

Indian Lake State Park

Dam and Spillway Interim Risk Reduction Measures

May 25, 2016



Ohio Department of Natural Resources

Presented By



Indian Lake

Project Location



Indian Lake

Project Areas (Spillway)



Why are we making Improvements?

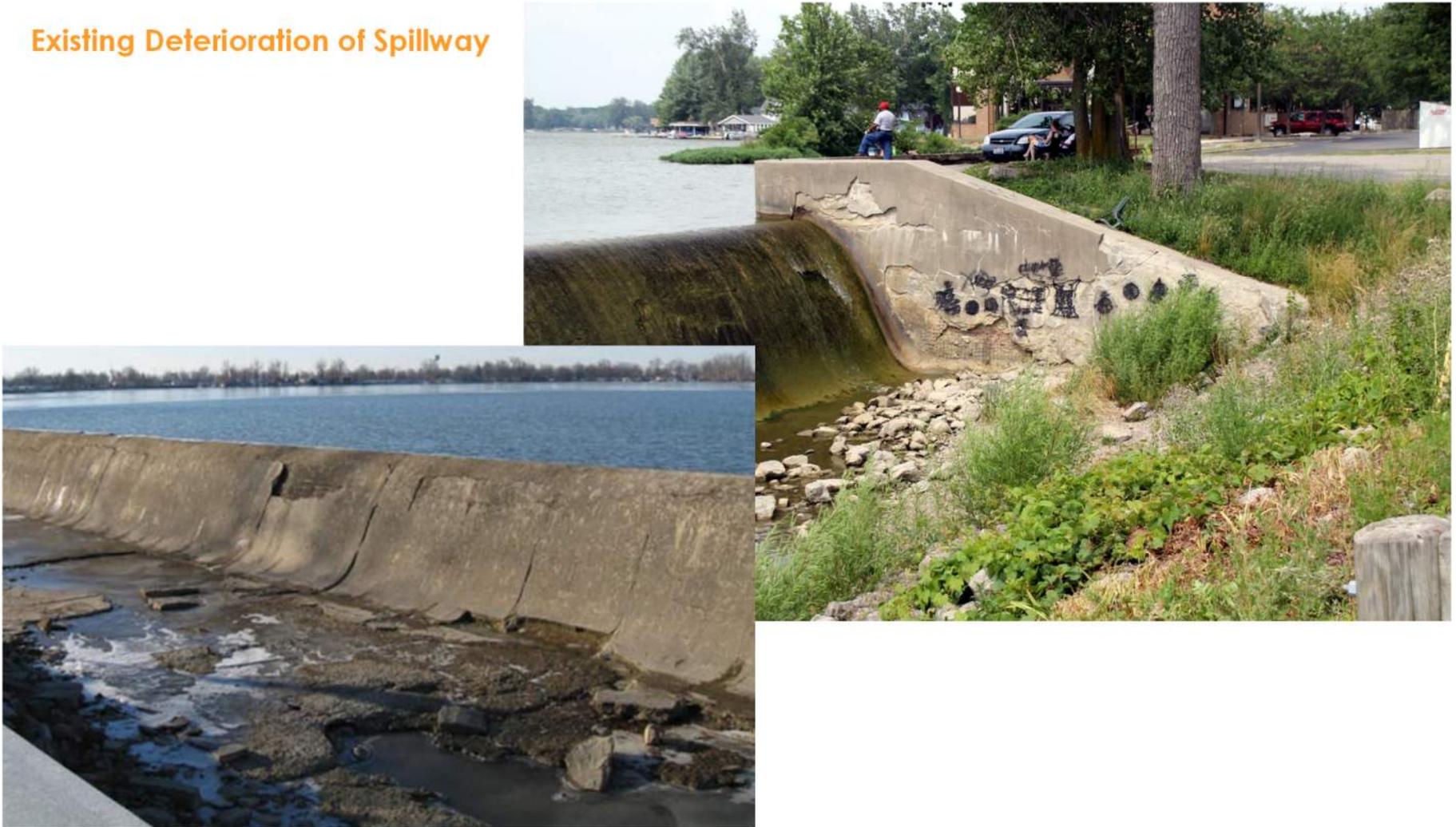
Deterioration and Too Many Years of Rehabilitation



Indian Lake Meeting (2016-05-25)

Why are we making Improvements?

