



Remedial Action for contaminated sediment remediation for the Cuyahoga Gorge



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- **US EPA**
- **Ohio EPA**
 - Nonfederal sponsor
 - Sediment Disposal
- **Ohio Lake Erie Commission**
 - Coordination Partner, Remedial Design Cost Share
- **City of Akron**
 - Land Owner
 - Nonfederal Sponsor
 - Sediment Disposal and Dam Removal
- **Summit Metroparks**
 - Permitting Lead
 - Long Term Land Steward, In-kind cost share partner
- **City of Cuyahoga Falls**
 - Local Partner
- **First Energy**
 - Local Partner
- **Northeast Ohio Regional Sewer District**
 - In-kind cost share partner

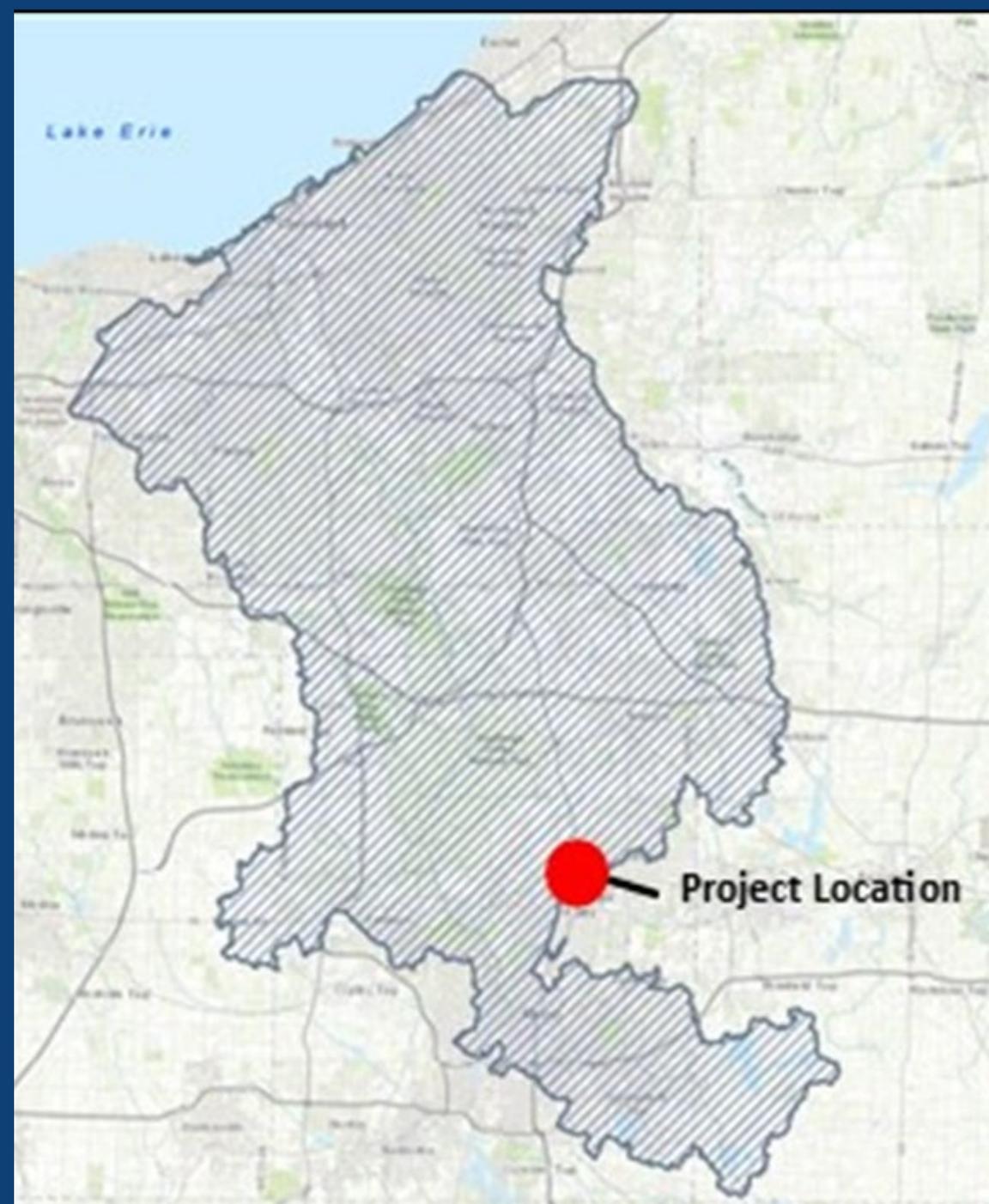
Project Partners



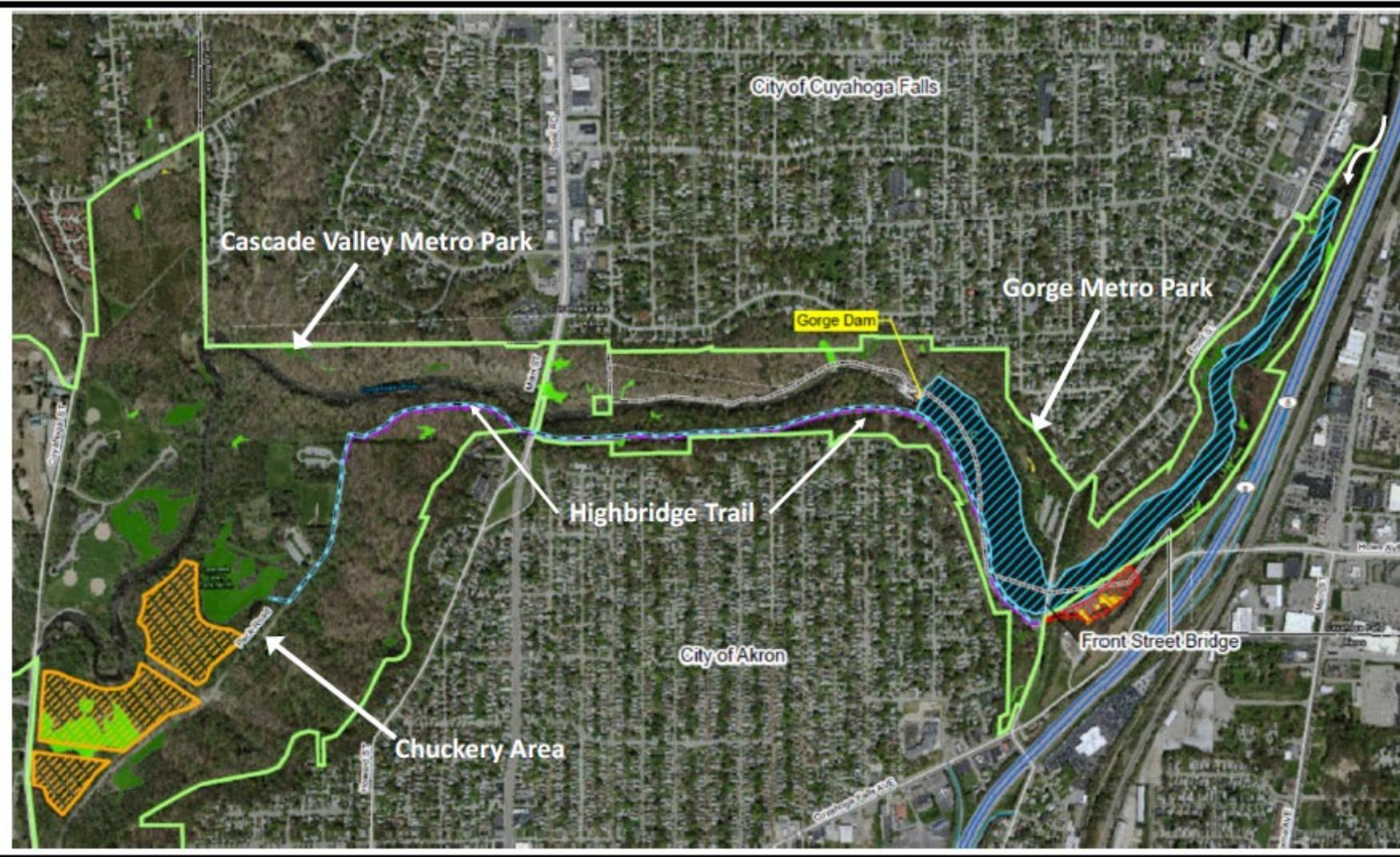
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Background - Cuyahoga Gorge Contaminated Sediments Project Area

