

East Reservoir Dam Improvements

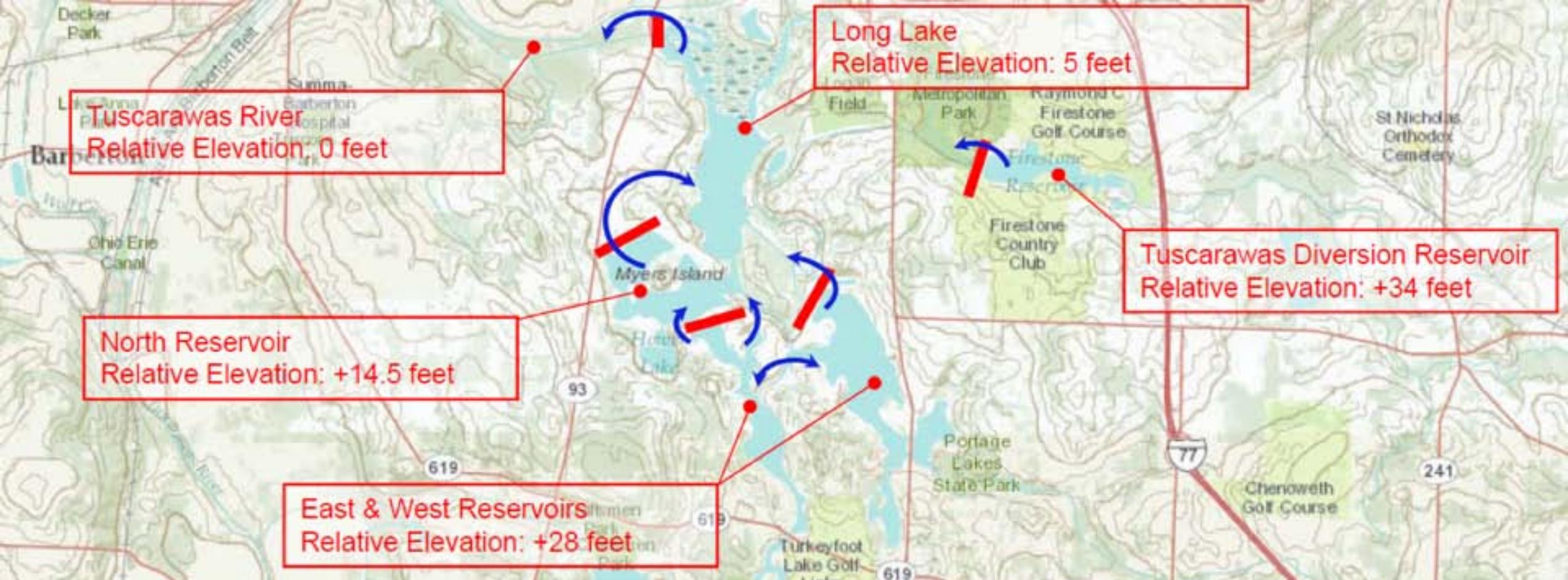


Public Briefing - December 13, 2016



Overview

- **Overview of the Portage Lakes Dam System**
- **Tonight's focus: East Reservoir Dam improvement updates**
- **Communication support**
- **Facilitated discussion**
- **Headline: Lake levels will stay the same**



Overview of Dam System

Recently Completed Dam Improvements

- **West Reservoir Dam (2012)**
 - Roller Compacted Concrete (RCC) overtopping protection & lake drain improvements
- **Tuscarawas Diversion Reservoir Dam (2014)**
 - RCC overtopping protection & lake drain improvements
- **Long Lake Dam Replacement (ongoing)**
 - Replacement of existing gate structure; scheduled for completion in summer, 2017
- **North Reservoir Dam Improvements (schedule TBD)**
 - Field data collection and engineering studies have begun