Existing Deterioration of Spillway



Indian Lake Meeting (2016-05-25)

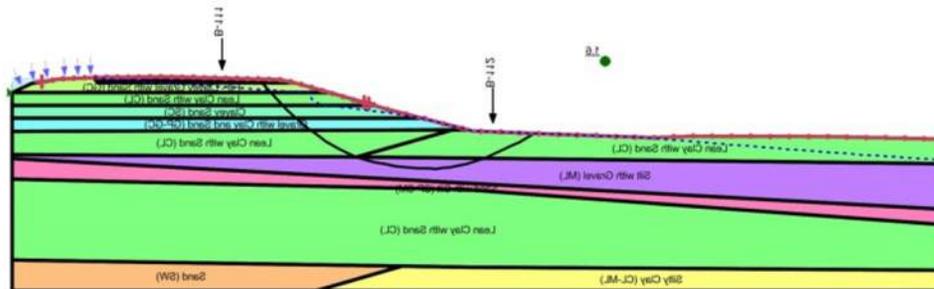
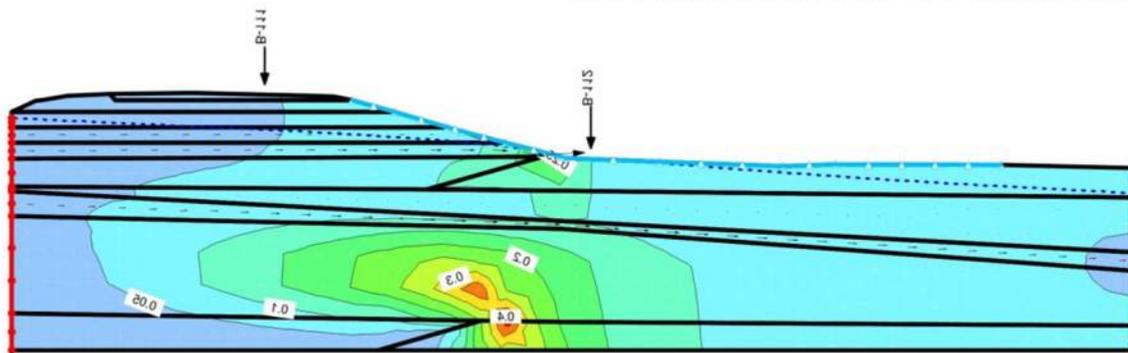
Indian Lake

Project Areas (Embankment Modification Area)



Why are we making Improvements?

Earthen Dam Has Seepage Concerns



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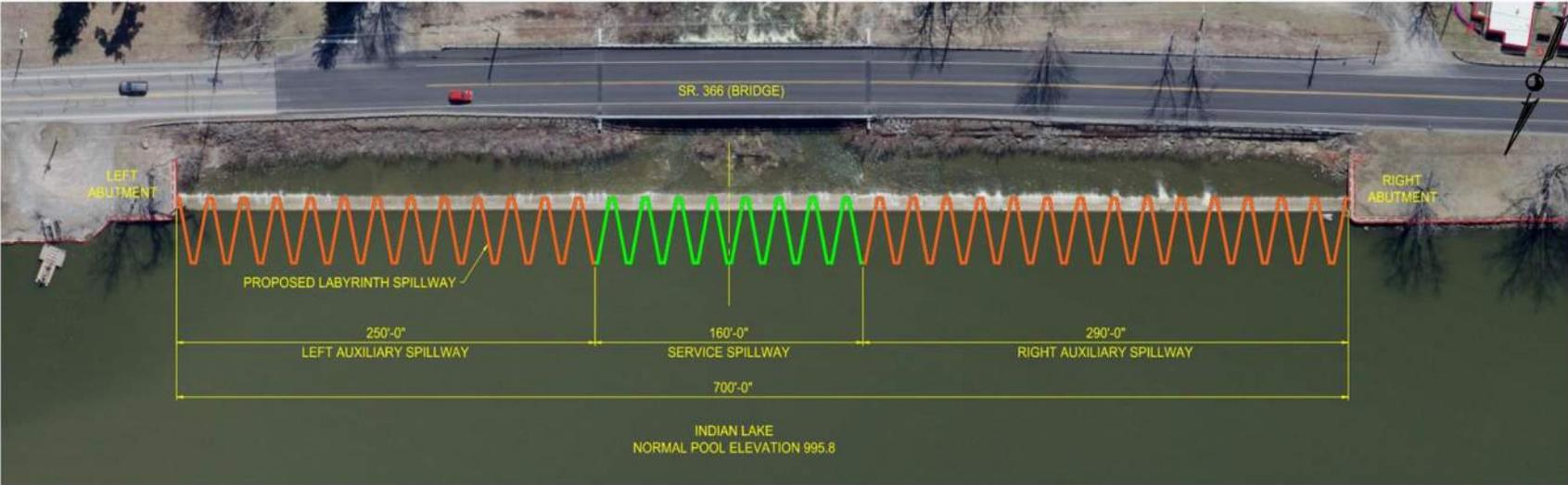
How are we going to improve the Spillway?

