Foster J. Sayers Dam
Project Modification Study

What is this Study?

Section 1135 of the Water Resources Development Act of 1986 authorizes the U.S. Army Corps of Engineers to plan, design and build modifications to existing Corps projects, or areas degraded by Corps projects, to restore or improve aquatic habitats for fish and wildlife. The process begins after a non-federal sponsor (Susquehanna River Basin Commission) requests Corps assistance. When funding is available, the Corps prepares a feasibility study with options to potentially achieve the improvements; evaluates the impacts and environmental effects of the options; and provides a scope and cost estimate for project implementation.

For this study, options were developed to modify amounts and timing of water releases only when triggered by historical low-flow conditions during the months of July - November to sustain aquatic habitat. No option(s) will be recommended that negatively impacts the dam's authorized purposes of flood control and recreation.

Habitat Benefits

Three fish modeled:

brown trout (game species)

smallmouth bass (game species)

longnose dace (environmental indicator species)

There are 13 other fish species that could benefit from modified operations during low-flow conditions, but the team had the best habitat data to model these fish. The target species provide a representation of unique habitats affected by existing and proposed flows.

Fish represent the top of the aquatic food chain. Ensuring there is enough water for fish and the small animals they feed on is important to sustain the habitat. Releases during low flows can create riffles and pools that provide desirable habitat. When riffles dry up during low flows, many macroinvertebrates and some forage species become stranded and die, impacting recreational fishing and the ecosystem as a whole.

Fast Facts

- Project authorized as Blanchard Dam and Reservoir by Flood Control Act of 1954.

- Renamed in memory of Private First Class Foster Joseph Sayers, former resident of Centre County, Pa., awarded the Congressional Medal of Honor for heroic service in WWII.

- Total land acquired for construction/operation of project: 7,991 acres, including 417 acres for flowage easement associated with spillway

- Operationally completed in August 1969.

- Operates as system along West Branch of Susquehanna River with Curwensville and Alvin R. Bush dams (and George B. Stevenson Dam constructed by Commonwealth of Pa.) to reduce flood risk.

- Recommendations from study could help provide more flexibility in reservoir operations to sustain aquatic habitat during low-flow conditions.

- Recommendations would only be implemented when triggered by historic low-flow conditions. Current operations maintained otherwise.

- Low-flow releases at Whitney Point have only been implemented once in 20 years.

- Sayers Reservoir Regulation Manual updated in 1996 to reflect regulation changes to fall/winter drawdown based on Dust Alleviation Study (1994)

Why Sayers?

Since the 1980s, the Army Corps and Susquehanna River Basin Commission (Commission) have partnered on many studies on how revised operations at Corps reservoirs can help sustain habitat during low-flow conditions.

Similar studies have occurred at Cowanesque, Curwensville and Whitney Point lakes.

The study at Whitney Point resulted in a recommendation for a more stable year-round lake level, improved environmental releases, wetland enhancements and recreational facility improvements. The Commission requested a study at Sayers because of the similarity to Whitney Point in sizeable storage and an annual fall/winter drawdown.

Evaluation of alternate operation at Corps reservoirs is within the Commission's Comprehensive Plan. They are the only agency focused on managing and protecting flows in the Susquehanna River Basin for the purpose of sustaining water availability for domestic, industrial and ecological functions during times of drought throughout the entire basin. This study focuses on the ecological functions.

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Operations Alternatives	Description	Habitat Benefits *Percentage of approximate habitat improvement per species above the baseline (existing operations) during low flows*
Existing Operations	Manages flood risk and infrequently impacts recreation; stakeholders have identifed winter drawdown can result in entrapment of fish, loss of fish habitat, increased dust, and impacts to ice fishing. Current drawdown can result in unseasonal flow trends, and full gate closures during floods that can create low-flow conditions in Bald Eagle Creek.	Baseline
Phased Fall Releases	Water releases are triggered based on historical low-flow conditions at Milesburg gage* with stepped drawdown capped to limit recreational impacts.	**6-8%** for longnose dace; **5%** for smallmouth bass; **9-11%** for brown trout
Surcharged Pool	Pool raised by 2 feet by July 1 (triggered by three days of low flows in June based on historical data at Milesburg gage*). Between July 1 and Nov. 15, up to 7 feet of water released gradually for flood control storage.	**6%** for longnose dace; **4%** for smallmouth bass; **9%** for brown trout
Enhanced Annual Conservation Releases	Maintains annual minimum outflow of 120 cubic feet per second.	**12%** for longnose dace; **4%** for smallmouth bass; **8%** for brown trout
Water Quality Releases	Allows more flexibility to provide low-flow releases for downstream temperature and acid mine drainage conditions.	**12%** for longnose dace; **4%** for smallmouth bass; **7%** for brown trout
Species-Preferred Releases	Flows that help sustain optimal habitat conditions for the trout, bass and dace.	**12%** for longnose dace; **5%** for smallmouth bass; **8%** for brown trout

**located 5 miles upstream*

How were Benefits Calculated?

Instream habitat was assessed using methods developed by the U.S. Fish and Wildlife Service. This methodology is commonly used to define minimum flow or conservation release standards. The Commission surveyed approximately two miles along the project area that is representative of typical habitat conditions at Bald Eagle Creek. Water speed and depth were measured at low, medium and high flow conditions to observe how they change with different streamflows, and a score was given to each type of habitat (riffle, pool) based on what targeted species prefer to include bottom material type. The Commission compared the data from the alternatives to the existing operations and calculated if the habitat got better or worse and by how much during low-flow conditions.