Stabilization Along the Cuyahoga River: Avoiding a "Tow Away Zone"

Kristen Buccier, NEORSD
Shannon Conway, Stantec

Stantec

Northeast Ohio Regional Sewer District

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

Agenda

- Regional Stormwater Management Program
- Project Background
- Challenges
- Solution
- Constructability

Northeast Ohio Regional Sewer District

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

@neorsd

NORTHEAST OHIO REGIONAL SEWER DISTRICT

REGIONAL STORMWATER MANAGEMENT PROGRAM

Inspect & Maintain

SW Master Plans

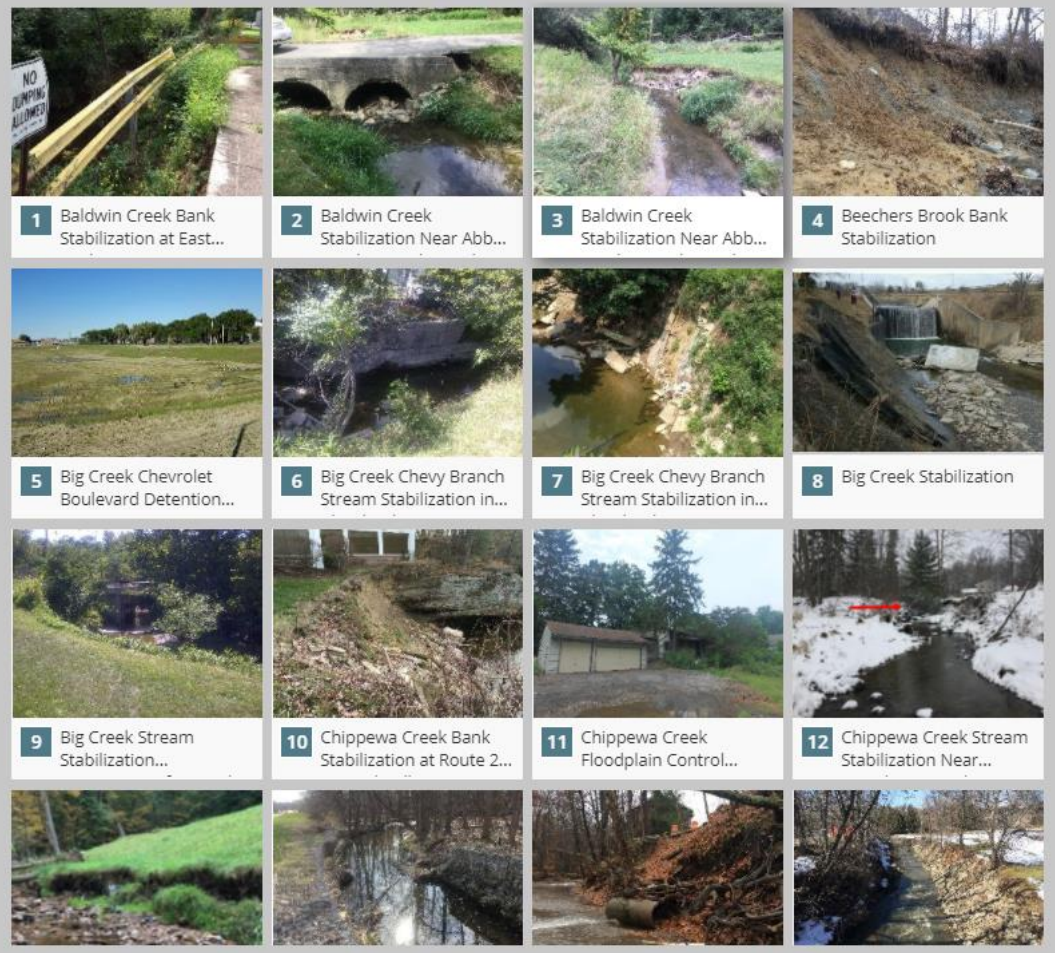
Construct Projects

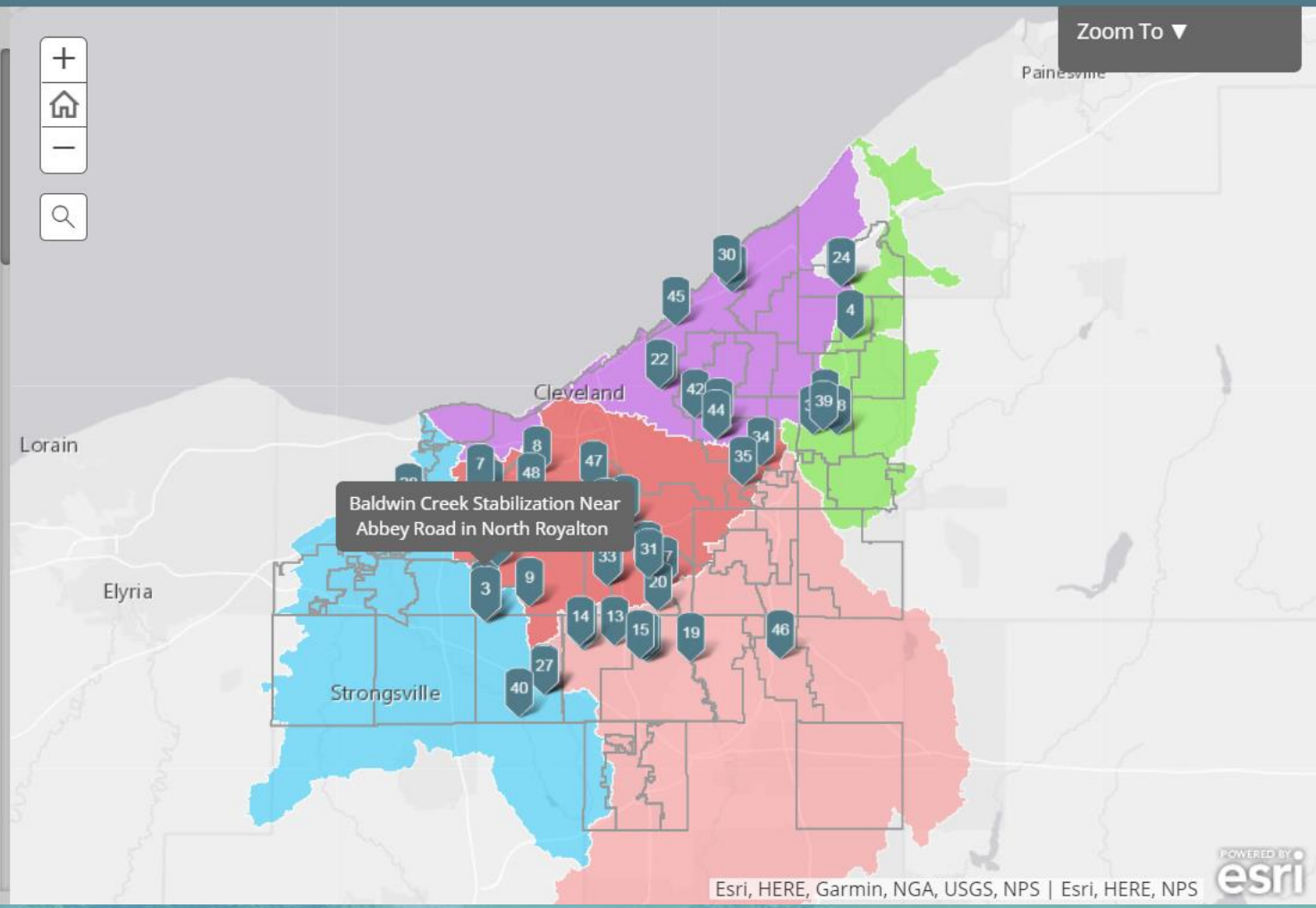
Encourage Good Practices

NEORSD Stormwater Design & Construction Program

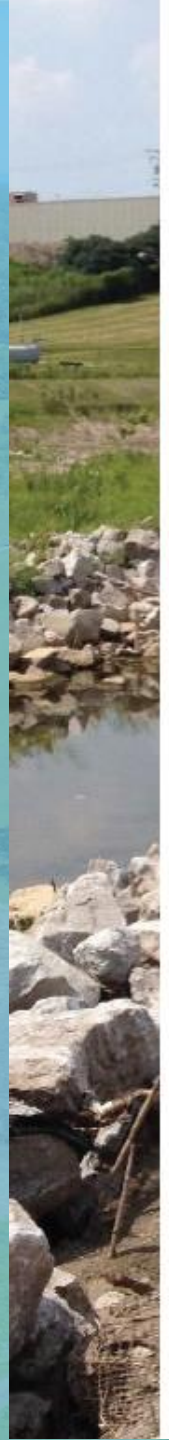
