

# Susquehanna River Basin Commission Information Sheet



## Aquatic Resource Surveys

### What is an Aquatic Resource Survey?

Susquehanna River Basin Commission (SRBC) scientists conduct comprehensive field investigations in streams related to a number of the agency's programs such as its subbasin surveys and interstate streams monitoring. This detailed assessment of the physical, chemical and biological components of a stream is known as an aquatic resource survey (ARS).

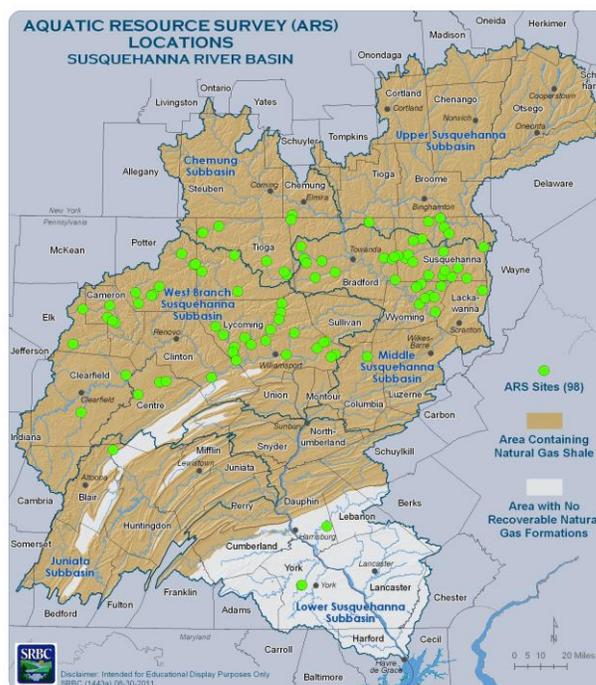
In 2008 when SRBC began receiving applications for surface water withdrawals for natural gas development, the agency decided to also conduct aquatic resource surveys as part of the Project Review process. An ARS, therefore, is performed where a proposed water withdrawal is regulated by SRBC and a stream reach meets specific criteria (described below). Understanding the aquatic resources and supporting habitat present in streams is important as indicators of the health of the ecosystem and its water quality for water supply and other uses. For water supply, an ARS contributes site-specific, baseline information to supplement SRBC's technical review of a water withdrawal application and follow-up data that documents any changes after a withdrawal is initiated.

### What Are the Criteria for Conducting an ARS and How Extensive Are SRBC's ARS Activities?

SRBC screens all project sites for environmental concerns and conducts an ARS within a targeted stream reach when one or more of the following conditions are met:

- Recent or comprehensive stream assessment data are not available;
- A state agency has designated the stream reach as sensitive;
- Wild trout populations and/or rare, threatened or endangered species are likely to be present;
- The stream reach is in a headwater setting;

Between January 2008 and August 2011, SRBC conducted ARSs (noted by green dots on map) at approximately 80 percent of proposed surface water withdrawal sites located on wadeable streams. The majority of the ARSs have been associated with withdrawal applications for natural gas development; however, surveys also have been conducted for proposed withdrawals for golf course irrigation and water bottling.



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## What Information and Data Are Assessed?

Data collected and analyzed during an ARS include:



- Field analysis of water chemistry, including temperature, pH, dissolved oxygen;
- Laboratory water analysis including total dissolved solids, barium, chloride, bromide and lithium;
- Biological community data, including fish, macroinvertebrates and periphyton (algae), and the presence of any invasive species;
- Physical habitat data, including stream channel, streambank and riparian area conditions and quality; and
- Stream discharge (flow) measurements.

## What Is the Outcome of an ARS?

Site-specific data collected during an ARS allow SRBC scientists in the Project Review Program to assess the current baseline stream condition at a proposed water withdrawal location. These data are used in conjunction with information about water availability, stream hydrology, and existing uses in SRBC's evaluation of potential impacts on the stream. In its technical review of an application, SRBC staff recommends appropriate protective measures, as needed, to avoid or minimize impacts to the subject waterway.

For example, if native sensitive or rare species such as wild trout were found during an ARS, SRBC's staff would consider that factor in its determination of the passby flow requirement to ensure protection of the aquatic community during periods of low flow. The project sponsor would have to interrupt its withdrawal when the stream at the intake drops below a predetermined low flow level, and could not withdraw any water until flows recover to be greater than the protected flow level.



Another protective measure might involve a restriction to avoid potential adverse impacts during a critical life cycle stage of a sensitive or rare species. If a sensitive species such as the Eastern Hellbender were found during an ARS, SRBC's staff would recommend a seasonal restriction on initial construction of the intake structure to protect the spawning period.

## Does SRBC Revisit Areas Where ARSs Were Conducted?

Yes, SRBC staff revisits selected sites where an ARS was previously conducted after an approved water withdrawal is operational and prior to renewal of an authorization for withdrawal. Baseline data collected during the initial ARS allow for "before and after withdrawal" comparison of the biology, water chemistry, and physical habitat.

SRBC staff typically samples the same surface water reach using the same methodologies. A variety of statistical analyses are used to evaluate the data to determine if any significant adverse impacts have occurred to aquatic communities or stream quality.

## What Will SRBC Do if Stream Impacts from Approved Water Withdrawals Are Identified?

If SRBC determines that adverse impacts to a stream are occurring as a result of an approved water withdrawal and immediate action is necessary, it will use its administrative discretion to issue appropriate orders to protect public health, safety and welfare. To address longer term impacts, SRBC staff will recommend to SRBC commissioners that the approval be terminated or that it be modified to include remedial measures to address the impacts, additional protective conditions, or other mitigation.

## For More Information, Contact the Following SRBC Staff Members:

ARS Project Review Questions

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ARS Biological Assessment Questions

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