



Piqua Hydraulic Canal and Dam Safety Design Project

Steering Committee Meeting 3 – August 15th 2022

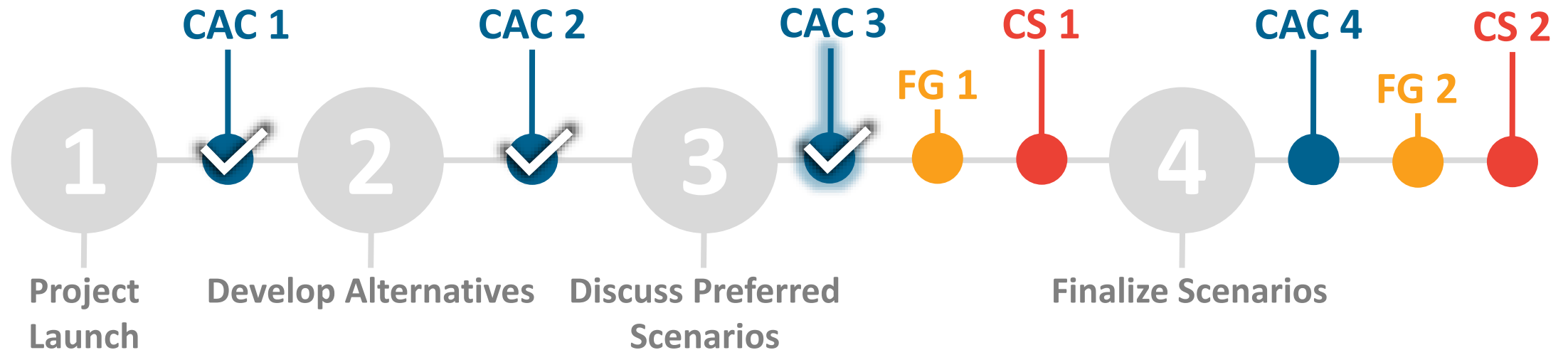
Agenda

1. Updates on ODNR meeting and requested Map Data
2. Review Outcomes of CAC 2
3. Review Scenarios
4. Group Discussion
5. Next Steps
 1. Focus Group Meetings August 29th
 2. Public Meeting October 3rd



Schedule + Next Steps

Focus Group Round 1 – August 29, 2022
Community Summit 1 – October 3, 2022
CAC Meeting 4 - October 17, 2022 (Tentative)
Dates may be subject to change.



CAC – Citizen Advisory Committee **FG** – Focus Group **CS** – Community Summit

Website Updates <https://piquadamstudy2022.com/>

Piqua Hydraulic Canal and Dam Safety Design Project

[Overview](#) [Resources](#) [Alternatives](#) [Get Involved](#)

[Contact Us](#)



Hydraulic Canal and Dam Safety Design Project

Website Updates

<https://piquadamstudy2022.com/>



We want you to participate in the canal and dam impro

Learn how you can contrib



Welcome to the alternatives page. This page will host the preferred design alternatives for the project for all three water bodies (Echo Lake, Franz Pond, and Swift Run).

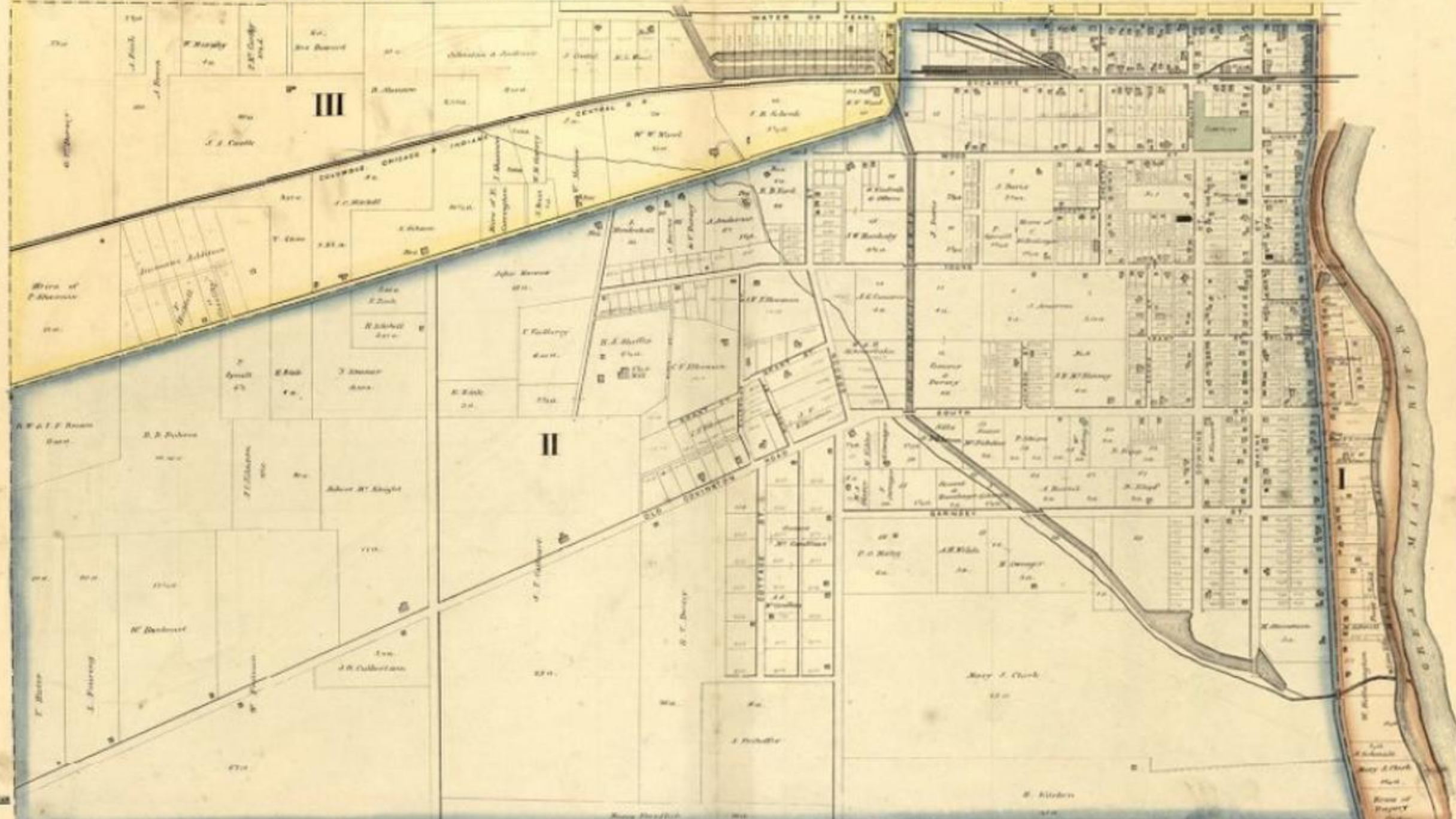
Preferred alternative refers to the 'final recommendation' or 'future project'. Note multiple alternatives will be studied for each water body. It is likely each water body will have 2-4 alternatives to consider. The alternative will be evaluated based on a set of social,

You asked....

You asked...

- ODNR meeting with Councilwoman Kazy Hinds, Frank, and City Manager
 - Resolution to Council
- Clarification / map of storm system
- Evaluate scenario to install conduits from Franz Pond through town to the Great Miami River
- Evaluate additional AWA study to reduce PMF





Storm System

- Existing system is being used
- Some available capacity
- Concerns about outflows during high rain events
- Too small for PMF rain events



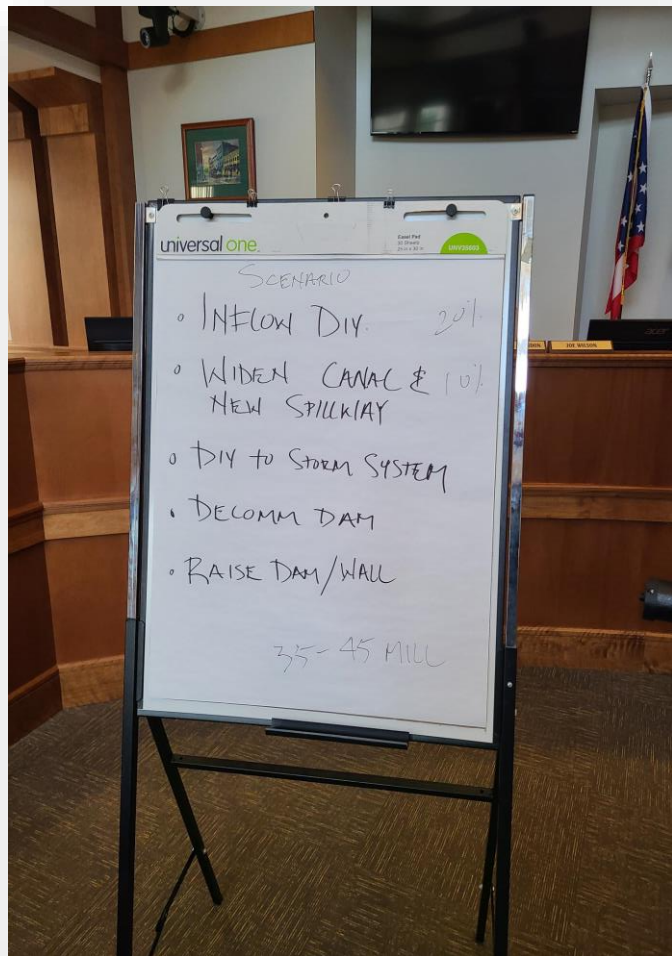
Review Outcomes of CAC 1

Outcomes of CAC Meeting 2

Reviewed all scenarios

Modified scenario table

Identified scenario toolbox



TO DO: **1** SIZE & MAP OF CULVERT

PIQUA HYDRAULIC CANAL AND DAM SAFETY DESIGN PROJECT | JULY 10, 2022
City of PIQUA
Citizen Advisory Committee Meeting #2

