



U.S. ARMY

Detroit District
US Army Corps of Engineers



Lake Winnebago Regulation Meeting

October 22, 2008



Agenda

- **Basin Overview**
- **Maintenance and Repair Work**
- **Precipitation and Weather Conditions**
- **2007-2008 Water Level Explanation**
- **2008-2009 Water Level Strategy**
- **Questions**

Fox-Wolf River Basin

Drainage Area

Basin = 6430 SQMI

Lake = 206 SQMI



Lake Winnebago Controls

Little Lake Butte Des Morts

**Menasha Dam
6 Tainter Gates**

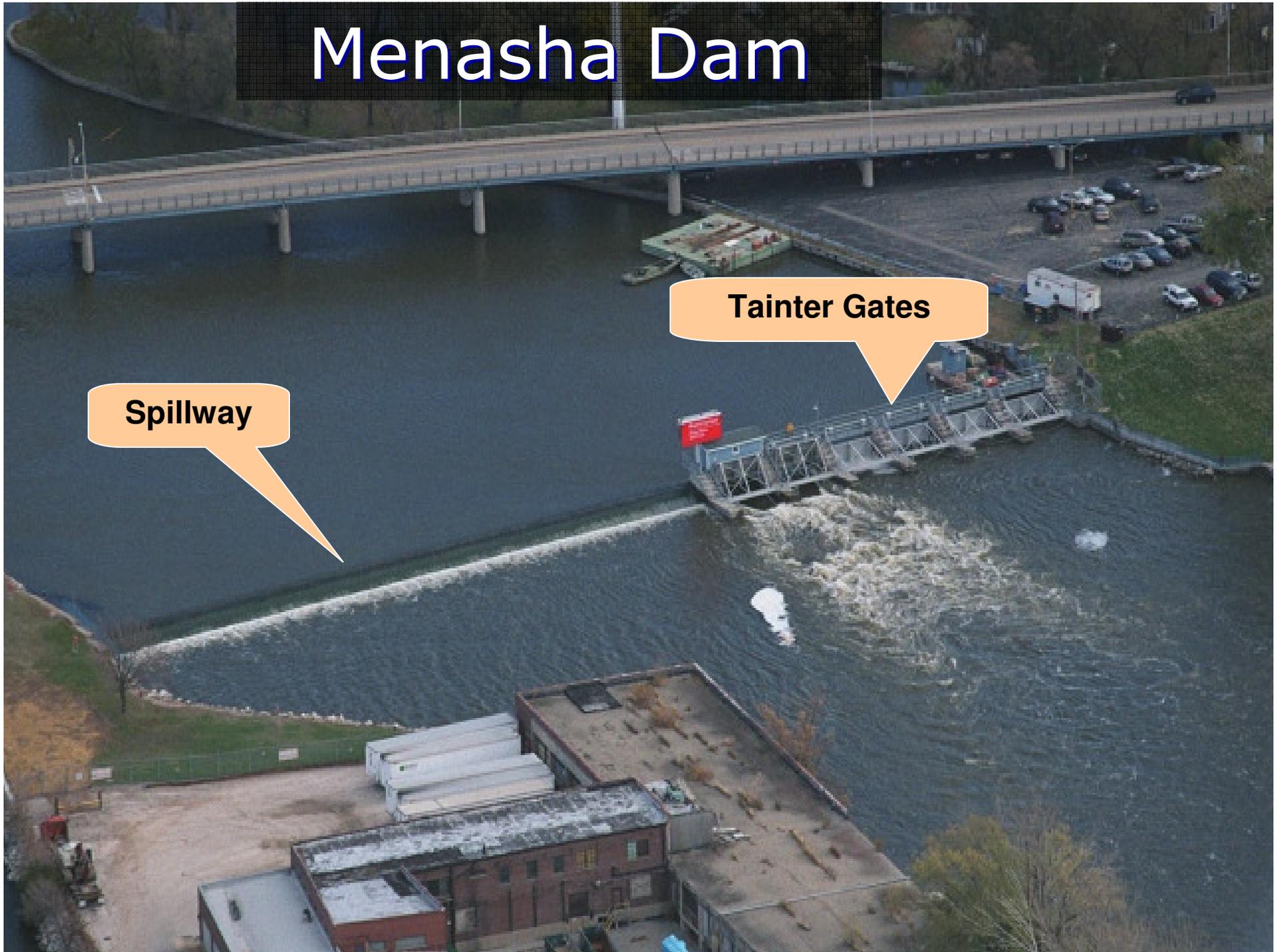
**Neenah Dam
9 Needle Gates
5 Tainter Gates**

