

# Kentucky—September 2010

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## GREETINGS FROM THE NORTH

Howdy from Kentucky, the northern parts of Region 4.

This year we have faced challenges in staffing our programs and trying to accomplish more with less. The work did go on, however, and we dealt with interesting weather and field conditions throughout the seasons. Monitoring has been full of variety – every condition from storm scouring events to drought conditions. As we head into autumn and cooler temperatures, we may be reporting snow in October. This newsletter will cover some of our program highlights from the 2010 season.

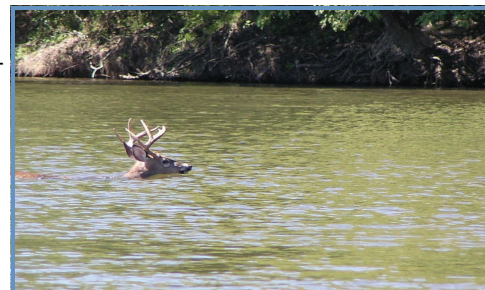
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## SWPBA CONFERENCE 2009/2010

Thanks to all who attended the 2009 Conference in Frankfort. We had a lot of fun (no, really we did) putting it on, and meeting new and old friends alike. We hope it was informative and productive, especially the bourbon tasting.

For 2010, Kentucky is sending a group of biologists and scientists to the conference. We plan on active participation in the monitoring, quality assurance and criteria development discussions, as well as making those important contacts and professional associations that are so vital to our work in the sciences.

Biological Indicator species?



Cumberland Falls

# 2010 DOW WQB MONITORING SUMMARY

The Kentucky Division of Water's (KDOW) Water Quality Branch sampled approximately 260 sites during the 2010 sampling season (Figure 1, Table 1). Sampling provided support for the development of Kentucky's nutrient criteria standards, TMDL development, basin assessments, and long-term ambient stations to meet state monitoring goals and objectives. The rotational sampling basin was located in the Four Rivers and Cumberland basins for 2010; therefore, a majority of the sampling sites were located in southwestern and southeastern Kentucky.

In addition to collecting macroinvertebrates, water quality, and habitat assessments at each of the probabilistic sites, fish sampling was added for those sites between 2 and 200 mi<sup>2</sup> drainage areas. A total of 30 out of the 50 original sites were sampled for fish. Those sites not sampled were excluded due to accessibility, conductivity issues (too high/too low), drainage area, etc.

**Table 1. Monitoring Programs during 2010.**

Program	Number of Sites
Probabilistic Sampling	53
BMP (Ongoing)	12
Pennyroyal Nutrient Study	46
Intensive Survey	2
Fish Tissue (Ongoing)	39
TMDL	30
Ambient Stations	44
Chlorophyll A	34
<b>Total Sites Sampled</b>	<b>260</b>

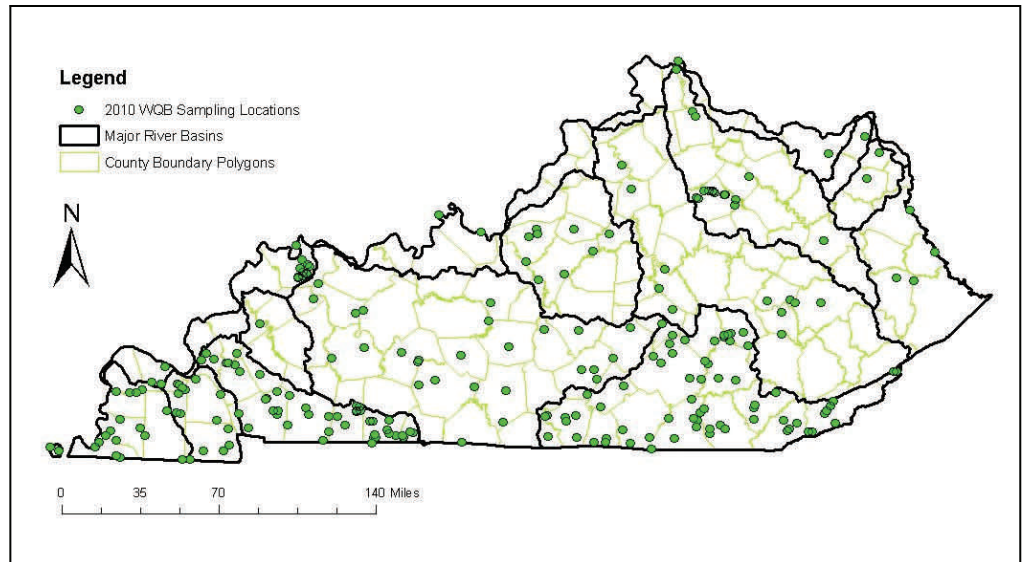


Figure 1. KDOW Water Quality Branch monitoring locations during 2010.

