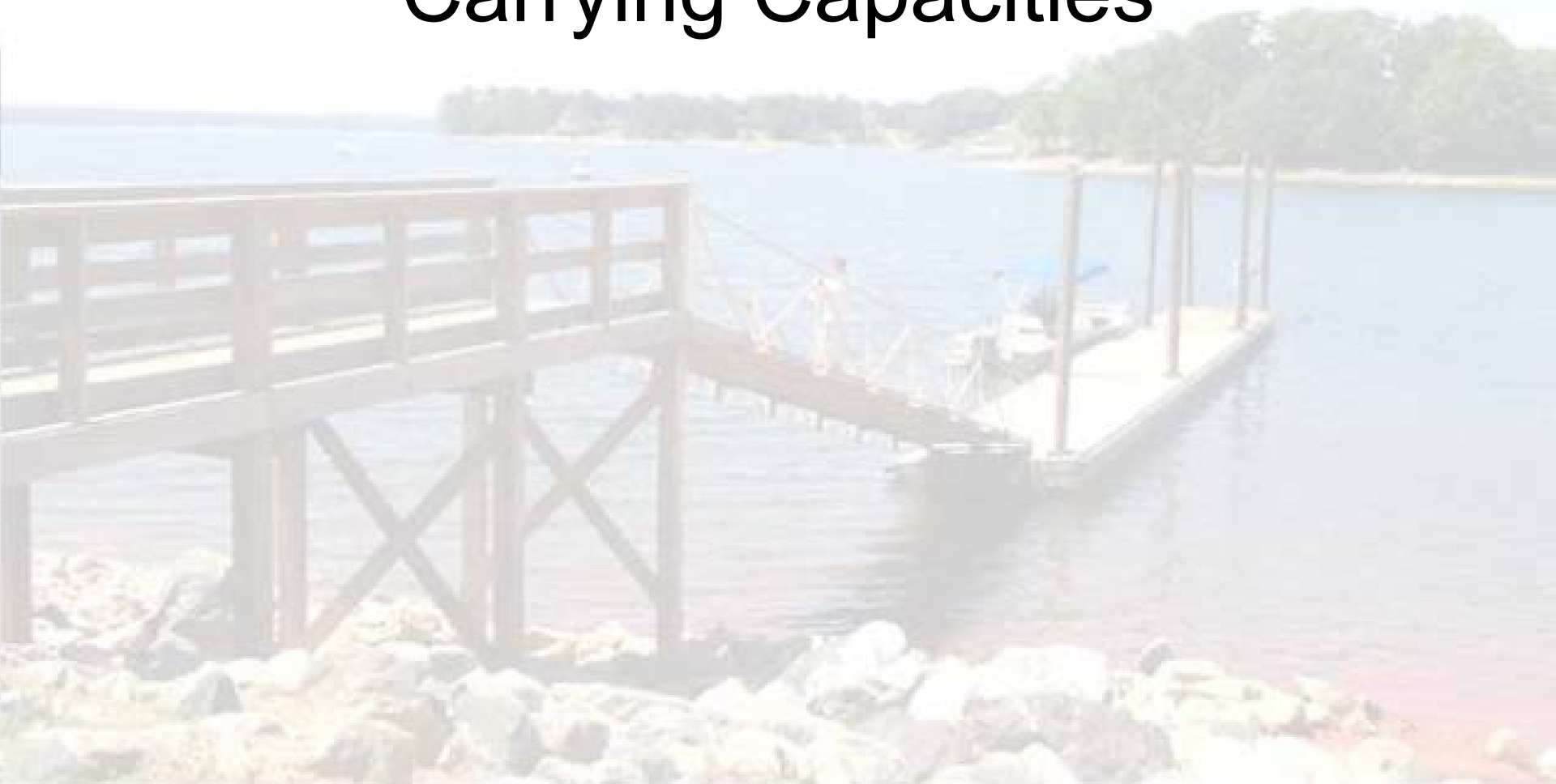


# Boat Densities and Carrying Capacities



# Boat Density and Carrying Capacity

**What are they?**

**Why do I care?**

**What does this have to do with relicensing?**

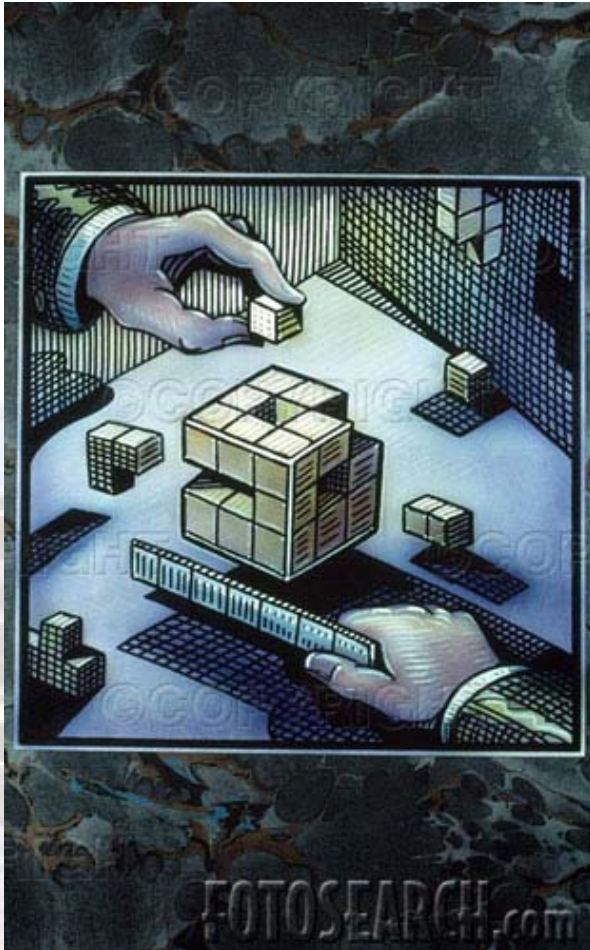


# Definitions

- ▲ **Boat density** - The number of boats per unit area. May include type of boat/activity, and may address shoreline configuration and availability of open water
- ▲ **Carrying capacity** – The type and level of visitor use that can be accommodated while sustaining the desired resource and social objectives (NPS, 1997)

# Boat Density

- ▲ Shows where people are boating
- ▲ Improves understanding of how and where a lake is used
- ▲ Provides input on shoreline management decisions
  - Identifies where new private, commercial, and/or public development may be accommodated without detracting from use on the water



- ▲ Boat density is a building block used to estimate carrying capacity
- ▲ Other building blocks might include number/type of public access sites, shoreline development, sensitive resources, water quality....and the list goes on

# Compared...

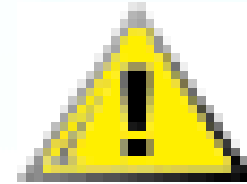
## Boat Density May Include...