SOLUTION	FEASIBILITY	CONSULTANT TEAM OBSERVATIONS	CAC OBSERVATIONS / COMMENTS
New Spillway(s) at Dam Location(s)	Not Feasible	<ul style="list-style-type: none"> Due to downstream hazards. No flow paths available through city. 	<ul style="list-style-type: none"> IDEAL LEAD UNDER COUNCILING STREET
New Spillways at Alternate Locations	High	<ul style="list-style-type: none"> Evaluating at multiple park locations. 	<ul style="list-style-type: none"> PARK IMPACTS PROPERTY IMPACTS
New Culvert System	Low	<ul style="list-style-type: none"> Due to significant capacity required. 	<ul style="list-style-type: none"> DRAIN PLAN
New Auxiliary/Emergency Spillway	Medium	<ul style="list-style-type: none"> Still have downstream hazards. No optimal locations. 	<ul style="list-style-type: none"> APPLIES TO SWIFT NEED TO REMOVE
Raise Dam/Canal Embankments	Medium	<ul style="list-style-type: none"> Modification of the hydraulic canals is a budget concern due to their lengths and heights. 	<ul style="list-style-type: none"> WOULD HAVE TO RAISE BRIDGES (SOME) COSTLY!!! IMPACTS TO PATH Doesn't work in some AREAS Not a lot of ideal locations
Overtopping Protection (Reinforced concrete)	Medium	<ul style="list-style-type: none"> At selected locations as part of a combination of multiple improvements. Acceptable with ODNR Dam Safety. Reduces improvements to downstream flood inundation. 	
Short Wall (Selected locations or other)	Medium	<ul style="list-style-type: none"> Still have concerns with stability of hydraulic canal embankments. 	
Control Inflow (Large diversion ditches)	Medium	<ul style="list-style-type: none"> Only solves part of the storage capacity 	<ul style="list-style-type: none"> HELPS BUT REALLY DOESN'T SOLVE THE 27 PROBLEM
Property Acquisition	High	<ul style="list-style-type: none"> May not be public friendly. Includes home on Echo Lake Dam, Fountain Park, other downstream properties. 	<ul style="list-style-type: none"> WHAT % OF TO BE SOLVED

2 EXISTING LOW IS 12.0' OF

Alternatives Presented in Dec. 2021

Swift Run

- Property Easements / Acquisition
- Additional Spillway Capacity
- New Auxiliary/Emergency Spillways
- Overtopping Protection (RCC)
- Re-Classification of Dam

Echo Lake/Franz Pond

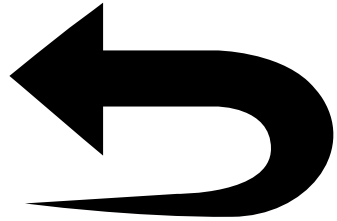
- New Spillway(s) at Dam Location(s)
- New Spillways at Alternate Locations
- New Culvert System
- ~~New Auxiliary/Emergency Spillways~~
- Raise Dam/Canal Embankments
- Overtopping Protection (Roller Compacted Concrete)
- ~~Short Wall (selected locations or entire)~~
- Control Inflow (large diversion ditches)
- Property Acquisition
- Upstream Lake Control (interior berm, supplemental dam, etc.)
- Decommission Dam / Lower Pool Levels and/or Fill in portion of Lake

Hydraulic Canal

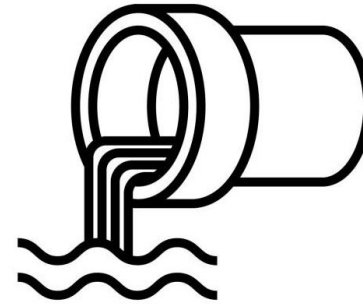
- Flatten Canal Downstream Slopes / Modify Upstream Slopes
- Conduit Canal System – Widening
- Conduit Canal System – Deepening
- Crest Wall Installation
- Additional Flow Control (new gates, etc.)
- Overtopping Protection (RCC)
- Property Acquisition

The Scenarios

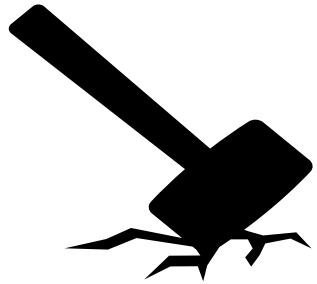
Scenario Toolbox



Divert Inflow



Divert to New Storm Sewer



Decommission Dam(s)



Raise Dam Wall

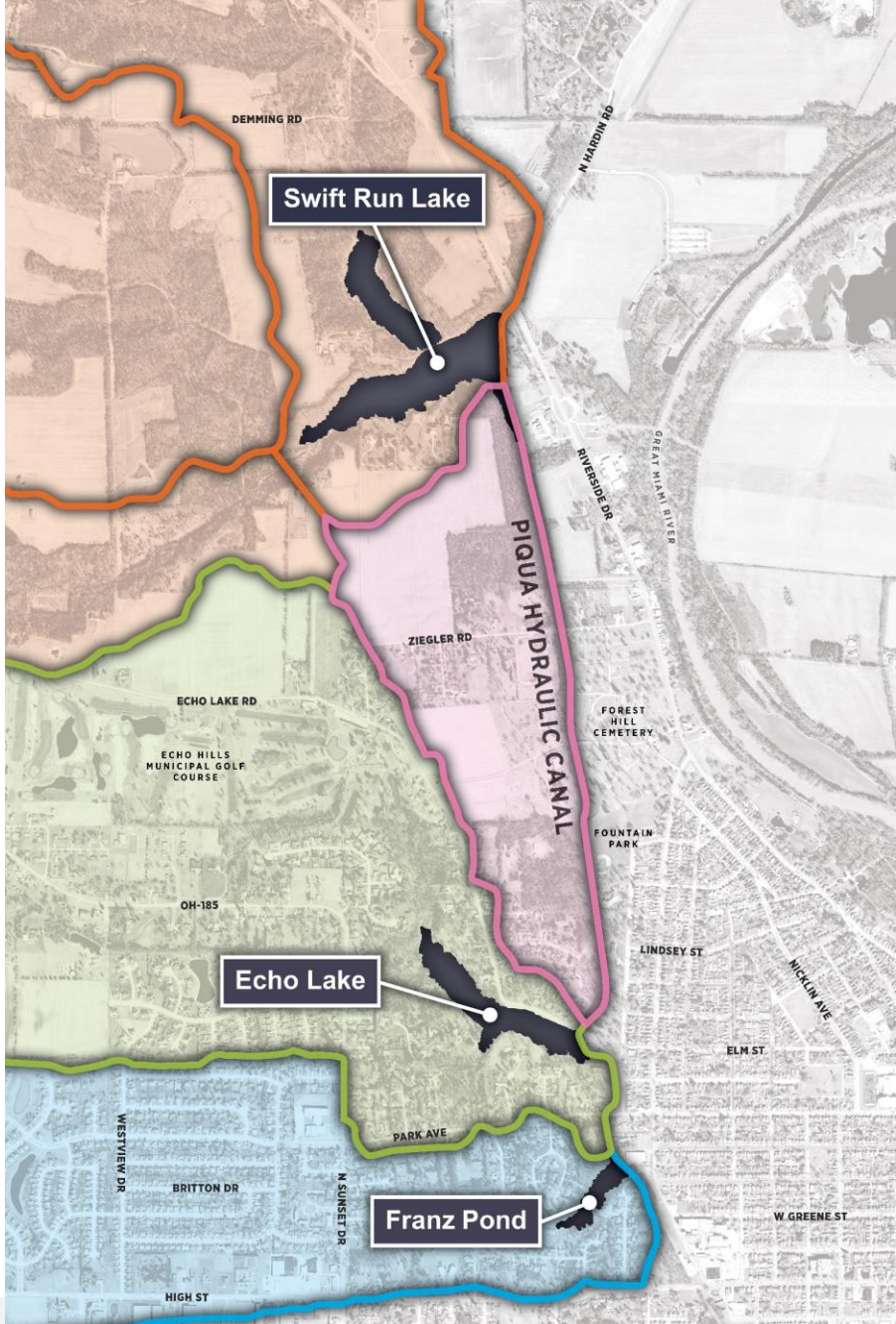
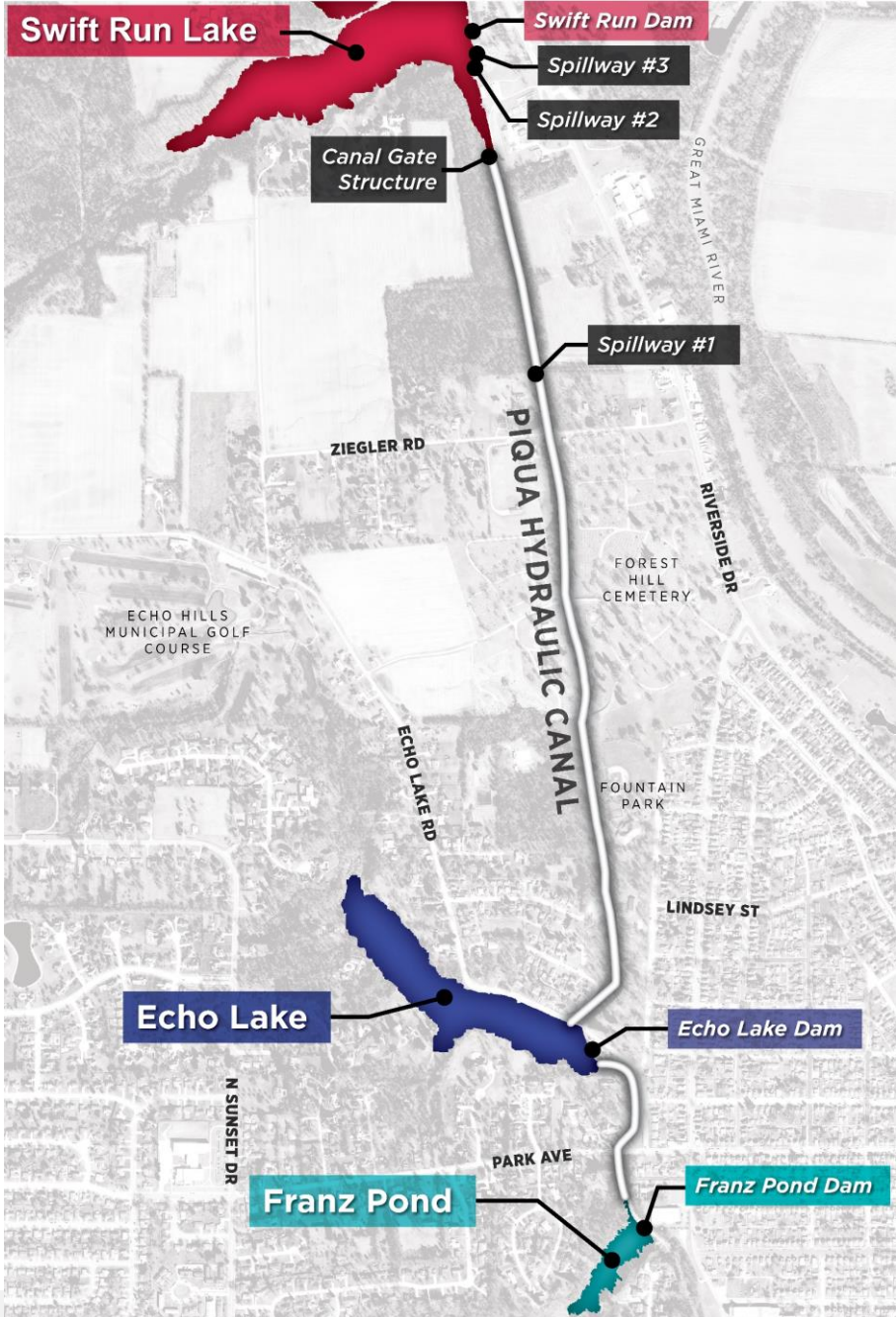


