
CALUMET STORMWATER COLLABORATIVE

MEETING SUMMARY – May 1, 2015

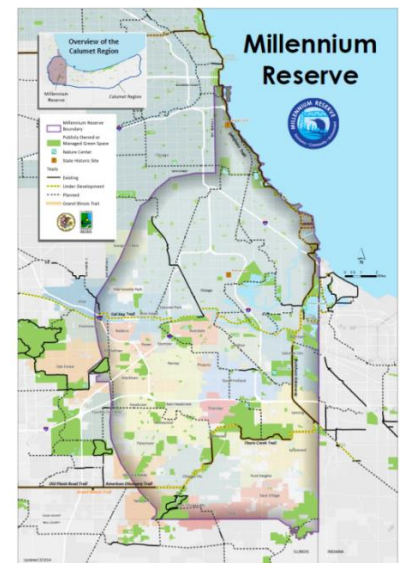
Metropolitan Planning Council

140 S. Dearborn St., Suite 1400, Chicago



Attendees

Jeff Edstrom, Cardno
Hal Sprague, Center for Neighborhood Technology
Burrell Poe, Center for Neighborhood Technology
Molly Oshen, Center for Neighborhood Technology
Jason Navota, Chicago Metropolitan Agency for Planning
Kate Evasic, Chicago Metropolitan Agency for Planning
Nora Beck, Chicago Metropolitan Agency for Planning
Nancy Williamson, Chicago Wilderness
Thomas Burke, Christopher Burke Engineering
Michael Berkshire, City of Chicago Department of Planning & Development
Aaron Koch, City of Chicago Department of Planning & Development
Amy Ellingson, Cook County – Office of Commissioner Gainer
Jennifer Miller, Cook County Department of Planning & Development
Matt Harrison, Delta Institute
Ryan Wilson, Elevate Energy
Peter Nicholson, Foresight Design Initiative
Lyndon Valicenti, Foresight Design Initiative
Eric Otto, Forest Preserve District of Cook County
Matt Bardol, Geosyntec
Andrea Cline, Geosyntec
Mary Ellen Guest, Historic Chicago Bungalow Association
Lisa Cotner, Illinois Department of Natural Resources
Margaret Schneemann, Illinois-Indiana Sea Grant
Josh Ellis, Metropolitan Planning Council
Danielle Gallet, Metropolitan Planning Council
Kelsey Pudlock, Metropolitan Planning Council
Brent Shraiberg, Metropolitan Water Reclamation District of Greater Chicago
Bob Nestorovic, Metropolitan Water Reclamation District of Greater Chicago
Beth Hall, Midwest Regional Climate Center
Lydia Scott, Morton Arboretum
Melissa Custic, Morton Arboretum
John Legge, The Nature Conservancy
Tiffany Ingram, Natural Resources Defense Council
Joel Scata, Natural Resources Defense Council
Daniella Pereira, Openlands



Moira Zellner, University of Illinois Chicago
Mary Pat Mattson, University of Illinois
Karen Kreis, Village of Midlothian
Joe Sparrey, Village of Midlothian

Member Updates

Josh Ellis announced the one-year anniversary of the Calumet Stormwater Collaborative. The first Collaborative meeting was on April 8, 2014.

Nora Beck, CMAP, announced CMAP's annual call for projects through their Local Technical Assistance (LTA) program. This year Cook County Department of Public Health (CCDPH) is partnering with the Regional Transportation Authority (RTA) and the LTA program to solicit proposals for developing local active transportation plans. In addition to the transportation component, CMAP is explicitly looking to incorporate stormwater management into their LTA planning work, and therefore, encourages Calumet communities to apply. Beck explained that projects are not limited in scope; communities can seek assistance in zoning updates, comprehensive plans, and/or corridor studies. Applications are due June 25, 2015 at 12:00pm. Beck noted that the application is only two pages so all communities have the opportunity to apply. Applications that pass the initial round will go through a series of interviews with CMAP. To learn more about the application process, you can attend an informational session at CMAP on Tuesday, May 19, at 2:00pm. You can also visit [CMAP's website](#) for more details.

Jennifer Miller, Cook County Department of Planning & Development, announced that the Department is receiving approximately \$80 million in CBDG-DR (disaster recovery) funds, which will be used for disaster recovery purposes. As of now, the Department has developed a strategy plan for the funds, [which is currently up for public comment until May 12, 2015](#). Miller strongly encourages members of the Collaborative to provide feedback on the strategy plan. Additionally, Miller pointed out the Department is actively working on Phase II of the National Disaster and Resilience Competition (NDRC) application. In the near future, they would like to talk to the Collaborative and get feedback on Phase II as it becomes more developed.