Lake Winnebago

Menasha Dam

Spillway

Tainter Gates

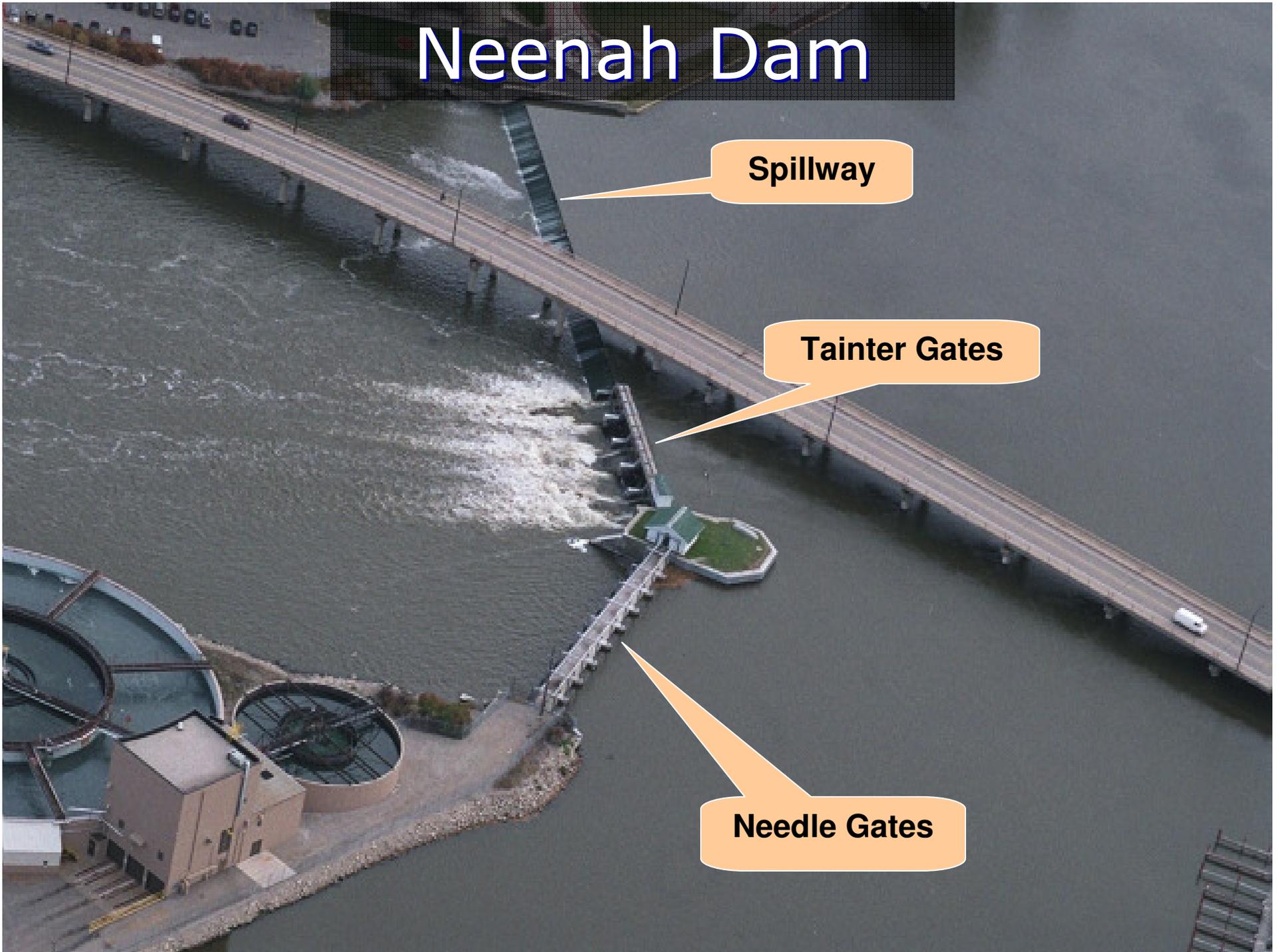


Neenah Dam

Spillway

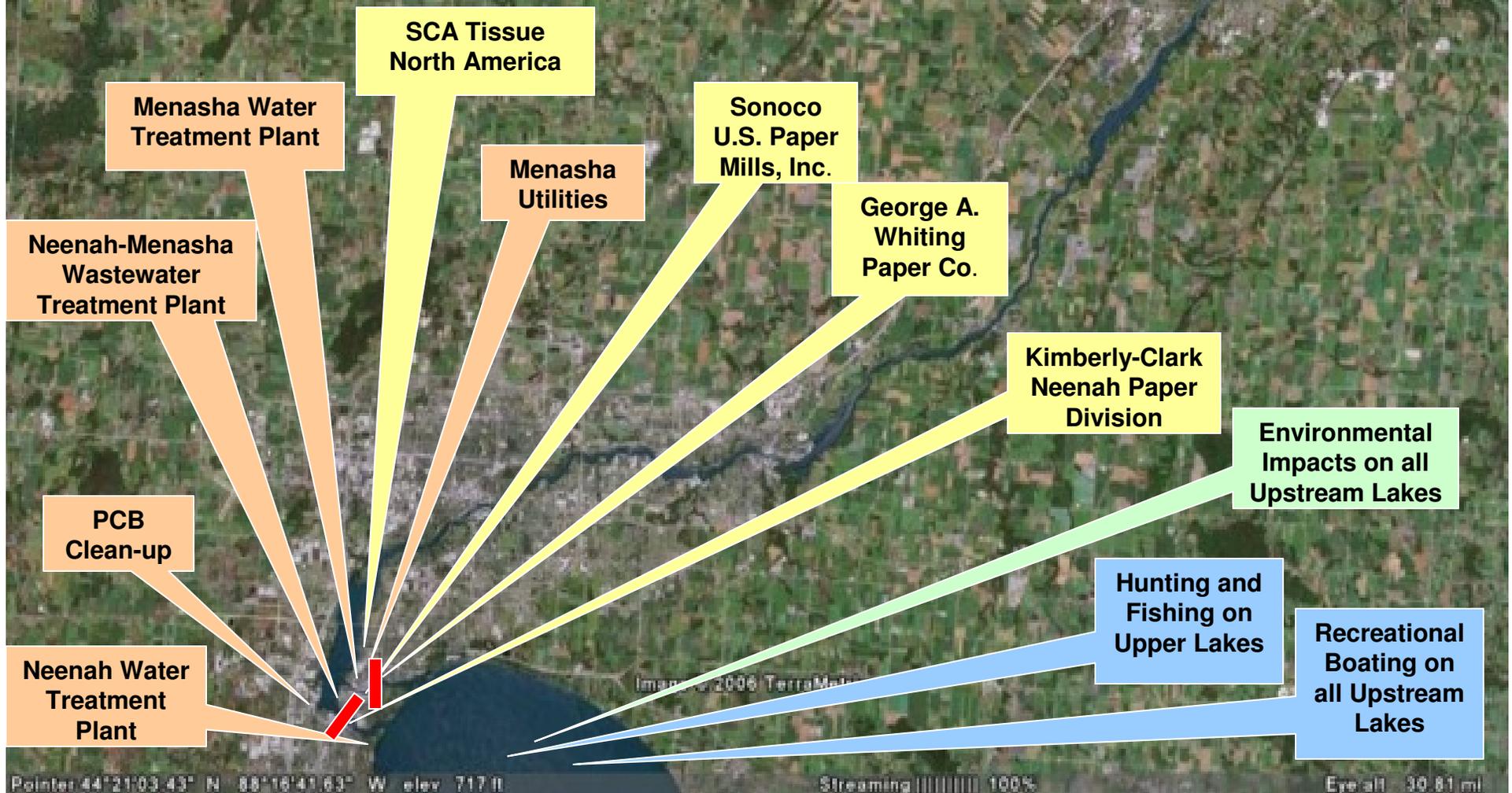
Tainter Gates

Needle Gates



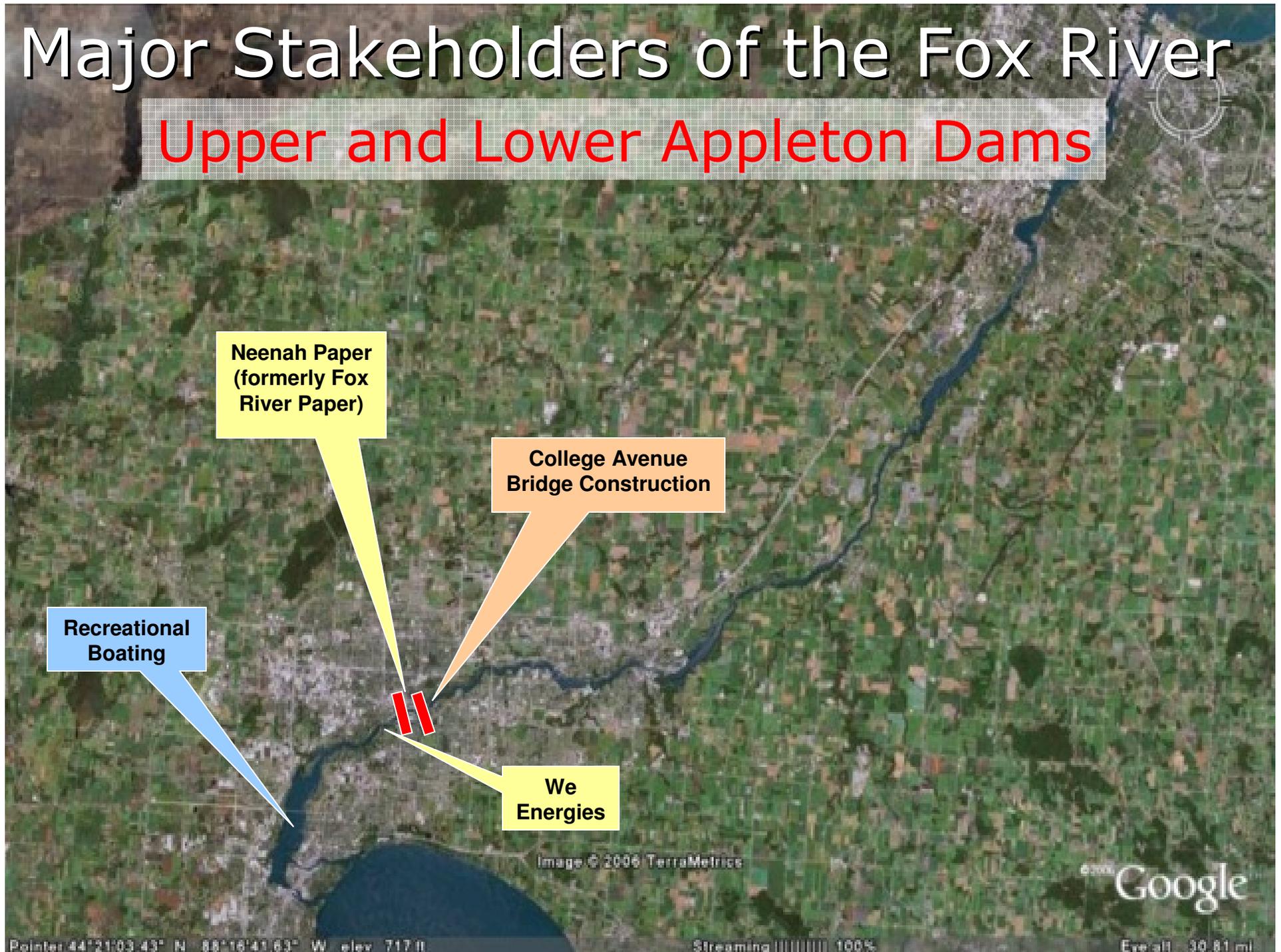
Major Stakeholders of the Fox River

Neenah Dam and Menasha Dam



Major Stakeholders of the Fox River

Upper and Lower Appleton Dams



Major Stakeholders of the Fox River

Cedars Dam

**New Page –
Kimberly
(closed Sep
2008)**

**Appleton
Wastewater
Treatment Plant**

Image © 2006 TerraMetrics

Google

Pointer: 44°21'03.43" N 88°16'41.63" W elev: 717 ft

Streaming | 100%

Eye alt: 30.81 mi

Major Stakeholders of the Fox River

Little Chute Dam

Kaukana
Utilities

Image © 2006 TerraMetrics

Google

Pointer: 44°21'03.43" N 88°16'41.63" W elev: 717 ft

Streaming 100%

Eye alt: 30.81 mi

Major Stakeholders of the Fox River

Kaukauna Dam

Heart of the Valley
Metropolitan
Sewerage
Commission.

