

# Town of Arietta - Board Meeting

## Piseco Lake Outlet Dam H&H Modeling Update

David M. Railsback, PE  
January 16, 2018

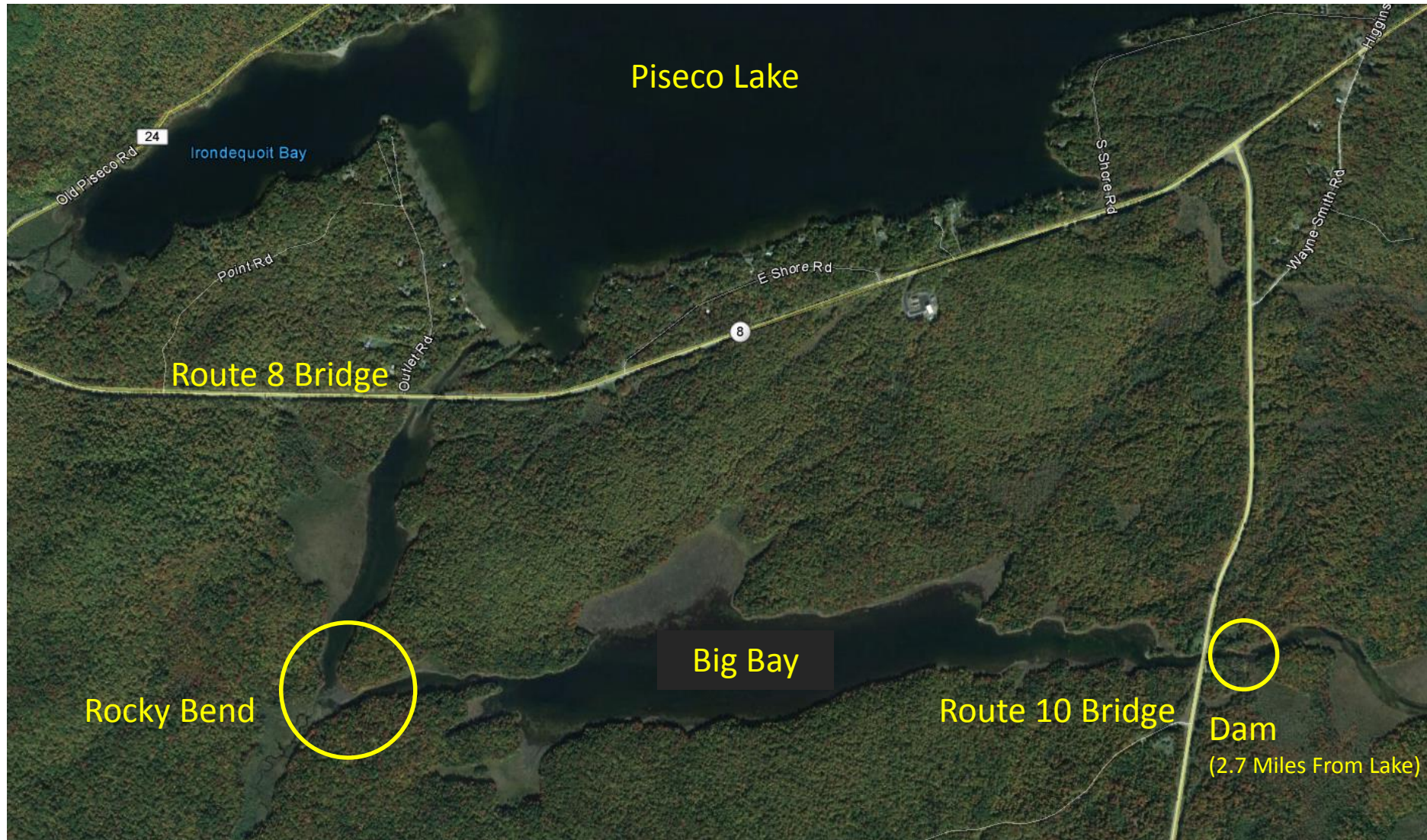


# Presentation Outline

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- Site Overview
- Review of Town's Concerns
- 2017 Recap
- Survey Results
- Refined Model
- Next Steps

# Site Overview



# Review of Town's Concerns

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- Condition of Dam
  - ❑ Seepage at Left Abutment
  - ❑ Concrete Deterioration
  - ❑ Erosion
- Lake Level Management
- Operations and Public Safety
- Regulatory Compliance
- Environmental Stewardship



