Monitoring and Restoration of Alabama Coastal Streams

Marlon Cook

Acknowledgements

- Mobile Bay National Estuary Program (Roberta Swann, Tom Herder, Amy Newbold, and Renee Collini)
- City of Daphne (Ashley Campbell)

Coastal Stream Restoration Funding

- Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf States.
- Enacted July 6, 2012
- Directs 80% of civil penalties related to the Deepwater Horizon oil spill into a trust fund to be distributed to Gulf States for environmental restoration projects.
- Congress designated the National Fish and Wildlife Foundation (NFWF) to administer RESTORE Act funds.

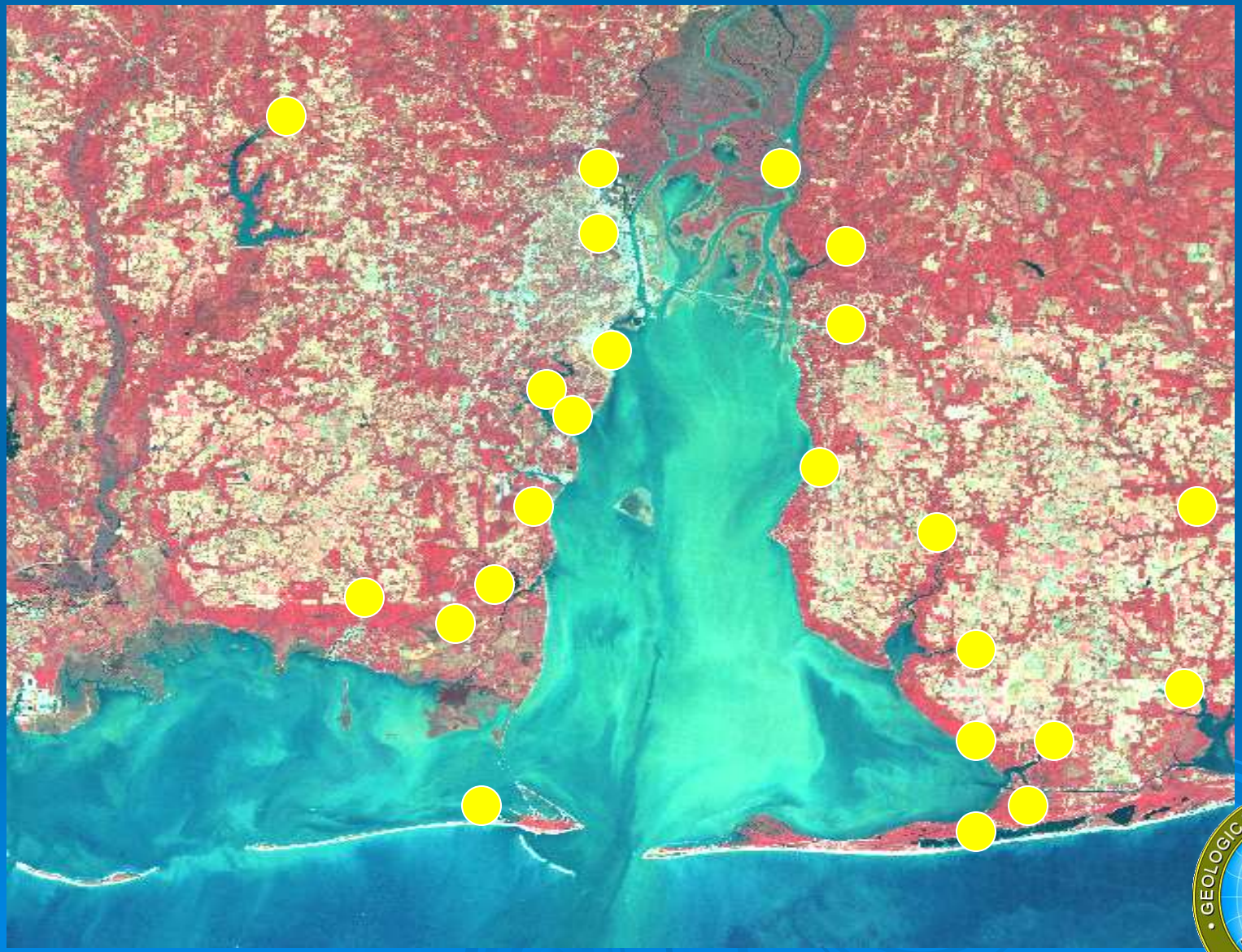
NFWF established The Gulf Environmental Benefit Fund (Gulf Fund) in accordance with the terms of two plea agreements that resolved certain criminal cases against BP and Transocean as a result of 2010 Deepwater Horizon explosion and oil spill. NFWF will administer and monitor $2.544 billion in payments received over a five-year period as required under the plea agreements.

Under the terms of the plea agreements, the Gulf Environmental Benefit Fund will receive a total of $1.272 billion for barrier island and river diversion projects in the state of Louisiana; $356 million for natural resource projects in each of the states of Alabama, Florida, and Mississippi; and $203 million for similar projects in the state of Texas. Payments into the fund will occur over a five-year period, with more than half the funding coming in years four and five.

In Alabama, NFWF is working with the Alabama Department of Conservation and Natural Resources and the Mobile Bay National Estuary Program to develop restoration projects on the Alabama Gulf Coast.