Thilmany Papers
Kaukauna

Kaukauna
Utilities

Image © 2006 Terra

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Streaming | 100%

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Major Stakeholders of the Fox River

Rapid Croche Dam

Kaukauna
Utilities

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Streaming ||||| 100%

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Major Stakeholders of the Fox River

Little Kaukauna Dam

Bass
Spawning

Duck
Hunting

Wrightstown
Wastewater
Treatment Plant

Water
Board
Warriors

Recreational
Boating

Image © 2006 TerraMetrics

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Pointer: 44°21'03.43" N 88°16'41.63" W elev: 717 ft

Streaming | 100%

Eye alt: 39.81 mi

Major Stakeholders of the Fox River

DePere Dam

Thilmany
Papers -
DePere

Pier Rehab

Sturgeon
Spawning

Recreational
Boating

PCB
Clean-up

Image © 2006 TerraMetrics

Google

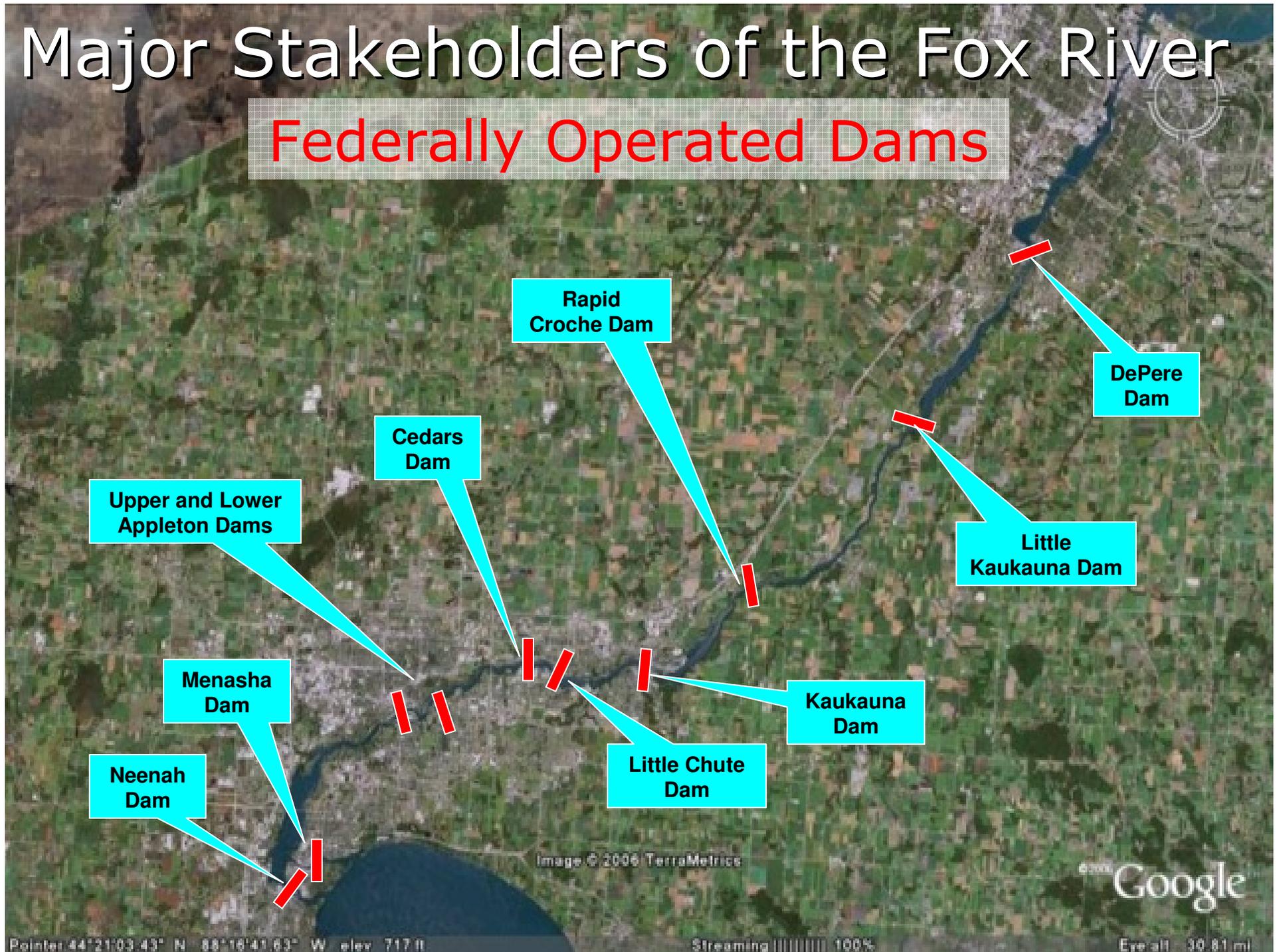
Pointer: 44°21'03.43" N 88°16'41.63" W elev: 717 ft

Streaming | 100%

Eye alt: 39.81 mi

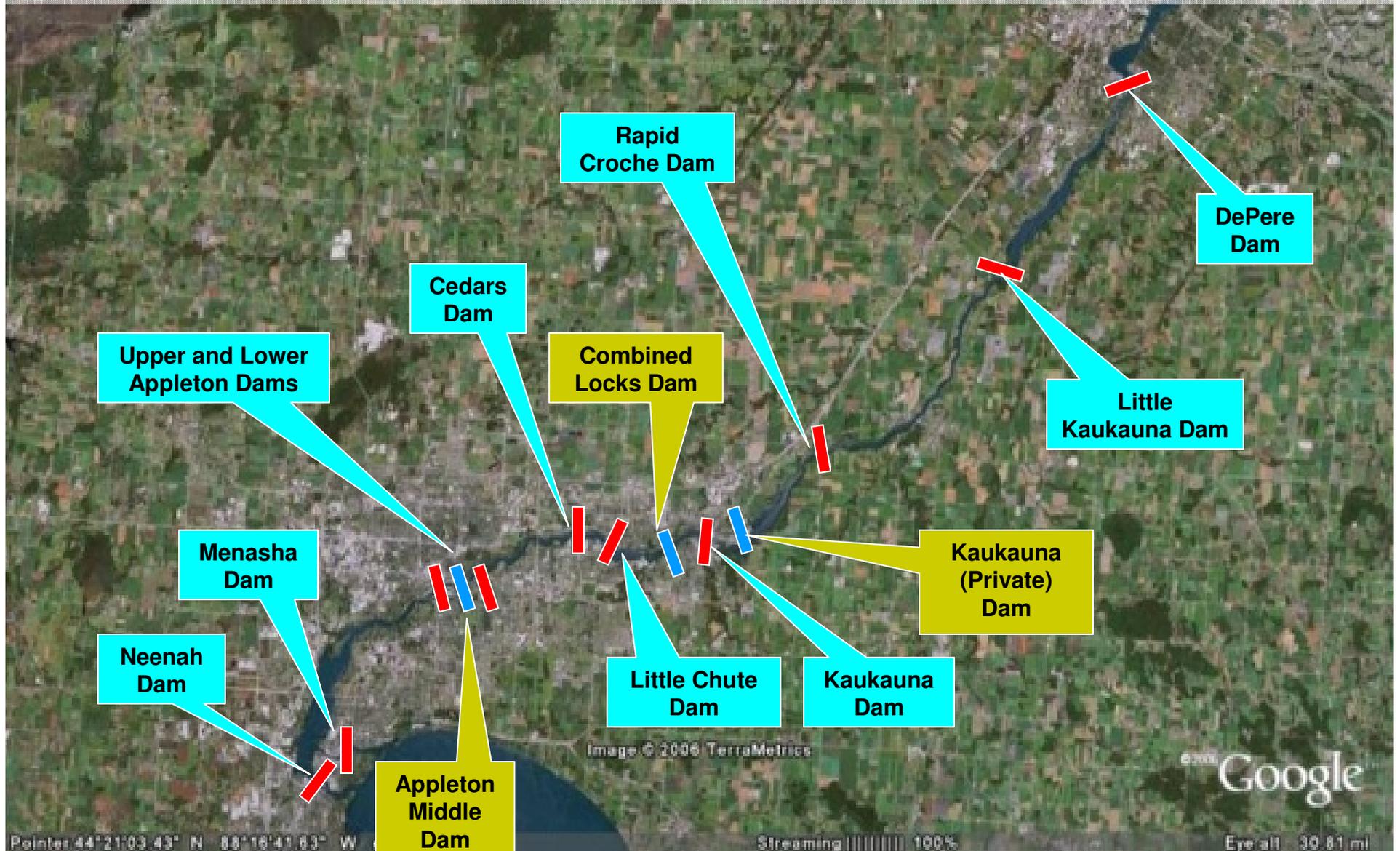
Major Stakeholders of the Fox River

Federally Operated Dams



Major Stakeholders of the Fox River

Dams on the Lower Fox River





Maintenance / Repair Work

- DePere Trunnion Repairs
- Clearing and Grubbing
- Kaukana Dike Repairs
- Cell Modem Data Reporting
- ADCP Boat
- Gage Upgrades

