

---

Metropolitan Water Reclamation District of Greater Chicago

# STORMWATER

## MASTER PLANNING

Partnering for Resilient Communities

2022 Update  
IAFSM Conference  
March 8, 2022



# Agenda

1. Introductions
2. Evolution of MWRD's Stormwater Master Plan
3. Stormwater Master Plan
  - a) Available Data
  - b) Stormwater storage metrics
4. How to use the GIS data – and why
5. Examples of Data Usage
6. Next Steps
7. Q&A

# Introductions



Richard Fisher, P.E., CFM  
MWRD  
Principal Civil Engineer



Jack T.P. Chan, Ph.D, P.E.  
MWRD  
Associate Civil Engineer



Matt Bardol, PE, CFM, CPESC,  
D.WRE  
Geosyntec  
Senior Principal  
Combined Sewer Team



Jennifer Maercklein, P.E, CFM  
V3 Companies  
Project Manager  
Separate Sewer Team

# Empowering Municipalities

*A regional authority providing guidance and county-wide (volumetric) planning*

## MWRD

Technical Expertise

Technical Resources

Funding

Requests for Assistance

## Municipalities

*Responsible for prioritizing and developing strategies to address local flooding issues and problems.*

Champion and manage stormwater projects



Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING



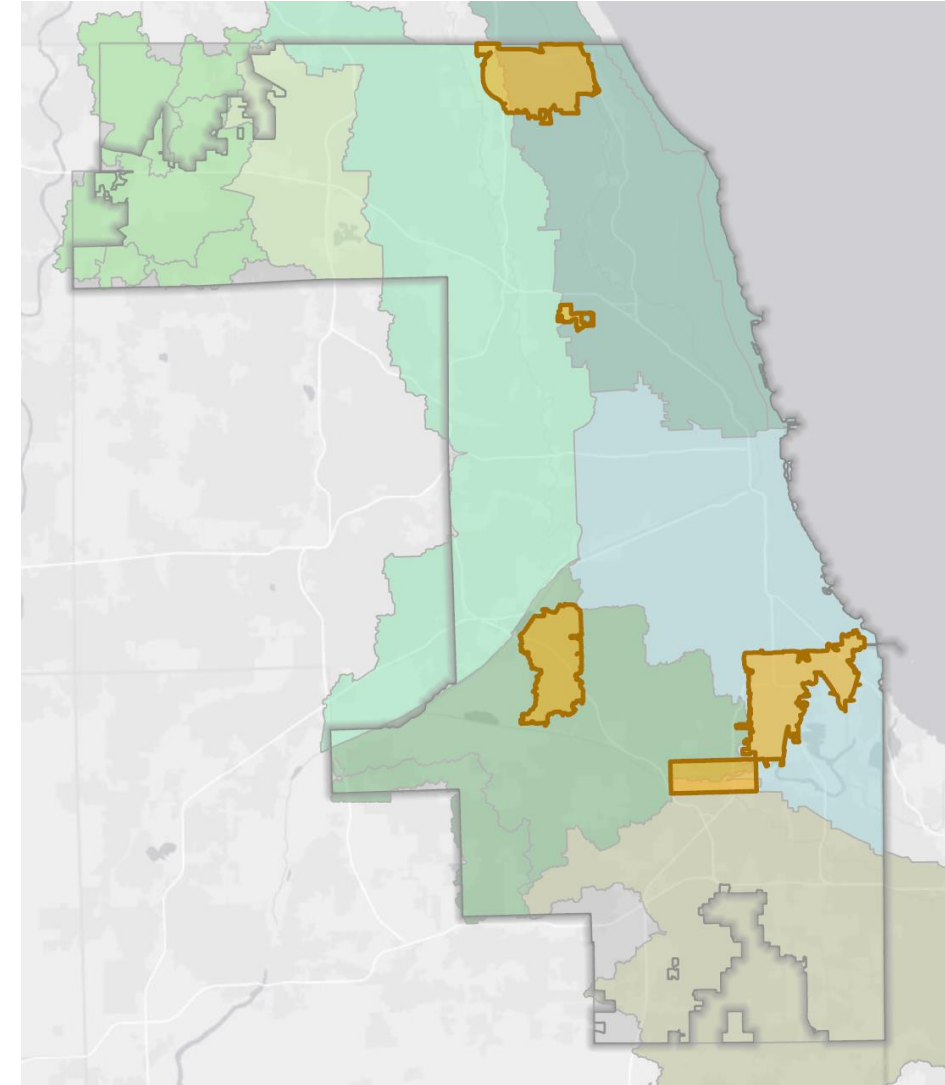
# District Stormwater Master Planning Evolution

## Stormwater Master Planning

Investigate “urban flooding” issues and evaluate potential green and gray infrastructure solutions.

2015 2016 2017 2018 2019 2020 2021 2022 2023

Five Master Plan Pilot Studies



Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING

# District Stormwater Master Planning Evolution

## Stormwater Master Planning

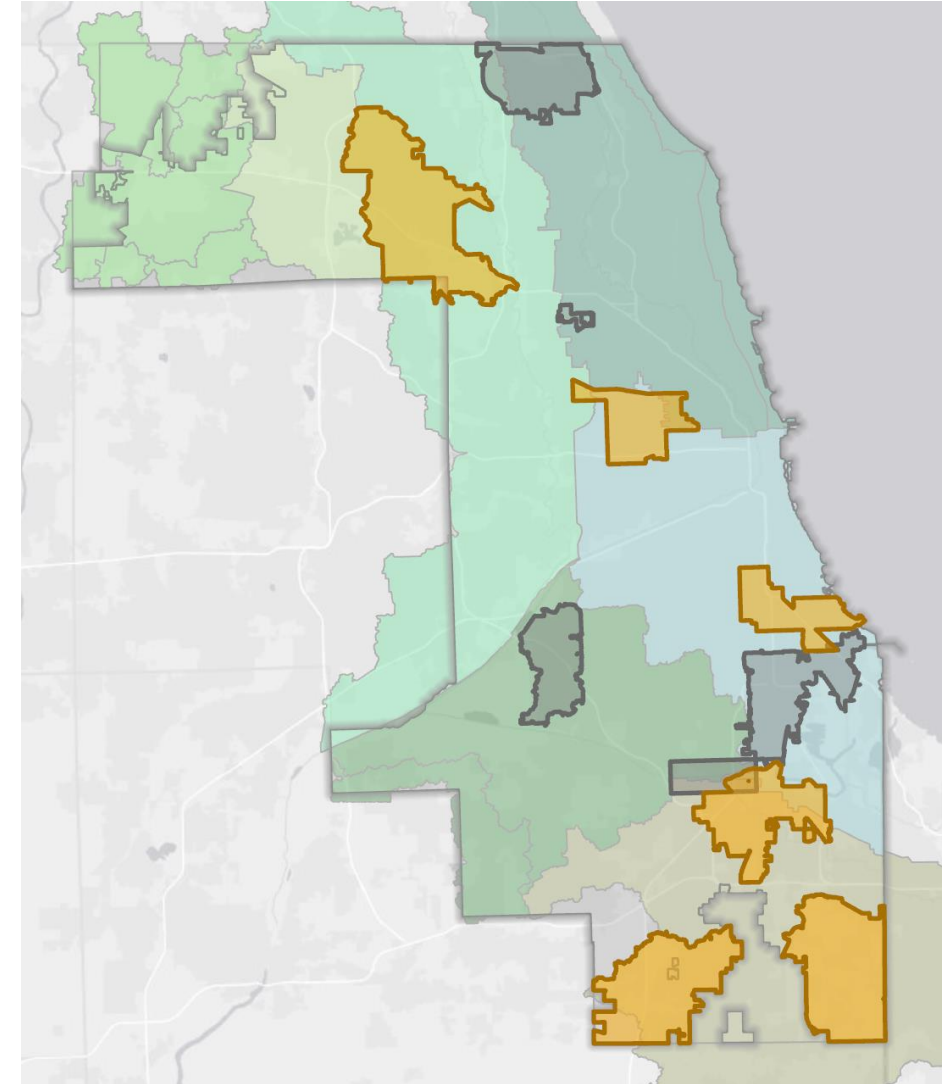
Investigate “urban flooding” issues and evaluate potential green and gray infrastructure solutions.

Six Stormwater Master Planning projects:  
Butterfield, North Creek/Deer,  
Willow/Weller, South Suburban, Chicago  
West and Chicago South

2015 2016 2017 2018 2019 2020 2021 2022 2023

Five Master Plan Pilot Studies

- Patchwork approach
- Plans expire quickly and not adaptive/responsive to changing conditions



Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING

# District Stormwater Master Planning Evolution

## Stormwater Master Planning

Investigate “urban flooding” issues and evaluate potential green and gray infrastructure solutions.

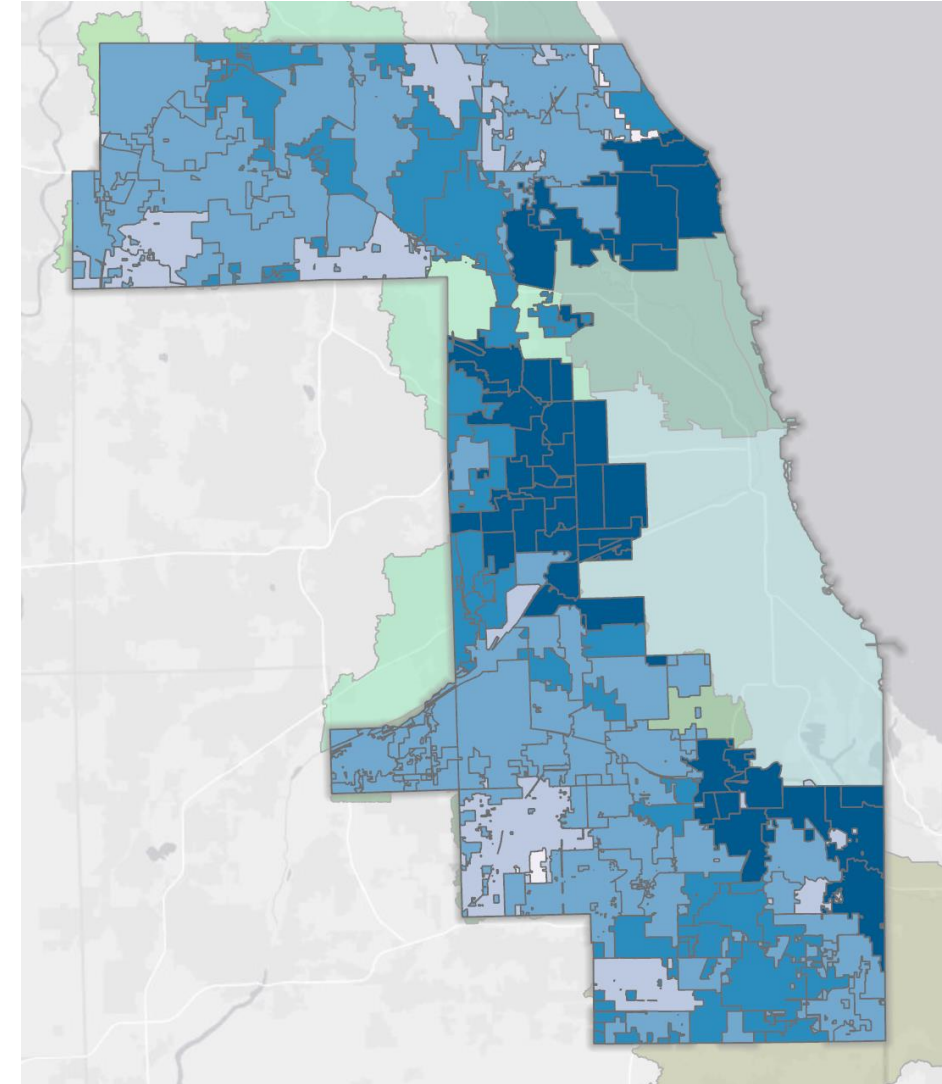
Six Stormwater Master Planning projects:  
Butterfield, North Creek/Deer,  
Willow/Weller, South Suburban, Chicago  
West and Chicago South

2015 2016 2017 2018 2019 2020 2021 2022 2023

Five Master Plan Pilot Studies

Stormwater Master Planning  
GIS Portal

- A GIS Portal to host all master planning data
- Continually updated, current and relevant
- Provide tools (web apps, storymaps, desktop references)
- Data will be used for Stormwater Partnership Program

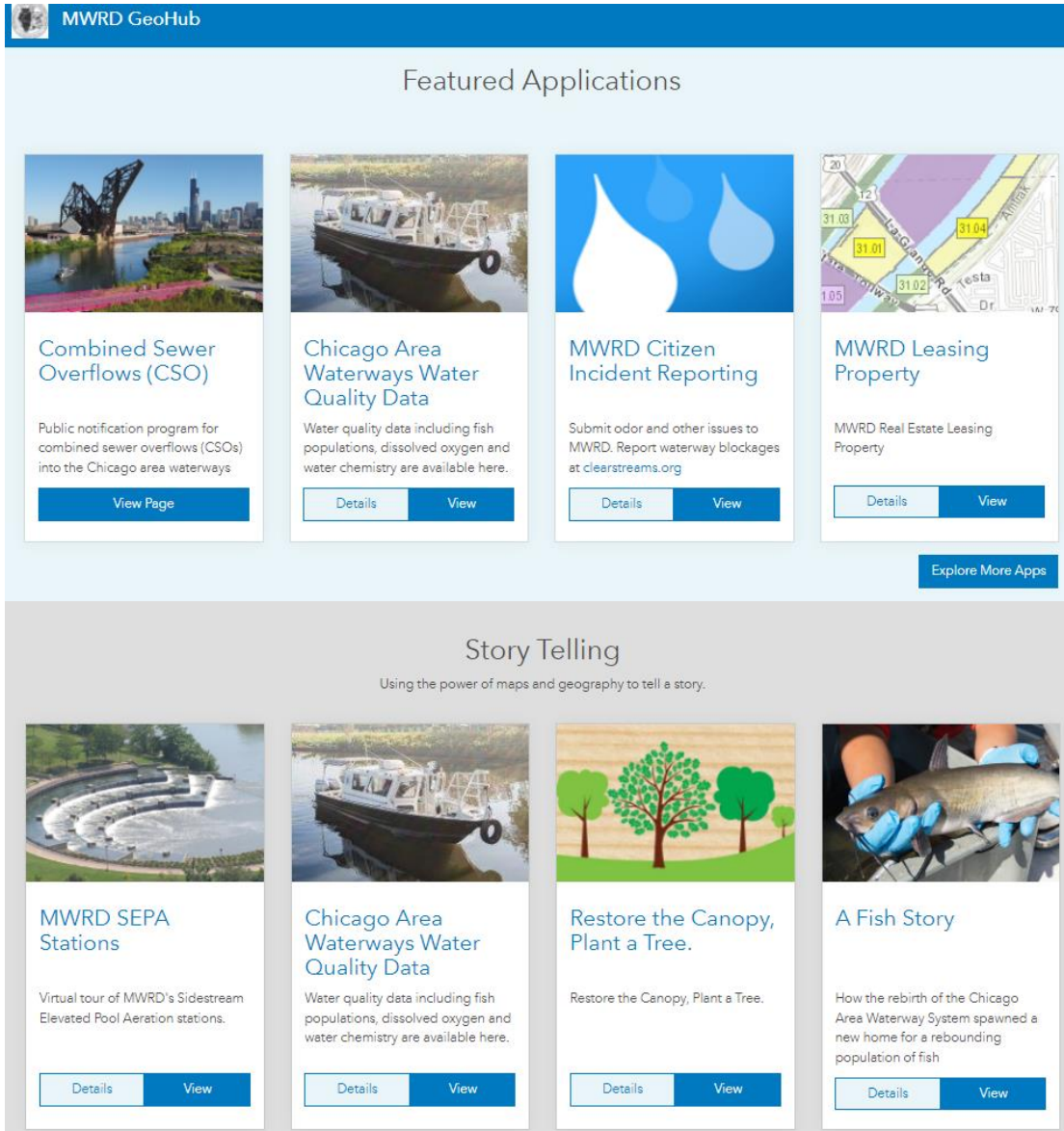


Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING



# Stormwater Master Plan: Available Data



The screenshot displays the MWRD GeoHub website. The top navigation bar is blue with the MWRD GeoHub logo. Below it, the 'Featured Applications' section is highlighted. It contains four application cards: 'Combined Sewer Overflows (CSO)' with a photo of a bridge over a river, 'Chicago Area Waterways Water Quality Data' with a photo of a boat, 'MWRD Citizen Incident Reporting' with a blue water drop icon, and 'MWRD Leasing Property' with a map. Each card has a title, a brief description, and 'Details' and 'View' buttons. An 'Explore More Apps' button is located at the bottom right of this section. Below the featured applications is the 'Story Telling' section, which includes the subtitle 'Using the power of maps and geography to tell a story.' It features four story cards: 'MWRD SEPA Stations' with a photo of a wastewater treatment facility, 'Chicago Area Waterways Water Quality Data' with a photo of a boat, 'Restore the Canopy, Plant a Tree.' with a graphic of trees, and 'A Fish Story' with a photo of a fish. Each story card also has a title, description, and 'Details' and 'View' buttons.

MWRD GeoHub

## Featured Applications

- Combined Sewer Overflows (CSO)**  
Public notification program for combined sewer overflows (CSOs) into the Chicago area waterways  
[View Page](#)
- Chicago Area Waterways Water Quality Data**  
Water quality data including fish populations, dissolved oxygen and water chemistry are available here.  
[Details](#) [View](#)
- MWRD Citizen Incident Reporting**  
Submit odor and other issues to MWRD. Report waterway blockages at [clearstreams.org](#)  
[Details](#) [View](#)
- MWRD Leasing Property**  
MWRD Real Estate Leasing Property  
[Details](#) [View](#)

[Explore More Apps](#)

## Story Telling

Using the power of maps and geography to tell a story.

- MWRD SEPA Stations**  
Virtual tour of MWRD's Sidestream Elevated Pool Aeration stations.  
[Details](#) [View](#)
- Chicago Area Waterways Water Quality Data**  
Water quality data including fish populations, dissolved oxygen and water chemistry are available here.  
[Details](#) [View](#)
- Restore the Canopy, Plant a Tree.**  
Restore the Canopy, Plant a Tree.  
[Details](#) [View](#)
- A Fish Story**  
How the rebirth of the Chicago Area Waterway System spawned a new home for a rebounding population of fish  
[Details](#) [View](#)

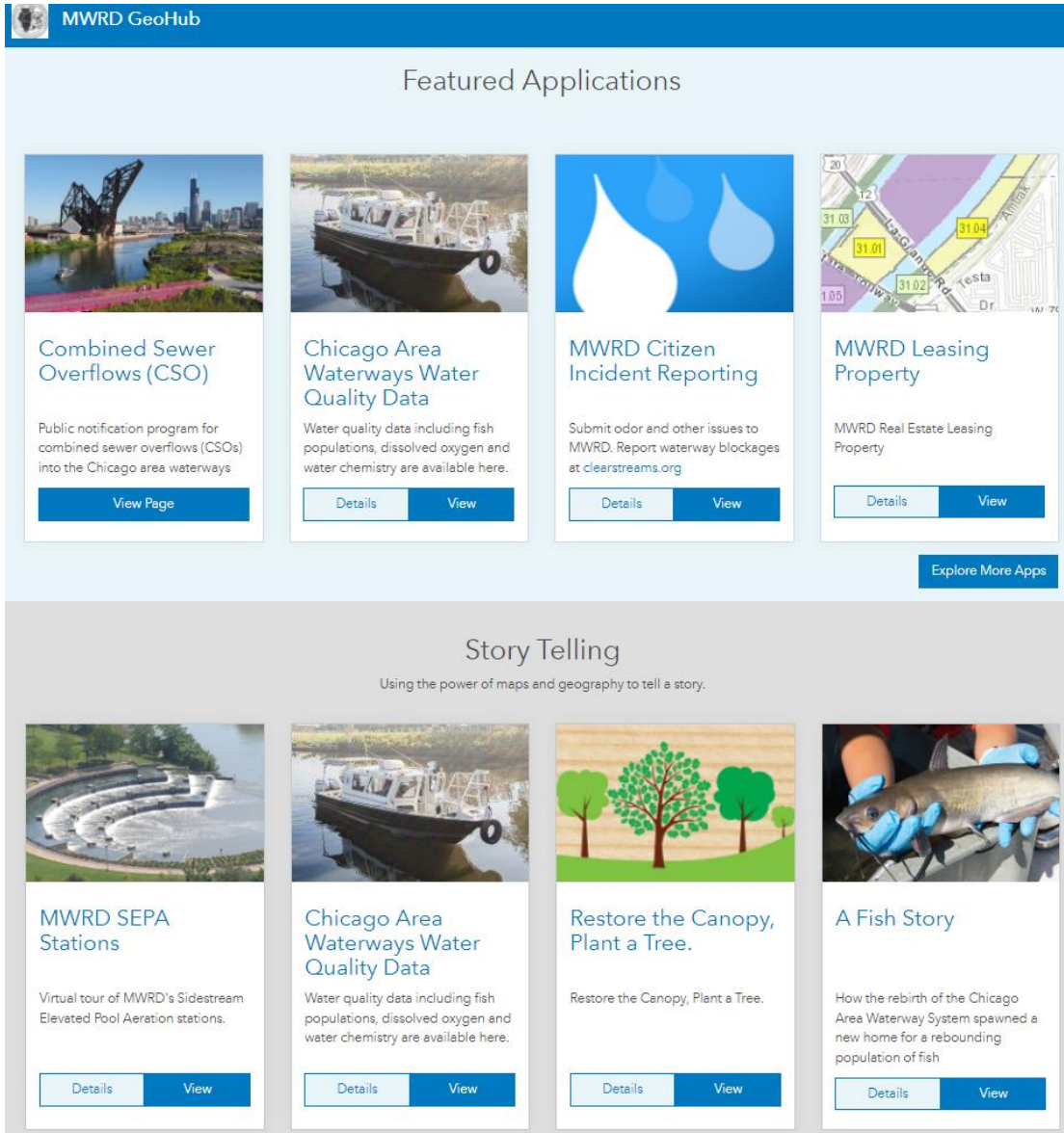
New data to assist municipalities and agencies:

- Web apps:
  - GIS Portal
  - Printable Data
- Story Maps:
  - General Users
  - Planners & Engineers

Looking for opportunities to test the new data with municipalities



# Stormwater Master Plan: Available Data



The screenshot displays the MWRD GeoHub website interface. At the top, a blue header bar contains the MWRD GeoHub logo. Below this, the 'Featured Applications' section is highlighted with a light blue background. It contains four application cards: 'Combined Sewer Overflows (CSO)' with a photo of a bridge over a river, 'Chicago Area Waterways Water Quality Data' with a photo of a boat, 'MWRD Citizen Incident Reporting' with a blue water drop icon, and 'MWRD Leasing Property' with a map. Each card includes a brief description and 'Details' or 'View' buttons. An 'Explore More Apps' button is located at the bottom right of this section. Below the featured applications is the 'Story Telling' section, which has a grey background and the tagline 'Using the power of maps and geography to tell a story.' It features four story cards: 'MWRD SEPA Stations' with a photo of a wastewater treatment facility, 'Chicago Area Waterways Water Quality Data' with a boat photo, 'Restore the Canopy, Plant a Tree.' with a tree illustration, and 'A Fish Story' with a photo of a fish. Each story card also includes a description and 'Details' or 'View' buttons.