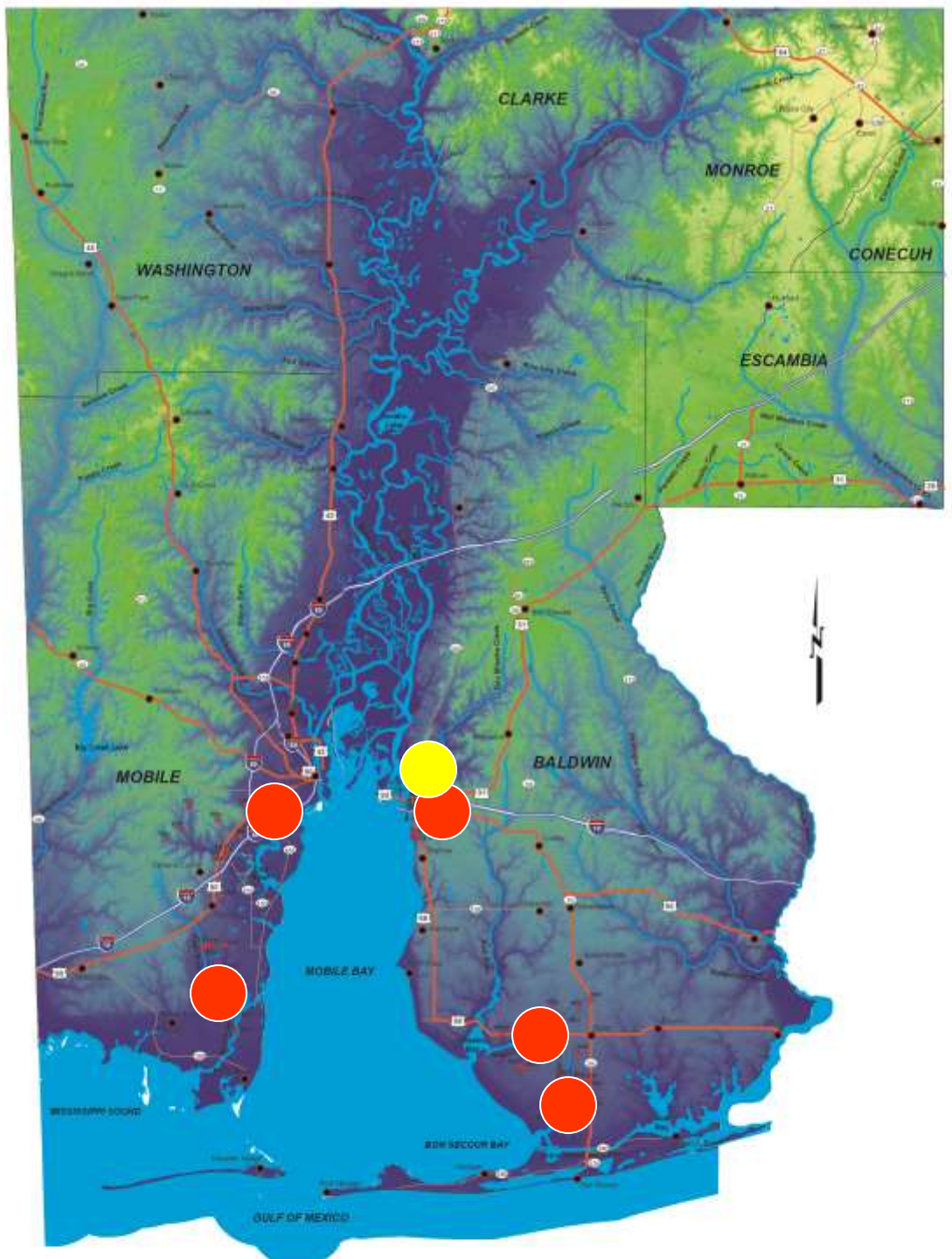
NFWF's decision-making related to project selection and funding relies on strong, science-based evidence and the technical input from state and federal resource agencies.

Habitats Considered for RESTORE Act Funds



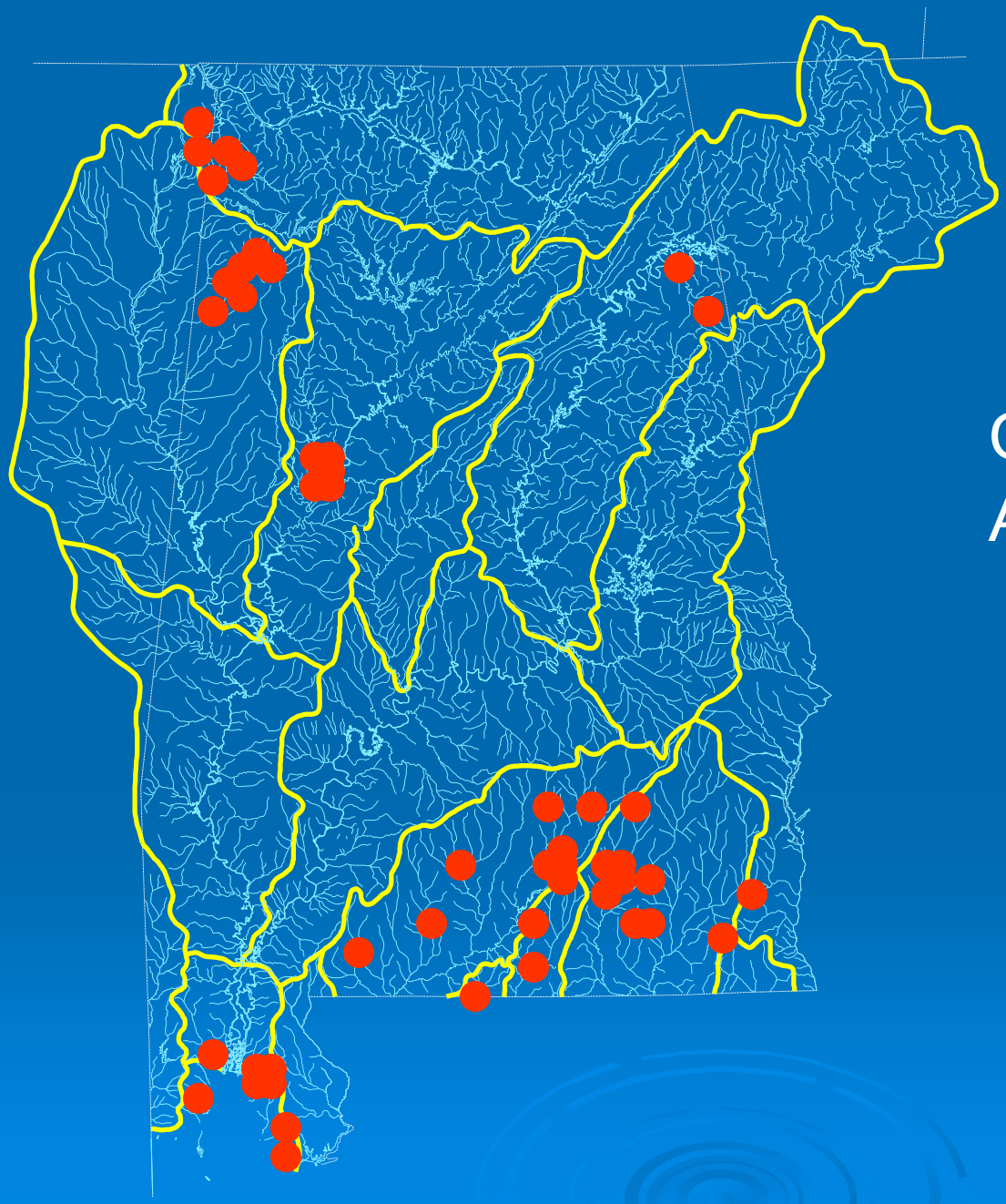
Completed Watershed Assessments

- Pre-Restoration Assessment
- Pre- and Post-Restoration Assessments



Restoration Process

- Monitoring and assessment to determine and document pre-restoration water-quality and habitat impairments.
- Preparation of a watershed management plan using scientific data to determine courses of action to address impairments.
- Implementation of remedies and actions.
- Monitoring after implementation to document effectiveness of restoration strategies.

