

A photograph of a dead, white fish floating in a dark, polluted river. In the background, a city skyline with several tall buildings is visible under a cloudy sky. The water is murky and reflects the buildings.

Patapsco River American Shad, Hickory Shad and River Herring Restoration Monitoring and Assessment and Patapsco River Fish Passage Restoration Project

Can fish be restored in urban watersheds?

Maryland Fisheries Resources Office
U. S. Fish and Wildlife Service

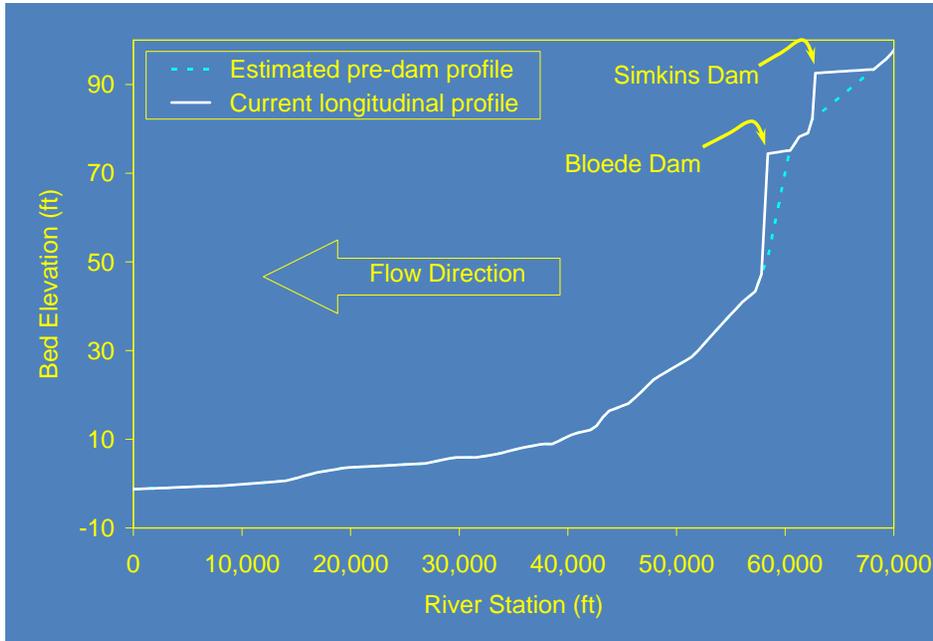
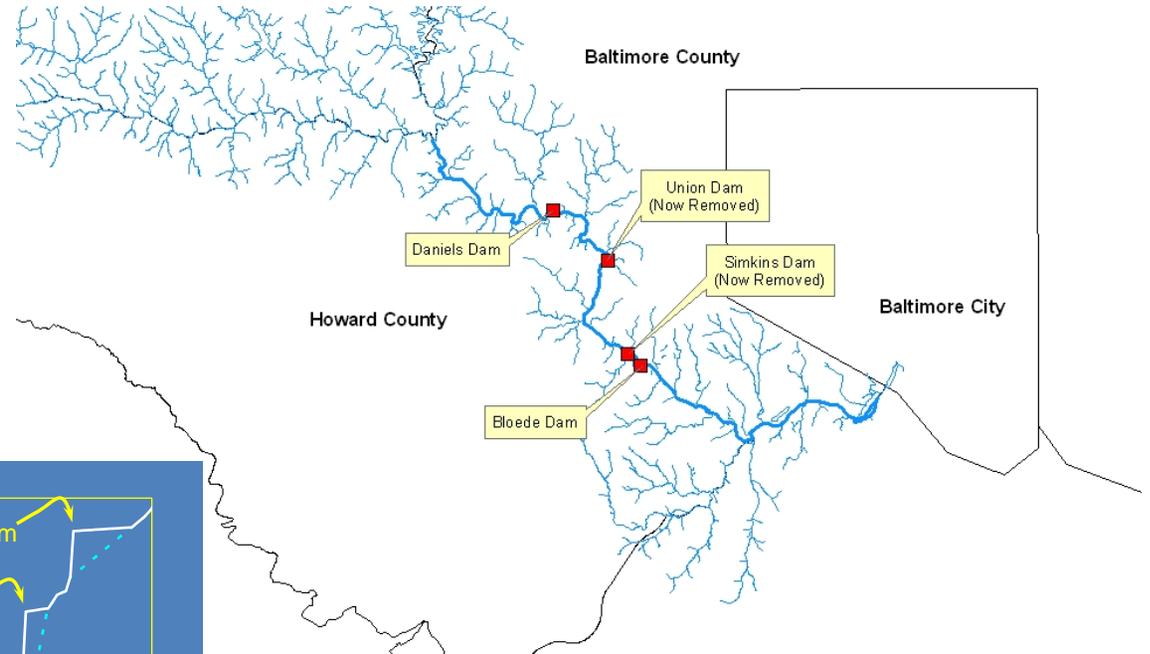
with MD DNR, NOAA, and American Rivers