- River Miles 44.5 - 46 of Cuyahoga River
- City of Akron/Cuyahoga Falls
- Gorge Metropark – Summit Metroparks
- Within the Cuyahoga Area of Concern (Annex 1 of GLWQA)



Overall Project



- Sediment Removal
- Sediment Disposal
- Dam Removal
- Restoration



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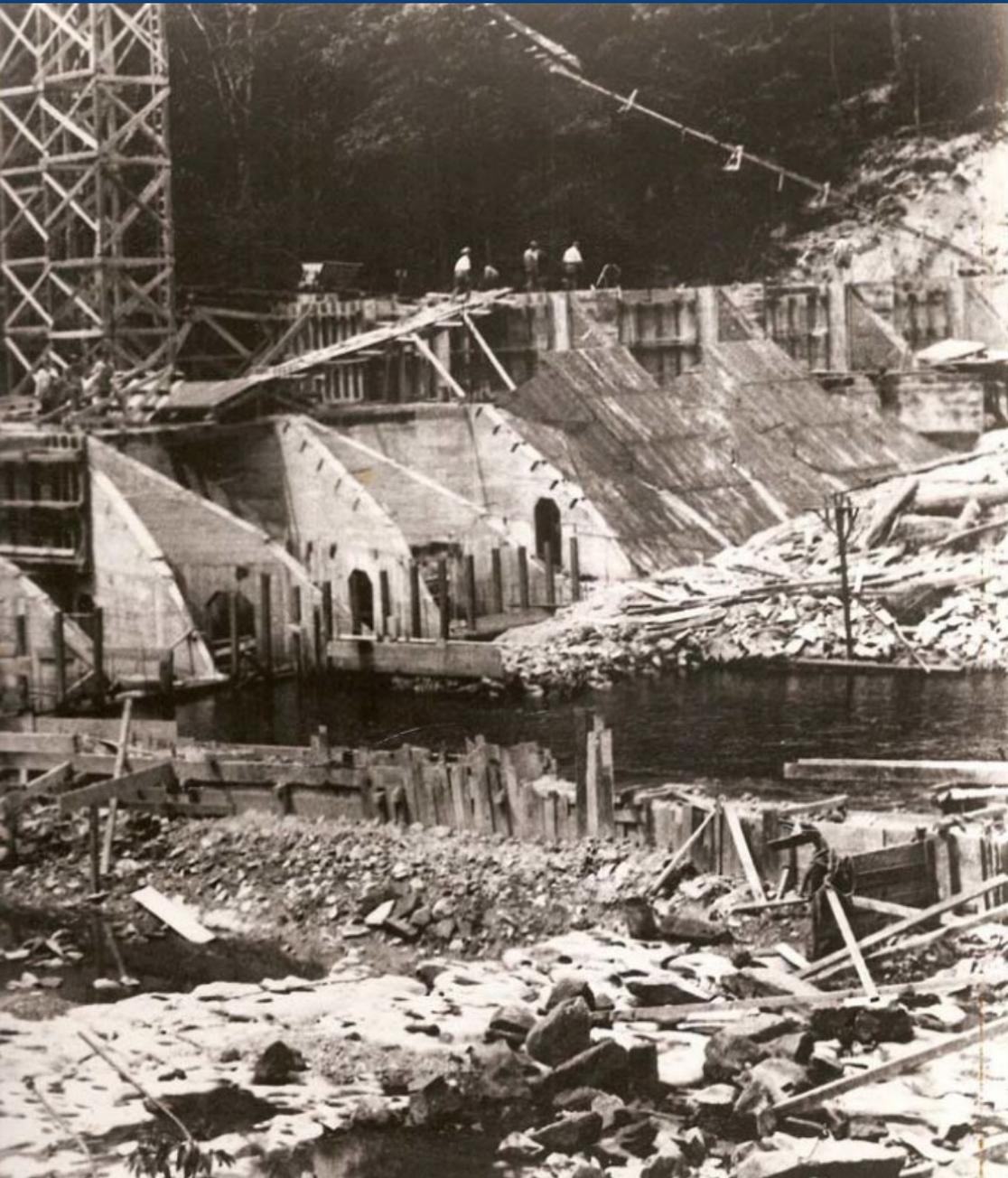
About the Dam



- Built in 1913
- Dam is ~58 feet high, 425 Feet wide
- Hydroelectric use ended in 1958



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Great Falls of the Cuyahoga River, circa 1880

