

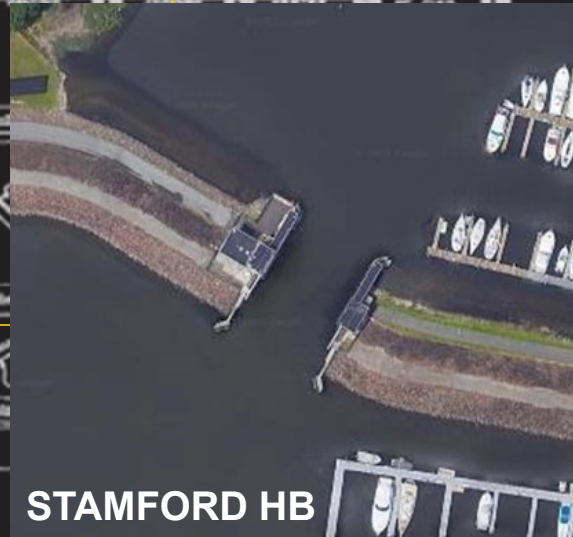
USACE FLOOD RISK MANAGEMENT PROGRAM

CT Flood Manager Annual Conference
November 1, 2023

Megan Pierce
Risk Communication Lead
New England District, USACE
Megan.E.Pierce@usace.army.mil



Thomaston Dam



STAMFORD HB

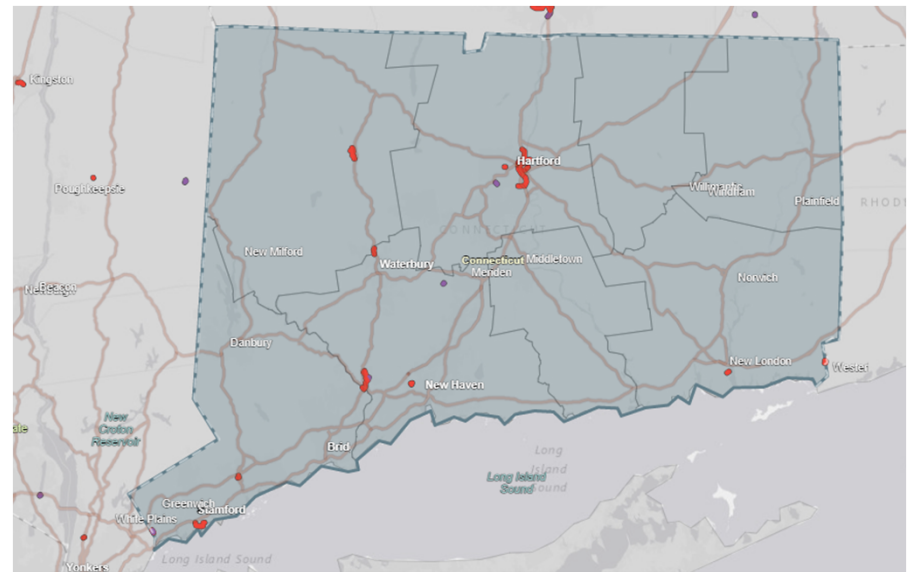
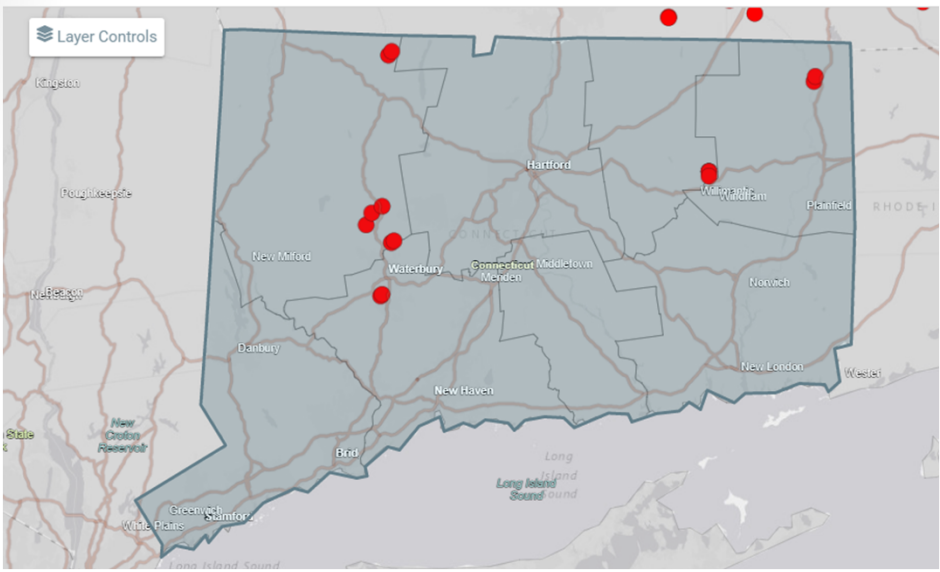




CONNECTICUT INFRASTRUCTURE



Dams: 12
Levees: 20
Hurricane Barrier: 1



8 USACE owned, operated dams
4 USACE Built and CT-DEEP owned

- East Branch Dam
- Hall Meadow Dam
- Sucker Brook Dam
- Mad River Dam

20 USACE Levees (23 mi)

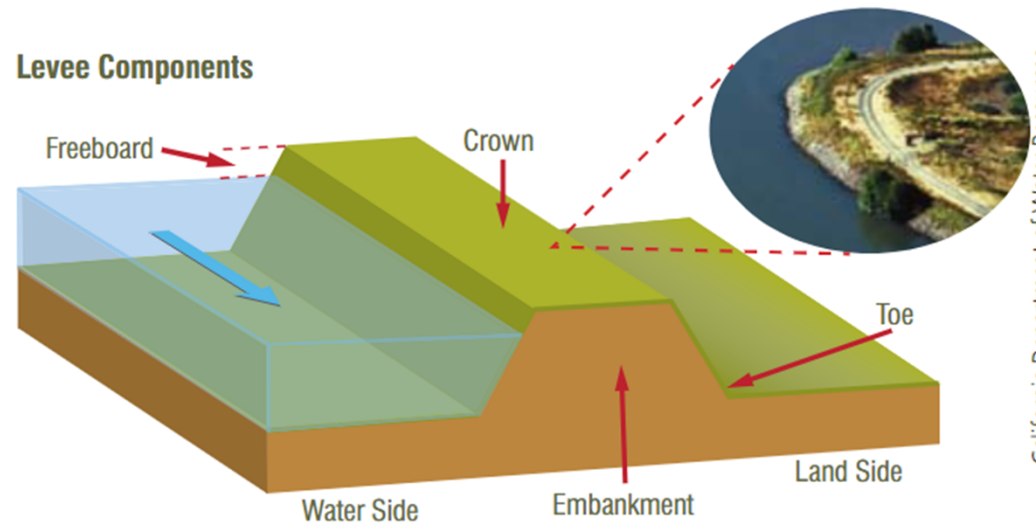


WHAT IS A LEVEE?