- ▲ Number of boats per acre
- ▲ Type of boat or activity
- ▲ Shoreline configuration
- ▲ Volume of use (user expectations based on proximity to population and shoreline development)

## Carrying Capacity May include...

- ▲ Accident data (on the water)
- ▲ Aquatic and submerged habitats
- ▲ Boat density
- ▲ Commercial access & development
- ▲ Cultural & historical properties
- ▲ Flora and fauna
- ▲ Private / residential access & development
- ▲ Public access & development
- ▲ Public or user preferences
- ▲ Shoreline configuration
- ▲ Shoreline erosion
- ▲ Shoreline habitats
- ▲ Special events (tournaments, regattas)
- ▲ Water quality

# Carrying Capacity



## **USE WITH CAUTION!**

Remember, usually a FERC licensee does not control boating on the water.

Carrying capacity estimates can guide management decisions, but are generally not used by licensees to limit boating activity. A licensee will not count boats daily and start evicting boaters from a lake when the number of boats exceeds an estimated carrying capacity!

▲ Provides an estimate of a number of boats (or people) that can be accommodated physically and socially by a specific area of water

# First...

- ▲ *Typically*, a licensee is responsible for managing recreational use and related development within its Project Boundary on the shoreline or submerged lands.
- ▲ *Usually*, a state agency or agencies are responsible for managing activity on the water at FERC-licensed projects.
  - Fishing, boating, etc.



# Second...Avoid Duplication of Effort

## Carrying Capacity Study

- ▲ **Accident data (on the water)**
- ▲ Aquatic and submerged habitats
- ▲ Boat density
- ▲ Commercial access & development
- ▲ Cultural & historical properties
- ▲ Flora and fauna
- ▲ Private / residential access & development
- ▲ Public access & development
- ▲ Public or user preferences
- ▲ Shoreline configuration
- ▲ Shoreline erosion
- ▲ Shoreline habitats
- ▲ **Special events (tournaments, regattas)**
- ▲ Water quality

## Shoreline Management Plan

- ▲ Aquatic and submerged habitats
- ▲ Boat density
- ▲ Commercial access & development
- ▲ Cultural & historical properties
- ▲ **Dredging**
- ▲ Flora and fauna
- ▲ **Permitting**
- ▲ Private / residential access & development
- ▲ Public access & development
- ▲ Public or user preferences
- ▲ Shoreline erosion
- ▲ Shoreline habitats
- ▲ Water quality

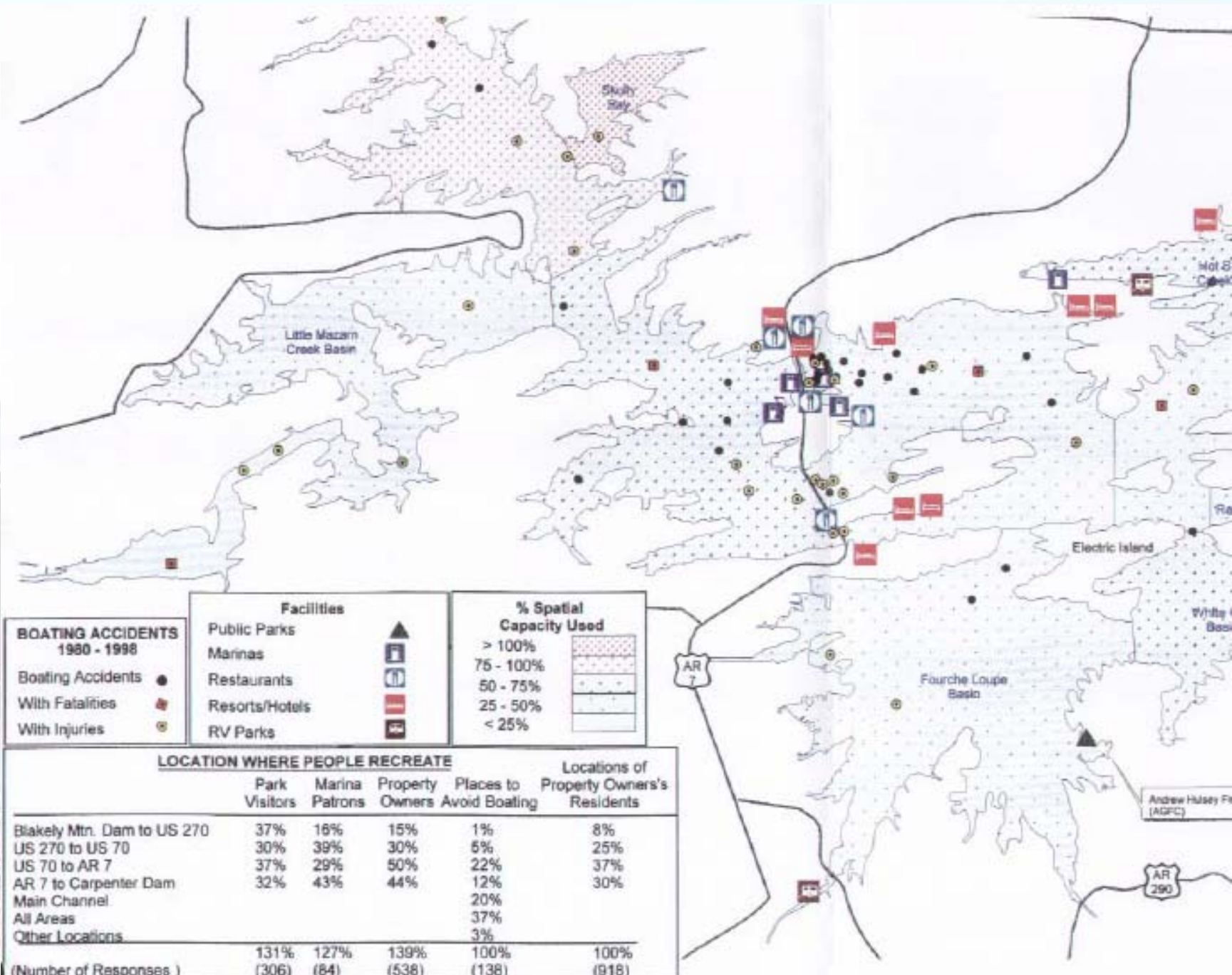
# Examples

- ▲ Entergy Arkansas, Inc. for the Carpenter-Remmel Project (1999)
- ▲ Duke Energy Corp. for the Nantahala Area Projects (2003)
- ▲ GRDA for the Pensacola Project (2006)

Entergy's Lake Hamilton  
and Lake Catherine  
study...

Aerial counts of boaters (including anglers, jet skiers, PWC), water skiers, tubers, pleasure boaters, tour boats, and on the river there are anglers, floaters, and surfers) were completed on a sample of days for a one year period.

The sample was distributed within each month proportionate to the total number of days in each month. A total of 40 days were sampled at each impoundment. Within each month, sample days were stratified by day type (weekdays, weekend days, and holidays) and time of day.