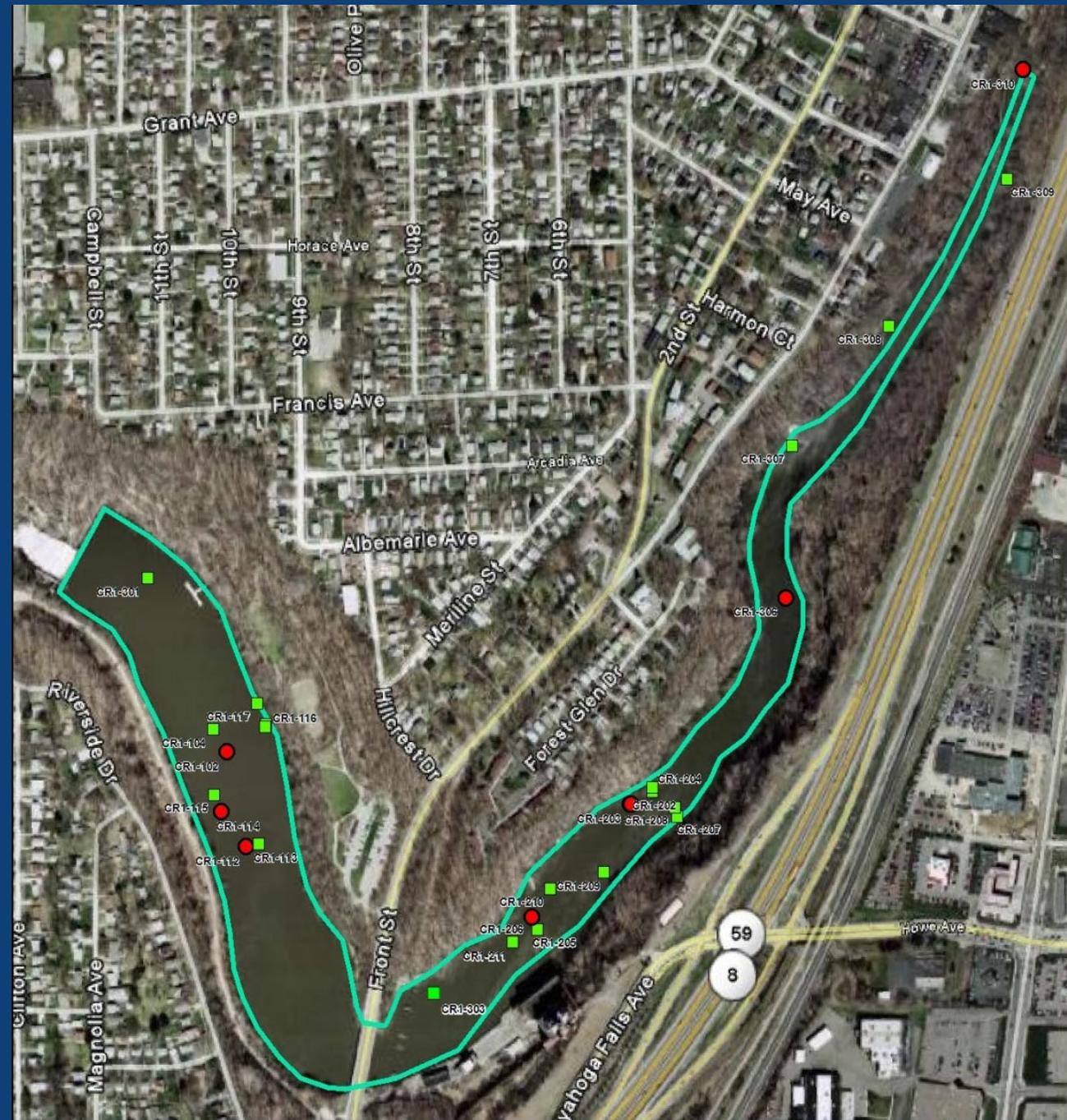


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About the Sediment

- Accumulated over many years of industrial past of the river.
- Dam Pool length 1-1/2 miles
- Sediment thickness of 1 to 34 feet
- Sediment with 100+ year legacy contaminants from upstream industries including
 - PCBs
 - PAHs
 - Oil & Grease

**Estimated up to approximately
912,000 cu yds of sediment for
removal.**



Contaminant Drivers

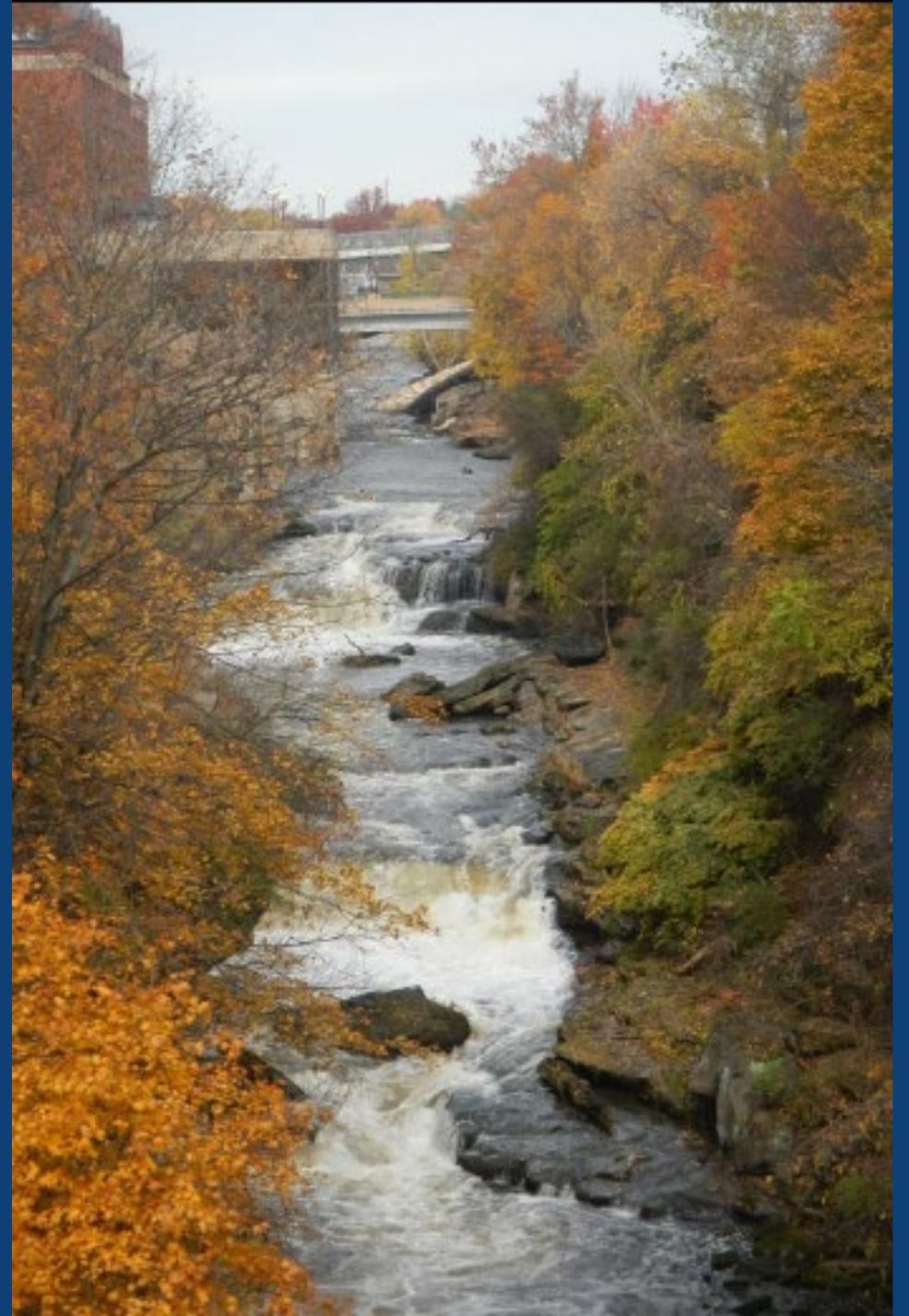
PAHs	<p>>50% of individual PAHs at or exceed PECs in 0-6 foot depths.</p> <p>85-95% of individual PAHs exceed TECs for 16 priority PAHs at each depth interval.</p> <p>PAH Toxicity analysis shows 15 of 25 may unacceptably affect benthic organism.</p>
PCBs	<p>Total Aroclors were detected and above TEC at every depth level. Samples exceed PEC at 15 feet depth or less</p> <p>77.5% of 182 Samples Above TEC benchmark</p> <p>26.5% of 182 Samples Above PEC benchmark</p>
Metals	<p>Eight metals exceeded their PECs and TECs. TECs ranged from 85-95% of samples.</p>
Pesticides	<p>Pesticides regularly detected at depths less than 15 feet</p>
Oil & Grease	<p>Oil and grease were prevalent through the Gorge Dam pool.</p>



