Richards Passive Treatment System
SRI O&M TAG Project #36 Request #3
OSM PTS ID: PA-129

Requesting Organization: Blacklick Creek Watershed Association (in-kind partner)
Requesting Organization Representative: Dennis Remy
Dates of work performed: 3/1/2023

Initial Request: On 8/29/2022, the Blacklick Creek Watershed Association (BCWA) requested an improvement for measurement of flow at various locations within the system.

Initial Site Visit, Observations, and Identified Needs: As both BioMost and Stream Restoration Incorporated (SRI) were familiar with the system and the issue appeared to be straightforward, an initial assessment was not conducted based on information provided by BCWA.

Work Completed: On 3/1/2023, BioMost mobilized equipment to the site. A flow measurement pipe was installed at the wetland outlet, which is the combined flow for JVFP2 and JVFP3, the existing borehole, and the seep collection drain. A 12" double-wall HDPE culvert pipe was installed through a check dam placed at the wetland outlet to measure flow. The check dam was lined with riprap. The water elevation within the wetland was kept at or below the existing water elevation.

Sample point	pH	Alkalinity	Flow
WL Out	6.7	92	145
VFP 2	6.7	185	65
VFP 3	6.7	195	50
VFP 1	7	196	50
Raw	<4.0	0	164
SEEP	<4.0	0	16
SP Out	7.2	159	26

Flow measurements and water quality parameters were obtained before and after system improvements, as applicable on 3/1/2023.

Two boulders were placed near the outlet of the seep collection drain to allow for access during monitoring. A coupler was installed to raise the outlet above the existing wetland water elevation to measure flow of the seep.

Riser pipes controlling flow within the vertical flow ponds were set to only allow flow through one cell within the system to limit hydrogen sulfide odors from the fresh treatment media. To exercise different cells within the ponds, the risers were adjusted to the next riser in line.

Recommendations & Future Considerations: On-going water monitoring and site inspections should continue. Continued cycling of the JVFP cells should be performed in accordance with the "System Startup and Odor Control" section of the O&M Plan available on www.datashed.org. To address potential concerns with high flow events, installation of an extension/riser is being considered for the Mine Drain. By raising the elevation of the Mine Drain, increased head pressure will increase conveyance through the raw water pipeline before flowing to the overflow channel.

Photo Log

Top Left: Wetland flow monitoring pipe was bedded in bentonite (3/1/23).
Top Right: The wetland flow monitoring pipe was armored with riprap (3/1/23).
Bottom Left: Flow measurement for the seep collection drain outlet is feasible due to upgrades (3/1/23).
Bottom Right: JVFP outlets were adjusted on all three vertical flow ponds in accordance with O&M manual (3/1/23).