Masonville Mitigation Project

- Funded by Maryland Port Administration
- Started in 2013
- Three years stocking
- Five years monitoring
- Adult, Ichthyoplankton, Juvenile surveys
- Abundance estimation



Patapsco River Watershed



Patapsco River Stocking 2013

**MD DNR stocked 1,514,000
larvae**

Species	Total stocked 2013
American shad	200,000
Hickory shad	484,000
Blueback herring	220,000
Alewife herring	610,000

**MD DNR stocked 336,000
early juveniles**

Species	Total stocked 2013
American shad	95,000
Hickory shad	77,000
Blueback herring	57,000
Alewife herring	107,000

Adult Electrofishing Survey

- Conducted March through May
- Five sample sites



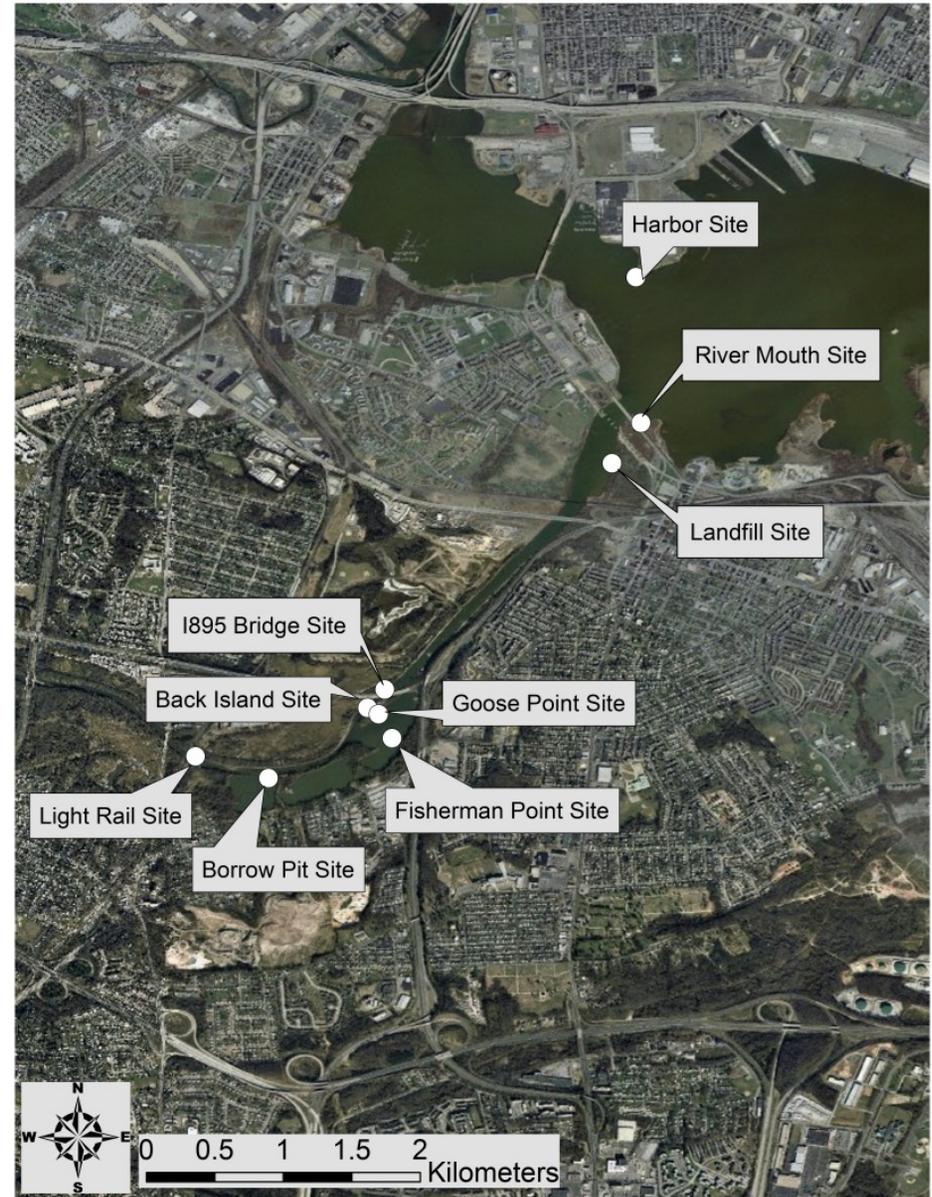
Ichthyoplankton Sampling

- Drift nets
- Towed nets
- 4 sites
- March to June



Juvenile Survey

- 14 sites sampled
