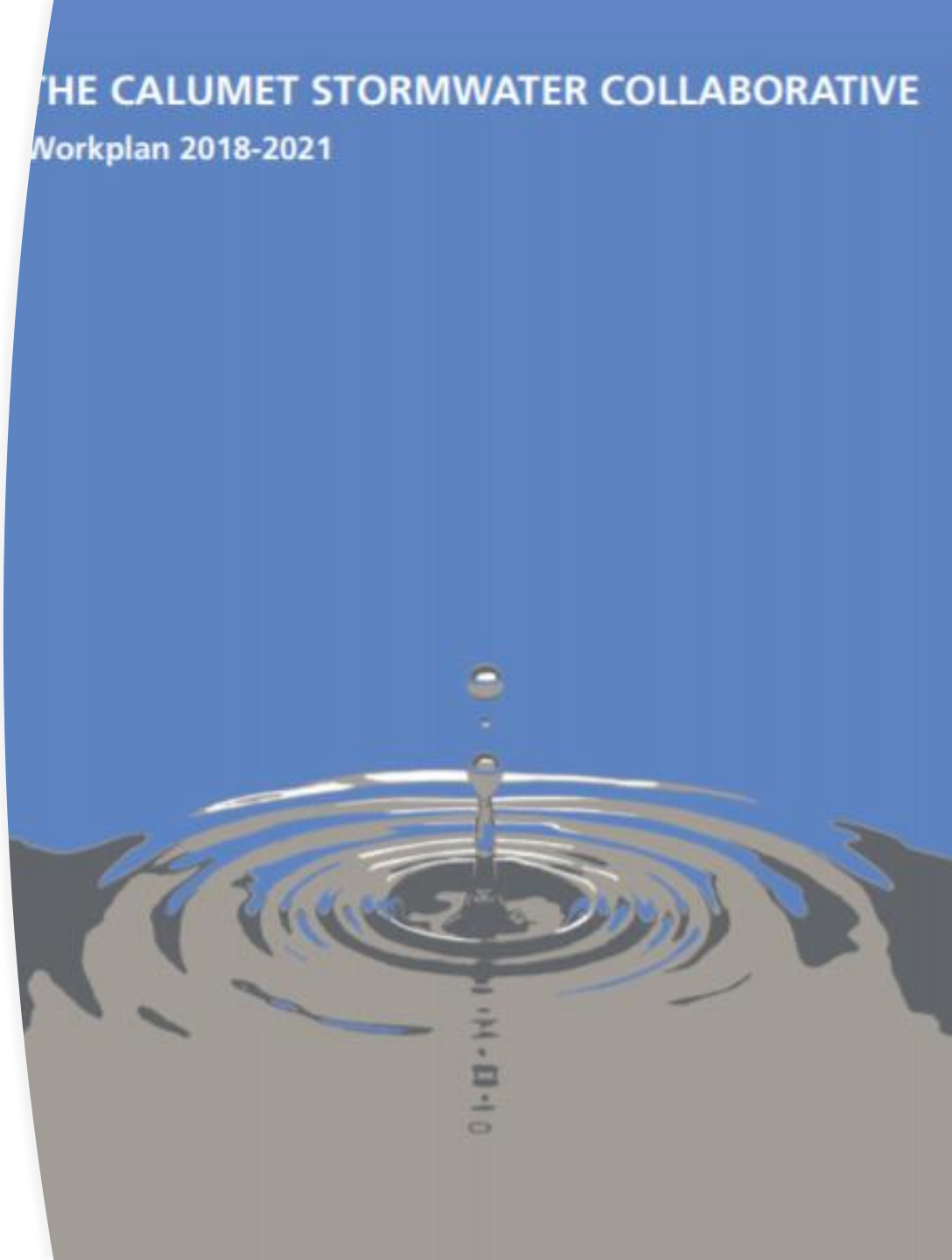# Urban Flooding Baseline CSC Update – 7/10/2020

Center for Neighborhood Technology

CNT

For today

- Why are we doing this?
- How you've helped
- What we've learned
- Where we're going

