

**Northeast Ohio
Regional Sewer District**

Thanks for joining!

WE WILL START MOMENTARILY.



**Northeast Ohio
Regional Sewer District**

Watershed Advisory Committee

CUYAHOGA RIVER SOUTH- OCTOBER 18, 2022



**Northeast Ohio
Regional Sewer District**

Agenda

- Welcome, Introduction & Updates
- Stormwater Inspection and Maintenance Update
- Watershed Technical Support Update
- Urgent Storm Event Update-Feature
- Design & Construction Update
- Code Updates
- Infrastructure Funding



Program Highlights

Frank Greenland, Director of Watershed Programs

Matt Scharver, Deputy Director of Watershed Programs

Community Cost-Share: 2022

Community Cost-Share: 2016-2022 Reimbursement

Year	CCS Funds Reimbursed
2016	\$ 35,166
2017	\$2,626,418
2018	\$4,218,308
2019	\$9,178,445
2020	\$6,720,943
2021	\$9,581,404
2022 (9/30/2022)	\$5,434,611
Total Reimbursed	\$37,795,295



Report a Flood Tool

Basement, Street, & Yard Flooding



Report a Flood Tool 2

This is the primary survey for RAFT now, Version 1 was corrupted and Report a Flood 2 was created to solve the issue. Use This Version.

[Report Flooding Event](#)

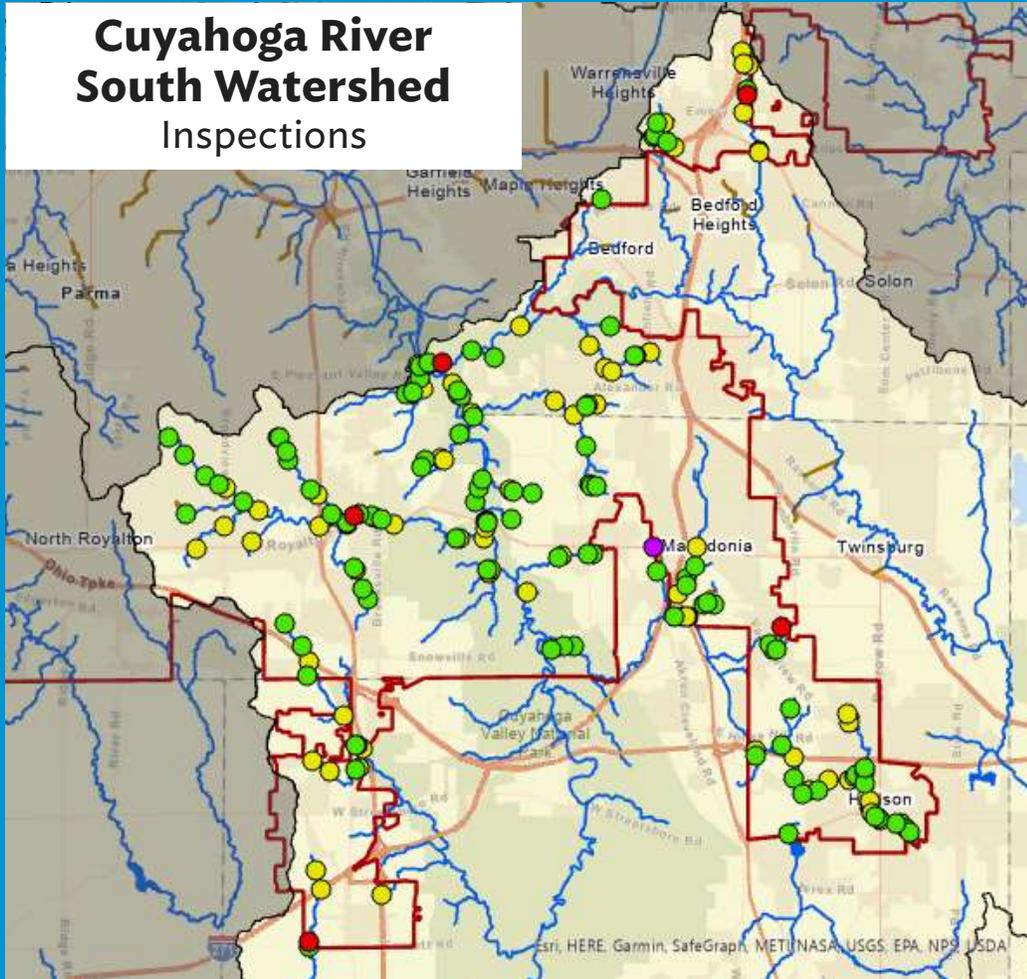
This platform was developed to help understand basement & street flooding issues within member communities of the Northeast Ohio Regional Sewer District's service area. This data is for reference only, and should be used for display purposes only. The Northeast Ohio Regional Sewer District (NEORS) makes no warranties, expressed or implied, with

Inspection & Maintenance Update

CUYAHOGA RIVER SOUTH SUBWATERSHED

SWIM Inspections

Cuyahoga River South Watershed Inspections

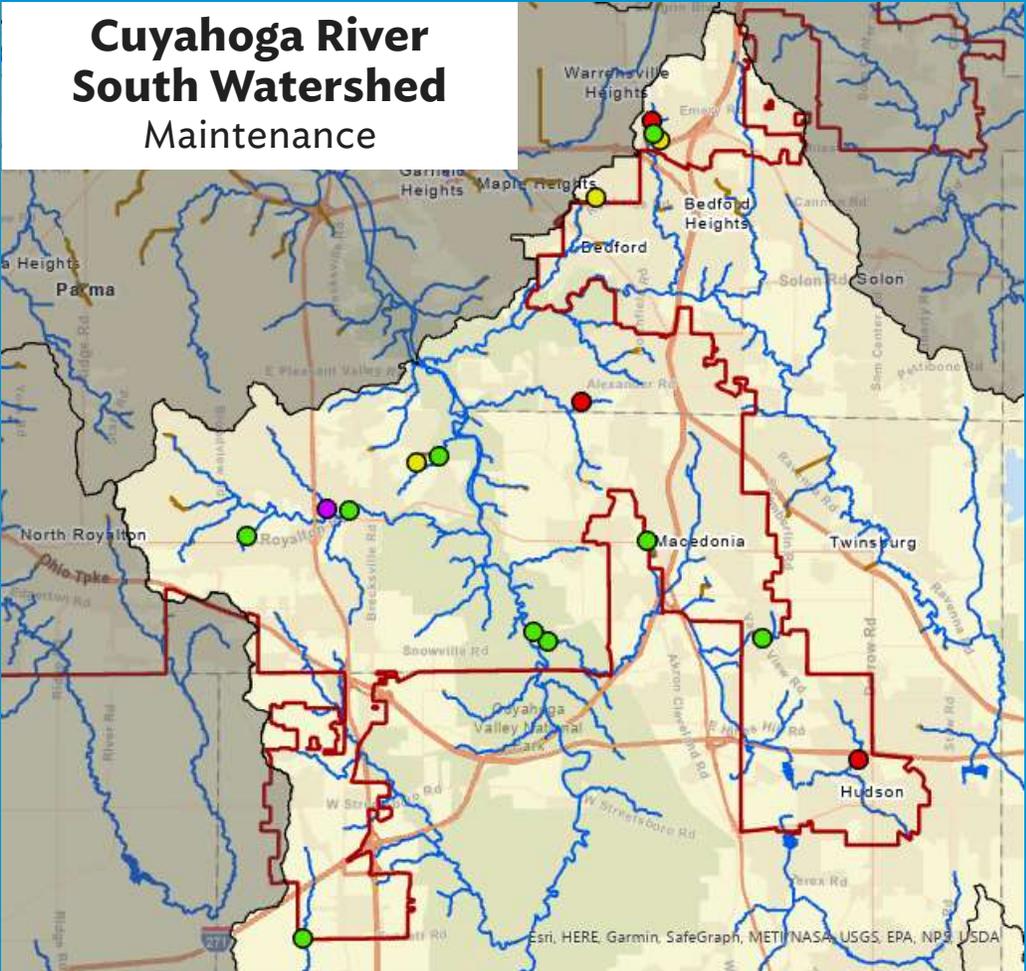


3/22 - 9/22 Completed Inspections

Inspection Type	Inspection Count
CCTV	1
Case	5
Inspection - Preventive	100
Inspection - Debris	86
Urgent Storm	0
Total	192



SWIM Maintenance



Cuyahoga River South Watershed Maintenance

3/22 - 9/22 Maintenance Projects

Project Type	Project Count
Bank Stabilization	1
Debris/Sediment Removal	9
Tree Removal	3
Vegetation Management	3
Total	16

Debris Removed	Sediment Removed
115 CY	50 CY

- Stream
- Basin
- Crossing
- Culverted Stream
- Watershed Boundary
- District Stormwater Service Area
- Project Type**
- Bank Stabilization
- Debris/Sediment Removal
- Tree Removal
- Vegetation Management

Large-Scale Sediment Removal Project: Riverview Road in Brecksville

- Riverview Road frequently overtopped causing road closures
- Removed sediment 500 ft downstream of Riverview Road
- Also removed sediment from upstream vaults
- Removed a total of 472 CY of sediment



The Riverview Road Sediment Removal Project is just downstream of the Picha Lake Basin



Picha Lake – Pre-Construction



Picha Lake – Post-Construction



Echo Lake Basin Drawdown - Strongsville



Pre-August 2020
Existing Condition*



August 2020
Board Removal



February 2022
First Notch Down

Note: Existing basin did not provide downstream flood reduction benefits.