DePere Trunnion Repairs



DePere Trunnion Repairs



Clearing and Grubbing



Kaukauna Dike Repairs



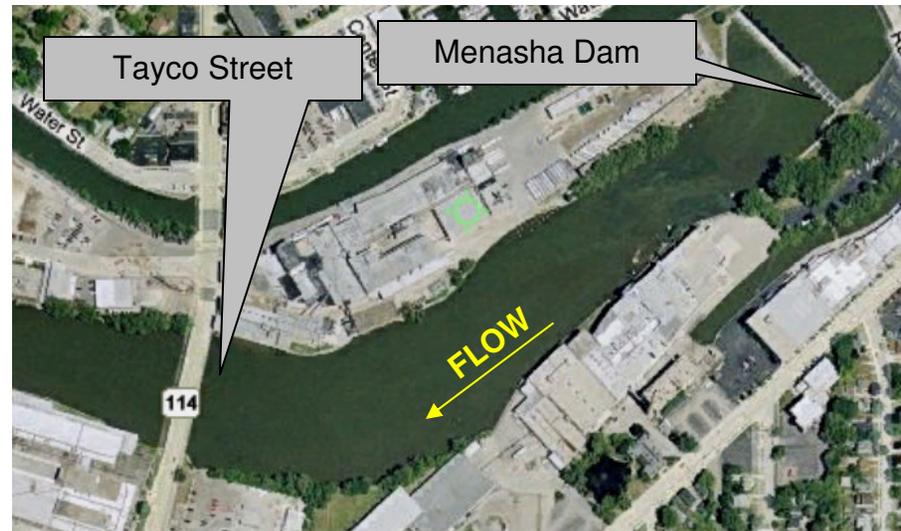
Cell Modem Data Reporting

- Significant Cost Savings
 - Over \$2,500/month in phone bill alone
- Increased Efficiency of River Operations



ADCP Boat

- Acoustic Doppler Current Profiler (ADCP)
- Real-time measurement of:
 - Flow
 - Velocity
 - Channel Profile

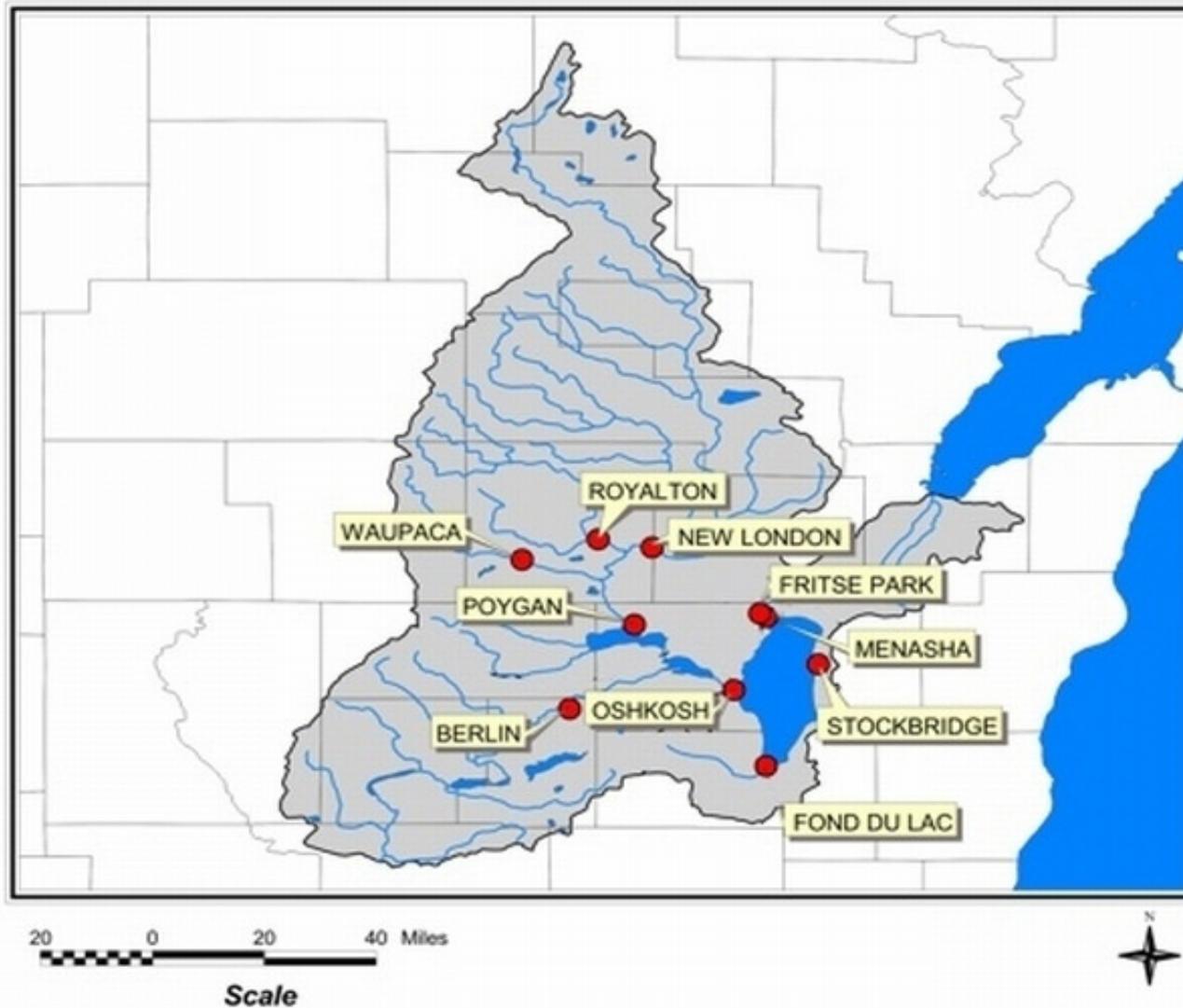


DCP Upgrades

- Replaced Data Collection Platforms (DCPs) and data encoders
 - Increased reliability
 - Reduced maintenance needs
 - Sends data every hour now instead of every 4