THE CALUMET STORMWATER COLLABORATIVE
Workplan 2018-2021

Why are we doing this?
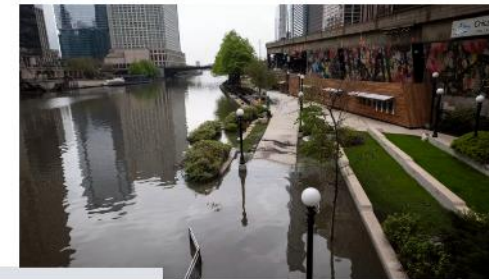

CHICAGO SUN-TIMES

WEATHER NEWS CHICAGO

Chicago sets record for wettest May ever

The 0.11 inches of rainfall recorded overnight at O'Hare Airport pushed the city's May precipitation to 8.3 inches, according to the National Weather Service.

By David Struett | @dstru312 | May 19, 2020, 10:06am CDT

MOST READ

American, United Airlines end social distancing, will book flights to full capacity

City releases bodycam footage of ex-CPD Supt. Eddie Johnson asleep at the wheel

17-year-old shot dead in East Chicago alley

Chicago Tribune

Heavy rains force closing of streets and COVID-19 testing site in Markham

By MIKE NOLAN
DAILY SOUTHTOWN | MAY 18, 2020 AT 5:15 PM

Heavy rains Sunday washed out the entrance to a COVID-19 testing site in Markham, forcing the temporary closing of the facility. (Illinois Department of Public Health)

Heavy rains Sunday prompted some south and southwest suburban street closures due to

Why are we doing this?

87% of flood damage insurance claims were paid in communities of color.

Percent Households of Color
- 10 - 33
- 34 - 58
- 59 - 100

Number of claims by household quartiles
- Least Claims (0 - 200)
- 201 - 1308
- 1309 - 5354
- Most Claims (5355 - 24422)
- Chicago

CNT

Why are we doing this?

The New York Times

Climate and Environment > | Taming Gridlock Trump's Changes Climate 101 Is Your Hometown Hotter? Newsletter

