

## **APPENDICES**



**APPENDIX A**

**YEAR 1 QUALITY ASSURANCE REPORT**

## **APPENDIX A**

### **YEAR 1 QUALITY ASSURANCE REPORT**

The data quality objectives (DQOs) for the EWRAP Regional Dissolved Oxygen (DO) Regime Studies were established and documented in the Quality Assurance Project Plan (QAPP) for Assessment of Ecoregional Dissolved Oxygen Regimes, May 2006. Following the seven steps of the DQO process described in detail in EPA QA/G-4, Guidance for the Data Quality Objectives Process, the following quality objectives were developed:

- Data must be of sufficient quality and quantity to characterize dissolved oxygen concentrations during warm-weather periods;
- Data must be of sufficient quality and quantity to determine the prevalence of DO conditions less than 5.0 mg/L during summer conditions within study reaches;
- Data must be of sufficient quality and quantity to assess exposure to dissolved oxygen concentrations less than 3.0 mg/L during summer conditions within study reaches;
- Data must be of sufficient quality and quantity to characterize the influence of flow on dissolved oxygen regimes;
- Data must be of sufficient quality and quantity to estimate dissolved oxygen mass-balances during warm-weather baseflows;
- Data must be of sufficient quality and quantity to provide a summer snapshot of trophic state as compared to draft nutrient criteria for EcoRegion IX; and
- Data must be of sufficient quality and quantity to assess ecoregional or landscape influences (if present) affecting observed DO levels.

To determine whether DQOs have been achieved, several quality control parameters have been evaluated: precision, accuracy, completeness, representativeness, and comparability (PARCC). These parameters have been evaluated by the laboratories conducting the analyses and by MEC as part of the data validation process. The continuous dissolved oxygen monitoring (sonde) data was validated in accordance with MEC's standard operating procedure (attached). In addition project training records and field documentation were assessed.

#### **Training Documentation**

EWRAP sampling personnel received a minimum of 8 hours of training by experienced field sampling personnel. The training included topics such as:

- Calibration and use of field meters and continuous monitoring devices,
- Sample collection, preservation, documentation and packaging/shipping, and

- Field logbook documentation.

Training, provided by MEC personnel, occurred prior to and in some cases during the field season. All laboratory personnel have received training/certification in the proper procedures for the particular analyses being performed.

### **Documentation Reviewed**

A representative sample of all of the data collected under EWRAP Regional DO Regime study was reviewed. All of the samples from the 2006 EWRAP Regional DO Regime study were subject to a detailed evaluation. Documentation for each sample included field logs, chain of custody, analytical results and batch QC data, data validation and database entry. Overall project documentation reviewed included the following:

- Field logbooks including field calibration and programming records,
- Chain of custody and shipping records,
- Analytical summaries including calibration and QC checks,
- Continuous DO Data validation reports, and
- Interim reports.

Documentation for the overall project was acceptable. Field logbooks from year 1 were available and were checked to ensure proper sample identification.

### **PARCC Analysis**

#### **Precision**

Precision is a measure of mutual agreement among individual measurements of the same monitoring location under prescribed and similar conditions. Precision of the measurement data for this project was based upon duplicate analyses (replicability), control sample analyses (repeatability), and results for duplicate field samples (sample replicability).

Field duplicates consisted of two samples collected at the same time and location. They have been used as measures of the homogeneity of the medium sampled in a particular location and the precision in sampling. In the case of automatic samplers, field duplicates were obtained by preparing two composite samples from the same automatic sampler collection bottles. Field duplicates were collected for all sample matrices and analyzed for all parameters.

Discretely sampled field duplicates are useful in determining sampling variability. However, greater than expected differences between duplicates may occur because of variability in the sample material. Field duplicates have been used as a quality control measure to monitor precision relative to sample collection activities. Field duplicates were to be obtained for 10% of the samples collected (per event) for each type of sampling event, with rounding up to the whole number of duplicate samples.

A review of the 2006 data collected revealed that the percentage of samples collected in duplicate met the stated 10 percent criterion.

When analyses of field duplicates had a relative percent difference (RPD) greater than 30%, the data were flagged as estimated values. For CBOD analyses, of the 45 samples analyzed, only 4 samples were flagged as estimated as a result duplicate analyses exceeding 30% RPD. For the nutrient, chlorophyll a, and suspended solids data of the 45 samples collected and analyzed for seven parameters each (315 analyses), 32 analytical results were flagged as estimated as a result duplicate analyses exceeding 30% RPD. None of the data had to be rejected completely and the data were deemed useable for the purposes of this study. These qualified data should be considered estimated concentrations.

Field blank collection percentages met the required 10% and none of the field blanks had detectable concentrations of the analytes of interest.

Analytical precision was evaluated by using matrix spike/matrix spike duplicates (MS/MSD), laboratory control samples (LCS) or by using laboratory duplicates. Laboratory precision was also calculated in terms of RPD for laboratory duplicate samples.

RPDs were compared to the laboratory-established RPD for the analysis, as precision of duplicates depend on sample homogeneity. The analyst or their supervisor were to investigate the cause of data outside stated acceptance limits and if necessary corrective action taken. Corrective actions may have included recalibration, reanalysis of QC samples, sample reanalysis, or flagging the data as suspect if problems could not be resolved. All MS/MSD data reviewed met the established threshold criteria for precision.

Precision of continuous measuring device data (DO, temperature, conductivity) were assessed through pre-deployment and post-deployment calibration checks of the instruments. To perform the DO calibration checks each sonde is placed in a container of oxygen-saturated water (aerated) for 2 hours with readings collected every 2 minutes. The criterion for precision of the DO probes ( $\pm 0.2$  mg/L) was met for all devices.

### **Accuracy**

Accuracy is the degree of agreement of a measurement or average of measurements with an accepted reference or “true” value. Accuracy is a measure of bias in the system.

Accuracy of the measurement data were assessed and controlled as follows. Results for blanks, matrix, laboratory control, and surrogate spikes were the primary indicators of accuracy. These results were used to control accuracy within acceptable limits by requiring that they meet specific criteria. As spiked samples were analyzed, spike recoveries were calculated and compared to pre-established acceptance limits.

Acceptance limits were based upon previously established laboratory capabilities for similar samples using control chart techniques. In this approach, the control limits reflect the minimum and maximum recoveries expected for individual measurements

for an in-control system. Recoveries outside the established limits indicate some assignable cause, other than normal measurement error, and the need for corrective action. This included recalibration of the instrument, reanalysis of the QC sample, reanalysis of the samples in the batch, or flagging the data as suspect if the problem could not be resolved. All of the MSD percent recoveries were within established thresholds (80-120%).

Accuracy of continuous measuring device data (DO, temperature, conductivity) was evaluated by performing side by side comparison of deployed sondes with a calibrated reference sonde. Discrepancies between the deployed sonde and the reference sonde were addressed in the field in accordance with established protocols referenced in the QAPP.

During the validation of the continuous measuring device data, calibration check data was assessed and if necessary the data were flagged and/or corrected for drift as discussed in the QAPP and SAP.

The vast majority of continuous measuring device data met the established criteria for accuracy (DO =  $\pm 2$  mg/L of reference sonde) or was rejected.

### **Representativeness**

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. The characteristics of representativeness are usually not quantifiable. Subjective factors to be taken into account are as follows:

- Degree of homogeneity of a site,
- Degree of homogeneity of a sample taken from one point in a site, and
- Available information on which a sampling plan is based.

Field duplicates are also used to assess representativeness. Two samples collected at the same location and at the same time are considered to be equally representative of this condition, at a given point in space and time. To maximize representativeness of results, sampling techniques, sample size, and sample locations were carefully chosen to provide laboratory samples representative of the site and the specific area. Within the laboratory, precautions were taken to extract from the sample container an aliquot representative of the whole sample.

Continuous measuring device data inherently provide representative data as they collect measurements of the stream conditions at 15 minute intervals for 13 weeks. During the continuous measuring device data validation, data are compared to the previous and succeeding measurement to detect any potentially anomalous measurements. These data points are either corrected for drift, explained by natural events (e.g., precipitation), or are rejected. See the attached standard operating procedure. The continuous measuring device data met the established criteria for representativeness.

## **Completeness**

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under controlled laboratory conditions.

Data completeness is a measure of the extent to which the database resulting from a measurement effort fulfills objectives for the amount of data required. Completeness is defined as the valid data percentage of the total tests requested. The completeness requirements may vary depending upon the importance of a particular sampling event with respect to the use of the data (e.g., sampling during baseflow conditions during summer months).

Valid analyses are defined as those where the sample arrived at the laboratory intact, properly preserved, in sufficient quantity to perform the requested analyses, and accompanied by a completed chain-of-custody form. Furthermore, the sample must be analyzed within the specified holding time and in such a manner that analytical QC acceptance criteria are met. All of the nutrient, chlorophyll a, suspended solids, and CBOD samples were properly preserved and were delivered to the laboratories under proper chain of custody procedures. Holding times were met in all cases. It was noted that duplicate samples and field blank samples were not disguised by the sampling crews so laboratory personnel were aware of which samples were duplicates and field blanks. While this does not invalidate the data, it is preferred that QC samples receive their own sample identification, which would not indicate that they are QC samples.

For the continuous measuring device data completeness is measured in terms of the number of valid readings as a percent of all of the possible readings to be taken. For DO measurements more than 95% completeness was attained at all monitoring locations. Specific conductance data were more than 98% complete with the exception of the CC-2 Rt. B monitoring location where 84% completeness was achieved. Measurements from the barologgers (barometric pressure and air temperature) and level loggers (water temperature and water level) were greater than 98% valid (complete). Light meter readings were more than 90% complete, with the exception of one location (Heath Creek-3) that was 81% complete.

## **Comparability**

Comparability expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability is ensured through the use of established and approved sample collection techniques and analytical methods, consistency in the basis of analysis, consistency in reporting units, and analysis of standard reference materials.

The use of standard methods to collect and analyze samples, along with instruments calibrated against Standard Analytical Reference Materials (SARM) which are NIST traceable standards, also ensure comparability.

Comparability also depends on the other data quality characteristics. Only when data are judged to be representative of the environmental conditions, and when precision and accuracy are known, can data sets be compared with confidence. It is the opinion of the data validator that these data meet the criteria for comparability.

### **Summary**

Valid data are defined as results that are generated when the instrument and quality controls are within the designated limits. This data validation involved systematically reviewing the data quality for EWRAP Regional DO regime monitoring data and assigning qualifiers that indicate limited usability of data.

### **Continuous Dissolved Oxygen Data Validation**

Validation of the continuous DO monitoring data is relatively complex due to environmental and potential equipment problems. A data validation process was developed based on input from the equipment manufacturer. Initially, DO data should be screened to identify individual outliers that differed significantly from previous and succeeding data. These outliers are then rejected based on professional judgment. Data are rejected if attributed to erratic equipment measurements rather than environmental causes. A data recording interval should be flagged as suspect if numerous individual outliers are present and the remaining data appear reasonable. Conversely, data recording intervals are rejected if the entire dataset appears to be impacted significantly by equipment problems.

All remaining data are corrected if significant drift ( $>0.4$  mg/L instrument error) occurred due to biofouling. Drift was measured as the difference between the last measurement taken by the deployed sonde and the measurement observed with a well maintained and recently calibrated replicate instrument. For example, if the deployed sonde measures 5 mg/L prior to servicing in comparison to a measurement of 6 mg/L by a replicate instrument the drift would be 1 mg/L. Drift corrections are performed by applying a linear drift correction, which assigns a correction value to each reading based on interpolation between zero drift at the beginning of the interval and the measured drift at the end of the interval. For example, the beginning, median, and ending measurements would be assigned corrections of 0, 50%, and 100% of the measured drift, respectively. Infrequently, the data may suggest that an inaccurate initial calibration was made. These errors are flagged by observing the initial logged readings after deployment of the instrument. For these data, a uniform correction, typically downward, should be applied to account for the calibration error. In certain circumstances, a downward drift correction is also applied to the data, since both an inaccurate calibration and biological fouling occurred. Data were flagged as suspect if a downward drift was greater than 2.0 mg/L, which would have required significant correction. Data validation flags (qualifiers) were assigned to each data point for consideration of appropriate data use.

**APPENDIX B**  
**2006 DATA FACT SHEETS**

**APPENDIX C**

**LANDUSE STATISTICS FOR AERDOR STUDYAREAS  
2005 THEMATIC MAPPER IMAGERGY**

**APPENDIX C**  
**LANDUSE STATISTICS FOR AERDOR STUDYAREAS**  
**2005 THEMATIC MAPPER IMAGERGY**

Landuse Classification	LDC-1	LDC-2	LDC-3	LDC-4	LDC-5	CC-1	CC-5	HC-1	HC-2	HC-3
Watershed Area (acres)	30705	34519	45762	76048	78627	56052	86728	36331	45945	47791
Impervious	1%	1%	1%	2%	2%	0%	0%	1%	1%	1%
High Intensity Urban	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Low Intensity Urban	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Urban	1%	1%	1%	2%	2%	0%	1%	2%	1%	1%
Barren	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cropland	26%	26%	23%	25%	24%	14%	12%	56%	52%	51%
Grasslands	52%	51%	51%	53%	53%	66%	65%	29%	30%	30%
Deciduous	9%	10%	10%	10%	10%	13%	16%	11%	14%	14%
Evergreen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Mixed	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Deciduous Woody/Herbaceous	3%	3%	3%	3%	3%	5%	5%	1%	2%	2%
Evergreen Woody/Herbaceous	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Forest	12%	13%	12%	13%	13%	18%	21%	13%	15%	16%
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Woody-Dominated Wetland	6%	6%	6%	6%	6%	1%	1%	1%	1%	1%
Herbaceous-Dominated Wetland	1%	1%	5%	1%	1%	0%	0%	0%	0%	0%
Open Water	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%

**APPENDIX D**

**BIOMONITORING DATA**

**APPENDIX D  
BIOMONITORING DATA**

Agency	Sample ID	Date Sampled	Stream Name	Taxa Richness	EPT Richness	Biotic Index	Shannon Diversity	Stream Condition Index
MDC	20181-02	10/10/2002	Cedar Creek	56	7	6.61	3.13	10
MDC	96711-02	10/10/2002	Cedar Creek	54	15	6.03	3.1	14
MDC	20181-04	10/13/2004	Cedar Creek	71	15	5.72	2.94	14
MDC	20121-02	9/25/2002	Little Dry Wood Creek	62	10	5.22	3.42	16
MDC	20121-03	10/1/2003	Little Dry Wood Creek	60	12	6.77	3.07	16
MDC	20121-04	10/13/2004	Little Dry Wood Creek	70	13	6.38	3.08	16

Agency	Sample ID	Station	Date Sampled	Stream Name	Taxa Richness	EPT Richness	Biotic Index	Shannon Diversity	Stream Condition Index
MDNR	0119541	1	Spring 2001	Cedar Creek	77	20	7.06	3.12	12
MDNR	0137053	1	Fall 2001	Cedar Creek	85	16	6.88	3.23	14
MDNR	0318709	1	Fall 2003	Cedar Creek	84	14	6.93	3.27	14
MDNR	0418696	1	Spring 2004	Cedar Creek	83	18	6.36	3.32	14
MDNR	0010108	1	Spring 2000	Little Drywood Creek	73	14	7.40	3.18	18
MDNR	0010124	1	Fall 2000	Little Drywood Creek	69	10	6.40	3.12	20
MDNR	0119546	2	Spring 2001	Little Drywood Creek	45	9	7.12	2.12	16
MDNR	0119547	1	Spring 2001	Little Drywood Creek	50	8	7.38	2.29	12
MDNR	0318700	1	Fall 2003	Little Drywood Creek	62	4	7.57	2.89	18
MDNR	0318701	2	Fall 2003	Little Drywood Creek	66	7	7.73	3.07	18
MDNR	0318702	3	Fall 2003	Little Drywood Creek	61	7	7.59	2.89	20
MDNR	0318703	4	Fall 2003	Little Drywood Creek	51	5	6.70	2.81	14
MDNR	950851	1	Spring 1995	Little Drywood Creek	50	8	6.70	2.96	16
MDNR	950852	2	Spring 1995	Little Drywood Creek	56	10	7.00	3.49	20
MDNR	950888	1	Fall 1995	Little Drywood Creek	55	8	6.83	3.01	18
MDNR	950889	2	Fall 1995	Little Drywood Creek	53	7	6.54	2.84	16
MDNR	982810	2	Spring 1998	Little Drywood Creek	69	13	6.55	2.96	20
MDNR	982811	3	Spring 1998	Little Drywood Creek	73	16	7.16	3.19	18
MDNR	988976	2	Fall 1998	Little Drywood Creek	64	6	7.64	3.44	16
MDNR	988977	3	Fall 1998	Little Drywood Creek	63	5	8.02	3.03	16
MDNR	0119532	2	Spring 2001	Heaths Creek	78	13	6.45	2.93	16
MDNR	0119533	1	Spring 2001	Heaths Creek	65	8	6.43	2.95	16
MDNR	0137051	1	Fall 2001	Heaths Creek	80	15	7.08	3.24	18
MDNR	0137052	2	Fall 2001	Heaths Creek	62	13	7.28	2.60	12
MDNR	984845	1	Spring 1998	Heaths Creek	74	13	6.44	2.68	16
MDNR	988954	1	Fall 1998	Heaths Creek	64	9	6.31	3.00	14

## **APPENDIX E**

### **DETERMINATION OF BASEFLOW AT STUDY SITES**

## **APPENDIX E**

### **DETERMINATION OF BASEFLOW AT STUDY SITES**

Average summer baseflow for ungaged sites was calculated using streamflow data from representative USGS stream gages, a U.S. Bureau of Reclamation (USBR) sponsored software program called Base Flow Index (BFI), and least-squares linear regression.