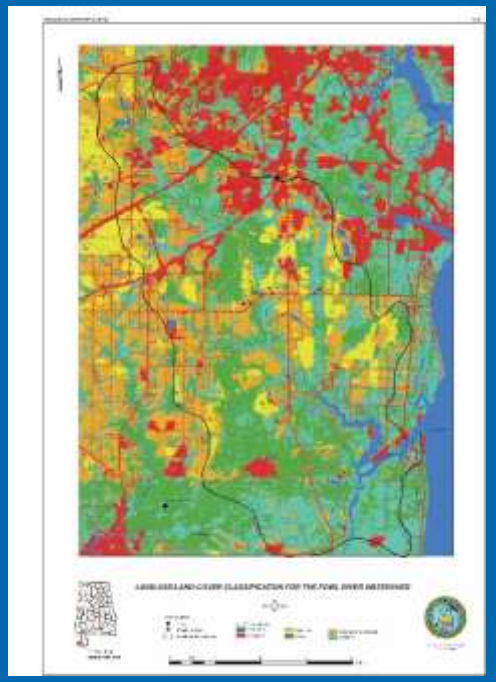


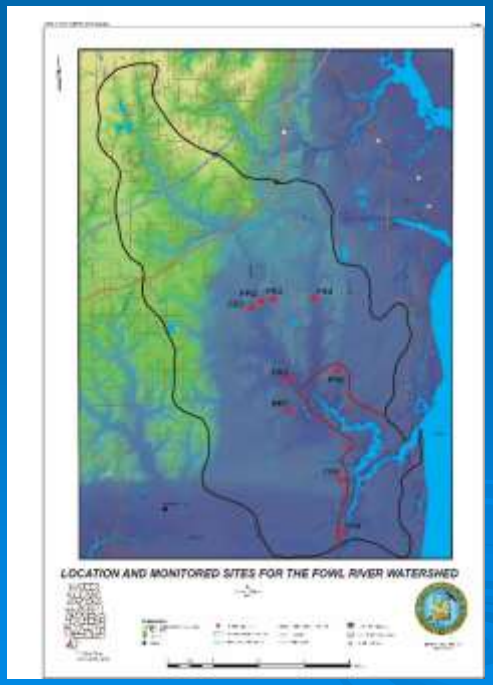
GSA Watershed Assessments

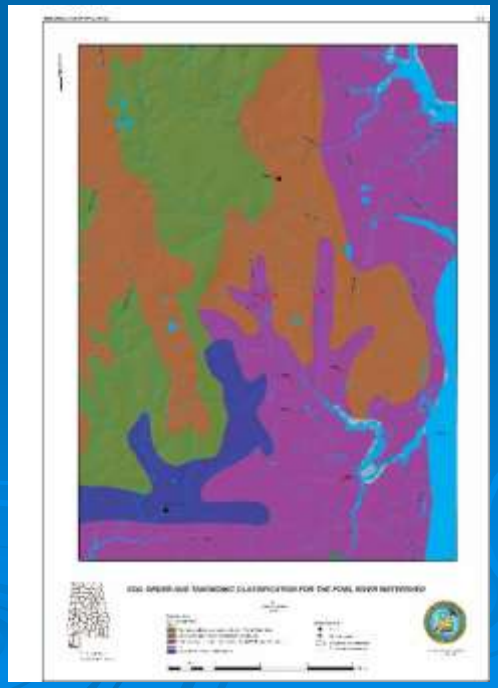
Assessed Factors

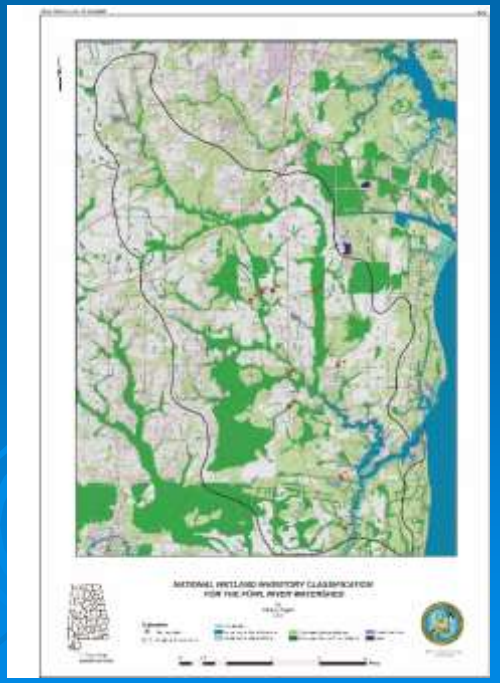
- Discharge
- Land use
- Nutrients
- Metals
- Sediment
  - Suspended
  - Bed sediment