Percentage of properties at risk of flooding during a major storm

Official FEMA estimate   3%   20   36   65   No data   Independent researchers' new estimate
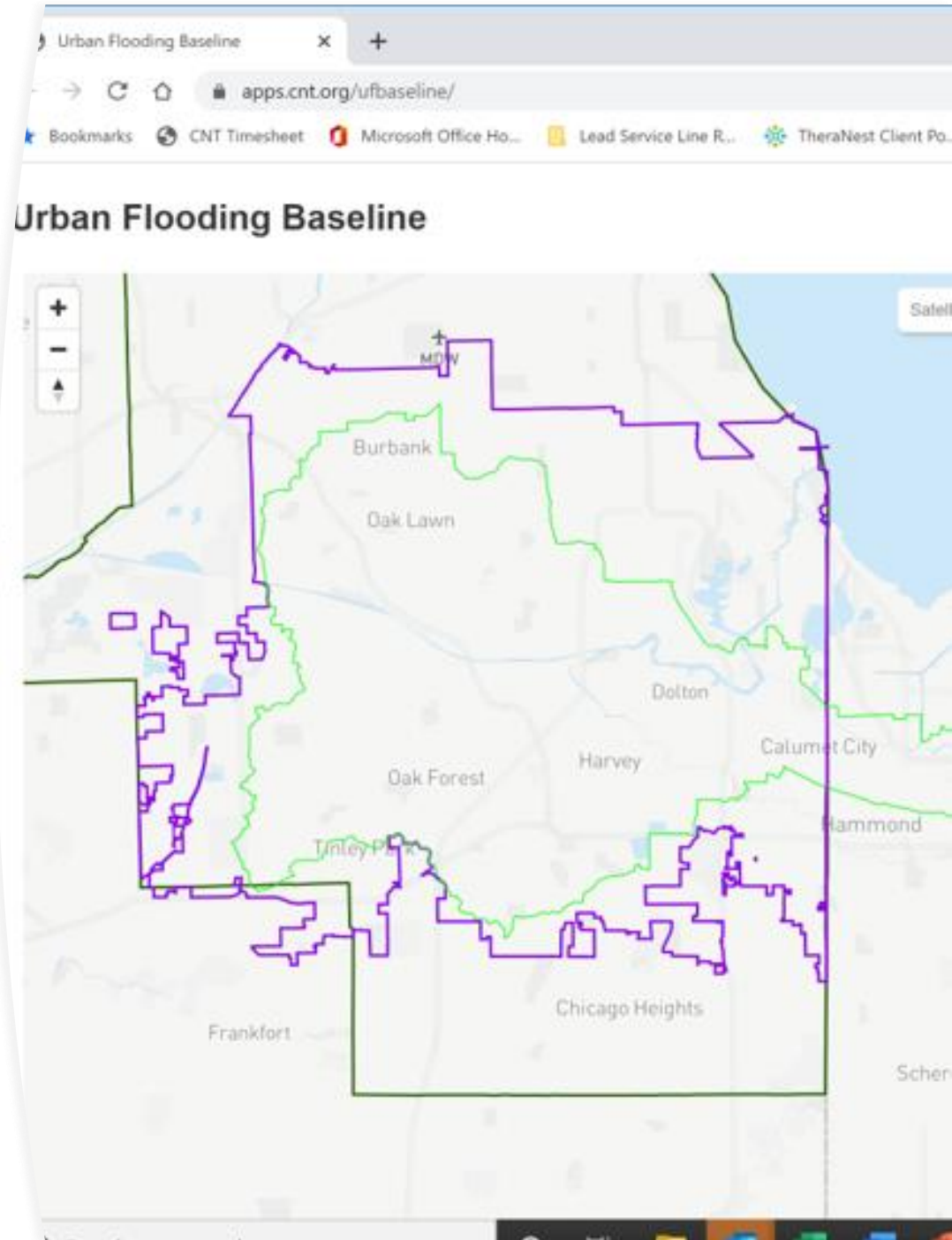
New Data Reveals Hidden Flood Risk Across America

"In more than two-thirds of states, First Street found that areas with more minority residents also had a greater share of unmapped flood risk than the statewide average."

How you've helped

- We have a study area
- We have a definition
- We think we know what to do next

Urban Flooding Baseline

How you've helped