- 30 foot fry seine
- 100 foot beach seine
- June – September



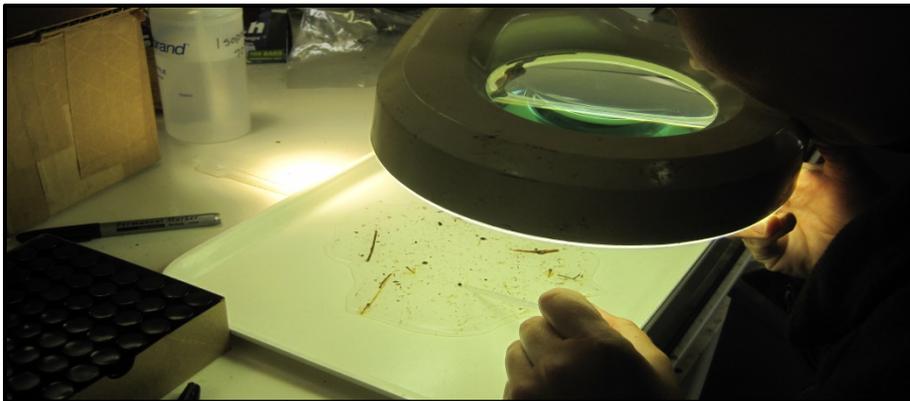
Adult Captures

- 66 alewife herring
- 53 blueback herring
- 38 hickory shad
- 1 American shad



Ichthyoplankton Sampling

- 352 eggs
- 13 larval alewife herring
- 14 larval blueback herring
- 8 larval hickory shad
- 1 larval American shad



Seine Survey

- 33 species
- 1,148 YOY fish captured
- 4,888 older fish captured
- 17 YOY striped bass



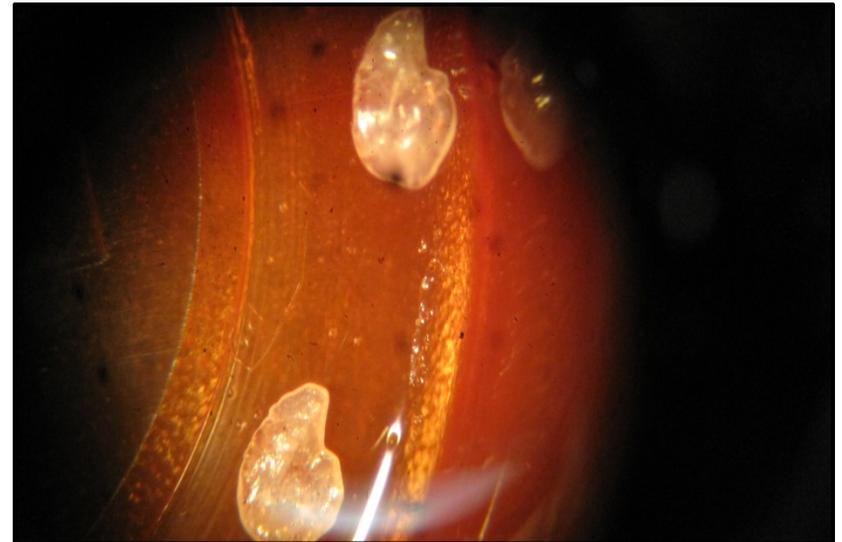
Juveniles

- 17 alewife herring
- 0 hickory Shad
- 68 American shad
- 208 blueback herring
- No juveniles found above route 648



American shad abundance

- No larval stocked juveniles recaptured
- 66 juvenile stocked shad recaptured
- 1 wild shad recaptured
- We estimate population of 3,076 wild American shad



