# 2015
# DRAFT SOUTH CAROLINA AQUATIC PLANT MANAGEMENT PLAN
# PART 2

DRAFT

Prepared by the
Aquatic Nuisance Species Program
South Carolina Department of Natural Resources
and Approved by the
South Carolina Aquatic Plant Management Council
2015

## 2015 SOUTH CAROLINA
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# PART II - 2015 ANNUAL MANAGEMENT PLAN

## INTRODUCTION

The Annual Management Plan for 2015 was developed by application of the procedures described in the Aquatic Plant Management Plan, Part I (Procedural Management Plan). The phases of development of the Annual Management Plan include l) identification of areas where aquatic plants interfere with water use, 2) development of a description of each problem area, 3) development of a management strategy for each problem area, and 4) determination of the distribution of available funding among problem areas.

Common and Scientific Names of Aquatic Plants Referenced in the Plan

| | |
|---|---|
| Alligatorweed | *Alternanthera philoxeroides* |
| Bladderwort | *Utricularia spp.* |
| Brazilian elodea | *Egeria densa* |
| Bur Marigold | *Bidens spp.* |
| Spatterdock | *Nuphar luteum macrophyllum* |
| Cattails | *Typha spp.* |
| Coontail | *Ceratophyllum demersum* |
| Common reed | *Phragmites australis* |
| Creeping rush | *Juncus repens* |
| Crested Floating-heart | *Nymphoides cristata* |
| Curly-leaf pondweed | *Potamogeton crispus* |
| Duckweed | *Lemna spp*. |
| Eurasian watermilfoil | *Myriophyllum spicatum* |
| Fanwort | *Cabomba caroliniana* |
| Filamentous algae | *Pithophora, Lyngbya, Hydrodictyon* |
| Floating bladderwort | *Utricularia inflata* |
| Floating heart | *Nymphoides spp*. |
| Frog's bit | *Limnobium spongia* |
| Giant cutgrass | *Zizaniopsis miliacea* |
| Hydrilla | *Hydrilla verticillata* |
| Lotus | *Nelumbo lutea* |
| Musk-grass | *Chara spp.* |
| Pondweed | *Potamogeton spp*. |
| Slender naiad | *Najas minor* |
| Smartweed | *Polygonum densiflorum* |
| Southern naiad | *Najas guadalupensis* |
| Spikerush | *Eleocharis spp.* |
| Stonewort | *Nitella* |
| Variable-leaf pondweed | *Potamogeton diversifolius* |
| Waterlily | *Nymphaea odorata* |
| Water hyacinth | *Eichhornia crassipes* |
| Water lettuce | *Pistia stratiotes* |
| Watermilfoil | *Myriophyllum spp.* |
| Water pennywort | *Hydrocotyle ranunculoides* |
| Water primrose | *Ludwigia hexapetala* |
| Watershield | *Brasenia schreberi* |

## Aquatic Plant Problem Areas

Areas where aquatic plants interfere with water use were identified from information provided by S.C. Aquatic Plant Management Council members, an aquatic plant survey conducted by the S.C. Department of Natural Resources staff and public input. The identified problem areas listed below are open to access and use by the public and are therefore considered by the Council as eligible for some type of public funding. Acres of infestation (coverage) are approximations based on observations made in 2014. Problematic species may change throughout the current year and inclusion in the plan is no guarantee the listed work will be done this year. All control work is based on existing funding and priority levels of both the invasive species and the water bodies in the plan.

**SPECIAL NOTE: Due to 2015 budget constraints and in an effort to continue to serve all of the areas around the state; each water body will only be eligible for up to $30,000 of cost share money from the SCDNR.**

1) Water body - Back River Reservoir
   Location - Berkeley County
   Surface acres - 850
   Aquatic plants - Hydrilla, Water hyacinth, Water primrose, Fanwort
   Coverage - 360 acres
   Impaired activities- Boating, fishing, hunting, swimming, industrial water supply, municipal water supply, electric power generation, public access
2) Water body - Baruch Institute
   Location - Georgetown County
   Surface acres - Unknown, adjacent to Winyah Bay
   Aquatic plants - Phragmites
   Coverage - 25 acres
   Impaired activities - Boating, hunting, fishing, public access
3) Water body - Black Mingo Creek
   Location - Georgetown County
   Surface acres -Unknown
   Aquatic plants - Alligatorweed, Parrot feather, Water hyacinth
   Coverage - 5 acres
   Impaired activities - Boating, hunting, fishing, public access
4) Water body - Black River
   Location - Georgetown County
   Surface acres -Unknown
   Aquatic plants – Alligatorweed, Water hyacinth
   Coverage – 40 acres
   Impaired activities - Boating, hunting, fishing, public access
5) Water body - Bonneau Ferry
   Location - Berkeley County
   Surface acres -Unknown - Multiple Reserves and impoundments

Aquatic plants - Water hyacinth, Water primrose, Frog's bit, Lotus, Cat-tails, Cutgrass, Pennywort, Parrotfeather, Fanwort, Coontail
Coverage - 40 acres
Impaired activities - Boating, hunting, fishing, public access

6) Water Body – Charleston County Parks
Location – Charleston County (CawCaw and Laurel Hill)
Surface acres – unknown
Aquatic plants - Hydrilla, Water primrose, Water hyacinth, Phragmites, Tallow
Coverage - 10 acres
Impaired activities – Recreational and public access

7) Water body - Combahee River (Borrow pit)
Location - Colleton County
Surface acres - approx. 5 acres
Aquatic plants - Hydrilla, Water primrose, Water hyacinth
Coverage - 4 acres
Impaired activities - Boating, hunting, fishing, public access

8) Water body - Cooper River (and adjacent ricefields)
Location - Berkeley County
Surface acres - Unknown
Aquatic plants - Hydrilla, Water primrose, Water hyacinth
Coverage - approx. 2,800 acres
Impaired activities - Boating, hunting, fishing, public access

9) Water body - Donnelley/Bear Island WMA
Location - Colleton County
Surface acres - Multiple impoundments and rivers
Aquatic plants - Cutgrass, Frog's bit, Cattails, Phragmites
Coverage - 80 acres
Impaired activities - Hunting, public access

10) Water body - Dungannon Plantation Heritage Preserve
Location - Charleston County
Surface acres - Unknown
Aquatic plants - Cutgrass, Frog's bit, Cattails, Water primrose, Swamp loosestrife
Coverage - 14 acres
Impaired activities - Wood stork nesting site, public access

11) Water body - Goose Creek Reservoir
Location - Berkeley County
Surface acres - 600
Aquatic plants - Water hyacinth, Water lettuce, Water primrose, Hydrilla, Salvinia(*Salvinia minima*)
Coverage - 180 acres
Impaired activities - Boating, public access, industrial water supply, floodway

12) Water body – Lake Bowen

Location - Spartanburg County
Surface acres - 1534
Aquatic plants – Muskgrass(Chara), Bladderwort
Coverage - 50 acres
Impaired activities- Boating, fishing, hunting, swimming, industrial water supply, municipal water supply, public access

13) Water body – Lake Cunningham
Location - Greenville County
Surface acres -160 acres
Aquatic plants – Brazilian elodea, Water primrose, Waterlily spatterdock
Coverage – 10 acres
Impaired activities - Boating, hunting, fishing, public access

14) Water body - Lake Greenwood
Location -Laurens and Greenwood Counties
Surface acres - 11,400
Aquatic plants - Hydrilla, Slender naiad
Coverage - <5 acres
Impaired activities – Potential impacts to electric power generation, boating, swimming, vector control, public access

15) Water body - Lake Keowee
Location – Pickens and Oconee Counties
Surface acres – 18,300 acres
Aquatic plants - Hydrilla
Coverage - <5 acres
Impaired activities - Potential impacts to electric power generation, municipal water supply, boating, swimming, vector control, public access

16) Water body - Lake Monticello(Recreation Lake)
Location - Fairfield County
Surface acres – 6,700 acres(400 acres)
Aquatic plants - Hydrilla
Coverage - <1 acres (Recreation Lake)
Impaired activities - Boating, swimming, fishing, vector control, public access

17) Water body - Lake Murray
Location - Lexington and Richland Counties
Surface acres - 50,000
Aquatic plants - Hydrilla, Illinois pondweed, Water primrose, Alligatorweed
Coverage - 50 acres
Impaired activities - Boating, swimming, domestic and municipal water intakes, public access

18) Water body - Lake Wateree
Location – Kershaw County
Surface acres – 13,710 acres
Aquatic plants – Hydrilla, cutgrass

Coverage - <5 acres
Impaired activities - Potential impacts to boating, swimming, vector control, public access

19) Water body - Little Pee Dee River
Location - Marion and Horry Counties
Surface acres - Unknown
Aquatic plants - Alligatorweed
Coverage - 30 acres
Impaired activities - Boating, hunting, fishing, public access

20) Water body - Lumber River
Location - Marion and Horry Counties
Surface acres - Unknown
Aquatic plants - Alligatorweed
Coverage - 5 acres
Impaired activities - Boating, hunting, fishing, public access

21) Water body - Pee Dee River
Location - Georgetown County
Surface acres - Unknown
Aquatic plants - Water hyacinth, Phragmites
Coverage - 40 acres
Impaired activities - Boating, hunting

22) Water body – Prestwood Lake
Location – Darlington County
Surface acres – 300 acres
Aquatic plants - Milfoil, Watershield, Filamentous algae, Water hyacinth
Coverage - 75 acres
Impaired activities - Boating, fishing, recreation

23) Water body - Samworth WMA
Location - Georgetown County
Surface acres - Unknown
Aquatic plants - Phragmites, Water hyacinth
Coverage - 50 acres
Impaired activities - Hunting, public access

24) Water body - Santee Coastal Reserve
Location - Georgetown County
Surface acres - Unknown
Aquatic plants - Phragmites
Coverage - 2000 acres
Impaired activities - Hunting, public access

25) Water body - Santee Delta WMA
Location - Georgetown County
Surface acres - Unknown
Aquatic plants - Phragmites

Coverage - 50 acres
Impaired activities - Hunting, public access

26) Water body - US Naval Weapons Station
Location - Charleston and Berkeley Counties
Surface acres - Unknown
Aquatic plants - Frog's-bit, Water primrose, Water hyacinth, Phragmites
Coverage - 80 acres
Impaired activities - Boating, hunting, fishing, public access

27) Water body - Waccamaw River
Location - Georgetown and Horry Counties
Surface acres - Unknown
Aquatic plants - Water hyacinth, Phragmites
Coverage - 50 acres
Impaired activities - Boating, hunting, fishing, public access

28) Water body - Yawkey Wildlife Center
Location - Georgetown County
Surface acres - Unknown
Aquatic plants - Phragmites
Coverage - 25 acres
Impaired activities - Hunting, public access

**Santee Cooper Lakes**

29) Water body - Lake Marion
Location - Sumter, Clarendon, Calhoun, Berkeley, and Orangeburg Counties.
Surface acres - 110,000
Aquatic plants - Alligatorweed, Brazilian elodea, Hydrilla, Water primrose, Slender naiad, Coontail, Water hyacinth, Filamentous algae, Fanwort, Cutgrass, Crested floating heart
Coverage - 2350 acres
Impaired activities - Boating, swimming, public access, potential electric power generation, potential irrigation water withdrawals

30) Water body - Lake Moultrie
Location - Berkeley County
Surface acres - 60,400
Aquatic plants - Alligatorweed, Water primrose, Brazilian elodea, Hydrilla, Slender naiad, Water hyacinth, Watermilfoil, Fanwort, Cutgrass, Crested floating heart
Coverage - 400 acres
Impaired activities - Potential electric power generation, boating, swimming, public access, potential domestic and irrigation water withdrawals

**SC Parks, Recreation and Tourism - State Park Lakes**

31) Water body - Aiken State Park

Location - Aiken County
Surface acres - 16
Aquatic plants – Floating heart
Coverage - 10 acres
Impaired activities - Fishing, swimming, aesthetics

32) Water body - Barnwell State Park
Location - Barnwell County
Surface acres - 12
Aquatic plants – Waterlily, Cattails
Coverage - 9 acres
Impaired activities - Fishing, swimming, aesthetics

33) Water body - Charles Towne Landing State Park
Location - Charleston County
Surface acres - 5
Aquatic plants - Duckweed, Alligatorweed, Pennywort, Cyanobacteria, Algae
Coverage - 4 acres
Impaired activities - Fishing, tourism, aesthetics

34) Water body - Cheraw State Park
Location - Chesterfield County
Surface acres - 280
Aquatic plants – Floating heart, Waterlily, Spatterdock, Watermilfoil
Coverage - 20 acres
Impaired activities - Fishing, swimming, aesthetics

35) Water body - Croft State Park
Location - Spartanburg County
Surface acres - 145
Aquatic plants – Hydrilla
Coverage - 50 acres
Impaired activities - Fishing, swimming, aesthetics

36) Water body - H. Cooper Black Recreation Area
Location - Chesterfield County
Surface acres - 2 acres
Aquatic plants - Spatterdock
Coverage - 1 acres
Impaired activities - Recreational activities

37) Water body – Hunting Island State Park
Location - Beaufort County
Surface acres - 1
Aquatic plants – Duckweed
Coverage - 1 acres
Impaired activities - Fishing, swimming, aesthetics

38) Water body - Huntington Beach SP

Location - Horry County
Surface acres - 15 acres
Aquatic plants - Cutgrass, Phragmites, Cattails
Coverage - 15 acres
Impaired activities - Recreational activities

39) Water body – Jones Gap State Park
Location - Greenville County
Surface acres - 1
Aquatic plants – Kudzu
Coverage - 1 acres
Impaired activities - Fishing, swimming, aesthetics

40) Water body - Kings Mountain State Park - Crawford Lake
Location - York County
Surface acres - 9
Aquatic plants - Slender naiad
Coverage - 4 acres
Impaired activities - Swimming, boating

41) Water body - Lee State Park
Location - Lee County
Surface acres – 1.75
Aquatic plants – Watermilfoil
Coverage – 2 acres
Impaired activities - Fishing, swimming, aesthetics

42) Water body - Little Pee Dee State Park
Location - Dillon County
Surface acres - 75
Aquatic plants - Spikerush, Spatterdock
Coverage - 15 acres
Impaired activities - Fishing, boating

43) Water body - N.R. Goodale State Park
Location - Kershaw County
Surface acres - 160 acres
Aquatic plants - Waterlily, Watershield
Coverage - 60 acres
Impaired activities - Swimming, recreational activities

44) Water body – Paris Mountain State Park
Location - Greenville County
Surface acres – 9.5
Aquatic plants – Slender naiad, Watershield
Coverage - 6 acres
Impaired activities - Fishing, swimming, aesthetics

45) Water body - Poinsett State Park

Location - Sumter County
Surface acres - 9
Aquatic plants – Spatterdock, Cattails
Coverage - 5 acres
Impaired activities - Fishing, swimming, aesthetics

46) Water body - Sesquicentennial State Park
Location - Richland County
Surface acres - 25 acres
Aquatic plants - Waterlily, Watershield
Coverage - 12 acres
Impaired activities - Swimming, fishing

**SC Department of Natural Resources - State Lakes**

47) Water body - Lake Cherokee
Location - Cherokee County
Surface acres - 50 acres
Aquatic plants - Water primrose
Coverage - 5 acres
Impaired activities - Boating, fishing

48) Water body - Lake Edwin Johnson
Location - Spartanburg County
Surface acres - 40 acres
Aquatic plants - Water primrose, Hydrilla, Pondweed
Coverage - 10 acres
Impaired activities - Boating, fishing

49) Water body - Jonesville Reservoir
Location - Union County
Surface acres - 25 acres
Aquatic plants - Water primrose, Pondweed
Coverage - 10 acres
Impaired activities - Boating, fishing

50) Water body - Mountain Lakes
Location - Chester County
Surface acres - 70 acres
Aquatic plants - Water primrose, Alligatorweed, Parrotfeather
Coverage - 5 acres
Impaired activities - Boating, fishing

51) Water body - Lancaster Reservoir
Location - Lancaster County
Surface acres - 61 acres
Aquatic plants - Water primrose, Alligatorweed

Coverage - 8 acres
Impaired activities - Boating, fishing, hunting

52) Water body - Sunrise Lake
Location - Lancaster County
Surface acres - 25 acres
Aquatic plants - Pondweed
Coverage - 15 acres
Impaired activities - Boating, fishing

53) Water body - Lake Ashwood
Location - Lee County
Surface acres - 75 acres
Aquatic plants - Waterlily
Coverage - spotty
Impaired activities - Boating, fishing

54) Water body - Lake Edgar Brown
Location - Barnwell County
Surface acres - 100 acres
Aquatic plants - Water primrose, Coontail
Coverage - 60 acres
Impaired activities - Boating, fishing

55) Water body - Lake George Warren
Location - Hampton County
Surface acres - 400 acres
Aquatic plants - Cattails, Water primrose, Coontail
Coverage - 20 acres
Impaired activities - Boating, fishing

56) Water body - Lake Thicketty
Location - Cherokee County
Surface acres - 100 acres
Aquatic plants - Hydrilla
Coverage - 5 acres
Impaired activities - Boating, fishing

57) Water body - Dargan's Pond
Location - Darlington County
Surface acres - 50 acres
Aquatic plants - Pondweed
Coverage - 15 acres
Impaired activities - Boating, fishing

**South Carolina Border Lakes**

58) Water body - Lake Wylie

Location – York County, SC; Gaston and Mecklenburg County, NC
Surface acres – 13,443 acres
Aquatic plants - Hydrilla
Coverage - <400 acres(all in NC waters)
Impaired activities - Potential impacts include electric power generation, boating, swimming, public access, domestic and irrigation water withdrawals

59) Water body - Lake Thurmond
Location – South Carolina, Georgia Border
Surface acres – 71,100 acres
Aquatic plants - Hydrilla
Coverage - > 7000 acres
Impaired activities - Potential impacts include electric power generation, boating, swimming, public access, domestic and irrigation water withdrawals

# AQUATIC PLANT MANAGEMENT STRATEGY

The following management strategies were developed for each identified problem area considered eligible for public funding. Planned expenditures are based on known available federal funds, estimated state funds and anticipated local support as of the date of this plan. For water bodies in which final funding is inadequate to conduct all proposed control operations, the extent of control will be reduced and priority areas and target plants will be determined by the Department of Natural Resources in cooperation with the local sponsor. A summary of proposed expenditures for 2015 and a location map of problem water bodies are located at the end of this section.

**SPECIAL NOTE:** Due to continuing budget constraints (in an effort to serve all of the areas around the state) each water body will only be eligible for up to $30,000 of cost share money from the SCDNR.

## Public Waters

### 1. Back River Reservoir (Berkeley County)

**Problem plant species**

Hydrilla, Water hyacinth, Fanwort, Water primrose, Frog's bit, Cutgrass

**Management objectives**

Reduce water hyacinth and water primrose populations throughout the lake to enhance public access, navigation, water flow and minimize impacts to water intakes from floating islands.

Reduce hydrilla in upper Foster Creek area to improve water quality, water flow and navigation.

Reduce hydrilla and fanwort in 62.50 acre area adjacent to SCE&G Williams Station intake to enhance water flow, minimize clogging of water intake, and enhance public boating and fishing use in this area.

Reduce hydrilla and fanwort in a 2 acre area at Bushy Park Landing to enhance public boating and fishing use in this area.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Water hyacinth | Renovate 3, Reward, Clearcast, Galleon SC, Habitat, Glyphosate |
| Water primrose, Cutgrass | Renovate 3, Reward, Habitat, Clearcast, Glyphosate |
| Hydrilla | Chelated copper*, Chelated copper*/Reward |

May be toxic to fish at recommended treatment rates; however, precautions will be implemented to minimize the risk of fish kills.

**Area to which control is to be applied**

Renovate 3, Reward, Habitat, Clearcast, Glyphosate and Galleon SC - 300 acres of water hyacinth, water primrose and cutgrass throughout the lake.

Chelated copper*/Reward, Galleon SC - 154 acres of hydrilla; 2 treatments of 62.50 acre area near SCE&G intake, 2 acres of hydrilla adjacent to Bushy Park Landing, 25 acres of hydrilla in Foster Creek arm (2 treatments-12.50 acres each).

**Rate of control agents to be applied**

Renovate 3 - 0.500 - 0.750 gallons per acre.

Reward - 0.500 gallons per acre.

Clearcast - 0.250 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Chelated copper - up to 1 ppm (about 10- 16 gallons per acre).

Chelated copper*/Reward - 4 gallons/2 gallons per acre

Habitat – 0.250 - 0.750 gallons per acre.

Galleon SC - Submersed 0.174 fl oz/acre foot to achieve minimum effective concentration of 25 to 75 ppb, Floating species – 2 to 6 fl oz/acre as foliar application.

**Method of application of control agents**

Renovate 3, Reward, Habitat, Clearcast, Glyphosate and Galleon SC - spray on surface of foliage with appropriate surfactant.

Chelated copper, Chelated copper*/Reward - subsurface injection from airboat.

**Timing and sequence of control application**

Three hundred (300) acres of water hyacinths, water primrose and cutgrass treated with Renovate 3, Clearcast, Habitat, Glyphosate, Galleon SC (May-October), Reward (October, November). The initial treatments are to be followed in 1-2 days with a cleanup treatment.

12.50 acres of hydrilla in Foster Creek to be treated 2 times (April-October) with Aquathol.

Hydrilla and fanwort located adjacent to public boat ramp to be treated with chelated copper.

Hydrilla located near the SCE&G water intake to be treated periodically during the year with Chelated copper, Chelated copper*/diquat (up to three times in the same 62.50 acre area), treatment area may be expanded as control is realized in target are

**Other control application specifications**

Herbicide used only upon approval by the S.C. Department of Health and Environmental Control.

All herbicide treatments conducted within 1600 feet of the CPW water intake will use Renovate 3 at a rate of 0.5 gallons per acre or less or Galleon SC at a rate of 2 to 6 oz/acre. Reward treatments will be conducted at least 1600 feet from the intake. Following any application of Reward within 1600 feet of the CPW water intake, herbicide residue concentrations may be monitored according to a plan agreed to by the S.C. Department of Natural Resources, Charleston Commissioners of Public Works(CPW), and the Department of Health and Environmental Control.

If filamentous algae are present on submersed macrophytes, an algaecide, such as K-TEA, will be used in addition to selected herbicides to assist in control.

Control is to be applied in a manner that will not significantly degrade water quality in the treatment area. This may involve treating only a portion of the area at any one time. Label rate of herbicide will be stringently adhered to.

**Entity to apply control agents**

Commercial applicator

**Estimated cost of control operations**

$45,000

**Potential sources of funding**

Water primrose and water hyacinths -

Charleston Commissioners of Public Works 30%

S.C. Electric and Gas Co. 20%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

Hydrilla and Cabomba (near SCE&G intake) -

S.C. Electric and Gas Co. 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

Hydrilla (Foster Creek, boat ramp, and Back River) -

Charleston Commissioners of Public Works 30%

S.C. Electric and Gas Co. 20%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

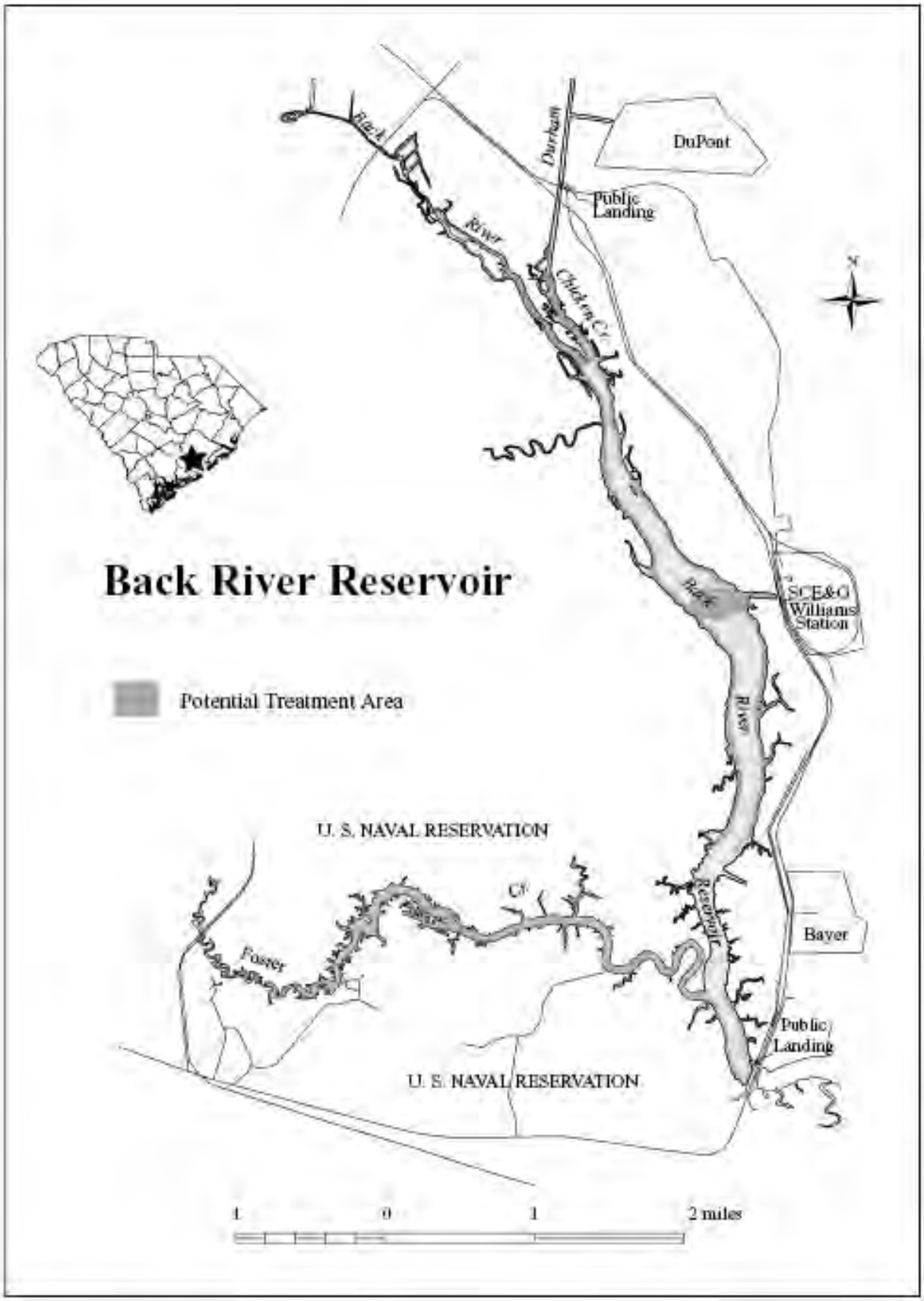
a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant

populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d) Effective long term control of water hyacinth in the reservoir must also include control of this species in the Cooper River to which the reservoir is connected.


Back River Reservoir
Potential Treatment Area
DuPont
Public Landing
Durham
Chicken Cr.
SCE&G Williams Station
Back
River
U. S. NAVAL RESERVATION
Foster
Cr.
Reservoir
Bayer
Public Landing
U. S. NAVAL RESERVATION
1
0
1
2 miles

## 2. Baruch Institute (Georgetown County)

**Problem plant species**

Phragmites

**Management objective**

Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Phragmites | Habitat, Glyphosate, Clearcast |

**Area to which control is to be applied**

25 acres of phragmites throughout area

**Rate of control agent to be applied**

Habitat - 0.250 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Clearcast - up to 5 % solution for spot spray.

**Method of application of control agent**

Helicopter - 25 acres of Habitat, Glyphosate, Clearcast applied to phragmites.

Other applications - Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply when plants are actively growing (July - Oct.).Note: Proceed as funds are available from Baruch Institute.

**Other control application specifications**

Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$3,000

**Potential sources of funding**

Baruch Institute 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

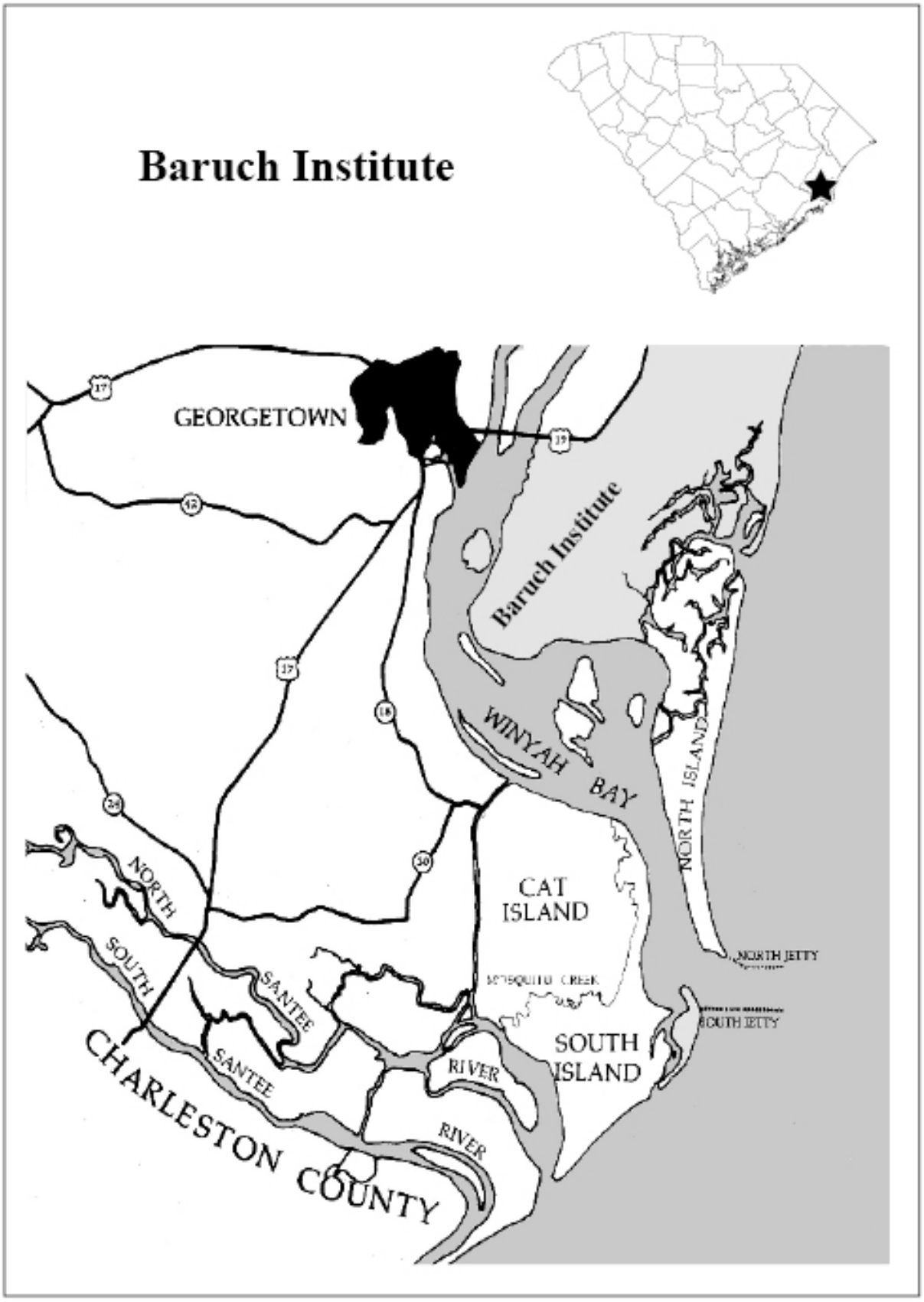
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d) Continue to coordinate treatment areas with local conservation groups.


Baruch Institute
GEORGETOWN
Baruch Institute
WINYAH BAY
NORTH ISLAND
CAT ISLAND
NORTH JETTY
SOUTH JETTY
SOUTH ISLAND
NORTH
SOUTH
SANTEE
SANTEE
RIVER
RIVER
CHARLESTON COUNTY

## 3. Black Mingo Creek (Georgetown County)

**Problem plant species**

Alligatorweed, Parrot feather, Frog's bit, Pennywort, Water hyacinth

**Management objective**

Reduce or remove nuisance weed infestation at public access points, the main river channel, and connecting lakes to improve water quality and navigation.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Alligatorweed, Pennywort | Renovate 3, Habitat, Clearcast, Glyphosate |
| Frog's bit, Parrot feather | Reward, Galleon SC |
| Water Hyacinth | Reward, Renovate 3, |

**Area to which control is to be applied**

5acres of problematic plants throughout river

**Rate of control agent to be applied**

Reward - 0.500 gallon per acre.

Renovate 3 - 0.500 to 0.750 gallons per acre.

Habitat - 0.250 - 0.750 gallons per acre.

Clearcast - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply when plants are actively growing (May - Oct.).

**Other control application specifications**

Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$1000

**Potential sources of funding**

Georgetown County 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

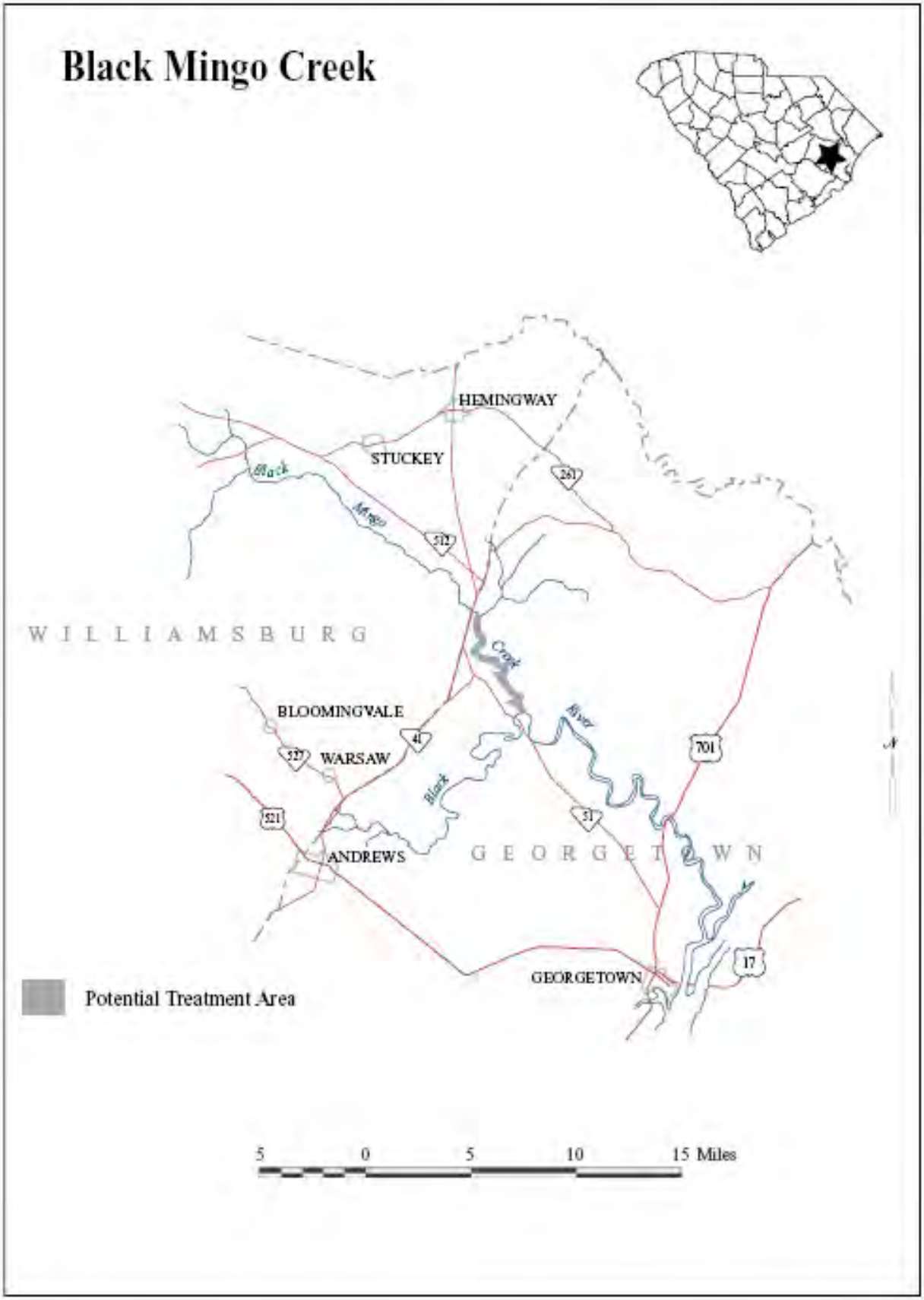
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d) Continue to coordinate treatment areas with local conservation groups.


Black Mingo Creek
HEMINGWAY
STUCKEY
Black
Mingo
261
512
WILLIAMSBURG
Creek
BLOOMINGVALE
41
527
WARSAW
River
701
Black
521
51
ANDREWS
GEORGETOWN
17
GEORGETOWN
Potential Treatment Area
5
0
5
10
15 Miles

## 4. Black River (Georgetown County)

**Problem plant species**

Alligatorweed, Parrot feather, Frog's bit, Pennywort, Phragmites, Water hyacinth

**Management objective**

Reduce or remove nuisance weed infestation at public access points, the main river channel, and connecting lakes to improve water quality and navigation.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Alligatorweed, Pennywort | Renovate 3, Habitat, Clearcast, Glyphosate |
| Frog's bit, Parrot feather | Reward, Galleon SC |
| Phragmites | Habitat, Clearcast |
| Water hyacinth | Renovate 3, Reward, Habitat |

**Area to which control is to be applied**

40 acres of problematic plants throughout river

**Rate of control agent to be applied**

Reward - 0.500 gallon per acre.

Renovate 3 - 0.500 to 0.750 gallons per acre.

Habitat - 0.250 - 0.750 gallons per acre.

Clearcast - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

Galleon SC - Floating species – 2 to 6 fl oz/acre as foliar application.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply when plants are actively growing (May - Oct.).

**Other control application specifications**

Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$3,250

**Potential sources of funding**

Georgetown County 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

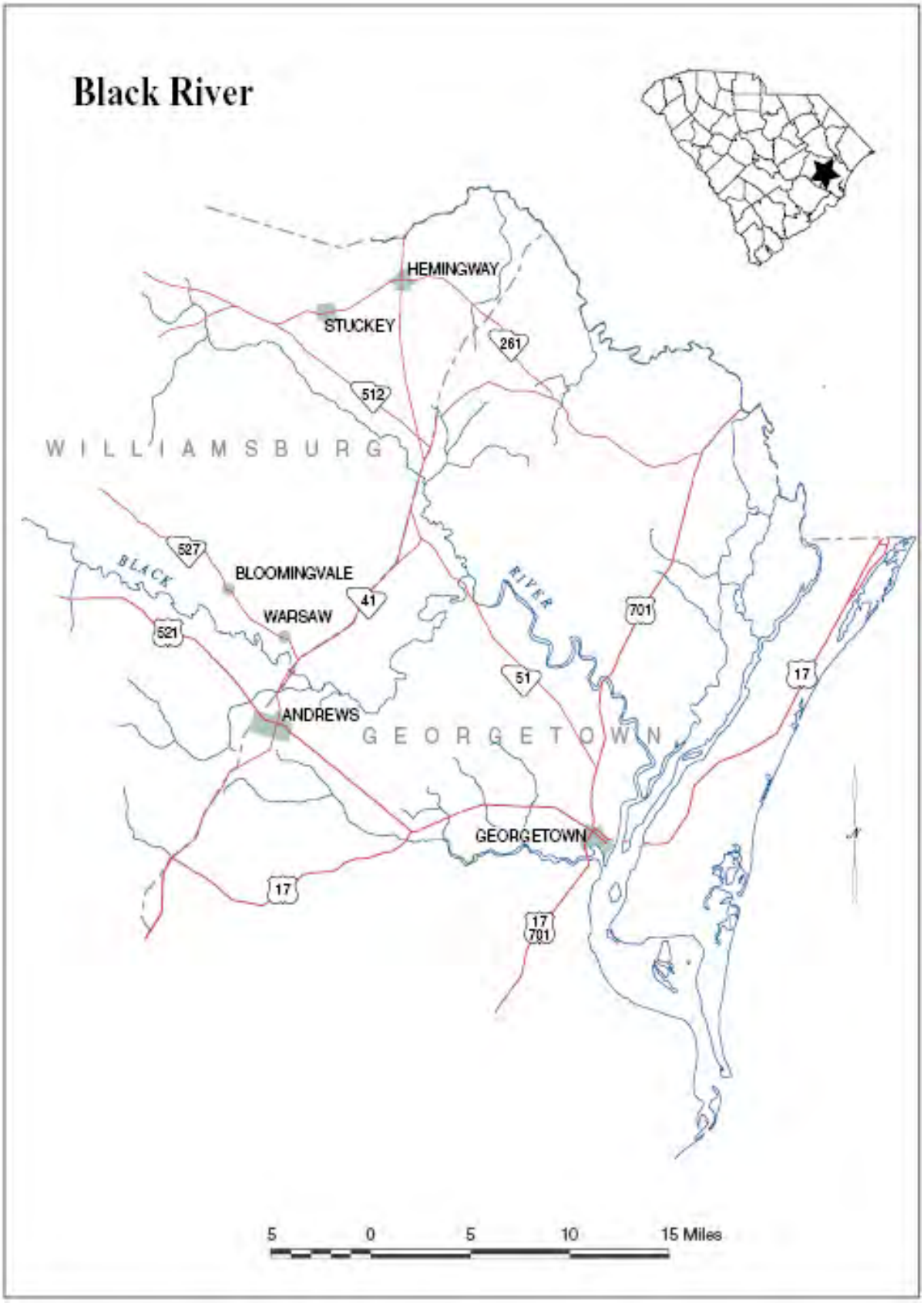
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d) Continue to coordinate treatment areas with local conservation groups and State Scenic Rivers Coordinator.


Black River
HEMINGWAY
STUCKEY
261
512
WILLIAMSBURG
527
BLACK
BLOOMINGVALE
41
WARSAW
521
RIVER
701
51
17
ANDREWS
GEORGETOWN
GEORGETOWN
17
17
701
5
0
5
10
15 Miles

## 5. Bonneau Ferry (Berkeley County)

**Problem plant species**

Water Primrose, Water hyacinth, Cattails, Lotus, Cutgrass, Pennywort, Frog's bit, Parrotfeather, Duckweed

**Management objective**

Reduce nuisance plant populations to the greatest extent possible throughout Bonneau Ferry impoundments to enhance water quality, water flow, waterfowl habitat, fishing, and hunting opportunities.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Water primrose, Pennywort | Renovate 3, Habitat, Clearcast, Glyphosate |
| Cattails, Cutgrass, Parrotfeather | Habitat, Clearcast, Glyphosate |
| Water hyacinth, Frog's bit | Renovate 3, Reward, Clearcast, and Galleon SC |
| Duckweed | Clipper |

**Area to which control is to be applied**

40 acres of problematic plants throughout the reserves and impoundments of Bonneau Ferry.

**Rate of control agent to be applied**

Reward - 0.500 gallon per acre.

Renovate 3 - 0.500 to 0.750 gallons per acre.

Habitat - 0.250 - 0.750 gallons per acre.

Clearcast - up to a 5% solution for spot spray.

Clipper – 5 to 12 oz/ac as a foliar application, submersed application 1 lb/ac foot.

Glyphosate - up to 0.937 gallons per acre.

Galleon SC - Floating species – 2 to 6 fl oz/acre as foliar application, submersed approximately 0.174 gallons/acre foot.

**Method of application of control agent**

Helicopter - 20 acres of Habitat, Glyphosate, Clearcast with appropriate surfactant.

Other applications - Spray on surface of foliage with appropriate surfactant from boat.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$5,750

**Potential sources of funding**

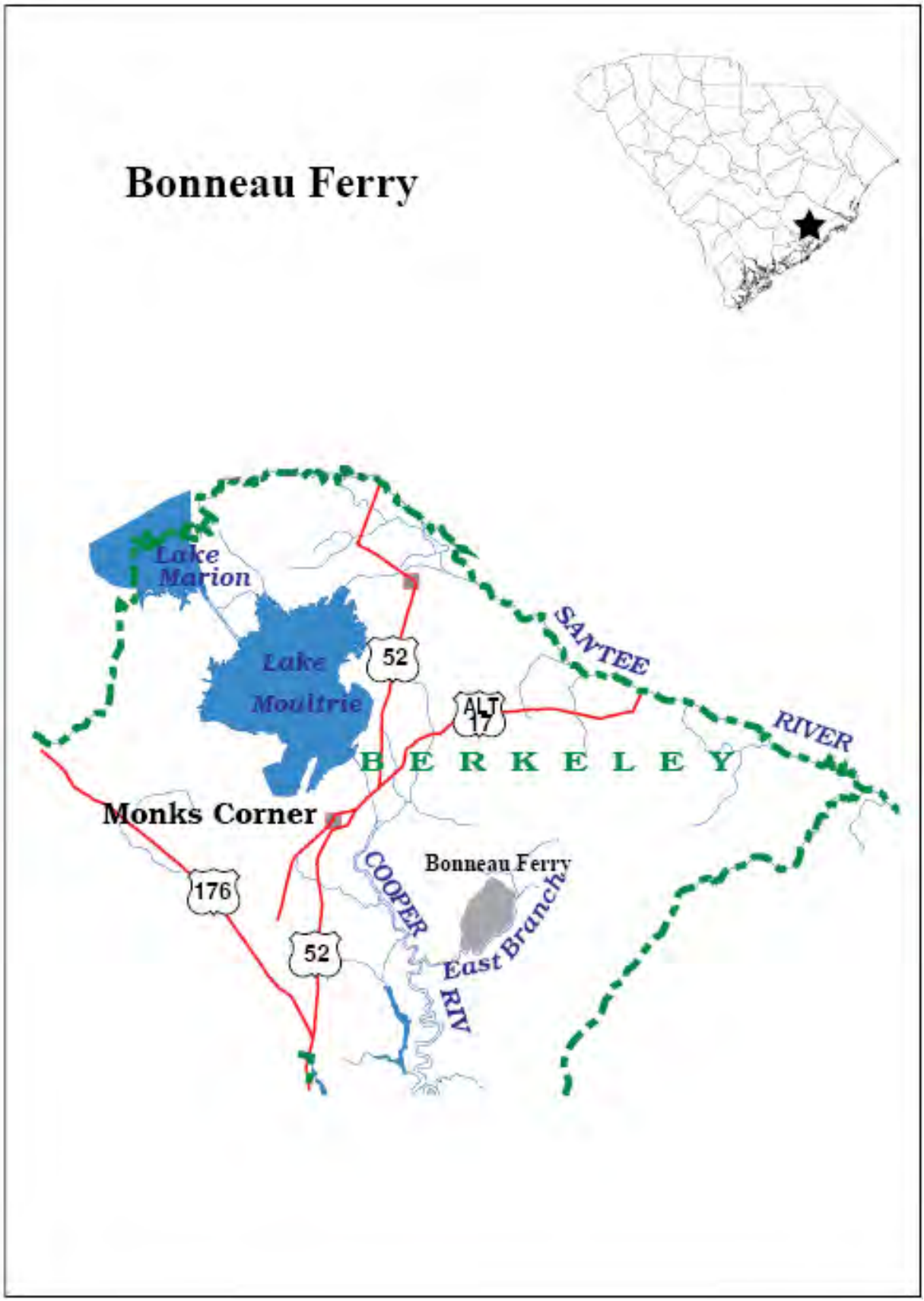
S.C. Department of Natural Resources 100%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.