“man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.” (FEMA)

Levee Components

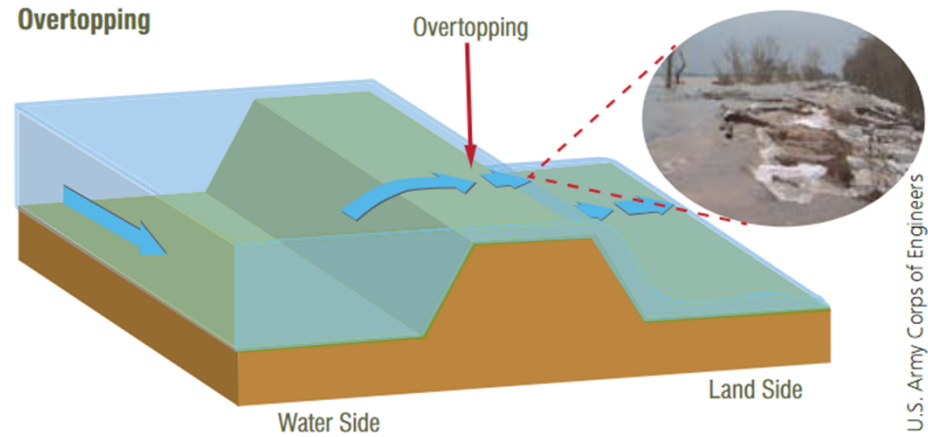




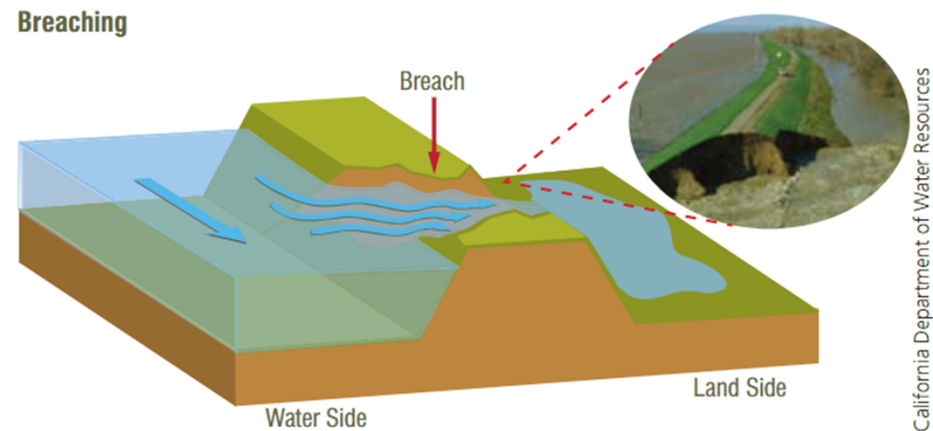
LEVEES



- No levee is floodproof, when a flood is too large the levee may overtop

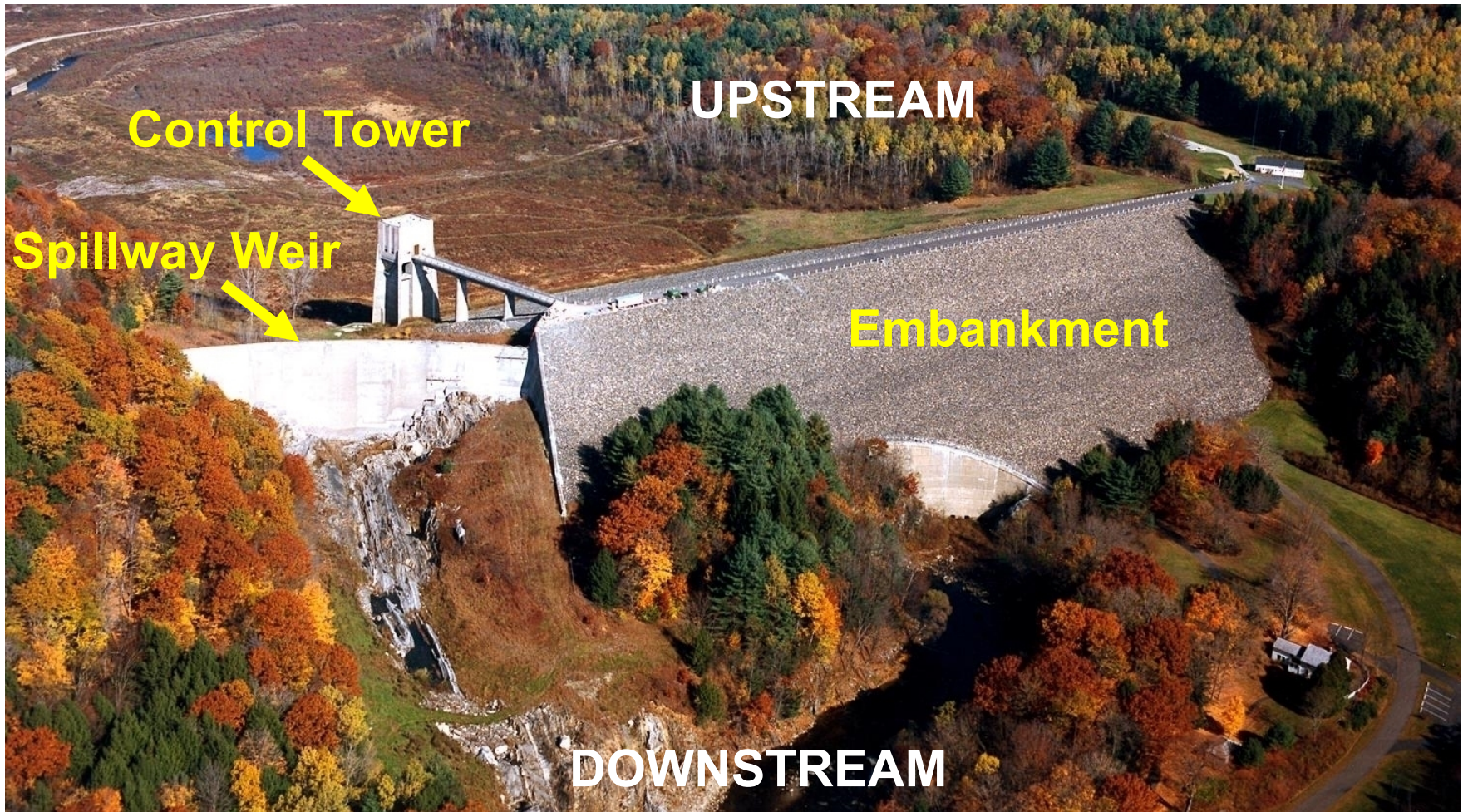


- Breaches can be gradual or sudden
- Causes
 - Strong river currents can erode the surface
 - debris or ice damage
 - burrowing animals
 - Trees growing and blowing over creating holes
 - Earthquakes can cause a loss of soil strength





WHAT IS A DAM?

