most downstream site						
TOTAL NO. STORMS OVER 0.1 INCH:	1						
MAX. DAILY RAINFALL:	1.0 inches						
TOTAL RAINFALL (FOR PERIOD):	1.2 inches						



Note: Data gaps appear when the sonde is removed for calibration or when the flow depth is below the sensors

**Continuous Water Quality  
Monitoring Periodic Report**

**Gills Creek C (Sep 20 -- Oct 21, 2013)**

**Explanation of Statistics:**

<b>MINIMUM OBSERVED</b>	The minimum of the values recorded by the datasonde in 15 minute intervals.
<b>MAXIMUM OBSERVED</b>	The maximum of the values recorded by the datasonde in 15 minute intervals.
<b>MEDIAN OBSERVED</b>	The median of all the values recorded by the datasonde in 15 minute intervals.
<b>MEAN OBSERVED</b>	The average of all the values recorded by the datasonde in 15 minute intervals.
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