2006
SOUTH CAROLINA AQUATIC PLANT MANAGEMENT PLAN PART II

Prepared by the
South Carolina Department of Natural Resources
and Approved by the
South Carolina Aquatic Plant Management Council

March, 2006

2006

ANNUAL MANAGEMENT PLAN

PART II

INTRODUCTION

The Annual Management Plan for 2006 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*
Cowlily	*Nuphar luteum macrophyllum*
Cattails	*Typha* spp.
Coontail	*Ceratophyllum demersum*
Creeping rush	*Juncus repens*
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.
Giant cutgrass	*Zizaniopsis miliacea*
Hydrilla	*Hydrilla verticillata*
Musk-grass	*Chara*
Pondweed	*Potamogeton* spp.
Common reed	*Phragmites australis*
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 2005.

1. Water body - ***Back River Reservoir***
   Location - Berkeley County
   Surface acres - 850
   Aquatic plants - Brazilian elodea, hydrilla, water hyacinth, water primrose, fanwort
   Coverage - 380 acres
   Impaired activities- Boating, fishing, hunting, swimming, industrial water supply, municipal water supply, electric power generation, public access

2. Water body - ***Bauruch Institute***
   Location - Georgetown County
   Surface acres -Unknown
   Aquatic plants - Phragmites
   Coverage - 1000 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
   Coverage - 30 acres
   Impaired activities - Boating, hunting, fishing, public access

4. Water body - ***Black River***
   Location - Georgetown County
   Surface acres -Unknown
   Aquatic plants - Alligatorweed
   Coverage - 50 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
   Coverage - 50+ acres
   Impaired activities - Boating, hunting, fishing, public access

6. 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

7. Water body - ***Cooper River*** (and adjacent ricefields)
Location - Berkeley County
Surface acres - Unknown
Aquatic plants - Hydrilla, water primrose, water hyacinth
Coverage - approx. 3,000 acres
Impaired activities - Boating, hunting, fishing, public access

8. Water body - ***Donnelley/Bear Island WMA***
Location - Colleton County
Surface acres - Multiple impoundments and rivers
Aquatic plants - Cutgrass, Frog's bit, Cattails, Phragmites
Coverage - 50+ acres
Impaired activities - Hunting, public access

9. Water body - ***Goose Creek Reservoir***
Location - Berkeley County
Surface acres - 500
Aquatic plants - Water hyacinth, water lettuce, water primrose, hydrilla
Coverage - 60 acres
Impaired activities - Boating, public access, industrial water supply, floodway

10. Water body - ***Lake Greenwood***
Location -Laurens and Greenwood Counties
Surface acres - 11,400
Aquatic plants - Hydrilla, slender naiad
Coverage - 100 acres
Impaired activities - Boating, swimming, vector control, public access

11. Water body - ***Lake Keowee***
Location - Pickens and Oconee Counties
Surface acres - 18,300
Aquatic plants - Hydrilla
Coverage - 10 acres
Impaired activities - Potential impacts to water recreation, public access, electric power generation, municipal water supply

12. 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, giant cutgrass
Coverage - 1000 acres
Impaired activities - Boating, swimming, public access, potential electric power generation, potential irrigation water withdrawals

13. 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, giant cutgrass
Coverage - 150 acres
Impaired activities - Potential electric power generation, boating, swimming, public access, potential domestic and irrigation water withdrawals

14. Water body - ***Lake Murray***
Location - Lexington and Richland Counties
Surface acres - 50,000
Aquatic plants - Hydrilla, Illinois pondweed, water primrose, alligatorweed
Coverage - 300 acres
Impaired activities - Boating, swimming, potential domestic and municipal water intakes, public access

15. Water body - ***Lake Wateree***
Location - Kershaw County
Surface acres - 13,710
Aquatic plants - Hydrilla
Coverage - < 2 acres
Impaired activities - Potential boating, swimming, public access

16. Water body - ***Little Pee Dee River***
Location - Marion and Horry Counties
Surface acres -Unknown
Aquatic plants - Alligatorweed
Coverage - 100 acres
Impaired activities - Boating, hunting, fishing, public access

17. Water body - ***Lumber River***
Location - Marion and Horry Counties
Surface acres -Unknown
Aquatic plants - Alligatorweed
Coverage - 40 acres
Impaired activities - Boating, hunting, fishing, public access

18. Water body - ***Pee Dee River***
Location - Georgetown County
Surface acres - Unknown
Aquatic plants - Water hyacinth, Phragmites
Coverage - 50 acres
Impaired activities - Boating, hunting

19. Water body - ***Santee Coastal Reserve***
Location - Georgetown County
Surface acres - Unknown
Aquatic plants - Phragmites
Coverage - 1200+ acres
Impaired activities - Hunting, public access

20. Water body - ***Santee Delta WMA***
Location - Georgetown County
Surface acres - Unknown
Aquatic plants - Phragmites
Coverage - 25+ acres
Impaired activities - Hunting, public access

21. 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

22. Water body - ***Yawkey Wildlife Center***
Location - Georgetown County
Surface acres - Unknown
Aquatic plants - Phragmites
Coverage - 50+ acres
Impaired activities - Hunting, public access

23. Water body - ***Barnwell State Park***
Location - Barnwell County
Surface acres - 12
Aquatic plants - Waterlily
Coverage - 3 acres
Impaired activities - Fishing, swimming, aesthetics

24. Water body - ***Charles Towne Landing State Park***
Location - Charleston County
Surface acres - 5
Aquatic plants - Duckweed, alligatorweed, pennywort, cyanobacteria
Coverage - 4 acres
Impaired activities - Fishing, aesthetics

25. 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

26. Water body - ***Little Pee Dee State Park***
Location - Dillon County
Surface acres - 75
Aquatic plants - Spikerush, cowlily
Coverage - 15 acres
Impaired activities - Fishing, boating

27. Water body - ***Santee State Park - Swimming lake***
Location - Orangeburg County
Surface acres - Unknown
Aquatic plants - Coontail
Coverage - 10 acres
Impaired activities - Swimming, recreational activities

28. Water body - ***Sesquicentennial State Park***
Location - Richland County
Surface acres - 25 acres
Aquatic plants - Waterlily, watershield
Coverage - 10 acres
Impaired activities - Swimming, fishing

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 2006 and a location map of problem water bodies are located at the end of this section.

1. Back River Reservoir

(Berkeley County)

1. Problem plant species

Hydrilla	Water hyacinth
Brazilian elodea	Fanwort
Water primrose	Cutgrass

2. Management objectives

   a. 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.

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

   c. Reduce hydrilla and fanwort in 60 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.

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

3. Selected control method

Problem Species	Control Agent
Water hyacinth	Renovate 3, Reward
Water primrose, Cutgrass	Renovate 3, Reward, Habitat
Hydrilla, Brazilian elodea	Chelated copper*, Chelated copper*/Reward
Fanwort	Endotholl

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

4. Area to which control is to be applied

Renovate 3, Reward - 300 acres of water hyacinth throughout the lake.

Habitat - 150 acres of water primrose and cutgrass throughout the lake.

Chelated copper, Chelated copper*/Reward - 185 acres of hydrilla (3 treatments of 60 acre area near SCE&G intake, 5 acres of hydrilla adjacent to Bushy Park Landing).

Chelated copper, Chelated copper*/Reward - 40 acres of hydrilla in Foster Creek arm (2 treatments - 20 acres each).

Endotholl - 5 acres of fanwort adjacent to Bushy Park Landing.

5. Rate of control agents to be applied

Renovate 3 - 0.5 - 0.75 gallons per acre

Reward - 0.5 gallon per acre.

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

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

Habitat - up to 4 pints per acre/up to 6 pints per acre.

Endotholl - up to 7 gallons per acre.

6. Method of application of control agents

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

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

7. Timing and sequence of control application

Three hundred (300) acres of water hyacinths treated with Renovate 3(May-July), Reward(July-October). The initial treatments are to be followed in 1-2 days with a cleanup treatment.

One Hundred fifty (150) acres of water primrose and cutgrass treated with Habitat during the growing season(May-October).

20 acres of hydrilla in Foster Creek to be treated 2 times (April-October) with Chelated copper, Chelated copper*/Reward.

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

Hydrilla located near the SCE&G water intake to be treated periodically during the year with Chelated copper, Chelated copper*/Reward (up to three times in

the same 60 acre area), treatment area may be expanded as control is realized in target area.

8. Other control application specifications

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

Renovate 3 treatments conducted within 1600 feet of the CPW water intake will use a rate of 0.5 gallons per acre or less. 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 is present on submersed macrophytes, an algacide, 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.

9. Entity to apply control agents

Commercial applicator

10. Estimated cost of control operations

$108,135

11. Potential sources of funding

Water primrose and water hyacinths -

Charleston Commissioners of Public Works 30%
S.C. Electric and Gas Co. 20%
U.S. Army Corps of Engineers 0%
S. C. Department of Natural Resources 50%

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

Hydrilla and Cabomba (near SCE&G intake) -

South Carolina Electric and Gas Co. 50%
U.S. Army Corps of Engineers 0%
S. C. Department of Natural Resources 50%

(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%
U.S. Army Corps of Engineers 0%
S. C. Department of Natural Resources 50%

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

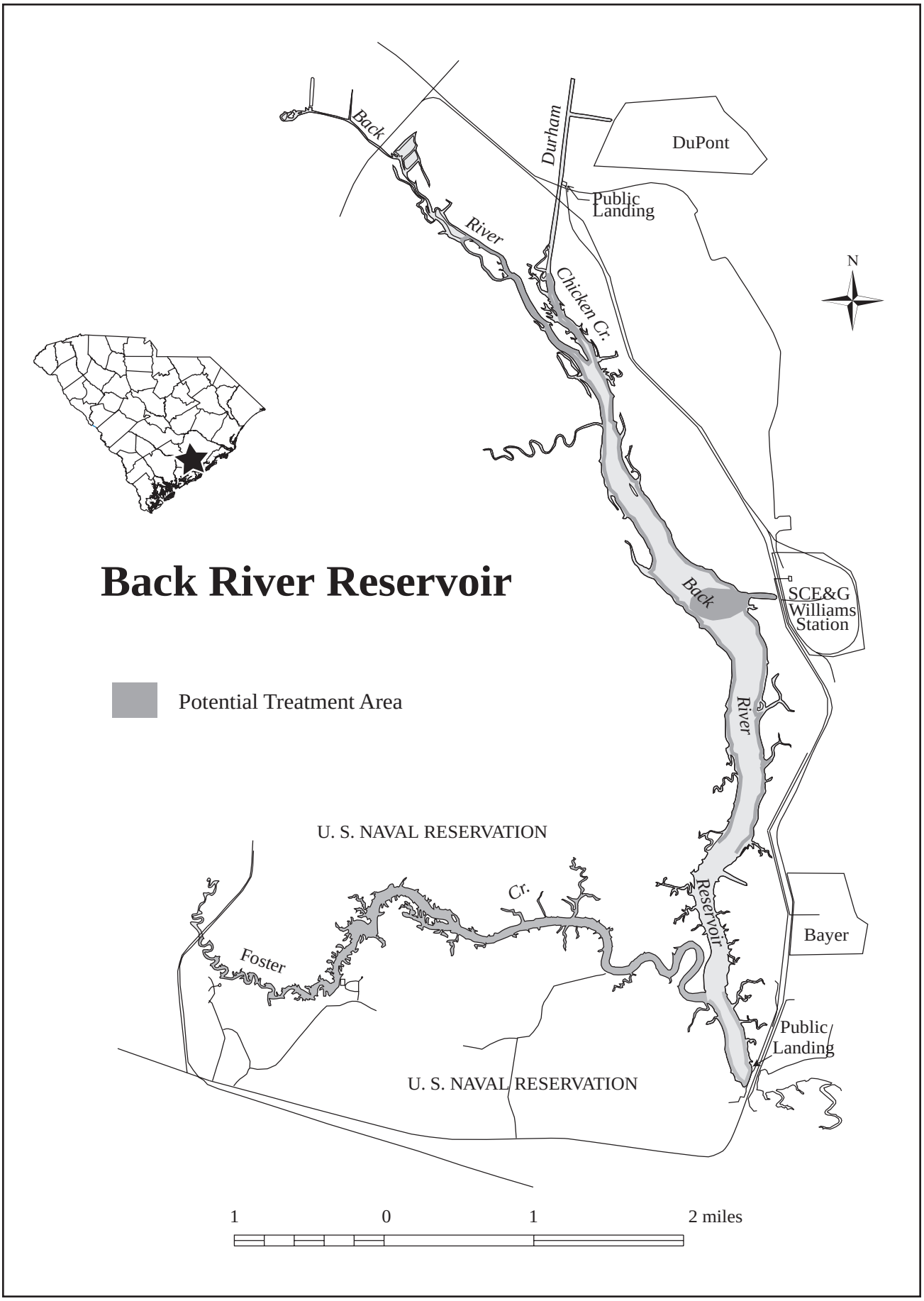
12. Long term management strategy

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

2. Bauruch Institute
(Georgetown County)

1. Problem plant species

   Phragmites

2. Management objective

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

3. Selected control method

Problem Species	Control Agent
Phragmites	Habitat

4. Area to which control is to be applied

   100 acres of phragmites throughout area

5. Rate of control agent to be applied

   Habitat - 2 - 6 pints per acre.

6. Method of application of control agent

   Helicopter - 100 acres of Habitat applied to phragmites.

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

7. Timing and sequence of control application

   Apply when plants are actively growing (July - Sept.).

9. Entity to apply control agent

   Commercial applicator

10. Estimated cost of control operations

    $18,238

11. Potential sources of funding

    Baruch Institute 50%

    U.S. Army Corps of Engineers 0%

    S. C. Department of Natural Resources 50%

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

12. 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.

3. Black Mingo Creek

(Georgetown County)

1. Problem plant species

Alligatorweed	Parrot feather
Frog's bit	Pennywort

2. 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.

3. Selected control method

Problem Species	Control Agent
Alligatorweed, Pennywort	Renovate 3, Habitat
Frog's bit, Parrot feather	Reward

4. Area to which control is to be applied

30 acres of problematic plants throughout river

5. Rate of control agent to be applied

Reward - 0.5 gallon per acre.

Renovate 3 - 0.5-0.75 gallons per acre.

Habitat - 2-3 pints per acre.

6. Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

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

9. Entity to apply control agent

Commercial applicator

10. Estimated cost of control operations

$3,167

11. Potential sources of funding

Georgetown County 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

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

12. Long term management strategy

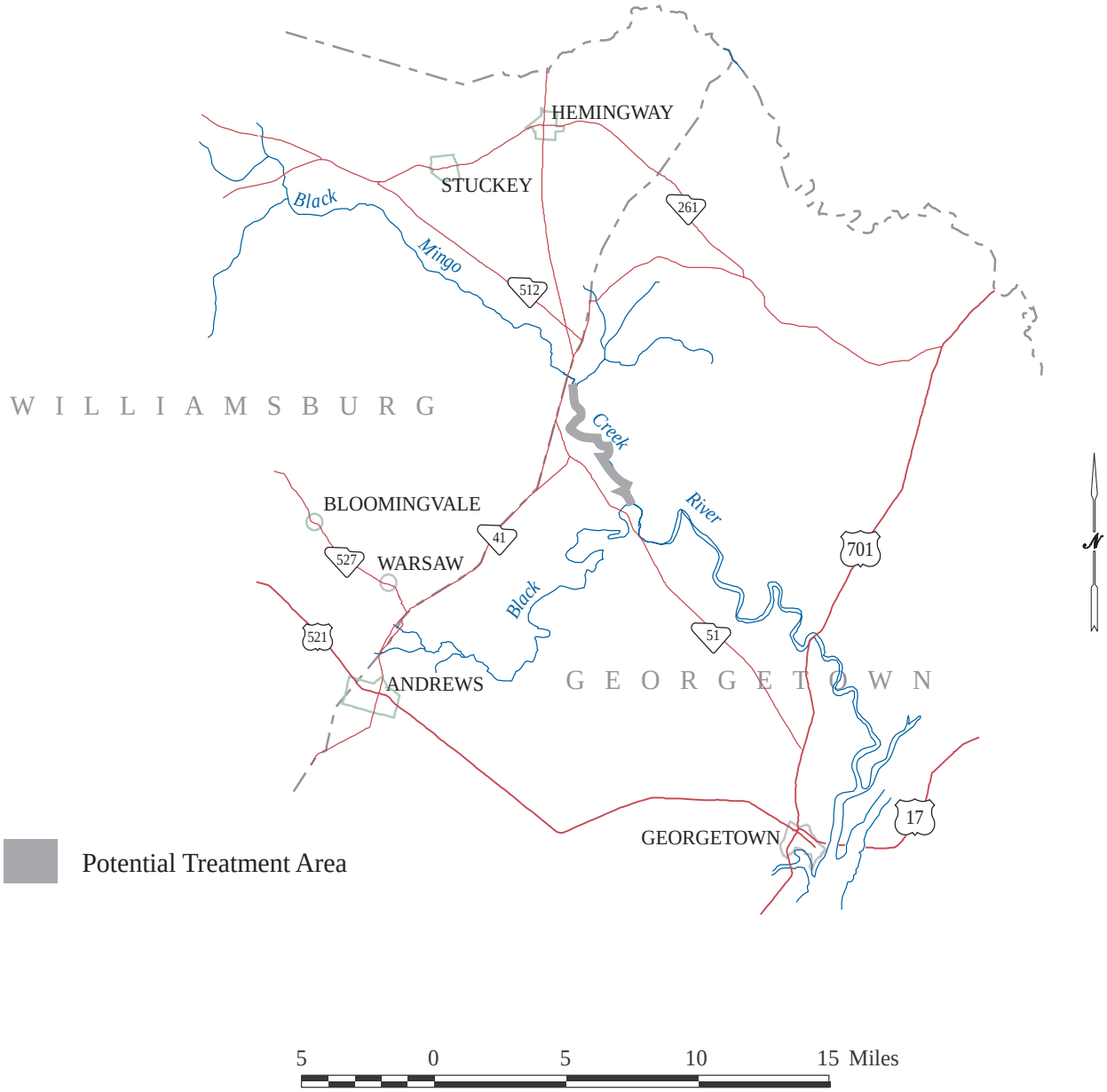
a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

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



4. Black River

(Georgetown County)

1. Problem plant species

Alligatorweed	Parrot feather
Frog's bit	Pennywort

2. 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.

3. Selected control method

Problem Species	Control Agent
Alligatorweed, Pennywort	Renovate 3, Habitat
Frog's bit, Parrot feather	Reward

4. Area to which control is to be applied

30 acres of problematic plants throughout river

5. Rate of control agent to be applied

Reward - 0.5 gallon per acre.

Renovate 3 - 0.5-0.75 gallons per acre.

Habitat - 2-3 pints per acre.

6. Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

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

8. Other control application specifications

None

9. Entity to apply control agent

Commercial applicator

10. Estimated cost of control operations

$3,167

11. Potential sources of funding

Georgetown County 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

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

12. Long term management strategy

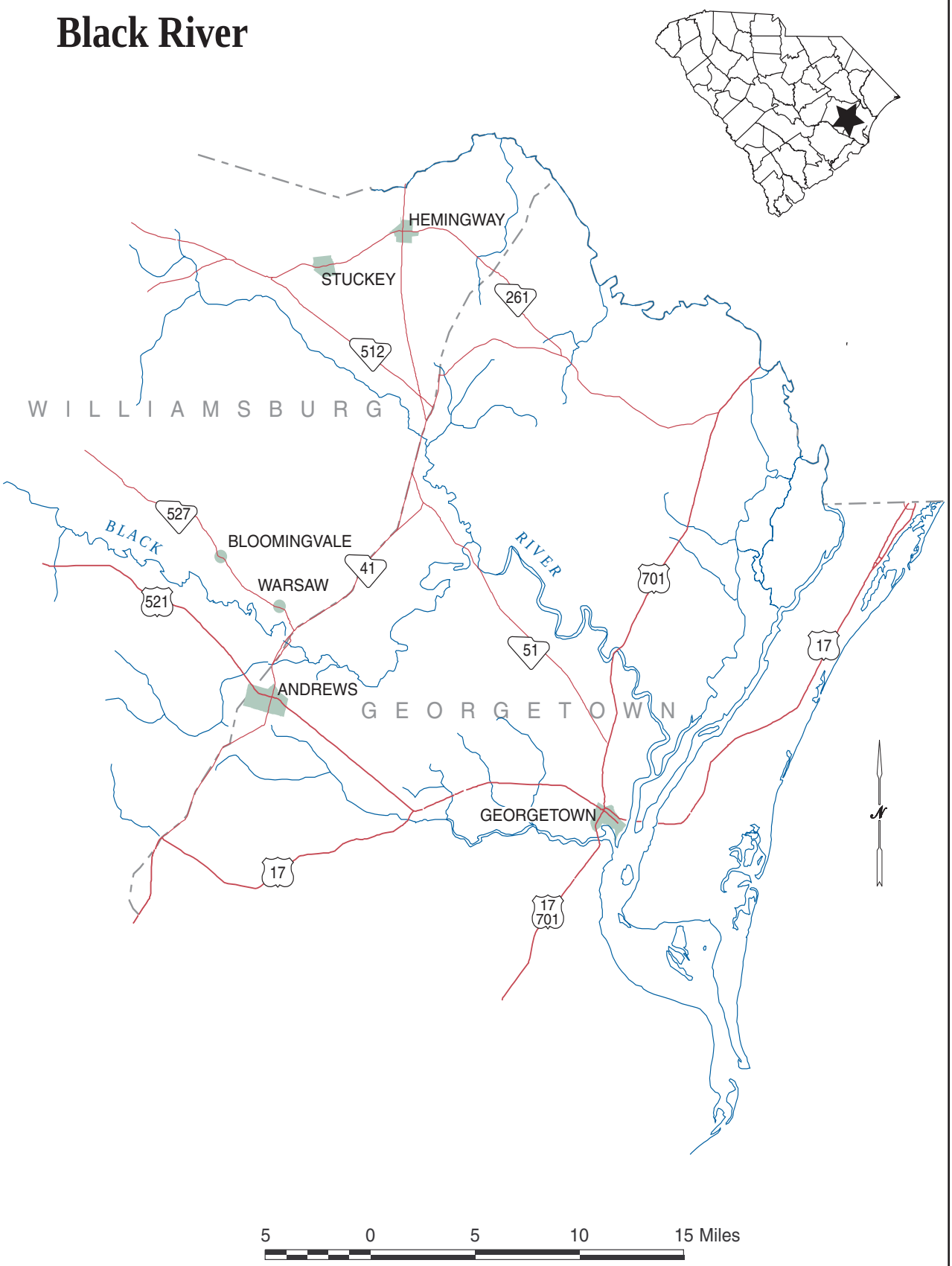
a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

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
W I L L I A M S B U R G
527
BLACK
BLOOMINGVALE
41
WARSAW
521
RIVER
701
51
17
ANDREWS
G E O R G E T O W N
GEORGETOWN
17
17
701
N
5
0
5
10
15 Miles

5. Bonneau Ferry

(Berkeley County)

1. Problem plant species

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

2. 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.

3. Selected control method

Problem Species	Control Agent
Water primrose, Pennywort	Renovate 3, Habitat
Cattails, Cutgrass, Parrotfeather	Habitat
Water hyacinth, Frog's bit	Renovate 3, Reward

4. Area to which control is to be applied

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

5. Rate of control agent to be applied

Habitat - 2-3 pints per acre.
Reward - 2 quarts per acre.
Renovate 3 - up to 4 quarts per acre.

6. Method of application of control agent

Helicopter - 25 acres of Habitat mix with appropriate surfactant.

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

7. Timing and sequence of control application

Apply when plants are actively growing.

8. Other control application specifications

None

9. Entity to apply control agent

Commercial applicator

10. Estimated cost of control operations

$13,083

11. Potential sources of funding

S. C. Department of Natural Resources 100%

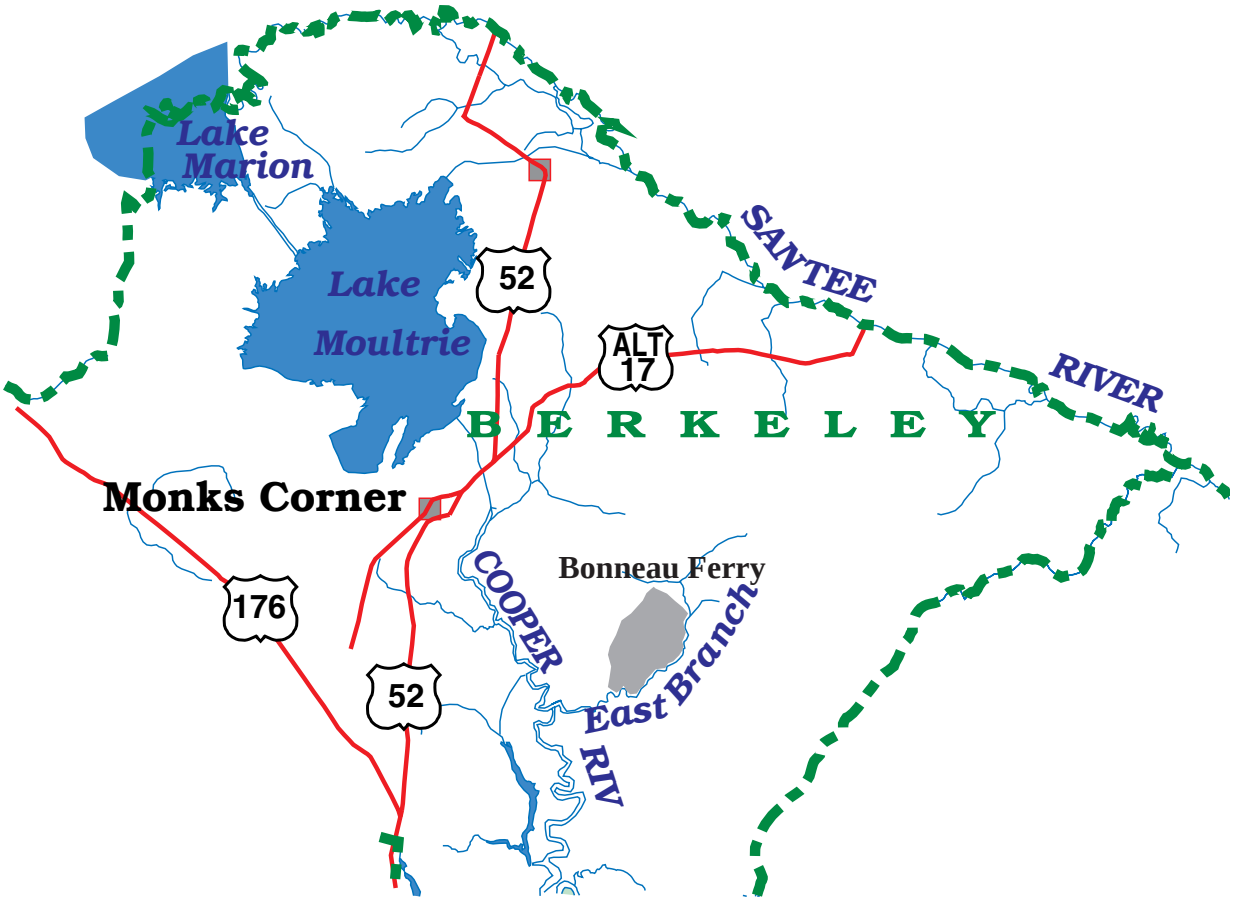
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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



6. Combahee River (Borrow pit)

(Colleton County)

1. Problem plant species

   Alligatorweed, Parrot feather, Frog's bit

2. Management objective

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

3. Selected control method

Problem Species	Control Agent
Alligatorweed	Renovate 3, Habitat
Frog's bit, Parrot feather	Reward

4. Area to which control is to be applied

   12 acres of problematic plants.

5. Rate of control agent to be applied

   Reward - 0.5 gallon per acre.

   Renovate 3 - 0.50-0.75 gallons per acre.

   Habitat - up to 4 pints per acre/up to 6 pints per acre.