New Labyrinth Configuration EXAMPLES

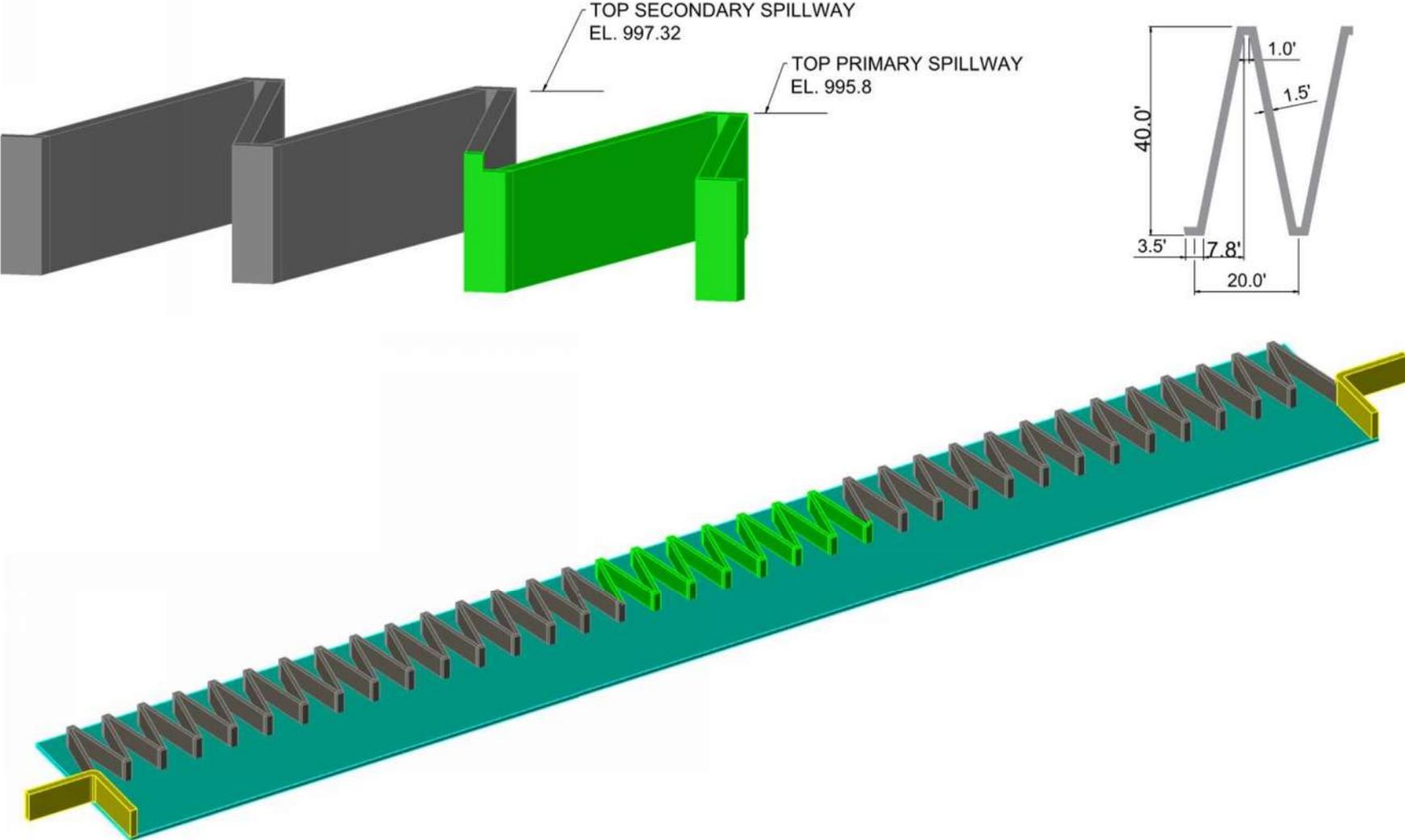


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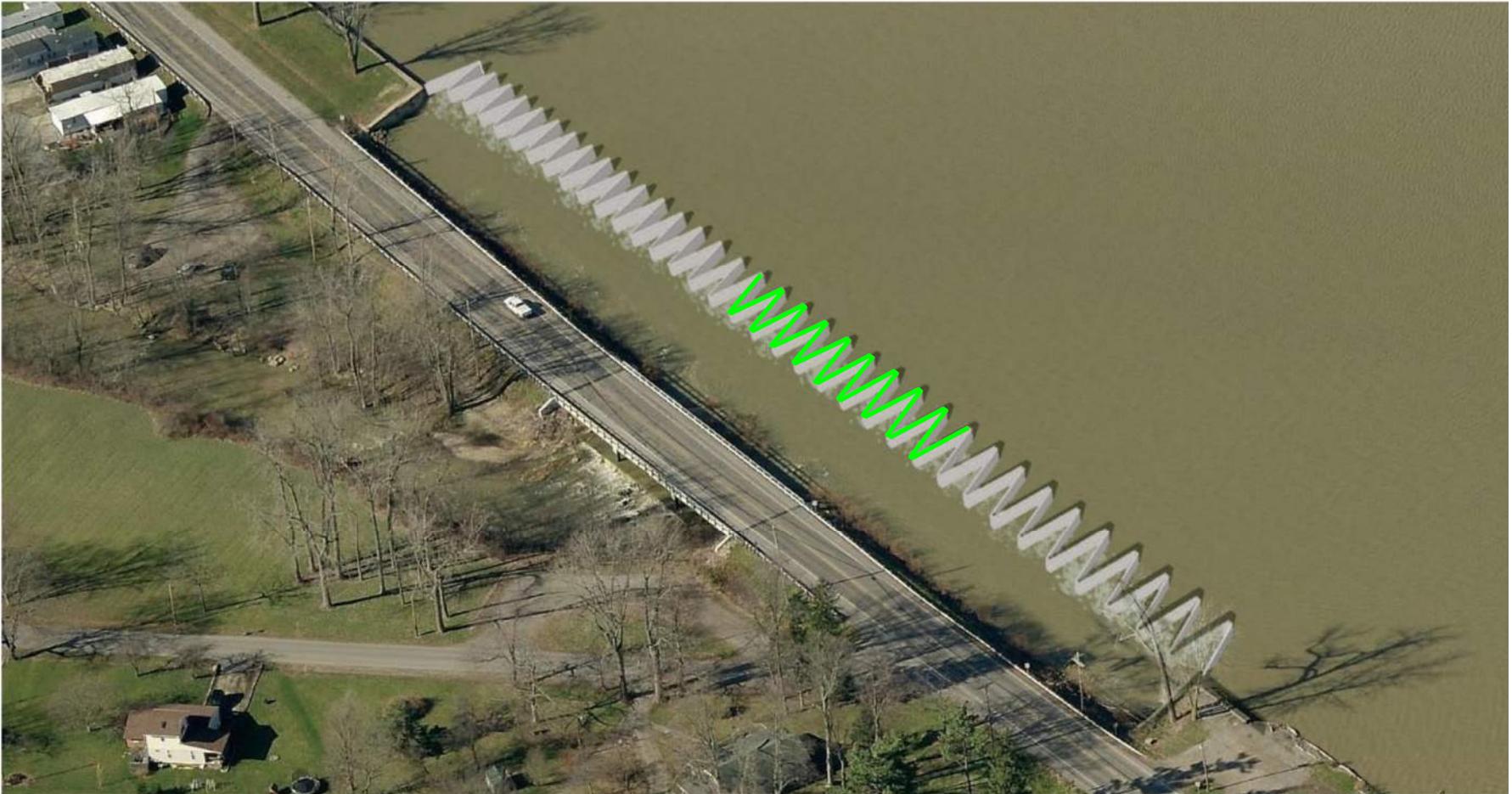
Spillway Modifications – Labyrinth Design



Spillway Modifications – Labyrinth Design



Spillway Modifications – Labyrinth Design Rendering



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Spillway Efficiency - Hydraulics and Hydrology

Efficiencies of Labyrinth Spillway:

- Designed to emulate the existing ogee spillway up to 100-year storm.
- Smaller footprint for flow up to 100-year storm.
- Balances the downstream and upstream pool conditions.
- Additional capacity for storm events over 100-year storm.