Eric Otto, Forest Preserves of Cook County, announced that they are looking to hire a civil engineer with 2-3 years of experience. In response, Josh Ellis, MPC, mentioned that [MPC has an Associate position open](#), Friends of the Chicago River has an opening in its watershed planning division, and [CMAP has a few positions open](#) as well.

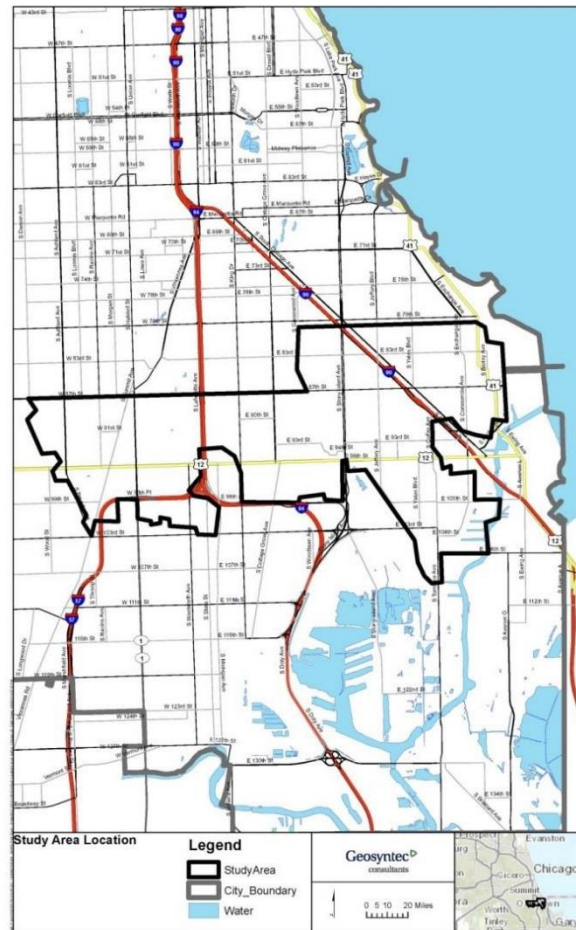
Lisa Cotner, IDNR, announced that there will be a 'No Adverse Impact' workshop coming up in partnership with Sea Grant. They will be providing input on the coastal fund program to ensure the program supports relevant projects.

Metropolitan Water Reclamation District of Greater Chicago's (MWRD) Work in the Calumet Region

○ Phase II Project Update: Flooding Plans for Chicago Neighborhoods in Calumet Region

Matt Bardol, Geosyntec, presented on their MWRD Phase II Study Area located on the South Side of Chicago. Geosyntec has been carrying out this project with MWRD and the City of Chicago. This area was selected for a variety of reasons: 1) Other studies have been done within the area that can be leveraged for valuable information and insight; 2) The northern boundary of the study area is 87th street, which used to be the boundary for the Sanitary District of Chicago in 1895; and 3) It comprises sections of Lake Calumet, including areas that had been filled in, and thus, have caused areas west of the lake to become flood-prone.

In total, the study area is a densely urbanized 13 square miles with relatively new residential areas (approximately 50% of the area was developed by 1959). It crosses through seven wards (7, 8, 9, 10, 21, 34 and 19)—with wards 7, 8, 9, and 21 as the most dominant—and includes the northern portion of Lake Calumet. Bardol reiterated that there have been other studies in this area, so Geosyntec are building from existing information and findings. Aaron Koch, City of Chicago Department of Water Management, pointed out that the City sees this area as one of the most chronic flooding areas in the City. He mentioned that MWRD's Thornton Reservoir is coming on board this year, which should help. Regional solutions are being assessed, but they have not looked into green infrastructure or home retrofits.



A member asked why the Lakeside development was not included in the study area, and Koch explained that it was not included because there are no buildings on the site. The study is focused specifically on relieving flooding for existing residents. Additionally, one Collaborative member commented that the Lakeside development already has plans to handle 90% of their stormwater.