#### **Selecting Representative USGS Stream Gages**

Operating stream gages were not available at any of the project sites so representative USGS stream gages were selected for baseflow analysis. The following characteristics helped to determine representative gage locations:

- Drainage area;
- Topography and soil characteristics;
- Climatic patterns;
- Urban influences;
- Springs and point source influences; and
- Period of record length.

The hydrologic conditions of a watershed are largely affected by its size. A smaller watershed typically responds to storm events differently than larger watersheds where travel distances are longer and infiltration time is greater. Therefore, USGS stream gages were generally limited to those with watershed areas within one order of magnitude in size to the project site.

USGS stream gages were further limited to those within the same Ecological Drainage Unit (EDU) as the project site. The topography, soil characteristics, and climatic patterns are assumed reasonably similar within any given EDU. The Cedar Creek (CC1), Heaths Creek (HC2), and Little Drywood Creek (LDC2) project sites are located in EDU-27, EDU-11, and EDU-15, respectively.

USGS stream gages were not selected if they are largely influenced by urban areas, springs, or point sources. Impervious surfaces in urban areas precluded the use of USGS stream gages within or downstream of urban areas. Similarly, USGS stream gages located downstream of significant streams and point sources were not considered representative of flow conditions at the project sites.

USGS stream gages with less than 10 years of data were not considered representative of flow conditions at the project sites. USGS stream gages with relatively short periods of record (i.e., less than 10 years) may overestimate or underestimate long-term average stream flow conditions.

### **Baseflow Separation**

Baseflow calculations were made for representative USGS stream gage data using the USBR sponsored BFI program. BFI can be downloaded at the following site: [http://www.usbr.gov/pmts/hydraulics\\_lab/twahl/bfi/](http://www.usbr.gov/pmts/hydraulics_lab/twahl/bfi/). BFI was developed using the Institute of Hydrology procedures in which the water year is divided into 5-day increments, and the minimum flow during each 5-day period is identified. If 90 percent of any 5-day period minimum is less than both adjacent minimums, then that minimum is considered a turning point. Turning points are used to define the baseflow hydrograph. The parameters N (number of days) and  $f$  (turning point test factor) may be adjusted in the BFI program; however, default values of  $N = 5$  days and  $f = 0.9$  were used for purposes of this project (Wahl and Wahl 1995).

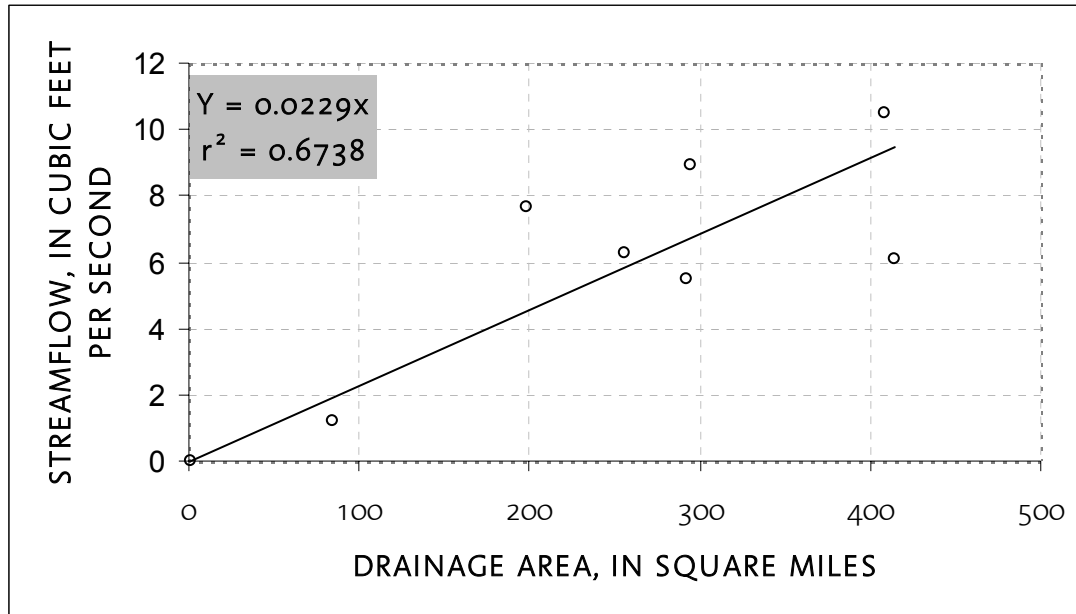
### **Regression Analysis**

Average summer baseflow values were derived using a regression analysis. Baseflow values measured between July 1 and September 30 were first averaged over all years at each of the USGS stations. Average baseflows were plotted against their respective drainage areas. A linear regression using a slope intercept of zero was performed to derive the relationship between baseflow and drainage area ( $P < .05$ ) for each project site EDU. Average July through September baseflows were then calculated for the project sites based on their respective drainage areas.

An alternate method of calculating the average baseflow was available for the Cedar Creek site (CC1), since there is a USGS gage downstream from the study site. The average baseflow at the USGS stream gage was scaled down to the size of the drainage area of CC1. The baseflow was scaled down based on the proportionality (Drainage Area Ratio) between the project site CC1 and the drainage area of the gaged watershed. The scaled down baseflow yielded a value of 2.86 cubic feet per second (cfs) as compared to the regression analysis value of 3.08 cfs.

## Regression Scatter Plots

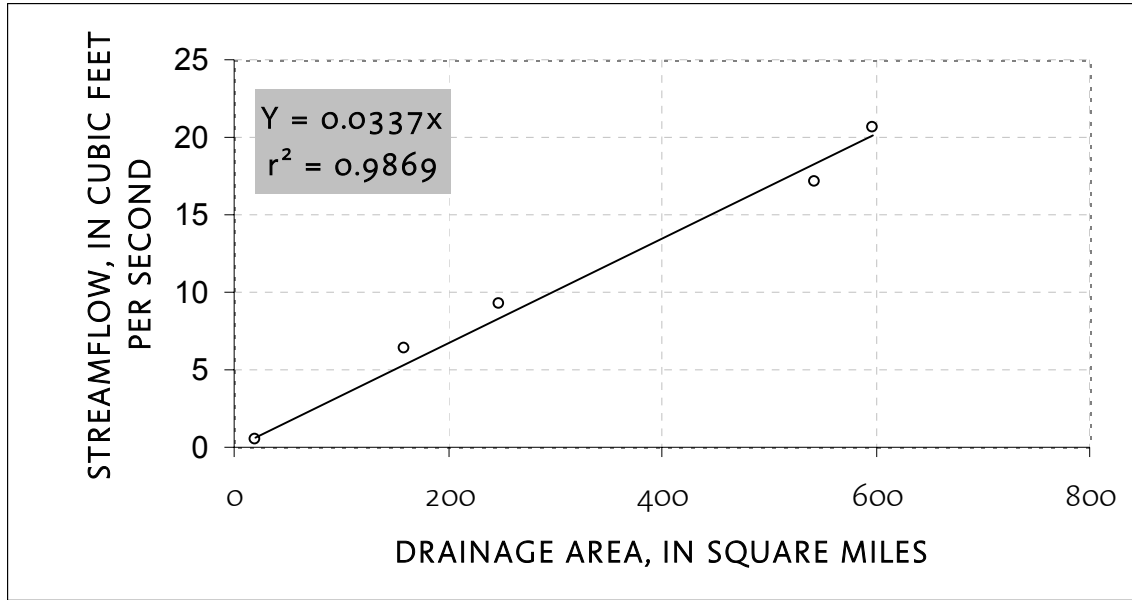
*Little Drywood Creek*



USGS Gages used in determining Little Drywood Creek baseflow regression.

Gage	Catchment	Mean 92-day Baseflow
(#)	(mi <sup>2</sup> )	(cfs)
06916500	198	7.65
06917000	295	8.91
06917240	84	1.2
06917380	292	5.47
06917500	408	10.48
06921590	256.001	6.29
06921720	414.001	6.08
06921740	1.151	0.01

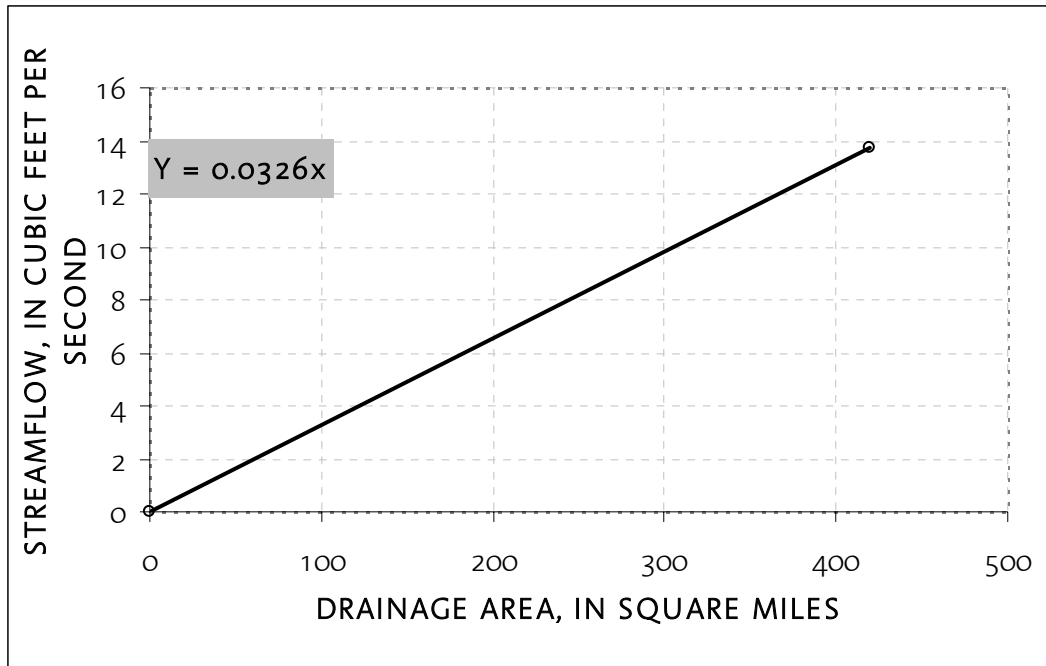
Heaths Creek



USGS Gages used in determining Heath's Creek baseflow regression.

Gage (#)	Catchment (mi <sup>2</sup> )	Mean 92-day Baseflow (cfs)
06894500	20	0.45
06895000	159	6.39
06896000	248	9.25
06906800	543	17.14
06907000	598	20.62

Cedar Creek\*



\* Calculated using Drainage Area Ratio method.

USGS Gages used in determining Cedar Creek baseflow relationship.

Gage (#)	Catchment (mi <sup>2</sup> )	Mean 92-day Baseflow (cfs)
06919500	420	13.7

