

Laurel Run #2 Passive Treatment System
SRI O&M TAG Project #38 Request #2
OSM PTS ID: PA-128

Requesting Organization: Blacklick Creek Watershed Association
Requesting Organization Representative: Dennis Remy
Municipality/County: Center Township, Indiana County
Dates of work performed: 6/23/21-7/13/21

Initial Request: On 9/29/2020, the Blacklick Creek Watershed Association (BCWA) requested assistance for the Laurel Run #2 (South) passive system. The BCWA reported poor water quality emanating from the system. They indicated there may be an issue with vegetation blocking flow paths.

Initial Site Visit, Observations, and Identified Needs: An initial site visit was conducted on 4/15/21. A buildup of cattails and sludge within the wetland appeared to be blocking flow through the wetlands causing a large portion of the water to exit the emergency spillway of the settling/flush pond bypassing the wetland and preventing meaningful treatment. This problem is likely caused in part by the narrow channel wetland design with several “sharp” (~90°) turns that create places for sludge and vegetation to build up. The wetland had a similar issue and had to be cleaned in 2015. At the outlet of the system, the weir was found in need of repair. A field 5.5 pH and alkalinity of 6 mg/L indicated that the water that was flowing through the system did not have sufficient alkalinity which suggests that the media may need to be replaced; However historic water monitoring data also indicates that performance has been variable. A follow up site visit was conducted on 6/18/21 just prior to maintenance to conduct further investigation and discuss actions to be taken.

Work Completed: BioMost, mobilized to the site on 6/23/21. A large amount of vegetation and iron precipitates was removed from the wetland cells to increase both flow through the system and settling capacity. The elevation of the settling/flush pond emergency spillway was raised to direct more flow through the wetland cells and prevent short circuiting. The spillway between the first and second wetland cells was lowered slightly to help prevent water backing up and overflowing at the settling/flush pond. The outlet monitoring weir had been compromised and was repaired. A staff gauge was installed to facilitate accurate weir readings.

As the Vertical Flow Reactors were older and water quality not always ideal, two test pits were dug in both VFRs to assess the condition of the media. Data is provided in the table below. Between 2-3 feet of iron precipitates and vegetation was found on top of the media surface at the locations chosen for test pits. An average organic mixed media depth of approximately two feet was observed to be in relatively good condition given the amount of additional material in the ponds and the age of the system. The accumulation of sludge and vegetation did not appear to be prohibiting flow through the media. Removing the accumulated iron and vegetation was beyond the scope of this O&M TAG request. There was concern that if the sludge and vegetation was stirred into the media, a permeability problem could be created. Therefore, a decision was made to leave the VFRs in their current condition.

Test Pit	Fe/Cattail depth (ft)	Media depth (ft)
1 VFR B	1.3	2.2
2 VFR B	2.5	3.0
3 VFR A	1.9	2.1
4 VFR A	2.6	2.6

Recommendations & Future Considerations: Continue monitoring of the treatment system including flow measurements. Continue monitoring water level and wetland capacity to indicate when the wetland may need to be cleaned. While not in imminent danger of failing, considering the age of the system, the accumulation of sludge and periodic decreased performance, the system should probably be redesigned and rebuilt. The BCWA should begin to work with the landowner to obtain a new agreement. As the BCWA has reported concern of other discharges on or near the site, a design phase should be conducted first that would include an investigation of site conditions.

Photo Log



Top Left: Media within the vertical flow ponds was in good condition considering system age (7/8/21).
Top Right: Outlet weir was restored to working condition and a staff gauge was installed (7/13/21).
Bottom Left: Each wetland component was cleared to increase settling capacity and flow (6/25/21).
Bottom Right: Large amounts of iron and vegetation were removed from the wetland (6/25/21)