

Instream Flow Analysis for the Lower Saluda River



Terminology

- IFIM - Incremental Instream Flow Methodology
- PHABSIM - Physical Habitat Simulation Model
- Mesohabitat - Commonly occurring habitat types
- Guild - A group of species having similar resource requirements and foraging strategies, and therefore having similar roles in the community

Purpose

- Provide data quantifying the effects of flows on aquatic habitat suitability in the lower Saluda River (LSR) for target species and lifestages

Target Species

- Redbreast Sunfish
- Spotted Sucker
- Blueback Herring
- American Shad
- Shortnose Sturgeon
- Robust Redhorse
- Saluda Darter
- Shorthead Redhorse
- Northern Hogsucker
- Spottail Shiner
- Striped Bass
- Brown Trout
- Rainbow Trout
- Smallmouth Bass

Guild Categories

Deep Slow Guild		
Species	Life stage	SI Curve Source
American shad	YOY	Catawba-Wateree
blueback herring	spawning	
blueback herring	YOY	
Northern hogsucker	adult	
redbreast sunfish	adult	
robust redhorse	juvenile	
robust redhorse	adult	
spotted sucker	juvenile	
spotted sucker	adult	

Deep Fast Guild		
Species	Life stage	SI Curve Source
American shad	YOY	Catawba-Wateree
American shad	spawning	
Northern hogsucker	spawning	
Northern hogsucker	fry/YOY	
Northern hogsucker	juvenile	
shorthead redhorse	adult	
spottail shiner	adult	

Guild Categories

Shallow Fast Guild		
Species	Life Stage	SI Curve Source
benthic macroinver.	juvenile	Catawba-Wateree
robust redhorse	spawning	
Saluda darter	adult	
spottail shiner	spawning	
spotted sucker	spawning	

Shallow Slow Guild		
Species	Life Stage	SI Curve Source
redbreast sunfish	spawning	Catawba-Wateree
robust redhorse	fry/YOY	
spotted sucker	juvenile	
spotted sucker	fry/YOY	

Stand-Alone Species

- Shortnose Sturgeon
- Brown Trout
- Rainbow Trout
- Smallmouth Bass
- Striped Bass

Field Reconnaissance and Habitat Mapping

- Classification and distribution of mesohabitats in the LSR study area



Mesohabitat Types

Riffle



Spotted Sucker (spawning)

Mesohabitat Types



Run



Juvenile/Adult Spotted Sucker

Mesohabitat Types

Pool



Adult Redbreast Sunfish

Mesohabitat Types

Shoal

Adult Striped Bass

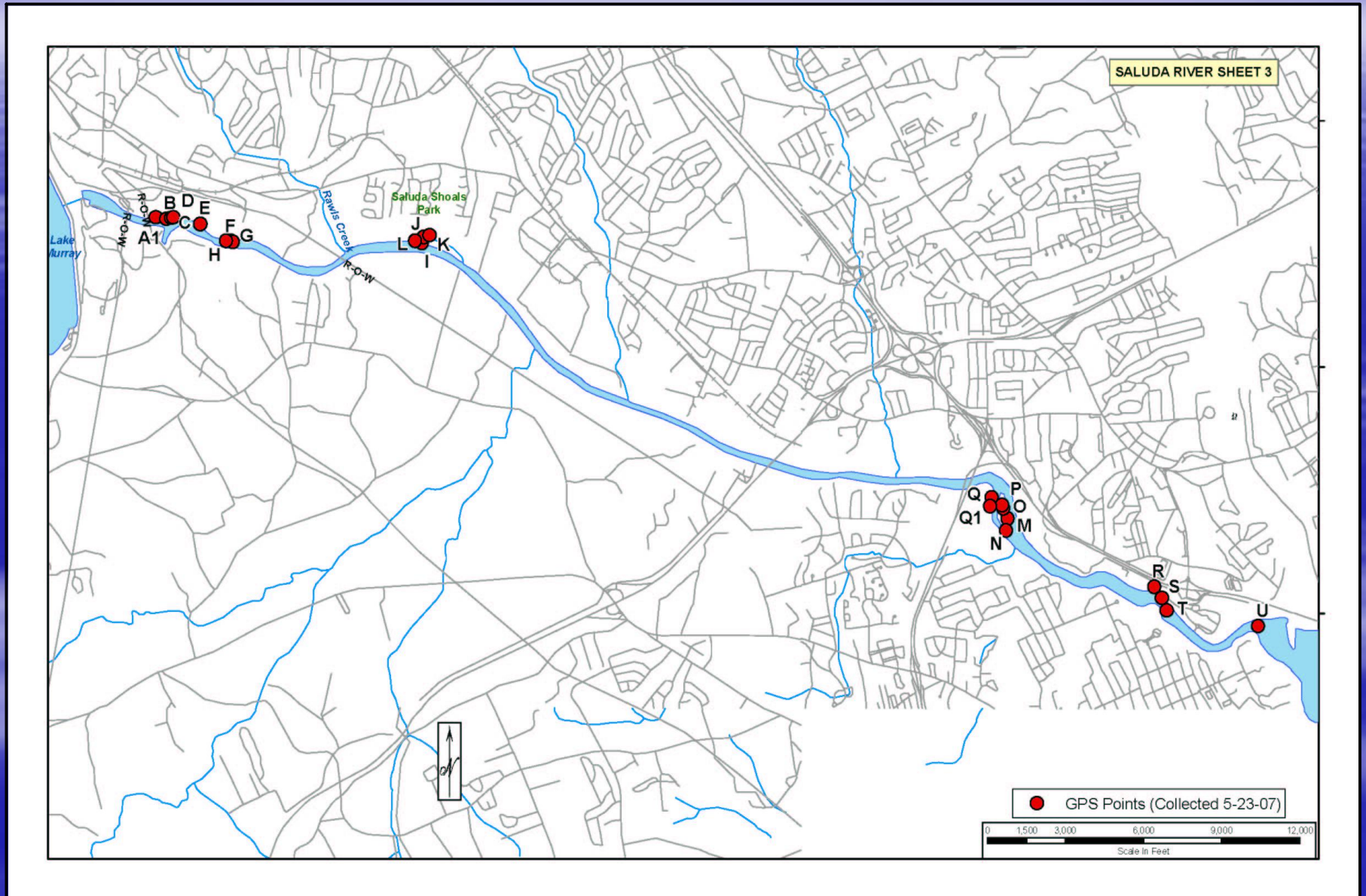


Transect Selection

- Approximately 20 transects were selected



Transect Locations



Zone of Passage

- One site was determined to have critical zone of passage for migratory fish species.



Field Data Collection

- Data was collected at three target flows:
 - 500 cfs
 - 1,200 cfs
 - 10,000 cfs



Field Data Collection

- Cross section surveys and water surface elevations were taken at each transect.



Field Data Collection

- Velocities, flow and slope measurements were taken at each transect.



Study Results

- Field data collected at each transect will be entered in the PHABSIM model which will be used to evaluate habitat suitability for target fish species in the LSR at varying flows.
- Empirical flow measurements will also be examined in the model to evaluate the zone-of-passage hydraulics at Millrace.

Reporting

- A draft report will be prepared for the TWC for review and comment in the fall of 2007
- Study results will be used to develop flow recommendations that best meet habitat needs of target species

Questions?

