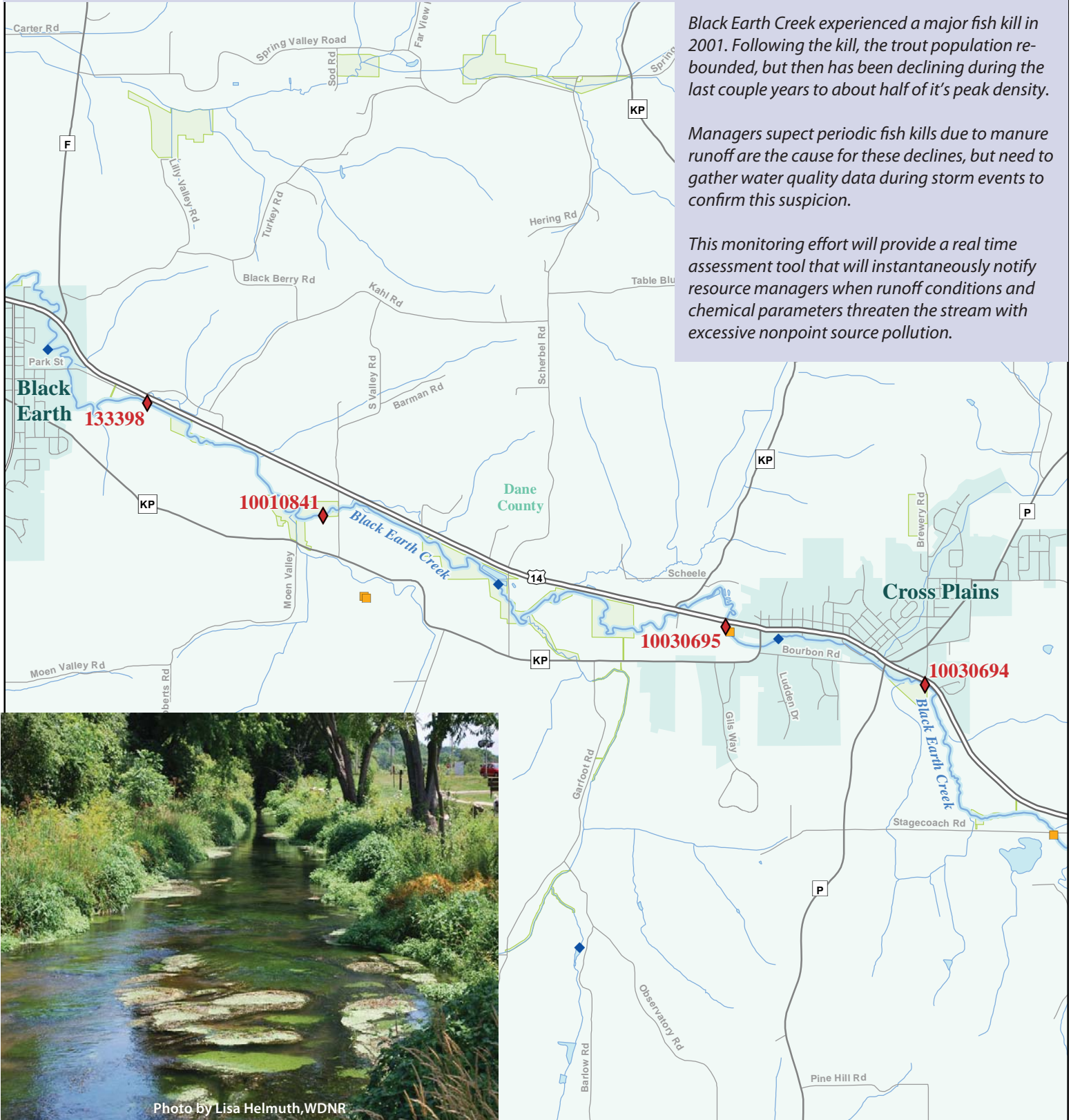


Black Earth Creek experienced a major fish kill in 2001. Following the kill, the trout population rebounded, but then has been declining during the last couple years to about half of its peak density.