Factors impacting erosion and sedimentation in coastal watersheds

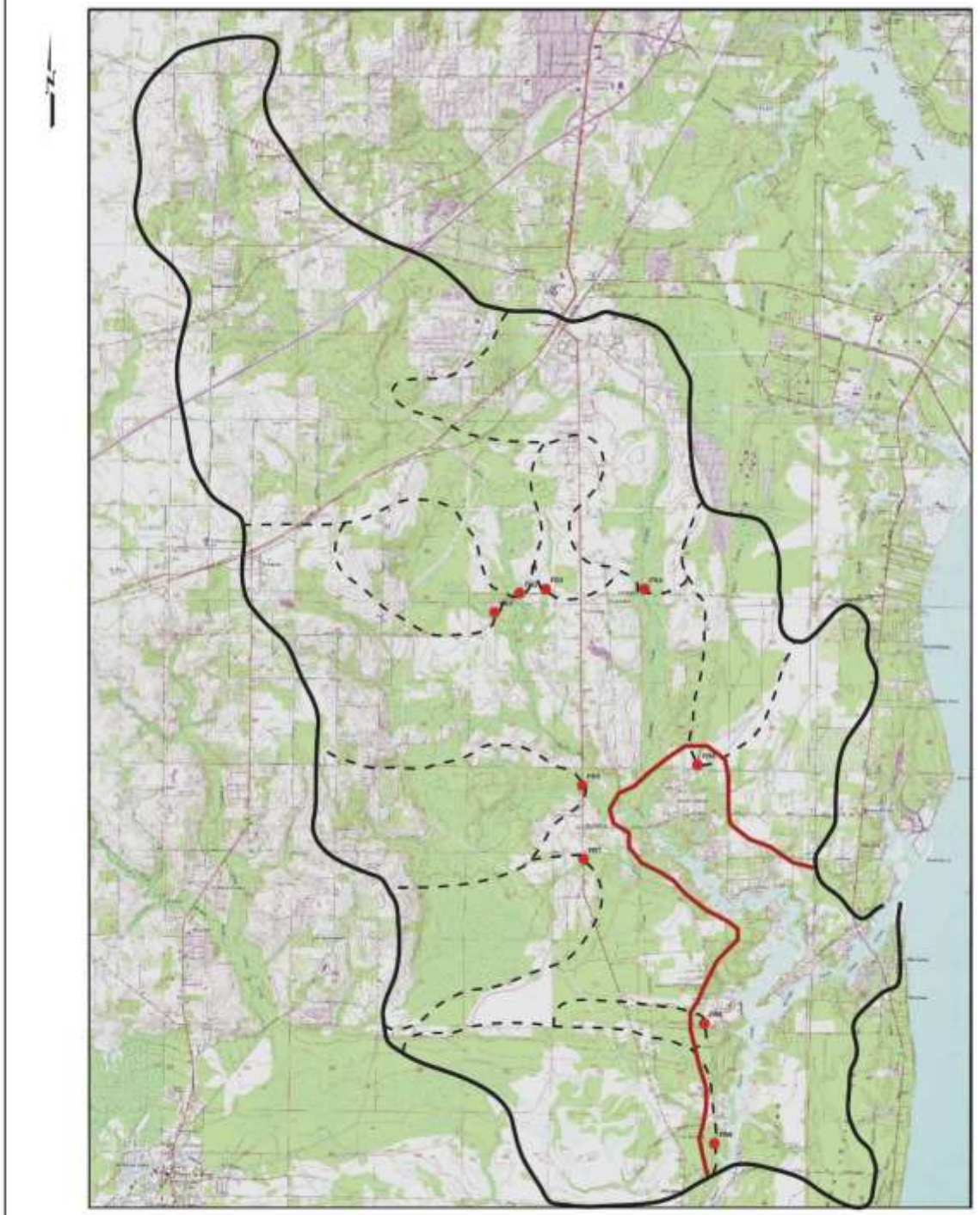