Blueback Herring

- 14 larval stocked recaptures
- 3 juvenile stocked recaptures
- 184 wild juveniles captured
- We estimate a large wild population (400,000 fish)



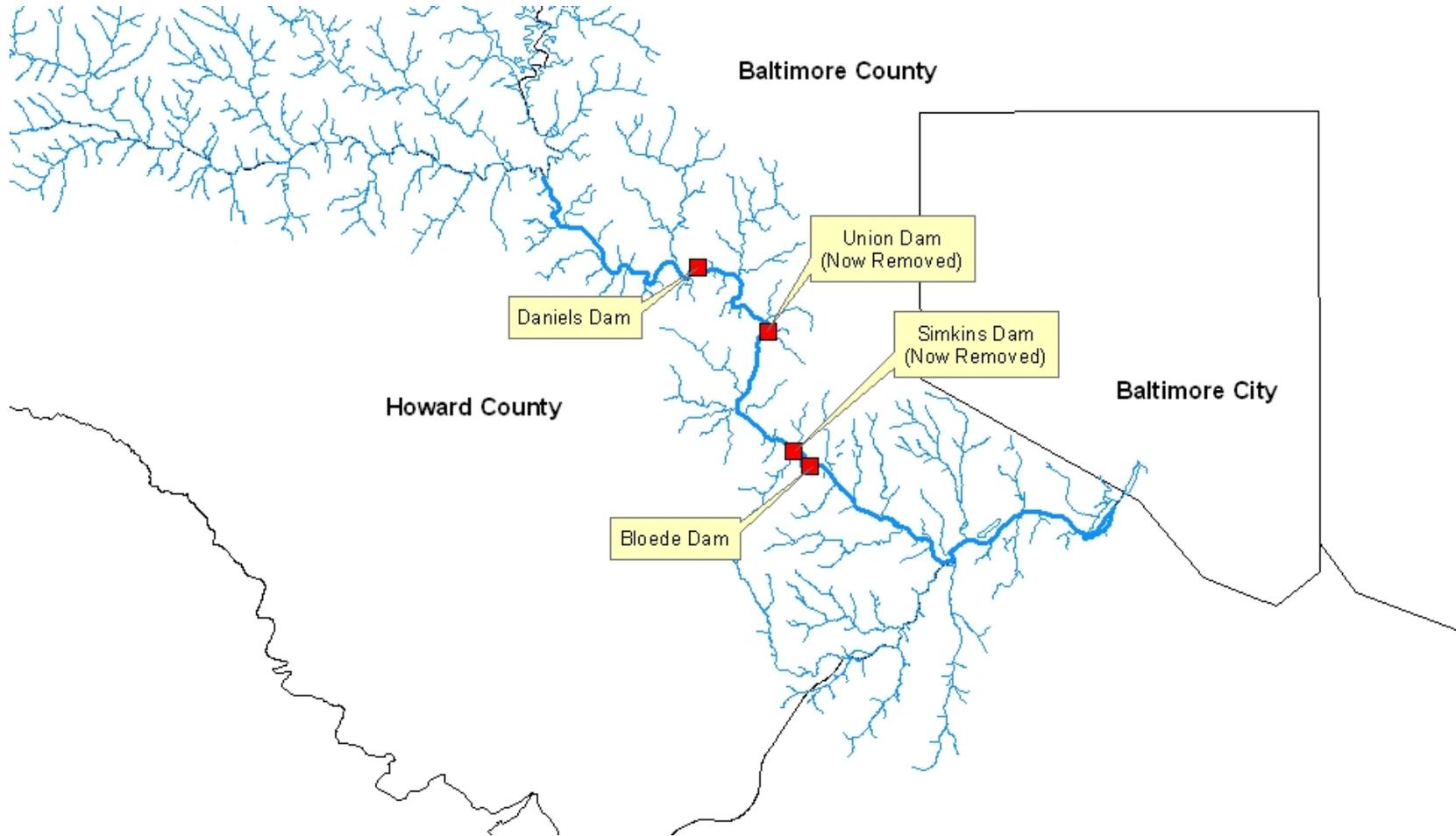


Conclusions



- **Upper coastal plain impacted by sediment**
- **Lower tidal portion of river functional**
- **Suggests stocking in lower river until dam removal**
- **Bloede dam removal in 2016 opens piedmont region**
- **Extending stocking and assessment could determine the effects of dam removal on restoring shad and river herring in the upper watershed**