**APPENDIX F**

**PARAMETER STATISTICS**



# APPENDIX F PARAMETER STATISTICS

## Little Drywood Creek (LDC1) Continuous Data

Date (mm/dd/yyyy)	Dissolved Oxygen					DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat)	Maximum (% sat)	Minimum (% sat)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)
7/17/2006	4.59	5.21	4.02	86%	0%	59.0	69.0	50.0	28.2	30.1	26.4	233	236	229	904	1455	15%
7/31/2006	4.29	5.11	3.14	98%	0%	54.3	67.2	39.3	26.6	28.4	25.1	291	296	286	699	1164	11%
8/14/2006	2.27	3.32	0.75	100%	88%	28.2	41.8	9.3	25.8	26.8	25.0	306	308	304	565	1010	17%
8/21/2006	2.63	4.02	0.57	100%	54%	31.7	49.1	6.8	24.5	25.5	23.3	328	330	325	544	930	14%
7/22/2006	5.34	6.74	4.38	49%	0%	63.0	80.8	50.9	23.6	25.0	22.1	250	258	245	865	1384	13%
7/24/2006	5.50	6.15	4.64	13%	0%	63.9	73.6	53.1	22.7	24.8	20.7	260	262	257	717	1155	11%
8/7/2006	3.02	4.94	2.09	100%	41%	37.8	60.5	25.8	26.3	27.9	24.7	330	334	326	606	1010	11%
8/28/2006	3.55	6.62	1.01	89%	33%	43.0	79.0	11.9	24.5	25.6	23.9	255	276	226	552	999	10%
9/5/2006	3.52	4.62	2.55	100%	28%	38.5	51.6	27.8	19.2	20.4	17.9	289	291	288	520	941	12%
7/23/2006	5.61	6.44	4.59	1%	0%	64.9	77.0	51.7	22.4	24.6	20.1	256	261	252	803	1285	12%
7/25/2006	5.65	6.67	4.92	4%	0%	66.7	81.6	56.5	23.5	25.6	21.5	263	267	261	721	1173	11%
7/29/2006	5.08	6.45	3.16	42%	0%	63.0	82.5	38.4	26.2	28.2	24.8	274	281	269	753	1246	12%
7/14/2006	5.83	6.57	4.77	10%	0%	70.6	77.5	59.2	25.0	26.9	22.4	240	292	187	945	1538	15%
7/15/2006	4.82	5.41	4.41	74%	0%	59.8	69.5	52.6	26.2	28.4	24.1	235	239	231	967	1546	15%
7/16/2006	4.85	5.32	4.44	78%	0%	61.4	69.9	54.2	27.5	29.6	25.5	238	240	236	863	1382	14%
7/18/2006	4.67	5.27	4.29	83%	0%	60.4	69.9	53.6	28.5	30.5	26.6	231	246	229	835	1336	14%
7/19/2006	4.49	5.07	4.19	92%	0%	58.1	67.8	52.9	28.7	30.7	26.9	234	238	232	851	1361	13%
7/20/2006	4.49	5.12	4.12	90%	0%	58.1	68.5	52.2	28.7	30.9	26.9	240	243	238	843	1371	14%
7/21/2006	4.84	5.89	4.11	53%	0%	60.7	74.7	51.2	27.0	29.0	25.1	245	246	243	769	1230	15%
7/28/2006	5.67	7.24	4.82	9%	0%	69.0	90.9	57.0	25.2	27.2	23.7	268	273	265	851	1459	15%
7/27/2006	4.68	5.68	3.52	78%	0%	56.4	69.9	42.1	24.7	25.9	24.0	272	276	270	226	373	16%
7/28/2006	4.47	5.66	3.12	75%	0%	54.0	69.9	37.2	24.7	28.4	23.4	273	277	269	691	1124	14%
7/30/2006	4.56	5.86	3.49	79%	0%	56.4	74.7	42.9	26.0	28.2	24.3	283	289	280	730	1208	11%
8/1/2006	4.16	5.61	2.92	84%	1%	53.4	74.5	36.7	27.0	28.9	25.6	298	302	294	813	1345	13%
8/2/2006	4.67	6.47	3.28	57%	0%	60.3	85.7	41.3	27.2	29.1	25.8	305	309	301	867	1436	15%
8/3/2006	4.61	5.84	3.26	64%	0%	58.5	75.5	40.9	26.5	27.8	25.3	309	313	307	786	1302	14%
8/4/2006	4.42	5.37	2.76	76%	2%	55.2	69.6	33.6	25.7	27.8	24.1	314	320	310	785	1300	12%
8/5/2006	3.78	4.84	2.25	100%	11%	47.8	63.8	28.1	26.2	28.6	24.6	319	323	316	752	1244	13%
8/6/2006	3.58	5.31	1.79	96%	17%	45.7	69.7	22.9	26.8	29.2	25.5	325	331	321	656	1086	12%
8/8/2006	2.43	3.27	1.04	100%	86%	30.1	41.3	12.6	26.0	27.6	24.6	333	338	331	709	1194	13%
8/9/2006	3.25	5.35	1.88	97%	53%	40.2	66.6	22.8	26.0	28.3	25.0	329	342	303	731	1231	14%
8/10/2006	2.57	4.66	0.88	100%	62%	31.2	56.1	10.9	25.2	26.0	24.6	299	304	282	335	564	14%
8/11/2006	2.52	4.65	1.23	100%	77%	30.7	57.7	14.8	25.3	26.9	24.2	289	294	281	628	1057	11%
8/12/2006	2.39	4.17	0.60	100%	65%	28.9	51.1	7.4	25.1	26.2	23.9	292	296	285	634	1086	11%
8/13/2006	1.91	3.59	0.45	100%	88%	23.4	44.2	5.6	25.8	27.1	24.6	297	304	291	714	1224	13%
8/15/2006	2.16	3.95	0.98	100%	97%	26.2	49.2	12.1	24.3	25.6	23.2	312	318	307	676	1159	14%
8/16/2006	2.17	3.33	0.71	100%	95%	26.2	40.9	8.8	24.1	25.8	22.8	318	322	314	771	1322	17%
8/17/2006	1.88	3.46	0.55	100%	97%	23.4	44.4	6.6	25.2	27.2	23.8	323	327	320	702	1204	15%
8/18/2006	2.14	3.65	1.24	100%	92%	27.0	46.8	15.8	26.0	27.8	24.9	327	331	324	660	1132	15%
8/19/2006	2.40	3.53	1.12	100%	81%	30.0	45.0	13.8	25.7	27.3	24.5	328	330	326	705	1231	16%
8/20/2006	3.08	5.06	1.28	99%	58%	38.1	64.0	15.6	25.2	26.5	24.2	328	330	326	616	1075	16%
8/22/2006	2.75	4.89	1.51	100%	70%	32.8	60.1	17.7	24.1	26.1	22.4	330	332	328	658	1129	13%
8/23/2006	2.64	4.35	0.41	100%	56%	31.4	53.0	4.8	23.9	26.1	22.0	333	339	330	759	1301	14%
8/24/2006	2.31	3.22	0.75	100%	94%	27.8	39.8	8.9	24.5	27.0	22.4	337	342	333	646	1128	12%
8/25/2006	2.77	4.65	0.52	100%	60%	34.3	59.1	6.3	25.8	27.9	24.5	340	343	338	728	1294	19%
8/26/2006	2.91	6.92	0.19	76%	64%	34.8	82.1	2.4	24.5	25.9	23.4	263	341	239	519	939	13%
8/27/2006	2.34	4.96	0.49	100%	60%	27.9	59.2	5.9	24.2	25.0	23.5	283	277	257	510	906	17%
8/29/2006	4.38	6.18	3.46	83%	0%	50.6	71.3	39.4	21.7	23.8	20.9	267	269	264	361	641	15%
8/30/2006	4.34	6.40	2.60	88%	5%	48.8	73.8	29.8	20.4	21.8	19.1	272	278	267	693	1210	13%
8/31/2006	4.25	6.31	2.24	77%	10%	47.5	72.1	25.7	20.1	21.5	18.6	278	283	274	711	1264	14%
9/1/2006	4.11	5.84	2.63	82%	8%	46.2	66.9	28.9	20.3	21.6	18.9	282	287	279	498	885	13%
9/2/2006	3.60	5.02	2.19	99%	22%	40.4	56.9	24.0	20.3	21.3	19.2	285	289	283	502	910	17%
9/3/2006	3.54	5.19	2.28	99%	27%	40.1	59.4	25.3	20.7	21.7	19.9	287	289	286	495	896	14%
9/4/2006	3.68	5.30	2.45	97%	18%	41.3	60.5	27.1	20.4	21.7	19.2	288	291	286	494	895	11%
9/6/2006	3.26	4.85	2.10	100%	36%	35.0	53.9	22.6	18.3	20.0	16.7	290	293	289	567	1028	12%
9/7/2006	3.20	4.49	2.03	100%	40%	33.1	49.6	0.2	18.2	19.5	16.9	292	296	290	421	762	13%
9/8/2006	3.11	4.71	1.78	100%	32%	33.0	52.1	0.2	18.4	20.0	16.9	294	297	293	542	982	14%
9/9/2006	2.96	4.74	1.33	100%	58%	32.7	53.5	14.7	19.4	20.6	18.4	296	298	294	454	822	18%
9/10/2006	2.84	4.30	1.14	100%	49%	31.5	47.5	12.8	19.7	20.9	18.8	298	302	295	354	642	17%
9/11/2006	3.56	5.18	1.42	98%	24%	40.7	60.2	15.8	20.9	22.5	19.6	297	300	292	599	1084	16%
9/12/2006	3.23	3.91	2.42	100%	19%	35.7	44.6	26.7	19.5	21.3	17.7	299	301	297	268	494	20%

### Little Drywood Creek (LDC2) Continuous Data

Date (mm/dd/yyyy)	Dissolved Oxygen					DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)
7/24/2006	5.43	7.90	4.17	43%	0%	64.8	98.5	47.4	23.6	26.7	20.7	280	283	278	2805	4517	44%
8/28/2006	2.52	5.12	0.52	98%	73%	30.5	62.8	6.3	25.0	25.9	24.5	208	245	180	1561	2776	29%
7/17/2006	4.97	6.41	4.05	55%	0%	64.4	86.2	49.9	27.9	30.1	25.8	254	277	253	2701	4350	46%
7/31/2006	4.76	7.13	3.22	63%	0%	61.0	96.6	39.4	27.6	31.8	24.9	304	307	300	2575	4291	41%
8/7/2006	4.09	7.03	2.34	74%	16%	52.5	95.5	28.7	27.5	31.8	24.6	301	308	297	2040	3399	38%
8/14/2006	3.75	5.73	2.45	83%	32%	47.2	73.4	30.1	26.9	29.0	25.4	275	279	271	1116	1949	32%
9/5/2006	3.24	4.18	1.54	100%	33%	35.5	46.4	17.1	19.9	21.5	18.6	278	280	277	1458	2641	32%
7/14/2006	5.68	6.80	4.74	12%	0%	68.8	81.5	58.3	25.1	27.1	22.8	238	274	219	2864	4582	29%
7/15/2006	5.15	6.30	4.66	57%	0%	63.4	80.5	54.9	25.8	28.5	23.4	236	244	221	2963	4741	45%
7/16/2006	4.80	6.11	3.97	61%	0%	60.6	79.6	48.2	27.2	29.3	25.1	249	253	244	2808	4492	45%
7/18/2006	4.99	6.32	4.09	55%	0%	65.3	85.1	51.6	28.1	30.0	26.1	259	266	256	2486	3977	40%
7/19/2006	4.73	5.89	3.85	71%	0%	62.6	80.6	49.1	28.7	30.9	26.9	264	265	261	2548	4078	40%
7/20/2006	4.64	5.93	3.87	72%	0%	61.7	82.2	49.4	28.9	31.8	26.9	265	268	264	2496	3994	40%
7/21/2006	4.86	6.70	3.03	61%	0%	62.7	88.9	38.9	27.4	29.6	25.1	269	272	267	1947	3116	38%
7/22/2006	5.35	7.47	4.23	52%	0%	65.0	94.2	50.8	24.2	26.6	21.8	273	275	272	2111	3378	32%
7/23/2006	5.65	7.91	3.43	50%	0%	67.5	99.9	38.7	23.2	26.5	20.2	277	278	275	2126	3401	31%
7/25/2006	5.18	7.99	3.80	60%	0%	62.5	101.7	43.9	24.3	27.8	21.5	284	286	281	2688	4269	41%
7/26/2006	5.35	8.07	4.03	56%	0%	66.0	103.6	47.7	25.7	28.6	23.8	288	291	286	2050	3335	34%
7/27/2006	4.67	5.91	3.84	74%	0%	56.5	71.7	46.1	24.9	28.0	24.3	290	293	286	455	740	32%
7/28/2006	4.82	7.93	2.84	62%	2%	59.3	99.5	33.8	25.3	27.7	23.4	293	296	291	1445	2313	28%
7/29/2006	5.14	8.03	3.34	51%	0%	65.3	107.8	40.6	27.1	30.9	24.7	285	297	282	2602	4307	41%
7/30/2006	5.01	7.74	3.21	59%	0%	63.4	103.4	38.8	26.8	31.0	23.7	289	302	287	2627	4347	41%
8/1/2006	4.43	7.75	2.20	70%	14%	57.4	105.2	28.9	28.0	32.1	25.4	308	313	305	2534	4194	40%
8/2/2006	4.83	8.21	2.80	58%	7%	62.7	111.8	34.7	28.1	32.1	25.6	311	315	308	2534	4194	42%
8/3/2006	5.16	8.10	3.10	59%	0%	65.7	107.4	38.4	27.3	30.7	25.1	312	315	309	2109	3491	36%
8/4/2006	5.19	7.68	3.55	58%	0%	65.5	103.5	42.7	26.8	31.8	23.7	315	320	312	2583	4276	41%
8/5/2006	4.94	7.91	3.25	68%	0%	63.5	109.9	39.2	27.5	32.8	24.4	321	327	317	2449	4054	43%
8/6/2006	4.27	6.39	2.83	75%	1%	55.3	89.4	35.0	28.2	33.7	25.4	321	338	296	2351	3891	43%
8/8/2006	4.64	8.05	2.06	68%	12%	59.1	107.5	25.3	27.2	31.5	24.3	307	315	303	2135	3534	38%
8/9/2006	4.93	8.35	2.67	64%	1%	62.5	113.9	32.4	26.9	32.0	24.9	276	312	204	1755	2905	34%
8/10/2006	2.81	4.33	1.66	100%	60%	34.5	54.4	20.3	25.7	27.1	24.7	224	231	215	669	1126	28%
8/11/2006	3.95	6.95	2.30	72%	38%	50.2	93.7	27.5	26.8	31.2	24.1	240	248	231	2438	4106	43%
8/12/2006	4.08	6.85	2.52	74%	16%	51.7	91.3	30.5	26.9	31.5	23.7	254	260	249	2553	4299	44%
8/13/2006	4.08	7.38	2.40	76%	30%	52.7	100.6	29.2	27.8	32.4	24.9	265	272	260	2658	4557	49%
8/15/2006	4.53	8.13	2.78	73%	2%	55.8	105.7	32.7	25.3	29.2	22.8	255	284	159	2082	3569	42%
8/16/2006	5.14	8.31	3.40	60%	0%	63.3	107.7	39.3	25.2	29.3	22.4	151	158	148	1933	3314	42%
8/22/2006	2.08	3.17	1.30	100%	95%	24.8	38.6	15.5	24.1	25.4	23.0	290	291	290	1474	2526	29%
8/23/2006	2.33	3.23	1.54	100%	95%	27.7	38.9	18.1	24.0	25.3	22.5	290	292	290	2123	3639	40%
8/24/2006	2.26	3.71	0.91	100%	84%	27.0	45.0	11.1	24.2	25.3	23.1	291	294	290	1505	2627	29%
8/25/2006	1.67	3.10	0.83	100%	99%	20.5	38.6	10.1	25.9	27.1	25.0	296	299	294	1834	3201	47%
8/26/2006	3.02	6.76	0.52	75%	56%	36.4	81.4	6.3	24.8	27.0	24.2	210	296	173	1516	2694	37%
8/27/2006	1.28	3.03	0.52	100%	98%	15.3	36.3	6.3	24.8	25.2	24.3	214	221	209	1365	2426	44%
8/31/2006	4.23	5.23	2.53	82%	5%	46.7	58.3	28.5	20.3	21.5	18.9	267	269	267	422	765	8%
9/1/2006	3.76	4.99	2.40	100%	16%	41.8	56.3	27.3	20.6	21.7	19.4	271	272	270	379	687	10%
9/2/2006	3.19	4.65	1.64	100%	39%	35.7	52.4	18.5	20.8	21.7	20.0	273	274	272	246	445	8%
9/3/2006	2.81	3.92	0.96	100%	52%	31.7	44.3	11.0	21.3	21.9	20.8	276	278	274	285	526	8%
9/4/2006	3.02	3.87	1.93	100%	46%	33.8	43.8	21.8	20.9	21.9	19.9	277	280	276	408	753	9%
9/6/2006	3.28	4.19	1.29	100%	28%	35.1	46.0	14.1	18.7	20.1	17.4	279	280	277	1983	3601	40%
9/7/2006	3.27	4.32	1.46	100%	39%	35.0	46.9	16.0	18.7	19.7	17.7	280	282	279	1398	2533	43%
9/8/2006	3.23	4.18	1.63	100%	30%	34.6	45.0	17.7	18.7	19.5	17.6	281	283	280	1398	2532	36%
9/9/2006	2.68	4.29	1.17	100%	69%	29.3	46.8	12.9	19.7	20.2	19.2	283	284	282	924	1674	37%
9/10/2006	2.73	3.94	0.90	100%	53%	29.9	43.5	9.9	19.9	20.4	19.3	283	284	282	861	1559	41%
9/11/2006	1.80	3.56	0.51	100%	90%	20.0	39.3	5.8	20.7	21.4	20.2	282	285	279	985	1783	26%
9/12/2006	2.59	3.39	0.42	100%	77%	28.6	37.2	4.7	20.3	21.4	18.6	282	284	281	451	833	34%

*Little Drywood Creek (LDC3) Continuous Data Statistics*

Date (mm/dd/yyyy)	Dissolved Oxygen					DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)
7/17/2006	3.90	4.59	2.87	100%	1%	50.1	61.1	35.8	28.2	30.7	26.3	50.1	61.1	35.8	1469	2350	25%
7/24/2006	3.44	4.54	2.33	100%	39%	41.1	57.0	26.1	23.4	25.9	20.7	41.1	57.0	26.1	1272	2049	20%
7/14/2006	5.53	6.87	4.54	27%	0%	66.7	82.1	55.0	24.9	26.3	22.6	66.7	82.1	55.0	1343	2185	22%
7/15/2006	4.39	4.83	3.90	100%	0%	53.6	60.6	48.7	25.4	27.6	23.3	53.6	60.6	48.7	1364	2182	21%
7/16/2006	4.23	4.90	3.90	100%	0%	53.3	64.3	48.1	27.1	29.5	25.2	53.3	64.3	48.1	1408	2253	22%
7/18/2006	4.17	4.90	3.48	100%	0%	53.7	65.1	43.3	28.3	30.4	26.4	53.7	65.1	43.3	1301	2082	21%
7/19/2006	4.23	5.02	3.57	98%	0%	55.1	67.6	45.2	29.0	31.3	27.1	55.1	67.6	45.2	1407	2252	22%
7/20/2006	4.03	5.09	3.15	95%	0%	52.7	69.0	39.9	29.1	31.5	27.2	52.7	69.0	39.9	1425	2319	23%
7/21/2006	3.95	4.87	3.11	100%	0%	49.8	62.3	39.0	27.3	29.2	25.3	49.8	62.3	39.0	1050	1680	21%
7/22/2006	3.85	4.89	3.26	100%	0%	45.9	59.7	38.3	24.0	25.6	22.4	45.9	59.7	38.3	1264	2023	19%
7/23/2006	3.81	4.91	3.18	100%	0%	44.7	60.3	36.4	23.2	25.8	20.5	44.7	60.3	36.4	1483	2373	22%
7/25/2006	2.99	4.43	1.60	100%	49%	36.4	56.2	19.5	24.0	26.5	21.6	36.4	56.2	19.5	1623	2596	25%
7/26/2006	2.66	3.40	1.98	100%	77%	32.9	42.9	23.9	24.8	26.1	23.4	32.9	42.9	23.9	1613	2670	27%
7/27/2006	2.53	4.42	1.70	100%	83%	30.7	53.5	20.6	24.1	25.0	23.8	30.7	53.5	20.6	234	387	17%
7/28/2006	2.02	3.06	0.97	100%	99%	24.8	38.1	11.7	24.8	26.7	23.2	24.8	38.1	11.7	1201	1953	24%
7/29/2006	2.23	3.76	1.28	100%	91%	28.1	48.8	15.6	26.1	28.1	24.5	28.1	48.8	15.6	1644	2722	26%
7/30/2006	2.19	3.39	1.23	100%	83%	27.7	44.0	15.0	28.0	27.8	24.0	27.7	44.0	15.0	1817	3008	28%