Bardol continued to describe how the existing land use has influenced their study, particularly their preliminary short- and long-term implementation strategies. As a result of the residential composition of the study area, 41% of it is private property. Just looking at public right-of-ways, they cover approximately 20% of the study area, excluding residential property. Geosyntec realizes that strategies that are implemented within this 20% are not going to have a significant impact on flood relief. Therefore, they are looking to harness public/private partnerships, and looking into how to best engage with the residents of the study area. Currently they are looking to work with

institutions such as schools (public and private) and churches. Matt remarked that one of the visuals that Geosyntec uses to talk and inform residents about flooding are topographic maps with a color gradient for elevation. He said topography is a definite issue. The severity of the flooding problem was also emphasized by a map of the 311 calls (water on streets and water in basements) from 2001 onward of flooding by census block. This is another visual that Geosyntec uses when they engage with residents. Matt noted other projects that overlap with Geosyntec's in some way. MWH is doing a study in Jeffrey Manor, and CNT and the U.S. Army Corp of Engineers (USACE) are working together to do detailed modeling for the Chatham neighborhood.

The foundation of Geosyntec's project approach supports and advances the goals of the Chicago's Green Stormwater Infrastructure Strategy—specifically Initiatives 4 and 6. These initiatives are at the heart of their key work plan elements, which include a: 3) green infrastructure tool box; 2) sub-service area selection; and 3) analytical / modeling approach. Initiative #4 looks at the green infrastructure cost and benefits for managing stormwater; Geosyntec is also looking at benefits, but narrowing them down to specific benefits of existing infrastructure systems—for example, answering questions like, what point or level do you start to see improvements of function in and/or effectiveness of the existing systems? Initiative #6 primarily focuses on a city-wide Stormwater Management Plan through building partnerships and serving residents. Currently Geosyntec is using the City's existing analytical modeling approaches, but they would like to look at alternatives. So far they have prioritized five subsurface areas that are approximately 100 acres in size. Within these locations, they are diving into a much smaller scale. The current workflow consists of using the InfoWorks model over the course of the year. Within this process, they are delineating catchments at the scale of 30-40 acres. At the block level, they are looking at the smallest pipes, which can produce 25 acre catchments. The ultimate goal of these modeling efforts is to figure out what is appropriate within the scope of economic and technical feasibility—including what could be most beneficial to the residents.

From a technical point of view, Geosyntec is modeling green infrastructure by *approximating* (e.g. curve numbers); however, they realize that they may need to *explicitly* model the different types of green infrastructure because each design acts differently (e.g. infiltrates and/or stores stormwater at different rates). Additionally, they are using the City's combined sewer model by InfoWorks for routing. Bardol noted that InfoWorks is moving from overland flood routing to integrated catchment modeling (ICM). Therefore, Geosyntec will be pairing with InfoWorks and EPA-SWMM so they can combine ICM with surface routing. They want to make sure they are getting the same answer both ways.

Public outreach involves educating residents about what some of the solutions might be, and trying to figure out what level of investments would be good for the community. Geosyntec plans to engage with community block groups and aldermanic leaders. The intent of aldermanic involvement is so that the initiatives (and future project implementation) can be carried out beyond the electoral terms. This outreach, engagement and education will continue to be supported through active conversations with business organizations, industries, retail, and small business owners. They will also hand out surveys through local officials that the community respects. Finally, Geosyntec plans to incorporate the residents' feedback into the study's final recommendations.

After Bardol's presentation, one Collaborative member commented that Phase II did not initially include Chatham. Bardol responded that after realizing CNT's work was overlapping, they moved the study area boundary so the project could be complementary. Additionally, there is a corridor in the area that Geosyntec would like to use as a model for scaling up. Another member asked about model calibration. Bardol ensured that Geosyntec is making sure the outputs of their modeling

efforts are consistent with those of existing models. A third member asked who would implement the solutions. Matt stated that the study is not really looking into implementation, but could see the City or MWRD carry out solutions. He also explained that solutions could be infrastructure and/or policy improvements. Another member asked how Geosyntec is educating residents about green infrastructure. Bardol noted that Terry Guen Design Associates provide renderings of various green infrastructure designs (e.g. planter boxes and cisterns). When a resident asks, "What does a rain garden look like," they can show he/she design sketches of the particular GI in question—by sketching them into areas that are familiar to the community. Geosyntec also has an idea of setting up a website that residents can go to as a central repository of green infrastructure information. This would provide examples of how green infrastructure can go beyond site scale solutions. It could be particularly useful in communities with vacant lots. The website could provide examples of a few lots repurposed as green infrastructure, and then what it would look like if it was scaled up to the street level. Josh Ellis, MPC, noted that field trips to green infrastructure would be highly beneficial; this would give residents a hands-on opportunity to realistically see, touch, and learn that a bioswale is more than just a garden, it is a part of our infrastructure.