6. Method of application of control agent

   Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

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

8. Other control application specifications

   None

9. Entity to apply control agent

   Commercial applicator

10. Estimated cost of control operations

    $1,299

11. Potential sources of funding

Colleton County 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

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

12. Long term management strategy

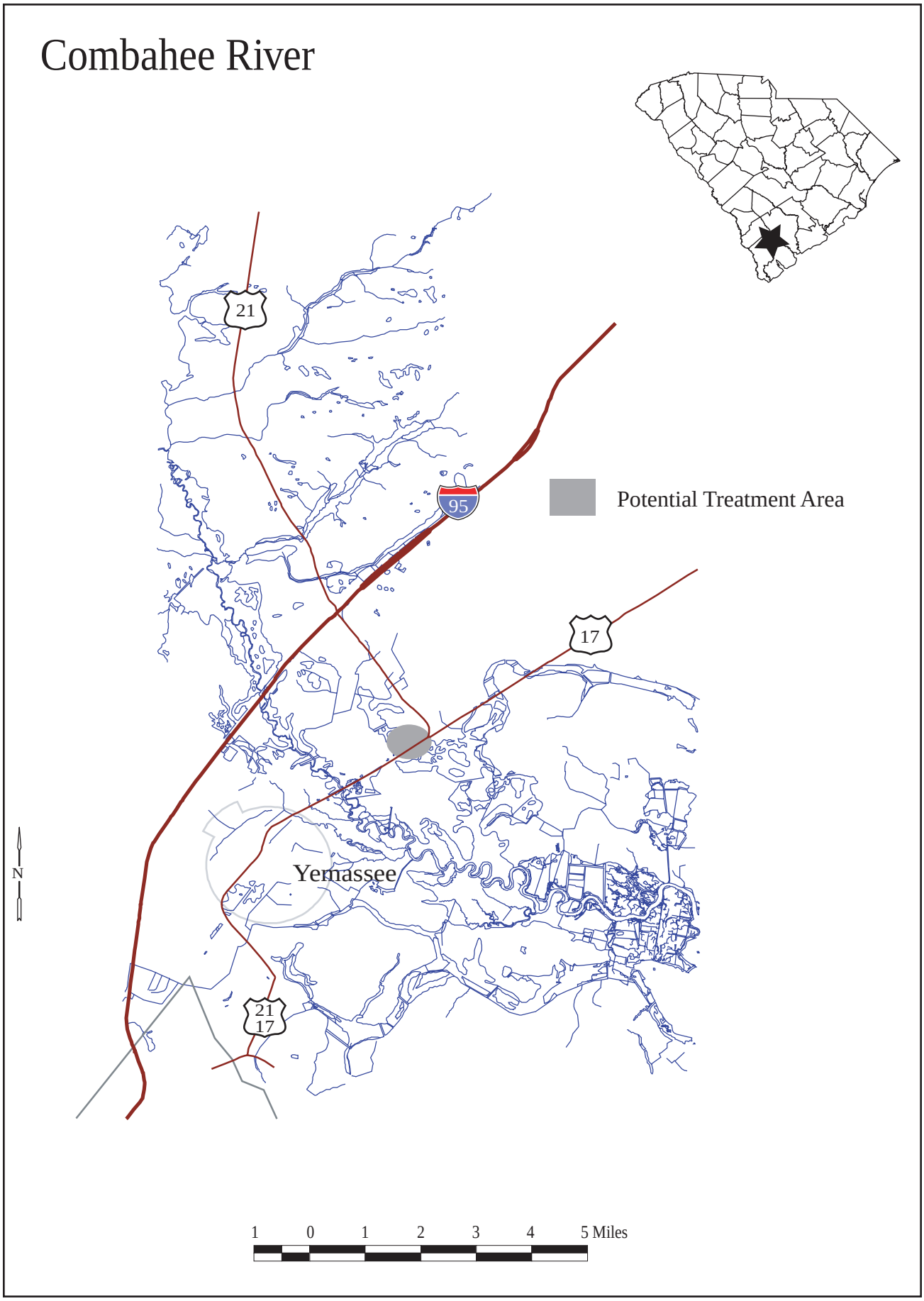
a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

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



7. Cooper River

(Berkeley County)

1. Problem plant species

   Hydrilla, Water hyacinth, Water primrose

2. Management objectives

   a. Reduce water hyacinth populations to the greatest extent possible in the main river and public ricefields.

   b. Reduce water primrose growth along boat channels to maintain navigation.

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

3. Selected control method

Problem Species	Control Agent
Water hyacinth	Renovate 3, Reward
Water primrose	Renovate 3, Reward, Habitat
Hydrilla	Chelated copper*

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

4. Area to which control is to be applied

   Renovate 3, Reward, Habitat - 600 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 Yacht Club ricefield.

   Chelated copper - 60 acres (30 acres treated twice yearly, spring and fall) to open boat trails in Pimlico, Berkeley Yacht Club and Rice Hope Plantation ricefields.

5. Rate of control agents to be applied

   Reward - 0.5 gallon per acre.

   Renovate 3 - 0.50-0.75 gallons per acre.

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

   Habitat - 2-3 pints per acre.

6. Method of application of control agent

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

   Chelated copper - subsurface injection from airboat.

7. Timing and sequence of control application

All agents to be applied when plants are actively growing. Renovate 3 treatments to be conducted in early spring with subsequent Reward maintenance treatments throughout the year. Chelated copper treatment of boat trails to be conducted as close to low tide as possible to minimize water movement.

8. Other control application specifications

None

9. Entity to apply control agent

Commercial applicator

10. Estimated cost of control operations

$73,147

11. Potential sources of funding

Berkeley County 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

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

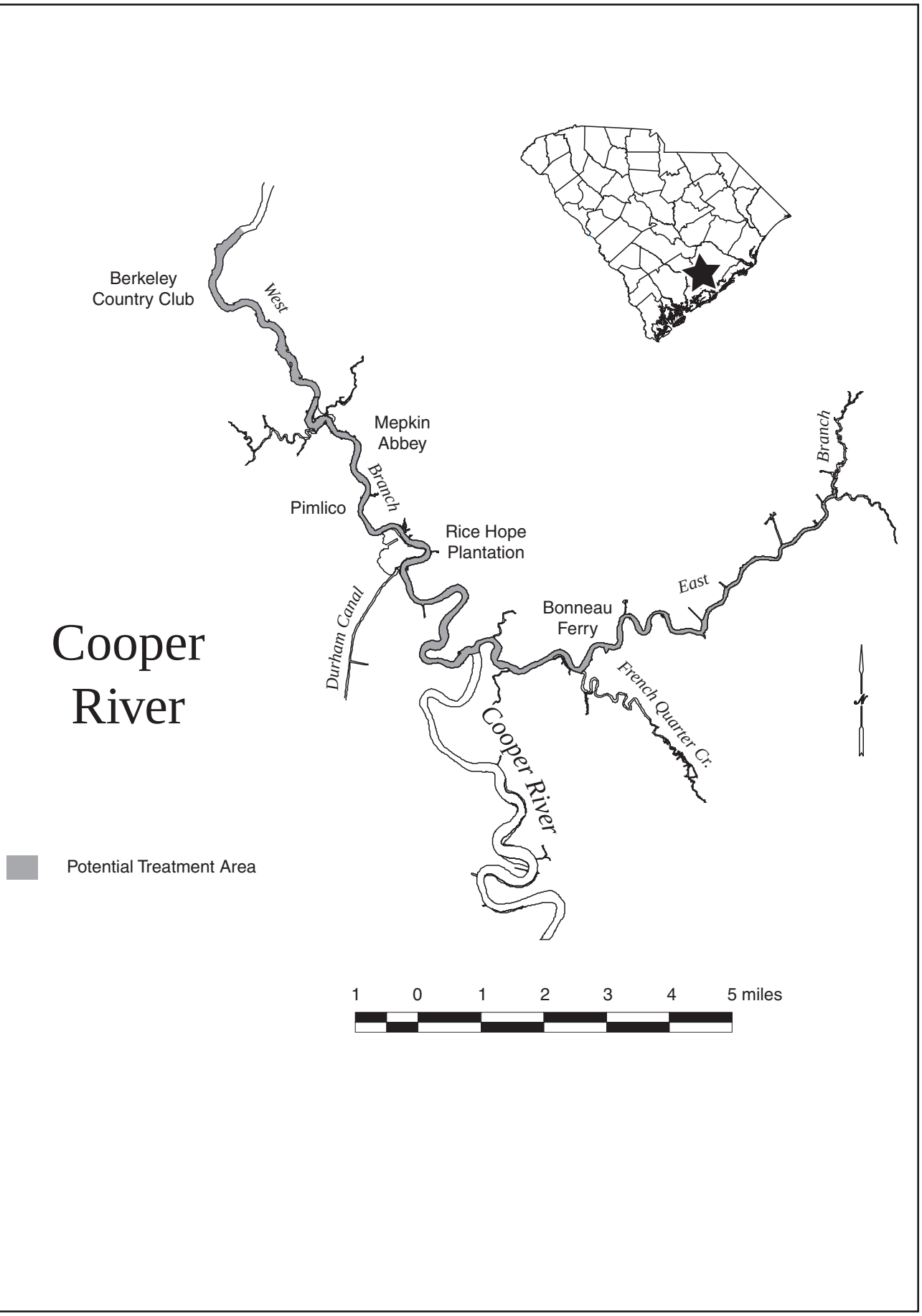
12. Long term management strategy

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 wateruse, 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.


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

8. Donnelley WMA/Bear Island WMA

(Colleton County)

1. Problem plant species

Frog's bit	Cattails	
Cutgrass	Phragmites	Swamp loosestrife

2. Management objective

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

3. Selected control method

Problem Species	Control Agent
Frog's bit	Renovate 3, Habitat
Phragmites, Cattails,	Habitat
Cutgrass, Swamp loosestrife	Habitat

4. Area to which control is to be applied

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

5. Rate of control agent to be applied

Renovate 3 - 0.5 - 0.75 gallons per acre
Habitat - 2-3 pints per acre.

6. Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

Renovate 3, Habitat - Apply when plants are actively growing.

8. Other control application specifications

Application to be conducted by airboat and helicopter.

9. Entity to apply control agent

Commercial applicator

10. Estimated cost of control operations

$5,382

11. Potential sources of funding

Donnelley WMA/USF&W 70%

S. C. Department of Natural Resources 30%

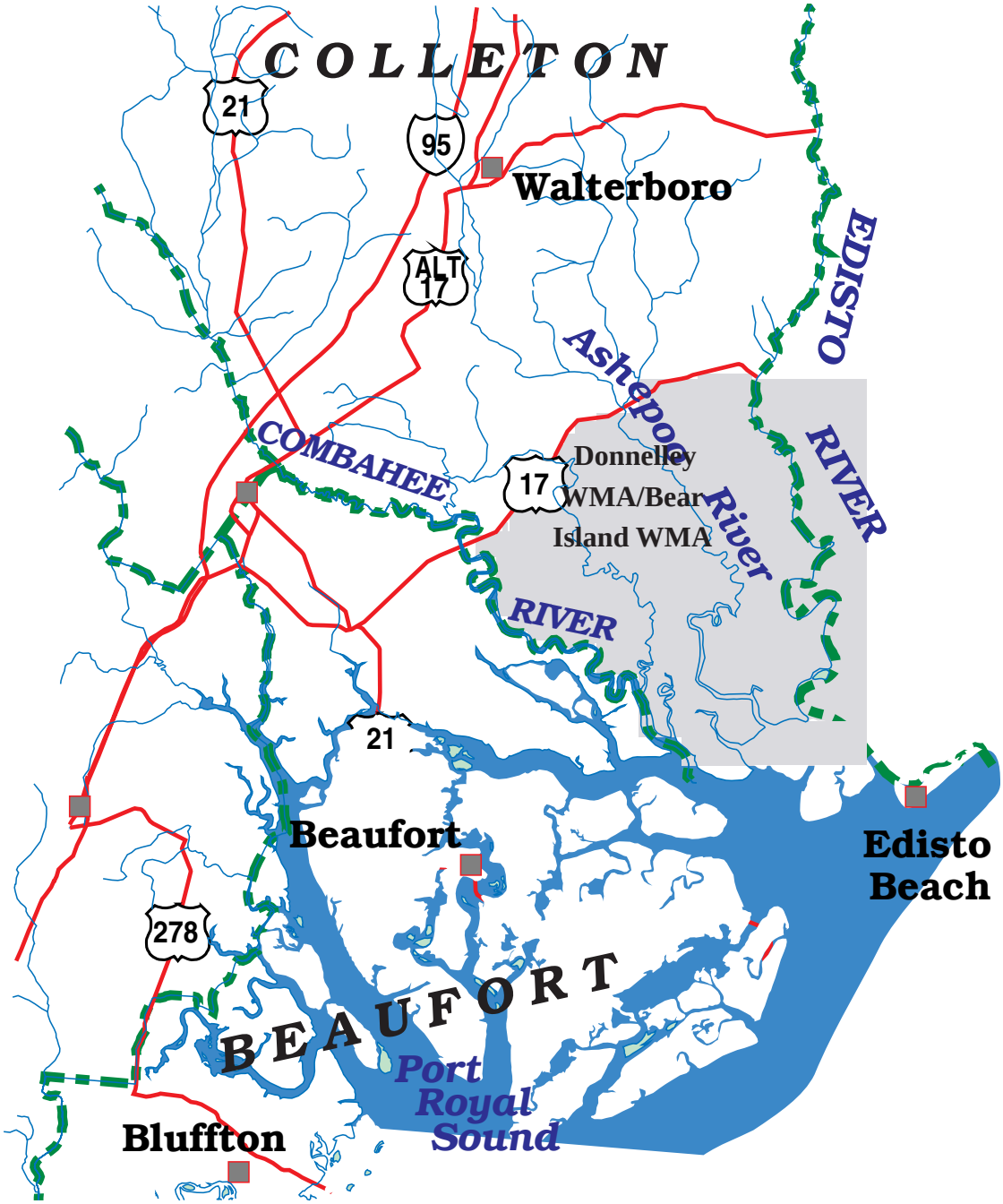
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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



9. Goose Creek Reservoir

(Berkeley County)

1. Problem plant species

   Water hyacinth
   Water lettuce
   Water primrose

2. Management objective

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

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

3. Selected control method

Problem Species	Control Agent
Water primrose	Renovate 3, Habitat
Water hyacinth	Renovate 3, Reward
Water lettuce	Renovate 3, Reward

4. Area to which control is to be applied

   Renovate 3, Habitat - 50 acres water primrose in upper lake and boat ramp.

   Reward - 100 acres of water hyacinth and water lettuce throughout lake.

   Renovate 3 - 100 acres of water hyacinth and water lettuce throughout lake.

5. Rate of control agents to be applied

   Renovate 3 - 0.50-0.75 gallons per acre.

   Reward - 0.5 gallon per acre.

   Habitat - 2-3 pints per acre.

6. Method of application of control agents

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

7. Timing and sequence of control application

   All agents to be applied when plants are actively growing.

8. 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.

Hydrilla is slowly increasing in acreage along with other submerged species. 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.

9. Entity to apply control agents

Commercial Applicator

10. Estimated cost of control operations

$22,934

11. Potential sources of funding

Charleston Commissioner of Public Works 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

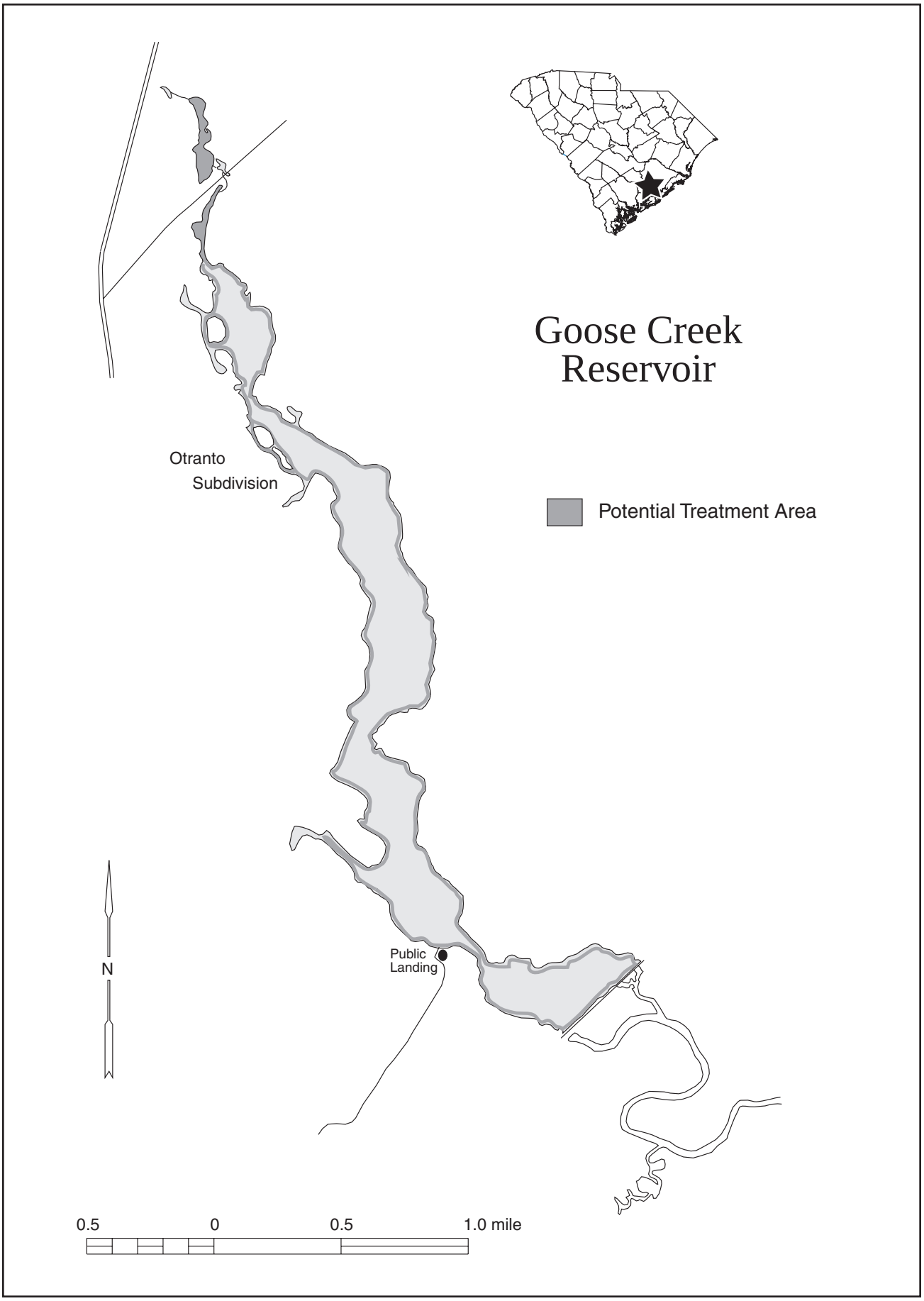
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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.


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

10. Lake Greenwood

(Greenwood and Laurens County)

1. Problem plant species

   Slender naiad
   Hydrilla

2. Management objectives

   a. Reduce slender naiad in developed shoreline areas and areas of high public access and use.

   b. Eliminate hydrilla from Rabon Creek arm.

3. Selected control method

Problem Species	Control Agent
Slender naiad, Hydrilla	Aquathol K

4. Area to which control is to be applied

   Aquathol K - 30 acres of slender naiad infestation.

   Aquathol K - 25 acres of hydrilla infestation in upper Rabon Creek arm.

5. Rate of control agents to be applied

   Aquathol K - 0.5 - 4 ppm (about 3- 8 gallons per acre depending on depth)

6. Method of application of control agents

   Aquathol K - Subsurface application by airboat with adjuvant.

7. Timing and sequence of control application

   Agent to be applied to slender naiad when plants are actively growing.

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

8. 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.

   Hydrilla may require multiple treatments.

9. Entity to apply control system

Commercial applicator

10. Estimated cost of control operations

$18,150

11. Potential sources of funding

Greenwood County 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

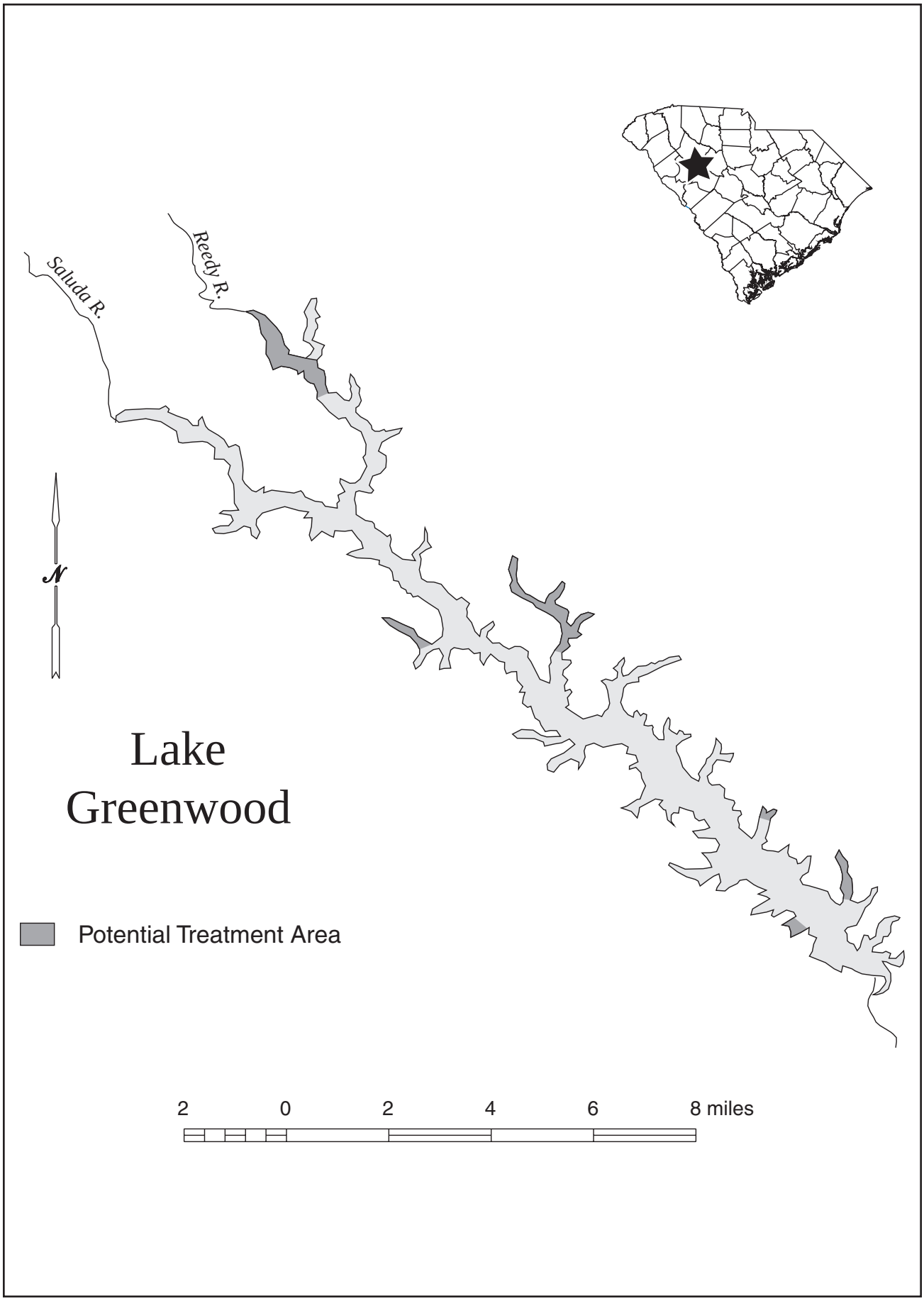
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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.


Saluda R.
Reedy R.
N
Lake
Greenwood
Potential Treatment Area
2
0
2
4
6
8 miles

11. Lake Keowee

(Pickens and Oconee County)

1. Problem plant species

   Hydrilla

2. 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.

3. 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**.

4. Area to which control is to be applied

   Chelated copper - 10 acres

   Drawdown - entire lake

5. 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.

6. Method of application of control agent

   Chelated copper - subsurface injection by airboat with adjuvant.

   Drawdown - draw lake down.

7. Timing and sequence of control application

   Herbicide application - when plants are actively growing.

   Drawdown - drawdown lake from October through February.

8. 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.

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

9. Entity to apply control system

Herbicide application - Commercial applicator or Duke Power Company

Drawdown - Duke Power Company

10. Estimated cost of control operations

Herbicide application - $2,742

Drawdown - Undetermined

11. Potential sources of funding

Duke Power Company 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

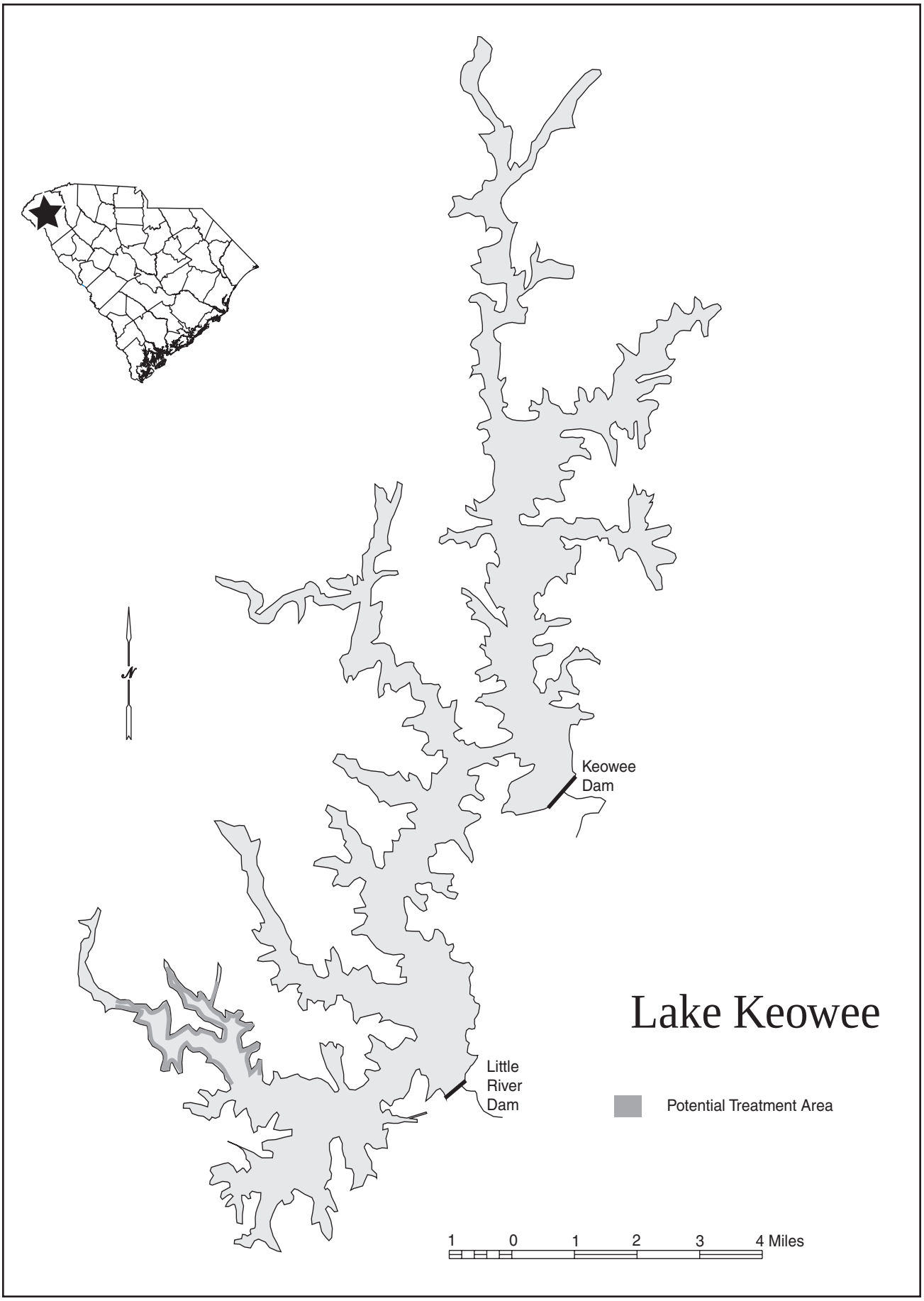
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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
N
1 0 1 2 3 4 Miles

12. Lake Marion

(Calhoun, Clarendon, and Sumter Counties)

1. Problem plant species

Hydrilla	Alligatorweed
Brazilian elodea	Fanwort
Water hyacinth	Slender naiad
Water primrose	Giant Cutgrass
Coontail	Filamentous algae (Lyngbya)
Slender Pondweed	

2. Management objectives

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

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

   c. Reduce water hyacinth populations throughout the lake, especially in the area above the I-95 bridge, to enhance boating, fishing, hunting, and public access.

   d. Reduce giant cutgrass populations throughout the lake, especially in the Santee Cooper Wildlife Management Area and upper lake near Lowfalls landing, to enhance wildlife habitat and hunting opportunities.

   e. 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.

3. Selected control method

Problem Species	Control Agents
Hydrilla	Aquathol K, Sonar, chelated copper*, Triploid grass carp**
Brazilian elodea, Lyngbya	Reward, chelated copper*, Hydrothol 191*
Water hyacinth	Reward

Fanwort, coontail, slender naiad, slender pondweed	Aquathol K, Sonar, Hydrothol 191*
Water primrose, alligatorweed, giant cutgrass	Glyphosate, Habitat, Renovate 3

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

**** Triploid grass carp stocked in previous years substantially reduced hydrilla coverage in the main bodies of Lakes Marion and Moultrie during 1996-2005. Consequently, no additional grass carp stockings are planned for these areas in 2006. However, hydrilla populations and potential regrowth will be carefully monitored and in the event that study results and regrowth warrant, the Aquatic Plant Management Council may reconsider the need for additional grass carp.**

4. Area to which control is to be applied

Water hyacinth - Approximately 650 acres throughout lake but mostly in the upper lake area above I-95 bridge.