Overall Project Objectives

1. Removal, transport, treatment, and disposal of contaminated sediment upstream of the Gorge Dam in the Cuyahoga River to address impairments to aquatic life.
2. Aquatic Habitat Restoration within the Cuyahoga River Area of Concern to address impairments to aquatic life.

Remediation to Restoration to Revitalization



AOC Impairments

- Degradation of Fish Populations
- Degradation of Benthos
- Loss of Fish Habitat

Completion of remediation at the Cuyahoga Gorge site is a management action project defined by Ohio AOC Program in coordination with the local AOC Advisory Committee



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Studies to Date

Cuyahoga TMDL	2003
Sediment Assessments	2012 (2009 and 2011 sampling)
Feasibility Study	2015
Pre-Final Design	2022
Final Remedial Design	2023

Ohio Environmental Protection Agency

Feasibility Study for the Removal of the Gorge Dam

TETRA TECH September 21, 2015

DRAFT PREFINAL BASIS OF DESIGN REPORT

Remedial Design of the Cuyahoga River Gorge Dam GLLA Project – Cuyahoga Falls, Ohio

Remedial Design
EPA GLAES Contract
Task Order 68HE0518F06F67/Contract No. EP-R5-11-09

Prepared for

June 2022

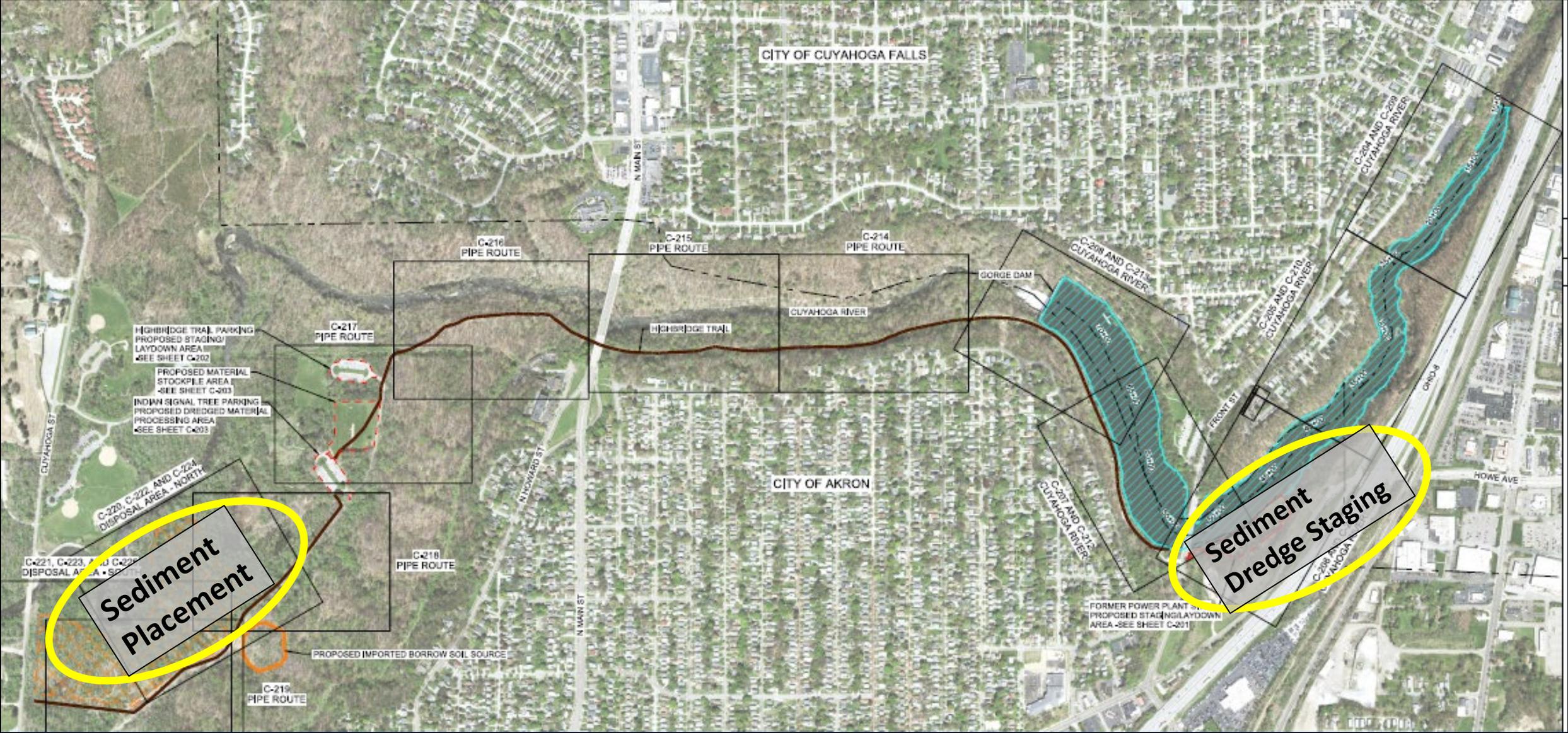
Remedial Action Proposal

- Preparation of Disposal Site (sequenced but planned for other State funding)
- Mechanical Dredging of Contaminated Sediment
Scow barge unloaded at the staging area, screened to remove any large debris.
- Pumped through Temporary Pipeline to Disposal Site (Chuckery Area)
- Sediment is mixed with concrete to prepare material for disposal area placement.
- Removal of Dam
- Restoration of former dam pool