MWRD GeoHub

## Featured Applications

- Combined Sewer Overflows (CSO)**  
Public notification program for combined sewer overflows (CSOs) into the Chicago area waterways.  
[View Page](#)
- Chicago Area Waterways Water Quality Data**  
Water quality data including fish populations, dissolved oxygen and water chemistry are available here.  
[Details](#) [View](#)
- MWRD Citizen Incident Reporting**  
Submit odor and other issues to MWRD. Report waterway blockages at [clearstreams.org](#).  
[Details](#) [View](#)
- MWRD Leasing Property**  
MWRD Real Estate Leasing Property.  
[Details](#) [View](#)

[Explore More Apps](#)

## Story Telling

Using the power of maps and geography to tell a story.

- MWRD SEPA Stations**  
Virtual tour of MWRD's Sidestream Elevated Pool Aeration stations.  
[Details](#) [View](#)
- Chicago Area Waterways Water Quality Data**  
Water quality data including fish populations, dissolved oxygen and water chemistry are available here.  
[Details](#) [View](#)
- Restore the Canopy, Plant a Tree.**  
Restore the Canopy, Plant a Tree.  
[Details](#) [View](#)
- A Fish Story**  
How the rebirth of the Chicago Area Waterway System spawned a new home for a rebounding population of fish.  
[Details](#) [View](#)

## PDFs and Supplementary Data

- Desk References:
  - Users Guide (printable version of content in Story Map for Planners & Engineers)
  - Appx A: Data Descriptions & Disclaimers
  - Appx B: Methodology
- Core Concepts for SMPs
- Programs & Policies
- Partners & Funding
- Action Plan Template

# Stormwater Master Plan: Available Data

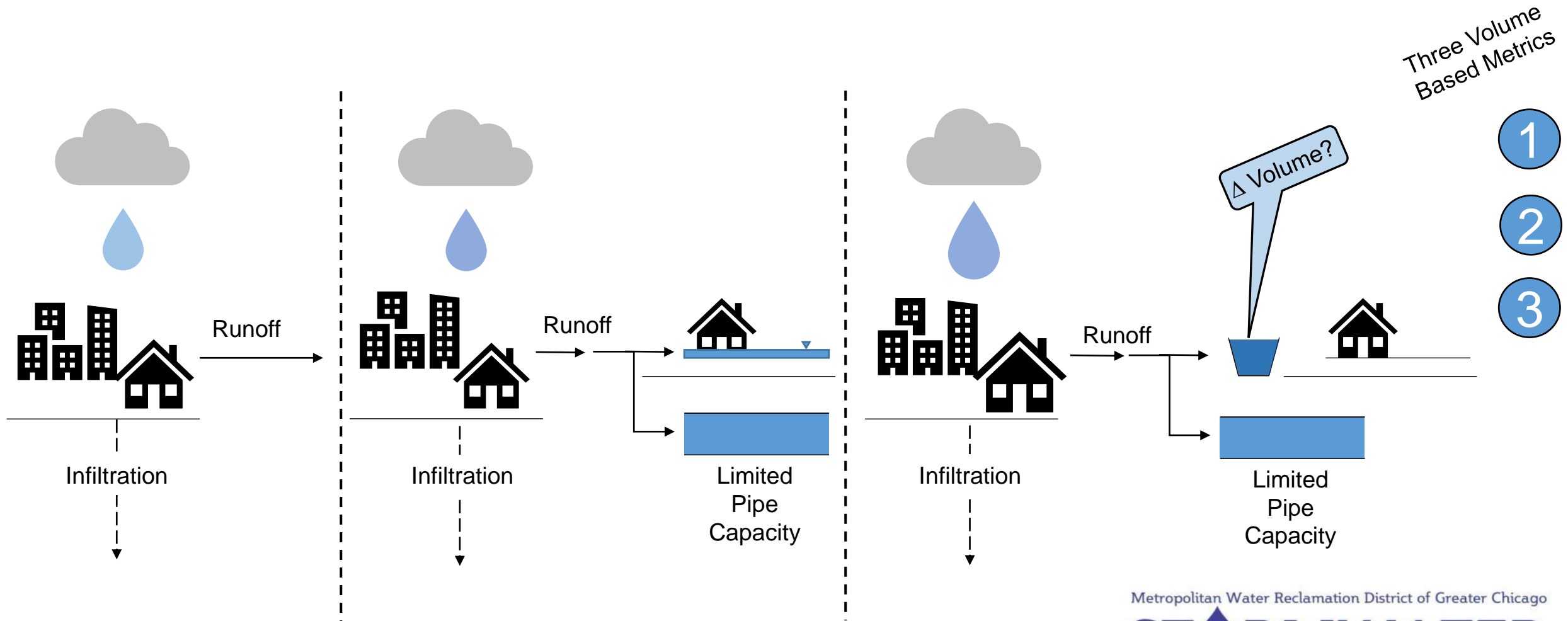
- So what does the data actually look like?
- What does the data tell us and how can I use it?
- Data saved in GIS as six feature classes:
  - Community level data - General Data
  - Community level data – Stormwater Storage Metric Data
  - Catchment Data
  - Adjoint Catchment Data (Accumulated Catchment Data)
    - SSA Adjoint Catchments – delineated along the overland flow paths
    - CSA Adjoint Catchments – delineated at municipal boundaries
    - CSA Adjoint Points – identification of inflow or outflow at boundary
  - Overland Flow Paths
  - Depression Data

# Stormwater Storage Metrics

## What are the stormwater storage metrics?

- A numerical **quantification of the total, cumulative flood mitigation need**, calculated throughout Cook County.
- A **common measurement** by which successful implementation of projects (or policies or programs) can be reported to the MWRD, and in turn reported to the Board or general public, to show progress towards addressing the overall need for flood mitigation in Cook County

# Stormwater Storage Metrics

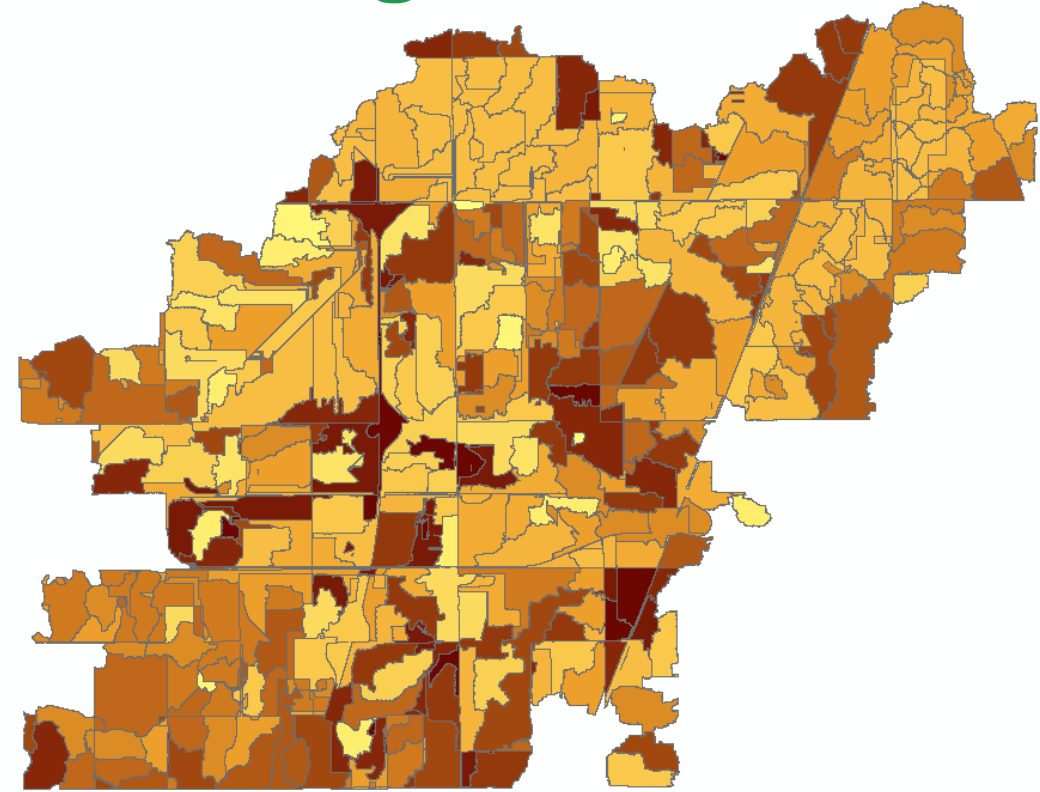
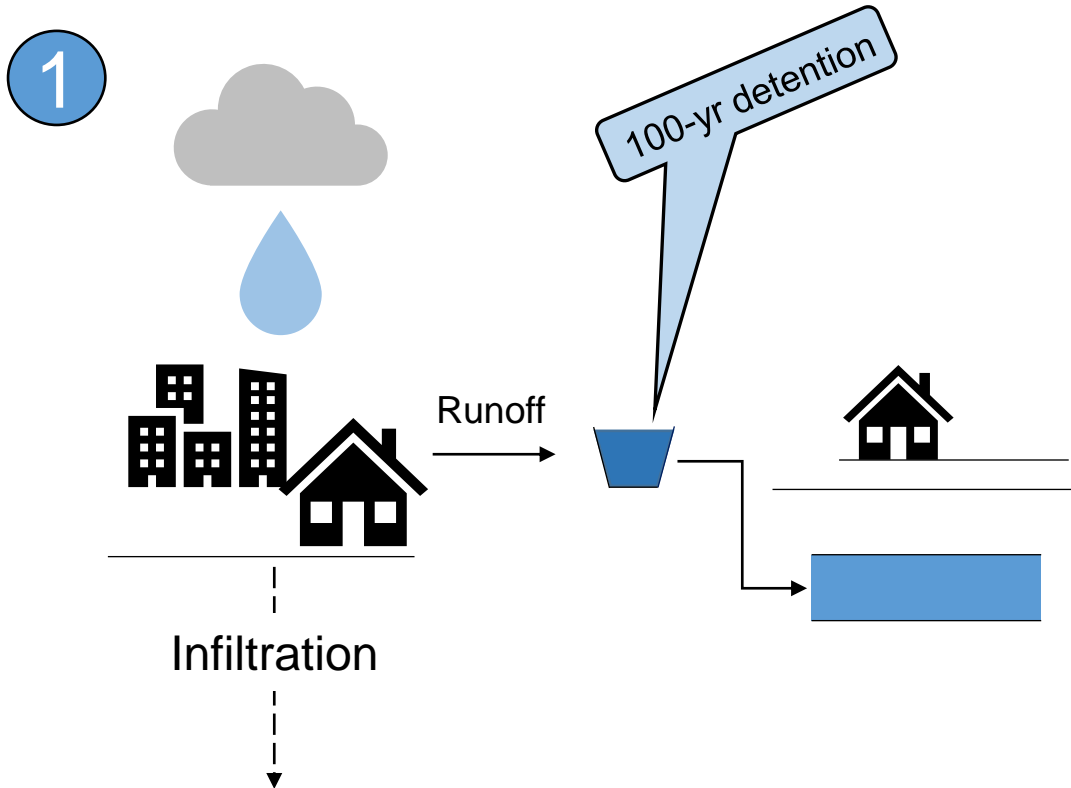


Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING



# Metric 1: 100-yr Stormwater Storage Volume



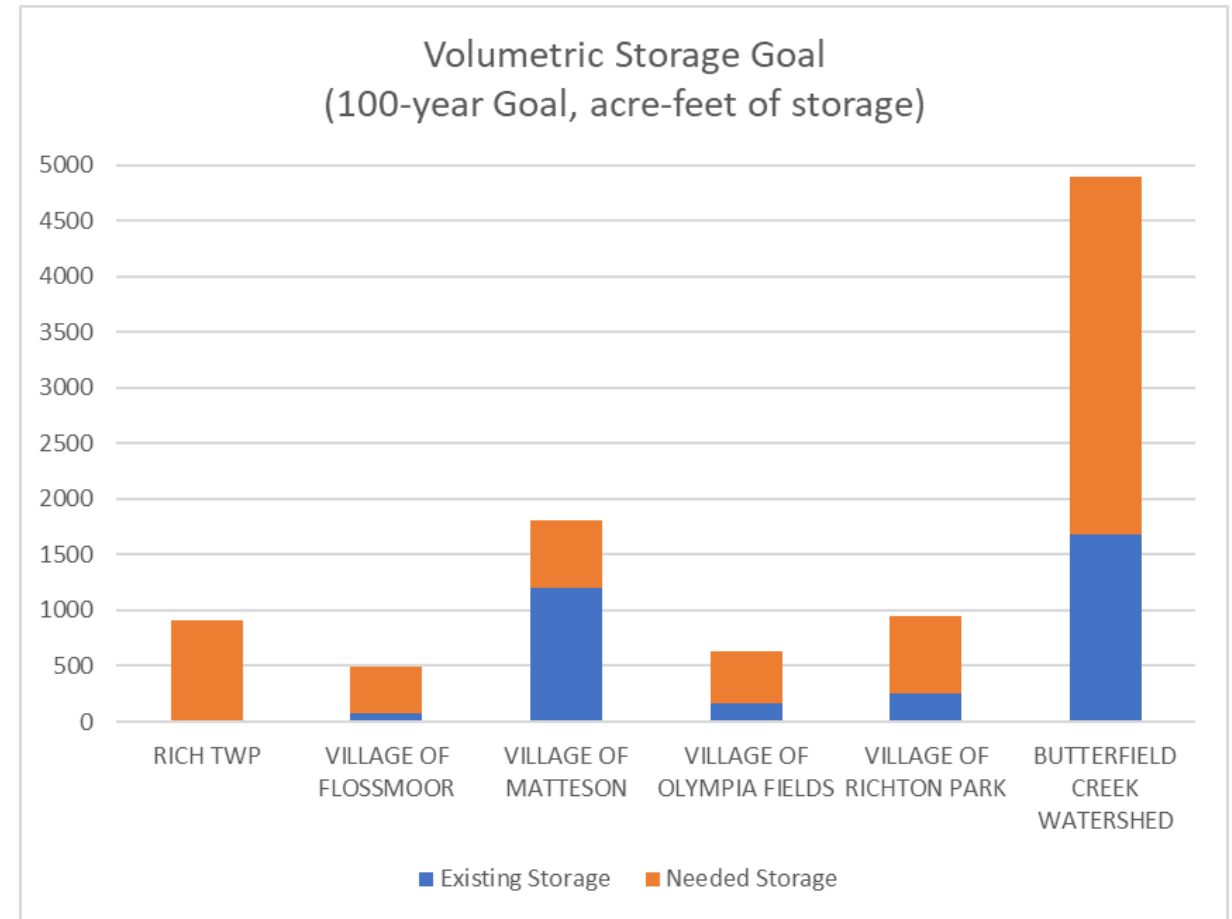
*Map depicts the volumetric storage goal, normalized by catchment size, with darker areas having a higher volumetric need.*

- Storage necessary to meet Watershed Management Ordinance (WMO) release rate for 100-yr 24-hr storm (Bull 75)
- Calculated in GIS for every catchment, aggregated at municipal and subwatershed level
- Scalable – Site, Catchments, & Municipality

# Metric 1: 100-yr Stormwater Storage Volume

## Application & Use:

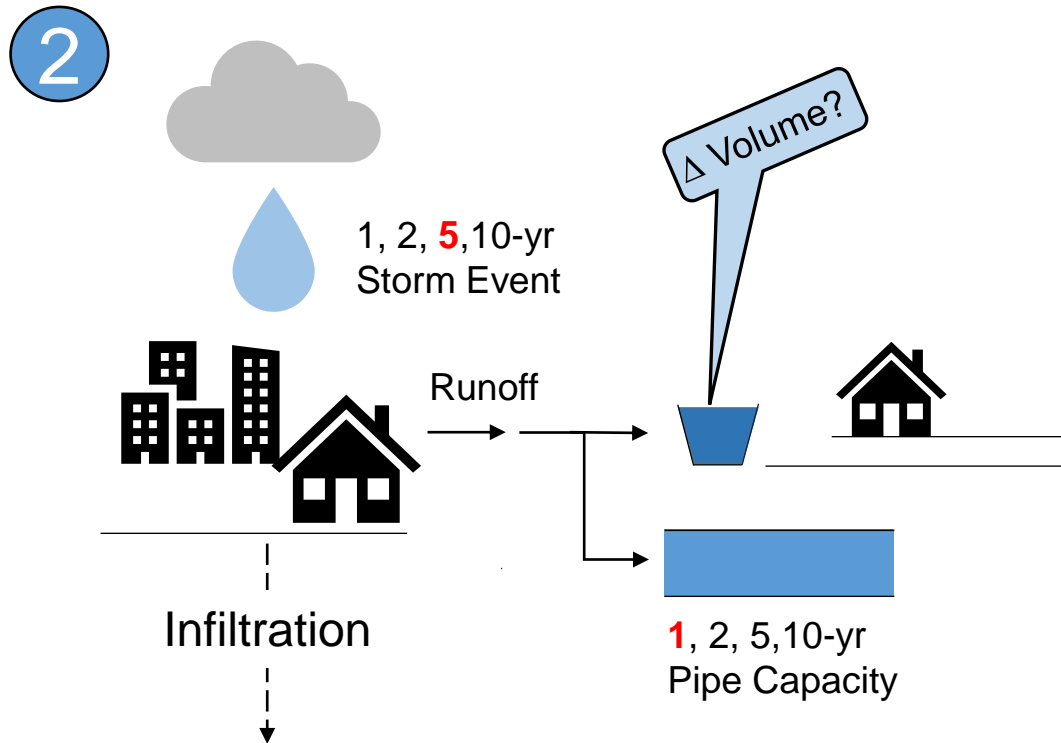
- Long term goal, consistent with WMO
- Based on calculations already developed and understood
- Useful as a common, countywide metric



Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING

# Metric 2: Level of Service – Target Volume



Volumetric Storage Targets (ac-ft)								
Baseline 2-Hour Design Storm	Target 2-Hour Design Storm							
	3- Month	6- Month	1- Year	2- Year	5- Year	10- Year	25- Year	100- Year
2-Month	29	90	167	254	407	551	773	1,149
3-Month		61	139	226	378	522	745	1,121
6-Month			78	165	317	461	684	1,060
1-Year				87	239	383	606	982
2-Year					152	296	519	895
5-Year						144	367	743
10-Year							223	599

*Example:*

1-year to 5-year  
level of service

- SCS Runoff equation used to calc runoff volumes for a range of design storms (Bulletin 75)
- Subtract the “existing level of service” runoff from the “desired level of service” runoff to determine volume target
- Scalable – Site, Catchments, & Municipality