# Suggested Road Map

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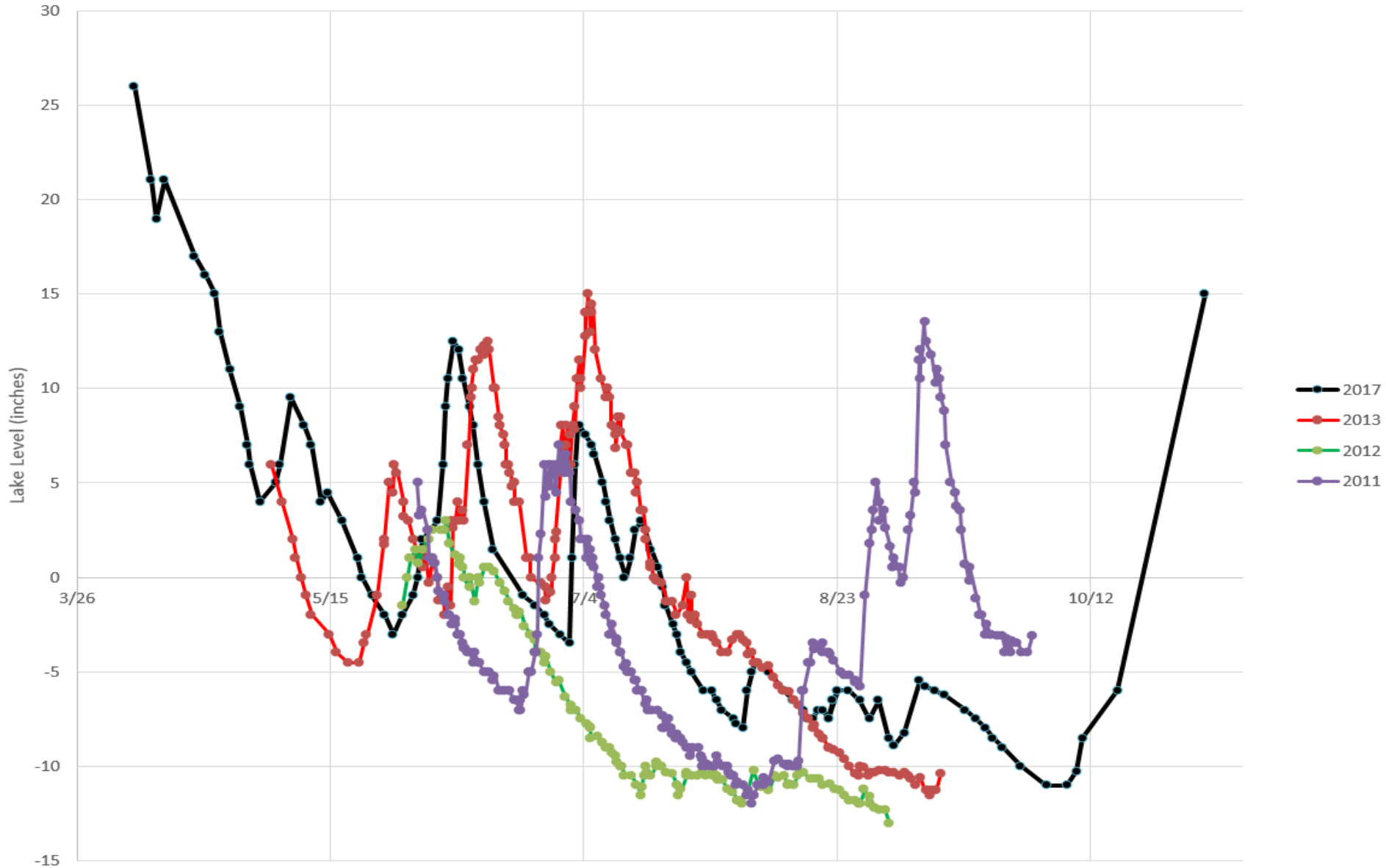
- ✓ Data Collection / File Review / Site Visit
- ✓ Survey – Topographic & Bathymetric
  - ✓ Establish Datum for current lake level gage & add staff gage at the dam.
- H&H Study – Inflow and Outflow from the Lake/Dam
- Geotechnical Investigation & Maintenance
- Establish Goals and Priorities for Short-Term and Long-Term Repairs and Improvements
- Develop Scope and Budget to Achieve Objectives
- Design and Implement Repairs

# Schnabel's Goals

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- Understand and prioritize future action items.
- Simplify operations of your Class A dam.
- Implement practical short-term maintenance.
- Evaluate effective long-term improvements.

# 2017 Lake Level Recap



# Survey

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# New Gauge Upstream of Dam (Rt. 10 Bridge)



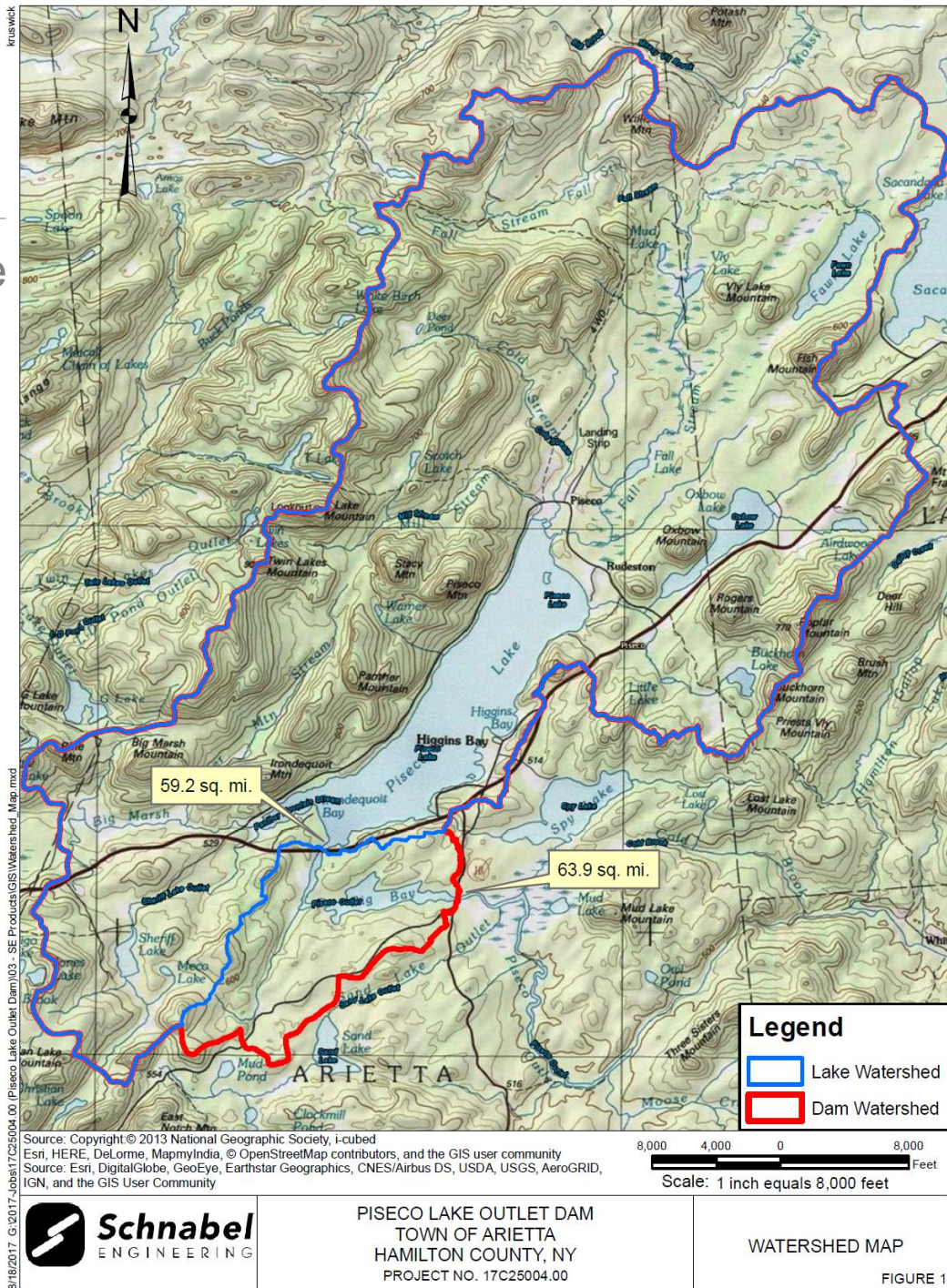
# REFINED H&H MODEL



Piseco Lake Outlet Dam

# Watershed Information

- 59.2 sq. mi. at Route 10 Bridge
- 63.9 sq. mi. at Dam
- 19% of watershed is lakes/wetlands
- 80% Forest Land
- 1% Developed/Urban Land

