

Aquatic Resource Surveys



Water Quality Advisory Committee Meeting

May 25, 2011

What is an Aquatic Resource Survey?

- Comprehensive field investigation conducted at proposed water withdrawal locations to inform the technical review process



Aquatic Resource Surveys

■ Criteria

- Application must be 'administratively complete'
- No data is available
- Available data is greater than three years old
- Available data is greater than one mile away, or have a significant tributary between data points
- Stream designation is EV or HQ
- The stream is a wild trout fishery or has naturally reproducing trout pop.
- The stream is habitat for RTE species
- The stream is part of, adjacent to, or hydrologically connected to a wetland complex
- The stream is a headwater

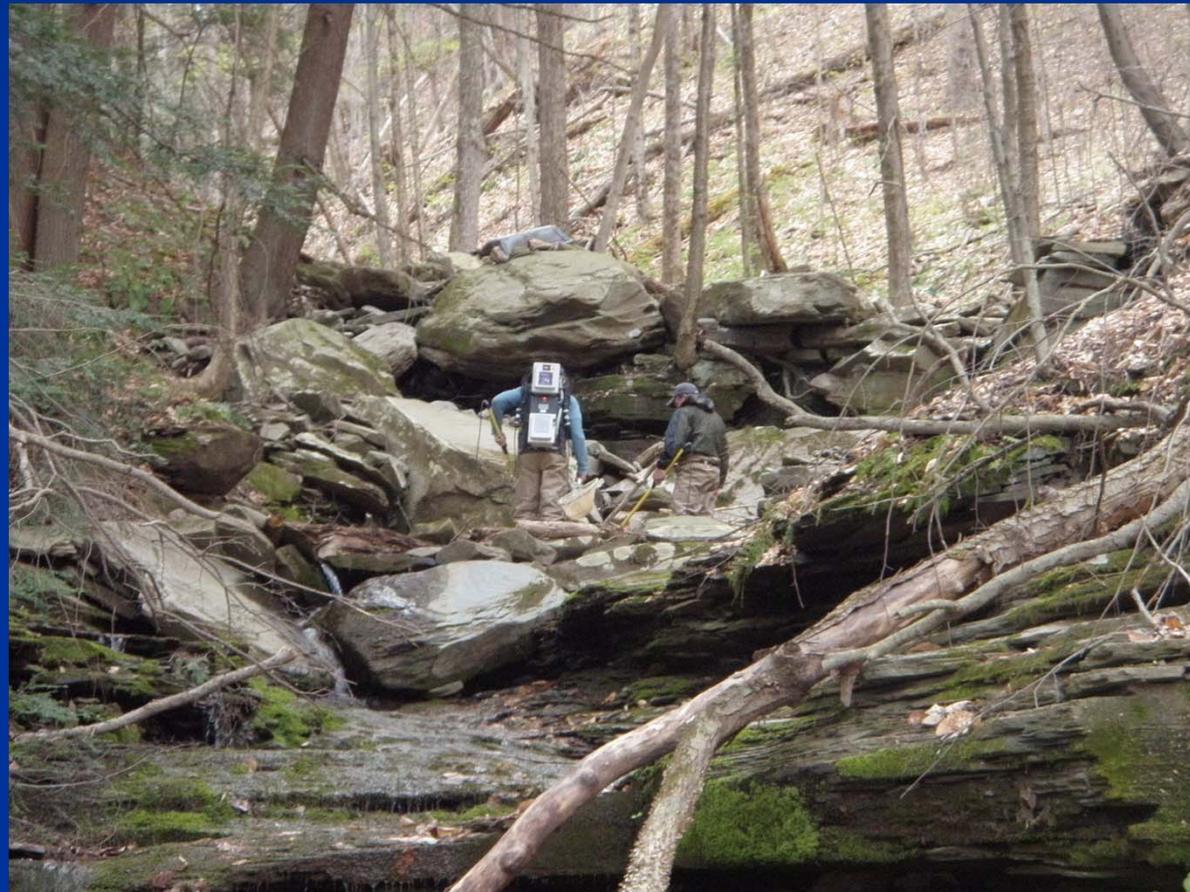
Aquatic Resource Surveys

- To date ~ 80% of sites for which SW withdrawals are proposed require and ARS
- Now beginning to evaluate whether to require ARS at sites where GW withdrawals are proposed
 - At sites that could draw baseflow from nearby surface water body



Field Methodology

- Fish
- Macroinvertebrates
- Periphyton
- Invasives
- Physical habitat
- Discharge
- Water quality
 - Lab and field



Fish Sampling

- Width based reach length
 - 10X average wetted width (min 100m / max 400m)
- 3 pass coverage
- Tote barge or backpack
- Collect all individuals
- ID to species and count
- Weigh and measure all gamefish



Macroinvertebrates

- Collection method corresponds with sampling location (PA or NY)
- PA
 - 6 D-frame kicks in best available habitat throughout stream reach
- NY
 - 5 meter diagonal transect in best available riffle/run within reach
- Kicks are composited, subsampled, and identified to genus



Periphyton

- RBP
 - Collected proportionally from all available substrates within reach
 - Composited, preserved
 - Identified to species