# Metric 2: Level of Service – Target Volume

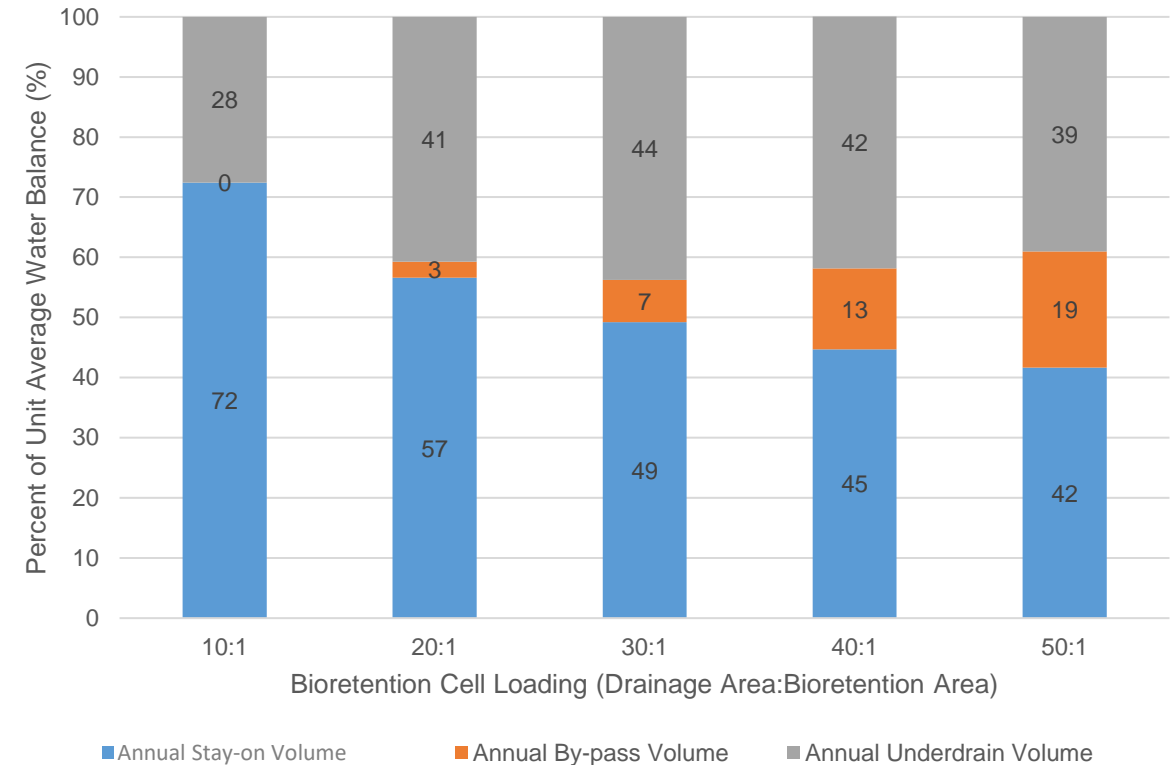
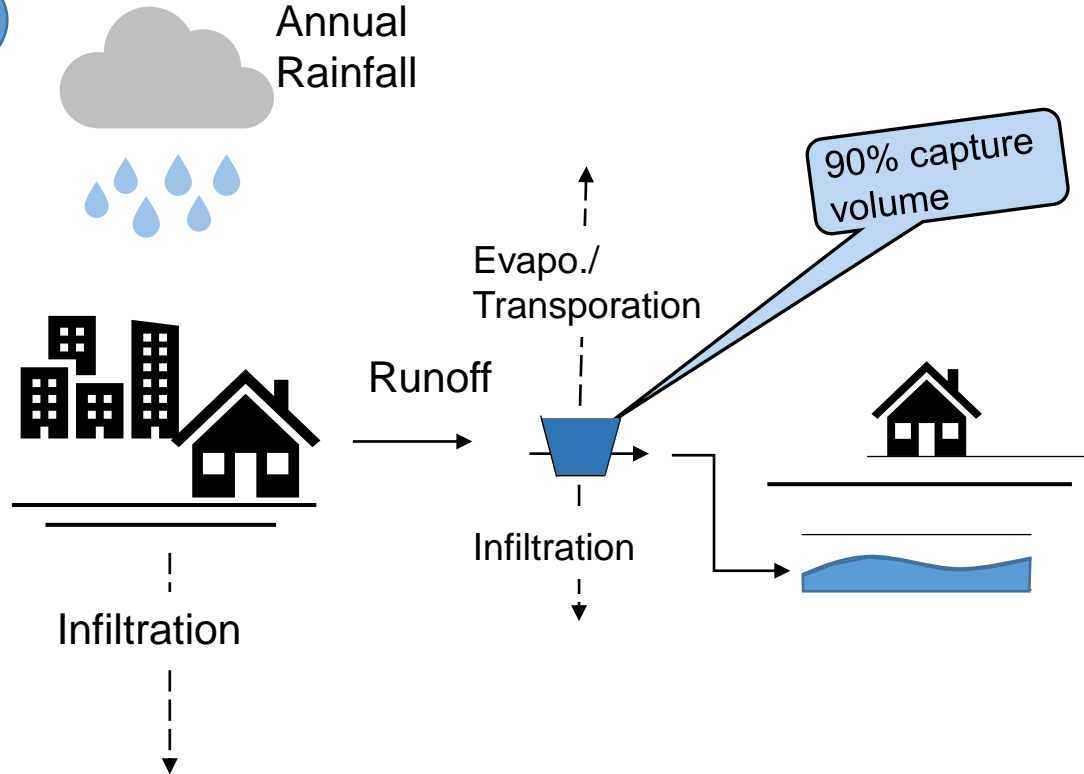
## Application & Use:

- Intermediate goal, based on local priorities and conditions
- Provides municipalities the flexibility to self-select their own adaptive intermediate goal to measure progress
- Recognizes 100-yr goal may be difficult to reach as the initial goal



# Metric 3: Annual Runoff Volume Reduction

3



- Quantify benefit of potential runoff volume reduction
- Annual volume reductions based on bioretention cell using RECARGA (planning level)
- Primarily used in Combined Sewer Area

# Metric 3: Annual Runoff Volume Reduction

## Application & Use:

- Shows benefit of green infrastructure to reduce runoff from small storms
- Results in reductions in treatment volumes and costs for collections and treatment



Source: MWRDGC - Terrence J. O'Brien Water Reclamation Plant video tour  
<https://www.youtube.com/watch?v=oJ4IbCBf7g0&feature=youtu.be>

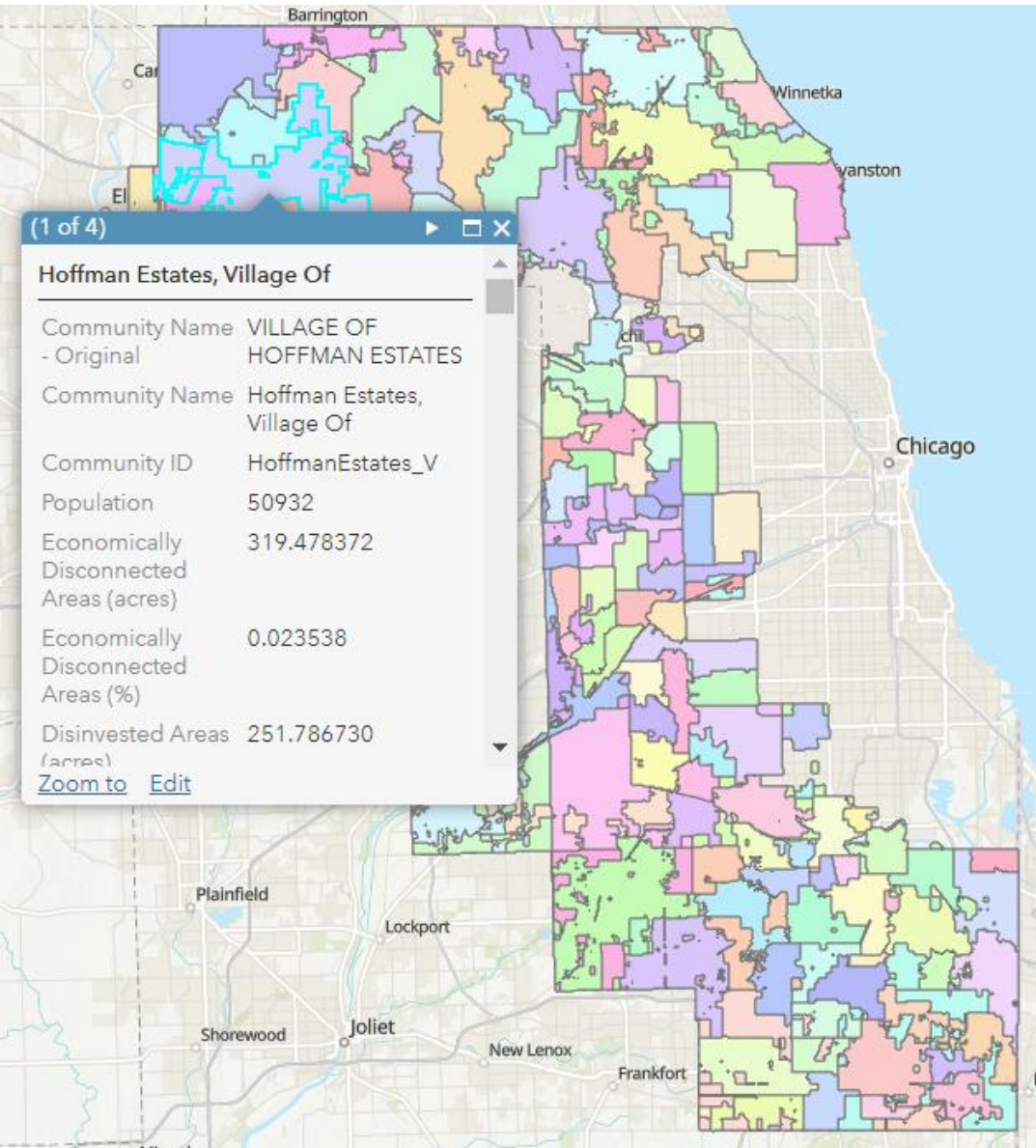
# Stormwater Storage Metrics

## How are the stormwater storage metrics used?

- **To identify areas** where flood mitigation needs...
  - are being met through local government or agency efforts;
  - are not being addressed and where additional assistance or capacity building may be necessary;
- **To quantify total, cumulative flood mitigation need** based on community information and objectives.
  - Allows municipalities to quickly estimate mitigation cost
- **To compare individual projects** (or policies or programs) against each another, as one means of prioritizing projects.

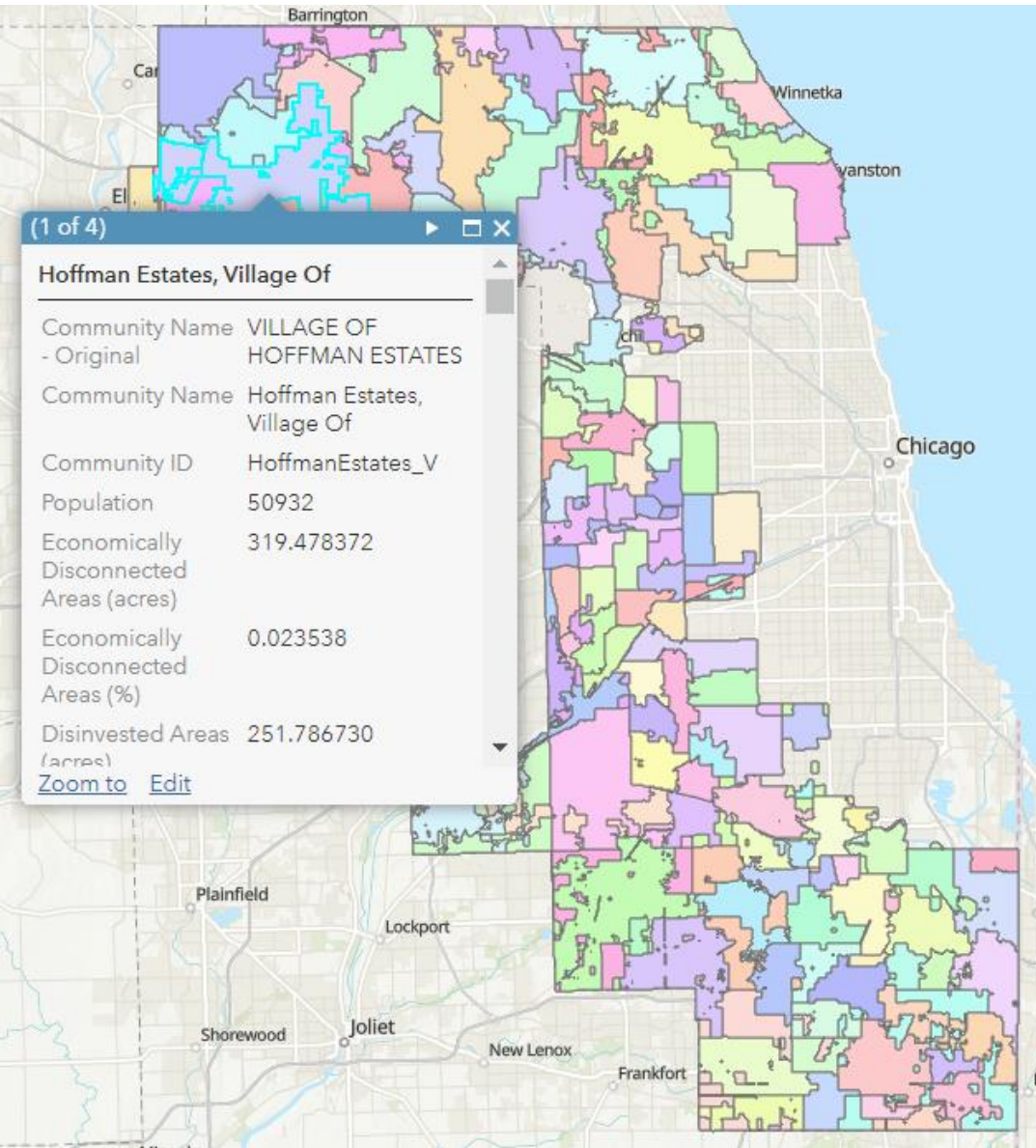
# Available Data: Community Level - General

- Data available everywhere except City of Chicago
  - Effort to support Chicago is happening separately





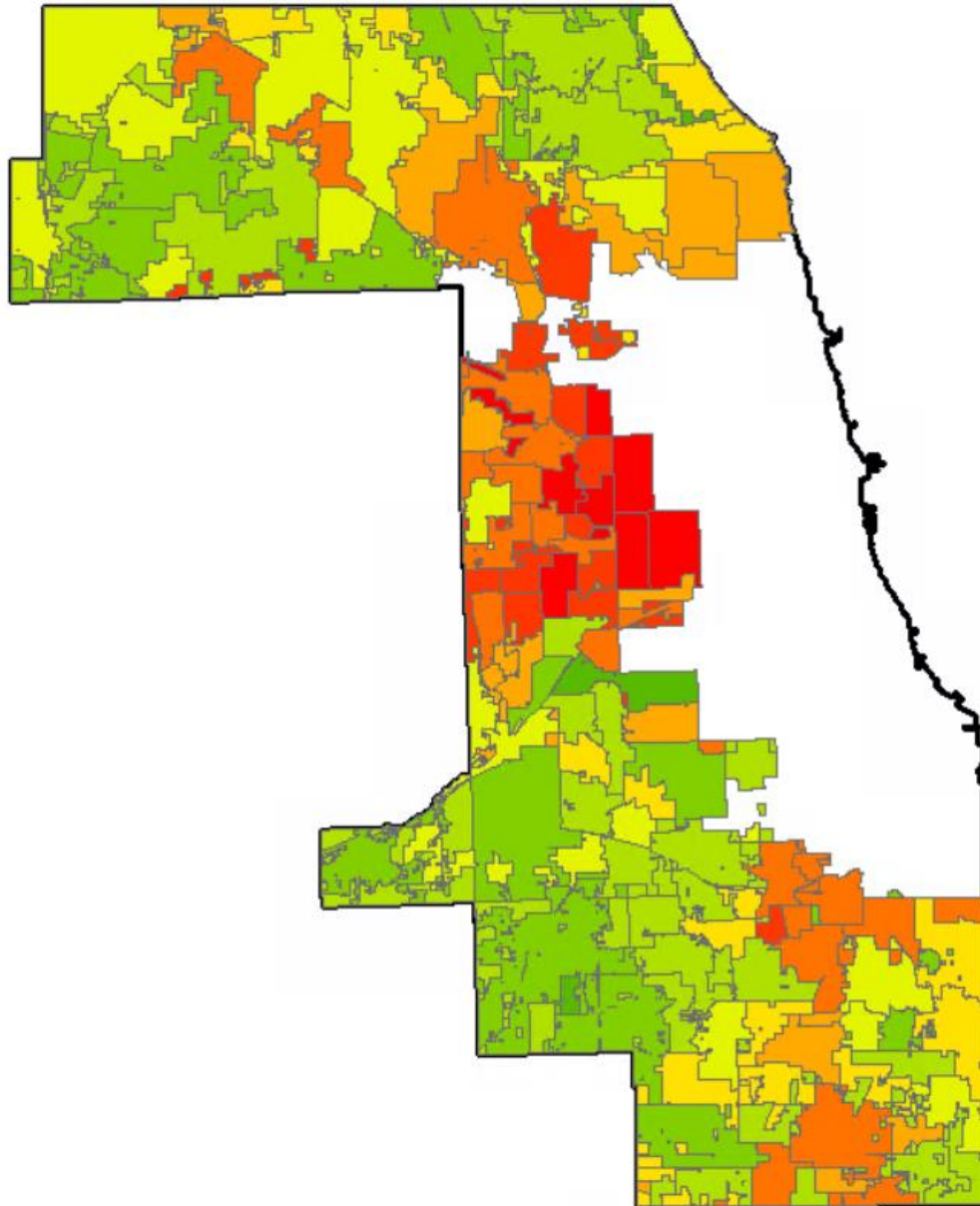
# Available Data: Community Level - General



- Demographics
- CMAP Economically Disconnected & Disinvested Statistics
- CMAP Land Use Statistics
- Drainage Statistics
  - Percent Impervious
  - Percent CSA
  - Number of Drainage Catchments & Size
  - MWRD Watersheds, Subwatersheds & Streams
  - CMAP Flood Susceptibility Index average values
  - Percent Coverage of high Topographic Wetness, Floodplain, Depressions
  - Number of at-risk structures
- Underlying datasets (eg, data from CMAP, ISWS, FEMA) provided as separate layers

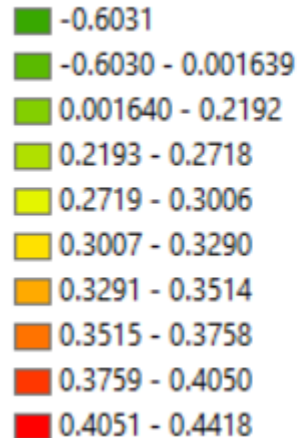
# Available Data:

## Community Level – Stormwater Storage Metrics



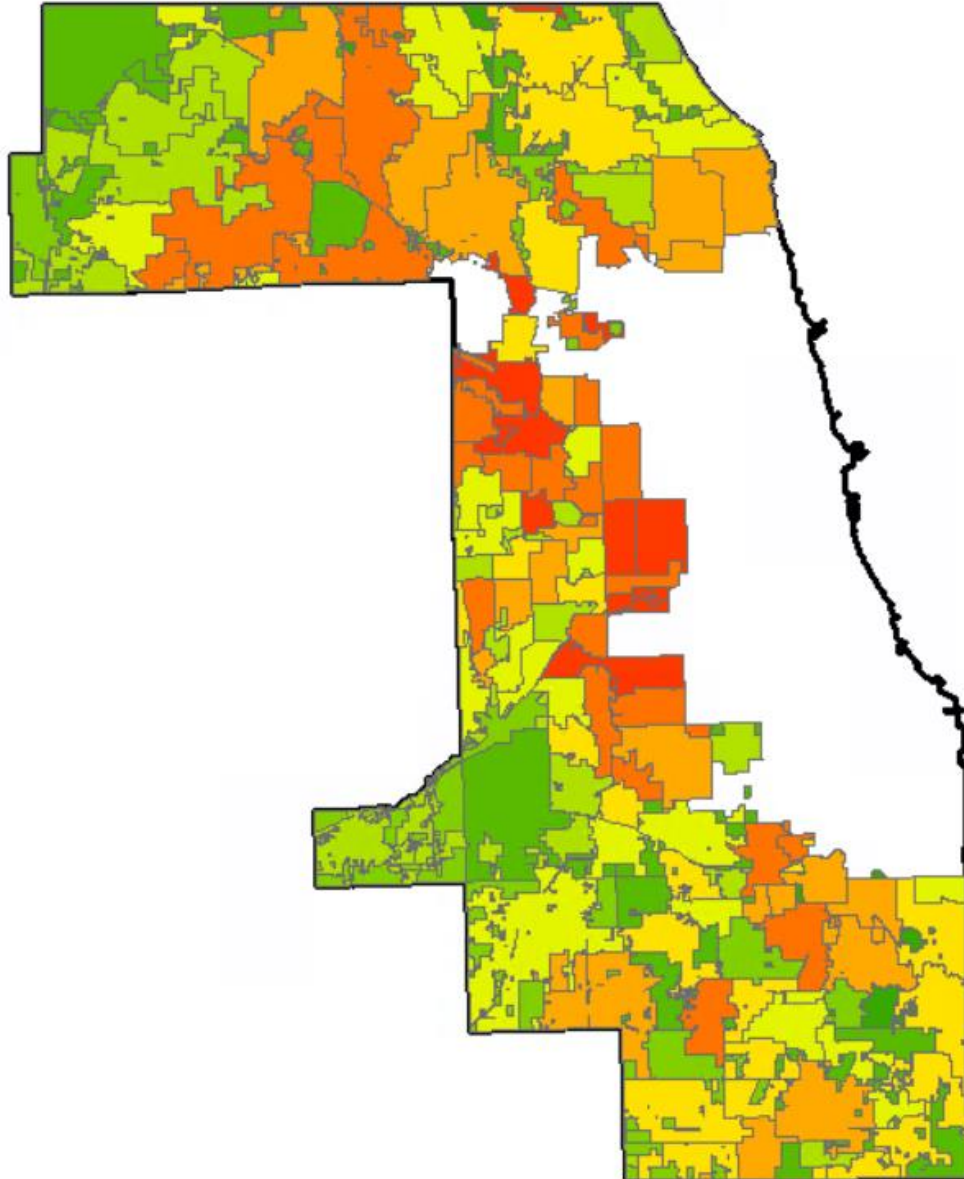
- Total storage needed to meet WMO release rate for 100-yr 24-hr storm (B75 Rainfall)
  - Subtracts existing storage per MWRD permit data
  - Climate change scenario provided (B75 + 1")