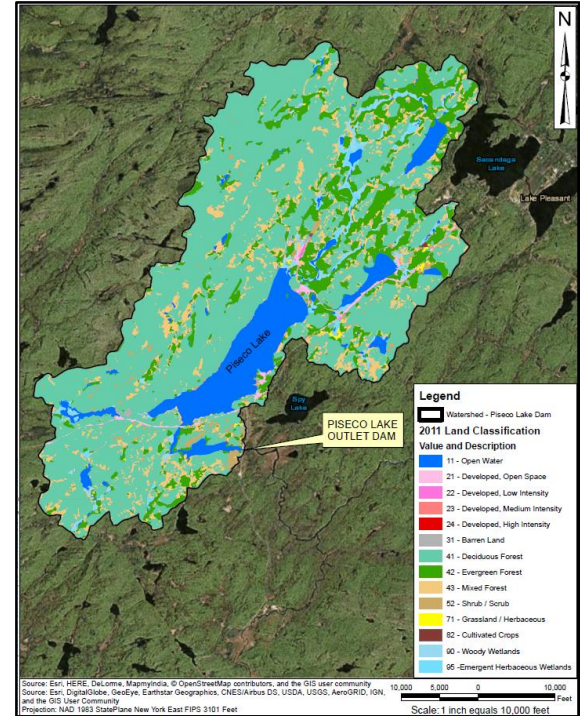
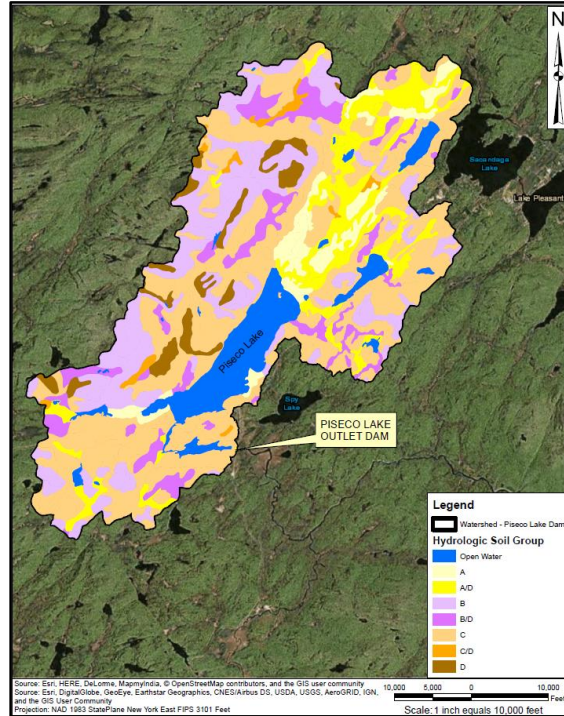
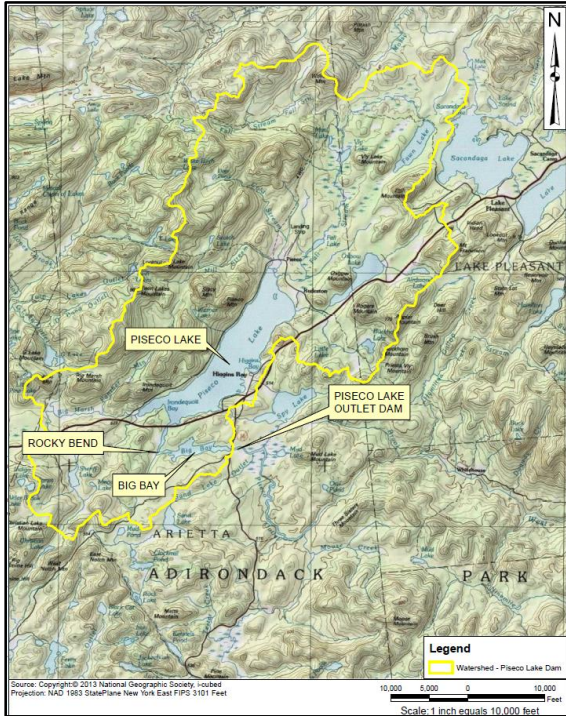