Echo Lake Basin Drawdown - Strongsville



May 2022
Native Seed & Cover
Crop Planted



July 2022
Vegetation Growth



August 2022
Second Notch Down

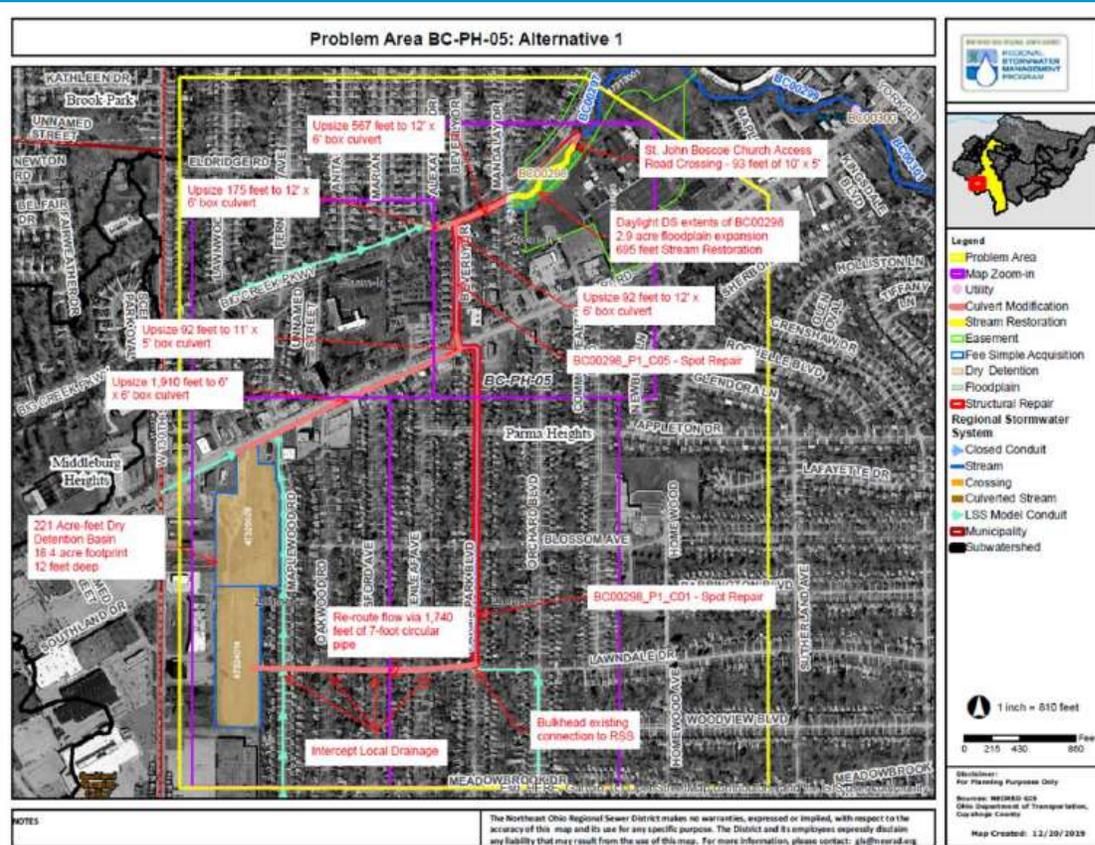
Supplemental Tree Plantings at Completed Project Sites

- NEORSD received GLRI grant funds to plant trees in Cuyahoga County for stormwater management
- Planted over 130 trees to supplement vegetation already installed at project sites
 - Stickney Creek at Ridge Rd, Brooklyn
 - Baldwin Creek at Abbey Rd, North Royalton
 - Pepper Luce Creek at Shaker Blvd, Pepper Pike



Watershed Technical Support

SW Master Plans to Advanced SW Planning



Level of Service (LOS) Summary			
Existing LOS	< 1-year		
Total Volume (100-year)	394 acre-feet		
Target Volume (100-year)	90 acre-feet		
Overview of Recommended Alternative (Alternative 1)			
Project Goals	Reduce hydraulic performance and structural condition risks by increasing storage, re-directing local drainage, and improving conveyance through upsizing and stream restoration		
Project Intent	Construct a new dry detention basin on vacant properties, re-route excess flow to the dry detention basin, upsize culverts, and daylight the downstream end of BC00298		
New Basin	Dry detention (221 acre-feet) on vacant land south of Pearl Road		
New Culvert	1,740 feet of 7-foot diameter circular pipe to reroute flows to the new basin		
Pearl Road LSS	Upsize 1,910 feet to 6-ft (W) x 6-ft (H)		
BC00298_P1_C04	Upsize 92 feet to 11-ft (W) x 5-ft (H)		
BC00298_P1_C06	Upsize 58 feet to 12-ft (W) x 6-ft (H)		
BC00298_P1_C07	Upsize 34 feet to 12-ft (W) x 6-ft (H)		
BC00298_P1_C08	Upsize 567 feet to 12 feet wide x 6-ft (H)		
Big Creek Pkwy LSS	Upsize 175 feet to 10-ft (W) x 4.5-ft (W)		
Culvert BC00298 (downstream segments)	Daylight portions of BC00298 and replace with 295 of stream restoration; 2.9 acre-feet of floodplain expansion; addition of a new crossing (93 feet (10-ft (W) x 5-ft (H))		
Property Interests			
Easements	47313001, 47318003		
Fee Simple Acquisition(s)	47317011, 47324014, 47325029		
Demolition(s)	47317011		
Benefits			
LOS	100-year	RSMP Goal 1: Erosion	Yes
RSMP Goal 2: Water Quality	Yes	RSMP Goal 3: Conveyance	Yes
Estimated Total Project Costs			
Pre-Design & Design	\$4,753,000	CA/RE	\$2,376,000
Construction	\$23,763,000	Anticipated Easement/Acquisition & Demolition	\$2,100,000
Total Project Cost	\$32,992,000		

Advanced Stormwater Planning

- Provides continued support for the implementation of the Stormwater Construction Plan with the goal of readying projects for full design
 - Contain multiple or complex components
 - Are cost prohibitive without phasing
 - Require additional information to understand the full impacts of the project
- ASP I – Closeout at end of 2022 (Wade Trim)
- ASP II – Underway (Jacobs)

ASP II - Active Tasks

Problem Area WBCL05 (Puritas Basin)

- Flow monitoring
- Model expansion to capture local stormwater system inputs into the basin
- Assess downstream benefits of basin storage
- Project alternatives analysis
- Consideration of anticipated environmental concerns

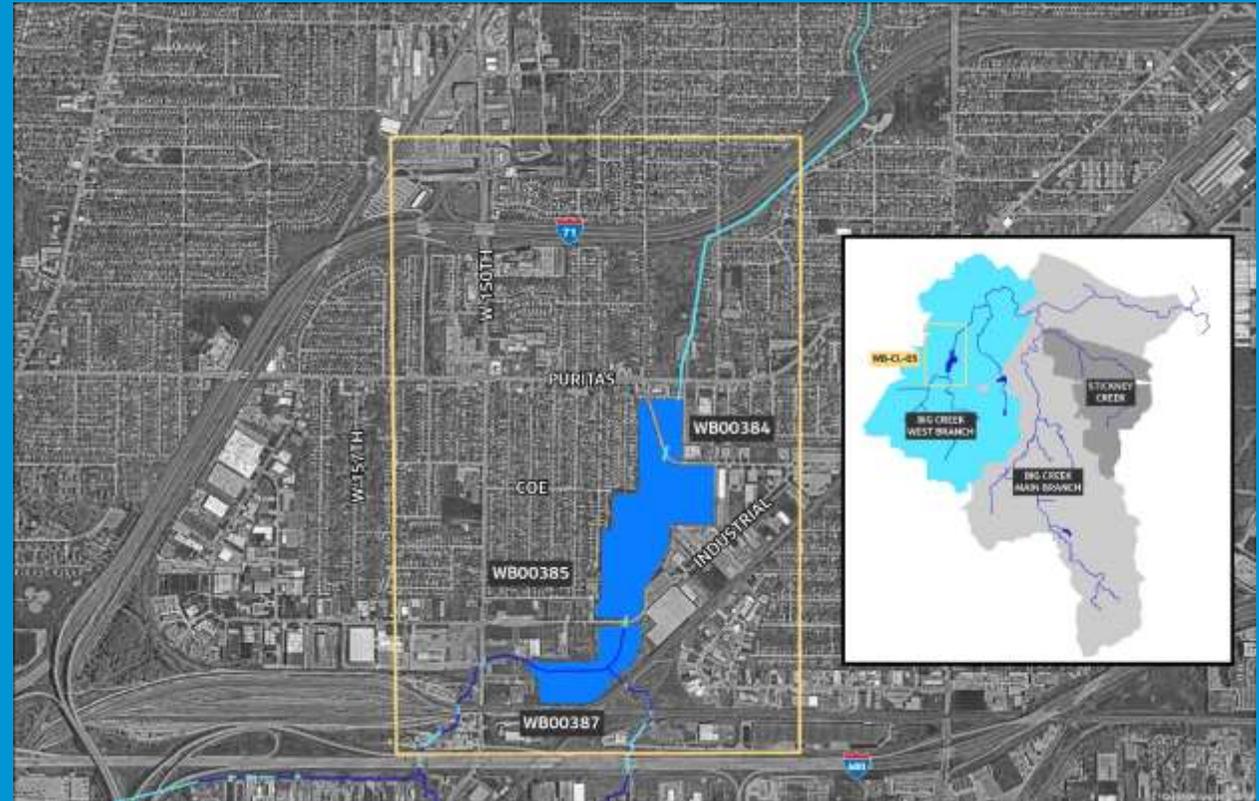


Figure 1. Problem Area WB-CL-05

Note: The inset map shows WB-CL-05 in relation to the three Big Creek subwatershed boundaries

ASP II – Active Tasks

Problem Areas WBCLO8-10 (Milligan Ave, McGowan and Carrington Ave)