Remaining 100-year, 24-hour Design Storm Volumetric Storage (ac-ft) / Total Area (acres)



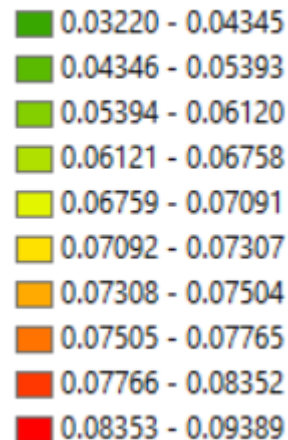
# Available Data:

## Community Level – Stormwater Storage Metrics



- Total storage needed to meet “Level of Service” storage goal
  - Difference between level of service provided by current stormwater management system (eg, 2-year) and desired level of service (eg, 10-yr)
  - Runoff values provided for all combinations of storms

10 year - 2 year Volume (ac-ft) / Municipal\_Ac

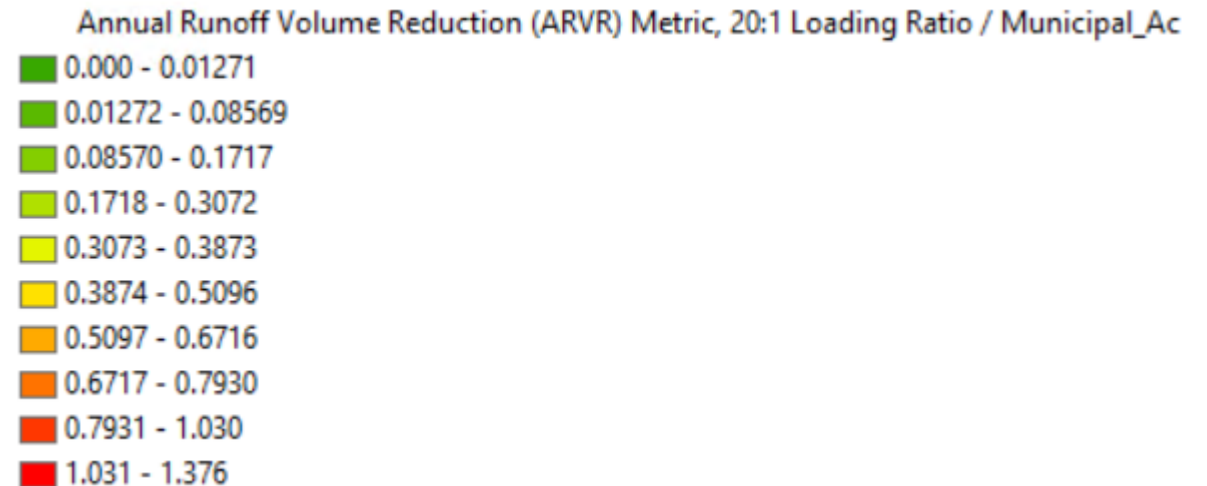
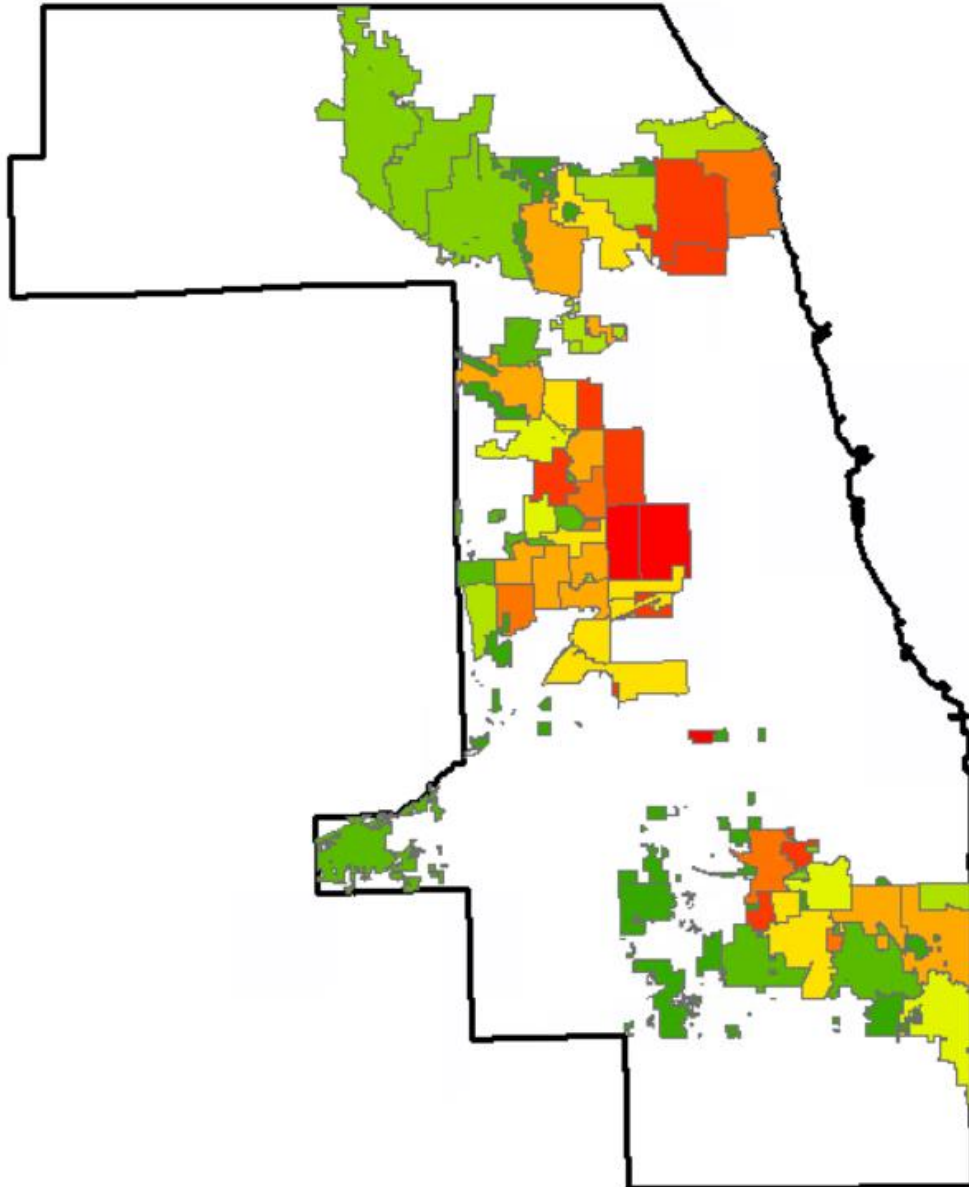




# Available Data:

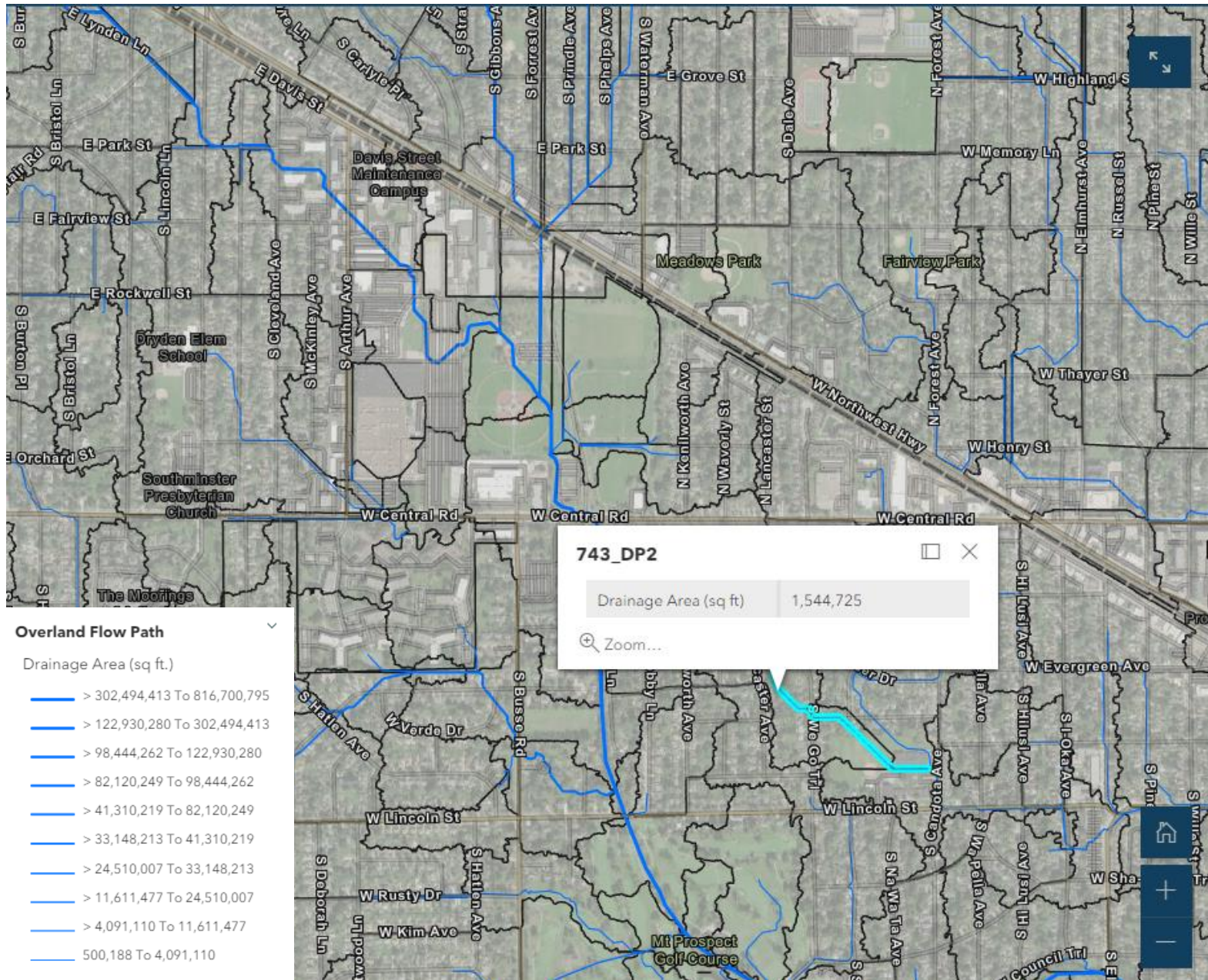
## Community Level – Stormwater Storage Metrics

- Total storage needed to meet Annual Runoff Volume Reduction





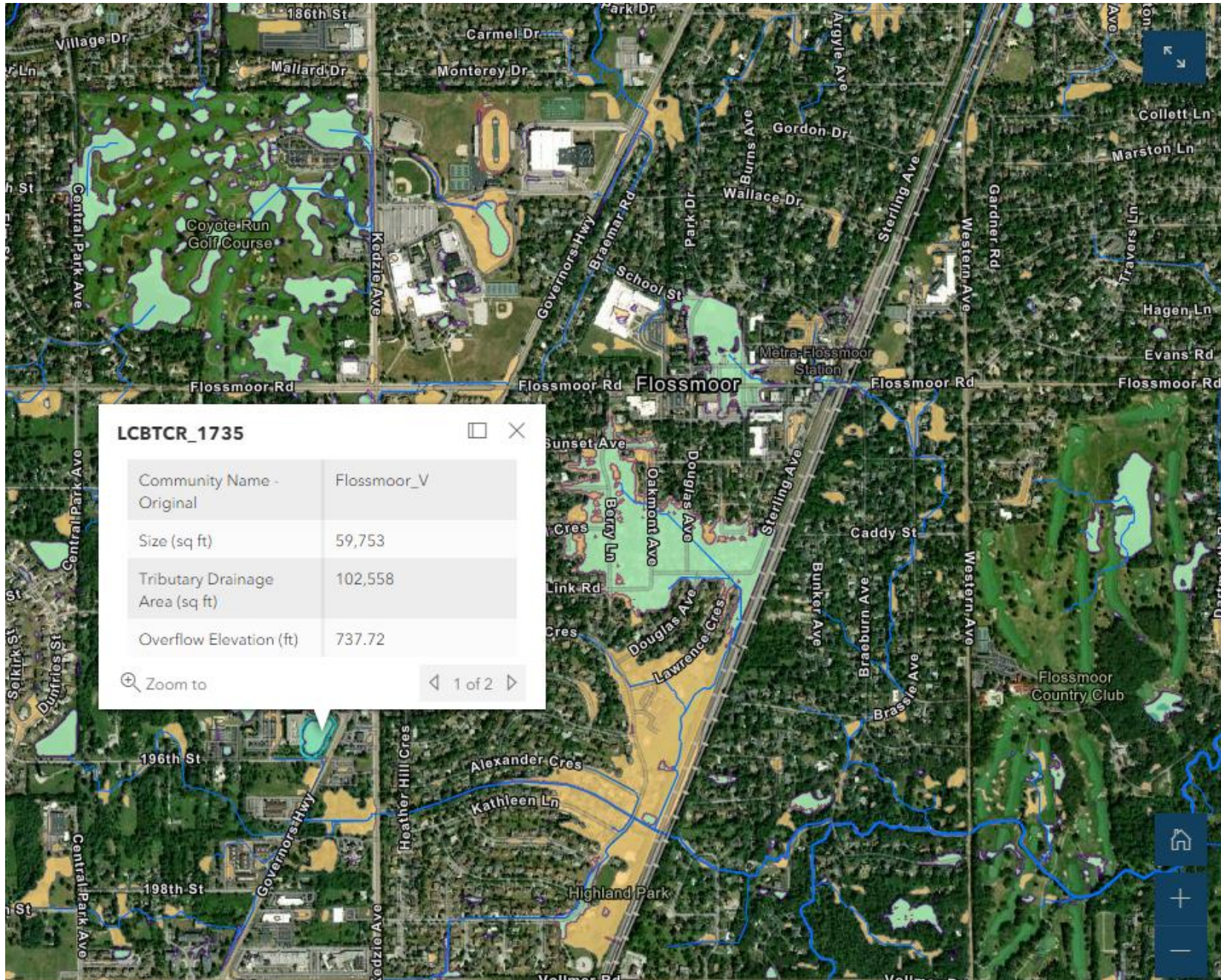
# Available Data: Overland Flow Paths



- Delineated by ArcHydro
- Based on topography
- Ignores most infrastructure
- Terminate at depressions or streams
- Each segment includes trib area



# Available Data: Depressions



- Low-lying areas based on topography
- Does not consider:
  - Stormwater infrastructure
  - Whether enough upstream area is tributary to fill the depression

Depressions

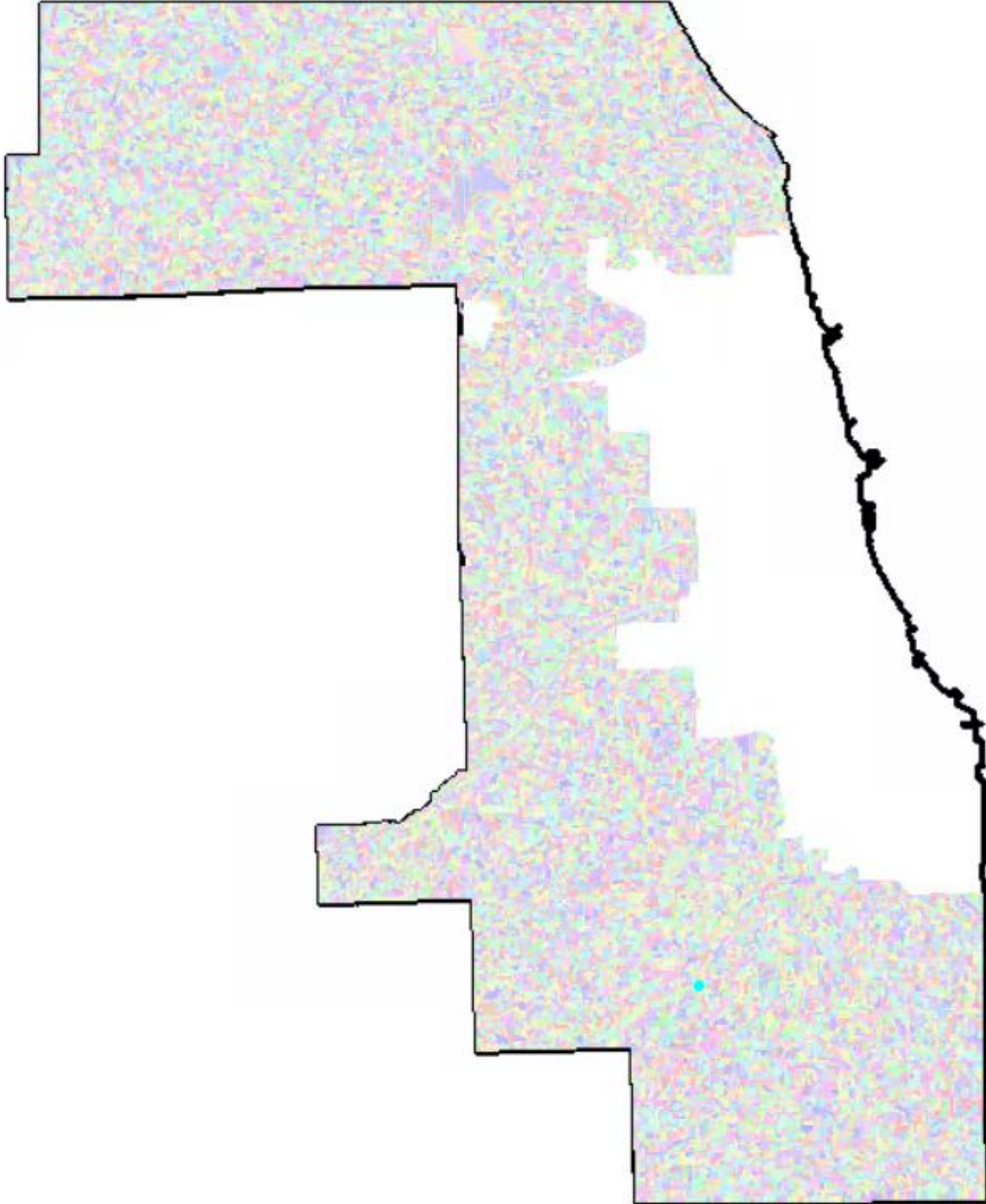


Areas of high wetness per Topographic Wetness Index



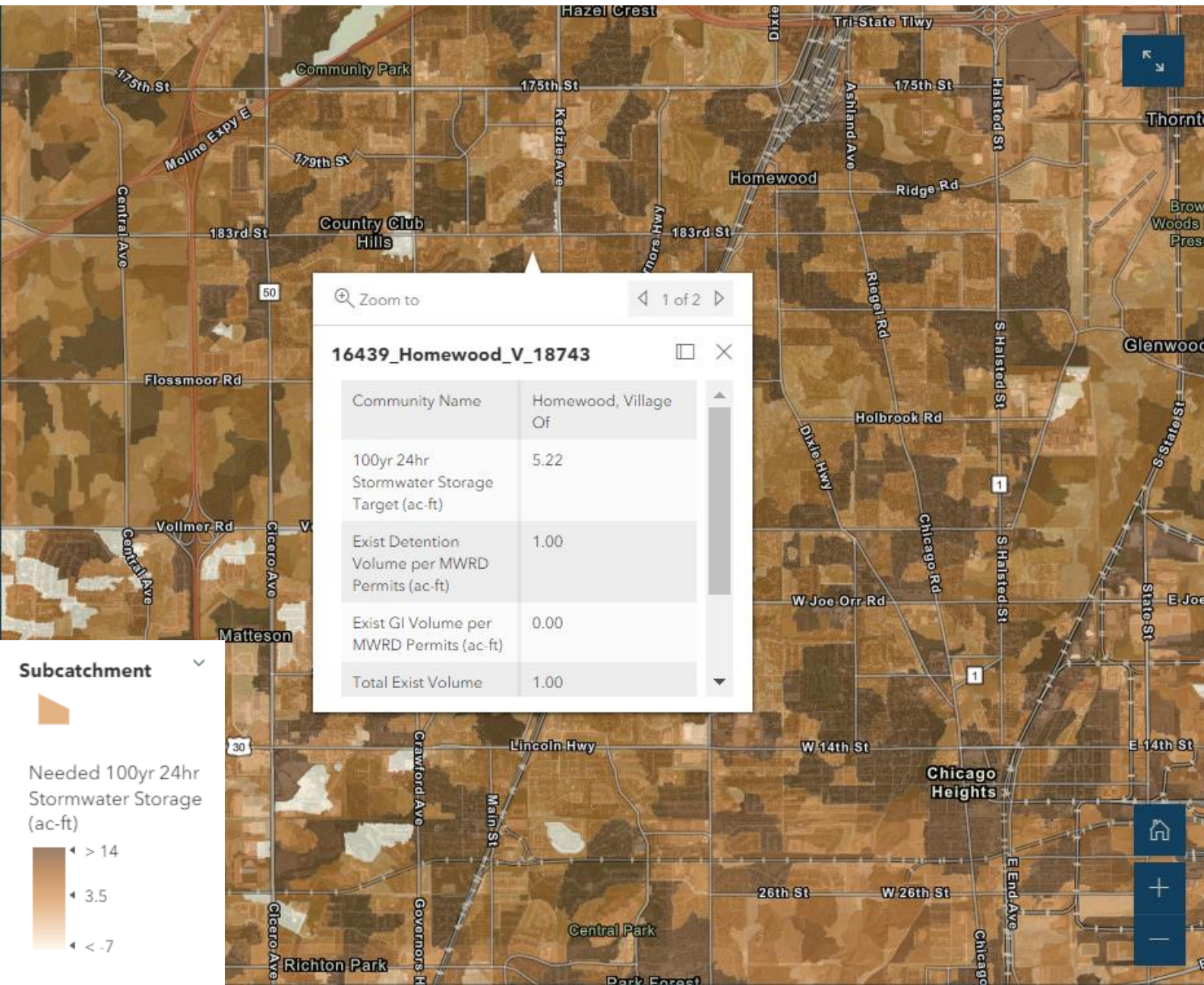


# Available Data: Catchments



- Delineated by ArcHydro, then subdivided by municipal boundaries
- Average size ~30 acres
- Large dataset
  - General data (*watershed, subwatershed, muni.*)
  - Drainage statistics (*imperviousness; CN; area covered by floodplain, high topographic wetness, depressions*)
  - Stormwater storage metrics
  - Risk metrics