Efficiencies at Maximum Design Storm:

Model	Max Design Storm (PMF)	Percent Improvement over Ogee Spillway
Existing Spillway (Ogee)	63%	
New Labyrinth Spillway	79%	+16%

Spillway Design - Hydraulics and Hydrology

Proposed Labyrinth Spillway

Downstream Impacts

Existing vs. Proposed COMPARISONS

Storm Events

- 100yr Existing
- 100yr Proposed



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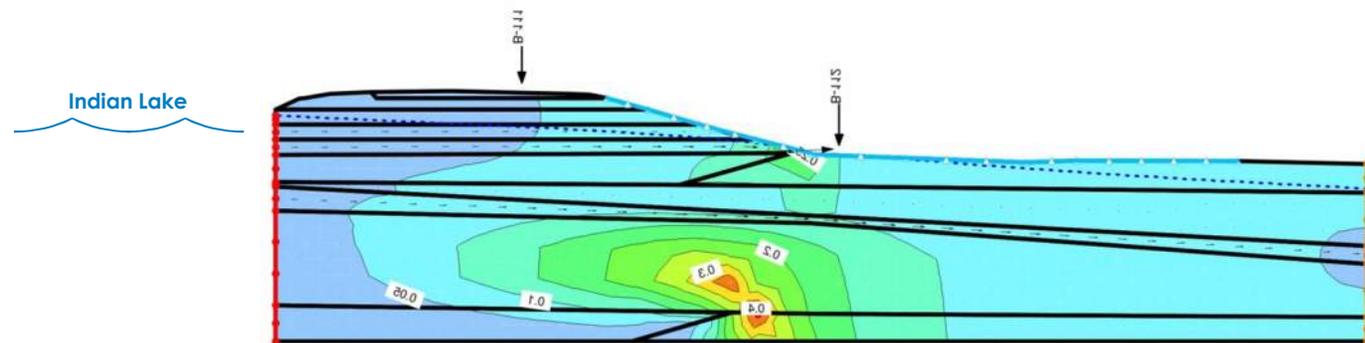


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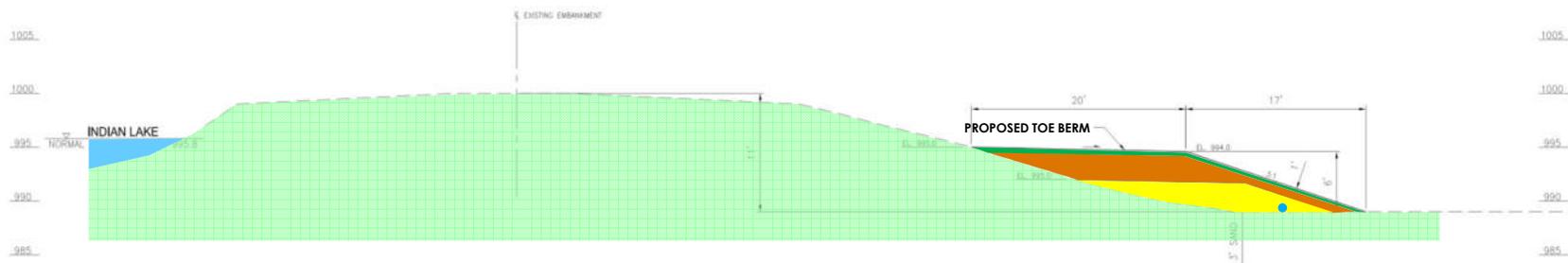
Project Areas (Embankment Modification Area)



Embankment Modifications – Toe Berm



SEEPAGE ANALYSIS SECTION



TYPICAL EMBANKMENT SECTION

Other Items

Schedule

Final Design:	June 2015 – June 2016
Permitting:	November 2015 – June 2016
Bidding / Selection:	Summer 2016
Construction:	Summer/Fall 2016 – Summer/Fall 2017

Tree Removal

A total of 7 trees were removed from State property.

Pool Level During Construction

It is the intent of the design to maintain the normal pool.

Limited drawdown may be necessary during short periods of time or as required by the ODNR Division of Water Resources - Dam Safety Program.

Discussion



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