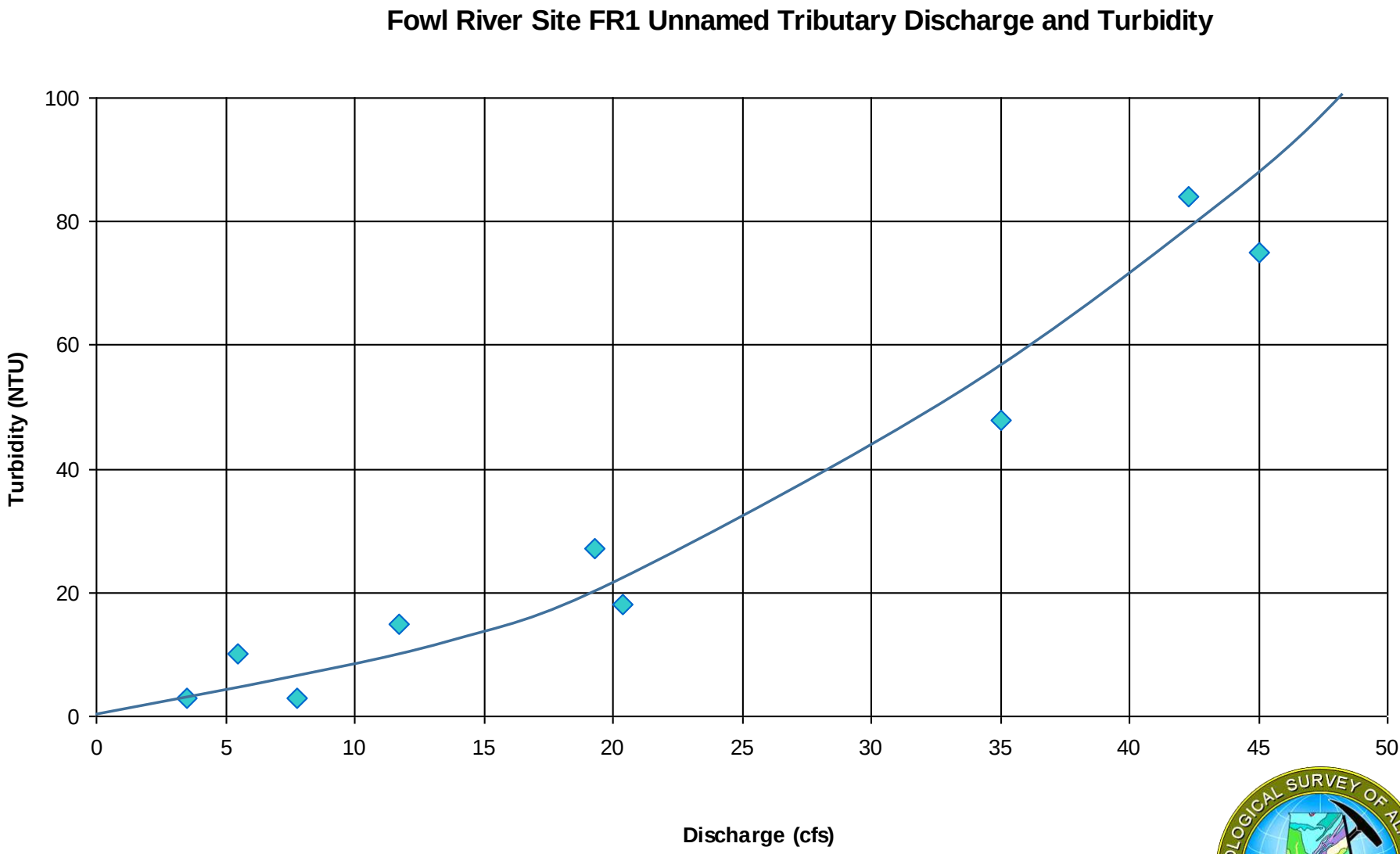


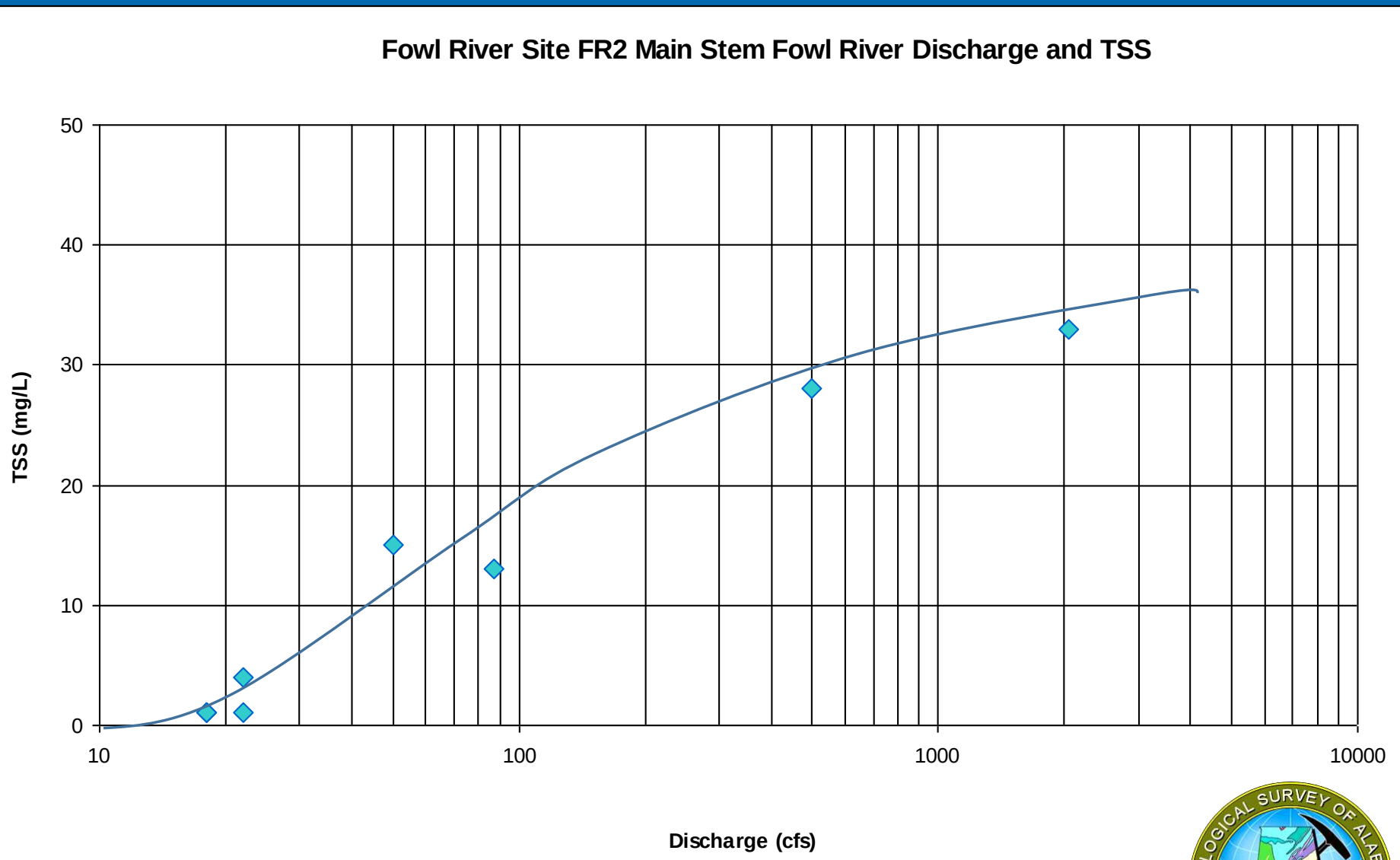