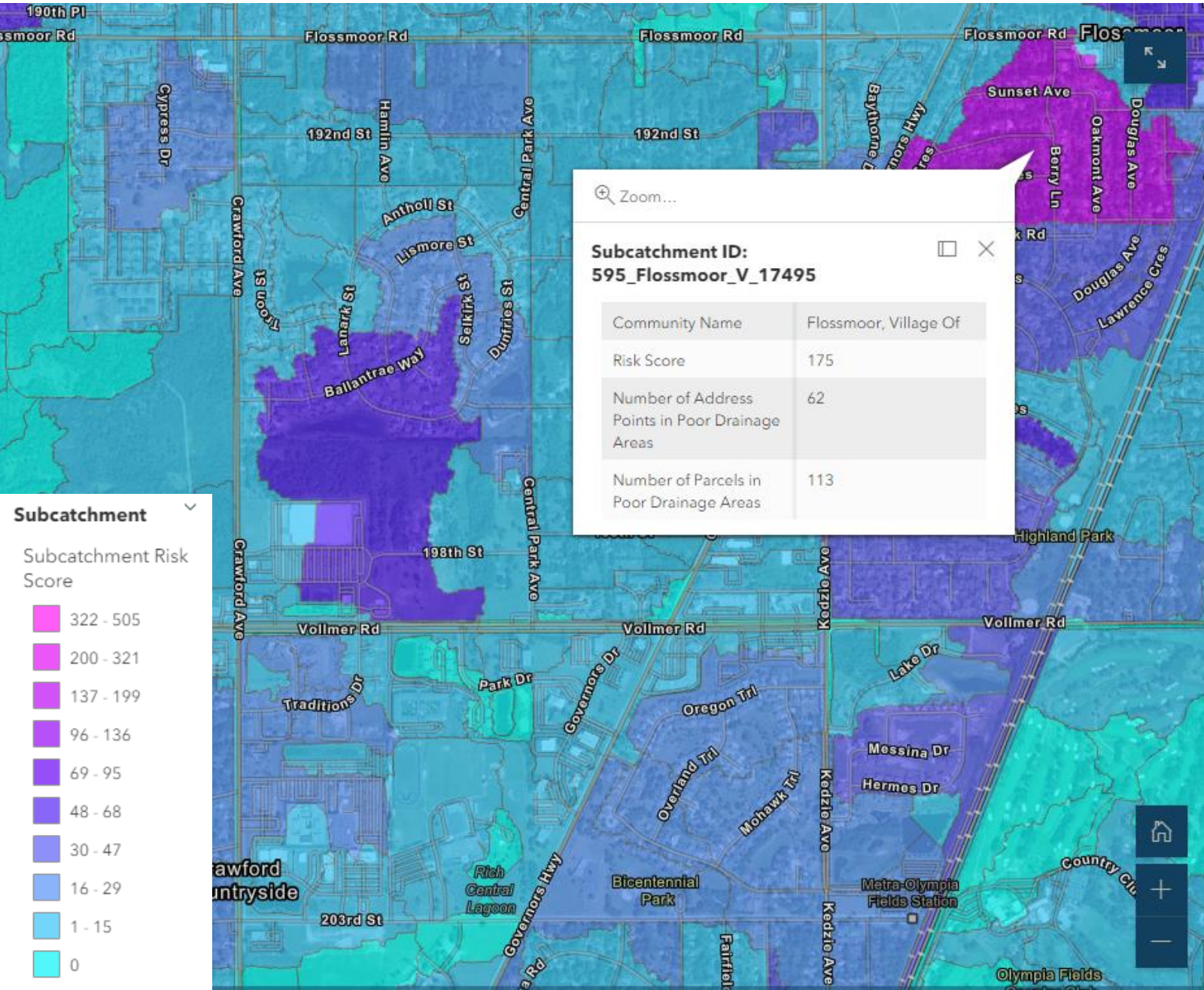
# Available Data: Catchments



- Stormwater Storage Metrics
  - 100-year
  - Level of Service
  - Annual Runoff Volume Reduction



# Available Data: Catchments



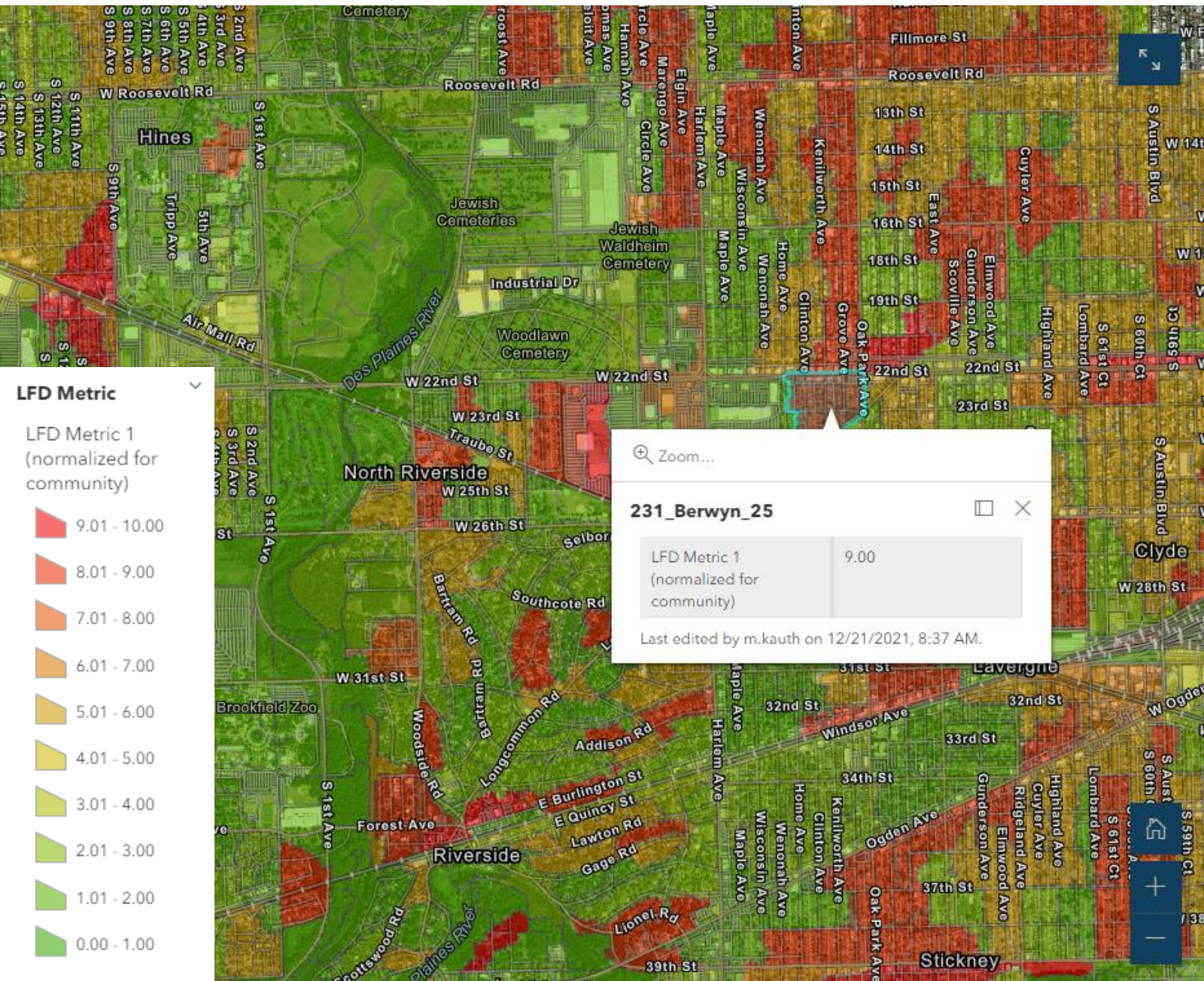
- Risk Score =  
**Number of structures**  
overlapping a depression or  
area of high topographic  
wetness (based on Cook  
County “address dot” at center  
of primary structure)

plus

- Number of parcels**  
overlapping a depression or  
area of high topographic  
wetness



# Available Data: Catchments



- Local Flood Damage (LFD) metric (CSA only) =

**Calculated separately for each municipality**

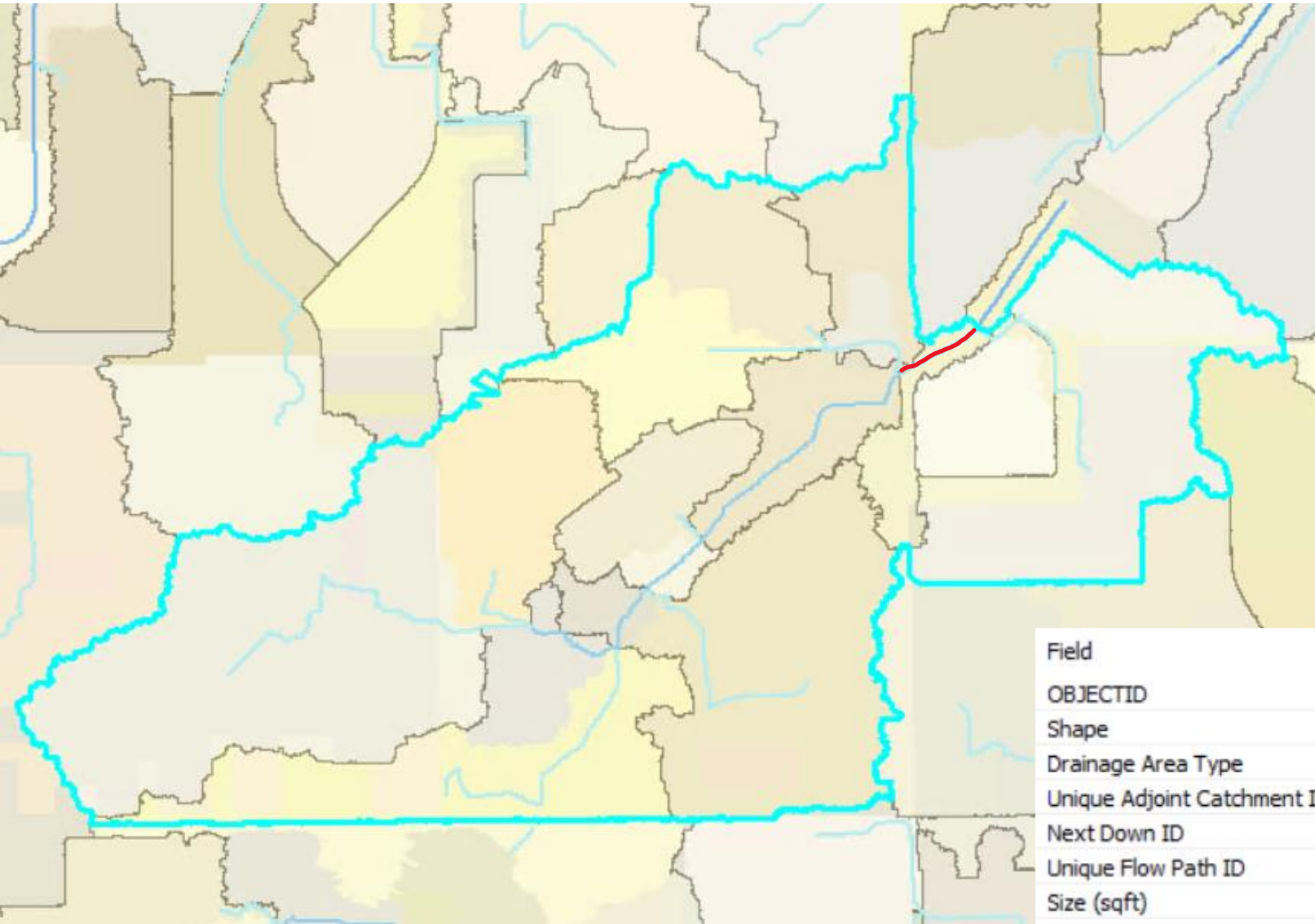
Each catchment assigned a score based on quartile value for **imperviousness** and for **building density**

**Scores normalized** across each municipality, based on highest value in municipality, for final value of 1 – 10.

LFD of 8 in one municipality is **not same risk** as LFD of 8 in another municipality



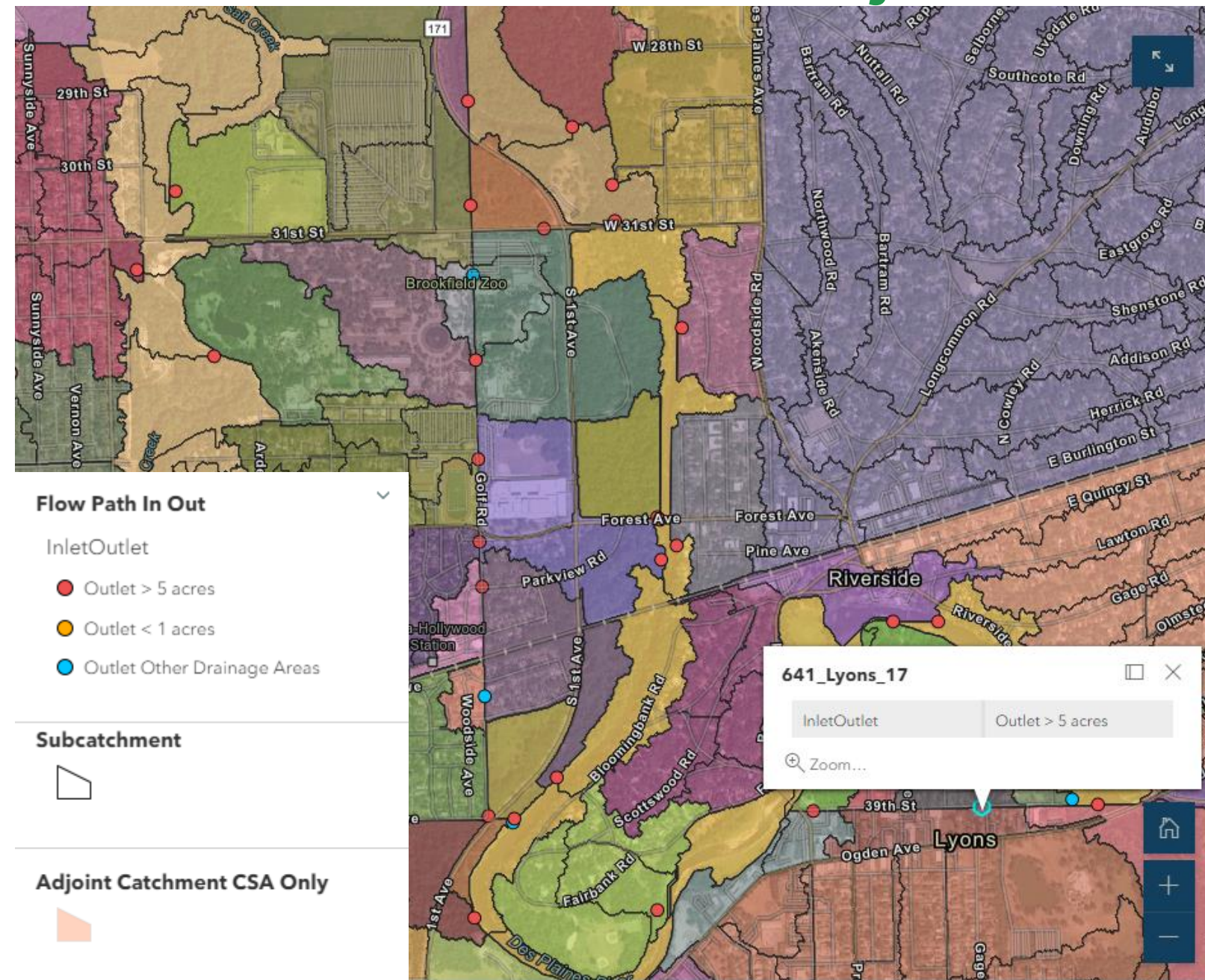
# Available Data: Adjoint Catchments (SSA)



- Adjoint Catchments = areas of accumulated flow
- Area of interest = overland flow path segment in red
  - Cyan selection = Adjoint Catchment corresponding to AOI

Field	Value
OBJECTID	450
Shape	Polygon
Drainage Area Type	SSA Adjoining Catchments
Unique Adjoint Catchment ID	2360_1998_NB
Next Down ID	2010
Unique Flow Path ID	1998_NB
Size (sqft)	14639877.579276

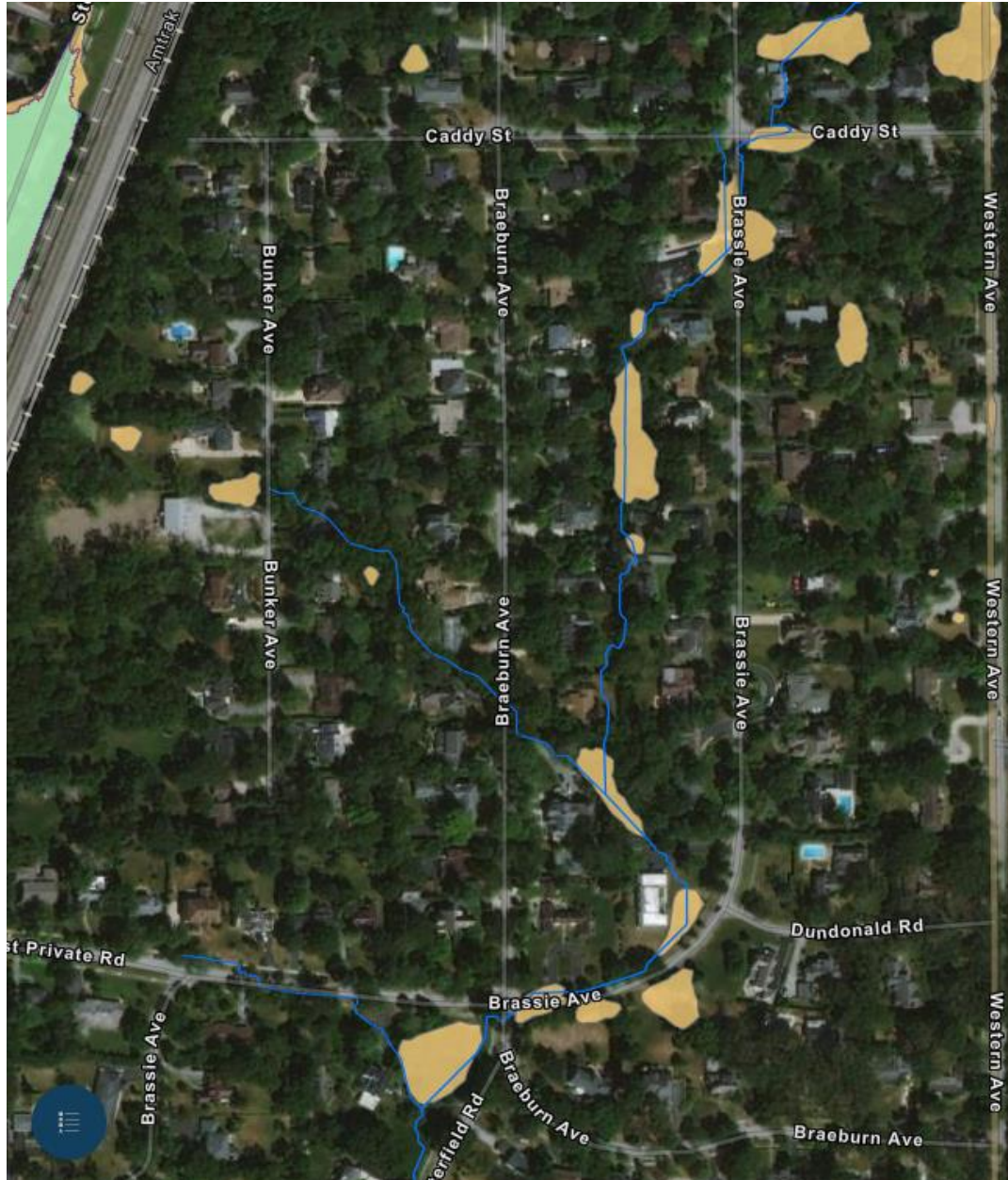
# Available Data: Adjoint Catchments (CSA)