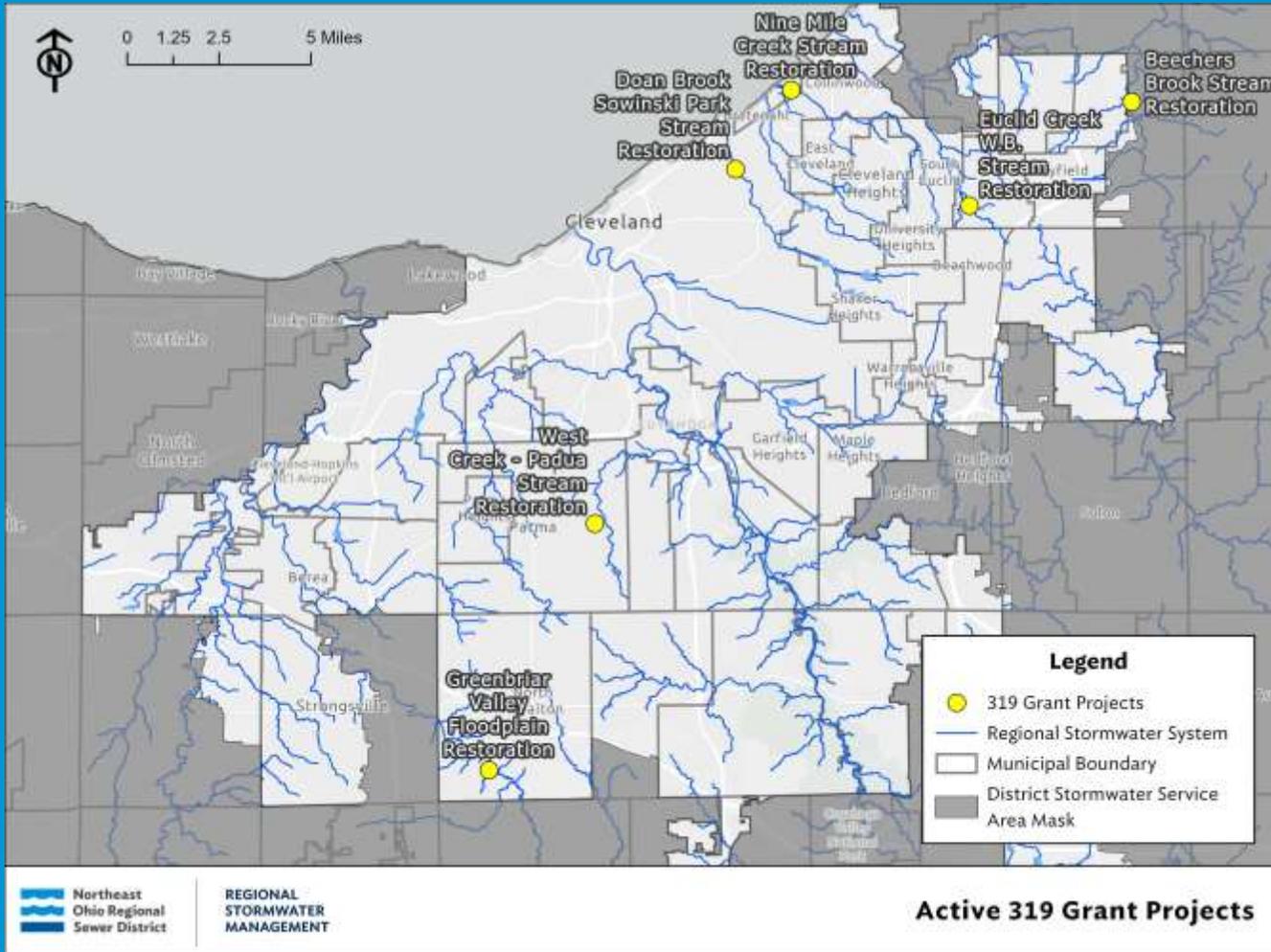
- Flow monitoring
- Assess storage opportunities and benefits
- Advance alternative analysis for short and long-term project(s)



Figure 1. Problem Areas WB-CL-08-09-10

Note: The inset map shows WB-CL-08-09-10 in relation to the three Big Creek subwatershed boundaries

Ohio EPA Section 319 Grant Program Projects



- **In Design Phase**
 - Greenbriar Valley Floodplain Restoration
 - West Creek – Padua Stream Restoration
 - Euclid Creek West Branch Phase I Stream Restoration
- **Beginning Construction Phase**
 - Nine Mile Creek Stream Restoration
 - Doan Brook Sowinski Park Stream Restoration
- **Recently Completed**
 - Beechers Brook Stream Restoration
- **Total Project Costs: \$3,253,736**
- **Total District Match: \$1,479,463 (45.5%)**

Urgent Storm Event Update

GEORGE REMIAS, PE

MANAGER OF STORMWATER STRATEGIC SUPPORT

Agenda

- Model Data Management Update
- Upcoming 2023 USGS Contract
 - Increased River Gages [25 to 27]
 - Increased Rain Gages [1 to 11]
 - New Cuyahoga River Flood Inundation Mapping [16.4-miles]
- Gauge Adjusted Radar Rainfall (GARR) Contract
 - Added Features [Forecast Rainfall; Monitoring; Rules & Alerts]
 - Looking for Pilot Member Communities to Develop Specific Rules & Alerts

Model Data Management Update

Reasons for Updating Models:

- New Construction
- New Alternatives
- Improved Data (Survey, LiDAR)
- Comply with modeling standards
- Additional model detail (extending into local system)

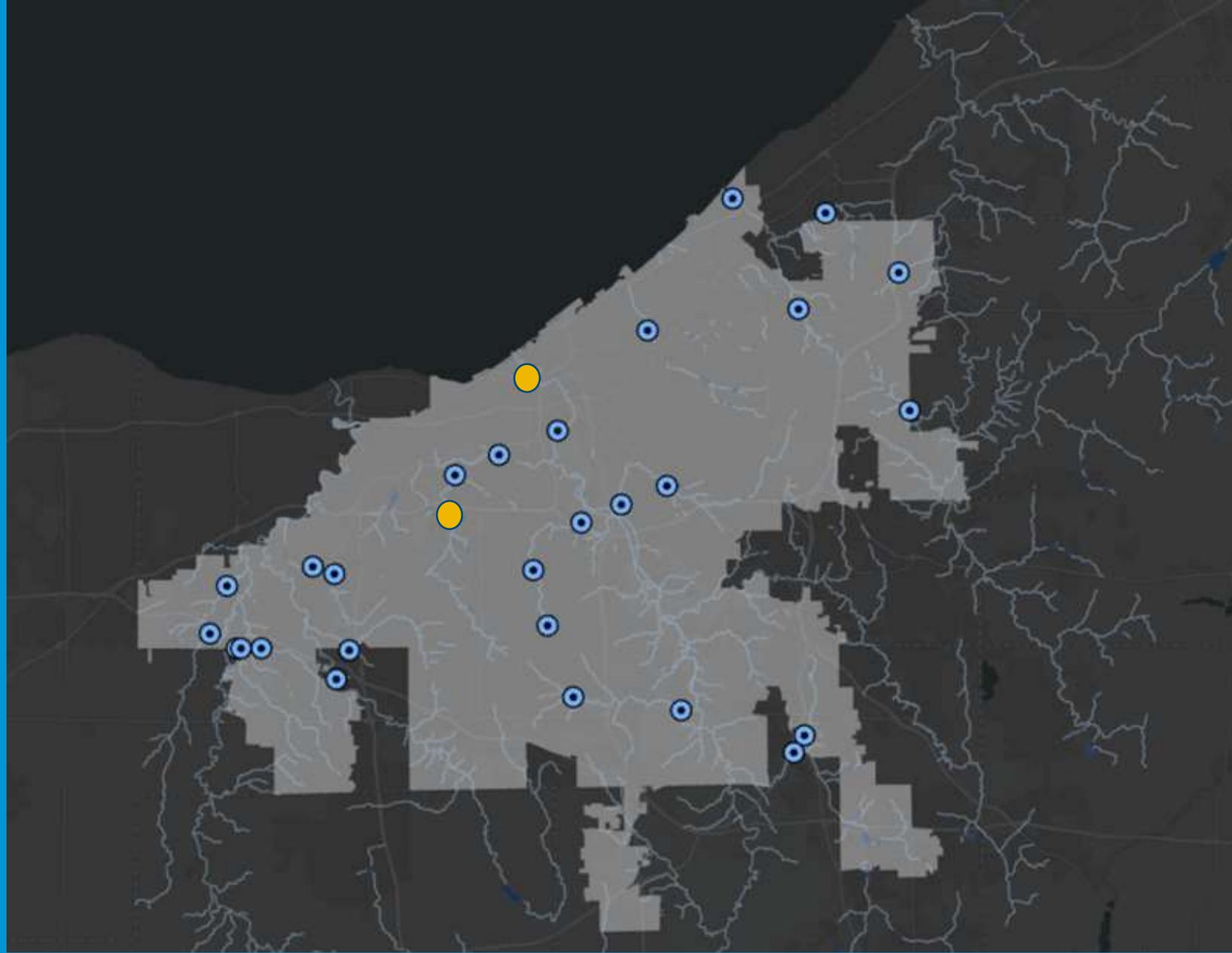
Updated Models: Big Creek, Mill Creek, and Chippewa Creek