Water level and Precipitation Data Collection Sites





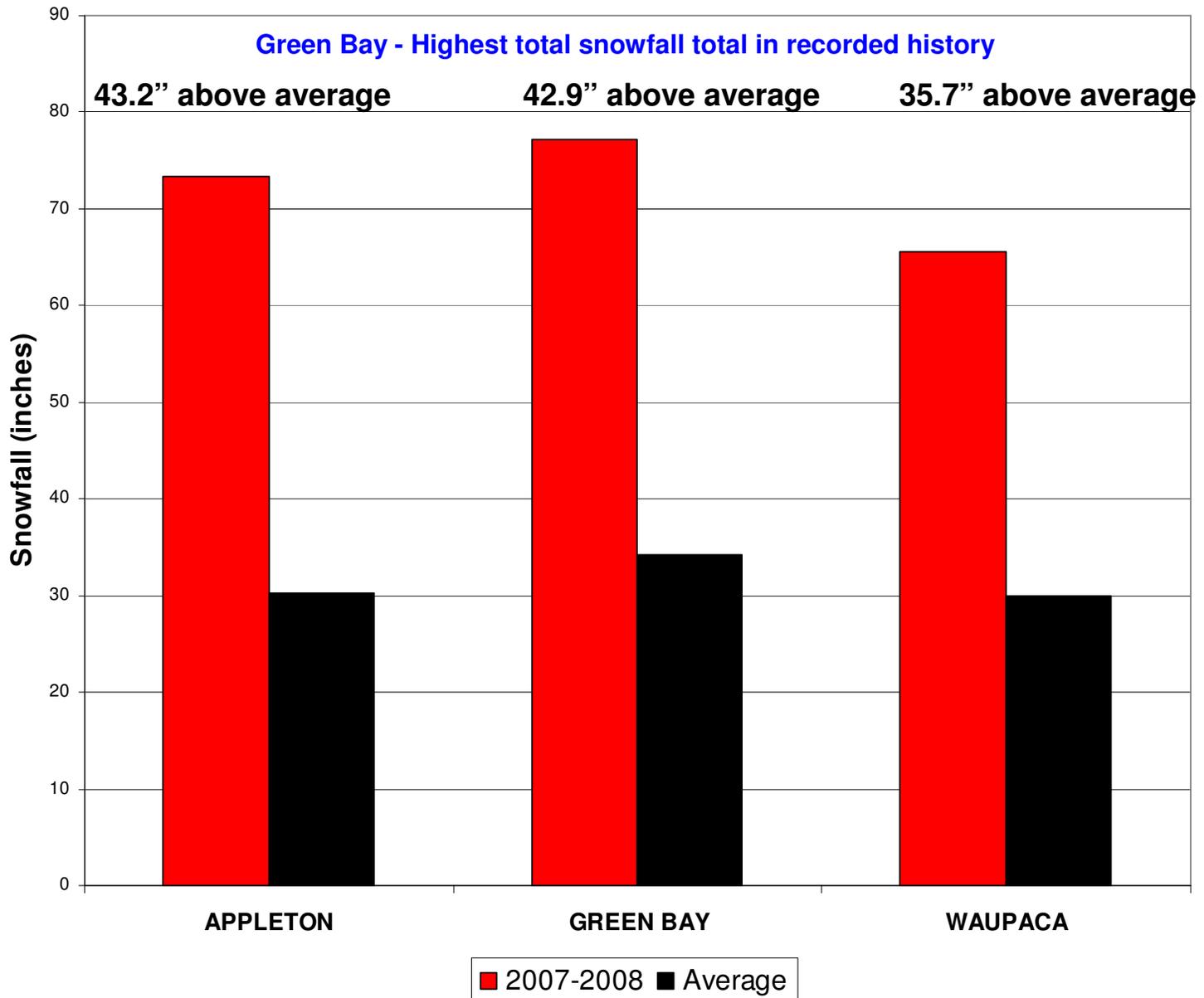
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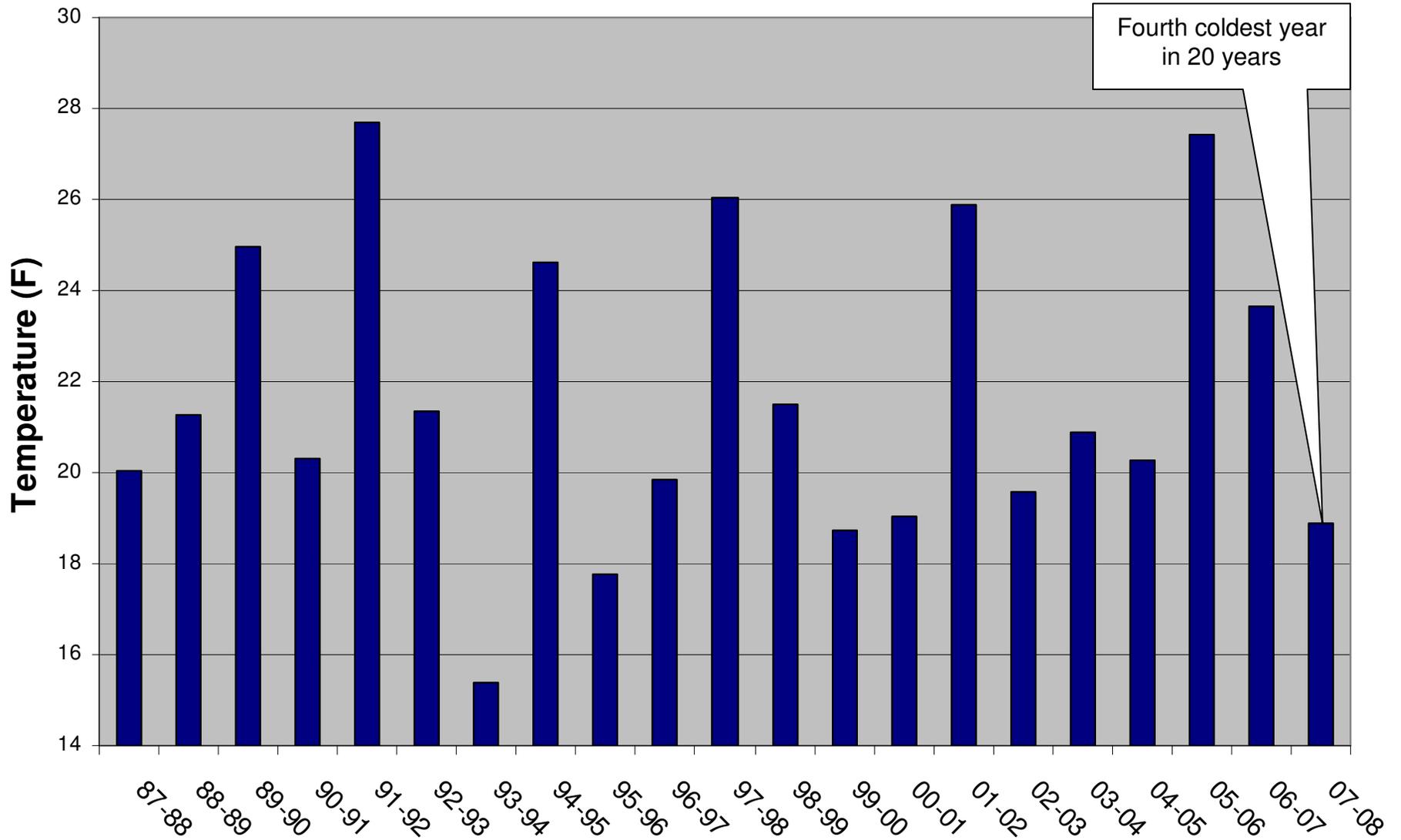


2007-2008 Weather

Lake Winnebago Snowfall



Average Winter Temperature



2007-2008 Ice Damage



How Ice Causes Damage

- Ice Floes/ Ice Shoves
 - Ice is moved by wind or water currents

- Expansion/Contraction
 - Forces can be very large

2007 – 2008 Ice Damage

- Situation
 - Sharp increase in reported damage from West and South shore residents
- Contributing Causes
 - Larger than normal snow pack over lake
 - Lack of offshore cracks
 - 4th coldest winter in 20 years