Bonneau Ferry
Lake Marion
Lake Moultrie
52
ALT 17
SANTEE
RIVER
B E R K E L E Y
Monks Corner
176
52
COOPER
Bonneau Ferry
East Branch
RIV

## 6. Charleston County Parks (Caw Caw Interpretative Center, Laurel Hill Plantation) (Charleston County)

**Problem plant species**

Phragmites, milfoil, waterlily

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Watermilfoil | Hardball, Renovate Max G, Clearcast |
| Waterlily, | Hardball, Habitat, Glyphosate, Clearcast |
| Phragmites | Habitat, Glyphosate, Clearcast, |

**Area to which control is to be applied**

5 acres

**Rate of control agent to be applied**

Habitat - 2 to 3 pints per acre.
Renovate Max G – 200 lbs per acre.
Clearcast - up to 5% solution for spot spray.
Glyphosate - up to 0.937 gallons per acre. Hardball - up to 5 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant and subsurface injection from airboat. Granular herbicides spread evenly using appropriate rate.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Other control application specifications**

Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator.

**Estimated cost of control operations**

$1,000

**Potential sources of funding**

Caw Caw Interpretative Center (Charleston Co. Parks) 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 7. Combahee River (Borrow pit) (Colleton County)

**Problem plant species**

Alligatorweed, Parrot feather, Frog's bit

**Management objective**

Reduce or remove alligatorweed infestation at public access points, the main river channel, and connecting lakes.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Alligatorweed | Renovate 3, Habitat, Clearcast, Glyphosate |
| Frog's bit, Parrot feather | Reward, Galleon SC |

**Area to which control is to be applied**

4 acres of problematic plants to be treated 2 times during the growing season.

**Rate of control agent to be applied**

Reward - 0.500 gallon per acre.

Renovate 3 - 0.500 to 0.750 gallons per acre.

Habitat - 2 to 3 pints per acre.

Clearcast - 1 to 4 pints per acre.

Glyphosate - up to 6 pints per acre.

Galleon SC - Floating species – 2 to 6 fl oz/acre as foliar application.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply when plants are actively growing (May - Oct.).

**Other control application specifications**

Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$700

**Potential sources of funding**

Colleton County 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

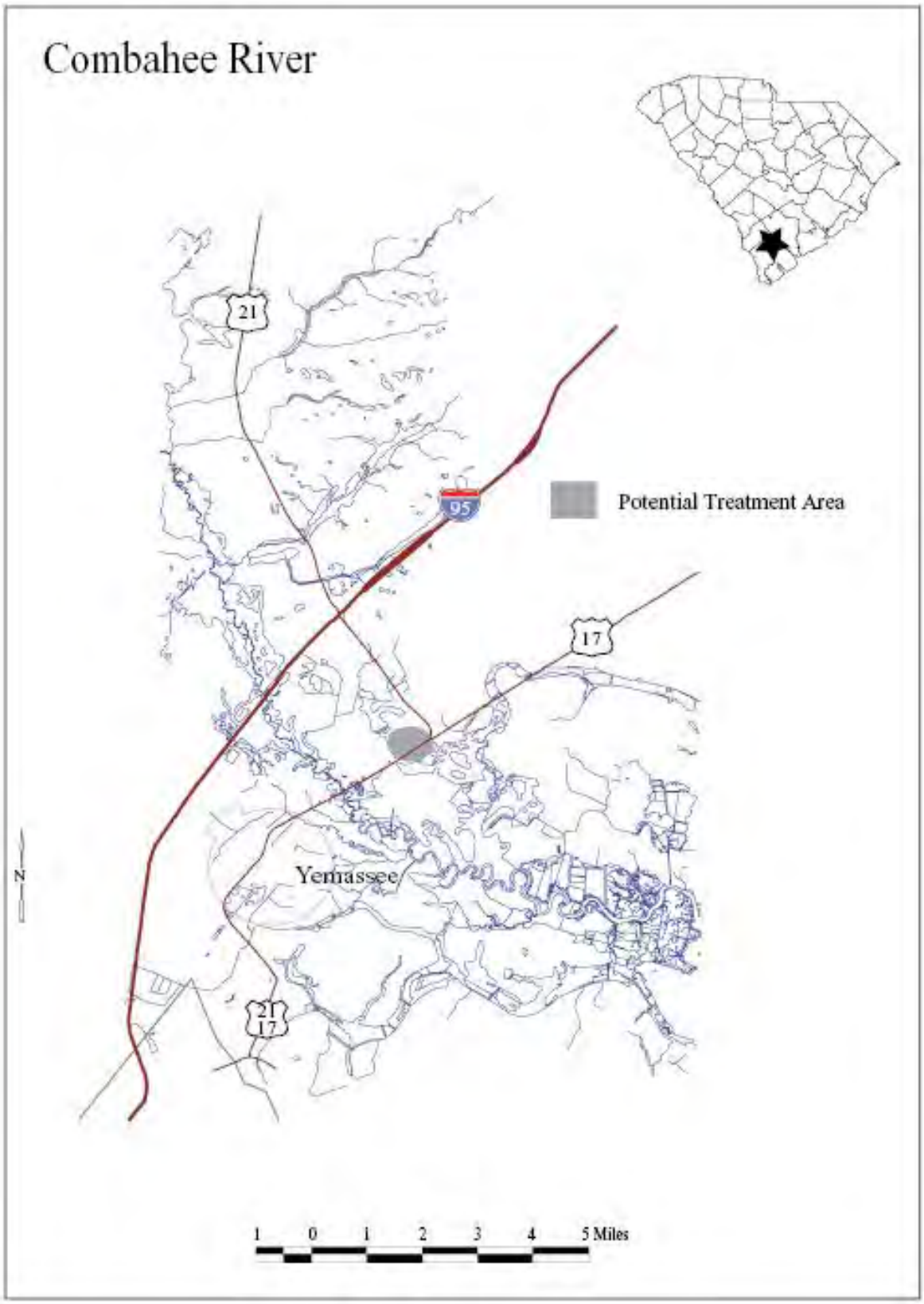
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d) Continue to coordinate treatment areas with local conservation groups.


Combahee River
21
95
17
Potential Treatment Area
Yemassee
N
21
17
1 0 1 2 3 4 5 Miles

## 8. Cooper River (Berkeley County)

**Problem plant species**

Hydrilla, Water hyacinth, Water primrose

**Management objectives**

Reduce water hyacinth populations to the greatest extent possible in the Main River and public ricefields.

Reduce water primrose growth along boat channels to maintain navigation.

Open limited boat trails in hydrilla infested ricefields to enhance public access to the river and selected ricefields.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Water hyacinth | Renovate 3, Reward, Clearcast, Glyphosate, Galleon SC |
| Water primrose | Renovate 3, Reward, Habitat, Clearcast, Glyphosate |
| Hydrilla | Chelated copper* |

* May be toxic to fish at recommended treatment rates; however, precautions will be implemented to minimize the risk of fish kills.

**Area to which control is to be applied**

Renovate 3, Reward, Habitat, Clearcast, Glyphosate, Galleon SC - 200 acres of water hyacinth and water primrose throughout river system and in narrow boat channels in French Quarter Creek, Rice Hope Plantation ricefield, and Berkeley Country Club ricefield.

Chelated copper - 48 acres (16 acres treated 3 times yearly, spring and fall) to open boat trails in Pimlico, Berkeley Yacht Club and Rice Hope Plantation ricefields and French Quarter Creek canal.

**Rate of control agents to be applied**

Habitat - 2 to 4 pints per acre.

Reward - 2 quarts per acre.

Renovate 3 - up to 4 quarts per acre

Clearcast - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

Chelated copper - up to 1 ppm (about 16 gallons per acre).

Galleon SC - Floating species – 2 to 6 fl oz/acre as foliar application.

**Method of application of control agent**

Renovate 3, Reward, Habitat, Galleon SC - spray on surface of foliage with appropriate surfactant.

Chelated copper - subsurface injection from airboat.

**Timing and sequence of control application**

All agents to be applied when plants are actively growing. Chelated copper treatment of boat trails to be conducted as close to low tide as possible to minimize water movement.

**Other control application specifications**

Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$28,000

**Potential sources of funding**

Berkeley County 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

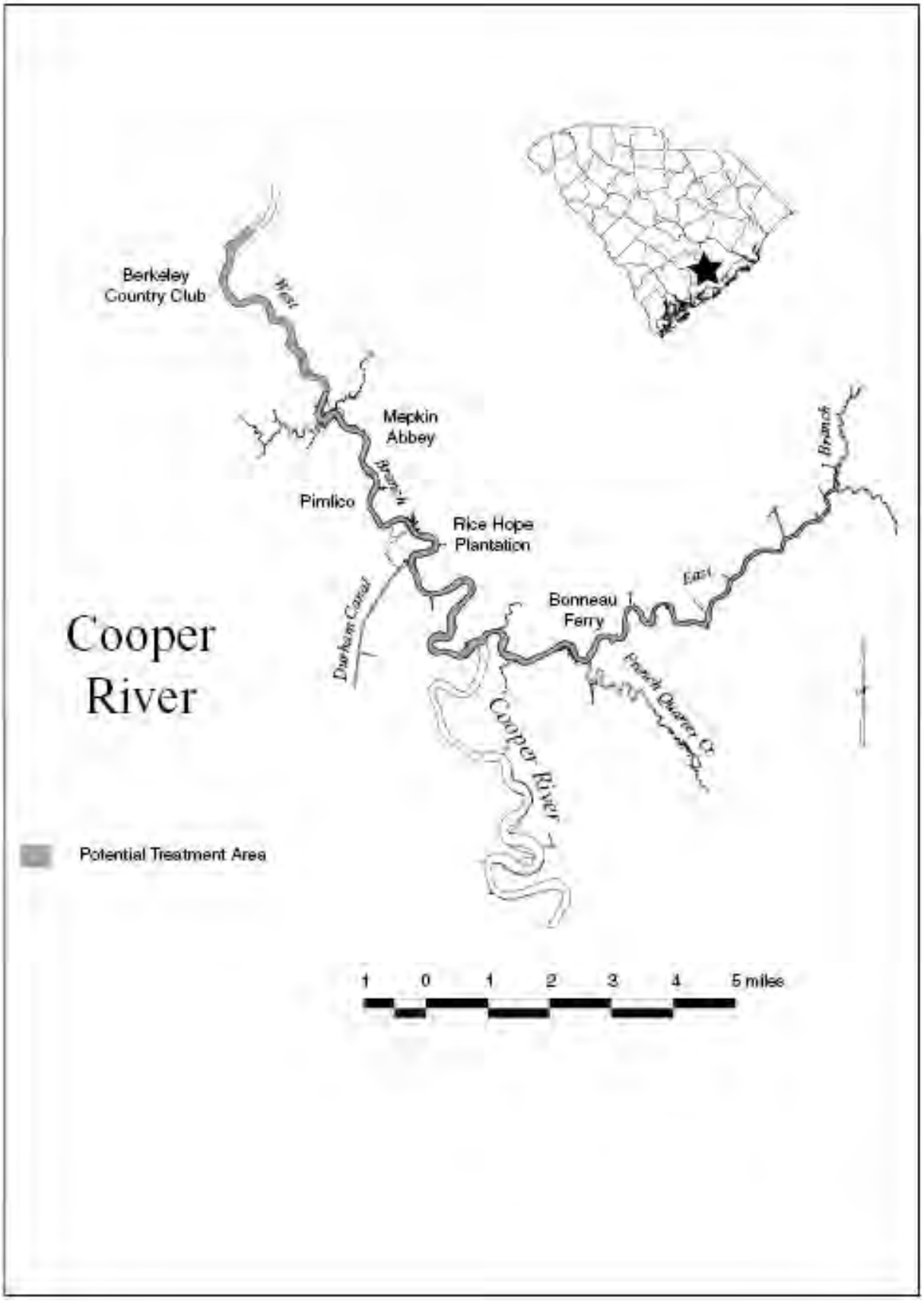
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d) Long term management must include consideration of water hyacinth control in many privately owned ricefields to which the public does not have boat access. Water hyacinth from these ricefields can reinfest public areas.


Berkeley
Country Club
West
Mepkin
Abbey
Branch
Pimlico
Rice Hope
Plantation
Durham Canal
Bonneau
Ferry
East
Branch
French Quarter Cr.
Cooper River
Cooper
River
Potential Treatment Area
1 0 1 2 3 4 5 miles

## 9. Donnelley WMA/Bear Island WMA/ACE Basin (Colleton County)

**Problem plant species**

Frog's bit, Cattails, Cutgrass, Phragmites, Swamp loosestrife

**Management objective**

Reduce problem plant populations to enhance waterfowl habitat, public access and use.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Frog's bit | Renovate 3, Galleon SC |
| Phragmites, Cattails | Habitat, Clearcast, Glyphosate |
| Cutgrass, Swamp loosestrife | Habitat, Clearcast, Glyphosate |

**Area to which control is to be applied**

80 acres of Frog's bit, Phragmites, Cattails, Cutgrass, and Swamp loosestrife throughout the area.

**Rate of control agent to be applied**

Renovate 3 - 0.500 to 0.750 gallons per acre

Habitat - 2 to 3 pints per acre.

Clearcast - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

Galleon SC - Floating species – 2 to 12 fl oz/acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply when plants are actively growing (May - Oct.).

**Other control application specifications**

Application to be conducted by airboat and helicopter. Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$5,000

**Potential sources of funding**

Donnelley WMA/USF&W 50%

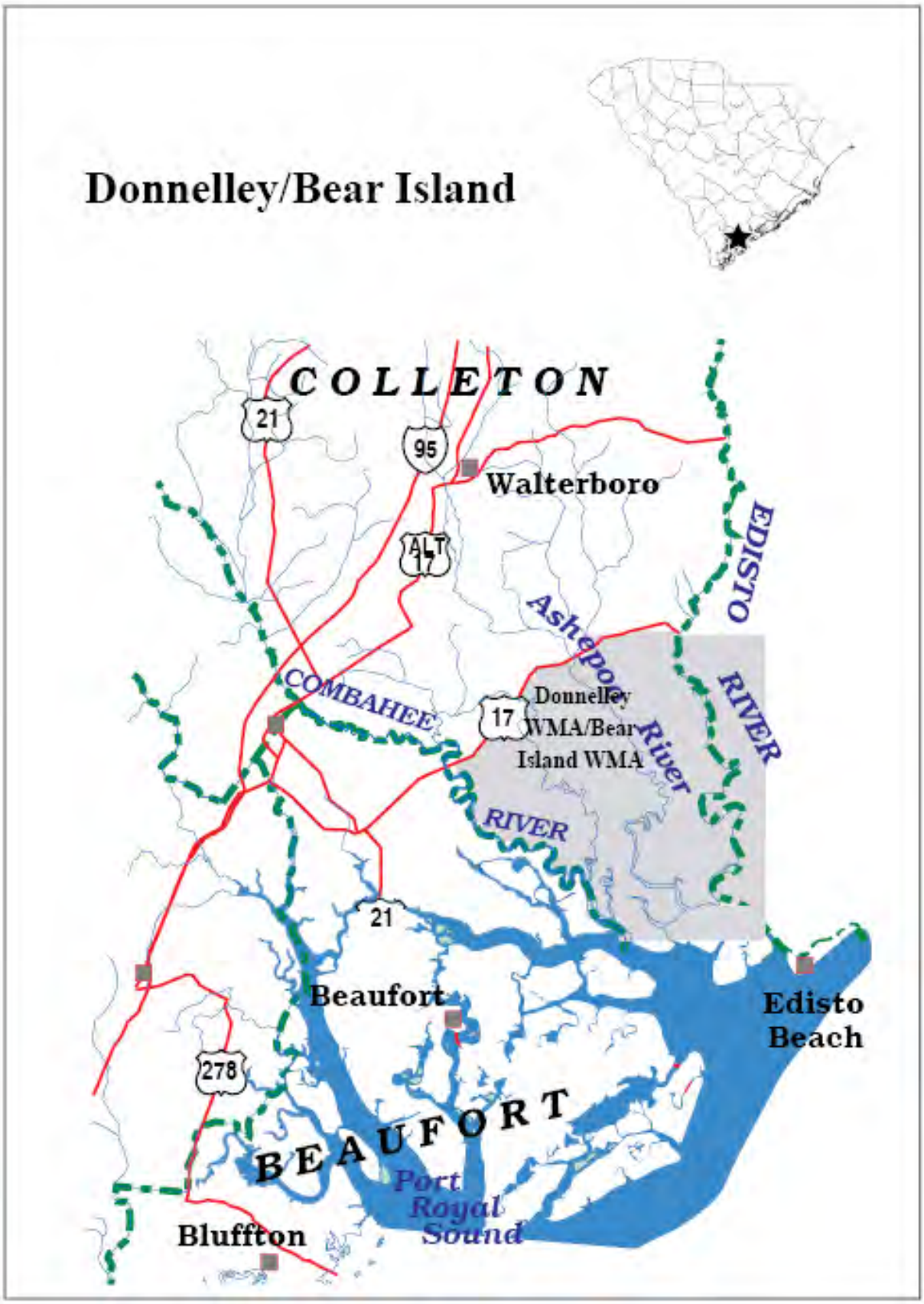
S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.


Donnelley/Bear Island
COLLETON
21
95
Walterboro
ALT 17
EDISTO
Ashepoo
RIVER
COMBAHEE
17
Donnelley WMA/Bear Island WMA
River
RIVER
21
Beaufort
Edisto Beach
278
BEAUFORT
Port Royal Sound
Bluffton

## 10. Dungannon Plantation Heritage Preserve (Charleston County)

**Problem plant species**

Frog's bit, Cattails, Bur Marigold, Cutgrass, Water Primrose, Swamp loosestrife

**Management objective**

Reduce problem plant populations to enhance Wood stork nesting habitat, public access and use.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Frog's bit, Water primrose, Bur marigold | Renovate 3, Habitat, Clearcast, Glyphosate, Galleon SC |
| Cattails | Habitat, Clearcast, Glyphosate |
| Cutgrass, Swamp loosestrife | Habitat, Clearcast, Glyphosate |

**Area to which control is to be applied**

14 acres of Frog's bit, Water primroses, and Bur marigold

14 acres of Cattails, Cutgrass, and Swamp loosestrife throughout the area.

**Rate of control agent to be applied**

Renovate 3 - 0.500 to 0.750 gallons per acre.
Habitat - 2 to 3 pints per acre.
Clearcast - 1 to 4 pints per acre.
Glyphosate - up to 6 pints per acre.
Galleon SC - Floating species – 2 to 12 fl oz/acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply when plants are actively growing (May - Oct.).

**Other control application specifications**

Application to be conducted by airboat and Jon-boat. Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$2,000

**Potential sources of funding**

Dungannon WMA 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Enhance aquatic plant communities to benefit waterfowl and to increase nesting activities of Wood storks and other waterfowl.

# Dungannon Plantation HP

## 11. Goose Creek Reservoir (Berkeley County)

**Problem plant species**

Hygrophila, Water hyacinth, Water primrose, Water lettuce, Hydrilla, Watermilfoil, Fanwort, Salvinia minima, Duckweed

**Management objective**

Reduce water hyacinth and water lettuce populations to the greatest extent possible throughout the lake.

Reduce water primrose, water lettuce and water hyacinth in the upper portion of the lake to enhance water flow and public access.

Reduce hydrilla growth throughout the lake to minimize its spread within the lake, help prevent its spread to adjacent public waters, and minimize adverse impacts to public use and access.

Reduce duckweed growth throughout populated portions of the lake to minimize adverse impacts to public use and access.

Reduce filamentous algae growth throughout populated portions of the lake to minimize adverse impacts to public use and access.

Maintain diverse aquatic plant community through selective application of control methods.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Water primrose, Hygrophila | Renovate 3, MaxG, Habitat, Clearcast, Glyphosate |
| Water hyacinth, Water lettuce | Renovate 3, Reward, Galleon SC, Clipper |
| Watermilfoil, fanwort | Reward, Hardball, Clearcast |
| Hydrilla, Hygrophila | Aquathol K, chelated copper, triploid grass carp |
| Duckweed | Sonar, Reward, Galleon SC, Clipper |
| Filamentous Algae | Captain |

**Area to which control is to be applied**

Renovate 3, Habitat, Clearcast, Glyphosate- 100 acres water primrose in upper reservoir and boat ramp.

Reward - 50 acres of water hyacinth and water lettuce throughout reservoir.

Renovate 3, Reward, Galleon SC - 100 acres of water hyacinth and water lettuce throughout the reservoir.

Reward, Hardball, Galleon SC - 20 acres of submersed growth throughout the reservoir.

Renovate 3, Habitat, Clearcast, Glyphosate, Aquathol – up to 30 acres of Hygrophila throughout the reservoir.

Release triploid grass carp in areas of the lake with greatest hydrilla growth. Grass carp will be released in selected areas, such as boat ramps and park sites, around the reservoir to achieve as even a distribution as practicable.

Sonar, Reward, Galleon SC – 50 acres of duckweed near populated areas of the reservoir.

Captain – 50 acres of filamentous algae near populated areas of the reservoir.

**Rate of control agents to be applied**

Reward - 0.500 gallon per acre.
Renovate 3 - 0.500 to 0.750 gallons per acre.
Habitat - up to 4 pints per acre.
Clearcast - 1 to 4 pints per acre.
Glyphosate - up to 6 pints per acre.
Hardball - up to 5 gallons per acre.
Clipper – up to 0.09375 gallons per acre
Galleon SC - Submersed 0.174 fl oz/acre foot to achieve minimum effective concentration of 25 to 75 ppb Floating species – 2 to 6 fl oz/acre as foliar application.

*Triploid Grass Carp - 825 fish in the entire reservoir.
*Based on a 32%(825) mortality to maintain existing population.

**Method of application of control agents**

Renovate 3, Habitat, Glyphosate, Reward, Clipper, Galleon SC - spray on surface of foliage with appropriate surfactant.

Reward, Hardball, Galleon SC - subsurface injection from airboat.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

All agents to be applied when plants are actively growing.

Triploid grass carp to be released as soon as possible in the spring of 2015 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

**Other control application specifications**

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time. Coordinate all control operations with Charleston Commissioners of Public Works and Goose Creek Reservoir Watershed Task Force. Label rate of herbicide will be stringently adhered to.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for Goose Creek Reservoir will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in Goose Creek Reservoir to provide long-term control of hydrilla. A maintenance stocking plan approved for other water bodies provided for stocking a small number of grass carp, 1 carp

to 8 or 10 surface acres, to control hydrilla while encouraging the expansion of a diverse, native aquatic plant community.

. Hydrilla populations will be carefully monitored and in the event that significant regrowth occurs during the year the Aquatic Plant Management Council may consider the need for additional grass carp or treat with herbicides to give short-term control as needed.

**Entity to apply control agents**

Herbicides - Commercial Applicator

Triploid Grass Carp - S.C. Public Service Authority and/or a commercial supplier with supervision by the SCDNR.

**Estimated cost of control operations**

$34,500

**Potential sources of funding**

Charleston Commissioner of Public Works 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

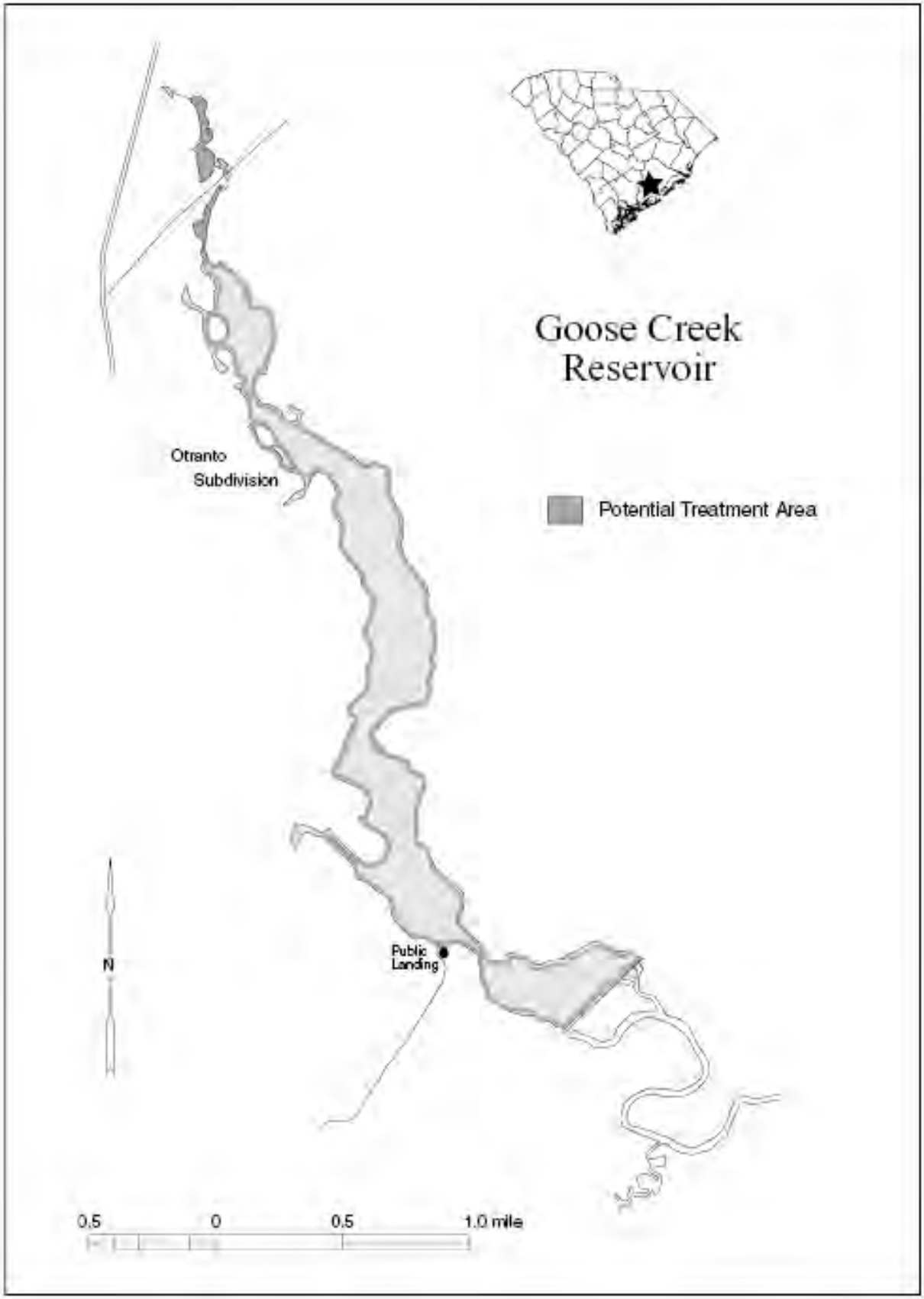
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species


Goose Creek
Reservoir
Otranto
Subdivision
Potential Treatment Area
Public
Landing
N
0.5
0
0.5
1.0 mile

## 12. Lake Bowen (Spartanburg County)

**Problem plant species**

Chara, Bladderwort

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

**Chara, Bladderwort** **Triploid grass carp, Chelated copper, SonarArea to which control is to be applied**

50 acres in lake.

**Rate of control agent to be applied**

* Triploid grass carp – Stock to maintain 1 fish per 10 surface acre density when population levels dictate.

Chelated copper - up to 1 ppm

**Method of application of control agents**

Chelated copper, Sonar - subsurface application by airboat.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest chara growth.

**Timing and sequence of control application**

Herbicide - Apply when plants are actively growing.
Triploid grass carp to be released as soon as possible in the spring of 2015 (March-May).
RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

**Other control application specifications**

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for Lake Bowen will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake and additional incremental stockings may be necessary based on the possibility of escape via the outflow at the dam. Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$40,000

**Potential sources of funding**

Spartanburg CPW 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) A long-term integrated management strategy has been implemented to control submersed nuisance species. Triploid grass carp have been stocked to control submersed nuisance species growth lake-wide and approved aquatic herbicides are used to control localized growth in priority use areas. Future plans include annual maintenance stocking of grass carp to maintain the population at a level that is sufficient to maintain control of submersed nuisance species but to minimize impacts on desirable native plant populations.

d) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

e) Periodically revise the management strategy and specific control sites as new environmental data, management agents and techniques, and public use patterns become available.

## 13. Lake Cunningham (Greenville County)

**Problem plant species**

Brazilian elodea, Fragrant water-lily, Water primrose, Spatterdock

**Management objective**

Reduce nuisance plant populations to the greatest extent possible throughout lake to enhance water quality, water flow, waterfowl habitat, fishing, and hunting opportunities.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Brazilian elodea | Chelated copper, triploid grass carp |
| Water primrose, | Renovate 3, Habitat, Clearcast, |
| Fragrant waterlily, spatterdock | Renovate 3, Habitat, Clearcast, |

**Area to which control is to be applied**

8 acres of problematic plants throughout Lake Cunningham.

**Rate of control agent to be applied**

Renovate 3 - 0.500 to 0.750 gallons per acre.
Habitat - 2 to 3 pints per acre.
Clearcast - 1 to 4 pints per acre.
Chelated copper – up to 1 ppm.
Triploid grass carp – Stock to maintain 1 fish per 10 surface acre density when population levels dictate.

**Method of application of control agent**

Herbicides spray on surface of foliage with appropriate surfactant from boat or subsurface injection from airboat.
Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest Brazilian elodea growth.

**Timing and sequence of control application**

Herbicide - Apply when plants are actively growing.
Triploid grass carp to be released as soon as possible in the spring of 2015 (March-May).
RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

**Other control application specifications**

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for Lake Cunningham will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake and additional incremental stockings may be necessary based on the possibility of escape via the outflow at the dam. Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$4,000

**Potential sources of funding**

Greer CPW 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

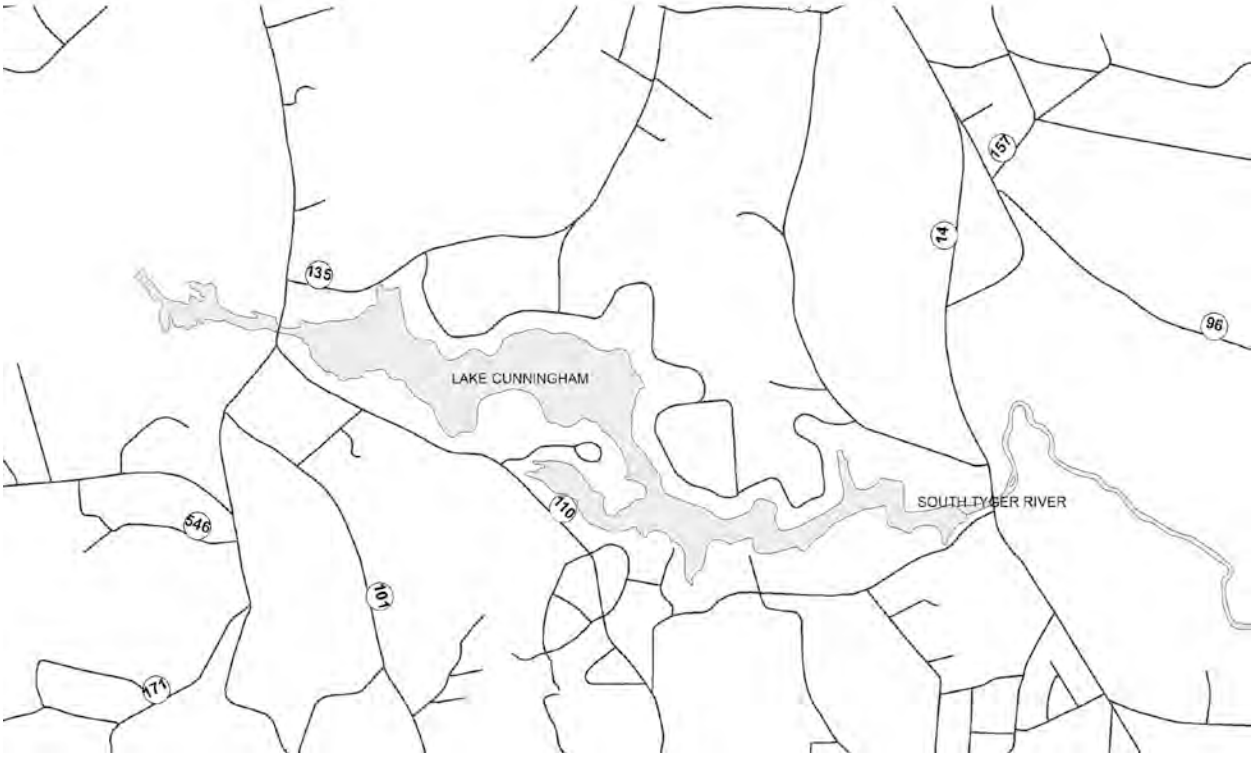
b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) A long-term integrated management strategy has been implemented to control Brazilian elodea. Triploid grass carp have been stocked to control Brazilian elodea growth lake-wide and approved aquatic herbicides are used to control localized growth in priority use areas. Future plans include annual maintenance stocking of grass carp to maintain the population at a level that is sufficient to maintain control of Brazilian elodea but to minimize impacts on desirable native plant populations.

d) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

e) Periodically revise the management strategy and specific control sites as new environmental data, management agents and techniques, and public use patterns become available.

# Lake Cunningham



## 14. Lake Greenwood (Greenwood and Laurens County)

**Problem plant species**

Slender naiad, Hydrilla, Water primrose

**Management objectives**

Maintain reduced hydrilla growth throughout the lake to minimize its spread within the lake, help prevent its spread to adjacent public waters, and minimize adverse impacts to drinking water withdrawals and public use and access.

Monitor water primrose growth and consider control options if impacts are greater than anticipated.

Maintain diverse aquatic plant community through selective application of control methods and introduction of desirable native plant species.

**Selected control method**

Triploid grass carp – stock 250 sterile grass carp yearly to maintain a 1 carp to 10 surface acre ratio.

Aquatic herbicides - selected areas of water primrose infestation to provide public access.

| Problem Species | Control Agent |
|---|---|
| Slender naiad, Hydrilla | Aquathol K, Sonar, Triploid Grass Carp, chelated copper* |
| Water primrose | Renovate 3, Glyphosate, Habitat, Clearcast |

**Area to which control is to be applied**

If needed, release triploid grass carp in areas of the lake with greatest hydrilla growth.

Use aquatic herbicides to provide control at high priority public access points, such as boat ramps and park sites

**Rate of control agents to be applied**

250 sterile grass carp to maintain a density of 1 grass carp per 10 surface acres (1,140 fish).

Aquathol K - 0.500 to 4 ppm (about 3 to 8 gallons per acre depending on depth)

Habitat – 0.250 – 0.750 gallons per acre

Clearcast - -up to 5% spot spray

Sonar - 0.075 to 0.250 ppm

Chelated Copper- up to 1 ppm

Sonar Q, Sonar PR - up to .40 ppm (approx 10 pounds/acre)

Triploid Grass Carp – Stock to maintain 1 to 10 surface acres density when population dictates.

**Method of application of control agents**

Aquathol K, Sonar, chelated copper* - Subsurface application by airboat with adjuvant.

Renovate 3, Glyphosate, Habitat, Clearcast - spray on surface of foliage with appropriate surfactant.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

Agent to be applied when plants are actively growing.

Agent to be applied to hydrilla when plants are actively growing but prior to tuber production.

Triploid grass carp to be released as soon as possible in the spring of 2015 (March-May).

**Other control application specifications**

Herbicide used only upon approval by the S.C. Department of Health and Environmental Control.

Treatment of control area is to be conducted in a manner that will not significantly degrade water quality. Survey and final determination of treatment areas to be conducted in conjunction with the South Carolina Department of Natural Resources district fisheries biologist. In general, treatment will be limited to developed shoreline areas, public access sites, and areas of high public use. Label rate of herbicide will be stringently adhered to.

Hydrilla may require multiple treatments.

**Entity to apply control system**

Commercial applicator

**Estimated cost of control operations**

$6,000

**Potential sources of funding**

Greenwood County 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

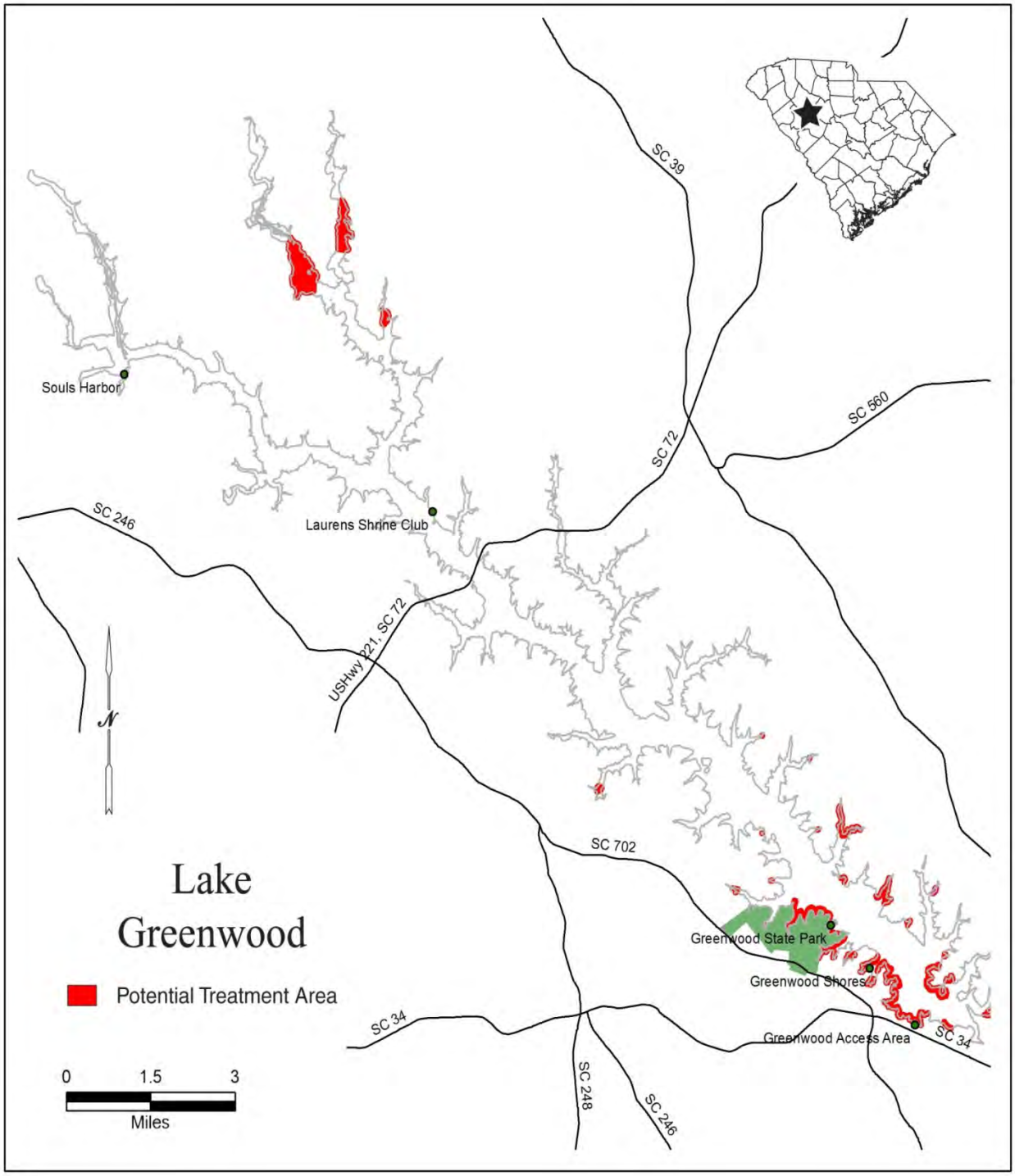
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


Lake
Greenwood
Potential Treatment Area
0
1.5
3
Miles
N
Souls Harbor
Laurens Shrine Club
Greenwood State Park
Greenwood Shores
Greenwood Access Area
SC 39
SC 72
SC 560
SC 246
USHwy 221, SC 72
SC 702
SC 34
SC 248
SC 246
SC 34

## 15. Lake Keowee (Pickens and Oconee County)

**Problem plant species**

Hydrilla

**Management objectives**

Keep hydrilla growth suppressed to minimize its spread within the lake, help prevent its spread to adjacent public waters and minimize adverse impacts to water use activities.

**Selected control method**

Chelated copper *

Fall/winter water level drawdown

* May be toxic to fish at recommended treatment rates; however, precautions will be implemented to minimize the risk of fish kills.

**Area to which control is to be applied**

Chelated copper - 5 acres

Drawdown - entire lake

**Rate of control agent to be applied**

Chelated copper - up to 1 ppm (about 16 gallons per acre)

Drawdown - to the greatest extent possible within project limits.

**Method of application of control agent**

Chelated copper - subsurface injection by airboat with adjuvant.

Drawdown - draw lake down.

**Timing and sequence of control application**

Herbicide application - when plants are actively growing.

Drawdown - Drawdown Lake from October through February.

**Other control application specifications**

Herbicide application - Herbicide used only upon notification of all local potable water supply authorities and approval by S.C. Department of Health and Environmental Control. Treatment of control area will be conducted in a manner that will not significantly degrade water quality. Label rate of herbicide will be stringently adhered to.

Drawdown - Extent and duration of drawdown is dependent on operational limits of hydroelectric project, Federal regulations, electric demand, precipitation, and inflow.

**Entity to apply control system**

Herbicide application - Commercial applicator or Duke Power Company

Drawdown - Duke Power Company

**Estimated cost of control operations**

Herbicide application - $0.00 (Hydrilla has not been observed in several years on Lake Keowee, therefore no applications are needed at this time.)

Drawdown - Undetermined

**Potential sources of funding**

Duke Power Company 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

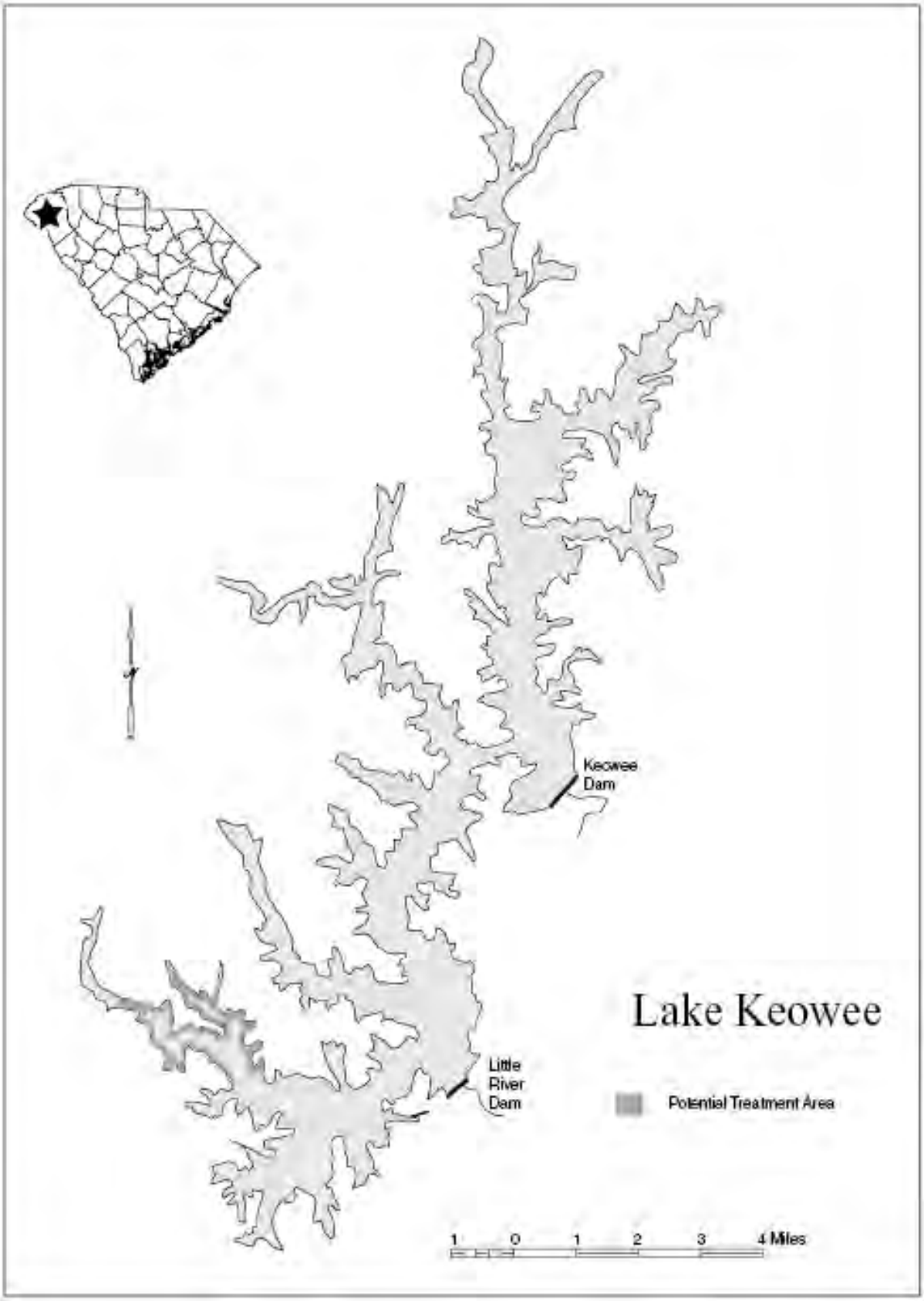
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


Lake Keowee
Keowee Dam
Little River Dam
Potential Treatment Area
1 0 1 2 3 4 Miles

## 16. Lake Monticello (Recreation Lake) (Fairfield County)

**Problem plant species**

Hydrilla

**Management objectives**

Manage hydrilla growth throughout the Recreation Lake section to minimize its spread to Lake Monticello, help prevent its spread to adjacent public waters, and minimize adverse impacts to agricultural irrigation withdrawals, and public use and access.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Hydrilla | Aquathol K, Sonar, Triploid Grass Carp, chelated copper* |

**Area to which control is to be applied**

Hydrilla -. Perform maintenance stocking in future years as needed (1 per 10 acres- 30 carp) to provide long term control option.