Hydrilla - Approximately 150 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.

Giant Cutgrass - Approximately 50 acres along shoreline areas throughout lake system.

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 -

a. Dean's Swamp Impoundment, Potato Creek Impoundment, Church Branch Impoundment

Santee Cooper plans to continue transitioning from Hydrilla dominant plant communities to ones dominated by native plant species beneficial to wildlife by use of aquatic herbicides.

5. Rate of control agents to be applied

Aquathol K - 6 to 10 gallons per acre (dependent on water depth)

Reward - 0.5 gallon per acre for floating plants; two gallons per acre for submersed plants

Renovate 3 - 0.5 to 0.75 gallons per acre for emergent species, per label for submersed plants.

Habitat - 1-6 pints per acre

Sonar - 0.075 to 0.15 ppm

Chelated Copper- 1 ppm

Hydrothol 191 - up to 1 ppm

Glyphosate - up to 7.5 pints per acre.

Sonar Q, Sonar PR - up to 20 ppb(approx 5.4 pounds/acre)

Triploid grass carp - (See ** footnote in Section 3 above)

6. Method of application of control agents

Aquathol K, chelated copper, Sonar, Hydrothol 191 - subsurface application by airboat or surface application by helicopter with adjuvant.

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

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

Triploid grass carp - (See ** footnote in Section 3 above)

7. Timing and sequence of control application

Herbicide applications -

All herbicide applications to be applied when plants are actively growing. Water hyacinth treatments should be initiated in early spring when plant growth begins and continued regularly during the year as needed.

Triploid grass carp - (See ** footnote in Section 3 above)

8. 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.

Water hyacinth treatments should 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. Frequent treatments in this area will be necessary to meet management objectives.

9. Entity to apply control agents

S.C. Public Service Authority and/or commercial applicator.

10. Estimated cost of control operations

$125,000

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 2006.

11. Potential sources of funding

S.C. Public Service Authority 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

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

12. 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 10% of the total surface area of the lake and to effectively control non-native invasive species.

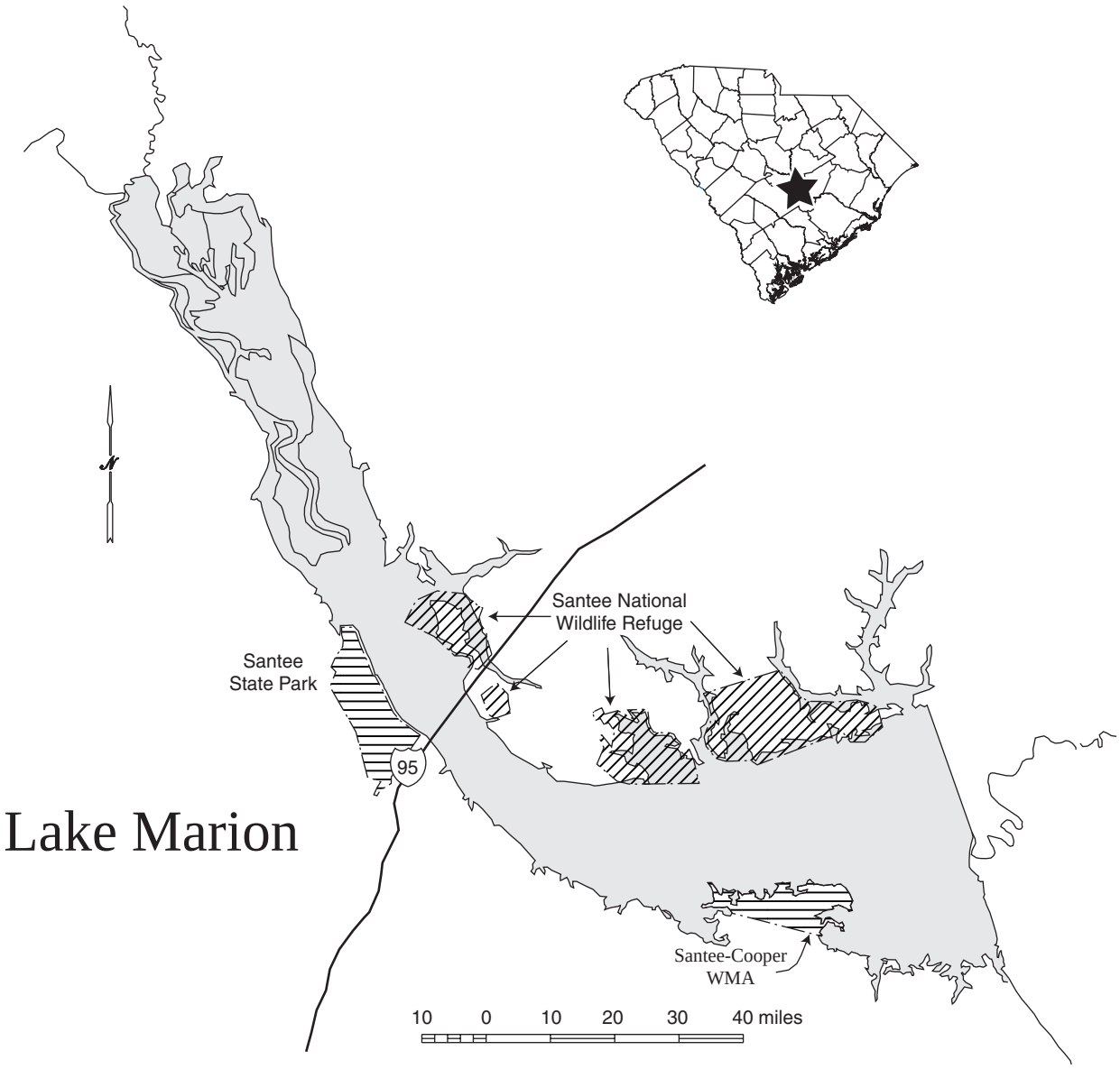
b. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

c. A long-term integrated 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 periodic 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.


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

Lake Marion

13. Lake Moultrie

(Berkeley County)

1. Problem plant species

Hydrilla	Slender naiad
Brazilian elodea	Watermilfoil
Water primrose	Alligatorweed
Fanwort	Water hyacinth
Giant Cutgrass	

2. Management objectives

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

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

   c. Reduce water hyacinth populations throughout the lake to enhance boating, fishing, hunting, and public access.

   d. Reduce giant cutgrass populations throughout the lake to enhance wildlife habitat and hunting opportunities.

   e. 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.

3. Selected control method

Problem Species	Control Agents
Hydrilla	Aquathol K, chelated copper*, Sonar, Triploid grass carp**
Brazilian elodea	Reward, chelated copper*, Sonar
Water hyacinth	Reward
Fanwort, slender naiad, watermilfoil	Aquathol K, Sonar, Hydrothol 191*
Water primrose, alligatorweed, giant cutgrass	Glyphosate, Habitat, Renovate 3

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

**** Triploid grass carp stocked in previous years substantially reduced hydrilla coverage in the main bodies of Lakes Marion and Moultrie during 1996-2005. Consequently, no additional grass carp stockings are planned for these areas in 2006. However, hydrilla populations and potential regrowth will be carefully monitored and in the event that study results and regrowth warrant, the Aquatic Plant Management Council may reconsider the need for additional grass carp.**

4. Area to which control is to be applied

Hydrilla, fanwort, watermilfoil - Approximately 10 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.

Giant cutgrass, water primrose, alligatorweed - Approximately 90 acres along shoreline areas throughout the lake.

5. Rate of control agents to be applied

Aquathol K - 6 to 10 gallons per acre (dependent on water depth)

Reward - 0.5 gallon per acre for floating plants; two gallons per acre for submersed plants

Renovate 3 - 0.5 to 0.75 gallons per acre for emergent species, per label for submersed plants.

Habitat - 1-6 pints per acre

Sonar - 0.075 to 0.15 ppm in treatment area

Chelated copper - 1 ppm

Hydrothol 191 - up to 1 ppm

Glyphosate- up to 7.5 pints per acre.

Other approved aquatic herbicides - as per label instructions.

Triploid grass carp - (See ** footnote in Section 3 above)

6. Method of application of control agents

Aquathol K, chelated copper, Sonar, Hydrothol 191 - subsurface application by airboat or surface application by helicopter with adjuvant.

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

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

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

Triploid grass carp - (See ** footnote in Section 3 above)

7. Timing and sequence of control application

All herbicides to be applied when plants are actively growing.
If needed, aerial treatment of hydrilla adjacent to the Rediversion Canal entrance should be performed as early as possible to prevent excessive plant growth and avoid impacts to the St. Stephen Hydropower Plant.

Triploid grass carp - (See ** footnote in Section 3 above)

8. Other control application specifications

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

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.

Treatment of lake, especially near the Rediversion Canal, should be coordinated with hydropower production to avoid excessive flows and maximize herbicide contact time.

9. Entity to apply control agent

S.C. Public Service Authority and/or commercial applicator

10. Estimated cost of control operations

$15,000

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 2006.

11. Potential sources of funding

S.C. Public Service Authority 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

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

12. 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 10% of the total surface area of the lake and to effectively control non-native invasive species.

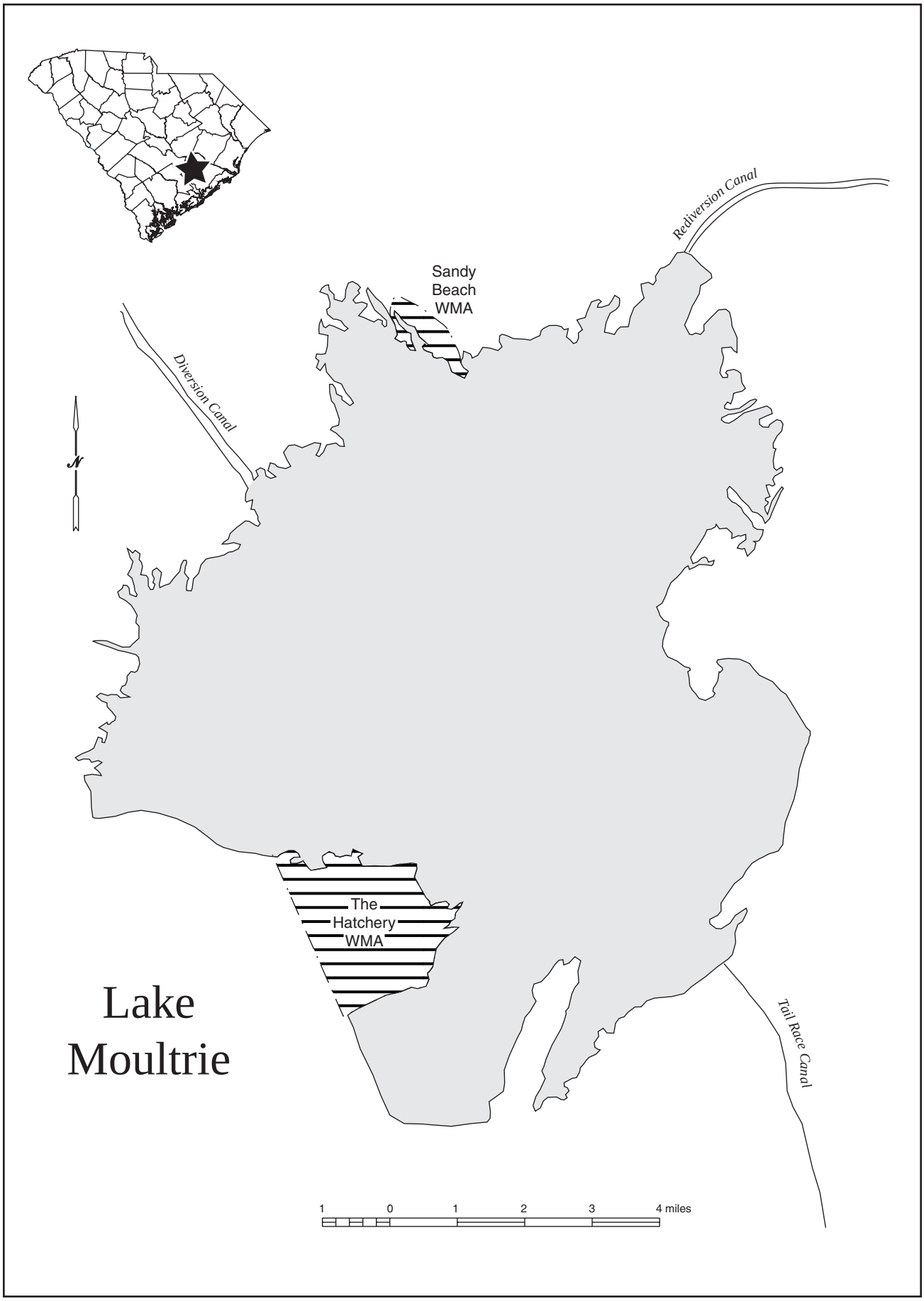
b. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

c. A long-term integrated 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 periodic 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.


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

14. Lake Murray

(Lexington, Newberry, Richland and Saluda Counties)

1. Problem plant species

Hydrilla	Illinois pondweed
Water Primrose	

2. Management objectives

   a. Maintain reduced hydrilla and Illinois pondweed 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.

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

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

3. Selected control method

   a. Triploid grass carp stocked in 2003 substantially reduced hydrilla coverage in Lake Murray during 2003-2005. Consequently, no additional grass carp stockings are planned for these areas in 2006. However, hydrilla populations and potential regrowth will be carefully monitored and in the event that survey results and regrowth warrant, the Aquatic Plant Management Council may reconsider the need for additional grass carp.

   b. Mechanical harvester – short-term control in selected areas to provide public access and clear areas around municipal water intakes.

   c. Aquatic herbicides - short-term control in selected areas to provide public access and clear areas around municipal water intakes.

Problem Species	Control Agents
Hydrilla	Chelated copper(Nautique)
Water primrose	Renovate 3*

*All herbicides which would be effective on this species have an irrigation restriction. All treatments would require coordination and notification of property owners.

4. Area to which control is to be applied

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

b. Use mechanical harvesters or aquatic herbicides to provide immediate short-term control at high priority public access points, such as boat ramps and park sites, and municipal water intakes.

5. Rate of control agent to be applied

a. If hydrilla acreage in 2006 warrants, additional grass carp may be stocked at the rate of 15 fish per vegetated acre following Council approval.

b. Harvest acreage as needed to provide public use, access and clear areas around municipal water intakes.

c. Apply aquatic herbicides to provide immediate short-term control at high priority public access points and municipal water intakes.
Chelated copper - up to 1 ppm

6. Method of application of control agent

a. Triploid grass carp - See section 3 above.

b. Use mechanical harvester as designed.

c. All agents to be applied when plants are actively growing.

7. Timing and sequence of control application

a. If hydrilla acreage in 2006 warrants, additional grass carp may be stocked following Council approval.

b. Harvest aquatic growth as it becomes problematic; multiple applications are likely.

c. Apply herbicides to aquatic vegetation as it becomes problematic.

8. Other control application specifications

a. 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.

b. Harvested vegetation must be removed from the lake and deposited on high ground. The harvesting process must minimize adverse impacts to fish.

c. 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 ac-

cess 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 b. 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 lakefront property owners.

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

9. Entity to apply control agent

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

   b. Mechanical harvester – Commercial harvester under supervision of SCE&G at park sites and public boat ramps; private marina operators to contract for application at commercial boat ramps.

   c. Aquatic herbicides - Commercial applicator under supervision by the SCDNR.

10. Estimated cost of control operations

   a. Triploid grass carp - None anticipated

   b. Mechanical harvester - $500-1000/acre

   c. Aquatic herbicides - $275 / acre

11. Potential sources of funding

   a. Triploid grass carp if needed.

      S.C. Electric and Gas Company, Lexington and Richland Counties 50%
      U.S. Army Corps of Engineers 0%
      S. C. Department of Natural Resources 50%

   b. Mechanical harvester

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

c Aquatic herbicides

S.C. Electric and Gas Company, Lexington and Richland Counties 50%
U.S. Army Corps of Engineers 0%
S. C. Department of Natural Resources 50%

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

12. 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.

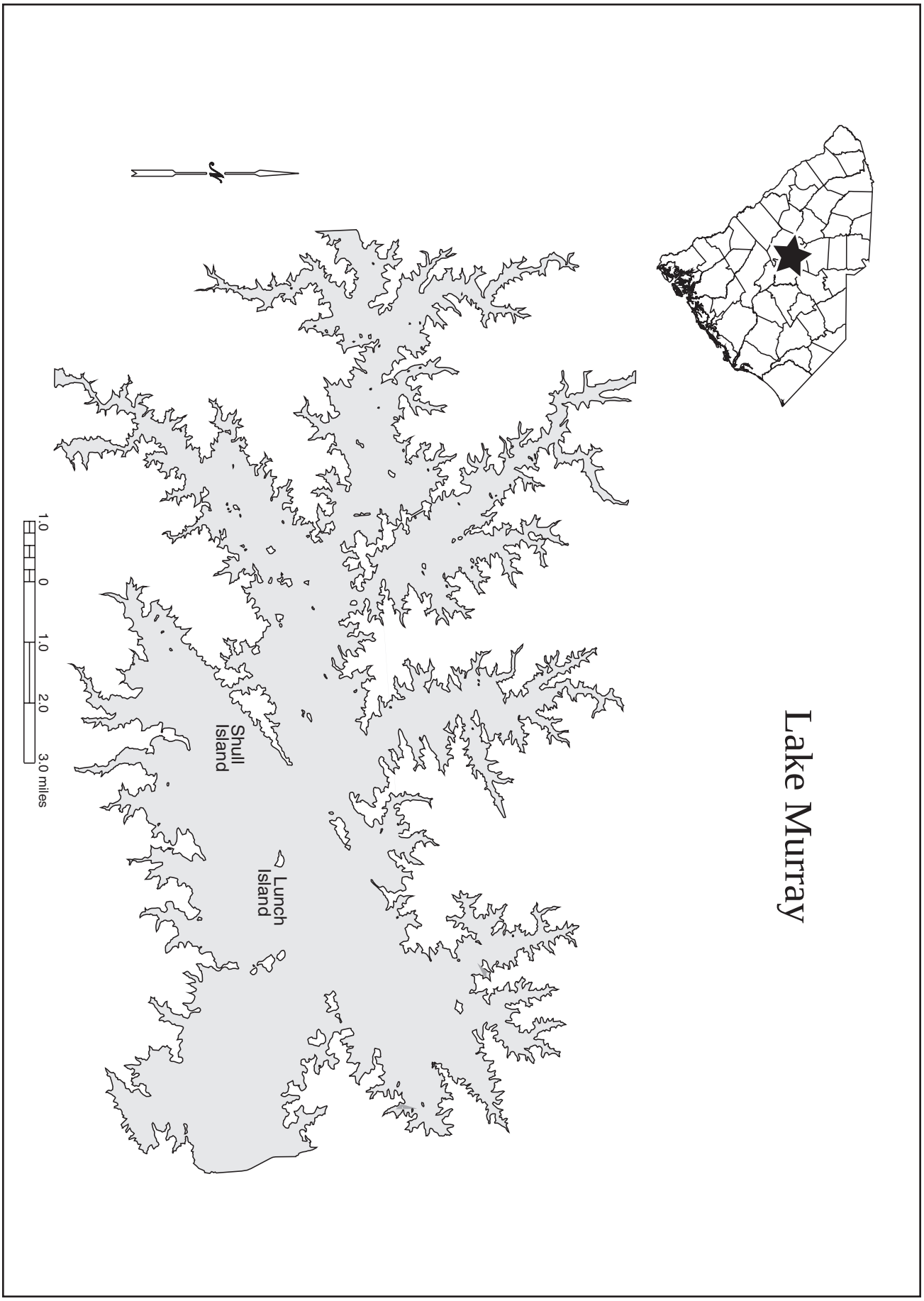
b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits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

f. Water primrose - Water primrose, a shoreline plant, became problematic in the upper portion of the lake last year. The two-year drawdown exposed a lot of unvegetated shoreline where water primrose quickly spread and re-established at the 345-348 foot contour level. While this plant can be invasive and cause localized problems, it has been in the lake for decades and is typically not a threat to general public access and use of the waterway. Based on past experience, it is expected that most of the plants that are rooted in deep water will not survive after the lake level returns to full pool. Therefore, there are no plans to control its growth this year. However, the SCDNR and SCE&G will monitor water primrose growth and consider control options if impacts are greater than anticipated.


Lake Murray
Shull Island
Lunch Island
1.0 0 1.0 2.0 3.0 miles

15. Lake Wateree

(Fairfield, Kershaw and Lancaster Counties)

1. Problem plant species

   Hydrilla

2. 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.

3. Selected control method

   Aquathol K

   Fall/winter water level drawdown

4. Area to which control is to be applied

   Aquathol K - At least 2 acres in cove near Lakeside Marina.

   Drawdown - Entire lake

5. Rate of control agent to be applied

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

   Drawdown - To the greatest extent possible within project limits.

6. Method of application of control agent

   Aquathol K - Subsurface injection from airboat with adjuvant.

   Drawdown - Draw lake down

7. Timing and sequence of control application

   Aquathol K - 2 acres treated twice in June and again in fall of year.

   Drawdown - Drawdown lake from October through February.

8. Other control application specifications

   Aquathol K - 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.

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

9. Entity to apply control agent

Herbicide application - Commercial applicator or Duke Power Company
Drawdown - Duke Power Company

10. Estimated cost of control operations

Herbicide application - $2,880
Drawdown - Undetermined

11. Potential sources of funding

Duke Power Company 50%
U.S. Army Corps of Engineers 0%
S. C. Department of Natural Resources 50%

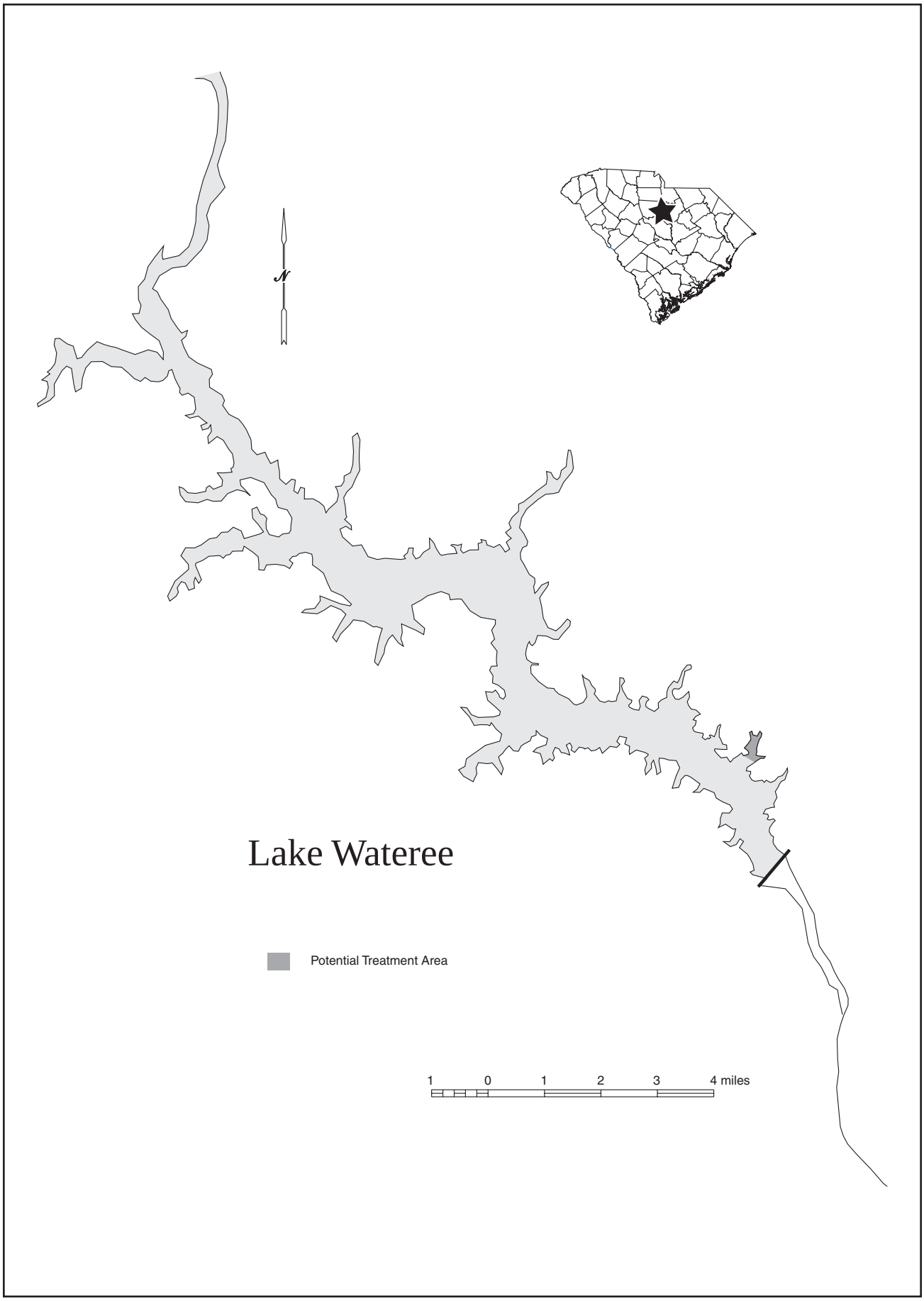
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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

16. Little Pee Dee River

(Marion and Horry Counties)

1. Problem plant species

   Alligatorweed

2. Management objective

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

3. Selected control method

   Renovate 3, Habitat

4. Area to which control is to be applied

   50 acres of problematic plants throughout river

5. Rate of control agent to be applied

   Renovate 3 - 0.5-0.75 gallons per acre.

   Habitat - 2-3 pints per acre.

6. Method of application of control agent

   Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

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

8. Other control application specifications

   None

9. Entity to apply control agent

   Commercial applicator

10. Estimated cost of control operations

    $5,413

11. Potential sources of funding

    Horry and Marion Counties 50%

    U.S. Army Corps of Engineers 0%

    S. C. Department of Natural Resources 50%

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

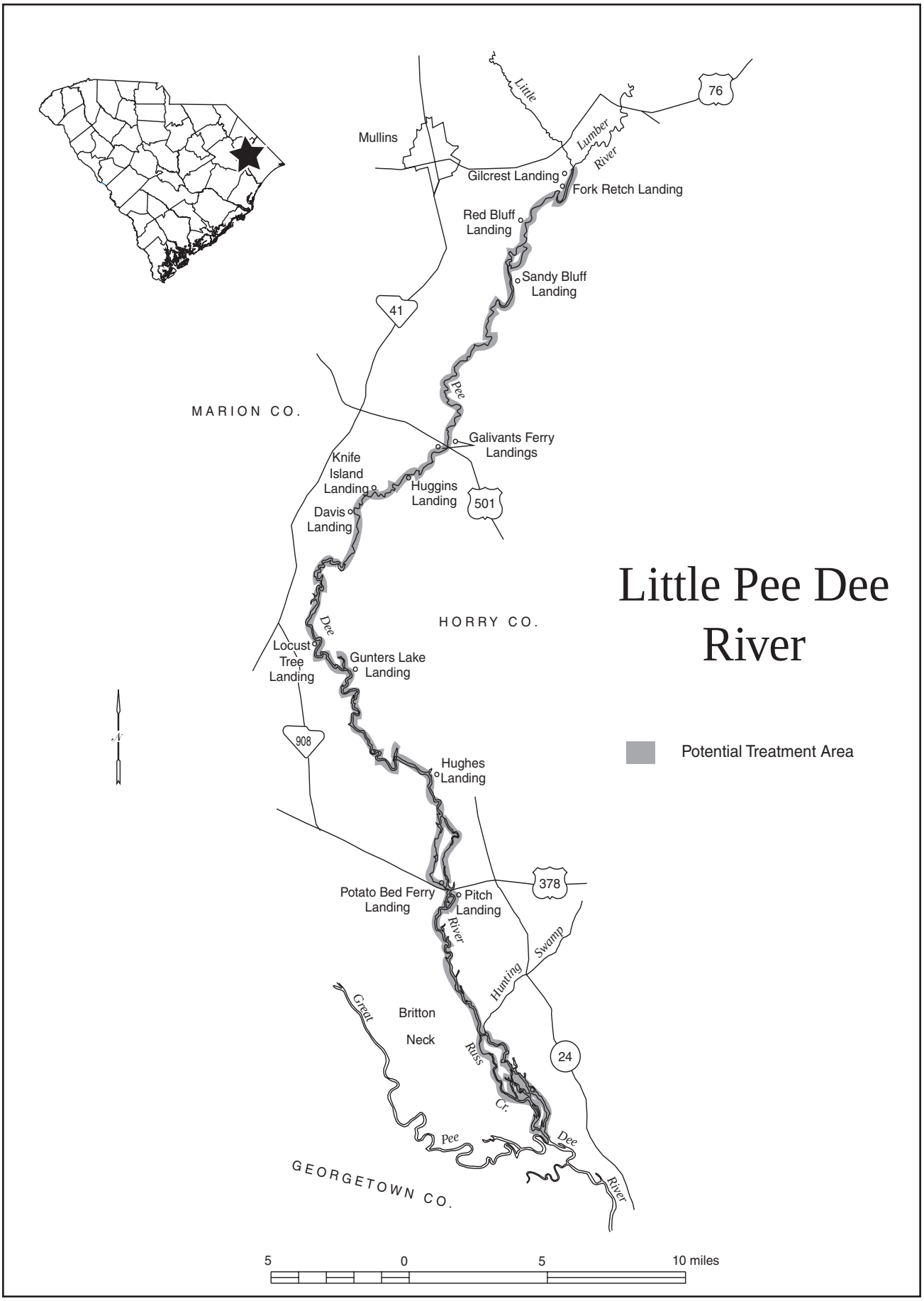
12. Long term management strategy

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
Little
Lumber River
76
Gilcrest Landing
Fork Retch Landing
Red Bluff Landing
Sandy Bluff Landing
41
Pee
MARION CO.
Galivants Ferry Landings
Knife Island Landing
Huggins Landing
501
Davis Landing
Dee
HORRY CO.
Locust Tree Landing
Gunters Lake Landing
908
Hughes Landing
378
Potato Bed Ferry Landing
Pitch Landing
River
Swamp
Hunting
Great
Britton Neck
Russ
Cr.
24
Pee
Dee
River
GEORGETOWN CO.
5
0
5
10 miles

17. Lumber River

(Marion and Horry Counties)

1. Problem plant species

   Alligatorweed

2. Management objective

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

3. Selected control method

   Renovate 3, Habitat

4. Area to which control is to be applied

   20 acres of problematic plants throughout river

5. Rate of control agent to be applied

   Renovate 3 - 0.5-0.75 gallons per acre.