Navigate using the tabs below and by clicking the images to view more details on our completed, current design, and current construction stormwater projects. Zoom in to view satellite imagery and Regional Stormwater System features (e.g. streams, culverts, conduits, etc). Use the "Zoom To" drop down menu to locate your watershed.

All Projects | Complete | Design | Construction





https://www.neorsd.org/business-home/stormwater-construction-plan/



SAVE THE DATE

Stormwater Design Preview

Tuesday, July 10, 2018 10 a.m.–Noon

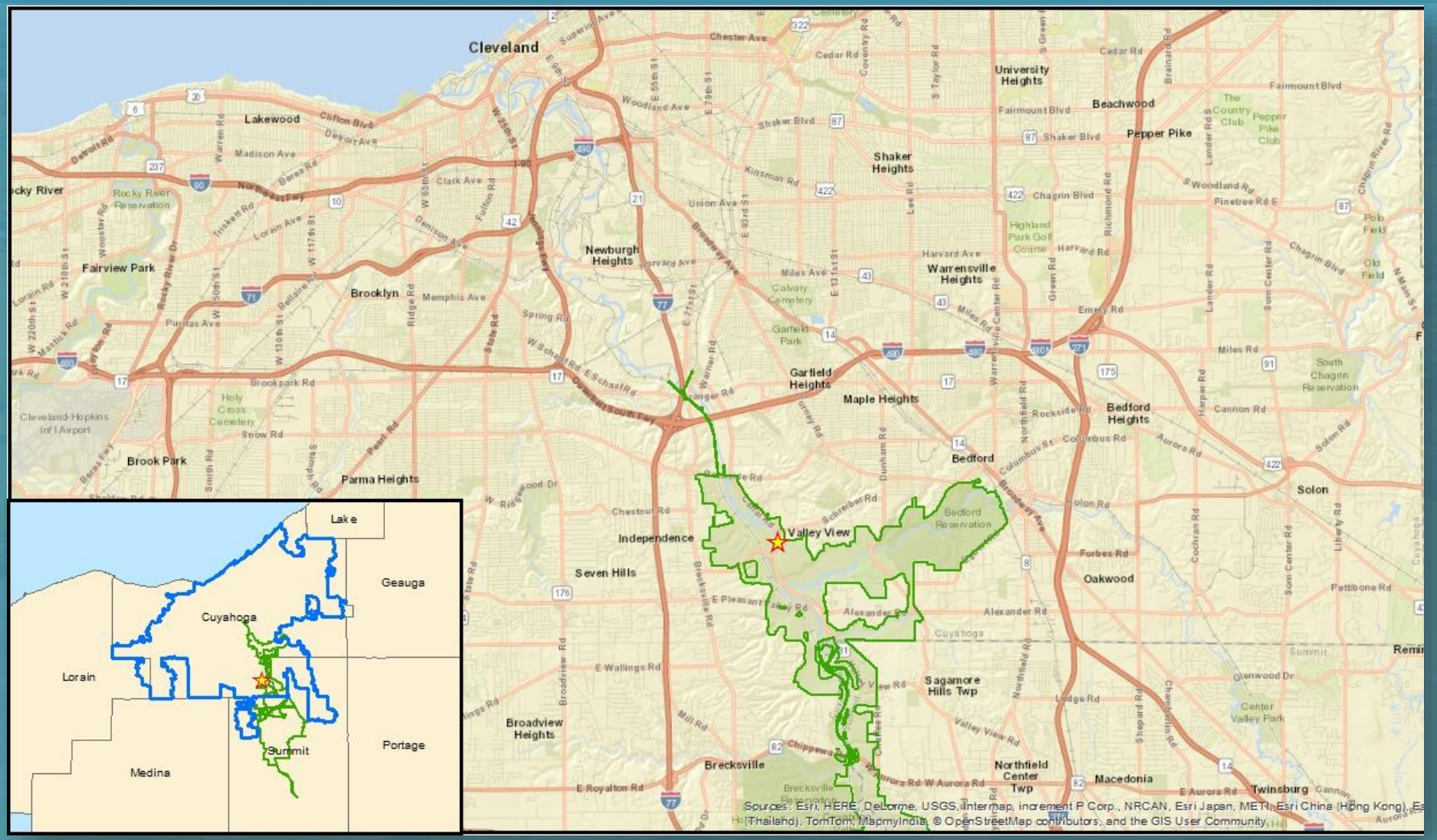
Watershed Stewardship Center in Parma

Join us for an advance look at upcoming Regional Stormwater Management Program projects, expectations, and opportunities. Details and additional resources available at *neorsd.org/opportunity*