## TMDL UPDATE

The beginning of the year was a busy one, as the Section was drafting the 2010 303(d) list for inclusion in the 2010 Integrated Report to Congress. For the 2010 reporting cycle there are 2423 pollutant-water body combinations (PWC). Currently, 35 TMDLs are scheduled for completion during FFY2010 and 100 in FFY2011. Based on current monitoring data the KDOW is requesting 142 PWC be delisted given these results. The 2010 303(d) list has completed public notice and the list will be submitted for final approval upon receiving EPA approval of the Delisting Requests.

The TMDL writing staff has been carrying on business as usual and has received approval for 26 TMDLs in FFY2010. Another 22 TMDLs have been submitted to EPA and are awaiting final approval.

## PEOPLE

In the last year or so, Kentucky had some personnel changes. During August 2009, two biologists joined the Water Quality Branch; Aric Payne joined the monitoring section and Katie McKone joined the TMDL section — both Katie and Aric went to EPT in Highlands, NC this past year. In March of 2010, Clark Dorman joined the Water Quality Branch as WQB Manager. In late July 2010, Jessica Bevins left and has pursued her interest in education. And since August of 2010, Mark Vogel has held the helm as the monitoring section supervisor.

See our updated contact list for complete listing of biologists and scientists





# TMDL DEVELOPS PUBLIC HEALTH REPORT

The TMDL section of the Kentucky Division of Water (DOW) has created a 'report card' style Health Report to communicate TMDL development monitoring results within targeted watersheds. The goal of the Health Report is to be transparent and local in order to educate people about the Clean Water Act, what the KY DOW is doing to meet the act's requirements, and to relay scientific information in a way that all citizens can understand and take meaning from.

In each Health Report, both signs of water quality and biological health receive a grade, A – F, based on numeric criteria or ecologically significant values. These grades are then averaged to achieve an overarching watershed grade to demonstrate the overall health of the system. The first Health Report focused on Cox Creek Watershed, which received a "report card grade" of a C- due to a lack of habitat, poor aquatic macroinvertebrate communities, and elevated *E. coli* concentrations. The report not only highlights where improvement is needed, but also highlights the strengths of the watershed in hopes of protecting existing habitat and areas that are not yet impaired.

The Cox Creek Health Report (Figure 2) is currently being distributed electronically and hard copies will be distributed in October, 2010. Those who receive the Cox Creek Health Report are given information on what they can do to improve water quality in their local streams and where to go for more information regarding funding, resources, and local watershed groups. It has been demonstrated in the past that a report card style assessment of watershed health is an effective way to engaged local and political support for improving water quality. The KY DOW hopes to see similar results with the distribution of these annual Health Reports.



Cox Creek

*"The report not only highlights where improvement is needed, but also highlights the strengths of the watershed in hopes of protecting existing habitat and areas that are not yet impaired."*

September 14th, 2010

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## Cox Creek Watershed Health Report

Department for Environmental Protection - Division of Water

The Kentucky Division of Water (DOW) is the state agency responsible for carrying out the requirements of the Clean Water Act to reach the goal of making all waters in Kentucky safe for swimming and fishing (called **uses**).

DOW has developed this health report to inform the residents of Bullitt, Spencer and Nelson counties of efforts to examine the health of Cox Creek and the area of land that drains into Cox Creek, which is called a **watershed**.

Upon initial evaluation, it was determined that parts of Cox Creek (shown in red and orange on the map below) do not support the uses required by the Clean Water Act.

The U.S. Environmental Protection Agency (EPA) requires that states conduct watershed studies on all such waters to calculate the maximum amount of pollution a creek can receive and still support a healthy watershed. This amount is known as a **Total Maximum Daily Load**, or TMDL.

Following a year-long study in 2009 by DOW to gather scientific data, the division has given a "report card grade" of a **C-** to the watershed. This health report explains the signs of health that went into assigning that grade and provides information on how the grade can be improved.