**Rate of control agents to be applied**

Aquathol K - 0.500 to 4 ppm (about 3 to 8 gallons per acre depending on depth)

Sonar - 0.075 to 0.250 ppm

Chelated Copper- up to 1 ppm

Sonar Q, Sonar PR - up to .40 ppm (approx 10 pounds/acre)

Triploid Grass Carp – Perform maintenance stocking in future years (1 per 10 acres- 30 carp) to provide long term control option.

**Method of application of control agents**

Aquathol K, Sonar, chelated copper* - Subsurface application by airboat with adjuvant.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

Agent to be applied to hydrilla when plants are actively growing but prior to tuber production.

Maintenance stocking of Triploid grass carp to be released in subsequent years as population dictates. RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

**Other control application specifications**

Herbicide used only upon approval by the S.C. Department of Health and Environmental Control.

Treatment of control area is to be conducted in a manner that will not significantly degrade water quality. Survey and final determination of treatment areas to be conducted in conjunction with the South Carolina Department of Natural Resources district fisheries biologist.

In general, treatment will be limited to developed shoreline areas, public access sites, and areas of high public use. Label rate of herbicide will be stringently adhered to.

Hydrilla may require multiple treatments.

**Entity to apply control system**

Commercial applicator

**Estimated cost of control operations**

$250

**Potential sources of funding**

Triploid grass carp

S.C. Electric and Gas Company, Lexington and Richland Counties 50%S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

Mechanical harvester, S.C. Electric and Gas Company, Commercial marina operators, and residential property owners.

Aquatic herbicides

S.C. Electric and Gas Company, Lexington and Richland Counties 50% S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 17. Lake Murray
## (Lexington, Newberry, Richland and Saluda Counties)

**Problem plant species**

Hydrilla, Water Primrose

**Management objectives**

Minimize hydrilla growth throughout the lake to prevent its spread within the lake, help prevent its spread to adjacent public waters, and avoid adverse impacts to drinking water withdrawals and public use and access.

Monitor water primrose growth and consider control options if impacts are greater than anticipated.

Maintain diverse aquatic plant community through selective application of control methods and introduction of desirable native plant species.

**Selected control method**

Triploid grass carp – stock 1,100 sterile grass carp yearly to maintain a 1 carp to 10 surface acre ratio.

Aquatic herbicides - selected areas of water primrose infestation to provide public access.

| Problem Species | Control Agents |
|---|---|
| Hydrilla | Chelated copper (Nautique) |
| Water primrose | Renovate 3, Habitat, Clearcast |

**Area to which control is to be applied**

Release approximately one-half of the triploid grass carp on the north side of the lake and one-half on the south side.

Use aquatic herbicides to provide control at high priority public access points, such as boat ramps and park sites.

**Rate of control agent to be applied**

1,100 sterile grass carp to maintain a density of 1 grass carp per 10 surface acres (4,800 fish).
Water primrose treatment:
Renovate 3 - 0.500 to 0.750 gallons per acre.
Habitat - 2 to 4 pints per acre.
Clearcast - 1 to 4 pints per acre.

**Method of application of control agent**

Triploid grass carp - See section 3 above.

All agents to be applied when plants are actively growing.

**Timing and sequence of control application**

Additional grass carp should be stocked in the spring following Council approval.

Apply herbicides to aquatic vegetation as it becomes problematic.

**Other control application specifications**

If needed, all sterile grass carp will be a minimum of 12 inches in length. All sterile grass carp shipments for Lake Murray will be examined by the SCDNR for sterility, size, and condition at the Campbell Fish Hatchery in Columbia prior to stocking in the lake.

Control by Residential/Commercial Interests:

This plan is designed to provide relief from noxious aquatic vegetation for the public at large. Private entities such as lake-front residents and commercial interests may have site specific concerns not addressed immediately by the use of grass carp or mechanical harvesters at public access areas. Residential and commercial interests may remove nuisance aquatic vegetation manually or by use of mechanical harvesting devices. Of the three major control methods the following conditions apply.

1) Mechanical harvesters – Commercial aquatic plant harvesting services may be hired to remove hydrilla and Illinois pondweed from areas adjacent to residential and commercial property after notification of SCE&G. Harvesting precautions as stated in item above must be adhered to.

2) Aquatic herbicides – SCE&G opposes regular or general application of herbicides in Lake Murray, therefore, aquatic herbicides may not be applied in the lake by lake front property owners. Label rate of herbicide will be stringently adhered to.

3) Sterile grass carp - A sufficient number of grass carp have been stocked by SCDNR to control nuisance aquatic vegetation. Stocking additional grass carp in Lake Murray without written consent by the SCDNR is prohibited.

**Entity to apply control agent**

Triploid grass carp - Commercial supplier with supervision by the SCDNR.

Aquatic herbicides - Commercial applicator under supervision by the SCDNR.

**Estimated cost of control operations**

Triploid grass carp - $8000

Aquatic herbicides - $0

**Potential sources of funding**

Triploid grass carp if needed.

S.C. Electric and Gas Company, Lexington and Richland Counties 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

Mechanical harvester, S.C. Electric and Gas Company, Commercial marina operators, and residential property owners.

Aquatic herbicides

S.C. Electric and Gas Company, Lexington and Richland Counties 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

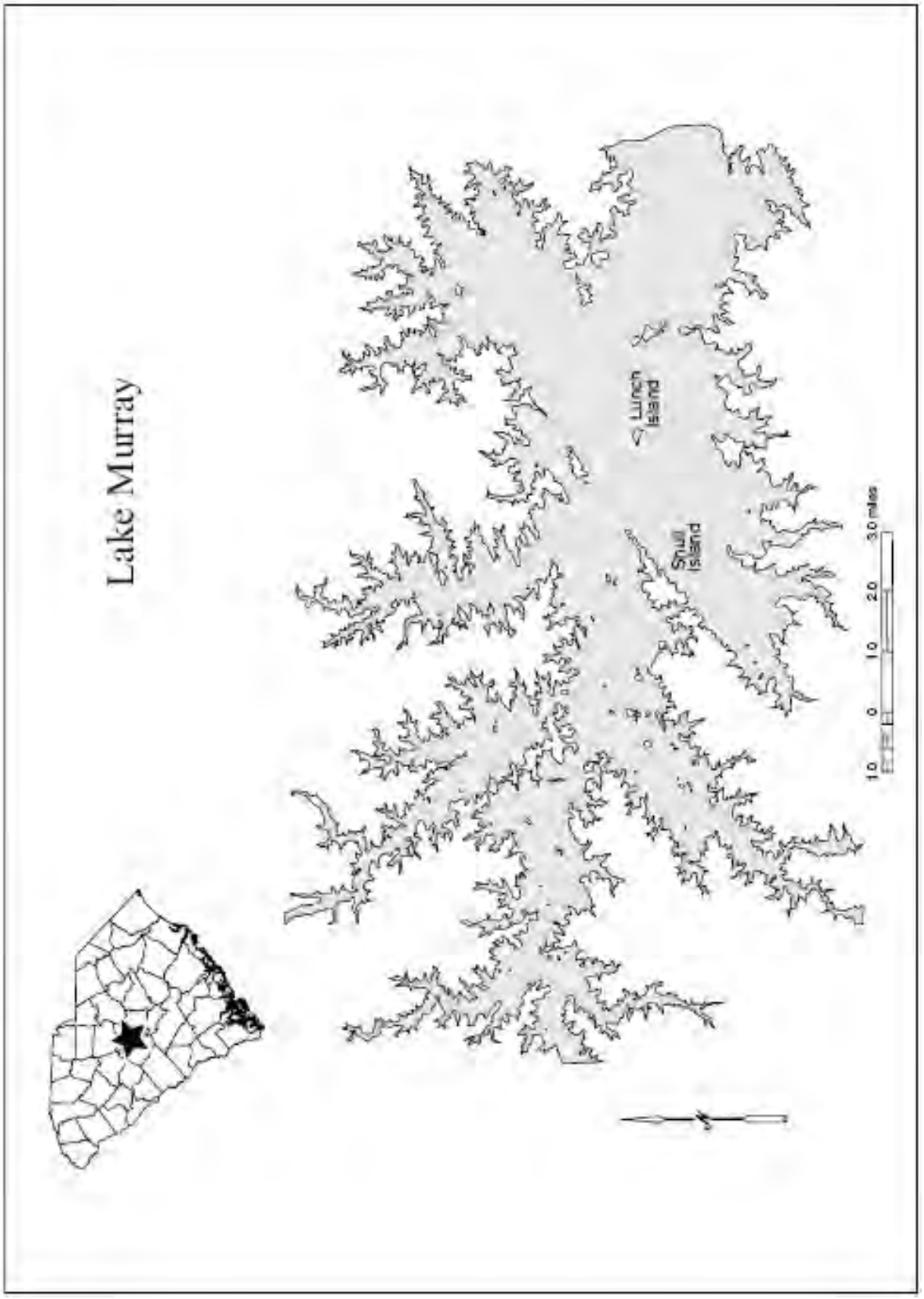
a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d) Improve public awareness and understanding of aquatic plant management activities through the maintenance of the Lake Murray Aquatic Plant Management web site. The web site includes up-to-date information on annual management plans, dates and locations of current and historical control operations, locations of habitat enhancement activities, and other pertinent information.

e) Periodically revise the management strategy and specific control sites as new environmental data and control agents and techniques become available and public use patterns change.


Lake Murray
Little Island
Shull Island
10 0 10 20 30 miles

## 18. Lake Wateree
## (Fairfield, Kershaw and Lancaster Counties)

**Problem plant species**

Hydrilla, Filamentous algae

**Management objective**

Keep hydrilla growth suppressed to prevent its spread within the lake, help prevent its spread to adjacent public water, and minimize adverse impacts to water use activities.

Maintain diverse aquatic plant community through selective application of control methods and introduction of desirable native plant species.

**Selected control method**

Fall/winter water level drawdown

Aquatic herbicides - selected areas of invasive plant infestation to provide public access.

| Problem Species | Control Agent |
|---|---|
| Hydrilla | Aquathol K, Sonar, Triploid Grass Carp, chelated copper* |
| Filamentous algae | Chelated copper |

**Area to which control is to be applied**

Use aquatic herbicides to provide control at high priority public access points, such as boat ramps and park sites

Drawdown - Entire Lake

**Rate of control agent to be applied**

Aquathol K – up to 4 ppm (about 8 gallons per acre depending on depth)

Sonar - 0.075 to 0.250 ppm

Chelated Copper- up to 1 ppm

Sonar Q, Sonar PR - up to .40 ppm (approx 10 pounds/acre)

Drawdown - To the greatest extent possible within project limits.

**Method of application of control agent**

Aquathol K, Sonar, chelated copper* - Subsurface application by airboat with adjuvant.

Chelated copper - spray on surface of foliage with appropriate surfactant.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

Drawdown - Draw lake down

**Timing and sequence of control application**

Agent to be applied when plants are actively growing.

Agent to be applied to hydrilla when plants are actively growing but prior to tuber production.

Drawdown - Drawdown lake from October through February.

**Other control application specifications**

Herbicide used only upon notification of all local potable water supply authorities and approval by S.C. Department of Health and Environmental Control. Treatment of control area will be conducted in a manner that will not significantly degrade water quality. Label rate of herbicide will be stringently adhered to.

Drawdown - Extent and duration of drawdown is dependent on operational limits of hydroelectric project, Federal regulations, electric demand, precipitation, and inflow.

**Entity to apply control agent**

Herbicide application - Commercial applicator or Duke Power Company

Drawdown - Duke Power Company

**Estimated cost of control operations**

Herbicide application - $0.00 (Hydrilla has not been observed in several years on Lake Wateree, therefore no applications are needed at this time.)

Drawdown - Undetermined

**Potential sources of funding**

Duke Power Company 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

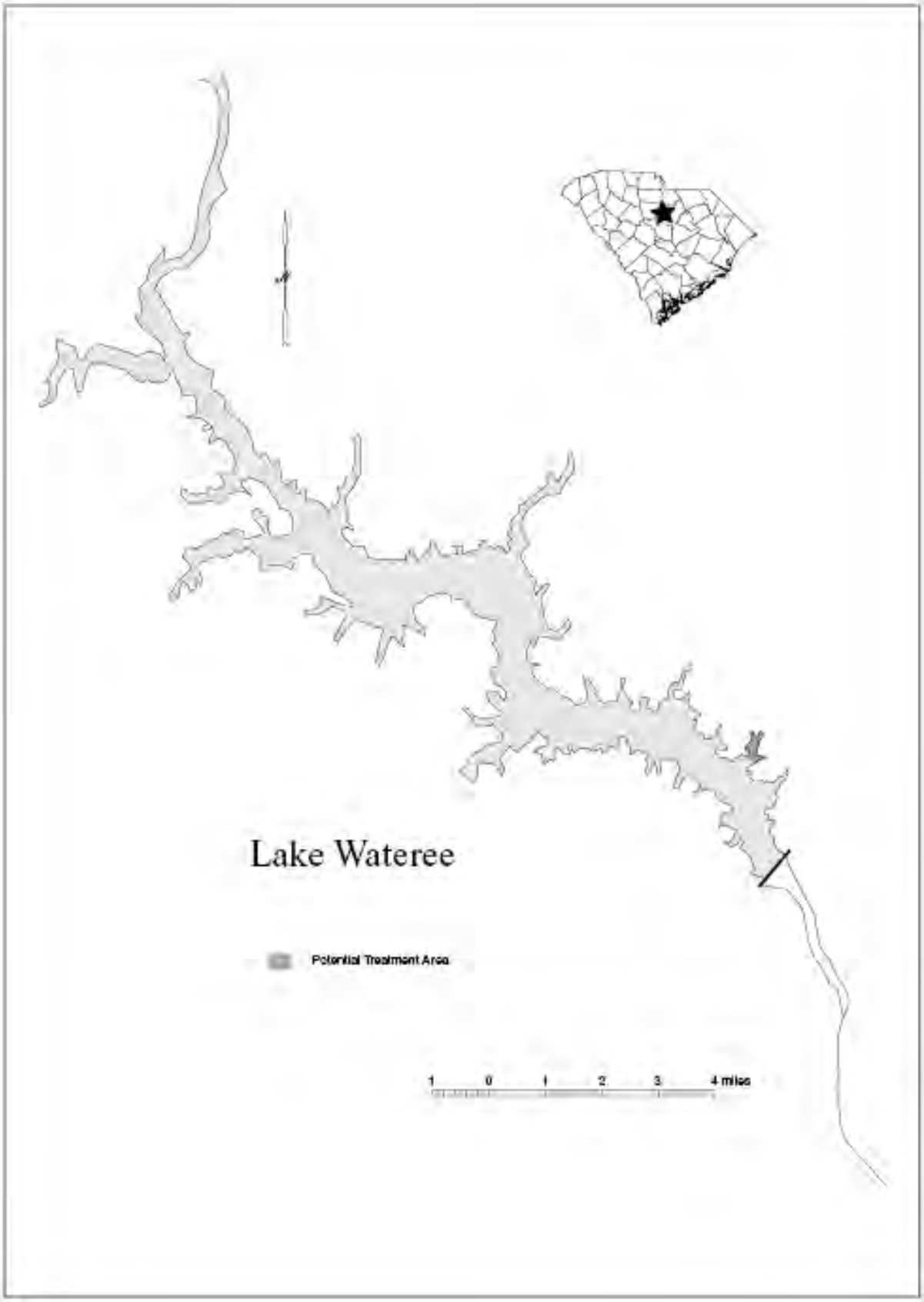
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


Lake Wateree
Potential Treatment Area
1 0 1 2 3 4 miles

## 19. Little Pee Dee River (Marion and Horry Counties)

**Problem plant species**

Alligatorweed, Water hyacinth

**Management objective**

Through a comprehensive, multi-year approach; reduce water hyacinth and alligatorweed populations to the greatest extent possible

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Water hyacinth | Renovate 3, Reward, Clearcast, Glyphosate, Galleon SC |
| Alligatorweed | Renovate 3, Reward, Habitat, Clearcast, Glyphosate |
| Biological Control - | Alligatorweed flea beetles, *Agasicles hygrophila* |

**Area to which control is to be applied**

30 acres of alligatorweed and water hyacinth throughout river

**Rate of control agent to be applied**

Habitat - 0.250 to 0.750 gallons per acre.
Reward - 0.500 gallons per acre.
Renovate 3 - 0.250 to 0.750 gallons per acre.
Clearcast - 0.125 to 0.750 gallons per acre.
Glyphosate - up to 0.937 gallons per acre.
Galleon SC - 2 to 6 fluid ounces per acre as foliar application.

**Method of application of control agent**

Herbicide - Spray on surface of foliage with appropriate surfactant.

Biological Control - Release in the vicinity of alligatorweed populations to supplement existing populations of alligatorweed flea beetles

**Timing and sequence of control application**

Apply after plants are actively growing (May - Oct.).

**Other control application specifications**

**Label rate of herbicide will be stringently adhered to.Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$1,500

**Potential sources of funding**

Horry and Marion Counties 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

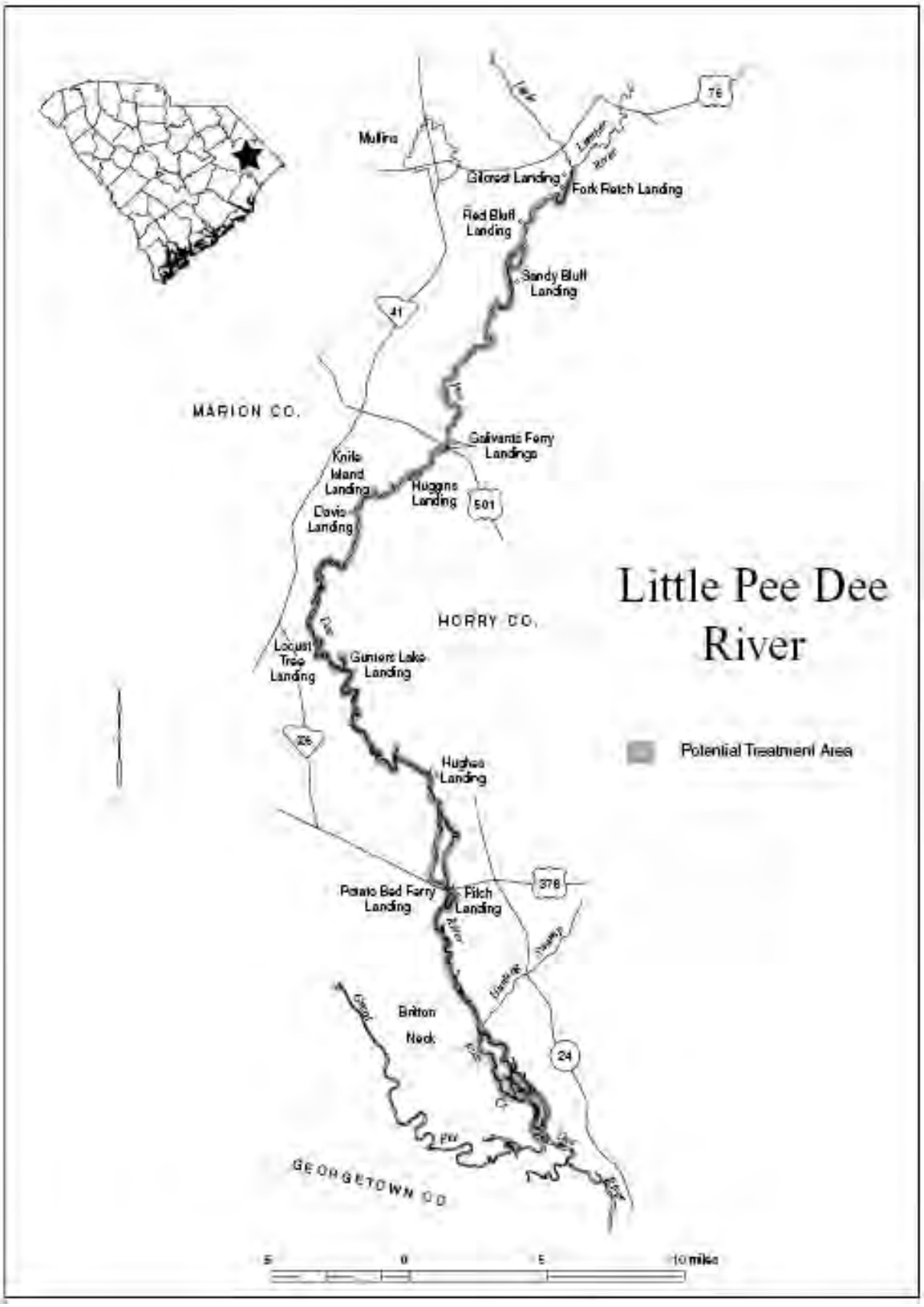
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d) Continue to coordinate treatment areas with local conservation groups and State Scenic Rivers Coordinator.


Little Pee Dee River
Potential Treatment Area
Mullins
Gilchrist Landing
Fork Ratch Landing
Red Bluff Landing
Sandy Bluff Landing
MARION CO.
Galivants Ferry Landings
Knife Island Landing
Huggins Landing
Davis Landing
HORRY CO.
Locust Tree Landing
Gunters Lake Landing
Hughes Landing
Potato Bed Ferry Landing
Pitch Landing
Britton Neck
GEORGETOWN CO.
76
41
501
24
378
5
0
5
10 miles

## 20. Lumber River (Marion and Horry Counties)

**Problem plant species**

Alligatorweed

**Management objective**

Reduce or remove alligatorweed infestation at public access points, the main river channel, and connecting lakes.

**Selected control method**

Herbicides - Renovate 3, Habitat, Clearcast, Glyphosate, Galleon SC

Biological Control - Alligatorweed flea beetles, *Agasicles hygrophila*

**Area to which control is to be applied**

20 5acres of problematic plants throughout river

**Rate of control agent to be applied**

Renovate 3 - 0.500 to 0.750 gallons per acre.

Habitat - 0.250 to 0.750 gallons per acre.

Clearcast - 0.250 to 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Galleon SC - 2 to 6 fluid ounces per acre as foliar application.

**Method of application of control agent**

Herbicide - Spray on surface of foliage with appropriate surfactant.

Biological Control - Release in the vicinity of alligatorweed populations to supplement existing populations of alligatorweed flea beetles

**Timing and sequence of control application**

Apply after plants are actively growing (May - Oct.).

**Other control application specifications**

**Label rate of herbicide will be stringently adhered to.Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$500

**Potential sources of funding**

Horry and Marion Counties 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

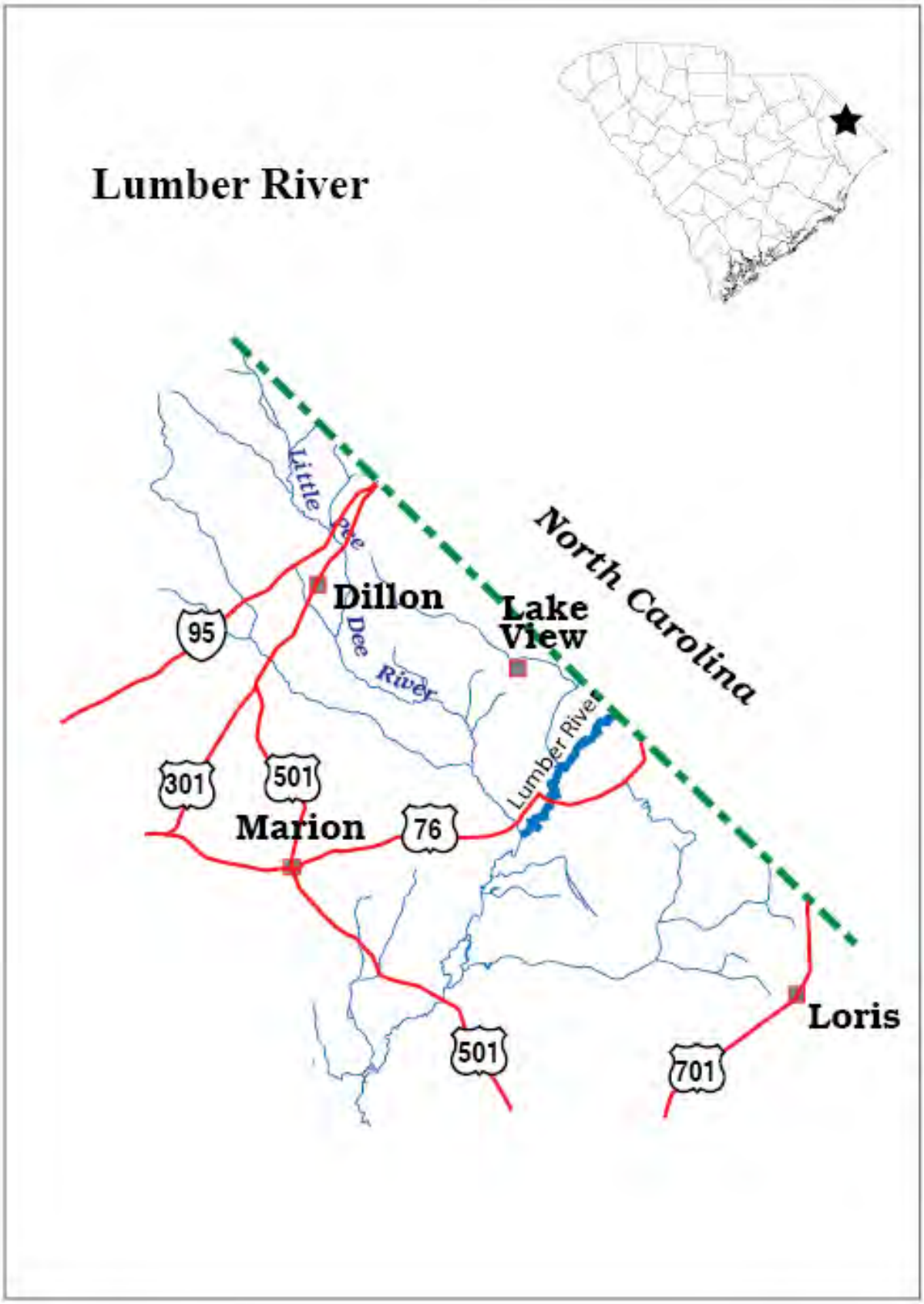
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

d) Continue to coordinate treatment areas with local conservation groups and State Scenic Rivers Coordinator.


Lumber River
North Carolina
Little Dee
Dillon
Dee River
Lake View
Lumber River
95
301
501
Marion
76
501
701
Loris

## 21. Pee Dee River (Georgetown County)

**Problem plant species**

Water hyacinth, Phragmites

**Management objective**

Through a comprehensive, multi-year approach; reduce water hyacinth and Phragmites populations to the greatest extent possible

**Selected control method**

| Problem Species | Control Agents |
|---|---|
| Water hyacinth | Reward, Renovate 3, Clearcast, Habitat, Galleon SC |
| Phragmites | Habitat, Glyphosate, Clearcast |

**Area to which control is to be applied**

25 acres of water hyacinth throughout river and adjacent public ricefields.

5 acres of phragmites in the Sandy Island area.

**Rate of control agent to be applied**

Reward - 0.500 gallons per acre.
Glyphosate – up to 0.937 gallons per acre
Renovate 3 - 0.500 to 0.750 gallons per acre.
Habitat - 0.250 to 0.750 gallons per acre.
Clearcast - 0.250 to 0.750 gallons per acre.
Galleon SC - 2 to 6 fluid ounces per acre as foliar application.

**Method of application of control agent**

Helicopter, airboat - 35 acres of herbicide applied to water hyacinth (Sandy Island Area 10 acres). 5 acres of Habitat applied to phragmites (Sandy Island Area 5 acres).

**Timing and sequence of control application**

Reward, Renovate 3, Clearcast, Habitat, Glyphosate, Galleon SC - to be applied periodically to water hyacinth from May through October.

Habitat, Clearcast, Glyphosate - Apply when plants are actively growing.

**Other control application specifications**

**Label rate of herbicide will be stringently adhered to.Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$5,500

**Potential sources of funding**

Georgetown County 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

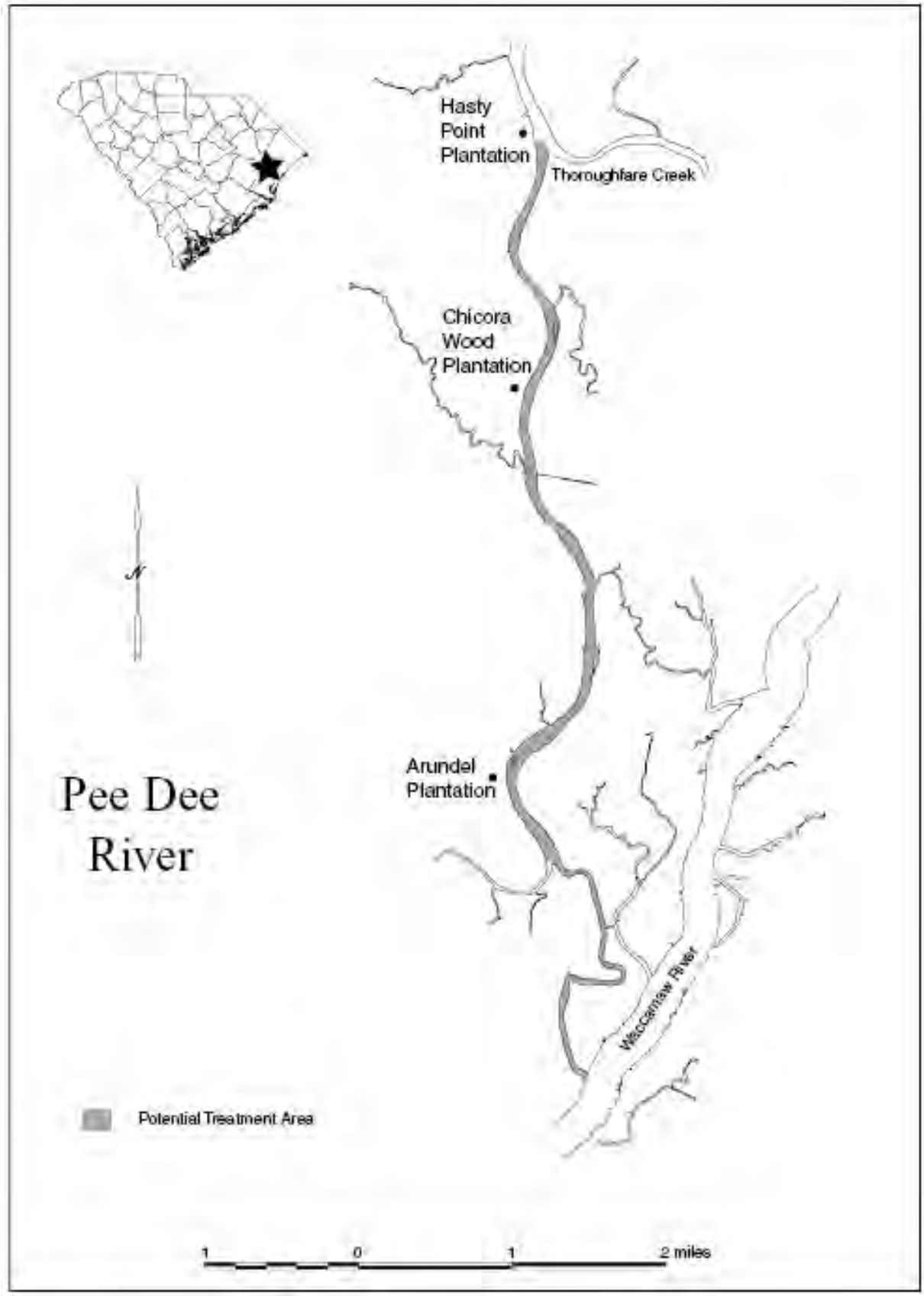
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


Hasty
Point
Plantation
Thoroughfare Creek
Chicora
Wood
Plantation
Arundel
Plantation
Pee Dee
River
Wateree River
Potential Treatment Area
1
0
1
2 miles

## 22. Prestwood Lake (Darlington County)

**Problem plant species**

Milfoil, Watershield, Filamentous algae, Water hyacinth

**Management objective**

Maintain diverse aquatic plant community through selective application of control methods and introduction of desirable native plant species.

**Selected control method**

Aquatic herbicides - selected areas of invasive plant infestation to provide public access.

| Problem Species | Control Agent |
|---|---|
| Filamentous algae | Chelated copper |
| Water milfoil | Clearcast, Clipper, Hardball, Renovate OTF<br>Renovate Max G, Reward, Triploid Grass Carp |
| Water hyacinth | Clearcast, Renovate, Renovate Max G, Reward |
| Watershield | Hardball, Renovate OTF, Renovate Max G |

**Area to which control is to be applied**

Use aquatic herbicides to provide control at high priority public access points, such as boat ramps and park sites

**Rate of control agent to be applied**

Chelated Copper – up to 1 ppm.

Clearcast – up to 0.500 gallons per acre.

Clipper – 200 to 400 ppb

Hardball - up to 5 gallons per acre.

Renovate – up to 1 gallon per acre

Renovate Max G - up to 200 pounds per acre.

Renovate OTF – 40 pounds per acre

Reward - 2 gallons per acre.

*Triploid Grass Carp – 500 fish in the entire reservoir

*Based on a 32% mortality to maintain existing population

**Method of application of control agent**

Chelated copper, Clearcast, Hardball, Reward - Subsurface application by airboat with adjuvant.

Chelated copper - spray on surface of foliage with appropriate surfactant.

Renovate Max G, Renovate OTF - Granular broadcast evenly from airboat.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest milfoil growth.

**Timing and sequence of control application**

Agent to be applied when plants are actively growing.

**Other control application specifications**

Herbicide used only upon notification of all local potable water supply authorities and approval by S.C. Department of Health and Environmental Control as needed. Treatment of control area will be conducted in a manner that will not significantly degrade water quality. Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Herbicide application - Commercial applicator

**Estimated cost of control operations**

$8,000

Herbicide application - $4,000.00

Triploid Grass Carp – $4,000

**Potential sources of funding**

City of Hartsville 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 23. Samworth WMA (Georgetown County)

**Problem plant species**

Water hyacinth, Phragmites

**Management objective**

Through a comprehensive, multi-year approach; reduce water hyacinth and Phragmites populations to the greatest extent possible

**Selected control method**

| Problem Species | Control Agents |
|---|---|
| Water hyacinth | Reward, Renovate 3, Clearcast, Habitat, Galleon SC |
| Phragmites | Habitat, Clearcast, Glyphosate |

**Area to which control is to be applied**

30 acres of water hyacinth throughout river and adjacent public ricefields.

10 acres of phragmites in the Sandy Island area and Samworth WMA.

**Rate of control agent to be applied**

Reward - 0.500 gallons per acre.
Renovate 3 - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Habitat - 0.250 to 0.750 gallons per acre.
Clearcast - 0.250 to 0.750 gallons per acre.
Galleon SC - 2 to 6 fluid ounces per acre as foliar application.

**Method of application of control agent**

Helicopter, airboat - 40 acres of herbicide applied to water hyacinth. 10 acres of Habitat, Glyphosate applied to phragmites.

**Timing and sequence of control application**

Reward, Renovate 3, Clearcast, Habitat, Glyphosate, Galleon SC - to be applied periodically to water hyacinth from May through October.

Habitat, Clearcast, Glyphosate - Apply when plants are actively growing.

**Other control application specifications**

**Label rate of herbicide will be stringently adhered to.Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$5,000

**Potential sources of funding**

Samworth WMA 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

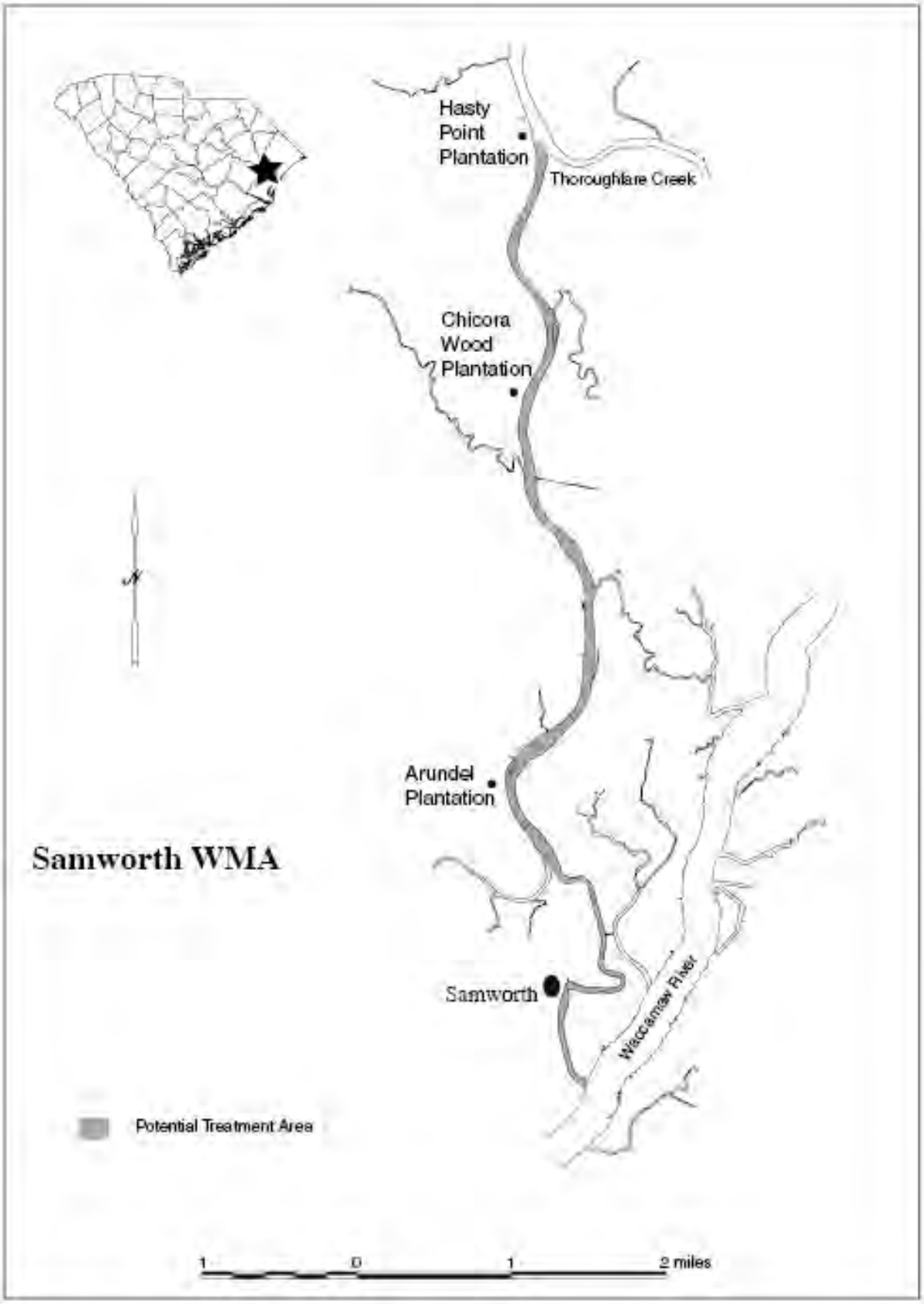
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


Hasty
Point
Plantation
Thoroughfare Creek
Chicora
Wood
Plantation
Arundel
Plantation
Samworth WMA
Samworth
Waccamaw River
Potential Treatment Area
1
0
1
2 miles

## 24. Santee Coastal Reserve (Charleston and Georgetown Counties)

**Problem plant species**

Phragmites

**Management objective**

Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible throughout the Santee Coastal Reserve.

**Selected control method**

Habitat, Clearcast, Glyphosate

**Area to which control is to be applied**

2000 acres of phragmites throughout the ricefields.

**Rate of control agent to be applied**

Habitat - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Clearcast - 0.500 to 0.750 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply after plants are actively growing (May - Oct.).

**Other control application specifications**

Application to be conducted by ground application or airboat. Helicopter applications should be utilized at a minimum of every 3 years or when substantial regrowth occurs. Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$231,000

**Potential sources of funding**

Santee Coastal Reserve 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

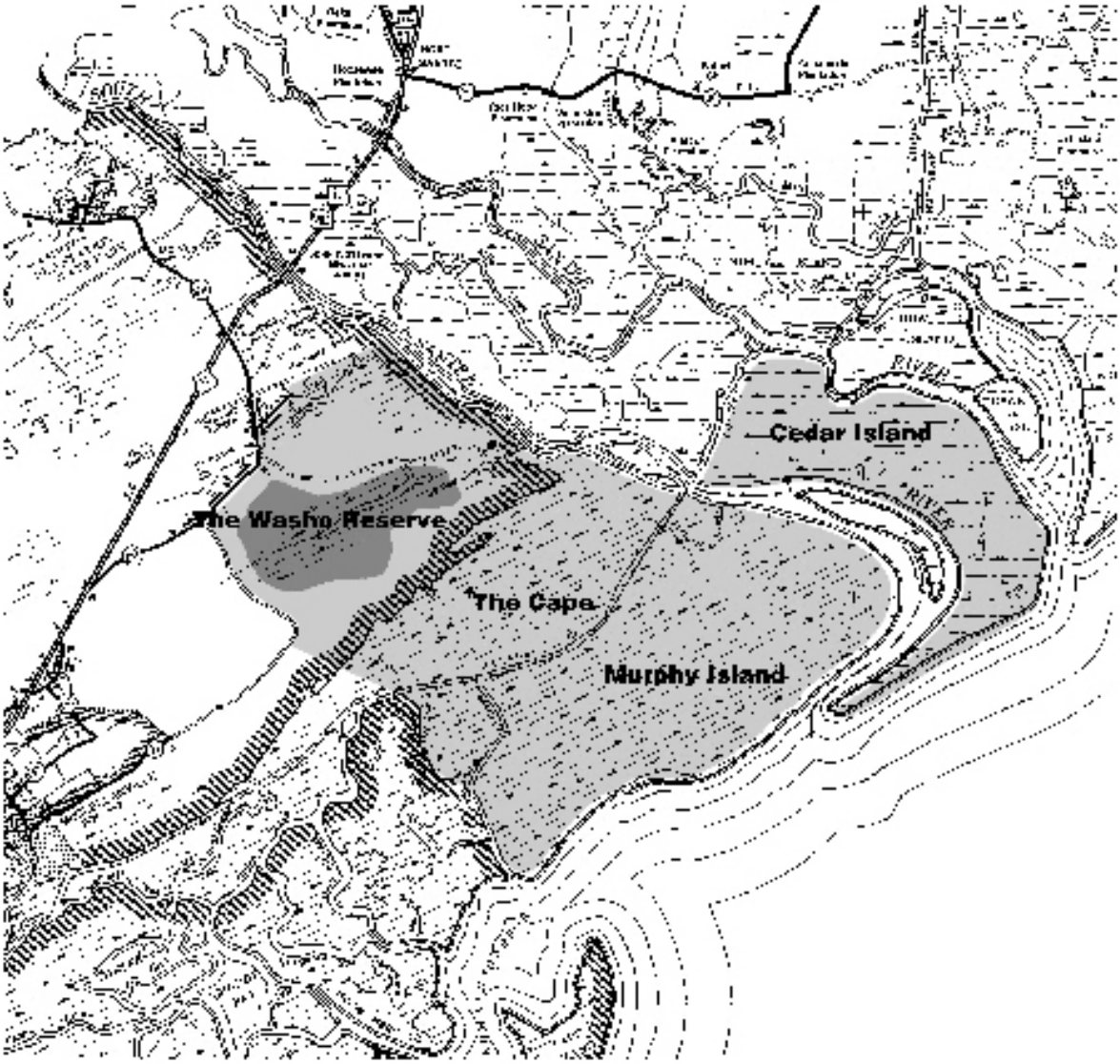
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

# Santee Coastal Reserve



## 25. Santee Delta WMA (Georgetown County)

**Problem plant species**

Phragmites

**Management objective**

Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible.

