
CALUMET STORMWATER COLLABORATIVE

MEETING SUMMARY – August 7, 2015

Metropolitan Planning Council

140 S. Dearborn, Suite 1400



Attendees

Burrell Poe, Center for Neighborhood Technology
Marcella Bondie Keenan, Center for Neighborhood Technology
Molly Oshun, Center for Neighborhood Technology
Anjolie Cheema, CH2M
Nora Beck, Chicago Metropolitan Agency for Planning
Eve Pytel, Delta Institute
Eric Otto, Forest Preserve District of Cook County
Lisa Cotner, Illinois Department of Natural Resources
Edith Makra, Metropolitan Mayors Caucus
Josh Ellis, Metropolitan Planning Council
Danielle Gallet, Metropolitan Planning Council
Kelsey Pudlock, Metropolitan Planning Council
Kelli-Ann Sottile, Metropolitan Planning Council
Dan Feltes, Metropolitan Water Reclamation District of Greater Chicago
Brent Shraiberg, Metropolitan Water Reclamation District of Greater Chicago
Nate Wolf, Metropolitan Water Reclamation District of Greater Chicago
Andrew Seo, Candidate for Water Commissioner of Metropolitan Water Reclamation District of Greater Chicago
John Legge, The Nature Conservancy
Andrew Szwak, Openlands
Bill Wood, SmithGroup JJR
Dennis Latto, South Suburban Mayors and Managers Association
Ed Paesel, South Suburban Mayors and Managers Association
Bob Newport, U.S. Environmental Protection Agency
Moira Zellner, University of Illinois Chicago
Tui M. Muse, Village of Dixmoor
Karen Kreis, Village of Midlothian



Introductions

With some new faces join the August meeting, Josh Ellis quickly went over some background about the Calumet Stormwater Collaborative (CSC). The CSC is a group of stormwater stakeholders from across the region that have been meeting since April of 2014. The CSC is a part of the Millennium

Reserve's priority projects; others include transitioning Pullman into a national monument. The CSC has created a work plan for the 2015 year. The work plans focuses on increasing government capacity, and minimizing the negative impacts of precipitation by sharing knowledge about technology and financial resources and deploying green infrastructure when and where appropriate. Meetings are held every month and present members with the opportunity to talk about projects, give updates and have discussions with like-minded people that are working toward many of the same goals. There is a sign-in sheet at every meeting; everyone is encouraged to sign-in; if someone is new to a meeting, you can include you email on the sign-in sheet to get on the CSC emailing list.

Member Updates

Josh Ellis, MPC, recalled that the CSC spent last month's meeting discussing the grant applications that many of the members were applying for at the end of July.

Kelsey Pudlock, MPC, announced that MPC (on behalf of the CSC) submitted an application to the Section 319(h) Financial Assistance Grant Program. The proposal called for the development of a water quality assessment to complement each of MWRD's detailed watershed plans that together cover the majority of Cook County. The assessments would focus on water quality and many of the elements needed for the existing watershed plans to become eligible under the Section 319 funding program. Josh Ellis mentioned that Cook County has provided matching funds, and MPC as well as CMAP will provide in-kind services if the application is awarded. If awarded, an advisory group would have to be created to help the development of the documents, and MWRD's watershed planning councils would be contacted and encouraged to become involved in the process.

Nora Beck, CMAP, announced that CMAP submitted an application to the NOAA's coastal resilience grant program to build CMAP's capacity to conduct infrastructure assessments and follow-up capital improvement plans (CIPs) for five specific areas in the Calumet region. Communities would be able to choose an infrastructure system they would like assessed. This could cover stormwater infrastructure but could also be other systems such as tree canopy, water supply infrastructure conditions and/or roadways.