Tonight's Focus: East Reservoir



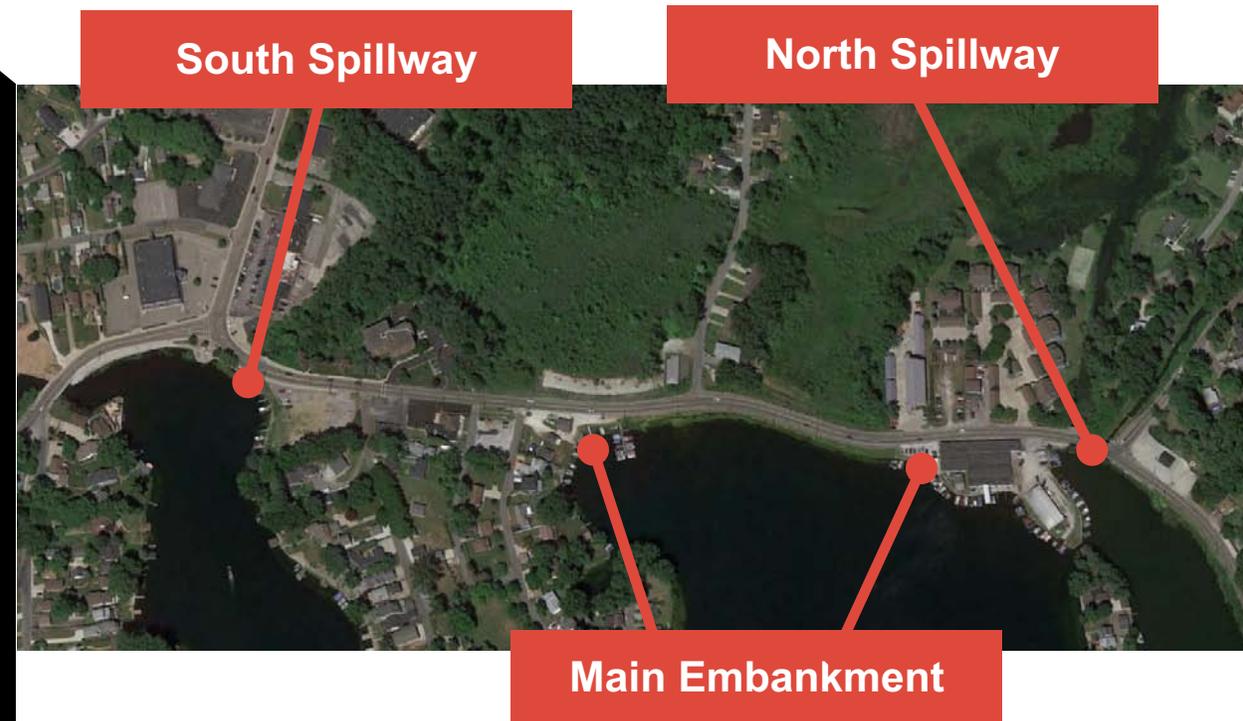
12/16/16

EAST RESERVOIR DAM IMPROVEMENTS

5

East Reservoir – Project Features

- **Constructed around 1840**
- **Class I – High hazard potential dam, 23 feet maximum height**
- **Approximately 1,400 feet long embankment (3 sections)**
- **Severe spillway discharge capacity deficiency; passes ~25% of Probable Maximum Flood**
- **Top of Dam = Elevation 993.0 feet - Normal Summer Pool = Elevation 989.0 feet**

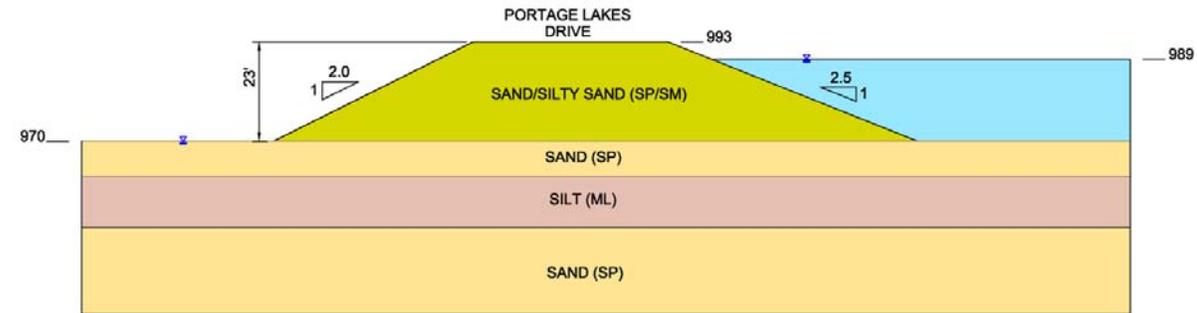


East Reservoir – Proposed Improvements to North and South Spillways



East Reservoir Project Features – Typical Selection

- Constructed from natural fine to medium-grained sand
- Crest width ranges from 40 to 50 feet (typical is 10 to 20 feet)
- Maximum height of approximately 23 feet
- Portage Lakes Drive on the embankment crest