**Selected control method**

Habitat, Clearcast, Glyphosate

**Area to which control is to be applied**

10 acres of Phragmites throughout the ricefields.

**Rate of control agent to be applied**

Habitat - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre
Clearcast - 0.500 to 0.750 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply after plants are actively growing (May - Oct.).

**Other control application specifications**

Application to be conducted by ground application or airboat. Helicopter applications should be utilized at a minimum of every 3 years or when substantial regrowth occurs. Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$1,500

**Potential sources of funding**

Santee Coastal Reserve 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

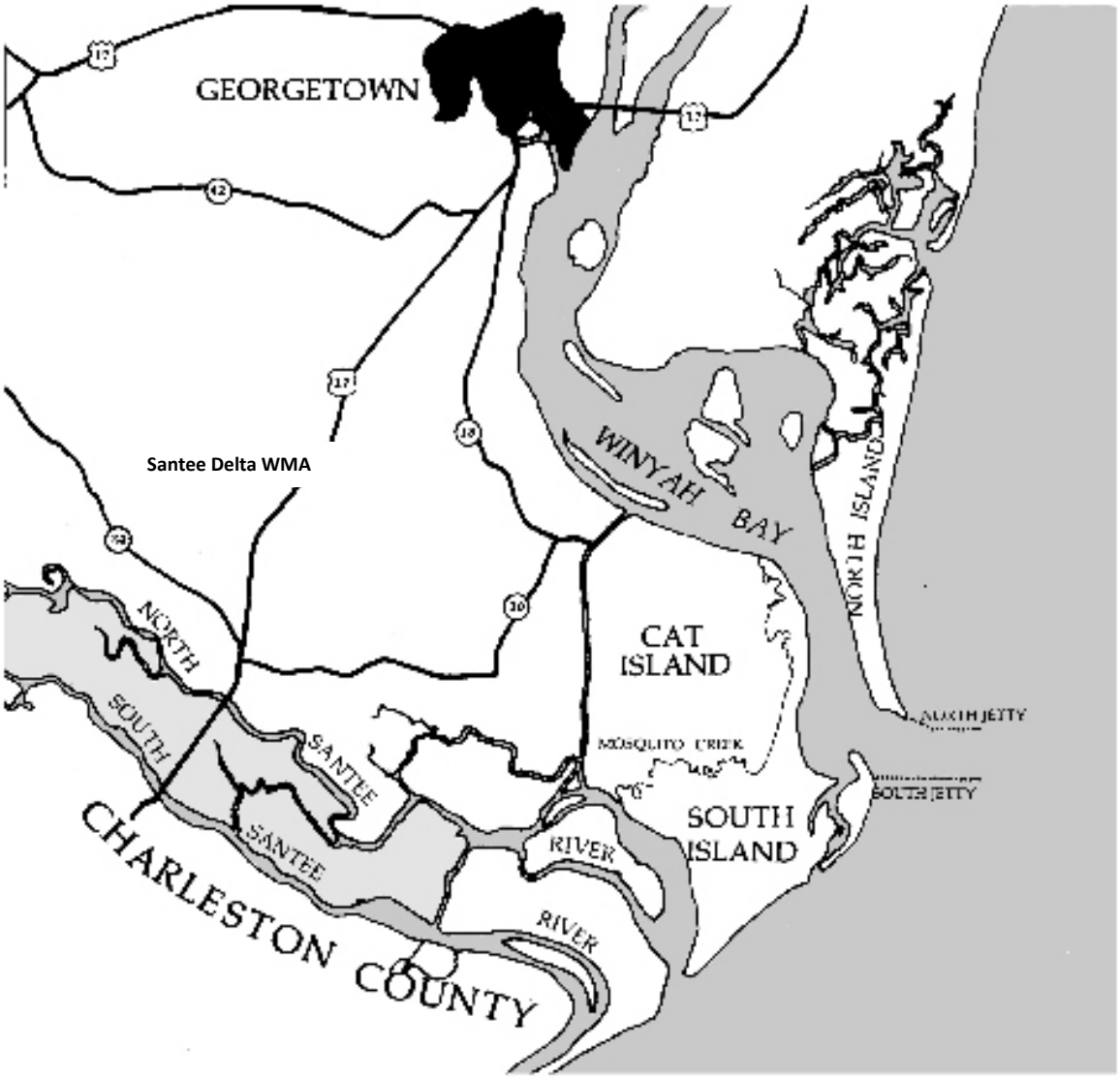
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

# Santee Delta WMA



## 26. US Navy, Naval Weapons Station (Charleston, Berkeley County)

**Problem plant species**

Phragmites, Chinese Tallow, Hydrilla, Water primrose, Water hyacinth

**Management objective**

Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible in spoil areas and control invasive.

**Selected control method**

| Problem Species | Control Agent |
|---|---|
| Phragmites, Chinese Tallow | Habitat, Clearcast, Glyphosate |
| Water primrose, Water hyacinth | Renovate 3, Habitat, Clearcast, Glyphosate, GalleonHydrilla Sonar, Aquathol |

**Area to which control is to be applied**

50 acres of Phragmites populations in dredge spoil areas.
30 acres of hydrilla in Foster Creek.
30 acres of water hyacinth, water primrose, or Chinese tallow on ponds adjacent to Foster Creek.

**Rate of control agent to be applied**

Renovate 3 - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Habitat - 0.250 to 0.750 gallons per acre.
Clearcast - 0.250 to 0.750 gallons per acre.
Galleon SC - 2 to 6 fluid ounces per acre as foliar application.
Sonar – up to 90 ppb based on depth
Aquathol – up to 5 ppm based on depth

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply after plants are actively growing (May - Oct.).

**Other control application specifications**

Application to be conducted by helicopter, airboat and jon-boat. Label rate of herbicide will be stringently adhered to.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$17,500

**Potential sources of funding**

US Naval Weapons Station 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

US Navy Naval Weapons Station

NO MAP AVAILABLE

## 27. Waccamaw River (Horry County)

**Problem plant species**

Water hyacinth, Phragmites

**Management objective**

Through a comprehensive, multi-year approach; reduce water hyacinth and Phragmites populations to the greatest extent possible

**Selected control method**

| Problem Species | Control Agents |
|---|---|
| Water hyacinth | Reward, Renovate 3, Clearcast, Galleon SC |
| Phragmites | Habitat, Clearcast |

**Area to which control is to be applied**

50 acres throughout river system where needed.

**Rate of control agent to be applied**

Reward - 0.500 gallons per acre.
Renovate 3 - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Habitat - 0.500 to 0.750 gallons per acre.
Clearcast - 0.500 to 0.750 gallons per acre.
Galleon SC - 2 to 6 fluid ounces per acre as foliar application.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant

**Timing and sequence of control application**

Herbicide to be applied to water hyacinth periodically from late May through November.

**Other control application specifications**

Herbicide used only upon approval by S.C. Department of Health and Environmental Control. Treatment of control area will be conducted in a manner that will not significantly degrade water quality.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$ 4,000

**Potential sources of funding**

Horry County 25%

Brookgreen Gardens 25%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

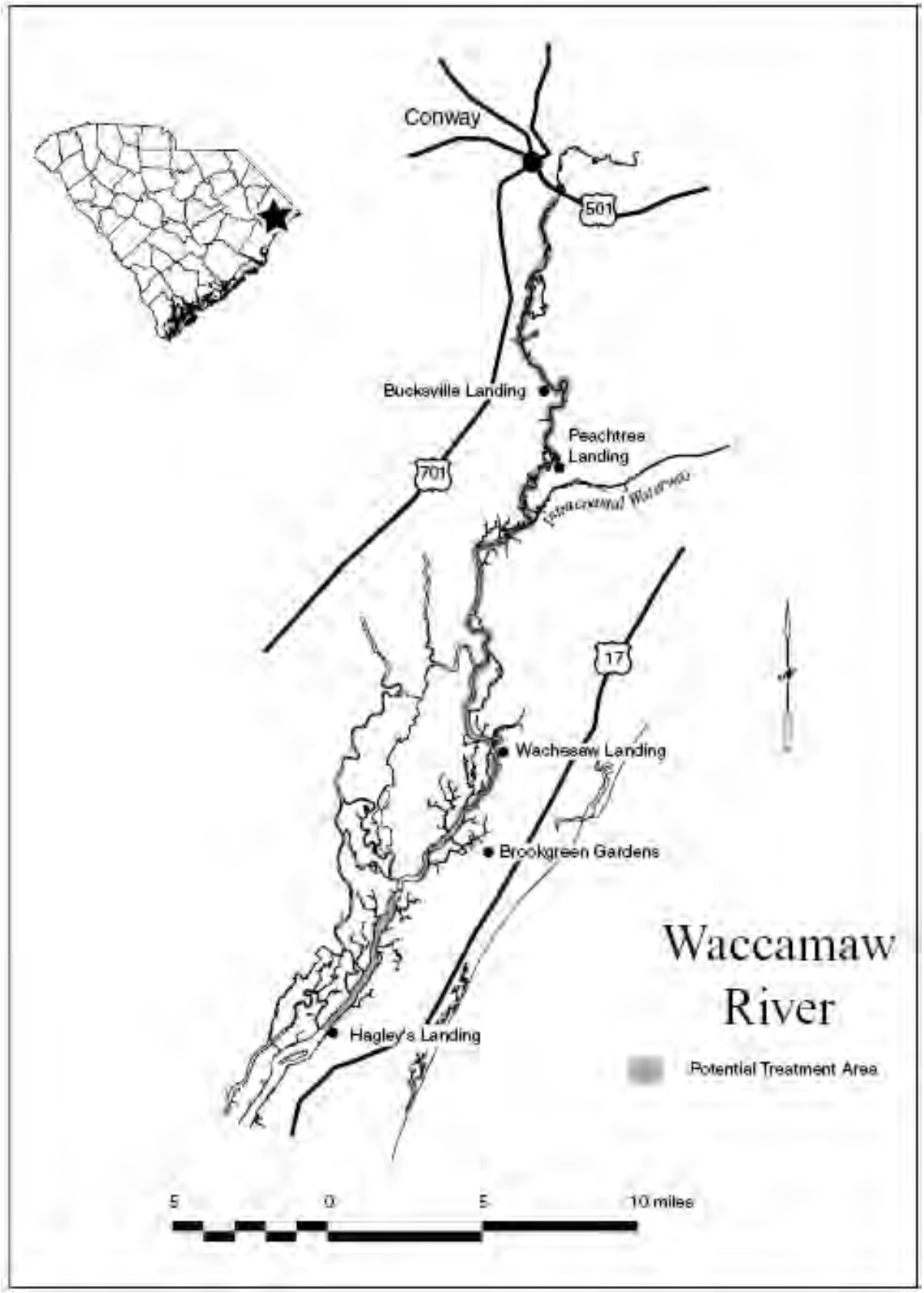
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


Conway
501
Bucksville Landing
Peachtree Landing
701
17
Wachesaw Landing
Brookgreen Gardens
Hagley's Landing
Waccamaw River
Potential Treatment Area
5
0
5
10 miles

## 28. Yawkey Wildlife Center (Georgetown County)

**Problem plant species**

Phragmites, Cattails, Cutgrass

**Management objective**

Through a comprehensive, multi-year approach; reduce Phragmites populations to the greatest extent possible.

**Selected control method**

Habitat, Clearcast, Glyphosate

**Area to which control is to be applied**

25 acres of Phragmites, cattails, and cutgrass throughout the ricefields.

**Rate of control agent to be applied**

Habitat - 0.500 to 0.750 gallons pints per acre.
Clearcast - 0.500 to 0.750 gallons per acre.
Glyphosate - up to 0.937 gallons per acre

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply after plants are actively growing (May - Oct.).

**Other control application specifications**

Application to be conducted by airboat, ground, or helicopter. Phragmites control in impounded areas should only occur where drainage has left areas moderately dry

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$3,850

**Potential sources of funding**

Yawkey Foundation 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

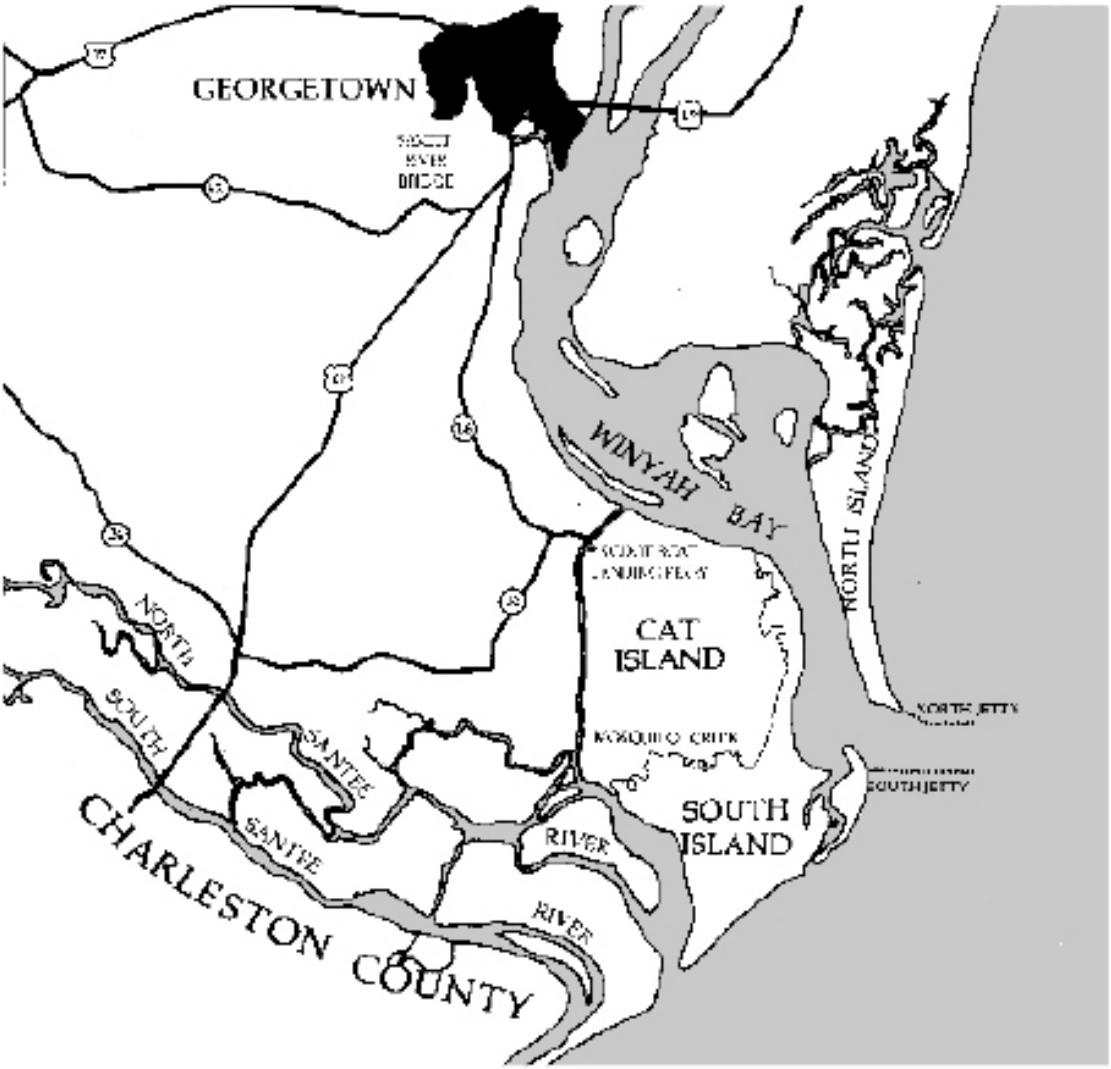
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

# Yawkey Wildlife Center



## Santee Cooper Lakes

### 29. Lake Marion
### (Calhoun, Clarendon, Orangeburg, Berkeley, and Sumter Counties)

### 30. Lake Moultrie
### (Berkeley County)

**NOTE: The following management plan applies to both lakes.**

**Problem plant species**

Hydrilla, Alligatorweed, Fanwort, Water willow, Water hyacinth, Slender naiad, Water primrose, Giant cutgrass, Coontail, Filamentous algae (Lyngbya), Slender pondweed, Crested floating heart, Fragrant waterlily, Watermilfoil

**Management objectives**

Foster a diverse aquatic plant community through selective treatment of nuisance aquatic vegetation (to avoid adverse impacts to existing native plant species) and the introduction of desirable native plant species when and where appropriate.

Manage hydrilla growth throughout the main lakes and subimpoundments to minimize its spread within the lakes, help prevent its spread to adjacent public waters, and minimize adverse impacts to electric power generation, agricultural irrigation withdrawals, and public use and access.

Reduce water hyacinth populations throughout the lakes to enhance boating, fishing, hunting, public access and prevent spread to other areas of the lake.

Reduce Crested floating heart populations throughout the lakes to enhance boating, fishing, hunting, public access and prevent spread to other areas of the lake.

Reduce giant cutgrass populations throughout the lakes, especially in Wildlife Management Areas and upper Lake Marion, to enhance wildlife habitat and hunting opportunities.

Reduce Crested floating heart, fragrant waterlily, American lotus and Giant cutgrass populations throughout Wildlife Management Areas to enhance wildlife habitat and hunting opportunities.

Reduce other nuisance aquatic vegetation in priority use areas, such as electric power generation facilities, public and commercial access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas in the main lake and subimpoundments.

**Selected control method**

| Problem Species | Control Agents |
|---|---|
| Hydrilla | Aquathol K, Sonar, chelated copper*, Triploid grass carp |
| Lyngbya | chelated copper*, peroxygen compounds |
| Water hyacinth | Tribune, Renovate 3, Clearcast, 2,4-d |
| Fanwort | Clipper, sonar |

| | |
|---|---|
| Coontail, slender naiad, slender pondweed | Aquathol K, Sonar, Tribune |
| Water primrose, alligatorweed, giant cutgrass | Glyphosate, Habitat, Renovate 3, Clearcast |
| Crested floating heart | Aquathol K, Hydrothol 191, Clearcast / Glyphosate, Renovate Max G, Sonar |

* May be toxic to fish at recommended treatment rates; however, precautions will be implemented to minimize the risk of fish kills.

**Area to which control is to be applied**

Water hyacinth - Approximately 4000 acres throughout the system but mostly in the upper lake area above I-95 Bridge.

Hydrilla - Approximately 100 acres in priority areas such as electric power generation facilities, public and commercial access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas in the main lake and sub-impoundments. If conditions warrant, release triploid grass carp in close proximity to areas of the lake with the greatest hydrilla growth and use herbicide applications to provide immediate short-term control of localized growth in those areas.

Crested floating heart - Approximately 4000 acres in priority areas such as public and commercial access sites (boat ramps, piers, swimming areas, marinas, and residential shoreline areas in the main lake), and State and Federal wildlife management areas.

Giant Cutgrass - Approximately 400 acres along shoreline areas throughout lake system, as well as within State and Federal wildlife management areas.

Other target species - Approximately 100 acres in priority areas such as electric power generation facilities, public and commercial access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas in the main lake and sub-impoundments.

Sub-Impoundments -

Dean's Swamp Impoundment, Potato Creek Impoundment, Church Branch Impoundment, Taw Caw Impoundment, Jack's Creek Impoundment

The general management strategy is to transition from hydrilla dominated plant communities to ones dominated by native plant species, which are beneficial to wildlife, by use of aquatic herbicides. Specific control methods for the sub-impoundments will be determined cooperatively between Santee Cooper and SCDNR staffs. Methods and goals will be consistent with both groups' interests for control of invasive plant species such as hydrilla while promoting vegetation beneficial to wildlife and waterfowl through other habitat enhancement projects.

**Rate of control agents to be applied**

Aquathol K - 5 to 10 gallons per acre (dependent on water depth).
Tribune - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.
Renovate 3 - 0.375 to 0.750 gallons per acre for emergent species, per label for submersed plants.
Habitat - 0.250 to 0.750 gallons per acre.
Sonar AS - 10 to 30 ppb.

Chelated Copper- up to 1 ppm.
Glyphosate - up to 1.25 gallons per acre.
Sonar Q, Sonar PR, sonar One - up to 40 ppb (approx 10 pounds/acre).
Clearcast - 0.250 to 1.00 gallons per acre.
Renovate Max G – up to 320 pounds per acre.

**Triploid grass carp** – During 2014, hydrilla decreased from 1100 acres down to 100 acres. The significant decrease in vegetation cannot be solely attributed to Triploid carp herbivory as there were other environmental factors which came into play. Higher than normal flows from increased rainfall caused severe turbidity in the Santee system which was also a limiting factor for both hydrilla growth as well as other species. The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in the Santee Cooper Lakes to provide long-term control of hydrilla. A maintenance stocking plan approved in 2015 provided for stocking a small number of grass carp (6400) to control hydrilla while encouraging the expansion of a diverse, native aquatic plant community. The plan is to gradually transition to one fish per eight total surface acres (160,000 acres) over the next several years. This equates to 20,000 grass carp system-wide at that time. Based on this information, the Aquatic Plant Management Council, with recommendations from DNR and Santee Cooper staff, agreed that the adaptive stocking plan should be transitioned into a maintenance stocking plan. SCDNR and Santee Cooper Staff will carefully monitor Lake Marion and Lake Moultrie for additional increases in hydrilla acreage or loss of native vegetation. Herbicide treatments will be used to provide temporary control of hydrilla until results from grass carp feeding become apparent. Changes to the strategy will be implemented if survey results, regrowth, or habitat loss warrant.

**Method of application of control agents**

Aquathol K, chelated copper, Sonar - subsurface application by airboat or surface application by helicopter.

Tribune - (water hyacinth) spray on surface of foliage using handgun from airboat or by helicopter with appropriate surfactant ;( submersed plants) subsurface application.

Renovate 3, Glyphosate, Habitat, Clearcast - spray on surface of foliage with appropriate surfactant.

Renovate Max G – Distribute granular product evenly over the surface at the prescribed rate.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

Herbicide applications - All herbicide applications to be applied when plants are actively growing. Water hyacinth and hydrilla treatments should be initiated in spring when plant growth begins and continued regularly during the year as needed to reduce biomass as much as possible.

Triploid grass carp, if needed, to be released as soon as possible in 2015 (March-October). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Other control application specifications

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

Hydrilla, Water hyacinth and Crested floating heart treatments will be considered a high priority to minimize spread to other areas of the lake system. Treatments should be conducted wherever the plants occur and access by boat is feasible. Areas inaccessible by boat or large acreages will be treated aerially. Frequent treatments in these areas will be necessary to meet management objectives.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for the Santee Cooper Lakes will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

**Entity to apply control agents**

Herbicide application - S.C. Public Service Authority and/or commercial applicator.

Triploid Grass Carp -

Commercial supplier with supervision by S.C. Public Service Authority and/or SCDNR.

**Estimated cost of control operations**

$900,000

Note: The budgeted amount is based on aquatic plant coverage and treatment needs from previous years. Actual expenditures will depend on the extent of noxious aquatic plant growth in 2015 and available funds provided by South Carolina Public Service Authority.

**Potential sources of funding**

S.C. Public Service Authority 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Support the management goals established by the DNR and Santee Cooper (Appendix E) which attempts to achieve a diverse assemblage of native aquatic vegetation in a minimum of 10% of the total surface area of the lake and to effectively control non-native invasive species.

b) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

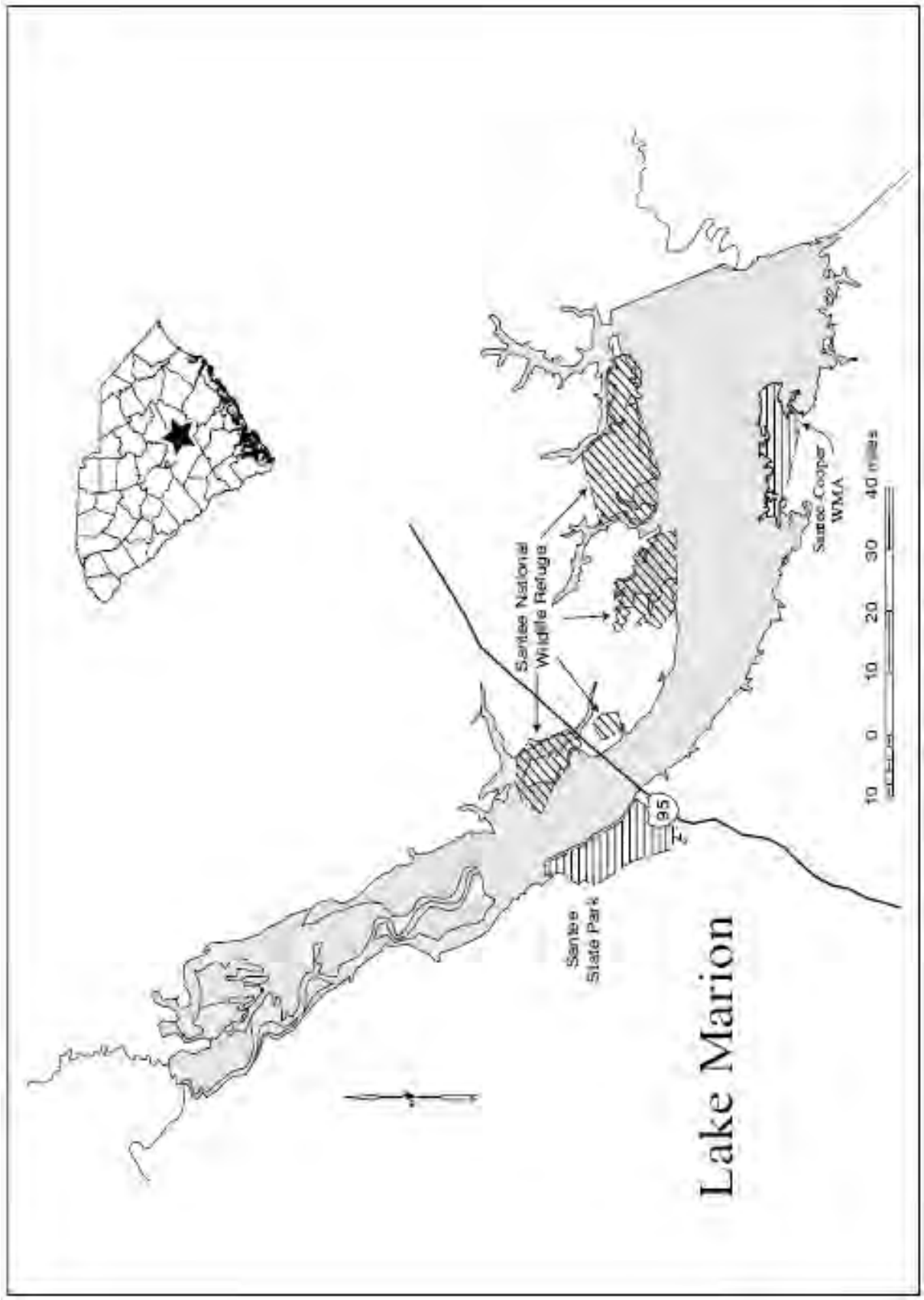
c) A long-term integrated adaptive management strategy has been implemented to control hydrilla. Triploid grass carp have been stocked to control hydrilla growth lake-wide and approved aquatic herbicides are used to control localized growth in priority use areas. Future plans include annual stocking of grass carp to maintain the population at a level that

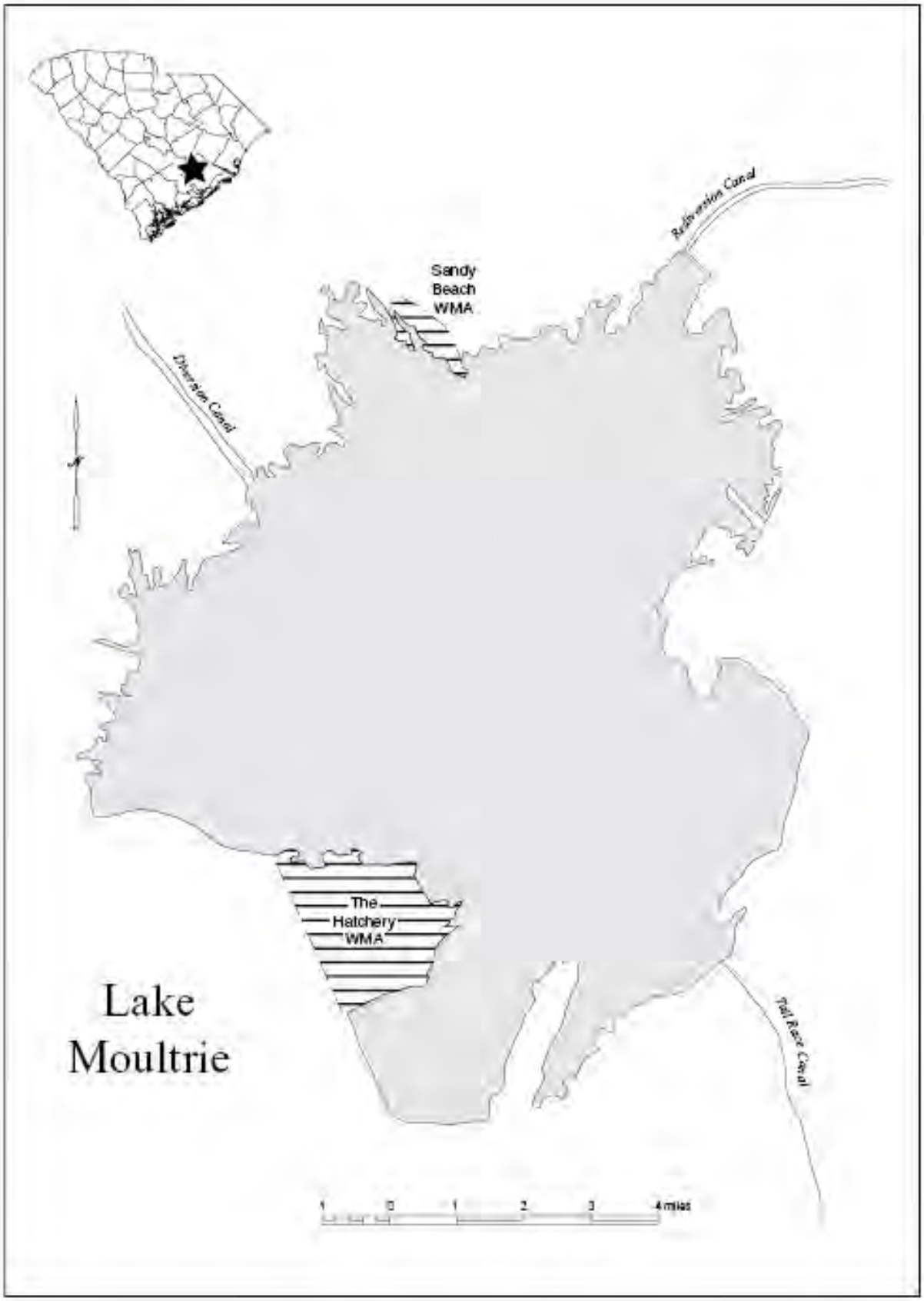
is sufficient to maintain control of hydrilla but to minimize impacts on desirable native plant populations.

d) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

e) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

f) Periodically revise the management strategy and specific control sites as new environmental data, management agents and techniques, and public use patterns become available.


Lake Marion
Santee State Park
95
Santee National Wildlife Refuge
Santee Cooper WMA
10 0 10 20 30 40 miles


Sandy
Beach
WMA
Diversion Canal
Tail Race Canal
The
Hatchery
WMA
Lake
Moultrie
1 0 1 2 3 4 miles

## South Carolina Department of Parks, Recreation and Tourism
## State Park Lakes

### 31. Aiken State Park (Aiken County)

**Problem plant species**

Floating Heart, Cattails

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Floating Heart – Renovate Max G

Cattails – Habitat, Glyphosate

**Area to which control is to be applied**

10 acres in three lakes

**Rate of control agent to be applied**

Renovate Max G – 200 lbs per acre.
Habitat – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.

**Method of application of control agent**

Foliar application using appropriate surfactant from airboat. Granular herbicides spread evenly using appropriate rate.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$6,000

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

AIKEN
State Natural Area
N
To Wagener
302
4
To Orangeburg
302
To Aiken
Kitchings Mill
State Park Road
Primitive Camping Area
Boat Ramp
Canoe Take Out Dock
Riverside Canoe Put-In Dock
Edisto River
Cypress Stump Picnic Area
Fishlake Shelter
Fishing Lake
Jungle Nature Trail
Fee Station
Cabin Lake
Boardwalk
Fee Station
Trail Head
Campground
Children's Pond
BBQ Shelter
#3
Ballfield
Park Office
Old Tory Trail
Park Shop
To Windsor (Hwy 78)
LEGEND
Restrooms
Comfort Station
Picnic Shelter
Residence
Parking
Traffic Flow

## 32. Barnwell State Park (Swimming Lake) (Barnwell County)

**Problem plant species**

Waterlily, Cattails

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Waterlily – Renovate Max G

Cattails – Habitat, Glyphosate

**Area to which control is to be applied**

3 acres in swimming lake.
6 acres in Upper lake.

**Rate of control agent to be applied**

Renovate Max G – 200 lbs per acre.
Habitat – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.

**Method of application of control agent**

Foliar application using appropriate surfactant from airboat. Granular herbicides spread evenly using appropriate rate.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$6,000

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

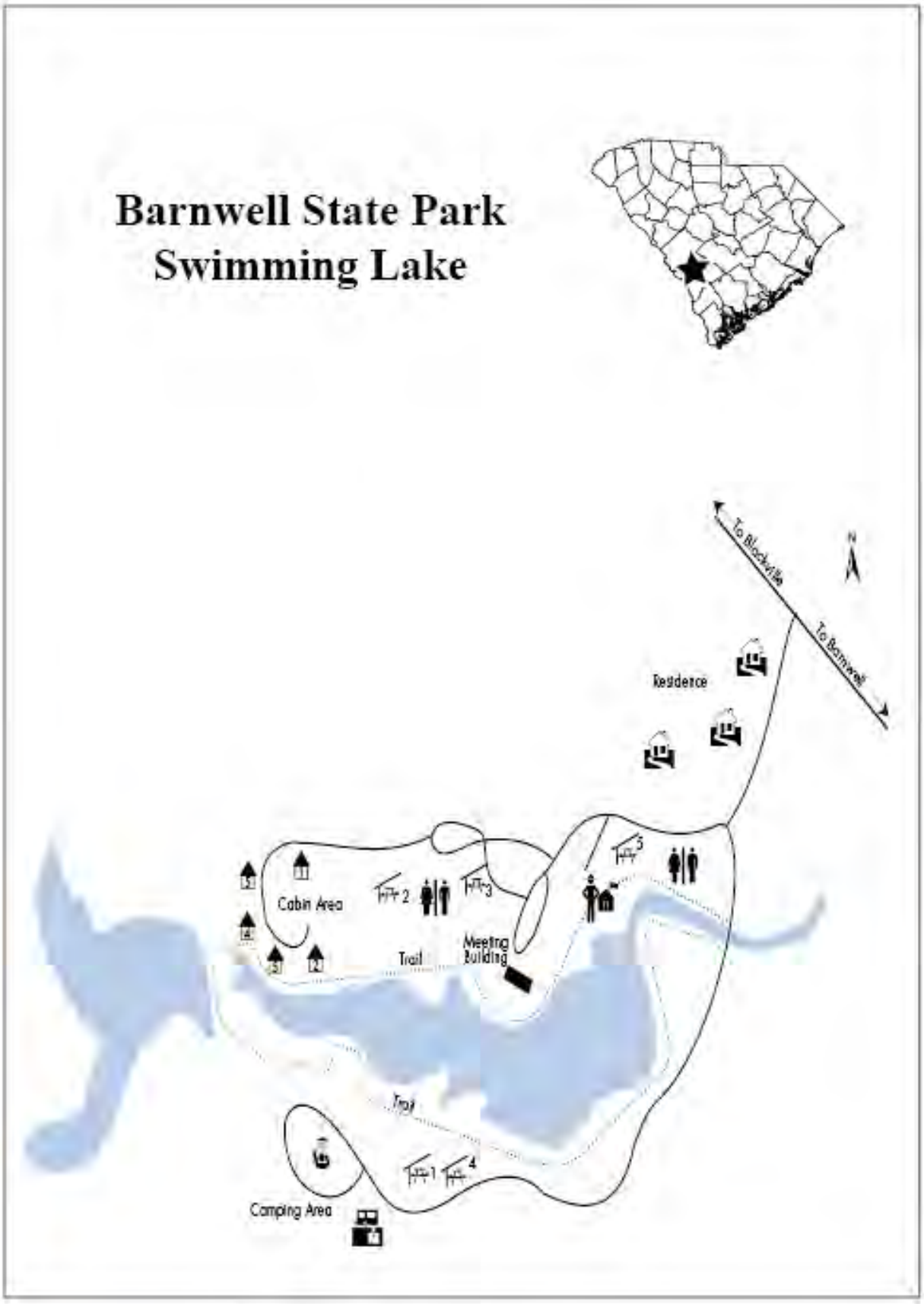
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


Barnwell State Park
Swimming Lake
To Blackville
To Barnwell
N
Residence
Cabin Area
Trail
Meeting Building
Trail
Camping Area

## 33. Charles Towne Landing State Park (Charleston County)

**Problem plant species**

Duckweed, Alligatorweed, Pennywort

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

| Problems species | Control Agent |
|---|---|
| Duckweed | Fluridone, Clipper, Galleon SC |
| Alligatorweed | Renovate 3, Habitat, Clearcast, Glyphosate |
| Pennywort | Renovate 3, Habitat, Clearcast, Glyphosate |

**Area to which control is to be applied**

Fluridone, Galleon SC - 3 acres

Renovate 3, Habitat, Clearcast, Glyphosate - 4 acres

**Rate of control agents to be applied**

Fluridone - 0.125 gallons per acre.
Habitat – 0.250 – 0.750 gallons per acre.
Clearcast – 0.500 – 0.750 gallons per acre.
Glyphosate - up to 0.937 gallons per acre.
Renovate - 0.500 to 0.750 gallons per acre.
Clipper – up to 0.09375 gallons per acre
Galleon SC - 2 to 12 fl oz per acre.

**Method of application of control agents**

Fluridone, Galleon SC - Apply subsurface throughout lake

Glyphosate, Clipper, Renovate - Spray on surface of foliage with appropriate surfactant

**Timing and sequence of control application.**

Herbicides to be applied when plants are actively growing

**Other control application specifications**

None

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$1,000

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

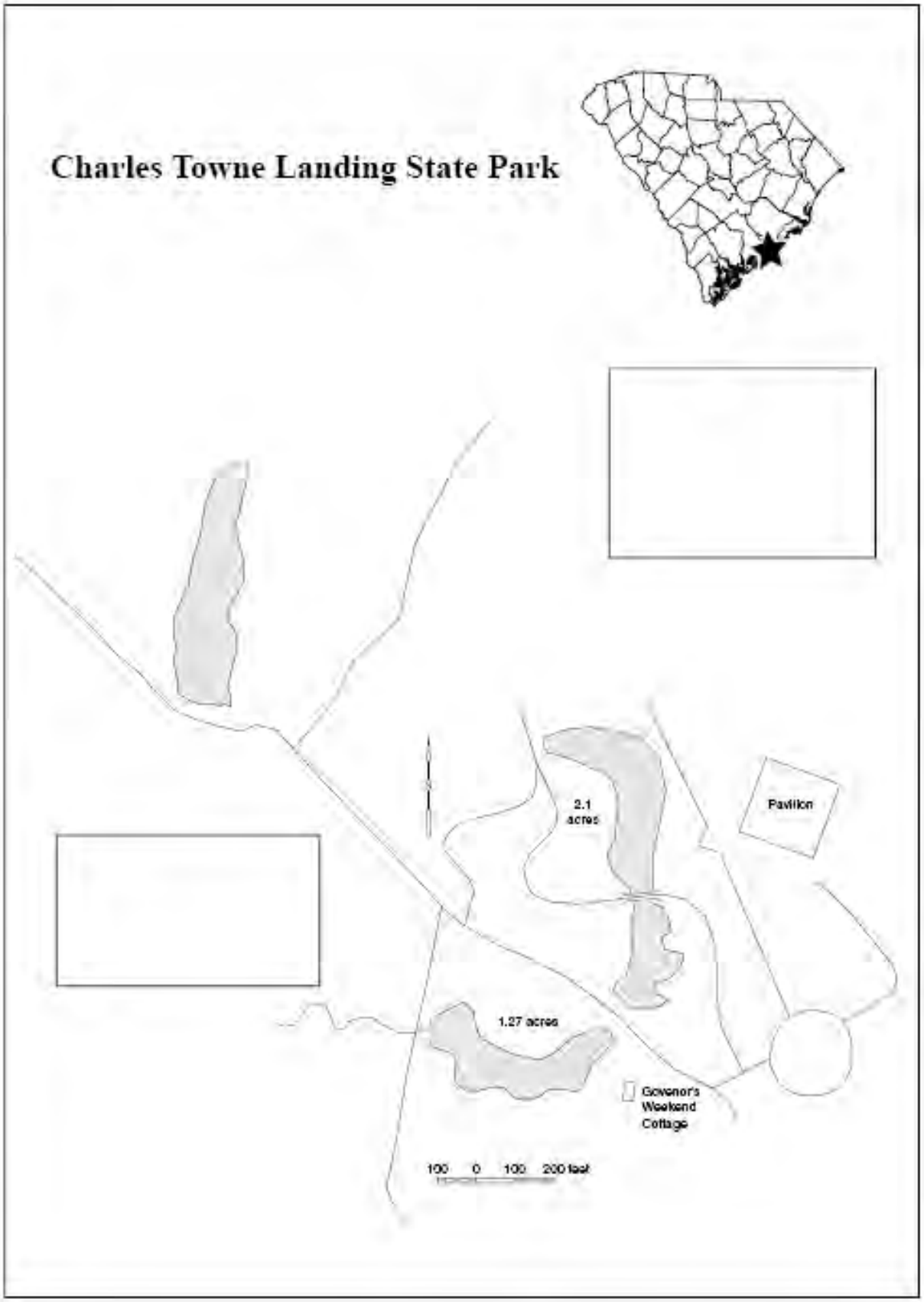
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


Charles Towne Landing State Park
2.1 acres
Pavilion
1.27 acres
Governor's Weekend Cottage
100 0 100 200 feet

## 34. Cheraw State Park (Lake Juniper) (Chesterfield County)

**Problem plant species**

Floating heart, Waterlily, Spatterdock, Watermilfoil

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Floating heart, Waterlily, Spatterdock, Watermilfoil – Renovate Max G

Floating heart, Spatterdock – Habitat, Glyphosate

**Area to which control is to be applied**

20 acres along boardwalk, main swimming area, and swimming areas at Camps Forest & Juniper

**Rate of control agent to be applied**

Renovate Max G – 200 lbs per acre.
Habitat – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.

**Method of application of control agent**

Foliar application using appropriate surfactant from airboat. Granular herbicides spread evenly using appropriate rate.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$12,000

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 35. Croft State Park (Spartanburg County)

**Problem plant species**

Hydrilla

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Hydrilla – Triploid Grass Carp

**Area to which control is to be applied**

50 acres

**Rate of control agent to be applied**

Triploid Grass Carp – 25 fish per vegetated acre

**Method of application of control agent**

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

Triploid grass carp to be released as soon as possible in the spring of 2015 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

**Other control application specifications**

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$12,000

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 36. H. Cooper Black State Recreation Area (Chesterfield County)

**Problem plant species**

Waterlily, Watershield

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Hardball, Habitat, Clearcast, Glyphosate

**Area to which control is to be applied**

2 acres in lake.

**Rate of control agent to be applied**

Habitat – 0.250 – 0.750 gallons per acre.
Clearcast – 0.500 – 0.750 gallons per acre.
Glyphosate - up to 0.937 gallons per acre.
Hardball – up to 5 gallons per acre.

**Method of application of control agent**

Subsurface injection from airboat.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$375

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

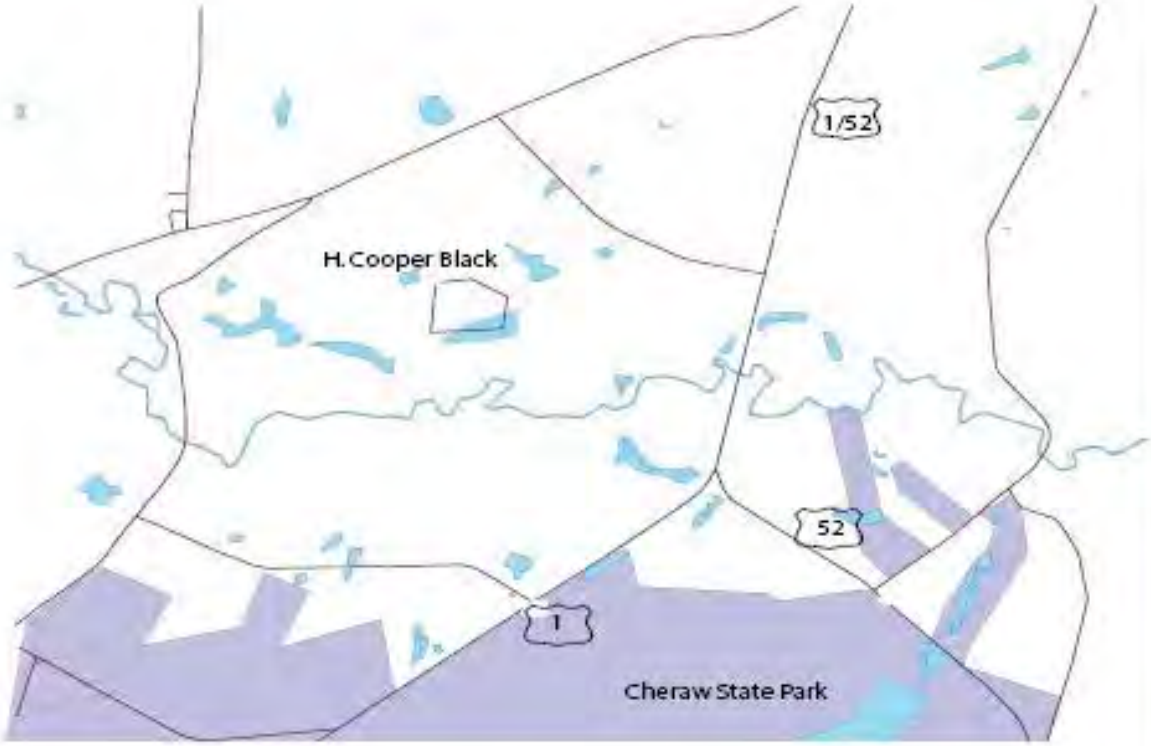
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# H. Cooper Black Recreation Area



## 37. Hunting Island State Park (Beaufort County)

**Problem plant species**

Duckweed

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Fluridone, Clipper, Galleon SC

**Area to which control is to be applied**

2 acres adjacent to the parks use area

**Rate of control agent to be applied**

Fluridone - 0.125 gallons per acre.
Clipper – up to 0.09375 gallons per acre
Galleon SC - 2 to 12 fl oz per acre.