*Little Drywood Creek (LDC4) Continuous Data Statistics*

Date (mm/dd/yyyy)	Dissolved Oxygen					DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)
8/7/2006	2.45	4.11	0.95	100%	76%	31.2	53.3	11.9	27.5	28.1	26.8	217	218	214	1184	1973	22%
8/1/2006	3.59	4.84	2.15	100%	34%	46.6	63.7	27.5	27.6	28.7	26.6	206	208	205	1455	2409	23%
8/2/2006	3.94	5.46	2.75	86%	16%	51.2	72.1	35.0	27.7	28.8	26.7	209	211	207	1382	2287	23%
8/3/2006	3.12	4.55	1.66	100%	40%	40.2	59.1	21.2	27.4	28.1	26.8	210	222	208	972	1608	17%
8/4/2006	2.05	4.20	0.86	100%	82%	26.1	54.0	10.8	26.8	27.4	26.0	211	212	209	1391	2302	22%
8/5/2006	2.48	4.57	1.15	100%	74%	31.8	59.5	14.8	27.0	28.0	26.3	212	213	210	1281	2121	22%
8/6/2006	2.33	4.85	1.18	100%	73%	30.1	63.1	15.3	27.5	28.2	26.8	214	215	212	1290	2135	24%
8/8/2006	2.54	4.70	0.85	100%	60%	32.4	60.7	10.6	27.5	28.6	26.6	219	220	217	1162	1924	21%
8/9/2006	2.94	5.30	1.35	92%	58%	37.5	68.1	16.9	27.5	28.7	26.8	221	222	219	929	1538	18%
8/10/2006	2.41	5.47	1.06	99%	74%	30.4	69.3	13.2	27.1	27.6	26.8	222	223	221	645	1086	27%
8/11/2006	2.15	4.90	0.39	100%	83%	26.9	61.8	4.8	26.8	27.4	26.1	223	224	221	975	1643	17%
8/12/2006	2.68	5.49	0.63	98%	55%	33.6	69.4	7.8	26.7	27.4	25.9	224	225	222	1051	1771	18%
8/13/2006	3.90	7.17	1.20	68%	38%	49.4	92.1	14.8	27.2	28.3	26.2	225	226	224	1228	2104	22%

Little Drywood Creek (LDC5) Continuous Data Statistics

Date (mm/dd/yyyy)	Dissolved Oxygen					DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)
8/28/2006	0.95	2.06	0.16	100%	100%	11.6	25.4	2.0	25.3	26.0	24.6	247	250	244	718	1276	13%
8/21/2006	0.39	1.34	0.11	100%	100%	4.7	16.0	1.3	23.7	24.4	22.9	362	368	359	775	1314	20%
9/5/2006	0.23	1.42	0.05	100%	100%	2.5	15.4	0.5	18.9	20.2	17.8	278	282	274	723	1310	16%
8/15/2006	0.35	1.96	0.12	100%	100%	4.2	23.4	1.4	23.7	24.8	22.9	342	347	337	1007	1726	20%
8/16/2006	0.41	1.62	0.14	100%	100%	4.8	19.2	1.6	23.4	24.3	22.7	345	349	342	990	1697	22%
8/17/2006	0.53	1.50	0.15	100%	100%	6.3	17.9	1.8	24.3	25.4	23.8	349	356	345	822	1409	17%
8/18/2006	0.20	0.87	0.14	100%	100%	2.5	10.5	1.7	25.1	25.7	24.6	357	362	353	937	1606	21%
8/19/2006	0.51	1.51	0.14	100%	100%	6.2	18.5	1.7	25.1	25.7	24.5	359	365	356	970	1663	21%
8/20/2006	0.58	1.80	0.13	100%	100%	7.0	21.9	1.5	24.4	25.5	23.8	359	364	357	720	1235	18%
8/22/2006	0.40	1.39	0.10	100%	100%	4.7	16.5	1.1	23.3	24.2	22.6	364	371	359	1026	1758	20%
8/23/2006	0.52	1.84	0.09	100%	100%	6.1	21.8	1.1	22.8	24.0	21.7	365	369	362	1153	1977	22%
8/24/2006	0.52	1.97	0.09	100%	100%	6.1	23.2	1.1	23.1	24.0	22.3	367	372	363	1051	1801	20%
8/25/2006	0.13	1.30	0.09	100%	100%	1.6	15.6	1.1	24.4	25.0	24.0	374	377	370	635	1151	17%
8/26/2006	2.63	4.10	0.09	100%	55%	32.0	48.9	1.1	25.1	26.7	23.6	308	376	266	607	1099	15%
8/27/2006	1.79	2.85	0.84	100%	100%	21.9	35.1	10.4	25.4	26.0	24.7	257	273	249	614	1092	20%
8/29/2006	0.70	1.34	0.08	100%	100%	8.2	16.0	1.0	22.6	24.5	21.9	249	250	248	425	756	18%
8/30/2006	0.32	0.82	0.06	100%	100%	3.6	9.3	0.7	21.1	21.8	20.1	253	257	249	952	1662	18%
8/31/2006	0.23	0.58	0.06	100%	100%	2.5	6.5	0.6	20.4	21.5	19.4	257	263	253	852	1487	16%
9/1/2006	0.21	0.82	0.06	100%	100%	2.3	9.2	0.6	20.4	21.2	19.5	261	266	255	851	1514	22%
9/2/2006	0.16	1.09	0.06	100%	100%	1.8	12.3	0.6	20.5	21.1	19.8	266	272	258	655	1164	21%
9/3/2006	0.16	1.22	0.06	100%	100%	1.9	13.7	0.6	20.6	21.0	20.1	271	276	264	565	1023	16%
9/4/2006	0.15	1.01	0.06	100%	100%	1.6	11.2	0.6	19.9	20.8	19.1	276	283	268	715	1296	16%
9/6/2006	0.24	0.77	0.05	100%	100%	2.5	8.3	0.5	17.9	19.0	16.8	281	286	277	698	1264	14%
9/7/2006	0.23	1.00	0.04	100%	100%	2.5	10.7	0.5	18.0	18.8	17.1	280	287	276	731	1325	23%
9/8/2006	0.25	1.43	0.04	100%	100%	2.6	15.4	0.4	18.2	19.3	17.3	281	286	276	756	1369	19%
9/9/2006	0.29	1.34	0.04	100%	100%	3.1	14.5	0.4	19.3	19.9	18.9	285	291	280	477	863	19%
9/10/2006	0.19	1.18	0.03	100%	100%	2.1	12.9	0.4	19.6	20.0	19.1	293	302	286	407	738	20%
9/11/2006	0.15	0.90	0.03	100%	100%	1.6	10.1	0.4	20.2	21.1	19.7	297	302	292	653	1182	17%
9/12/2006	0.37	1.00	0.04	100%	100%	4.0	11.2	0.4	19.5	20.9	18.0	300	302	296	293	541	22%

Cedar Creek (CC1) Continuous Data Statistics

Date (mm/dd/yyyy)	Dissolved Oxygen					DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)
8/28/2006	8.25	11.49	1.30	42%	28%	81.4	155.1	15.9	28.1	31.8	25.4	305	318	284	3886	20480	79%
7/19/2006	7.36	14.76	0.57	39%	27%	108.4	226.8	7.4	33.2	37.7	28.7	340	356	318	4614	20480	76%
8/7/2006	4.01	9.67	0.56	59%	50%	56.4	139.1	7.1	31.0	35.7	27.6	315	321	296	4232	20480	70%
8/21/2006	4.20	8.93	0.97	65%	38%	55.7	122.6	11.9	28.1	32.1	24.6	308	313	303	3069	17408	73%
9/5/2006	5.97	9.95	2.37	43%	5%	71.6	124.8	26.5	23.8	27.0	20.7	339	350	334	3542	23552	69%
7/24/2006	5.20	10.92	1.21	55%	42%	68.6	149.8	14.5	27.4	32.1	23.2	328	338	321	4058	23552	61%
7/31/2006	4.87	10.43	0.50	54%	41%	67.2	149.8	6.3	30.8	35.0	27.3	330	335	321	4613	20480	75%
8/14/2006	5.09	9.99	0.96	52%	34%	69.9	140.9	12.5	29.9	33.1	27.6	315	319	308	3365	24576	85%
7/14/2006	8.10	12.71	4.38	12%	0%	108.8	181.7	52.8	29.7	34.9	24.7	328	340	303	4412	19456	70%
7/15/2006	8.75	12.28	2.23	40%	17%	93.5	180.3	27.6	30.9	36.2	26.0	345	357	334	4383	20480	69%
7/16/2006	6.00	12.19	1.38	39%	28%	85.0	181.2	17.7	32.3	37.3	27.8	350	359	343	4400	19456	67%
7/17/2006	6.73	14.44	0.88	47%	32%	97.0	217.1	11.4	32.9	37.8	28.6	355	371	336	4270	19456	65%
7/19/2006	6.19	13.10	0.67	45%	29%	81.6	201.4	9.0	33.5	37.6	29.8	328	336	316	4469	19456	71%
7/20/2006	5.63	12.45	0.64	49%	40%	83.5	191.0	8.6	33.4	39.3	29.3	326	334	315	4435	19456	70%
7/21/2006	5.49	11.49	0.76	51%	33%	77.3	166.6	10.2	31.4	34.2	28.4	321	329	313	3842	19456	75%
7/22/2006	4.59	9.65	0.88	56%	41%	61.5	133.3	10.7	28.0	32.1	24.4	318	323	312	4572	26624	75%
7/23/2006	4.41	9.07	1.00	59%	39%	58.0	123.2	12.0	27.0	30.9	23.1	322	331	315	3900	23552	74%
7/25/2006	6.31	11.11	1.37	38%	20%	83.2	153.6	16.5	28.5	32.6	24.6	328	333	323	4614	20480	78%
7/26/2006	5.08	10.03	0.59	51%	32%	67.8	139.2	7.2	29.1	32.8	26.0	331	335	327	4172	22528	85%
7/27/2006	2.68	5.66	0.61	91%	61%	33.9	72.2	7.6	27.3	28.9	26.2	329	334	325	6144	1371	1371
7/28/2006	4.59	10.56	0.29	51%	48%	61.4	146.0	3.6	28.6	32.5	25.5	339	347	330	2849	22528	61%
7/29/2006	5.07	10.40	0.48	50%	36%	69.7	148.5	6.0	30.6	34.5	27.1	338	341	333	4718	21504	83%
7/30/2006	4.92	10.46	0.36	52%	40%	68.3	150.9	4.6	30.8	35.2	27.0	333	337	327	4698	23552	74%
8/1/2006	5.53	10.80	1.27	50%	34%	76.0	154.7	16.1	30.7	35.0	27.0	327	331	322	4704	20480	79%
8/2/2006	5.05	10.22	1.25	55%	35%	69.2	146.5	15.7	30.6	34.9	26.6	327	330	323	4502	21504	81%
8/3/2006	4.27	9.13	0.57	62%	42%	57.9	127.6	7.2	30.2	33.5	27.6	329	333	326	3581	22528	75%
8/4/2006	4.43	9.10	0.76	57%	41%	59.7	127.7	9.4	29.6	33.6	26.1	328	331	325	4087	23552	69%
8/5/2006	4.37	9.21	0.87	62%	38%	59.9	132.2	11.0	30.4	35.0	26.7	327	330	321	4182	19456	73%
8/6/2006	3.75	9.05	0.53	64%	46%	52.0	131.0	6.8	31.0	36.0	27.7	324	330	312	4518	20480	79%
8/8/2006	4.41	8.53	1.00	59%	36%	61.4	122.2	13.0	30.7	33.5	27.8	315	317	313	4021	24576	85%
8/9/2006	5.26	10.38	1.15	52%	35%	73.9	151.3	15.0	30.6	34.3	27.4	315	318	310	4252	24576	73%
8/10/2006	4.00	8.82	1.38	64%	47%	54.1	121.9	18.0	29.1	30.8	27.8	317	319	314	1946	16384	74%
8/11/2006	5.49	10.81	1.31	51%	34%	76.6	157.3	16.7	29.9	34.1	26.6	317	322	312	3994	26624	81%
8/12/2006	5.11	10.01	1.43	55%	26%	70.5	144.2	18.3	29.7	33.8	26.5	316	320	313	3632	22528	85%
8/13/2006	5.19	9.93	1.17	49%	33%	72.5	144.3	14.8	30.0	33.9	26.2	316	320	312	4076	22528	80%
8/15/2006	5.54	11.09	1.07	49%	31%	74.4	154.9	13.2	28.1	32.5	24.7	312	317	306	4322	19456	77%
8/16/2006	5.36	9.93	1.41	51%	26%	72.1	140.9	17.3	28.2	32.8	24.5	311	315	305	4170	17408	77%
8/17/2006	5.11	9.68	1.03	56%	29%	70.7	140.4	12.9	29.6	34.2	25.6	311	315	307	4476	18432	89%
8/18/2006	4.91	10.18	0.55	54%	36%	68.9	150.4	7.0	30.2	35.1	26.7	312	318	306	4496	18432	81%
8/19/2006	4.63	10.24	0.55	59%	36%	64.3	148.2	7.0	29.7	34.4	26.2	310	318	302	3994	18432	81%
8/20/2006	3.97	7.97	0.54	68%	45%	52.4	107.7	6.8	27.7	30.4	25.4	307	314	299	2320	14336	85%
8/22/2006	4.24	8.82	0.28	62%	42%	55.7	122.2	3.3	27.9	32.7	24.2	315	322	308	2828	20480	59%
8/23/2006	4.43	9.05	0.63	59%	42%	58.4	126.3	7.4	27.8	33.1	23.0	316	321	311	3435	19456	65%
8/24/2006	4.02	8.49	0.53	66%	49%	53.9	120.4	6.1	28.3	34.2	23.0	320	325	313	3813	21504	70%
8/25/2006	3.10	7.67	0.20	72%	58%	40.8	104.5	2.4	28.2	32.0	25.6	325	333	314	1796	20480	50%
8/26/2006	4.58	8.14	0.68	45%	24%	59.0	109.0	8.1	27.8	31.3	24.4	283	323	238	2889	21504	71%
8/27/2006	4.70	10.67	0.30	54%	36%	60.6	139.2	3.6	27.7	29.8	25.9	312	325	295	1975	12288	64%
8/29/2006	5.88	10.11	2.32	46%	18%	70.2	121.3	27.4	24.2	27.0	22.9	314	321	302	1338	8704	74%
8/30/2006	6.83	11.59	2.98	35%	1%	82.3	147.2	33.0	23.8	27.9	20.4	323	334	316	3386	20480	60%
8/31/2006	6.92	11.39	2.39	29%	3%	84.5	146.6	26.8	24.5	28.7	20.9	327	336	320	3420	20480	70%
9/1/2006	6.27	10.21	3.07	29%	0%	76.3	130.0	34.7	24.6	27.8	21.5	332	340	325	2900	21504	74%
9/2/2006	6.18	10.72	2.41	39%	7%	74.6	133.9	27.6	24.2	26.7	21.8	337	345	331	2329	20480	75%
9/3/2006	6.35	10.96	2.09	35%	8%	77.3	138.4	24.0	24.5	28.0	22.1	339	348	333	2976	19456	78%
9/4/2006	6.10	10.51	2.46	44%	4%	75.2	135.6	28.5	25.2	29.0	22.2	340	347	334	3671	18432	74%
9/6/2006	6.05	9.28	2.46	41%	4%	71.7	115.7	26.8	23.0	27.1	19.4	343	351	337	3479	22528	74%
9/7/2006	5.89	9.24	2.47	38%	4%	70.0	115.5	27.7	23.2	26.9	19.7	348	352	345	3641	22528	79%
9/8/2006	5.99	9.71	2.45	41%	3%	71.7	122.1	27.3	23.5	27.3	20.2	351	353	349	3821	21504	86%
9/9/2006	4.82	7.98	1.28	54%	16%	57.3	97.0	14.7	23.7	25.4	22.0	352	357	350	2135	17408	107%
9/10/2006	2.90	5.15	0.61	99%	47%	33.6	60.6	6.9	22.3	23.7	20.8	357	360	352	1012	5376	72%
9/11/2006	5.32	9.77	1.43	54%	24%	64.9	124.9	16.2	24.3	28.3	21.4	353	356	351	2894	18432	84%
9/12/2006	4.58	7.31	2.22	53%	26%	52.9	84.0	25.6	22.6	25.3	20.5	355	357	353	1159	5120	81%