**BOATING ACCIDENTS  
1980 - 1998**

Boating Accidents ●

With Fatalities ●

With Injuries ●

**Facilities**

Public Parks ▲

Marinas ⚓

Restaurants 🍽️

Resorts/Hotels 🏠

RV Parks 🚐

**% Spatial  
Capacity Used**

> 100% [Dotted pattern]

75 - 100% [Horizontal lines]

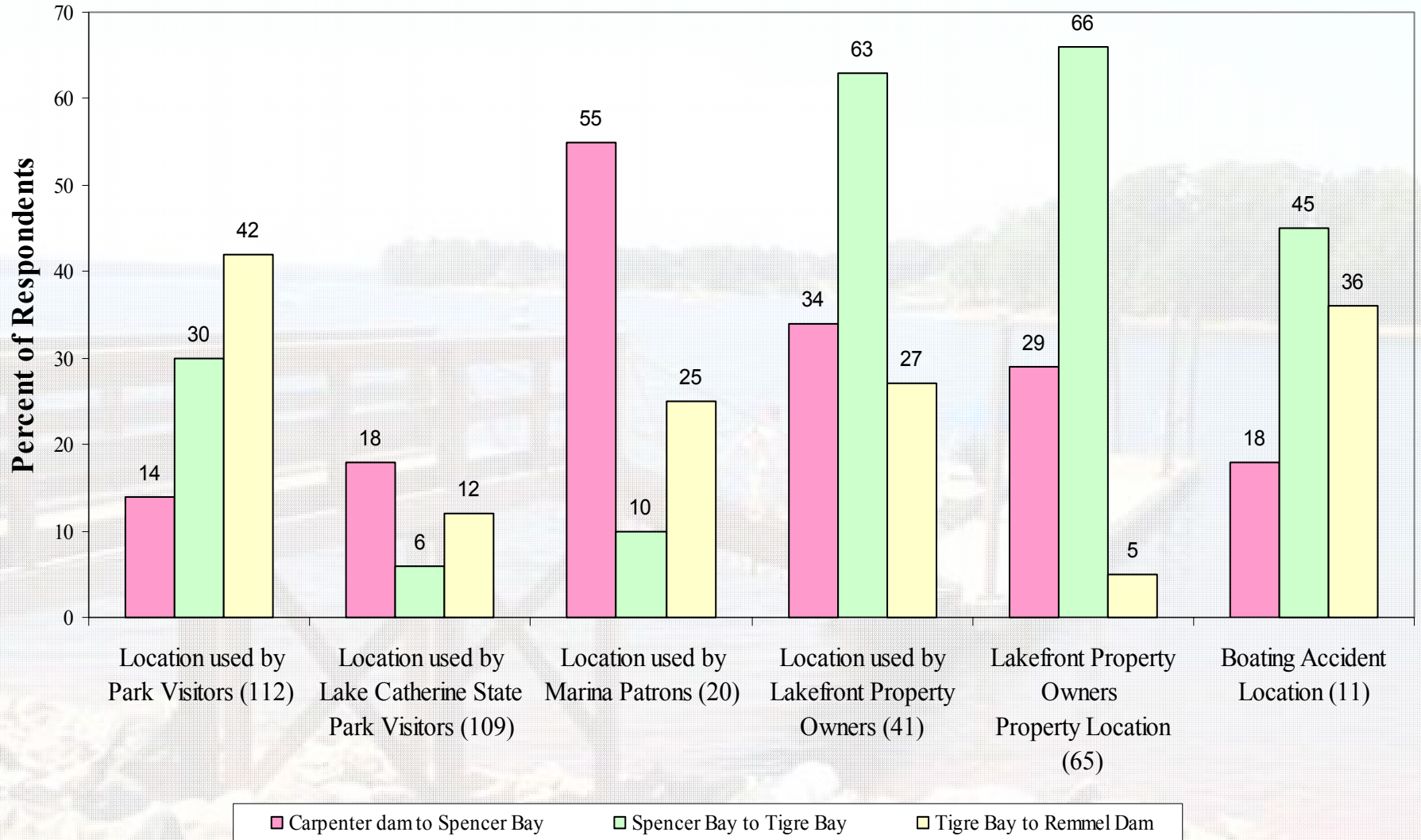
50 - 75% [Vertical lines]

25 - 50% [Diagonal lines]

< 25% [White]

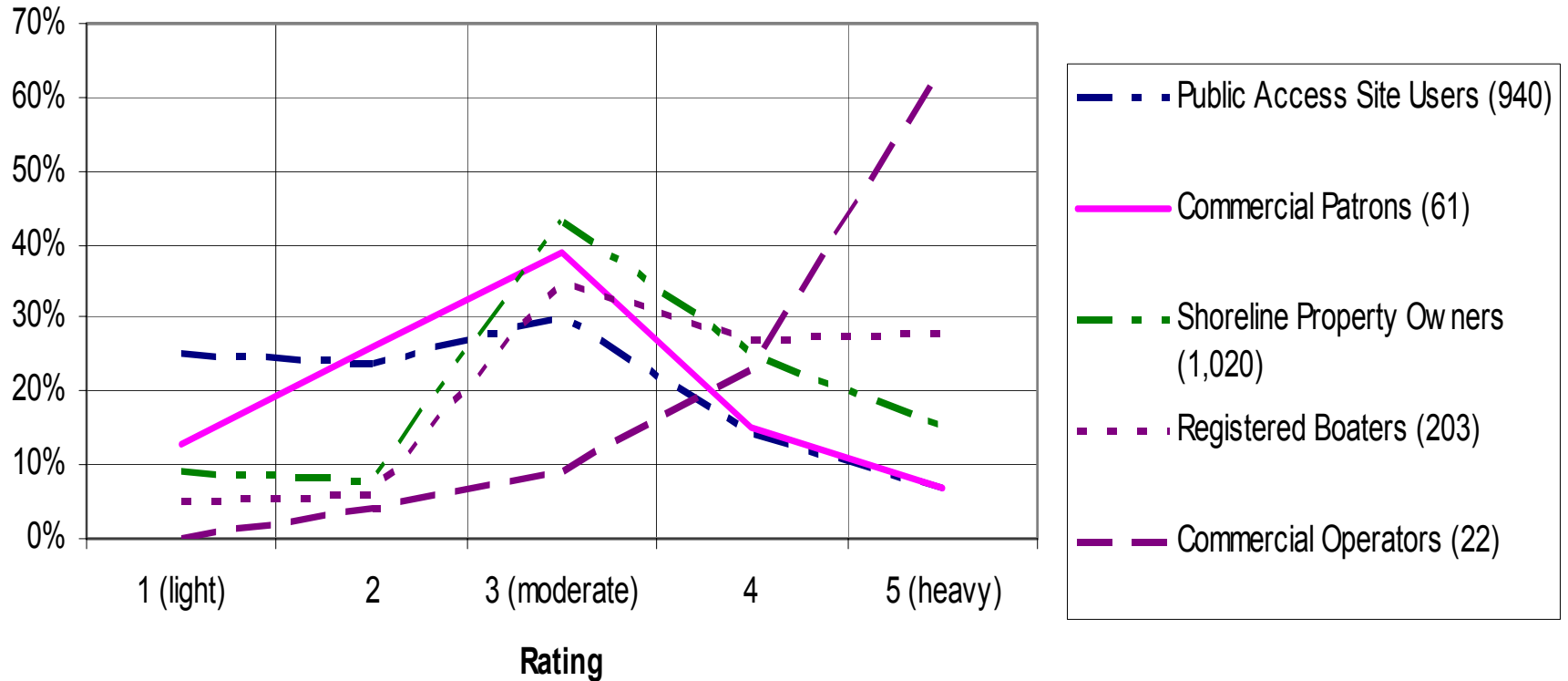
	LOCATION WHERE PEOPLE RECREATE				Locations of Property Owners's Residents
	Park Visitors	Marina Patrons	Property Owners	Places to Avoid Boating	
Blakely Mtn. Dam to US 270	37%	16%	15%	1%	8%
US 270 to US 70	30%	39%	30%	5%	25%
US 70 to AR 7	37%	29%	50%	22%	37%
AR 7 to Carpenter Dam	32%	43%	44%	12%	30%
Main Channel				20%	
All Areas				37%	
Other Locations				3%	
(Number of Responses )	131% (306)	127% (84)	139% (538)	100% (138)	100% (918)