Widen Canal



Roller Compacted Dams and Canal

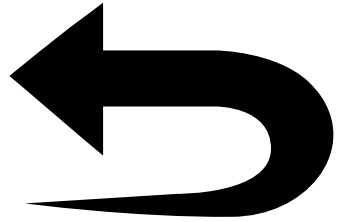
Reference Maps



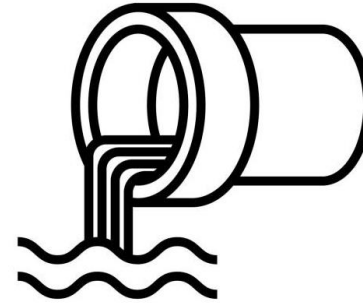


Kit of Parts

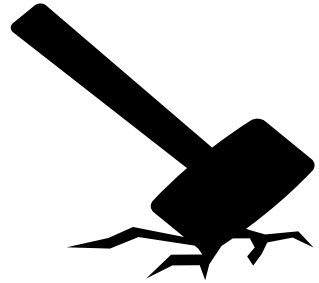
Scenario 1



Divert Inflow



Divert to New Storm Sewer



Decommission Dam(s)



Raise Dam Wall

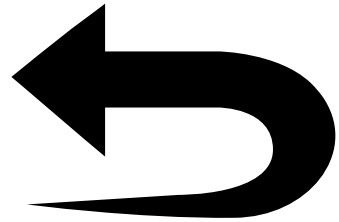


Widen Canal

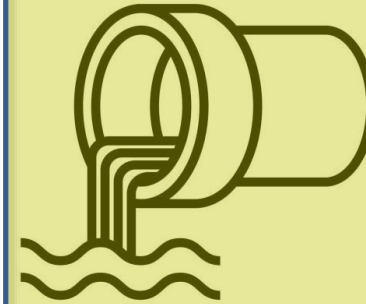


Roller Compacted Dams and Canal

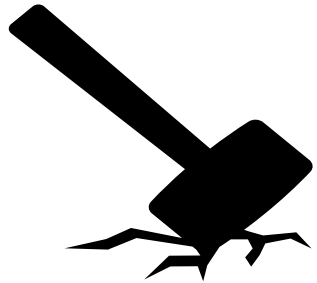
Scenario 2



Divert Inflow



Divert to New Storm Sewer



Decommission Dam(s)



Raise Dam Wall

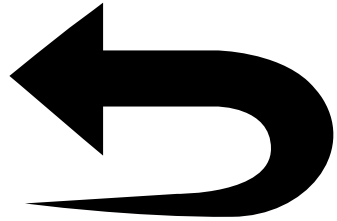


Wide Canal

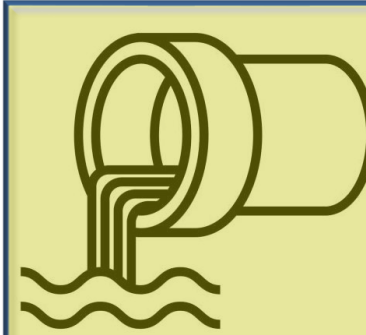


Roller Compacted Dams and Canal

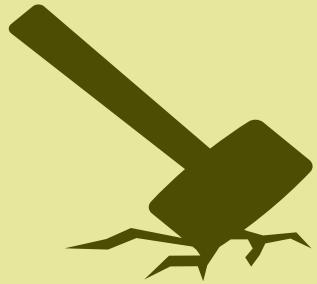
Scenario 3



Divert Inflow



Divert to Storm Sewer



Decommission Dam(s)



Raise Dam Wall

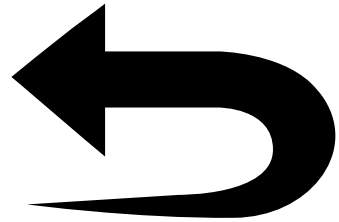


Wide Canal

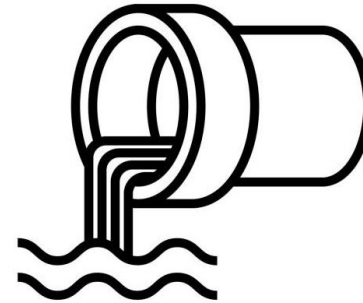


Roller Compact Dams and Canal

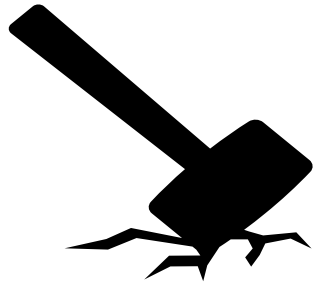
Scenario 4



Divert Inflow



Divert to
Storm Sewer



Decommission
Dam(s)



Raise Dam
Wall



Wide Canal



Roller Compact
Dams and Canal

Before we review...