Reducing Future Ice Damage

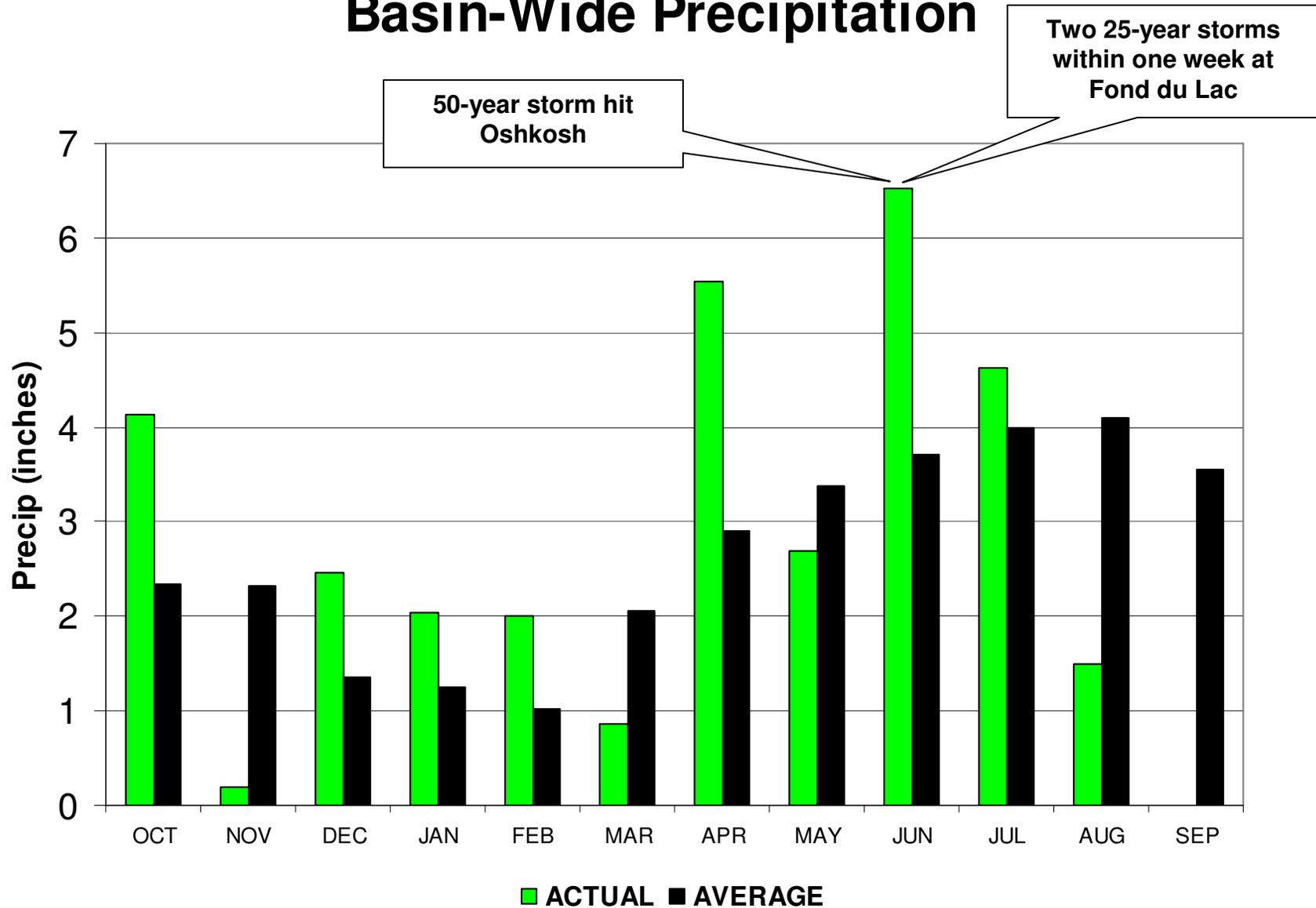
What You Can Do

- Install Compressed Air Bubbling Systems
 - Rising bubbles bring up warmer bottom water
- Use propeller or pump
 - Keep water in motion
- Trenching
 - 75-80% of ice thickness 2 to 3 weeks before thaw begins
- Install Floating or Removable Docks

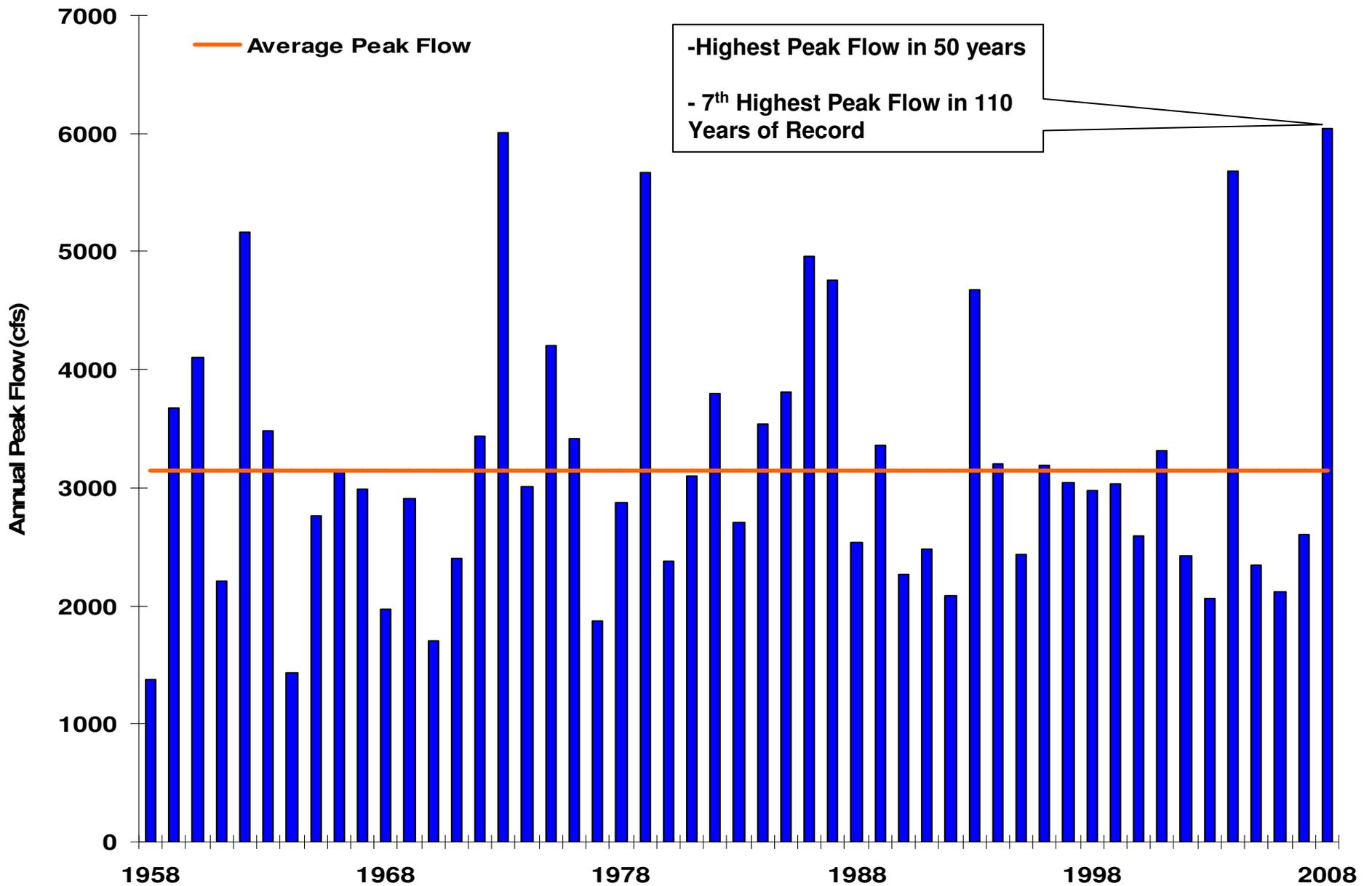
Spring Flooding



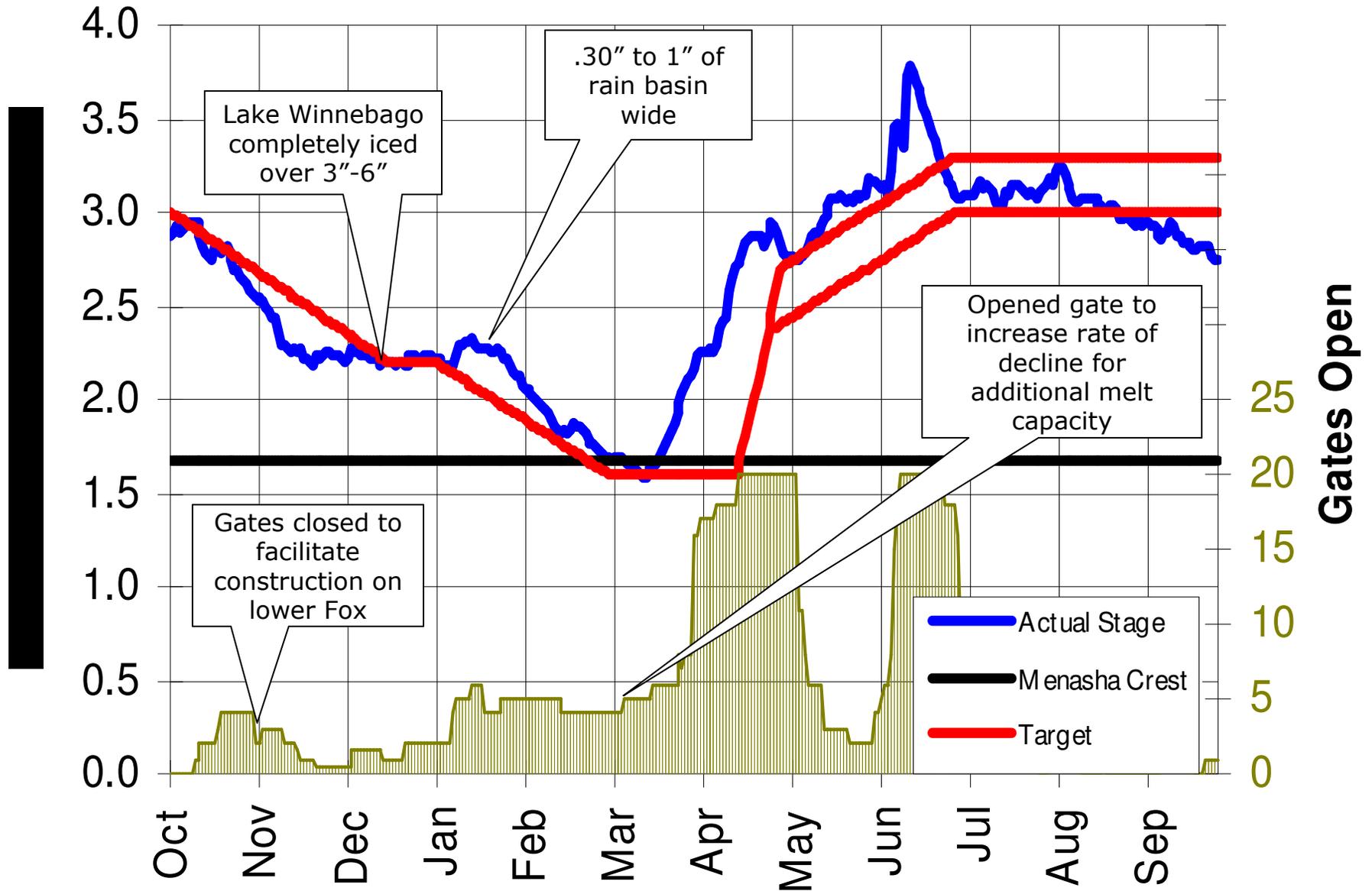
2007-2008 Lake Winnebago Basin-Wide Precipitation



