# Conowingo Dam & Susquehanna River Hydro Relicensing

*Chesapeake Bay Commission Meeting*
*September 20, 2013*

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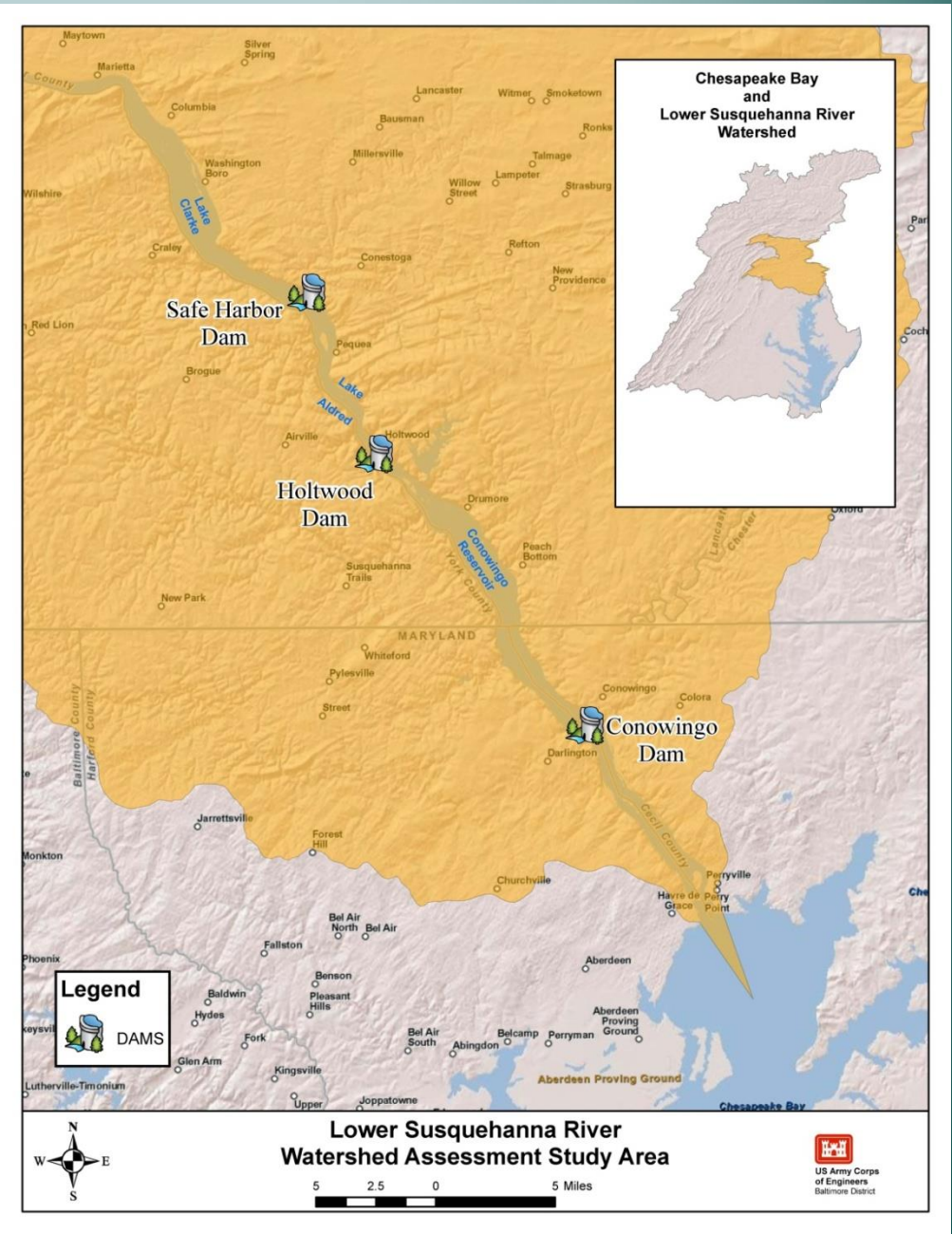
Maryland Department of Natural Resources



# Presentation Outline

- Susquehanna River Relicensing Info
- FERC Relicensing Activities
- FERC-Approved Environmental and Socioeconomic Studies
- Summary of Discussions
- Susquehanna River Sediment
- Lower Susquehanna River Watershed Assessment Study