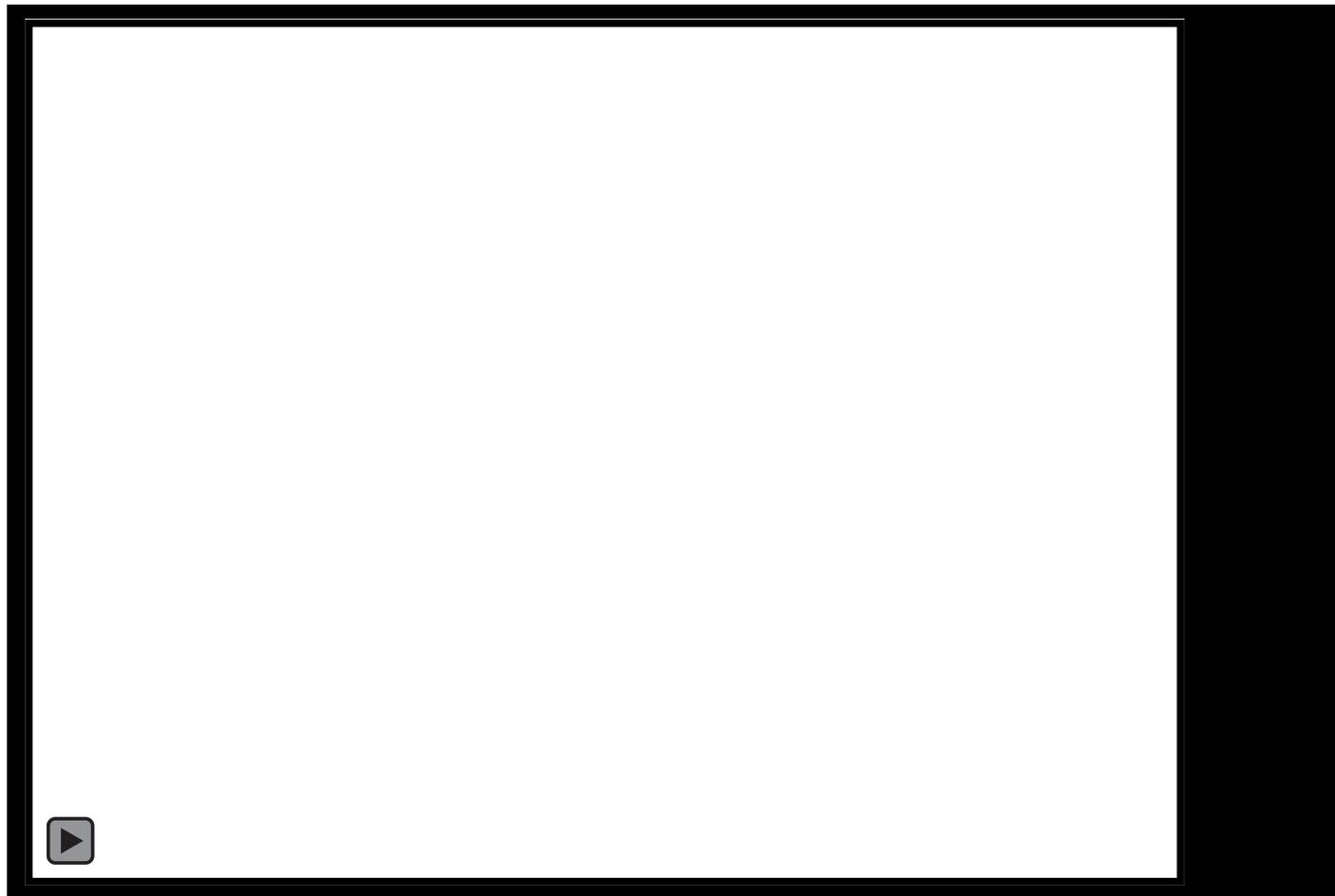
East Reservoir Dam

Safety Issues

East Reservoir – Proposed Improvements

- **Safety Issues**

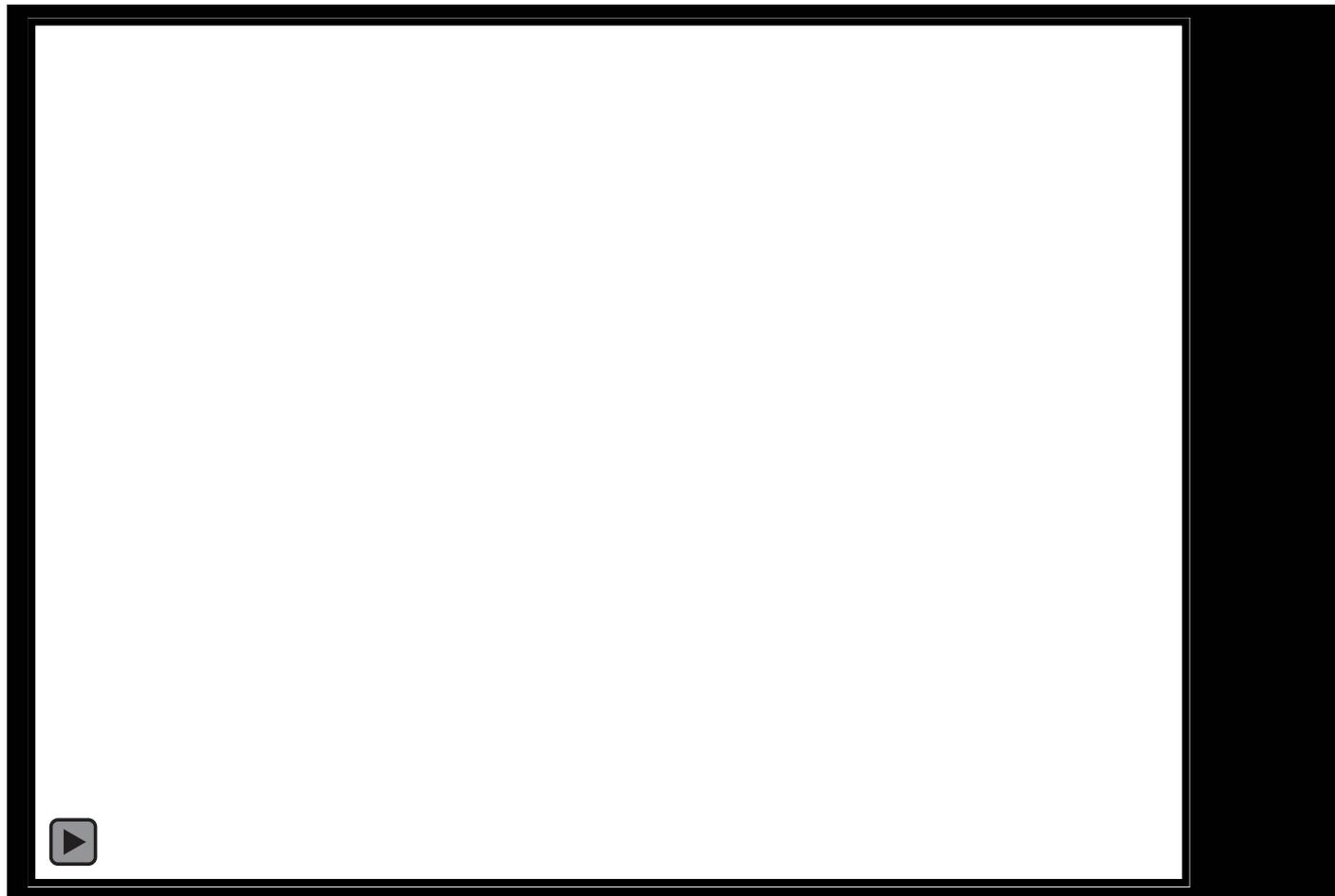
- Dam does not meet Ohio's Dam Safety standards
- Insufficient storage and discharge capacity; cannot pass required design storm without overtopping
- Excessive and uncontrolled seepage, especially at higher pool levels
- Concrete deterioration of spillway and lake drain structures