"Urban flooding occurs when rain overwhelms drainage systems and waterways in a built and more densely populated environment , and makes its way into the basements, yards, and streets of homes, businesses, and other structures, disrupting lives and economic activity."

What we've learned

- Review of regional and global methods for collecting and displaying flood data
- Initial social media scraping experimentation
- Review and assessment of regional datasets
- Outreach to CSC members and local leaders
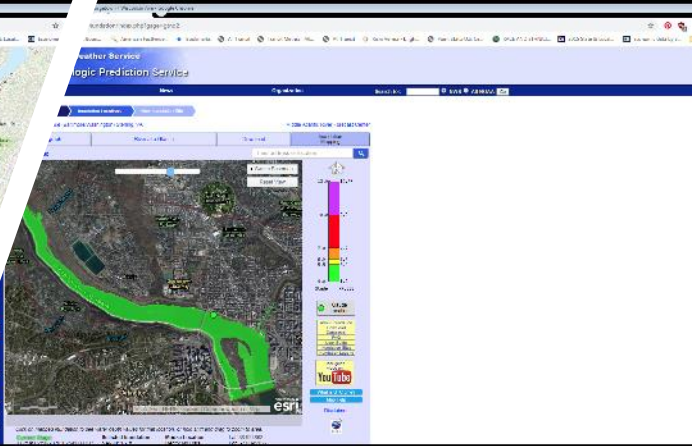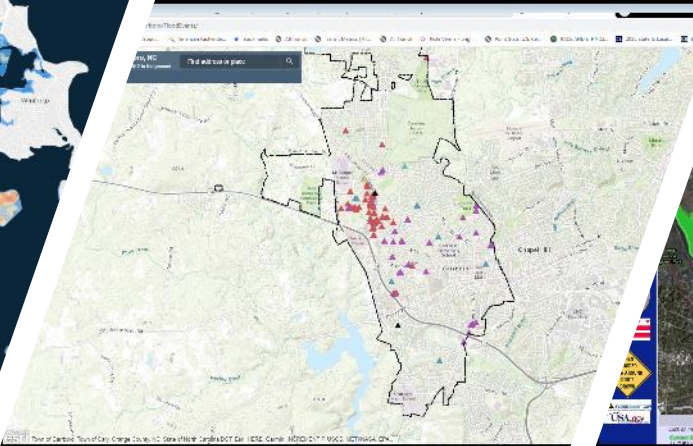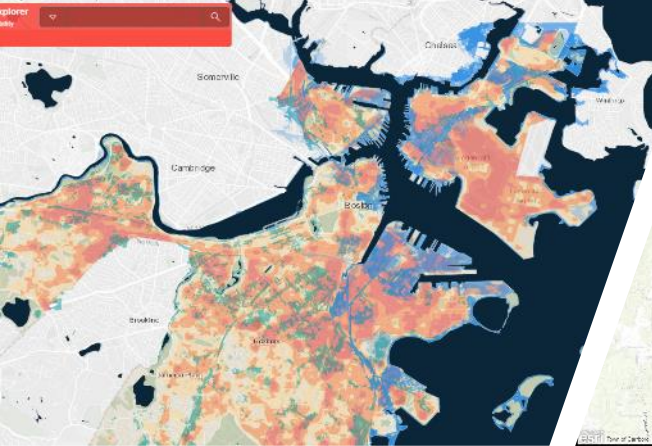
Review of methods

