

Status Report

Treatment of Richard Mine AMD Problem

Deckers Creek Watershed in Monongahela County, WV

By TJ Burr
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BACKGROUND

- ◆ This project is in the Deckers Creek Watershed and was originally identified in the Supplemental Watershed Plan No. 1 and Environmental Assessment of September 2000.
- ◆ The *Natural Resources Conservation Service* (NRCS) continues providing technical assistance to the *sponsors* for a proposed project to eliminate or treat a major Acid Mine Drainage (AMD) discharge from the Richard Mine, near Morgantown.
- ◆ The AMD discharge has existed for many years. The primary discharge at its current location started in 1988 when building pressure caused it to blowout at the base of a mountainside. Before this happened, the seepage was dispersed through several small seeps.
- ◆ The abandoned mine discharge is acidic and high in heavy metals (iron, aluminum, and manganese), which makes the water in Deckers Creek toxic to most aquatic life.

PROJECT GOAL

The goal of this project is to restore the fish habitat in the lower 5-miles of Deckers Creek by reducing the adverse impacts from the primary Richard Mine AMD discharge (reduce acidity and heavy metals). Recreational benefits from improved water quality would include better fishing, scenery, boating, kayaking, and swimming. Most of this river section is located within Morgantown city limits, which makes the City and County primary beneficiaries of the improvements.

PROJECT PHASES

- ◆ The project was initially planned in **five phases**: 1) Analysis of Problems and Compilation of Alternatives, 2) Develop Scope of Work, 3) Site Investigation, 4) Preliminary Design, & 5) Final Design.
- ◆ Phase 1 was completed in June 2009, producing the following background data for the project:
 - A comprehensive treatment alternatives report identifying the consultant's recommendations for solving the AMD problem.
 - One full year of flow monitoring and data providing measurements of the flow, pH, rainfall, and water temperature every 15-minutes. The flow quantity varies daily, but had an average monthly flow of **401 gpm** (577,000 gallons per day) in 2008.
 - Bench scale testing was done to determine the chemistry of the AMD discharge entering Deckers Creek. This showed the discharge to be high in iron and aluminum.
 - A comprehensive flow model was accomplished to show the minimal impact of piping the discharge into the Monongahela River. Piping the discharge to the much larger Mon River was originally the consultant's highest recommended solution to the problem.
 - A flow analysis for the impact of removing the discharge from Deckers Creek was accomplished, which showed there would be no adverse affects.
 - The work accomplished by Phase 1 represents a completion of a feasibility-level study to determine the best ways to solve the problem using today's technology.

TOP 5 TREATMENT ALTERNATIVES

1. Hydrated lime with mechanical mixing and sludge injection into mine workings¹,
2. Piping discharge to the Monongahela River²,
3. Lime dispensing doser with settling pond,
4. Gas injection of anhydrous ammonia, and
5. Activated iron solids.

Footnotes:

1. This was the preferred treatment method when the DEP/AML was considering to operate the treatment plant.
2. This alternative has benefits of not adversely affecting the water quality in the Mon River, having lower annual operating costs, and being a more sustainable solution. However, public and regulatory agency perception of this option could be problematic. Before the report was amended, this was the consultant's number one recommendation.

MILESTONE SCHEDULE

- 2008 – Continuous Flow Monitoring of primary discharge (Every 15-minutes for one year)
2009 – Phase 1 completed in June. A sponsor for O&M is required to continue to Phase 2.
2010 – Assuming a 20% O&M sponsor is found, Phases 2 & 3 of the project could begin.

WVDEP/AML (80% O&M Sponsor)

A meeting with the WVDEP/AML office on April 1, 2008 resulted in Modification 2 for the Phase 1 consulting services, which cost \$23,000. The addendum to the Alternatives Report (May 2009) identified the top treatment method as hydrated lime with mechanical mixing and sludge injection into mine workings. This is the method preferred by the WVDEP/AML primarily because it addresses a feasible way to dispose of the large volume of AMD sludge resulting from the treatment process.

CURRENT STATUS

- ◆ The project is **on-hold** until a 20% sponsor provides a written commitment to provide O&M for the treatment facility as required by NRCS policy and regulations. The O&M sponsor will have to be a legal entity capable of owning and operating the proposed treatment facility as well as owning the associated property.
- ◆ The active treatment facility is estimated to cost \$3.25 million for construction, which would be mostly covered by federal funding depending on the costs of other ongoing work in the watershed.
- ◆ The consultant estimated operations and maintenance cost at \$290,100 per year with about 21% of that being electrical costs. The WVDEP/AML disagrees with this number and estimates that it will be closer to \$500,000 per year due to differing personnel costs and rising hydrated lime costs.
- ◆ The WVDEP/AML has offered to pay 80% of the annual O&M costs on a reimbursable basis. The Sponsoring Local Organization would provide the other 20% of the costs, plus purchase the land, obtain all permits, and operate the treatment plant. If the annual cost is closer to the \$500,000/year estimate, the local sponsor would only need to contribute \$100,000/year.

TECHNICAL ASSISTANCE FROM NRCS

- ◆ The USDA NRCS spent \$213,635 to complete Phase I of the project, and has approximately \$3.1 million remaining to fund the construction of the selected treatment alternative. The NRCS will also continue to provide technical assistance to complete the design and assist with construction oversight.
- ◆ The NRCS has spent or will spend \$2.3 million on passive AMD treatment higher in the watershed.

- ◆ The top recommended alternative will require 7 or 8 environmental permits, which the sponsors will have to obtain. The NRCS will provide technical assistance with the applications.

ORIGINAL SPONSORS OF 2000 WATERSHED PLAN

- ◆ The USDA NRCS provides technical assistance and manages the federal funding for the project, but the sponsors are required to make the project happen.
- ◆ Sponsors include the following: Monongahela Soil Conservation District, West Virginia Conservation Agency, WV Department of Environmental Protection (Abandoned Mine Lands), WV Division of Natural Resources, Monongalia County, and Preston County.
- ◆ There are also numerous supporting organizations, including the Friends of Deckers Creek, Office of Surface Mining, and the City of Morgantown.



Richard Mine Acid Mine Drainage (AMD) entering Deckers Creek about 5-miles upstream of the Monongahela River. Deckers Creek is a scenic stream that could become a great place for fly fishing and other recreational pursuits if the AMD is removed from the creek. From the pictured location, Deckers Creek meanders through Morgantown, past Marilia Park, and through neighborhoods. The creek is visible and accessible to the population of the Morgantown area. The Deckers Creek Rail Trail parallels the creek from Reedsville, West Virginia down to the Monongahela River near Morgantown's Wharf District. Photo taken on June 6, 2005 by TJ Burr, USDA NRCS.