On-going Model Updates: Abram Creek, Baldwin Creek, and West Creek

Remaining Models: All models are intended to be updated and

2023 USGS Agreement

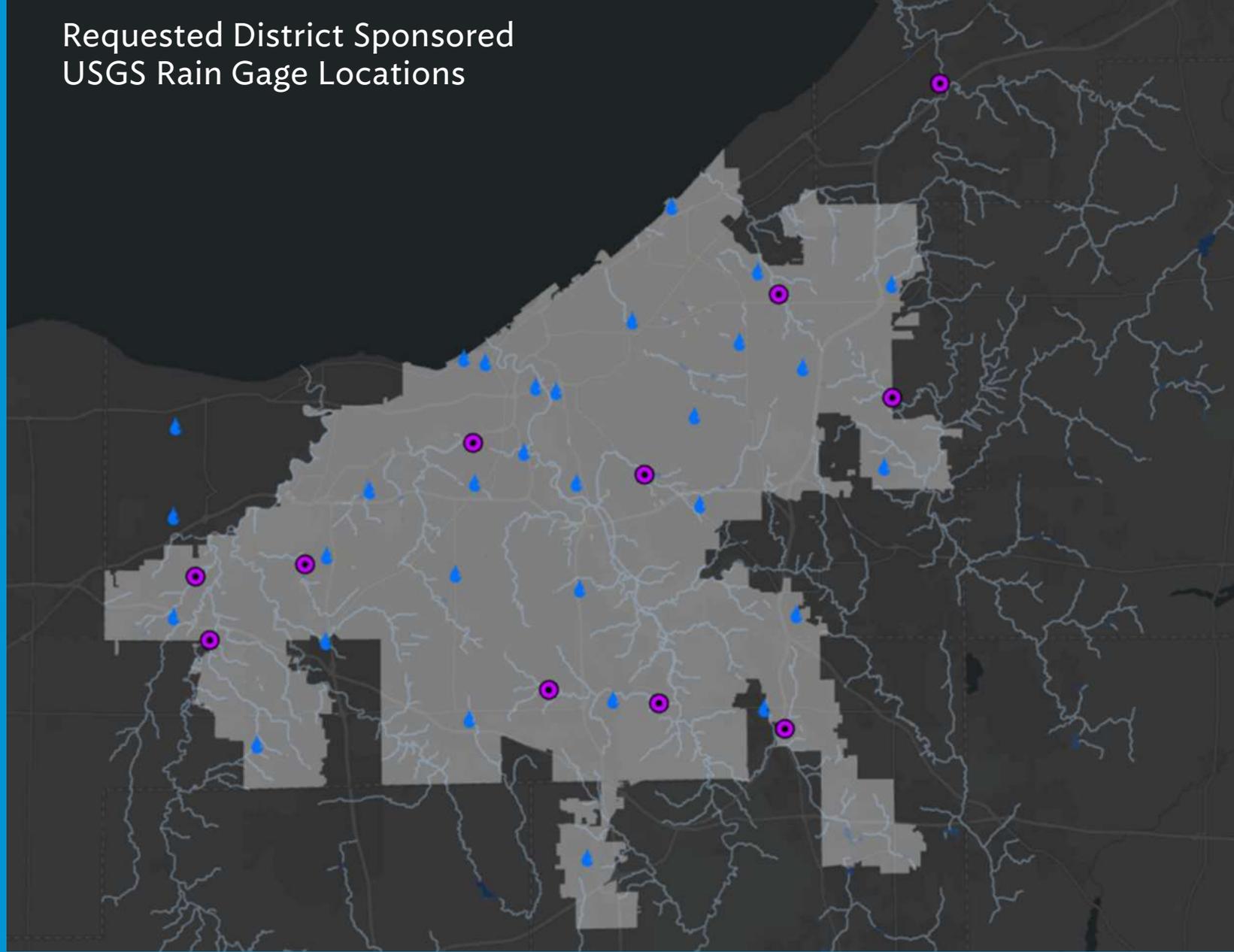
- Operation and maintenance of 27 stream gages (25 existing and 2 new)



New USGS Rain Gage Locations

- District is investing in 11 USGS rain gages (10 existing and 1 new)
- The 10 new rain gages will be Pluvio, which are supposed to be very accurate and reliable during high intensity storm events.

Requested District Sponsored
USGS Rain Gage Locations



New Flood Inundation Mapping

- USGS will create 16.4 miles of Flood Inundation Mapping along the Cuyahoga River
- Will support on-line advanced flood warning services to other agencies, member communities, residents and businesses along the Cuyahoga River

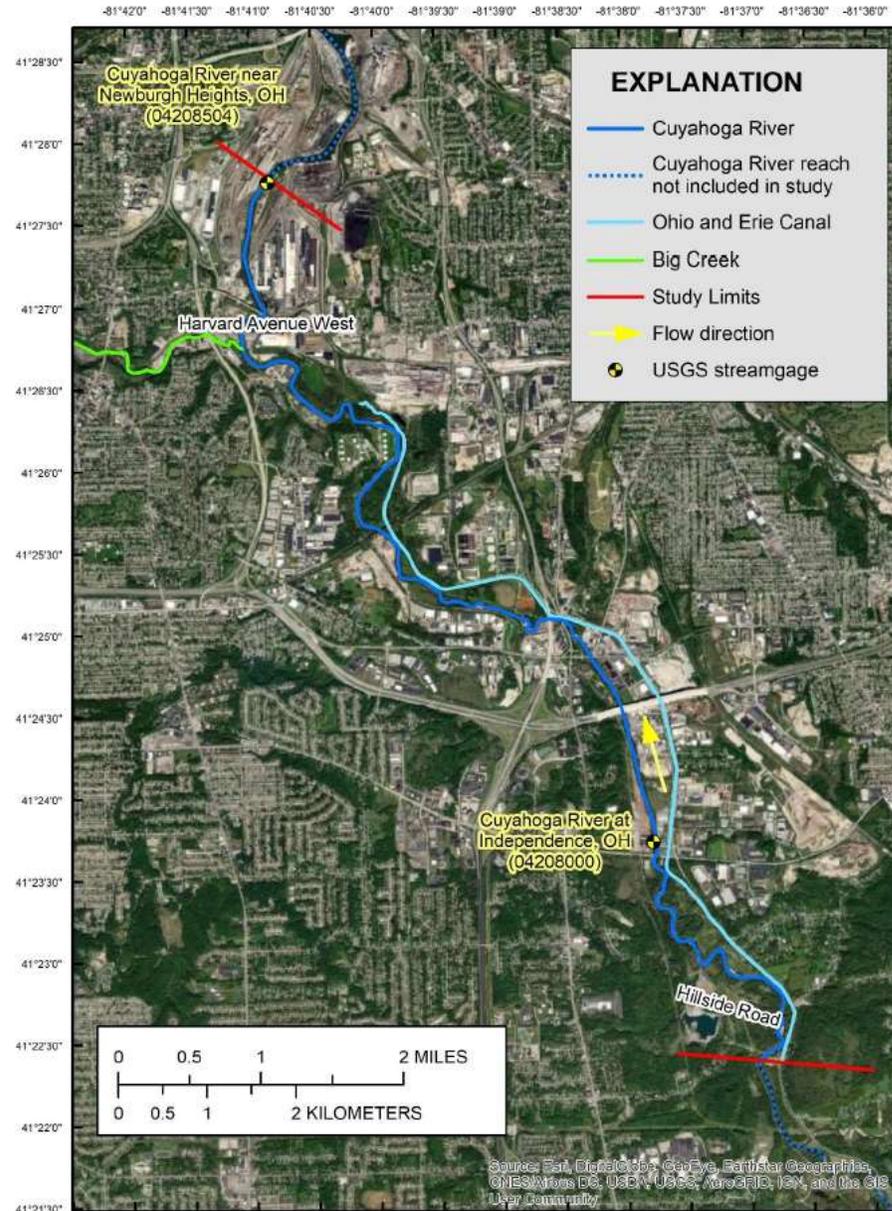


Figure 1. Map of proposed study reach near Independence, Ohio.