# Susquehanna River Dams Relicensing

- Conowingo Dam
  -- expires 2014
- Muddy Run (Pump/Storage)
  – expires 2014
- Holtwood Dam
  – amended to 2030
- Safe Harbor Dam
  – expires 2030
- York Haven Dam
  – expires 2014

# Relicensing Participants

- Federal Energy Regulatory Commission (FERC)

- Exelon – Applicant / Owner
  - Conowingo & Muddy Run
- York Haven Power – Applicant / Owner
  - York Haven

- Maryland – DNR & MDE
- Pennsylvania – PADEP, PAFBC
- USFWS / NOAA / NMFS
- National Park Service (NPS)
- Susquehanna River Basin Commission (SRBC)
- The Nature Conservancy (TNC)
- Lower Susquehanna Riverkeeper












# FERC Relicensing Activities
## (To Date)

**2009**

- Exelon Filed Pre-Application Document
  - Maryland participated in the development of all study plans
  - FERC approved a total of 32 studies
  - Exelon conducted studies between 2010 and 2012

**2012**

- Exelon Filed Final License Application (FLA)
  August 31, 2012

**2013**

- FERC Issued Ready for Environmental Assessment (REA)
  April 29, 2013
    - FERC granted extension until December 15, 2013
      - MD can file comments on the FLA and 10j licensing recommendations
      - FWS must issue fish passage prescriptions
      - Maryland 401 WQC Application Due (1 year review period)

# Studies Approved by FERC

3.1 Seasonal and Diurnal Water Quality in Conowingo Pond and below Conowingo Dam
3.2 Downstream Fish Passage Effectiveness Study
3.3 Biological and Engineering Studies of American Eel at the Conowingo Project
3.4 American Shad Passage Study
3.5 Upstream Fish Passage Effectiveness Study
3.6 Conowingo East Fish Lift Attraction Flows
3.7 Fish Passage Impediments Study below Conowingo Dam
3.8 Downstream Flow Ramping and Fish Stranding Study
3.9 Biological and Engineering Studies of the East and West Fish Lifts
3.10 Maryland Darter Surveys
3.11 Hydrologic Study of the Lower Susquehanna River
3.12 Water Level Management (Littoral Zone and Water Level Fluctuation)
3.13 Study to Assess Tributary Access in Conowingo Pond
3.14 Debris Management Study
3.15 Sediment Introduction and Transport (Sediment and Nutrient Loading)
3.16 Instream Flow Habitat Assessment below Conowingo Dam

# Studies Approved by FERC (Continued)

3.17 Downstream EAV/SAV Study (Water Level Vegetative Cover Study)
3.18 Characterization of Downstream Aquatic Communities
3.19 Freshwater Mussel Characterization Study below Conowingo Dam
3.20 Salinity and Salt Wedge Encroachment
3.21 Impact of Plant Operations on Migratory Fish Reproduction
3.22 Shortnose and Atlantic Sturgeon Life History Studies
3.23 Study to Identify Habitat Use Areas for Bald Eagle
3.24 Dreissenid Mussel Monitoring Study
3.25 Creel Survey of Conowingo Pond and the Susquehanna River below Conowingo Dam
3.26 Recreational Inventory and Needs Assessment
3.27 Shoreline Management
3.28 Archaeological and Historic Cultural Resource Review and Assessment
3.29 Effect of Project Operations on Downstream Flooding
3.30 Osprey Nesting Survey
3.31 Black-crowned Night Heron Nesting Survey
3.32 Re-evaluate the Closing of the Catwalk to Recreational Fishing

# Summary of Discussions

## American Shad and River Herring Passage

- 2010 study: 73% entered lift, 45% passed (Safe Harbor passes 70+%)
- East Fish Lift Improvements
  - Reductions in turbulence associated with Kaplan units
  - Increased attraction flow
  - Additional gates / collection gallery
  - Increased capacity
- Refurbish / Rebuild West Fish Lift for Truck and Transport Program of American Shad
- Considering a Hatchery for Juvenile American shad
- Turbine Operations to Maximize Downstream Survival

# Summary of Discussions
## (Continued)

## American Eel Passage

- American eels are a host fish to freshwater mussel glochidium (larvae stage) and therefore needed for their successful restoration
- There is currently no passage for American Eels at Conowingo (first impoundment), except for the US Fish & Wildlife's experimental trap
- Goal is to trap at least 1 million eels per year and truck to various pre-determined locations in the watershed
- Developing an Eel "Management Plan"