PISECO LAKE OUTLET DAM  
 TOWN OF ARIETTA  
 HAMILTON COUNTY, NY  
 PROJECT NO. 17C25004.00

WATERSHED MAP

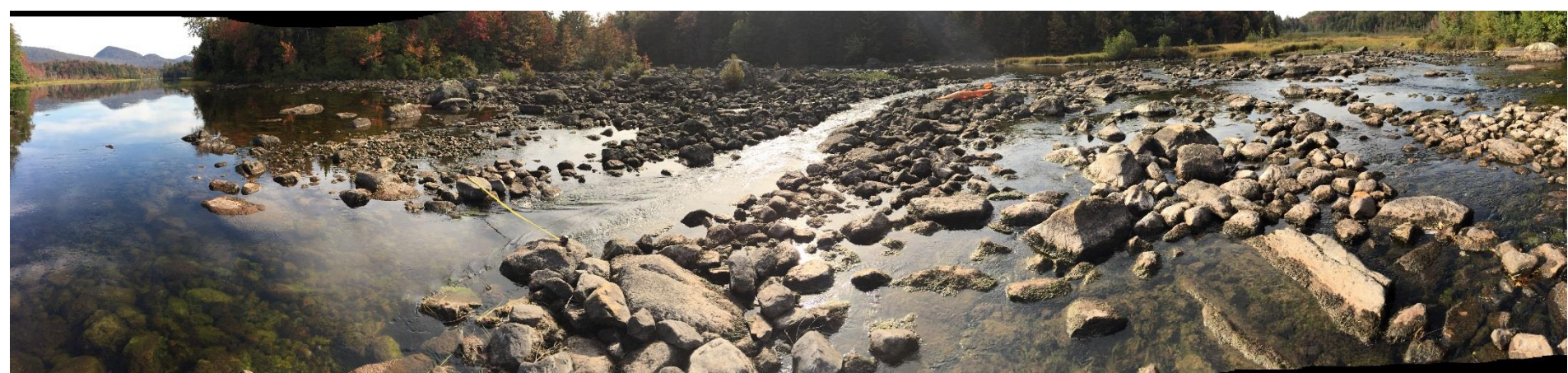
FIGURE 1

# Watershed Evaluation

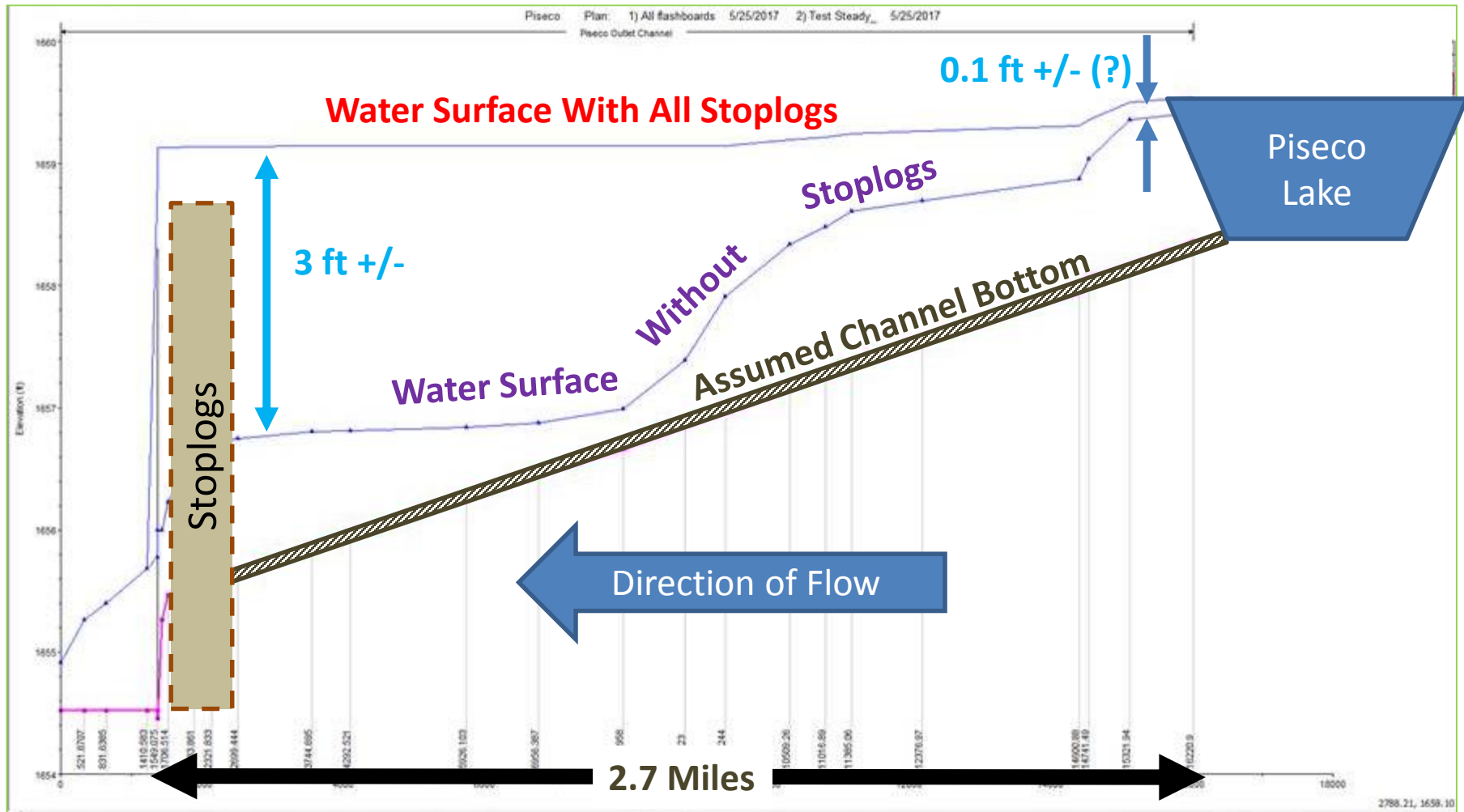


# Survey (Including Rocky Bend)

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# Preliminary Model



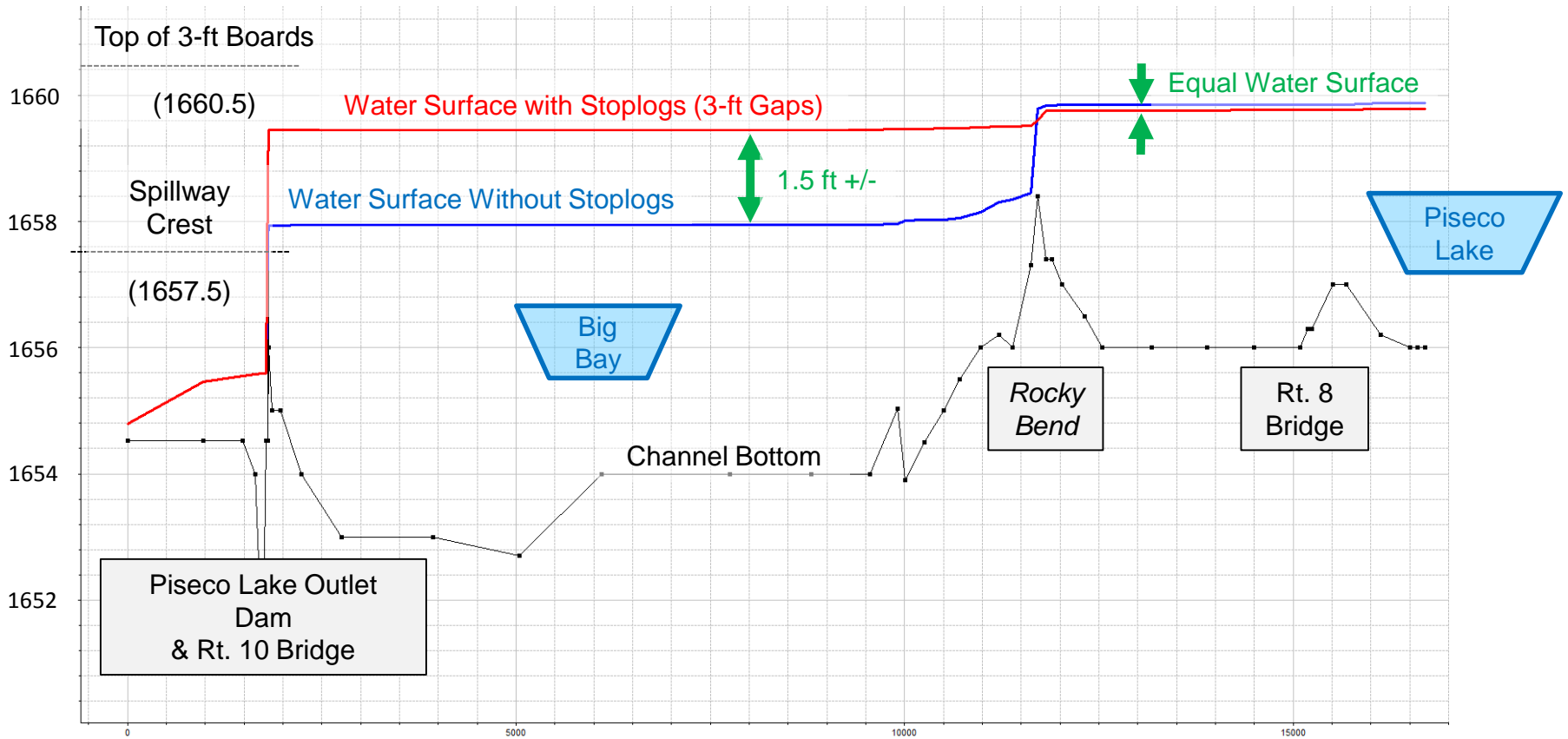
Dam / Route 10

Big Bay

Narrows (Boulder Channel)