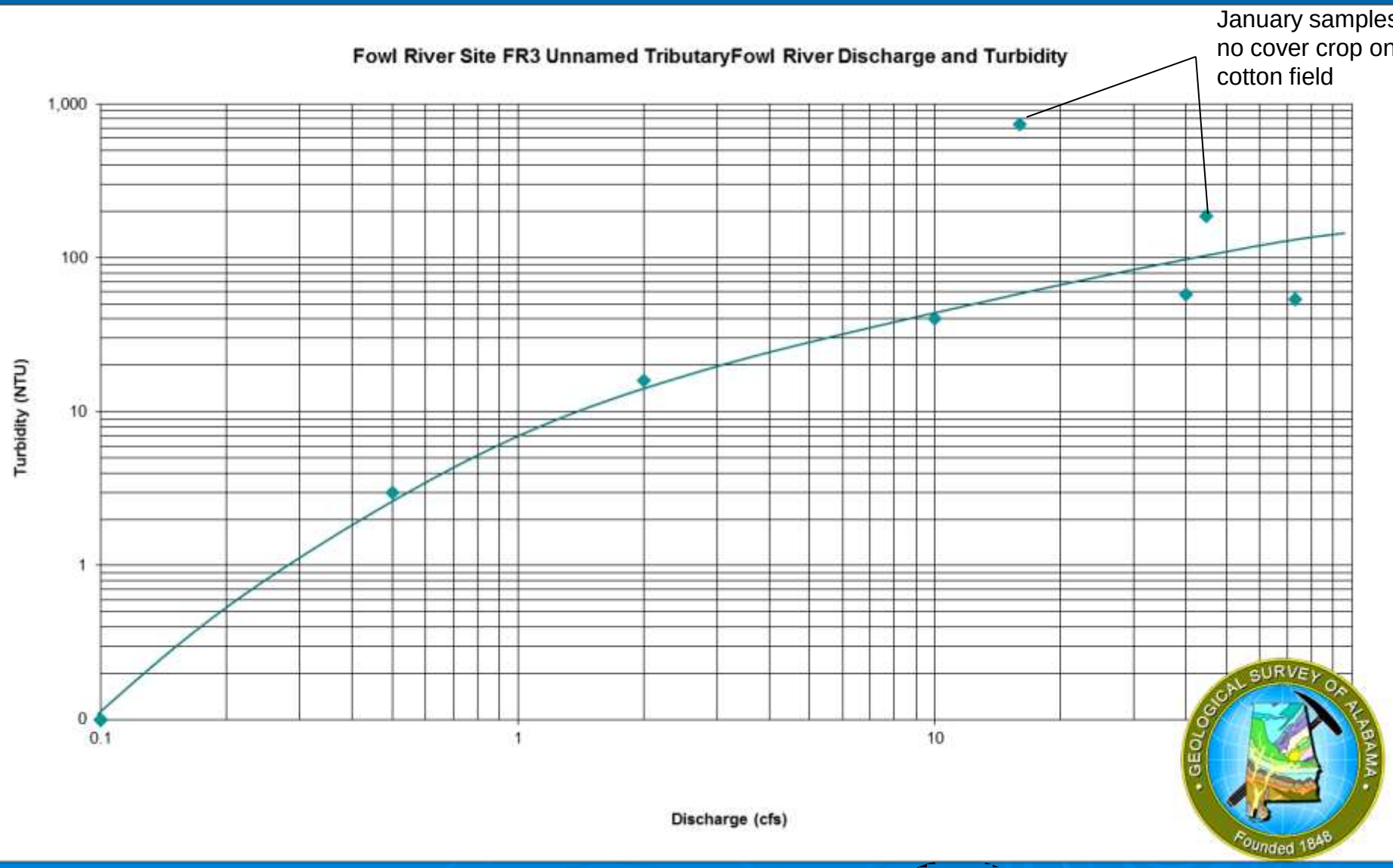
Fowl River Watershed Monitored Subwatersheds