The solution must be technically informed/engineered solution

All scenarios have significant private property impacts, Scenario 2 is somewhat temporary

No scenario has been designed or tested

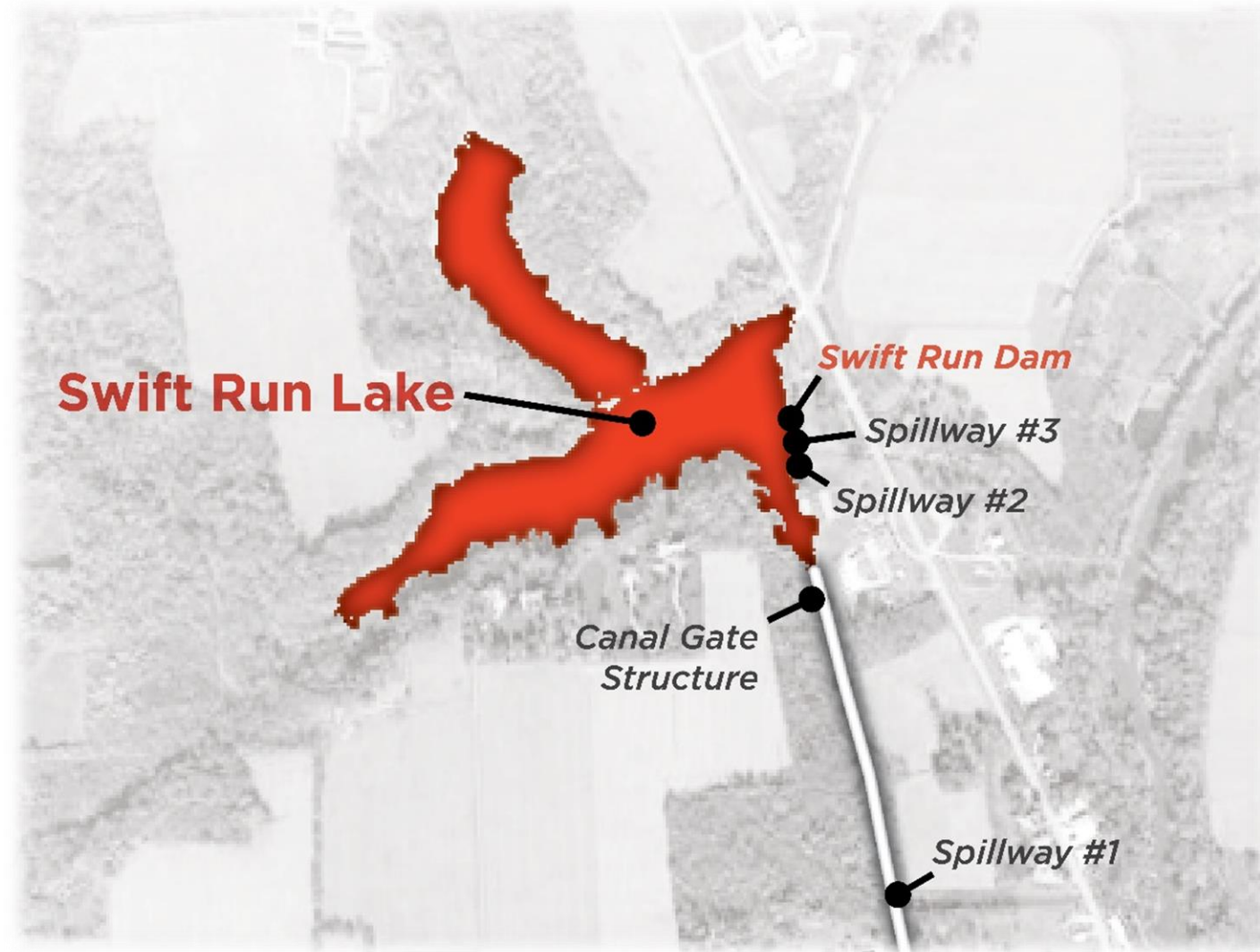
Need to identify scenarios that should continue to be explored

Swift Run design solution is studied, has support, and is being discussed with ODNR



Swift Run

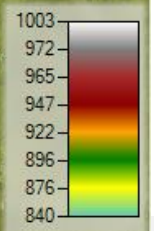
1. Modify Swift Run Lake spillway
2. General community support thus far
3. Work to reclassify 2 or 3
4. Helps address immediate ODNR concerns and reduces impact to spillway 1 allowing for capacity from Franz and Echo



Swift Run Lake

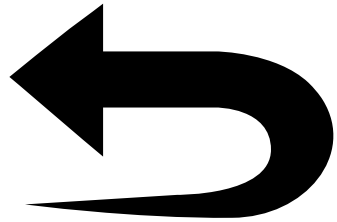
901.74

- Modest dam improvements, slight lowering of dam
- Enhance spillway
- Water levels stay similar to existing condition

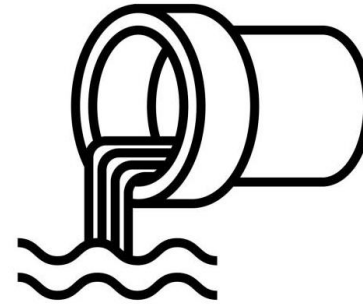


200 ft

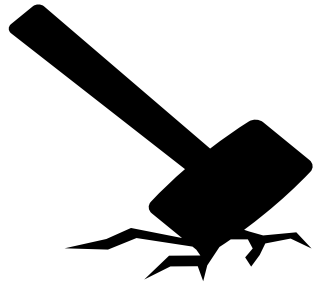
Scenario 1



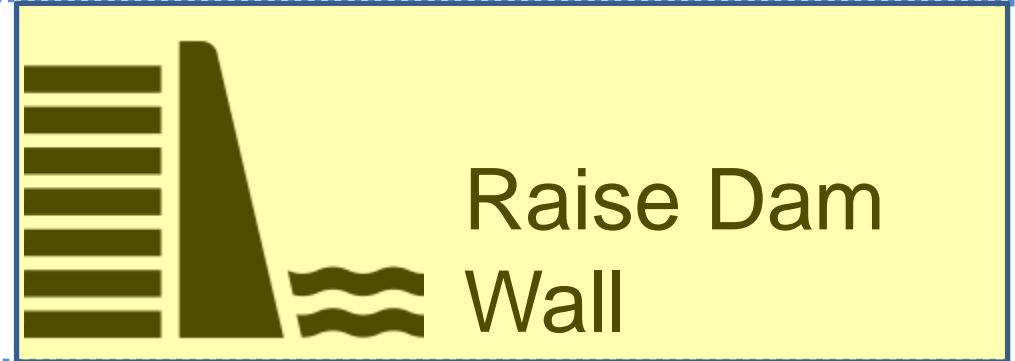
Divert Inflow



Divert to New Storm Sewer



Decommission Dam(s)



Raise Dam Wall

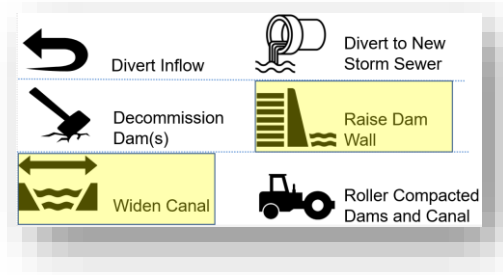


Widen Canal



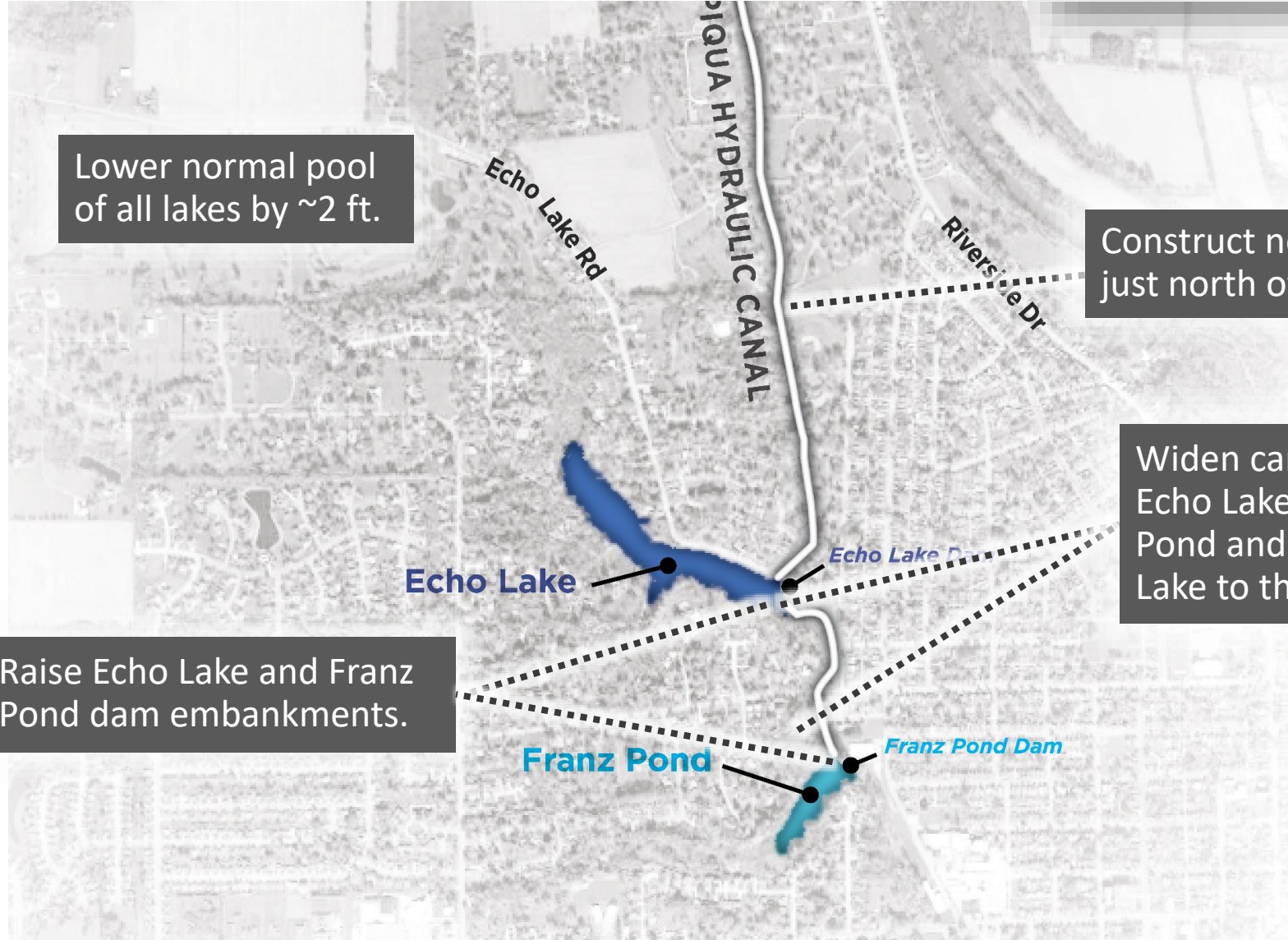
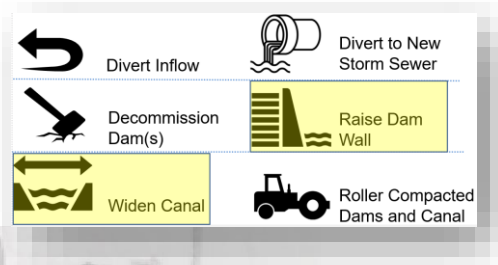
Roller Compacted Dams and Canal