### Cedar Creek (CC2) Continuous Data Statistics

Date (mm/dd/yyyy)	Dissolved Oxygen						DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)	
7/13/2006	1.52	6.45	0.10	92%	81%	19.1	81.8	1.2	26.2	27.7	24.6	356	367	338	3273	5151	104%	
7/14/2006	2.30	4.50	0.12	100%	49%	28.0	57.1	1.5	26.0	28.2	22.8	392	429	338	3773	6036	61%	
7/15/2006	0.85	4.06	0.10	100%	95%	10.8	52.4	1.4	26.6	29.8	23.9	459	482	431	3850	6059	59%	
7/16/2006	0.98	6.49	0.08	96%	86%	12.7	84.9	1.0	27.7	30.1	25.5	479	490	455	3738	5882	58%	
7/17/2006	1.63	9.49	0.09	84%	77%	21.6	126.8	1.1	28.3	31.1	26.2	485	495	467	3799	5980	58%	
7/18/2006	2.71	11.93	0.09	77%	71%	36.4	163.3	1.2	28.8	32.1	26.0	487	497	468	3973	6357	64%	
7/19/2006	3.44	15.32	0.09	73%	68%	46.3	208.4	1.1	29.1	31.7	26.7	483	495	460	3782	6052	61%	
7/20/2006	1.96	9.57	0.08	81%	75%	26.7	133.0	1.1	29.4	32.8	26.7	479	491	463	3865	6184	61%	
7/21/2006	2.13	7.82	0.06	79%	69%	28.1	104.9	0.8	28.2	30.8	26.1	475	487	461	3280	5249	64%	
7/22/2006	2.30	8.84	0.03	76%	69%	29.1	114.3	0.3	25.4	28.8	22.5	471	484	458	3670	5872	60%	
7/23/2006	1.73	7.66	0.04	86%	76%	21.5	96.8	0.4	23.9	27.4	20.7	470	479	457	3599	5759	68%	
7/24/2006	4.50	15.28	0.05	66%	55%	56.4	197.1	0.5	24.1	28.5	20.9	464	482	435	3976	6402	60%	
7/25/2006	5.65	20.64	0.00	64%	54%	71.6	269.5	0.0	25.0	29.3	22.0	467	482	435	4125	6600	70%	
7/26/2006	5.98	20.41	0.01	59%	51%	77.8	274.3	0.1	26.4	30.9	23.7	463	483	409	3643	5829	74%	
7/27/2006	3.03	9.41	0.01	67%	58%	37.5	116.8	0.2	25.9	26.7	24.8	466	480	451	1189	1935	75%	
7/28/2006	4.79	17.23	0.04	65%	57%	62.3	227.5	0.5	26.6	30.5	24.1	468	484	432	2955	4728	64%	
7/29/2006	5.22	20.52	0.02	64%	58%	70.9	289.8	0.3	28.2	34.1	25.0	464	480	430	4132	6723	74%	
7/30/2006	7.04	23.49	0.01	59%	54%	95.8	329.3	0.2	28.1	34.6	24.4	454	481	384	3704	5927	58%	
7/31/2006	6.65	23.44	0.08	58%	54%	90.5	337.9	0.9	28.4	35.2	25.1	444	476	370	3989	6491	65%	
8/1/2006	6.59	23.05	0.08	60%	54%	90.9	333.4	1.0	28.7	35.7	25.0	399	471	239	3981	6478	67%	
8/2/2006	5.11	18.90	0.05	64%	61%	71.4	275.6	0.7	29.2	36.3	25.0	239	255	217	4106	6681	74%	
8/3/2006	3.26	14.62	0.05	72%	68%	43.8	198.7	0.6	28.1	32.2	25.3	243	256	195	2684	4442	57%	
8/4/2006	3.17	16.27	0.02	75%	71%	44.0	234.6	0.3	28.0	35.2	23.8	---	---	---	4304	7123	74%	
8/5/2006	2.49	15.09	0.04	79%	73%	34.2	210.2	0.4	28.0	34.1	23.8	---	---	---	3397	5623	60%	

### Cedar Creek (CC5) Continuous Data Statistics

Date (mm/dd/yyyy)	Dissolved Oxygen						DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)	
8/8/2006	3.28	5.34	1.76	94%	49%	41.7	69.4	22.0	27.6	29.0	26.6	279	280	277	1218	2016	26%	
8/9/2006	3.46	6.58	1.58	79%	48%	44.1	85.5	19.7	27.5	29.1	26.3	281	282	279	1797	3027	32%	
8/10/2006	3.39	5.44	1.84	85%	54%	42.9	69.7	23.1	27.3	28.1	26.6	283	283	282	1006	1695	39%	
8/11/2006	3.26	6.49	1.03	80%	50%	41.3	82.4	12.7	27.1	28.2	26.0	284	285	283	1532	2580	32%	
8/12/2006	3.22	5.98	0.82	74%	55%	40.9	76.1	10.1	27.0	29.3	25.5	285	287	284	1836	3092	43%	
8/13/2006	3.12	5.77	0.99	89%	48%	39.5	74.2	12.2	27.1	28.5	25.9	287	289	286	1656	2789	33%	
8/14/2006	3.71	6.14	0.96	67%	38%	46.9	78.3	11.9	27.1	28.2	26.4	287	288	286	1461	2504	37%	
8/15/2006	4.16	7.01	1.88	64%	35%	51.9	89.6	22.8	26.2	28.0	24.7	287	289	286	2257	3802	41%	
8/16/2006	4.42	7.50	1.33	54%	42%	55.1	95.6	15.9	25.9	28.0	24.2	289	290	284	1987	3346	37%	
8/17/2006	4.51	7.33	1.67	56%	31%	56.8	94.5	20.3	26.7	28.6	25.1	290	295	287	2130	3587	42%	
8/18/2006	4.71	7.83	1.24	57%	27%	60.0	102.7	15.3	27.3	29.8	25.8	292	294	290	2432	4169	45%	
8/19/2006	5.13	9.03	2.26	50%	20%	65.5	117.3	27.7	27.4	29.9	25.8	294	295	291	2243	3916	46%	
8/20/2006	4.29	6.82	1.80	64%	23%	53.5	85.5	22.1	26.5	27.4	25.8	290	295	271	987	1691	36%	
8/21/2006	3.43	7.56	1.06	83%	48%	42.4	95.1	12.7	25.9	27.3	24.5	240	298	171	1385	2349	33%	
8/22/2006	3.62	9.04	0.76	74%	50%	44.6	113.0	9.1	25.4	26.8	24.1	297	303	295	1289	2210	28%	
8/23/2006	3.82	8.37	0.87	75%	46%	46.5	102.6	10.8	24.9	26.8	23.1	298	303	294	1866	3198	35%	
8/24/2006	3.10	8.28	0.44	77%	61%	37.8	102.5	5.5	25.0	26.7	23.1	299	302	294	1989	3472	37%	
8/25/2006	2.38	6.36	0.28	78%	71%	29.5	79.8	3.4	25.9	26.9	24.9	300	303	296	1157	2020	32%	
8/26/2006	3.32	7.72	0.42	80%	48%	40.7	95.3	5.3	25.9	26.8	24.8	269	302	256	1383	2459	34%	
8/27/2006	2.42	5.87	0.59	96%	76%	29.7	72.2	7.1	25.5	26.2	24.9	268	273	265	867	1541	29%	
8/28/2006	3.16	5.06	1.44	99%	44%	38.7	62.8	17.3	25.5	26.3	24.9	262	268	257	1941	3451	39%	
8/29/2006	3.12	5.37	1.90	97%	52%	36.7	62.7	22.3	23.5	25.3	22.3	265	269	262	751	1334	42%	
8/30/2006	3.04	6.74	1.34	92%	59%	35.4	79.0	15.1	22.5	24.2	21.0	267	270	263	1730	3020	31%	
8/31/2006	2.95	6.59	1.06	92%	57%	34.2	76.4	11.9	22.3	24.7	20.9	270	273	265	1747	3049	36%	
9/1/2006	3.18	6.56	1.13	84%	53%	36.7	76.1	12.6	22.2	23.5	20.8	271	274	268	1520	2653	39%	
9/2/2006	3.80	7.05	1.26	70%	44%	43.8	81.9	14.2	22.1	23.0	21.0	270	271	267	868	1542	29%	
9/3/2006	3.87	6.39	1.47	74%	33%	44.4	74.3	16.6	22.0	22.9	21.2	270	273	267	1114	2018	30%	
9/4/2006	3.61	5.92	2.08	86%	35%	41.6	69.1	23.3	22.1	23.0	20.9	271	274	268	1884	3412	39%	
9/5/2006	4.73	7.84	2.50	59%	18%	54.1	90.7	27.7	21.5	22.5	20.1	271	273	270	1335	2417	27%	
9/6/2006	4.27	7.73	1.94	76%	17%	48.7	89.3	22.6	20.7	21.7	19.0	273	276	269	1547	2803	34%	
9/7/2006	4.00	7.33	1.78	76%	30%	45.6	85.0	20.7	20.5	22.1	18.9	274	277	272	1254	2272	28%	
9/8/2006	3.98	8.22	2.65	88%	22%	45.2	94.6	29.1	20.3	21.6	19.0	275	277	272	1359	2461	30%	
9/9/2006	4.19	8.38	2.09	72%	26%	47.9	96.7	24.1	20.7	21.6	19.9	275	278	271	723	1309	36%	
9/10/2006	3.46	5.90	1.51	91%	27%	39.3	67.8	17.3	20.4	21.7	19.6	277	278	275	416	754	30%	
9/11/2006	3.65	5.81	1.85	96%	27%	42.2	68.9	21.0	21.1	22.6	20.2	274	276	272	1341	2430	39%	
9/12/2006	4.72	6.35	2.82	62%	1%	53.5	71.4	31.3	20.4	21.8	19.2	272	274	271	430	794	30%	

# Heaths Creek (HC1) Continuous Data Statistics

Date (mm/dd/yyyy)	Dissolved Oxygen					DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)
7/18/2006	3.32	5.90	1.43	86%	47%	43.4	79.2	18.1	28.7	31.0	26.8	371	376	359	3691	5120	51%
8/8/2006	2.16	3.62	0.90	100%	90%	27.7	47.9	11.2	27.3	29.0	25.8	400	403	399	981	1624	24%
8/16/2006	4.56	7.98	1.83	58%	17%	56.0	103.7	21.1	24.2	28.0	21.3	412	415	408	1181	1989	23%
7/25/2006	5.12	7.86	3.62	55%	0%	63.4	102.3	42.0	25.1	27.7	22.7	359	374	354	1423	2292	24%
8/1/2006	4.13	8.54	2.04	72%	30%	54.4	117.1	26.1	28.7	32.1	26.4	374	377	368	2011	3293	32%
8/22/2006	4.14	6.89	1.34	66%	21%	50.8	87.6	15.7	24.9	29.2	22.0	410	414	407	1367	2343	24%
9/6/2006	8.12	11.47	5.37	0%	0%	91.4	136.0	57.6	20.6	23.9	18.1	253	256	248	1097	1950	23%
7/13/2006	4.56	7.46	2.85	67%	4%	57.4	97.3	34.7	26.8	29.3	24.9	365	369	314	---	---	---
7/14/2006	5.26	9.35	2.78	49%	4%	65.6	120.0	33.6	26.1	28.3	24.4	334	359	293	---	---	---
7/15/2006	4.27	7.33	1.86	67%	19%	53.9	95.3	22.5	26.7	29.3	24.6	368	376	358	---	---	---
7/16/2006	3.86	6.37	1.89	78%	26%	49.0	83.7	23.2	27.2	29.7	25.1	376	379	372	---	---	---
7/17/2006	4.04	7.03	2.43	77%	25%	52.6	94.9	30.4	28.6	31.3	26.2	373	377	369	---	---	---
7/19/2006	3.50	5.98	1.76	84%	43%	46.0	81.2	22.3	29.1	31.5	27.4	366	369	359	2102	3309	35%
7/20/2006	3.97	7.46	2.25	81%	29%	52.6	102.1	28.6	29.5	32.1	27.5	366	368	364	2134	3414	35%
7/21/2006	3.61	5.94	2.31	84%	38%	45.5	74.8	29.0	27.3	30.3	24.7	366	369	362	767	1227	28%
7/22/2006	4.21	6.16	2.79	70%	11%	50.4	76.6	32.2	24.1	26.6	22.3	362	365	359	2093	3349	39%
7/23/2006	4.23	6.25	2.36	84%	4%	50.2	77.4	27.0	23.7	26.3	21.4	362	365	360	1844	2902	32%
7/24/2006	4.42	6.08	2.79	73%	1%	52.6	75.0	31.7	23.8	26.3	21.6	362	377	359	2050	3280	33%
7/25/2006	5.20	8.78	3.00	58%	0%	67.2	118.6	37.4	26.7	29.6	24.4	359	361	356	1930	3068	34%
7/27/2006	3.90	5.43	2.08	94%	4%	49.5	89.0	26.4	26.3	27.8	25.5	363	365	360	559	964	28%
7/28/2006	2.90	4.74	1.35	100%	61%	36.2	61.2	16.3	25.6	27.9	23.8	366	368	363	1531	2450	28%
7/29/2006	3.34	6.94	1.80	86%	47%	43.3	93.7	22.3	27.3	30.0	25.4	368	370	366	1541	2508	25%
7/30/2006	4.21	8.13	2.61	78%	12%	55.4	111.6	32.7	27.8	30.6	25.6	369	372	367	1852	3013	35%
7/31/2006	4.40	8.86	2.49	74%	11%	58.4	124.3	31.5	28.3	31.9	26.0	373	375	370	1983	3226	30%
8/2/2006	4.15	7.42	2.47	77%	25%	54.0	100.3	30.8	28.5	31.3	26.3	380	413	375	1641	2671	29%
8/3/2006	3.13	4.87	1.30	100%	45%	39.5	63.0	16.0	27.0	28.6	25.7	383	385	381	1734	2870	58%
8/4/2006	3.75	6.69	0.90	85%	31%	46.1	86.7	10.4	25.3	28.8	22.6	386	440	384	2329	3789	38%
8/5/2006	4.02	7.25	1.68	78%	21%	49.8	94.4	19.7	25.8	29.1	23.4	389	392	387	1601	2604	28%
8/6/2006	3.16	6.30	1.33	96%	47%	39.9	84.6	16.0	26.9	31.2	24.6	394	397	392	1717	2794	32%
8/7/2006	2.27	5.25	0.31	99%	84%	28.9	69.1	3.7	27.3	29.7	25.3	397	401	394	1671	2815	32%
8/9/2006	2.38	3.94	1.15	100%	88%	31.0	53.9	14.5	27.6	30.6	25.4	405	447	402	1290	2136	23%
8/10/2006	2.33	4.53	0.70	100%	77%	30.3	59.6	8.9	27.5	28.6	26.6	410	460	407	914	1539	31%
8/11/2006	2.30	4.15	0.80	100%	76%	29.8	55.0	10.2	27.2	30.2	25.3	412	414	410	1444	2390	25%
8/12/2006	3.65	8.25	2.03	78%	53%	46.8	109.4	24.9	26.4	29.5	24.3	412	414	407	1373	2312	29%
8/13/2006	3.25	6.26	1.28	94%	47%	41.7	84.1	15.9	26.6	29.4	24.4	416	418	414	936	1576	21%
8/14/2006	2.68	4.44	0.47	100%	56%	33.5	56.3	5.9	25.6	27.3	23.9	407	418	402	637	1092	28%
8/15/2006	2.97	5.53	0.76	97%	61%	35.9	71.1	8.5	23.4	27.7	20.2	411	415	408	1471	2477	23%
8/17/2006	3.32	5.61	2.25	99%	34%	41.0	71.3	26.9	24.9	26.6	23.3	414	417	411	823	1386	21%
8/18/2006	2.85	7.52	0.34	92%	60%	36.3	99.6	4.2	26.3	29.4	24.9	415	422	401	814	1421	24%
8/19/2006	2.86	7.05	0.24	91%	59%	36.2	91.9	2.9	25.9	28.1	24.4	401	404	398	913	1566	23%
8/20/2006	3.43	7.90	0.31	71%	57%	43.5	104.1	3.8	25.8	28.9	23.9	406	411	403	1296	2222	29%
8/21/2006	3.69	7.30	0.41	71%	42%	45.8	91.7	5.0	25.1	27.3	23.1	412	416	405	1009	1700	23%
8/23/2006	4.20	6.75	0.76	65%	21%	50.8	86.0	8.8	24.2	28.6	21.2	414	418	410	1347	2310	25%
8/24/2006	4.29	7.74	0.55	60%	18%	52.6	98.6	6.4	24.8	29.4	21.8	421	425	416	1291	2253	23%
8/30/2006	5.38	5.83	4.97	1%	0%	64.4	71.9	58.7	23.4	25.3	21.4	193	200	185	1699	1699	24%
8/31/2006	5.65	6.25	5.01	0%	0%	67.5	78.6	59.9	23.3	26.3	21.1	207	214	200	963	1681	20%
9/1/2006	6.00	7.56	4.74	6%	0%	71.6	94.6	54.0	23.2	26.4	20.9	218	225	214	1519	1854	22%
9/2/2006	6.89	9.96	4.82	9%	0%	82.9	124.4	55.8	23.6	25.9	21.9	228	232	225	710	1262	23%
9/3/2006	7.34	9.83	4.76	1%	0%	85.2	115.8	54.5	22.0	23.2	21.1	235	238	232	447	795	27%
9/4/2006	8.62	13.70	5.43	0%	0%	99.3	168.8	59.0	21.1	24.5	18.6	239	242	234	978	1772	25%
9/5/2006	8.81	13.60	5.63	0%	0%	100.5	164.1	60.6	20.8	24.2	18.4	247	251	240	852	1514	19%
9/7/2006	7.64	10.51	6.00	0%	0%	86.0	124.7	66.2	20.8	23.9	18.3	258	261	254	1053	1907	24%
9/8/2006	7.11	9.01	5.53	0%	0%	80.4	107.1	59.3	21.2	24.2	18.6	265	268	261	900	1631	20%
9/9/2006	5.63	7.49	3.81	23%	0%	62.9	85.3	42.4	20.7	21.8	19.9	273	275	269	396	730	31%
9/10/2006	6.10	8.26	4.64	2%	0%	68.6	95.5	50.7	21.0	22.5	19.4	277	279	275	558	1051	21%
9/11/2006	6.15	7.19	4.07	8%	0%	70.3	83.8	45.3	21.9	23.6	20.2	276	279	274	561	1036	19%
9/12/2006	6.66	9.41	4.66	10%	0%	74.3	105.8	51.6	20.8	22.6	18.9	281	282	279	470	868	29%
9/13/2006	7.72	9.92	5.85	0%	0%	83.1	112.2	60.5	18.6	21.8	16.2	285	288	282	799	1475	17%