# Summary of Discussions
## (Continued)

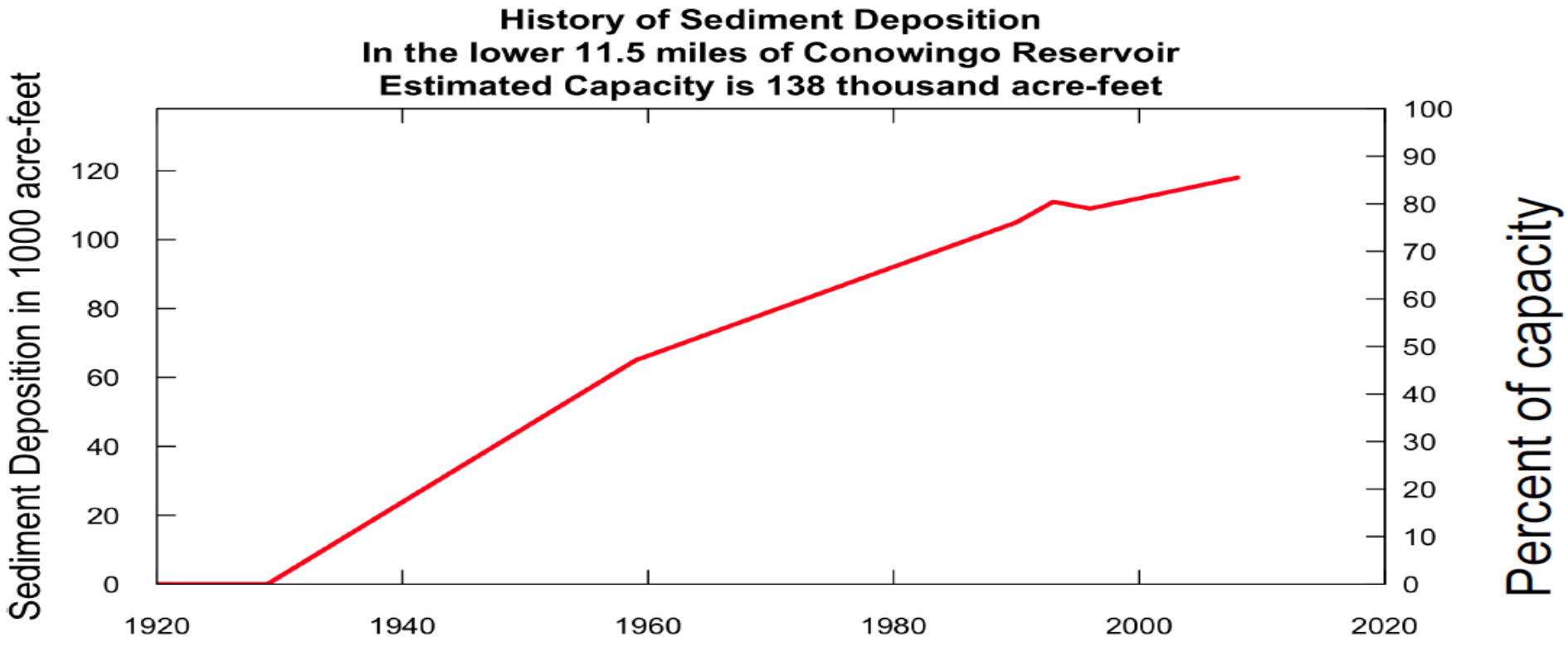
## Minimum Flows

- Intention is to balance operational, economic and ecosystem needs
- Discussions are trying to address three (3) main flow management components: minimum flow, ramping rates and maximum flow
- Focus is on flows during fish migration and spawning seasons
- Recommending flows that improve downstream habitat and reduce fish stranding
- Cannot conflict with Conowingo Pond Management levels

# Susquehanna River Sediment

- 3 million tons/year loading with 2 million tons/year captured
- Conowingo Dam Traps about 2% N, 40% P and 50-70% of suspended sediments
- Sediment Capacity at ≈ 86%
- 10-15 yrs of storage capacity?
- Tropical Storm Lee (2011) scoured ≈ 4 million tons of sediment / added about 2 yrs sediment capacity at 728,000 cfs
- Hurricane Agnes (1972) – largest single event at 1,100,000 cfs