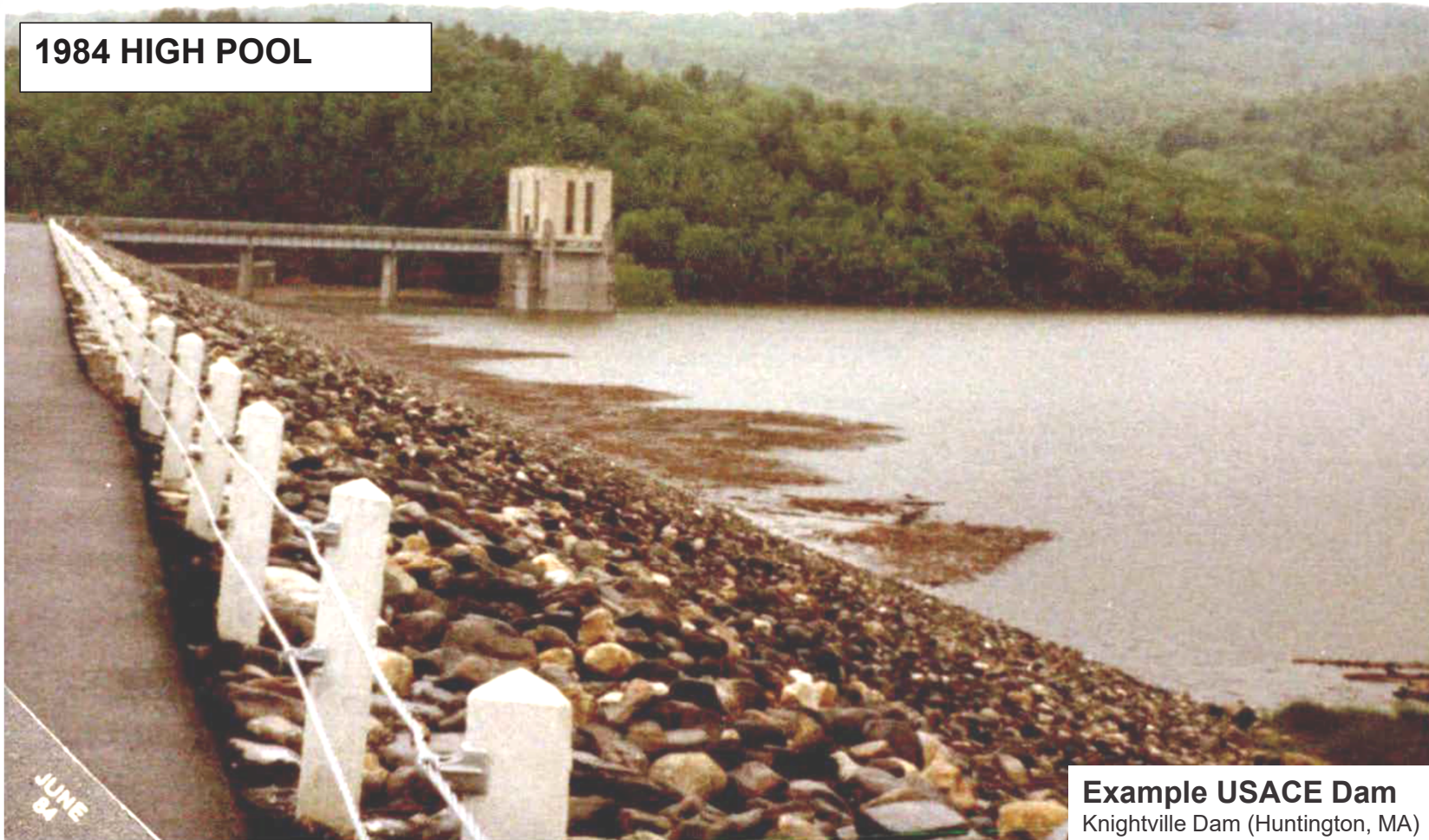




HIGH POOL EXAMPLE



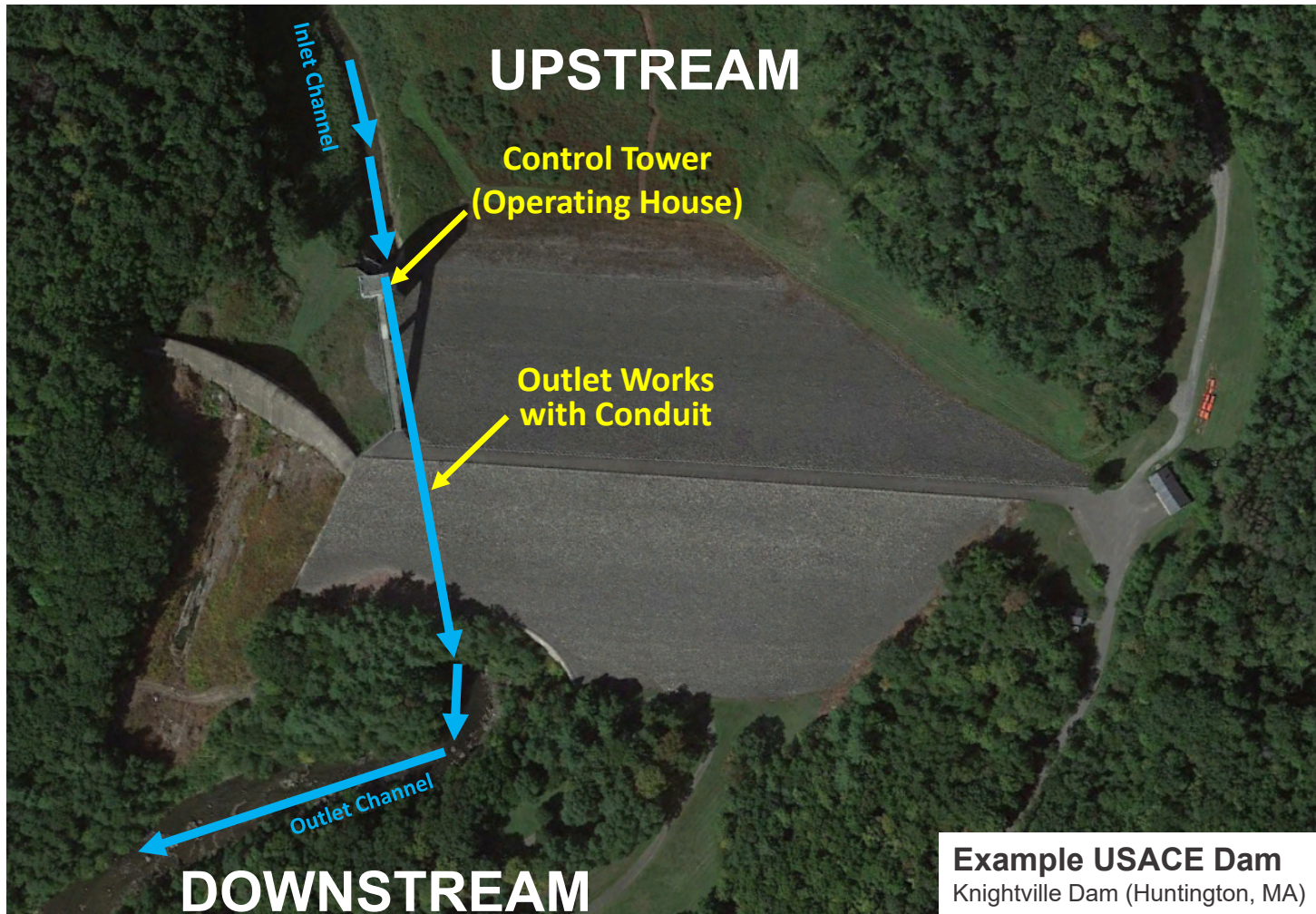
1984 HIGH POOL



Example USACE Dam
Knightville Dam (Huntington, MA)