Managers suspect periodic fish kills due to manure runoff are the cause for these declines, but need to gather water quality data during storm events to confirm this suspicion.

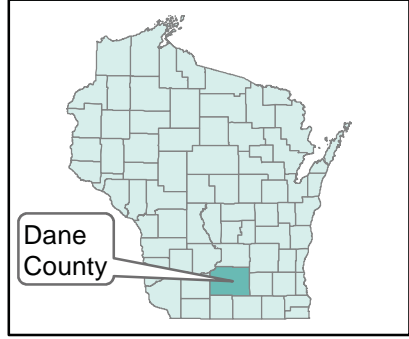
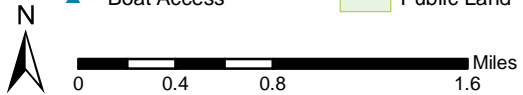
This monitoring effort will provide a real time assessment tool that will instantaneously notify resource managers when runoff conditions and chemical parameters threaten the stream with excessive nonpoint source pollution.



Water Division Targeting Monitoring Project

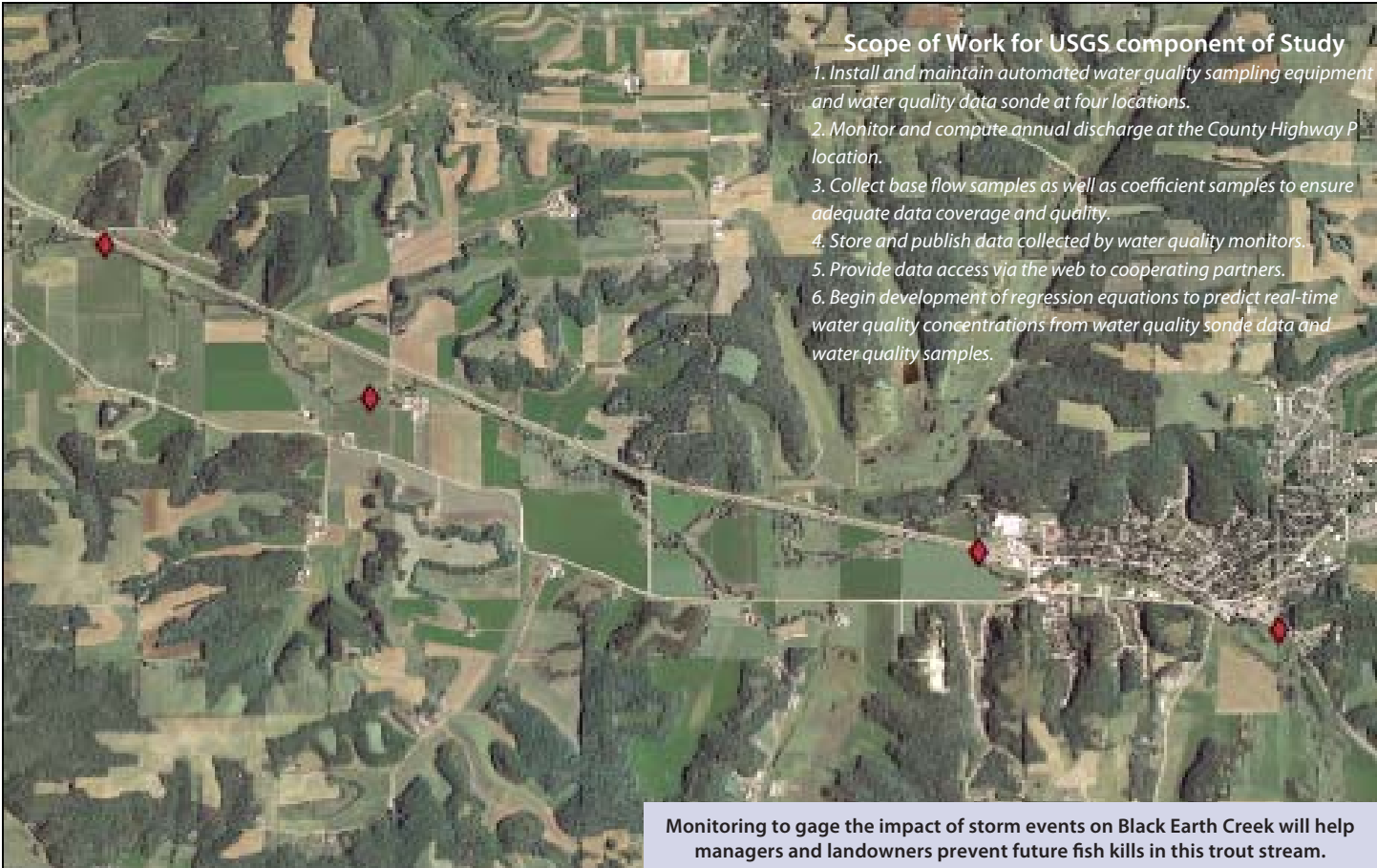
Black Earth Creek Monitoring Project

- ◆ Monitoring Stations
- Outfall
- ◆ Dam
- ▲ Boat Access
- Lake
- City/Town
- County
- Public Land
- Featured River
- Other River
- Interstate Highway
- US Highway
- State Highway
- County Highway
- Local Road



Scope of Work for USGS component of Study

1. Install and maintain automated water quality sampling equipment and water quality data sonde at four locations.
2. Monitor and compute annual discharge at the County Highway P location.
3. Collect base flow samples as well as coefficient samples to ensure adequate data coverage and quality.
4. Store and publish data collected by water quality monitors.
5. Provide data access via the web to cooperating partners.
6. Begin development of regression equations to predict real-time water quality concentrations from water quality sonde data and water quality samples.



Monitoring to gage the impact of storm events on Black Earth Creek will help managers and landowners prevent future fish kills in this trout stream.

Project Goals:

The overall objective of the study is to monitor long-term water quality trends on Black Earth Creek (BEC) and attempt to determine potential water quality parameters that may lead to a decline in fish populations. Data from this study will be collected year round and viewable via the web on a real-time basis; discharge and water quality data will be published annually in the Wisconsin Water Science Center's annual data report. Researchers will use the data from this study to create regression equations to predict real-time water quality concentrations. Water quality sonde data and water quality samples will be