**Method of application of control agent**

Herbicide - Spray on surface of foliage with appropriate surfactant or subsurface injection broadcast evenly from airboat.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$1,200

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 38. Huntington Beach State Park (Georgetown County)

**Problem plant species**

Phragmites, Cutgrass, Cattails

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Habitat, Clearcast, Glyphosate

**Area to which control is to be applied**

10 acres in 3 different lakes.

**Rate of control agent to be applied**

Habitat - 0.500 – 0.750 gallons per acre.

Clearcast - 0.500 – 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply after plants are actively growing (May - Oct.).

**Other control application specifications**

Application to be conducted by airboat, ground, or helicopter. Phragmites control in impounded areas should only occur where drainage has left areas moderately dry

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$1,100

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

Huntington Beach SP
N
To Myrtle Beach
Saltwater Marsh
To Jetty (1.2 miles)
Boardwalk
North Beach
Sandpiper Pond Nature Trail
Fee Booth
17
Boardwalk
P
Education Center
Atlantic Ocean
Freshwater Lagoon
Camping Area
To Georgetown
Kerrigan Nature Trail
Atalaya
Office/Store & Camper Registration

## 39. Jones Gap State Park (Greenville County)

**Problem plant species**

Kudzu

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Renovate 3, 2,4-D

**Area to which control is to be applied**

1 acre in marsh.

**Rate of control agent to be applied**

Renovate 3 – 0.500 gallons per acre.

2,4-D - 0.250 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant.

**Timing and sequence of control application**

Apply after plants are actively growing (May - Oct.).

**Other control application specifications**

Application to be conducted by ground, or helicopter.

**Entity to apply control agent**

Commercial applicator

**Estimated cost of control operations**

$240

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 40. Kings Mountain State Park - Crawford Lake (York County)

**Problem plant species**

Slender naiad

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Aquathol K

**Area to which control is to be applied**

4 acres in swimming and paddle boat area

**Rate of control agent to be applied**

Four (4) gallons per acre.

**Method of application of control agent**

Apply subsurface throughout lake

**Timing and sequence of control application**

Apply in May or June when naiad growth is initiated.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$1,050

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

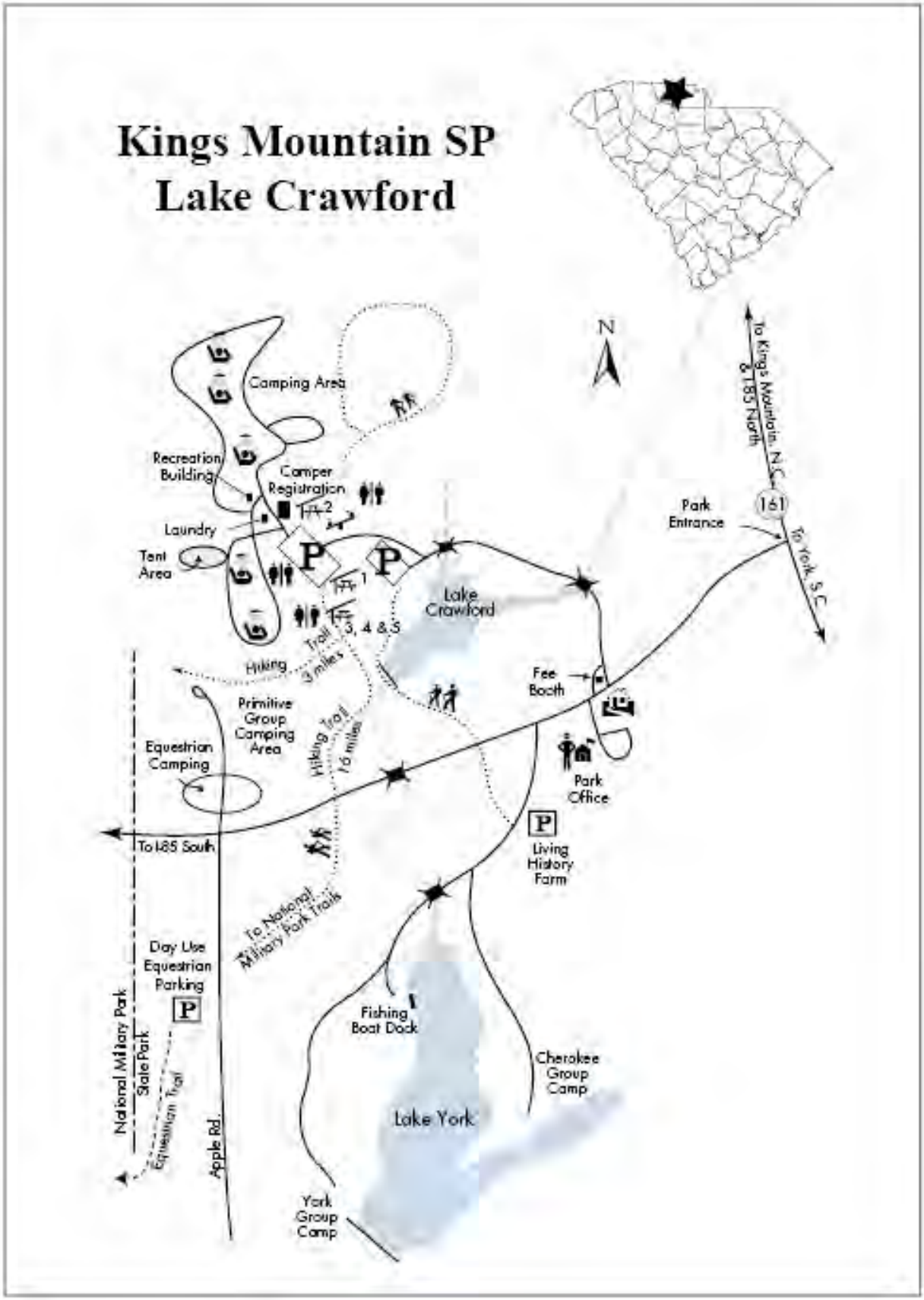
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


Kings Mountain SP
Lake Crawford
N
Camping Area
Recreation Building
Camper Registration
Laundry
Tent Area
Lake Crawford
Hiking Trail 3 miles
Primitive Group Camping Area
Equestrian Camping
Hiking Trail 1.6 miles
To I-85 South
To National Military Park Trails
Day Use Equestrian Parking
National Military Park
State Park
Equestrian Trail
Apple Rd.
Fee Booth
Park Office
Living History Farm
Fishing Boat Dock
Cherokee Group Camp
Lake York
York Group Camp
Park Entrance
To Kings Mountain, N.C. & I-85 North
161
To York, S.C.

## 41. Lee State Park (Lee County)

**Problem plant species**

Watermilfoil

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Renovate Max G,

**Area to which control is to be applied**

3 acres adjacent to the parks day use area, along the park dam and adjacent to the campground

**Rate of control agent to be applied**

Renovate Max G - 200 lbs per acre.

**Method of application of control agent**

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$1,810

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

d) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

e) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

f) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 42. Little Pee Dee State Park (Dillon County)

**Problem plant species**

Spatterdock, Spatterdock, Water lily, Watershield,

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Renovate Max G, Clearcast, Glyphosate, Habitat

**Area to which control is to be applied**

10 acres adjacent to the parks day use area, along the park dam and adjacent to the campground

**Rate of control agent to be applied**

Renovate Max G - 200 lbs per acre.
Clearcast – 0.500 – 0.750 gallons per acre.
Habitat - 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.

**Method of application of control agent**

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$3,000

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

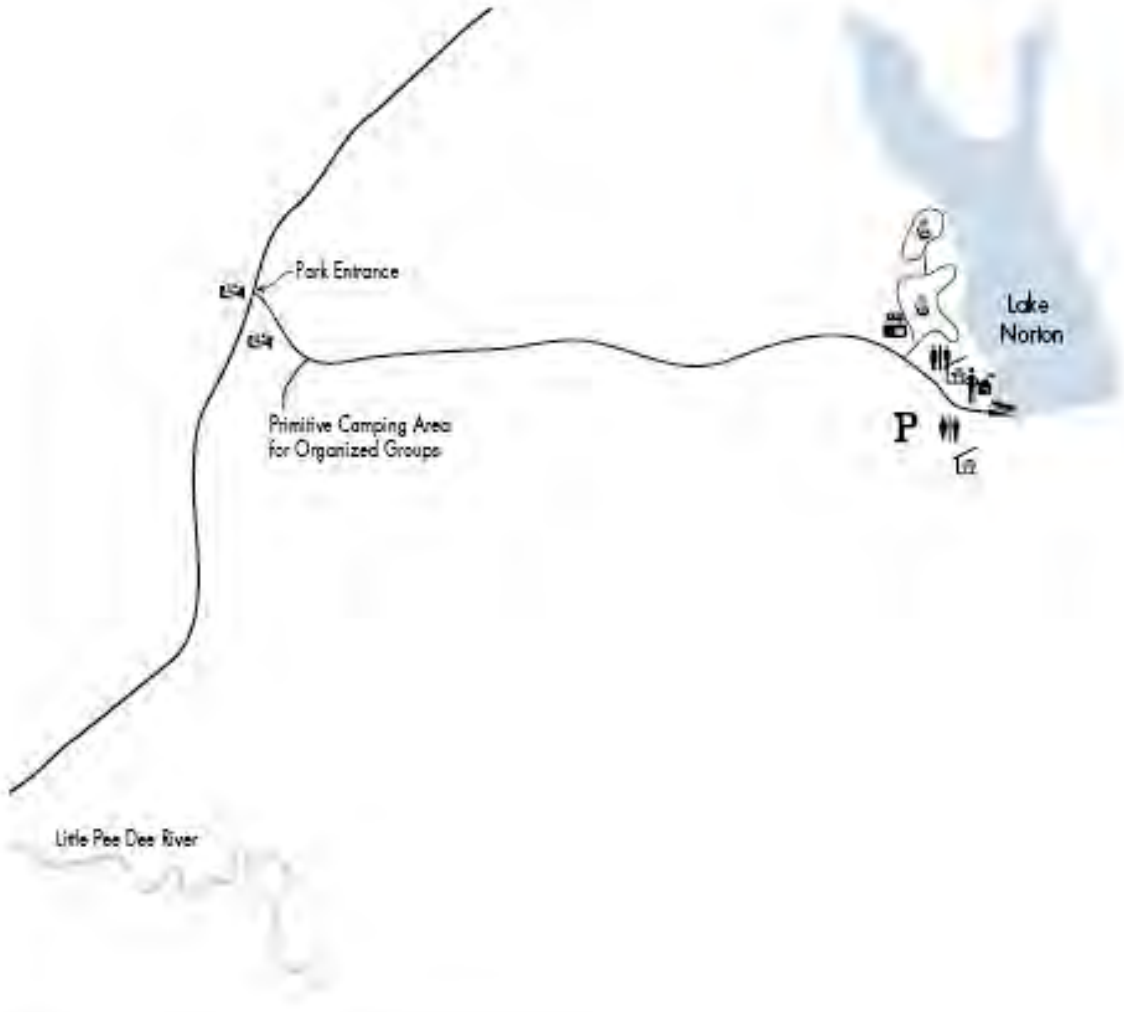
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Little Pee Dee SP
# Lake Norton



## 43. N.R. Goodale State Park (Kershaw County)

**Problem plant species**

Waterlily, Watershield

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Hardball, Renovate Max G

**Area to which control is to be applied**

5 acres in lake.

**Rate of control agent to be applied**

Hardball - Up to 5 gallons per acre.
Renovate Max G – 200 lbs per acre.

**Method of application of control agent**

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$3,000

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

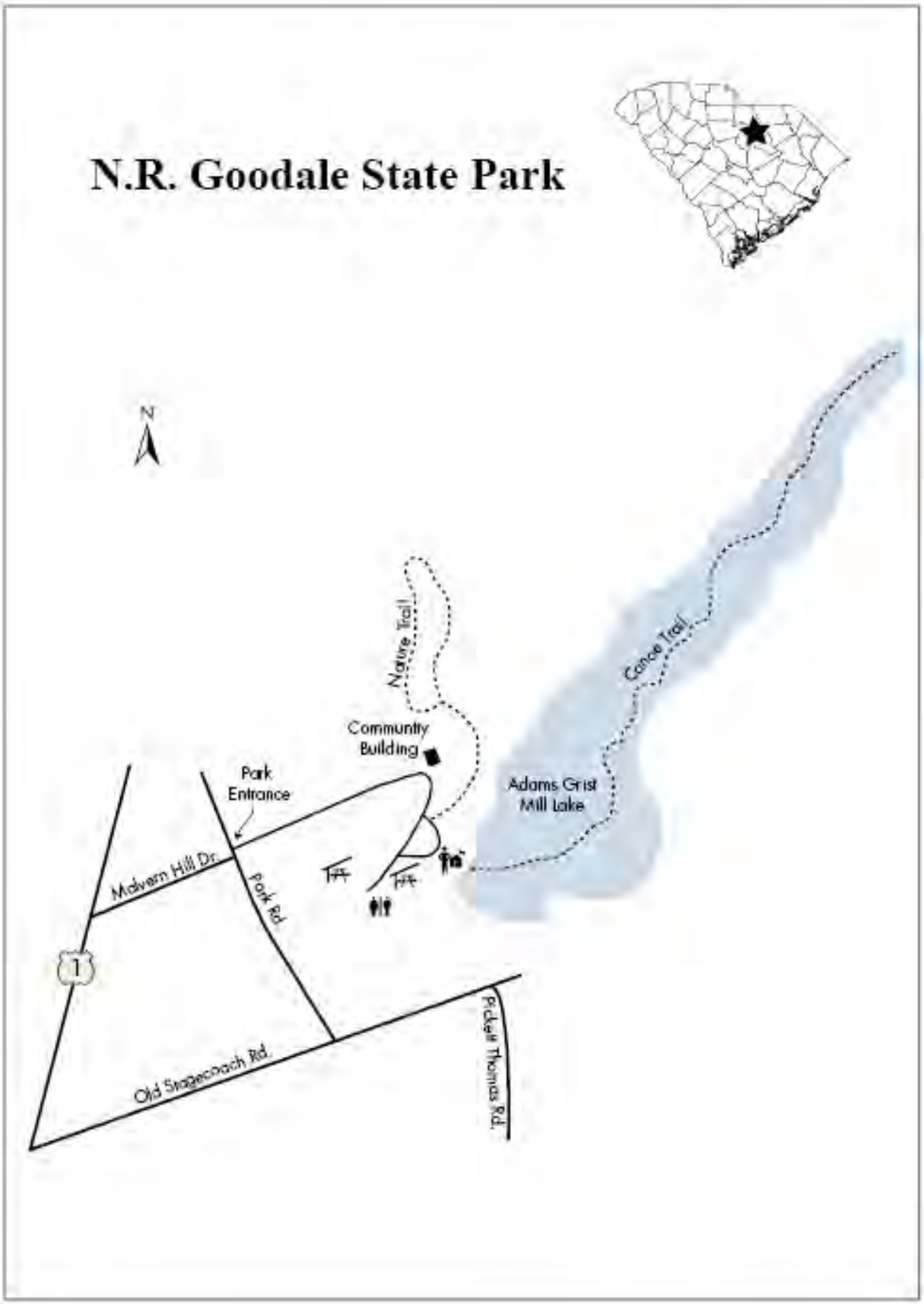
(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


N.R. Goodale State Park
N
Nature Trail
Canoe Trail
Community Building
Park Entrance
Adams Grist Mill Lake
Malvern Hill Dr.
Park Rd.
1
Pickett Thomas Rd.
Old Stagecoach Rd.

## 44. Paris Mountain State Park (Greenville County)

**Problem plant species**

Slender Naiad, Watershield,

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Renovate Max G, Clearcast, Glyphosate, Habitat

**Area to which control is to be applied**

Lake Placid: slender naiad 5 acres - Treat with grass carp

Lake Buckhorn: Watershield, pondweed treat 1 acre

**Rate of control agent to be applied**

Triploid Grass Carp – 15 fish per vegetated acre

Renovate Max G - 200 lbs per acre.

**Method of application of control agent**

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

**Timing and sequence of control application**

Triploid grass carp to be released as soon as possible in the spring of 2015 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Herbicide - Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment. Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$1,300

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 45. Poinsett State Park (Sumter County)

**Problem plant species**

Spatterdock, Cattails

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Habitat, Glyphosate, Clearcast, Renovate Max G

**Area to which control is to be applied**

5 acres in swimming and bank fishing portions of the lake.

**Rate of control agent to be applied**

Clearcast - Up to 1 gallon per acre.
Habitat - Up to 0.750 gallons per acre.
Glyphosate - Up to 0.750 gallons per acre.
Renovate Max G – 200 lbs per acre.

**Method of application of control agent**

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$1,500

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 46. Sesquicentennial State Park (Richland County)

**Problem plant species**

Waterlily, Watershield

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Hardball, Renovate Max G

**Area to which control is to be applied**

5 acres in swimming and bank fishing portions of the lake.

**Rate of control agent to be applied**

Hardball - Up to 5 gallons per acre.
Renovate Max G – 200 lbs per acre.

**Method of application of control agent**

Herbicide - Spray on surface of foliage with appropriate surfactant. Granular broadcast evenly from airboat.

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

Commercial applicator contracted and monitored by SCPRT.

**Estimated cost of control operations**

$3,000

**Potential sources of funding**

S.C. Department of Parks, Recreation and Tourism 50%

S.C. Department of Natural Resources 50% (up to $30,000 cost share per waterbody)

(Percentage of match subject to change based on availability of Federal and State funding.)

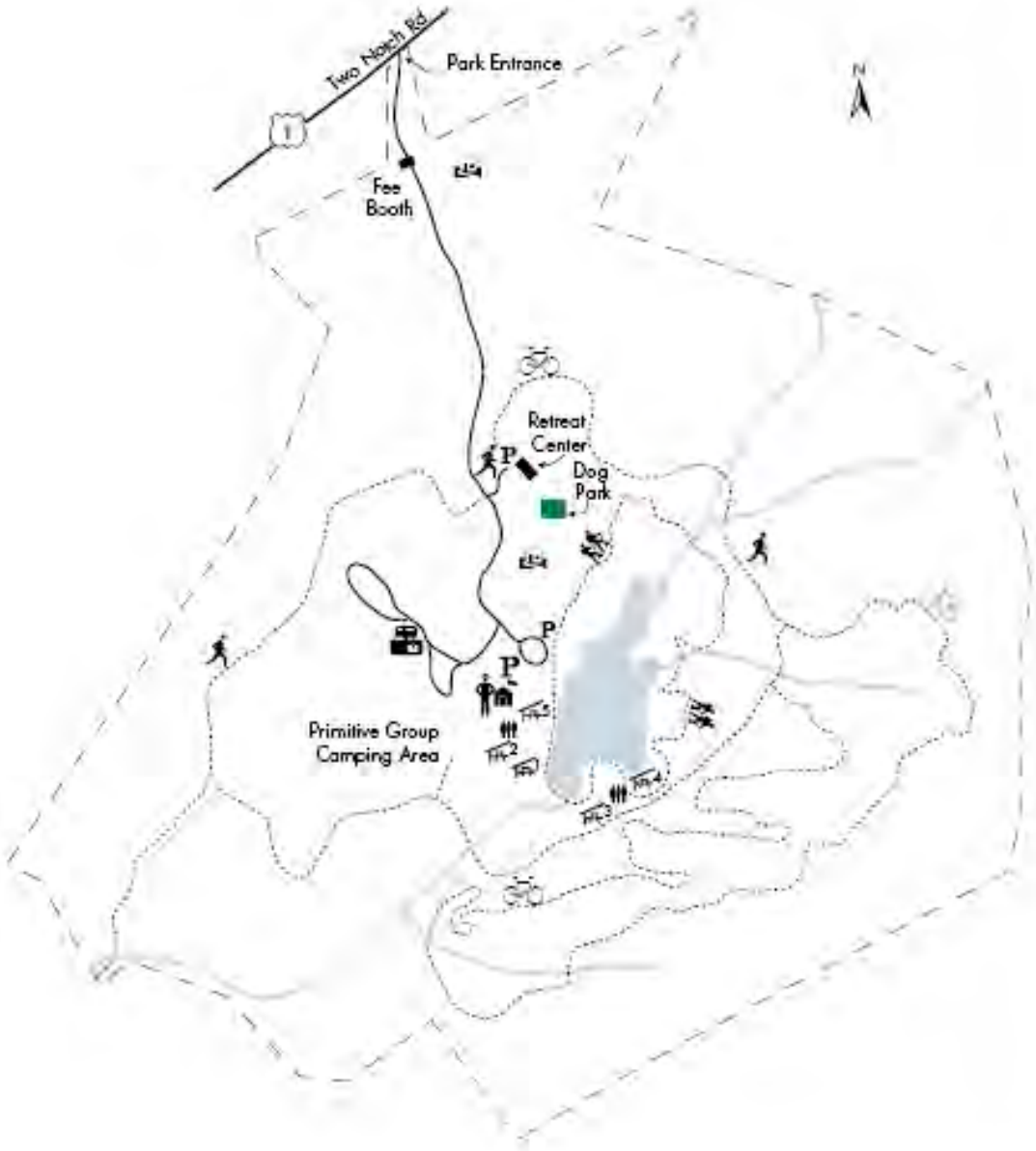
**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

# Sesquicentennial State Park



## South Carolina Department of Natural Resources
## State Lakes

*Total price and cost share is for herbicide costs only based on state contract costs. Freshwater Fisheries staff will apply based on label rates.

### 47. Lake Cherokee (Cherokee County)

**Problem plant species**

Water primrose

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Renovate 3

**Area to which control is to be applied**

5 acres in lake, two (2) times per year.

**Rate of control agent to be applied**

Renovate 3 - 0.500 - 0.750 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 48. Lake Edwin Johnson (Spartanburg County)

**Problem plant species**

Water primrose, Hydrilla, Pondweed

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

| Problems species | Control Agent |
|---|---|
| Water Primrose | Renovate 3 |
| Pondweed | Komeen/Reward |
| Hydrilla | Triploid Grass Carp, Komeen/Reward |

**Rate of control agent to be applied**

Renovate 3 - 0.500 - 0 gallons per acre.

Komeen/Reward - 4 gallons per acre / 2 gallons per acre.

Triploid Grass Carp – 25 fish per vegetated acre.

**Area to which control is to be applied**

Primrose - 7 acres in lake two (2) times per year.

Hydrilla/Pondweed - 4 acres in lake two (2) times per year.

If conditions warrant, release triploid grass carp in close proximity to areas of the lake with the greatest problematic growth and use herbicide applications to provide immediate short-term control of localized growth in those areas. 100 Triploid Carp

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant. Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

Apply when plants are actively growing.
Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

**Other control application specifications**

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

**Entity to apply control agent**

Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 49. Jonesville Reservoir (Union County)

**Problem plant species**

Water primrose, Pondweed

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Renovate 3, Glyphosate

**Area to which control is to be applied**

10 acres in lake.

**Rate of control agent to be applied**

Renovate 3 - 0.500 – 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 50. Mountain Lakes (Chester County)

**Problem plant species**

Water primrose, Alligatorweed, Parrotfeather

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Renovate 3, Glyphosate

**Area to which control is to be applied**

5 acres in lake.

**Rate of control agent to be applied**

Renovate 3 - 0.500 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 51. Lancaster Reservoir (Lancaster County)

**Problem plant species**

Water primrose, Alligatorweed

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Renovate 3, Glyphosate

**Area to which control is to be applied**

8 acres in lake.

**Rate of control agent to be applied**

Renovate 3 - 0.500 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 52. Sunrise Lake (Lancaster County)

**Problem plant species**

Pondweed

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Glyphosate

**Area to which control is to be applied**

15 acres in lake.

**Rate of control agent to be applied**

Glyphosate - up to 0.937 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 53. Lake Ashwood (Lee County)

**Problem plant species**

Waterlily

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Renovate Max G

**Area to which control is to be applied**

<5 acres of spotty coverage

**Rate of control agent to be applied**

200 pounds per acre

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 54. Lake Edgar Brown (Barnwell County)

**Problem plant species**

Water primrose, Coontail, water hyacinth

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities. Control efforts will extend into the Turkey Creek area adjacent to the Barnwell Hatchery.

**Selected control method**

Habitat, Glyphosate

**Area to which control is to be applied**

60 acres in lake.

**Rate of control agent to be applied**

Habitat - up to 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant

**Timing and sequence of control application**

Apply when plants are actively growing.

**Other control application specifications**

Monitor plant growth prior to treatment.

**Entity to apply control agent**

SCDNR-Wildlife and Freshwater Fisheries Division, Lake Management staff.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 55. Lake George Warren (Hampton County)

**Problem plant species**

Water primrose, Cattails, Coontail, Naiad

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Glyphosate, Habitat, Triploid Grass Carp

**Area to which control is to be applied**

20 acres in lake.

**Rate of control agent to be applied**

Glyphosate - up to 0.937 gallons per acre.

Habitat - 0.250 - 0.500 gals/ac

If conditions warrant, release triploid grass carp in close proximity to areas of the lake with the greatest problematic growth and use herbicide applications to provide immediate short-term control of localized growth in those areas.

**Method of application of control agent**

Spray on surface of foliage with appropriate surfactant. Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

Apply when plants are actively growing.
Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

**Other control application specifications**

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

**Entity to apply control agent**

Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant

populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 56. Lake Thicketty (Cherokee County)

**Problem plant species**

Hydrilla

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Hydrilla Triploid grass carp, chelated copper

**Area to which control is to be applied**

5 acres in lake.

**Rate of control agent to be applied**

Approximately 5 acres in priority areas such as, public access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas. If conditions warrant, release triploid grass carp in close proximity to areas of the lake with the greatest hydrilla growth and use herbicide applications to provide immediate short-term control of localized growth in those areas. 20 fish per vegetated acre.

Chelated copper - up to 1 ppm Glyphosate- up to 1 gallon per acre.

**Method of application of control agents**

Chelated copper- subsurface application by airboat.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

All herbicides to be applied when plants are actively growing.

Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

**Other control application specifications**

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

**Entity to apply control agent**

Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## 57. Dargan's Pond (Darlington County)

**Problem plant species**

Pondweed

**Management objective**

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities.

**Selected control method**

Glyphosate, Triploid Grass Carp

**Area to which control is to be applied**

15 acres in lake.

**Rate of control agent to be applied**

Glyphosate - up to 0.937 gallons per acre.

Triploid Grass Carp – 25 fish per vegetated acre

**Method of application of control agents**

Glyphosate - subsurface application by airboat.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

All herbicides to be applied when plants are actively growing.

Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

**Other control application specifications**

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

**Entity to apply control agent**

Herbicide application – SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or commercial applicator.

Triploid Grass Carp - SCDNR Wildlife and Freshwater Fisheries Division, Lake Management staff and/or a commercial supplier with supervision by the SCDNR.

**Estimated cost of control operations**

$*

**Potential sources of funding**

S.C. Department of Natural Resources (WFF division) 100%

S.C. Department of Natural Resources 0%

(Percentage of match subject to change based on availability of Federal and State funding.)

**Long term management strategy**

a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

## South Carolina Border Lakes

Approval for Lake Wylie was accomplished by SCDNR staff in conjunction with staff from North Carolina Natural Resource agencies, Duke Energy staff, and the Lake Wylie Marine Commission.

### 58. Lake Wylie
### (York County, SC; Gaston and Mecklenburg County, NC)

**Problem plant species**

Hydrilla

**Management objective**

Reduce hydrilla growth lake-wide and prevent the spread of hydrilla to other systems.

Achieve measurable reduction of hydrilla within two or three years and once hydrilla has been controlled, prevent it from reestablishing.

Control hydrilla by using a low enough density of triploid grass carp that potentially other forms of native vegetation can become established.

**Selected control method**

Triploid (sterile) grass carp used lake wide for long-term control.

Registered and properly applied herbicides should be used for initial suppression and by home owners for spot treatments.

**Area to which control is to be applied**

Triploid grass carp will be released from boat ramps near the greatest concentration of hydrilla.

**Rate of control agent to be applied**

Recommendation for supplemental grass carp stocking in the spring of 2015. Because of the loss of sterile grass carp to mortality (disease, predation, fishing, bow hunting, etc.) we recommend 576 grass carp, be stocked in the lake during the spring of 2015. This is a supplemental stocking of 32% (average of national grass carp annual mortality curves, Phil Kirk pers com) of the original 1800 grass carp introduced in 2009. Duke Energy will continue to monitor the effectiveness of the introduced fish.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Method of application of control agents**

Herbicide- subsurface application by airboat.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

Herbicide applications - To be applied when plants are actively growing.

Triploid grass carp to be released as soon as possible in the spring of 2015 (March-May) and yearly at the same time for at least the next three years. RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS. After hydrilla has been controlled, follow up stocking, currently estimated at maintaining triploid grass carp stocking densities of approximately 1 fish per every 8 surface acres of Lake Wylie will be continued using mortality estimates derived from the population and population models.

**Other control application specifications**

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

Triploid grass carp will be a minimum of 12 inches total length. All shipments will be examined for condition and length specified in the contract with the vendor.

**Estimated cost of control operations**

All work to be done in North Carolina Section of the lake.

**Entity to apply control agent**

Herbicide application - Commercial applicator or Duke Power Company

Drawdown - Duke Power Company

**Potential sources of funding**

Duke Power Company 100% - All control work at present time is in North Carolina.

**Long term management strategy**

a) Manage hydrilla's potential adverse impacts to the Lake Wylie ecosystem using primarily triploid grass carp after initial suppression using approved herbicides.

b) Maintain or enhance native aquatic vegetation by maintaining the lowest possible stocking rates of triploid grass carp, especially once major stands of hydrilla have been controlled.

c) Seek to prevent further introduction and distribution of problem aquatic species through public education and enforcement of existing laws and regulations.

d) Periodically revise management plans and strategy as new environmental data becomes available.

e) Plan for long-term control of hydrilla, once control has been achieved, by maintaining very low densities of triploid grass carp. Stockings will be determined from mortality estimates generated from triploid grass carp collected on Lake Wylie and the use of age-structure population models developed for fisheries.

## 59. Lake Thurmond (South Carolina - Georgia)

Lake Thurmond is a U.S. Army Corps of Engineers (USACOE) lake which borders South Carolina and Georgia. The control and maintenance issues associated with this lake fall under the jurisdiction of the USACOE. The USACOE coordinate with both Georgia and SC natural resource agencies on a variety of issues that effect natural resource management. A consensus has not been reached by the entities involved on management activities for invasive species, specifically hydrilla. Ongoing meetings and correspondence will continue on this and many other subjects.

**NOTE: The following description is not binding for management activities but represents the Aquatic Plant Management Council's opinion on managing hydrilla in Lake Thurmond.**

**Problem plant species**

Hydrilla

**Management objective**

Reduce hydrilla growth lake-wide and prevent the spread of hydrilla to other systems.

Achieve measurable reduction of hydrilla within two or three years and once hydrilla has been controlled, prevent it from reestablishing.

Control hydrilla by using a low enough density of triploid grass carp that potentially other forms of native vegetation can become established.

**Selected control method**

Triploid (sterile) grass carp used lake wide for long-term control.

Registered and properly applied herbicides should be used for initial suppression and by home owners for spot treatments.

**Area to which control is to be applied**

Triploid grass carp will be released from boat ramps near the greatest concentration of hydrilla.

**Rate of control agent to be applied**

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Method of application of control agents**

Herbicide- subsurface application by airboat.

Triploid grass carp – Using standard techniques to minimize loss, stock sterile grass carp in areas of the lake with the greatest hydrilla growth.

**Timing and sequence of control application**

Herbicide applications - To be applied when plants are actively growing.

Triploid grass carp to be released as soon as possible. RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS. After hydrilla has been controlled, follow up stocking,

currently estimated at maintaining triploid grass carp stocking densities of approximately 1 fish per every 8 surface acres of Lake Thurmond will be continued using mortality estimates derived from the population and population models.

**Other control application specifications**

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

Triploid grass carp will be a minimum of 12 inches total length. All shipments will be examined for condition and length specified in the contract with the vendor.

**Estimated cost of control operations**

**No estimate available**

**Entity to apply control agent**

Herbicide application - Commercial applicator or USACOE

Drawdown - USACOE

**Potential sources of funding**

USACOE 100%

**Long term management strategy**

a) Manage hydrilla's potential adverse impacts to the Lake Thurmond ecosystem using primarily triploid grass carp after initial suppression using approved herbicides.

b) Maintain or enhance native aquatic vegetation by maintaining the lowest possible stocking rates of triploid grass carp, especially once major stands of hydrilla have been controlled.

c) Seek to prevent further introduction and distribution of problem aquatic species through public education and enforcement of existing laws and regulations.

d) Periodically revise management plans and strategy as new environmental data becomes available.

e) Plan for long-term control of hydrilla, once control has been achieved, by maintaining very low densities of triploid grass carp. Stockings will be determined from mortality estimates generated from triploid grass carp collected on Lake Thurmond and the use of age-structure population models developed for fisheries.

## Additional Control Activities

Control efforts for Island Applesnails**,** which costs are shouldered by SCDNR**,** will be conducted in Horry County **and Charleston County**. Herbicides based on the active ingredient Copper will be utilized. Product names include Natrix, Captain, and copper sulfate. Rates will be based on the lowest possible label rates published by the manufacturer.

**Problem species**

Island Applesnail

**Management objective**

Achieve measurable reduction of Island Applesnails within two or three years and once controlled, prevent them from reestablishing.

**Selected control method**

Registered and properly applied herbicides should be used for initial suppression and for spot treatments.

**Area to which control is to be applied**

Local ponds in Horry County near Socastee and in Charleston County near Mount Pleasant

**Rate of control agent to be applied**
**Herbicide will be applied at the low end of the label rate.**

**Method of application of control agents**

Herbicide- application by hand held sprayers of small boats.

**Timing and sequence of control application**

Herbicide applications - To be applied when snails are actively growing.

**Other control application specifications**

Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.

**Estimated cost of control operations**

Costs may vary significantly

**Entity to apply control agent**

Herbicide application - Commercial applicator or SCDNR

**Potential sources of funding**

SCDNR 100%

**Long term management strategy**

a) Manage Island Applesnail's potential adverse impacts to the local ecosystem using approved herbicides. Prevent IAS from expanding its range into adjacent Waccamaw National Wildlife Refuge

b) Seek to prevent further introduction and distribution of problem aquatic species through public education and enforcement of existing laws and regulations.

c) Periodically revise management plans and strategy as new environmental data becomes available.

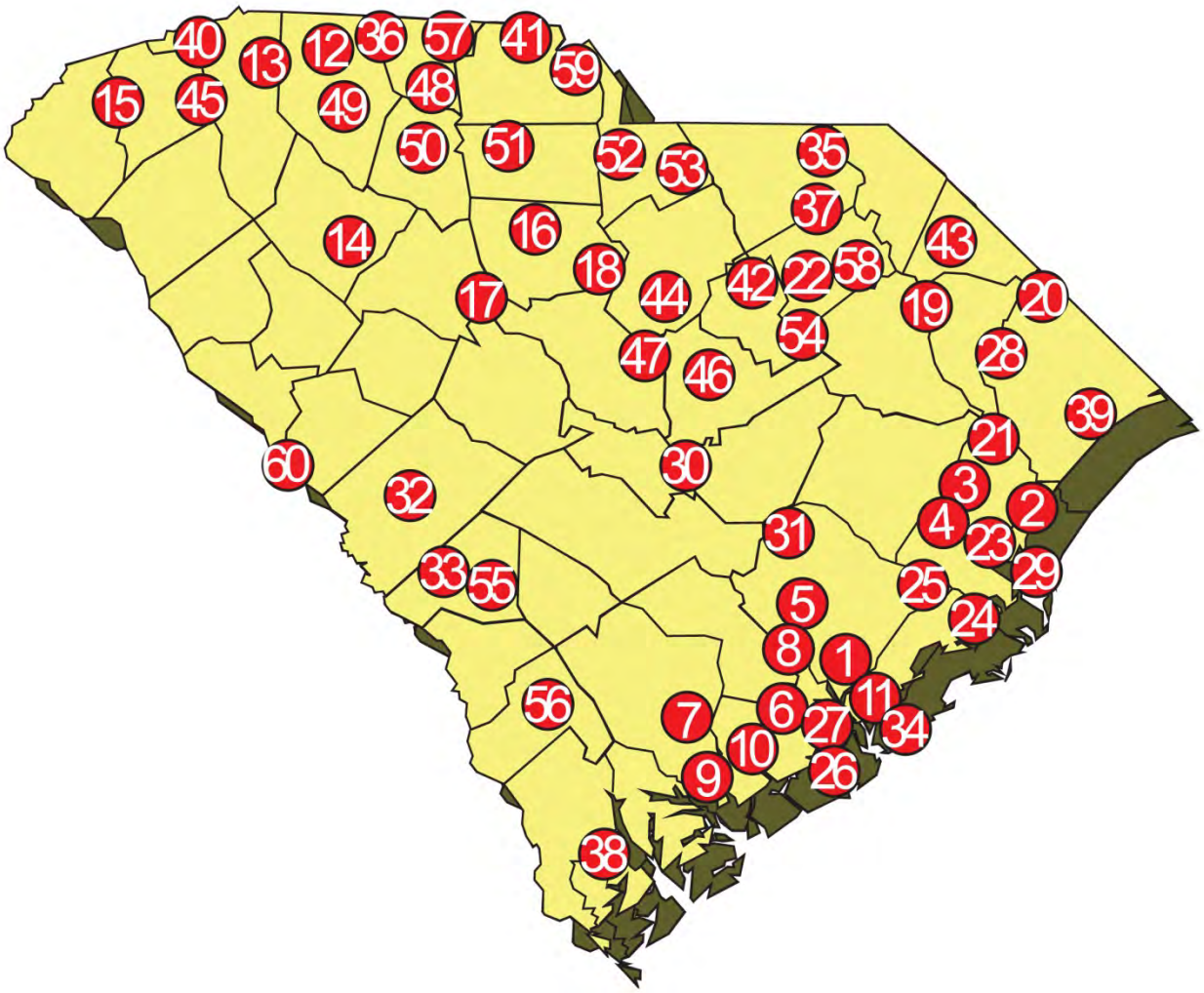
## Summary of Proposed Management Operation Expenditures for 2015

| | Water Body Name | Total Cost | Local | State | Federal | Local Sponsor |
|---|---|---|---|---|---|---|
| 1 | Back River Reservoir | $45,000 | $22,500 | $22,500 | $0 | SCE&G, CPW |
| 2 | Baruch | $3,000 | $1,500 | $1,500 | $0 | Baruch |
| 3 | Black Mingo Creek | $900 | $450 | $450 | $0 | Georgetown Co. |
| 4 | Black River | $3,250 | $1,625 | $1,625 | $0 | Georgetown Co. |
| 5 | Bonneau Ferry WMA | $5,750 | $2,875 | $2,875 | $0 | SCDNR |
| 6 | Charleston Co. Parks | $1,000 | $500 | $500 | $0 | Charleston Parks |
| 7 | Combahee River | $700 | $350 | $350 | $0 | Colleton Co. |
| 8 | Cooper River | $28,000 | $14,000 | $14,000 | $0 | Berkeley Co. |
| 9 | Donnelley/ACE Basin | $2,900 | $1,450 | $1,450 | $0 | SCDNR,USF&W |
| 10 | Dungannon WMA | $2,000 | $1,000 | $1,000 | $0 | SCDNR, USF&W |
| 11 | Goose Creek Reservoir | $34,500 | $17,250 | $17,250 | $0 | CPW |
| 12 | Lake Bowen | $1,400 | $700 | $700 | $0 | Spartanburg CPW |
| 13 | Lake Cunningham | $2,000 | $1,000 | $1,000 | $0 | Greer CPW |
| 14 | Lake Greenwood | $6,000 | $3,000 | $3,000 | $0 | Greenwood Co. |
| 15 | Lake Keowee | $0 | $0 | $0 | $0 | Duke Energy |
| 16 | Lake Monticello(Rec. Lake) | $0 | $0 | $0 | $0 | SCE&G |
| 17 | Lake Murray | $8,000 | $4,000 | $4,000 | $0 | SCE&G, Lex. Co. |
| 18 | Lake Wateree | $0 | $0 | $0 | $0 | Duke Energy |
| 19 | Little Pee Dee River | $1,500 | $750 | $750 | $0 | Horry Co. |
| 20 | Lumber River | $500 | $250 | $250 | $0 | Horry Co. |
| 21 | Pee Dee River | $5,500 | $2,750 | $2,750 | $0 | Georgetown Co. |
| 22 | Prestwood Lake | $8000 | $4000 | $4000 | | City of Hartsville |
| 23 | Samworth WMA | $5,000 | $2,500 | $2,500 | $0 | SCDNR |
| 24 | Santee Coastal Reserve | $200 | $100 | $100 | $0 | SCDNR |
| 25 | Santee Delta WMA | $1,500 | $750 | $750 | $0 | SCDNR |
| 26 | USACOE AICWW/Chas. Harbor | $3,100 | $0 | $0 | $3,100 | USACOE |
| 27 | US Naval Weapons Sta. | $7,500 | $0 | $0 | $7,500 | US Navy |
| 28 | Waccamaw River | $4,000 | $2,000 | $2,000 | $0 | USF&W/Horry Co. |
| 29 | Yawkey Wildlife Center | $3,850 | $1,925 | $1,925 | $0 | SCDNR |
| | Santee Cooper Lakes | | | | | |
| 30 | Lake Marion | $1,000,000 | $1,000,000 | $0 | $0 | Santee Cooper |
| 31 | Lake Moultrie | $400,000 | $400,000 | $0 | $0 | Santee Cooper |
| | State Parks | | | | | |
| 32 | Aiken State Park | $6,000 | $3,000 | $3,000 | $0 | SCPRT |
| 33 | Barnwell SP | $6,000 | $3,000 | $3,000 | $0 | SCPRT |
| 34 | Charlestown Landing SP | $1,000 | $500 | $500 | $0 | SCPRT |
| 35 | Cheraw SP | $12,000 | $6,000 | $6,000 | $0 | SCPRT |
| 36 | Croft SP | $10,000 | $5,000 | $5,000 | $0 | SCPRT |

| | | | | | | |
|---|---|---|---|---|---|---|
| 37 | H Cooper Black SP | $375 | $188 | $188 | $0 | SCPRT |
| 38 | Hunting Island SP | $1,200 | $600 | $600 | $0 | SCPRT |
| 39 | Huntington Beach SP | $1,100 | $550 | $550 | $0 | SCPRT |
| 40 | Jones Gap SP | $240 | $120 | $120 | $0 | SCPRT |
| 41 | Kings Mountain SP | $1,050 | $525 | $525 | $0 | SCPRT |
| 42 | Lee SP | $1,810 | $905 | $905 | $0 | SCPRT |
| 43 | Little Pee Dee SP | $3,000 | $1,500 | $1,500 | $0 | SCPRT |
| 44 | NR Goodale | $3,000 | $1,500 | $1,500 | $0 | SCPRT |
| 45 | Paris Mountain SP | $1,500 | $750 | $750 | $0 | SCPRT |
| 46 | Poinsett SP | $1,500 | $750 | $750 | $0 | SCPRT |
| 47 | Sesquicentennial SP | $3,000 | $1,500 | $1,500 | $0 | SCPRT |
| * | 48-58 done entirely by SCDNR State Lakes Program, budget not provided | | | | | |
| | 59-60 are border lakes with either Federal or other State jurisdictions, budget not provided | | | | | |
| | SCDNR Total | $185,050 | $87,225 | $87,225 | $10,600 | |
| | State Park Lake Total | $52,776 | $26,388 | $26,388 | $0 | |
| | Santee Cooper Total | $1,400,000 | $1,400,000 | $0 | $0 | |
| | **SCDNR/State Parks Total** | **$237,825** | **$113,613** | **$113,613** | **$10,600** | |
| | **Grand Total** | **$1,637,825** | **$1,513,613** | **$113,613** | **$10,600** | |

NOTE: Planned expenditures are based on anticipated aquatic plant problems. The extent of proposed management operations will be modified depending on actual aquatic plant growth and funding availability in 2015 (Percentage of match subject to change based on availability of Federal and State funding.) * Control operations on Lakes Marion and Moultrie may receive federal funds from the Corps of Engineers St. Stephen Plant if control activities are directly related to maintaining operation of the St. Stephen Hydropower Facility. Those funds should be used whenever possible instead of APC cost-share funds from the Charleston District.