Scenario 1 - Details



1. Echo Lake and Franz Pond may require normal pool lowering
2. Raise Echo Lake and Franz Pond dam embankments.
3. Construct new spillways just north of Echo Lake.
4. Widen canal between Echo Lake and Franz Pond and north of Echo Lake to the new spillway.

Scenario 1 - Details



Lower normal pool of all lakes by ~2 ft.

Construct new spillway just north of Echo Lake.

Widen canal between Echo Lake and Franz Pond and north of Echo Lake to the new spillway.

Raise Echo Lake and Franz Pond dam embankments.


Scenario 1



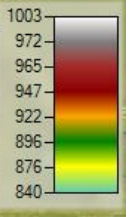
New 300 ft wide spillway to new discharge channel (see next slide)

Widen / deepen canal downstream of Echo to new spillway location (currently showing 70 ft bottom width with 3:1 side slopes)

Raise dam crest (or add floodwall) ~3-4 ft to approximately elevation 913 ft

 Potential Property Impacts

Echo Lake Drive will need to be replaced with a new bridge (minimal hydraulic restriction)



500 ft

Scenario 1



Scenario 1 – Pros and Cons

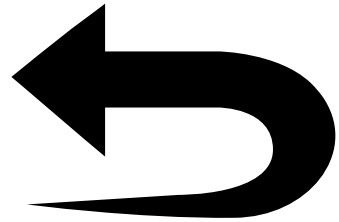
PROS

1. Water levels in lake remain similar
2. Bike path remains
3. Potential to keep select trees
4. Minimal impact to majority of Fountain Park

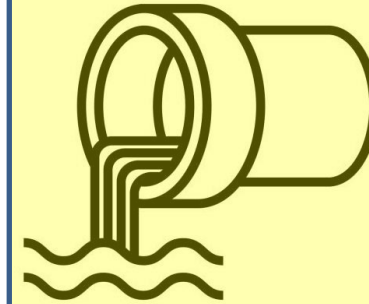
CONS

1. Property acquisition
2. Cost
3. Significant impact to Fountain Park
4. Veterans Memorial Park modified
5. Property impacts
 - Fountain Blvd, Nicklin, Forest, Washington, Broadway

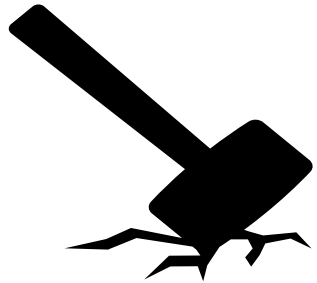
Scenario 2



Divert Inflow



Divert to New Storm Sewer



Decommission Dam(s)