# Use of Lake Catherine



# Nanatahala Weekend Crowding

Perceptions of Use Levels on Peak Season Weekends





07/01/2005





# What Can We Learn?

- ▲ Identify areas of unique uses
- ▲ Identify areas of crowding
- ▲ Identify where use can be spread out to help protect/manage other resources
- ▲ Inputs into shoreline management decisions
- ▲ Identify information needs
- ▲ Identify needed expansions at facilities to address user needs

# Licensee Considerations

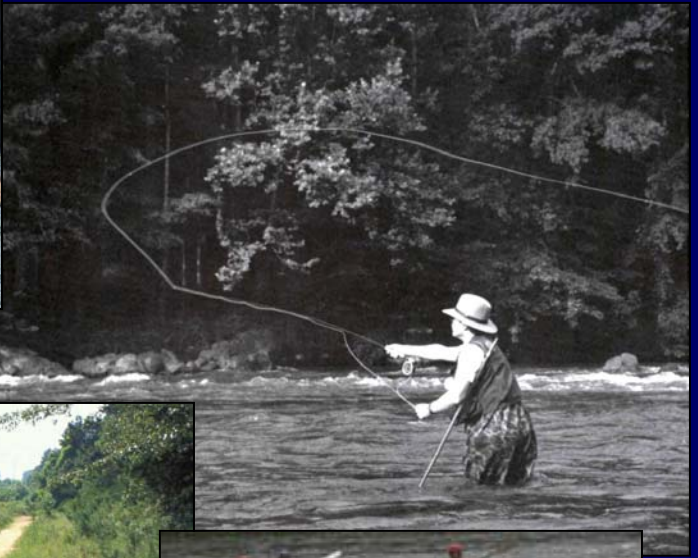
- ▲ **Avoid setting a carrying capacity number that will require restrictions on public access**
  - ▲ FERC does not advocate restricting access to project waters. Tailor decisions based on all resources and remember, environmental and social considerations are dynamic: management plans should be too.
- ▲ **Determine the metrics that you will consider before starting data collection**
  - ▲ There's nothing more frustrating than finding out that the data collected will not answer the question asked.
- ▲ **Be comfortable with agencies and stakeholders – know where your responsibilities begin *and end***
  - ▲ A licensee's responsibility is to provide and manage access to project waters. It may not include management of activity on the water.
- ▲ **Work with agencies and stakeholders.**
  - ▲ You may need them to provide information (data, expertise, etc) or implement some of the resulting recommendations. Cooperation and buy-in from stakeholders will always result in a more accepted and workable management plan.

# Lower Saluda Scenic River & Corridor Plans

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Lower Saluda  
River  
Recreation



# S.C. Scenic Rivers Act

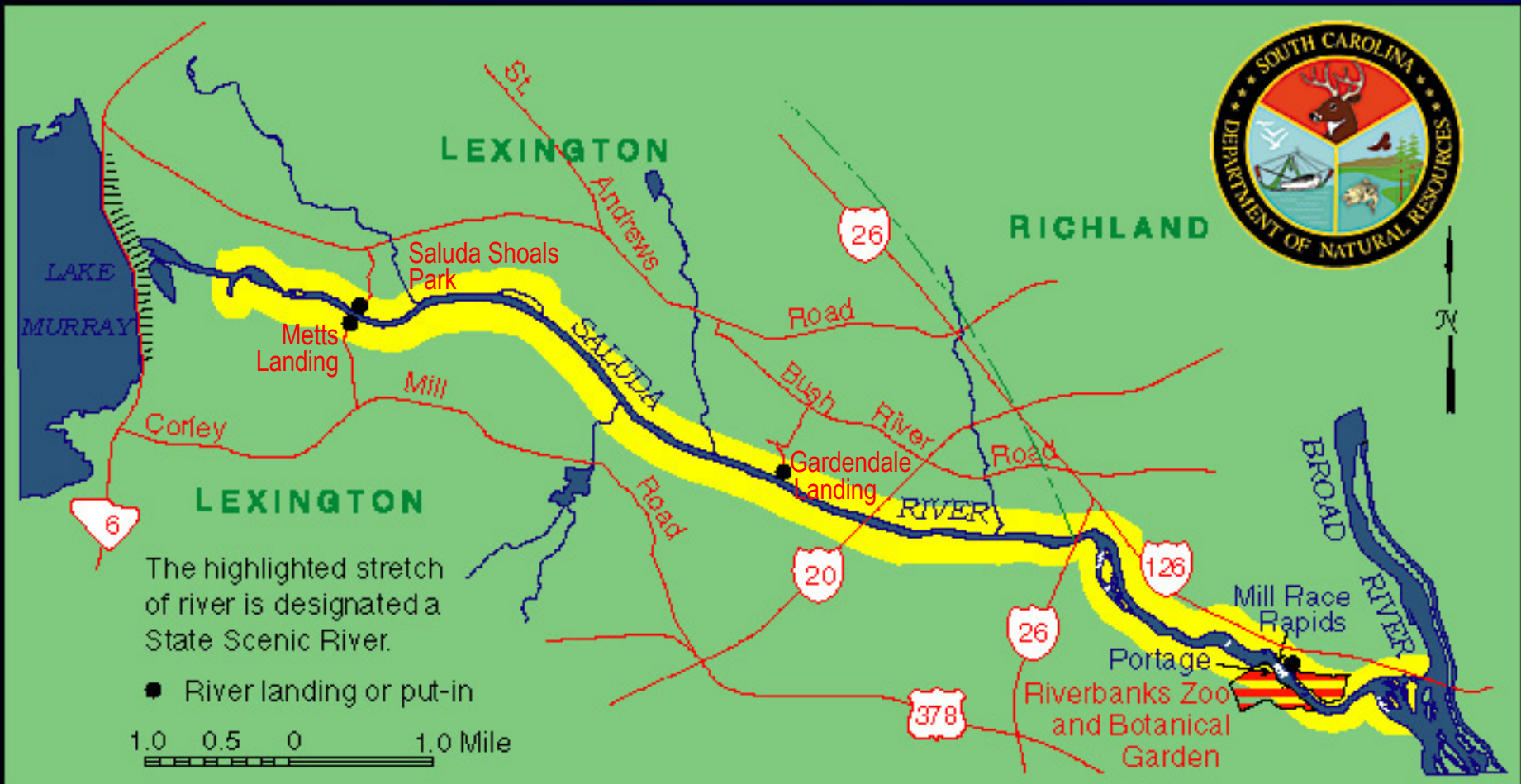
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Purpose of Act -- to protect unique and outstanding river resources of South Carolina