- Adjoint Catchments in CSA
  - Delineated at municipal boundaries
  - Points indicate locations where flow enters or exits



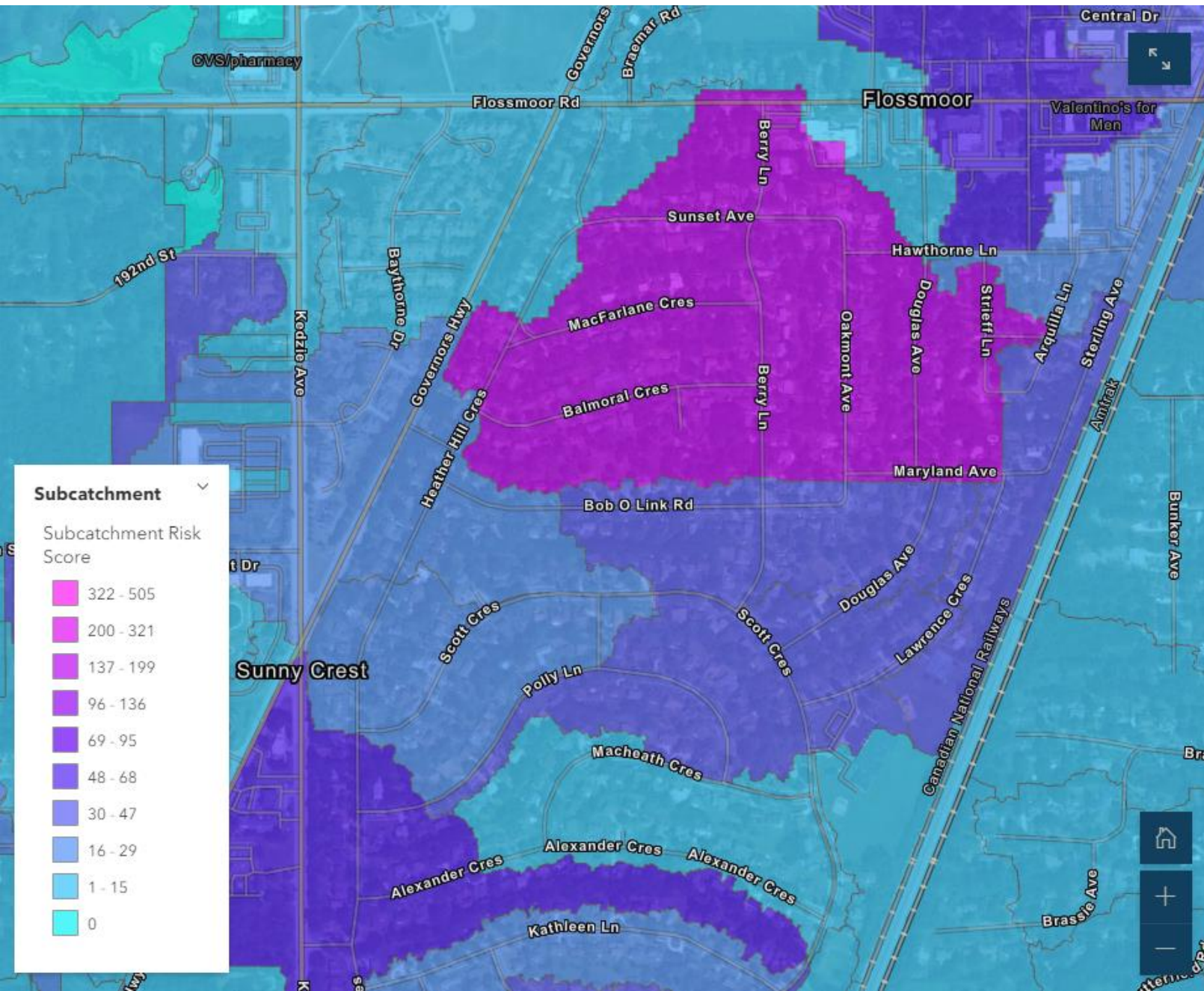
# How to Use this Data?



- Two Story Maps provide a Tutorial
- Story Map for General Users
- Quick / Immediate Uses:
  - Building Permits: review depressions & flow paths
  - Flooding complaints from residents: quickly understand drainage patterns when fielding calls



# How to Use this Data?



- Story Map for General Users
- Quick / Immediate Uses:
  - New (non-stormwater) projects: are they adjacent to areas of need?

# How to Use this Data?

- Story Map for General Users
- Quick / Immediate Uses:
  - Capital budget planning: estimate stormwater improvement cost based on needed storage. Consider setting aside funding for stormwater improvements based on the metrics

<b>Municipality</b>	<b>100-year Stormwater Storage Metric (ac-ft)</b>	<b>Cost (\$M) based on \$100k/ac-ft</b>	<b>Level of Service Stormwater Metric, choose 10y - 2y (ac-ft)</b>	<b>Cost (\$M) based on \$100k/ac-ft</b>
City A	3285	329	683	68
Village B	2330	233	653	65
Village C	2017	202	964	96
Township D	1498	150	302	30



# How to Use this Data?

[Introduction](#)[Available Maps & Data](#)[Community Maps](#)[How To Use This Data](#)[If Problems Are Known](#)[If Problems Are Unknown](#)

How can a local government actually use this information for stormwater master planning?

A 3-step process can help a local government quickly (1) assess the baseline data to understand where problems are, (2) formulate priorities, and (3) develop an implementation plan with actionable steps, including identification of the necessary project and estimation of project cost.

The three-step process is similar whether a community already has an understanding of where flood issues are, or not. Examples to illustrate the process are in the next two sections.

Communities that know where their flood problems are can view illustrations of each step in Section 5, “If Problems are Known”.

Communities that do not know where their flood problems are can view illustrations of each step in Section 6, “If Problems are Unknown”.

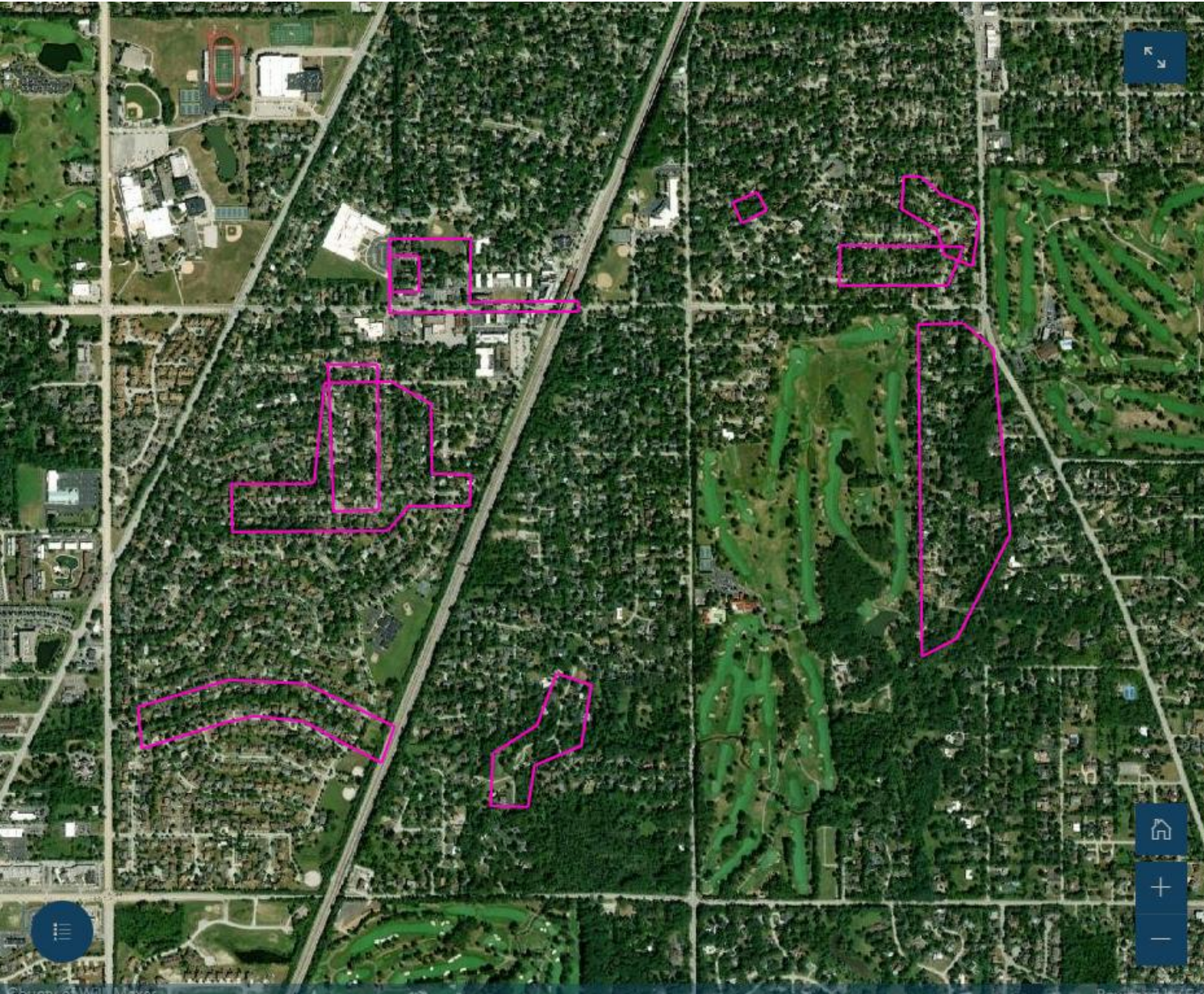


Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING



# How to Use this Data?



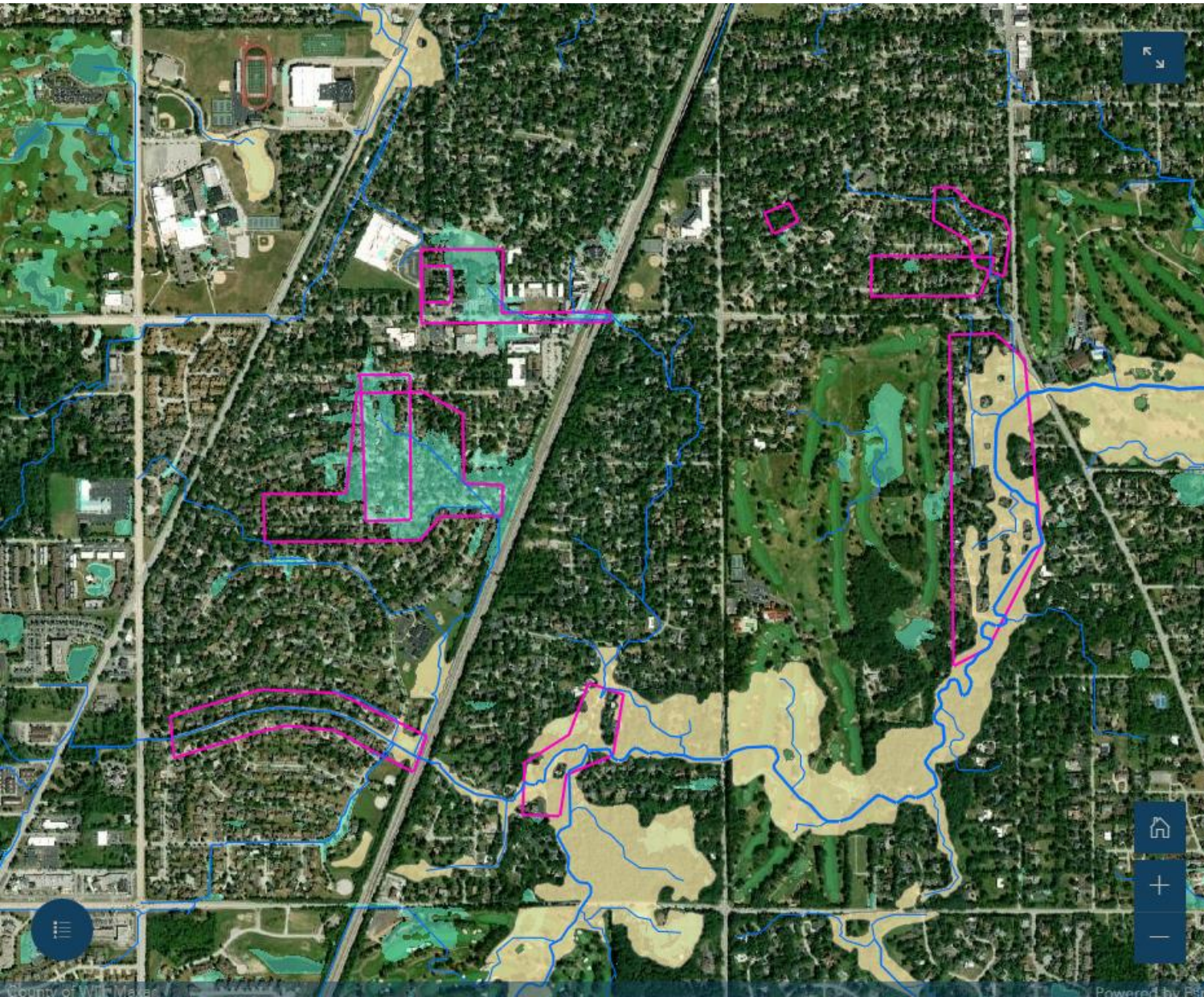
- Story Map for Engineers & Planners
- Step 1: Baseline Assessment
  - **Identify** known flood problem area locations

Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING



# How to Use this Data?



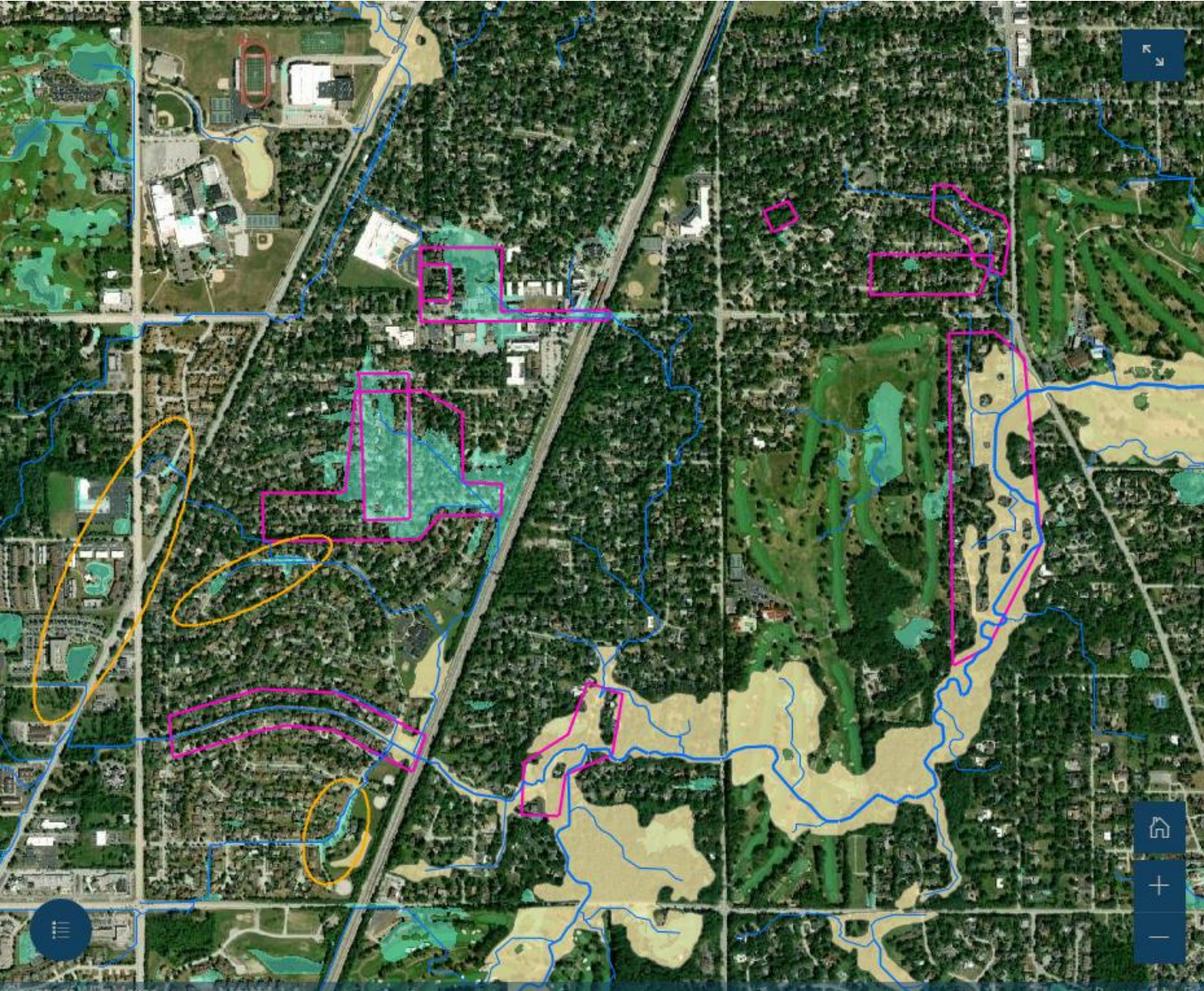
- Story Map for Engineers & Planners
- Step 1: Baseline Assessment
  - Identify known flood problem area locations
  - **Review** against poor drainage indicators

Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING



# How to Use this Data?



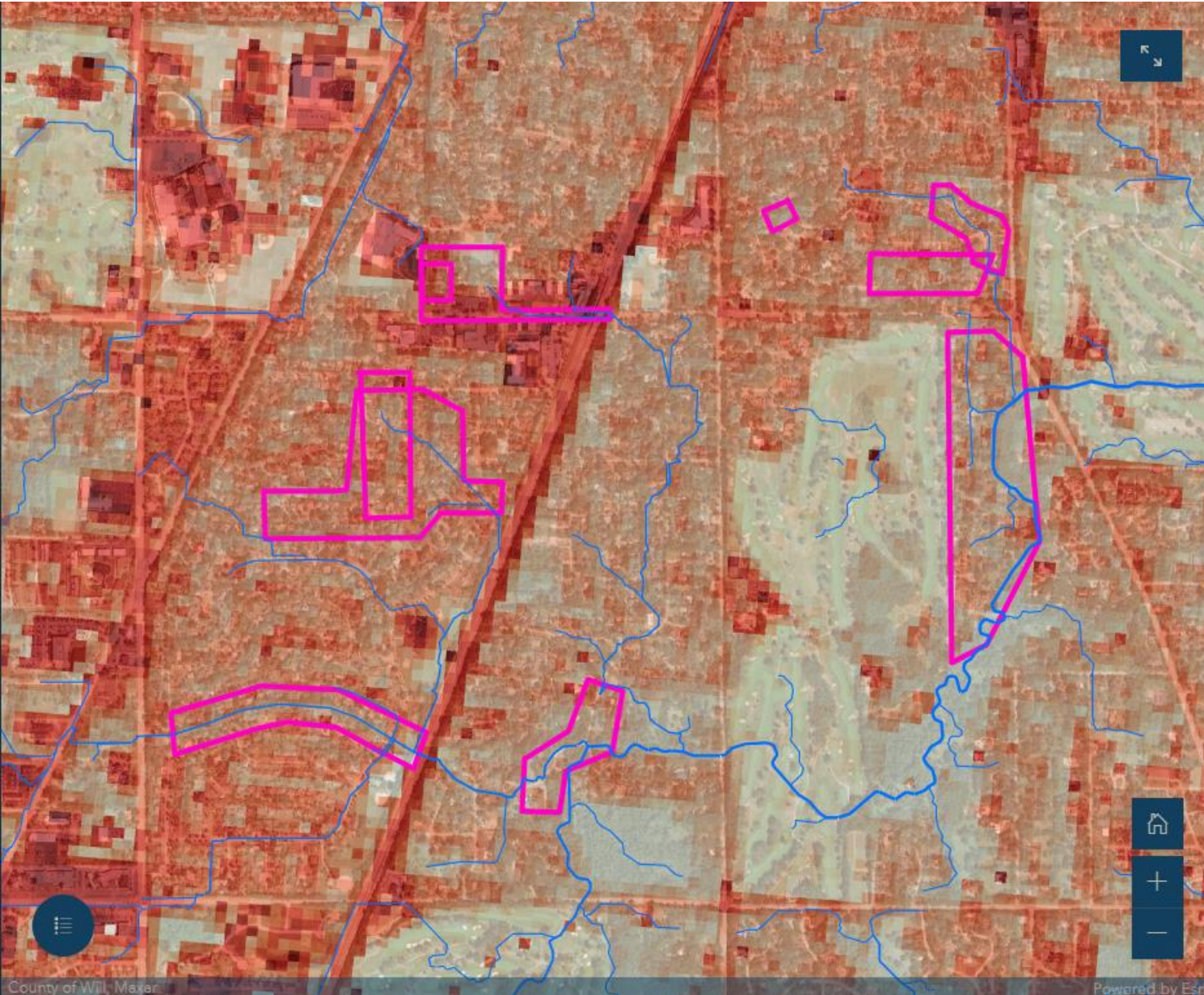
- Story Map for Engineers & Planners
- Step 1: Baseline Assessment
  - Identify known flood problem area locations
  - **Review** against poor drainage indicators

Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING



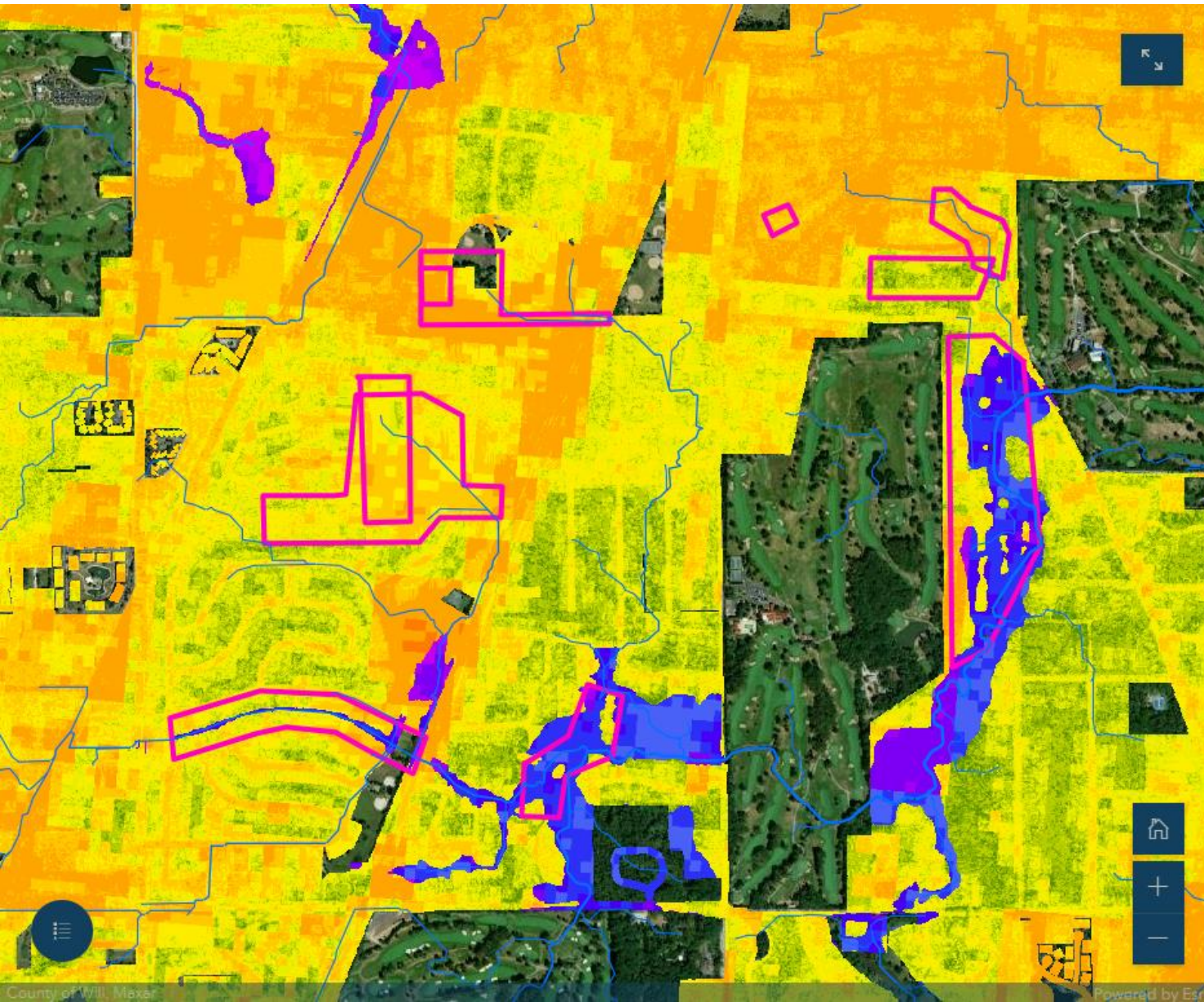
# How to Use this Data?



- Story Map for Engineers & Planners
- Step 1: Baseline Assessment
  - Identify known flood problem area locations
  - Review against poor drainage indicators
  - **Overlay** percent impervious maps, flood susceptibility maps,



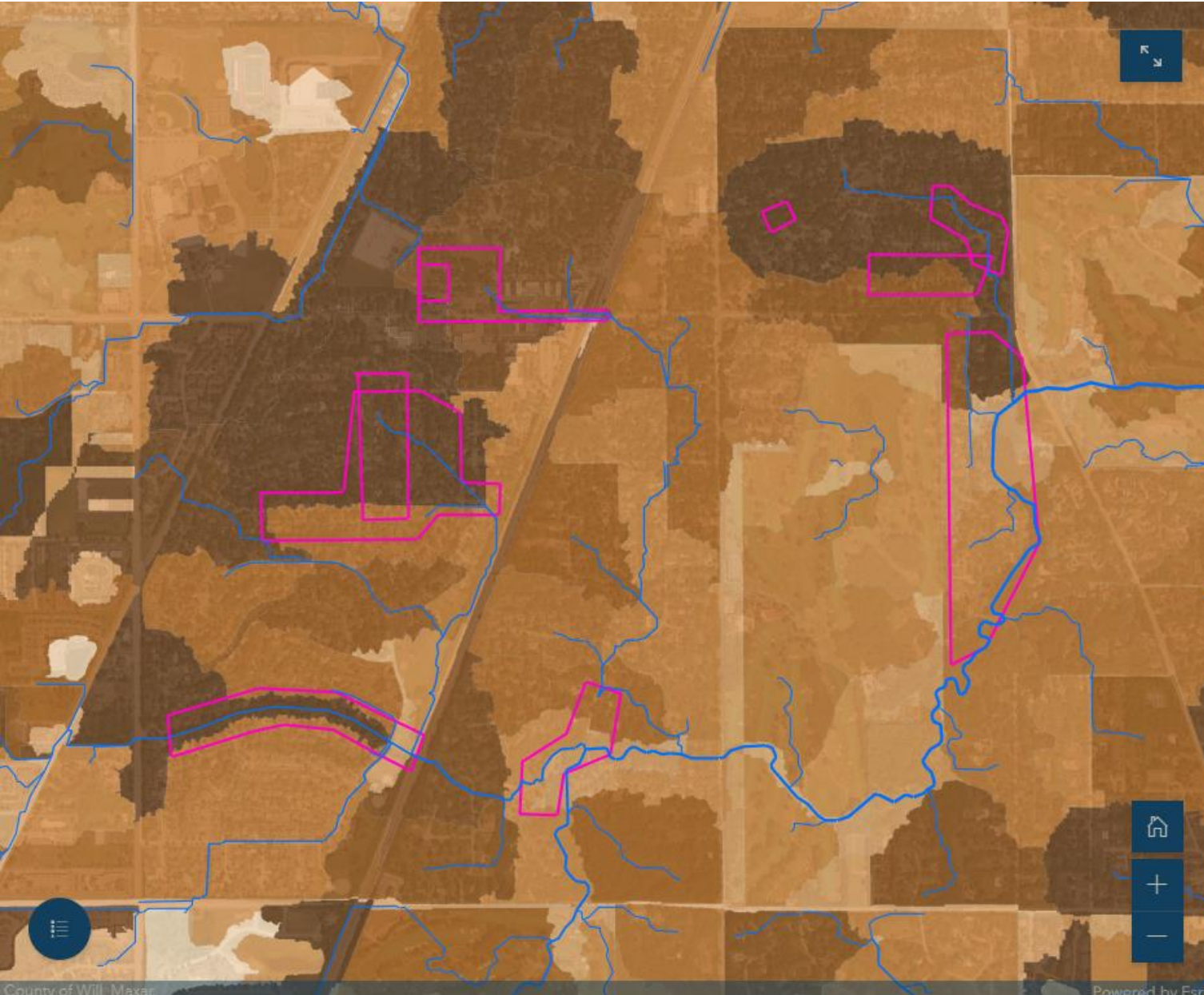
# How to Use this Data?



- Story Map for Engineers & Planners
- Step 1: Baseline Assessment
  - Identify known flood problem area locations
  - Review against poor drainage indicators
  - **Overlay** percent impervious maps, flood susceptibility maps,



# How to Use this Data?



- Story Map for Engineers & Planners
- Step 1: Baseline Assessment
  - Identify known flood problem area locations
  - Review against poor drainage indicators
  - Overlay percent impervious maps, flood susceptibility maps,
  - **Determine goals for flood protection**, then overlay corresponding stormwater storage metrics

Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING

# How to Use this Data?

Next steps could include:

- additional data collection,
  - development of a conceptual solution(s),
  - engineering analysis,
  - construction documents,
  - private property programs (overhead sewers, overland flow path restoration/protection),
  - development of programs or policies (land use planning measures, regulatory requirements, private/public cost share programs, etc), etc.
- Story Map for Engineers & Planners
  - Step 1: Baseline Assessment
    - Identify known flood problem area locations
    - Review against poor drainage indicators
    - Overlay percent impervious maps, flood susceptibility maps,
    - Determine goals for flood protection, then overlay corresponding stormwater storage metrics
    - **Identify Next Steps**

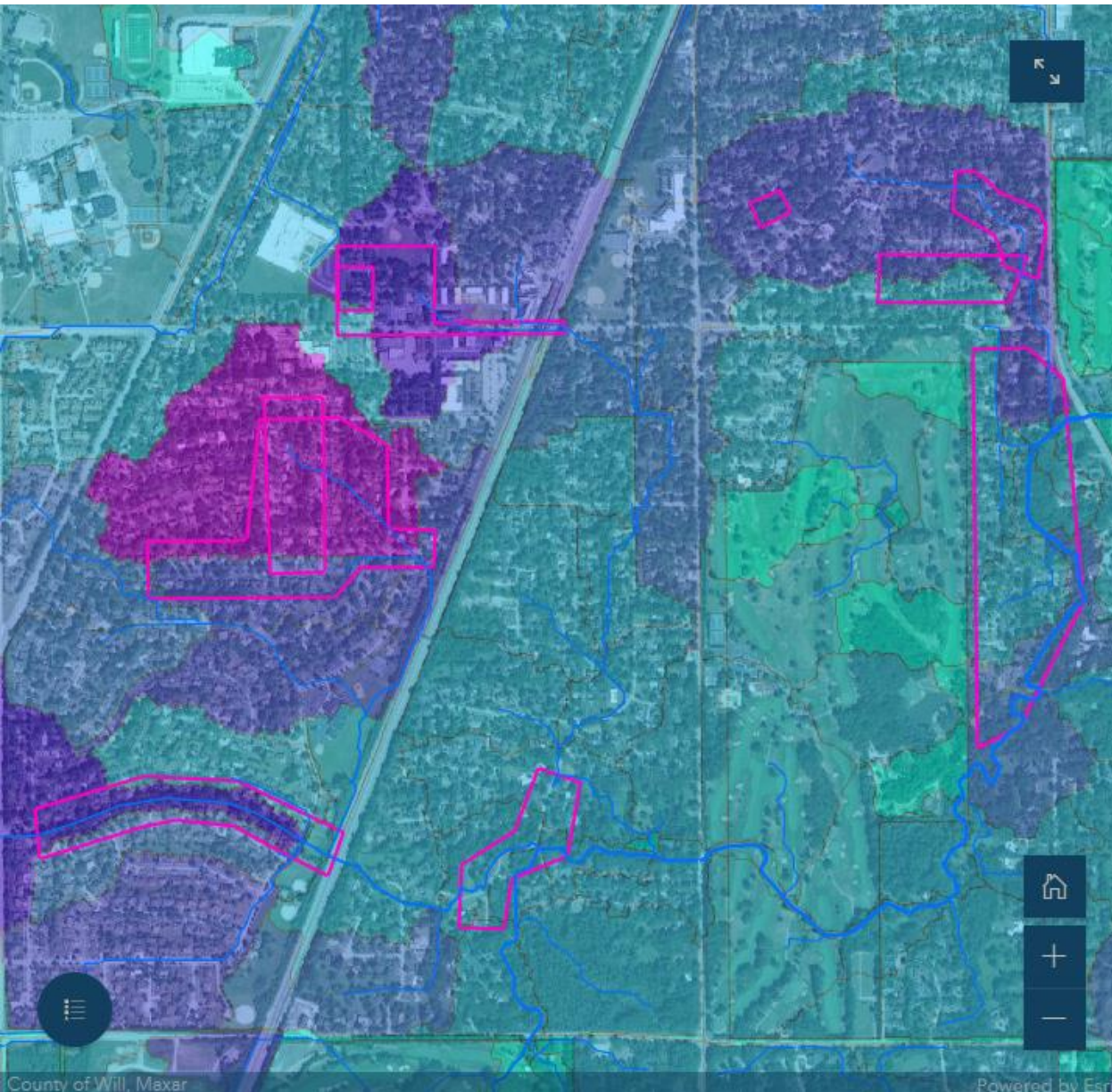


# How to Use this Data?



- Story Map for Engineers & Planners
- Step 2: Formulate Priorities
  - Each municipality or agency may have their own priorities, or may weight factors differently
  - GIS data can be used to objectively measure each variable in the municipality/agency's prioritization scheme

# How to Use this Data?

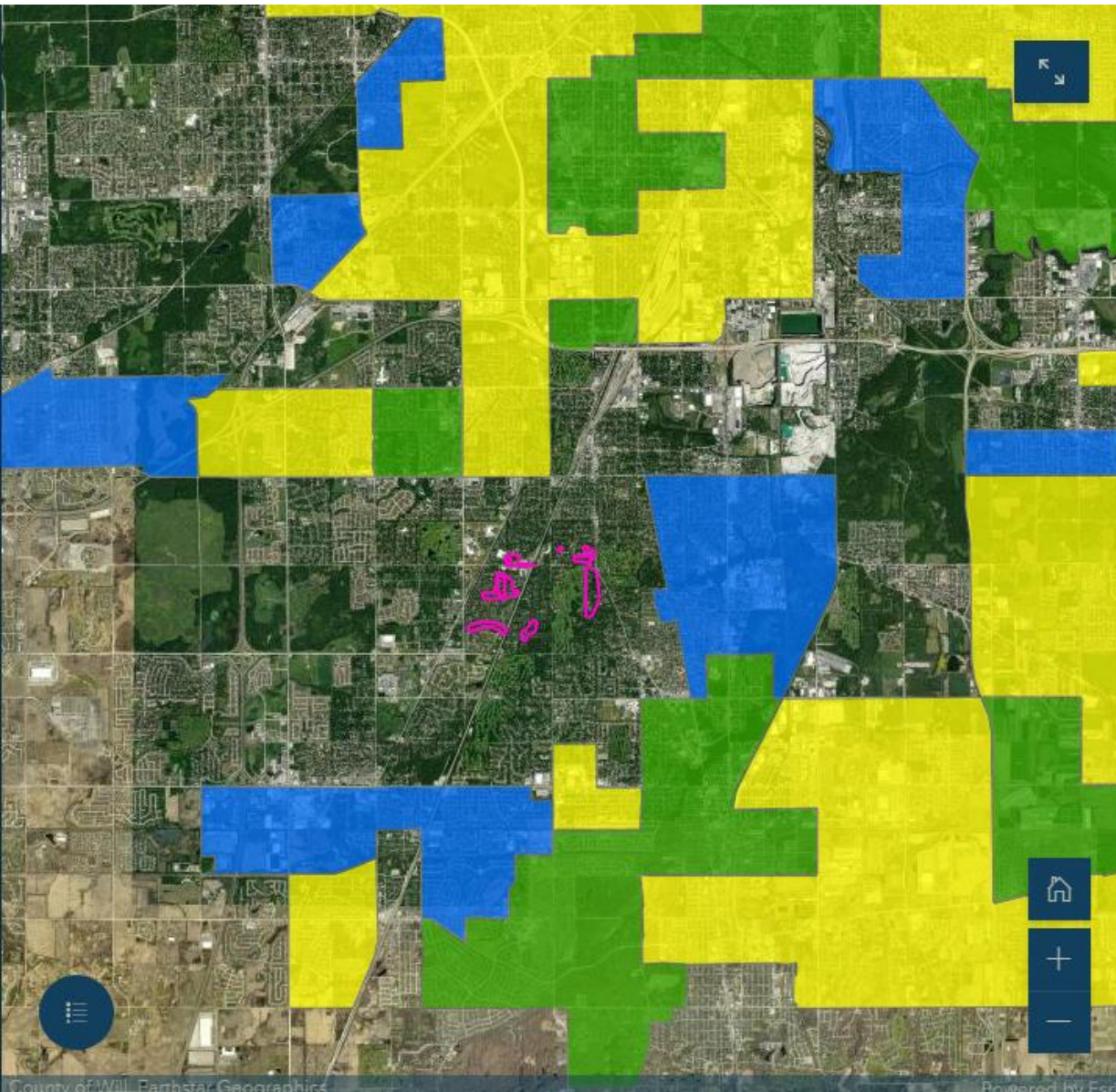


- Story Map for Engineers & Planners
- Step 2: Formulate Priorities
  - Review Risk Maps






# How to Use this Data?

- Story Map for Engineers & Planners
- Step 2: Formulate Priorities
  - Review Risk Maps
  - Review Socio-Economic Maps



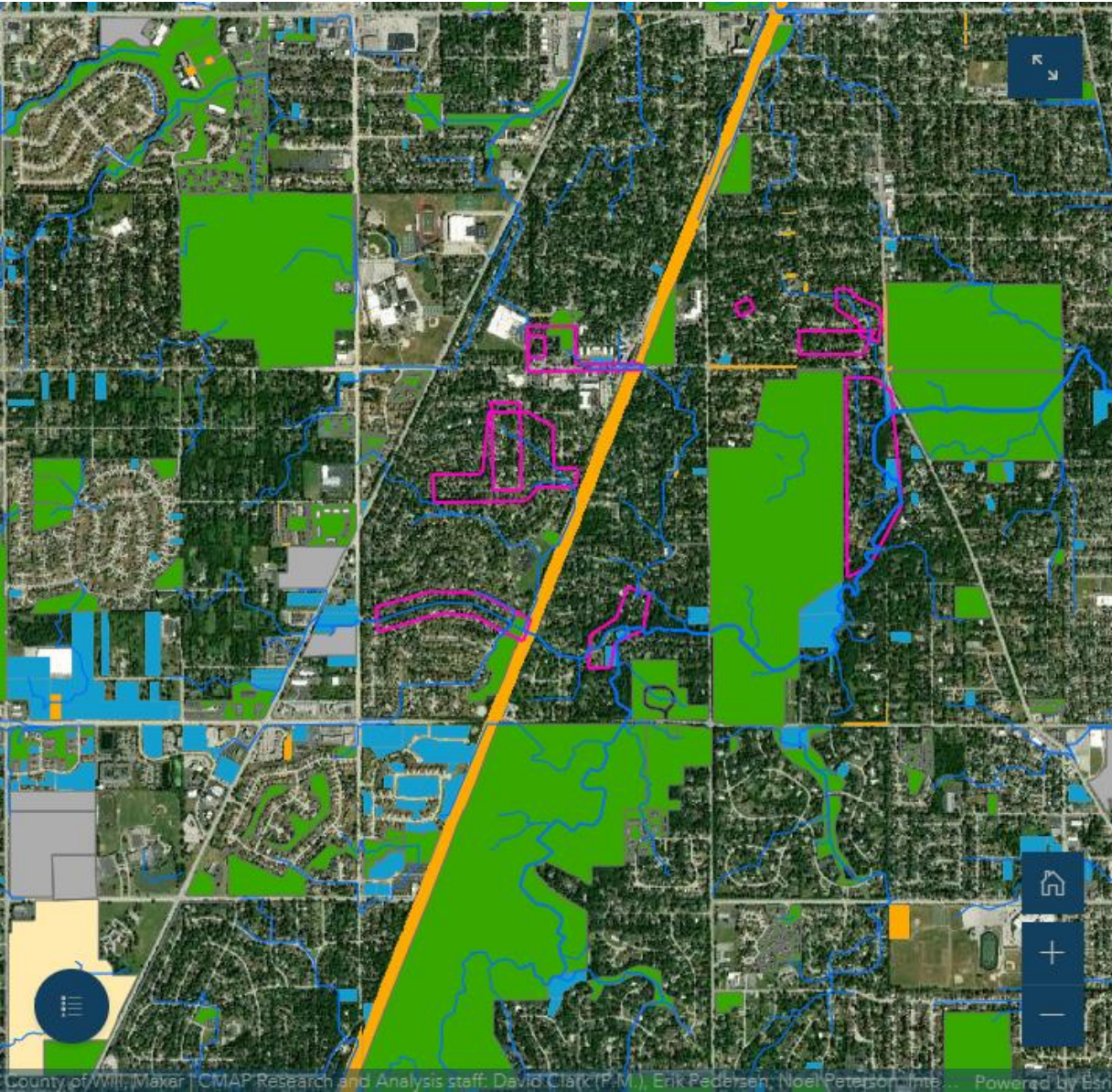
## Economically Disconnected and Disinvested