Route 8

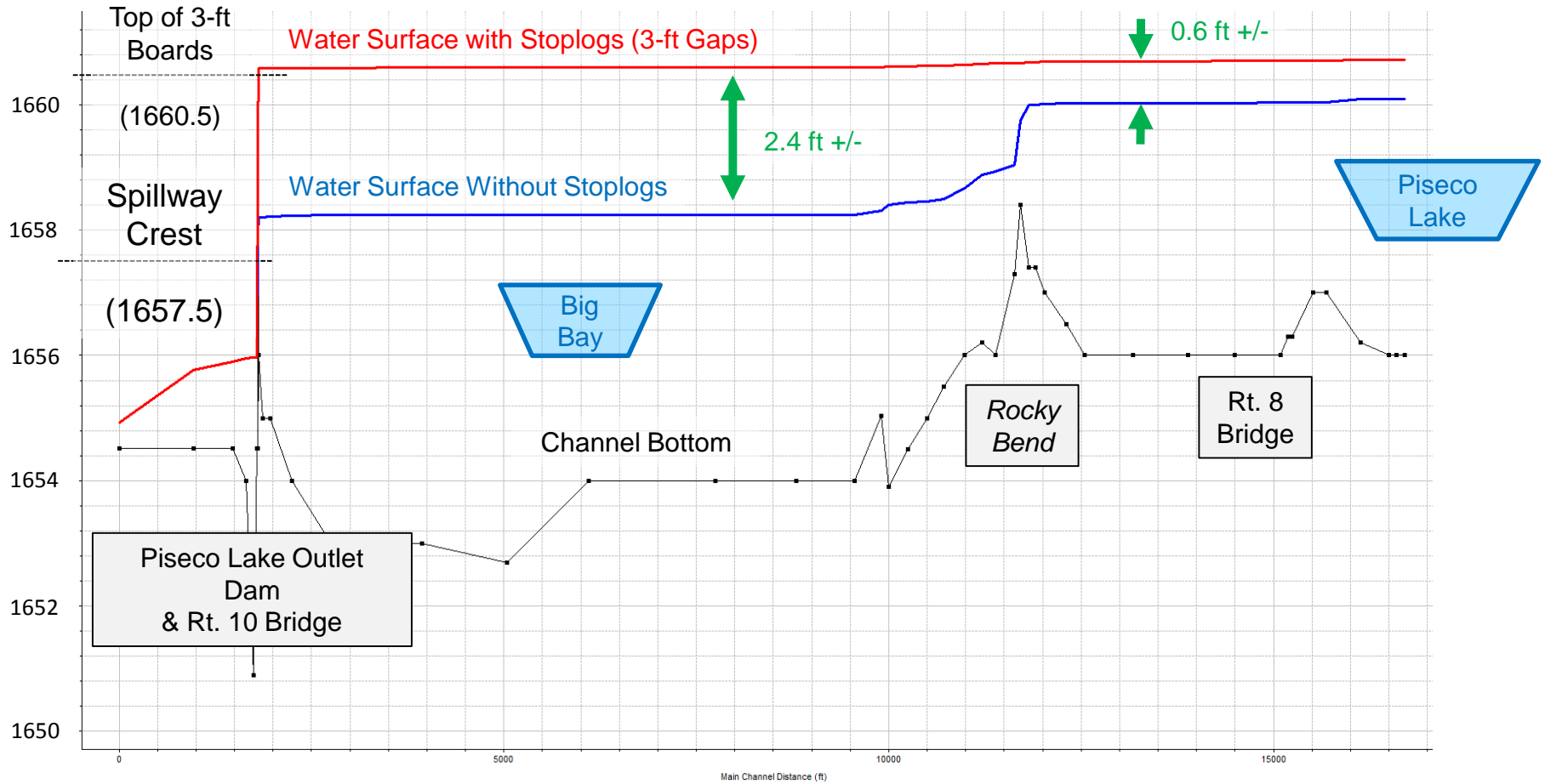
# Refined Model



50 Cubic Feet per Second (Low Typical Flow)

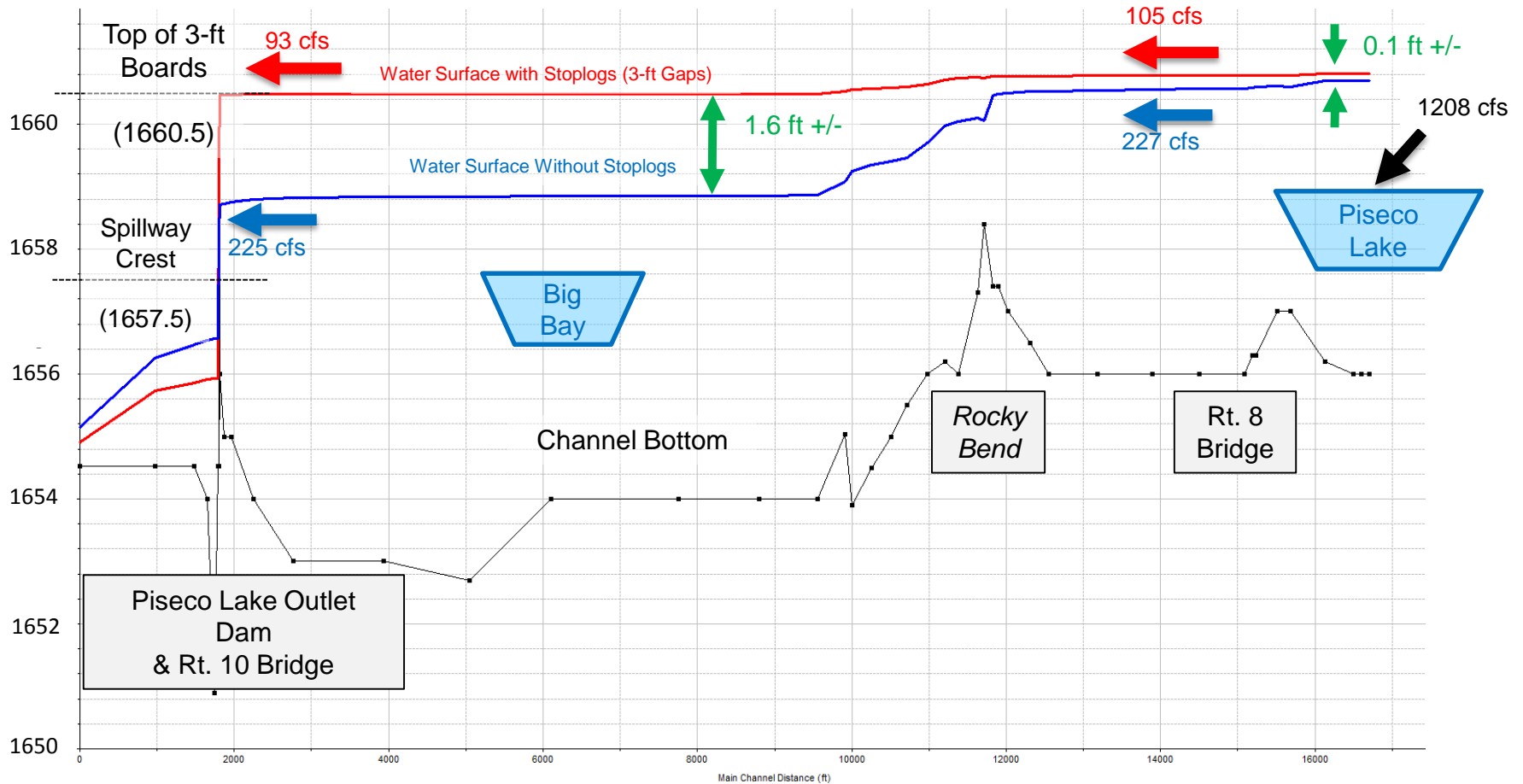


# Refined Model



100 Cubic Feet per Second (Moderate Typical Flow)

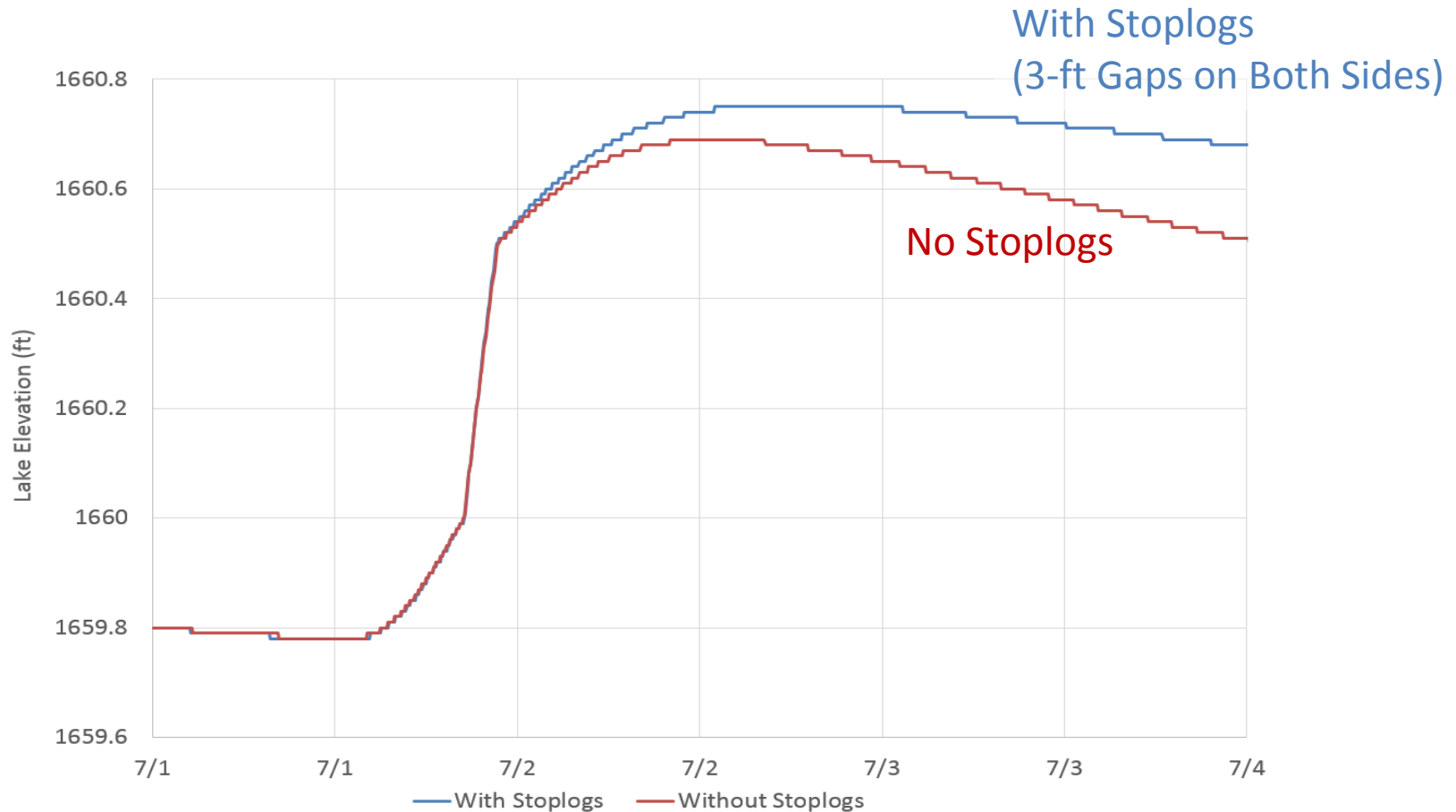
# 1-Year Storm (2.5 inches of rain in 24 hours) 1208 CFS Runoff to Lake



# Modeling for Long-Term Trends

- DEC Dam Safety requires an event-based storm evaluation (i.e. 100-yr storm).
- Additional value for the Town in a long-term model.