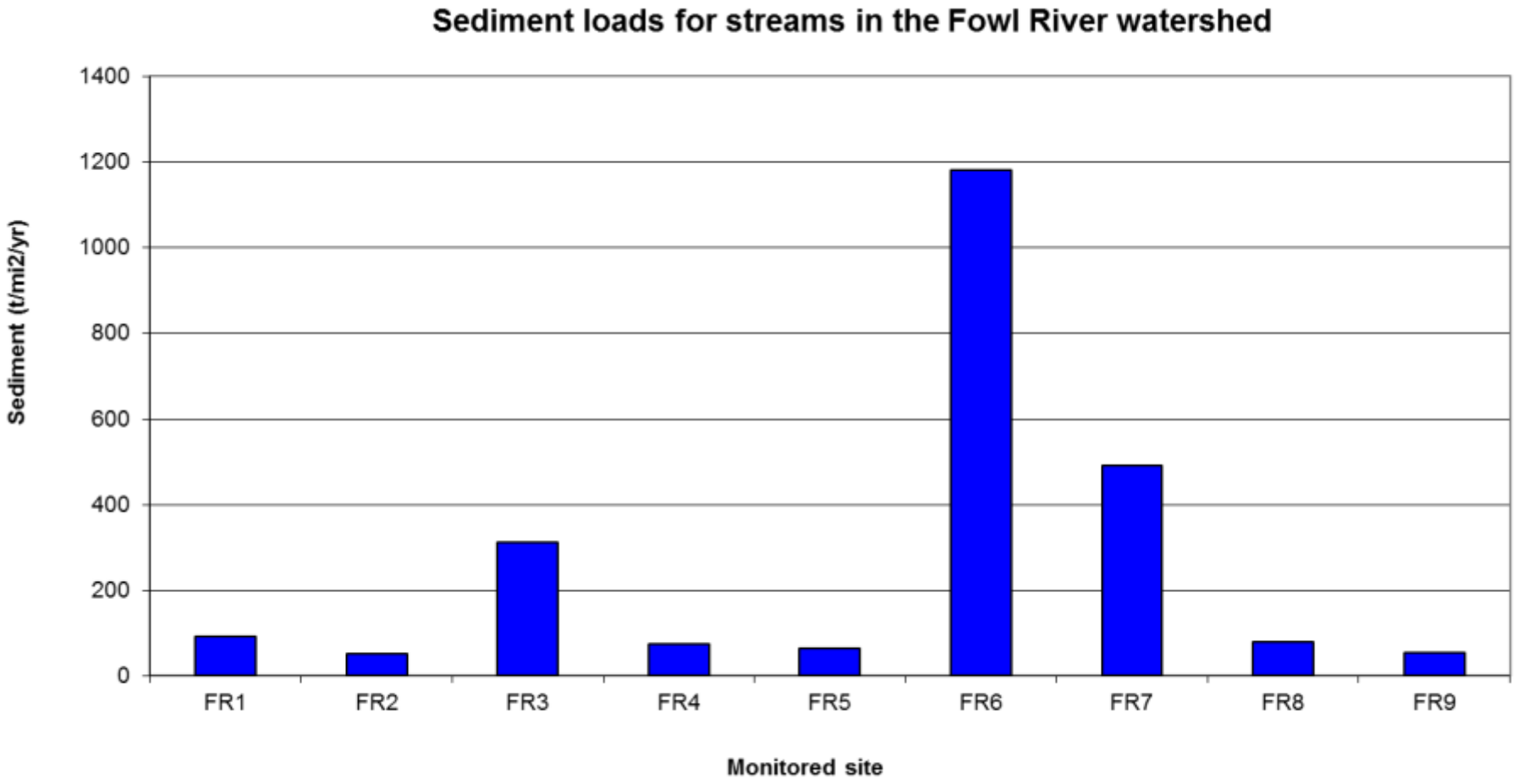


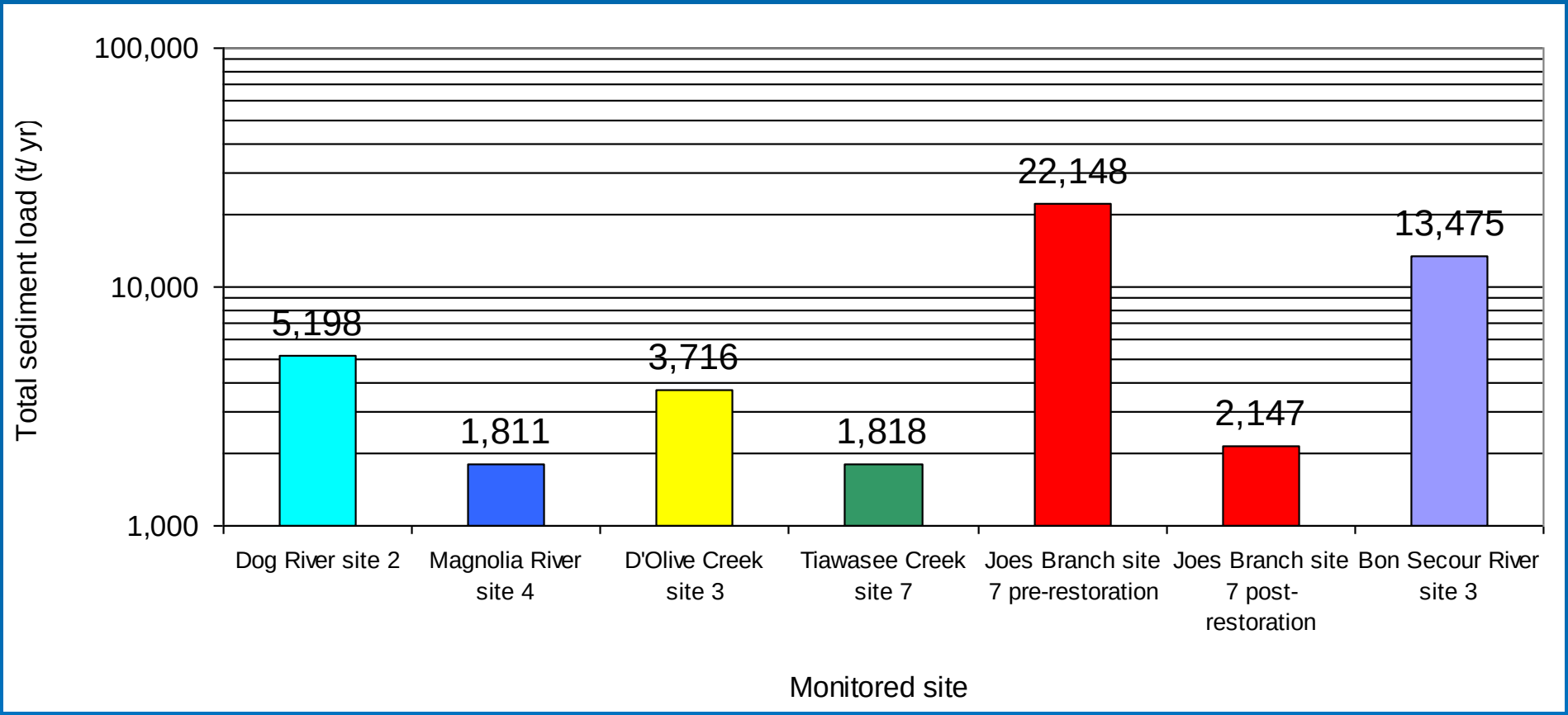
Pre-Restoration Sediment Loads


Fowl River Site FR1 Unnamed Tributary Discharge and Turbidity
Turbidity (NTU)
100
80
60
40
20
0
0
5
10
15
20
25
30
35
40
45
50
Discharge (cfs)