Economically Disconnected or Disinvested

-  Both
-  Disinvested
-  Economically Disconnected Area



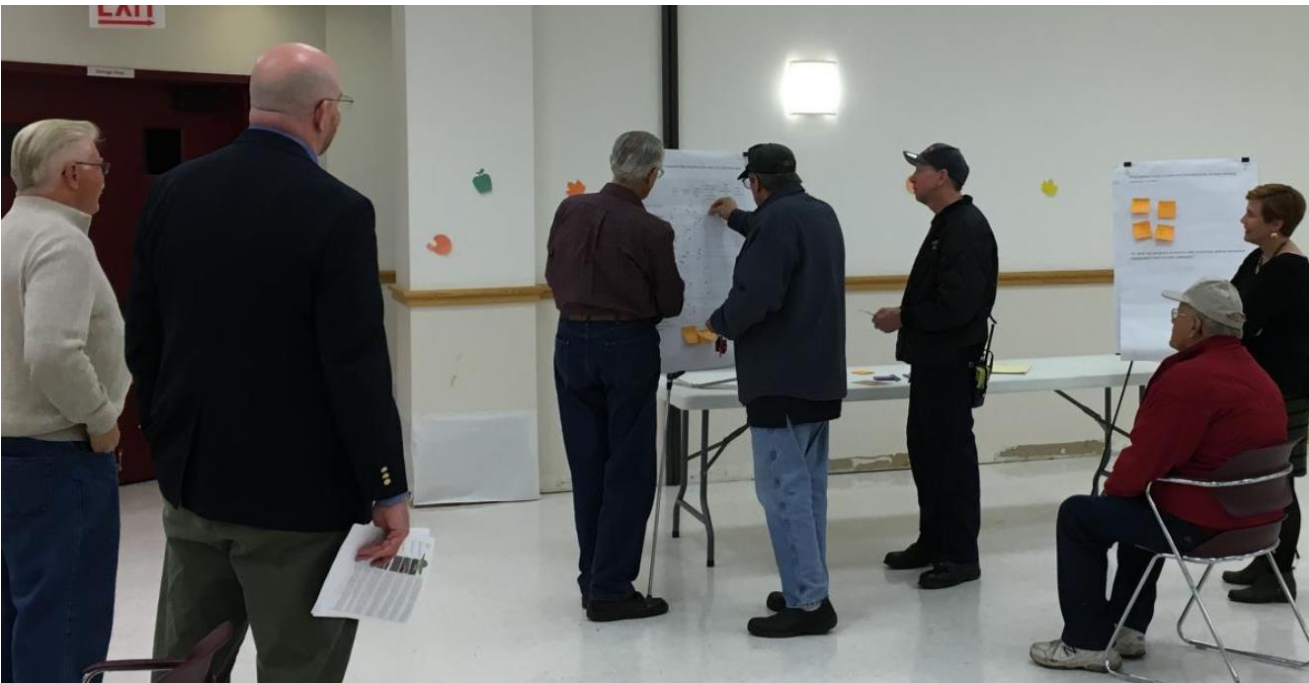
# How to Use this Data?



- Story Map for Engineers & Planners
- Step 2: Formulate Priorities
  - Review Risk Maps
  - Review Socio-Economic Maps
  - Review maps to look for project opportunities:
    - open space maps
    - vacant area maps
    - forthcoming public & private development projects

# How to Use this Data?

- Story Map for Engineers & Planners
- Step 2: Formulate Priorities
  - Review Risk Maps
  - Review Socio-Economic Maps
  - Review maps to look for project opportunities:
    - open space maps
    - vacant area maps
    - forthcoming public & private development projects
  - Consider community-specific needs:
    - What is important to community?
    - Community preference for project types
    - Planned public CIPs or private developments adjacent to drainage problem area?
    - Funding availability





# How to Use this Data?

- Story Map for Engineers & Planners
- Step 2: Formulate Priorities
  - Review Risk Maps
  - Review Socio-Economic Maps
  - Review maps to look for project opportunities:
    - open space maps
    - vacant area maps
    - forthcoming public & private development projects
  - Consider community-specific needs:
    - Which areas are most important to community?
    - Community preference for project types
    - Planned public CIPs or private developments adjacent to drainage problem area?
    - Funding availability
  - Develop & apply prioritization scheme
    - Based on community's weighting of above factors





# How to Use this Data?

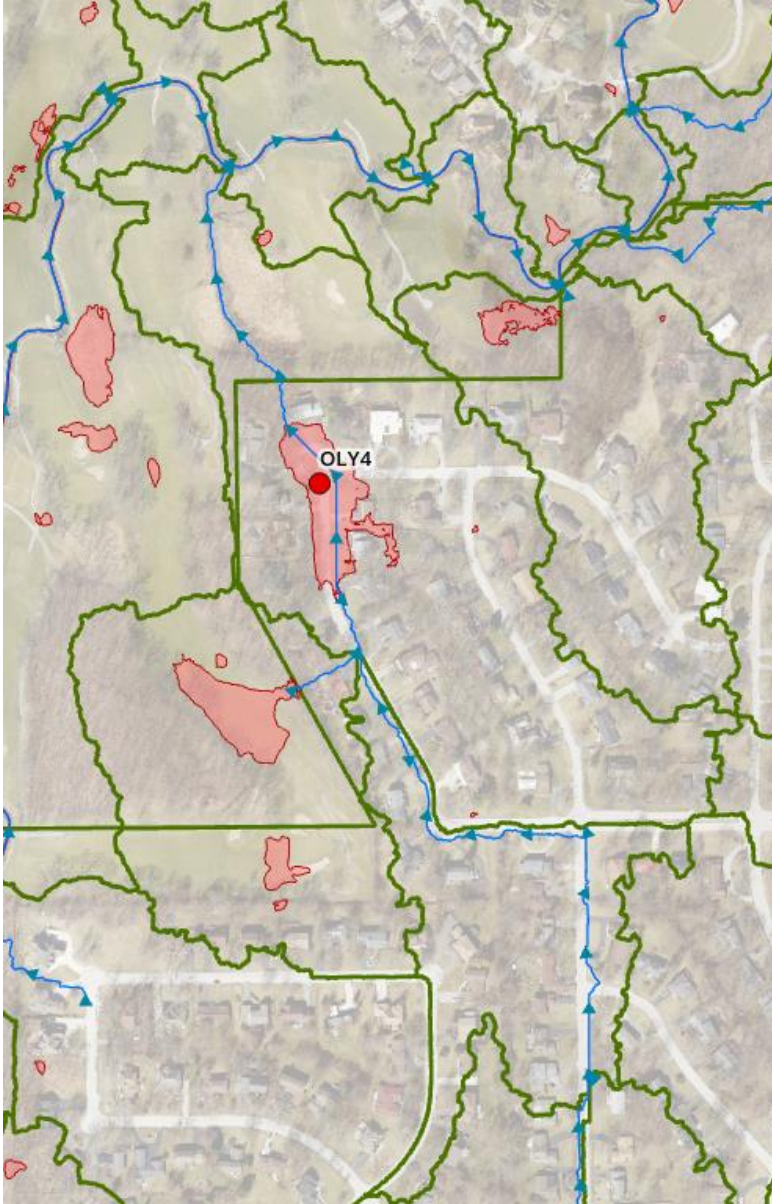


- Story Map for Engineers & Planners
- Step 3: Implementation Plan
  - Actionable Steps for each Problem Area
  - Identify stakeholders and partners
  - Identify funding and resources needed
  - Develop timeline and critical milestones
- MWRD Resources available:
  - Action Plan Template
  - Core Concepts
  - Desk Reference and Users Guides
  - Green Guides
  - Funding Assistance may be available

Action Plan for the Big Creek Subbasin Stormwater Master Plan, Action Plan Date 1/5/2020

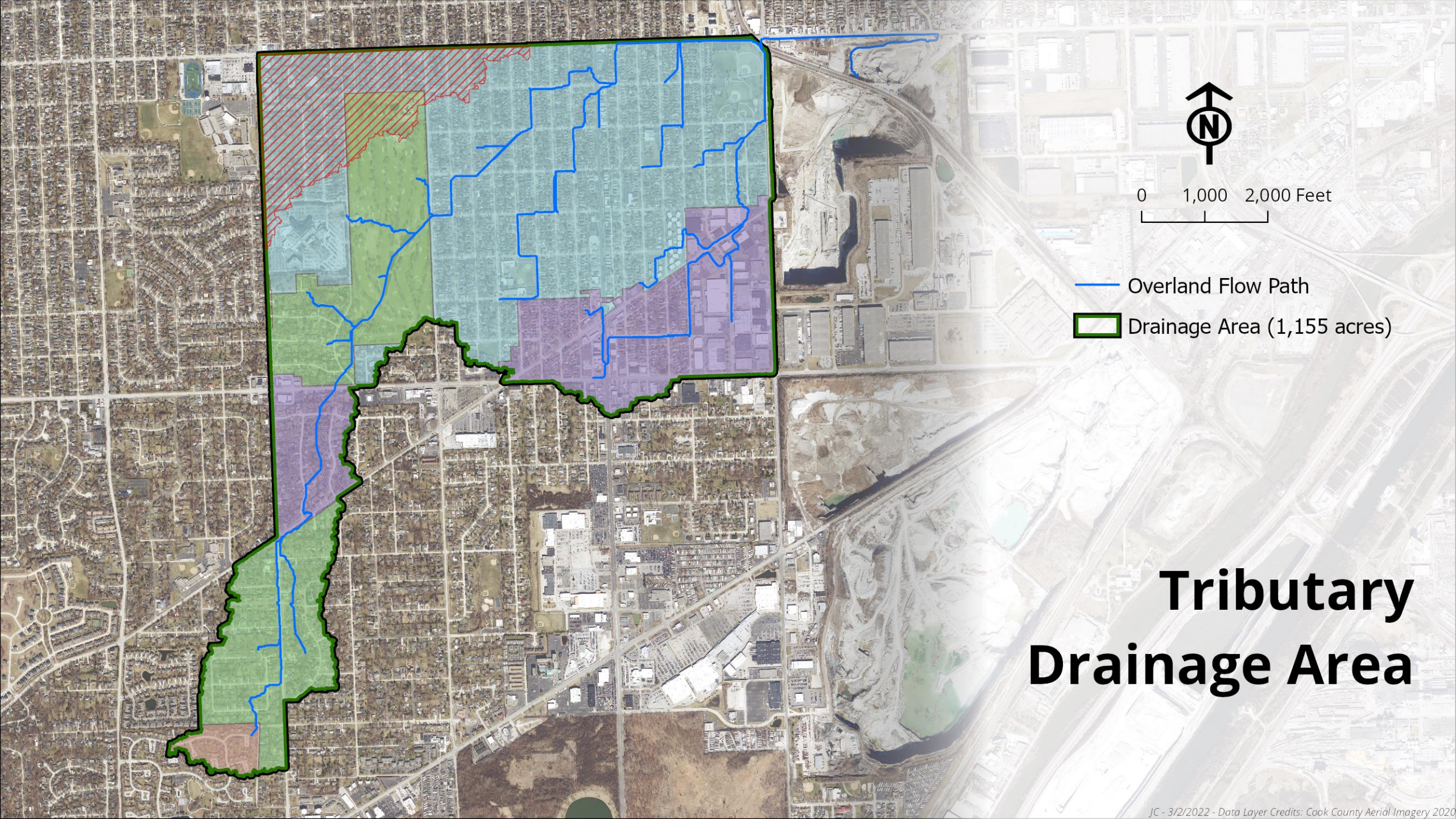
Action Plan ID	ID of Corresponding SMP Recommendation	Brief Description of Recommendation	Action Item Summary*	Responsible Party	Identified Partners	Timeline	Funding and/or Resources Needed
1	Project Alt S	Storage at Courthouse plus connect relief sewer into Main Street sewer	Coordinate with County Highway Department to create IGA and add sewer to their plans	Joe Smith, Village Engineer, Village of Oakleaf	County Highway Department	Begin discussion immediately. IGA required prior to December, 2020	
2	Project Alt S	Storage at Courthouse plus connect relief sewer into Main Street sewer	Engage engineer to perform additional modeling. Determine preferred route for relief sewer; size junction chamber; provide design to County Highway Department for incorporation into their plans	Joe Smith, Village Engineer, Village of Oakleaf		Prior to December, 2020	\$50,000 in engineering costs
3	Project Alt N	Expand pond in Public Park to include new storage wetland with interpretive signage	Apply for OSLAD Grant	Tonya Jones, Public Works Director, City of Adams		Application window July 1 – Aug 15, 2020	OSLAD could provide funding for 50% of project

# Examples of Current Data Use



- Data were used in the Butterfield Creek Stormwater Master Planning Project.
- Useful for problem area identification and confirmation
- Facilitate discussion in potential solutions





0 1,000 2,000 Feet



- Overland Flow Path
- ▭ Drainage Area (1,155 acres)

# Tributary Drainage Area





0 1,000 2,000 Feet

Municipality	Drainage Area (acres)		100-yr Storage Required per WMO (acre-feet)	Existing Storage (acre-feet)	100-yr Storage Goal (acre-feet)	
Village A	625.5	54%	260.7	15	245.7	54%
Village B	243.9	21%	104.9	2	102.9	23%
Town C	19.0	2%	7.5	0	7.5	2%
Township D	277.3	24%	101.3	5	96.3	21%
<i>Total</i>	1165.6		474.4	22	452.4	

Drainage Area



# Next Steps

How can municipalities or agencies get this data?

- Will be online later in 2022
  - Story Maps: explain use of data
  - GIS portal: interactive maps for use online or download
  - PDF documents (user's guides, metadata, planning concepts, etc)
- In the meantime, request from Jack Chan: [ChanT@mwrdd.org](mailto:ChanT@mwrdd.org), (312) 751-3214

Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING

# Next Steps

- Populate MWRD Website with Stormwater Master Plan Data
- Future Updates to GIS:
  - Allow for municipal/agency updates of existing data
    - e.g., correct permitted volumes, add other existing volume
  - Allow municipalities and agencies to add new data
    - via approval process
    - e.g. storm sewers, problem areas, etc.
  - MWRD future data update may include flow paths into sewers, future updates as underlying data is updated



# Next Steps

How can this data assist a municipality with their Stormwater Partnership Program application?

- Use data to:
  - Quickly formulate understanding of problem area
  - Develop solutions (even conceptual, using Core Concepts)
  - Identify next steps
  - Estimate necessary storage (and cost) of associated solution using Stormwater Storage Metrics
- Include anticipated storage in application, and compare to stormwater storage metric need
- Projects will be prioritized based on storage provided vs need
- Upfront engineering or modeling not necessary to understand problem (or solutions) or prepare application
- Data may help support other Grant Applications (BRIC, etc.)

# Thank you!

## Questions?



## MWRD Contacts

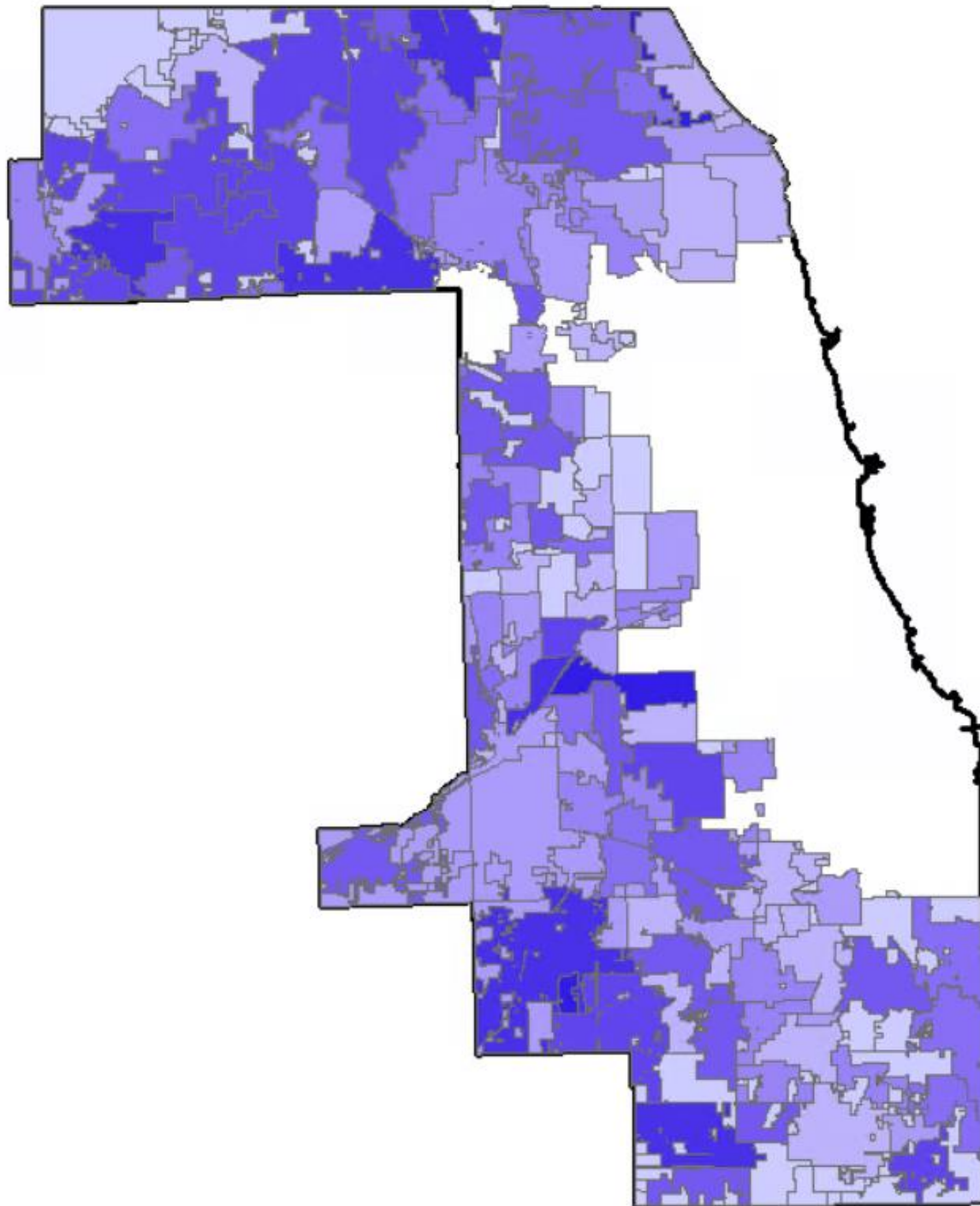
Richard Fisher  
[FisherR@mwrdd.org](mailto:FisherR@mwrdd.org)  
(312) 751-5479

Jack Chan  
[ChanT@mwrdd.org](mailto:ChanT@mwrdd.org)  
(312) 751-3214



Metropolitan Water Reclamation District of Greater Chicago

**STORMWATER**  
MASTER PLANNING



Sum Detention and GI Vol (ac-ft) / Total Area (acres)

- 0.000 - 0.003667
- 0.003668 - 0.01118
- 0.01119 - 0.02629
- 0.02630 - 0.04953
- 0.04954 - 0.07379
- 0.07380 - 0.1034
- 0.1035 - 0.1644
- 0.1645 - 0.2640
- 0.2641 - 0.4282
- 0.4283 - 0.9662

Reclamation District of Greater Chicago

**RMWATER**  
STER PLANNING



# MWRD Stormwater Master Plan

## Local Government identifies need

for holistic stormwater planning and/or addressing a specific flooding problem

## MWRD Stormwater Master Plan

Map and Data Repository,  
Project Tracking,  
housed in GIS

Story Map

Volumetric Planning

Guidance Documents

### View Story Map

understand available data and how to use it

### Explore Story Map

view community flood facts, tables, maps

### View Volumetric Data

estimate magnitude of stormwater needs

### Identify Areas

interact with data sets to identify potential areas of need

### Prioritize Areas

based on flood risk factors to develop mitigation strategy

### Apply for Grant Funding

use flood facts, GIS data to assist with funding applications

## Complete Flood Mitigation Initiatives

enter into GIS to track progress

Metropolitan Water Reclamation District of Greater Chicago<sup>60</sup>

**STORMWATER**  
MASTER PLANNING