Source: Association of
State Dam Safety Officials
www.damsafety.org

East Reservoir – Proposed Improvements

Safety Issues – Insufficient Spillway Capacity (Overtopping)



Source: Association of
State Dam Safety Officials
www.damsafety.org

East Reservoir – Proposed Improvements

Safety Issues – Uncontrolled Seepage (Piping)

East Reservoir – Project History

- East Reservoir failed during the flood of 1913 and caused extensive damage to downtown Akron
- The north spillway at East Reservoir was constructed in 1915 to increase the project's discharge capacity



This was not the worst of it...

A dike of the East Reservoir gave way. Water flooded into South Akron along the canal, rising eight feet in the warehouses and store basements on the low ground west of Main Street.

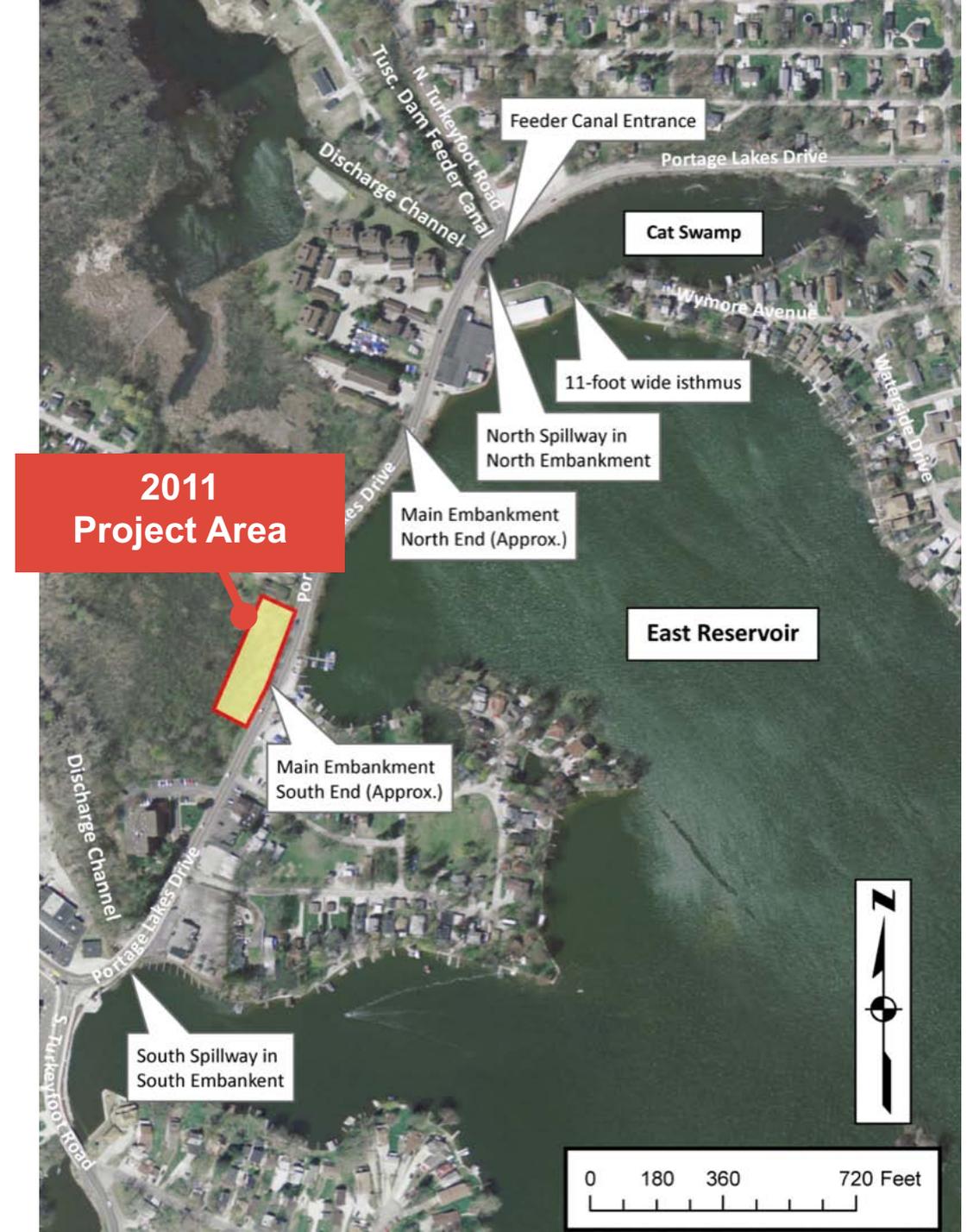
East Reservoir

2011 Uncontrolled Seepage Event



East Reservoir – Uncontrolled Seepage 2011 Storm Event

- 7 inches of rain fell in 3.5 hours (roughly a 1,000-year frequency event)
- Pool rose 7 inches from elevation 989.0 feet to 989.57 feet
- Uncontrolled seepage observed halfway up the downstream slope



East Reservoir Embankment – 2011 Uncontrolled Seepage

- Pool at elevation 989.57 feet – Seepage at elevation 977 feet – Clear seepage; no piping





East Reservoir Embankment – Completed Filter Berm

East Reservoir

Proposed Improvement Design



East Reservoir – Risk Reduction Goals

- **Proposed Improvements**

- Meet Ohio Dam Safety standards
- Provide an overtopping structure to safely pass the design storm (the Probable Maximum Flood)
- Control and reduce seepage
- Rehabilitate concrete spillway and lake drain structures
- Increase spillway discharge capacity

East Reservoir – Spillway Modification

- **Proposed Improvements**
 - Interim risk reduction measure (IRRM) – Increase spillway discharge capacity
 - Provide notch in spillway with hand pull gate to be removed if large rainfall event is forecast
 - Modification is part of the Long Lake construction contract



East Reservoir – Design and Construction Goals

- **Proposed Improvements**

- Maintain normal lake level operations during construction
- Minimize impacts to adjacent property owners
- Minimize impact to lake recreation activities outside the construction area
- Minimize disruption to adjacent roadway traffic
- Minimize the inconvenience of construction: noise and dust