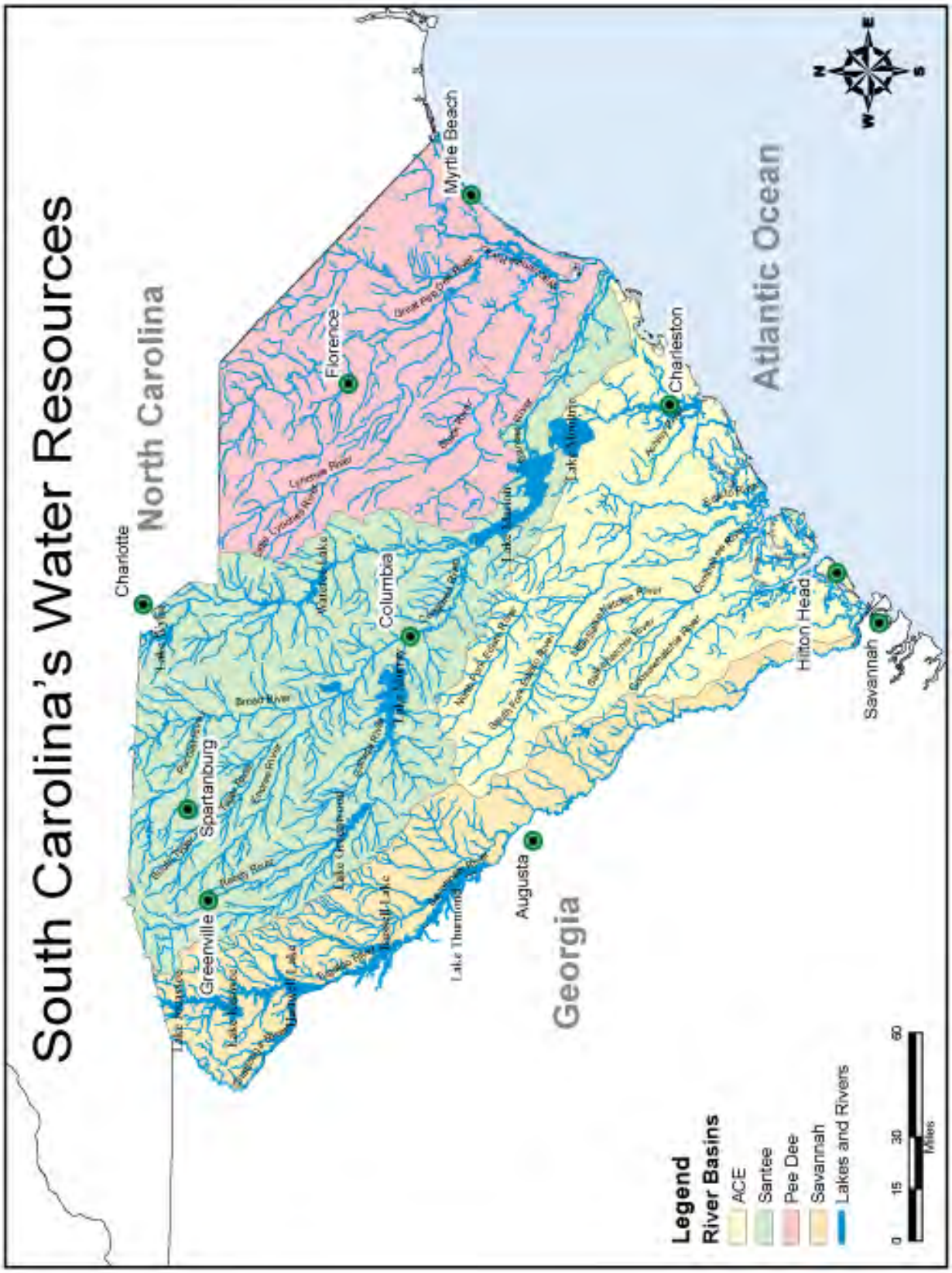
**Location of 2015 Management Sites**



# Appendices

## APPENDIX A

## Major River Basins in South Carolina


South Carolina's Water Resources
North Carolina
Georgia
Atlantic Ocean
Charlotte
Spartanburg
Greenville
Columbia
Florence
Myrtle Beach
Charleston
Hilton Head
Savannah
Augusta
Lake Wylie
Lake Marion
Lake Moultrie
Lake Thurmond
Legend
River Basins
ACE
Santee
Pee Dee
Savannah
Lakes and Rivers
0
15
30
60
Miles

**APPENDIX B**
**Additional Documentation for NPDES General Permit**

## NPDES Required Information Details

Aquatic Nuisance Species Program Emergency Numbers

| | | | |
|---|---|---|---|
| SCDNR Main Street Office | 803-734-4036 | Radio Room – Law Enforcement | 803-955-4000 |
| SCDNR Emergency Number | 800-922-5431 | DHEC Local Number – Columbia | 803-253-6488 |
| Poison Control Hotline | 800-222-1222 | National Response Center | 800-424-8802 |
| Chemical Spill/Fish Kill Emergency Number (DHEC) | | 888-481-0125 | |
| Clemson Department of Pesticide Regulation | | 864-646-2150 | |
| Chris Page<br>Program Manager<br>Aquatic Nuisance Species Program<br>SC Department of Natural Resources<br>2730 Fish Hatchery Road<br>West Columbia, SC 29172<br>803-755-2836 Voice<br>803-600-7541 Cell | | Michael Hook<br>Field Supervisor<br>Aquatic Nuisance Species Program<br>SC Department of Natural Resources<br>2730 Fish Hatchery Road<br>West Columbia, SC 29172<br>803-755-2872 Voice<br>803-667-1249 Cell | |
| Daniel Hood<br>Technician<br>Aquatic Nuisance Species Program<br>SC Department of Natural Resources<br>2730 Fish Hatchery Road<br>West Columbia, SC 29172<br>803-351-6718 Cell | | Bob Cernuda<br>Vice President-Southeast Division<br>PLM Lake and Land Management Corp.<br>46 Veronica Road<br>Georgetown, SC 29440<br>866 PRO-LAKE Toll Free-866 776-5253<br>843 545-1114 Voice<br>866 899-1627 Toll Free Fax<br>843 458-3022 Cell | |

| DNR Region | Counties | Land, Water & Conservation | Freshwater Fisheries<br>Fish Kills | Wildlife<br>Wildlife Problems | Law Enforcement | Marine Resources | Support Services |
|---|---|---|---|---|---|---|---|
| **Region I**<br>(Clemson)<br>311 Natural Resources Drive<br>Clemson, SC<br>29631<br>(864) 654-1671 | Abbeville<br>Anderson<br>Cherokee<br>Edgefield<br>Greenville<br>Greenwood<br>Laurens<br>McCormick<br>Oconee<br>Pickens<br>Spartanburg<br>Union | Marc Cribb<br><br>803-734-6367<br><br>803-331-1568 (Cell) | Dan Rankin<br><br>864-654-1671 Ext. 12<br><br>864-982-2175 (Cell) | Tom Swayngham<br><br>864-654-1671 Ext. 21<br><br>864-982-2921 (Cell) | CPT Jamie Landrum<br><br>864-654-8266 Ext 18<br><br>864-982-1707 (Cell) | None Assigned | Don Winslow<br><br>803-734-3672 (Main Columbia Office)<br><br>Greg Lucas<br>864-654-1671 Ext 22<br><br>864-380-5201 (Cell) |
| **Region II**<br>(Florence)<br>2007 Pisgah Rd<br>Florence, SC<br>29501<br>(843) 661-4766 | Chester<br>Chesterfield<br>Darlington<br>Dillon<br>Fairfield<br>Florence<br>Lancaster<br>Kershaw<br>Lee<br>Marion<br>Marlboro<br>Williamsburg<br>York | Marc Cribb<br><br>803-734-6367<br><br>803-331-1568 (Cell) | Robert Stroud<br><br>843-661-4767<br><br>803-609-7018 (Cell) | Sam Stokes<br><br>843-870-3771 (Cell) | CPT Sandy Young<br><br>843-616-4290 (Cell) | None Assigned | Scott Speares<br><br>803-734-3624 (Main Columbia Office) |
| **Region III**<br>(Columbia)<br>PO Box 167<br>1000 Assembly St.<br>Columbia, SC<br>29202<br>(803) 734-4303 | Aiken<br>Allendale<br>Bamberg<br>Barnwell<br>Calhoun<br>Clarendon<br>Lexington<br>Newberry<br>Orangeburg<br>Richland<br>Saluda<br>Sumter | Marc Cribb<br><br>803-734-6367<br><br>803-331-1568 (Cell) | Hal Beard<br><br>803-955-0462<br><br>803-609-7024 (Cell) | Brett Moule<br><br>803-734-3940<br><br>803-609-6988 (Cell) | CPT Harvin Brock<br><br>803-734-4303<br><br>803-260-6716 (Cell) | None Assigned | DeAnne Gray<br><br>803-734-3902 (Main Columbia Office)<br><br>Richard Byrd<br>803-734-3998 (Main Columbia Office)<br><br>803-360-0252 (cell) |
| **Region IV**<br>(Charleston)<br>PO Box 12559<br>217 Ft. Johnson Rd.<br>Charleston, SC<br>29412<br>(843) 953-9307 | Beaufort<br>Berkeley<br>Charleston<br>Colleton<br>Dorchester<br>Georgetown<br>Hampton<br>Horry<br>Jasper | Marc Cribb<br><br>803-734-6367<br><br>803-331-1568 (Cell) | Scott Lamprecht<br><br>843-953-5160<br><br>843-870-5810 (Cell) | Sam Chappelear<br><br>843-953-5291<br><br>843-870-5777 (Cell) | CPT Gentry Thames<br><br>843-953-9307<br><br>843-870-5641 (Cell) | David Whitaker<br><br>843-953-9392<br><br>843-442-2093 (Cell) | |

1) Pest Management Area Description
   (See AQUATIC PLANT MANAGEMENT STRATEGY section for Specific Water body.)
2) Control Measure Description
   (See AQUATIC PLANT MANAGEMENT STRATEGY section for Specific Water body.)
3) Schedules and Procedures
   (See AQUATIC PLANT MANAGEMENT STRATEGY section for Specific Water body.)
4) PESTICIDE SPILL POLICY AND PROCEDURES
   a. Put on protective clothing as may be appropriate: rubber boots, aprons, gloves, mask, and respirator. Use special caution if two different materials are spilled and mix together. They may react chemically to form noxious fumes.
   b. Immediately contain the spill. Use absorbents, dikes, mops or brooms, dirt or sand to retard the spread of the spill.

c. Notify your Contacts listed above or person in charge.
d. Recover the spill into containers (usually 5 gallon buckets or 30 gallon drums). Each warehouse should have at least one clean, empty 30-gallon drum for the purpose.
e. After sealing each recovered material container, mark it or attach a tag clearly to identify its contents, approximate quantity and date.
f. Move containers of spilled materials to a secure area.
g. Prepare a spill report giving relevant information including date; location; material spilled; approximate quantity; actions taken; location of recovered material; cause or circumstances leading to spill; and recommendations on how to avoid this problem in the future.
h. Contact the office for disposal instructions.

**DO NOT USE OR DISPOSE OF SPILLED MATERIALS WITHOUT PRIOR REVIEW.**

i. Depending on the circumstances, the best disposal method will differ. Some potential alternatives are:
    1. Use in the normal course of business;
    2. Dilute and wash into sanitary sewer;
    3. Shipment to an approved hazardous waste facility; neutralization / detoxification on site.
    4. Since a decision on how best to dispose of a spill may be quite complex, we may want input from manufacturers, regulatory officials or technical advisors. Consult the office before acting.

5) SPILL RESPONSE

Purpose: To ensure the safety of all individuals participating in or affected by herbicide use, to minimize the SCDNR's and Contractor's exposure to liability, to ensure the appropriate and effective application of herbicides as a management tool, and to minimize detrimental effects to the environment.

| ***The following information will provided following the discovery and initial telephonic reporting of the spill:*** | |
|---|---|
| 1. | Time spill occurred or was first observed:<br><br>_____ |
| 2. | Name of person first observing spill:<br><br>_____ |
| 3. | Location of initial spill and present location if moving:<br><br>_____ |
| 4. | Type of spilled material:<br><br>_____ |

| | |
|---|---|
| 5. | Estimate of amount spilled or rate of release if continuing:<br><br>_____ |
| 6. | Environmental conditions e.g., wind direction and speed, wave action, and currents:<br><br>_____ |
| 7. | If from mobile container (e.g., 2.5, 5, 15, 30, 55, tote):<br><br>_____ |
| 8. | Description of area likely to be affected by spill --e.g., riverbanks, lakes, land areas, wildlife areas:<br><br>_____ |
| 9. | Cause of spill, if determined:<br><br>_____ |
| 10. | Action taken to combat spill, if any:<br><br>_____ |
| 11. | Activities or authorities notified:<br><br>_____<br><br>_____<br><br>_____ |

**SPILL KIT CONTENTS**

A spill kit is required to be assembled and placed in locations where pesticides are mixed, and on vehicles, which transport pesticides.

| Shop Kit Quantity | Vehicle Kit Quantity | Item |
|---|---|---|
| 1 (55 gal) | 1 (5 gal) | open-head drum |
| 1 | 1 | pesticide spill policy and procedures |

| | | |
|---|---|---|
| 4 | 2 | pairs of nitrile gloves |
| 2 | 1 | pairs of unvented goggles |
| 2 | 1 | respirator and pesticide cartridges |
| 2 | 1 | aprons (chemical resistant) |
| 2 | 1 | pairs of rubber boots |
| 2 | 1 | pairs of tyvek coveralls |
| 1 | 1 | dustpan |
| 1 | 1 | shop brush |
| 12 | 6 | heavy ply, polyethylene bags w/ties |
| 1 | 1 | first aid kit |
| 80 | 10 | lbs absorbent material |
| 1 | 1 | dozen blank labels |
| 0 | 1 | portable eyewash |
| 1 | 0 | synthetic fiber push broom |
| 1 | 0 | square-point "D" handle shovel |

6) SCDNR Required Practices

Required practices, described below, are designed to ensure that the SCDNR's standards for use of herbicides meet or exceed the U.S. EPA's Worker Protection Standard for Agricultural Pesticides.

a. Prior to implementing use of any herbicide, the need for its use relative to management goals shall be described in the S.C. Aquatic Plant Management Plan, and/or in a Weed Plan specific to the site.
b. Only employees or contractors, who are certified/licensed by state and/or local regulations, are authorized to apply herbicides.
c. Application techniques, monitoring strategies, and impacts/progress toward goals and required reporting information shall be documented.
d. Standard safety practices for storage, mixing, transportation, disposal of containers and unused herbicide, and spill management will be followed.
e. Herbicide containers and related equipment will be stored in a secure containment area away from people, animals and food. Herbicide containers will be stored closed and inspected periodically. Hazardous waste will be labeled appropriately and include accumulation start dates.
f. Additional training required for the proper use and maintenance of personal protective equipment (PPE) and other equipment or required by the Occupational Safety and Health Administration (OSHA) shall be coordinated.
g. The point(s) of contact and threshold size for spills that must be reported shall be verified in advance with the appropriate local agency. This information and other

emergency related information shall be provided to all applicators and initial responders through a written contingency plan.

h. Directions and contact numbers of the nearest emergency medical treatment facility will be provided to all applicators.
i. Investigations of herbicide related accidents and receipt of employee suggestions or complaints relating to safety and health issues involving herbicides will be used as a feedback mechanism that can be used to improve the program.
j. Decontamination kits must be readily available, and must include two one-gallon (or more) containers filled with potable water, eyewash kits or eyewash bottles with buffered isotonic eyewash, hand or body soap, paper or other disposable towels, a full Tyvek coverall with foot covers, and a map and directions to the nearest medical facility. Whenever possible, those who apply herbicides shall have access (within 15 minutes travel time or at the nearest vehicle access point, whichever is closest) to an eyewash kit and either a 1) shower or large sink, or 2) emergency decontamination and first aid kits.
k. Treated areas should be closed to public access until they are judged safe for re-entry (or until the herbicide dries or for the minimum period required by the product label, whichever is longer). Posting is not required in most places, but where it is required (usually by local statute), place notices at points of entry or the perimeter of treated areas. Posting notices should include a statement that the area has been or will be treated, name of the herbicide, date of treatment, appropriate precautions to be taken or the date when re-entry is judged to be safe, and a phone number for additional information. Notices should be removed after it is judged safe to re-enter the area.
l. Under the NPDES Permit requirements, the SCDNR is required to maintain records for all herbicide application activities. These records shall include information on site(s), purpose(s), name(s) and amount(s) of product(s) used, name(s) of applicator(s), and licensing requirements for all herbicide applications in the previous 12 months. In addition, a yearly report shall include the same information, with estimates for the upcoming 12 months.

7) Adverse Incident Response

Any incident which results in adverse impacts to fish, wildlife, or non target plant species will be reported to the appropriate contacts as listed in the Section 1 contacts table. Additionally, the causes of the adverse impact will be determined through a scientific assessment to prevent or mitigate future problems.

8) Pesticide Monitoring Requirements

a. While there are no specific pesticide residue monitoring requirements the SCDNR will maintain the following information along with any required monitoring data:
b. Records of equipment maintenance and calibration are to be maintained only by the entity performing the pest application activity (on behalf of self or client).
c. A copy of the NOI submitted to the Department and any correspondence exchanged between you and the Department specific to coverage under this permit;
d. The date on which you knew or reasonably should have known that you would exceed an annual treatment area threshold during any calendar year, as identified in Part 1.2.2;

e. Surveillance method(s) used, date(s) of surveillance activities, and findings of surveillance;
f. Target pest(s);
g. Pest density prior to pesticide application;
h. Company name and contact information for pesticide applicator;
i. Pesticide application date(s);
j. Description of treatment area, including location and size (acres or linear feet) of treatment area and identification of any waters, either by name or by location, to which you discharged any pesticide(s)(a GIS record of the specific area where discharge of herbicide occurs);
k. Name of each pesticide product used including the EPA registration number;
l. Quantity of pesticide applied (and specify if quantities are for the pesticide product as packaged or as formulated and applied);
m. Concentration (%) of active ingredient in formulation;
n. For pesticide applications directly to waters, the effective concentration of active ingredient required for control;
o. Any unusual or unexpected effects identified to non-target organisms;
p. Documentation of any equipment cleaning, calibration, and repair (to be kept by pesticide application equipment operator); and
q. A copy of your PDMP, including any modifications made to the PDMP during the term of this permit.

9) General Specifications
   a. The Contractor and SCDNR shall utilize equipment specifically designed for commercial application of herbicides. Equipment shall be kept in good operating condition at all times and must meet or exceed all safety requirements for this type of work. The equipment must be calibrated to disperse herbicides at the prescribed rate as outlined in the plan and records of said calibration shall be maintained. As a minimum requirement, the equipment shall meet the following conditions:
   b. The Contractor shall have a minimum of two watercraft (airboats) and a skiff with a "mudmotor" capable of traveling through heavily vegetated waterways. The watercraft shall be equipped with depth finders capable of locating vegetation underwater, such as an Eagle Ultra or equivalent make and model. The Contractor shall also have a computerized herbicide delivery spray system which is calibrated and has Global Positioning System capability on each watercraft capable of recording exact positions of all treatments. Such unit shall be capable of creating a file, such as a shape file, which will be capable of being imported into a Geographic Information System program such as ESRI's ArcView or any ArcInfo based software and will provide SCDNR with a copy of such file in a timely manner. All data will become the property of SCDNR. The watercraft shall be capable of operation by one or two persons and shall be set up for underwater injection, handgun application, or granular broadcast application. A helicopter contract or access must also be available to the Contractor for performing aerial application of herbicides as needed at specified sites when needed.

c. SCDNR reserves the right to inspect and approve all equipment to be utilized prior to the award. Non-conformance of equipment to SCDNR standards shall be reason for rejection of daily work.
d. Regulations and Standards:
e. The work shall comply with all laws, ordinances, and regulations of all legally constituted authorities that have jurisdiction over any part of this work. These requirements supplement these specifications and shall take precedence in case of conflict.
f. All work shall be performed and completed in a thoroughly workman like manner in accordance with best modern practices and any permit requirements, regardless of any omissions from the attached specifications and/or drawings.

10) Qualifications

a. The Contractor must have a minimum of five years of professional experience in the area of chemical aquatic weed control on large public waterbodies.
b. All persons applying chemicals must be certified by the Clemson University Department of Pesticide Regulation in Category 5 (Aquatic Pest Control) or must work under the direct supervision of a person so tested and present on the spray boat.
c. All persons applying chemicals must be capable of identifying target plants in the field.
d. The Contractor must maintain liability insurance coverage of at least Five Million Dollars ($5,000,000) to fulfill requirements of PART II.A.12.

## APPENDIX C

## Enabling Legislation

South Carolina Code of Laws Section 49-6-10/40

Title 49 – Waters, Water Resources and Drainage

CHAPTER AQUATIC PLANT MANAGEMENT

SECTION 49-6- Purpose; administering agency.
There is hereby created the South Carolina Aquatic Plant Management Program for the purpose of preventing, identifying, investigating, managing, and monitoring aquatic plant problems in public waters of South Carolina The program will coordinate the receipt and distribution of available federal, state, and local funds for aquatic plant management activities and research in public waters.

The Department of Natural Resources (department) is designated as the state agency to administer the Aquatic Plant Management Program and to apply for and receive grants and loans from the federal government or such other public and private sources as may be available for the Aquatic Plant Management Program and to coordinate the expenditure of such funds.

SECTION 49-6-20. Aquatic Plant Management Trust Fund.
There is created the South Carolina Aquatic Plant Management Trust Fund which must be kept separate from other funds of the State. The fund must be administered by the department for the purpose of receiving and expending funds for the prevention, management, and research of aquatic plant problems in public waters of South Carolina Unexpended balances, including interest derived from the fund, must be carried forward each year and used for the purposes specified above. The fund shall be subject to annual audit by the Office of the State Auditor.

The fund is eligible to receive appropriations of state general funds, federal funds, local government funds, and funds from private entities including donations, grants, loans, gifts, bond issues, receipts, securities, and other monetary instruments of value. All reimbursements for monies expended from this fund must be deposited in this fund.

SECTION 49-6-30. Aquatic Plant Management Council; membership; duties.
There is hereby established the South Carolina Aquatic Plant Management Council, hereinafter referred to as the council, which shall be composed of ten members as follows:

The council shall include one representative from each of the following agencies, to be appointed by the chief executive officer of each agency:

(a) Water Resources Division of the Department of Natural Resources;

(b) South Carolina Department of Health and Environmental Control;

(c) Wildlife and Freshwater Fish Division of the Department of Natural Resources;

(d) South Carolina Department of Agriculture;

(e) Coastal Division of the Department of Health and Environmental Control;

(f) South Carolina Public Service Authority;

(g) Land Resources and Conservation Districts Division of the Department of Natural Resources;

(h) South Carolina Department of Parks, Recreation and Tourism;

(i) Clemson University, Department of Fertilizer and Pesticide Control.

The council shall include one representative from the Governor's Office, to be appointed by the Governor.

The representative of the Water Resources Division of the Department of Natural Resources shall serve as chairman of the council and shall be a voting member of the council.

The council shall provide interagency coordination and serve as the principal advisory body to the department on all aspects of aquatic plant management and research. The council shall establish management policies, approve all management plans, and advise the department on research priorities.

SECTION 49-6-40. Aquatic Plant Management Plan.
The department, with advice and assistance from the council, shall develop an Aquatic Plant Management Plan for the State of South Carolina The plan shall describe the procedures for problem site identification and analysis, selection of control methods, operational program development, and implementation of operational strategies. The plan shall also identify problem areas, prescribe management practices, and set management priorities. The plan shall be updated and amended at appropriate intervals as necessary; provided, however, problem site identification and allocation of funding shall be conducted annually. In addition, the department shall establish procedures for public input into the plan and its amendments and priorities. The public review procedures shall be an integral part of the plan development process. When deemed appropriate, the department may seek the advice and counsel of persons and organizations from the private, public, or academic sectors.

The council shall review and approve all plans and amendments. Approval shall consist of a two-thirds vote of the members present. The department shall have final approval authority over those sections which do not receive two-thirds approval of the council.

Some of the Specific State Laws which pertain to Illegal, Noxious, or Nuisance Species:

Title 46, Chapter 9 - State Crop Pest Act
The State Crop Pest Commission is authorized by law (Section 46-9-40) to promulgate and enforce reasonable regulations to eradicate or prevent the introduction, spread or dissemination of plant pests. Plant pests are by definition (Section 46-9-15(5)) any living state of insects, mites, nematodes, slugs, animals, protozoa, snails or other invertebrate animals, bacteria, weeds, fungi, other parasitic plants...which directly or indirectly may injure or cause disease or damage in plants...and which may be a serious agricultural threat to the State, as determined by the Director.

The State Crop Pest Commission is responsible for control of plant pests which constitute a threat to production agriculture. In so doing, the Commission is the primary contact point for cooperation with the Animal and Plant Health Inspection Service (APHIS), U. S. Department of Agriculture.

The Commission has designated certain organisms as plant pests. These organisms are already designated as noxious weeds by state and/or federal authorities or are under domestic federal

quarantine. Once a plant pest has been designated, the Commission has the authority to impose control measures, up to and including, quarantine of the premises. However, the Director, as the Commission's designee, retains the discretion to determine that a plant pest has become so widespread that further control measures are not warranted.

Title 46, Chapter 23 - South Carolina Noxious Weed Act
Provides far reaching powers to seize, quarantine, treat, destroy, apply other remedial measures, to export, return to shipping point, or otherwise dispose of in such a manner as (it) deems appropriate, any noxious weed or any product or article of any character whatsoever or any means of conveyance which (it) has reason to believe contains or is contaminated with any noxious weed, offered for movement, moving, or has moved into or through the state or intrastate. To further deter persons from spreading nuisance aquatic weeds the law includes fines not exceeding $500 and/or imprisonment not exceeding one year.

SECTION 50-13-1415 -Importation, possession, or placing water hyacinth and hydrilla in waters of the state.
No person shall possess, sell, offer for sale, import, bring, or cause to be brought or imported into this State, or release or place into any waters of this State any of the following plants:
(1) Water Hyacinth
(2) Hydrilla
Provided, however, that the department may issue special import permits to qualified persons for research purposes only.
The department shall prescribe the methods, control, and restrictions which are to be adhered to by any person or his agent to whom a special permit under the provisions of this section is issued. The department is authorized to promulgate such regulations as may be necessary to effectuate the provisions of this section and the department, by regulation, is specifically authorized to prohibit additional species of plants from being imported, possessed, or sold in this State when, in the discretion of the department, such species of plants are potentially dangerous.

SECTION 50-13-1630. Importing, possessing or selling certain fish unlawful; special permits for research; Department shall issue rules and regulations.

(A) A person may not possess, sell, offer for sale, import, bring, or cause to be brought or imported into this State or release into the waters of this State the following fish or eggs of the fish:

(1) carnero or candiru catfish (*Vandellia cirrhosa*);
(2) freshwater electric eel (*Electrophorus electricus*);
(3) white amur or grass carp (*Ctenopharyngodon idella*);
(4) walking catfish or a member of the Clariidae family (*Clarias, Heteropneustea, Gymnallabes, Channallabes,* or *Heterobranchus* genera); (5) piranha (all members of *Serrasalmus, Rooseveltiella*, and *Pygocentrus* genera);
(6) stickleback;
(7) Mexican banded tetra;
(8) sea lamprey;

(9) rudd (*Scardinius erythrophtalmu*-Linneaus); and
(10) snakehead (all members of family Channidae).

(B) The department may issue special import permits to qualified persons for research and education only.

(C) (1) The department may issue special permits for the stocking of sterile white amur or grass carp hybrids in the waters of this State. The special permits must certify that the permitee's white amur or grass carp hybrids have been tested and determined to be sterile. The department may charge a fee of one dollar for each white amur or grass carp hybrid that measures five inches or longer or twenty-five cents for each white amur or grass carp hybrid that measures less than five inches. The fee collected for sterility testing must be retained by the department and used to offset the costs of the testing.

(2) The department is authorized to promulgate regulations to establish a fee schedule to replace the fee schedule contained in item (1) of this subsection. Upon these regulations taking effect, the fee schedule contained in item (1) of this subsection no longer applies.

(D) The department may issue special permits for the importation, breeding, and possession of nonsterile white amur or grass carp hybrids. The permits must be issued pursuant to the requirements contained in Chapter 18 of this title. Provided, however, that no white amur or grass carp hybrids imported, bred, or possessed pursuant to a special permit issued pursuant to this section may be stocked in the waters of this State except as provided in subsection (C) of this section.

(E) It is unlawful to take grass carp from waters stocked as permitted by this section. Grass carp caught must be returned to the water from which it was taken immediately.

(F) The department must prescribe the qualifications, methods, controls, and restrictions required of a person or his agent to whom a special permit is issued. The department must condition all permits issued under this section to safeguard public safety and welfare and prevent the introduction into the wild or release of nonnative species of fish or other organisms into the waters of this State. The department may promulgate regulations necessary to effectuate this section and specifically to prohibit additional species of fish from being imported, possessed, or sold in this State when the department determines the species of fish are potentially dangerous.

## APPENDIX D

## Aquatic Plant Problem Identification Form

## Aquatic Plant Problem Site Identification Form

Name and location of affected water body

_____

GPS Location (LAT/LONG or UTM. specify projection)

_____

Public or private water

_____

Name of problem plant (if known)

_____

Does the plant grow above or below the surface of the water?

_____

Approximate area of water covered by the problem plant

_____

Type of water use(s) affected by the plant

_____

Length of time problem has existed

_____

Plant control methods that have been used

_____

Contact for additional information: _____

Name _____

Address _____

Phone _____

Please Return To: Aquatic Nuisance Species Program

S.C. Department of Natural Resources
2730 Fish Hatchery Road
West Columbia, South Carolina 29170
(803) 755-2836 email: invasiveweeds@dnr.sc.gov

** *Please include a sample of the plant, if possible, or a detailed digital image. Wrap the plant in a moist towel and place in a "baggie". The sample or photo should include flowers, if visible, along with leaf structure and stem*. A photo or drawing of the affected area with an approximate acreage should also accompany this form.

## APPENDIX E

## Aquatic Plant Control Agents

# Aquatic Plant Control Agents

Listed below are the major aquatic plant control agents which are currently available for use in South Carolina While the list is not all inclusive, it does contain those agents considered most useful for aquatic plant management. Costs for the agents are approximations and will vary somewhat depending on the source and amount purchased. Application costs are approximations of commercial applicator rates.

**I. Chemical Control**

**A. Diquat (Reward, Tribune, Solera)**

Target Plants

Submersed species - Bladderwort, coontail, elodea, naiad, pondweeds, watermilfoil, and hydrilla. Floating species - Pennywort, Salvinia, water hyacinth, water lettuce, and duckweed.

Application Rate

Submersed species - One to two gallons per surface acre. Floating species - One half to one gallon per surface acre, depending on target species.

Cost -Diquat costs approximately $99 per gallon. Assuming an application rate of two gallons per acre and an application cost of $41 per acre, the total cost would be $239 per acre per application for submersed species. The treatment cost for floating species at one-half gallon per acre rate would be $90 per acre.

Use Considerations -Diquat is not toxic to fish or wildlife at normal use concentrations. It is non-volatile and nonflammable, but can cause irritation to eyes and skin upon contact. Its effectiveness is greatly reduced at temperatures below 50-60°F, by overcast conditions, and by turbid waters.

Water Use Restrictions - Water treated with Diquat cannot be used for drinking for up to 3 days, livestock consumption for one day, irrigation of food crops for 5 days, and irrigation of turf and ornamentals for up to 3 days depending on application rate or until approved analysis indicates that diquat ion concentrations are less than 0.02 ppm. There are no fishing or swimming restrictions. Do not apply this product within 1600 feet upstream of an operating water intake in flowing water bodies (rivers, streams, canals) or within 400 feet of an operating water intake in standing water bodies (lakes, reservoirs). To make applications within these restricted areas, the intake must be turned off for the time periods specified on the Federal label for the appropriate use category (Drinking, Livestock consumption, Irrigation) or until the treated area contains less than 0.02 ppm of diquat dibromide.

**B. 2,4-D (Aqua-Kleen, Navigate, Hardball, Sinkerball, Renovate Max G)**

Target Plants

Emergent species - Broadleaf species such as water primrose, waterlily, spatterdock, watershield, smartweed, pondweeds, and floating heart. Submersed species - Watermilfoil, bladderwort, and coontail. Floating species - Water hyacinth.

Application Rate

Granular form (2,4-D BEE) - 150 to 200 pounds per acre depending on target species. Liquid form - (2,4-D DMA) - 5 gallons per acre.

Cost

The granular form of 2,4-D costs about $36 per pound. Assuming an application rate of 200 pounds per acre and an application cost of $47 per acre, the total cost would be $519 per application. The liquid form of 2,4-D costs approximately $31 per gallon. Assuming an application rate of 5 gallons per acre and an application cost of $41 per acre, the total cost would be $196 per application

Use Considerations - The recommended formulations of 2,4-D are not toxic to fish or wildlife at normal use concentrations. This chemical is nonflammable and noncorrosive.

Water use Restrictions - Do not apply to waters used for irrigation, agricultural sprays, watering dairy animals, or domestic water supplies.

**C. Chelated Copper (Cutrine Plus, Clearigate, Komeen, K-TEA, Nautique, Captain, Natrix)**

Target Plants

Algae - Cutrine Plus, K-TEA, Captain

Submersed species (Hydrilla, Brazilian elodea, pondweed and southern naiad) - Komeen, Nautique, Cutrine Plus, Clearigate, and Captain

Application Rate

Algae - Treatment concentration of 0.2-0.5 parts per million of copper. Submersed species - 0 part per million of copper (12-16 gallons per acre) or mix two gallons of copper complex and two gallons of Diquat per acre.

Cost - Copper products cost about $17 per gallon. Assuming an application rate of 16 gallons per acre and an application cost of $41 per acre, the total cost would be $313 per acre.

Use Considerations - Copper may be toxic to fish and aquatic invertebrates at recommended application rates, especially in soft water. Copper-based product should be carefully applied and monitored to minimize the risk of fish kills.

Water Use Restrictions - Copper complexes may be used in domestic and irrigation water supplies without water use restrictions.

**D. Endothall - (Aquathol, Aquathol K, Aquathol Super K granular, Hydrothol 191granular and liquid)**

Target Plants

Aquathol products are effective for submersed species such as naiads, bladderwort, coontail, watermilfoil, pondweed, hydrilla, and cabomba

Hydrothol 191 is effective on the species listed above as well as filamentous and macrophytic algae.

Application Rate

Aquathol

Liquid form (Aquathol K) - three gallons or more per acre depending on the target species. Granular form - Aquathol: 54-323 pounds per acre depending on water depth and the target species.

Aquathol Super K: 22-66 pounds per acre depending on the water depth and the target species.

Hydrothol 191

Heavy Infestations - Evenly spread 160 - 270 pounds per acre foot of water (0 - 0 ppm) applied evenly. Moderate or light infestations - Use 55 - 110 pounds per acre foot (0 - 0 ppm) applied evenly.

Cost

Aquathol

Aquathol K costs approximately $57 per gallon. Assuming an application rate of 5 gallons per acre and an application cost of $41 per acre, the total cost would be $326 per acre. Aquathol Super K costs about $15 per pound at an application rate of 30 pounds per acre and an application cost of $47 per acre, the total cost would be $510 per acre.

Hydrothol 191

Hydrothol 191 costs approximately $64 per gallon. Assuming an application rate of 7gallons per acre and an application cost of $41, the total cost would be $492 per acre.

Hydrothol 191 granular costs approximately $78 per pound. Assuming an application rate of 240 pounds per acre and an application cost of $47, the total cost would be $714 per acre.

Use Considerations - Concentrated endothall formulations are toxic to man if ingested or absorbed through the skin. They are also irritating to the skin and eyes. Avoid contact with or drift to other crops or plants as injury may result. Generally not toxic to fish at normal use concentrations, however, fish may be killed by dosages of Hydrothol 191 in excess of 0.3 ppm.

Water Use Restrictions - Water treated with endothall cannot be used for watering livestock, preparing agricultural sprays for food crops, for irrigation or domestic purposes for 7 to 25 days after treatment (depending on treatment concentration) or until such time that the water does not contain more than 0.2 ppm of endothall. Do not use fish from treated areas for feed or food for three days after treatment.

**E. Glyphosate (Rodeo, Aquastar, Touchdown Pro, Glypro)**

Target Plants - Emergent broadleaf plants and grasses such as alligatorweed, water primrose, smartweed, and Phragmites.

Application Rate - Up to 7 1/2 pints per acre, the specific rate depending on the target species.

Cost - Glyphosate products range in price from $21-$39 per gallon. At an application rate of 5 pints per acre and an application cost of $41 per acre, the total would range from $63-$78 per acre per application.

Use Considerations - Glyphosate is not toxic to mammals, birds or fish at recommended use concentrations. Glyphosate products with aquatic labels can be used in and around aquatic sites, including all bodies of fresh and brackish water which may be flowing or nonflowing.

Water Use Restrictions - Do not apply within 0.5 miles upstream of potable water intakes unless water intake is shut off for 48 hours. There are no restrictions on water use for irrigation or recreation after treatment.

**F. Flumioxazin (Clipper)**

Target Plants – Duckweed, water meal, water lettuce, frog’s-bit, water fern, alligatorweed

Application Rate - Up to 12 ounces of formulated product per acre, on surface applications or 200 - 400 ppb for subsurface treatment.

Cost - Flumioxazin products range in price from $120-140 per pound. At an application rate of 12 ounces per acre and an application cost of $41 per acre, the total would range from $131-$146 per acre per application.

Use Considerations - Flumioxazin is not toxic to mammals, birds or fish at recommended use concentrations. Flumioxazin products with aquatic labels can be used in and around aquatic sites, including all bodies of fresh and brackish water which may be flowing or nonflowing.

Water Use Restrictions There are no restrictions on potable water use or recreation after treatment. Treated water may not be used for irrigation purposes on food crops until at least five (5) days after application. Do not use in water utilized for crawfish farming. Do not re-treat the same section of water with *Clipper* Herbicide more than 6 times per year. Do not exceed 400 ppb of *Clipper H*erbicide during any one application. On surface spray applications of less than 3 feet of depth there is a 12 hour restriction for irrigation of turf and landscape ornamentals and a restriction of subsurface treatment applications of 1 to 3 days depending on the concentration used. There is also a 5 day restriction for ornamentals grown for production in greenhouses and nurseries for both surface and subsurface application.

**G. Fluridone (Sonar, Avast)**

Target Plants - Primarily submersed plants, such as hydrilla, Brazilian elodea, watermilfoil, pondweeds, duckweeds and naiads; also effective on lilies and some grasses.

Application Rate Liquid form (Sonar AS, Avast) - 1-4 pints per acre depending on water depth. Pellet forms (Sonar PR, Sonar SRP, Avast SRG) - 15 to 80 pounds per acre depending on water depth.

Cost - The liquid formulation ranges from $1468-$1650 per gallon. Assuming an application rate of 5 pints per acre (2 pounds active ingredient per acre) and an application cost of $40 per acre, the total cost would be $349 per acre per application. The pellet formulations range in price from $200-$200 per pound. Assuming an application rate of 20 pounds per acre (2 pounds active ingredient per acre) and an application cost of $47 per acre, the total cost would be $567 per acre per application.

Use Considerations - In large lakes and reservoirs fluridone should be applied to areas greater than five acres. This herbicide requires a long contact time and is not effective in sites with significant water movement or rapid dilution. Fluridone is slow acting and may require 30 to 90 days to achieve desired control under optimal conditions. Unlike other aquatic herbicides, fluridone has proven effective in inhibiting viable hydrilla tuber production.

Water Use Restrictions - Do not apply within 1/4 mile of a functioning potable water intake unless concentrations are less than 20 ppm. Water treated with fluridone cannot be used for irrigation for 7-30 days depending on target crop.

**H. Imazapyr (Habitat)**

Target Plants - Phragmites, Alligatorweed, Water primrose, and Cutgrass.

Application Rate - 1 to 6 pints per acre depending on target species.

Cost - Habitat (Imazapyr) costs $245 per gallon. Assuming the application rate of 16 oz. per acre and an application cost of $41 per acre, the total cost would be $78 per acre.

Use Considerations - Applications to public waters can only be made by federal, state, or local agencies or those applicators which are licensed or certified as aquatic pest control applicators and are authorized by state or local agencies. Do not use in close proximity to hardwoods.

Water Use Restrictions - Do not apply within ½ mile of potable water intakes. For applications within ½ mile of a potable water intake, the intake must be turned off for a minimum of 48 hours. Do not apply within 1 mile of active irrigation intakes on still or slow moving waters. Irrigation water usage may be continued 120 days after application or when Habitat (Imazapyr) residue levels are determined by laboratory analysis to be 0 ppb or less.

Aerial Applications may only be made by helicopter.

**I. Imazamox (Clearcast)**

Target Plants - Phragmites, Alligatorweed, Water primrose, and Cutgrass.

Application Rate - 1 to 6 pints per acre depending on target species.

Cost -Clearcast (Imazamox) costs $175 per gallon. Assuming the application rate of 16 oz. per acre and an application cost of $41 per acre, the total cost would be $63 per acre.

Use Considerations - Applications to public waters can only be made by federal, state, or local agencies or those applicators which are licensed or certified as aquatic pest control applicators and are authorized by state or local agencies. Can be used in close proximity to hardwoods

Water Use Restrictions - Do not apply within ½ mile of potable water intakes. For applications within ½ mile of a potable water intake, the intake must be turned off for a minimum of 48 hours. Do not apply within 1 mile of active irrigation intakes on still or slow moving waters. Irrigation water usage may be continued 120 days after application or when Habitat (Imazapyr) residue levels are determined by laboratory analysis to be 0 ppb or less.

Aerial Applications may only be made by helicopter.

**J. Triclopyr (Renovate 3, Tahoe)**

Target Plants - Alligatorweed, Eurasian watermilfoil, water hyacinth, parrotfeather, and water primrose.

Application Rate - 2-8 qts. per acre depending on target species.

Cost - Triclopyr products cost $96 per gallon. Assuming the application rate of 2 qts per acre and an application cost of $41 per acre, the total cost would be $89 per acre.

Use Considerations - Triclopyr is not toxic to fish or wildlife at normal use concentrations. It can cause severe irritation to eyes and skin upon contact. It is suggested that it is used in a manner to reduce the possibility of drift. The proper personal protective equipment should be used as prescribed by the Federal label.

Water Use Restrictions - For floating and emergent applications do not apply within 200 feet of operating potable water intakes when using 4 - 8 qts. per acre. There are no setback restrictions for potable water intakes when 2 qts. per acre or less is applied to emergent vegetation. To make applications within these restricted areas, follow the label directions. There are no restrictions on the use of treated water for recreational purposes or for livestock consumption.

**K. Penoxsulam (Galleon SC)**

Target Plants

Submersed species – Hydrilla, Cabomba, Egeria, Eurasian watermilfoil

Floating species – Floating species – Water hyacinth, Water lettuce, Water fern, Duckweed, Frog's bit, Mosquito fern

Application Rates

0.174 fl oz per acre foot to achieve minimum effective concentration of 25 – 75 ppb.

Floating species – 2- 6 fl oz per acre as foliar application.

Cost – Penoxsulam costs approximately$1650 per gallon. Assuming an application rate of 11 fl oz per acre and an application cost of $41 per acre, total cost would be $183 per acre for submersed plants. Assuming an application rate of 6 fl oz per acre, and an application cost of $41 per acre, total cost would be $113 per acre for emergent plants.

Use considerations – Penoxsulam has no potable water restrictions or irrigation restrictions except for irrigation of food crops. It must have prolonged contact times similar to fluridone (>21 days).

Water Use Restrictions - Food crop irrigation waters cannot be used if penoxsulam concentrations are above 1ppb

**II. Biological Control**

Alligatorweed Flea Beetle (Agasicles hygrophila)

Target Plant - Alligatorweed

Stocking Rate - 600-1,000 per acre.

Cost - The U.S. Army Corps of Engineers office in Palatka, Florida will provide lots of 6,000 flea beetles for the cost of shipping which is about $50 per shipment. Flea beetles may also be obtained from the U.S. Department of Agriculture.

Use Considerations - Flea beetles feed only on alligatorweed and pose no threat to desirable plant species. They produce no adverse impact on the aquatic environment. As with all biological control agents, flea beetles may not remain in the area where stocked but may migrate to other areas of alligatorweed infestation. These insects are not able to survive severe winters and may require occasional restocking. The effectiveness of these insects may be enhanced by use with an aquatic herbicide such as 2, 4-D, or Rodeo.

Alligatorweed Stem Borer Moth (*Vogtia malloi*)

Target Plant - Alligatorweed

Cost - Approximately the same as for flea beetle.

Use Considerations - Same as for flea beetle.

Alligatorweed Thrip (*Amynothrips andersonii*) - This insect feeds on alligatorweed and has been stocked in South Carolina It has failed to become established in the State and is considered less desirable than flea beetles or stem borers for control of alligatorweed.

D. Triploid White Amur or grass carp (*Ctenopharygodon idella*)

Target Plant - Primarily submersed plants including Brazilian elodea, hydrilla, bladderwort, coontail, naiads, pondweeds.

Cost - Triploid white amur cost $4 to $7 each. At a stocking rate of 15 to 25 fish per vegetated acre, the total cost could range from $60 to $175 per acre.

Use Considerations - Only the triploid (sterile) white amur may be stocked in South Carolina for aquatic weed control. Introduction and stocking of this fish is regulated by the S.C. Department of Natural Resources and requires a permit. Escapement over some dams may occur during high flow periods. Use of barriers in some lakes should prevent fish loss. While grass carp are effective on a wide variety of submersed plants, they generally do not provide effective control of watermilfoil species. Plants should be carefully identified prior to stocking to ensure proper stocking rates and potential efficacy.