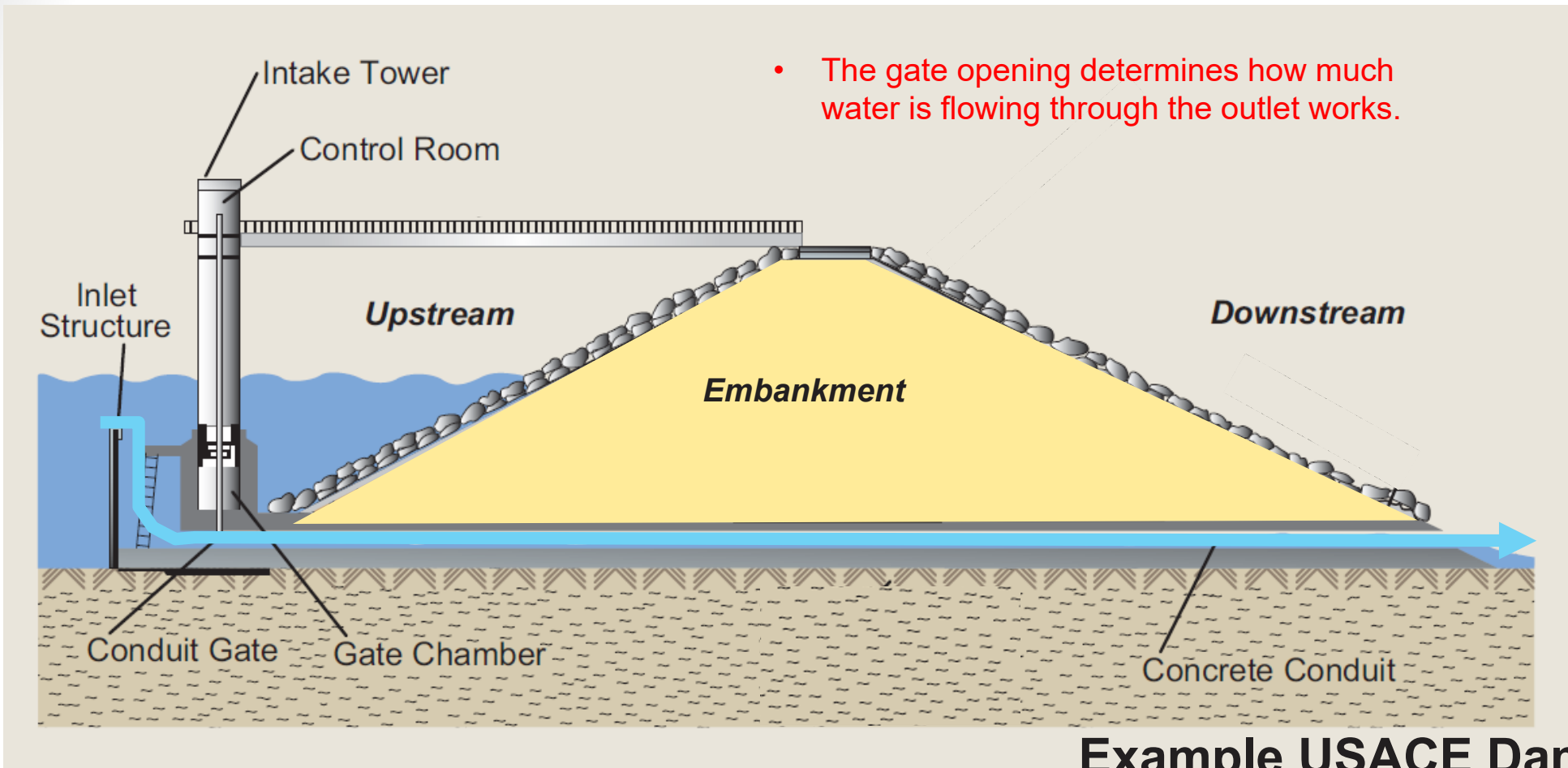
HIGH POOL EXAMPLE





DAM PROFILE

- The gate opening determines how much water is flowing through the outlet works.



Example USACE Dam



FULL STORAGE



- During extreme rain events the amount of water entering the reservoir can fill the reservoir to capacity.
- **A dam is 100% full when the reservoir is at the top of the spillway crest NOT the top of the dam.**
- Once the reservoir is full, as more water enters the reservoir water will begin to discharge over a concrete **spillway**.

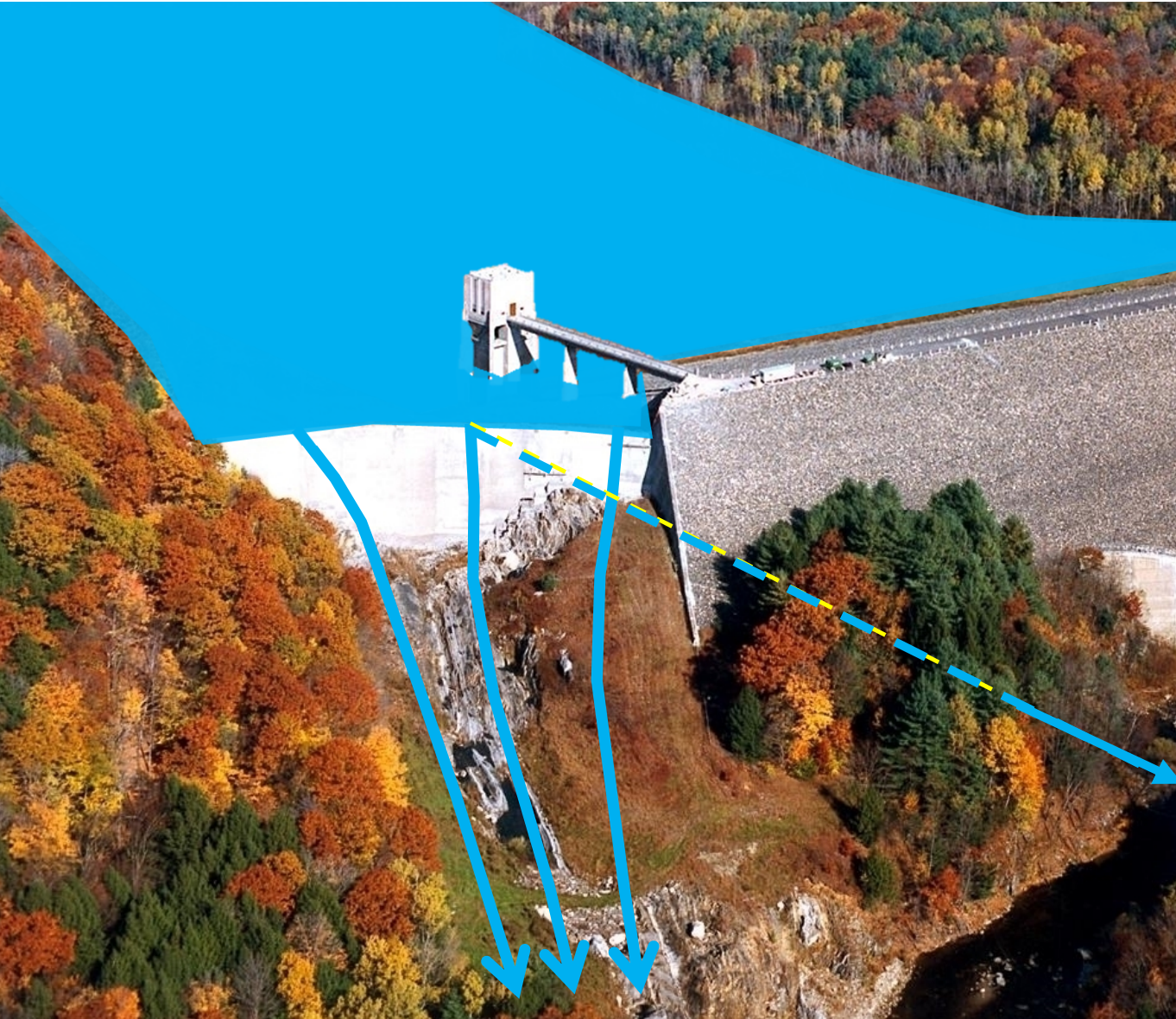




FULL STORAGE



- **A dam is 100% full when the reservoir is at the top of the spillway crest NOT the top of the dam.**



1) Storm waters are entering the reservoir causing the reservoir to fill. Project staff are making gate changes to minimize downstream flows through the conduit.

2) Excessive storm waters continue to flow into reservoir. Reservoir is 100% full, water is at the top of the spillway weir.

3) Reservoir is over 100% full, water is moving over the spillway.