BUSINESS Opportunity PROGRAM

Northeast Ohio Regional Sewer District

Towpath Project Location

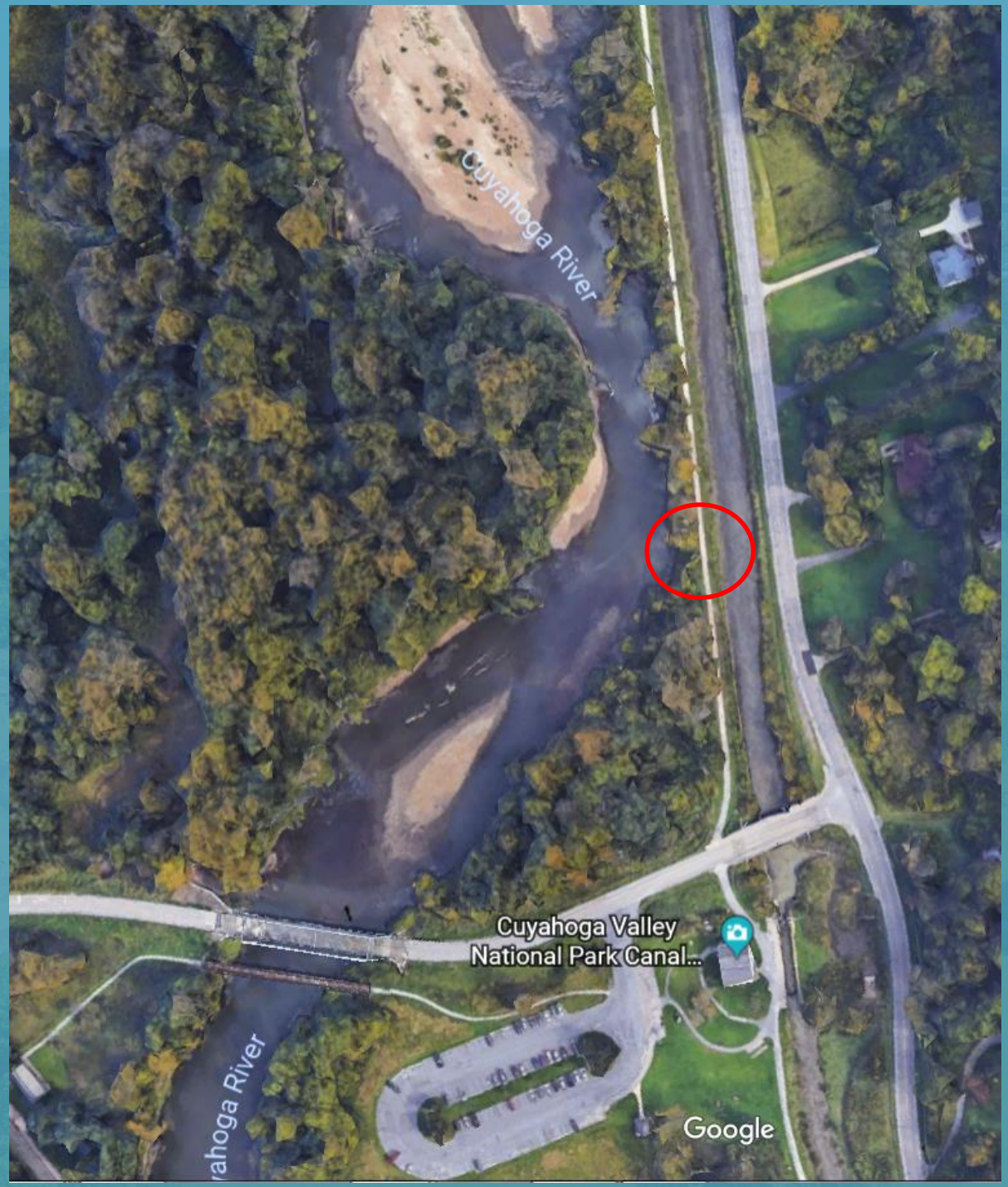


Northeast Ohio Regional Sewer District

@neorsd

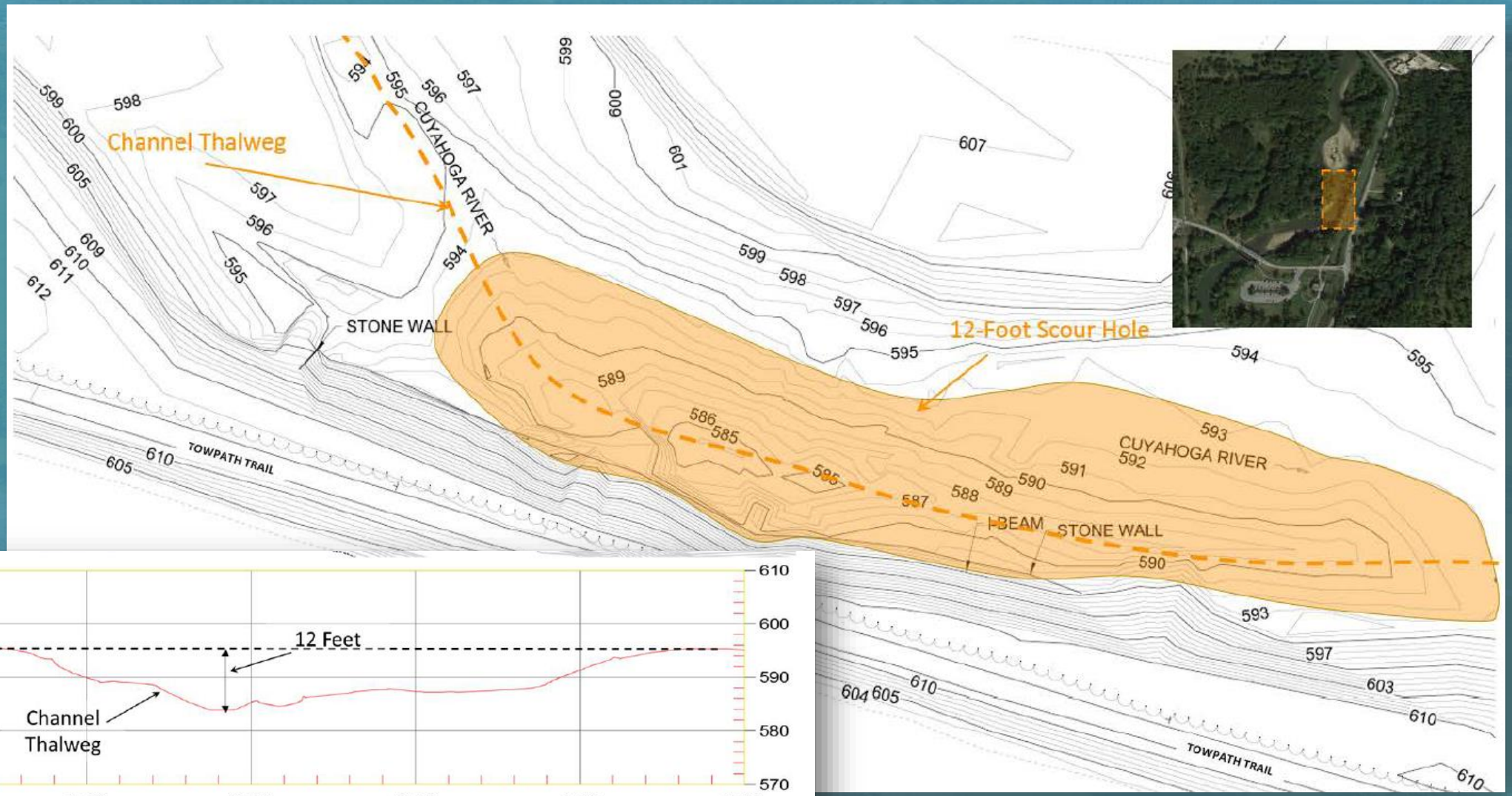
Project is located in the Cuyahoga Valley National Park

Cuyahoga River was eroding the right bank to the point of undermining the Ohio and Erie Canal Towpath Trail