Features --

- Cooperative, voluntary management program
- Involves landowners, river users, community interests, and SCDNR
- Scenic river management plans
- Tax incentives for conservation easements

# Lower Saluda State Scenic River





Lower Saluda Scenic River



# Lake Murray Dam







# Upper River



Ledge at Corley Island

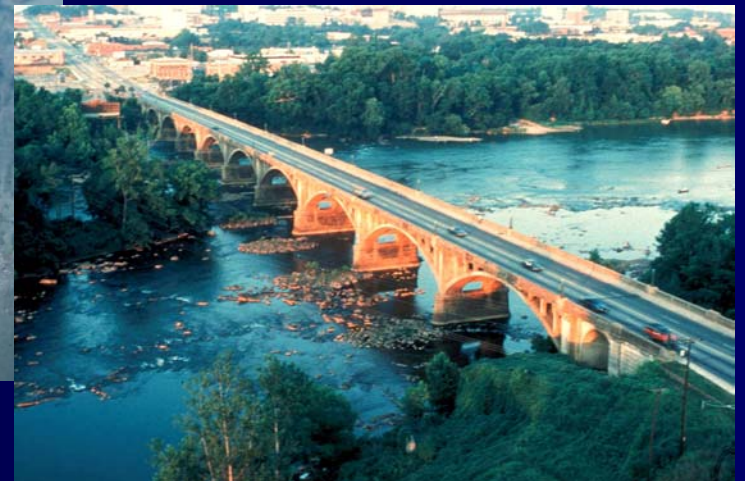
# Lower River

Confluence with Broad



Mill Race Rapids

Gervais Street Bridge



Oh Brother



Ocean Blvd

# Wildlife



# Lower Saluda Scenic River Advisory Council

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- Tommy Boozer: SCE&G
- Ed Diebold: Riverbanks Zoo & Garden
- Guy Jones: River Runner outfitters
- Larry Jones: Shaw Corp
- Malcolm Leaphart: Trout Unlimited
- Bill Marshall: SCDNR
- Tom Stonecypher: residential landowner
- Dan Well: Irmo-Chapin Recreation Commission
- Rick Wilson: residential landowner

## *Ex-officio members*

- Tony Bebber: SCPRT
- Parkin Hunter: Columbia Audubon
- Ann Jennings: Congaree Land Trust
- Gerrit Jobsis: Coastal Conservation League / American Rivers
- Karen Kustafik: Palmetto Paddlers
- Charlene Coleman: American Whitewater

# Advisory Council Objectives

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*Lower Saluda River Corridor Plan – 1990*

*Lower Saluda Scenic River Corridor Plan Update – 2000*

- Protect/conserve natural, cultural, and scenic qualities of river corridor
- Improve water quality and aquatic habitat
- Improve quality and management of public access
- Improve river-user safety

# The Lower Saluda River Corridor Plan



1990 Corridor Plan

# Lower Saluda River Task Force

1988 - 1990

SC Water Resources Commission

SC Dept of Parks, Recreation & Tourism

City of Columbia Mayor

Central Midland COG

SC Wildlife Federation

Landowners on Saluda (3)