Karen Kreis, Village of Midlothian, announced that the Village submitted an application to the Chi-Cal Rivers fund. Kreis explained that if the application is accepted it would be the Village's second green infrastructure project. The proposal called for a soon-to-be demolished city-owned property—that is continually inundated by stormwater—to be replaced with a green infrastructure solution. Kreis also mentioned that their IGIG project has been put on hold; she is worried that funding will be lost with the grant ending in October of this year. Josh Ellis recommended that Kreis contact IEPA to share these concerns and see if an extension is possible.

Josh Ellis gave a brief update on HUD's National Disaster and Resilience Competition (NDRC). In the spring, there were many meetings to think through the applications. Phase I was conceptualizing the project and defining the project's geographic scope. All of Illinois' applications—City of Chicago, Cook County, DuPage County, and the State of Illinois—made it through Phase I and are now working on Phase II, which is asking applicants to identify actual projects and budgets. Currently the four applicants have been able to call out individual projects, however, they still need to figure out how and what they are going to work on, collectively. A meeting was held this week to discuss collective work, and there will likely be two more prior to the Phase II submission deadline.

Community Engagement Tool for Green Infrastructure Modeling

Moira Zellner, UIC, is an ecologist, urban and environmental planner and complex systems modeler. She has an interest in green infrastructure design at the neighborhood level, and how it relates to effectiveness and efficiency. Previous modeling work had been commissioned by IEPA in 2009-2010. Beyond that work, her team at UIC has further developed and used simulation models to develop landscape design principles to answer questions such as how much green infrastructure coverage is needed to be to alleviate flooding, and where is placement in a neighborhood most effective? These are critical questions to understand if regulation on green infrastructure is formulated and enforced. Data on green infrastructure performance is very sparse and variable because many factors influence effectiveness. In those cases, it is useful to turn to modeling to anticipate possible impacts.

Zellner and her UIC team developed a computer model, called L-GrID (Landscape Green Infrastructure Design), developed in Netlogo (an agent-based programming language and modelling environment). L-GrID looks at how to accommodate and rapidly assess different green infrastructure interventions at a neighborhood scale. The model is a generalized representation of the key elements needed to evaluate green infrastructure and the larger system within which it is contained—this includes the green infrastructure itself, permeable or impermeable cover, sewer intakes, outlets and roads. Zellner explained that the model takes into account local and regional datasets and incorporates many of the ecological and hydrologic functions (e.g. evaporation and evapotranspiration) involved with green infrastructure. For example, rain that comes into the model is based on data from the local area and will infiltrate based on the surface cover; the rate at which the sewer intakes convey water is based on the City's and MWRD's data; and the model includes the network capacity and outflows. Edith Makra, Metropolitan Mayors Caucus, asked why tree interception was not included. Zellner explained that they have been working with the Morton Arboretum to include things like tree canopy; however, modelling efforts have yet to show that tree canopy has a meaningful reduction on reducing stormwater abstraction.

Zellner went further to explain how much green infrastructure would be needed for 5- and 100-year design storms based on an assumption of 50% impervious cover. For small storms nearing the 5-year range, 10% of the land would need to be green infrastructure for stormwater to infiltrate more water than what goes into sewers as well to eliminate flooding. For 100-year storms, 15% of the land would need to be green infrastructure for stormwater to infiltrate more than what the sewers can take, but 30% to reduce flooding and to provide relief to the sewer system. While providing these illustration, Zellner emphasized these thresholds are hypothetical, and that they are likely to vary as landscape and storm conditions change. Still, they give a sense of where minimum thresholds might exist, and that beyond certain levels of green infrastructure, marginal benefits decrease.

When Zellner's team looked at green infrastructure placement, they assessed six different location scenarios: 1) random; 2) curb cuts (adjacent to roads); 3) scattered (away from roads), 4) upstream clustering; 5) downstream clustering, and 6) hybrid (following flow paths and accumulation of runoff). Zellner's team had found that clustering did not prove to do well. Scattering green infrastructure has shown promising results, particularly when curb cuts are present; however, larger storms produce so much runoff that there is no advantage of any particular layout. Nevertheless, positive trends in green infrastructure placement are noticeable with greater coverage (around 25%). Curb cuts layouts show great potential in handling runoff peaks, in particular when space is limited. As opportunity for green infrastructure installation increase, a hybrid approach becomes

more advantageous, and can be easily built on an initial curb cut design. If all else fails, random placement can still provide some relief.