   Habitat - 2-3 pints per acre.

6. Method of application of control agent

   Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

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

8. Other control application specifications

   None

9. Entity to apply control agent

   Commercial applicator

10. Estimated cost of control operations

    $2,165

11. Potential sources of funding

    Horry and Marion Counties 50%

    U.S. Army Corps of Engineers 0%

    S. C. Department of Natural Resources 50%

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

12. Long term management strategy

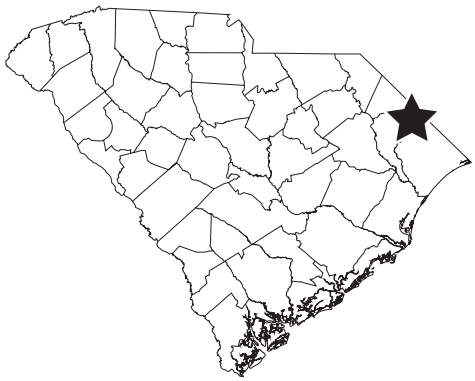
a. Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment through the use of federal and state approved control methods.

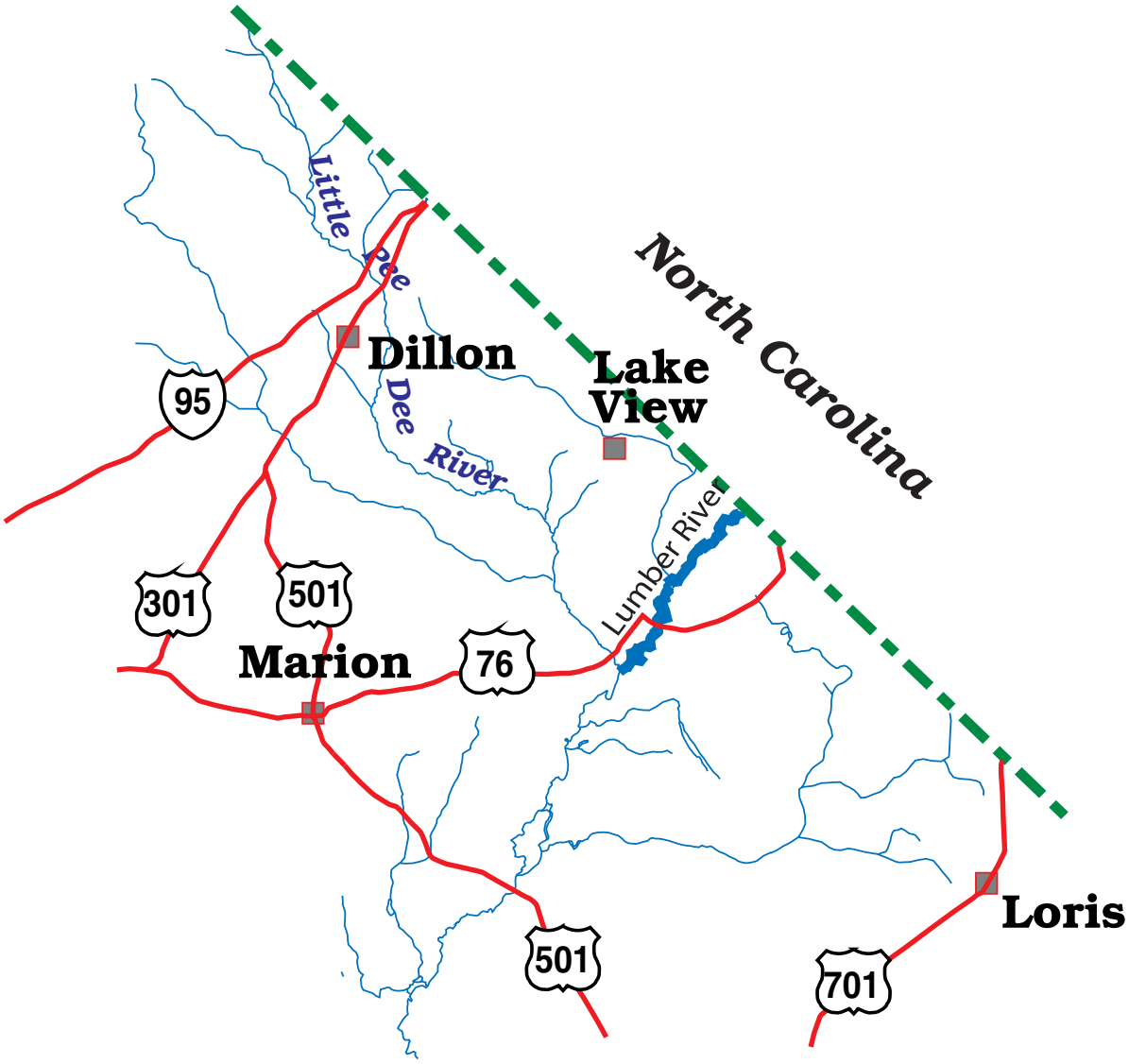
b. Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits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





18. Pee Dee River

(Georgetown County)

1. Problem plant species

   Water hyacinth

   Phragmites

2. Management objective

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

3. Selected control method

Problem Species	Control Agents
Water hyacinth	Reward, Renovate 3
Phragmites	Habitat

4. Area to which control is to be applied

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

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

5. Rate of control agent to be applied

   Reward - 0.5 gallons per acre.

   Renovate 3 - 0.5 - 0.75 gallons per acre

   Habitat - 2-3 pints per acre.

6. Method of application of control agent

   Helicopter - 25 acres of reward applied to water hyacinth(Samworth 10 acres, Sandy Island Area 15 acres). 10 acres of Habitat applied to phragmites(Samworth 10 acres)

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

7. Timing and sequence of control application

   Reward, Renovate 3 - to be applied periodically to water hyacinth from May through October.

   Habitat - Apply when plants are actively growing.

8. Other control application specifications

None

9. Entity to apply control agent

Commercial applicator

10. Estimated cost of control operations

$9,140

11. Potential sources of funding

Georgetown County 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

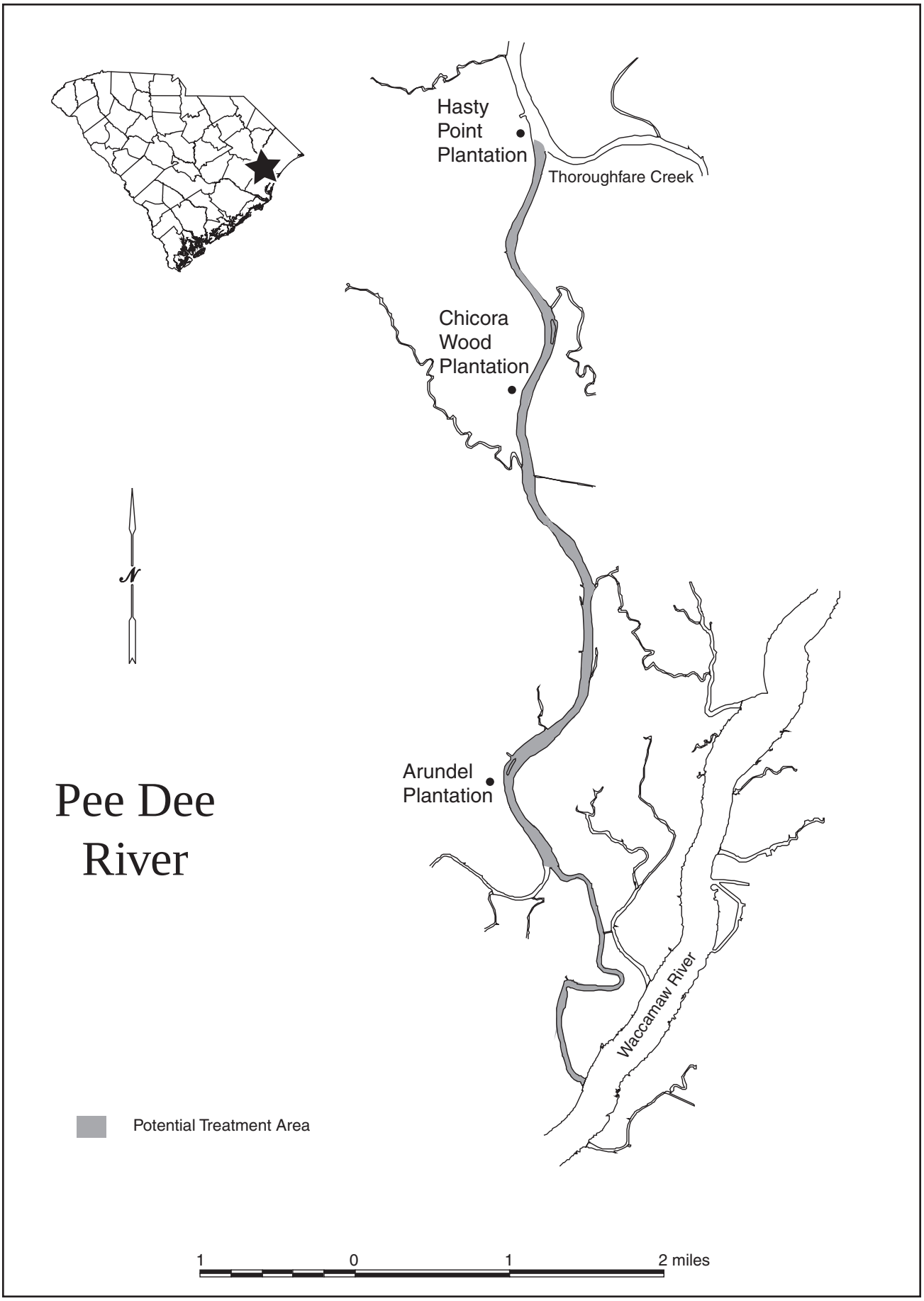
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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
N
Arundel
Plantation
Pee Dee
River
Waccamaw River
Potential Treatment Area
1
0
1
2 miles

19. Santee Coastal Reserve

(Charleston and Georgetown Counties)

1. Problem plant species

   Phragmites

2. Management objective

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

3. Selected control method

   Habitat

4. Area to which control is to be applied

   1200 acres of phragmites throughout the ricefields.

5. Rate of control agent to be applied

   Habitat - 3-6 pints per acre.

6. Method of application of control agent

   Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

   Habitat - Apply when plants are actively growing.

8. Other control application specifications

   Application to be conducted by helicopter.

9. Entity to apply control agent

   Commercial applicator

10. Estimated cost of control operations

    $218,850

11. Potential sources of funding

    Santee Coastal Reserve 50%

    S. C. Department of Natural Resources 50%

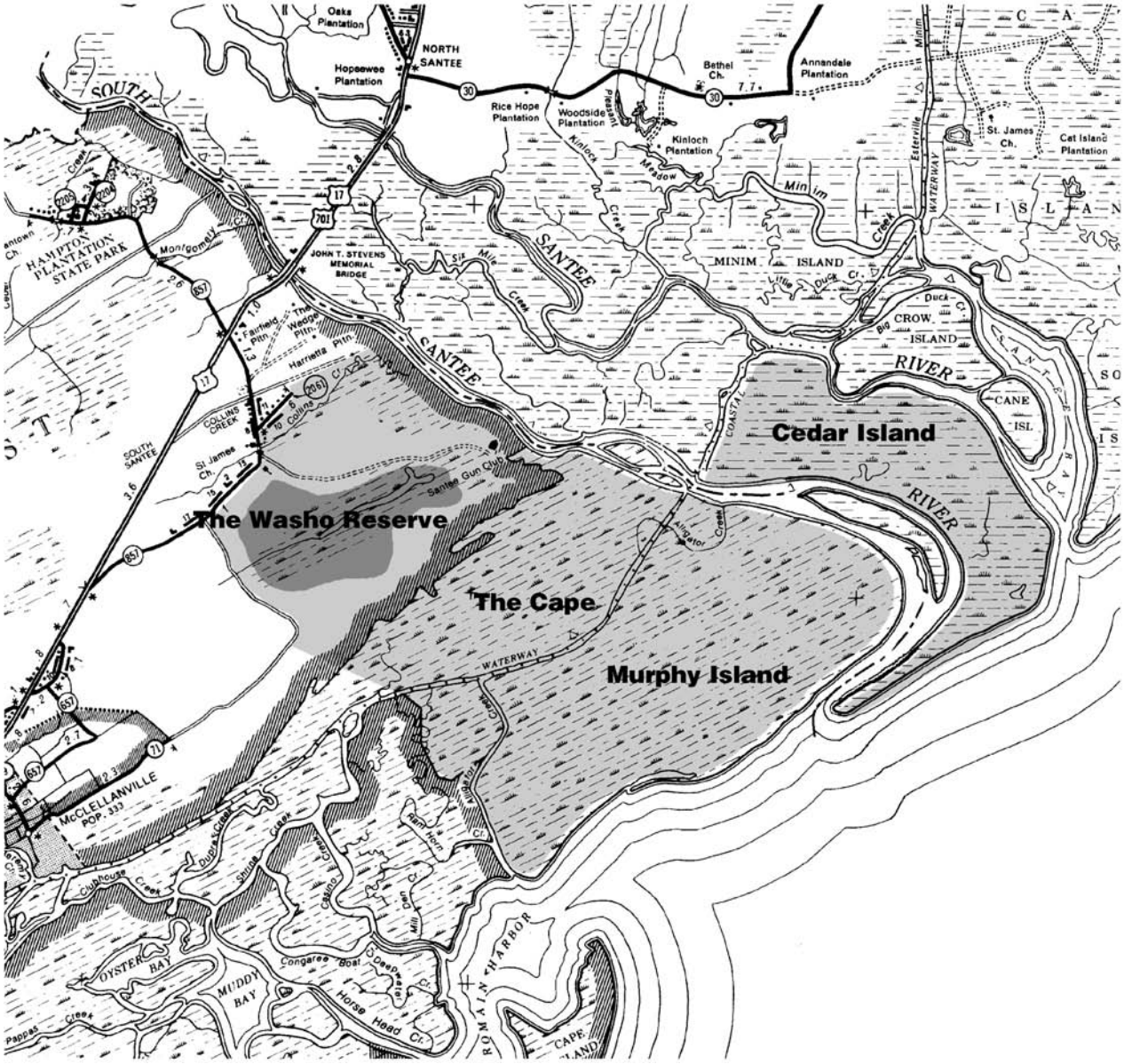
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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



20. Santee Delta WMA

(Georgetown County)

1. Problem plant species

   Phragmites

2. Management objective

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

3. Selected control method

   Habitat

4. Area to which control is to be applied

   30 acres of Phragmites throughout the ricefields.

5. Rate of control agent to be applied

   Habitat - up to 4 pints per acre/up to 6 pints per acre.

6. Method of application of control agent

   Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

   Habitat - Apply when plants are actively growing.

8. Other control application specifications

   Application to be conducted by helicopter.

9. Entity to apply control agent

   Commercial applicator

10. Estimated cost of control operations

    $5,471

11. Potential sources of funding

    Santee Coastal Reserve 50%

    S. C. Department of Natural Resources 50%

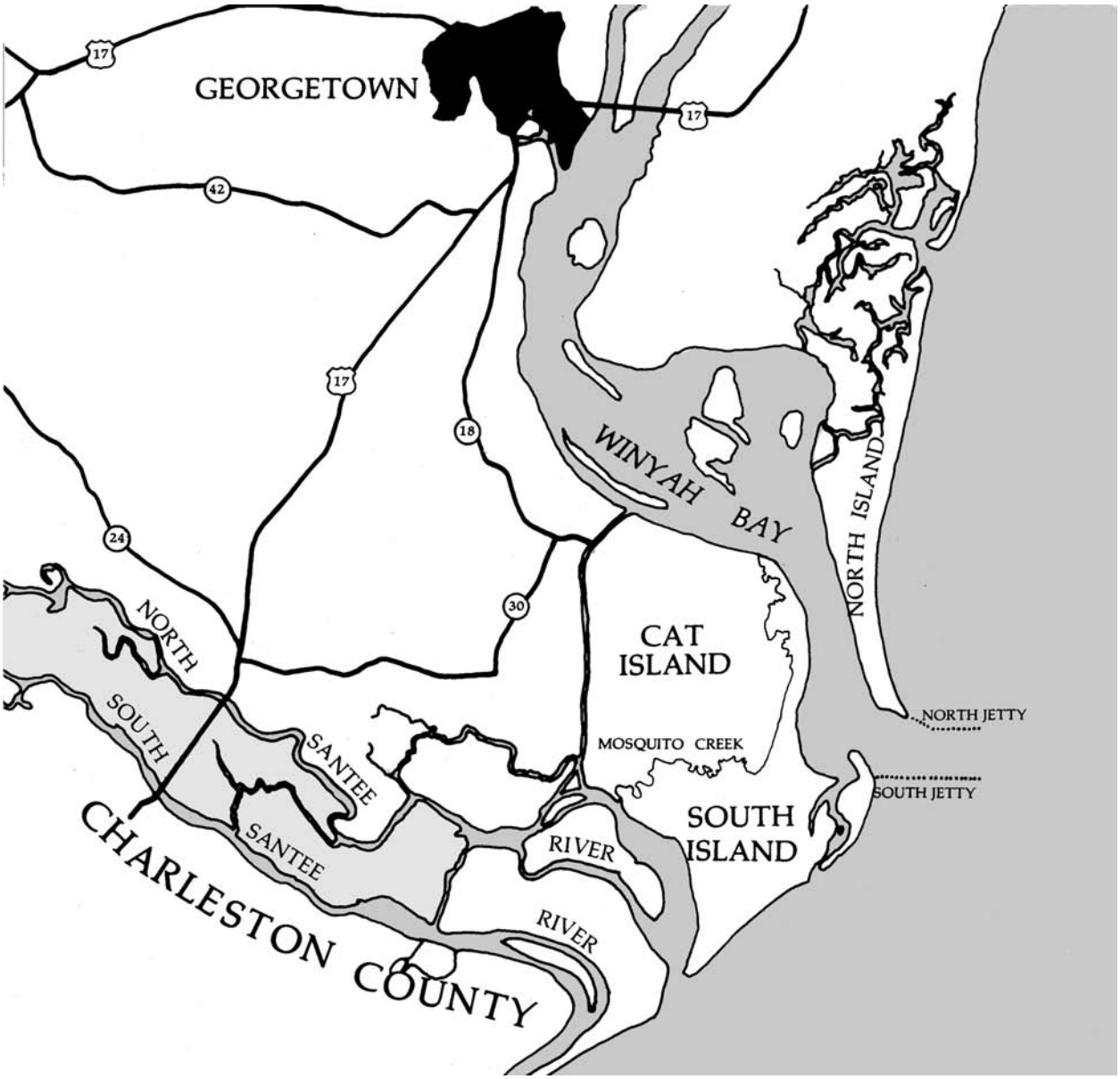
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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



21. Waccamaw River

(Horry County)

1. Problem plant species

   Water hyacinth

2. Management objective

   Reduce water hyacinth populations to the greatest extent possible throughout the river system.

3. Selected control method

   Reward

   Renovate 3

4. Area to which control is to be applied

   75 acres throughout river system where needed.

5. Rate of control agent to be applied

   Reward - 0.5 gallons per acre

   Renovate 3 - 0.5 - 0.75 gallons per acre

6. Method of application of control agent

   Spray on surface of foliage with appropriate surfactant

7. Timing and sequence of control application

   Reward, Renovate 3 to be applied to water hyacinth periodically from late May through November.

8. 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.

9. Entity to apply control agent

   Commercial applicator

10. Estimated cost of control operations

$ 6,638

11. Potential sources of funding

Horry County 50%

U.S. Army Corps of Engineers 0%

S. C. Department of Natural Resources 50%

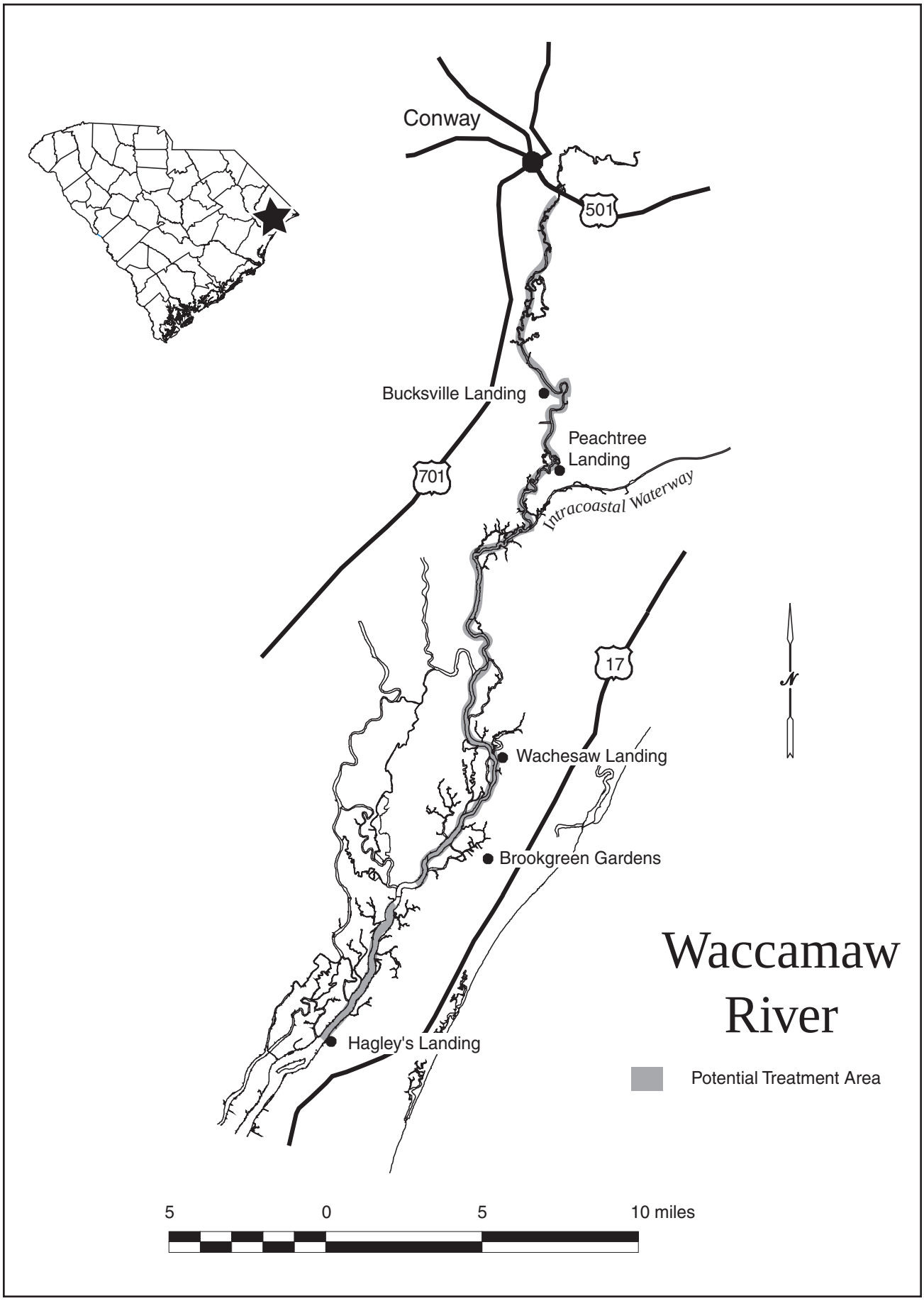
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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
Intracoastal Waterway
17
N
Wachesaw Landing
Brookgreen Gardens
Waccamaw
River
Hagley's Landing
Potential Treatment Area
5
0
5
10 miles

22. Yawkey Wildlife Center

(Georgetown County)

1. Problem plant species

   Phragmites Cattails

2. Management objective

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

3. Selected control method

   Habitat

4. Area to which control is to be applied

   50 acres of Phragmites and cattails throughout the ricefields.

5. Rate of control agent to be applied

   Habitat - 3-6 pints per acre.

6. Method of application of control agent

   Spray on surface of foliage with appropriate surfactant.

7. Timing and sequence of control application

   Habitat - Apply when plants are actively growing.

8. Other control application specifications

   Application to be conducted by helicopter.

9. Entity to apply control agent

   Commercial applicator

10. Estimated cost of control operations

    $9,119

11. Potential sources of funding

    Yawkey Foundation 50%

    S. C. Department of Natural Resources 50%

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

12. 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.

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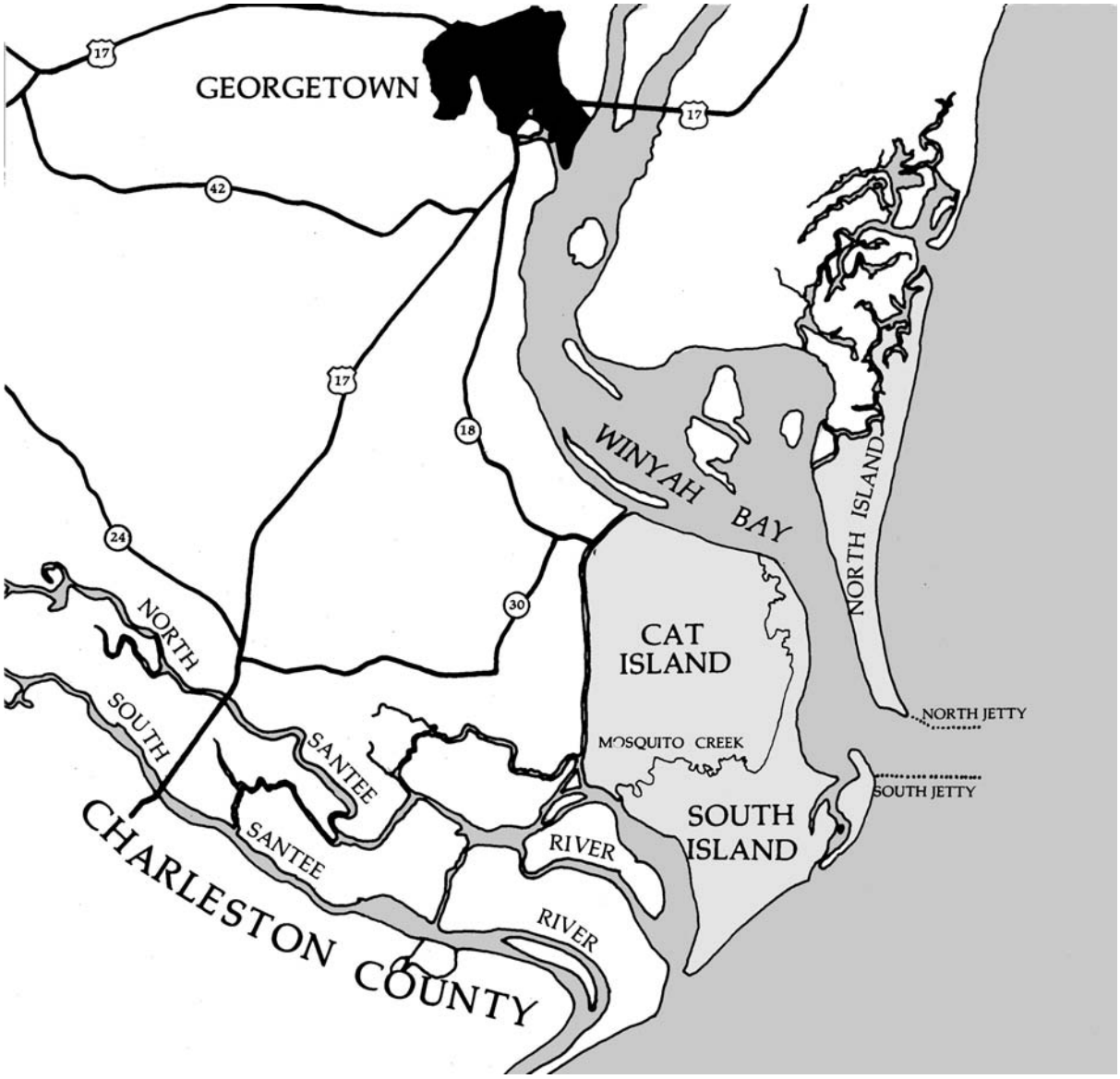
Yawkey Wildlife Center



23. Barnwell State Park (Swimming Lake)

(Barnwell County)

1. Problem plant species

   Waterlily

2. Management objective

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

3. Selected control method

   2,4-D BEE granular

4. Area to which control is to be applied

   3 acres in swimming lake.

