Low Head Dam Mitigation River Mile 12.2

FAST FACTS

LOCATION:

325 Clark Road
Arlington Heights, OH 45215

PROJECT PARTNERS:

Village of Arlington Heights
Mill Creek Alliance
Benchmark Land Mgmt
Metropolitan Sewer District of Greater Cincinnati
Hamilton County Conservation District

PROJECT AREA:

120 feet

PROJECT COST:

$229,458

COMPLETED:

Winter 2023

PROJECT FEATURES:

Dam Mitigation
Rock Riffle Installation
Education & Outreach

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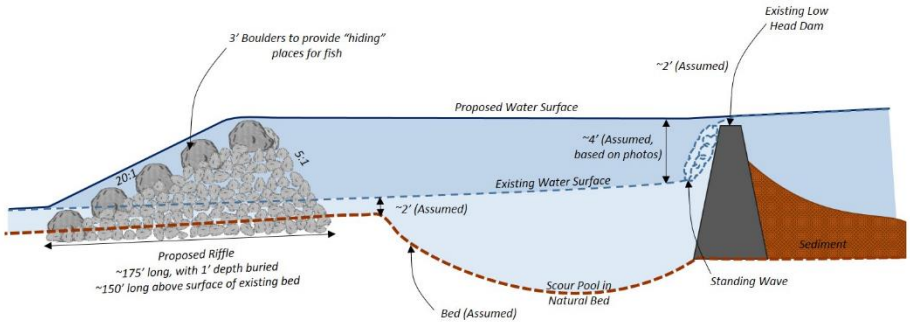
The Low Head Dam Mitigation River Mile 12.2 (LHD RM 12.2) is located immediately downstream of Clark Road along the Mill Creek mainstem in the Village of Arlington Heights. It mitigates one of the 29 low-head dams (LHDs) that once blocked the Mill Creek. Within a few years we expect all LHDs will be mitigated, and the entire 28 miles of the Mill Creek will once again be a free-flowing and connected to the Ohio River.

A sewer crossing constructed across the stream formed the low head dam at RM 12.2. A 1-foot high waterfall was formed by the dam that acted as a barrier to fish and other aquatic species, eroded the streambed, impaired water quality, and was a hazard to recreation in the stream.

Because the dam was formed by necessary infrastructure, it could not be removed. The selected approach left the dam in place, and mitigated it by constructing a rock ramp up and over it at 30:1 slope. The 120-foot long riffle used 1,200 tons of rocks and was designed to raise the water level in such a way that the dam will be effectively submerged during most flow conditions (see graphic).



The environmental diversity designed into the restored stream environment promotes biological diversity. A low-flow channel accommodates changing flow conditions from the dry summer to wet winters. The gradual slope enables aquatic organisms with a range of swimming abilities to migrate upgradient, over the riffle. Boulders placed on the downslope side of the riffle introduce habitat patches and provide refuge to aquatic species migrating upstream, over the riffle.

The project meets multiple goals including: protecting infrastructure, improving water quality, restoring habitat, and increasing recreational utility, all of which support the vision of a healthy Mill Creek to the benefit of the human health and environment in the watershed.

In 2021 scientists from the Midwest Biodiversity Institute (MBI) completed a Biological and Water Quality Assessment of Mill Creek. They found that water quality was good, and that macroinvertebrate (worms, insects, crustaceans, mussels, and other animals without backbones) were in attainment with Warm Water Habitat (WWH) Aquatic Life Use standards. However, fish communities were not in attainment for WWH standards simply because of dams that acted as fish barriers.

The project brings the restored stream reaches into attainment with Warm Water Habitat (WWH) Aquatic Life Use standards. The project restores the natural sequence typically seen repeating in streams: deep pools with slow moving water, followed by rocky riffles agitation water, and then shallow runs where sediment settles out and water flows quickly. This complex stream structure increase habitat, oxygenation, nutrient uptake, and metal sequestration. These measures restore, to the maximum extent possible, the natural function of the streams and repair degraded habitat while reducing erosion, sedimentation and nutrient enrichment. This project offers a unique opportunity to improve highly impaired reaches of the Mill Creek, remove barriers to the migration of fish and other aquatic species, and bring the stream into attainment with the WWH criteria.

Project Partners:

Mill Creek Alliance – Shifting the Current

Ohio Environmental Protection Agency

Christopher B. Burke Engineering, Ltd.

Benchmark Land Management, LLC

Village of Arlington Heights

Metropolitan Sewer District of Greater Cincinnati

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