## Heaths Creek (HC2) Continuous Data Statistics

Date (mm/dd/yyyy)	Dissolved Oxygen					DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)
7/18/2006	6.00	8.85	4.10	34%	0%	80.1	123.2	52.3	29.6	32.1	27.9	384	409	380	3565	5680	56%
7/25/2006	7.87	11.87	5.26	0%	0%	100.8	158.1	64.3	26.5	29.2	24.5	399	403	396	3440	5540	57%
8/1/2006	5.94	10.56	2.80	34%	1%	81.0	150.2	36.4	29.8	33.2	27.6	414	418	412	4006	6561	65%
8/16/2006	3.79	6.98	1.79	69%	42%	47.3	89.0	21.2	25.5	28.8	23.5	415	419	410	2941	4954	57%
8/8/2006	4.87	7.15	2.97	56%	2%	64.2	96.1	37.9	28.6	30.4	27.2	413	415	409	2024	3374	50%
8/22/2006	3.74	7.69	1.16	7%	40%	47.3	103.3	13.9	26.1	30.1	24.2	414	421	412	3359	5657	58%
8/29/2006	3.28	3.97	2.19	100%	20%	39.8	48.5	26.4	24.1	25.2	23.4	190	204	175	1199	1841	37%
9/6/2006	2.44	3.33	1.22	100%	93%	27.3	37.2	13.6	20.5	22.0	19.2	233	237	230	2075	3720	44%
7/13/2006	6.80	10.11	4.70	7%	0%	86.7	133.5	58.0	27.6	30.3	25.7	389	413	349	3342	5259	58%
7/14/2006	5.63	8.95	3.97	36%	0%	71.1	116.8	48.3	27.1	29.6	25.2	368	385	352	4162	6445	72%
7/15/2006	5.00	8.00	3.39	58%	0%	64.0	105.8	41.6	27.7	30.5	25.6	377	392	370	4266	6606	64%
7/16/2006	5.09	7.64	3.52	47%	0%	65.7	101.6	43.6	28.2	30.8	26.2	378	395	371	3431	5399	60%
7/17/2006	5.42	8.12	3.51	44%	0%	71.1	110.2	44.3	29.1	31.9	27.1	381	405	377	4089	6436	62%
7/19/2006	6.25	9.04	4.19	27%	0%	85.0	127.3	55.0	30.2	32.7	28.4	387	412	378	3841	6045	63%
7/20/2006	6.22	8.65	3.90	30%	0%	85.1	122.1	51.5	30.4	32.6	28.7	388	417	383	3892	6227	64%
7/21/2006	5.27	7.30	3.53	45%	0%	69.4	99.0	46.0	28.6	30.9	26.7	391	428	385	2472	5711	56%
7/22/2006	4.80	8.41	1.99	58%	30%	61.1	110.3	24.5	26.4	28.9	25.0	394	429	388	3625	5705	60%
7/23/2006	5.82	9.53	2.99	44%	1%	73.7	125.7	36.4	28.0	28.7	24.2	400	433	393	3982	6266	69%
7/24/2006	6.97	11.45	2.95	28%	2%	88.5	149.0	59.9	28.0	28.7	24.0	398	442	392	3898	5819	59%
7/26/2006	7.82	12.30	4.63	3%	0%	102.9	168.8	68.4	27.7	30.7	25.6	399	451	395	3926	6282	69%
7/27/2006	6.73	7.90	5.69	0%	0%	87.3	104.5	72.9	27.4	28.8	26.6	400	435	397	1087	1740	54%
7/28/2006	5.24	9.21	2.53	50%	8%	67.9	123.1	31.9	27.2	29.8	25.4	405	447	401	3214	5142	59%
7/29/2006	7.11	13.00	3.62	29%	0%	94.4	176.5	45.9	28.5	31.4	26.4	407	469	402	3544	5670	55%
7/30/2006	6.63	11.13	3.76	28%	0%	88.5	154.8	48.2	28.7	31.4	26.8	408	410	406	2732	4371	51%
7/31/2006	6.08	10.55	2.66	33%	3%	82.2	149.1	34.3	29.2	32.5	27.1	411	416	408	3900	6347	60%
8/2/2006	5.84	11.15	2.53	42%	9%	79.7	158.1	33.1	29.9	32.6	28.0	415	418	411	3369	5482	60%
8/3/2006	4.67	7.62	2.66	58%	16%	61.6	102.1	34.5	28.5	30.1	27.7	413	414	410	2082	3446	70%
8/4/2006	4.01	8.94	1.45	68%	42%	52.2	120.9	18.0	27.4	30.2	25.8	415	419	413	3644	5928	60%
8/5/2006	4.65	8.57	1.92	60%	31%	61.0	117.1	23.9	27.6	31.1	25.6	417	420	416	3496	5689	62%
8/6/2006	4.77	7.25	2.08	49%	19%	62.7	97.8	26.3	28.0	31.2	26.2	415	421	396	3008	4894	56%
8/7/2006	4.71	9.37	2.14	58%	21%	62.3	127.6	27.1	28.5	31.3	26.6	411	416	405	3269	5410	62%
8/9/2006	4.39	7.53	1.34	55%	33%	58.9	102.8	17.3	28.9	31.7	27.0	415	418	411	2992	4952	53%
8/10/2006	4.50	6.92	1.86	57%	22%	59.6	92.6	24.2	28.6	29.4	27.8	413	416	407	1765	2972	59%
8/11/2006	4.83	8.99	2.44	56%	19%	64.2	123.1	31.4	28.5	31.4	27.2	414	416	408	2993	4954	51%
8/12/2006	5.66	11.86	2.58	55%	18%	74.5	161.3	32.8	27.9	30.7	26.6	413	415	406	2606	4389	55%
8/13/2006	4.81	7.94	1.93	51%	22%	63.2	107.4	24.4	27.9	30.5	26.2	414	418	406	2363	3980	52%
8/14/2006	4.02	6.71	2.32	81%	21%	51.1	85.6	29.5	26.6	27.6	25.6	411	414	408	1105	1862	48%
8/15/2006	3.23	6.23	1.22	85%	53%	40.6	82.0	14.7	25.5	29.0	23.7	414	417	411	3714	6256	59%
8/17/2006	3.97	6.75	1.41	78%	29%	49.6	86.2	16.9	26.3	28.7	24.5	414	418	409	1813	3053	46%
8/18/2006	5.16	11.45	2.26	58%	15%	65.5	149.8	27.9	27.0	30.4	25.4	411	417	401	2066	3541	60%
8/19/2006	4.34	7.90	1.91	72%	18%	54.8	103.9	23.4	26.9	29.6	25.5	409	414	402	2617	4486	65%
8/20/2006	4.22	7.82	1.79	68%	28%	53.0	102.1	21.9	26.6	29.2	25.4	411	413	407	2531	4262	55%
8/21/2006	3.84	6.52	1.69	73%	33%	47.8	82.8	20.4	26.2	28.2	24.9	412	416	403	2193	3694	51%
8/23/2006	3.87	6.84	1.51	70%	40%	49.4	92.3	18.1	26.0	30.5	23.6	413	418	409	3098	5218	55%
8/24/2006	4.09	8.44	1.64	69%	31%	52.4	112.5	19.8	26.0	30.1	23.7	413	418	410	3194	5574	58%
8/25/2006	5.33	6.80	2.73	42%	1%	64.6	80.3	32.8	24.0	26.2	22.2	295	411	165	245	521	13%
8/26/2006	6.08	7.12	5.27	0%	0%	73.4	85.3	62.5	23.8	24.5	23.1	131	215	106	---	---	---
8/27/2006	5.43	5.98	4.98	4%	0%	66.4	72.9	60.5	24.4	24.8	24.0	180	183	133	---	---	---
8/28/2006	4.39	5.14	3.06	86%	0%	54.2	63.3	38.2	24.9	25.9	24.4	188	197	180	---	---	---
8/30/2006	3.14	3.41	2.81	100%	15%	37.6	42.0	32.8	23.4	25.5	22.2	186	190	181	1463	2553	36%
8/31/2006	2.99	3.70	2.51	100%	60%	35.6	45.8	29.0	23.1	25.7	21.7	194	197	190	1638	2858	35%
9/1/2006	2.86	3.92	1.93	100%	61%	33.7	47.7	22.2	22.7	25.1	21.2	204	210	197	1360	2417	35%
9/2/2006	3.07	4.29	1.79	100%	47%	36.3	50.7	20.7	22.9	24.5	21.8	210	215	205	1319	2303	42%
9/3/2006	2.92	3.92	1.97	100%	58%	33.9	45.5	22.6	22.0	22.9	21.5	215	219	212	730	1273	43%
9/4/2006	2.36	3.46	1.49	100%	97%	26.9	40.2	16.7	21.2	22.6	20.2	225	232	219	1058	1881	27%
9/5/2006	2.85	3.77	1.77	100%	64%	32.2	43.3	20.1	20.7	22.2	19.5	228	232	222	1585	2817	36%
9/7/2006	2.45	3.60	1.30	100%	86%	27.4	39.7	14.1	20.5	22.1	19.2	236	244	231	1725	3066	39%
9/8/2006	2.68	4.14	0.86	100%	65%	30.0	46.8	9.4	20.7	22.4	19.3	241	245	238	1831	3255	41%
9/9/2006	2.67	3.64	1.69	100%	83%	29.7	40.4	18.7	20.6	21.5	20.1	246	250	242	715	1321	56%
9/10/2006	2.43	3.51	1.75	100%	90%	27.1	39.8	19.2	20.6	21.6	19.8	251	256	247	1033	1907	39%
9/11/2006	3.07	4.42	1.85	100%	48%	34.6	50.5	20.4	21.1	22.6	20.2	252	257	247	1151	2084	37%
9/12/2006	3.44	4.77	1.98	100%	29%	38.1	52.7	21.9	20.4	21.7	19.5	255	259	248	942	1706	57%
9/13/2006	3.25	4.91	2.36	100%	49%	35.2	54.5	25.1	19.1	20.7	18.1	260	263	258	1744	3220	38%

