Detain H₂O Basin Retrofit

Project Location: Toyota North American Parts Center of KY Watershed: Woolper Creek ively Drainage Area: ~31 acres estricting Funding: USEPA Water Technology Innovation Grant

Description: This BMP technology cost-effectively retrofits detention basin outlet structures by restricting release rates such that more storms are discharged below the critical flow for streambed erosion, enhancing stream channel protection while maintaining flood control.

Project Highlights:

 Hydrologic/hydraulic and sediment transport modeling guided design to optimize excess basin capacity to reduce downstream channel erosion.

Inflow2

Outflow

Upstrean

Inflow1

🛆 Site Rain Gage

NWS Rain Gage < 1 mile

- Flow regime restoration supported ecological lift in receiving stream.
- Project monitoring confirmed pilot study performance and benefits.
- Patent pending and currently distributed by Site Supply, Inc.
- Results to be published by JAWRA (Hawley, et al., 2017).

Monitoring: Pre- and postproject monitoring included time-series photographs of basin stage, outflow and inflow pipe discharge, stream stage gages, a rain gage, and in-stream surveys. Results below illustrate a 1.3-inch storm event with peak intensity of 2.6 in/hr and outflow of only 4 cfs.



Ecological Lift: ~1 dozen native minnows evident in first pool downstream of scour pool at outfall on 9/16/16 (2 circled below). Flow was discharging from the basin despite the relatively dry/hot week.



Project Partners: Led by the USEPA Office of Research and Development, many entities worked together to make this pilot project a success.



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