# Sediment




Source: Langland, 2009
http://pubs.usgs.gov/sir/2009/5110/

# Lower Susquehanna River Watershed Assessment Study

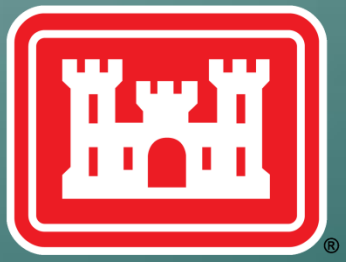
- Watershed assessment (Authorized by Section 729 of Water Resources Development Act of 1986)
- Cost: $1.376 million
- Cost-sharing sponsor = Maryland Department of the Environment with contributions from MD DNR, Susquehanna River Basin Commission and The Nature Conservancy
- Cost sharing = 75% Federal, 25% non-Federal
- Agreement executed September 2011
- Study duration expected to be 3-years

# LSRWA Partners









- Each agency will be providing funding and/or conducting specific tasks for the assessment

# Goals and Objectives

1. Evaluate strategies to manage sediment and associated nutrient delivery to the Chesapeake Bay.
   - Strategies will incorporate input from Maryland, New York, and Pennsylvania Total Maximum Daily Load (TMDL) Watershed Implementation Plans.
   - Strategies will incorporate evaluations of sediment storage capacity at the three hydroelectric dams on the Lower Susquehanna River.
   - Strategies will evaluate types of sediment delivered and associated effects on the Chesapeake Bay.

2. Evaluate strategies to manage sediment and associated nutrients available for transport during high flow storm events to reduce impacts to the Chesapeake Bay.

3. Determine the effects to the Chesapeake Bay due to the loss of sediment and nutrient storage behind the hydroelectric dams on the Lower Susquehanna River.

# Activities Completed to Date

- ✓ Sediment Data Collection (sediment cores, suspended sediment water quality, grain size analysis)
- ✓ Bathymetric Surveys
- ✓ Sediment Characterization
- ✓ Outreach Activities (project website, quarterly email updates, ...)
- ✓ Literature Search for Potential Strategies – Watershed and Reservoir-Specific
- ✓ Development of Hydraulic, Transport and Bay Models
- ✓ Modeling of Existing and Projected Conditions
- ✓ Assessed Feasibility of Sediment Management Alternatives

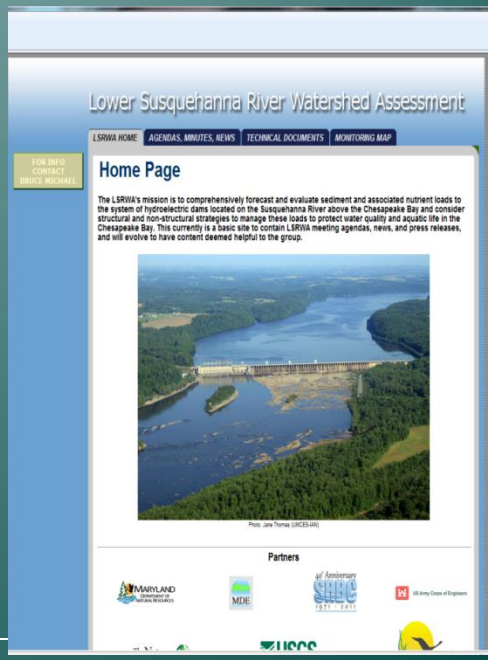
# Stakeholder Outreach

- ✓ Study Initiation Notice February 2012
- ✓ Agency Coordination Letters February 2012
- ✓ Face book Page:

http://www.facebook.com/pages/Lower-Susquehanna-River-Watershed-Assessment/359608094092593