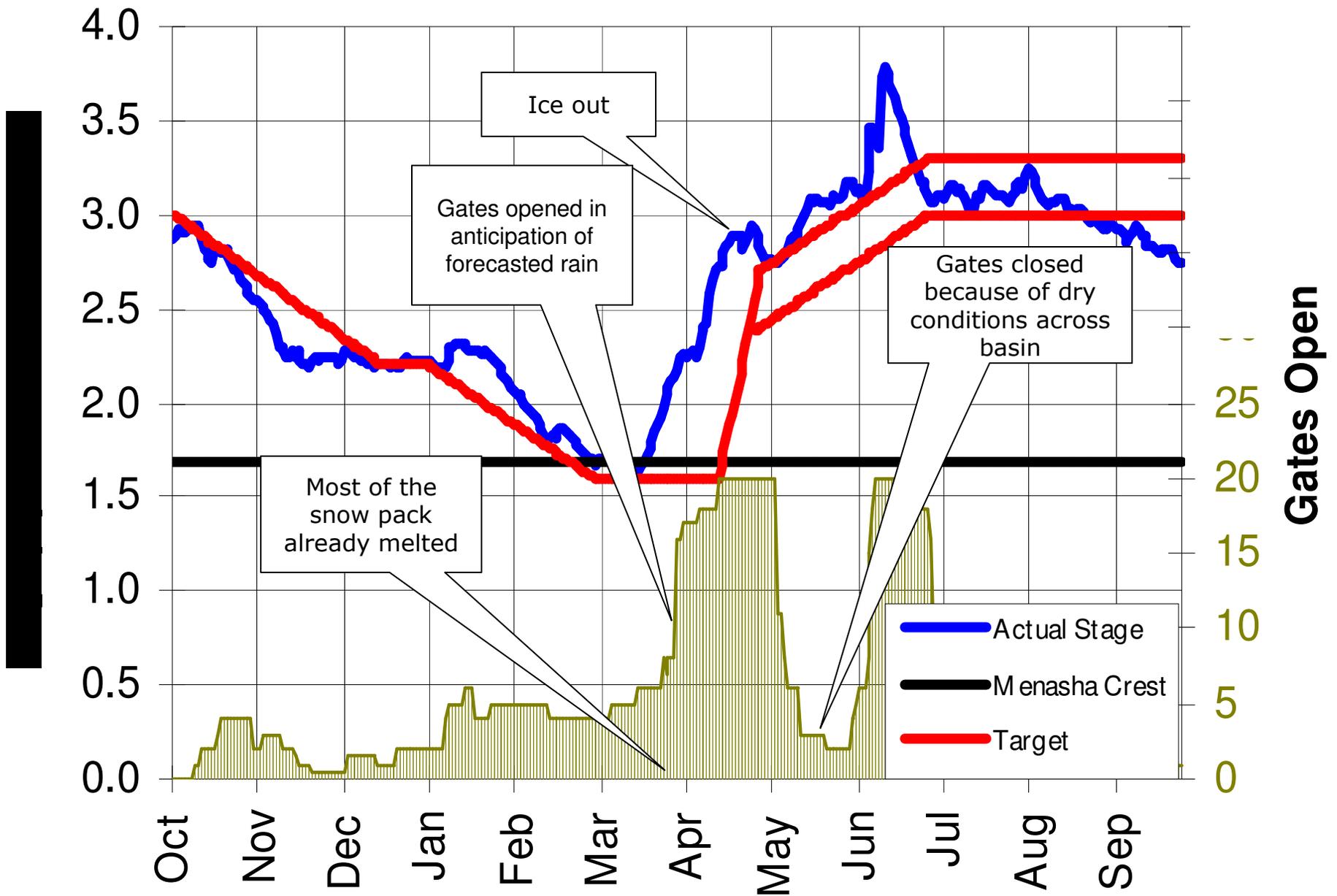
Annual Peak Flow in Upper Fox River at Berlin, WI



