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Town of Mina Nonpoint Source Planning Grants

KICK-OFF MEETING

May 11, 2023

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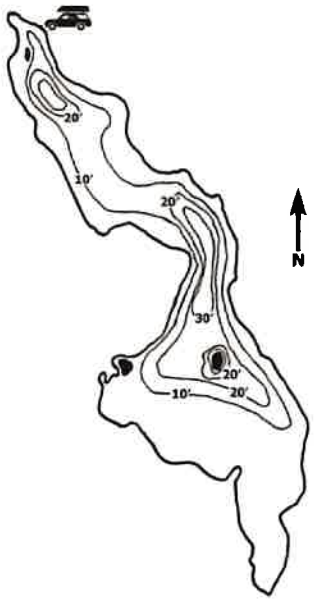
Agenda

I. Project Team Introductions

II. Project Overview & Background

III. Project Approach

IV. Project Schedule



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Project Team Introductions

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TOWN OF MINA

Project Team Introductions

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PRINCETON HYDRO

FINDLEY LAKE Watershed Foundation LAKE STEWARDS SINCE 1949

- Town of Mina
- Barton & Loguidice, D.P.C.
- Princeton Hydro
- Findley Lake Watershed Foundation
- Other Stake Holders

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Project Overview & Background

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Project Background

I. 2022 Non-Agricultural Nonpoint Source Planning Grants
   I. Stormwater Retrofit Study
   II. Culvert Assessment Report
   III. In-Lake Waterbody Controls for Nutrients
      I. Princeton Hydro Lake Evaluation & Recommendations
      II. CSLAP Data

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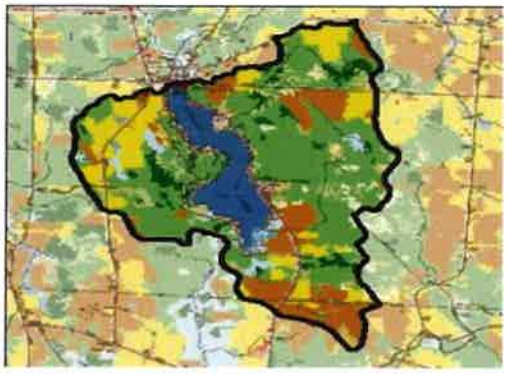
Project Goals

1. ***Thorough evaluation*** of existing conditions;
2. ***Prioritize recommendations*** to address water quality
   1. Watershed Projects
   2. In-Lake Controls
3. ***Position for future funding*** for project implementation.

Findley Lake	Findley Lake Watershed Foundation	Town of Findley Lake	Chautauqua County



Lake Characteristics	Surface area (ac/ha)	307 / 124
	Max depth (ft/m)	38 / 12
	Mean depth (ft/m)	11 / 3
	Retention time (years)	0.5
	Lake Classification	B
	Dam Classification	A
Watershed Characteristics	Watershed area (ac /ha)	3064 /1420
	Watershed / Lake ratio	10
	Lake & wetlands %	13%
	Agricultural %	28%
	Forest, shrub, grasses %	54%
	Residential	6%
	Urban	0%
CSLAP Participation	Years	1986-2000, 2003-2013, 2015, 2018
	Volunteers	James A Lictus and Ed Mulkearn

Trophic state	HABs Susceptibility	Invasive Vulnerability	PWL Assessment
Eutrophic	Persistent blooms, High susceptibility	Invasives present, High Vulnerability	Impaired

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Project Approach

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Project Approach

I. Stormwater Retrofit Study
   I. Watershed Based
   II. Pollutant Loading Evaluation
      I. Stormwater Ponds/Wetlands
      II. Green Infrastructure
      III. Land Use Planning & Zoning
      IV. Water Quality Improvements
      V. Natural Resource Protection

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Project Approach

I. Stormwater Retrofit Study
   I. Toolbox of Mitigation Options
   II. Ranking Matrix
      I. Cost/Benefit Analysis
   III. Two (2) Recommended Alternatives
      I. Conceptual Design
      II. Future Grant Application for Implementation

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Project Approach

I. Culvert Assessment Report
   I. Field Inventory of culverts
      I. Size
      II. Material
      III. Condition
   II. GIS Mapping
   III. Channel Erodibility Assessment
   IV. Ranking of culvert rehab projects

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Culvert Assessment

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Elliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK If Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

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Project Approach

I. In-Lake Nutrient Controls
   I. Internal Phosphorus Loading/Oxygen Demand
      I. Aeration
      II. Hypolimnetic Withdrawal
      III. Dredging
      IV. Destratification