Patapsco River Fish Passage Restoration



2009 ARRA funding



Union Dam removed Sept. 2010

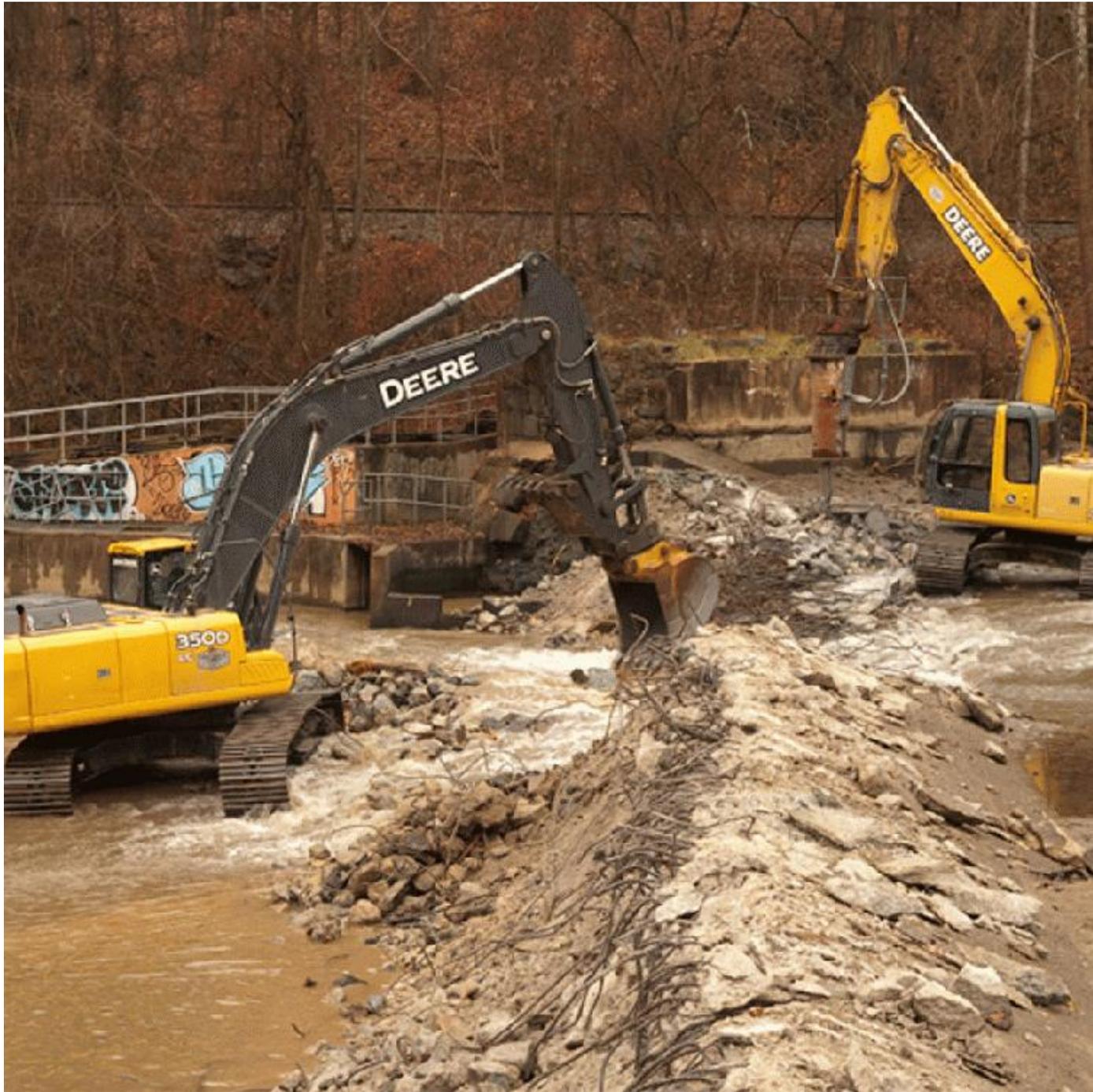


Union Dam – summer 2011



Simkins Dam – removed March 2011

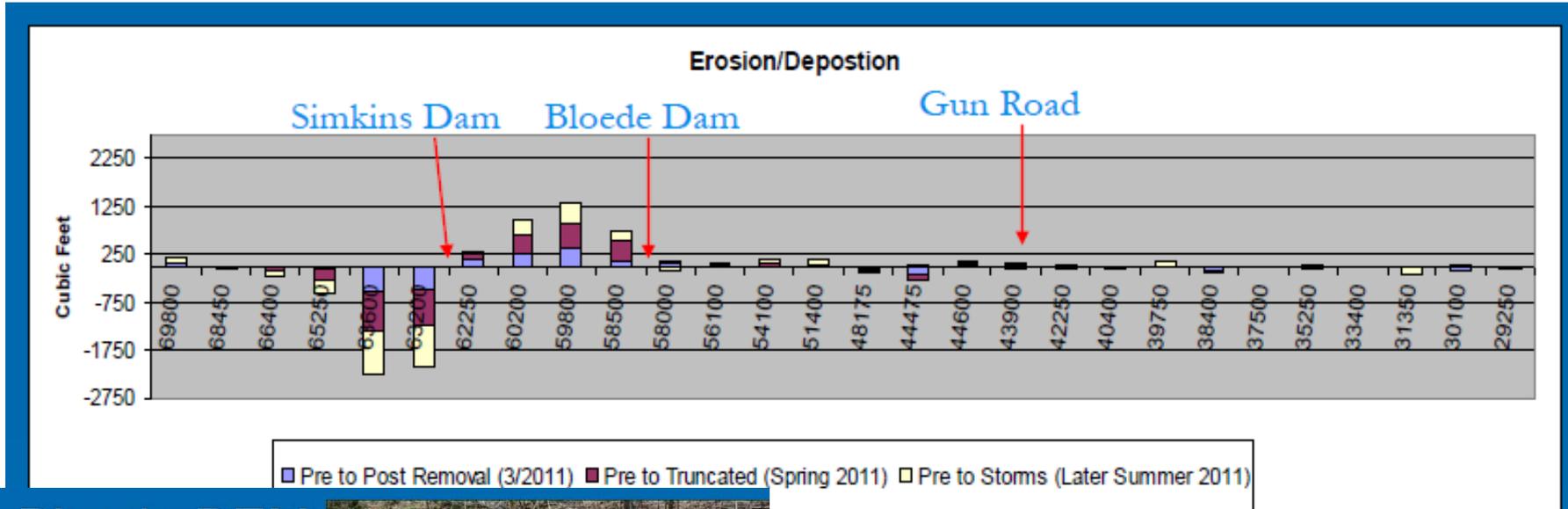




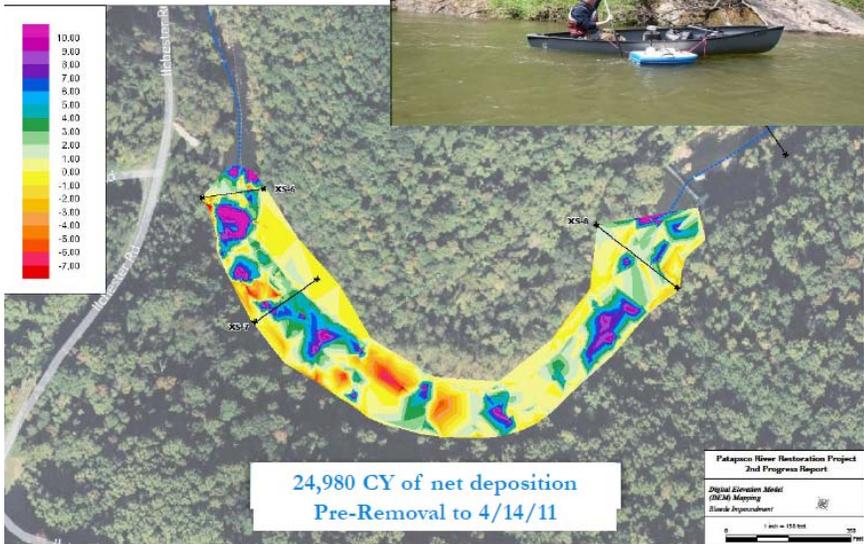
Simkins Dam – fall 2012



Biological and Physical Monitoring



Bloede DEM



Bloede Dam



Besides fish passage



The pipe



Bloede Dam

- NOAA ARRA funding was used for feasibility and design
- NOAA community restoration grant funding – 3.5 million
- USFWS – Sandy resiliency funding – 1 million
- NFWF – Sandy funding – will be hearing soon
- MDDNR - ~ 1 million