## 1-Yr Storm (2.5 inches in 24 hours)



# Spillway Capacity Requirements

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The required design storm for a  
Class A – Low Hazard Dam  
is the 100-year storm:  
6.1 inches of rain in 24 hours.

## Piseco Lake Outlet Dam Spillway:

- No Stoplogs:  
Does not overtop, meets dam safety criteria.
- Stoplogs with 3-ft gaps on both sides:  
Overtops, does not meet dam safety criteria.



# Spillway Capacity Requirements

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Next question...

What stoplog configuration allows passage of the 100-year storm (6.1 inches in 24 hours)?

We would need larger stoplog gaps than the current 3-ft gaps on both sides.

This could be the “set it and forget it” stoplog configuration.



# Summary of Hydraulic Modeling

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- Current modeling is developed on an “event basis” (ie. 1-yr, 5-yr, 100-yr storm) as required for DEC Dam Safety Standards
- Current model is adequate to address dam safety questions, and illustrate short-term stoplog impacts on lake level.
- There would be benefits from performing a long-term modeling, supported by calibration, to better characterize lake level trends.

NEXT STEPS



Big Bay viewed from Route 10 Bridge.

# Next Steps

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## Items for Discussion:

- Optimize the stoplog configuration (short-term).
- Additional staff gauge at Rt. 8 Bridge and benchmark at boat ramp.
- Automated data collection.
- Geotechnical maintenance work at left abutment.
- Model calibration for long-term trends.
- Optimize stoplog configuration for long-term.
- Evaluate flow control alternatives at dam (gates?).
- Evaluate other dam locations.





# Additional Gauge on Route 8 Bridge

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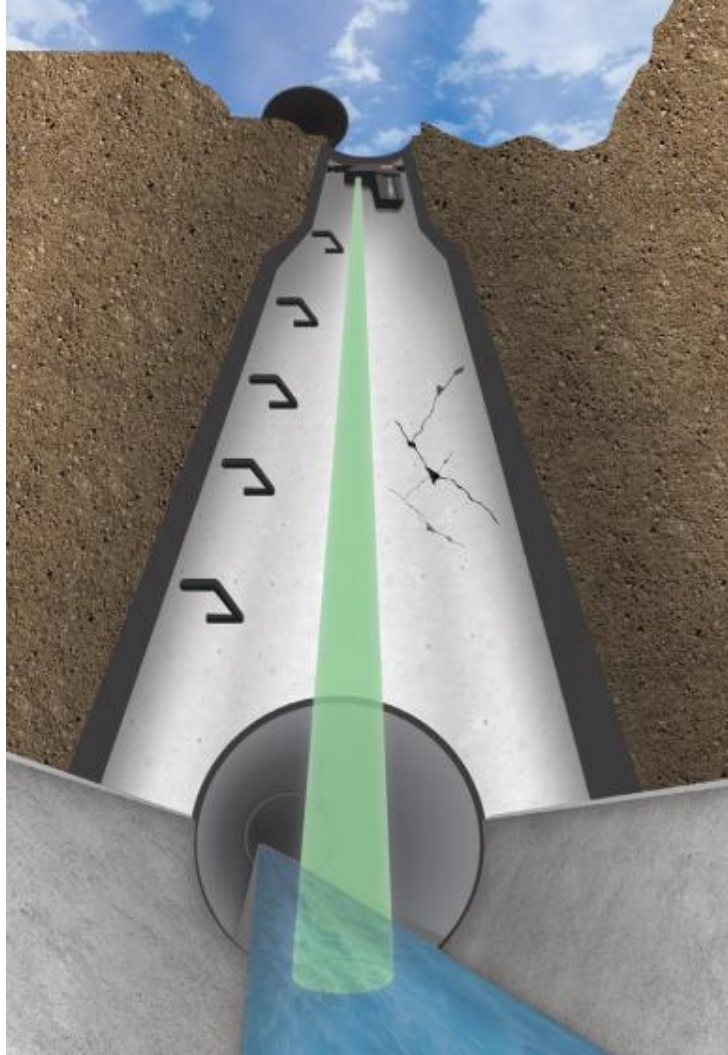


# Benchmark at Boat Ramp

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# Automated Lake Level Data Collection