RESERVOIR REGULATION

Reservoircontrol.com



NAE Reservoir Regulation Section
New England District

US Army Corps of Engineers

Hydro Data | **Project/Gate Data** | Tools | Snow/Ice | Mapping | Dam Safety | Levee Status

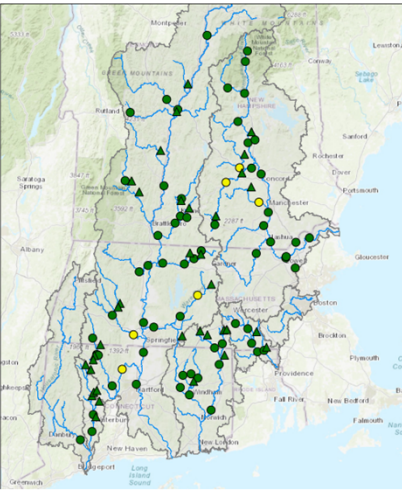
Links

- Weather
- Hurricane/Tides
- Whitewater/Recreation
- Bulletins & Reports
- Emergency Operations
- Cape Cod Canal
- RCC Personnel
- Contact Us
- Mobile Website
- Home

Notes

All data presented on this website are for informational purposes only and should be considered preliminary.

NAE - Regulated River Basins



Show All

Show Projects

Projects / Reservoirs

- ▲ Spillway Discharge
- ▲ Pool > 50% Full
- ▲ Pool < 50% Full
- ▲ Missing Data

Show River Gages

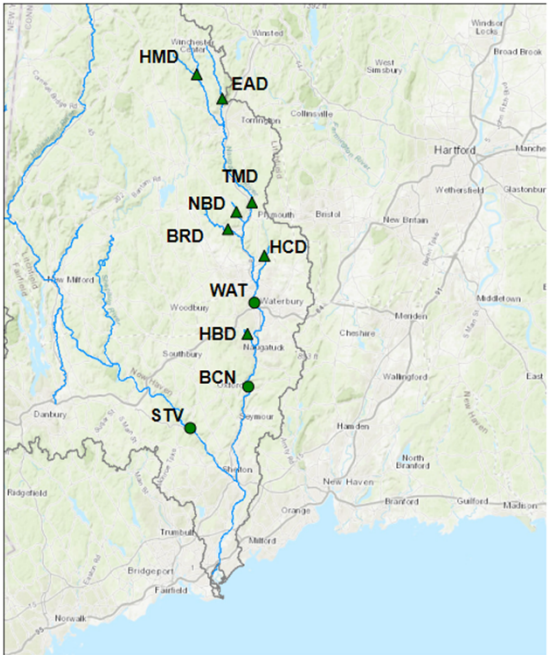
River Gages

- Flood Stage
- Above Warning Stage
- Normal
- Missing Data

[Switch to District Schematic](#)

Project Status River Status Forecast Status Precip/Temp Status

Naugatuck River Basin



Show All

Show Projects

Projects / Reservoirs

- ▲ Spillway Discharge
- ▲ Pool > 50% Full
- ▲ Pool < 50% Full
- ▲ Missing Data

Show River Gages

River Gages

- Flood Stage
- Above Warning Stage
- Normal
- Missing Data

[Switch to Basin Schematic](#)

Click on map text for detailed real-time data.

[Detailed Map](#)
 [Schematic Map](#)
 [Summary Table](#)
 [Basin Personnel](#)



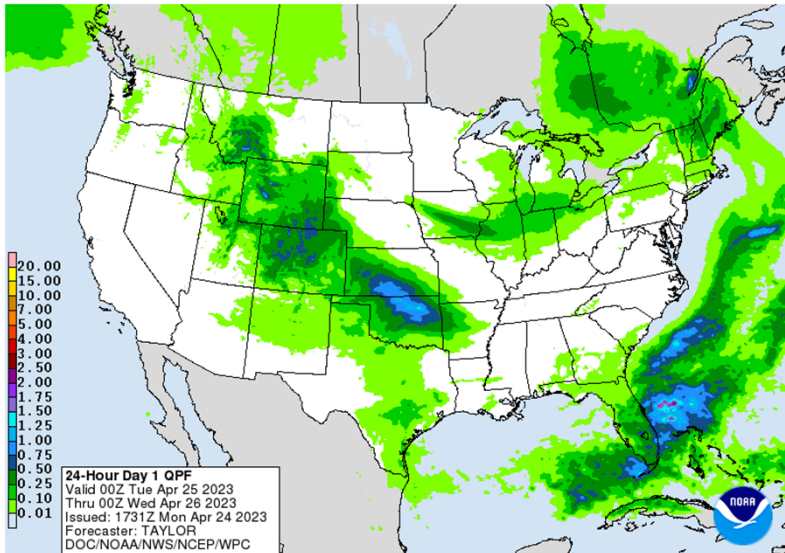
WEATHER FORECASTING



Weather Prediction Center Days 1-7 QPF Forecasts

(Contours Color-Filled)

Day 1: 24-Hour Total



National Weather Service National Headquarters
National Weather Service

Home Site Map News Organization Search for: NWS All NOAA

Local forecast by "City, ST" or Zip Code
City: ST: Go
XML RSS Feeds

Quantitative Precipitation Statement

Issued by NWS Northeast RFC

Current Version | Previous Version | Text Only | Print | Product List | Glossary Off
Versions: 1 2 3 4