5. Rate of control agent to be applied

   200 pounds per acre

6. Method of application of control agent

   Apply granular with spreader throughout lake

7. Timing and sequence of control application

   Apply when plants are actively growing.

8. Other control application specifications

   Monitor plant growth prior to treatment.

9. Entity to apply control agent

   Commercial applicator contracted and monitored by SCPRT.

10. Estimated cost of control operations

    $1,667

11. Potential sources of funding

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

    S. C. Department of Natural Resources 50%

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

12. Long term management strategy

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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.

24. Charles Towne Landing State Park

(Charleston County)

1. Problem plant species

   Duckweed Alligatorweed
   Pennywort

2. Management objective

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

3. Selected control method

Problems species	Control Agent
Duckweed	Fluridone
Alligator weed	Glyphosate
Pennywort	Glyphosate

4. Area to which control is to be applied

   Fluridone - 3 acres
   Glyphosate - 1 acre

5. Rate of control agents to be applied

   Fluridone - 1 pint per acre
   Glyphosate - 7.5 pints per acre

6. Method of application of control agents

   Fluridone - Apply subsurface throughout lake

   Glyphosate- Spray on surface of foliage with appropriate surfactant

7. Timing and sequence of control application.

   Fluridone & glyphosate applied when plants are actively growing

8. Other control application specifications

   None

9. Entity to apply control agent

   Commercial applicator contracted and monitored by SCPRT.

10. Estimated cost of control operations

    $773

11. Potential sources of funding

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

S. C. Department of Natural Resources 50%

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

12. 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.

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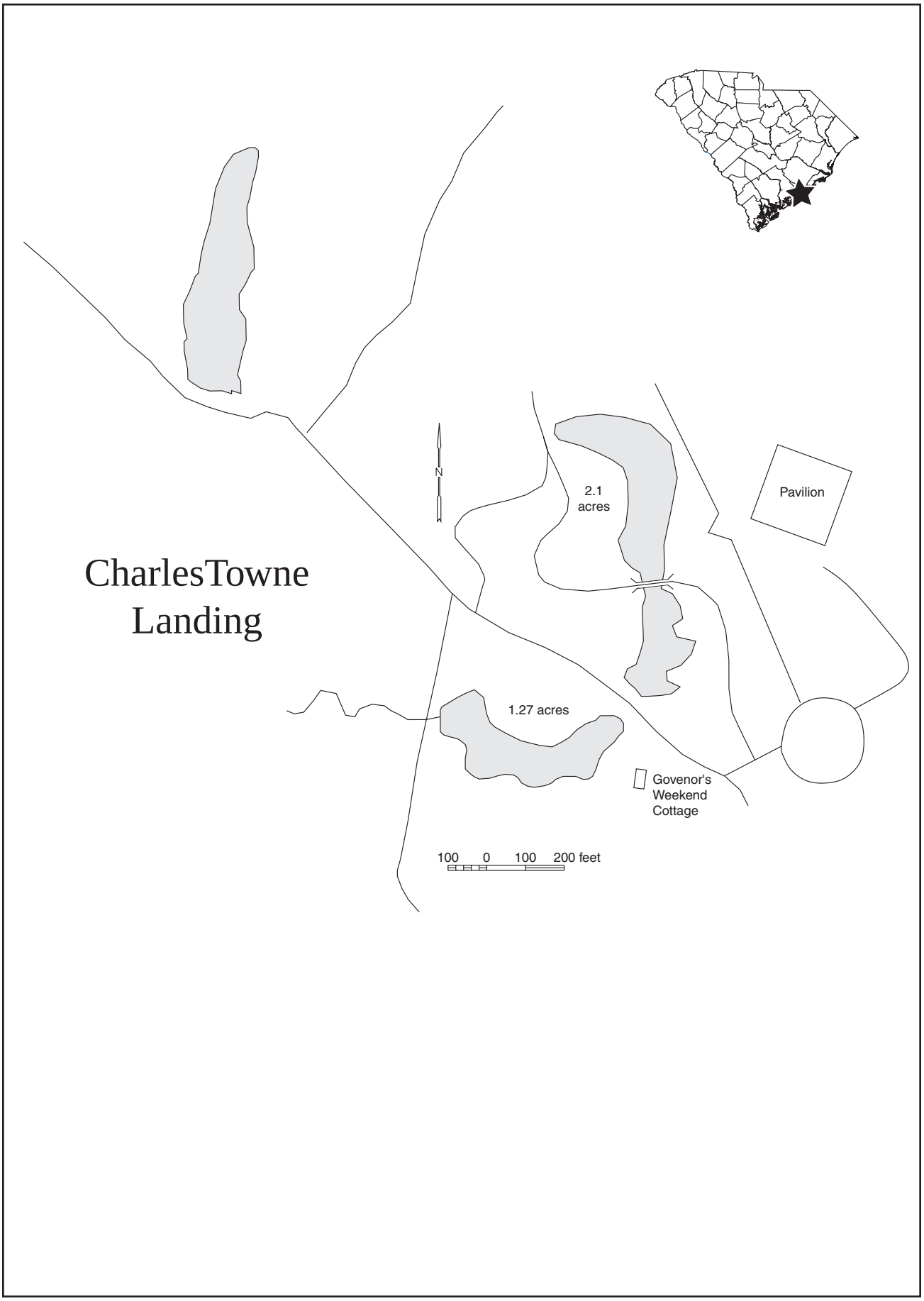
c. Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.


CharlesTowne
Landing
N
2.1
acres
Pavilion
1.27 acres
Govenor's
Weekend
Cottage
100 0 100 200 feet

25. Kings Mountain State Park - Crawford Lake

(York County)

1. Problem plant species

   Slender naiad

2. Management objective

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

3. Selected control method

   Aquathol K

4. Area to which control is to be applied

   4 acres in swimming and paddle boat area

5. Rate of control agent to be applied

   Four gallons per acre.

6. Method of application of control agent

   Apply subsurface throughout lake

7. Timing and sequence of control application

   Apply in May or June when naiad growth is initiated.

8. Other control application specifications

   Monitor plant growth prior to treatment.

9. Entity to apply control agent

   Commercial applicator contracted and monitored by SCPRT.

10. Estimated cost of control operations

    $1,040

11. Potential sources of funding

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

    S. C. Department of Natural Resources 50%

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

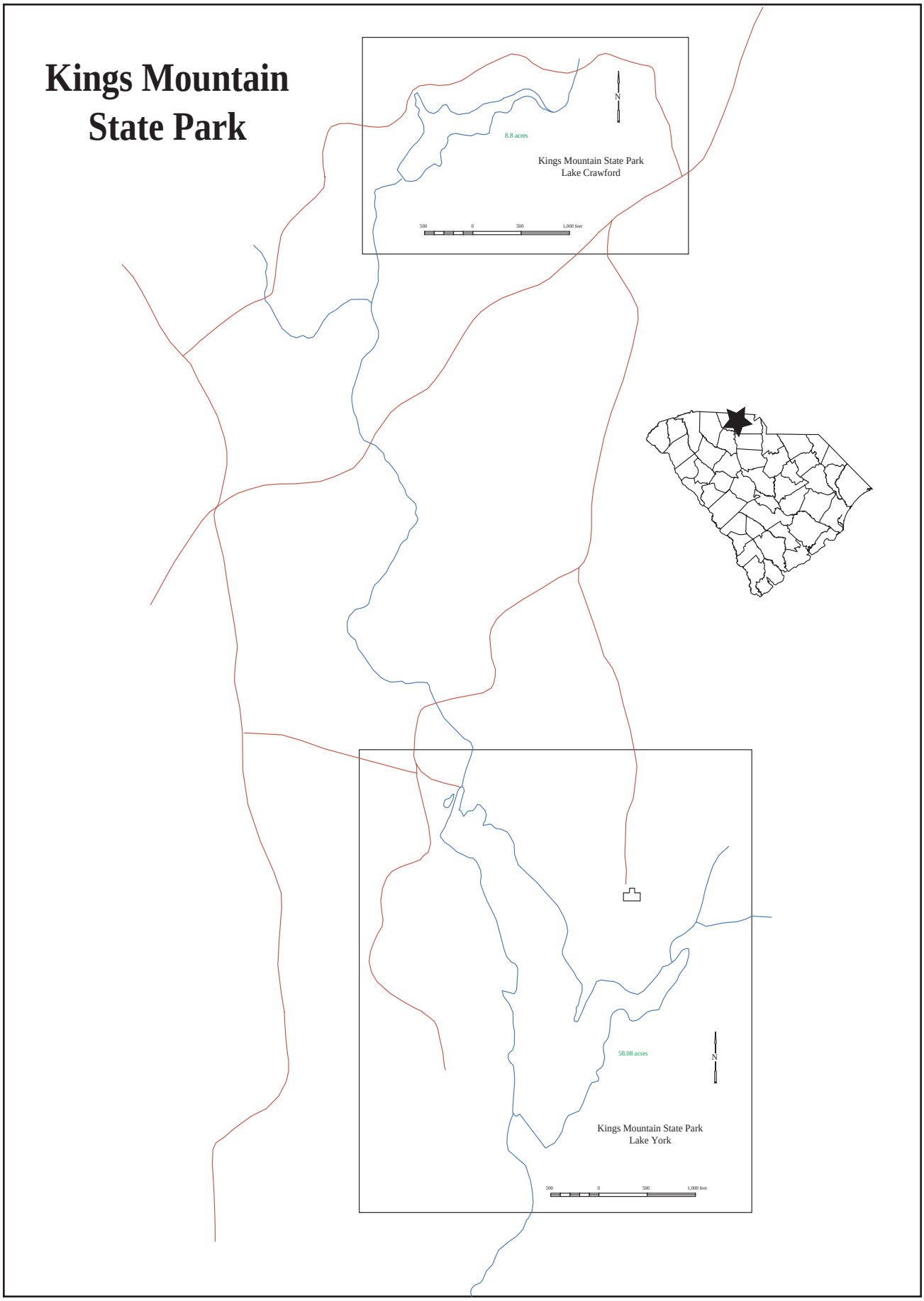
12. Long term management strategy

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 State Park



26. Little Pee Dee State Park

(Dillon County)

1. Problem plant species

   Spikerush

   Cowlily

2. Management objective

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

3. Selected control method

   2,4-D BEE granular

4. Area to which control is to be applied

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

5. Rate of control agent to be applied

   200 pounds per acre

6. Method of application of control agent

   Apply granular with spreader throughout lake

7. Timing and sequence of control application

   Apply when plants are actively growing.

8. Other control application specifications

   Monitor plant growth prior to treatment.

9. Entity to apply control agent

   Commercial applicator contracted and monitored by SCPRT.

10. Estimated cost of control operations

    $5,558

11. Potential sources of funding

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

    S. C. Department of Natural Resources 50%

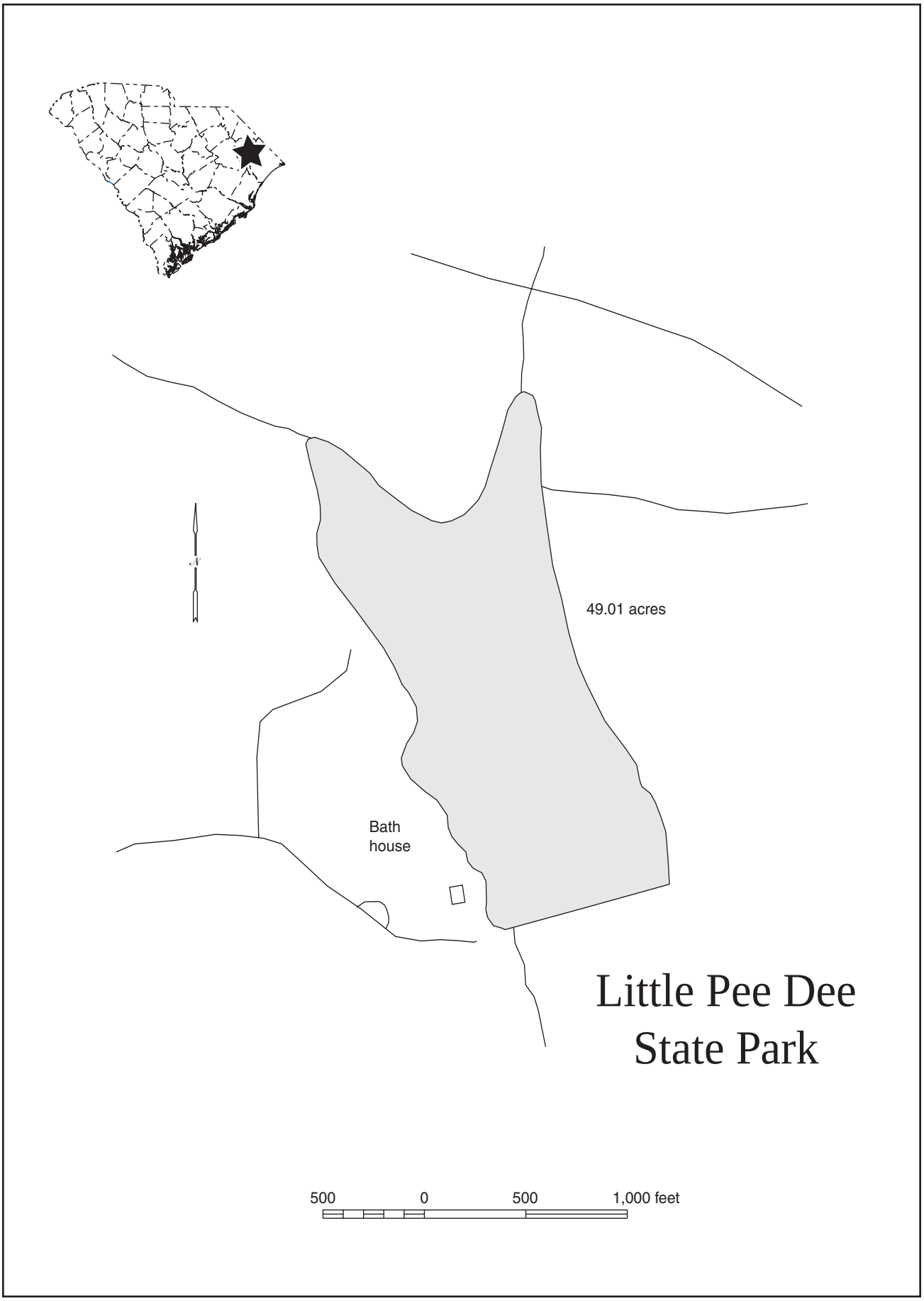
(Percentage of match subject to change based on availability of Federal and State funding.)

12. 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.


49.01 acres
Bath
house
Little Pee Dee
State Park
500
0
500
1,000 feet

27. Santee State Park - Swimming Lake

(Orangeburg County)

1. Problem plant species

   Coontail

2. Management objective

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

3. Selected control method

   Reward (Diquat)

4. Area to which control is to be applied

   10 acres

5. Rate of control agent to be applied

   2 gallons per acre

6. Method of application of control agent

   Apply subsurface throughout lake

7. Timing and sequence of control application

   Apply when plants are actively growing.

8. Other control application specifications

   Monitor plant growth prior to treatment.

9. Entity to apply control agent

   Commercial applicator contracted and monitored by SCPRT.

10. Estimated cost of control operations

    $1,170

11. Potential sources of funding

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

    S. C. Department of Natural Resources 50%

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

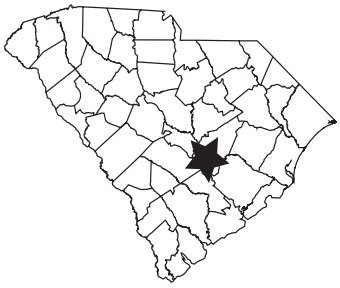
12. Long term management strategy

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.

Santee State Park



28. Sesquicentennial State Park

(Richland County)

1. Problem plant species

   Waterlily

   Watershield

2. Management objective

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

3. Selected control method

   2,4-d BEE granular

4. Area to which control is to be applied

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

5. Rate of control agent to be applied

   200 pounds per acre

6. Method of application of control agent

   Apply granular with spreader throughout lake

7. Timing and sequence of control application

   Apply when plants are actively growing.

8. Other control application specifications

   Monitor plant growth prior to treatment.

9. Entity to apply control agent

   Commercial applicator contracted and monitored by SCPRT.

10. Estimated cost of control operations

    $2,779

11. Potential sources of funding

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

    S. C. Department of Natural Resources 50%

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

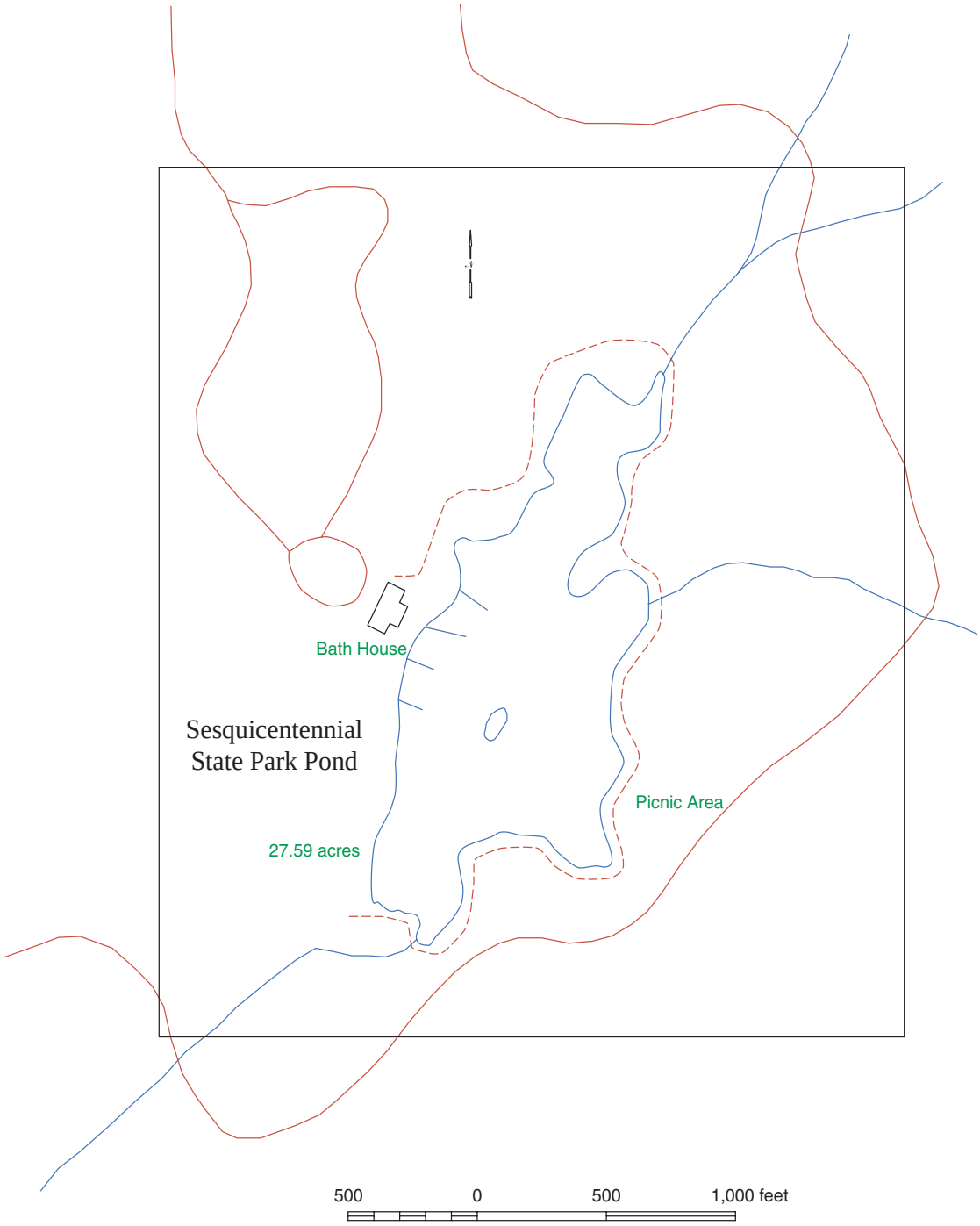
12. Long term management strategy

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



Summary of Planned Management Operation Expenditures For 2006

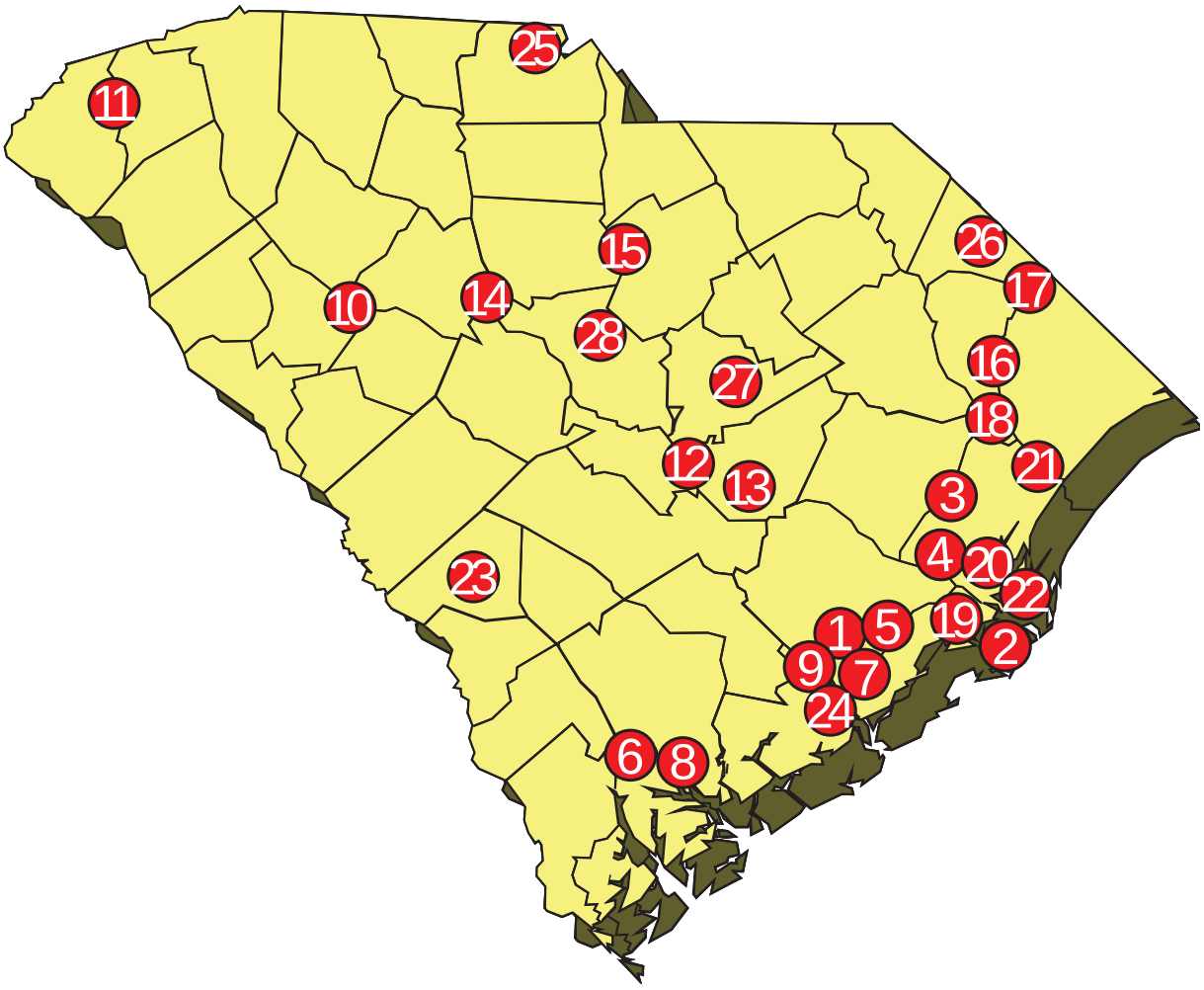
Water Body	Total Cost	Federal	State	Local	Local Sponsor
1. Back River Reservoir	$108,135	$0	$54,067	$54,067	SCE&G, CPW
2. Baruch Institute	$18,238	$0	$9,119	$9,119	Baruch Institute
3. Black Mingo Creek	$3,167	$0	$1,583	$1,583	Georgetown Co.
4. Black River	$3,167	$0	$1,583	$1,583	Georgetown Co.
5. Bonneau Ferry	$13,083	$0	$13,083	$0	SCDNR
6. Combahee River(Borrow Pit)	$1,299	$0	$650	$650	Colleton Co.
7. Cooper River	$73,147	$0	$36,574	$36,574	Berkeley Co.
8. Donnelly/Bear Island WMA	$5,382	$0	$2,691	$2,691	SCDNR
9. Goose Creek Reservoir	$22,934	$0	$11,467	$11,467	Charleston CPW
10 Lake Greenwood	$18,150	$0	$9,075	$9,075	Greenwood Co.
11. Lake Keowee	$2,742	$0	$1,371	$1,371	Duke Power
12. Lake Marion	$125,000	$0	$62,500	$62,500	Santee Cooper
13. Lake Moultrie	$15,000	$0	$7,500	$7,500	Santee Cooper
14. Lake Murray	$0	$0	$0	$0	SCE&G, Lexington Co., Richland Co.
15. Lake Wateree	$2,880	$0	$1,440	$1,440	Duke Power
16. Little Pee Dee River	$5,413	$0	$2,706	$2,706	Horry Co.
17. Lumber River	$2,165	$0	$1,083	$1,083	Horry Co.
18. Pee Dee River	$9,140	$0	$4,570	$4,570	Georgetown Co.
19. Santee Coastal Reserve	$218,850	$0	$109,425	$109,425	Santee Coastal Reserve
20. Santee Delta WMA	$5,471	$0	$2,736	$2,736	SCDNR
21. Waccamaw River	$6,638	$0	$3,319	$3,319	Horry Co., Georgetown Co.
22. Yawkey	$9,119	$0	$4,559	$4,559	Yawkey Foundation
23. Barnwell SP	$1,667	$0	$834	$834	SCPRT
24. Charlestown Landing SP	$773	$0	$387	$387	SCPRT
25. Kings Mt. Lk. Crawford SP	$1,040	$0	$520	$520	SCPRT
26. Little Pee Dee SP	$5,558	$0	$2,779	$2,779	SCPRT
27. Santee (swimming lake) SP	$1,170	$0	$585	$585	SCPRT
28. Sesquicentennial SP	$2,779	$0	$1,390	$1,390	SCPRT
Totals:	$682,106	$0	$347,595	$334,512	

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 2006. (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.

** State appropriated funds may be used for operations after July 1 if received in FY 06.

Location of 2006 Management Sites



Appendices

APPENDIX A

Major River Basins

in South Carolina

SANTEE
SAVANNAH
PEE DEE
ACE

APPENDIX B

Enabling Legislation

South Carolina Code of Laws
Section 49-6-10/40

Other Legislation

Title 49 – Waters, Water Resources and Drainage

CHAPTER 6. AQUATIC PLANT MANAGEMENT

SECTION 49-6-10. 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:

1. 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.

2. The council shall include one representative from the Governor's Office, to be appointed by the Governor.

3. 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) No person may 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:

(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).

(B) The department may issue special import permits to qualified persons for research and education only.

(C) The department may issue special permits for the stocking of nonreproducing white amur or grass carp hybrids in the waters of this State.

(D) 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.

(E) 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 C

Aquatic Plant Problem Identification Form

Aquatic Plant Problem Site Identification Form

1. Name and location of affected water body _____

_____

2. GPS Location (LAT/LONG or UTM. specify projection) _____

_____

3. Public or private water _____

_____

4. Name of problem plant (if known) _____

_____

5. Does the plant grow above or below the surface of the water?_____

_____

6. Approximate area of water covered by the problem plant_____

_____

7. Type of water use(s) affected by the plant _____

_____

8. Length of time problem has existed_____

_____

9. Plant control methods that have been used _____

_____

10. Contact for additional information: _____

Name _____

Address _____

Phone _____

** Please include a sample of the plant if possible. Wrap the plant in a moist towel and place in a "baggie". The sample should include flowers, if visible, along with leaf structure and stem.