### Heaths Creek (HC3) Continuous Data Statistics

Date (mm/dd/yyyy)	Dissolved Oxygen					DO Saturation			Temperature			Specific Conductivity			Light Intensity		
	Mean (mg/L)	Maximum (mg/L)	Minimum (mg/L)	Records < 5 (%)	Records < 3 (%)	Mean (% sat.)	Maximum (% sat.)	Minimum (% sat.)	Mean (degrees C)	Maximum (degrees C)	Minimum (degrees C)	Mean (uS/cm)	Maximum (uS/cm)	Minimum (uS/cm)	Mean 24 Hour (lumens/sq.ft.)	Mean Photic (lumens/sq.ft.)	Photic % of Reference (lumens/sq.ft.)
7/18/2006	5.08	7.50	3.42	53%	0%	66.1	100.1	42.8	28.7	31.3	26.7	404	430	392	4295	6886	68%
7/25/2006	6.09	9.79	3.09	35%	0%	77.1	128.6	36.1	25.9	29.0	23.2	475	481	467	4387	7020	73%
8/29/2006	4.68	4.93	4.24	100%	0%	56.5	60.5	50.9	23.8	24.9	23.1	187	192	181	---	---	---
8/1/2006	5.55	8.80	2.39	36%	10%	74.9	124.0	30.4	29.2	32.6	26.5	492	500	484	4663	7638	75%
8/8/2006	5.29	8.79	2.24	48%	12%	68.1	117.0	27.9	27.7	30.3	25.7	508	520	499	3103	5136	76%
8/16/2006	7.98	14.35	2.44	26%	4%	99.0	186.8	28.0	25.3	29.3	22.0	517	538	496	4191	7059	81%
8/22/2006	3.96	6.58	0.86	65%	29%	49.7	86.7	10.0	25.6	29.7	22.9	522	542	508	3893	6557	68%
7/13/2006	6.06	8.40	3.90	28%	0%	76.8	110.9	47.0	27.1	30.6	24.8	426	454	385	4151	6532	72%
7/14/2006	6.15	8.77	4.40	18%	0%	76.7	114.1	52.7	26.3	29.0	24.4	384	400	366	4834	7485	84%
7/15/2006	6.04	8.68	4.59	17%	0%	76.4	115.3	55.4	27.1	30.3	24.8	390	419	373	4822	7467	73%
7/16/2006	5.51	8.09	4.16	34%	0%	70.3	107.7	51.2	27.6	30.7	25.4	390	409	382	4334	6821	76%
7/17/2006	5.27	7.43	3.20	49%	0%	68.5	99.9	39.6	28.6	31.8	26.1	393	404	385	4696	7390	71%
7/19/2006	5.13	7.40	2.64	48%	2%	67.6	101.4	33.2	29.3	32.2	27.1	408	430	398	4436	6982	73%
7/20/2006	4.73	6.99	2.73	52%	5%	62.6	95.5	34.6	29.6	32.1	27.5	412	430	404	4652	7443	76%
7/21/2006	4.20	5.95	2.42	73%	22%	53.0	75.4	30.6	27.3	30.0	25.0	429	443	414	1754	2761	63%
7/22/2006	4.26	8.07	0.88	54%	46%	52.2	101.4	10.4	25.0	27.3	23.6	450	467	435	4014	6317	73%
7/23/2006	5.22	8.90	1.28	48%	23%	64.1	112.3	14.8	24.9	28.0	22.4	462	478	447	5241	8248	91%
7/24/2006	5.36	8.55	2.25	46%	11%	65.7	109.3	26.1	25.0	28.3	22.4	470	475	463	4809	7569	76%
7/26/2006	6.28	9.41	3.61	30%	0%	81.9	127.4	44.7	27.1	30.5	24.7	472	478	465	3509	5615	62%
7/27/2006	5.13	6.82	3.45	40%	0%	65.6	87.5	43.6	26.7	28.0	25.8	473	480	468	1055	1688	53%
7/28/2006	4.75	8.23	1.82	51%	25%	61.2	109.4	22.2	26.7	29.6	24.4	480	485	474	3900	6240	72%
7/29/2006	5.96	9.38	3.10	40%	0%	78.7	130.6	38.6	28.2	31.7	25.5	481	491	470	4353	6965	68%
7/30/2006	5.99	9.44	2.94	35%	3%	79.6	129.7	37.0	28.4	30.9	25.9	484	494	465	4607	7372	86%
7/31/2006	5.98	9.25	3.12	30%	0%	79.8	128.4	39.6	28.6	31.4	26.4	487	514	476	4757	7740	73%
8/2/2006	5.38	8.28	2.54	44%	15%	72.7	116.2	32.5	29.3	32.0	26.8	492	517	478	4184	6808	74%
8/3/2006	4.71	8.13	2.40	61%	17%	60.6	106.0	30.4	27.2	28.4	26.2	492	499	486	2457	4066	82%
8/4/2006	5.12	8.38	1.23	50%	20%	65.3	111.2	14.8	26.3	29.6	23.8	499	511	492	4946	8048	81%
8/5/2006	5.90	9.28	2.65	35%	5%	75.8	124.5	32.0	26.6	30.0	23.9	502	516	496	4227	6877	75%
8/6/2006	5.17	8.52	2.25	49%	15%	67.8	117.9	27.6	27.5	31.6	24.4	503	518	478	3665	5963	69%
8/7/2006	5.25	9.80	1.93	47%	36%	68.4	132.5	23.8	27.5	30.5	25.1	506	518	492	3460	5726	66%
8/9/2006	4.95	9.05	2.09	57%	28%	65.1	124.0	25.6	28.5	32.6	25.4	513	526	499	3799	6288	67%
8/10/2006	3.73	7.87	0.96	69%	40%	47.8	103.2	12.0	27.7	29.5	26.3	517	521	506	1622	2732	55%
8/11/2006	4.99	10.52	0.66	50%	35%	65.4	143.9	8.1	28.1	32.2	25.5	515	528	498	3884	6429	67%
8/12/2006	5.27	10.47	1.78	52%	26%	67.0	134.5	21.5	27.0	30.0	24.9	503	526	450	2870	4833	61%
8/13/2006	6.18	10.61	1.40	44%	24%	80.0	142.6	16.7	27.5	30.9	24.2	507	527	439	2808	4729	62%
8/14/2006	5.12	11.36	1.01	53%	28%	63.3	142.8	12.2	25.8	27.5	23.8	514	526	493	1037	1746	45%
8/15/2006	6.88	15.36	0.50	45%	32%	86.9	198.9	5.7	25.3	30.8	21.0	509	531	424	4654	7838	74%
8/17/2006	7.56	13.46	2.34	34%	12%	94.1	172.7	27.5	25.6	28.2	23.2	515	533	481	2215	3731	56%
8/18/2006	6.54	13.35	2.26	46%	15%	82.4	174.8	27.2	26.3	29.6	24.4	515	532	459	2341	4012	68%
8/19/2006	5.21	10.99	0.87	52%	34%	65.6	143.9	10.5	26.2	29.3	24.2	510	528	466	2390	4098	59%
8/20/2006	4.35	8.55	0.93	55%	36%	54.5	110.4	11.1	26.1	28.9	24.0	517	532	495	2988	5033	65%
8/21/2006	4.27	7.76	0.62	57%	32%	53.0	99.1	7.3	25.6	27.0	23.5	519	536	513	2703	4552	62%
8/23/2006	3.84	7.13	1.03	65%	38%	48.3	94.2	11.9	25.0	29.2	21.9	528	544	519	3728	6390	68%
8/24/2006	3.66	6.80	0.57	66%	44%	46.2	89.7	6.7	24.9	29.0	21.9	531	546	525	3674	6412	67%
8/25/2006	4.33	6.57	1.23	57%	33%	51.8	77.8	15.0	23.3	24.5	22.3	348	536	112	523	958	24%
8/26/2006	6.09	7.28	5.52	0%	0%	73.4	86.7	67.2	23.6	24.3	22.8	112	131	85	---	---	---
8/27/2006	5.72	6.10	5.37	0%	0%	69.8	75.2	65.1	24.3	24.8	23.9	141	170	118	---	---	---
8/28/2006	5.32	5.77	4.87	0%	0%	65.5	70.6	60.2	24.8	25.7	24.1	175	180	170	---	---	---
8/30/2006	4.35	4.65	4.13	100%	0%	51.5	55.5	48.9	23.0	23.8	22.1	197	202	192	---	---	---
8/31/2006	4.24	4.81	3.47	100%	0%	49.1	56.3	39.7	22.6	23.5	21.8	208	215	203	---	---	---
9/7/2006	5.67	7.80	3.16	30%	0%	64.4	91.3	34.5	20.5	22.7	18.9	263	269	259	2514	4554	58%
9/8/2006	6.13	8.21	3.42	24%	0%	69.9	95.6	37.9	20.7	23.0	18.9	267	273	263	2248	4072	51%
9/9/2006	6.07	7.39	4.80	3%	0%	67.9	83.6	53.2	20.0	20.8	19.5	273	276	270	686	1267	54%
9/10/2006	6.12	7.89	4.46	11%	0%	69.2	91.4	49.5	20.4	22.1	19.2	275	282	268	1583	2980	61%
9/11/2006	7.16	9.14	5.37	0%	0%	82.2	107.0	60.0	21.1	22.6	19.8	275	278	272	1810	3342	60%
9/12/2006	5.38	7.16	3.67	24%	0%	60.0	82.2	40.3	19.9	21.3	18.9	284	292	275	788	1428	48%
9/13/2006	5.10	6.92	3.45	47%	0%	55.8	77.3	37.4	18.8	20.0	18.0	294	307	288	2159	3986	47%



Discrete Water Quality Data – Continuous Sites

Site (ID)	Date (M/D/Y)	Time (24:00)	TP (mg/L)	TN (mg/L)	NO <sub>2</sub> +NO <sub>3</sub> (as N, mg/L)	Ammonia (as Total N, mg/L)	S-Chla (ug/L)	Per-Chla (mg/m <sup>2</sup> )	TSS (mg/L)	VSS (mg/L)	CBOD-20 (mg/L)	pH (SU)
CC1	7/18/2006	8:12	0.146	1.66	<0.02	<0.03	43	45	16	8	10	7.1
CC1	7/24/2006	15:40	0.118	1.23	<0.02	0.38	33	60	18	8	11	8.1
CC1	7/31/2006	17:00	0.272	2.86	0.12	0.16	59	54	13	9	19	8.2
CC1	8/7/2006	17:40	0.154	1.18	0.13	0.07	40	59	31	13	11	8.4
CC1	8/14/2006	17:00	0.165	1.81	<0.02	0.04	32	84	83	18	13	8.5
CC1	8/21/2006	14:45	0.196	2.21	<0.02	0.10	48	72	33	10	7	8.0
CC1	8/28/2006	16:30	0.126	1.32	<0.02	<0.03	60	82	15	11	12	8.7
CC1	9/5/2006	14:30	0.110	0.75	<0.02	<0.03	43	76	44	10	11	8.0
CC1	9/13/2006	12:30	0.101	0.88	<0.02	<0.03	30	81	38	8	6	7.8
LDC2	7/17/2006	11:00	0.082	2.18	0.11	<0.03	9	57	20	9	2	7.4
LDC2	7/24/2006	10:07	0.076	1.11	0.05	<0.03	11	19	7	5	4	7.2
LDC2	7/31/2006	10:00	0.061	0.80	0.13	0.20	16	59	23	11	6	7.3
LDC2	8/7/2006	11:00	0.087	1.25	0.17	0.23	33	54	15	6	9	7.5
LDC2	8/14/2006	11:00	0.089	2.23	<0.02	0.11	16	65	21	8	7	7.5
LDC2	8/21/2006	11:30	0.106	2.44	<0.02	0.13	46	54	16	6	6	7.3
LDC2	8/28/2006	12:30	0.096	1.16	0.07	0.05	53	46	18	4	7	7.1
LDC2	9/5/2006	10:40	0.054	0.35	<0.02	<0.03	16	47	5	4	4	7.2
LDC2	9/13/2006	10:30	0.051	0.47	0.02	0.05	15	54	20	7	4	6.9
HC2	7/18/2006	14:52	0.172	1.18	0.05	<0.03	24	40	-----	-----	4	7.6
HC2	7/25/2006	10:00	0.150	1.34	<0.02	<0.03	45	40	15	10	5	7.6
HC2	8/1/2006	9:15	0.147	1.36	0.12	0.18	36	25	13	7	5	7.3
HC2	8/8/2006	10:05	0.140	1.06	0.13	0.19	13	26	8	5	9	7.4
HC2	8/16/2006	10:00	0.248	1.48	<0.02	0.13	32	74	50	5	9	7.2
HC2	8/22/2006	12:00	0.136	1.57	<0.02	0.15	4	40	8	7	3	7.5
HC2	8/29/2006	14:00	0.605	3.32	0.69	0.14	1	87	38	9	7	7.2
HC2	9/6/2006	11:05	0.520	1.45	0.08	<0.03	3	51	12	5	6	7.2
HC2	9/14/2006	12:00	0.428	1.71	0.12	0.15	21	48	28	8	4	7.3

TP- Total Phosphorus      CBOD- 20 day CBOD

TN- Total Nitrogen      VSS- Volatile Suspended Solids

Ammonia- Total Ammonia as Nitrogen      S-Chla- Suspended Chlorophyll-a

NO<sub>2</sub>+NO<sub>3</sub>- Nitrite + Nitrate N      Per-Chla- Periphyton Chlorophyll-a

TSS- Total Suspended Solids      pH- *potential hydrogenii*

*Tributary Discrete Water Quality Data*

Site	Date (mm/dd/yyyy)	Time (24:00)	Dissolved Oxygen (mg/L)	DO Saturation (%)	Temperature (degree C)	SC (uS/cm)	pH (SU)
HC4	7/12/2006	7:55	1.81	21.4	24.2	516	7.43
	7/19/2006	8:03	1.63	20.4	27.3	501	7.43
	7/25/2006	7:31	3.4	39.8	23.3	516	7.38
	8/1/2006	7:30	1.4	17.4	26.2	531	7.41
	7/12/2006	8:10	1.47	17.5	20.3	586	---
HC5	7/19/2006	7:47	1.34	17.1	27.6	397	7.34
	7/25/2006	7:44	1.92	22.8	23.6	390	7.44
	8/1/2006	7:40	1.52	19.1	27.0	424	7.38
HC6	7/12/2006	8:55	0.81	10.2	21.9	518	---
	7/19/2006	7:16	1.49	10.4	25.3	461	7.44
	7/25/2006	8:15	1.66	18.7	21.2	459	7.56
HC7	7/12/2006	8:30	0.66	7.1	21.7	507	---
	7/19/2006	7:33	0.68	9.2	28.9	407	7.2
	7/25/2006	7:57	1.9	22.8	24.5	447	7.38
	8/1/2006	7:50	1.26	16.2	27.8	402	7.3
HC8	7/19/2006	8:23	3.58	46.9	29.6	405	7.4
LDC6	7/17/2006	8:36	3.32	41.1	26.2	124	7.29
	7/24/2006	8:34	3.1	35.5	21.9	185	6.97
	7/31/2006	8:30	2.5	30.9	26.3	226	7.09

## **APPENDIX G**

### **METHOD FOR DETERMINING EXPECTED STAGNANT FLOW DAYS**

**APPENDIX G  
METHOD FOR DETERMINING EXPECTED STAGNANT FLOW DAYS**

In order to investigate the representativeness of the streamflow conditions exhibited during the dissolved oxygen survey period, the number of stagnant flow days expected to occur at each of the three study sites was calculated using streamflow, precipitation, and drainage area data from nearby weather stations and USGS stream gaging stations.

***Data Sources and Preparation***

MEC used historical flow data from representative USGS gage stations to determine the expected number of stagnant flow days from July through September at the three reference sites. The criteria for selecting the USGS gages was the same as described in Appendix E. The average number of stagnant flow days for each USGS gage station was determined by the following steps:

1. The number of flow records over the entire period of record was totaled, but only for the months of June through September;
2. The number of records with a flow less than 0.1 cubic foot per second (cfs) were totaled (i.e., the number of stagnant records were totaled) for the same period and months as defined in step 1; and
3. The number of stagnant records was divided by the total number of records and multiplied by 92 (i.e., the number of days from June through September).

The number of stagnant flow days averaged over the entire period of record for each USGS gage station is presented in Table TG-1 below. Stagnant flow days were also totaled by year for purposes of comparison with annual precipitation.

**Table TG-1.** Drainage Areas and Average Number of Stagnant Flow Days from July through September at Select USGS Gage Stations

Little Drywood Creek			Cedar Creek			Heaths Creek		
Gage (#)	Catchment (mi <sup>2</sup> )	Stagnant Days (#)	Gage (#)	Catchment (mi <sup>2</sup> )	Stagnant Days (#)	Gage (#)	Catchment (mi <sup>2</sup> )	Stagnant Days (#)
06916500	198	15	06918700	1.3	74	06894500	20	19
06917000	295	12	06919500	420	5	06895000	159	6
06917240	84	44	06921200	112	17	06896000	248	0
06917380	292	7	06925200	4.2	67	06906800	543	0
06917500	408	2	06926200	0.8	72	06907000	598	1
06921590	256	12	06927000	257	0			
06921720	414	5						
06921740	1.2	74						

In order to consider the effects of precipitation on the observed number of stagnant flow days, up to three climate stations were identified as representative of each USGS gage station. The climate stations were selected based on their proximity to the USGS gage stations and for the completeness of their recordset. It was necessary to select multiple climate stations since many climate stations have large periods of missing precipitation data and do not necessarily have a period of record corresponding with the USGS gage stations.

Precipitation data from the selected climate stations were obtained from the Midwestern Regional Climate Center<sup>1</sup>. The precipitation data were totaled for each climate station by year for the months of June through September. Although stagnant flow days were assessed from July through September, precipitation totals included the month of June in order to account for the effects of antecedent rainfall. Where annual precipitation totals were not available, they were obtained from the next closest station; however, no more than 3 stations were considered for any given USGS gage station.

### *Data Analysis*

The initial goal of this analysis was to develop an equation to predict the number of stagnant flow days that is expected at each of the study sites based on drainage areas, streamflows, and precipitation amounts observed at nearby gage and weather stations. Preliminary graphical analysis of the variables indicated that there is a relationship between the number of stagnant days observed (DAYS), the log transformed drainage area (LNDRAIN) and the log transformed rain data (LNRAIN) at each of the study sites. Pearson correlation analyses supported this determination (graphical and full correlation analyses not shown).

Although the preliminary analysis indicated that relationships were present between the variables, multiple regression analyses that attempted to relate both drainage area and precipitation to stagnant flow days at the three study sites resulted in weak and/or insignificant predictive models (analysis not shown). It is undeniable that both the drainage basin and precipitation inputs are the predominant drivers of streamflow; however, the multiple regression models did not demonstrate the importance of these variables. One reason for the poor models may be the paucity and inconsistency of the precipitation data that was available from the weather stations. The inadequacy of the precipitation data is evident in that a correlation analysis between stagnant flow days and precipitation resulted in a fairly low coefficient as compared to that between stagnant flow days and drainage area at each of the study sites (Table TG-2.). Although other factors such as drainage basin shape, geology, slope, and degree of groundwater influence may also be important in predicting stagnant days, one would expect precipitation to be a more dominant factor than this analysis suggests.