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FSUS41 KTAR 241314
QPSTAR
.B8 TAR 0424 Z DH12/DC202304241309
.B1 /DRH+6/PPQFM
.B2 /DRH+12/PPQFM
.B3 /DRH+18/PPQFM
.B4 /DRH+24/PPQFM
.B5 /DRH+30/PPQFM
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.B9 /DRH+54/PPQFM
.B10 /DRH+60/PPQFM
.B11 /DRH+66/PPQFM
.B12 /DRH+72/PPQFM
:
: Quantitative Precipitation Forecast
: from NWS Northeast River Forecast Center
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: 0424 0425 0425 0425 0425 0426 0426 0426 0427 0427
:
: HSA ALBANY
: Lake Champlain
: GVN6 0.05 / 0.07 / 0.02 / 0.00 / 0.00 / 0.02 / 0.00 / 0.00 / 0.00 / 0.10 / 0.06 / 0.00 / :0.32 MID. GRANVILLE NY
: Connecticut River
: RKG1 0.03 / 0.07 / 0.03 / 0.00 / 0.02 / 0.03 / 0.00 / 0.00 / 0.00 / 0.10 / 0.09 / 0.00 / :0.37 ROCKINGHAM VT
: BALV1 0.04 / 0.07 / 0.02 / 0.00 / 0.01 / 0.02 / 0.00 / 0.00 / 0.00 / 0.14 / 0.10 / 0.00 / :0.40 BALL MTN DAM VT
: TOHV1 0.04 / 0.07 / 0.01 / 0.00 / 0.02 / 0.03 / 0.00 / 0.00 / 0.00 / 0.14 / 0.09 / 0.00 / :0.40 TOMSHEND DAM VT
: RVRC3 0.00 / 0.00 / 0.00 / 0.00 / 0.02 / 0.02 / 0.00 / 0.00 / 0.00 / 0.05 / 0.07 / 0.00 / :0.16 RIVERTON CT
: Housatonic River
: GTB3 0.00 / 0.01 / 0.00 / 0.00 / 0.01 / 0.02 / 0.00 / 0.00 / 0.00 / 0.05 / 0.05 / 0.00 / :0.17 GREAT BARRINGTON MA
: FLVC3 0.00 / 0.01 / 0.00 / 0.00 / 0.02 / 0.02 / 0.00 / 0.00 / 0.00 / 0.06 / 0.05 / 0.00 / :0.14 FALLS VILLAGE CT
: TENN6 0.00 / 0.01 / 0.00 / 0.00 / 0.00 / 0.02 / 0.00 / 0.00 / 0.00 / 0.05 / 0.03 / 0.00 / :0.11 GAYLORDSVILLE CT
: GAYC3 0.00 / 0.01 / 0.00 / 0.00 / 0.00 / 0.02 / 0.00 / 0.00 / 0.00 / 0.05 / 0.04 / 0.00 / :0.12 GAYLORDSVILLE CT
: LLIC3 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.03 / 0.03 / 0.00 / :0.06 LAKE LILLINOH NY
: STVC3 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.00 / 0.02 / 0.03 / 0.00 / :0.05 STEVENSON CT
: THSC3 0.00 / 0.00 / 0.00 / 0.00 / 0.01 / 0.01 / 0.00 / 0.00 / 0.00 / 0.03 / 0.00 / 0.00 / :0.11 THORASTON DAM CT
: Hudson River
: NINC6 0.09 / 0.12 / 0.01 / 0.00 / 0.02 / 0.03 / 0.00 / 0.00 / 0.00 / 0.13 / 0.00 / 0.00 / :0.40 NENCOMB NY
: INDN6 0.02 / 0.07 / 0.00 / 0.00 / 0.01 / 0.02 / 0.00 / 0.00 / 0.00 / 0.12 / 0.00 / 0.00 / :0.24 INDIAN LAKE CT
: NCKN6 0.05 / 0.10 / 0.00 / 0.00 / 0.02 / 0.03 / 0.00 / 0.00 / 0.00 / 0.13 / 0.00 / 0.00 / :0.35 NORTH CREEK NY
: RVRN6 0.07 / 0.13 / 0.02 / 0.00 / 0.01 / 0.04 / 0.00 / 0.00 / 0.00 / 0.12 / 0.01 / 0.00 / :0.40 RIVERBANK NY
: HOYN6 0.02 / 0.08 / 0.00 / 0.00 / 0.01 / 0.02 / 0.00 / 0.00 / 0.00 / 0.12 / 0.00 / 0.00 / :0.25 HADLEY NY
: HOPN6 0.01 / 0.05 / 0.00 / 0.00 / 0.01 / 0.02 / 0.00 / 0.00 / 0.01 / 0.12 / 0.00 / 0.00 / :0.22 HOPE NY
: SACH6 0.00 / 0.03 / 0.00 / 0.00 / 0.00 / 0.01 / 0.00 / 0.00 / 0.00 / 0.11 / 0.00 / 0.00 / :0.15 CONKLINGVILLE NY
: FTEH6 0.01 / 0.06 / 0.00 / 0.00 / 0.00 / 0.01 / 0.00 / 0.00 / 0.00 / 0.09 / 0.01 / 0.00 / :0.18 FORT EDWARD NY
: BTTH6 0.02 / 0.05 / 0.01 / 0.00 / 0.00 / 0.01 / 0.00 / 0.00 / 0.00 / 0.11 / 0.05 / 0.00 / :0.25 BATTENVILLE NY

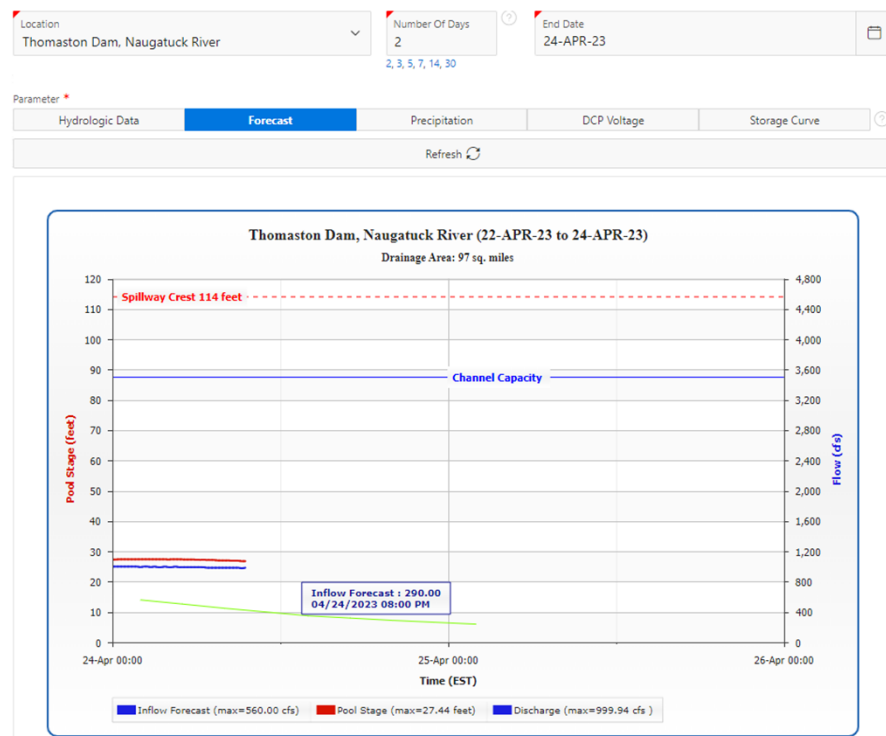
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RIVER AND INFLOW FORECASTING

