

Derry Township Stormwater Improvement Project- Area 2

Project Description: Derry Township proposes a comprehensive upgrade to their current stormwater system, in areas with historical flooding and erosion problems. The proposed project includes the design of an integrated storm sewer, open channel, and roadway culvert elements in three distinct problem “areas” within Derry Township.

Area 2 – (aka “Bullfrog Valley”) of Derry Township’s Storm Water Improvement project is designed to enhance, improve, stabilize and restore an unnamed tributary to the Swatara Creek to address extensive long term problems with flooding and erosion. The proposed project includes the enhancement of an existing stream channel, and design of hydraulic roadway drainage structure elements. This area contains 3 subsections of improvements (“upstream”, “central”, and “downstream”) as follows:

The “upstream” section of improvements to Area 2 is located near the Bullfrog Valley Pond (pond) at the intersection of Bullfrog Valley Road and Wood Road. Proposed improvements are as follows from upstream to downstream:

1. Four (4) existing gabion structures will be removed and the channel upstream of the pond will be re-graded and stabilized within the existing banks.
2. Sediment, which has accumulated at the mouth of the pond, will be removed.
3. A pedestrian bridge that provides access to the Jonathan Eshenour Memorial Trail will be replaced with a larger structure.
4. A diversion structure at the entrance of the pond will divide stream flows between the pond and a new stream channel to be installed to the immediate west of the pond for the purpose of taking the pond offline, at the request of the US Army Corps of Engineers, US Fish and Wildlife Service and the Pennsylvania DEP. The diversion structure will be adjustable for the purpose of maintaining a base flow to the pond while taking the pond offline from the main channel and still maintaining a consistent stream flow throughout the stream channel. The new restored stream channel to the west of the pond will carry low and high rates of stream flow to a proposed concrete pipe culvert designed to replace the existing corrugated metal pipe under Wood Road.
5. The existing basin-like configuration downstream of the pedestrian bridge will be removed and replaced with a newly graded restored stream channel, which will require relocation of an existing water line. Limits of work for the southern end of Area 2 will end at the recently restored stream channel. This pipe has been determined to be undersized for storm

events and contributing to channel overflows and flooding in the surrounding areas. At the request of the Dauphin County Conservation District, an existing sediment basin placed during previous walking path construction will be converted to a permanent rain garden to enhance the water quality of the contributing stormwater runoff.

6. Downstream of this area, in order to create a riparian buffer, the stream banks will be planted with suitable shrubs and protected by a linear filter sock strip.

The “central” section of work for Area 2 begins near the southern ramp of the Route 322 / 422 PENNDOT interchange. Culverts, storm piping and an inlet box system of structures is proposed to convey stormwater around the east side of the bridge and underpass. Culvert installation will be completed by the bore and jack method and the inlet box system will be precast. The existing culvert under the bridge and underpass is to remain in place to carry base flow of the stream. The central limit of work for Area 2 ends at the north ramp of the interchange. A supplemental culvert is planned for installation under the southern ramp by the bore and jack method.

The “downstream” section of work for Area 2 begins upstream of the Norfolk Southern railroad and continues north through the Highmeadow Campground to the confluence with Swatara Creek. The stream channel will be returned to its original shape and the area will be seeded and stabilized following removal. A supplemental culvert through the railroad embankment by the bore and jack method, adjacent to the existing culvert that currently conveys water through the railroad. The stream channel downstream of the railroad embankment, which is currently eroded and unstable where it passes through Highmeadow Campground, will be re-graded, stabilized, and re-profiled to its confluence with Swatara Creek. A pedestrian bridge that provides access to both sides of the stream will be replaced. In addition to stabilization and seeding, native tree and shrub species will be planted along the edge of the stream corridor from the railroad embankment down to the confluence with Swatara Creek.

Project Cost and Funding: The expected construction cost of this area is \$1.8 million that will be funded by a combination of state H2O grant and Pennsylvania Infrastructure bank loan secured by Derry Township.

Project Schedule: Construction will begin, (contingent of securing requisite permits from Pennsylvania Department of Environmental Project and Pennsylvania Department of Transportation) during the late summer of 2010 and continue for approximately 12 months.