SC Wildlife and Marine Resources Dept

SC Dept of Health & Environment Control

Audubon Society

Lexington County Recreation Com

Irmo-Chapin Recreation Com

State Budget and Control Board

SC Land Resources Commission

Lexington County Council

River Runner, Inc

Barron's Fishing and Hunting Center

Columbia Convention/Visitors Bureau

Riverbanks Zoo

Trout Unlimited

Richland County Council

Greater Columbia Chamber of Commerce

Governor's Office

SC Electric and Gas Company

Sierra Club

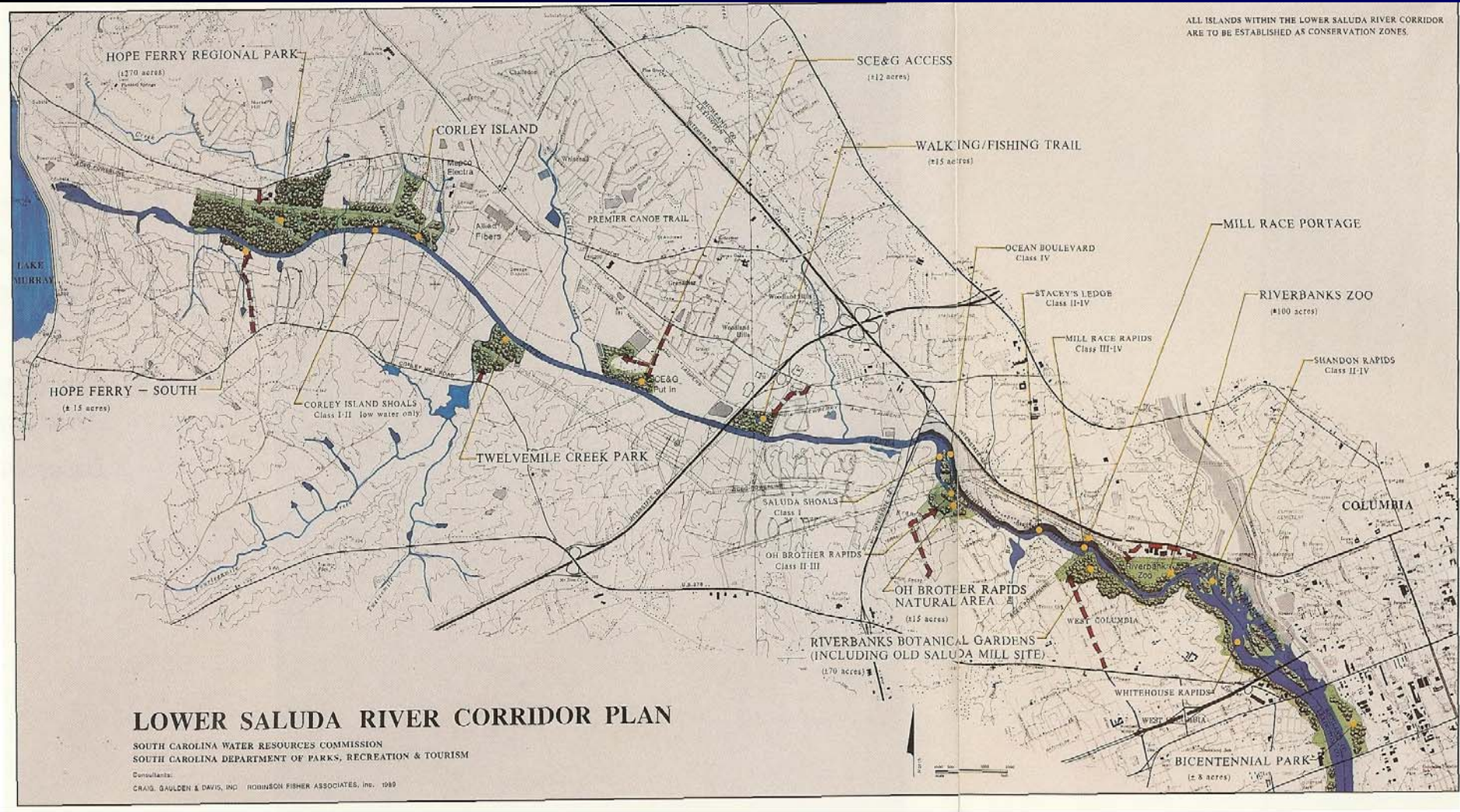
Palmetto Paddlers

City of West Columbia Mayor



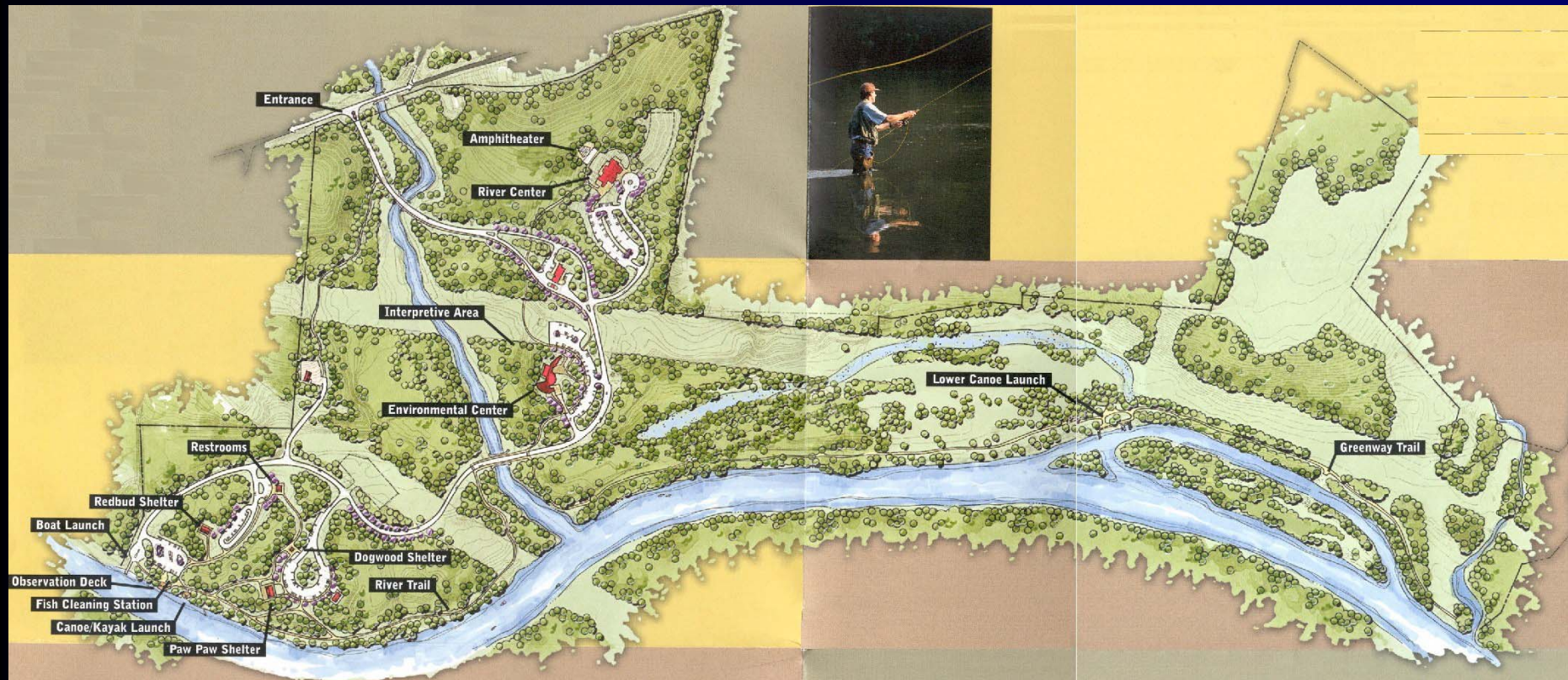
# Task Force Committees

- Access and Facilities
- Historic and Archaeological Sites
- Law Enforcement
- Litter
- Resource Protection
- Tourism and Promotion
- User Safety
- Implementation