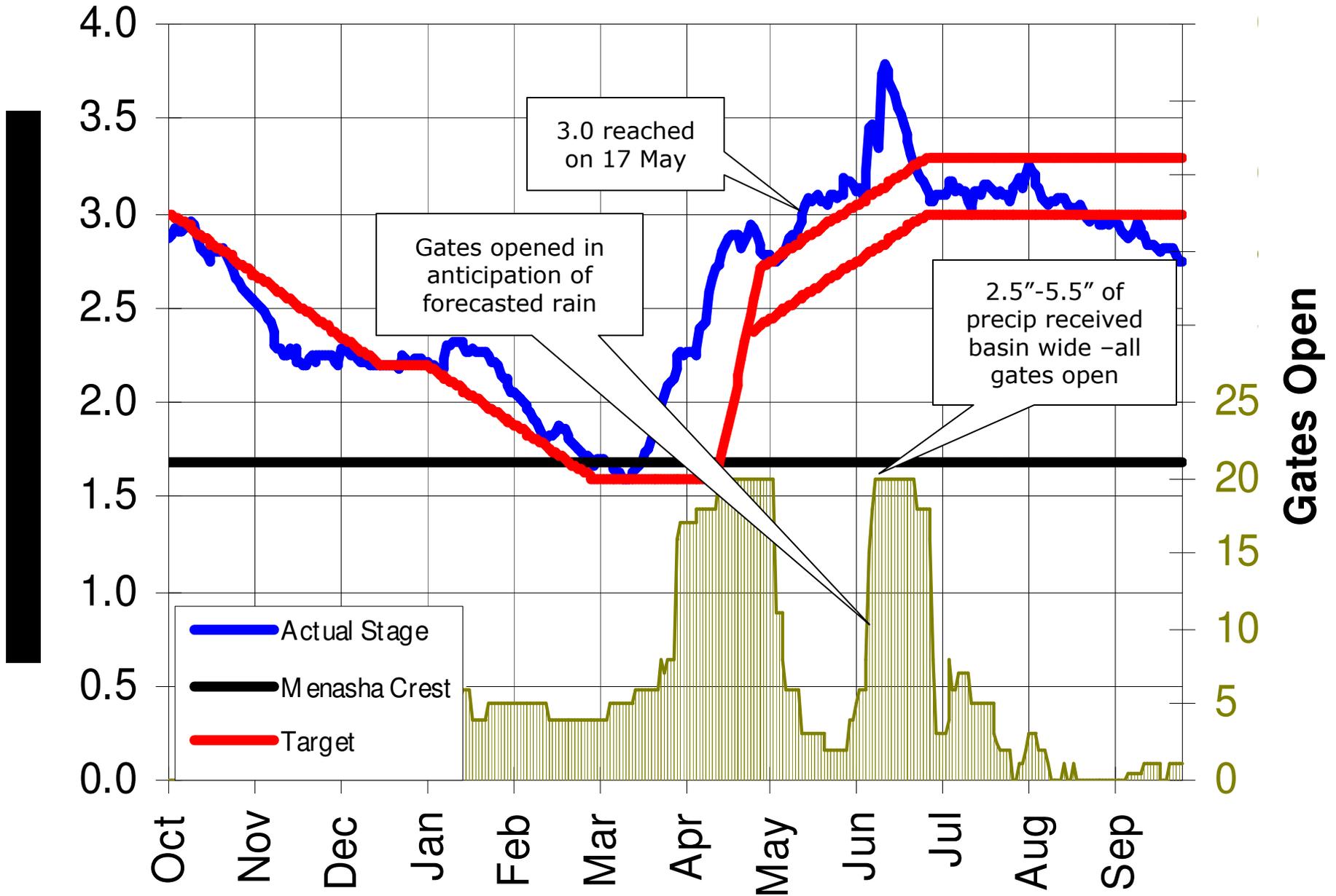
2007-2008 Stage with # of Open Gates



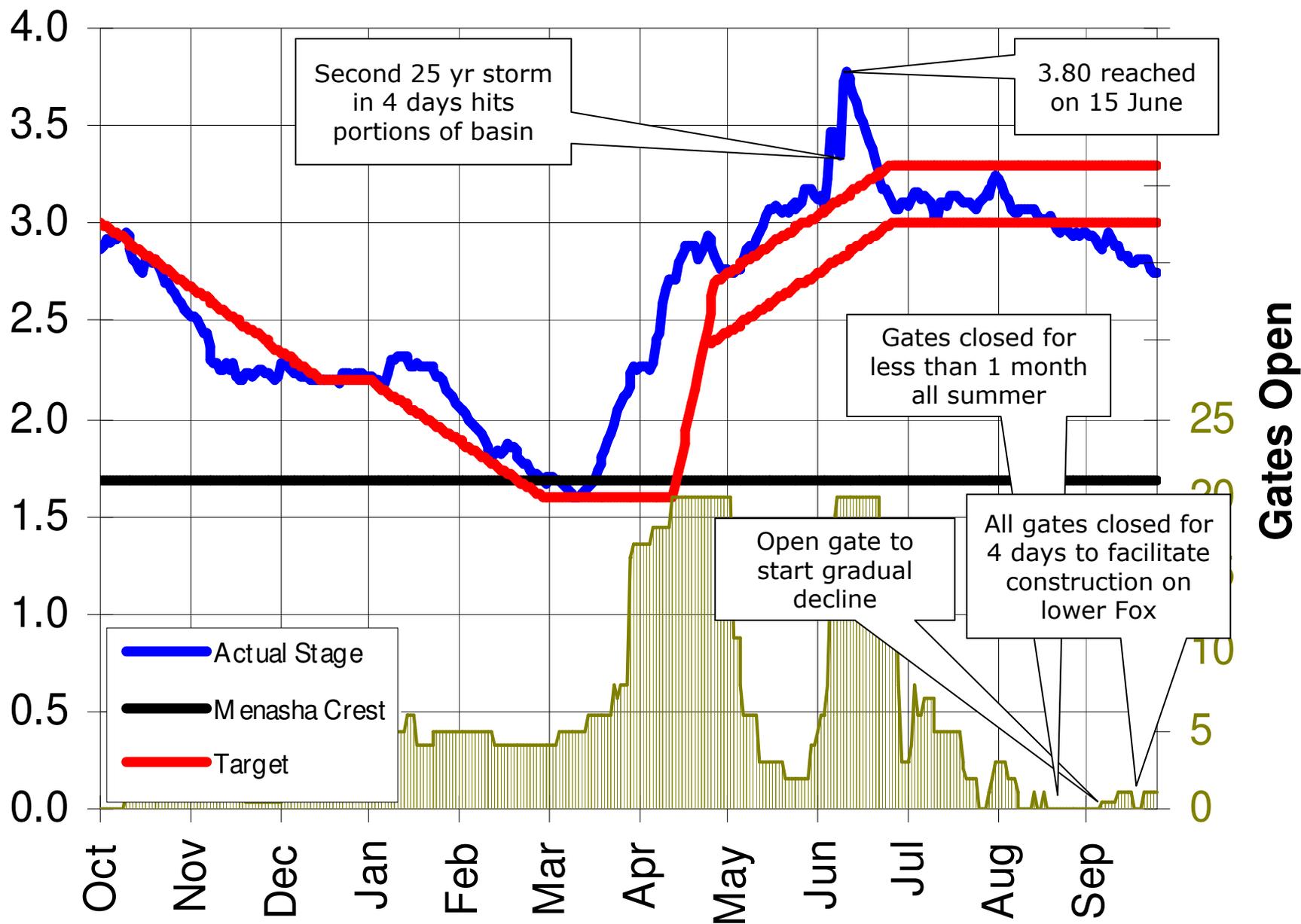
2007-2008 Stage with # of Open Gates



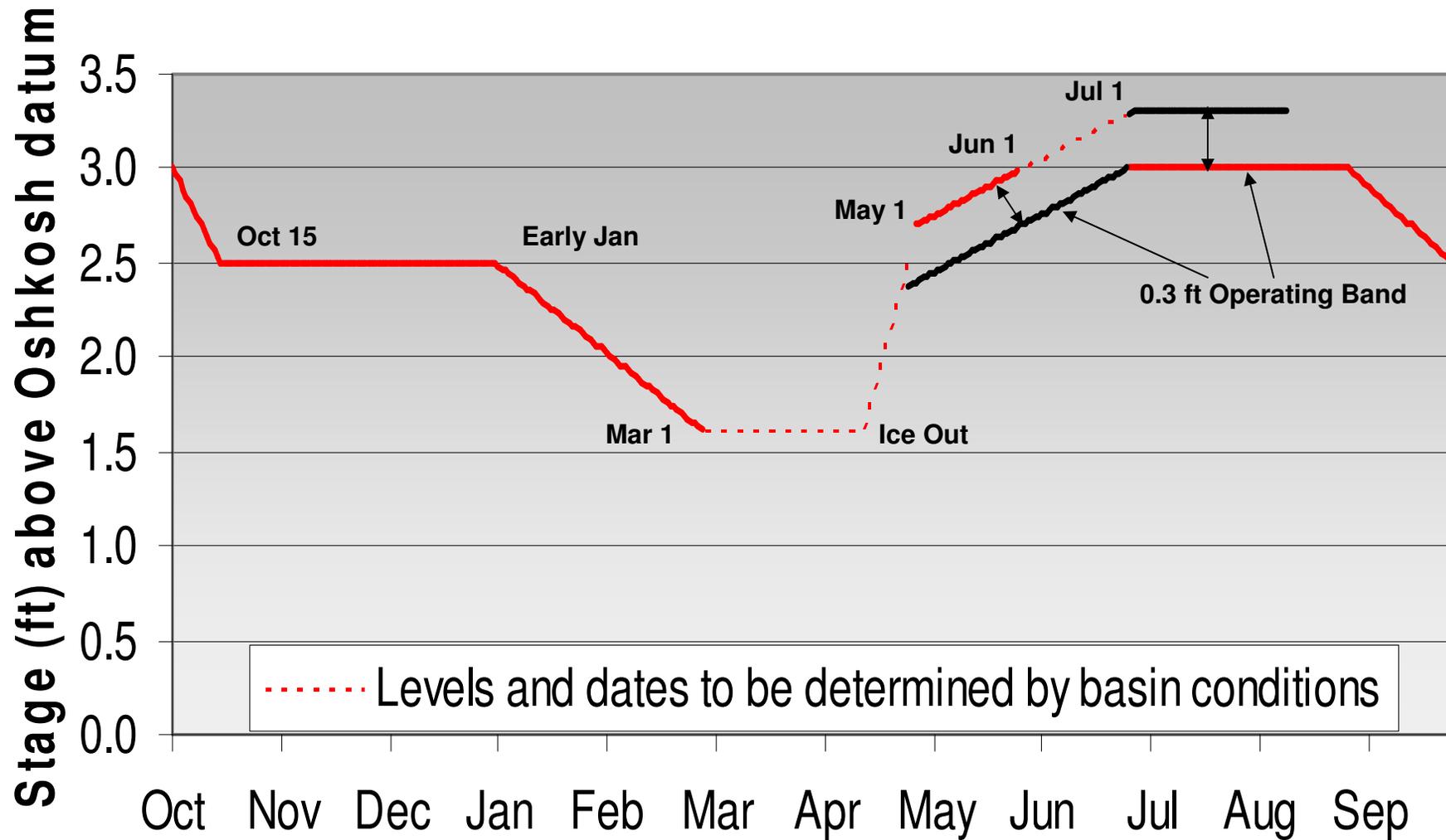
2007-2008 Stage with # of Open Gates



2007-2008 Stage with # of Open Gates



Proposed 2008-2009 Target Water Levels





<http://www.lre.usace.army.mil/greatlakes/hh/lakewinnebago/>

USACE - Detroit District - Lake Winnebago - Microsoft Internet Explorer

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Important Notices

- [Current Conditions](#)
- [Ice Conditions \(ICE OUT\)](#)
- [2008 Drawdown Conference Call Minutes](#)
- [2008 Lake Winnebago Spring Fill-up Minutes](#)
- [2007 Regulation Meeting Minutes](#)
- [2007 Regulation Meeting Presentation](#)

Water Levels and Flows:

- [Summary of Todays Hourly Data](#)
- [Summary of Yesterdays Hourly Data](#)
- [Summary of This Months Daily Data](#)
- [Summary of Last Months Daily Data](#)
- [Lake Winnebago Water Levels for the Last Two Months](#)
- [Tributary Inflows](#)
- [Open Historical Water Levels](#)

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- [Two Month Plots](#)
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Weather Information
Flood Monitoring

Done Local intranet