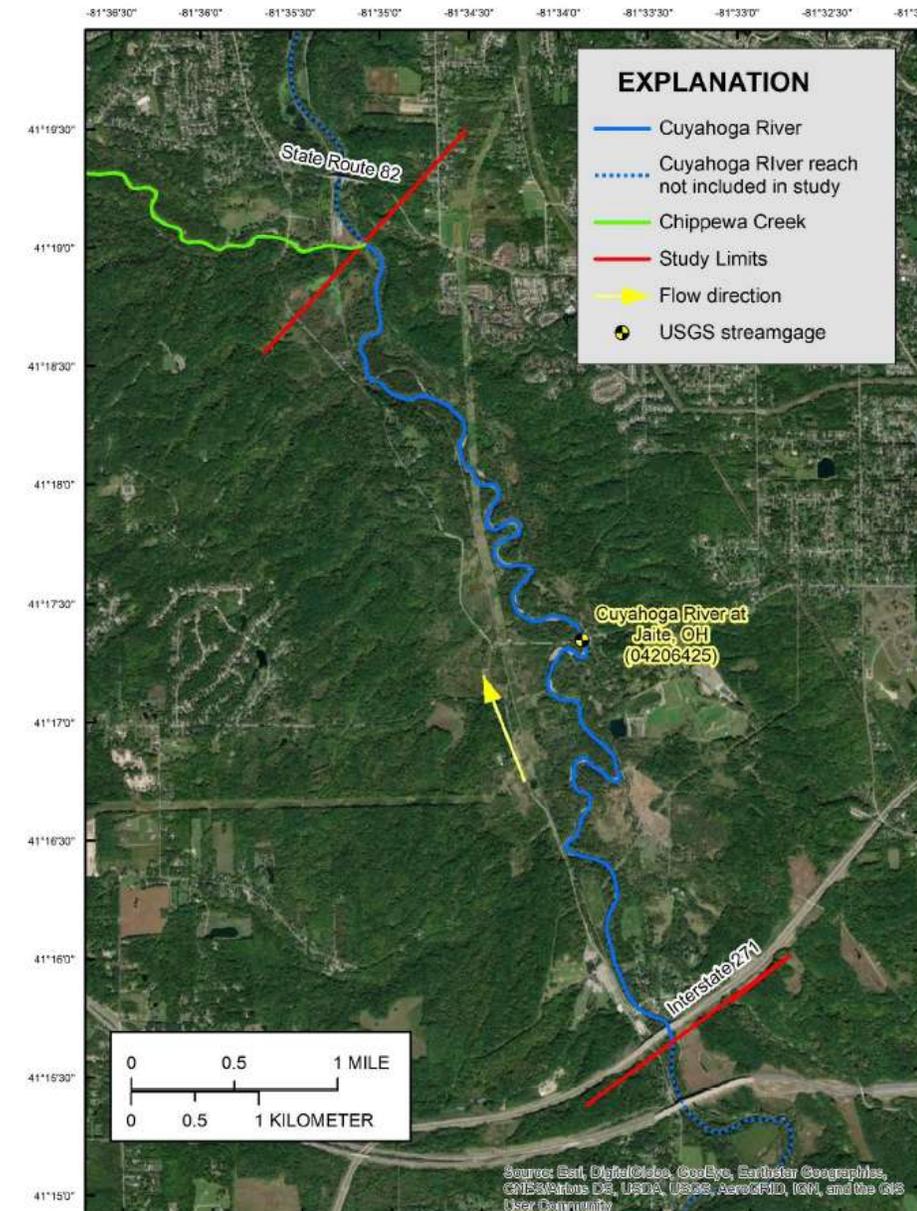


Figure 2. Map of proposed study reach near Jaite, Ohio.

Flood Inundation Mapping Example: Blanchard River near Findlay

← → ↻ fwm.wim.usgs.gov/fim/



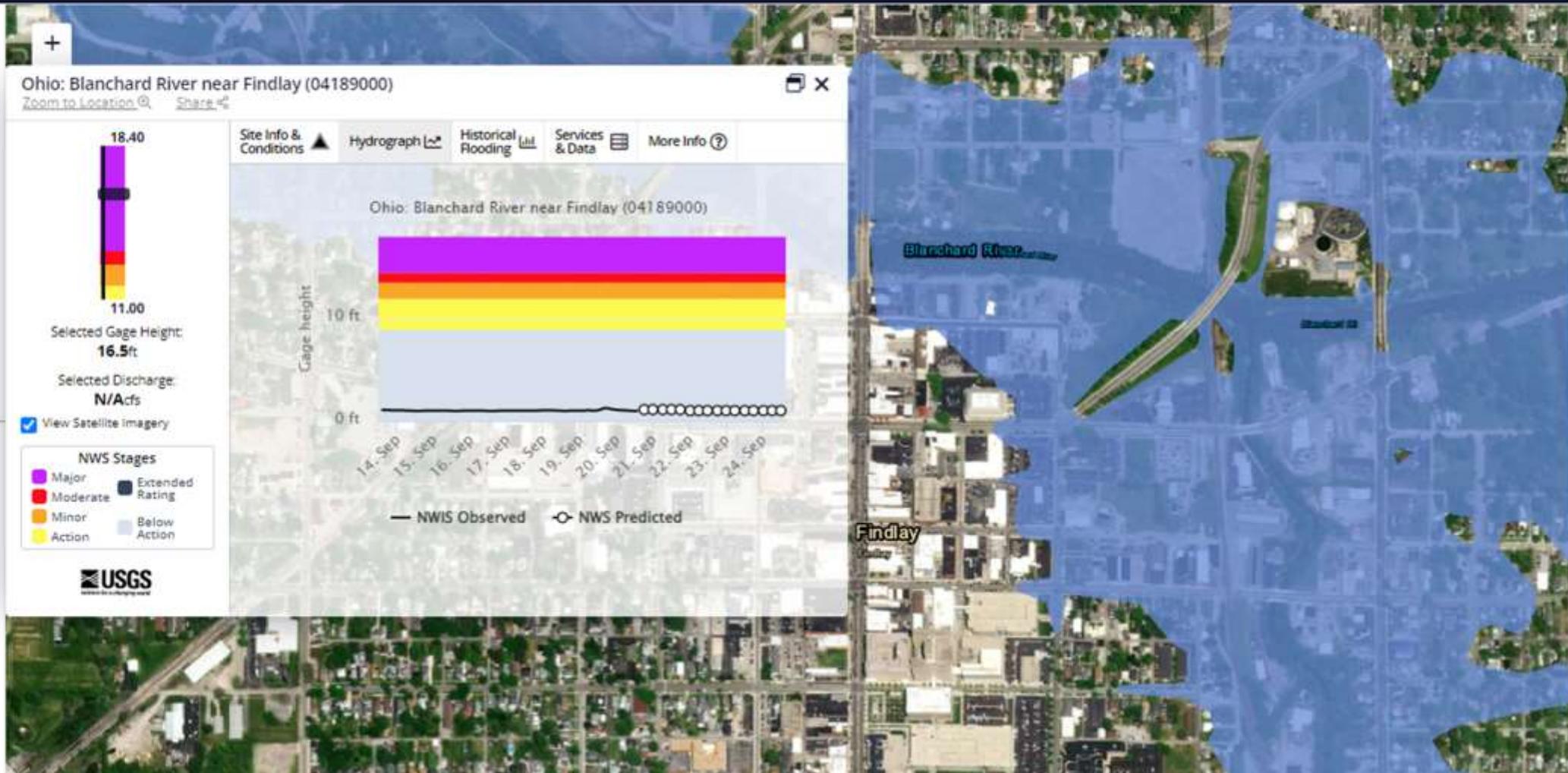
Flood Inundation Mapper

Basemaps

- Streets
- Satellite
- Hybrid
- Topo
- Terrain
- Gray
- OSM
- NetGeo
- Nat'l Map

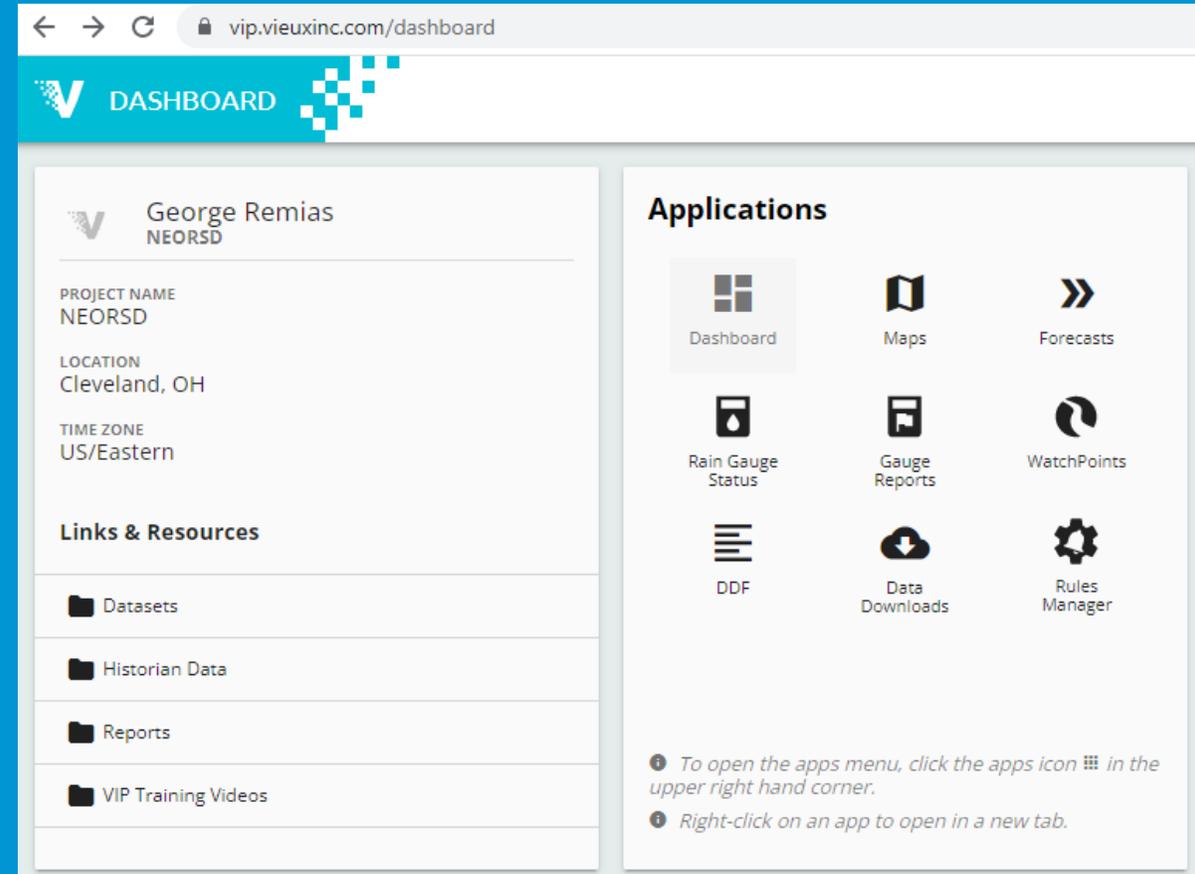
Map Layers

- National Weather Service Radar
- Flood Watches and Warnings
- AHP5 Forecast Sites
- Major flooding
- Moderate flooding
- Minor flooding
- Near flood
- No flooding