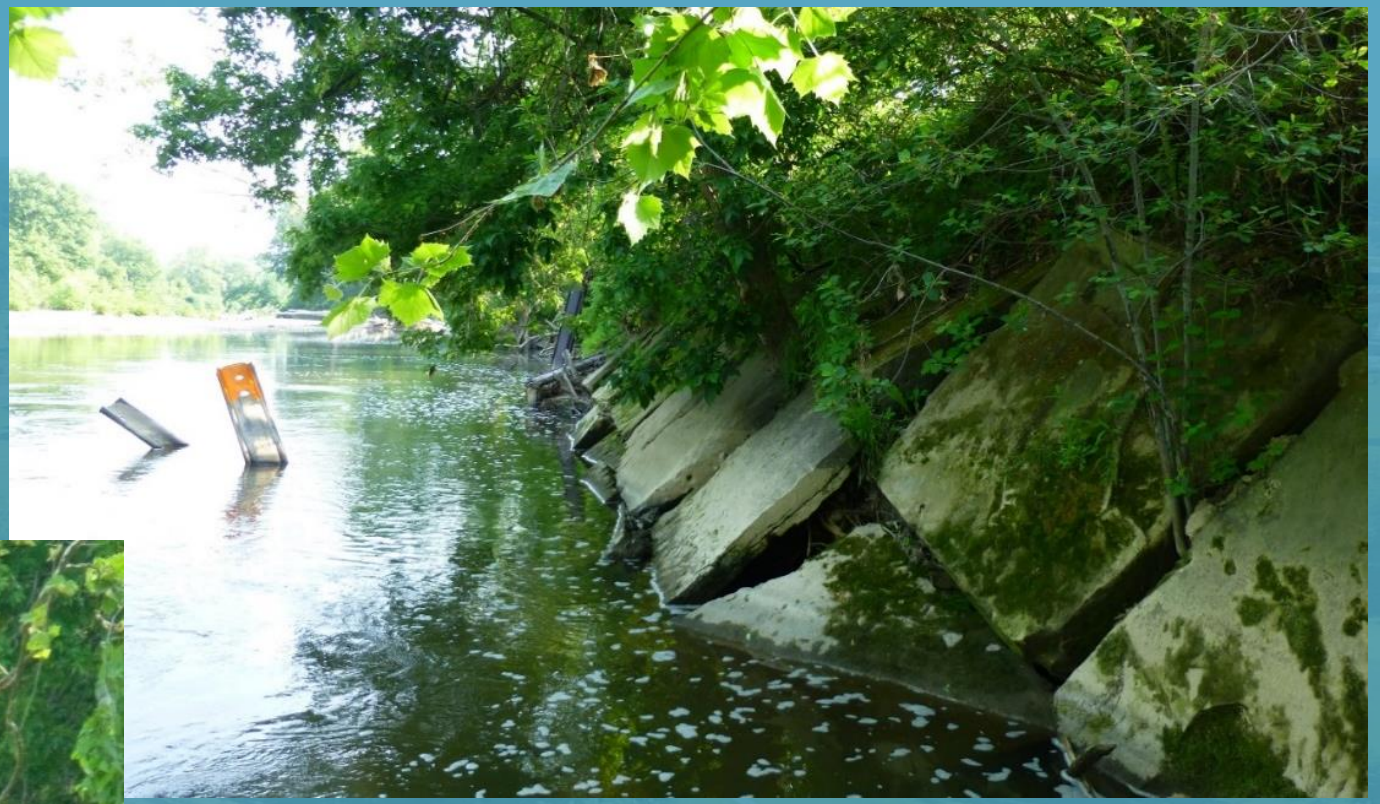
Northeast Ohio
Regional Sewer District

Scour Hole Formation



@neorsd

Previous Stabilization Efforts



Sandstone Sheeting

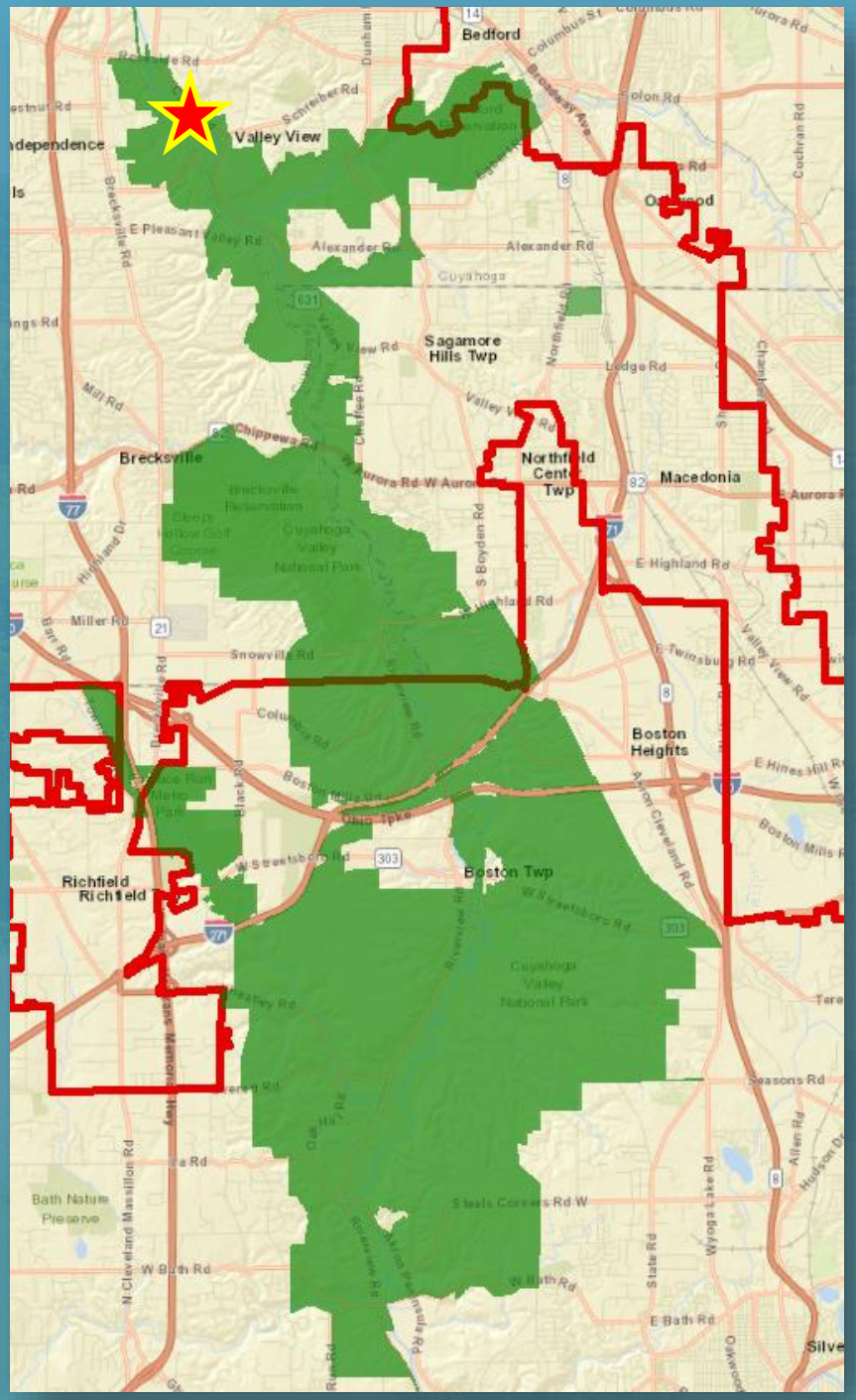
Piles

@neorsd

Challenges

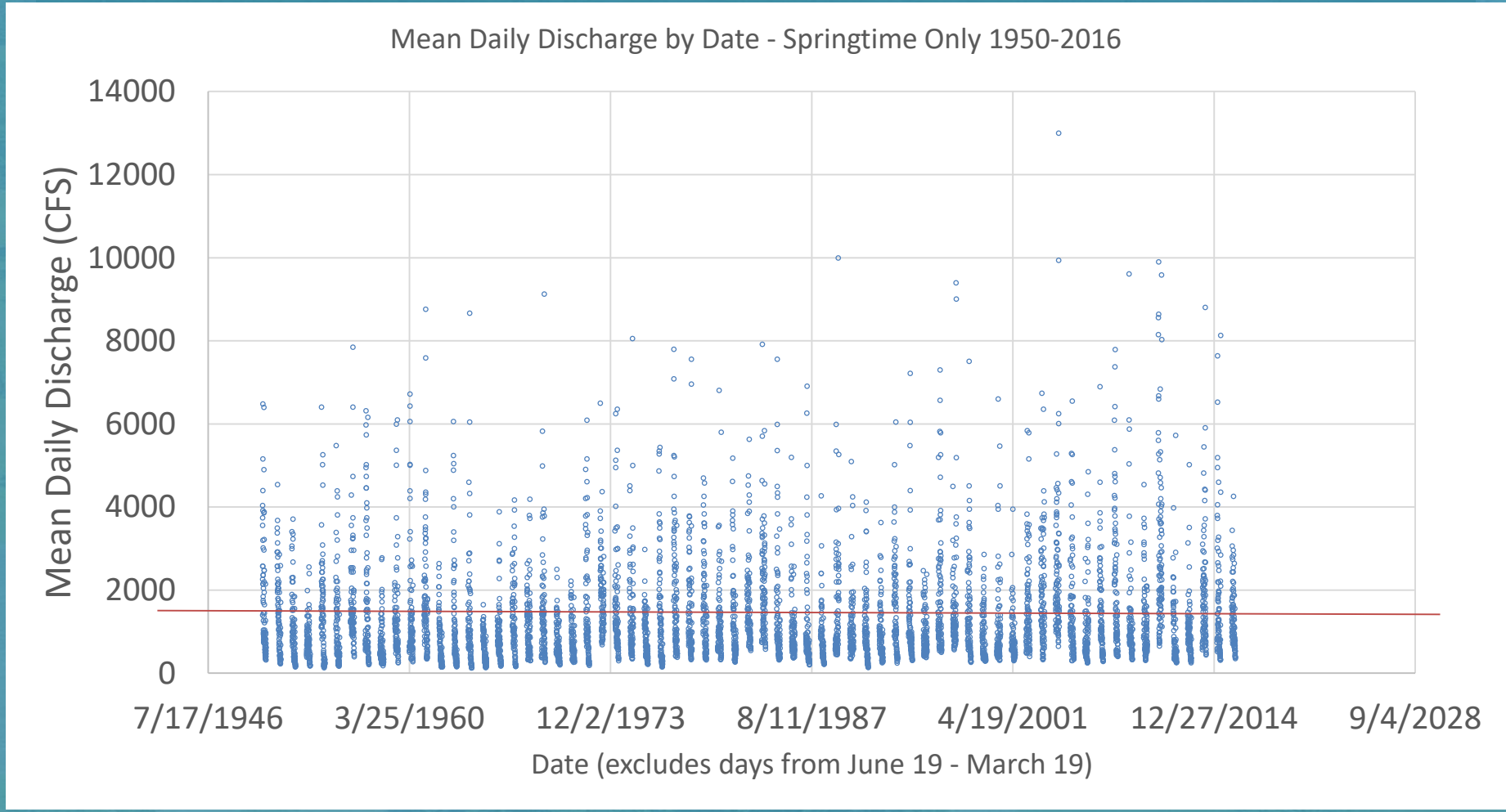
Cuyahoga Valley National Park

- Programmatic Environmental Assessment
  - Solution, material preferences
- Towpath considerations
- Permitting
  - Access
  - Planning, Environment and Public Comment (PEPC) process



Northeast Ohio Regional Sewer District

Working in the Cuyahoga River