Morton Arboretum's Use of LiDAR Mapping and Related Activities

Lydia Scott and Melissa Custic, Morton Arboretum, presented on the Chicago Region Trees Initiative. Scott pointed out that the framework of our City is a network of people, streets and trees. The Arboretum looks at a City's forest as a collective resource, and therefore strives to work with all owners of trees to keep urban forests functioning for our benefit. From a water quality point of view, the Initiative is looking into collecting information on what benefits trees actually provide (e.g. stormwater mitigation and pollution filtration), and at what level or capacity. There are also a number of social and economic implications being taken into consideration such as improved social interactions, reduced energy use, and increased property values. Scott emphasized that trees are connectors, even in the suburbs, and we want to look into where we can make more connections across the region's landscape.

Scott stated that the Chicago Region Trees Initiative is a collaborative effort that is building and supporting the framework for trees—figuring out how to leverage and increase resources. It has 10 member leaders that have taken a bottom up approach—taking expertise from partners—to increase nursery supply, build consensus in planting practices, increase private property knowledge (70% of trees are on private land), assess risk (e.g. ash trees), improve wildlife habitat and establish design standard specs for trees. Scott referenced Daniella Pereira's, Openlands, involvement in the community tree network—a mentoring program that works with sister communities that don't have forests and teaches them the importance of tree planting. There are seven working groups: 1) Tree Stewardship and Planting; 2) Trees and Green Infrastructure; 3) Communications and Education; 4) Risk Assessment; 5) Forest Composition (and Operations); 6) Industry and Associations; and 7) Resources (i.e. funding opportunities). The presentation for the Collaborative focused on the Forest Composition and Operations working group. Within this group the three essential tasks are determining a realistic and obtainable canopy cover goal, ascertaining an appropriate age and species distribution, and developing achievable regional planting goals. So far, the group has done on-the-ground studies across a 7-county region; they have sampled 1400 plots; and have recorded a variety of information including species, diameter at breast height, and canopy cover. A study from 2010 affirmed that invasive species are a problem throughout the region, and as a result urban forests are in a 'state of transition'.

Melissa Custic explained that a major part of achieving the group's tasks is data collection. The biggest data collection effort that is taking place right now is a tree inventory using LiDAR as well as flyover and satellite imagery. Urban tree canopy is being calculated across the seven county

region at a ½ meter resolution that is broken into seven land cover types. Cook County is currently done, and the rest of the region will be completed in September. Prior to these efforts, the Arboretum knew canopy densities within natural areas, but didn't know much about private trees; therefore, one of the goals is filling these gaps, and interpolating data to get a better understanding of the tree canopies. Tree canopy density can be useful when siting grey or green infrastructure, or identifying priority places to plant. Although the data is from 2010 (pre-ash canopy cover), you can overlay existing or future canopy covers with 100-year floodplain layers, or you can look at temperature (or heat island maps). One of the images used in the presentation demonstrated that the dense tree canopy along the Des Plaines River directly correlated with lower temperatures along the waterway. Cusic also stated that the data layer could help with social justice issues by identifying areas where trees could have the biggest impact. The dataset will be completed in September of 2015, and will be stored and managed on CMAP's data hub. Additionally, for those who do not have GIS resources, the Arboretum is working with the Field Museum to make interactive maps that are available to the general public.

One project the operations side of the working group is currently working on is making strategic data-driven decisions on where trees should be planted. They also put out a survey to get a better understanding of how people use and take care of trees. For example, the survey looked at who takes care of trees at the scale of a business or municipality; how many people are staffed to manage trees; whether or not training is provided to the staff who take care of trees, and if so what does it entail; how much of an agency's or business' operating budget is allotted to tree care; and whether or not an agency or business has a tree inventory. The idea is that detailed information will help identify what is needed to assist residents and agencies in maintaining healthy and resilient trees and/or forests. These results will also be beneficial to the climate change response framework, which is focused on adaptation and vulnerability.

One Collaborative member asked if the public could access survey responses by community, and the answer was yes. A second member asked if the city has information about when trees were or are going to be taken out. In response, Cusic said yes, however mapping these changes won't give you a detailed enough picture of what is going on because the City does not specify the type of tree that is taken down.

