

SR 115 Passive Treatment System
SRI O&M TAG Project #72 Request #1
OSM PTS ID: PA-182

Requesting Organization: Slippery Rock Watershed Coalition and PA Game Commission

Requesting Organization Representative: Cliff Denholm

Municipality/County: Washington Township, Butler County

Dates of work performed: 8/6/2021 to 8/12/2021, 5/4/2022 to 5/5/2022

Initial Request: On 4/29/2021, the Slippery Rock Watershed Coalition (SRWC) requested assistance with the SR115 passive treatment system. The SRWC reported that the AMD collection and flow splitter system did not appear to be working; therefore AMD does not go to both parts of the system.

Observations and Identified Needs: On arrival at site, multiple trees had fallen on the system access road. It appeared that no flow was entering the flow splitter box and all flow was directed to the overflow channel into the eastern (original/older) settling pond. The splitter box valves were not immediately visible due to vegetation growth.

Work Completed: In August 2021, BioMost mobilized to the site. The conveyance pipes that extended from the distribution box to each of the two settling ponds were located. The area below each pipe outlet was excavated to allow flow measurements to be taken. Both valves were located and it was determined that they were both in the closed position. Both valves were opened. A large amount of iron oxide and leaf debris was observed in the concrete splitter box. The debris was excavated and the pipe inlets were observed to begin flowing once cleared of debris. The east pond inlet was designed to outlet from the splitter box approximately a foot lower than the west pond inlet, effectively making the west pond function as an overflow. A rubber coupler (Fernco) and a 45° elbow were installed in an attempt to evenly split the flow between the two ponds. Flow measurements were taken on 8/11/21 (East: 20 gpm + West: 58 gpm = 78 gpm). To reduce future debris accumulation in the splitter box, the mine pool outlet pipe was extended and an elbow was installed to direct flow into the splitter box. Treated plywood was installed on top of the box grate to help prevent leaves and debris from entering the distribution box and clogging the conveyance pipes. Embankments were inspected and select woody vegetation was cleared. Trees were removed from the access road to allow travel with a pickup truck.

In May 2022 a site visit revealed that the 6" PVC piping from the mine discharge to the distribution box was not conveying a large portion of the flow which was following the original channel to the east settling pond, and that the pipe and plywood cover were not as effective as desired. In order to better capture the mine drainage and direct it to the distribution box, a containment structure was installed using PVC Z-piles driven into the ground on the three sides of the distribution box. In order to prevent leaves and other debris from entering the distribution box and potentially clogging the two 6" conveyance pipes, additional Z-pile was placed on top of the containment structure. An overflow opening was installed on the downstream side of the containment structure to allow mine water in excess of the capacity of the two 6" pipes to exit the containment structure and flow to the older (eastern) settling pond. 90-degree PVC elbows were installed on the two conveyance pipes to balance the flow between the two settling ponds.

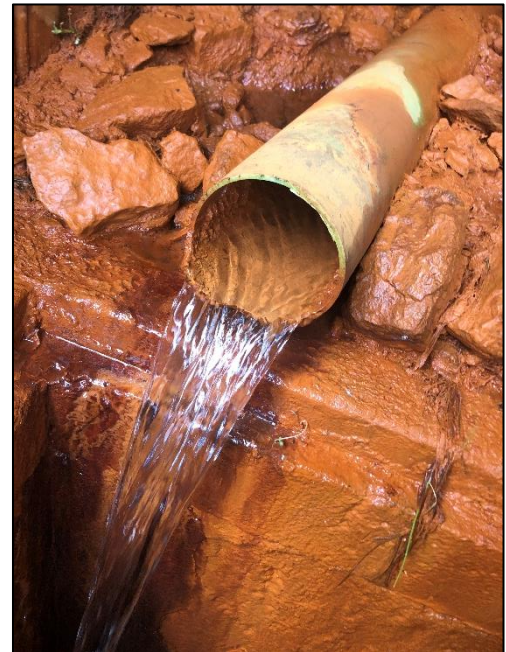
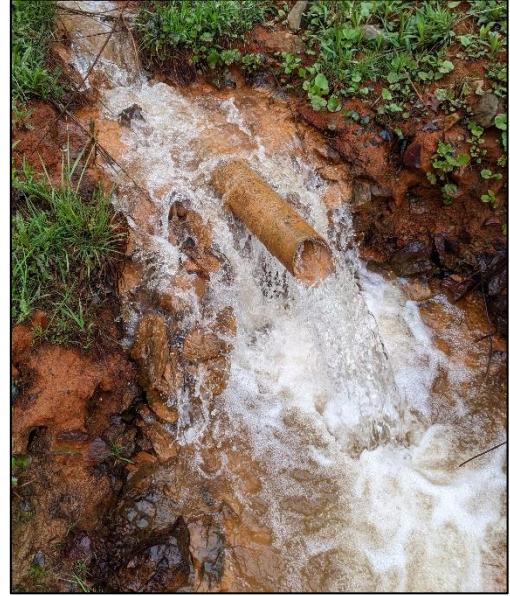
Recommendations & Future Considerations: Continue to monitor the system including flow measurements on a regular basis. Based on observations during high-flow period (May 2022), the two 6" conveyance pipes do not have sufficient capacity to effectively split the flow between the two ponds and the east settling pond is being overwhelmed during overflow periods. It is recommended that a flow distribution weir box be installed and the conveyance pipes be replaced with new and expanded conveyance channels that will promote better aeration

and result in better iron oxidation and overall treatment effectiveness while eliminating an ongoing maintenance issue. It has been recently noted by several passive treatment practitioners that channels can be effective in iron oxidation and precipitation. The older (east) settling pond should be assessed for sludge capacity and plans to clean should be developed if needed. The installation of baffle curtains may also improve overall treatment effectiveness.

Photo Log



Top Left: The conveyance pipe to the west settling pond was cleaned to restore flow to the west pond (8/10/21).
Top Right: A pipe was added to the mine discharge pipe to convey the discharge into the distribution box where a plywood lid was installed to prevent leaves and debris from clogging the conveyance pipes (8/11/21).
Bottom Left: Elbows and pipe were added to split flow between the two ponds (8/26/22).
Bottom Right: Site evaluation to determine work to be done prior to excavation (04/28/21).



Top Left: A flow containment structure was constructed using PVC Z-pile (5/5/2022).

Top Right: During high flow periods, the two 6" conveyance pipes do not have sufficient capacity to carry the full discharge resulting in overflow draining to the older (east) settling pond (5/4/2022).

Bottom Left: A Z-pile cover prevents leaves and debris from entering the distribution box (5/5/2022).

Bottom Right: During lower flow conditions, the majority of the discharge enters the distribution box via a 6" PVC pipe (8/26/2022).