1990 Corridor Plan Concepts

# Saluda Shoals Park

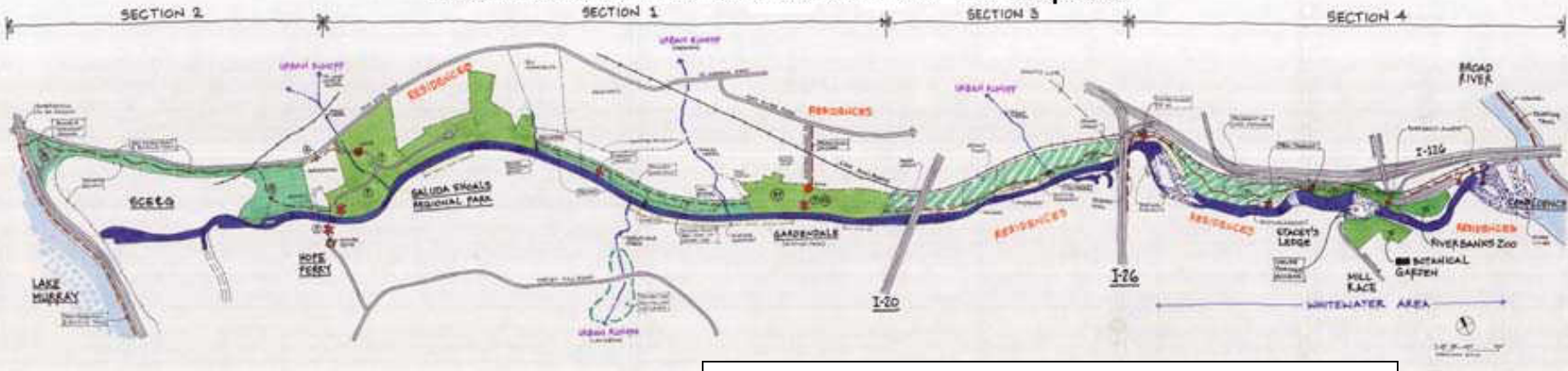


Park plan as developed by Irmo-Chapin Recreation Commission

**Figure 12. • Conceptual Park Opportunity Analysis — Twelvemile Creek**



# Lower Saluda Scenic River Corridor Plan Update



## Corridor Plan Update of 2000



# Lower Saluda Scenic River Corridor Plan Update

## Lake Murray Dam to Saluda Shoals Park

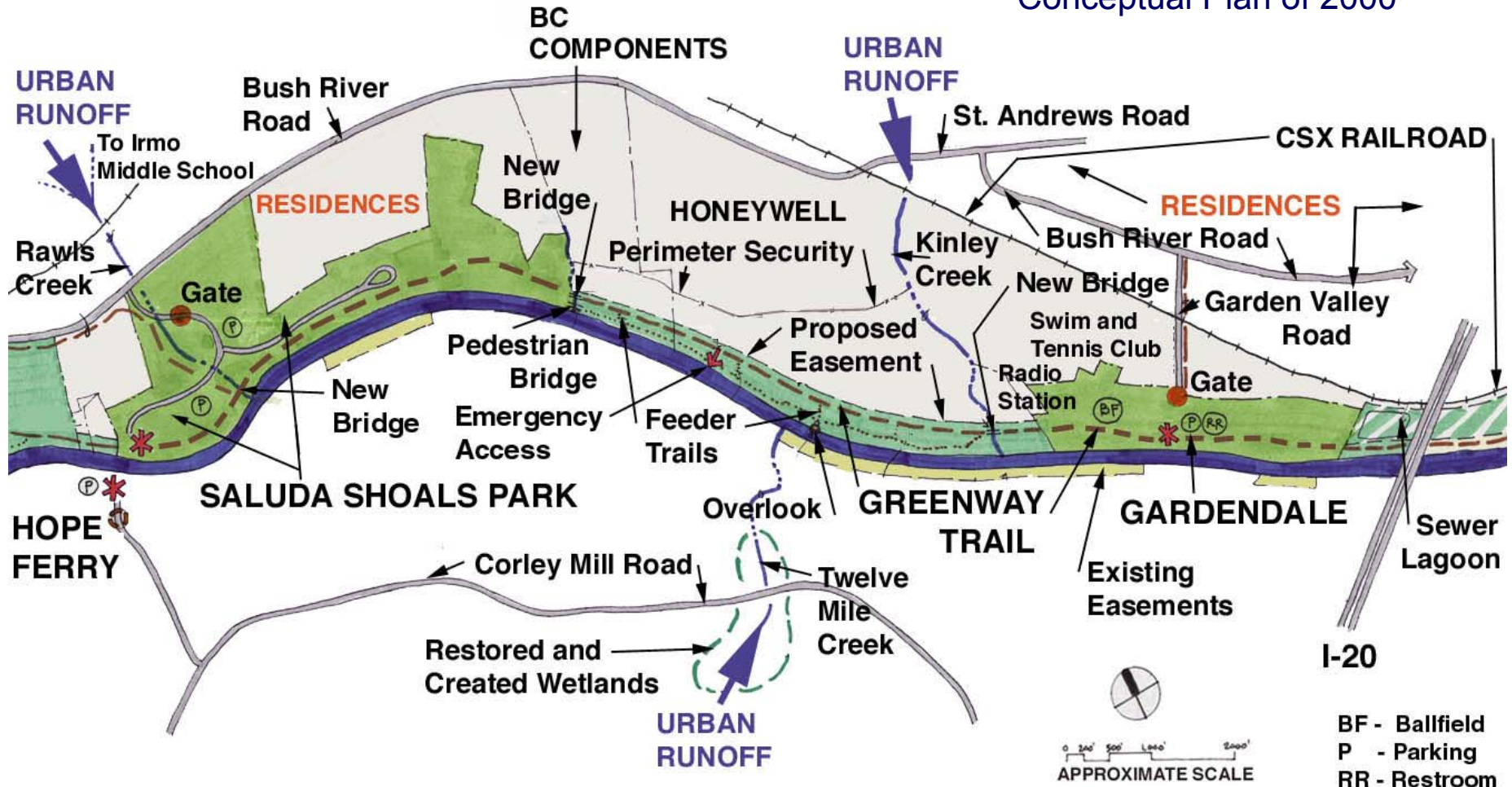
Conceptual Plan of 2000



# Lower Saluda Scenic River Corridor Plan Update

## Saluda Shoals Park to Gardendale Landing

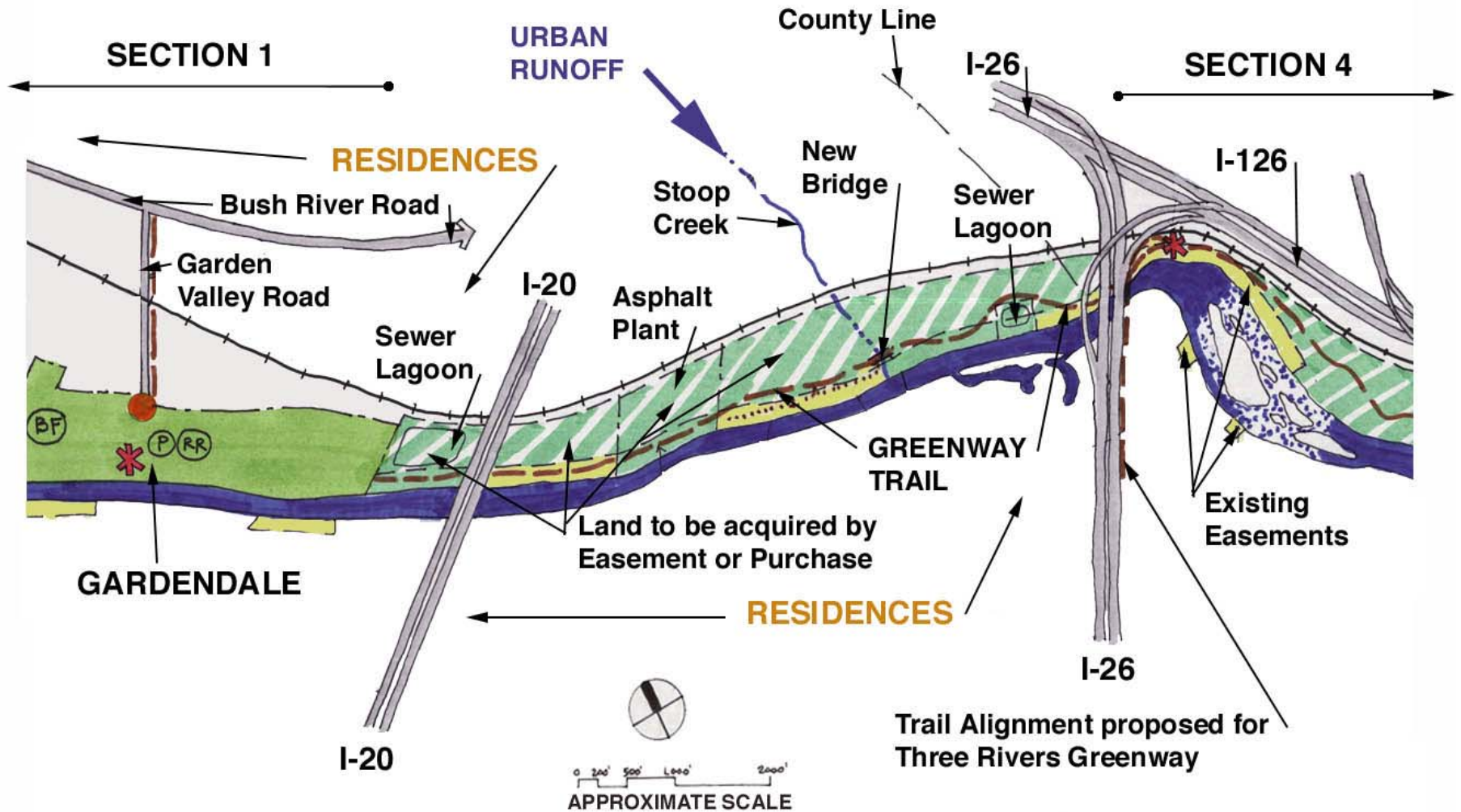
Conceptual Plan of 2000