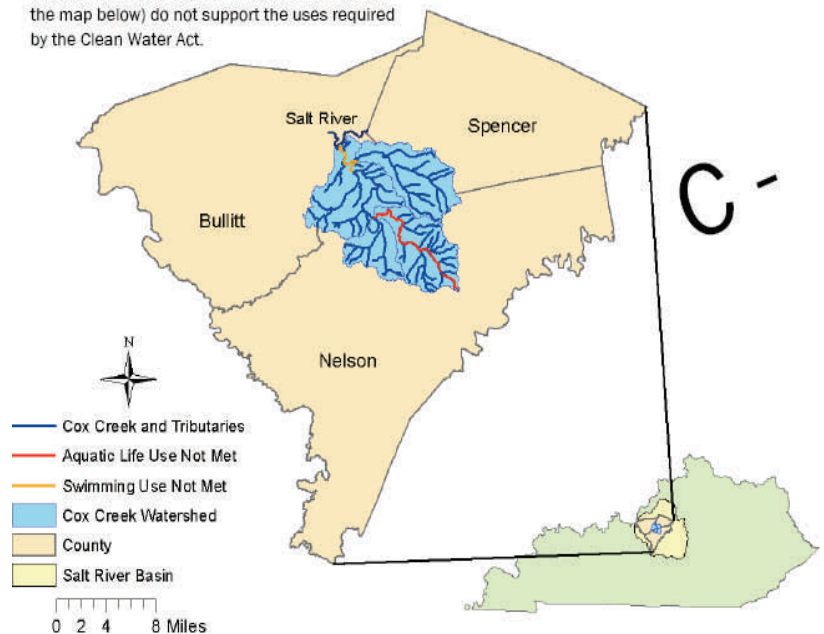


Figure 2. Front page of the 4 page Cox Creek Watershed Health Report.

## WETLANDS PROGRAM DEVELOPMENT

Kentucky has begun to develop a wetlands monitoring program in several phases. In 2009 and 2010, we pursued and obtained grants to implement the National Wetland Condition Assessment Project, which included monitoring wetlands using the USA Rapid Assessment Method, and contracting out work for the development of a Kentucky monitoring assessment process. To date we have performed reconnaissance on several reference condition wetlands throughout the state, and have conducted preliminary assessments in wetlands close to Frankfort. Most of the scheduled wetlands in the study will occur in western Kentucky, near and around the Mississippi and Ohio Rivers.



## NUTRIENT CRITERIA DEVELOPMENT

The Water Quality Branch continues to devote substantial resources in support of developing nutrient criteria for Kentucky's waters. A report on wadeable streams nutrient "benchmarks" is being completed which summarizes results thus far of numerous approaches to identifying region-specific in-stream concentrations of TP and TN associated with potential management endpoints. These approaches include reference stream and probability sampling distributions, biological effects thresholds, regional models, and benchmarks from relevant research papers. Sorting out the effects of nutrients on biological communities continues to be the focus of ongoing special projects. In 2010, we completed field work for a study to improve our understanding of nutrient-biology relationships in two ecoregions within the Pennyroyal Bioregion, a region with diverse stream channel types and complex geology. We sampled nutrients at 50 probabilistically selected sites on multiple visits, and sampled macroinvertebrates and algae at 26 of those sites.

## K-WADE DEVELOPMENT



With much help and assistance from both Alabama and Mississippi, we have begun the process of developing a Division-wide database that will house everything from biological data to water chemistry to habitat, with the intent to replace the current EDAS system. The new database, called K-WADE (Kentucky Water Assessment Database for Environmental Monitoring) is to be implemented sometime in late 2010/early 2011. Alabama and Mississippi have graciously provided us with demonstrations of their systems (ALAWADR and enSPIRE) and we hope to provide additional functionality and features that will benefit all states. Specifically, we are incorporating macroinvertebrates, fish and algae into the biological modules, habitat assessments data sheets modeled on the EPA RPB, water chemistry data with direct imports from a LIMS system., additional GIS mapping connections tied to the entry screens, groundwater data, and eventually wetlands and other monitoring programs data.



## APPALACHIAN COAL ISSUES

In early 2010, EPA issued interim guidance on reviewing surface coal mining operations under the Clean Water Act, as related in part to state discharge permits under Section 402. EPA focused attention on recent science on the effects of high conductivity to water quality and aquatic life. Eastern Kentucky land use is heavily influenced by coal mining, and Kentucky permitting and biological monitoring efforts have been affected by this recent guidance. Research on coal effects in the Appalachian region have used KY data to assist in setting guidance on water quality indicators during monitoring efforts. In response, KY has prepared several papers and analysis on conductivity and macroinvertebrate indices in both the eastern and western KY coalfields. We used specific biological site

data to determine correlations between MBI scores and conductivity values in both regions of the state. Comments are open on the EPA interim guidance documents; in the meantime, KY has instigated new monitoring requirements for wastewater discharges related to coal mining that is aimed at determining adverse effects to aquatic life.



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*"To manage, protect, and enhance the quality and quantity of the Commonwealth's water resources for present and future generations through voluntary, regulatory, and educational programs."*