Raise Dam Wall

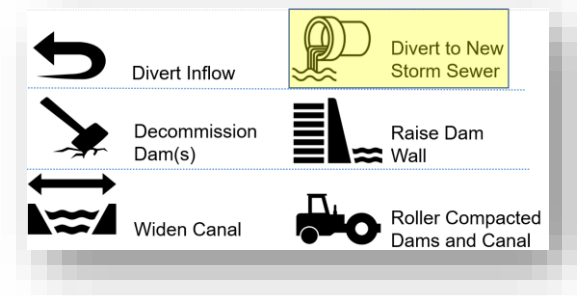


Widen Canal









Roller Compacted Dams and Canal

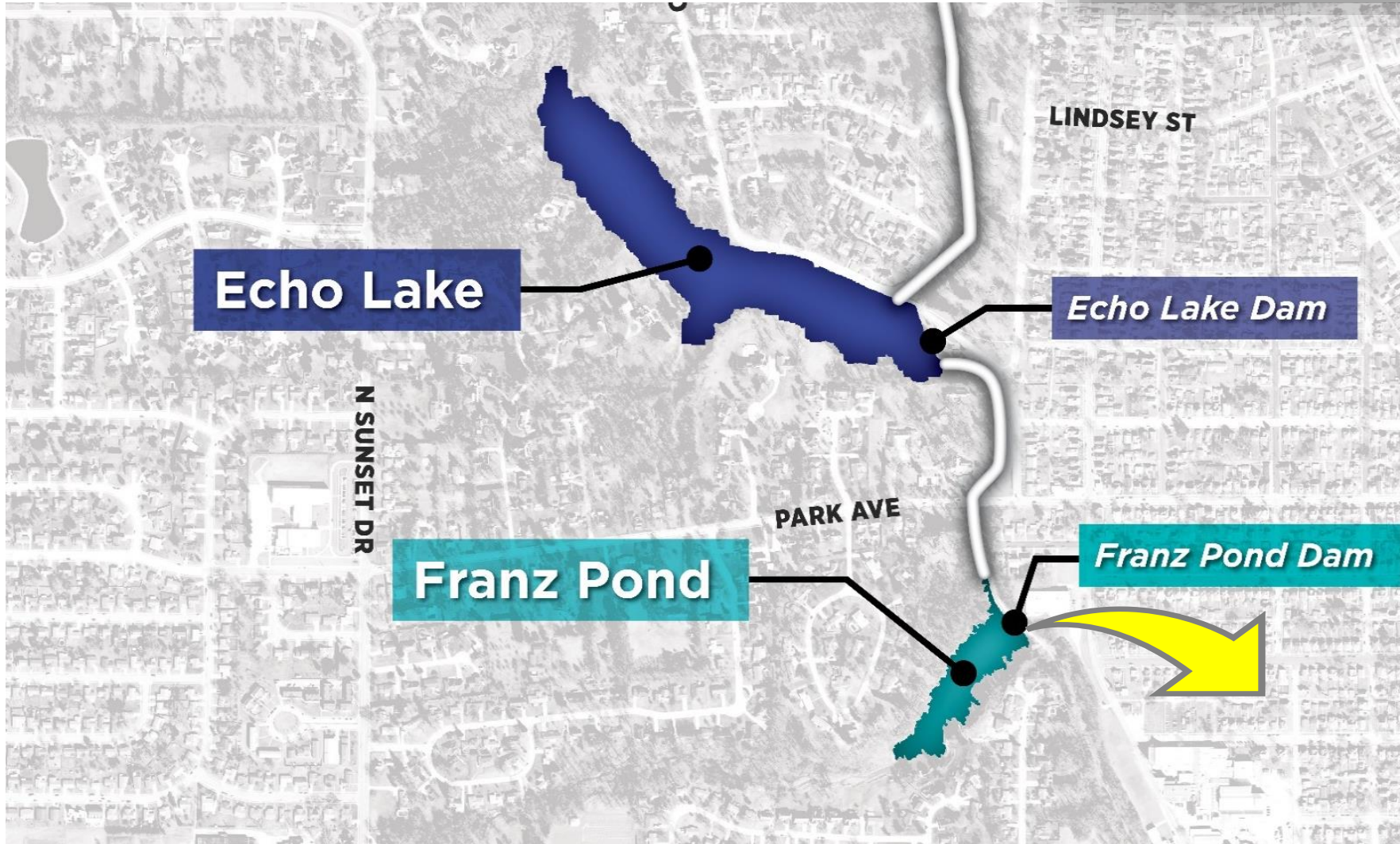
Scenario 2 – Details



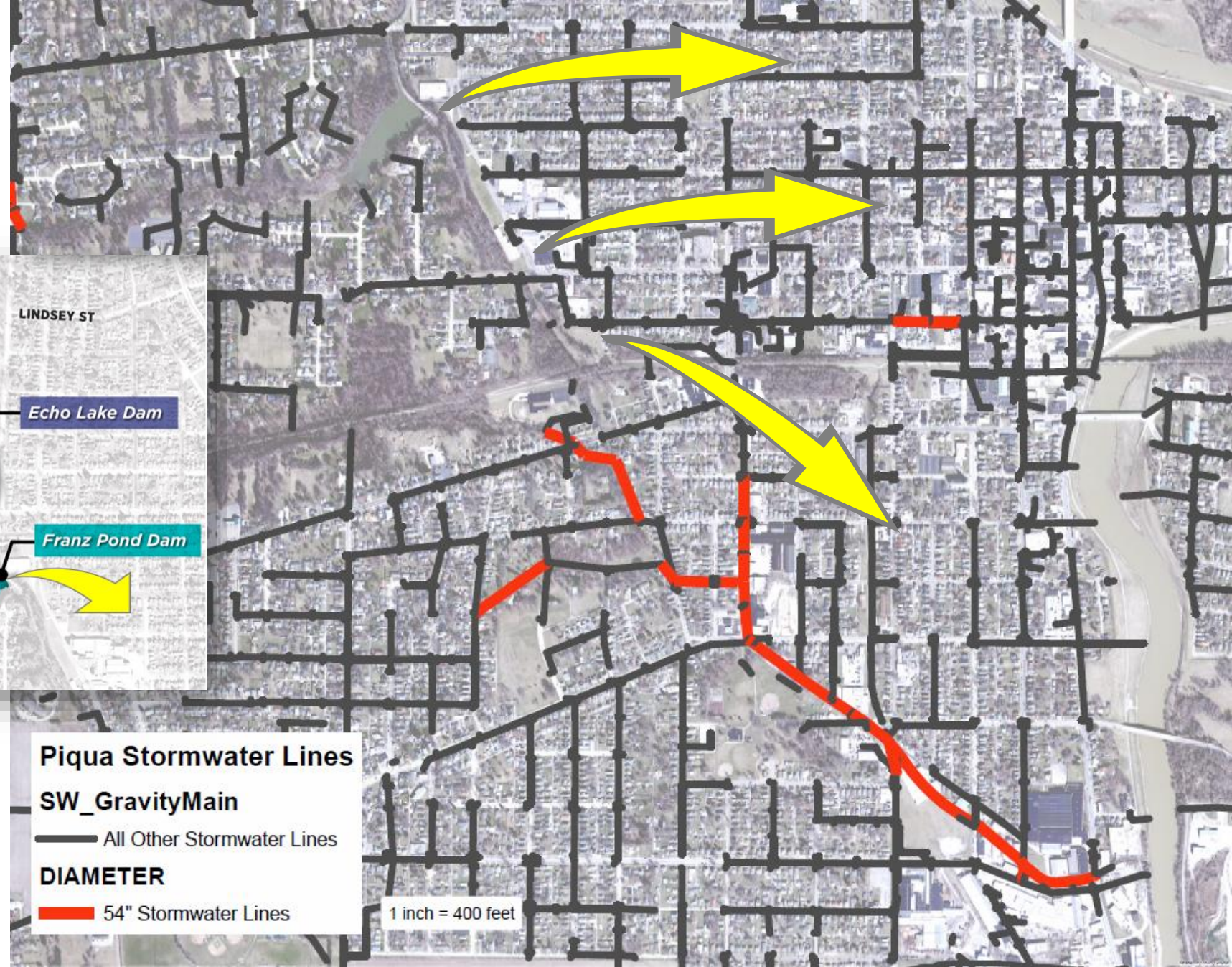
1. Divert stormwater into expanded stormwater system
 - Diversion prior to entering Franz (to be evaluated)
 - Diversion from Franz in high rain events (required)
2. Would require upgrading most of the downtown stormwater network
3. Upgrades would happen over time
4. May not be feasible
5. Disruption to businesses, residences, and existing service

Scenario 2 – Details

 Divert Inflow	 Divert to New Storm Sewer
 Decommission Dam(s)	 Raise Dam Wall
 Widen Canal	 Roller Compacted Dams and Canal



Scenario 2







DEERE

470

LICKING COUNTY FOUNDATION

Foundation

True

51031

Scenario 2 – Pros and Cons

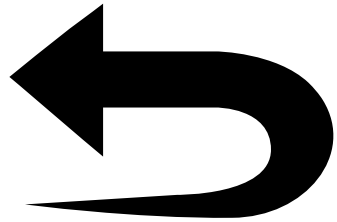
PROS

1. Lake pool levels similar to existing
2. Parks have limited impacts
3. May require significantly less property acquisition

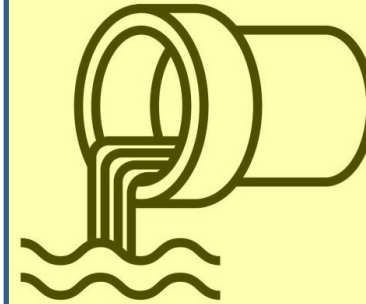
CONS

1. High cost
2. Significant disruption to downtown businesses and residents
3. Does not have capacity in existing system
4. May not be feasible due to elevations of river / water levels
5. Utility disruptions

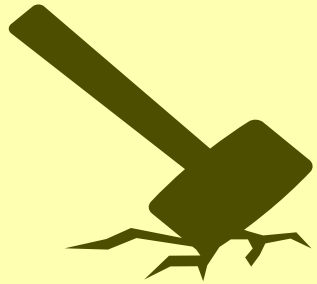
Scenario 3



Divert Inflow



Divert to New Storm Sewer



Decommission Dam(s)



Raise Dam Wall

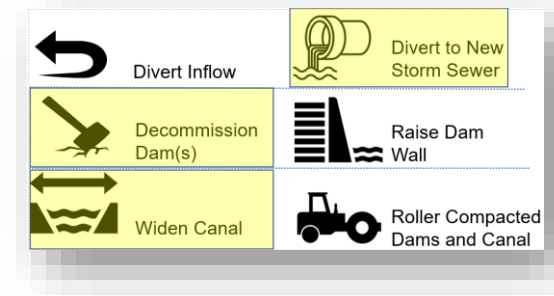


Widen Canal



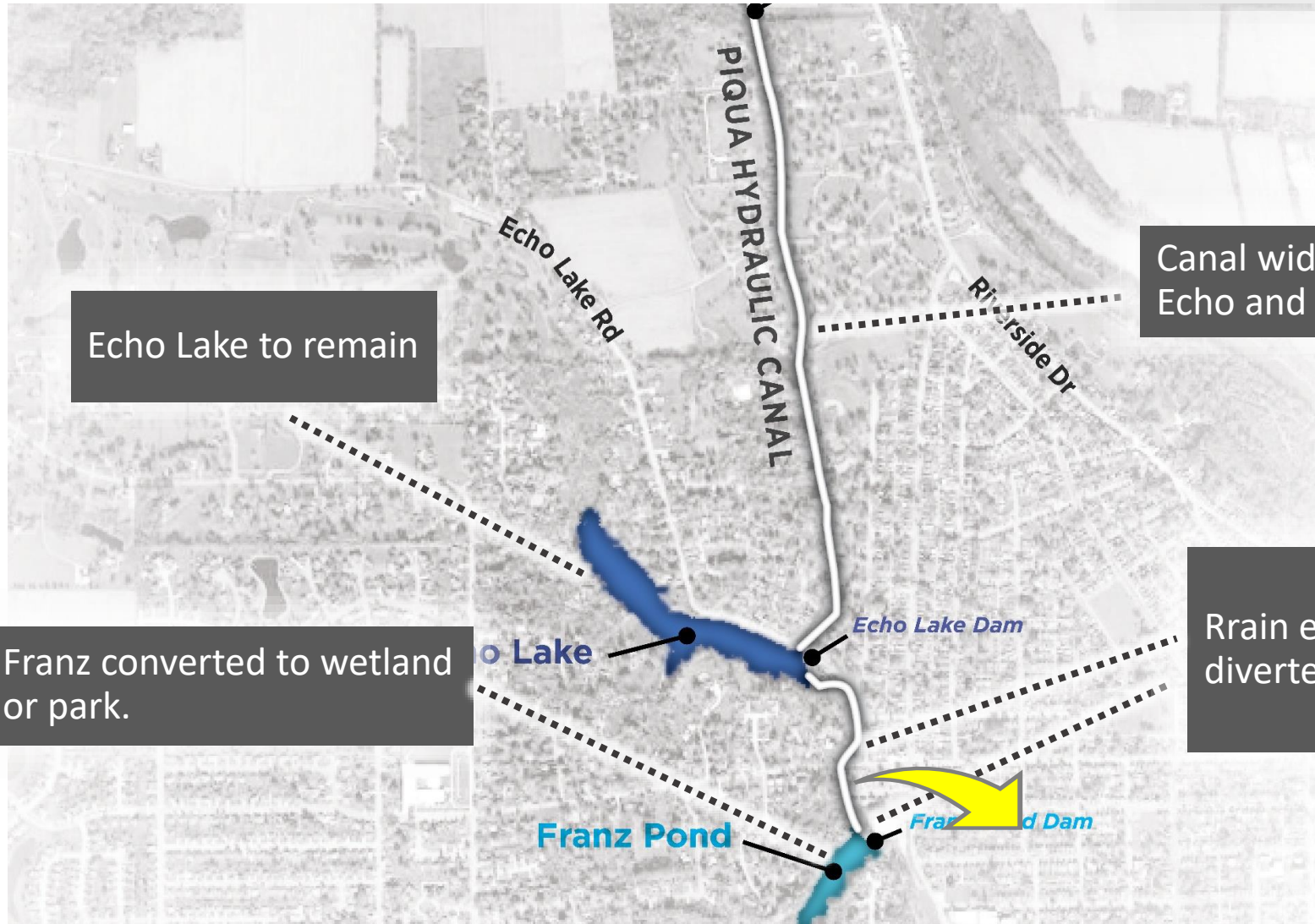
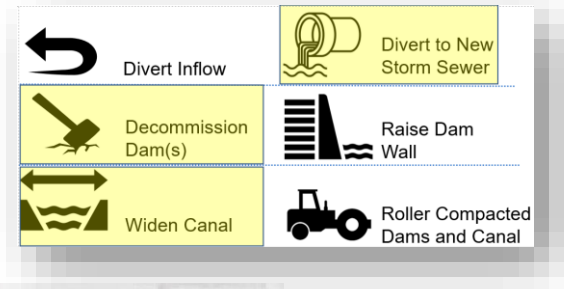
Roller Compacted Dams and Canal