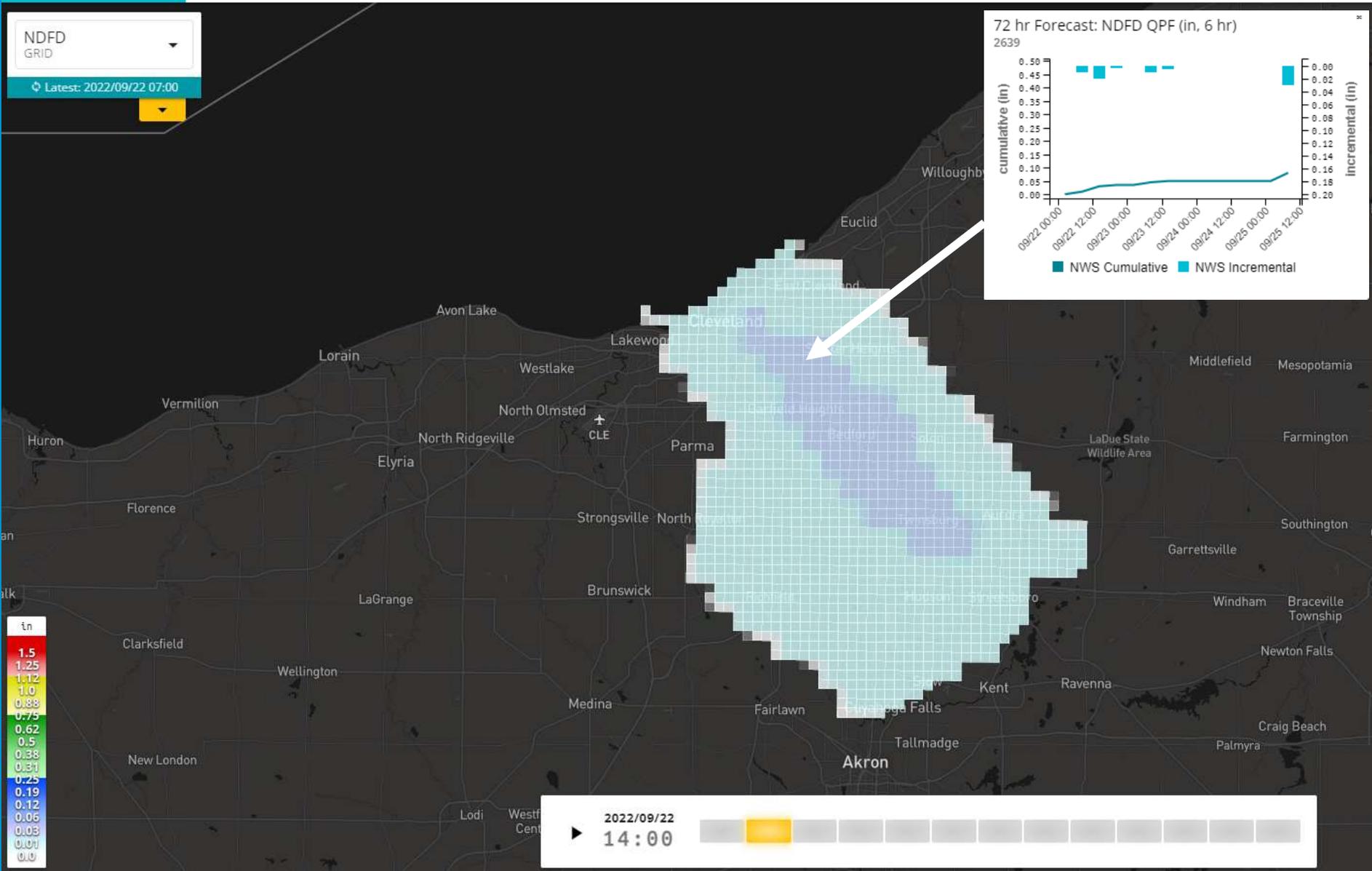
GARR Services

- Since 2016, the District has invested in gauge adjusted radar rainfall (GARR) data to support the RSMP and Performance Compliance Project (PCP).
- Before Aug 2022, the primary product was an End of Month (EOM) GARR dataset to support model calibration.
- The District was interested in improved tools to track future and current storms to support communicating internally and externally about issues across the SWSA.



Forecasting Services

NDFD
GRID
Latest: 2022/09/22 07:00



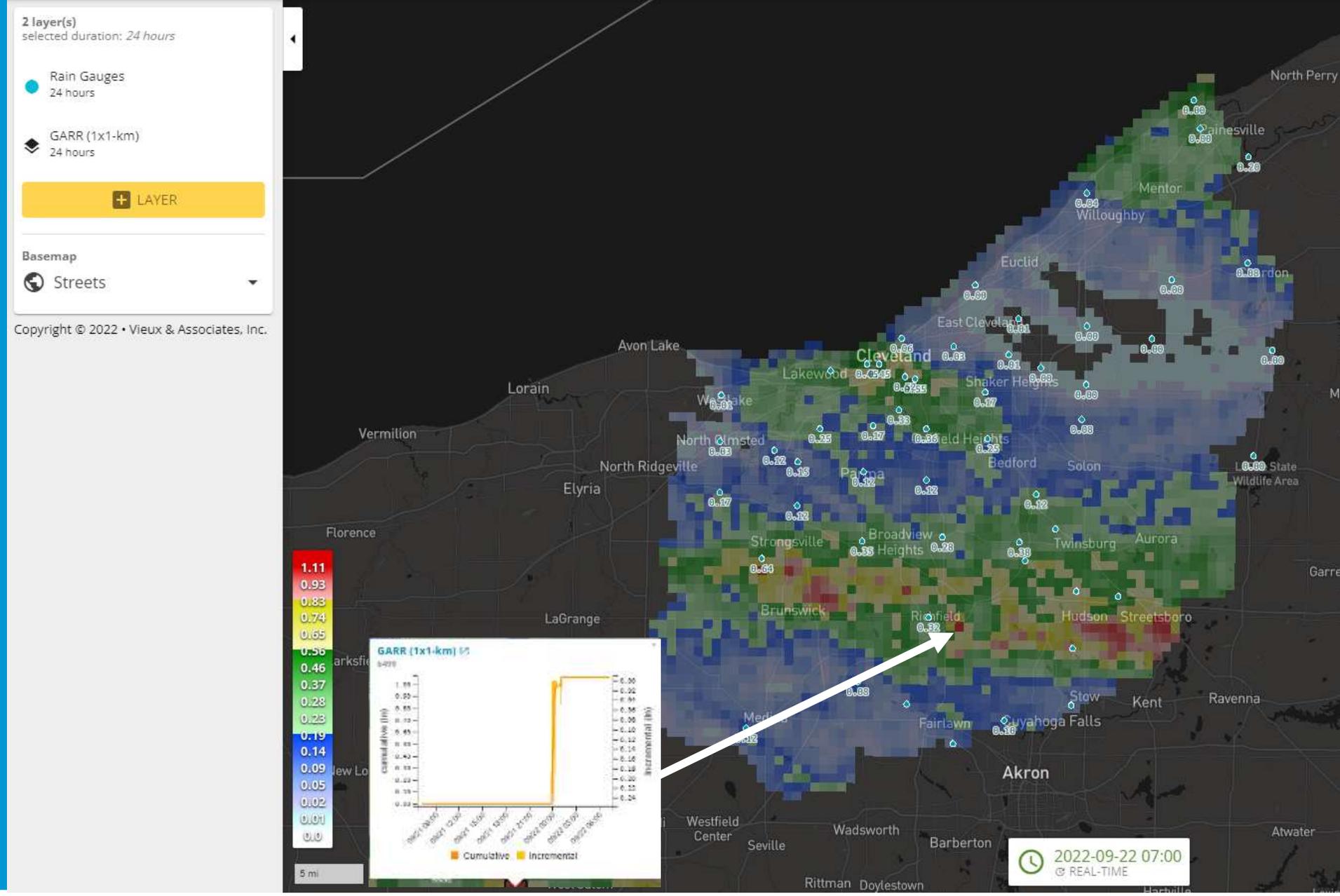
View provides three different forecasting datasets:

- PreView:
 - 0-1-hour forecast
 - 5-min time steps
- HRRR:
 - 1-18-hour forecast
 - 1-hour time steps
- NDFD:
 - 1 – 3-day forecast
 - 6-hour time steps

Near Real-Time (NRT) GARR

5-minute timestep NRT GARR is created using:

- NOAA Radar Rainfall (1kmx1km)
- Real-Time Rain Gauges (46):
 - District (30)
 - Other (16)



WatchPoints

The District is tracking nearly 100 monitors:

- USGS Sites (35)
- District (25)
- 3rd Party Vendor sites under District Contract (50)

Each monitor lists current readings and two watchpoints:

- NWS equivalent - Action Stage
- NWS equivalent - Minor Flood Stage



Rules Manager and Alert Notifications

All Items

Search list

TYPES

- DDF
- Forecast
- GARR
- Gauges
- PreView
- WatchPoints

IMPORTANCE

- Critical
- Moderate
- Low impact

Test GARR Rule
▲ | 3410 feature(s) | 1 in

Test: Multi-Dataset criteria
▲ | 1 feature(s) | 2 in

Test: Try to add multi-criteria
▲ | 6 feature(s) | 2.01 in

Test: WatchPoints
▲ | 1 feature(s) | 9 ft

Rule Notifications

Description
Test GARR Rule when any pixel exceeds 1"

Suggestion: include specific services, structures, and locations that are likely to be impacted

Importance
▲ LOW IMPACT ▲ MODERATE ▲ CRITICAL

Type - subtype (locked)
GARR - Value

Whether rainfall crosses a threshold.

Source: GARR (1x1-km) Aggregation: Any

TOTAL: 3,410 | SELECTED: 3,410

Map showing a highlighted area in orange, likely representing the GARR (1x1-km) source. Labels on the map include Avon Lake, Akron, and Youngstown.