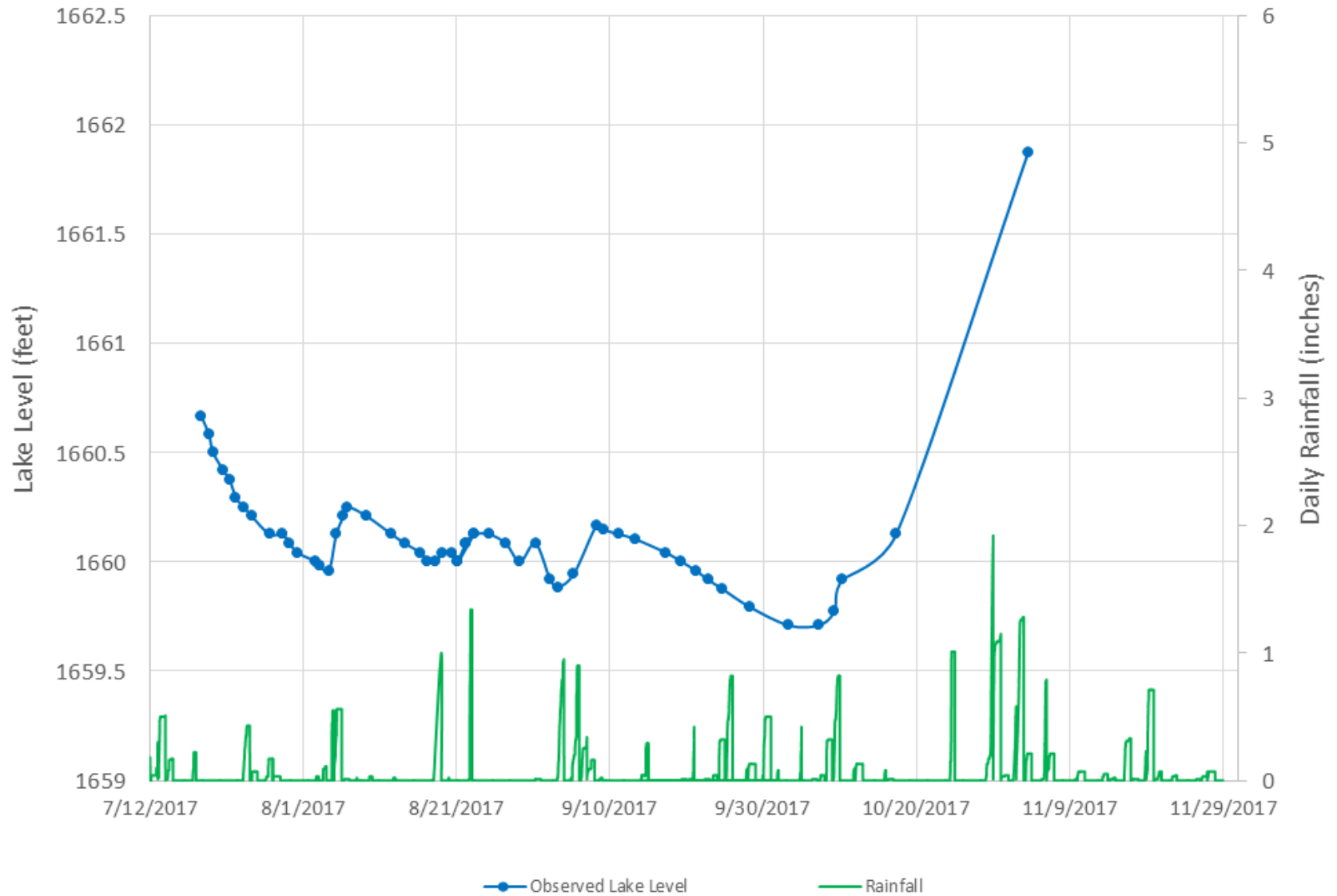
# Geotechnical Investigation

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- Town is arranging excavator and materials.
- Schnabel coordinated material availability and specs.
- Schnabel coordinated with NYSDEC – Dam Safety (No permit required for this work.)
- Schedule: wait for low flows and dry ground.



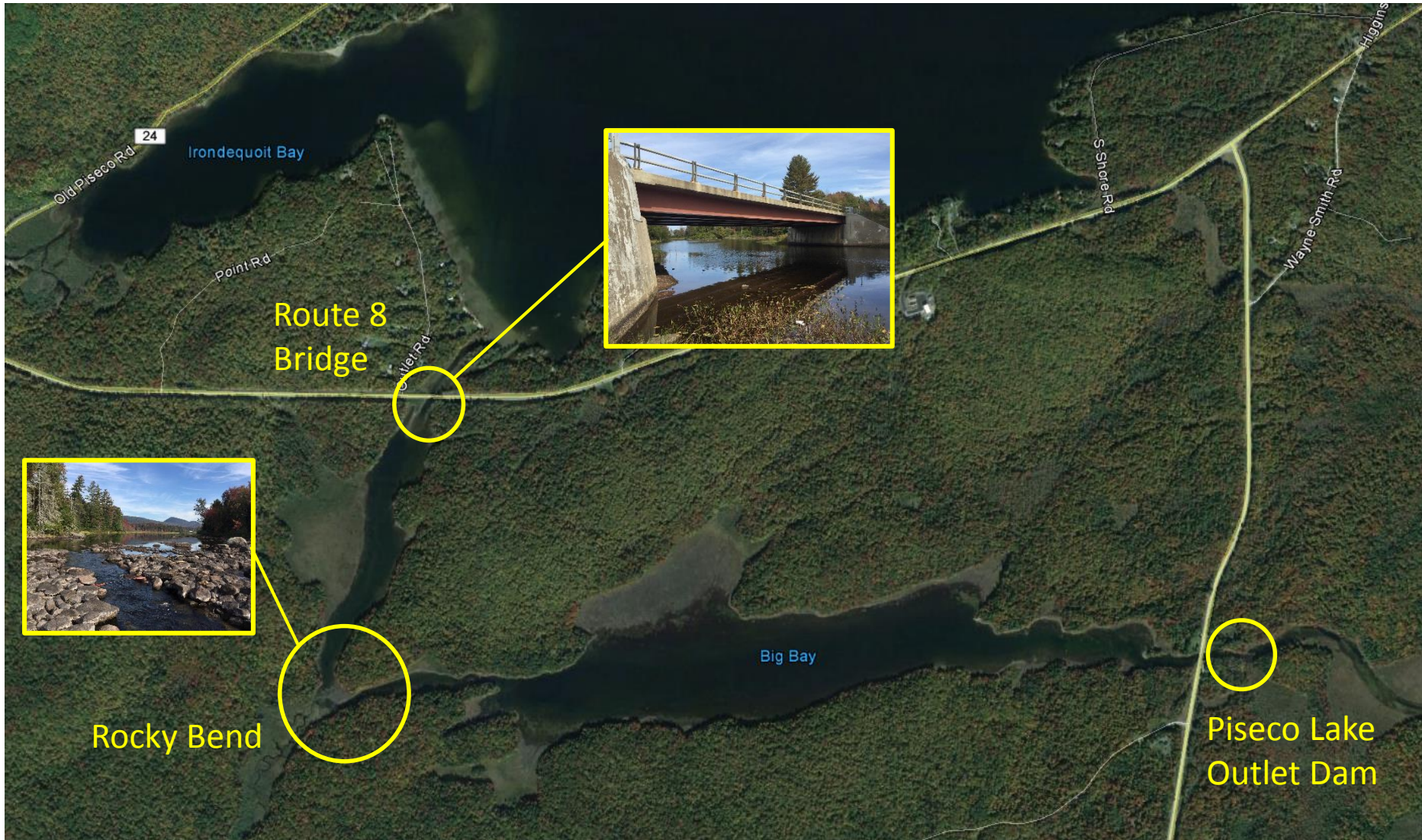
# Model of Long-Term Trends



# Evaluate Flow Control Alternatives



# Evaluate Alternate Dam Locations



# Questions

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