Northeast Ohio Regional Sewer District

@neorsd

Towpath Trail Constraints

- Limited Space for equipment
- Heavily utilized recreational trail, important to minimize closures

Northeast Ohio Regional Sewer District

@neorsd

Site is Physically Constrained

- Narrow Towpath between Canal and Cuyahoga River
- Trail is heavily utilized
- Limited laydown area
- Archeological Exclusion Area
- Load limits on Hillside, Canal Road, Towpath

Solution

Northeast Ohio Regional Sewer District

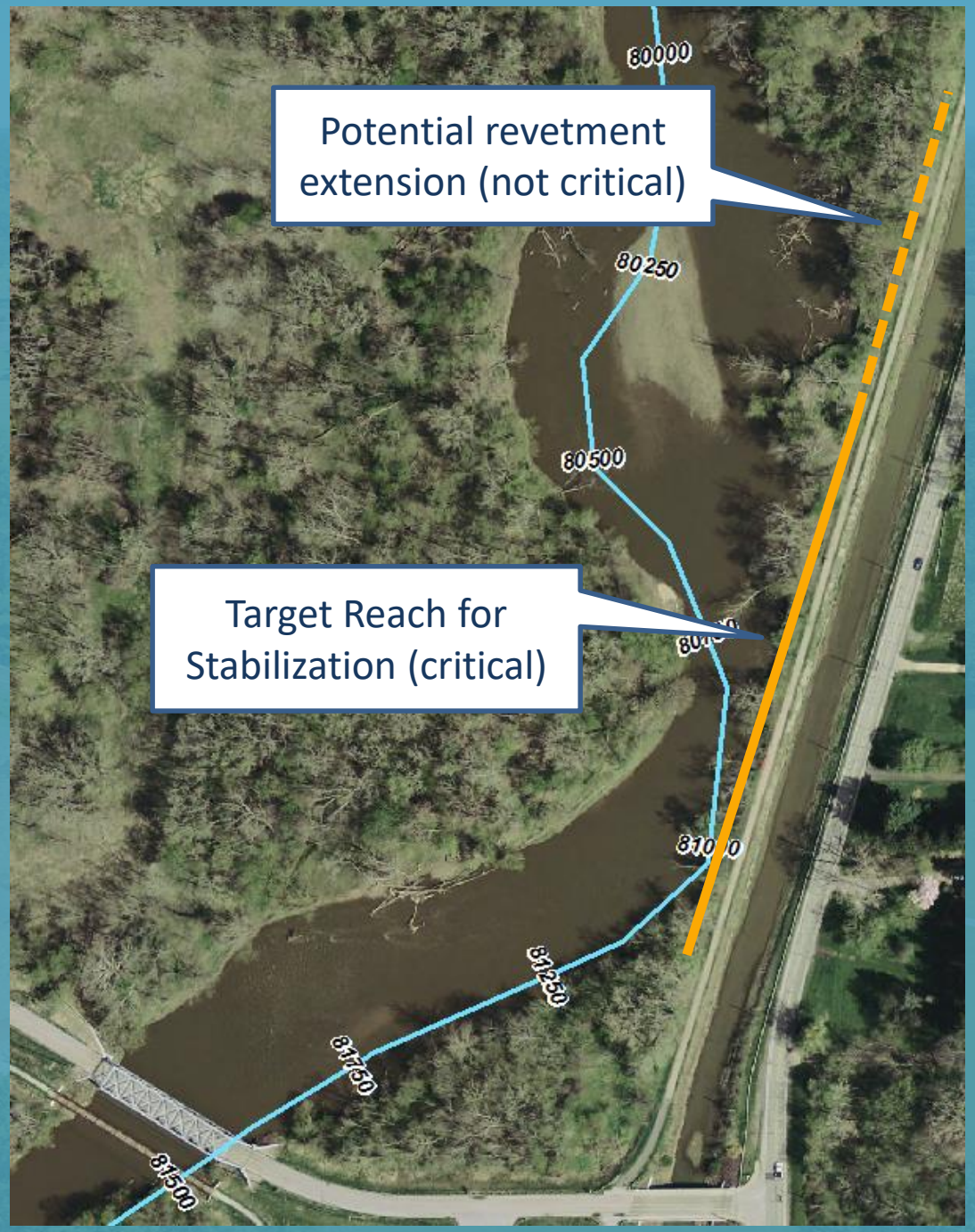
NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