- ✓ LSRWA Website: http://bit.ly/LowerSusquehannaRiver
- ✓ Stakeholder Involvement Plan
- ✓ Email updates: to be added email

bmichael@dnr.state.md.us

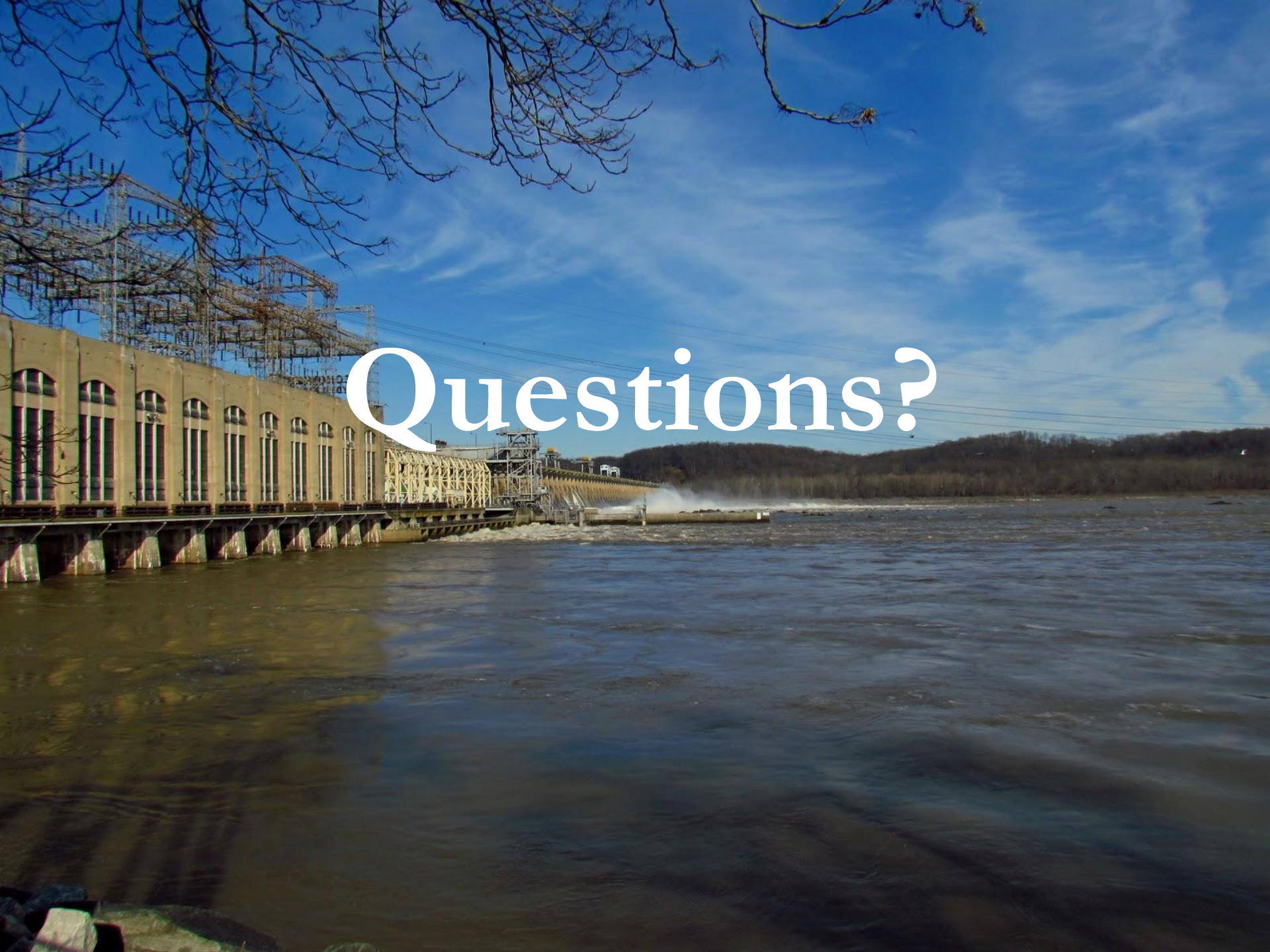


# Interagency Working Group

- ✓ Representatives from Federal partners:
  EPA, US Geological Survey, US Fish and Wildlife, NOAA, Army Corps of Engineers
- ✓ State Agencies:
  Maryland DNR and MDE, Pennsylvania Department of Environmental Protection
- ✓ Commissions:
  Chesapeake Bay Commission, Susquehanna River Basin Commission
- ✓ First meeting held on April 22, 2013
- ✓ Next meeting to be determined
- ✓ Role of Group is advisory

# Next Steps

- Continuation of ongoing sediment studies
- Potential public meetings to advise citizens on issues, studies and progress
- Exelon FERC filings on December 15, State and Intervener responses


Questions?