E. Tilapia (Tilapia sp.) - Several species of this herbivorous fish have been used to control filamentous algae and submersed macrophytes. Tilapia cannot overwinter in South Carolina Introduction of fish is regulated by the S.C. Department of Natural Resources.

**III. Mechanical Control**

Harvesters, Cutters, Dredges and Draglines

Target Plants - All species

Cost - Harvesters range in cost from $5,000 to over $150,000 for the initial investment. Operating cost range from $300 to $700 per acre.

Use Consideration - Harvesters can be used in irrigation and drinking water supplies without water use restrictions. They may actually spread some plants such as Brazilian elodea and hydrilla by dispersing plant fragments which form new colonies. Harvesting requires the availability of a land disposal site for harvested plants. These devices cannot be used on water bodies which have debris and obstructions which interfere with operation. Harvesters are slow, with a maximum coverage of about five acres per day.

Fiberglass Bottom Screens

Target Plants - All species which root in the bottom.

Cost $10,000 per acre.

Use Considerations - Bottom screens may be detrimental to bottom-dwelling aquatic organisms. Due to high cost, use is usually restricted to beaches and other swimming areas where a relatively small area of control is required.

**IV. Environmental Alterations**

Water Level Manipulation - Some species of aquatic plants can be controlled by a periodic raising or lowering of water level. Shoreline grasses, cattails, and Phragmites can be controlled, to some extent, by maintaining higher than normal water levels during the plant growing season. Periodic lowering of water and drying of the bottom can reduce abundance of a number of submersed and emersed species. Disadvantages are that water level fluctuation can adversely affect water uses such as recreation, hydroelectric power production, wildlife protection, and others. Also, some plant species may actually be favored by water level variations. Many factors must be considered before using this method for aquatic plant control.

Reduction in Sedimentation and Nutrient Loading - Sedimentation decreases depth of the water body and increased the area where aquatic plants can grow. Nutrient enrichment resulting from man's activities usually does not create aquatic plant problems, but does contribute to existing problems. Reduction in these two environmental factors can assist in aquatic plant management,

but is not a sufficient control method by itself. The mechanism for control of these factors is through implementation of Best Management Practices for Control of Non-Point Source Pollution developed by the S.C. Department of Health and Environmental Control, and through the wastewater discharge permitting program (NPDES) also administered by the S.C. Department of Health and Environmental Control.

**APPENDIX F**

**SCDNR and Santee Cooper**
**Aquatic Plant and Habitat Management Goals for the Santee Cooper Lakes**

S.C. Department of Natural Resources and Santee Cooper Aquatic Plant and Habitat Management Goals for the Santee Cooper Lakes

# MEMORANDUM OF AGREEMENT

## BETWEEN SANTEE COOPER AND SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES

## REGARDING AQUATIC PLANT AND HABITAT MANAGEMENT GOALS FOR THE SANTEE COOPER LAKES

This AGREEMENT (hereinafter "Agreement") is between Santee Cooper (hereinafter "S-C") and the South Carolina Department of Natural Resources (hereinafter "DNR"). This Agreement is effective on the date of the last signatory to the Agreement.

WHEREAS, S-C and DNR recognize Lakes Marion and Moultrie (hereinafter "Lakes") as a significant natural resource of the State of South Carolina, and

WHEREAS, in order to provide balanced benefits to natural resources and the multiple uses of the Lakes, DNR and S-C (hereinafter "Parties") agree to cooperate in the management of aquatic vegetation and the habitat that it provides, and

WHEREAS, the Parties' goal is to maintain, at a minimum, 10% of the surface area of the Lakes as beneficial vegetated habitat for waterfowl, wildlife, fish and other aquatic organisms,

THEREFORE, in order to achieve this goal, the Parties agree to the following:

The aquatic plant management goal for the Lakes is to achieve a diverse assemblage of native aquatic vegetation in and on, at a minimum, 10% of the total surface area of the Lakes and to effectively control non-native invasive species. The aquatic plant coverage should include a combination of submerse, floating leaf, and emergent plant species that provide habitat and food to game and non-game fish and wildlife species. The goal would be for this vegetation to be distributed throughout the Lakes.

11) S-C will annually monitor the vegetative community and extent of coverage. This monitoring may include aerial photography, visual surveys, hydro-acoustic transects and other appropriate measures as deemed necessary by the Parties in the annual work plan, in order to map plant species and coverage. An annual report of the monitoring results will be completed at the end of each growing season and provided to the Parties prior to preparation of the work plan for the following year.
12) The Parties will cooperate in monitoring the health of the fishery and in monitoring of wintering waterfowl populations. Wintering waterfowl population monitoring may consist of aerial or other census techniques as deemed appropriate by the Parties. When waterfowl census is utilized, DNR will provide personnel and prepare an annual report to be distributed to both agencies, and S-C will provide the flight time.
13) Sterile grass carp will continue to be a major component of the long-term management strategy in controlling hydrilla *(Hydrilla verticillata).* The Parties will meet at least annually to review the monitoring data and to develop recommendations for maintenance stocking levels and other control strategies. These recommendations will be jointly presented to the South Carolina

Aquatic Plant management Council (hereinafter "Council"). The implementation of these recommendations will be subject to approval by the Council.

14) Aquatic vegetation will not be controlled in Santee Cooper Project water bodies that are totally isolated from the Lakes unless it conflicts with specific water uses or is identified as a state or federal noxious weed and poses a threat to the Lakes.
15) Localized aquatic vegetation control using approved chemical or mechanical methods may be necessary in areas where vegetation interferes with hydroelectric power production or other legitimate uses of the Lakes regardless of plant coverage and distribution.
16) In order to enhance native plant growth and habitat throughout the lake system, the Parties will cooperate in implementing innovative management techniques. These techniques could include such measures as, introducing desirable native plant species, enhancing wildlife/waterfowl management areas, and implementing strategic lake level management measures.
17) The Parties will meet annually to review the results of monitoring and treatment programs to determine the effectiveness of the programs, and to develop annual work plans.
18) Every five years the Parties will meet to conduct a comprehensive review of the programs and to determine the success in meeting the overall management goals. Based upon this review, the provisions of this agreement may be modified, as deemed appropriate, by the mutual consent of the Parties.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the date hereof.

SANTEE COOPER

By: R.M. Singletary, III

Date: 2/3/2010

SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES

By: John Frampton

Date: 2-22-10

**APPENDIX G**

**Summary of Aquatic Plant Control Expenditures - NOTE: The table for 2014 needs revision based on incomplete data compilation which is not yet available**

**SUMMARY OF AQUATIC PLANT CONTROL EXPENDITURES –** (1981 THROUGH CURRENT)

During 1981, the Council received $60,000 in Federal matching funds through the U.S. Army Corps of Engineers. The Council allocated $57,000 of these funds to the S.C. Public Service Authority for plant management at Lake Marion. The Authority used these funds to chemically treat approximately 500 acres of the area uplake of the Rimini railroad trestle. The herbicide diquat was used to treat for Brazilian elodea and other submersed weed species. The remainder of the Federal funds were used to assist in development of the Council's management program.

During 1982, $30,000 in Federal funds were allocated to the S.C. Public Service Authority for control of hydrilla and other nuisance plants at Lake Marion. An additional $13,500 was allocated to Berkeley County for control of water hyacinths at Goose Creek Reservoir.

During 1983, $155,000 in Federal matching funds were allocated to the S.C. Public Service Authority for plant control at Lake Marion. These funds were used to treat approximately 1,400 acres of upper Lake Marion with diquat, endothall and fluridone for control of Brazilian elodea, hydrilla and other submersed plants. The Council also provided $4,500 in Federal matching funds to Berkeley County for maintenance control of water hyacinths at Goose Creek Reservoir.

During 1984, $249,500 in Federal funds and $40,500 in State funds were allocated to the S.C. Public Service Authority for aquatic weed control at Lake Marion. The S.C. Electric and Gas Company was allocated $25,000 for control of hydrilla and other submersed aquatic weeds at Back River Reservoir. Berkeley County was allocated $5,000 for maintenance control of water hyacinth at Goose Creek Reservoir.

Calendar year 1985 represented the first year of significant funding for aquatic plant management in South Carolina since the establishment of the Aquatic Plant Management Program in 1980. Funding was available from State and Federal sources over separate fiscal years. A total expenditure of $701,349 was used to control nuisance aquatic plant populations on 29 water bodies around the State. Of this expenditure, $98,377 was used for biological control by triploid grass carp and $602,972 was used for chemical control operations.

During 1986, a mild winter coupled with low lake levels and clear water due to a severe drought resulted in an abundance of submersed aquatic plants. Hydrilla populations in Lake Marion and Back River Reservoir increased in coverage and new populations were discovered in the Cooper River ricefields. A total of 38 water bodies (4,925 acres) were managed for aquatic weeds at a cost of $704,090. Herbicide applications were made on 33 lakes (4,441 acres) at a cost of $673,979. Biological controls were implemented on nine water bodies around the State at a cost of $30,111.

During 1987, a total of $604,695 in State and Federal funds were expended for aquatic weed control in public waters. Chemical control work amounting to $599,445 was conducted in 26 public water bodies. Biological control, including stocking triploid grass carp and alligatorweed flea beetles, was conducted at eight water bodies for a total expenditure of $5,250.

During 1988, a total of $631,164 in State, Federal, and local funds were expended for aquatic plant control activities in 25 water bodies. Because of reductions in the amount of Federal match from 70

percent to 50 percent of total control cost, local sponsors were for the first time required to provide at least 15 percent of control costs. Approved aquatic herbicides were applied to 3,258 acres on 21 water bodies at a total cost of $583,764. Biological controls were implemented on four water bodies at a cost of $47,400.

During 1989, a total of $827,630 in Federal, State, and local funds were expended for aquatic plant control operations in 23 water bodies. Aquatic herbicides were applied to 2620 acres on 21 water bodies at a cost of $422,009. A three year triploid grass carp stocking project was initiated on Lake Marion with the release of 100,000 sterile grass carp. Because this represents the largest such stocking in the country to date, biological control expenditures were substantially higher than in previous years, totaling $405,621.

During 1990, a total of $944,194 were expended for aquatic plant control activities on 24 water bodies. Herbicide treatments were made to all water bodies (2850 acres) at a cost of $524,194. Lake Marion received its second installment of 100,000 triploid grass carp at a cost of $420,000. Because of limited federal funds and a substantial increase in local funds (primarily from Santee Cooper), this was the first year that there were insufficient federal funds available to match all planned control operations. The Corps of Engineers provided 47 percent of total funding, while state and local entities provided 16 percent and 37 percent, respectively.

In 1991, aquatic plant management operations were conducted on 18 public water bodies at a total cost of $1,965,387. The exceptionally large expenditure was a result of emergency control operations to alleviate blockage of the St. Stephen Hydroelectric facility on Lake Moultrie by hydrilla A record high 6838 acres was treated with aquatic herbicides at a cost of $1,505,771. Biological control agents were used on five lakes at a cost of $459,615. Most of this included the third stocking of triploid grass carp in upper Lake Marion. While 50 percent of program funding was provided by the U.S. Army Corps of Engineers, 9 percent was provided by the State and 41 percent by local entities.

In 1992, 22 water bodies received control operations at a total cost of $1,859,709. While last year's expenditures were higher, over 1,000 acres were treated by Santee Cooper at a cost of over $200,000 but were not cost shared through the State program. Fifty percent of funding was provided by the U.S. Army Corps of Engineers, 8 percent by the State, and 42 percent by local entities. About 6,888 acres were treated with aquatic herbicide at a cost of $1,447,864. Biological control agents (sterile grass carp and Tilapia) were introduced to six water bodies at a cost of $411,845. This was the first year in which widespread hydrilla control was evident in upper Lake Marion from the grass carp. Hydrilla was controlled in over 6,500 acres in Stumphole, Low Falls, Elliotts Flats, and tree line areas. Compared to 1990 coverage, this represents an 80 percent reduction.

During 1993, a total of $2,050,736 were expended for aquatic plant control activities on 27 water bodies. Forty-six percent of the funding was provided by the U.S. Army Corps of Engineers, 5 percent by the Department of Natural Resources, and 49 percent by various local sponsors. Aquatic herbicide treatments were made on 23 water bodies (8,125 acres) at a total cost of $1,828,335. Biological control agents (grass carp and tilapia) were used on 11 lakes at a cost of $222,400. Grass

carp stocked in upper Lake Marion in 1989-92 provided control (over 9,000 acres) for the second consecutive year. As a result of this success, stocking efforts were initiated in Lake Moultrie with the release of 50,000 grass carp. Hydrilla was discovered in Lake Murray this year resulting in unplanned treatment operations at several boat ramps and swimming beaches.

During 1994, aquatic plant management operations were conducted on 28 water bodies at a total cost of $2,876,763. The U.S. Army Corps of Engineers provided 50 percent of all funds, while the State provided 7 percent and local entities provided 43 percent. Aquatic herbicide treatments were conducted on all water bodies (9,090 acres) at a cost of $2,370,025. Grass carp were stocked in five lakes to control 10,242 acres at a cost of $506,738. Lake Moultrie received the most grass carp (150,000 fish) to help increase the number of fish to target levels. Grass carp continue to control over 9,000 acres in upper Lake Marion for the third straight year. This year hydrilla was found in Lake Wateree for the first time resulting in unplanned treatments to attempt to eliminate it.

In 1995, a total of $2,804,206 were expended for aquatic plant control activities on 30 water bodies. Fifty percent of the funding was provided by the U.S. Army Corps of Engineers, 44 percent was provided by local sponsors, and the state contributed 6 percent. Some level of herbicide treatment occurred on all the water bodies totaling about 9,710 acres at a cost of $2,367,622. A total of 97,526 grass carp were stocked in five lakes at a total cost of $435,084. Most of these were stocked in the Santee Cooper lakes (91,000) and Goose Creek Reservoir (6,000). Hydrilla was found in Lake Keowee for the first time this year which resulted in an unplanned treatment. Also Salvinia molesta, a federal noxious weed, was discovered in a private pond in Colleton County. Efforts were made to eradicate the infestation with treatments by the landowner and the state. Grass carp continue to provide excellent control in over 9,000 acres in upper Lake Marion; however, floating water hyacinths now infest much of this area impacting primarily shoreline and swamp areas.

Control expenditures in 1996 were about one-half of those in 1995 due in part to successful results from control efforts in previous years and in part to reductions in federal funding. A total of 19 water bodies were managed for nuisance species at a total cost of $1,151,501; the Corps of Engineers provided 31%, the State provided 10%, and local entities provided 59%. Herbicide treatments were conducted in 4,920 acres at a cost of $888,685; biocontrol agents were used in four lakes at a cost of $262,816. Hydrilla coverage on the Santee Cooper lakes (Lakes Marion and Moultrie) declined by almost 80% due apparently to the successful stocking of sterile grass carp. As a result, herbicide treatments of hydrilla were reduced by a comparable amount. Hydrilla coverage has been essentially eliminated on Lake Wateree and substantially reduced on Lake Keowee through a combination of herbicide treatments and drawdowns. A large drawdown and treatment on Lake Murray this year is hoped to have similar results.

During 1997, aquatic plant management operations were conducted on 21 water bodies at a total cost of $459,783. This represents a 60% reduction from control costs in 1996 due to very successful hydrilla management efforts on the Santee Cooper lakes and Lake Murray coupled with limited Federal matching funds. Matching funds from the Corps of Engineers composed only 2 percent of total costs, while State and Local funds made up 38 percent and 60 percent, respectively. Sterile grass carp were stocked in five lakes to control 292 acres of submersed plants at a cost of $15,951.

Aquatic herbicides were used to treat 3,762 acres at a total cost of $443,832. Most herbicide treatments (58%, 2,181 acres) were focused on water hyacinth which has expanded its range and now is found on six major water bodies. Water hyacinth treatments on the Ashepoo River were greater than originally planned and treatments on the Waccamaw River were unanticipated. Hydrilla coverage on the Santee Cooper lakes continued to decline in 1997 due to successful control by sterile grass carp resulting in sharp reductions in management expenditures. The drawdown and herbicide treatment on Lake Murray in 1996 resulted in better than anticipated hydrilla control this year. Hydrilla acreage was reduced 88 percent with a 45 percent reduction in shoreline miles.

Limited hydrilla coverage on the Santee Cooper Lakes, Lake Murray and Goose Creek Reservoir during 1998 helped reduce overall control expenditures for the third consecutive year. Total control cost for 1998 were 40% less than in 1997. A total of 1,862 acres on 17 water bodies were managed at a cost of $273,223. The Department of Natural Resources provided 47% of total funding, while 25% was provided by the Corps of Engineers, and 28% by various local entities. Sterile grass carp are effectively controlling hydrilla growth in the Santee Cooper Lakes and Goose Creek Reservoir. About one-half of all herbicide treatments (940 ac.) were focused on water hyacinth control on coastal rivers and impoundments.

A total of 3,259 acres on 19 water bodies were managed in 1999 at a total cost of $453,071. Funding support was 34% State (SCDNR), 21% Federal (USACOE), and 45% local match. Most herbicide treatments (1506 acres, 46%) were directed at controlling the growth of water hyacinth in seven water bodies. Hydrilla growth remains limited statewide due to control operations in previous years. Grass carp in the Santee Cooper Lakes (Lakes Marion and Moultrie) and Goose Creek Reservoir are effectively controlling hydrilla growth in those lakes. Hydrilla regrowth was evident in Lake Murray at the end of the year; however, higher than normal lake levels restricted herbicide treatments. Therefore, significant regrowth is expected next year.

During 2000, aquatic plant management operations were conducted on 21 water bodies at a total cost of $483,236. State budget cuts at the end of the calendar year reduced control efforts by 21% of planned expenditures and shifted costs to local sponsors. Seventy percent of total costs were borne by local entities with the state paying the rest. Most of the control effort was focused on water hyacinth (31%), followed by hydrilla (25%) and Pithophora (19%). Hydrilla regrowth was significant on Lake Murray as predicted. Grass carp continue to control hydrilla on Goose Creek Reservoir and Lake Marion and Lake Moultrie.

During 2001, aquatic plant management operations were conducted on 2,775 acres on 25 water bodies at a total cost of $508,075. Due to State budget cuts virtually all control costs were paid for with federal (41%) and local funds (59%). Hydrilla treatments were up this year (1,550 acres) because of a resurgence of hydrilla growth on Lake Murray; however, water hyacinth treatments were especially low (186 acres) due to a very cold period in December. Grass carp continue to provide effective control of hydrilla on Goose Creek Reservoir and the Santee Cooper Lakes.

During 2002, aquatic plant management operations were conducted on 2,239 acres on 17 water bodies at a total cost of $297,236. Due to State budget cuts virtually all control costs were paid for with federal (37%) and local funds (63%). Water hyacinth treatments were up this year (1,186 acres)

because of a milder than normal winter; however, hydrilla treatments were especially low (390 acres) due to the inability to treat Lake Murray. Grass carp continue to provide effective control of hydrilla on Goose Creek Reservoir and the Santee Cooper Lakes.

In 2003, aquatic plant management operations were conducted on 61340 acres in 12 water bodies at a total cost of $639,328. Due to state budget cuts all control costs were paid for with federal (38%) and local funds (62%). Included in this total are the stocking of 64,500 sterile grass carp in Lake Murray to control 4300 acres of hydrilla at a cost of $369,529. About 57% of all herbicide treatments (1005 ac.) were focused on water hyacinth control on coastal rivers and impoundments. Grass carp continue to provide effective control of hydrilla on Goose Creek Reservoir and the Santee Cooper Lakes.

A total of 2764 acres were treated in 2004 at a total cost of $470,815. Local sponsors provided 41% of the cost, while the Corps of Engineers provided 30%. Funds from the State's Water Recreational Resource Fund (boat gas tax) paid for 29% of all control costs. The focus of most control was on water hyacinth (931 acres) and Phragmites (710 acres). Grass carp continue to provide effective control of hydrilla on Goose Creek Reservoir and the Santee Cooper Lakes. Preliminary surveys of Lake Murray indicate that grass carp stocked in 2003 are beginning to provide some control of hydrilla. The drawdown on Lake Murray over the past two years is also providing good hydrilla control in the drawdown zone.

In 2005 the focus of the Aquatic Nuisance Species Program was Phragmites control in coastal South Carolina, 1983 acres were treated at a cost of $349,174. In all, a total of $655,535 was spent on 3,935 acres of control of invasive plants. Local sponsors provided 32% of the cost, while the Corps of Engineers provided 35%. Funds from the State's Water Recreational Resource Fund (boat gas tax) paid for 33% of all control costs. Grass carp continue to provide effective control of hydrilla on the Santee Cooper Lakes and have provided excellent control on Lake Murray.

For 2006, Phragmites control was center stage and once again led the control efforts with 1950 acres treated at a cost of $352,804. This is second only to last year's acreage of phragmites treated. In total 3983 acres of invasive species were treated at a cost of $722,316. Funding from the Corps of Engineers was not available this year and the costs were almost evenly split between the local cost share monies and Water Recreation funds. Additional funding was used from the U.S. Navy, Naval Weapons Station in Goose Creek. Included in that total was 242 acres of Phragmites and about 70 acres of pond work in the Marrington Recreation are Findings in Goose Creek Reservoir and the Santee Cooper Lakes indicate that additional stockings of triploid grass carp may need to be reconsidered in 2007.

Increasing hydrilla and the abundance of native submersed vegetation in 2007 brought about maintenance stocking of Triploid Grass Carp in Lake Marion, Lake Moultrie, and Goose Creek Reservoir. A total of 2620 sterile carp were stocked in the Santee Cooper Lakes with an additional 185 fish stocked into Goose Creek Reservoir. In total 4208 acres of invasive species were treated at a cost of $773,263. Costs were almost evenly split between the local cost share monies and Water Recreation funds. Additional funding was used from the U.S. Navy, Naval Weapons Station in Goose Creek and U. S. Army Corps of Engineers for treatment of phragmites on spoil areas in Charleston

Harbor and the Intracoastal Waterway. Santee coastal WMA managers should now have gained the upper hand with an additional 714 acres treated on Santee Coastal. Yawkey continued treatment of phragmites (120 acres) with several problem areas which remain persistent throughout treatment. Additionally 904 acres of phragmites have been treated from Colleton County through Georgetown County.

2008 showed a rebound of hydrilla across the state. Hydrilla was discovered in several new sites and at some old sites this highly invasive species increased abundantly. Triploid grass carp maintenance stocking plans are being reconsidered because of the increased levels of hydrilla in the Santee Cooper Lakes and Goose Creek Reservoir. Cooperative efforts with Duke Energy, Lake Wylie Marine Commission, South Carolina DNR, and North Carolina wildlife agencies produced a management plan for the border lake, Lake Wylie. 3335 acres of invasive species were treated at a cost of $641,791. Costs were split approximately 44% local cost share monies and 56% Water Recreation funds. Phragmites sites continued to decline in acreage and new cooperative agreements were put in place for water hyacinth control on public and private areas along the Pee Dee and Waccamaw Rivers. This agreement includes SCDNR, the U.S. Fish and Wildlife Service, the Nature Conservancy, and private landowners. New problems tackled by the ANS program include a highly invasive snail species in the Socastee area of Horry County (111 acres at $3,671) and a toxic algae problem in Hopeland Gardens in Aiken, S.C.

Budget problems in 2009 limited state level cost-share. In all 65% of total costs for control in South Carolina was absorbed by the local entities, along with 35% State Water Recreational Resource funds and 2% Federal funds. Through innovative control measures and perseverance by ANS staff, control efforts were not severely hampered. Triploid grass carp were stocked for the first time in Lake Greenwood to control an ever increasing hydrilla population. This stocking had limited success as hydrilla numbers grew throughout the summer months to double the original acreage. Maintenance stocking of the Santee Cooper Lakes and Goose Creek Reservoir was accomplished. In 2009 2,867 acres of control work was done at a total cost of $572,588. Santee Cooper control was about 38% of the total acreage treated. Phragmites control was a key component of habitat restoration for waterfowl and other species and resulted in 424 acres of control efforts which is down from previous years because of efficacy of previous control efforts.

During FY 2010, aquatic plant management operations by the ANS Program were conducted on 28 different management sites at a cost of $271,003 using local and State Water Recreation Resource funds. Field operation expenditures for the SCDNR decreased by 2% from FY 2009-2010 while acres controlled (2091, +18%) increased. This occurred by utilizing more efficient survey and treatment schedules along with the increased efficacy of newer herbicides brought about by a renewed state contract. Budget problems in 2010 limited state level cost-share. In all, 42% of total costs for control in South Carolina were absorbed by the local entities along with 58% State Water Recreational Resource funds. Through innovative control measures and perseverance by ANS staff, control efforts were not severely hampered. Triploid grass carp stocked in Lake Greenwood had good success as hydrilla acreage numbers plummeted to near zero. Maintenance stocking of the Santee Cooper Lakes and Goose Creek Reservoir was accomplished; with results in Goose Creek

Reservoir showing decreased submerged invasives and the results are pending based on aerial GIS surveys to be completed on Santee Cooper. 2,091 acres of control work was done in state waters. Habitat restoration for waterfowl and other species continues on Santee Coastal, Yawkey, Samworth, Donnelley, and Santee Delta. Early reports from those areas show an increase in useable habitat for waterfowl with increased bird numbers. Santee Cooper, which received no cost share funding, completed 2,438 acres at a cost of $785,621. Acreage increases statewide and on Santee Cooper are almost entirely based on significant expansion of two new highly invasive species, *Nymphoides cristata* (crested floating heart) and *Pomacea insularum* (Island Applesnail). In all 4,519 acres of invasives were treated in South Carolina public waters at a total cost of $1,056,624.

Hydrilla showed a 160 % increase in acreage on the Santee Cooper Lakes in 2011 prompting the Council to forego the maintenance stocking approach for an adaptive management strategy. The new plan calls for a total number of 109,000 triploid grass carp to be stocked in 2015 to reach a target rate of 129,000 carp. Aquatic plant management operations were conducted on 27 different management sites at a cost of $201,849 using local and State Water Recreation Resource funds. Field operation expenditures for the SCDNR decreased by 26% from FY 2010, while acres controlled was 1228. Phragmites control is a key component of habitat restoration for waterfowl and other species and resulted in 390 acres of control efforts which is down from previous years because of efficacy of previous control efforts and the fact that the phragmites population has been reduced to mostly scattered pods. The cooperative effort to control the spread of the highly invasive Island apple snail appears to have continued success as populations continue to decline and expansion has not materialized.

In 2012 Hydrilla on the Santee Cooper Lakes increased again to 7210 acres up from 3244 acres in 2011. While this was occurring native submerged species acreage numbers also increased to 9.2 % coverage of the total 160,000 acre system. Lake Greenwood and Murray are still stable with no reported growth of hydrilla and will not require stocking in 2012. Several other areas, mostly in the upstate region, of the state have experience an increase in hydrilla growth and were treated accordingly. In all Santee Cooper and SCDNR expended $1.15 million for control of 4929 acres of invasive species.

2013 brought about similar results to 2012 in the Santee Cooper Lakes. An adaptive hydrilla management plan was still in effect as 114,000 carp were stocked into Santee Cooper Lakes. Santee Cooper and SCDNR expended $1.646 million for control of 6763 acres of invasive species with the SCDNR share of that coming in at $238,377 for 1413 acres.

**Table 2013-A. Summary of Expenditures by Source for Control Operations During 2013.**

| | Water Body Name | Total Cost | Local | State | Local Sponsor |
|---|---|---|---|---|---|
| 1 | Back River Reservoir | $67,681.50 | $33,840.75 | $33,840.75 | SCE&G, Charleston CPW |
| 2 | Bonneau Ferry | $6,686.07 | $0.00 | $6,686.07 | SCDNR |
| 3 | Charleston Co. Parks | $878.00 | $439.00 | $439.00 | Charleston Parks |
| 4 | Cooper River | $16,310.30 | $8,155.15 | $8,155.15 | Berkeley Co. |
| 5 | Donnelly | $1,361.89 | $0.00 | $1,361.89 | SCDNR |
| 6 | Dungannon HP | $661.68 | $0.00 | $661.68 | SCDNR |
| 7 | Goose Creek Reservoir | $21,466.91 | $10,733.46 | $10,733.46 | Charleston CPW |
| 8 | Lake Bowen | $1,280.00 | $640.00 | $640.00 | Spartanburg CPW |
| 9 | Lake Monticello | $4,800.00 | $2,400.00 | $2,400.00 | SCE&G |
| 10 | Lake Prestwood | $17,574.50 | $8,787.25 | $8,787.25 | Hartsville City |
| 11 | Little Cypress * | $0.00 | $0.00 | $0.00 | SCDNR |
| 12 | Morris Village | $674.70 | $337.35 | $337.35 | SCDMH |
| 13 | Mountain Lake | $1,280.00 | $0.00 | $1,280.00 | SCDNR |
| 14 | Socastee | $5,303.55 | $0.00 | $5,303.55 | SCDNR |
| 15 | Waccamaw River | $2,351.05 | $0.00 | $2,351.05 | SCDNR |
| 16 | Whitehall | $0.00 | $0.00 | $0.00 | SCDNR |
| 17 | Hatchery WMA | $45,941.92 | $0.00 | $45,941.92 | SCDNR |
| 18 | Santee Cooper WMA (40 acre pond) | $21,276.74 | $0.00 | $21,276.74 | SCDNR |
| 19 | Santee Cooper WMA (Snow Bottom) | $14,151.88 | $0.00 | $14,151.88 | SCDNR |
| 20 | Potato Creek | $2,516.43 | $0.00 | $2,516.43 | SCDNR |
| 21 | Sandy Beach WMA | $3,971.75 | $0.00 | $3,971.75 | SCDNR |
| 22 | Misc. | $2,208.36 | $0.00 | $2,208.36 | SCDNR |
| | Santee Cooper Lakes | | | | |
| 23 | Lake Marion | $736,104.92 | $736,104.92 | $0.00 | Santee Cooper |
| 24 | Lake Moultrie | $82,373.58 | $82,373.58 | $0.00 | Santee Cooper |
| | Impoundments | $20,046.29 | $20,046.29 | $0.00 | Santee Cooper |
| 26 | State Parks | | | | |
| 25 | H. Cooper Black State Park | $0.00 | $0.00 | $0.00 | SCPRT |
| | SCDNR Total | $238,377.23 | $65,332.96 | $173,044.28 | |
| | State Park Total | $0.00 | $0.00 | $0.00 | |
| | Santee Cooper Total | $838,524.79 | $838,524.79 | $0.00 | |
| | SCDNR/ State Park Total | $238,377.23 | $65,332.96 | $173,044.28 | |
| | Grand Total | $1,076,902.02 | $903,857.75 | $173,044.28 | |
| | Santee Total w/Carp | $1,407,384.79 | | | |
| | Grand Total w/Carp | $1,645,762.02 | | | |

Table 2013-B Summary of S.C. Aquatic Nuisance Species Control Operations and Expenditures During 2013

| | Waterbody | TargetPlants | Acres | TotalCost | Cost/Acre | ControlAgent | Rate | ManagementObjective | ControlEffectiveness |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Back River Reservoir | Hydrilla | 130.94 | $32,079.14 | $244.99 | Komeen, Komeen/diquat | 16 gal/ac, 4 gal/ac 2 gal/ac | Reduce problem plants to enhance public access, use, water quality, and maintain | > 95% control Reward/Komeen mix proved to be more effective |
| | | Water hyacinth | 402.00 | $35,602.36 | $88.56 | Renovate3, Habitat/Glyphosa | 0 gal/ac, 0.500 gal/ac 0.500 g | electric power generation and minimize | 90% control |
| | | TOTAL: | 532.94 | $67,681.50 | $127.00 | | | | |
| 2 | Bonneau Ferry | Water primrose | 30.00 | $1,848.90 | $61.63 | Habitat/Glyphosate | 0.500 gal/ac 0.500 gal/ac | Reduce problem plants to enhance waterfowl | > 95% control |
| | | Bladderwort, water lily | 15.00 | $3,700.30 | $246.69 | Nautique/diquat, Clearcast | 4.000 gal/ac, 0.500 gal/ac | habitat, public access and use. | > 95% control |
| | | Cattails, loosestrife | 14.00 | $1,136.87 | $81.21 | Habitat/Glyphosate | 0.500 gal/ac 0.500 gal/ac | | > 95% control |
| | | TOTAL: | 59.00 | $6,686.07 | $113.32 | | | | |
| 3 | Charleston Co. Parks | Phragmites | 4.00 | $878.00 | $219.50 | Clearcast | 0.750 gal/ac | Reduce phragmites to enhance waterfowl | >90% control |
| | | TOTAL: | 4.00 | $878.00 | $219.50 | | | | |
| 4 | Cooper River | Hydrilla | 34.39 | $13,269.20 | $385.87 | Komeen | 16 gal/ac | Reduce phragmites to enhance waterfowl habitat, public access and use. | 90% control |
| | | Water primrose, hyacinth | 40.00 | $3,041.10 | $76.03 | Habitat/Glyphosate, Renovati | 0.250 gal/ac, 0.500 gal/ac | | |
| | | TOTAL: | 74.39 | $16,310.30 | $219.26 | | | | |
| 5 | Donnelly | Frog's bit | 11.00 | $1,361.89 | $123.81 | Habitat/Glyphosate, Clearcast | 0.250 gal/ac, 0.375 gal/ac | Reduce problem plants to enhance waterfowl habitat, public access and use. | > 95% control |
| | | TOTAL: | 11.00 | $1,361.89 | $123.81 | | | | |
| 6 | Dungannon HP | Swamp loosestrife | 8.00 | $661.68 | $82.71 | Habitat/Glyphosate | 0.500 gal/ac 0.500 gal/ac | Reduce problem plants to enhance waterfowl habitat, public access and use. | >95% control |
| | | TOTAL: | 8.00 | $661.68 | $82.71 | | | | |
| 7 | Goose Creek Reservoir | Hydrilla | 36.00 | $5,440.00 | $151.11 | Triploid Grass Carp | 850 | Reduce problem plants to enhance public access, use and water quality. | 90% control |
| | | Water hyacinth | 28.50 | $4,270.99 | $149.86 | Galleon/Clipper | 0.03125 gal/ac 0.125 lb/ac | | 90% control |
| | | Water lettuce | 81.00 | $11,082.03 | $136.82 | Galleon/Clipper | 0.03125 gal/ac 0.125 lb/ac | | |
| | | Water primrose | 10.00 | $673.89 | $67.39 | Habitat/Glyphosate | 0.250 gal/ac 0.250 gal/ac | | |
| | | TOTAL: | 155.50 | $21,466.91 | $138.05 | | | | |
| 8 | Lake Bowen | Chara | 13.00 | $1,280.00 | $98.46 | Triploid Grass Carp | 200 | Reduce problem plants to enhance waterfowl habitat, public access and use. | 90% control |
| | | TOTAL: | 13.00 | $1,280.00 | $98.46 | | | | |
| 9 | Lake Monticello | Hydrilla | 25.00 | $4,800.00 | $192.00 | Triploid Grass Carp | 750 | Reduce problem plants to enhance waterfowl habitat, public access and use. | 95% control |
| | | TOTAL: | 25.00 | $4,800.00 | $192.00 | | | | |
| 10 | Lake Prestwood | Misc | 26.00 | $17,574.50 | $675.94 | Renovate OTF, Triploid Grass | 40 lbs/ac, 2000 | Reduce problem plants to enhance waterfowl habitat, public access and use. | >90% control |
| | | TOTAL: | 26.00 | $17,574.50 | $675.94 | | | | |
| 11 | Little Cypress * | Misc | 18.00 | $0.00 | $0.00 | Habitat/Glyphosate, Galleon | 0.500 gal/ac, 0.06875 gal/ac | Reduce problem plants to enhance waterfowl habitat, public access and use. | >90% control |
| | | TOTAL: | 18.00 | $0.00 | $0.00 | | | | |
| 12 | Morris Village | Watershield | 14.00 | $629.72 | $44.98 | Renovate OTF, Sonar PR | 274 lbs/ac, 8.57 lbs/ac | Reduce problem plants to enhance waterfowl habitat,wood stork rookery | >90% control |
| | | Water lily | 1.00 | $44.98 | $44.98 | Renovate Max G | 200 lbs/ac | | |
| | | TOTAL: | 15.00 | $674.70 | $44.98 | | | | |
| 13 | Mountain Lake | Hydrilla | 2.00 | $1,280.00 | $640.00 | Triploid Grass Carp | 200 | Reduce problem plants to enhance waterfowl | >90% control |
| | | TOTAL: | 2.00 | $1,280.00 | $640.00 | | | | |
| 14 | Socastee | Island apple snail | 41.32 | $5,303.55 | $128.35 | Natrix | 2.50 gals/ac to 3.247 gal/ac | Reduce invasive species of snails to enhance | >90% control |
| | | TOTAL: | 41.32 | $5,303.55 | $128.35 | | | | |
| 15 | Waccamaw River | Water hyacinth | 26.00 | $2,351.05 | $90.43 | Renovate 3 | 0.500 gal/ac | Reduce problem plants to enhance waterfowl | >90% control |
| | | TOTAL: | 26.00 | $2,351.05 | $90.43 | | | | |
| 16 | Whitehall | Misc | 15.19 | $0.00 | $0.00 | Habitat/Glyphosate | 0.500 gal/ac 0.375 gal/ac | Reduce problem plants to enhance waterfowl | >90% control |
| | | TOTAL: | 15.19 | $0.00 | $0.00 | | | | |
| 17 | Hatchery WMA | Hydrilla | 154.00 | $45,941.92 | $298.32 | Sonar 1, Sonar PR | 6.79 gal/ac, 1.70 lbs/ac | Reduce problem plants to enhance waterfowl | >90% control |
| | | | 154.00 | $45,941.92 | $298.32 | | | | |
| 18 | Santee Cooper WMA | Hydrilla | 53.00 | $14,514.14 | $273.85 | Sonar 1, Sonar PR | 6.79 gal/ac, 1.70 lbs/ac | Reduce problem plants to enhance waterfowl | >90% control |
| | 40 Acre Pond | Crested Floating Heart | 53.00 | $6,762.60 | $127.60 | Sonar 1 | 4.900 lbs/ac | | |
| | | | 106.00 | $21,276.74 | $200.72 | | | | |
| 19 | Santee Cooper WMA | Hydrilla | 72.00 | $14,151.88 | $196.55 | Sonar products | 3.247-4.176 gal/ac | Reduce problem plants to enhance waterfowl | >90% control |
| | Snow bottom | | | | | | | | |
| | | TOTAL: | 72.00 | $14,151.88 | $196.55 | | | | |
| 20 | Potato Creek | Hydrilla | 11.00 | $2,516.43 | $228.77 | Komeen/diquat | 4.000 gal/ac | Reduce problem plants to enhance waterfowl | >90% control |
| | | TOTAL: | 11.00 | $2,516.43 | $228.77 | | | | |
| 21 | Sandy Beach WMA | Water primrose, misc | 40.00 | $3,971.75 | $99.29 | Habitat/Glyphosate, Clearcast | 0.500 gal/ac, 0.375 gal/ac | Reduce problem plants to enhance waterfowl | >90% control |
| | | TOTAL: | 40.00 | $3,971.75 | $99.29 | | | | |
| 22 | Misc Herbicides | Misc | 0.00 | $2,208.36 | | Habitat/Glyphosate, Clearcast | 0.500 gal/ac, 0.375 gal/ac | Reduce problem plants to enhance waterfowl | >90% control |
| | | TOTAL: | 0.00 | $2,208.36 | | | | | |
| | | SCDNR TOTAL: | 1409.34 | $238,377.23 | $169.14 | | | | |

Table 2013-B Summary of S.C. Aquatic Nuisance Species Control Operations and Expenditures During 2013

| | Waterbody | TargetPlants | Acres | TotalCost | Cost/Acre | ControlAgent | Rate | ManagementObjective | ControlEffectiveness |
|---|---|---|---|---|---|---|---|---|---|
| | Santee Cooper Lakes | | | | | | | | |
| 23 | Lake Marion | Crested Floating Heart | 304.9 | $185,306.45 | $607.86 | Aquathol K Liquid<br>Clearcast, Touchdown PRO<br>Sonar PR | 5.5 - 10.5 gal/ac 1.0 gal/ac / 0.5 gal/ac 5-15 lbs/ac | Provide access to open water and shoreline areas for public use and prevent spread to other areas of the lake | >95% in shallow coves with Aquathol K, 80% - 85% in areas treated with Clearcast / Touchdown PRO Note: *Sonar PR test plots will be evaluated in early 2014 for effectiveness* |
| | | Giant Cutgrass, Cattail | 7.8 | $1,337.42 | $172.57 | Habitat, Touchdown PRO | .25 gal/ac / .50 gal/ac | Reduce plant encroachment on lake-front property and public access areas. Removal from areas where plant is blocking commercial irrigation intake. | >95% control of plant at end of season |
| | | Lyngbya, Pithophora, Spirogyra | 1.3 | $287.05 | $220.81 | Captain XTR, Cutrine Ultra | 4.0 - 5.0 gal/ac | Reduce algal mats to enhance recreational use of water | 90% control of plant at end of season |
| | | Water Hyacinth | 4617.1 | $527,619.67 | $114.28 | Tribune<br>Renovate 3<br>Clearcast | 0.5 gal/ac 0.375 - 0.5 gal/ac .25 gal/ac | Remove non-native, invasive plant population to prevent spread to other areas of the lake | ~90% control of plants after treatment |
| | | Water Primrose, Alligatorweed | 124.6 | $17,065.70 | $137.02 | Touchdown PRO<br>Renovate 3 | 1.0 - 1.25 gal/ac .0625 gal/ac | Reduce shoreline plant populations to enhance recreation and navigation | ~85% control of plant at end of season. Some late season regrowth noted. |
| | | Water Willow | 4.0 | $505.46 | $126.37 | Renovate 3 | .375 gal/ac | Reduce problem plants in residential areas where navigation and recreation is adversely affected. | ~85% control of plant at end of season |
| | | Duckweed | 2.2 | $369.25 | $167.84 | Clipper<br>Tribune | 7.5 lbs/ac 0.5 - 1.0 gal/ac | Reduce plant population to prevent spread to other quiescent areas of the lake | 90% control of plant at end of season |
| | | Milfoil | 7.0 | $3,613.92 | $516.27 | Renovate 3 | 4.0 gal/ac | Reduce plant population to prevent spread to other quiescent areas of the lake | |
| | | TOTAL: | 5069 | $736,104.92 | $145.23 | | | | |
| 24 | Lake Moultrie | American Lotus | 0.5 | $77.83 | $155.66 | Touchdown PRO<br>Renovate | 1.25 gal/ac 0.5 gal/ac | Reduce problem plants in residential areas where recreation is adversely affected | >95% control of plant at end of season |
| | | Vallisneria | 0.1 | $37.36 | $373.60 | Hydrothol 191 Liquid<br>Cutrine Ultra | 5.0 gal/ac, 2.5 gal/ac | Provide access to open water areas for public use. | 85% control of plant at end of season, treatment site now de-watered |
| | | Crested Floating Heart | 56.8 | $27,446.89 | $483.22 | Aquathol K Liquid<br>Touchdown PRO, Clearcast | 5.0 - 10.0 gal/ac<br>0.5 gal/ac, 1.0 gal/ac | Remove problem plants adjacent to boat landings and residential areas to prevent spread to other areas of the lake | >95% in shallow coves with Aquathol K, ~80% in areas treated with Clearcast / Touchdown PRO Note: *Sonar PR test plots will be evaluated in early 2014 for effectiveness* |
| | | Cabomba | 38.2 | $33,032.09 | $864.71 | Clipper | 5.8 - 6.7 lbs/ac | Reduce problem plants in residential areas where recreation is adversely affected | >95% control of plant after treatment |
| | | Maidencane | 1.5 | $233.13 | $155.42 | Aquathol Super K Granular | 70 lbs/ac | Reduce problem plants in residential area where recreation are adversely affected. | |
| | | Hydrilla | 64.1 | $8,024.44 | $125.19 | Sonar ONE | 4.4 lbs/ac | Reduce problem plant population to prevent spread to other areas of the lake. Maintain level until adequate grass carp population from restocking can maintain control | >95% control in treated areas (Duck Pond) |
| | | Pithophora | 1.63 | $295.67 | $181.95 | Captain XTR | 5.0 gal/ac | Reduce algal mats on shoreline and in dead-end coves where navigation and recreation is adversely affected | >95% control of plant after treatment |
| | | Water Primrose, Alligatorweed | 42.60 | $9,170.42 | $215.27 | Renovate MAX G<br>Touchdown PRO<br>Renovate 3 | 190 - 200 lbs/ac<br>1.25 gal/ac .0625 gal/ac | Reduce problem plants in residential areas where recreation is adversely affected | >90% control of Primrose, very little control of Alligatorweed with MAX G, 85% with Touchdown PRO, Renovate tank mix. Some late season regrowth noted. |
| | | Slender Naiad | 1.6 | $539.06 | $344.89 | Reward, Cutrine Ultra | 2.0 gal/ac, 4.0 gal/ac | Reduce problem plants in residential area where recreation are adversely affected. | 100% control after treatment, area now de-watered |
| | | Pondweed | 1.6 | $539.05 | $344.99 | Tribune, Nautique<br>Clipper<br>Nautique | 2.0 gal/ac, 3.5 gal/ac<br>5.0 lbs/ac 2.5 gal/ac | Reduce problem plants in residential area where recreation are adversely affected. | ~85% control after treatment |
| | | Hyacinth | 2.10 | $207.86 | $98.98 | Touchdown PRO | 1.25 gal/ac | Reduce problem plants in public and residential areas where recreation is adversely affected and prevent spread to other areas of the lake | >95% control after treatment |
| | | Milfoil | 3.10 | $2,769.78 | $893.48 | Clipper | 6.7 lbs/ac | Reduce problem plants in residential area where recreation is adversely affected | >95% control after treatment |
| | | TOTAL: | 214 | $82,373.58 | $385.37 | | | | |