Zellner reminded the Collaborative that there are a number of considerations to these guidelines. All modeling should be followed by monitoring so you can validate and adjust models based on data collected. Also, simulations alone are not enough; in addition to the variables of the landscapes and green infrastructure types, there are tradeoffs, costs and distribution, spatial constraints and diverse stakeholder interests that should have a role in green infrastructure placement decisions. These cannot be sorted out by computer simulations in a vacuum, but should be part of a collective planning process together with the simulations.

Zellner's team has been working on ways to use simulations to support both collaborative solution-building and compromise when dealing with stormwater management and green infrastructure. Zellner explained that her team modified the LGrID so that it could represent more types of green infrastructure and run scenarios faster, to fit within a typical two-hour planning meeting. They have also incorporated costs, damages and efficiencies into the simulation process, based on feedback from potential users. Zellner asserted that for compromise to happen, those at the table need to understand their own values, as well as other people's values. The participatory simulation setup is a scaffold for this understanding to be achieved, an entry point to the problem and to finding a compromised solution.

Through photos of the workshop setup, which showed the interactive model (LGrID) and corresponding mobile interface in use, Zellner described how they are integrating participatory planning and modelling to encourage people to understand the problem—both spatially and socially—and helping them be open about their values in the decision making process. Zellner explained that the participants first define their values and interests; these values are then used to tailor results of each scenario as well as provide a score that is representative of whether or not priorities are met. The mobile interface allow participants to compare and contrast across his/her own scenarios as well as scenarios of other participants in the room. The workshop setup includes structured facilitation, where participants engage with prefabricated interest profiles, first, before creating their own, use worksheets that allow participants to keep track of how variables of interest improve or decline, and adopt suggested strategies for exploration. This setup has shown to significantly help participants to critically think about the trials, synthesize solutions and decisions, and make connections with the larger region.

Moving forward, the UIC team is ready to collaborate on monitoring opportunities, by helping design field experiments and collect data to both validate existing models and also refine design principles. Zellner and her team can also support implementation in communities, using participatory modeling as a point of entry for stakeholders to understand the problem, to understand other potential conflictive interests), and to other more sophisticated modeling tools to work toward collaborative action.

One CSC member commented that Zellner's research presents an opportunity to think about how future scenarios of green infrastructure projects fit into strategic planning, particularly in terms of moving land into more productive management. Another CSC member commented that this tool can be meaningful and useable across multiple stakeholders dealing with and experiencing the impacts of stormwater. Zellner affirmed that they have been working with UIC hydrologists, USGS and MWRD to make sure flow and other sewer-related data are appropriately represented, following established hydrological models. A third CSC member asked, "Who are the types of people that have been involved in her research in the past?" Zellner explained that through the

design of the model's code and facilitation process, engineers, environmental advocates, planners and village professionals were involved. They are also building collaborations with museums to create avenues for the public to begin thinking about their role in the problem *and* solutions. Josh Ellis, MPC, asked what the feasibility is for developing an interface for a new geography. Zellner responded that it can be done easily with minimal financial support.

Watershed Management Ordinance (WMO) and Developed Standard for Volume Control Compliance in Green Infrastructure

Nate Wolf, MWRD, presented on the recently completed Volume Control Design Details that were created as a part of the August 2015, Technical Guidance Manual update of the Watershed Management Ordinance (WMO) which requires the first inch of runoff from the new development impervious area to be captured on site. The purpose of the design details is to provide landowners and developers with a library of infrastructure design templates that can be implemented to help capture the one-inch of rain and quicken the permitting process. Wolf explained that all volume control templates can be found in [Appendix C of the WMO](#). In addition to pdf documents, AutoCAD files will also be posted on the website for public use. Wolf recalled that all volume control details are new and all other details have been substantially updated.