Invasive Species

- Zebra mussel check – PA Sea Grant protocol
- Visual survey for didymo, water chestnut
- Presence of invasive fish species verified through electrofishing
 - Appropriate resource agencies contacted
- Non felt wading boots, disinfection of sampling equipment between sites

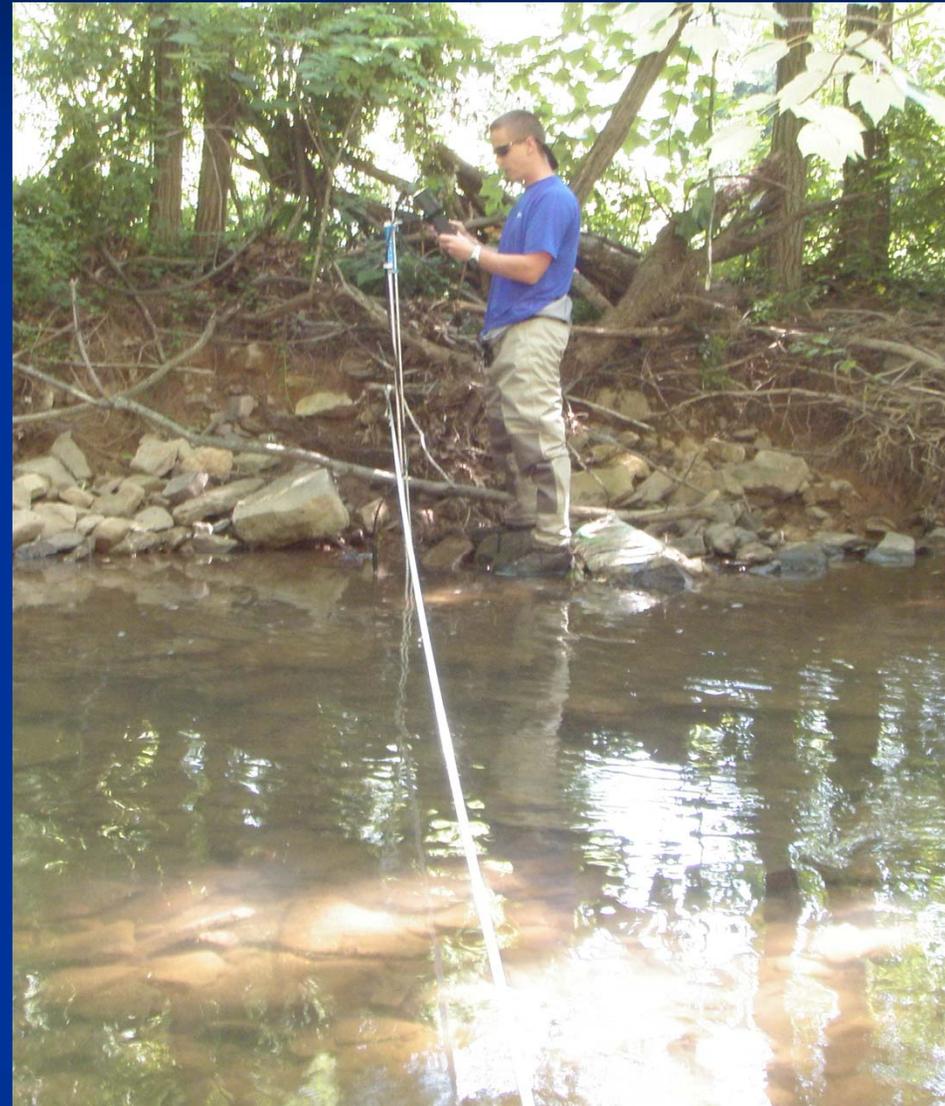
Physical Habitat

- RBP parameters - slightly modified
 - Instream cover
 - Epifaunal substrate
 - Embeddedness
 - Velocity/depth regimes
 - Channel alteration
 - Sediment deposition
 - Frequency of riffles
 - Channel flow status
 - Condition of banks
 - Vegetative protective cover
 - Riparian vegetative zone width



Discharge Measurement

- Flow tracker – standard USGS procedures
- Used to verify reference gages and in house models used to determine pass bys



Water Quality

- Field

- pH, Conductance, Temperature, Dissolved O₂

- Lab

- Alkalinity, Acidity, TDS, Total Organic Carbon, Iron, Manganese, Barium, Chloride, Sulfate, Sodium, Lithium, Strontium, Bromide



How ARS guide the review process

- Place seasonal restrictions on installations of intake structures to protect native sensitive or rare species
- If TE species is encountered, work with project sponsor to move their intake structure away from sensitive habitats that are being utilized
 - Could require protective pass by flow (daily or seasonal)
 - Consult other resource agencies when RTE species are encountered



Revisit Research Initiative

- SRBC plans to revisit sites where withdrawals have been initiated
 - Will sample
 - The same reach done previously, bracketing intake
 - And an upstream reach, unaffected by withdrawal (reference)
- Objective:
 - Compare biological communities too see if affected by withdrawals
 - Before vs. after implementation of withdrawal
 - Upstream vs. downstream reaches
 - Will apply principles of inertia and elasticity
 - Similarity matrices
 - Biological metrics

Questions?

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