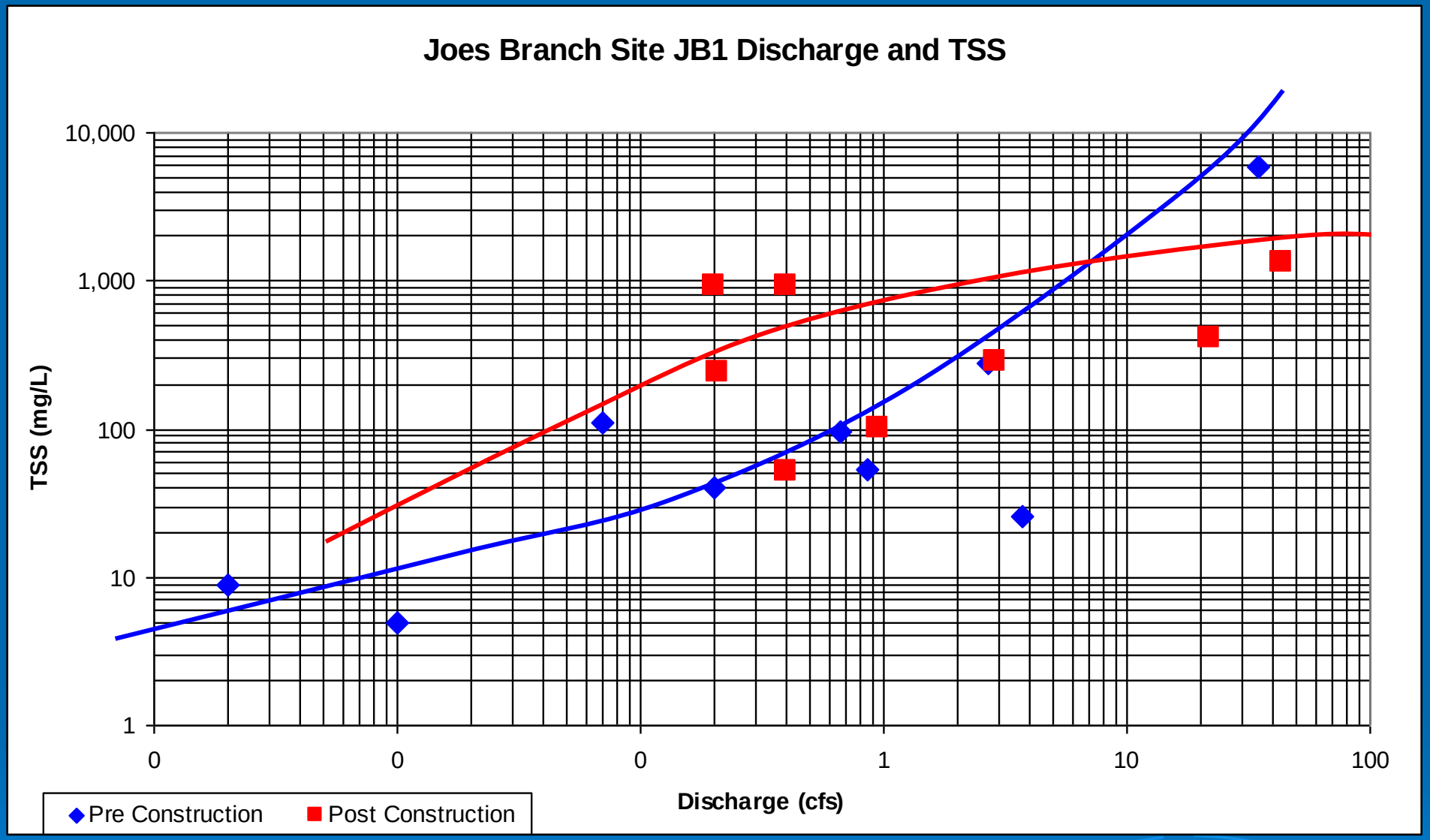

Fowl River Site FR2 Main Stem Fowl River Discharge and TSS
TSS (mg/L)
50
40
30
20
10
0
10
100
1000
10000
Discharge (cfs)


Fowl River Site FR3 Unnamed TributaryFowl River Discharge and Turbidity
January samples no cover crop on cotton field
1,000
100
10
1
0
Turbidity (NTU)
0.1
1
10
Discharge (cfs)
GEOLOGICAL SURVEY OF ALABAMA
Founded 1848

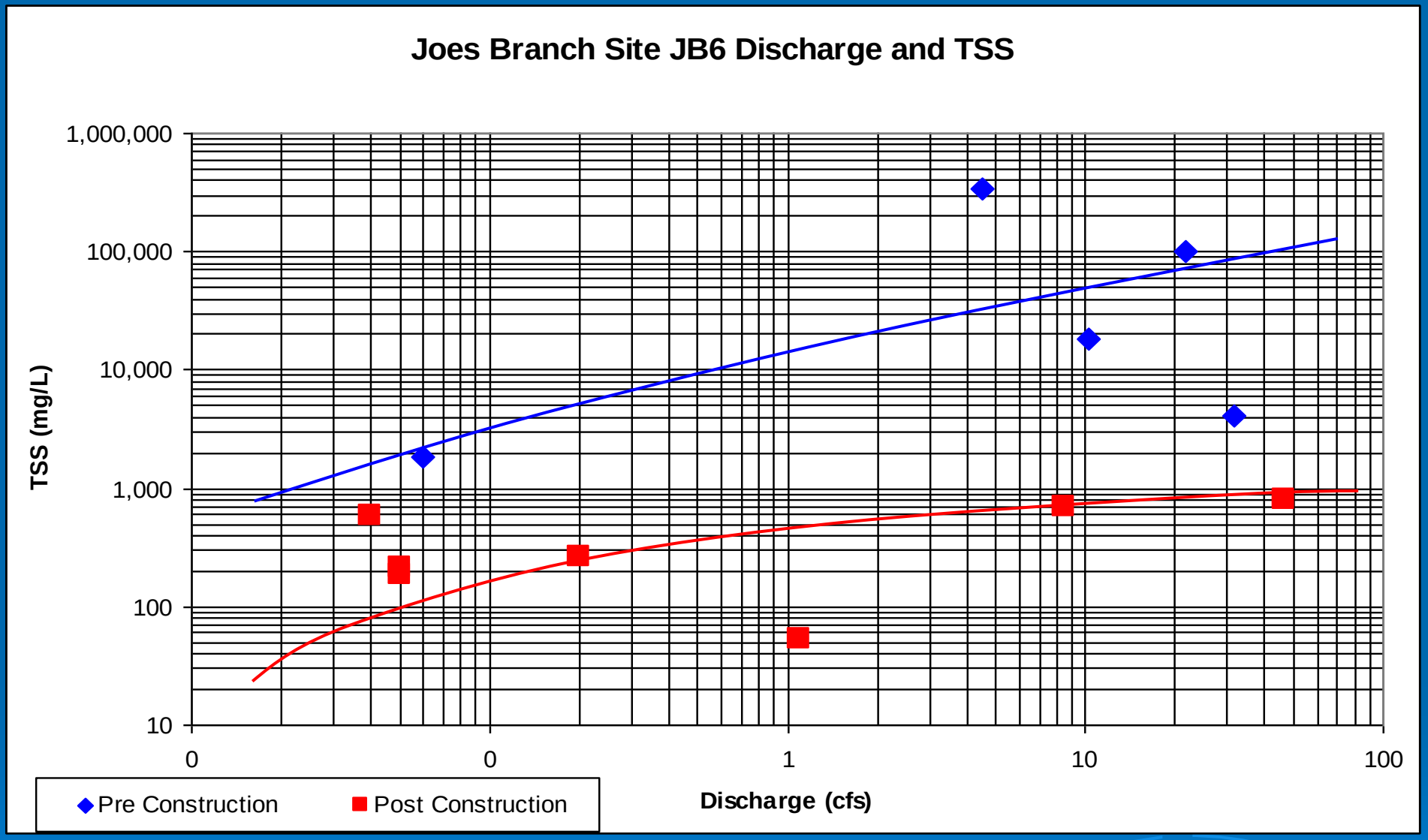

Sediment loads for streams in the Fowl River watershed
Sediment (t/mi2/yr)
1400
1200
1000
800
600
400
200
0
FR1
FR2
FR3
FR4
FR5
FR6
FR7
FR8
FR9
Monitored site


100,000
10,000
1,000
Total sediment load (t/ yr)
5,198
1,811
3,716
1,818
22,148
2,147
13,475
Dog River site 2
Magnolia River site 4
D'Olive Creek site 3
Tiawasee Creek site 7
Joes Branch site 7 pre-restoration
Joes Branch site 7 post-restoration
Bon Secour River site 3
Monitored site

Post-Restoration Sediment



Site JB1 Upstream Pre- and Post-Construction
Total Suspended Solids and Discharge



Site JB6 Downstream Pre- and Post-Construction
Total Suspended Solids and Discharge

Restoration Effectiveness

- Suspended sediment was reduced 97%
- Bed sediment was reduced 72%
- Total sediment was reduced 90%