Active

SAVE

Looking for Pilot Member Communities to Develop Specific Rules & Alerts

- Both Regional and Local Rules and Alerts can be defined throughout the service area Forecast (Rainfall), Current (Rainfall or Monitor Data)
- The District is looking for interested parties to pilot developing specific rules and alerts for their area.
- If interested in being a pilot community, contact your WTL.

Stormwater Design and Construction

Design and Construction Projects

[Project Story Map](#)

Over \$124M in Construction



Project Name	City	Subwatershed	Actual or Estimated Construction NTP
Debris Racks and Access Road Improvements	(various)	(various)	1-Jun-21
Rocky River Stabilization & Sewer Protection	North Royalton	Rocky River	30-Aug-21
Lake View Cemetery Dam Maintenance	Cleveland	Dugway Brook	8-Nov-21
Baldwin Creek Stabilization near Abbey Road	North Royalton	Baldwin Creek	19-Jan-22
Chippewa Creek Stream Stabilization Broadview Rd	Broadview Hts	Chippewa Creek	1-Feb-22
Big Creek Flood Reduction near Sprague Road	(various)	Big Creek	14-Mar-22
Blodgett Creek Stabilization near Brigadoon	Strongsville	Blodgett Creek	14-Mar-22
Brandywine Creek Barlow Dam Improvements	Hudson	Brandywine Creek	14-Apr-22
Brookside Culvert	Cleveland	Big Creek	10-May-22
Baldwin Stormes Drive	Parma	Baldwin Creek	10-Jun-22
Picha Basin	Brecksville	Cuy Trib	17-Jun-22
Pepper Luce Creek Stabilization Gates Mills Blvd	Pepper Pike	Pepper Luce Creek	27-Jun-22
Big Creek Upper Ridgewood Basin	Parma	Big Creek	1-Aug-22
Bear Creek Culvert Improvements	North Randall	Bear Creek	15-Sep-22
Stafford Basin	Maple Hts	Wood Creek	26-Sep-22
Chippewa Creek Stabilization Route 21	Brecksville	Chippewa Creek	16-Nov-22
Doan Stabilization in Shaker Hts Country Club	Shaker Heights	Doan Brook	14-Dec-22
Big Creek near Old York Road in Parma Hts	Parma Hts	Big Creek	18-Jan-23
Brookside in Independence CH00147	Independence	Cuy Trib	18-Jan-23
Mill Creek Culverted Stream Rehab (ROCS1)	Garfield Hts	Mill Creek	19-Apr-23
West Creek Stabilization	Brooklyn Hts	West Creek	19-Apr-23
Chippewa Creek Flood Reduction Echo Ln	Broadview Hts	Chippewa Creek	19-Apr-23
Dugway Brook - Forest Hills Dam	Cleveland	Dugway Brook	31-May-23
Mill Creek Restoration near Cricket Ln	Warrensville Hts	Mill Creek	21-Jun-23
Hemlock Seven Hills Phase 1	Seven Hills	Hemlock Creek	21-Jun-23
Big Creek Near Ridge Road	Parma	Big Creek	5-Jul-23
Baldwin Bonny Banks Basin	Parma	Baldwin Creek	15-Nov-23
Cuyahoga River Vaughn Road Raising	Brecksville	Cuyahoga	3-Jan-24
Cuyahoga Trib Riverview Road Reconstruction	Brecksville	Cuy Trib	6-Feb-24
West Creek Veterans Basin	Parma	West Creek	6-Feb-24
Abrams Creek Flood Reduction Sheldon Rd	(various)	Abrams Creek	1-May-24
Big Creek Flood Reduction near Oakridge	North Royalton	Big Creek Creek	30-May-24
Renewal of Culverted Stream II (ROCS2)	(various)	various	30-Nov-24
Hemlock Creek near Hemlock Road	Independence	Hemlock Creek	30-Nov-24
Baldwin - York Pleasant Valley Dell Haven Basin	Parma	Baldwin Creek	30-Dec-24
Mill Creek Restoration Kerruish Basin	Garfield Hts	Mill Creek	30-Jan-25
Doan Restoration at Horseshoe Lake Park	(various)	Doan Brook	13-Jan-25
Lower Shaker Lake Reconstruction	(various)	Doan Brook	13-Jan-26



Stormwater Design

1575 Chippewa Creek Flood Reduction Project Near Echo Lane

Cities of Broadview Heights and North Royalton

Project Goals:

- Improve existing detention basin
- Replace undersized culvert
- Realign and daylight portions of stream

Consultant: Jacobs Engineering Group

Estimated Construction: \$7.4M

Construction NTP: 2023

Facts to Note:

- Both communities are contributing funds toward local improvements in the project area



1635 Riverview Road Flood Mitigation - City of Brecksville

Project Goals:

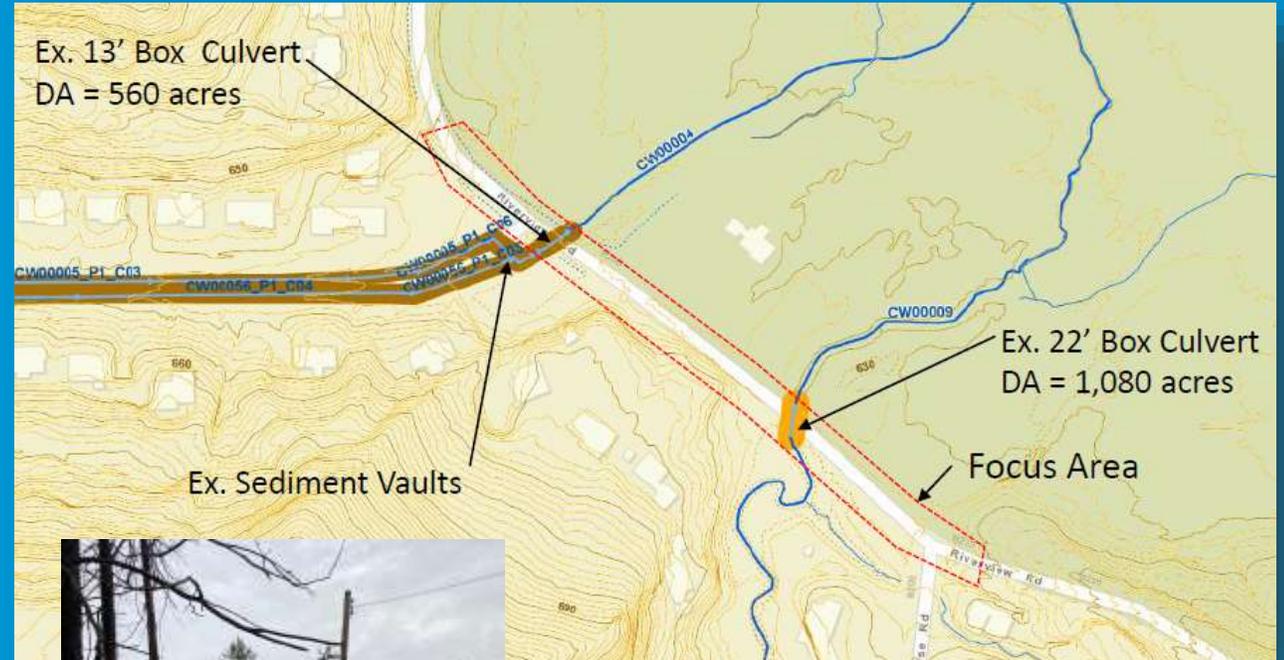
- Reduce Flooding
- Replace 2 culvert crossings
- Reconstruct roadway at higher elevation
- Remove existing sediment vaults

Consultant: EMH&T (GES Contract)

Estimated Construction: \$2.8M

Facts to Note:

- Evaluated under SW Master Planning and Advanced SW Planning
- Phase 1 of larger problem area where erosion and sedimentation will also be addressed



1641 Vaughn Road Flood Mitigation – City of Brecksville

Project Goals:

- Reduce Flooding
- Reconstruct roadway at higher elevation

Consultant: EMH&T (GES Contract)

Estimated Construction: \$2.2M

Facts to Note:

- Roadway has overtopped multiple times per year which disrupts traffic and deposits debris requiring maintenance cleanup
- Goal is to elevate Vaughn Road to prevent overtopping up to the 10-year flood event





Stormwater Construction

1578 Chippewa Creek Stream Stabilization

City of Broadview Heights

Project Goals:

- Reduce flooding and erosion risks
- Stabilize 887 feet of stream
- Replace commercial culvert crossing

Contractor: Tucson

Construction Award: \$1.596M

Construction NTP: Feb 1 2022



1586 Bear Creek Culvert Improvements Village of North Randall

Project Goals:

- Reduce flooding and erosion risks
- Replace or daylight structurally deficient RSS assets

Contractor: Triad Eng & Construction

Construction Award: \$1.21M

Construction NTP: Sep 15, 2022

- Scheduled mobilization to site 9/26/2022

Facts to Note:

- No fee simple land acquisition
- Easements necessary on 11 parcels



Code Updates

Title III & IV Repeal and Replacement



Authority

Ohio Revised Code Section 6119.08

Title III Separate Sanitary Sewer Code

Title IV Combined Sewer Code



Title III – Updated

Document structure

Definitions

Creation of The Water Quality Technical Program



Title III – Updated

Original Purpose- ...to provide a procedure by which the District and each Community served by the District can cooperate...