@neorsd

Alternatives Analysis

- Riprap
- Flow Redirection (stream barbs, spur dykes)

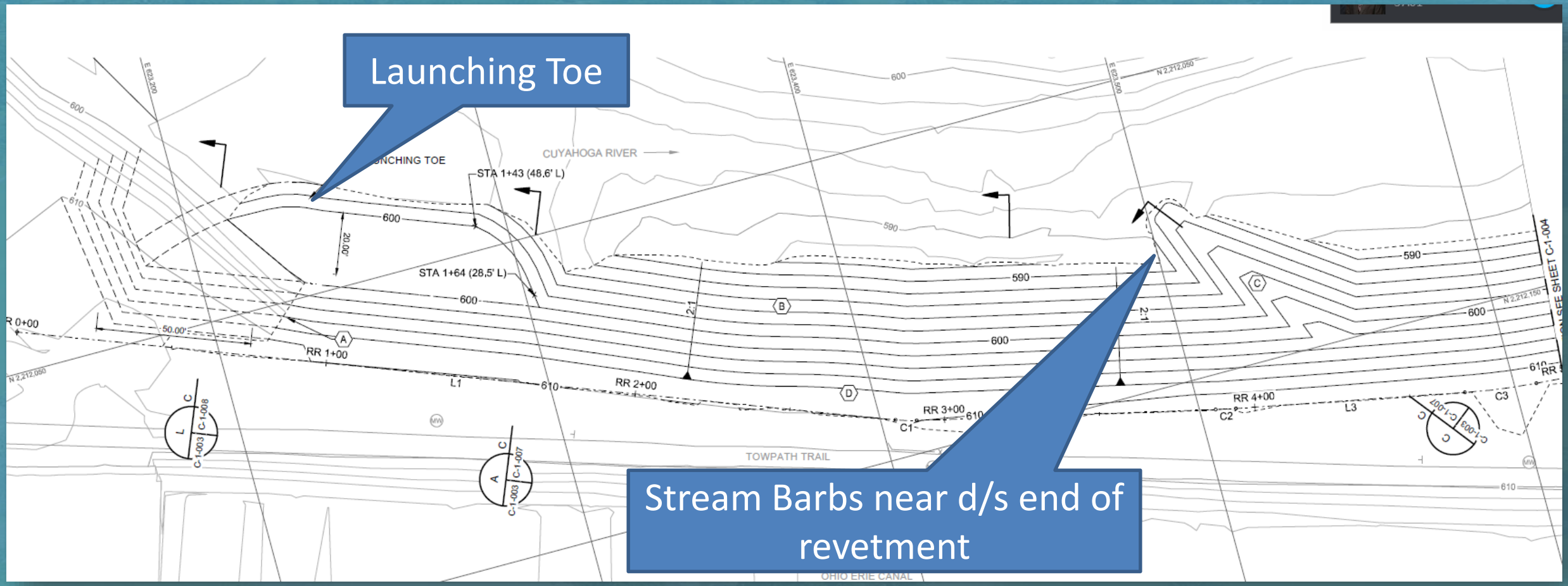
- Riprap selected as preferred solution
  - D50 = 18”