**Table TG-2.** Correlations for variables used in multiple regression analysis.

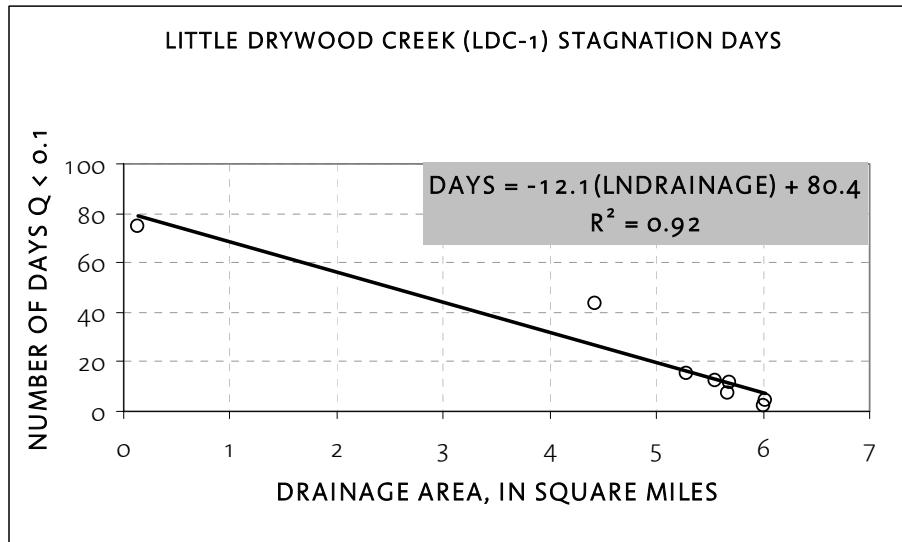
	Little Drywood			Heaths Creek			Cedar Creek		
	DAYS	LNDRAIN	LNRAIN	DAYS	LNDRAIN	LNRAIN	DAYS	LNDRAIN	LNRAIN
DAYS	1	---	---	1	---	---	1	---	---
LNDRAIN	-0.59	1	---	-0.49	1	---	-0.84	1	---
LNRAIN	-0.36	-0.002	1	-0.23	-0.003	1	-0.35	0.05	1

Because of the weak relationships derived in the multiple regression analysis, simple regression models relating drainage area and average number of stagnant days observed at each USGS station were investigated. Linear regressions between the

---

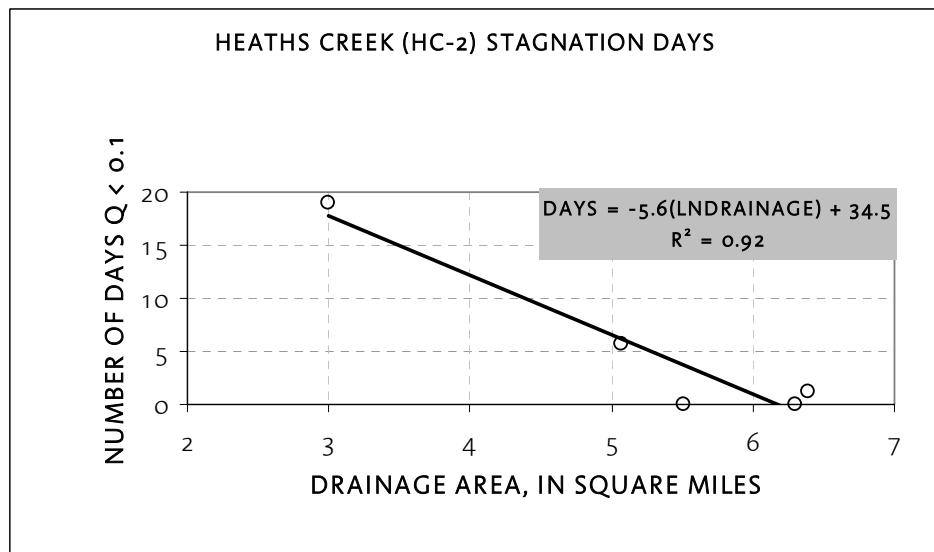
<sup>1</sup> The Midwestern Regional Climate Center (MRCC) is a cooperative program of the Illinois State Water Survey and the National Climatic Data Center.

number of stagnant days observed and drainage area indicated very strong and significant relationships at each of the study sites (Figures FG-1, FG-2, and FG-3).



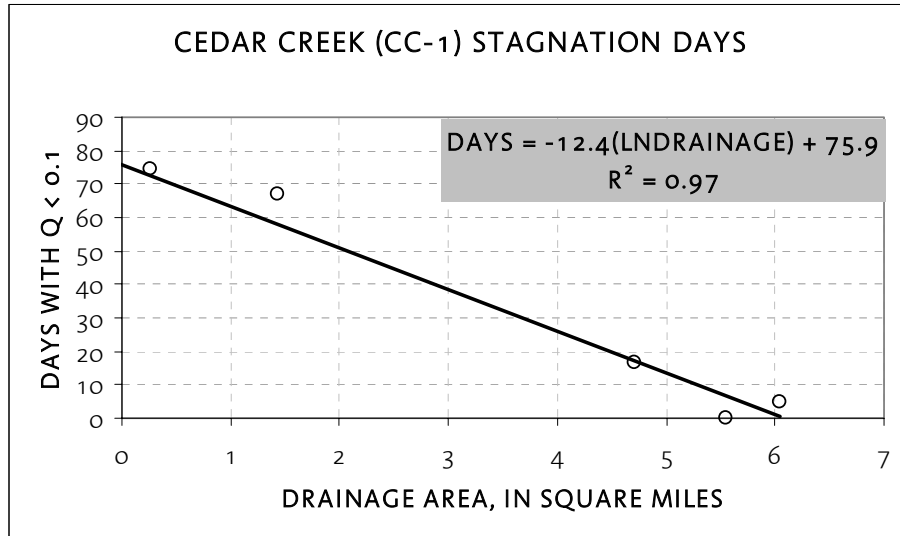
ANOVA					SUMMARY				
	df	SS	MS	F	Sig. F	Coeff.	SE	t-Stat	P-value
Reg.	1	3998.5	3998.5	65.7	0.00018	80.36	7.77	10.34	4.782E-05
Res.	6	365.3	60.9	---	---	-12.14	1.50	-8.10	0.00018
Total	7	4363.7	---	---	---				

Figure FG-1. Little Drywood Creek regression results.



ANOVA					SUMMARY				
	df	SS	MS	F	Sig. F	Coeff.	SE	t-Stat	P-value
Reg.	1	237.4	237.4	33.4	0.01	34.53	5.20	6.61	0.007
Res.	3	21.3	7.1	---	---	-5.59	0.97	-5.77	0.010
Total	4	258.7	---	---	---				

Figure FG-2. Heaths Creek regression results.



ANOVA					SUMMARY				
	df	SS	MS	F	Sig. F	Coeff.	SE	t-Stat	P-value
Reg.	1	6093.8	6093.8	123.5	0.0004	75.85	4.40	17.34	6.49E-05
Res.	4	197.3	49.3	---	---	-12.43	1.10	-11.11	0.0004
Total	5	6291.2	---	---	---				

Figure FG-3. Cedar Creek regression results.

Regression diagnostics were performed on each of the regressions above in order to ensure that the assumptions of linear regressions were not violated and to evaluate the influence of any outliers (analysis not shown). There were no major violations of the linear model assumptions and any outliers present are not significantly influencing the predictive models. The three models presented here are therefore useful for predicting the number of stagnant days that can be expected during the summer months.

### Conclusions

Using the calculated linear regression models, we predicted the number of stagnant days that would be expected at each of our study sites based on their respective drainage areas (Table TG-3). The regression models predict that the streams should have exhibited many fewer days of stagnant conditions than we observed. This indicates that the flow conditions experienced during the Summer 2006 sampling period may not be representative of the long-term summer average.

Table TG-3. Observed and calculated days with discharge < 0.1 cfs at AERDOR streams.

	Drainage Area	Deployment Days	Days < 0.1 cfs	
	(square miles)	(number)	(observed)	(expected)*
LDC2	53.9	63	51	22
HC2	71.8	65	57	7
CC1	87.6	63	63	14

\* Normalized to the number of deployment days.

## **APPENDIX H**

### **STREAM METABOLISM PARAMETERS**

APPENDIX H  
STREAM METABOLISM PARAMETERS

Little Drywood Creek Site 2 (LDC2)

Date (M/D/Y)	$P_{av}$ (mgO L <sup>-1</sup> day <sup>-1</sup> at 20°C)	$R_{av}$ (mgO L day at 20°C)	Reaeration (day <sup>-1</sup> at 20°C)	M.R.E. (%)
7/17/06	1.6	5.4	1.6	2.90%
7/24/06	2.5	7.0	1.4	3.40%
7/31/06	3.4	5.7	0.7	2.50%
8/7/06	3.2	5.8	0.8	4.30%
8/14/06	5.2	11.8	1.9	5.40%

$P_{av}$  - Average Daily Photosynthesis  
 $R_{av}$  - Average Daily Respiration

M.R.E- Median Relative Error

Heaths Creek Site 2 (HC2)

Date (M/D/Y)	$P_{av}$ (mgO L <sup>-1</sup> day <sup>-1</sup> at 20°C)	$R_{av}$ (mgO L day at 20°C)	Reaeration (day <sup>-1</sup> at 20°C)	M.R.E. (%)
7/18/2006	2.6	3.1	0.2	3.0%
7/25/2006	5.7	5.7	1.6	3.9%
8/1/2006	4.7	5.5	0.6	4.5%
8/8/2006	5.1	6.5	0.9	5.7%
8/16/2006	4.1	8.3	1.2	4.7%
8/22/2006	5.2	8.5	0.8	12.6%
9/6/2006	0.0	9.0	1.4	14.7%
9/14/2006	1.0	4.0	0.8	8.8%

$P_{av}$  - Average Daily Photosynthesis  
 $R_{av}$  - Average Daily Respiration

M.R.E- Median Relative Error

Cedar Creek 1 (CC1)

Date (M/D/Y)	$P_{av}$ (mgO L <sup>-1</sup> day <sup>-1</sup> at 20°C)	$R_{av}$ (mgO L day at 20°C)	Reaeration (day <sup>-1</sup> at 20°C)	M.R.E. (%)
7/18/2006	10.6	10.0	0.9	9.6%
7/24/2006	8.7	9.1	0.4	3.7%
7/31/2006	8.1	10.4	1.3	5.4%
8/7/2006	6.9	7.9	0.3	6.4%
8/14/2006	10.0	13.7	1.4	3.7%
8/21/2006	8.5	13.1	1.4	5.6%
8/28/2006	11.1	13.5	1.0	5.5%
9/5/2006	8.8	10.9	1.0	4.4%
9/13/2006	6.6	11.8	1.7	6.5%

$P_{av}$  - Average Daily Photosynthesis  
 $R_{av}$  - Average Daily Respiration

M.R.E- Median Relative Error

## **APPENDIX I**

### **PARAMETERS FOR CALIBRATED BIOMASS- BASED METABOLISM MODEL**

APPENDIX I  
PARAMETERS FOR CALIBRATED BIOMASS-BASED METABOLISM MODEL

Little Drywood Creek (LDC2)

Model Parameter	Unit	Calibrated Value at 20°C	Minimum Boundary	Maximum Boundary
Sestonic Algae Max Growth Rate	day <sup>-1</sup>	3	1	3
Sestonic Algae Base Respiration Rate	day <sup>-1</sup>	0.05	0.05	0.25
Benthic Algae Growth Rate	day <sup>-1</sup>	0.5	0.5	5
Benthic Algae Respiration Rate	day <sup>-1</sup>	0.1	0.1	1.25
Benthic Nitrogen Half-Saturation Constant	mg N L <sup>-1</sup>	0.3	0.1	0.3
Benthic Phosphorus Half-Saturation Constant	mg P L <sup>-1</sup>	0.1	0.05	0.1
Sestonic Nitrogen Half-Saturation Constant	mg N L <sup>-1</sup>	0.01	0.01	0.15
Sestonic Phosphorus Half-Saturation Constant	mg P L <sup>-1</sup>	0.001	0.001	0.05
Community Light Half-Saturation Constant		Varies by Day	observed min = 12%	observed max = 36%
CBOD Decay	day <sup>-1</sup>	0.005	0.005	0.6
NBOD Decay	day <sup>-1</sup>	0.15	0.005	0.6
SOD	gO m <sup>-2</sup> day <sup>-1</sup>	1.75	0.1	3
Biomass: Chla Ratio	gDW:gChla	200	50	200
Carbon Stoichiometry	gC:gDW	0.4	constant	constant
Percent Bottom Coverage Periphyton	%	2%	2%	40%
Percent Bottom Coverage SOD	%	91%	60%	100%
Reaeration Temperature Correction	dimensionless	1.047	constant	constant
Photosynthesis Temperature Correction	dimensionless	1.066	constant	constant
Respiration Temperature Correction	dimensionless	1.066	constant	constant
BOD Temperature Correction	dimensionless	1.047	constant	constant

Cedar Creek (CC1)

Model Parameter	Unit	Calibrated Value at 20°C	Minimum Boundary	Maximum Boundary
Sestonic Algae Max Growth Rate	day <sup>-1</sup>	1.1	1	3
Sestonic Algae Base Respiration Rate	day <sup>-1</sup>	0.25	0.05	0.25
Benthic Algae Growth Rate	day <sup>-1</sup>	2.37	0.5	5
Benthic Algae Respiration Rate	day <sup>-1</sup>	0.89	0.1	1.25
Benthic Nitrogen Half-Saturation Constant	mg N L <sup>-1</sup>	0.10	0.1	0.3
Benthic Phosphorus Half-Saturation Constant	mg P L <sup>-1</sup>	0.05	0.05	0.1
Sestonic Nitrogen Half-Saturation Constant	mg N L <sup>-1</sup>	0.02	0.01	0.15
Sestonic Phosphorus Half-Saturation Constant	mg P L <sup>-1</sup>	0.001	0.001	0.05
Community Light Half-Saturation Constant		Varies by Day	observed min = 19%	observed max = 56%
CBOD Decay	day <sup>-1</sup>	0.005	0.005	0.6
NBOD Decay	day <sup>-1</sup>	0.24	0.005	0.6
SOD	gO m <sup>-2</sup> day <sup>-1</sup>	0.54	0.1	2
Biomass: Chla Ratio	gDW:gChla	159	50	200
Carbon Stoichiometry	gC:gDW	0.4	constant	constant
Percent Bottom Coverage Periphyton	%	20%	2%	20%
Percent Bottom Coverage SOD	%	46%	5%	50%
Reaeration Temperature Correction	dimensionless	1.047	constant	constant
Photosynthesis Temperature Correction	dimensionless	1.066	constant	constant
Respiration Temperature Correction	dimensionless	1.066	constant	constant
BOD Temperature Correction	dimensionless	1.047	constant	constant

APPENDIX I (continued)  
Heaths Creek (HC2)

Model Parameter	Unit	Calibrated Value at 20°C	Minimum Boundary	Maximum Boundary
Sestonic Algae Max Growth Rate	day <sup>-1</sup>	2.6	1	3
Sestonic Algae Base Respiration Rate	day <sup>-1</sup>	0.05	0.05	0.25
Benthic Algae Growth Rate	day <sup>-1</sup>	4.6	0.5	5
Benthic Algae Respiration Rate	day <sup>-1</sup>	0.43	0.1	1.25
Benthic Nitrogen Half-Saturation Constant	mg N L <sup>-1</sup>	0.10	0.1	0.3
Benthic Phosphorus Half-Saturation Constant	mg P L <sup>-1</sup>	0.05	0.05	0.1
Sestonic Nitrogen Half-Saturation Constant	mg N L <sup>-1</sup>	0.01	0.01	0.15
Sestonic Phosphorus Half-Saturation Constant	mg P L <sup>-1</sup>	0.001	0.001	0.05
Community Light Half-Saturation Constant		Varies by Day	observed min = 14%	observed max = 80%
CBOD Decay	day <sup>-1</sup>	0.5	0.005	0.6
NBOD Decay	day <sup>-1</sup>	0.60	0.005	0.6
SOD	gO m <sup>-2</sup> day <sup>-1</sup>	1.10	0.1	2
Biomass: Chla Ratio	gDW:gChla	111	50	200
Carbon Stoichiometry	gC:gDW	0.4	constant	constant
Percent Bottom Coverage Periphyton	%	10%	1%	20%
Percent Bottom Coverage SOD	%	46%	5%	80%
Reaeration Temperature Correction	dimensionless	1.047	constant	constant
Photosynthesis Temperature Correction	dimensionless	1.066	constant	constant
Respiration Temperature Correction	dimensionless	1.066	constant	constant
BOD Temperature Correction	dimensionless	1.047	constant	constant