Please Return To: Chris Page
S.C. Department of Natural Resources
2730 Fish Hatchery Road
West Columbia, South Carolina 29172
(803) 755-2836

APPENDIX D

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)

1. Target Plants

   a. Submersed species - Bladderwort, coontail, elodea, naiad, pondweeds, watermilfoil, and hydrilla.

   b. Floating species - Pennywort, Salvinia, water hyacinth, water lettuce, and duckweed.

2. Application Rate

   a. Submersed species - One to two gallons per surface acre.

   b. Floating species - One half to one gallon per surface acre, depend ing on target species.

3. Cost -Diquat costs approximately $93 per gallon. Assuming an applica tion rate of two gallons per acre and an application cost of $39 per acre, the total cost would be $225 per acre per application for submersed species. The treatment cost for floating species at one-half gallon per acre rate would be $86 per acre.

4. 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.

5. 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)

1. Target Plants

   a. Emergent species - Broadleaf species such as water primrose, waterlily, cowlily, watershield, smartweed, pondweeds, and floating heart.

   b. Submersed species - Watermilfoil, bladderwort, and coontail.

   c. Floating species - Water hyacinth.

2. Application Rate

   a. Granular form (2,4-D BEE) - 150 to 200 pounds per acre depending on target species.

   b. Liquid form - (2,4-D DMA) - 4 3/4 pints in 50 to 100 gallons of water per acre.

3. Cost

   a. The granular form of 2,4-D costs about $2.07 per pound. Assuming an application rate of 150 pounds per acre and an application cost of $55 per acre, the total cost would be $365 per application.

   b. The liquid form of 2,4-D costs approximately $11.50 per gallon. Assuming an application rate of 4 3/4 pints per acre and an application cost of $39 per acre, the total cost would be $46 per

4. 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.

5. Water use Restrictions - Do not apply to waters used for irrigation, agri cultural sprays, watering dairy animals, or domestic water supplies.

C. Chelated Copper (Cutrine Plus, Clearigate, Komeen, K-TEA, Nautique, Captain)

1. Target Plants

   a. Algae - Cutrine Plus, K-TEA, Captain

   b. Submersed species (Hydrilla, Brazilian elodea, pondweed and southern naiad) - Komeen, Nautique, Cutrine Plus, Clearigate, and Captain

2. Application Rate

a. Algae - Treatment concentration of 0.2-0.5 parts per million of copper.

b. Submersed species - 1.0 part per million of copper (12-16 gallons per acre) or mix two gallons of copper complex and two gallons of diquat per acre.

3. Cost - Copper products cost about $11.50 per gallon. Assuming an application rate of 16 gallons per acre and an application cost of $39 per acre, the total cost would be $223 per acre.

4. 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.

5. 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 191 granular and liquid)

1. 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.

2. Application Rate

Aquathol

a. Liquid form (Aquathol K) - three gallons or more per acre depending on the target species.

b. 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

a. Heavy Infestations - Evenly spread 160 - 270 pounds per acre foot of water (3.0 - 5.0 ppm) applied evenly.

b. Moderate or light infestations - Use 55 - 110 pounds per acre foot (1.0 - 2.0 ppm) applied evenly.

3. Cost

Aquathol

a. Aquathol K costs approximately $47 per gallon. Assuming an application rate of 5 gallons per acre and an application cost of $39 per acre, the total cost would be $274 per acre.

b. Aquathol granular costs about $2.25 per pound. At an application rate of 150 pounds per acre and an application cost of $55 per acre, the total cost would be $393 per acre per application.

c. Aquathol Super K costs about $13.00 per pound at an application rate of 30 pounds per acre and an application cost of $55 per acre, the total cost would be $445 per acre.

Hydrothol 191

Hydrothol 191 granular costs approximately $2.25 per pound. Assuming an application rate of 240 pounds per acre and an application cost of $55, the total cost would be $595 per acre.

4. 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.

5. 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, Eagre, Aquastar)

1. Target Plants - Emergent broadleaf plants and grasses such as alligatorweed, water primrose, smartweed, and *Phragmites*.

2. Application Rate - Up to 7 1/2 pints per acre, the specific rate depending on the target species.

3. Cost - Glyphosate products range in price from $47-$77 per gallon. At an application rate of 7.5 pints per acre and an application cost of $39 per acre, the total would range from $83-$111 per acre per application.

4. Use Considerations - Glyphosate is not toxic to mammals, birds or fish at recommended use concentrations. Glyphosate products with aquatic la-

bels can be used in and around aquatic sites, including all bodies of fresh and brackish water which may be flowing or nonflowing.

5. 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. Fluridone (Sonar, Avast)

1. Target Plants - Primarily submersed plants, such as hydrilla, Brazilian elodea, watermilfoil, pondweeds, duckweeds and naiads; also effective on lilies and some grasses.

2. Application Rate

   a. Liquid form (Sonar AS, Avast) - 0.12 to 2.44 quarts per acre depending on water depth.

   b. Pellet forms (Sonar PR, Sonar SRP, Avast SRG) - 15 to 80 pounds per acre depending on water depth.

3. Cost

   a. The liquid formulation ranges from $1200-$1500 per gallon. Assuming an application rate of 2 quarts per acre (2 pounds active ingredient per acre) and an application cost of $39 per acre, the total cost would be $639 per acre per application.

   b. The pellet formulations range in price from $21.00-$25.00 per pound. Assuming an application rate of 40 pounds per acre (2 pounds active ingredient per acre) and an applica tion cost of $55 per acre, the total cost would be $895 per acre per application.

4. 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.

5. Water Use Restrictions - Do not apply within 1/4 mile of a functioning potable water intake unless concentrations are less than 20 ppb. Water treated with fluridone cannot be used for irrigation for 7-30 days depend ing on target crop.

G. Imazapyr (Habitat)

1. Target Plants - Phragmites, Alligatorweed, Water primrose, and Cutgrass.

2. Application Rate - 1 to 6 pints per acre depending on target species.

3. Cost - Habitat (Imazapyr) costs $270 per gallon. Assuming the application rate of 16 oz. per acre and an application cost of $39 per acre, the total cost would be $73 per acre.

4. 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.

5. 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 1.0 ppb or less.

6. Aerial Applications may only be made by helicopter.

H. Triclopyr (Renovate 3, Tahoe)

1. Target Plants - Alligatorweed, Eurasian watermilfoil, water hyacinth, parrotfeather, and water primrose.

2. Application Rate - 2-8 qts. per acre depending on target species.

3. Cost - Triclopyr products cost $106 per gallon. Assuming the application rate of 2 qts per acre and an application cost of $39 per acre, the total cost would be $92 per acre.

4. 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.

5. 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.

II. Biological Control

A. Alligatorweed Flea Beetle (*Agasicles hygrophila*)

1. Target Plant - Alligatorweed

2. Stocking Rate - 600-1,000 per acre.

3. 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.

4. 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.

B. Alligatorweed Stem Borer Moth (*Vogtia malloi*)

1. Target Plant - Alligatorweed

2. Cost - Approximately the same as for flea beetle.

3. Use Considerations - Same as for flea beetle.

C. 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 (*Ctenopharyngodon idella*)

1. Target Plant - Primarily submersed plants including Brazilian elodea, hydrilla, bladderwort, coontail, naiads, pondweeds.

2. 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.

3. 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

A. Harvesters, Cutters, Dredges and Draglines

1. Target Plants - All species

2. 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.

3. 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.

B. Fiberglass Bottom Screens

1. Target Plants - All species which root in the bottom.

2. Cost $10,000 per acre.

3. 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

A. 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.

B. 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 E

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

Santee Cooper (S-C) and the S.C. Department of Natural Resources (DNR) recognize the Santee Cooper Lakes as a significant natural resource of the State. In order to provide balanced benefits to natural resources and the multiple uses of the lakes, the DNR and S-C (the parties) agree to cooperate in the management of aquatic vegetation and the habitat that it provides. The parties' goal is to maintain 10 % of the lakes' surface area as beneficial vegetated habitat for waterfowl, wildlife, fish and other aquatic organisms. In order to achieve this goal, the parties agree to the following:

1. The aquatic plant management goal for the Santee Cooper Lakes is to achieve a diverse assemblage of native aquatic vegetation in 10% of the total surface area of the lake and to effectively control non-native invasive species. The aquatic plant coverage should include a combination of submersed, floating leaf, and emergent plant species that provide habitat and food to game and non-game fish and wildlife species. At least 75% of the vegetation should be composed of species that are beneficial to waterfowl. This vegetation should be distributed throughout the lake system. However, localized control using chemical or mechanical methods may be necessary in areas where vegetation interferes with hydroelectric power production or other legitimate lake uses regardless of plant coverage and distribution.

2. Monitoring

Aquatic Plants: 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 - to map the 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 following year's work plan.

Fish and Wildlife: The DNR and Santee Cooper will cooperate in monitoring the health of the fishery and in conducting enhanced monitoring of waterfowl populations. The waterfowl population monitoring will consist of aerial waterfowl censuses. The census will be conducted 10 times each winter. The DNR will provide personnel and prepare an annual report to be distributed to both agencies. S-C will provide the flight time, approximately 30 hours each year.

3. Sterile grass carp will continue to be a major component of the long-term management strategy in controlling hydrilla. The DNR and S-C 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 Aquatic Plant Management Council for consideration. The implementation of these recommendations will be subject to approval by the Council.

4. 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 Lakes Marion and Moultrie.

5. In order to enhance native plant growth and habitat throughout the lake system, S-C and the DNR will cooperate in implementing innovative management techniques. These techniques could include such measures as constructing grass carp barriers, introducing desirable native plant species, enhancing wildlife/waterfowl management areas, and implementing strategic lake level management measures.

6. The DNR and S-C will meet annually to review the results of the monitoring and treatment programs to determine the effectiveness of the programs, and to develop annual work plans. 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.

Bill McCall Jr.
Santee Cooper

Paul Sandifer
SCDNR

APPENDIX F

Summary of Aquatic Plant Control Expenditures

SUMMARY OF AQUATIC PLANT CONTROL EXPENDITURES

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 were 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 totalling 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 (USCOE), 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 6135.40 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.

Table 2001-A. Summary of Expenditures by Source for Control Operations During 2001.

Water Body Name	Total Cost	Federal	State	Local	Local Sponsor
Back River Reservoir	$115,870	$36,511	$0	$79,359	CCPW/SCE&G/NWS
Cooper River	$11,468	$5,734	$0	$5,734	Berkeley County
Cromer Road Pond	$827	$0	$248	$579	-
Goose Creek Reservoir	$9,916	$4,085	$0	$5,831	Charleston CPW
Lake Greenwood	$14,755	$0	$0	$14,755	Duke Power/ Greenwd Co.
Lake Marion	$21,837	$9,682	$0	$12,155	Santee Cooper
Lake Moultrie	$14,582	$5,957	$0	$8,624	Santee Cooper
Church Branch Impoundment	$4,210	$1,328	$0	$2,883	Santee Cooper
Dean Swamp Impoundment	$12,804	$5,184	$0	$7,620	Santee Cooper
Fountain Lake	$2,695	$1,003	$0	$1,692	Santee Cooper
Potato Cr. Impoundment	$9,023	$4,511	$0	$4,511	Santee Cooper
Taw Caw Cr. Impoundment	$16,459	$6,551	$0	$9,908	Santee Cooper
Lake Murray	$245,969	$122,984	$0	$122,984	SCE&G/Lexington Co.
Lake Wateree	$147	$0	$0	$147	Duke Power Co.
Little Pee Dee River	$10,162	$3,356	$0	$6,806	Horry & Marion County
Waccamaw River	$203	$0	$102	$101	Georgetown County
Lake Cherokee	0*	$0	$0	$0	SCDNR Fisheries
Mountain Lake	0*	$0	$0	$0	SCDNR Fisheries
Barnwell State Park	$4,550	$0	$0	$4,550	SC Parks, Rec, Tourism
Charles Towne Landing St Pk.	$390	$0	$0	$390	SC Parks, Rec, Tourism
Huntington Beach State Pk	$1,950	$0	$0	$1,950	SC Parks, Rec, Tourism
Kings Mt. State Park	$1,260	$0	$0	$1,260	SC Parks, Rec, Tourism
Little Pee Dee State Park	$5,175	$0	$0	$5,175	SC Parks, Rec, Tourism
Poinsette State Park	$2,275	$0	$0	$2,275	SC Parks, Rec, Tourism
Santee State Park	$1,550	$0	$0	$1,550	SC Parks, Rec, Tourism
State Park Lake Total	$17,150	$0	$0	$17,150	
Non Santee Cooper Total	$426,466	$172,670	$350	$253,446	
Santee Cooper Total	$81,609	$34,215	$0	$47,394	
GRAND TOTAL	**$508,075**	**$206,885**	**$350**	**$300,840**	

* received complimentary grass carp from Santee Cooper.

Table 2001-B. Summary of S.C. Aquatic Plant Management Program Control Operations and Expenditures During 2001.

Waterbody	Target Plants	Acres Treated	Total Cost	Cost/Acre	Control Agent	Treatment Rate	Management Objective	Control Effectiveness
Back River Reservoir	Hydrilla	238.0	$50,684.48	$212.96	Komeen	16 gal/ac	Reduce problem plants to enhance	30% control of hydrilla with Sonar & 75-90% control
		75.0	$30,888.00	$411.84	Sonar AS & K-Tea	1qt/ac + 2gal/ac	public access, use, and water quality	with Komeen after 6 wks.; 75% control of
	Water hyacinth	77.0	$6,286.28	$81.64	Reward	0.5 gal/ac	and minimize floating islands and	water primrose and w. hyacinth with Eagre; 85%
	Water primrose	275.0	$28,011.22	$101.86	Eagre	7.5 pt/ac	impacts to water intakes.	control of wat. primrose with Arsenal after 9wks.
TOTAL:		665.0	$115,869.98	$174.24				
Cooper River	Hydrilla	50.0	$10,648.00	$212.96	Komeen	16 gal/ac	Reduce water hyacinth to greatest	80% control of water primrose after 8 wks; 65%
	Water primrose	8.0	$819.52	$102.44	Arsenal (EUP)	32 oz/ac	extent possible; provide boat trails	control of hydrilla after 4 wks;
TOTAL:		58.0	$11,467.52	$197.72			to main channel through hydrilla.	
Cromer Road Pond	Water hyacinth	8.5	$826.54	$97.24	Reward	0.5-0.75 gal/ac	Eliminate all water hyacinth.	85% control of treated plants.
Goose Creek Reservoir	Water primrose	43.0	$4,364.07	$101.49	Eagre	7.5 pt/ac	Reduce water hyacinth to greatest	75% control of water primrose; 90% control of
	Water hyacinth	68.0	$5,551.52	$81.64	Reward	0.5 gal/ac	extent possible; reduce w. primrose	water hyacinth; hydrilla still controlled by grass
TOTAL:		111.0	$9,915.59	$89.33			for public use and flood flow.	carp.
Lake Greenwood	Pithophora	60.0	$8,160.00	$136.00	Cutrine Plus	60 lbs/ac	Minimize growth of algae in Reedy R.	95% contol of Pithophora throughout year;
	Slender naiad	44.0	$6,595.16	$149.89	Aquathol K	3.5 gal/ac	arm; reduce naiad along developed	60% control of naiads.
TOTAL:		104.0	$14,755.16	$141.88			shoreline.	
Lake Marion	American lotus, waterlily,	5.0	$462.68	$92.54	Reward, Eagre,	0.5 gal/ac	Manage hydrilla to minimize	>90% control of all target species except
	watershield				and, Arsenal (EUP)		spread and impacts to water uses; reduc.	for algae and parrotfeather; >80% control of
	Giant cutgrass	28.8	$3,619.66	$125.68	Arsenal (EUP)	0.25-0.375 gal/ac	cutgrass to enhance waterfowl habitat;	parrotfeather; >85% control of Lyngbya and
	Lyngbya, Pithophora	47.0	$7,125.45	$151.61	Clearigate, Nautique	1 gal/ac, 0.5 gal/ac,	reduce other problem plant species in	Pithophora at end of the season (low lake levels
	Water primrose, alligator-	59.2	$6,880.29	$116.22	Arsenal (EUP),	0.25 gal/ac;	priority use areas to enhance public	and freezing temps have reduced plant density).
	weed, maidencane				Eagre, AquaNeat	0.75 gal/ac	access and use, and maintain	
	Parrotfeather	1.0	$238.25	$238.25	Rodeo, Reward	0.75 gal/ac, 1 gal/ac	electric power generation.	
	Water hyacinth	32.0	$3,510.27	$109.70	Reward	0.5 gal/ac		
TOTAL:		173.0	$21,836.60	$126.22				
Lake Moultrie	American lotus, waterlily	13.5	$1,468.83	$108.80	Reward	1 gal/ac	Manage hydrilla to minimize	>90% control of most target species at
	Cabomba, watermilfoil	4.5	$1,042.15	$231.59	Sonar SRP	10 lbs/ac	spread and impacts to water uses; reduc.	end of the season; retreatment needed
	Wat. prim., alligatorweed	86.0	$9,016.38	$104.84	Arsenal (EUP), Eagre	0.25 gal/ac; 0.75gal/ac	cutgrass to enhance waterfowl habitat;	for some emergent species.
	Giant cutgrass, Cattail	22.5	$2,583.75	$114.83	Arsenal (EUP), Eagre	0.25 gal/ac; 0.75gal/ac	reduce other problem plant species in	
	Bladderwort	1.0	$267.43	$267.43	Reward	1 gal/ac	priority use areas to enhance public	
	Hydrilla	0.7	$203.07	$290.10	Reward/Komeen	2 gal/ac + 3.5 gal/ac	access and use, and maintain	
TOTAL:		128.2	$14,581.61	$113.74			electric power generation.	
Church Branch Impound.	Wat. primrose, alligatorwd,	4.0	$583.69	$145.92	Arsenal (EUP), Eagre	0.25 gal/ac; 0.75gal/ac	Reduce problem plants to enhance	>90% control of target plants at end of season.
	giant cutgrass, cattail						public access and use.	
	Watermilfoil, parrotfeather	9.5	$3,626.71	$381.76	Sonar AS, 2, 4D BEE	0.2 gal/ac; 200 lbs/ac		
TOTAL:		13.5	$4,210.40					
Dean Swamp Impound.	Wat. primrose, alligatorwd,	15.5	$1,757.58	$113.39	Arsenal (EUP), Eagre	0.25 gal/ac; 0.75gal/ac	Reduce problem plants to enhance	>90% control of coontail and emerget plants and
	giant cutgrass, cattail						public access and use.	65% control of Lyngbya at end of season.
	Coontail	12.0	$3,087.23	$257.27	Aquathol K	5 gal/ac		
	Lyngbya, Pithophora	26.5	$7,958.95	$300.34	K-Tea, Reward,	6 gal/ac; 2 gal/ac		
TOTAL:		54.0	$12,803.76	$237.11	Hydrothol 191	0.5 gal/ac		
Fountain Lake	Wat. primrose, alligatorwd,	7.5	$927.80	$123.71	Arsenal (EUP), Eagre	0.25 gal/ac; 0.75gal/ac	Reduce problem plants to enhance	>90% control of target plants at end of season.
	giant cutgrass, cattail						public access and use.	
	American lotus, waterlily	6.0	$1,767.37	$294.56	Arsenal (EUP), Eagre	0.25 gal/ac; 0.75gal/ac		>90% control of target plants at end of season.
TOTAL:		13.5	$2,695.17					
Potato Creek Impoundment	Hydrilla	30.0	$9,022.81	$300.76	Aquathol K, Hydrothol	5 gal/ac, 1 gal/ac	Reduce problem plants to enhance	>80% control of target plants at end of season.
							public access and use.	
Taw Caw Cr. Impoundment	Coontail	53.0	$12,909.76	$243.58	Aquathol K	5 gal/ac	Reduce problem plants to enhance	>90% control of target plants at end of season.
	Water primrose, alligator-	35.0	$3,548.75	$101.39	Arsenal EUP,	0.25 gal/ac,	public access and use.	
	weed, cutgrass, cattail				Eagre	0.75 gal/ac		
TOTAL:		88.0	$16,458.51	$187.03				
Lake Murray	Hydrilla	1155.0	$245,968.80	$212.96	Komeen	16 gal/ac	Reduce hydrilla to min. spread and imp.	70-99% control of hydrilla depending on depth
							to public access, use, and water intakes.	and wind conditions.
Lake Wateree	Hydrilla	1.0	$147.14	$147.14	Komeen	10 gal/ac	Eliminate hydrilla from site.	>95% control, no regrowth.
Little Pee Dee River	Alligatorweed	100.0	$10,162.30	$101.62	Eagre, Arsenal (EUP)	0.75 gal/ac; 32 oz/ac	Reduce alligotorweed for boat access.	90% control with Eagre; 75 % contol with Arsenal.

Table 2001-B. Summary of S.C. Aquatic Plant Management Program Control Operations and Expenditures During 2001.

Waterbody	Target Plants	Acres Treated	Total Cost	Cost/Acre	Control Agent	Treatment Rate	Management Objective	Control Effectiveness
Waccamaw River	Wat. hyacinth, wat. primrose,	2.0	$202.98	$101.49	Eagre	7.5 pt/ac	Reduce problem plants and	95% control of water hyacinth;
	alligatorweed, Phragmites						Phragmites to greatest extent possible.	85% control of Phragmites.
Lake Cherokee	Slender spikerush, naiads	20.0	$0.00	$0.00	Triploid grass carp	20 fish/ac (400 fish)	Reduce problem plants to enhance	Too soon for results.
							fishing and boating.	
Mountain Lake	Pondweeds	5.0	$0.00	$0.00	Triploid grass carp	20 fish/ac (100 fish)	Reduce problem plants to enhance	Too soon for results.
							fishing and boating.	
State Park Lakes								
Barnwell State Park	Waterlily	10.0	$4,550.00	$455.00	2, 4-D granular	200 lbs/ac	Improve fishing and boating.	85-90% control of target plants.
Charles Towne Landing SP	Pennywort, alligatorweed	2.0	$390.00	$195.00	Rodeo	7.5 pt/ac	Provide public access for bank fishing	90-95% control of target plants.
Huntington Beach State Park	Cattails, Phragmites	10.0	$1,950.00	$195.00	Rodeo	7.5 pt/ac	Remove cattails to improve waterfowl	60-65% control target plants.
							use; public wildlife observation, fishing.	
Kings Mt. State Park	Slender naiad	4.0	$1,260.00	$315.00	Aquathol K	4 gal/ac	Reduce naiads in swimming and boating	80-85% control of target plants.
							areas.	
Little Pee Dee State Park	Watermilfoil, cowlily	10.0	$5,175.00	$517.50	2, 4-D granular	200 lbs/ac	Reduce plants to enhance swimming,	75-80% control of target plants.
							boating, and fishing.	
Poinsett State Park	Cowlily	5.0	$2,275.00	$455.00	2, 4-D granular	200 lbs/ac	Improve swimming, fishing and boating.	80-85% control of target plants.
Santee State Park	Coontail	5.0	$1,550.00	$310.00	Reward	2 gal/ac	Improve fishing and boating.	85-90% control of target plants.
State Park Lakes		46.0	$17,150.00	$372.83				
Santee Cooper Lakes		499.2	$81,608.86	$163.48				
GRAND TOTAL:		**2774.7**	**$508,074.87**	**$183.11**				

Table 2002-A. Summary of Expenditures by Source for Control Operations During 2002.

Water Body Name	Total Cost	Federal	State	Local	Local Sponsor
Back River Reservoir	$92,071	$38,877	$0	$53,194	CCPW/SCE&G/NWS
Black Mingo Creek	$1,223	$611	$0	$611	Georgetown County
Combahee River	$1,279	$640	$0	$640	Colleton County
Cooper River	$36,414	$18,207	$0	$18,207	Berkeley County
Goose Creek Reservoir	$21,194	$10,597	$0	$10,597	Charleston CPW
Lake Greenwood	$31,556	$15,778	$0	$15,778	Duke Power/ Greenwd Co.
Pee Dee River	$10,436	$5,218	$0	$5,218	Georgetown County
Santee Coastal Reserv	$47,717	$0	$0	$47,717	SCDNR-WFF Div.
Waccamaw River	$1,249	$625	$0	$625	Georgetown County
Lake Marion	$15,444	$5,838	$0	$9,606	Santee Cooper
Lake Moultrie	$7,060	$2,765	$0	$4,295	Santee Cooper
Church Branch Impoun	$9,563	$4,300	$0	$5,263	Santee Cooper
Dean Swamp Impound	$10,852	$4,297	$0	$6,555	Santee Cooper
Fountain Lake	$348	$104	$0	$243	Santee Cooper
Taw Caw Cr. Impoundm	$5,781	$1,734	$0	$4,046	Santee Cooper
Barnwell State Park	$3,250	$0	$0	$3,250	SC Parks, Rec, Tourism
Kings Mt. State Park	$1,800	$0	$0	$1,800	SC Parks, Rec, Tourism
State Park Lake Total	$5,050	$0	$0	$5,050	
Non Santee Cooper Tot	$248,190	$90,553	$0	$157,637	
Santee Cooper Total	$49,047	$19,038	$0	$30,009	
GRAND TOTAL	**$297,236**	**$109,591**	**$0**	**$187,646**	
		37%		63%	

Table 2002-B. Summary of S.C. Aquatic Plant Management Program Control Operations and Expenditures During 2002

Waterbody	Target Plants	Acres Treated	Total Cost	Cost/Acre	Control Agent	Treatment Rate	Management Objectives	Control Effectiveness
Back River Reservoir	Hydrilla	229.00	$50,597.98	$220.95	Komeen	16 gal/ac	Reduce problem plants to enhance public access, use, water quality,	85% control of hydrilla except Foster Creek which was 50% control
	Water hyacinth	459.00	$38,220.93	$83.27	Reward	0.5 gal/ac	and maintain electric power generation and minimize impacts to	90% control of water hyacinth
	Water primrose	40.00	$3,251.60	$81.29	Eagre	7.5 pt/ac	water intakes.	75% control of water primrose
Total		**728.00**	**$92,070.51**	**$126.47**				
Black Mingo Creek	Alligatorweed	**10.00**	**$1,222.80**	**$122.28**	Arsenal (EUP), Eagre	24 oz/6 pt/ac	Reduce problem plants to enhance public access and use.	75% control of alligatorweed with some regrowth after 2 months
Combahee River	Alligatorweed	7.00	$855.96	$122.28	Arsenal (EUP), Eagre	24 oz/6 pt/ac	Provide public access for bank	95% control after three treatments
	Parrott feather, frog's bit	4.00	$423.28	$105.82	Reward	0.75 gal/ac	fishing	
Total		**11.00**	**$1,279.24**	**$116.29**				
Cooper River	Hydrilla	25.00	$5,430.50	$217.22	Komeen	16 gal/ac	Provide boat trails to main channel through hydrilla.	70% control of hydrilla
	Water hyacinth	355.00	$29,560.85	$83.27	Reward	0.5 gal/ac	Reduce water hyacinth to greatest	90% control of water hyacinth
	Water primrose	1.00	$122.28	$122.28	Arsenal (EUP), Eagre	24 oz/6 pt/ac	extent possible. Reduce problem plants to	90% control of water primrose
	Water primrose	16.00	$1,300.64	$81.29	Eagre	7.5 pt/ac	enhance public access and use.	
Total		**397.00**	**$36,414.27**	**$91.72**				
Goose Creek Reservoir	Water lettuce, water hyacinth	235.00	$19,568.45	$83.27	Reward	0.5 gal/ac	Reduce water hyacinth & water lettuce to greatest extent possible.	90% control of water hyacinth
	Water primrose	20.00	$1,625.80	$81.29	Eagre	7.5 pt/ac	Reduce water primrose for public use and flood flow.	75% control of water primrose; hydrilla still controlled by grass carp.
Total		**255.00**	**$21,194.25**	**$83.11**				
Lake Greenwood	Hydrilla	109.50	$27,121.81	$247.69	Aquathol K	5 gal/ac	Eradicate hydrilla from site.	99% control of hydrilla. **Note: Eradication of hydrilla yet to be determined.**
	Slender naiad	16.50	$4,434.33	$268.75	Aquathol K	5 gal/ac	Reduce naiad along developed shoreline.	85% control of Slender naiad
Total		**126.00**	**$31,556.14**	**$250.45**				
Pee Dee River								
Thoroughfare Creek	Water hyacinth	72.00	$5,995.44	$83.27	Reward	0.5 gal/ac	Reduce water hyacinth to greatest	90% control of hyacinth
Sandy Island	Water hyacinth	25.00	$4,440.75	$177.63	Reward	0.75 gal/ac	extent possible to enhance public	95% control of hyacinth with two
							access.	retreatments
Total		**97.00**	**$10,436.19**	**$107.59**				
Santee Coastal Reserve	Phragmites	**299.00**	**$47,717.41**	**$159.59**	Arsenal (EUP), Rodeo	24 oz/6 pt/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control of phragmites
Waccamaw River	Water hyacinth	**15.00**	**$1,249.05**	**$83.27**	Reward	0.75 gal/ac	Reduce water hyacinth to greatest extent possible to enhance public access.	90% control of water hyacinth
Santee Cooper Lakes								
Lake Marion	American lotus, waterlily, watershield	1.00	$174.83	$174.83	Reward, Glyphosate	.5 gal/ac, .75 gal/ac	Reduce problem plant species in priority use areas to enhance public	>90% control of plant in areas treated.
	Giant cutgrass	50.50	$7,255.61	$143.68	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac	access and use, enhance waterfowl habitat, and to maintain electric	>95% control of plant in areas treated.
	Lyngbya, Pithophora	18.00	$2,541.55	$141.20	K-Tea, Reward	6.0 gal/ac, 2.0 gal/ac	power generation.	65% control of plant in areas treated.
	Water hyacinth	14.50	$1,364.90	$94.13	Reward	.5 gal/ac		>95% control of plant in areas treated.
	Water primrose, Alligatorweed,	29.00	$4,014.22	$138.42	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac		>85% control of plant in areas treated.
	Water pod, water willow, Slender naiad, pondweed	0.25	$92.55	$370.20	Reward, Komeen	2.0 gal/ac, 4.0 gal/ac		>90% control of plant in areas treated.
Total		**113.25**	**$15,443.66**	**$136.37**				
Lake Moultrie	American lotus, waterlily, watershield	36.50	$3,688.61	$101.06	Glyphosate	.75 gal/ac.	Reduce problem plant species in priority use areas to enhance public	>90% control of plant in areas treated.
	Bladderwort, pondweed	1.25	$357.04	$285.63	Reward	2 gal/ac	access and use, enhance waterfowl habitat, and to maintain electric	>90% control of plant in areas treated.
	Hydrilla	0.50	$162.51	$325.02	Komeen / Reward	4.0 / 2.0 gal/ac	power generation.	>90% control of plant in areas treated.
	Water primrose, Alligatorweed	11.25	$1,606.54	$142.80	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac		>85% control of plant in areas treated.
	Giant cutgrass, cattail	11.25	$1,245.20	$110.68	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac		>95% control of plant in areas treated.
Total		**60.75**	**$7,059.90**	**$116.21**				