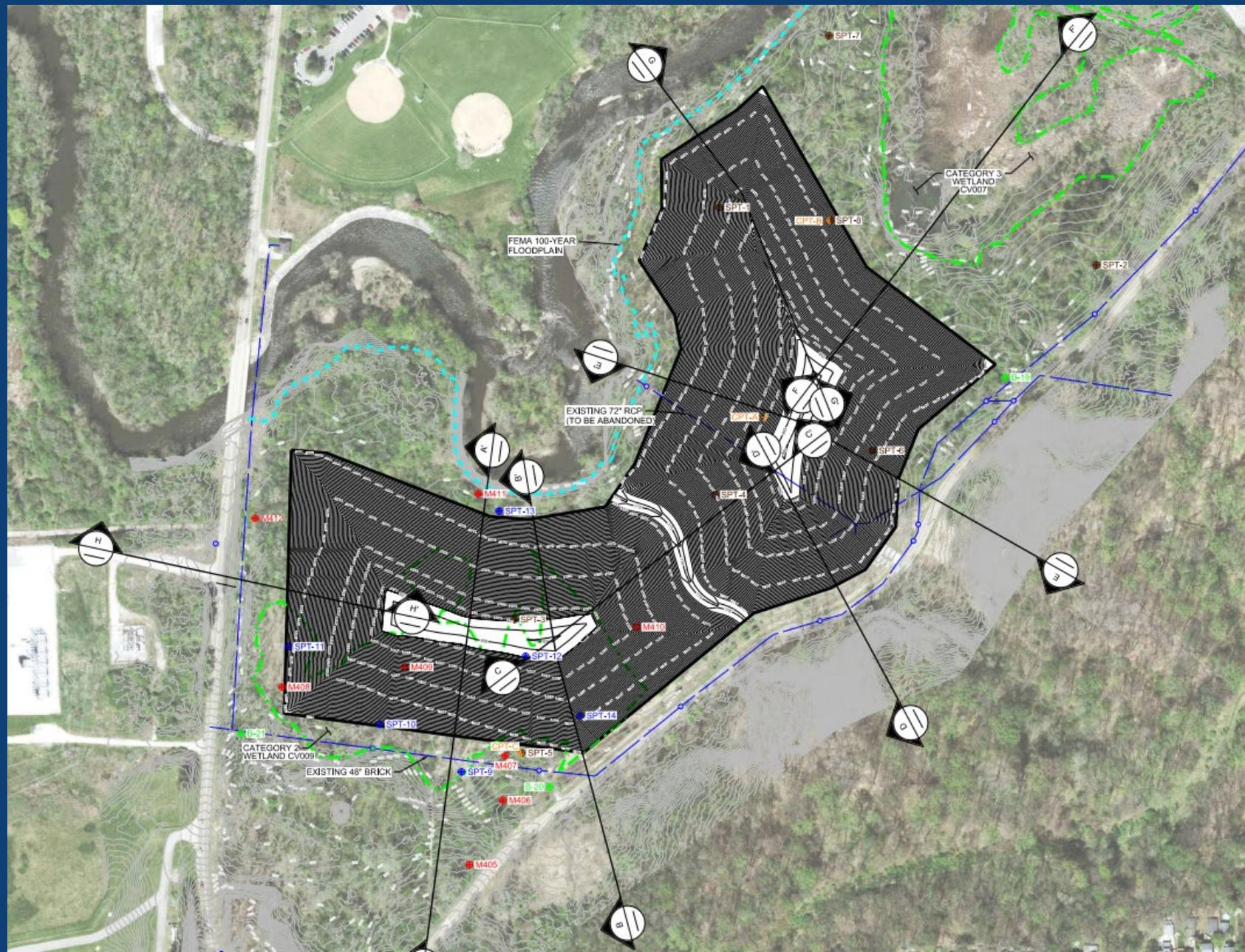
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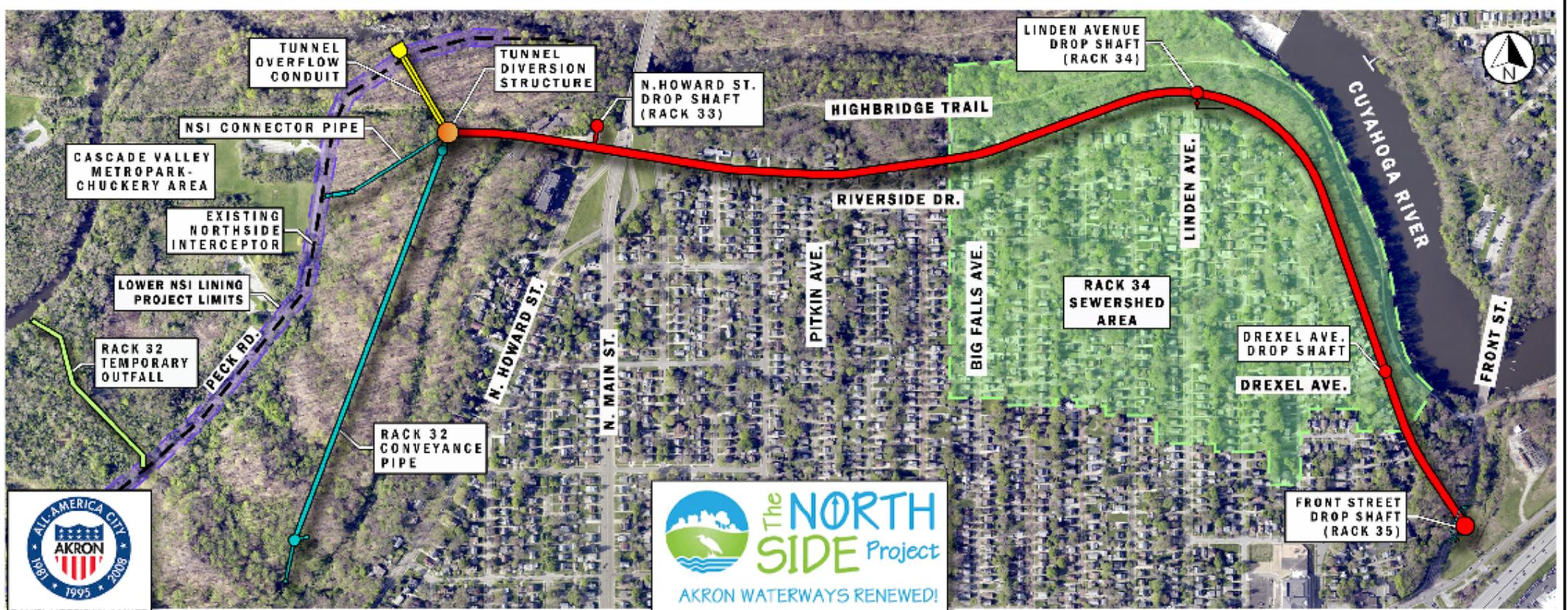
Remedy Approach



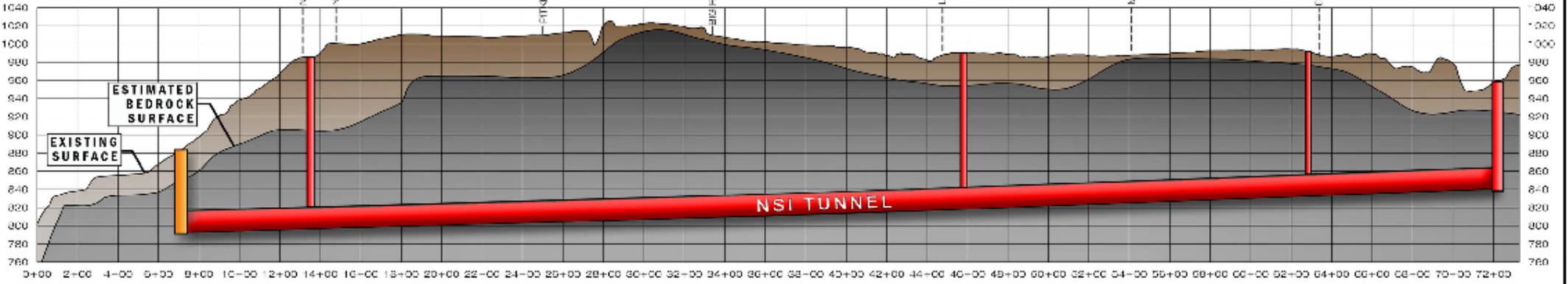
Remedy Approach

- Sediment Disposal Site Constructed by Local Stakeholders (WRRSP)
- Tree Clearing by Summit Metroparks
- Wetland Permitting by Summit Metroparks
- Current Design Will Use Two Cells
- Need to Coordinate With Akron CSO Projects