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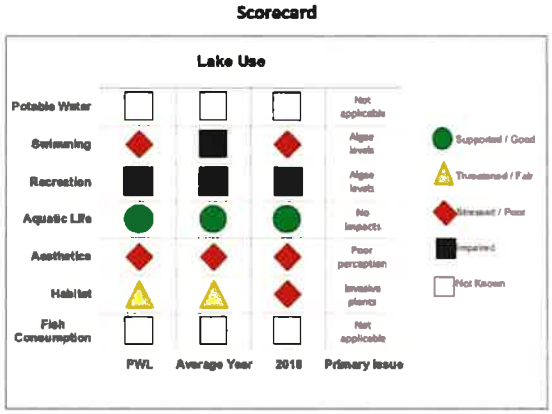
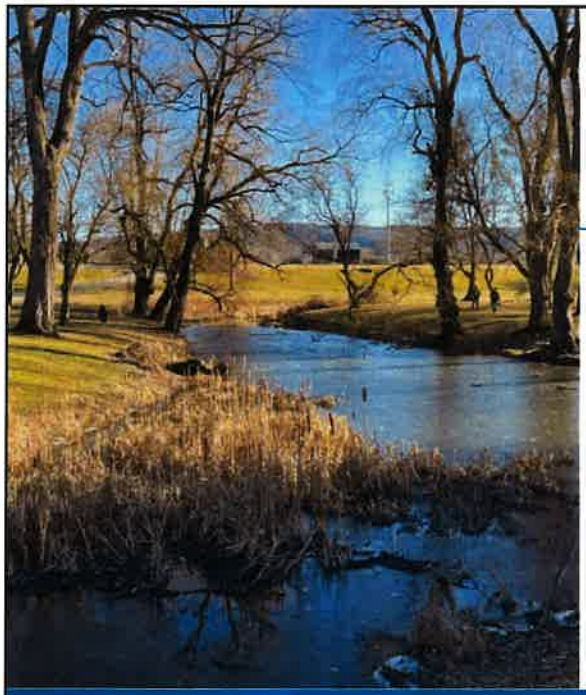
In-Lake Nutrient Controls

I. In-Lake Nutrient Controls
  I. Three Monitoring Events
    I. Various Depth Intervals
      I. Temperature
      II. Conductance
      III. Dissolved Oxygen
      IV. pH
      V. Chlorophyll
      VI. Nutrients
      VII. Sediments
      VIII. plankton





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Nutrient Pollutant Loading Analysis

- Model watershed based nutrient loads (i.e. phosphorus, nitrogen and sediment)
- Evaluate existing water quality conditions
- Inform mitigation alternative ranking and selection

Development and Evaluation of Mitigation Alternatives

- Modifications to existing drainage system
- Upstream Detention
- Installation of green infrastructure stormwater retrofits
- Water quality improvements
- In-Lake Nutrient Controls

Mitigation Alternative Matrix - Prioritization

RANKING

- Stormwater Benefits (total 55 out of 100 points)
  - Flood reduction (45 points)
  - Nutrient reduction – water quality benefit (10 points)
- Constructability (total 20 out of 100 points)
  - Ownership: public or private (10 points)
  - Known constraints (5 points)
  - Permitting (5 points)
- Cost (total 20 out of 100 points)
  - Construction Cost – (10 points)
  - Maintenance Cost (5 points)
  - Fundability (5 points)
- Co-Benefits (total 5 out of 100 points)
  - Energy and air quality impacts (1 point)
  - Habitat and biodiversity (1 point)
  - Community and aesthetic benefits (1 point)
  - Human health benefits (1 point)
  - Educational opportunities/visibility (1 point)

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Project Schedule

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Data Collection and Field Verification Stormwater Retrofits & Culvert Assessment	June/July
Princeton Hydro In-Lake Monitoring	May, August, September - ***Boat Availability?***
Hydrologic and Hydraulic Modeling	July/August
Pollutant Loading Analyses	July/August
Evaluation of Mitigation Alternatives	September-November
Draft Engineering Reports Identify Priority Projects	January 2024
Draft Report Meeting	January 2024
Final Engineering Reports	March 2024
Final Report Meeting	March 2024

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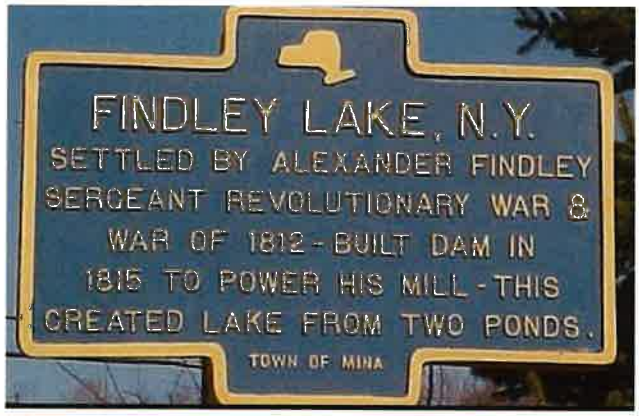
Questions & Open Discussion?



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