Table 2013-B Summary of S.C. Aquatic Nuisance Species Control Operations and Expenditures During 2013

| | Waterbody | TargetPlants | Acres | TotalCost | Cost/Acre | ControlAgent | Rate | ManagementObjective | ControlEffectiveness |
|---|---|---|---|---|---|---|---|---|---|
| | Santee Cooper Impoundments | | | | | | | | |
| | Taw Caw Impoundment | Water Primrose, Alligatorweed | 16.4 | $3,616.33 | $220.51 | Touchdown PRO<br>Renovate 3 | 1.0 - 1.25 gal/ac 0.0625 gal/ac | Reduce problem plant population to provide public and shoreline access | ~85% control of plant at end of season |
| | | Giant Cutgrass, Cattail | 0.5 | $67.36 | $134.72 | Touchdown PRO<br>Renovate 3 | 1.0 - 1.25 gal/ac 0.0625 gal/ac | Reduce problem plant population to provide public and shoreline access | >95% control of plant at end of season |
| | | Lyngbya, Pithophora | 5.0 | $866.30 | | Cutrine-Ultra | 4 - 6 gal/ac | Remove algae to improve access and use of water for property owners. | ~85% control of plant at end of season |
| | | Smartweed | 4.0 | $368.08 | $92.02 | Habitat / Touchdown PRO | 0.25 gal/ac / 0.5 gal/ac | Reduce problem plants in residential area where navigation and recreation are adversely affected. | >95% control of plant in areas treated at end of season |
| | | TOTAL: | 25.9 | $4,918.07 | $189.89 | | | | |
| | Dean Swamp Impoundment | Water Primrose, Alligatorweed | 8.5 | $863.30 | $101.56 | Touchdown PRO<br>Renovate 3 | 1.0 - 1.25 gal/ac, 0.0625 gal/ac | Reduce problem plant population to provide public and shoreline access | ~90% control of plant at end of season Some late season regrowth noted |
| | | Lyngbya, Pithophora | 8.0 | $1,629.52 | $203.69 | Cutrine Ultra<br>Captain XTR | 4.0 - 6.0 gal/ac | Remove algae to improve access and use of water for property owners. | >90% control of algal mats at end of season |
| | | TOTAL: | 16.5 | $2,492.82 | $151.08 | | | | |
| | Church Branch Impoundment | Water Primrose, Alligatorweed | 3.0 | $521.06 | $173.69 | Touchdown PRO<br>Renovate 3 | 1.0 - 1.25 gal/ac, 0.0625 gal/ac | Reduce problem plant population to provide public and shoreline access | >95% control of plant at end of season |
| | | Spirogyra | 0.3 | $99.29 | $397.16 | Cutrine Ultra | 4.0 - 6.0 gal/ac | Remove algae to improve access and use of water for property owners. | >90% control of algal colonies at end of season |
| | | Water Milfoil | 11.0 | $10,353.74 | $945.55 | Clipper | 4.0 - 7.0 lbs/ac | Reduce problem plant population to provide public and shoreline access | ~95% control of plant in areas treated at end of season |
| | | TOTAL: | 14.2 | $10,974.09 | $772.82 | | | | |
| | Fountain Lake Impoundment | Water Primrose, Alligatorweed | 6.5 | $533.20 | $310.47 | Touchdown PRO<br>Renovate 3 | 1.0 - 1.25 gal/ac, 0.0625 gal/ac | Reduce problem plant population to provide public and shoreline access | ~80% control of plant at end of season Some late season regrowth noted |
| | | Fragrant Water Lily | 1.0 | $115.06 | $202.48 | Touchdown PRO | 1.0 - 1.25 gal/ac | Provide access to open water and shoreline areas for public use | >95% control of plant in areas treated at end of season |
| | | Crested Floating Heart | 0.25 | $84.57 | $304.61 | Clearcast<br>Touchdown PRO | 1.0 gal/ac<br>0.5 gal/ac | Reduce problem plants in residential area where navigation and recreation are adversely affected. | ~90% control of plant. Late season application did not allow for additional treatment. Regrowth will be monitored in spring 2014 |
| | | Water Shield | 2.7 | $928.48 | $124.23 | Touchdown PRO | 1.0 - 1.25 gal/ac | Prevent further spread in impoundment. Areas plant located was adjacent to water control structure | ~85% control of plant |
| | | TOTAL: | 10.4 | $1,661.31 | $159.74 | | | | |
| | | SANTEE COOPER TOTAL: | 5349.45 | $838,524.79 | $156.75 | | | | |
| | SC State Parks | | | | | | | | |
| 25 | H. Cooper Black State Park | Spatterdock | 4.00 | $0.00 | $0.00 | Renovate 3 | 1.000 gal/ac | Reduce problem plants to enhance waterfowl habitat, public access and use. | 95% control |
| | | TOTAL: | 4.00 | $0.00 | $0.00 | | | | |
| | | STATE PARKS TOTAL | 4.00 | $0.00 | $0.00 | | | | |
| | | SCDNR TOTAL | 1409.34 | $238,377.23 | $169.14 | | | | |
| | | SANTEE COOPER TOTAL | 5349.45 | $838,524.79 | $156.75 | | | | |
| | | STATE PARKS TOTAL | 4.00 | $0.00 | $0.00 | | | | |
| | | SANTEE CARP TOTAL* | | $ 568,860.00 | 4.99 | 114000 | *triploid grass carp | | |
| | | GRAND TOTAL | 6762.79 | $1,645,762.02 | | | | | |

**Table 2012-A. Summary of Expenditures by Source for Control Operations During 2012.**

| | Water Body Name | Total Cost | Local | State | Local Sponsor |
|---|---|---|---|---|---|
| 1 | Back River Reservoir | $24,172.35 | $12,086.18 | $12,086.18 | SCE&G, Charleston CPW |
| 2 | Bonneau Ferry | $795.50 | $0.00 | $795.50 | SCDNR |
| 3 | Caw Caw | $206.15 | $103.08 | $103.08 | Charleston Parks |
| 4 | Cherokee Lake | $2,145.00 | $0.00 | $2,145.00 | SCDNR |
| 5 | City Lake Pickens | $5,720.00 | $2,860.00 | $2,860.00 | Pickens CPW |
| 6 | Cooper River | $13,031.28 | $6,515.64 | $6,515.64 | Berkeley Co. |
| 7 | Donnelly | $9,980.80 | $0.00 | $9,980.80 | SCDNR |
| 8 | Dungannon HP | $4,466.52 | $0.00 | $4,466.52 | SCDNR |
| 9 | Eutawville WMA | $55,678.40 | $0.00 | $55,678.40 | SCDNR |
| 10 | Goose Creek Reservoir | $33,411.70 | $16,005.85 | $16,005.85 | Charleston CPW |
| 11 | Lake Bowen | $1,430.00 | $715.00 | $715.00 | Spartanburg CPW |
| 12 | Lake Cunningham | $1,400.00 | $700.00 | $700.00 | Greer CPW |
| 13 | Lake Monticello | $6,890.00 | $3,445.00 | $3,445.00 | SCE&G |
| 14 | Morris Village | $3,775.50 | $1,887.75 | $1,887.75 | SCDMH |
| 15 | Mountain Lake | $715.00 | $0.00 | $715.00 | |
| 16 | Potato Creek | $27,940.00 | $0.00 | $27,940.00 | SCDNR |
| 17 | Samworth | $1,383.30 | $0.00 | $1,383.30 | SCDNR |
| 18 | Santee Coastal | $48,617.40 | $0.00 | $48,617.40 | SCDNR |
| 19 | Socastee | $8,274.32 | $0.00 | $8,274.32 | SCDNR |
| 20 | Stoney Bay | $3,609.45 | $0.00 | $3,609.45 | SCDNR |
| 21 | Misc. | $655.00 | $327.50 | $327.50 | |
| | **Santee Cooper Lakes** | | | | |
| 22 | Lake Marion | $648,285.50 | $648,285.50 | $0.00 | Santee Cooper |
| 23 | Lake Moultrie | $209,531.79 | $209,531.79 | $0.00 | Santee Cooper |
| | **State Parks** | | | | |
| 24 | SP Aiken | $3,170.80 | $1,585.40 | $1,585.40 | SCPRT |
| 25 | SP Barnwell | $1,258.50 | $629.25 | $629.25 | SCPRT |
| 26 | SP Cheraw | $12,585.00 | $6,292.50 | $6,292.50 | SCPRT |
| 27 | SP Croft | $1,350.50 | $675.25 | $675.25 | SCPRT |
| 28 | SP Hickory Knob | $1,337.50 | $668.75 | $668.75 | SCPRT |
| 29 | SP Lake Croft | $8,937.50 | $4,468.75 | $4,468.75 | SCPRT |
| 30 | SP Lake Placid | $536.25 | $268.13 | $268.13 | SCPRT |
| 31 | SP Little Pee Dee | $6,292.50 | $3,146.25 | $3,146.25 | SCPRT |
| 32 | SP Poinsett | $1,887.75 | $943.88 | $943.88 | SCPRT |
| | **SCDNR Total** | $254,297.67 | $44,645.99 | $208,251.68 | |
| | **State Park Total** | $37,356.30 | $18,678.15 | $18,678.15 | |
| | **Santee Cooper Total** | $857,817.29 | $857,817.29 | $0.00 | |
| | **SCDNR/ State Park Total** | $291,653.97 | $63,324.14 | $226,929.83 | |
| | **Grand Total** | $1,149,471.26 | $921,141.43 | $226,929.83 | |
| | **Santee Total w/Carp** | $1,401,727.29 | | | |
| | **Grand Total w/Carp** | $1,656,024.96 | | | |

Table 2012-B Summary of S.C. Aquatic Nuisance Species Control Operations and Expenditures During 2012

| | Waterbody | TargetPlants | Acres | TotalCost | Cost/Acre | ControlAgent | Rate | ManagementObjective | ControlEffectiveness |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Back River Reservoir | Hydrilla | 65.50 | $15,752.25 | $240.49 | Komeen, Komeen/diquat | 16 gal/ac, 4 gal/ac 2 gal | Reduce problem plants to enhance public access, use, water quality, and maintain | > 95% control Reward/Komeen mix proved to be more effective |
| | | Water hyacinth | 96.00 | $8,420.10 | $87.71 | Renovate3, Habitat/Glyp | 0.500 gal/ac, 0.500 gal/a | electric power generation and minimize | 90% control |
| | | TOTAL: | 161.50 | $24,172.35 | $149.67 | | | | |
| 2 | Bonneau Ferry | Water primrose | 10.00 | $795.50 | $79.55 | Habitat/Glyphosate | 0.500 gal/ac 0.500 gal/a | Reduce problem plants to enhance waterfowl | > 95% control |
| | | TOTAL: | 10.00 | $795.50 | $79.55 | | | | |
| 3 | Caw Caw | Phragmites | 2.00 | $206.15 | $103.08 | Habitat/Glyphosate | 0.750/0.750 gal/ac | Reduce phragmites to enhance waterfowl | >90% control |
| | | TOTAL: | 2.00 | $206.15 | $103.08 | | | | |
| 4 | Cherokee Lake | Hydrilla | 12.00 | $2,145.00 | $178.75 | Triploid Grass Carp | 300 | Provide boat trails to main channel through hydrilla. Reduce problem plants to enhance | > 95% control |
| | | TOTAL: | 12.00 | $2,145.00 | $178.75 | | | | |
| 5 | Cooper River | Hydrilla | 34.29 | $12,753.63 | $371.96 | Komeen | 16 gal/ac | Reduce phragmites to enhance waterfowl habitat, public access and use. | 90% control |
| | | Water primrose | 4.00 | $277.65 | $69.41 | Habitat/Glyphosate | 0.500 gal/ac 0.500 gal/ac | | |
| | | TOTAL: | 38.29 | $13,031.28 | $340.35 | | | | |
| 6 | Donnelly | Frog's bit | 80.00 | $9,980.80 | $124.76 | Galleon | 0.0625 gal/ac | Reduce water hyacinth & water lettuce to greatest extent possible. | > 95% control |
| | | TOTAL: | 80.00 | $9,980.80 | $124.76 | | | | |
| 7 | Dungannon HP | Frogs bit | 12.00 | $3,992.32 | $332.69 | Galleon | 0.166 gal/ac | Eradicate or reduce problematic snail populations to protect human health and sensitive areas. | >60% control |
| | | Swamp loosestrife | 8.00 | $474.20 | $59.28 | Habitat/Glyphosate | 0.250 gal/ac 0.250 gal/ac | | |
| | | TOTAL: | 20.00 | $4,466.52 | $223.33 | | | | |
| 8 | Eutawville WMA | Crested Floating heart | 178.00 | $55,678.40 | $312.80 | Clearcast/Glyphosate | 1 gal/ac 0.500 gal/ac | Reduce problem plants to enhance public | 90% control |
| | | TOTAL: | 178.00 | $55,678.40 | $312.80 | | | | |
| 9 | Goose Creek Reservoir | Hydrilla | 36.00 | $6,435.00 | $178.75 | Triploid Grass Carp | 900 | Reduce problem plants to enhance public | 90% control |
| | | Water hyacinth | 121.00 | $8,920.39 | $73.72 | Diquat, Renovate 3 | 0.250 gal/ac, 0.500 gal/a | access, use and water quality. | 90% control |
| | | Water lettuce | 146.00 | $14,889.36 | $101.98 | Galleon/Clipper | 0.03125 gal/ac 0.125 lb/ac | | |
| | | Watermeal | 18.00 | $1,066.95 | $59.28 | Habitat/Glyphosate | 0.250 gal/ac 0.250 gal/ac | | |
| | | TOTAL: | 321.00 | $31,311.70 | $97.54 | | | | |
| 10 | Misc | Misc | 20.00 | $2,755.00 | $137.75 | Clipper, Habitat | 15 lbs, 10 gals | Reduce problem plants to enhance public | 90% control |
| | | TOTAL: | 20.00 | $2,755.00 | $137.75 | | | | |
| 11 | Lake Bowen | Hydrilla | 13.00 | $1,430.00 | $110.00 | Triploid Grass Carp | 200 | Reduce phragmites to enhance waterfowl habitat, public access and use. | 90% control |
| | | TOTAL: | 13.00 | $1,430.00 | $110.00 | | | | |
| 12 | Lake Cunningham | misc | 6.00 | $1,400.00 | $233.33 | Habitat/Glyphosate | 0.750 gal/ac 0.750 gal/a | Reduce problem plants to enhance waterfowl habitat, public access and use. | 95% control |
| | | TOTAL: | 6.00 | $1,400.00 | $233.33 | | | | |
| 13 | Lake Monticello | Hydrilla | 25.00 | $6,880.00 | $275.60 | Nautique/diquat | 4 gal/ac 2 gal/ac | Reduce hyacinth to minimize spread and impacts to public access and use. | 95% control |
| | | TOTAL: | 25.00 | $6,880.00 | $275.60 | | | | |
| 14 | Morris Village | Watershield | 6.00 | $3,775.50 | $629.25 | Renovate Max G | 200 lbs/ac | Reduce phragmites and problem plants to enhance waterfowl habitat, public access and use. | >90% control |
| | | TOTAL: | 6.00 | $3,775.50 | $629.25 | | | | |
| 15 | Mountain Lake | Hydrilla | 2.00 | $715.00 | $357.50 | Triploid Grass Carp | 100 | | |
| | | TOTAL: | 2.00 | $715.00 | $357.50 | | | | |
| 16 | Samworth | Water hyacinth | 12.00 | $1,383.30 | $115.28 | Habitat/Glyphosate | 0.250 gal/ac 0.250 gal/ac | | |
| | | TOTAL: | 12.00 | $1,383.30 | $115.28 | | | | |
| 17 | Santee Coastal | Phragmites | 312.00 | $48,617.40 | $155.83 | Habitat/Glyphosate | 0.750 gal/ac 0.750 gal/ac | | |
| | | TOTAL: | 312.00 | $48,617.40 | $155.83 | | | | |
| 18 | Socastee | Island apple snail | 83.34 | $100,716.40 | $99.28 | Natrix | 2.50 gals/ac to 3,247 gal/ac | | |
| | | TOTAL: | 83.34 | $100,716.40 | $99.28 | | | | |
| 19 | Whitehall | Frogs bit | 14.00 | $0.00 | $0.00 | Habitat/Glyphosate | 0.250 gal/ac 0.250 gal/ac | | |
| | | TOTAL: | 14.00 | $0.00 | $0.00 | | | | |
| 20 | Potato Creek | Hydrilla | 140.00 | $27,940.00 | $199.57 | Sonar One | 12 lbs/ac | | |
| | | TOTAL: | 140.00 | $27,940.00 | $199.57 | | | | |
| 21 | Stoney Bay | Water primrose, misc | 52.00 | $55,880.00 | $69.41 | Habitat/Glyphosate | 0.500 gal/ac 0.500 gal/ac | | |
| | | TOTAL: | 52.00 | $55,880.00 | $69.41 | | | | |
| | | SCDNR TOTAL: | 1,503.13 | $393,240.30 | $261.78 | | | | |

| | Waterbody | TargetPlants | Acres | TotalCost | Cost/Acre | ControlAgent | Rate | ManagementObjective | ControlEffectiveness |
|---|---|---|---|---|---|---|---|---|---|
| | **Santee Cooper Lakes** | | | | | | | | |
| 22 | **Lake Marion** | American Lotus | 2.0 | $510.44 | $255.22 | Touchdown PRO, Renovate 3, Renovate MAX G | .75 gal/ac, .50 gal/ac, 150 - 200 lbs./ac | Provide access to open water and shoreline areas for public use | >95% control of plant at end of season |
| | | Vallisneria | 9.3 | $4,025.43 | $440.56 | Hydrothol 191 Liquid, Nautique | 5.0 gal/ac, up to 10.0 gal/ac | Provide access to open water and shoreline areas for public use | 85% control of plant after treatment |
| | | Crested Floating Heart | 1686.0 | $542,149.39 | $321.56 | Aquathol K Liquid Clearcast, Touchdown PRO, Renovate MAX G, Sonar Q, Sonar PR | 2.5 - 7.0 gal/ac 1.0 gal/ac / 0.5 gal/ac, 150 - 300 lbs./ac, 14.0 lbs/ac, 3.25 lbs/ac | Provide access to open water and shoreline areas for public use and prevent spread to other areas of the lake | >95% in shallow coves with Aquathol K 80% in open water areas with Clearcast / Touchdown PRO. 100% in quiescent cove with Sonar. |
| | | Chara | 44.0 | $4,864.95 | $110.57 | Captain, Cygnet Plus, Captain XTR | 4.0 - 5.0 gal/ac, 2.0 - 5.0 gal/ac | Reduce problem plants in residential area where navigation and recreation is adversely affected. | >85% control of plant at end of season |
| | | Giant Cutgrass, Cattail | 7.8 | $890.98 | $114.97 | Habitat, Touchdown PRO | 0.25 gal/ac, 0.50 gal/ac | Reduce plant encroachment on lake-front property and public access areas. Restoration of waterfowl habitat. | 100% control of plant at end of season |
| | | Hydrilla | 70.0 | $35,188.40 | $502.69 | Aquathol K Liquid, Nautique | 6.0 - 8.0 gal/ac, 1.0 gal/ac | Reduce problem plant population to prevent spread to other areas of the lake. Maintain level until adequate grass carp population from restocking can maintain control. | >90% control of plant after treatment |
| | | Lyngbya, Pithophora | 38.1 | $7,122.35 | $186.94 | Captain, Cygnet Plus, Captain XTR, Cutrine Ultra | 4.0 - 6.0 gal/ac, 0.5 gal/ac, 4.0 - 6.0 gal/ac | Reduce algal mats to enhance recreational use of water | 90% control of plant at end of season |
| | | Water Primrose, Alligatorweed | 52.0 | $16,483.64 | $316.99 | Clearcast, Touchdown PRO, Renovate MAX G | .5 gal/ac, .25 gal/ac, 150 - 200 lbs/ac | Reduce shoreline plant populations to enhance recreation and navigation | ~75% control of plant at end of season. Some late season regrowth noted. |
| | | Water Willow | 35.3 | $4,687.17 | $132.97 | Renovate 3 | .375 gal/ac | Reduce problem plants in residential areas where navigation and recreation is adversely affected. | ~85% control of plant at end of season |
| | | Pondweed | 3.4 | $1,375.57 | $410.62 | Aquathol K, Captain | 5.0 - 9.0 gal/ac, 0.95 gal/ac | Reduce problem plants in residential areas where navigation and recreation is adversely affected. | ~75% control of plant at end of season |
| | | Duckweed | 0.25 | $125.42 | $501.68 | Reward | 1.0 gal/ac | Reduce plant population to prevent spread to other quiescent areas of the lake. | 90% control of plant at end of season |
| | | TOTAL: | 1948 | $617,473.74 | $316.99 | | | | |
| 18 | **Lake Moultrie** | American Lotus | 9.6 | $1,634.67 | $170.28 | Renovate | 0.5 gal/ac | Reduce problem plants in residential areas where recreation is adversely affected | >95% control of plant at end of season |
| | | Fragrant Water Lily | 2.8 | $464.44 | $168.89 | Touchdown PRO | 1.0 gal/ac | Reduce problem plants in residential area where recreation is adversely affected | >95% control of plant at end of season |
| | | Vallisneria | 0.5 | $331.41 | $662.82 | Nautique, Cygnet Plus | Up to 10.0 gal/ac, 0.25 gal/ac | Provide access to open water areas for public use. | 85% control of plant at end of season, treatment site now de-watered. |
| | | Crested Floating Heart | 7.8 | $2,982.06 | $384.78 | Clearcast, Touchdown PRO, Renovate MAX G | 1.0 gal/ac / 0.5 gal/ac, 150 - 300 lbs/ac | Remove problem plants adjacent to boat landing to prevent spread to other areas of lake | >95% control of plant at end of season (in canal area only) |
| | | Cabomba | 9.0 | $6,659.08 | $739.90 | Clipper | 5.0 lbs/ac | Reduce problem plants in residential areas where recreation is adversely affected | 100% control of plant after treatment |
| | | Giant Cutgrass, Cattail | 0.8 | $135.37 | $180.49 | Habitat / Touchdown PRO | 0.25 gal/ac/0.50 gal/ac | Reduce problem plants in residential area where recreation is adversely affected | 100% control of plant at the end of season |
| | | Hydrilla | 450.0 | $221,263.79 | $491.70 | Aquathol K Liquid, Nautique | 7.0 gal/ac, 1.0 gal/ac | Reduce problem plant population to prevent spread to other areas of the lake. Maintain level until adequate grass carp population from restocking can maintain control. | 90% control of plant after treatment |
| | | Lyngbya, Pithophora, Spirogyra | 5.5 | $1,363.30 | $247.87 | Captain, Cygnet Plus, Captain XTR, Cutrine Ultra | 4.0 - 6.0 gal/ac, 0.5 gal/ac, 4.0 - 6.0 gal/ac (XTR, Ultra) | Reduce algal mats on shoreline and in dead-end coves where navigation and recreation is adversely affected | 85% control of plant after treatment |
| | | Chara | 0.5 | $84.70 | $169.40 | Captain XTR | 2.5 gal/ac | Reduce problem plant population to provide public and shoreline access. | 90% control of plant after treatment |
| | | Water Primrose, Alligatorweed | 27.6 | $11,565.15 | $419.79 | Clearcast, Touchdown PRO, Renovate MAX G | .5 gal/ac, .25 gal/ac, 200 - 300 lbs/ac | Reduce problem plants in residential areas where recreation is adversely affected | ~75% control of plant at end of season. Some late season regrowth noted. |
| | | Water Willow | 0.25 | $55.82 | $223.28 | Renovate 3 | .375 gal/ac | Reduce problem plants in residential areas where recreation is adversely affected | 90% control of plant at end of season |
| | | Slender Naiad | 1.5 | $274.52 | $183.01 | Nautique, Cygnet Plus | 5.0 gal/ac, 0.25 gal/ac | Reduce problem plants in residential area where recreation are adversely affected. | 100% control after treatment, area now de-watered. |
| | | Pondweed | 1.5 | $407.30 | $271.53 | Nautique, Cygnet Plus | 5.0 gal/ac, 0.25 gal/ac | Reduce problem plants in residential area where recreation are adversely affected. | 80% control after treatment |
| | | Milfoil | 8.3 | $5,356.55 | $645.37 | Clipper, Renovate MAX G | 5.0 lbs/ac, 80 - 200 lbs/ac | Reduce problem plants in residential area where recreation is adversely affected. | 90% control of plant at end of season |
| | | TOTAL: | 525 | $252,578.18 | $480.99 | | | | |

| Waterbody | TargetPlants | Acres | TotalCost | Cost/Acre | ControlAgent | Rate | ManagementObjective | ControlEffectiveness |
|---|---|---|---|---|---|---|---|---|
| **Taw Caw Impoundment** | Hydrilla | 171.0 | $29,897.34 | $174.84 | Sonar One | 6.3 lbs/ac | Reduce plant population to provide public access to shoreline, coves and open water areas and prevent spread of plant to other areas of the lake. | >95% control of plant at the end of season |
| | Water Primrose, Alligatorweed | 2.5 | $574.10 | $229.64 | Clearcast, Touchdown PRO | .5 gal/ac, .25 gal/ac | Reduce problem plant population to provide public and shoreline access | ~75% control of plant at end of season. Some late season regrowth noted. |
| | Giant Cutgrass, Cattail | 1.0 | $191.37 | $191.37 | Habitat / Touchdown PRO | .25 / .50 gal/ac | Reduce plant encroachment on lake-front property and public access areas. Restoration of waterfowl habitat. | No Treatment |
| | **TOTAL:** | 174.5 | $30,662.81 | $175.72 | | | | |
| **Potato Creek Impoundr** | Hydrilla | 145.0 | $26,714.42 | $184.24 | Sonar One | 6.8 lbs/ac | Reduce plant population to provide public access to shoreline, coves and open water areas and prevent spread of plant to other areas of the lake. | >95% control of plant at the end of season |
| | **TOTAL:** | 145.0 | $26,714.42 | $184.24 | | | | |
| **Dean Swamp Impoundr** | Hydrilla | 116.0 | $16,412.30 | $141.49 | Sonar One | 5.2 lbs/ac | Reduce plant population to provide public access to shoreline, coves and open water areas and prevent spread of plant to other areas of the lake. | >95% control of plant at the end of season |
| | Water Primrose, Alligatorweed | 5.0 | $927.40 | $185.48 | Clearcast, Touchdown PRO | .5 gal/ac, .25 gal/ac | Reduce problem plant population to provide public and shoreline access | ~85% control of plant at end of season. Some late season regrowth noted. |
| | Lyngbya, Pithophora | 18.0 | $3,472.56 | $192.92 | Captain, Cygnet Plus, Captain XTR, Cutrine Ultra | 4.0 - 6.0 gal/ac, 0.5 gal/ac, 4.0 - 6.0 gal/ac (XTR, Ultra) | Remove algae to improve access and use of water for property owners. | ~75% control of algal mats at end of season. |
| | **TOTAL:** | 139.0 | $20,852.26 | $149.73 | | | | |
| **Church Branch Impoun** | Cabomba | 3.7 | $2,768.01 | $748.11 | Clipper | 5.4 lbs/ac | Reduce plant population to provide public access to shoreline, coves and open water areas and prevent spread of plant to other areas of the lake. | ≥100% control of plant at the end of season. |
| | Water Primrose, Alligatorweed | 1.3 | $260.99 | $208.79 | Clearcast, Touchdown PRO | .5 gal/ac, .25 gal/ac | Reduce problem plant population to provide public and shoreline access | ~90% control of plant at end of season. Some late season regrowth noted. |
| | Fragrant Water Lily | 2.0 | $1,590.19 | $795.10 | Glyphosate, Renovate | .75 gal/ac, .50 gal/ac | Provide access to open water and shoreline areas for public use | No Treatment |
| | Lyngbya, Pithophora | 10.5 | $1,918.82 | $182.74 | Captain, Cygnet Plus, Captain XTR, Cutrine Ultra | 4.0 - 6.0 gal/ac, 0.5 gal/ac, 4.0 - 6.0 gal/ac (XTR, Ultra) | Remove algae to improve access and use of water for property owners. | ~75% control of plant at end of season. Some late season regrowth noted. |
| | Water Milfoil | 4.0 | $3,180.39 | $795.10 | Renovace | .50 - 1.0 gal/ac | Reduce problem plant population to provide public and shoreline access | ~85% control of plant in areas treated at end of season. |
| | Slender Naiad | 20.0 | $5,843.06 | $292.25 | Aquathol K Liquid | 5 - 6 gal/ac | Eliminate plant population to provide public access to coves and open water areas and prevent spread to other areas of lake | <50% reduction of plant biomass in areas treated at the end of season. |
| | Pondweed | 30.0 | $8,767.60 | $292.25 | Aquathol K Liquid, Nautique | 4.75 gal/ac, 0.6 gal/ac | Reduce problem plant population to provide public and shoreline access | ~70% control of plant at end of season. Some late season regrowth noted. |
| | Water Shield | 0.8 | $104.84 | $139.79 | Touchdown PRO | 1.0 gal/ac | Remove plants to improve access and use of water for property owners. | >95% control of plant in areas treated at end of season |
| | **TOTAL:** | 72.2 | $24,435.90 | $338.45 | | | | |
| **Fountain Lake Impound** | Chara | 1.0 | $310.47 | $310.47 | Captain, Cygnet Plus | 4.0 gal/ac, 1.0 gal/ac | Remove algae to improve access and use of water for property owners. | >95% control of plant in areas treated at end of season |
| | Water Primrose, Alligatorweed | 2.0 | $404.96 | $202.48 | Clearcast, Touchdown PRO | .5 gal/ac, .25 gal/ac | Reduce problem plant population to provide public and shoreline access | ~75% control of plant at end of season. Some late season regrowth noted. |
| | Fragrant Water Lily | 1.0 | $304.61 | $304.61 | Clearcast, Touchdown PRO | .5 gal/ac, .25 gal/ac | Provide access to open water and shoreline areas for public use | >95% control of plant in areas treated at end of season |
| | Lyngbya, Pithophora | 4.0 | $496.91 | $124.23 | Captain, Cygnet Plus | 4.0 gal/ac, 1.0 gal/ac | Remove algae to improve access and use of water for property owners. | Remove algae to improve access and use of water for property owners. |
| | Pondweed | 5.0 | $1,427.32 | $285.46 | Nautique | 2.5 gal/ac | Eliminate plant population to provide public access to coves and open water areas and prevent spread to other areas of lake | ~75% control of plant at end of season. Some late season regrowth noted. |
| | Water Shield | 3.0 | $913.85 | $304.62 | Clearcast, Touchdown PRO | .5 gal/ac, .25 gal/ac | Provide access to open water and shoreline areas for public use | >95% control of plant in areas treated at end of season |
| | **TOTAL:** | 16.0 | $3,858.12 | $241.13 | | | | |
| | **SANTEE COOPER TOTAL:** | 3020.10 | $676,935.41 | $223.85 | | | | |

| Waterbody | TargetPlants | Acres | TotalCost | Cost/Acre | ControlAgent | Rate | ManagementObjective | ControlEffectiveness |
|---|---|---|---|---|---|---|---|---|
| **SC State Parks** | | | | | | | | |
| **SP Aiken** | Bladderwort | 7.00 | $1,832.75 | $261.82 | Sonar 1 | 8.57 lbs/ac | Reduce problem plants to enhance public access, use and water quality. | >95% control |
| | Floating heart | 2.00 | $1,258.50 | $629.25 | Renovate Max G | 200 lbs/ac | Reduce problem plants to enhance public access, use and water quality. | >95% control |
| | Misc | 1.00 | $79.55 | $79.55 | Habitat/Glyphosate | 0.500 gal/ac 0.500 gal/a | Reduce problem plants to enhance public access, use and water quality. | 95% control |
| | TOTAL: | 10.00 | $3,170.80 | $79.55 | | | | |
| **SP Barnwell** | Watershield | 2.00 | $1,258.50 | $629.25 | Renovate Max G | 200 lbs/ac | Reduce problem plants to enhance public access, use and water quality. | 95% control |
| | TOTAL: | 2.00 | $1,258.50 | $629.25 | | | | |
| **SP Cheraw** | Water lily | 20.00 | $12,585.00 | $629.25 | Renovate Max G | 200 lbs/ac | Reduce problem plants to enhance public access, use and water quality. | 95% control |
| | TOTAL: | 20.00 | $12,585.00 | $629.25 | | | | |
| **SP Croft** | Hydrilla | 5.00 | $1,350.50 | $270.10 | Nautique/Diquat | 4 gal/ac 2 gal/ac | Reduce problem plants to enhance public access, use and water quality. | 95% control |
| | TOTAL: | 5.00 | $1,350.50 | $270.10 | | | | |
| **SP Hickory Knob** | Hydrilla | 4.00 | $980.00 | $245.00 | Sonar 1/Sonar Genesis | 5 lbs/ac 0.500 gal/ac | Reduce problem plants to enhance public access, use and water quality. | 95% control |
| | | 2.00 | $357.50 | $178.75 | Triploid Grass Carp | 50 | Reduce problem plants to enhance public access, use and water quality. | 95% control |
| | TOTAL: | 6.00 | $1,337.50 | $178.75 | | | | |
| **SP Lake Croft** | Hydrilla | 50.00 | $8,937.50 | $178.75 | Triploid Grass Carp | 1250 | Reduce problem plants to enhance public access, use and water quality. | >95% control |
| | TOTAL: | 50.00 | $8,937.50 | $178.75 | | | | |
| **SP Lake Placid** | Hydrilla | 3.00 | $536.25 | $178.75 | Triploid Grass Carp | 75 | | |
| | TOTAL: | 3.00 | $536.25 | $178.75 | | | | |
| **SP Little Pee Dee** | Water lily | 10.00 | $6,292.50 | $629.25 | Renovate Max G | 200 lbs/ac | | |
| | TOTAL: | 10.00 | $6,292.50 | $629.25 | | | | |
| **SP Poinsett** | Misc | 3.00 | $1,887.75 | $629.25 | Renovate Max G | 200 lbs/ac | | |
| | TOTAL: | 3.00 | $1,887.75 | $629.25 | | | | |
| | STATE PARKS TOTAL | 109.00 | $37,356.30 | $342.72 | | | | |
| | | | | | | | | |
| | SCDNR TOTAL | 1508.13 | $393,290.30 | $260.78 | | | | |
| | | | | | | | | |
| | SANTEE COOPER TOTAL | 3020.10 | $976,595.41 | $323.35 | | | | |
| | | | | | | | | |
| | STATE PARKS TOTAL | 109.00 | $37,356.30 | $342.72 | | | | |
| | | | | | | | | |
| | SANTEE CARP TOTAL | | $ 543,910.00 | | | | | |
| | | | | | | | | |
| | GRAND TOTAL | 4637.23 | $1,951,092.01 | | | | | |

## APPENDIX H

## Summary of Public Comments, Responses, and Plan Modifications to the Draft South Carolina Aquatic Plant Management Plan

**Summary of Public Comments, Responses, and Plan Modifications to the Draft 2014 South Carolina Aquatic Plant Management Plan**

**Santee Cooper Lakes**

14 Comments

**Comments**

**Opposed:**

**Supported:**

As a member of the Goat Island boat Club, I am very interested in health of our lake system. I am in favor of the plan as written. Thank you for your time and commitment. Sincerely, Jennifer Conlin Miller H. Robert Miller
Jennifer Miller [jconmil@gmail.com]

I am in total support of DNR's actions to control the invasive weeds choking out the shoreline of our lake. I remember the terrible Hydrilla problem many years ago and now we have it and Floating Crested Heart choking out many of the coves on the lake. As a sportsman that has enjoyed hunting and fishing on both lakes I hope that DNR can find a solution to control the invasive weeds as well as support the fishing and wildlife habitat. Jerry McCown
McCown, William J (Jerry) [William.McCown@workflowone.com]

First off, thanks to the Aquatic Plant Management Council for the outstanding work you do trying to rid our lakes of invasive weeds. My one comment on the Aquatic Plan Management Plan as posted on your web site is that I prefer that you develop a more robust annual maintenance stocking plan for triploid grass carp in the Santee Cooper Lakes to eliminate the spikes in hydrilla growth when the grass carp numbers in the lakes decline. Suspending the stocking of grass carp because the current level of hydrilla has declined will only put the lakes in another period of hydrilla growth the Council will have to face in the future.
Looking at Appendix G, Summary of Plant Control Expenditures:
1989 - stocked 100,000 grass carp in Lake Marion
1990 - stocked 100,000 grass carp in Lake Marion
1991 - third stocking of grass carp
1992 - reported widespread control of hydrillia in Lake Marion
1993 - reported control over 9000 acres of hydrillia in Lake Marion
1994 - stocked 150,000 grass carp in Lake Moultrie
1995 - stocked 91,000 grass carp in Santee Cooper Lakes
1996 - reported hydrillia declined by 80%
1997 - 2005 reported widespread control of hydrillia, no mention of additional stocking, assume there was none
2006 - growth of hydrilla indicates additional stocking of grass carp would be required

2007 - maintenance stocking of 2620 grass carp in Santee Cooper Lakes
2008 - reported hydrilla rebounded across the state and maintenance restocking of grass carp would be reconsidered
2009 - maintenance stocking of grass carp in Santee Cooper Lakes
2010 - maintenance stocking of grass carp in Santee Cooper Lakes
2011 - reported hydrilla growth increased by 160%, forced to forego maintenance stocking of grass carp for an adaptive management strategy, 109,000 grass carp to be stocked
2012 - reported hydrilla increased to 7210 acres
2013 - reported hydrilla acreage down to 1100 acres

Clearly this shows the positive effects of stocking large numbers of grass carp to effectively control hydrilla. Just as apparent is the rapid growth of hydrilla once there are insufficient grass carp in the lakes to maintain control of the invasive weed. I believe a robust annual maintenance stocking plan is the correct path to follow, but there must be sufficient fish added each year to keep the numbers in the lakes at a level to control or eradicate the hydrilla altogether. Not adding any fish or an insufficient number is surely a recipe for aggressive hydrilla growth.

Thanks for allowing me to comment on your plan. Other than my one concern over suspending the grass carp stocking plan for the Santee Cooper Lakes, you have my full support.

Dale Cozart
306 Broad River Drive
Santee, SC 29142
843 697-2103
Dale Cozart [cozartd@gmail.com]

I am submitting this comment to ask that you pay particular attention to the coves and inlets south of the I-95 Bridge. In the DRAFT 2014 SOUTH CAROLINA AQUATIC PLANT MANAGEMENT PLAN regarding Lake Marion (Calhoun, Clarendon, Orangeburg, Berkeley, and Sumter Counties), Water Hyacinth is identified as a problem plant species. The stated goal in the plan is to "Reduce water hyacinth populations throughout the lakes to enhance boating, fishing, hunting, public access and prevent spread to other areas of the lake."

Unfortunately, the plan states that there are approximately 4000 acres of Water Hyacinth throughout the lake, but *"mostly in the upper lake area above I-95 Bridge."* There may be a lot of Water Hyacinth north of the I-95 Bridge, but there is also a great deal below the Bridge in coves and inlets that are choking the ability of residents and visitors alike from access to Lake Marion.

The plan states that Water Hyacinth treatments will be considered a *high priority to minimize spread to other areas of the lake system*. I would especially like to emphasize this point – Water Hyacinth does travel by wind and currents to infest coves and inlets south of the I-95 Bridge and must be vigorously treated and to prevent its continuing expansion.

Thank you for soliciting comments – please listen! Mike Kirk Santee, S.C.

Michael Kirk [mkk@att.net]

I, Sandra J. Rolland, President of the Goat Island Boat Club, am in total support of this program, I want what's best for our waters, and safety for our boats, swimmers etc, please, please keep up

what you are, and have been doing, in the past!!
I'am in total Support!! Thank You, for hearing me out! Sandra J. Rolland
Robin Rolland [rjroll@bellsouth.net]

Thank you to everyone involved in the making of the Aquatic Plant Management Plan for 2014. All of your hard work is greatly appreciated. My one concern is the decision to temporarily suspend the stocking of triploid carp in Santee Cooper Lakes. I have witnessed the rapid growth of hydrilla in the past and I do not want to see that happen again. I'm concerned that we may find ourselves in a position of playing 'catch up'. With that being said, I have faith that the very knowledgeable staff of SCDNR and Santee Cooper will diligently monitor for a resurgence of hydrilla and will respond with herbicides and a restocking of triploid carp. Again, thank you all for all your hard work.
Debra Gleaton
1043 Autumn Lane
Summerton, SC 29148
Debra Gleaton [dgleaton@ftc-i.net]

As a home owner living on lake Marion, I have always supported the control of non-native weeds in our lake and always will. I am 66 years old and since I can remember the highlight of my earlier years was looking forward to getting away and going fishing for bream on lake Marion. Just the thought of fishing for these fighters (and other species), and the over all beauty of this lake was the main reason I retired here. In 1998 when I did retire here, I started to realize the problems of home owners living on the lake concerning these unwelcomed non-native weeds. For such a long time, you could not even pull your boat (or recreational vehicle) up to your on dock. Boat landings were closed because of the weed hydrilla. As I have stated, I very much support the efforts of DNR in controlling these aquatic plants that do not belong on our lake.
Winston Hinds
Proud member of Goat Island Boat Club
MarleHin@aol.com

I'm writing to thank you for the work you have done on the invasive weed program and pledge my support for the future. Please do not hesitate to call on me or the Goat Island Boat Club for support. Thank you again for the work you have done.
Carl Cagle
1321 Holland Rd.
Summerton, SC 29148
carlmcagle@FTC-I.NET

I fully support the 2014 S.C. Aquatic Plant Management Plan.
Eddie V. Gleaton, Jr.
1043 Autumn Lane
Summerton, SC 29148
Eddie Gleaton [manningit@cityofmanning.org]

As residents who live on the lake and enjoy all recreational activities the lake has to offer, we support all efforts to control the invasive weeds. The weeds often severely detract from the recreational value of the lake. It is disturbing that in recent years, new species have appeared that require constant and expensive defensive measures. We think the cost is necessary to preserve this valuable resource.
Thank you for your assistance in this matter,
William and Wanda Johnson
wanda@whjohnsonlaw.com

Re: 2014 South Carolina Aquatic Plant Management Plan
The Santee National Wildlife Refuge (NWR) would like to express support for the 2014 South Carolina Aquatic Plant Management Plan developed by the SC Aquatic Plant Management Council and SCDNR. The plan is consistent with U. S. Fish and Wildlife Service (Service) policy on control and removal of exotic, invasive organisms that have harmful impacts on aquatic natural resources and on the human use of these resources. Additionally, the plan is consistent with the Santee NWR Comprehensive Conservation Plan goals and objectives. The occurrence and spread of exotic, invasive, and nuisance plant and animal species has been identified by Service staff and intergovernmental partners as one of the priority management issues facing Santee NWR.
We support your efforts to enhance the biological integrity, desirable native vegetation, compatible public uses, and control of aquatic invasive species on the refuge and contiguous ecosystems.
Thank you for the opportunity to comment.
Sincerely,
Marc Epstein, Refuge Manager
U. S. Fish and Wildlife Service
Santee National Wildlife Refuge
2125 Fort Watson Road
Summerton, SC 29148
http://www.fws.gov/santee/ - marc_epstein@fws.gov

As a fourteen (14) year resident of the Lake Marion area and a member of the Goat Island Boat Club, I feel I must express my appreciation to you, the SCDNR, and Mr. Larry McCord of Santee Cooper for your continued efforts to control the spread of invasive and nuisance weeds that reside in our beautiful lake. Having said that, please count me as a supporter of the DNR 2014 SC Aquatic Plant Management Plan. I firmly believe the plan always has and continues to strike a balance between the needs of both fisherman and recreational boaters.
Hal White
1021 Carving Trace
Manning S.C. 29102

The purpose of this letter is to express my support for your Draft 2014 Aquatic Plant Management Plan. I believe that your current plan for control of nuisance weeds is geared to minimizing the impact the weed control will have on fishing while insuring that recreational activities on the lake will not be impacted.

Michael T. Young
1061 Carving Trace
Manning S.C. 29102

I have reviewed the DNR's Draft 2014 Aquatic Plant Management Plan and support the plan as it is written. As a recreational bass fisherman I frequently visit the many piers and sloughs around Wyboo Creek and can attest to both the quantity and quality of the fish that populate this area of our lake. I appreciated that the SC DNR has an invasive weed control program that allows excellent fishing opportunities and, at the same time, is compatible with recreational boating.
John V. Hall
1042 Carving Trace
Manning S.C. 29102

**Comments and Revisions:**

**Response:**

Most of the problems that were commented on are solely contributed to the problematic water hyacinth that got pushed out of the upper lake's swamps in 2014 by extremely high flows. That was an unusual situation as heavy rainfall dominated the areas climate last year. That rainfall also led to poor growing conditions for submersed plants and made it extremely difficult to survey for said plants. With the absence of the large acreage in 2013 surveys we find it problematic to continue stocking at the same rate as in 2013. As the season progresses and we can further analyze the acreage and composition of the submersed species we have the option available to stock additional triploid carp if conditions warrant. Our goal through adaptive management techniques is to return to a maintenance mode for the stocking of grass carp.

**Plan Modifications:**

None at present time.

The South Carolina Department of Natural Resources prohibits discrimination on the basis of race, color, national origin, disability, age, sex, or religion. Direct all inquiries to the

Office of Human Resources,

P.O. Box 167, Columbia, SC 2920

Revised: 2/24/2015