• OUTLET STRUCTURE, OVERFLOW CULVERT, AND CONNECTION TO EXISTING NORTHSIDE INTERCEPTOR NOT SHOWN IN PROFILE.



Remedy Approach

- Mechanical Dredging
- Staging Area at Former Power Plant
- Pumped to Second Staging Area to Use Pneumatic Flow Tube Mixing Technology
- Second Process Material Staging Area at Chuckery Area
- Material Management by Use of Mellowing Cells and Fill Cells
- Closure of Disposal Area and Final Grading



Remedy Approach

- Use PFTM
- Originally Planned to use Sediment Tubes
- Partners Opted for PFTM After Discussion and Review
- PFTM Allows Better Sediment Placement Options
- PFTM Removes Concerns About Leachate Management

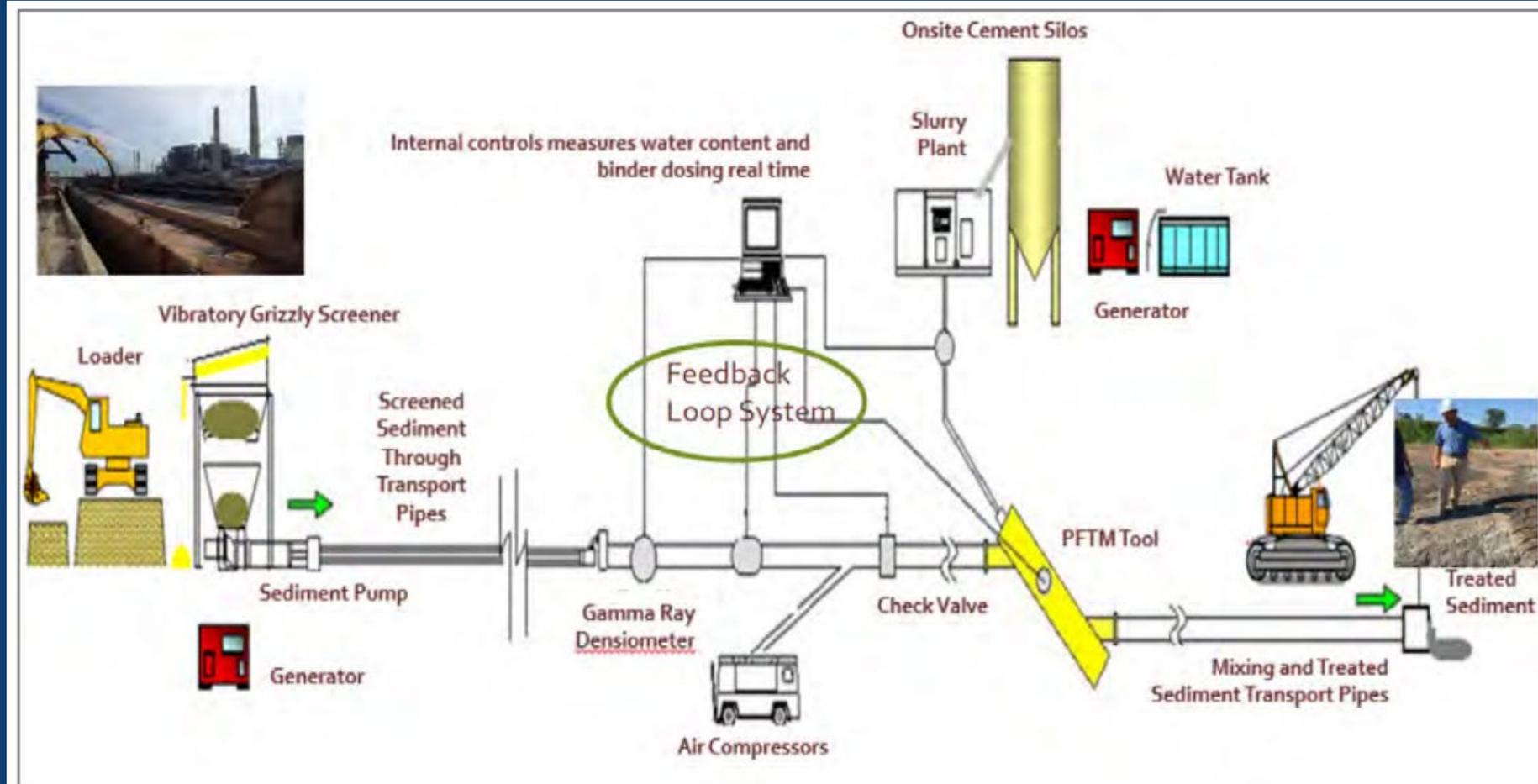


Figure 4-1. PFTM Process Flow Diagram



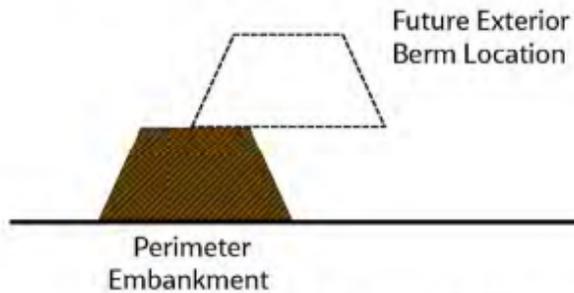
Proposed PFTM SDM Fill Construction Sequence

PFTM SDM Mellowing cells (overhead view)

- Centrally located in CDF (could be several)
- Each cell 500 to 1,000 CY (e.g. 1 day production or drying)
- T-walls 3 to 10 ft tall as needed (5 ft shown; easily lift)
- Full week capacity recommended
- Loader accesses cells from top/bottom
- Enables higher PC doses to perimeter berm
- Enables sandy materials to be used in perimeter blends
- Cells 5,6 only used when compacted fill must be placed in Cells 1 to 4 to raise grade
- Manage drainage away from perimeter berm to aid strength development and contact water management

Filling Mellowing Cell 1

- Perimeter Berm PC content TBD
- Berm dimensions TBD
- Compacted fill lifts 6 to 18 inches TBD