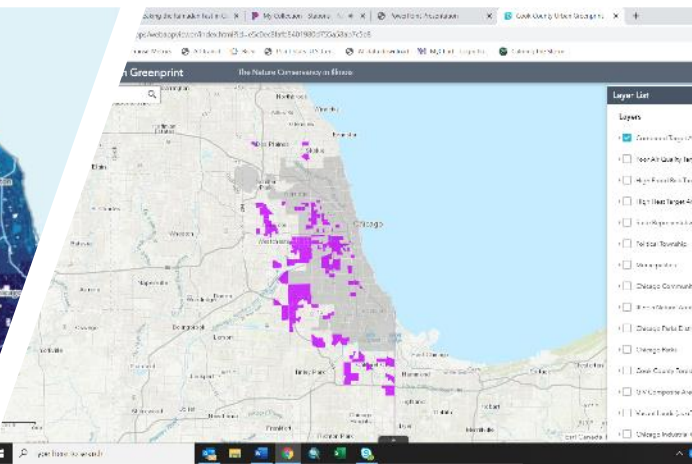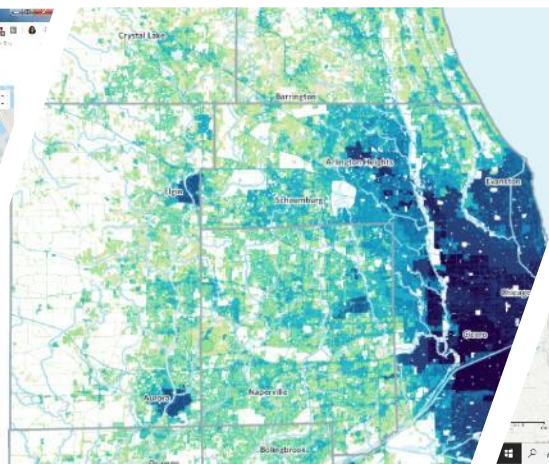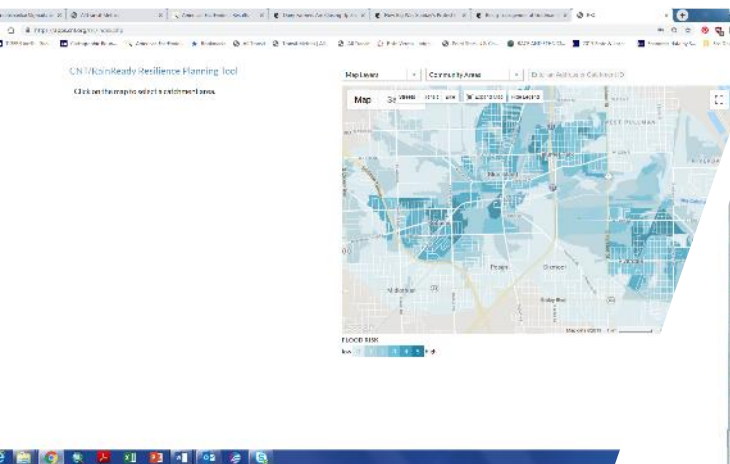| Search Terms/Areas	Alsip	Blue Island	Bridgeview	Burbank	Burnham	Calumet City	Calumet Par	Chicago	Chicago Ridge	Country Clul	Crestwood	Dixmoor	D
flooded street	0	0	0	1	0	1	0	25	0	0	0	0	0
water in my basement	0	0	0	0	0	0	0	9	0	0	0	0	0
cracks in basement walls	0	0	0	0	0	0	0	0	0	0	0	0	0
water in the streets	0	0	0	0	0	0	0	13	0	0	0	0	0
wet basement	0	0	0	0	0	0	0	15	0	0	0	0	0
mold in basement	0	0	0	0	0	0	0	1	0	0	0	0	0
flooded yard	0	0	0	0	0	0	0	3	0	0	0	0	0
yard flooding	0	0	0	0	2	0	0	10	0	0	0	0	0
rain in my yard	0	0	0	0	0	0	0	0	0	0	0	0	0
damp basement	0	0	0	0	0	0	0	1	0	0	0	0	0
how do i fix a flooding basement	0	0	0	0	0	0	0	0	0	0	0	0	0
how do i get the water out of my basement	0	0	0	0	0	0	0	0	0	0	0	0	0
broken sump pump	0	0	0	0	0	0	0	2	0	0	0	0	0
broken ejector pump	0	0	0	0	0	0	0	0	0	0	0	0	0
sewage in my basement	0	0	0	0	0	0	0	0	0	0	0	0	0
backflow in my basement	0	0	0	0	0	0	0	0	0	0	0	0	0
clogged basement drain	0	0	0	0	0	0	0	0	0	0	0	0	0
moldy smell in basement	0	0	0	0	0	0	0	0	0	0	0	0	0
musty smell in basement	0	0	0	0	0	0	0	0	0	0	0	0	0
broken backwater valve	0	0	0	0	0	0	0	0	0	0	0	0	0
basement takes in water	0	0	0	0	0	0	0	0	0	0	0	0	0
flood damage in basement	0	0	0	0	0	0	0	0	0	0	0	0	0
how do i keep my basement dry	0	0	0	0	0	0	0	0	0	0	0	0	0
how do i flood proof my basement	0	0	0	0	0	0	0	0	0	0	0	0	0
basement flood prevention	0	0	0	0	0	0	0	0	0	0	0	0	0
why is my basement flooding													0