evaluated annually to determine the feasibility of establishing an alert system. This project collect and analyze water quality data sondes at two locations along BEC to help identify areas of water chemistry changes. These sites would use regressions to estimate the discharge (non-published) between the site locations and the active streamgages located on BEC. Manual EWI samples will be collected during base flow and periods of storm runoff. These samples will be used in the development of the regression analyses to predict real-time constituent concentrations from the water quality sonde data and water quality samples.

Site Selection

To adequately describe the water quality parameters that occur along BEC, multiple monitoring locations were secured. For the initial study in 2010, four monitoring locations were identified (see above).

- Currently there is an operating stream-gaging station (station number 05406460, February 1954 to present) on BEC downstream of South Valley Rd that is collecting water level and discharge data. An additional gage was to be installed downstream of the current gage to add the additional continuous water quality monitoring sonde and automated sampling equipment.
- The second monitoring location includes an installation of a new gage at County Highway P for discharge, automated water quality sampling, and continuous water quality.
- The third and fourth monitoring locations include the installation of two remote continuous water-quality data sondes for real-time monitoring between County Highway P and the BEC streamgage at Black Earth. Potential sites include Hwy 14 below the sewage treatment plant and Scherbel Rd, below confluence of Garfoot Creek.

The principle need that this monitoring study was designed to address is the identification of water chemistry conditions that may be limiting trout populations. The study was also designed also to help determine the feasibility of establishing an alert system that would use real-time water chemistry parameters to indicate when stream conditions may potentially induce a fish kill. This alert system would notify the WDNR and other organizations to activate management plans to reduce the impact on the fisheries resource.