Table 2002-B. Summary of S.C. Aquatic Plant Management Program Control Operations and Expenditures During 2002

Waterbody	Target Plants	Acres Treated	Total Cost	Cost/Acre	Control Agent	Treatment Rate	Management Objectives	Control Effectiveness
Church Branch Impoundment	Water primrose, Alligatorweed	2.50	$317.35	$126.94	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac	Reduce problem plant species to enhance public access and use and	>85% control of plant in areas treated.
	Giant cutgrass, cattail	1.00	$126.94	$126.94	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac	to enhance waterfowl habitat.	>90% control of plant in areas treated.
	Lyngbya, Pithophora	2.00	$251.91	$125.96	K-Tea, Reward, Hydrothol 191 Granular & Liquid	6 gal/ac, 2 gal/ac, .5 gal/ac & 100 lbs/ac		>90% control of plant in areas treated.
	Water milfoil, parrot feather	7.75	$3,037.74	$391.97	2,4-D Granular	150 - 200 lbs/ac		>95% control of plant in areas treated.
	Coontail	1.25	$629.67	$503.74	Reward	2.0 gal/ac		>90% control of plant in areas treated.
	Pondweed	16.00	$4,888.83	$305.55	Aquathol K Liquid	6.0 gal/ac		>90% control of plant in areas treated.
	Slender naiad	1.00	$310.43	$310.43	Aquathol K Liquid	6.0 gal/ac		>80% control of plant in areas treated.
Total		**31.50**	**$9,562.87**	**$303.58**				
Dean Swamp	Hydrilla	26.50	$7,657.66	$288.97	Aquathol K, Hydrothol 191 Liquid, Reward, Komeen	6.0 gal/ac, .50 gal/ac, 2.0 gal/ac, 4.0 gal/ac	Reduce problem plant population to improve recreational access	75% control of areas treated.
	Coontail	2.00	$581.91	$290.96	Aquathol K	5 gal/ac		>80% control of plant in areas treated.
	Water primrose, Alligatorweed	3.00	$281.28	$93.76	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac		>85% control of plant in areas treated.
	Lyngbya, Pithophora	12.00	$2,331.21	$194.27	Hydrothol 191 Liquid / Granular, Reward, K-Tea	.5 - 1.0 gal / 60-80 lb/ac, 2.0 gal/ac, 6.0 gal/ac		65% control of plant in areas treated.
Total		**43.50**	**$10,852.06**	**$249.47**				
Fountain Lake	Water primrose, Alligatorweed	2.00	$173.76	$86.88	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac	Reduce problem plant population to improve recreational access	>85% control of plant in areas treated.
	American lotus, fragrant waterlily, watershield	2.00	$173.76	$86.88	Glyphosate	.75 gal/ac		>90% control of plant in areas treated.
Total		**4.00**	**$347.52**	**$86.88**				
Taw Caw Impoundment	Coontail	10.00	$2,590.95	$259.10	Aquathol K	5 gal/ac	Reduce problem plant population to improve recreational access	>80% control of plant in areas treated.
	Bladderwort, slender naiad	2.00	$518.20	$259.10	Aquathol K	5 gal/ac		>80% control of plant in areas treated.
	Giant cutgrass, cattail	2.00	$241.48	$120.74	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac		>95% control of plant in areas treated.
	Water primrose, Alligatorweed,	20.00	$2,429.95	$121.50	Arsenal (EUP), Glyphosate	.125 - .375 gal/ac,.50 - .75 gal/ac		>85% control of plant in areas treated.
Total		**34.00**	**$5,780.58**	**$170.02**				
Barnwell State Park - Swimming Lake	Waterlily	**10.00**	**$3,250.00**	**$325.00**	2,4-D granular	200 lb/ac	Reduce problem plant population to improve recreational access	85% control of waterlily
King's Mt. State Park - Lake Crawford	Slender naiad	**4.00**	**$1,800.00**	**$450.00**	Aquathol K	4.0 gal/ac	Reduce problem plant population to improve recreational access	75% control of slender naiad
Total		**14.00**	**$5,050.00**	**$360.71**				
SCDNR Total		**1938.00**	**$243,139.86**	**$125.46**				
Santee Cooper Total		**287.00**	**$49,046.59**	**$170.89**				
State Park Lakes Total		**14.00**	**$5,050.00**	**$360.71**				
Grand Total		**2239.00**	**$297,236.45**	**$132.75**				

Table 2003-A. Summary of Expenditures by Source for Control Operations During 2003.

Water Body Name	Total Cost	Federal	State	Local	Local Sponsor
Back River Reservoir	$69,929	$27,971	$0	$41,957	SCE&G, CCPW
Black Mingo Creek	$2,144	$858	$0	$1,286	Georgetown Co.
Black River	$476	$191	$0	$286	Georgetown Co.
Cooper River	$46,906	$18,762	$0	$28,144	Berkeley Co., SCE&G
Goose Creek Reservoir	$19,085	$7,634	$0	$11,451	Charleston CPW
Lake Greenwood	$6,890	$2,756	$0	$4,134	Greenwood Co.
Lake Murray	$369,529	$147,811	$0	$221,717	SCE&G, Lexington Co., Richland Co.
Pee Dee River	$772	$386	$0	$386	Georgetown Co.
Santee Coastal Reserve	$25,128	$0	$0	$25,128	Santee Coastal Reserve
Waccamaw River	$515	$257	$0	$257	Horry Co.
Lake Marion	$10,701	$4,281	$0	$6,421	Santee Cooper
Lake Moultrie	$14,272	$5,709	$0	$8,563	Santee Cooper
Taw Caw Impoundment	$26,808	$10,723	$0	$16,085	Santee Cooper
Potato Creek Imp.	$14,620	$5,848	$0	$8,772	Santee Cooper
Dean Swamp	$22,313	$8,925	$0	$13,388	Santee Cooper
Fountain Lake	$1,264	$506	$0	$758	Santee Cooper
Church Branch Imp.	$1,693	$677	$0	$1,016	Santee Cooper
State Park Lake Total	**$0**	**$0**	**$0**	**$0**	
Non Santee Cooper Total	**$541,374**	**$206,626**	**$0**	**$334,747**	
Santee Cooper Total	**$91,671**	**$36,669**	**$0**	**$55,003**	
	$633,045	**$243,295**	**$0**	**$389,750**	

Table 2003-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2003								
Water Body	**Target Plants**	**Acres**	**Total Cost**	**Cost/Acre**	**Control Agent**	**Rate**	**Management Objective**	**Control Effectiveness**
Back River Reservoir	Hydrilla	131.25	$29,354.06	$223.65	Komeen	16 gal/ac	Reduce problem plants to enhance public access, use, water quality, and maintain electric power generation and minimize impacts to water intakes.	> 95% control
	Water hyacinth	153.00	$13,122.81	$85.77	Reward	0.5 gal/ac		90% control
	Water hyacinth	2.00	$238.24	$119.12	Renovate	0.75 gal/ac		> 95% control
	Water hyacinth/primrose	221.00	$25,155.12	$113.82	Renovate	0.5 - 0.75 gal/ac		90% control
	Water hyacinth/primrose	24.00	$2,058.48	$85.77	Reward	0.5 gal/ac		90% control
TOTAL:		531.25	$69,928.71	$131.63				
Black Mingo Creek	Alligatorweed	18.00	$2,144.16	$119.12	Renovate 3	0.75 gal/ac	Reduce problem plants to enhance public access, use and water quality.	75% control with some regrowth.
TOTAL:		18.00	$2,144.16	$119.12				
Black River	Alligatorweed	4.00	$476.48	$119.12	Renovate 3	0.75 gal/ac	Reduce problem plants to enhance public access, use and water quality.	75% control with some regrowth.
TOTAL:		4.00	$476.48	$119.12				
Cooper River	Hydrilla	37.50	$8,386.88	$223.65	Komeen	16 gal/ac	Provide boat trails to main channel through hydrilla. Reduce problem plants to enhance public access and use.	> 95% control
	Water hyacinth	99.00	$8,491.23	$85.77	Reward	0.5 gal/ac		90% control
	Water hyacinth/primrose	224.00	$26,682.88	$119.12	Renovate	0.75 gal/ac		> 95% control
	Water hyacinth/primrose	39.00	$3,345.03	$85.77	Reward	0.5 gal/ac		90% control
TOTAL:		399.50	$46,906.02	$117.41				
Goose Creek Reservoir	Water hyacinth/primrose	16.00	$1,905.92	$119.12	Renovate	0.75 gal/ac	Reduce water hyacinth & water lettuce to greatest extent possible.	> 95% control
	Water hyacinth/Water lettuce	34.00	$3,677.68	$108.17	Renovate	0.5 -0.75 gal/ac		> 95% control
	Water hyacinth/Water lettuce	156.00	$13,501.62	$86.55	Reward	0.5 gal/ac		> 95% control
TOTAL:		206.00	$19,085.22	$92.65				
Lake Greenwood	Hydrilla	25.00	$6,889.50	$275.58	Aquathol-k	5 gal/ac	Eradicate hydrilla from site.	> 99% control of Hydrilla. **Note: Eradication of hydrilla yet to be determined.**
TOTAL:		25.00	$6,889.50	$275.58				
Lake Murray	Hydrilla	4300.00	$369,528.60	$85.94	Sterile Grass Carp	15 per vegetated acre	Reduce hydrilla to minimize spread and impacts to public access and use.	Control of hydrilla using grass carp not readily identifiable.
TOTAL:		4300.00	$369,528.60	$85.94				
Pee Dee River	Water Hyacinth	9.00	$771.93	$85.77	Reward	0.5gal/ac	Reduce hyacinth to minimize spread and impacts to public access and use.	> 95% control
TOTAL:		9.00	$771.93	$85.77				
Santee Coastal Reserve	Phragmites	156.00	$25,128.48	$161.08	Arsenal/Rodeo	24 oz/6 pints	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
TOTAL:		156.00	$25,128.48	$161.08				
Waccamaw River	Water hyacinth	6.00	$514.62	$85.77	Reward	0.5gal/ac	Reduce hyacinth to minimize spread and impacts to public access and use.	90% control
TOTAL:		6.00	$514.62	$85.77				
Santee Cooper Lakes								
Lake Marion	Lyngbya, Pithophora	8.00	$1,142.79	$142.85	Hydrothol 191 Liquid / Granular,	0.5 - 1.0 gal / 60-80 lb/ac, 2.0	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	65% control at end of season
	Water hyacinth	22.00	$2,381.46	$108.25	Reward / Renovate	0.5 gal/ac		> 95% control
	Water primrose, Alligatorweed, Water pod, Water willow	56.50	$7,177.0	$127.03	Arsenal EUP, Arsenal EUP/Glyphosate, Glyphosate	0.25 - 0.375 gal/ac, 0.125 - 0.25 / 0.5 gal/ac, 0.75 gal/ac		> 85% control
TOTAL:		86.50	$10,701.25	$123.71				
Lake Moultrie	American lotus, Water lily, Water shield	30.00	$2,684.20	$89.47	Glyphosate	0.75 gal/ac.	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	> 90% control
	Bladderwort, Pondweed	0.60	$131.41	$219.02	Reward	2 gal/ac		> 90% control
	Cabomba, Watermilfoil	4.00	$970.71	$242.68	Avast SRP	10 lbs/ac		> 90% control
	Hydrilla	0.20	$116.87	$584.35	Komeen / Reward	4.0 / 2.0 gal/ac		> 90% control
	Water primrose, Alligatorweed	76.00	$8,996.64	$118.38	Arsenal EUP, Arsenal EUP/Glyphosate, Glyphosate	0.25 - 0.375 gal/ac, 0.125 - 0.25 / 0.5 gal/ac, 0.75 gal/ac		> 85% control
	Giant cutgrass, Cattail	11.00	$1,372.52	$124.77	Arsenal EUP, Arsenal EUP/Glyphosate, Glyphosate	0.25 - 0.375 gal/ac, 0.125 - 0.25 / 0.5 gal/ac, 0.75 gal/ac	Reduce problem plants to enhance waterfowl habitat, public access and use.	> 95% control
TOTAL:		121.80	$14,272.35	$117.18				

Table 2004-A. Summary of Expenditures by Source for Control Operations During 2004.

Water Body Name	Total Cost	Federal	State	Local	Local Sponsor
Back River Reservoir	$94,772	$47,386	$23,693	$23,693	SCE&G, CCPW
Black Mingo Creek	$2,523	$1,262	$630	$631	Georgetown Co.
Black River	$2,523	$1,262	$630	$631	Georgetown Co.
Bonneau Ferry	$10,736	$0	$10,736	$0	SCDNR
Cooper River	$62,011	$31,006	$15,502	$15,503	Berkeley Co., SCE&G
Delta Plantation	$2,158	$0	$2,158	$0	SCDNR
Edisto River	$1,733	$0	$520	$1,213	SCDNR, USF&W
Goose Creek Reservoir	$19,066	$9,533	$4,766	$4,767	Charleston CPW
Lake Greenwood	$10,711	$5,356	$2,677	$2,678	Greenwood Co.
Lake Murray	$1,364	$682	$341	$341	SCE&G, Lexington Co., Richland Co.
Little Pee Dee River	$7,131	$3,566	$1,783	$1,783	Horry Co.
Lumber River	$803	$401	$201	$201	Horry Co.
Pee Dee River	$4,206	$2,103	$1,052	$1,051	Georgetown Co.
Santee Coastal Reserve	$114,517	$0	$34,355	$80,162	Santee Coastal Reserve
Yawkee Wildlife Center	$43,294	$0	$12,988	$30,306	Yawkee Wildlife Center
Lake Marion	$24,531	$12,265	$6,133	$6,133	Santee Cooper
Lake Moultrie	$9,167	$4,583	$2,292	$2,292	Santee Cooper
Taw Caw Impoundment	$3,750	$1,875	$937	$938	Santee Cooper
Potato Creek Imp.	$12,692	$6,346	$3,173	$3,173	Santee Cooper
Dean Swamp	$20,883	$10,441	$5,221	$5,221	Santee Cooper
Fountain Lake	$819	$409	$205	$205	Santee Cooper
Church Branch Imp.	$9,425	$4,712	$2,356	$2,357	Santee Cooper
Charlestown Landing SP	$1,815	$0	$0	$1,815	SCPRT
Kings Mt. SP Lk. Crawford	$3,325	$0	$0	$3,325	SCPRT
Sesquicentennial SP	$6,860	$0	$0	$6,860	SCPRT
SCDNR Total	**$377,548**	**$102,555**	**$112,034**	**$162,958**	
State Park Lake Total	**$12,000**	**$0**	**$0**	**$12,000**	
Santee Cooper Total	**$81,266**	**$40,633**	**$20,317**	**$20,316**	
Grand Total	**$470,814**	**$143,188**	**$132,348**	**$195,276**	

Table 2004-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2004

Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness
Back River Reservoir	Hydrilla	167.25	$ 38,119.62	$ 227.92	Komeen	16 gal/ac	Reduce problem plants to enhance public access, use, water quality, and maintain electric power generation and minimize impacts to water intakes.	> 95% control
	Hydrilla	25.00	$ 16,281.75	$ 651.27	Aquathol Super K	40 lbs/ac		<40% control
	Water hyacinth	228.00	$ 19,927.20	$ 87.40	Reward	0.5 gal/ac		90% control
	Water hyacinth	90.00	$ 10,707.40	$ 118.97	Renovate	0.5 - 0.75 gal/ac		90% control
	Cabomba	4.00	$ 1,282.56	$ 320.64	Hydrothol 191 Liquid	7 gal/ac		>95% control
	Water primrose	75.00	$ 8,453.10	$ 112.71	Renovate	0.5 - 0.75 gal/ac		90% control
TOTAL:		589.25	$ 94,771.63	$ 160.83				
Black Mingo Creek	Alligatorweed	20.00	$ 2,523.00	$ 126.15	Habitat/Glypro	0.250 gal/ac/.750 gal/ac	Reduce problem plants to enhance public access, use and water quality.	95% control with some regrowth.
TOTAL:		20.00	$ 2,523.00	$ 126.15				
Black River	Alligatorweed	20.00	$ 2,523.00	$ 126.15	Habitat/Glypro	0.250 gal/ac/.750 gal/ac	Reduce problem plants to enhance public access, use and water quality.	95% control with some regrowth.
TOTAL:		20.00	$ 2,523.00	$ 126.15				
Cooper River	Hydrilla	60.25	$ 13,732.18	$ 227.92	Komeen	16 gal/ac	Provide boat trails to main channel through hydrilla. Reduce problem plants to enhance public access and use.	> 95% control
	Water hyacinth	193.00	$ 16,868.20	$ 87.40	Reward	0.5 gal/ac		90% control
	Water hyacinth	174.00	$ 21,120.12	$ 121.38	Renovate	0.75 gal/ac		> 95% control
	Water hyacinth	66.00	$ 9,413.58	$ 142.63	Habitat/Glypro	0.250 gal/ac/.750 gal/ac		> 95% control
	Water primrose	8.00	$ 877.36	$ 109.67	Habitat	0.250 gal/ac		90% control
TOTAL:		501.25	$ 62,011.44	$ 123.71				
Goose Creek Reservoir	Water hyacinth	51.00	$ 4,457.40	$ 87.40	Reward	0.5 gal/ac	Reduce water hyacinth & water lettuce to greatest extent possible.	> 95% control
	Water hyacinth	28.00	$ 3,398.64	$ 121.38	Renovate	0.5 -0.75 gal/ac		> 95% control
	Water lettuce	125.00	$ 10,925.00	$ 87.40	Reward	0.5 gal/ac		> 95% control
	Cutgrass/Water primrose	2.00	$ 285.26	$ 142.63	Habitat/Glypro	0.250 gal/ac/.750 gal/ac		90% control
TOTAL:		206.00	$ 19,066.30	$ 92.55				
Edisto River	Phragmites	12.00	$ 1,733.52	$ 144.46	Habitat	0.375 gal/ac		90% control
TOTAL:		12.00	$ 1,733.52	$ 144.46				
Lake Greenwood	Hydrilla	25.00	$ 7,020.75	$ 280.83	Aquathol-k	5 gal/ac	Eradicate hydrilla from site.	> 90% control of Hydrilla. **Note: Eradication of hydrilla yet to be determined.**
	Naiad	20.00	$ 3,690.60	$ 184.53	Aquathol-k	3 gal/ac	Reduce problem plants to enhance public access, use and water quality.	> 95% control
TOTAL:		45.00	$ 10,711.35	$ 238.03				
Lake Murray	Hydrilla	5.00	$ 1,363.80	$ 272.76	Nautique	12 gal/ac	Reduce hydrilla to minimize spread and impacts to public access and use.	> 95% control
TOTAL:		5.00	$ 1,363.80	$ 272.76				
Lumber River	Alligatorweed	6.00	$ 802.86	$ 133.81	Habitat/Eagre	.250 gal/ac/.500 gal/ac	Reduce problem plants to enhance public access, use and water quality.	90% control
Little Pee Dee River	Alligatorweed	50.00	$ 7,131.50	$ 142.63	Habitat/Glypro	.250 gal/ac/.500 gal/ac	Reduce problem plants to enhance public access, use and water quality.	90% control
TOTAL:		56.00	$ 7,934.36	$ 141.69				
Bonneau Ferry	Water Primrose, Water hyacinth,	66.00	$ 10,735.60	$ 162.66	Habitat/Glypro	0.250 - 0.375 gal/ac/0.750 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	80% control
Misc Ponds & Reserves	Frog's bit, Lotus, Cutgrass, Cattails							
TOTAL:		66.00	$ 10,735.60	$ 162.66				
Delta Plantation	Salvinia Molesta	4.00	$ 538.84	$ 134.71	Reward	1 gal/ac	Eradicate Salvinia from site.	75% control
	Salvinia Molesta	2.00	$ 1,618.86	$ 809.43	Sonar	0.500 gal/ac		> 95% control
TOTAL:		6.00	$ 2,157.70	$ 359.62				
Pee Dee River	Water Hyacinth	40.00	$ 3,496.00	$ 87.40	Reward	0.5gal/ac	Reduce hyacinth to minimize spread and impacts to public access and use.	90% control
Sandy Island	Phragmites	4.00	$ 709.68	$ 177.42	Habitat/Glypro	.375 gal/ac/.750gal/ac	Reduce phragmites to enhance public access and use.	> 95% control
TOTAL:		44.00	$ 4,205.68	$ 95.58				
Santee Coastal Reserve	Phragmites	494.00	$ 114,516.98	$ 231.82	Habitat/Glypro	.375 gal/ac/.750gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
TOTAL:		494.00	$ 114,516.98	$ 231.82				
Tom Yawkey	Phragmites	200.00	$ 43,294.00	$ 216.47	Habitat/Glypro	.375 gal/ac/.750gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
TOTAL:		200.00	$ 43,294.00	$ 216.47				
Santee Cooper Lakes								
Lake Marion	American Lotus, Waterlily, Water Shield	14.00	$ 1,575.66	$ 112.55	Reward, Glyphosate	.5 gal/ac, .75 gal/ac	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	65% control at end of season
	Cabomba, Variable Leaf Water Milfoil, Parrots Feather	0.50	$ 60.49	$ 120.98	Sonar, Renovate	40 lbs/ac, .5 gal/ac		> 95% control
	Giant Cutgrass, Arundo Donax	51.50	$ 5,884.02	$ 114.25	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac		> 85% control
	Lyngbya, Pithophora	13.00	$ 1,507.99	$ 116.00	Hydrothol 191 Liquid / Granular, Cutrine Plus Granular, K-Tea	.5 - 1.0 gal / 60-80 lb/ac, 60 lbs/ac, 2.0 - 6.0 gal/ac		
	Water Hyacinth	110.50	$ 10,654.73	$ 96.42	Reward, Renovate	.5 gal/ac, .5 gal/ac		
	Water Primrose, Alligatorweed, Water Pod, Water Willow	36.50	$ 4,847.98	$ 132.82	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.50 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac		
TOTAL:		226.00	$ 24,530.87	$ 108.54				

Table 2004-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2004

Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness
Lake Moultrie	American Lotus, Waterlily, Water Shield	28.80	$ 2,934.25	$ 101.88	Reward, Glyphosate	.5 gal/acre, .75 gal/ac	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	> 90% control
	Bladderwort, Pondweed, Slender Naiad	1.50	$ 273.63	$ 182.42	Reward, Aquathol K Liquid, Aquathol Super K	2.0 gal/ac, 5.0 gal/ac, 40 lb./ac		> 90% control
	Cabomba, Watermilfoil	2.50	$ 692.30	$ 276.92	Sonar	40 lbs/acre		> 90% control
	Water Primrose, Alligatorweed	42.30	$ 3,801.89	$ 89.88	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.50 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac		> 90% control
	Water Hyacinth	7.00	$ 713.62	$ 101.95	Renovate, Reward	.50 gal/acre		> 85% control
	Giant Cutgrass, Cattail, Arundo Donax	9.00	$ 750.87	$ 83.43	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.50 gal/acre, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac	Reduce problem plants to enhance waterfowl habitat, public access and use.	> 95% control
TOTAL:		91.10	$ 9,166.56	$ 100.62				
Taw Caw Impoundment	Coontail	4.00	$ 1,240.12	$ 310.03	Aquathol K Liquid	5 gal/ac	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	> 80% control
	Hydrilla	6.00	$ 1,860.16	$ 310.03	Aquathol K Liquid, Sonar	5 - 10 gal/ac, 10 lbs/ac		> 80% control
	Water Primrose, Alligatorweed,	7.00	$ 650.09	$ 92.87	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac		85% control
TOTAL:		17.00	$ 3,750.37	$ 220.61				
Potato Creek Impoundment *SCDNR Waterfowl Management Area.	Hydrilla	36.50	$ 12,692.12	$ 347.73	Aquathol K Liquid, Sonar	5 - 10 gal/ac, 10 lbs/ac	Reduce problem plant populations to provide residential and public access to open water an prevent the spread to other areas.	> 90% control
TOTAL:		36.50	$ 12,692.12	$ 347.73				
Dean Swamp	Hydrilla	52.00	$ 16,152.85	$ 310.63	Aquathol K Liquid, Sonar	5 - 10 gal/ac, 10 lbs/ac	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	75% control
	Water Primrose, Alligatorweed	14.00	$ 1,534.79	$ 109.63	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac		85% control
	Cabomba	3.00	$ 1,030.88	$ 343.63	Sonar	40 lbs/ac		
	Lyngbya, Pithophora	18.00	$ 2,164.05	$ 120.23	Hydrothol 191 Liquid / Granular, Cutrine Plus Granular, K-Tea	.5 - 1.0 gal / 60-80 lb/ac, 60 lbs/ac, 2.0 - 6.0 gal/ac		> 90% control
TOTAL:		87.00	$ 20,882.57	$ 240.03				
Fountain Lake	Water primrose, Alligatorweed	5.00	$ 819.15	$ 163.83	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	85% control
TOTAL:		5.00	$ 819.15	$ 163.83				
Church Branch Impoundment	Water Primrose, Alligatorweed	3.00	$ 516.92	$ 172.31	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac	Reduce problem plant populations to reduce impacts to public access, recreational use, irrigation withdrawals, navigation, and water quality.	85% control
	Lyngbya, Pithophora	0.75	$ 107.76	$ 143.68	K-Tea, Reward, Hydrothol 191 Granular & Liquid	6 gal/acre, 2 gal/acre, .5 gal/ac & 100 lbs/ac		>95% control
	Water Milfoil, Parrot Feather	2.50	$ 1,276.79	$ 510.72	2,4-D Granular	150 - 200 lbs/ac		>90% control
	Pondweed	30.25	$ 7,523.08	$ 248.70	Reward, Aquathol K Liquid, Aquathol Super K	2.0 gal/ac, 5.0 gal/ac, 40 lb./ac	Reduce problem plants to enhance waterfowl habitat, public access and use.	>90% control
TOTAL:		36.50	$ 9,424.55	$ 258.21				
State Park Lakes								
Charles Towne Landing SP	Duck weed	5.00			Fluridone	1 pint/acre	Reduce problem plants to enhance public access and use.	95% control
	alligator weed & penny wort	3.00	$ 1,815.00	$ 226.88	Glyphosate	7.5 pints/acre		>95% with some regrowth
TOTAL:		8.00	$ 1,815.00	$ 226.88				
Kings Mountain SP	Slender naiad	7.00	$ 3,325.00	$ 475.00	Aquathol K	4 gallons/acre	Reduce problem plants to enhance public access and use.	80% control
TOTAL:		7.00	$ 3,325.00	$ 475.00				
Sesquicentennial:	Waterlily, watershield	8.50	$ 6,860.00	$ 807.06	2,4 D-Bee granular	200 lbs./acre	Reduce problem plants to enhance public access and use.	85-90% with some regrowth.
TOTAL:		8.50	$ 6,860.00	$ 807.06				
	SCDNR TOTAL	**2264.50**	**$ 377,548.36**	**$ 166.72**				
	SANTEE COOPER TOTAL	**499.10**	**$ 81,266.19**	**$ 162.83**				
	STATE PARKS TOTAL	**23.50**	**$ 12,000.00**	**$ 510.64**				
	GRAND TOTAL	**2787.10**	**$ 470,814.55**	**$ 168.93**				

Table 2005-A. Summary of Expenditures by Source for Control Operations During 2005.

