Managing Flooding, Pollution, & Erosion: Evaluating Stormwater Solutions in Ohio

Design and Monitoring Local Stormwater BMPs

Monitoring continued throughout the winter and data analysis is underway for all sites. Project contractors experienced substantial challenges with monitoring during the Ohio winter, including difficulty accessing equipment in catch basins because of piles of snow and frozen manhole covers and water freezing behind weirs.

Data at Holden Arboretum and Perkins Township appear to confirm that pre-construction infiltration testing predicts quite well the expected exfiltration or drawdown rate from constructed infiltration practices. Over the coming months, North Carolina State University will continue analyzing data for other sites across the Chagrin and Pipe Creek watersheds. Due to problems with construction methods producing concentrated run-on, the pervious pavement at Pepper Pike is no longer being monitored. The porous asphalt parking area at Old Woman Creek NERR has been redesigned as a pervious paver and rainwater harvesting system and construction is anticipated in spring 2014.

Ice behind weir, Orange Village

The project team also plans to monitor a bioretention cell to be constructed at Ursuline College in Pepper Pike. An existing 1.3 acre a parking lot will drain to the bioretention cell. The project team provided feedback on the design to make hydrologic monitoring feasible. Infiltration tests will be completed during construction. The design specifies a media amendment - Osorb - to be included in the bioretention mix to capture nutrients and metals. Osorb is a swellable, organically modified silica or glass capable of absorbing volatile organic compounds and other contaminants from water. Construction is planned for late April. To schedule a site visit during construction please contact Kristen Buccier at (440) 975-3870 or kbuccier@crwp.org

Ice and frozen sensors in catch basin weir box, Perkins Township

Modeling

CRWP and ODNR have been working closely with modeling subcontractor Cardno/JFNew and have scoped contracts to engage NCSU as an additional modeling subcontractor. Cardno/JFNew is completing modeling work using the USEPA Storm Water Management Model (SWMM). A thorough review of the SWMM model sensitivity analysis allowed the team to identify and eliminate insensitive design parameters from further consideration. Work continues to collate results in a way they can be efficiently used in developing or updating design guidance and communicating results to other stormwater professionals. Monitoring data collected in 2014 for four bioretention practices and five permeable pavement installations will be used to calibrate and validate the

For more info on this project, please contact Amy Brennan at abrennan@crwp.org or (440) 975-3870 or Heather Elmer heather.elmer@dnr.state.oh.us or (419) 433-4601

At the May 7th CLG meeting Cardno JFNew will share results for design parameters and site conditions impacting volume reduction, highlighting those most likely to be included in design specifications and credits. The presentation will review results for bioretention, porous pavements and detention and compare observed and modeled volume reduction for the Perkins Township pervious concrete installation. Discussion will focus on strategies for sharing results and interest and approach for developing a supplementary SWMM model user's guide.

CRWP is contracting NCSU to develop DRAINMOD models for bioretention and permeable pavement to complement SWMM modeling. In addition, NCSU will coordinate with University of Tennessee Civil Engineering Department (UTCED) and the Oak Ridge Laboratory on development of climate change scenarios for the watersheds of interest.

Collaboration and Training

The September 2013 collaborative learning group (CLG) meeting included a site visit to the Willoughby Hills Community Center to view stormwater BMPs and monitoring equipment and a guest presentation on design and performance of innovative stormwater practices by Dr. Bill Hunt of North Carolina State University. The group discussed construction and monitoring progress, stormwater modeling, and provided input to shape development of site-based case studies. Of meeting attendees that completed a follow-up survey, all said participating in the project is a good use of their time and that it has increased their knowledge of BMP performance. 92% have shared project information with others and 71% are applying what they have learned in their own LID planning or design work.

The project team will be seeking input from CLG members and others as it develops technical trainings on bioretention and pervious pavement design, construction, and maintenance. Old Woman Creek NERR and CRWP are again offering a graduate internship in conjunction with the University of New Hampshire TIDES program. Rebecca Jacobson will join the team in June and provide project support, include development of case studies, training and tools, and assisting with monitoring at project sites.

2014 TIDES Intern Rebecca Jacobson

Dates to Remember

- **May 7, 2014 9:00am-3:30pm** - CLG Meeting and Site Visit at Ursuline College The meeting will feature a site visit focused on bioretention cells, BMP cost analysis, site investigation considerations for effective design, modeling results, input on development of trainings and preliminary monitoring results.
- **August 20, 2014** - CLG Meeting and Site Visit, Location TBD

About this project

This project is developing science-based tools to promote the use of practices that minimize stormwater impacts on Ohio's coastal communities and Lake Erie. Stormwater professionals are collaborating with the project team to generate credible and locally verified performance information about innovative systems. Project results will be used to develop credits and incentives for the most effective stormwater systems.

For progress reports, meeting summaries, project updates, presentations, and other resources visit: http://crwp.org/index.php/projects/research-projects/nerrs-science-collaborative

To review design plans, photos, and notes for potential monitoring sites click here.

Contact

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