Note: Potentially higher PC dose for perimeter berms

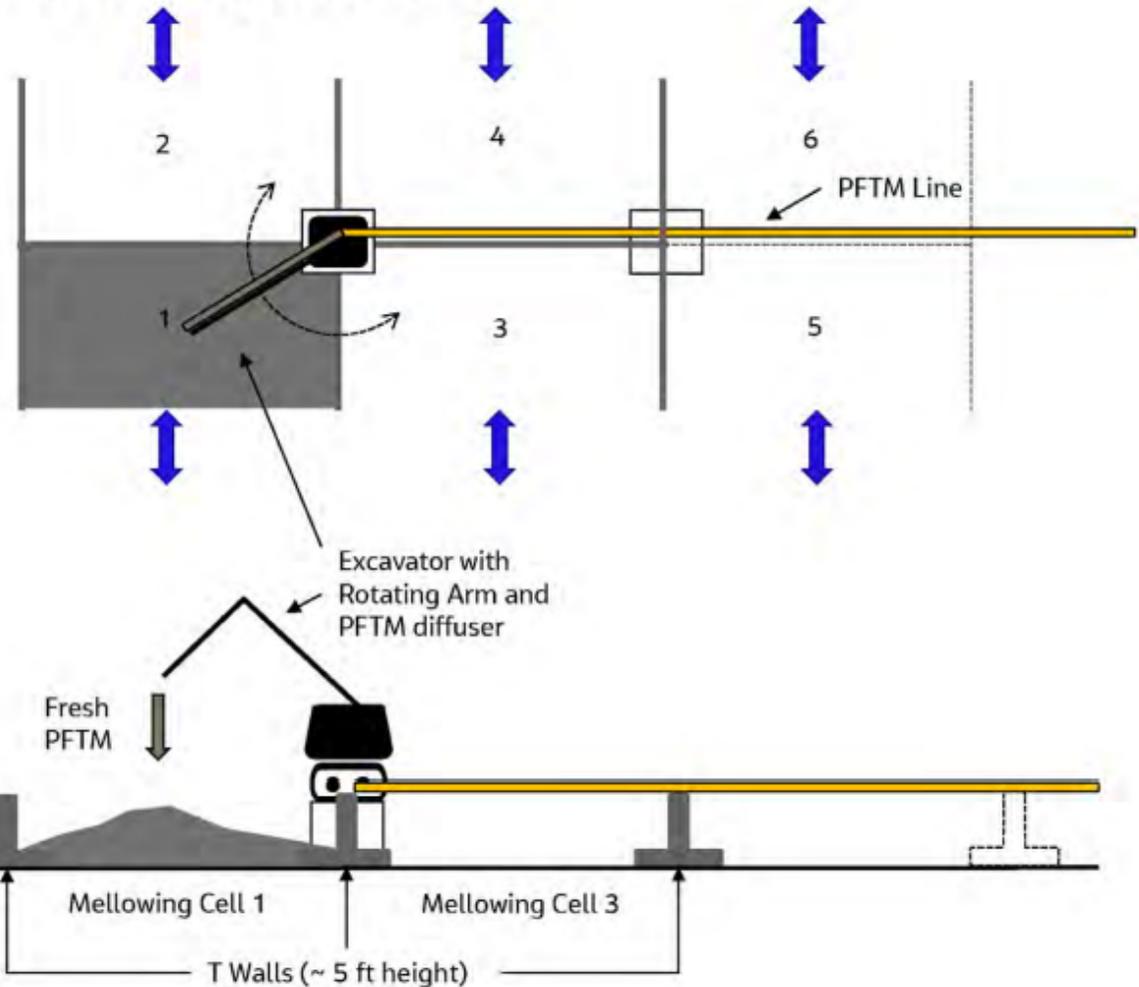
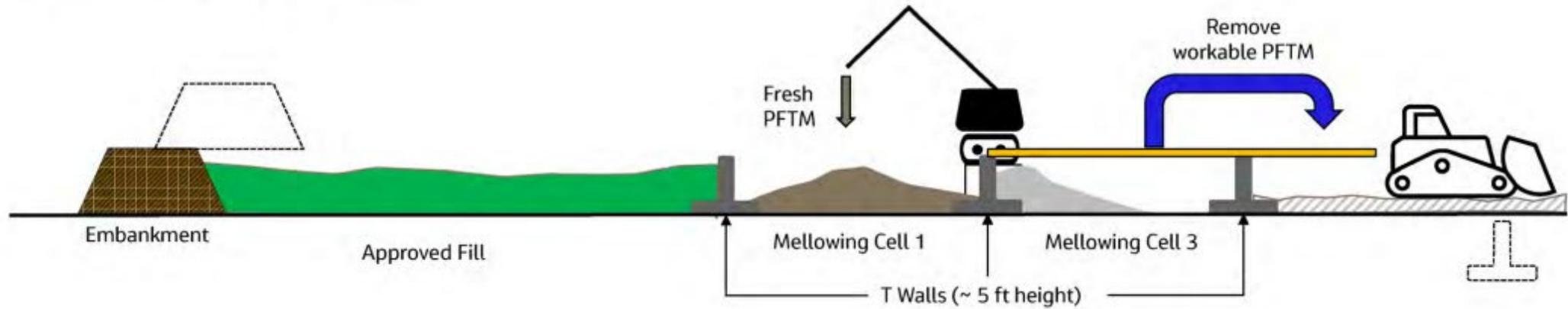


Figure 6-1
Proposed PFTM SDM Fill Construction
Sequence - Filling Mellowing Cells 1 & 2
Cuyahoga River Gorge Dam GLLA Project
Cuyahoga Falls, Ohio

Proposed PFTM SDM Fill Construction Sequence

Filling Cells 1/2 & Emptying Cells 3/4



Relocating PFTM Line & Excavator

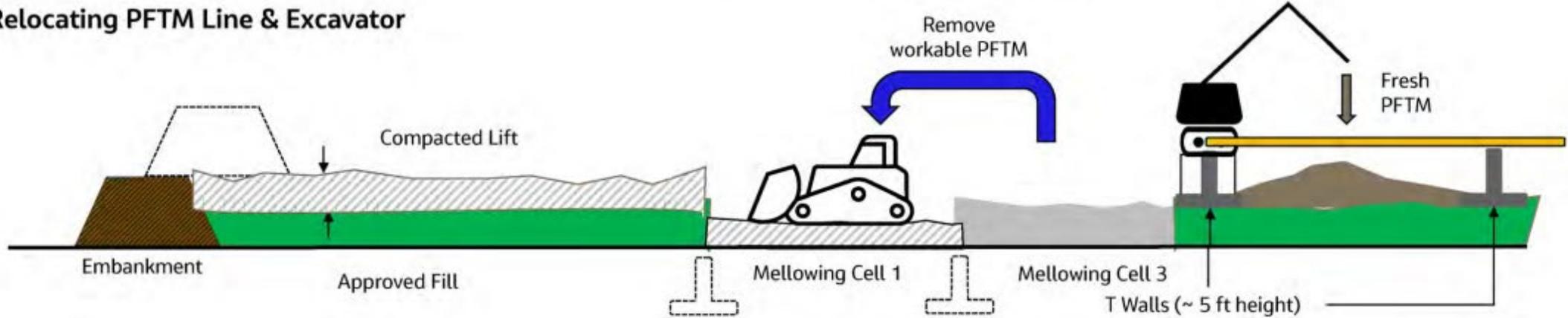


Figure 6-3
Proposed PFTM SDM Fill Construction
Sequence - Filling Cells 1/2, Emptying cells 3/4,
and Relocating PFTM Line and Excavator
Cuyahoga River Gorge Dam GLLA Project
Cuyahoga Falls, Ohio

Water Quality Improvements

- Removal of Dam Pool and contaminated sediment to improve food chain conditions.
- Improve oxygen levels in river to support aquatic life.
- Increase in fish population diversity and abundance.
- Consumption of fish from recreational activities.
- Ability to remove dam to restore to a free-flowing natural river.