Northeast Ohio Regional Sewer District

@neorsd

Rip Rap Revetment Design



Northeast Ohio Regional Sewer District

@neorsd

Northeast Ohio
Regional Sewer District

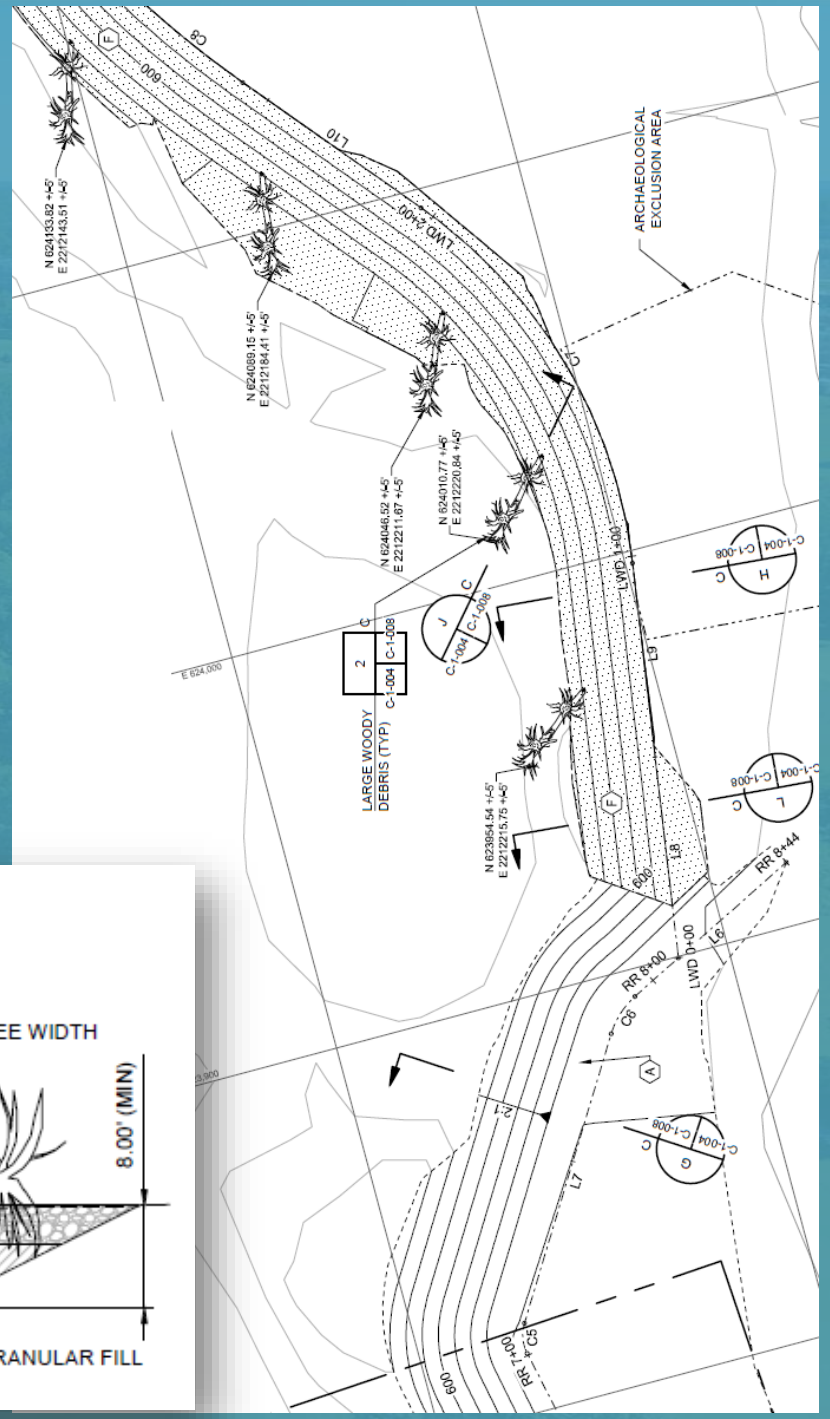
@neorsd

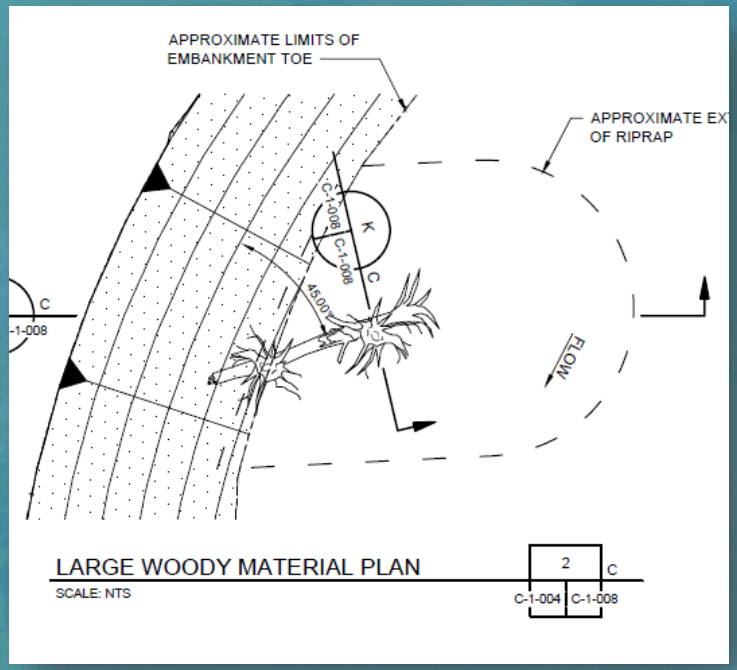
Pilot natural stabilization method selected in downstream, less critical area:

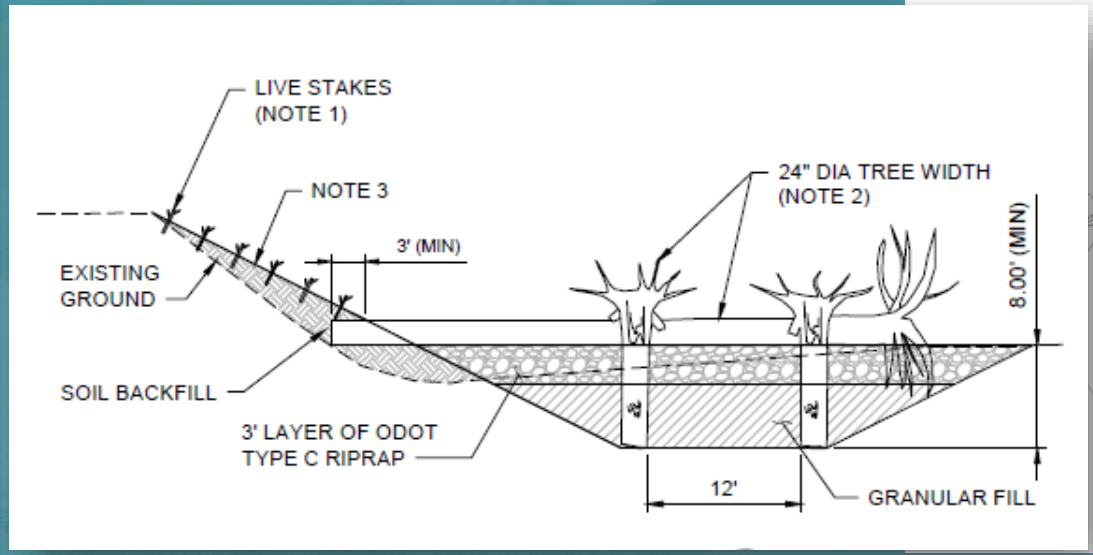
Large, woody debris structures:

H: 24” dia., 36’-40’ long with root wad intact

V: 24” dia., 12’-14’ long







On-Site Trees used for LWD Structures

LWD Structures Installation

Northeast Ohio Regional Sewer District

@neorsd

LWD Structures Installation

Northeast Ohio Regional Sewer District

Removal of Sandstone Sheets and Piles

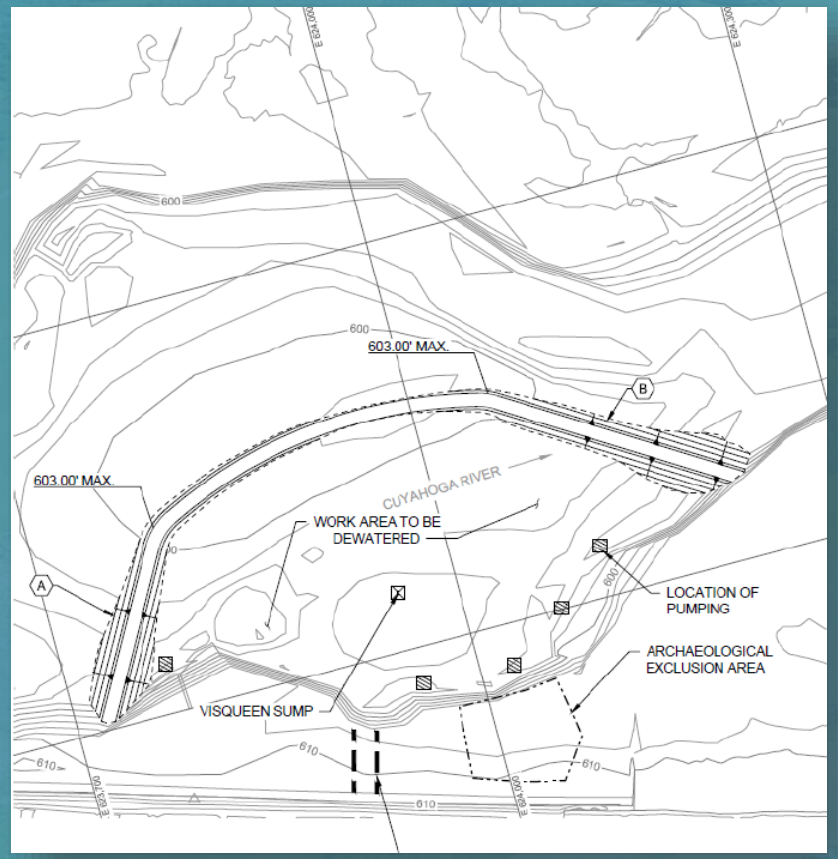
Northeast Ohio Regional Sewer District

@neorsd

Contractor's Site Access Approach to Minimize Towpath Trail Closures


CAT

Inflatable Cofferdam Used for Installation of LWD Structures



Northeast Ohio Regional Sewer District

@neorsd

Cofferdam around Large Woody Debris Installation

Northe
Region

@neorsd

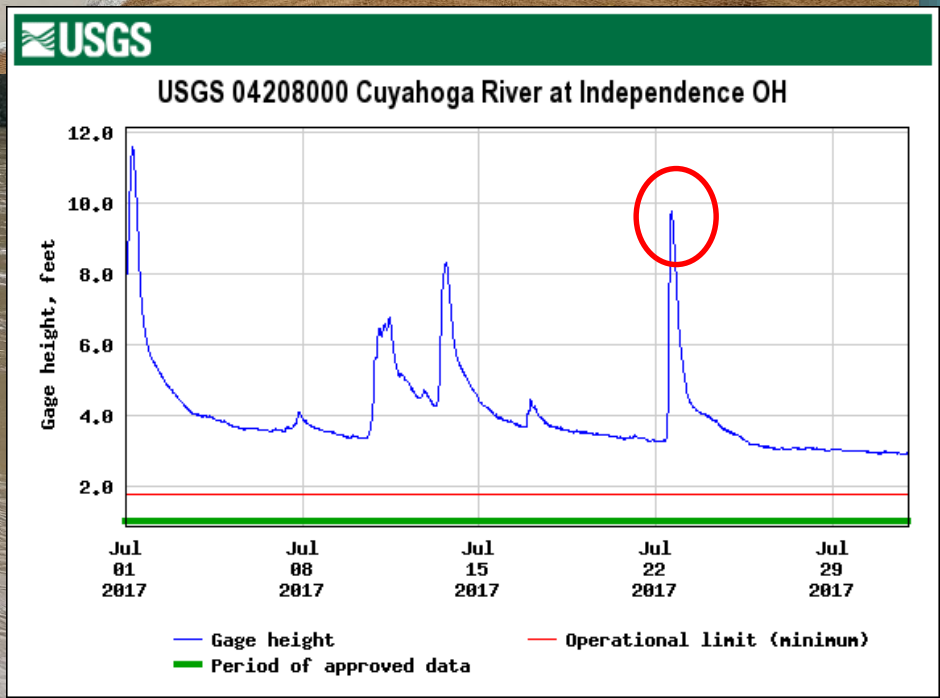
Post-Construction

Northeast Ohio Regional Sewer District

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM

@neorsd

July 22, 2017 Storm Event



July 23, 2017
Post-Storm Event

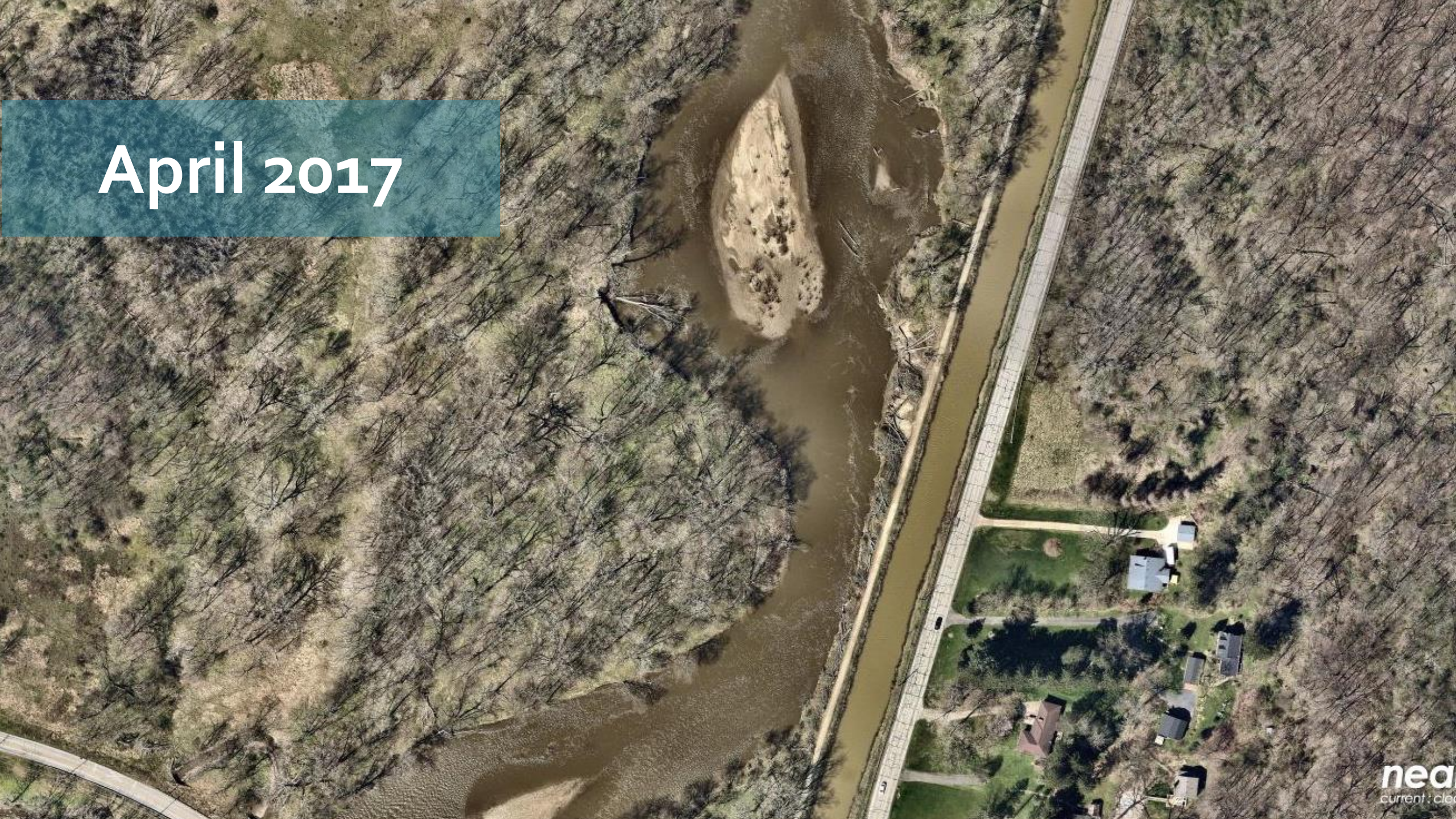
@neorsd


November 2017


November 2017

Deposition

Northeast Ohio
Regional Sewer District


April 2017


June 2017


September 2017


April 2018

Project Details

Design: June 2016 – Jan 2017

Construction: May 2017 – November 2017

Construction Cost: $1.28M

Thank You!

Contact Information:

Kristen Buccier: buccierk@neorsd.org

Shannon Conway: shannon.conway@stantec.com

Stantec

Northeast Ohio Regional Sewer District

NORTHEAST OHIO REGIONAL SEWER DISTRICT
REGIONAL STORMWATER MANAGEMENT PROGRAM