Scenario 3 – Details



1. Franz Pond decommissioned and turned into wetland or park
2. Flows directed into storm system during rain events
3. Canal would need to be widened between Echo and Spillway 1
4. Bridge crossings would need upgraded
5. Widen Echo Lake bridge
6. Significant loss of trees

Scenario 3 - Details



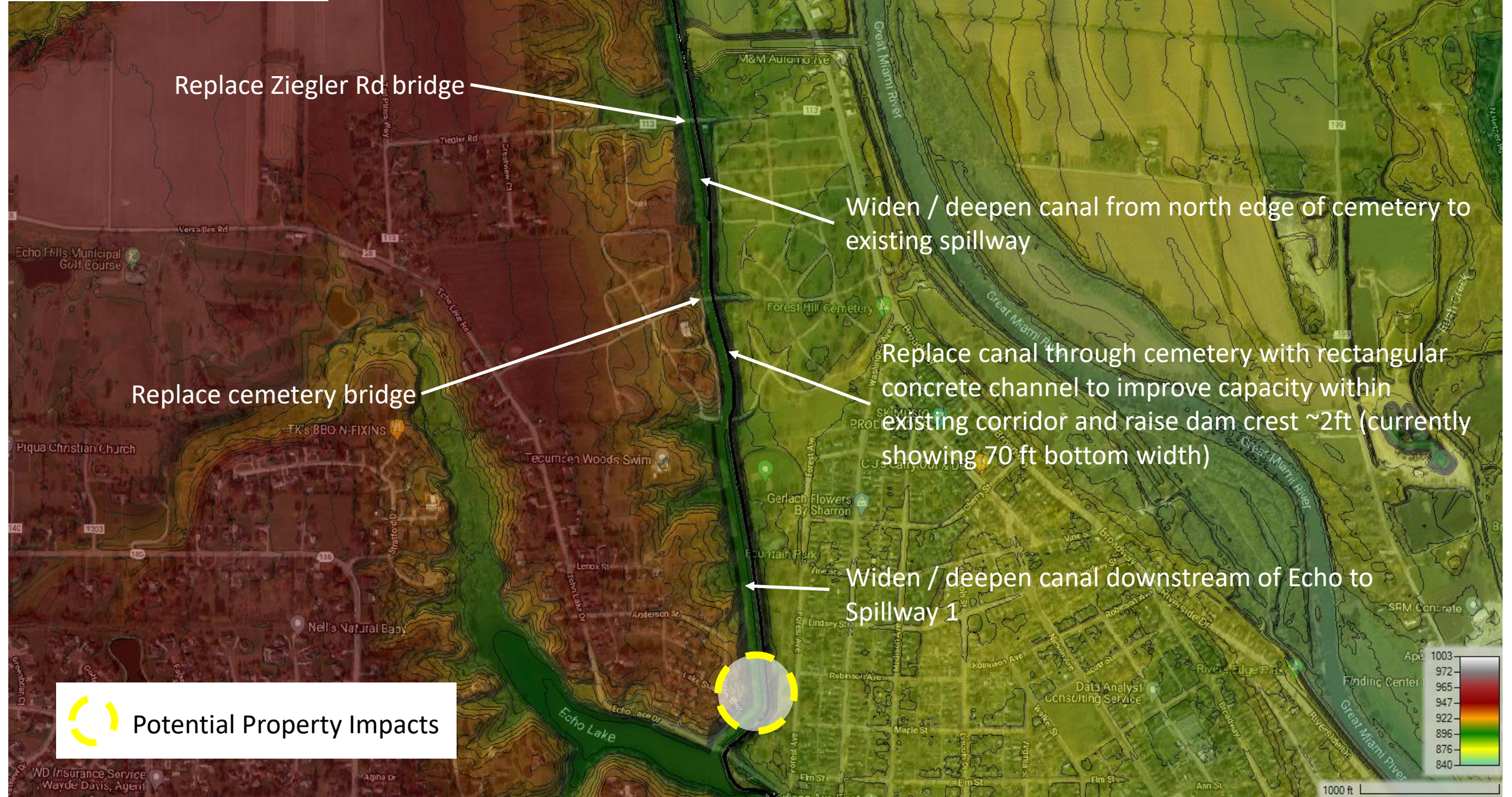
Echo Lake to remain

Canal widened between Echo and Spillway 1

Franz converted to wetland or park.

Rain events rain diverted to storm system.

Scenario 3



Replace Ziegler Rd bridge

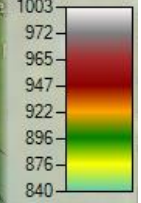
Widen / deepen canal from north edge of cemetery to existing spillway

Replace cemetery bridge

Replace canal through cemetery with rectangular concrete channel to improve capacity within existing corridor and raise dam crest ~2ft (currently showing 70 ft bottom width)

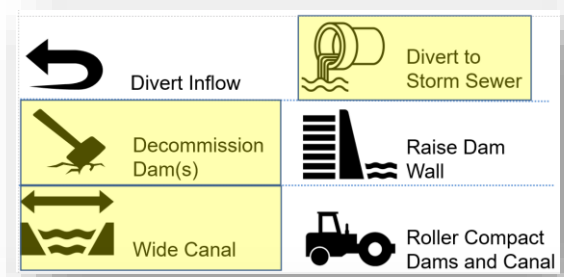
Widen / deepen canal downstream of Echo to Spillway 1

 Potential Property Impacts

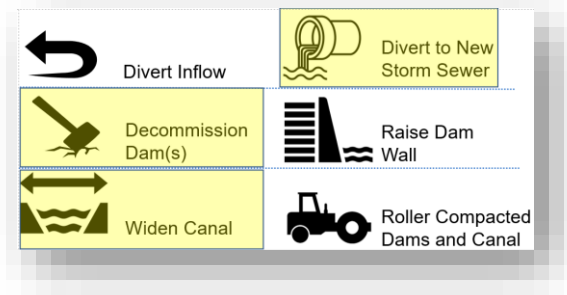


1000 ft

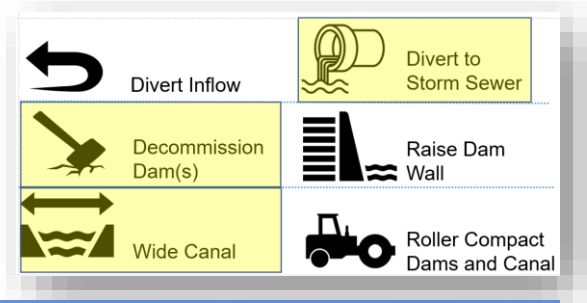
Scenario 3 – Details



Scenario 3 – Details



Scenario 3 – Details



Scenario 3 – Pros and Cons

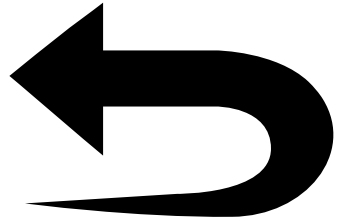
PROS

1. Removes dam hazard from public
2. Removes ODNR dam hazard requirements
3. Includes improvements to existing erosion
4. Creates natural amenity for public
5. Medium cost
6. Changes condition of Franz (wetland or park)

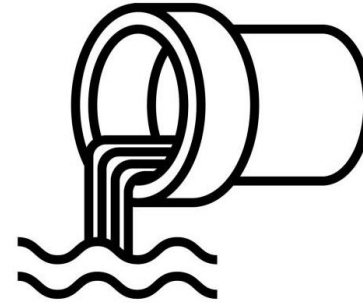
CONS

1. Changes condition of Franz (wetland or park)
2. Some private property impacts to properties west of Fountain Park
3. Widens canal system north of Echo
4. Three bridge widenings
5. Possible impact to trees / canopy on canal
6. Potential private property impacts east of canals (Fisher Dr.)