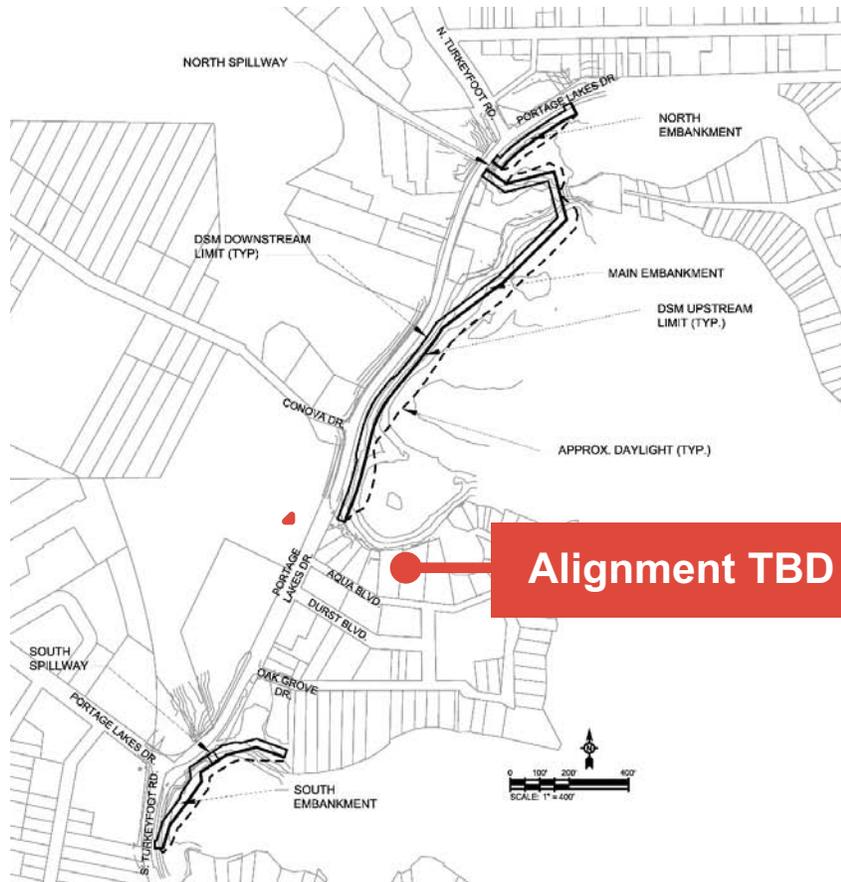
East Reservoir – Proposed Improvements

- **Proposed Improvements**

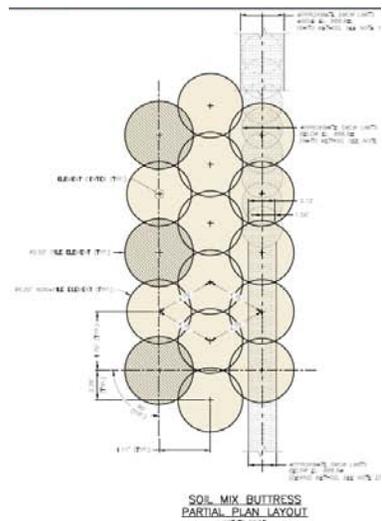
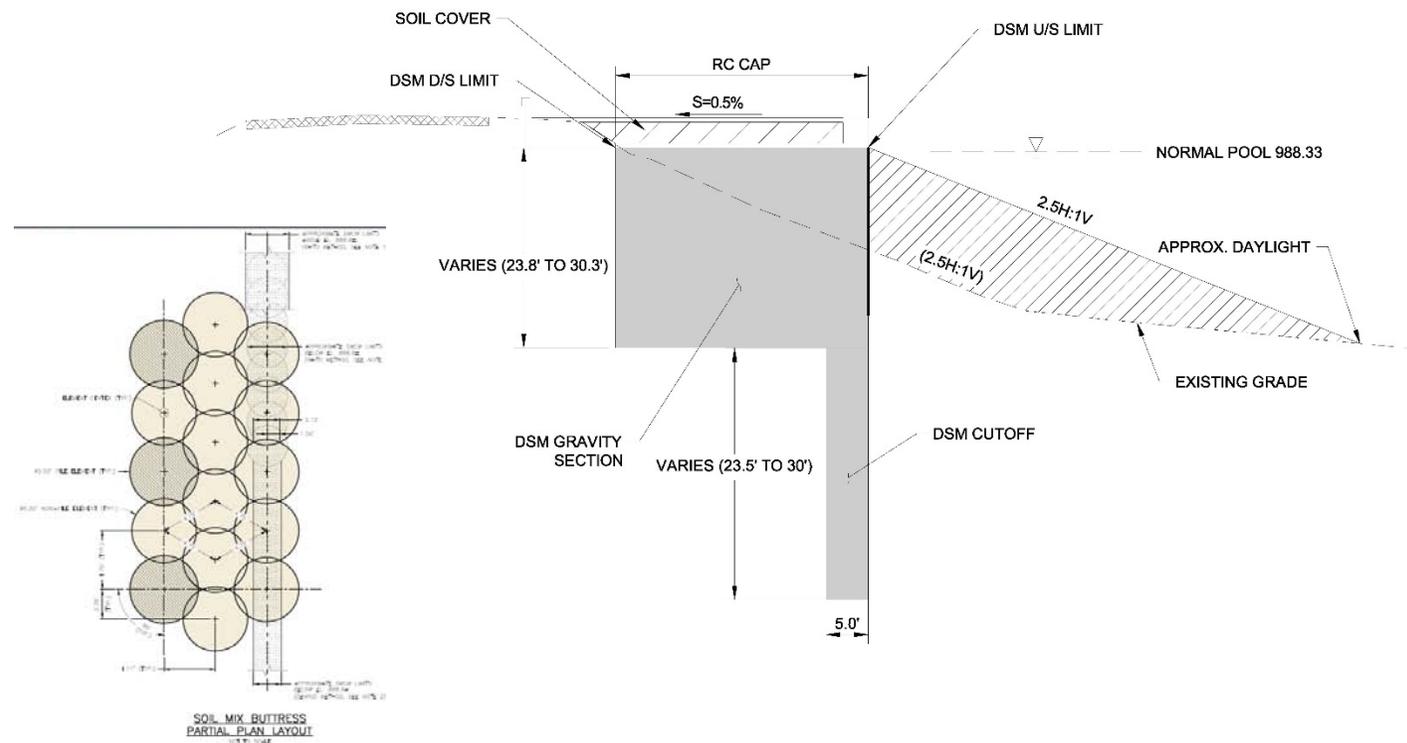
- Numerous alternatives considered:
 - Downstream overtopping structure
 - Embankment armoring (RCC)
 - Upstream overtopping structure in the lake
- Upstream overtopping structure was the most economical solution and best met the project objectives
 - Alternate alignments being considered
- Berm and Deep Soil Mixing Gravity Section was selected as the best upstream overtopping structure alternative

