Lambert Run Passive Treatment Installation: Site 7 Lambert Run

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Lambert Run Site 7

Figure 1. *Lambert Run confluence with the West Fork*

Lambert Run is a 4.4 mile long stream located northwest of Clarksburg in Harrison County, West Virginia. Abandoned coal mining operations dating back to the 1900s occurred throughout the length of Lambert Run. These abandoned mine sites produce both acid and alkaline mine drainage.

Problem

Acidity to a lesser extent, and metal sources of impairment caused the degradation of Lambert Run and its inclusion on the state's 303(d) list in 1996. In 2002 WVDEP completed a TMDL for the West Fork watershed, which included Lamberts Run. The TMDL identified metals and pH as the impairments, and established the necessary load reductions for the metals: Aluminum (Al) 81%, Iron (Fe) 97% and Manganese (Mg) 99%. Since 2003 after the watershed plan was completed and approved, nearly two million dollars in funding has been secured for projects in the watershed. Several of the major contributors of mine drainage have been remediated and the mainstem of Lambert Run is showing improved water quality. However, Site 7 is one of the largest sources in the watershed, estimated to contribute > 166,000 lbs/year of metals pollution.

Project highlights

Figure 2. *Aeration weir at Site 7 in wetland cell #1*

The project consisted of a combination of passive treatment technologies. The main treatment method for the passive treatment system at Site 7 is five aerobic wetland cells. Discharge from the impoundment makes its way over an in-channel aeration weir and is then culverted into wetland #1. Wetland #1 has three large aeration weirs to encourage oxidation of the metals. The water then makes its way through four more wetland cells with aeration drops at various locations. After the fifth and final wetland, the water then discharges into Lambert Run. Total wetland area is approximately four acres. In addition, baffles have been installed in the existing impoundment to increase retention time and encourage oxidation.

Results

Figure 3. View of the wetland treatment cells taken during the 2015 EPA tour

Table 6 is recent data from the impoundment discharge at Site 7 (inflow). National Mine Land Reclamation Center (NMLRC) and Guardians of the West Fork (GWF) have yet to collect data from the outfall of the passive system. Initial visual results indicate that the system is working as intended. However, performance cannot be fully quantified until after next growing season when the wetlands have had ample growing time. The system is expected to reduce iron by 132,832 lbs/year and aluminum by 416 lbs/year.

Table 1 Recent influent data at Lambert Run Site 7

Date	Site Name	pH*	Alk	Acd	D.Al	D.Fe	D.Mn	Discharge	tons per year			
		Lab	mg/L	mg/L	mg/L	mg/L	mg/L	gal/min	D. Fe	D. Al	D. Mn	Acidity
9/16/2015	Site 7 (In)	6.56	116.83	54.97	0.005	24.03	2.28	994	52.5488	0.010934	4.985904	120.2084

Partners and funding

The Lambert Run Site 7 AMD treatment system was completed in September 2015 through the cooperative efforts of WVDEP; the watershed group, GWF) and NMLRC at West Virginia University. NMLRC also worked with the GWF to obtain funds from the Office of Surface Mining's (OSM) Watershed Cooperative Agreement Program (WCAP). WCAP funds and WVDEP's stream restoration funds (SRF) covered construction costs and match. Table 2 provides a breakdown of the final costs.

Table 2. Lambert Run Site 7 final costs

Funding	Award	Spent	Balance
§ 319	$384,933	$384,376	-
SRF	$200,000	$200,000	-
WCAP	$56,622	$56,622	-
Total	$641,555	$640,998	$577

Note: Load reductions and other updates will be provided after the system is operational, most likely by the summer of 2016. At that time this report will be amended to include the most up-to-date information.