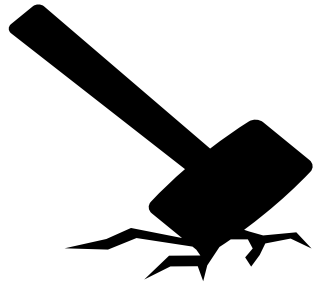
Scenario 4



Divert Inflow



Divert to New Storm Sewer



Decommission Dam(s)



Raise Dam Wall

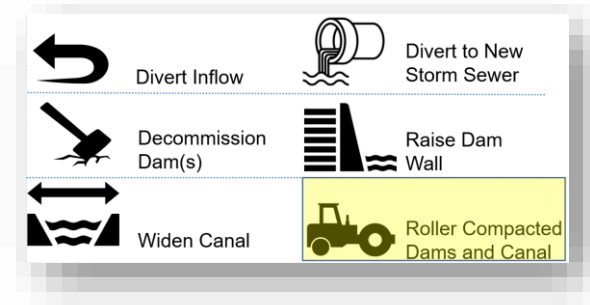


Widen Canal



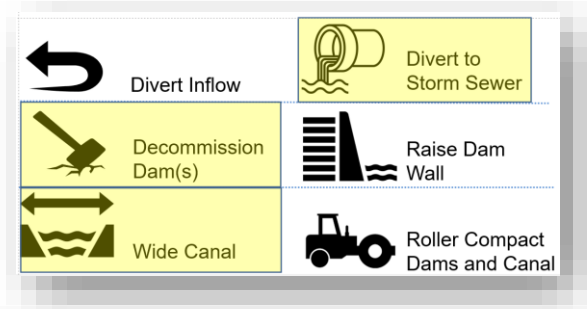
Roller Compacted Dams and Canal

Scenario 4 – Details

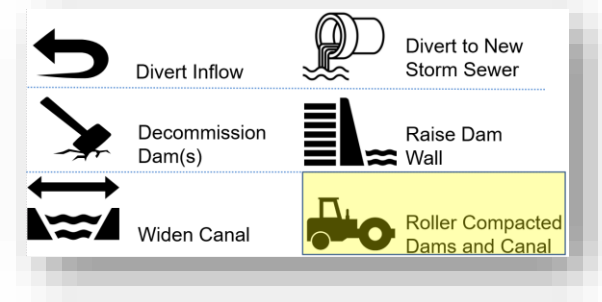


1. Reconstruct dams and canal system with new roller compacted concrete (covered with grass for aesthetics)
2. Increases strength and lowers failure probability
3. May still result in 'spill over' during high rain events, but decreases catastrophic failure

Scenario 4 – Details



Scenario 4 – Details



Scenario 4 – Pros and Cons

PROS

1. Lakes remain similar to existing
2. Minimized probability for catastrophic failure
3. System looks and feels similar to what is there once complete (no trees)
4. Maybe be acceptable to ODNR Dam Safety with limited modifications

CONS

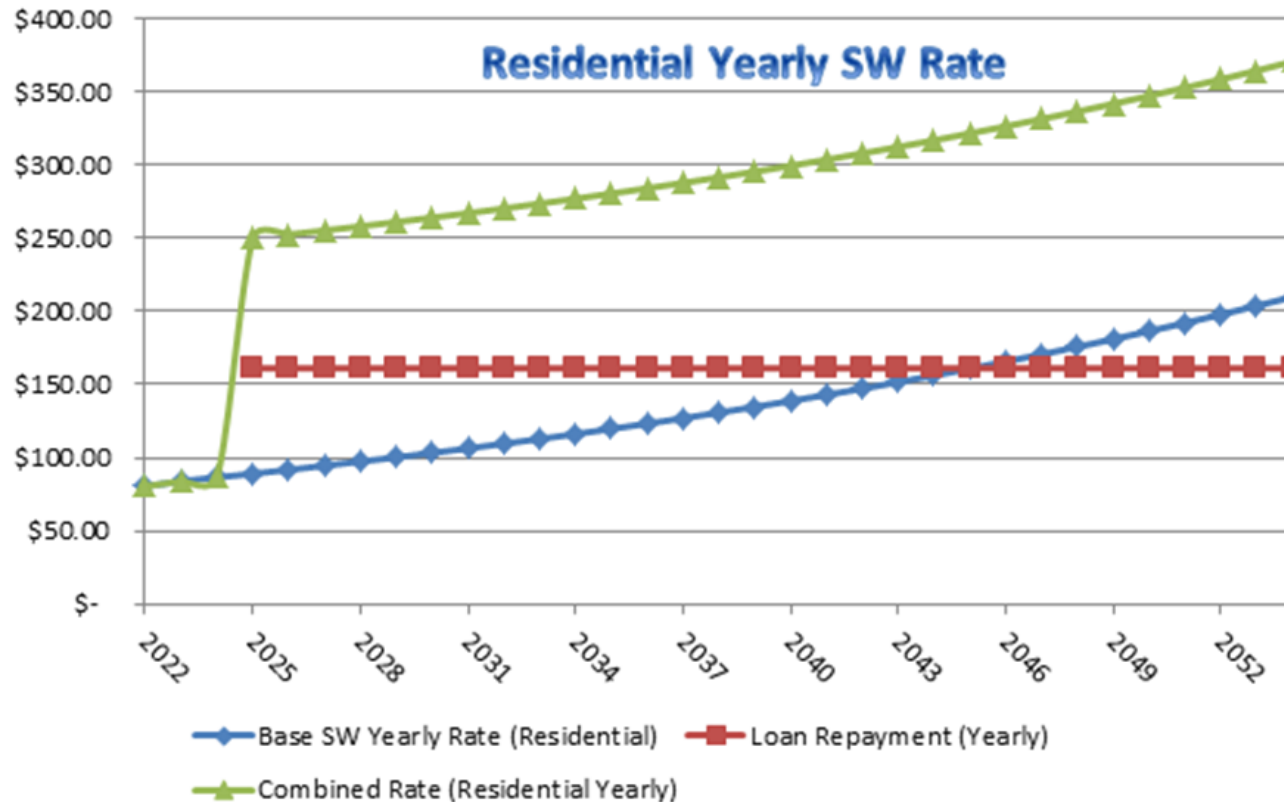
1. High cost / rebuilds entire canal and dam system
2. Still presents opportunities for overtopping/spill over
3. All trees removed from embankments
4. Doesn't prevent flooding during high rain events
5. May not be accepted by ODNR (needs to be studied)
6. Private property impacts on Park Avenue / Forest (could be significant)
7. May require extensive property acquisition
8. May not be suitable on portions of dam/canal

Evaluation Matrix

Criteria	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Private Property Impact	●●●	●	●●●	●●
Environmental Impact	●●	●●	●●●	●●●
Community Impact	●●	●●	●●●	●●●
Aesthetic	●	●	●●	●
Cost	●●	●●●	●●	●●●
Constructability	●●	●●●	●●●	●●

Potential Funding Scenario

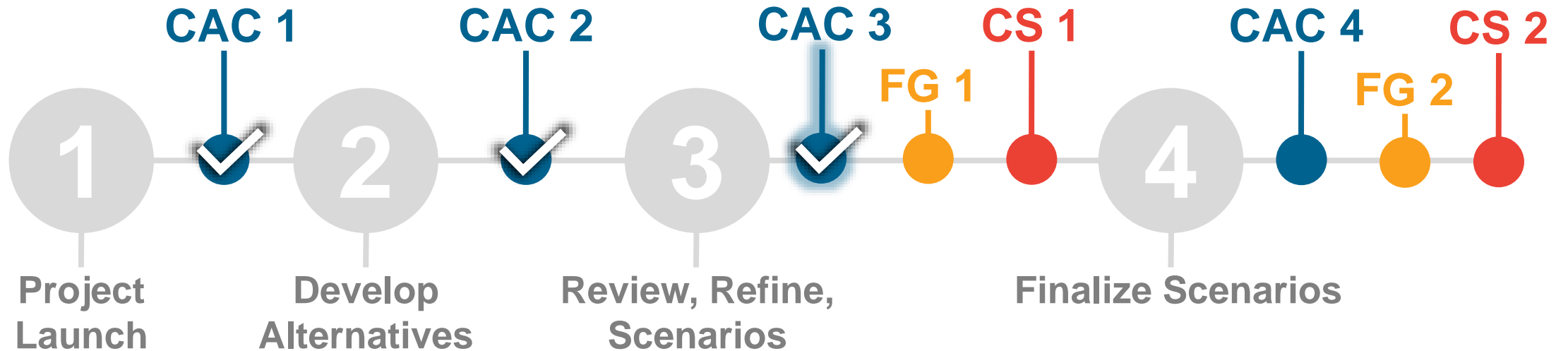
	Overall Amount	% Interest	Years	Monthly Payment 2025-2054	Yearly Amount	Total Paid
ODNR Safety Hypothetical Loan	\$ 44,879,845	3.08	30	\$ 191,953	\$ 2,303,436	\$ 69,103,080



Next Steps

Next Steps

Focus Group Round 1 – August 29, 2022
Community Summit 1 – October 3, 2022
CAC Meeting 4 - October 17, 2022 (Tentative)
Dates may be subject to change.



CAC – Citizen Advisory Committee

FG – Focus Group

CS – Community Summit