East Reservoir

Proposed Improvement Design: Deep Soil Mixing (DSM)



Alignment TBD



East Reservoir – Proposed Improvements to Berm and DSM Gravity Section

Typical Cross Section



East Reservoir

Proposed Improvement Design

East Reservoir – Proposed Improvements to Berm and DSM Gravity Section

- Proposed conceptual design presented to public fall, 2016; 50% design completed in November 2016; 100% design to be completed spring, 2017
- ODNR will use a Construction Manager at Risk (CMR) project delivery method
- ODNR in the process of hiring a Construction Manager to be completed in January/February 2017
- 404/401 permit application to be submitted by December 31 to the Corps of Engineers, the Ohio EPA, and the State Historical Preservation Office
- Crack surveys will be performed on homes and buildings adjacent to the construction sights prior to the start of construction
- Construction to start early spring, 2017 and finish by the end 2018
- Estimated project construction cost of \$28M to \$33M

East Reservoir – Communications

- Website to be updated soon:
<http://engineering.ohiodnr.gov/>
- E-newsletter
- Social media
- Fact sheets, construction fliers, notifications of closures
- Future public meetings

East Reservoir Dam Improvements to Begin in 2017

You're Invited

Public Briefing
Tuesday, December 13



AKRON, OH – Representatives of the Ohio Department of Natural Resources (ODNR) and engineering firm Tetra Tech, Inc. will host two identical public briefings to share preliminary plans for improvements to the East Reservoir Dam in Portage Lakes State Park. ODNR contracted with Tetra Tech to provide an independent assessment of the condition of the dam; Tetra Tech will present findings and recommendations to reduce risk and bring the dam into compliance with Ohio's dam safety requirements. Construction is planned to start spring, 2017. The normal lake operations and levels should not be impacted.

What
East Reservoir Dam Improvements –
Public Briefings

When
Tuesday, December 13 (RSVP requested)
5 to 6:15 PM and 6:30 to 7:45 PM

Who
ODNR and Tetra Tech, Inc.

Where
ODNR Division of Wildlife District 3 Headquarters
912 Portage Lakes Drive
Akron, Ohio 44319

RSVP

Please RSVP by emailing Angela DeBrocco at adelbrocco@murphyjason.com or by calling 614-221-2985 ex.18

BACKGROUND – The East Reservoir Dam includes three separate earthen embankment sections measuring a combined distance of approximately 1,400 feet. Those who attend the public briefing will learn about the dam structure, general dam safety concepts and plans for dam risk reduction measures, and be invited to provide their comments. Additionally, ODNR will share its plans to keep the public informed throughout construction.



Hosted by the Ohio Dept of Natural Resources and Tetra Tech, Inc.



Discussion Guidelines

- **Focus: East Reservoir**
- **Respect each other's time**
- **Respect each other's ideas**
- **It's okay to disagree, please don't be disagreeable**

Questions? Comments?