Creation of the Water Quality Technical Support Program (WQTSP)

- District to provide support to communities in addressing water quality issues regulated by others, such as OEPA and County Board of Health
- Voluntary program

Community Discharge Permit- Community Must:

- Control Excessive I/I
- Maintain and update local sewer data
- Implement BMPs
- Create a Community Compliance Plan outlining how compliance of the permit objectives will be achieved



Title IV – Updated

Document structure

Definitions

**Connections to or Disconnections from the
Combined Sewer System**



Benefits of Title III & IV Updates

- **Consistency**
 - Permits for all communities
 - 1 unified permit
- **Improved utilization of District resources**
 - Local Sewer System Evaluation Studies
 - Member Community Infrastructure Program Grant
- **Usability**
- **Simplicity**
- **Water quality improvement and infrastructure investment**



Title V – Updated

Increased Credit Eligibility

- Applicants can receive credit for partial responsibility for maintenance of SCM
- Applicants can receive credit for an SCM that they do not directly drain to, if:
 - The SCMs is oversized to compensate for these areas
 - If the applicant has partial responsibility for the maintenance of SCM

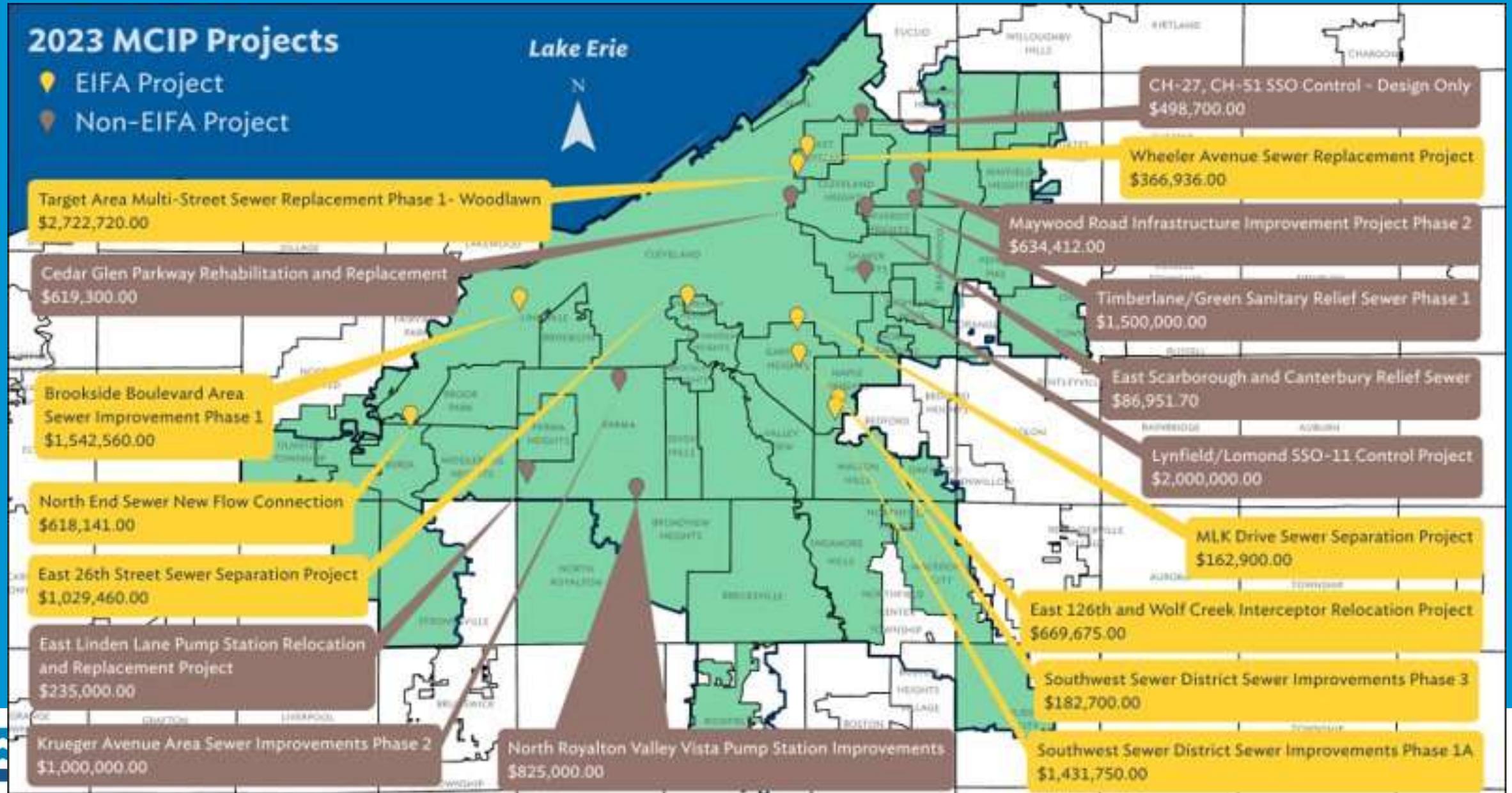
Updated Definition of “Associated Impervious Surface”

- Definition updated to accurately reflect the above changes to credit eligibility



Infrastructure Funding Update

Member Community Infrastructure Program (MCIP) 2023



Infrastructure Investment and Jobs Act: Ohio Clean Water State Revolving Fund

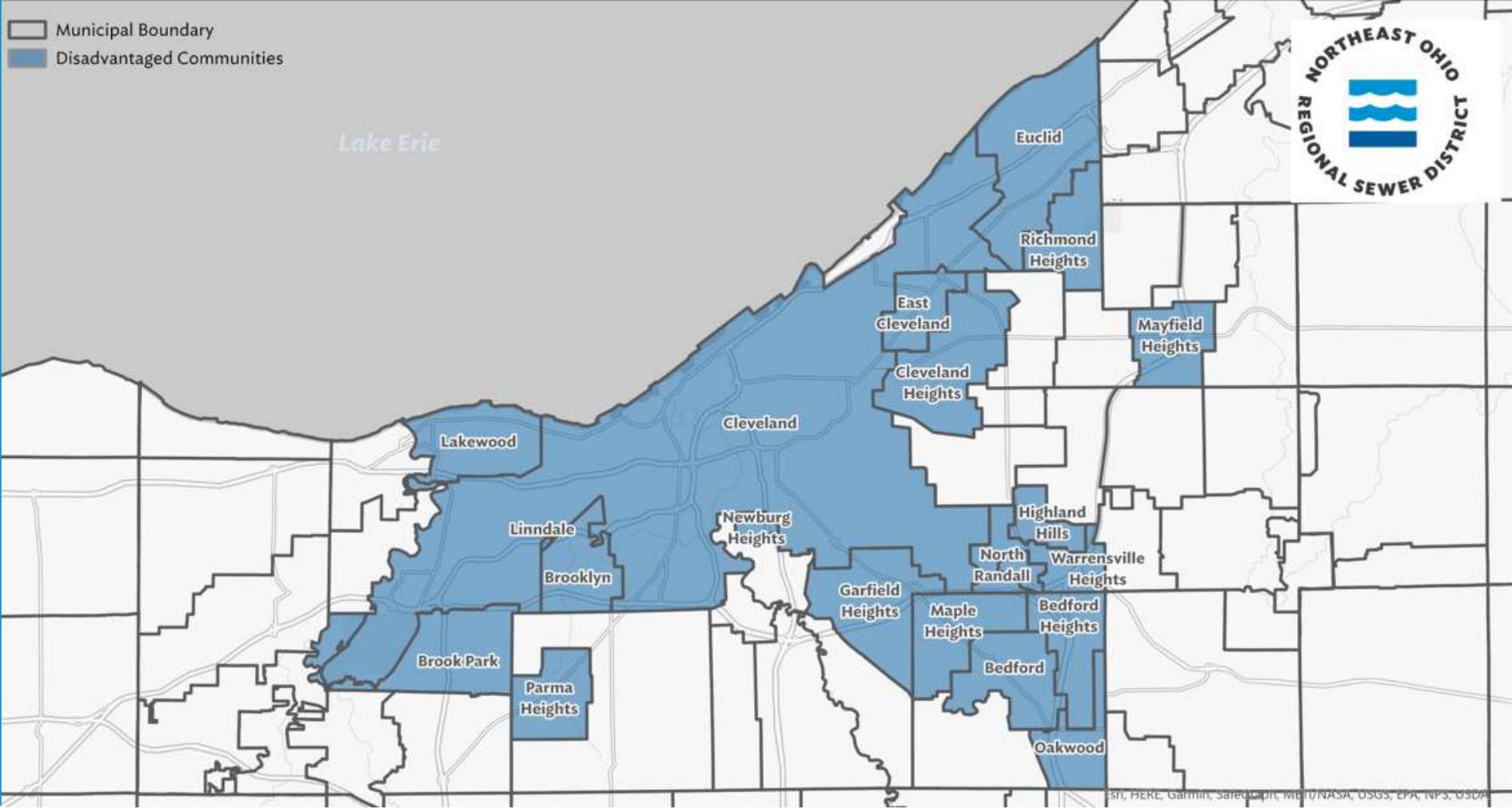
- Approximately \$100 million/year to the Water Pollution Control Loan Fund (WPCLF)
 - 5 years of funding
 - 49% through grants referred to as “principal forgiveness”
 - Focus of grants is disadvantaged communities
 - District goal to ensure maximum IJA grant funding to region

2023 WPCLF Affordability Criteria

Median Household Income (MHI)	$\leq \$58,116$
Unemployment Rate	$\geq 5.3\%$
Poverty Rate < 200% of Poverty Level	$\geq 30.4\%$
Percent Population Change	$\leq 50\%$ Increase

3/4 Criteria

20 Communities Meet OEPA Affordability Criteria



Project Submittal Process

- Communities provided their priority projects.
- District reviewed and applied for 8 projects, \$8.3M for design in 2022.
- **If awarded, we will be seeking construction funding and potentially more design dollars next year.**



2022 Clean Watersheds Needs Survey

- EPA report to Congress on Clean Water needs
 - Supports state and congressional budgeting efforts
 - Supports public information and other clean water initiatives
 - Typically conducted every 4 years
- EPA will send the survey out to large communities/service providers.
- Due date for that survey will likely be 11/18.



WTL Contact

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Thank you!