Water Body Name	Total Cost	Federal	State	Local	Local Sponsor
Back River Reservoir	$77,533	$31,952	$21,516	$24,066	SCE&G, CPW
Baruch/Winyah Bay	$14,100	$0	$4,230	$9,870	Baruch Institute
Black River	$1,040	$520	$260	$260	Georgetown Co.
Bonneau Ferry WMA	$20,072	$0	$20,072	$0	SCDNR
Cooper River	$32,635	$13,609	$9,127	$9,898	Berkeley Co., SCE&G
Delta Plantation	$399	$0	$399	$0	SCDNR
Donnelley WMA	$12,700	$0	$3,810	$8,890	SCDNR
Ace Basin	$4,054	$0	$1,267	$2,787	SCDNR, USF&W
Goose Creek Reservoir	$20,993	$8,406	$5,854	$6,733	CPW
Lake Greenwood	$14,028	$5,611	$4,208	$4,208	Greenwood Co.
Lake Marion	$22,102	$8,841	$6,631	$6,631	Santee Cooper
Lake Moultrie	$7,405	$2,962	$2,222	$2,222	Santee Cooper
S/C Impoundments	$83,353	$33,341	$25,006	$25,006	Santee Cooper
Lake Murray	$1,481	$740	$370	$370	SCE&G, Lexington Co., Richland Co.
Pee Dee River	$1,335	$668	$334	$334	Georgetown Co.
Samworth WMA	$8,480	$3,436	$2,544	$2,500	SCDNR
Santee Coastal Reserve	$304,736	$121,174	$94,946	$88,617	SCDNR
Santee Delta WMA	$5,727	$661	$1,718	$3,349	SCDNR
Waccamaw River	$617	$207	$185	$225	Horry Co.
Yawkey Wildlife Center	$18,506	$0	$5,552	$12,954	Yawkey Foundation
Charlestown Landing	$0	$0	$0	$0	SCPRT
Kings Mt. Lk. Crawford	$0	$0	$0	$0	SCPRT
Lee	$0	$0	$0	$0	SCPRT
Little Pee Dee	$0	$0	$0	$0	SCPRT
Paris Mountain	$0	$0	$0	$0	SCPRT
Santee (swimming lake)	$0	$0	$0	$0	SCPRT
Sesquicentennial	$0	$0	$0	$0	SCPRT
SCDNR Total	**$538,437**	**$186,984**	**$175,060**	**$176,393**	
State Park Lake Total	**$0**	**$0**	**$0**	**$0**	
Santee Cooper Total	**$112,861**	**$50,683**	**$38,284**	**$38,284**	
Grand Total	$651,298	$232,128	$210,251	$208,919	
		36%	**32%**	**32%**	

Table 2005-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2005

Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness
Back River Reservoir	Hydrilla	179.50	$ 47,979.60	$ 267.30	Komeen, Komeen/Reward	16 gal/ac, 4gal/ac/2gal/ac	Reduce problem plants to enhance public access, use, water quality, and maintain electric power generation and minimize impacts to water intakes.	> 95% control
	Water hyacinth	275.50	$ 25,444.01	$ 92.36	Renovate 3	0.500 - 0.750 gal/ac		90% control
	Water hyacinth	40.00	$ 3,380.00	$ 84.50	Reward	0.500 gal/ac		90% control
	Water primrose	52.00	$ 4,968.25	$ 95.54	Renovate 3	0.500 - 0.750 gal/ac		90% control
TOTAL:		547.00	$ 81,771.86	$ 149.49				
Baruch/ Winyah Bay	Phragmites	80.00	$ 14,100.00	$ 176.25	Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
TOTAL:		80.00	$ 14,100.00	$ 176.25				
Black River	Alligatorweed	12.00	$ 1,039.50	$ 86.63	Habitat	0.187 gal/ac	Reduce problem plants to enhance public access, use and water quality.	95% control with some regrowth.
TOTAL:		12.00	$ 1,039.50	$ 86.63				
Bonneau Ferry Misc Ponds & Reserves	Water Primrose, Water hyacinth, Frog's bit, Lotus, Cutgrass, Cattails	142.00	$ 19,650.75	$ 138.39	Habitat	0.250 - 0.1875 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use. This is year 2 of a 3 year plan to restore Bonneau Ferry.	> 95% control
		4.00	$ 421.50		Renovate 3	0.750 gal/ac		
TOTAL:		146.00	$ 20,072.25	$ 137.48				
Cooper River	Hydrilla	60.50	$ 16,020.40	$ 264.80	Komeen	16 gal/ac	Provide boat trails to main channel through hydrilla. Reduce problem plants to enhance public access and use.	> 95% control
	Water hyacinth	183.00	$ 15,139.00	$ 82.73	Renovate 3	0.750 gal/ac		> 95% control
	Water primrose	14.00	$ 1,475.25	$ 105.38	Habitat	0.250 gal/ac		90% control
TOTAL:		257.50	$ 32,634.65	$ 126.74				
Delta Plantation -Jasper County	Salvinia Molesta	1.50	$ 114.63	$ 76.42	Reward	1 gal/ac	Eradicate Salvinia from site.	~99% control of areas treated at the end of season.
	Salvinia Molesta	1.50	$ 282.74	$ 188.49	Sonar	0.500 gal/ac		
TOTAL:		3.00	$ 397.37	$ 132.46				
Donnelley WMA	Frog's Bit, Cattails, swamp loosestrife	62.00	$ 9,327.00	$ 150.44	Habitat	0.250 gal/ac	Reduce problem plants to enhance waterfowl habitat, public access and use.	95% control with some regrowth.
	Frog's Bit	29.00	$ 3,373.38	$ 116.32	Renovate 3	0.500 - 0.75 gal/ac		
ACE Basin(Edisto & Combahee Rivers)	Phragmites	23.00	$ 4,053.75	$ 176.25	Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	
TOTAL:		114.00	$ 16,754.13	$ 146.97				
Goose Creek Reservoir	Water hyacinth	67.00	$ 7,060.13	$ 105.38	Renovate 3	0.750 gal/ac	Reduce water hyacinth & water lettuce to greatest extent possible.	> 95% control
	Water lettuce	24.00	$ 1,974.00	$ 82.25	Renovate 3	0.500 -0.750 gal/ac		> 95% control
	Water lettuce	120.00	$ 10,140.00	$ 84.50	Reward	0.500 gal/ac		> 95% control
	Water hyacinth/water primrose	21.00	$ 1,819.13	$ 86.63	Habitat	0.187 gal/ac		90% control
TOTAL:		232.00	$ 20,993.26	$ 90.49				
Lake Greenwood	Hydrilla	27.00	$ 12,528.00	$ 464.00	Aquathol-k	5 gal/ac	Eradicate hydrilla from site.	> 90% control of Hydrilla. Note: Eradication of hydrilla yet to be determined.
	Naiad	6.00	$ 1,500.00	$ 250.00	Aquathol-k	3 gal/ac	Reduce problem plants to enhance public access, use and water quality.	> 95% control
TOTAL:		33.00	$ 14,028.00	$ 425.09				
Lake Murray	Water primrose	18.00	$ 1,480.50	$ 82.25	Renovate 3	0.500 gal/ac	Reduce hydrilla to minimize spread and impacts to public access and use.	> 95% control
TOTAL:		18.00	$ 1,480.50	$ 82.25				
Pee Dee River	Phragmites	9.00	$ 1,335.00	$ 148.33	Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
TOTAL:		9.00	$ 1,335.00	$ 148.33				
Samworth WMA	Phragmites	2.50	$ 440.49	$ 176.20	Habitat	0.375 gal/ac	Reduce phragmites and water hyacinth to enhance waterfowl habitat, public access and use.	90% control
	Water hyacinth	64.00	$ 8,040.00	$ 125.63	Habitat	0.1875 gal/ac		90% control
TOTAL:		66.50	$ 8,480.49	$ 127.53				
Santee Coastal Reserve	Phragmites	1729.00	$ 304,736.25	$ 176.25	Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
TOTAL:		1729.00	$ 304,736.25	$ 176.25				
Santee Delta WMA	Phragmites, willows	32.50	$ 5,727.45	$ 176.23	Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
TOTAL:		32.50	$ 5,727.45	$ 176.23				
Waccamaw River/Sandy Island	Water Hyacinth	4.00	$ 342.25	$ 85.56	Habitat	0.1875 gal/ac	Reduce hyacinth to minimize spread and impacts to public access and use.	90% control
	Phragmites	2.00	$ 274.50	$ 137.25	Habitat	0.375 gal/ac	Reduce phragmites to enhance public access and use.	> 95% control
TOTAL:		6.00	$ 616.75	$ 102.79				
Tom Yawkey Wildlife Center	Phragmites	105.00	$ 18,506.25	$ 176.25	Habitat	0.375 gal/ac	Reduce phragmites to enhance waterfowl habitat, public access and use.	90% control
TOTAL:		105.00	$ 18,506.25	$ 176.25				
SCDNR TOTAL:		**3,390.50**	**$ 542,673.71**	**$ 160.06**				

Table 2005-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2005

Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness
Santee Cooper Lakes								
Lake Marion	American Lotus, Waterlily, Water Shield, Floating Heart	2.0	$ 149.16	$ 74.58	Glyphosate, Renovate	.75 gal/ac, .50 gal/ac	Provide access to open water areas for public use	>90% control of plant in areas treated at the end of season.
	Giant Cutgrass, *Arundo Donax	48.0	$ 6,286.76	$ 130.97	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac	Reduce plant encroachment on lake-front property and public access areas. Restoration of waterfowl habitat.	>95% control of plant in areas treated at the end of season. * Arundo ~50% control
	Lyngbya, Pithophora	16.0	$ 2,267.45	$ 141.72	K-Tea / Cide Kick	4 - 6 gal/ac	Reduce algal mats to enhance recreational use of water and reduce interference in agricultural irrigation intakes.	90% control of plant in areas treated at the end of season.
	Water Hyacinth	77.5	$ 9,908.57	$ 127.85	Reward, Renovate	.5 gal/ac, .5 gal/ac	Reduce problem plant population to provide public access to open water areas and prevent movement into other areas	>90% control of plant in areas treated.
	Water Primrose, Alligatorweed, Water Pod, Water Willow	14.0	$ 3,490.36	$ 249.31	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.375 - .50 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac	Reduce problem plant population to provide public and shoreline access.	>85% control of plant in areas treated at end of season. Retreatment was necessary in areas where leaves of plant were partially submerged during initial treatment
TOTAL:		157.5	$ 22,102.30	$ 140.33				
Lake Moultrie	American Lotus, Water Lily, Water Shield	21.0	$ 2,102.31	$ 100.11	Glyphosate, Renovate	.75 gal/ac, .50 gal/ac	Reduce plant population to provide public access to coves and open water areas. Restoration of waterfowl habitat.	>90% control of plant in areas treated at end of season.
	Cabomba, Watermilfoil	1.0	$ 403.11	$ 403.11	Sonar Q / PR	11 lbs/ac	Reduce problem plants in dead-end coves where navigation and recreation are adversely affected.	~80% control of plant in areas treated at end of season.
	Hydrilla	0.5	$ 115.94	$ 231.88	Aquathol K Liquid	6 - 8 gal/ac	Eliminate plant population to provide access to coves and prevent spread to other areas of lake.	>90% control of plant in areas treated at end of season.
	Water Primrose, Alligatorweed	2.0	$ 174.83	$ 87.42	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.50 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac	Reduce problem plant population to provide public and shoreline access.	~85% control of plant in areas treated at end of season. Retreatment was necessary in areas where leaves of plant were partially submerged during initial treatment
	Water Hyacinth	2.0	$ 179.74	$ 89.87	Renovate, Reward	.50 gal/acre	Reduce problem plant population to provide public and shoreline access.	>95% control of plant in areas treated at the end of season.
	Water Willow	0.7	$ 259.68	$ 370.97	Habitat, Habitat/Glyphosate, Glyphosate, Renovate	.375 - .50 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac	Reduce problem plant population to provide public and shoreline access.	75% control of plant in areas treated at the end of season.
	Giant Cutgrass, Cattail, Arundo	29.0	$ 4,169.52	$ 143.78	Habitat, Habitat/Glyphosate,	.375 - .50 gal/acre, .125 - .25 /	Reduce plant encroachment on shoreline property and public	>95% control of plant in areas
TOTAL:		56.20	$ 7,405.13	$ 131.76				
SANTEE COOPER LAKES TOTAL:		**213.70**	**$ 29,507.43**	**$ 138.08**				
Santee Cooper Impoundments								
Taw Caw Impoundment	Coontail	18.70	$ 6,297.96	$ 336.79	Aquathol K Liquid	5 - 6 gal/ac	Reduce plant population to provide public access to shoreline, coves and open water areas	<50% control of plant in areas treated at the end of season.
	Hydrilla	31.00	$ 10,677.76	$ 344.44	Aquathol K Liquid	6 - 8 gal/ac	Eliminate plant population to provide public access to coves and open water areas and prevent spread to other areas of lake.	<50% control of plant in areas treated at the end of season.
	Water Primrose, Alligatorweed,	8.00	$ 917.97	$ 114.75	Habitat/Glyphosate, Glyphosate,	.25 - .375 gal/ac, .125 - .25 / .50	Reduce problem plant population to provide public and	~85% control of plant in areas
TOTAL:		57.70	$ 17,893.69	$ 310.12				
Potato Creek Impoundment *	Hydrilla	120.00	$ 21,986.68	$ 183.22	Aquathol K Liquid, Sonar Q / PR, AS	5 - 8 gal/ac, 1.25 - 1.35 lb/ac, .025 gal/ac	Reduce plant population to provide residential and public access to open water areas and prevent spread to other	Undetermined
	Giant Cutgrass, Cattail	2.00	$ 279.79	$ 139.90	Habitat, Habitat/Glyphosate, Glyphosate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac	Reduce plant population to provide residential and public access to open water areas . To improve waterfowl access to SCDNR duck boxes	~100% control of areas treated at the end of season.
TOTAL:		122.00	$ 22,266.47	$ 182.51				
Dean Swamp	Hydrilla	47.70	$ 16,998.16	$ 356.36	Aquathol K Liquid	6 - 8 gal/ac	Reduce plant population to provide residential and public access to open water areas and prevent spread to other	<50% control of areas treated at the end of season.
	Water Primrose, Alligatorweed	5.50	$ 713.83	$ 129.79	Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac	Provide shoreline access.	85% control of plant in areas treated at end of season
	Cabomba	4.00	$ 1,696.16	$ 424.04	Sonar PR / Q	11 lbs/ac	Provide shoreline access.	~90% control of areas treated at the end of season.
	Lyngbya, Pithophora	11.00	$ 1,495.64	$ 135.97	K-Tea / Cide Kick	4 - 6 gal/ac	Reduce algal mats to enhance recreational use of water.	~80% control of plant in areas treated at the end of season.
TOTAL:		68.20	$ 20,903.79	$ 306.51				

Table 2005-B Summary of S.C. Aquatic Plant Management Control Operations and Expenditures During 2005

Water Body	Target Plants	Acres	Total Cost	Cost/Acre	Control Agent	Rate	Management Objective	Control Effectiveness
Fountain Lake	Water Primrose, Alligatorweed	5.50	$ 645.62	$ 117.39	Habitat/Glyphosate, Glyphosate, Renovate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac, .50 gal/ac	Provide shoreline access.	~85% control of plant in areas treated at end of season. Retreatment was necessary in areas where leaves of plant were partially submerged during initial treatment
TOTAL:		5.50	$ 645.62	$ 117.39				
Church Branch Impoundment	Giant Cutgrass, Cattail	4.25	$ 573.89	$ 135.03	Habitat, Habitat/Glyphosate, Glyphosate	.25 - .375 gal/ac, .125 - .25 / .50 gal/ac, .75 gal/ac	Open areas at head of coves to reduce sediment buildup through increased flow and provide shoreline access.	>90% control of plant in areas treated at the end of season.
	Lyngbya, Pithophora	12.00	$ 1,239.23	$ 103.27	K-Tea / Cide Kick	4 - 6 gal/ac	Eliminate plant population to provide public access to coves and open water areas and prevent spread to other areas of lake.	>90% control of plant in areas treated at the end of season.
	Cabomba	3.00	$ 1,389.39	$ 463.13	Sonar PR / Q	11 lbs/ac	Reduce plant population to provide public access to coves and open water areas	>90% control of plant in areas treated at the end of season.
	Pondweed	14.70	$ 4,701.13	$ 319.80	Aquathol K Liquid	5 - 6 gal/ac	Open areas at head of coves to provide shoreline access.	~40% control of plant in areas treated at the end of season.
	Water Shield	1.00	$ 41.70	$ 41.70	Glyphosate, AquabupH	.75 gal/ac, .25 gal/ac	Open areas at head of coves to reduce sediment buildup through increased flow and provide shoreline access.	~80% control of plant in areas treated at the end of season.
	Slender Naiad	42.00	$ 13,698.58	$ 326.16	Aquathol K Liquid	5 - 6 gal/ac	Open areas at head of coves to reduce sediment buildup through increased flow and provide shoreline access.	>90% control of plant in areas treated at the end of season.
TOTAL:		76.95	$ 21,643.92	$ 281.27				
IMPOUNDMENTS TOTAL		**330.35**	**$ 83,353.49**	**$ 252.32**				
SCDNR TOTAL		**3,390.50**	**$ 542,673.71**	**$ 160.06**				
SANTEE COOPER TOTAL		**544.05**	**$ 112,860.92**	**$ 207.45**				
GRAND TOTAL		**3934.55**	**$ 655,534.63**	**$ 166.61**				

APPENDIX G

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 2006 South Carolina Aquatic Plant Management Plan

Note: All comments received refer to Lake Murray. No other comments were received.

Lake Murray:

Commenters: Sam Gustafson, George King, Roy Parker, Herlong (cherlong@greenwood.net), John & Heide Hoppe, Robert Shealy Jr., Robert King, Roger A. Becker, Julius A. Bell, Billy F. Peake, E. Gobbel, Mr. & Mrs. Henry C. Blakewood, Mary Autrey, Martin Blackford, Charles F. Noll Jr., David McElyea, Don & Deloris Rains, Michelle Elles, Jimmy & Cathy Woods, Harvey Cubb, Robert C. Rucker, Bernard H. Long, Hans N. Fagg, Tom & June Schmitt, Benji & Joe Barnhill.

Comments:

1. 300 acres...that's real impressive. As I recall prior to the carp the coverage on Lake Murray was several thousand acres. Congratulations and thanks to you and SCDNR for on a great job! (George King)

The 2006 Aquatic Plant Management Plan for Lake Murray looks fine to me. Thanks for the work you do to prevent the spread of invasive species of aquatic weeds. I think the grass carp stocked in 2003 have done a wonderful job of controlling hydrilla and Illinois Pondweed. Keep up the good work! (Parker)

2. We are concerned about the influx of weeds that prevents enjoyment of the lake. The plan calls for 4300 acres to be the trigger point for control action to begin. This is too high of a level to begin control actions. (Gustafson)

3. THE PURPOSE OF THIS LETTER IS TO MAKE IT CLEAR THAT THE HYDRILLA IS NOT GONE ... IT HAS JUST MIGRATED TO A TWO MILE LONG COVE WHICH IS SANDWICHED BETWEEN HIGHWAY 378 AND HORSE CREEK RD. The water adjoining our property had no nuisance vegetation until after the long drawdown for construction of the back-up dam. When the water returned in 2005, most of the cove quickly filled with hydrilla and a little water primrose. Because hydrilla is a perennial plant and because there are certainly tubers under the water and in the mud, we expect the hydrilla problem to explode when the weather warms. The property owners in this area of the lake need a three prong attack. Probably most importantly, we need to be scheduled for sterile grass carp stocking before the weed Gets a full grip on the cove this Spring. It would seem that early use of the appropriate herbicide might also help curtail the invasion. Finally, we may need commercial mechanical removal this Summer. (Hoppe, Shealy, Robert King, Becker, Bell, Peake, Gobbel, Blakewood, Autrey, Blackford, Noll, McElyea, Rains, Elles, Woods, Cubb, Rucker, Long, Fagg, Schmitt, Barnhill)

4. I think the drawdown alone was enough to control hydrilla for a couple years. Why didn't we learn a lesson from the effects of eradication of hydrilla from Santee? Total elimination has a negative affect on fishing and ducks. Why not find a balance? Hydrilla as we speak is no longer in Lake Murray. Why have a control plan? You have succeeded in killing it all and it can't come back with all the carp. (Herlong)

Response:

1. Even though no hydrilla was found in a late fall survey it shouldn't be taken for granted that it is gone. The carp and the drawdown both helped to control the hydrilla and pondweed problems that were being experienced on the lake. However, hydrilla tubers and pondweed seeds are still viable and abundant in Lake Murray. The goal is to provide long-term control of these invasive species, which will take several years to fully assess.

2. The trigger mechanism of 4300 acres of hydrilla only applies to use of grass carp. Other control activities may be initiated at lower infestation levels. This year's plan is consistent with the 2005 plan. The 2006 plan calls for no stocking of grass carp on Lake Murray unless hydrilla coverage exceeds 4,300 acres above the 330-foot contour at which time the Aquatic Plant Management Council may reconsider the need for additional grass carp. A late fall survey showed no appreciable hydrilla, so a dramatic increase in that acreage would have to occur to consider stocking more carp. However, this year's plan does include the option of select herbicide control around municipal water intakes and high traffic landings if needed.

3. A survey of this area by SCDNR staff and discussions with SCE&G staff familiar with the area in question indicate that a plant other than hydrilla caused the problem. Water primrose and different terrestrial vegetation are routinely being confused with hydrilla. The drawdown exposed a lot of unvegetated shoreline where water primrose quickly spread and re-established at the 345-348 foot contour level. Water primrose is normally a shoreline species. It extends out into the water but is rooted close to the shoreline. While this plant can be invasive and cause localized problems, it has been in the lake for decades and is typically not a threat to general public access and use of the waterway. Based on past experience, it is expected that most of the plants that are rooted in deep water will not survive after the lake level returns to full pool. Another problem associated with primrose control is that all available herbicides require some set back or water use restriction for irrigation or potable water. Therefore, there are no plans to control its growth this year. However, the SCDNR and SCE&G will monitor aquatic plant growth in this area and reconsider control options as needed.

4. Drawdowns have a limited effect on hydrilla. Normally for 2–3 years after a drawdown, the zone where the drawdown occurred has little hydrilla growth. However, large amounts of hydrilla still existed in the areas below the drawdown level and still presented major problems. Although hydrilla was under control last year, a plan is needed to address the potential for regrowth of hydrilla and Illinois pondweed this year.

Plan Modifications:

None at present.

Summary of Public Comments, Responses, and Plan Modifications to the Draft 2005 South Carolina Aquatic Plant Management Plan

Commenters: Lee Bacot, Teresa Cannon, Jeremiah Jensen, Alan Rae, David Rogers, Randy Saliga, Michael Sizer, Joseph M. Walker, Mark West, Jesse N. Williams III, Jon & Judy Willkomm, Sharpep2

Lake Murray:

Comments:

I support the management plan at the level APMC has recommended for 2005. (Saliga)

I'd voice my opinion against the use of more grass carp… I have no problem with the spot treatment of access points and intakes, but I'm worried that the use of more carp could result in a situation similar to Santee where the grass was totally exterminated. (Jensen)

Why can't we just come to an agreement on the hydrilla (Lake Murray) like they did on Lake Guntersville, AL? (Rae)

Replacing vegetation removed by carp with artificial habitat would be a great compromise for fishermen. (Rogers)

The reason the fishing is good is because of the grass! Take a note from Va. And Maryland they treat it as a natural resource up there, they even have signs at the landings asking people to protect it! (Walker)

Introducing the grass carp to Lake Murray is killing the grass off too fast, before long there is going to be no grass left, Murray is a recreational lake and fishing is going to suffer. (West)

The idea of releasing large numbers of grass carp is frightening. (Williams)

I'm afraid to purchase a pontoon because of the weeds. (Cannon)

Primrose is blocking access and navigation for many residents. (Sizer)

We are very concerned about water primrose and hope that serious steps are being taken. (Willkomm)

I am anxious about the continual uncontrolled spread of primrose in the upper part of the lake. I urge the DNR to recognize the rapidly expanding growth of water primrose as a major threat to Lake Murray and to include the control of this plant in the 2005 plan. (Bacot)

It comes as no surprise to any of us that there is no plan to address the primrose problem and that DNR fails to even mention it. We are not in the more affluent section of the lake. (Sharpep2)

Response:

Aquatic vegetation in general is beneficial to the lake ecology and the plan clearly acknowledges this point by specifying as one of the management objectives (2.c.) to maintain diverse aquatic plant community. Along those lines, the DNR hopes to reinvigorate the Lake Murray Habitat Enhancement Program that it initiated several years ago to plant desirable native vegetation to enhance fish and wildlife habitat and help control shoreline erosion. Also, one of the main reasons for stocking while the lake was down is to be able to achieve control using fewer grass carp, thus minimizing the possibility of controlling too much of the vegetation.

This year's plan is consistent with the 2004 plan. The 2005 plan calls for no stocking of grass carp on Lake Murray unless hydrilla coverage **exceeds 4,300 acres above the 330-foot contour at which time the Aquatic Plant Management Council may reconsider the need for additional grass carp. A late fall survey showed only 2,400 acres of hydrilla, a dramatic increase in that acreage would have to occur to consider stocking more carp. However, this year's plan does include the option of select herbicide control around municipal water intakes and high traffic landings if needed.**

Water primrose is normally a shoreline species. It extends out into the water but is rooted close to the shoreline. During the two-year drawdown water primrose established its self at various locations throughout the upper part of Lake Murray. However, as water levels rise and the lake returns to its normal elevation, the water primrose problem is expected to subside. SCE&G and DNR will monitor the growth and extent of the primrose throughout 2005 and reconsider control options as needed.

Plan Modifications:

A long-term management goal is added in Section 12-f.
Section 12-f states: Water primrose - Water primrose, a shoreline plant, became problematic in the upper portion of the lake last year. The two-year drawdown exposed a lot of unvegetated shoreline where water primrose quickly spread and re-established at the 345-348 foot contour level. While this plant can be invasive and cause localized problems, it has been in the lake for decades and is typically not a threat to general public access and use of the waterway. Based on past experience, it is expected that most of the plants that are rooted in deep water will not survive after the lake level returns to full pool. Therefore, there are no plans to control its growth this year. However, the SCDNR and SCE&G will monitor water primrose growth and consider control options if impacts are greater than anticipated.

Santee Cooper Lakes:

Comments:

What's this stuff I read on 2004 Santee Cooper about allowing fish to have 10% surface vegetation area for fish? What sense does that make? (Rae)

I implore you to not stock more grass carp in our impoundments. There are so many other methods, some are which expensive and you have listed in the management plan. Our natural

resources, which include our fish and wildlife, need to be cared for with all parties in mind, not just hunters and fishermen, and not just wealthy property owners that ski and pleasure boat. (Williams)

One suggestion I have is that before we release more grass carp into any impoundments, let's consult **B.A.S.S.** or other organizations that have the funding and database to do the research. (Williams)

Response:

The language in the draft plan is consistent with the comments not to stock more grass carp in the Santee Cooper Lakes. No additional grass carp are planned for 2005, but the Council may reconsider the need for additional fish if hydrilla regrowth and regrowth potential warrants it.

The long-term management strategy for hydrilla control in the Santee Cooper Lakes is to maintain a sufficient number of grass carp in the system to keep hydrilla suppressed while allowing desirable native vegetation to flourish. The DNR and Santee Cooper recognize that although the grass carp have been effective in controlling hydrilla they have also controlled many desirable submersed aquatic plant species. In response to this concern, the agencies have signed an agreement that identifies management goals and objectives that try to maintain 10% of the lakes' surface area as beneficial vegetated habitat for fish, waterfowl and other aquatic organisms. The Aquatic Plant Management Council has adopted the management agreement as part of the long-term management strategy for the Santee Cooper Lakes and has included it in the final 2005 Aquatic Plant Management Plan. An important part of the agreement between the agencies is accurate and timely monitoring of aquatic vegetation. The agencies will work together in developing a monitoring work plan. Decisions regarding subsequent stocking of grass carp will be determined by the Council following assessment of monitoring results by DNR, Santee Cooper, and other agency representatives on the Council.

Submersed and emergent vegetation provides important habitat for waterfowl and fish as well as other types of wildlife. Management plans in public waters always attempt to control invasive species while trying to maintain desirable vegetation. Grass carp are used only after other more selective control methods have proven ineffective and after ample discussion in public meetings and plan reviews. Except for two sub-impoundments of Lake Marion, no grass carp are planned for any state waterways in 2005.

Plan Modifications:

None at present.

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DNR

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