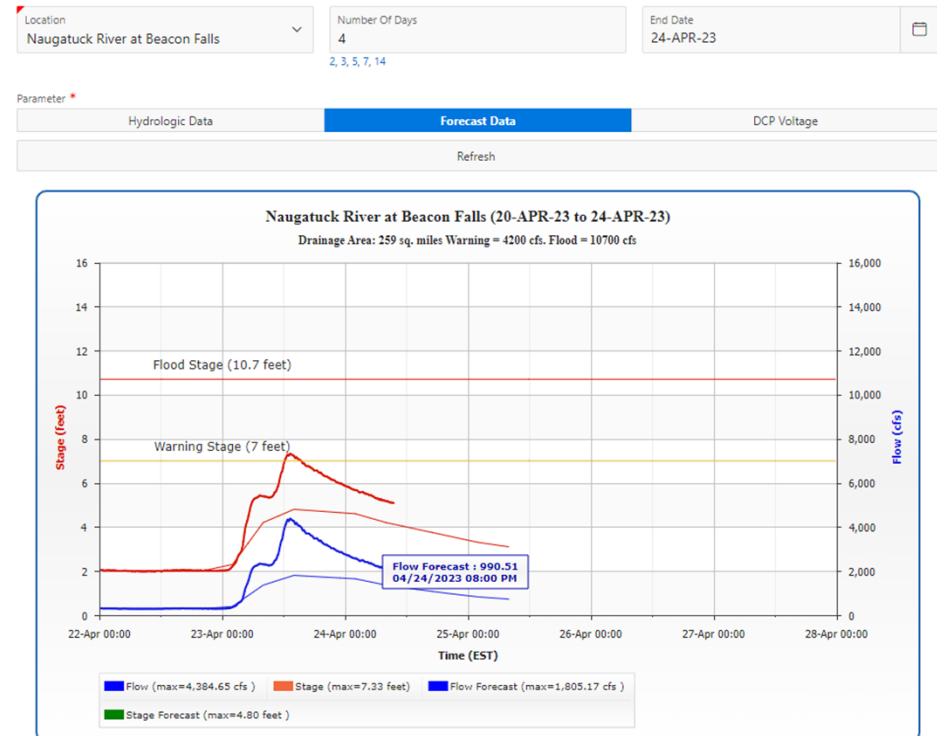


Reservoirs



Reservoir Regulation Center Data
NERFC Inflow Predictions

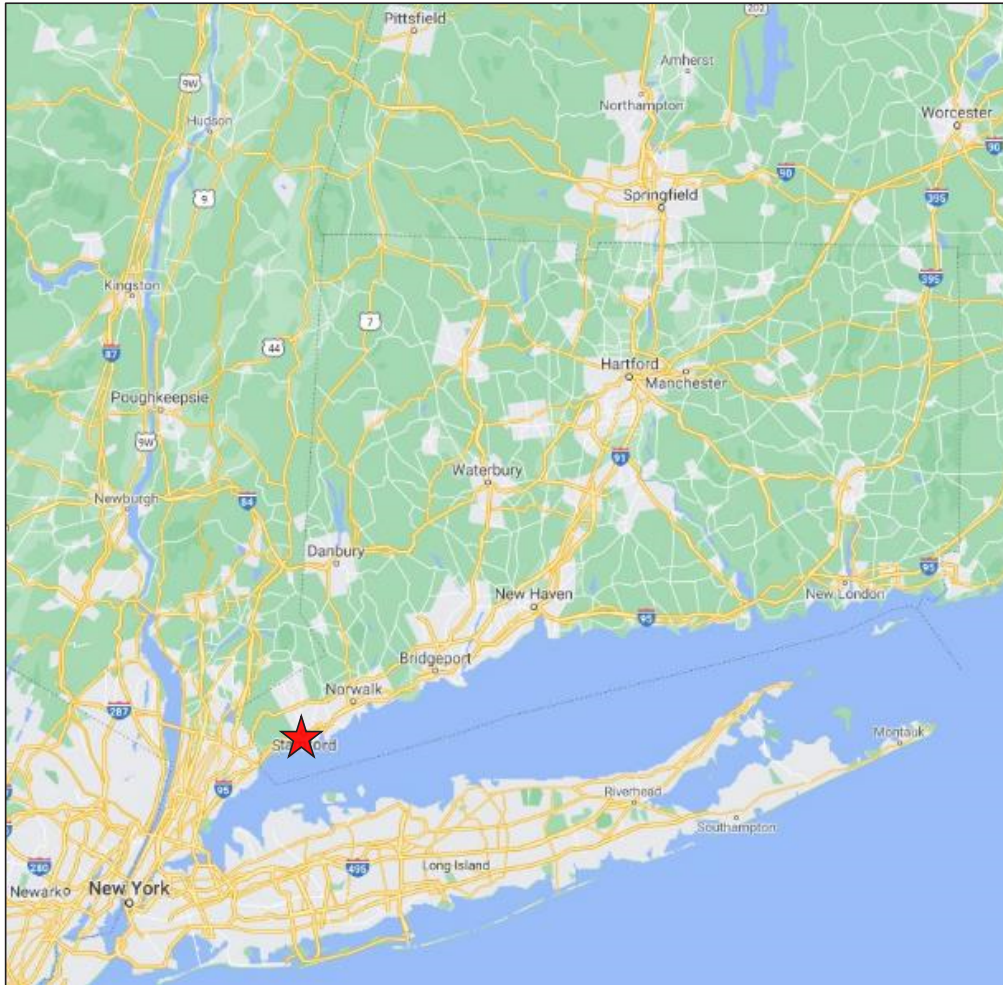
River Gages



USGS Gages
NERFC: Advanced Hydrologic Prediction Service

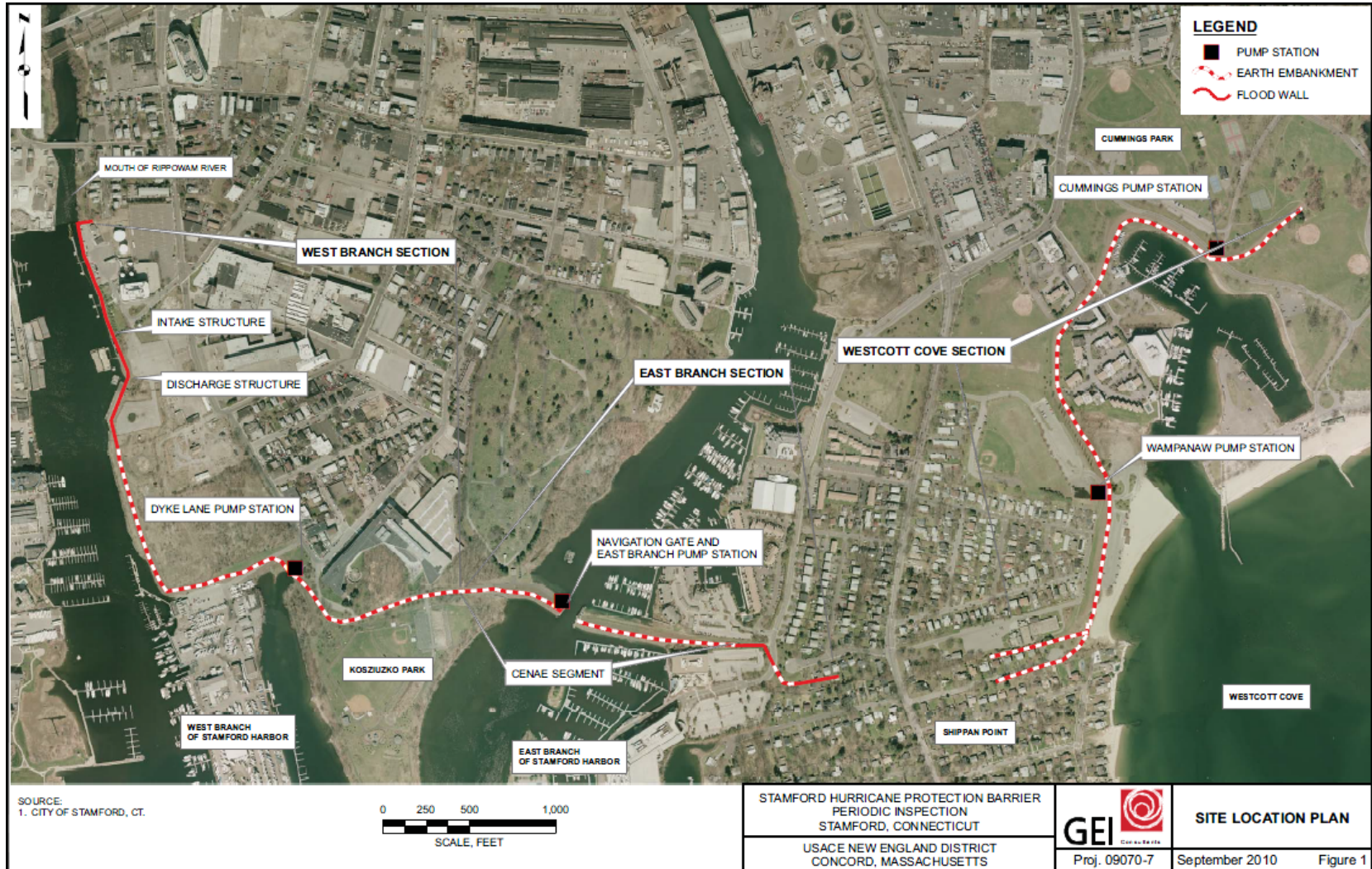


STAMFORD HURRICANE BARRIER





STAMFORD HURRICANE BARRIER



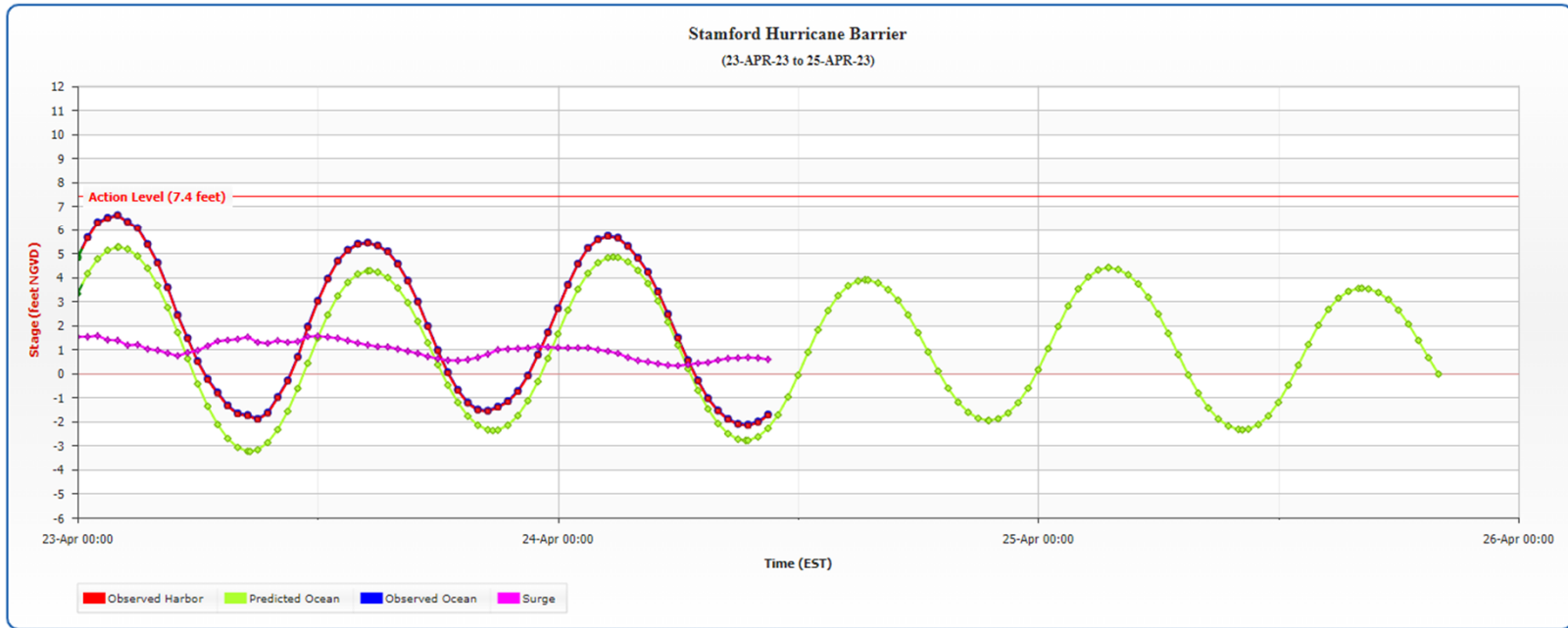


STAMFORD REAL-TIME DATA



Location: Stamford Hurricane Barrier
Number Of Days: 2
End Date: 24-APR-23

Parameter: Tide Data, DCP Voltage, Barometer Data
Refresh

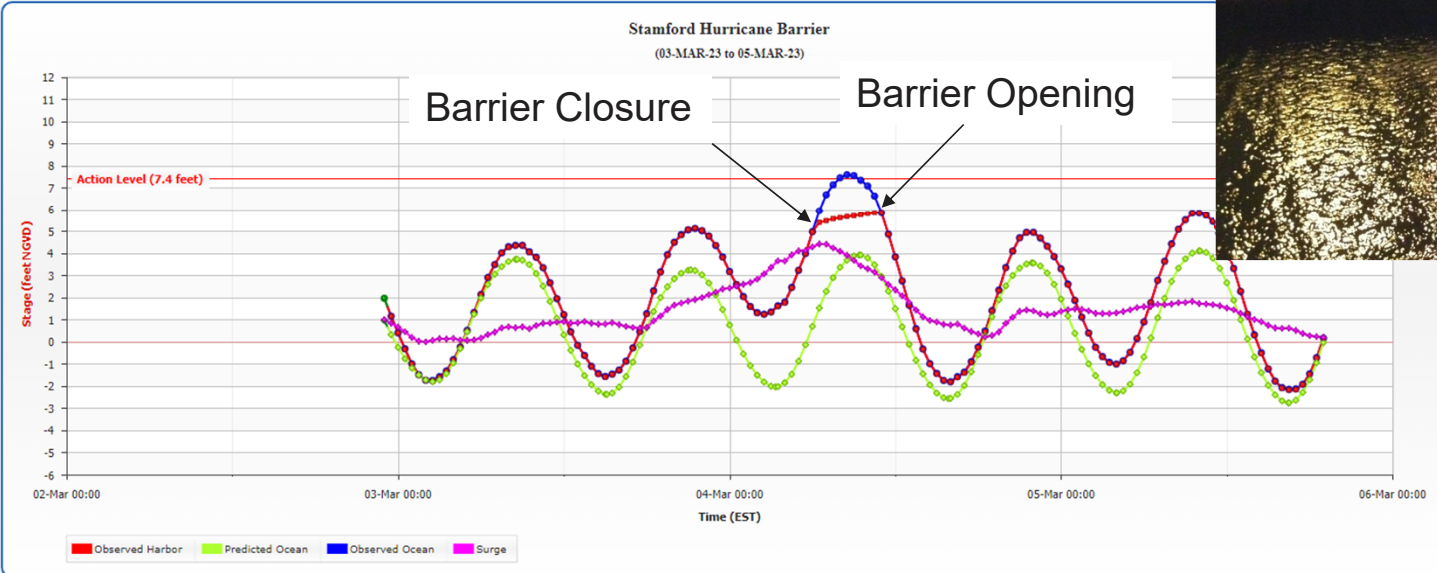




STAMFORD OPERATIONS



Location: Stamford Hurricane Barrier
Number Of Days: 2
End Date: 04-MAR-23
Parameter: Tide Data





STAMFORD'S HISTORY



HISTORICAL FACTS:

- Location: Stamford, CT
- Protects ~600 ac
 - manufacturing plants, main commercial district, residential areas
- Placed into operations in 1969
- Gate Type: Flap gate (hinged at the bottom)
- Damages to-date prevented are over \$80M
- Operates on average 15 times a year





STAMFORD'S HISTORY



BARRIER CLOSURE CRITERIA:

- Record high tide was Hurricane Sandy (2012) at 11.1' NGVD
- Top of barrier: 17' NGVD
- Barrier closure criteria historically has been 7' NGVD projected at the barrier.
- Several factors determine when to close the barrier:
 - NOAA Predicted Astronomical Tides
 - Wind – speed and direction
 - Storm surge
 - Upstream Inflow
- If projected Tide + Wind + Storm Surge + Inflows > closure criteria target
- ***It is Art and Science.***





STAMFORD BARRIER REPAIR



- Issues: Bent hinges and gate mis-aligned gate
- Evaluating detailed inspection results and developing repair approach and schedule
- Stamford Hurricane Barrier Gate is expected to be out of service for a minimum of 4 months during the repair

We will continue to share information with the city of Stamford and our stakeholders to ensure transparency during the repair or replacement.





QUESTIONS?



USACE Project, River, Weather Data (available to the public)
Reservoircontrol.com

Questions and Comments
Megan Pierce
Risk Communication Lead
New England District, USACE
Megan.E.Pierce@usace.army.mil