Potential Climate Mapping Possibilities

Beth Hall, MRCC, explained that the 'bread and butter' of MRCC is their access to all national historical observation data from a large selection of stations—including all its cooperative networks, and those located at airports. Most of the cooperative networks provide daily summaries of precipitation and snow. Airport stations provide these datasets at an hourly basis, as well as other weather related data such as wind and air pressure. Hall showed the Collaborative a map of stations currently collecting data as well as stations that are no longer collecting data, but have historic data available for review.

The different types of datasets are historical station observations, PRISM, MPE, and NARCCAPs. PRISM datasets provide monthly and daily totals dating back to 1980. MPE datasets are high density and based on radar imagery. NARCCAPs datasets can describe future projections that have a coarse resolution at 50 kilometers. These datasets sometimes have soil data, but overall, MRCC doesn't really do future climate projections. However, MRCC can work with and ask key partners for data sets that may not be their expertise.

Hall told the Collaborative that they needed to provide more specifics MRCC to determine whether or not they could build a useful dataset and/or tool. A few questions she had for the Collaborative

were what does the group mean by 'detailed' and 'historical'—how far back does MRCC have to go in the dataset(s) of inquiry? This could go back to 1950 or 1850 depending on the dataset that is used. Currently MRCC has funding through Sea Grant to look at trends across Cook County, do projections, and see how climate/weather related definitions have changed over time (they are working with Momcilo Markus at ISGS on this project). However, Hall asked again, what does the Collaborative mean by, "spatial trends?" Would this mean a map charting differences between the years 1980-1985, or would it include future scenarios? If it included future scenarios, thresholds would have to be defined, and the type of dataset (e.g. station data or PRISM grid) would have to be identified.

When discussing plausible mapping that could be done for free, Hall mentioned that MRCC is a key partner of ISGS and USGS. While ISGS is big on water modeling—including surface groundwater dynamics, USGS and USACE specialize in stream flow networks. Similar to previous questions, MRCC would have to know how the Collaborative would be defining "development." Hall stated that publishing data in formats that could be easily used is possible, but MRCC would have to know what exact formats in which the Collaborative would like to see the data. Also, it was noted that some data networks have proprietary concerns and therefore, could not be accessed. Another term that the Collaborative would need to define and elaborate on is 'data gap analysis.' MRCC has experience with filling in holes found in datasets, but what data and kinds of analysis (e.g. statistical or weighted) are in question. The biggest takeaway is that the Collaborative needs to be more specific, and that they should reach out to MRCC with mapping ideas once these details are fully articulated.

Discussion: Brainstorm usage of potential new soil mapping data for various stakeholders

After presentations, Danielle Gallet, MPC, reminded the Collaborative that since its inception, soil mapping of the region was identified as being an important data set to create for the group. She announced that the U.S. Army Corps of Engineers and Cook County are in negotiation about embarking on this type of project together; hopefully with the involvement of the City of Chicago as well. However before pursuing the opportunity to develop better soil data and tools for soil analysis, the partners wanted to hear from potential end-users—such as those in the Collaborative—about how this type of data or tool might be useful and utilized. After the small breakout group discussions, moderators from each of the five groups reported out on their conversation. Following is a synthesized list of feedback, considerations and brainstorming ideas that will be useful for the soil mapping partners to keep in mind as they begin to work on this project:

New soil data could be used to:

- Plan and properly site green infrastructure
- Locate and better understand the composition of urban fill
- Detect/identifying contamination
- Detect compaction
- Help homeowners site rain gardens on property
- Plant species in proper soils; species selection based on soil or use (e.g. remediation)
- Prioritize green infrastructure projects (based on soil infiltration/storage capacity)
- See if there is any correlation between soil characteristics and existing flooding issues

New Data should include:

- Soil pH levels
- More accurate infiltration rates
- 3-D spatial reads of surface and subsurface dynamics (particularly in reference to recharge areas)

The soil database interface should:

- Easily sort data
- Allow users to access raw data
- Call outs form layers
- Import shapefiles

Additional Considerations and Comments:

- User and scale of the data would need to be defined—is the data tailored for homeowners or is it for planning.
- Capital projects will still need soil sampling conducted by professionals
- How deep would soils need to be identified?

Next Meeting

Friday, June 5, 2:00pm to 4:00pm

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