# Lower Saluda Scenic River Corridor Plan Update

## Gardendale Landing to Interstate-26

Conceptual Plan of 2000

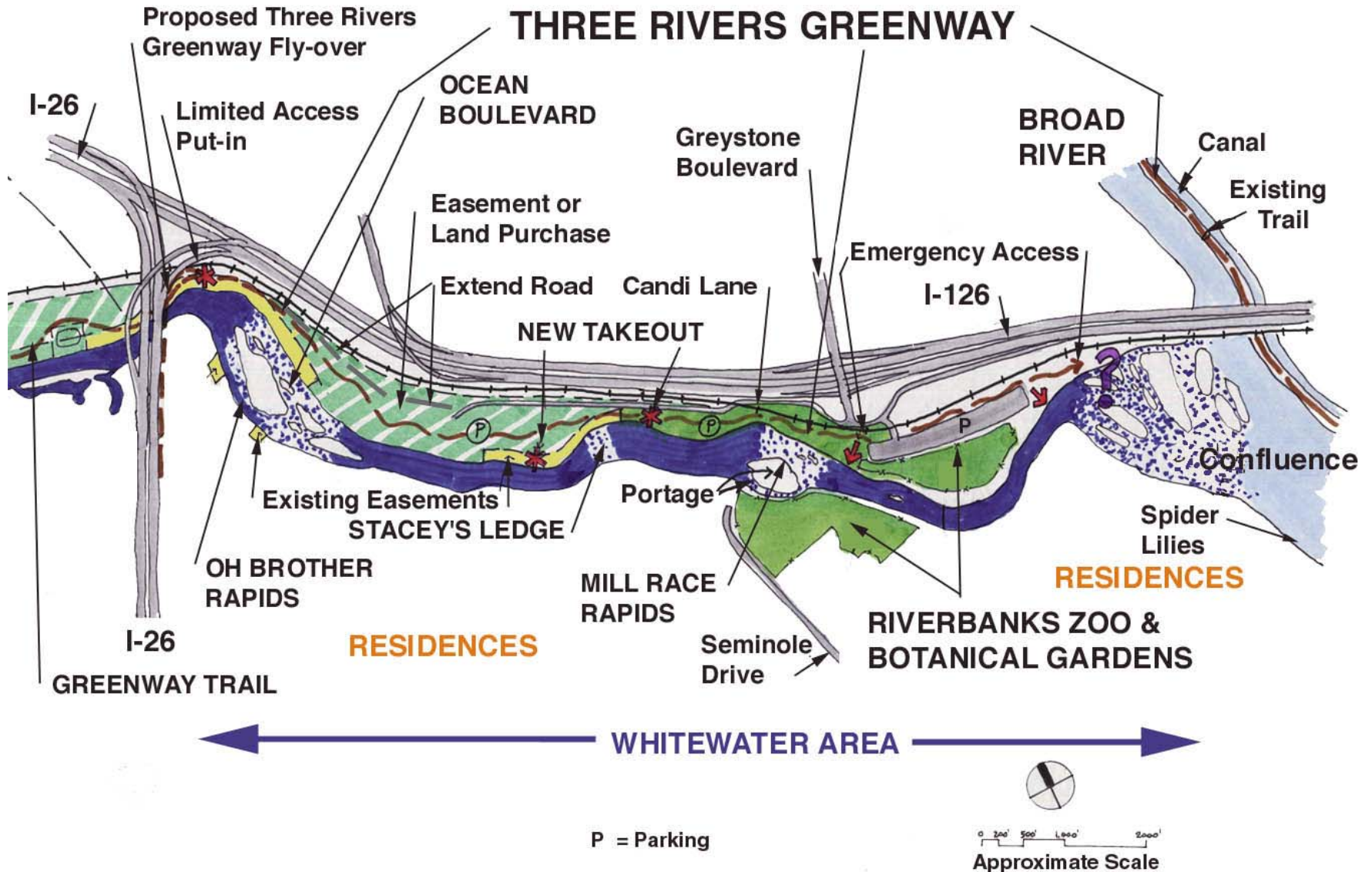




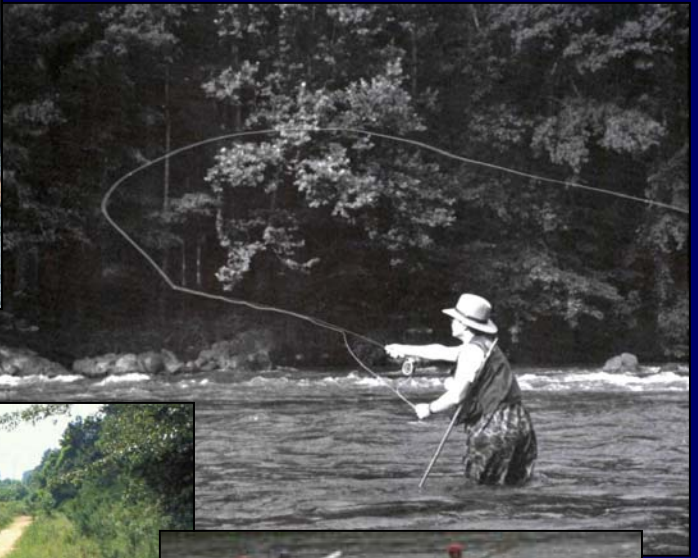
# Lower Saluda Scenic River Corridor Plan Update

## Interstate-26 to Broad River

Conceptual Plan of 2000



Lower Saluda  
River  
Recreation



# Desired Outcomes for Recreation

## Access/Facilities, Flows, and Safety

- Lower Saluda River Greenway Trail
- Safety egress above Mill Race Rapids
- Conservation of all SCE&G lands on river
- Minimum flows for recreational navigation
- Ramping flow releases & improved warning system
- Improved communication of flow conditions
- Scheduled flows for recreation

End