Examples of green infrastructure that are used for volume control are bioretention, bioswales, constructed wetlands, drywells, observation wells, permeable pavers, rain cisterns/water reuse, vegetated filter strips and green roofs. Each template calls out standard details—this includes the type of materials used in the design and the recommended dimension of each element. There is also a table on every template that provides the volume type, porosity and storage volume to help calculate the total volume the infrastructure design will afford. This is where AutoCAD files can become useful as they can be tailored to a specific site. In addition to accelerating the permit process, it will also help improve maintenance and the sustainability of the site

Working Group Update: Green Infrastructure Design Template - final product

Eve Pytel, Delta Institute, presented on the green infrastructure templates they designed with the help of Guidon Design (www.guidondesign.com). Delta has a mission to work with municipalities that are experiencing economic challenges. They saw that many of these types of communities need more guidance on how green infrastructure actually performs—not just how to build a rain garden. Delta's toolkit, which includes a textbook, corresponding design templates and appendices, can be found, [here](#). The textbook provides relevant information about green infrastructure, such as what it is and how it fits in with municipal decision-making. Templates are provided as pdfs as well as AutoCAD files. In addition to these files, there is a 'working library' that includes additional guidance related to the various template designs.

Design template specs include a description of the green infrastructure, customization options, maintenance, cost information, typical sections, details, view and notes. In addition to these main detail specs, there are additional ones in the appendices such as information on construction and cost estimates. One template that is unique to Delta's toolkit is a native plantings template. It identifies the types of plugs to use when working with green infrastructure that uses native vegetation, where to get the plugs, as well as tree species that can be paired with shrubbery. There currently is not a lot of information that links the two types of vegetation with stormwater management in mind. The toolkit can be accessed by Delta's tool page. Delta plans on working with communities and is encouraging communities to work together and give guidance to each as they use the templates. Josh Ellis, MPC, recalled that the tool was developed for the Great Lake

Region because it was funded by a Coastal Zone Grant. Pytel affirmed that within the Calumet and beyond, the region is rapidly accelerating so there are many ways' or people to benefit from this work.

One CSC member asked Pytel if Delta is going to track users, or the number of implemented projects that used the templates. Pytel said that they are particularly interested in uses related to the demolition of homes; however, with open source information, they are not going to know who is using what and where. Another CSC member asked what criteria was used to create the templates. Pytel said that they were informed by a variety of projects based in Minneapolis—they looked at a variety of what had been used before, and what was most effective. A third CSC member commented that some kind of monitoring device would be complementary to their work. Pytel mentioned that Delta sees this beneficial in the long-term (especially with the cost of maintenance over time) as it would better inform decision-making.

Final Remarks

Josh Ellis, MPC, wanted to remind the CSC that WEFTEC 2015 (Water Environment Federation Technical Expo and Conference)—a giant wastewater and stormwater conference—is taking place in Chicago on September 26-30th. On Wednesday, September 30th, there will be a panel discussion on the Calumet Stormwater Collaborative. A few of the members that will be talking include Josh Ellis at MPC, Amy Walkenbach at IEPA, and Mason Throneburg at CH2M. Proceeding the panel, MPC (on the CSC's behalf) will be leading a tour through the Calumet region highlighting cross-government collaborations—and in some cases, the projects resulting from the collaboration.

One Collaborative member announced that it is important to note that the Thornton Reservoir will be going online very soon (possibly as early as September 1st). The Reservoir will collect 4.5 billion gallons of stormwater. While most of the meeting was focused on *green* infrastructure solutions, the reservoir project (grey infrastructure) is a multi-decade effort that is finally being realized. The majority of the Collaborative members would be interested in a private tour of the reservoir before it goes online.

Next Meeting

Friday, September 11, 2:00pm– 4:00pm
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