Social Media Scraping
dig my visual water pun

Data Assessment

- We could find very little data, with regional coverage, that documents urban flooding.

- There are some high-value datasets that may be worth significant time and persistence to acquire, because they add significant value.

- Social media and web scraping aren't going to cut it.

Outreach

- 11 Municipal Interviews

- Takeaways
    - Municipal staff were *really* hard to get ahold of, but they roughly fell into a couple categories…
    - Those who need all of the support and those who need none, because they're getting it (typically from MWRD).
    - Most document urban flooding in some way, but typically through work orders to public works.
    - All said they wouldn't share this information for confidentiality reasons.
    - We're concerned that these findings aren't so reliable, because of the difficulty in connecting with staff.
    - SO, we're not going to rely on municipal outreach for the foreseeable future.
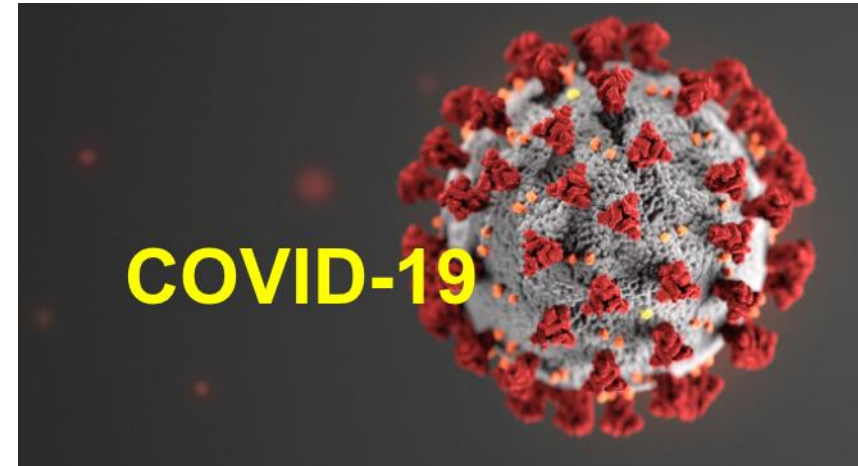
Outreach

- 2 CSC focus group discussions and several follow-up interviews
    - We were able to reach consensus on definition, study geography, and timeframe.
    - There would be value in synthesizing existing datasets
    - Primary data collection will need to be paired with proactive, intentional, strategic outreach to residents and community leaders.
    - Simple documentation, such as a picture and limited data, can support stormwater master planning.

Outreach

- Who would benefit from a new methodology and tool?

- Engineers – starting point for project planning, inform master planning, evidence for grant seeking

- Government and Intermediaries – prioritizing project location and investment, maximize impact

- Residents – need more input in phase 2, need to ensure they are (at minimum) informed about any risks

Where we're going

- Scale up the RainReady Resilience Planning tool, probably without the GSI piece (phase 3? Coordinate with GSI Baseline?)
- Use LIDAR analysis to create new catchment areas
- Update existing layers and add a few new ones

CNT/RainReady Resilience Planning Tool

Catchment: 361

Area: 2,806,088 sqft view data

Print Snapshot
Generate Permalink

Priority Score 7

FLOOD RISK SCORE: 5 expand
OPPORTUNITY SCORE: 2 expand

AVERAGE ANNUAL RAINFALL

Annual Rainfall (in): 35.8 edit
Design Storm Rainfall (in): 5.5 edit
Design Storm Time (hrs): 24 edit

REDUCTION GOAL

Precipitation Depth Capture (in): 1.0

Volume Needed to Capture:
233,841cuft (1,749,252 gallons)

0.0%

0   Goal Reached   100

Total Cost: $0
show detail

GREEN IMPROVEMENTS	Lifecycle Cost	% Towards Goal
Roof Water Capture		
☐ Green Roof	$0	0%
Roof Water Redirection		
☐ Planter Boxes	$0	0%

Map Layers ▾	Community Areas ▾	Enter an Address or Catchment ID

Base Layer   **Overlay**

✓ Flood Risk   Catchment Flow Path   Identified Problem Areas
Land Use   Community Meeting Problem Areas   MR Opportunity Areas
Land Cover   Community Meeting Solution Areas MWD Inundations
FEMA Flood Zones   COD Site Regions   NDRC Project Area
HU12 Watershed Regions   Cook County Forest Preserves TIF Districts
                         Depressions   TOD Sites
                         Enterprise Zones   Sewer Atlas
                         GI Connections   Survey Points
                         GI Sites   IDOT Roadways
                                                      CMAP Greenways and Trails

FLOOD RISK

low 0 1 2 3 4 5 high

Where we're going

- Coordinate with MWRD stormwater master planning efforts

- Pay community groups and residents for input and to take pictures of street urban flooding April-June 2021

- Upload pictures through simple, mobile optimized form with VERY FEW required data fields: probably just depth and duration

- Feeds into master planning, prioritization of investment

- Analyze, process, and add picture data to tool in the most appropriate way

Discussion

Feedback on this direction

- What questions can we answer, today or in the future?

- How could we make these data and this tool most useful to you?

- Who do we need to hear more from and how would you recommend we do that, given COVID-19?