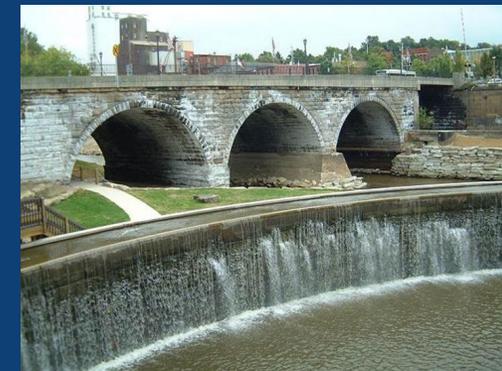
Canal Diversion
Dam 2020



Cuyahoga
Falls 2013



Munroe Falls
2005



Kent Dam



Economic and Community Benefits



- Community Fishing and associated consumption
- River Fishing
- Public Access to Outdoor spaces.
- New Recreation Uses & Associated Economic Development
- Expanding whitewater kayak use. (expected increase from current 10,000 in 2021)
- Expanded connections to River resources including National Park



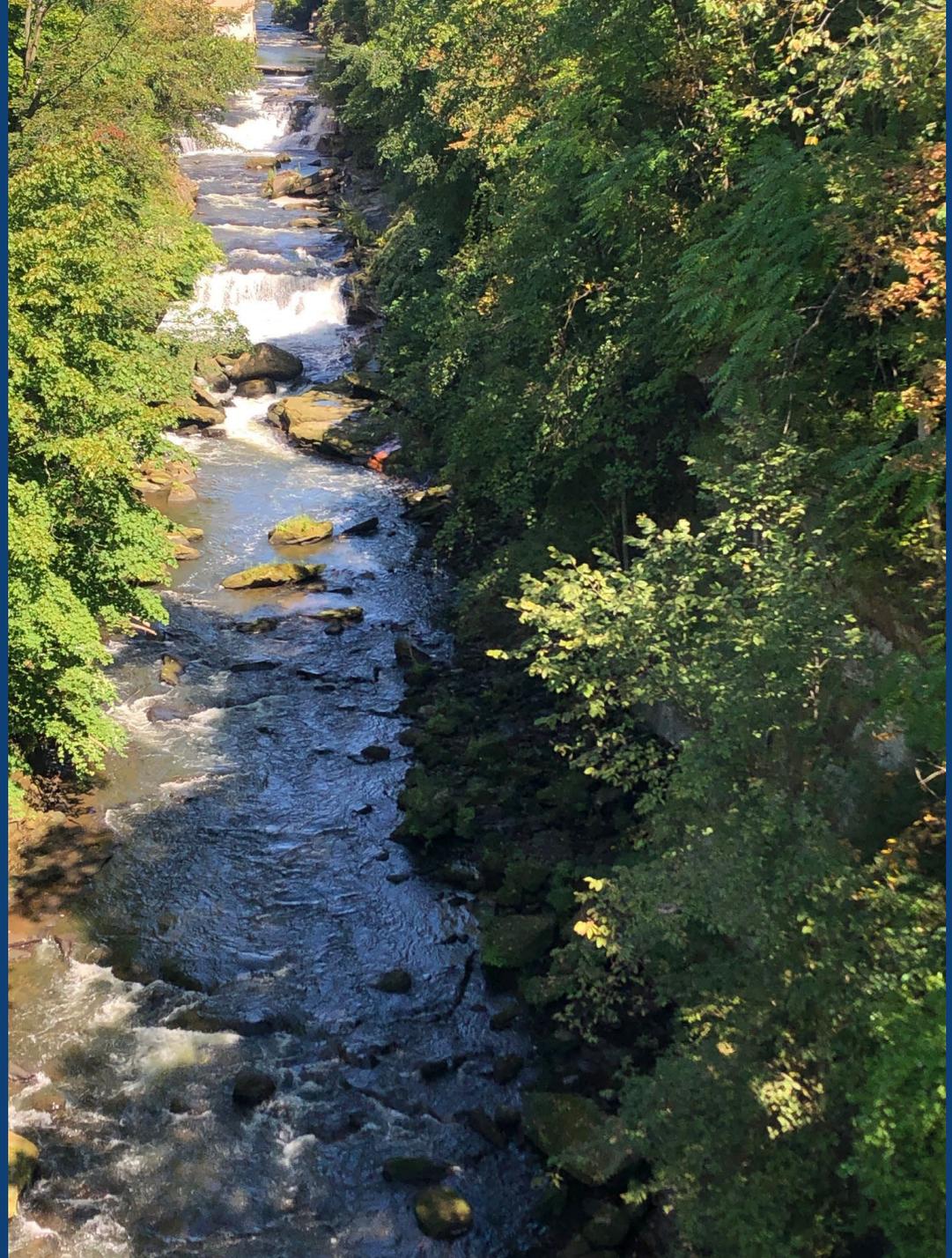
Public Engagement

- 50 local partner letters of support since 2014.
- 250+ attendees at 2019 public engagement meeting.
- 10-15 presentations annually to community by OEPA and local partners.
- Estimated 300+ at the Oct 31, 2022, meeting



Expected Results

- Estimated 850,000+ cubic yards of contaminated sediment.
- Restoration of habitat of 1-1/2 miles within a large river system in Ohio.
- Restoration of aquatic life by removing last remaining impediment to the Lower Cuyahoga River for water quality.
- Improved fishing conditions for local communities/adjacent neighborhoods.
- Restore over 1 mile of river for recreation uses with complementary economic impacts of local communities.



Great Lakes Legacy Act

Goal: *Accelerate* the pace of sediment remediation at Areas of Concern (AOCs)

Mechanism: Use *partnerships* as an innovative approach to conducting sediment remediation

Minimum 35% Non-Federal *match* required

U.S. Environmental Protection Agency Great Lakes National Program Office



Ashtabula River- GLLA, AOC Delisting 2021

Remediation to Restoration to Revitalization



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A Restored & Revitalized Cuyahoga River



- A primary critical project to achieve delisting as an Area of Concern.
- Removal of Remaining AOC- related impairments can be achieved as a result of this project.
- A community asset for future river use.



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Questions?



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