

FY2024-2025
ANNUAL SOUTH CAROLINA
AQUATIC PLANT MANAGEMENT PLAN



Prepared by the
Aquatic Nuisance Species Program
South Carolina Department of Natural Resources
and Approved by the
South Carolina Aquatic Plant Management Council
2024

**2024 SOUTH CAROLINA
AQUATIC PLANT MANAGEMENT COUNCIL**

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SC Department of Natural Resources, Wildlife and Freshwater Fisheries Division

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SC Department of Natural Resources, Land, Water, and Conservation Division

Adam Leaphart -

SC Department of Agriculture, Director of Consumer Protection Laboratories

Chris Stout -

SC Department of Health and Environmental Control, Office of Ocean and Coastal Resource Management

Casey Moorer -

SC Public Service Authority (Santee Cooper)

Stacy Scherman -

SC Department of Parks, Recreation, and Tourism

Tammy Lognion -

Clemson University, Department of Pesticide Regulation

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PART II – FY2024-2025 ANNUAL MANAGEMENT PLAN

INTRODUCTION

The Annual Management Plan for 2024 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 1) 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			
Common Name	Scientific Name	Common Name	Scientific Name
Alligatorweed	<i>Alternanthera philoxeroides</i>	Giant salvinia	<i>Salvinia molesta</i>
Bladderwort	<i>Utricularia spp.</i>	Hydrilla	<i>Hydrilla verticillata</i>
Brazilian elodea	<i>Egeria densa</i>	East Indian hygrophila	<i>Hygrophila polysperma</i>
Bur Marigold	<i>Bidens spp.</i>	Illinois Pondweed	<i>Potamogeton illinoensis</i>
Cattails	<i>Typha spp.</i>	Lotus	<i>Nelumbo lutea</i>
Chinese Tallow	<i>Sapium sebiferum</i>	Musk-grass	<i>Chara spp.</i>
Coontail	<i>Ceratophyllum demersum</i>	Parrotfeather	<i>Myriophyllum aquaticum</i>
Common reed (Phragmites)	<i>Phragmites australis</i>	Pondweed	<i>Potamogeton spp.</i>
Common salvinia	<i>Salvinia minima</i>	Slender naiad	<i>Najas minor</i>
Creeping rush	<i>Juncus repens</i>	Smartweed	<i>Polygonum densiflorum</i>
Crested Floating-heart	<i>Nymphoides cristata</i>	Southern naiad	<i>Najas guadalupensis</i>
Cuban bulrush	<i>Cyperus blepharoleptos</i>	Spatterdock	<i>Nuphar luteum macrophyllum</i>
Curly-leaf pondweed	<i>Potamogeton crispus</i>	Spikerush	<i>Eleocharis spp.</i>
Cyanobacteria	<i>Anabaena, Aphanozomenon, and Microcystis spp., etc.</i>	Stonewort	<i>Nitella</i>
Duckweed	<i>Lemna spp.</i>	Swamp loosestrife	<i>Decodon verticillatus</i>
Eel Grass	<i>Vallisneria americana</i>	Variable-leaf pondweed	<i>Potamogeton diversifolius</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	Water hyacinth	<i>Eichhornia crassipes</i>
Fanwort	<i>Cabomba caroliniana</i>	Water lettuce	<i>Pistia stratiotes</i>
Filamentous algae	<i>Pithophora, Lyngbya, Hydrodictyon spp.</i>	Waterlily	<i>Nymphaea odorata</i>
Floating bladderwort	<i>Utricularia inflata</i>	Watermilfoil	<i>Myriophyllum spp.</i>
Floating heart	<i>Nymphoides spp.</i>	Water pennywort	<i>Hydrocotyle ranunculoides</i>
Frog's bit	<i>Limnobium spongia</i>	Water primrose	<i>Ludwigia hexapetala</i>
Giant cutgrass	<i>Zizaniopsis miliacea</i>	Watershield	<i>Brasenia schreberi</i>

AQUATIC PLANT PROBLEM AREAS

Areas where aquatic plants interfere with water use were identified from information provided by SC Aquatic Plant Management Council members, an aquatic plant survey conducted by the SC Department of Natural Resources (SCDNR) 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 2023. Some water bodies are not active every year but remain in the plan because of previous major problems. Problematic species may change throughout the current year and inclusion

in the plan is no guarantee the listed work will be done this year. All control work is based on existing funding and priority levels of both the invasive species and the water bodies in the plan. SPECIAL NOTE: Due to budget constraints and to continue to serve all the areas around the state, each water body will only be eligible for up to \$30,000 of cost share money from the SCDNR.

Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Ashepool River	Colleton County	Unknown	Water hyacinth, Alligatorweed, Water primrose, Parrotfeather, Frog's bit, Pennywort	150	Boating, hunting, fishing, public access
Back River Reservoir	Berkeley County	850	Hydrilla, Water hyacinth, Water primrose, Fanwort, Cutgrass, Phragmites	360	Boating, fishing, hunting, swimming, industrial water supply, municipal water supply, electric power generation, public access
Baruch Institute	Georgetown County	Unknown, adjacent to Winyah Bay	Phragmites	50	Boating, hunting, fishing, public access
Black Mingo Creek	Georgetown County	Unknown	Alligatorweed, Parrotfeather, Water hyacinth, Frog's bit, Pennywort	50	Boating, hunting, fishing, public access
Black River	Georgetown County	Unknown	Alligatorweed, Water primrose, Water hyacinth, Parrotfeather, Frog's bit, Pennywort, Phragmites	120	Boating, hunting, fishing, public access
Bonneau Ferry WMA	Berkeley County	Multiple Reserves and impoundments	Water hyacinth, Water primrose, Frog's bit, Lotus, Cattails, Cutgrass, Pennywort, Parrotfeather, Fanwort, Coontail, Duckweed	40	Boating, hunting, fishing, public access
Broadway Lake	Anderson County	300	Hydrilla, Brittle Naiad	45	Boating, fishing, recreation and public access
Charleston County Parks	Charleston County (CawCaw and Laurel Hill)	Unknown	Hydrilla, Water primrose, Water hyacinth, Phragmites, Chinese tallow, Milfoil, Waterlily	5	Recreational and public access
Combahee River	Colleton County	Unknown	Water hyacinth, Hydrilla, Water primrose, Alligatorweed, Parrotfeather, Frog's bit	150	Boating, hunting, fishing, public access

Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Cooper River (and adjacent rice fields)	Berkeley County	Unknown	Hydrilla, Water primrose, Water hyacinth, Brazilian elodea, Fanwort	approx. 2,800	Boating, hunting, fishing, public access
Donnelley / Bear Island WMA	Colleton County	Multiple impoundments and rivers	Cutgrass, Frog's bit, Cattails, Phragmites, Swamp loosestrife, Cuban bulrush, Tallow tree	200	Hunting, public access, Wood stork nesting site
Dungannon Plantation Heritage Preserve	Charleston County	Unknown	Cutgrass, Frog's bit, Cattails, Water primrose, Swamp loosestrife, Bur Marigold	14	Wood stork nesting site, public access
Goose Creek Reservoir	Berkeley County	600	Water hyacinth, Water lettuce, Water primrose, Hydrilla, Common salvinia, Spatterdock, East Indian hygrophyla, Watermilfoil, Fanwort, Duckweed, Bladderwort	180	Boating, fishing, public access, industrial water supply, floodway
Lake Blalock	Spartanburg County	1,105	Chara	3.5	Boating, fishing, hunting, swimming, industrial water supply, municipal water supply, public access
Lake Bowen & Reservoir #1	Spartanburg County	1534 & 272	Muskgrass (Chara), Bladderwort	175	Boating, fishing, hunting, swimming, industrial water supply, municipal water supply, public access
Lake Cunningham	Greenville County	160	Brazilian elodea, Water primrose, Fragrant Waterlily, Spatterdock	10	Boating, hunting, fishing, public access
Lake Greenwood	Laurens and Greenwood counties	11,400	Hydrilla, Slender naiad, Eel grass (Vallisneria), Water primrose	<100	Electric power generation, boating, swimming, vector control, public access
Lake Keowee	Pickens and Oconee counties	18,300	Hydrilla, Slender naiad	10	Electric power generation, municipal water supply, boating, swimming, vector control, public access
Lake Lyman	Spartanburg County	350	Water primrose	75	Boating, swimming fishing, public access
Lake Monticello (Recreation Lake)	Fairfield County	6,700 (400)	Hydrilla	<1 (Recreation Lake)	Boating, swimming, fishing, vector control, public access

Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Lake Murray	Lexington and Richland counties	50,000	Hydrilla, Illinois pondweed, Curly-leaf pondweed, Water primrose, Southern naiad, Alligatorweed	50? Survey Needed	Boating, swimming, domestic and municipal water intakes, public access
Lake Wateree	Kershaw County	13,710	Hydrilla, cutgrass, Filamentous algae	30	Potential impacts to boating, swimming, vector control, public access
Little Pee Dee River	Marion and Horry counties	Unknown	Alligatorweed, Water hyacinth	30	Boating, hunting, fishing, public access
Lumber River	Marion and Horry counties	Unknown	Alligatorweed	5	Boating, hunting, fishing, public access
Pee Dee River	Georgetown County	Unknown	Water hyacinth, Phragmites, Common salvinia	30	Boating, hunting
Prestwood Lake	Darlington County	300	Milfoil, Watershield, Filamentous algae, Water hyacinth	40	Boating, fishing, recreation
Samworth WMA	Georgetown County	Unknown	Phragmites, Water hyacinth, Common salvinia, Zizaniopsis	60	Hunting, public access
Santee Coastal Reserve WMA	Georgetown County	Unknown	Phragmites	3000	Hunting, public access
Santee Delta WMA	Georgetown County	Unknown	Phragmites	100	Hunting, public access
Waccamaw River	Georgetown and Horry counties	Unknown	Water hyacinth, Phragmites, Common salvinia	200	Boating, hunting, fishing, public access
Yawkey Wildlife Center	Georgetown County	Unknown	Phragmites, Cattails, Cutgrass	25	Hunting, public access
Santee Cooper Lakes					
Lake Marion	Sumter, Clarendon, Calhoun, Berkeley, and Orangeburg counties.	110,000	Alligatorweed, Brazilian elodea, Hydrilla, Water primrose, Water hyacinth, Crested floating heart, Giant salvinia, Common salvinia, Filamentous algae*, Fanwort*, Giant cutgrass*, Water milfoil*, Waterwillow* *When necessary.	TBD	Boating, swimming, public access, electric power generation, domestic and irrigation water withdrawals

Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Lake Moultrie	Berkeley County	60,400	Alligatorweed, Brazilian elodea, Hydrilla, Water primrose, Water hyacinth, Crested floating heart, Giant salvinia, Common salvinia, Filamentous algae*, Fanwort*, Giant cutgrass*, Water milfoil*, Waterwillow* *When necessary.	TBD	Electric power generation, boating, swimming, public access, domestic and irrigation water withdrawals
Santee Cooper Area WMA'S					
Hatchery WMA	Berkeley County	Unknown	Crested Floating Heart, Cattails, Hydrilla, Water Primrose, Giant salvinia, Common salvinia, Alligatorweed	70	Boating, hunting, fishing, public access
Hickory Top WMA	Clarendon County	Unknown	Cutgrass, Cattails, Misc. Woody Species, Giant salvinia, Common salvinia	30	Boating, hunting, fishing, public access
Potato Creek WMA	Clarendon County	Unknown	Hydrilla, Water Hyacinth, Water Primrose, Bladderwort, Cutgrass, Lotus, Giant salvinia, Common salvinia	20	Boating, hunting, fishing, public access
Sandy Beach WMA	Berkeley County	Unknown	Crested Floating Heart, Cattails, Cutgrass, Lotus, Water Primrose, Misc. Woody Species, Hydrilla, Giant salvinia, Common salvinia	40	Boating, hunting, fishing, public access
Santee Cooper WMA	Orangeburg County	Unknown	Crested Floating Heart, Cattails, Cutgrass, Lotus, Water Primrose, Waterlily, Misc. Woody Species, Giant salvinia, Common salvinia	150 (multiple waterbodies)	Boating, hunting, fishing, public access
SC Parks, Recreation and Tourism, State Park Lakes					
Aiken State Park	Aiken County	16	Floating heart, Cattails, Lemon bacopa, Watershield	10	Fishing, swimming, aesthetics
Barnwell State Park	Barnwell County	12	Waterlily, Cattails, Pondweed, Maiden-cane	9	Fishing, swimming, aesthetics

Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Charles Towne Landing State Park	Charleston County	5	Duckweed, Alligatorweed, Pennywort, Cyanobacteria, Algae	4	Fishing, tourism, aesthetics
Cheraw State Park	Chesterfield County	280	Floating heart, Waterlily, Spatterdock, Watermilfoil	10	Fishing, swimming, aesthetics
Croft State Park	Spartanburg County	145	Hydrilla	50	Fishing, swimming, aesthetics
H. Cooper Black Recreation Area	Chesterfield County	2	Spatterdock, Waterlily, Watershield	2	Recreational activities
Hunting Island State Park	Beaufort County	1	Duckweed, Parrotfeather	1	Fishing, swimming, aesthetics
Huntington Beach State Park	Horry County	84	Cutgrass, Phragmites, Cattails	20	Recreational activities
Kings Mountain State Park Crawford Lake	York County	9	Slender naiad, Misc. species	4	Swimming, boating
Lee State Park	Lee County	2	Watermilfoil	1	Fishing, swimming, aesthetics
Little Pee Dee State Park	Dillon County	75	Spikerush, Spatterdock, Waterlily, Watershield	15	Fishing, boating
Misty Lake State Park	Aiken County	7	Water primrose, Milfoil, Bladderwort, Naiad	2	Fishing, aesthetics
N.R. Goodale State Park	Kershaw County	160	Waterlily, Watershield, Bladderwort	60	Boating, fishing
Paris Mountain State Park	Greenville County	9.5	Slender naiad, Watershield, Pondweed	6	Fishing, swimming, aesthetics
Poinsett State Park	Sumter County	9	Spatterdock, Cattails, Watermilfoil	5	Fishing, swimming, aesthetics
Ramsey Grove State Park	Georgetown County	10	Water primrose, Bladderwort	10	Fishing, boating
Sesquicentennial State Park	Richland County	25	Waterlily, Watershield, Fanwort, Watermilfoil	12	Swimming, fishing
SCDNR State Lakes					
Lake Cherokee	Cherokee County	50	Water primrose	5	Boating, fishing

Water body	Location	Surface acres	Aquatic plants	Coverage acres	Potentially impaired activities
Lake Edwin Johnson	Spartanburg County	40	Water primrose, Hydrilla, Pondweed	10	Boating, fishing
Jonesville Reservoir	Union County	25	Water primrose, Pondweed	10	Boating, fishing
Mountain Lakes	Chester County	70	Water primrose, Alligatorweed, Parrotfeather	5	Boating, fishing
Lancaster Reservoir	Lancaster County	61	Water primrose, Alligatorweed	8	Boating, fishing, hunting
Sunrise Lake	Lancaster County	25	Pondweed	15	Boating, fishing
Lake Ashwood	Lee County	75	Waterlily	spotty	Boating, fishing
Lake Edgar Brown	Barnwell County	100	Water primrose, Coontail, Water hyacinth	40	Boating, fishing
Lake George Warren	Hampton County	400	Cattails, Water primrose, Coontail	20	Boating, fishing
Lake Thicketty	Cherokee County	100	Hydrilla	5	Boating, fishing
Dargan's Pond	Darlington County	50	Pondweed	15	Boating, fishing
Lake Paul Wallace	Marlboro County	300	Hydrilla, naiad	200	Boating, fishing
Draper WMA Lakes	York County	5	Naiad	5	Fishing
South Carolina Border Lakes					
Lake Wylie	York County, SC; Gaston and Mecklenburg County, NC	13,443	Hydrilla, Alligatorweed	<100 (all in NC waters)	Electric power generation, boating, swimming, public access, domestic and irrigation water withdrawals
Lake Thurmond	South Carolina, Georgia Border	71,100	Hydrilla	> 7000	Electric power generation, boating, swimming, public access, domestic and irrigation water withdrawals

AQUATIC PLANT MANAGEMENT STRATEGY

The following management strategies were developed for each identified problem area considered eligible for public funding. Planned expenditures are based on known available federal funds, estimated state funds and anticipated local support as of the date of this plan. Problematic species may change based on environmental conditions. Therefore, this plan is fluid and will utilize an adaptive management approach. 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 SCDNR in cooperation with the local sponsor. A summary of proposed expenditures for 2024 and a location map of problem water bodies are located at the end of this section.

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

Public Waters

1. **Ashepoo River (Colleton County)**

Problem plant species:

Water hyacinth, Alligatorweed, Water Primrose, Parrotfeather, Frog’s bit, Pennywort

Management objectives:

Reduce water hyacinth populations to enhance public access, navigation, and water flow.

Selected control method:

Problem Species	Control Agent
Water hyacinth, Alligatorweed,	Triclopyr, Diquat, Imazamox, Imazapyr, Glyphosate,
Water primrose	ProcellaCOR-SC, Flumioxazin
Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Frog’s bit, Parrotfeather	Diquat, Penoxsulam, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied:

Through river system upstream and downstream of US 17 bridge.

Rate of control agents to be applied:

Triclopyr - 0.500 - 0.750 gallons per acre.

Diquat - 0.500 gallons per acre.

Imazamox - 0.250 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Imazapyr – 0.250 - 0.750 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agents:

Triclopyr, Diquat, Imazapyr, Imazamox, ProcellaCOR-SC, Glyphosate, and Flumioxazin - spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application:

Apply herbicide periodically to vegetation from May through October as needed.

Other control application specifications:

Herbicide used only upon approval by the SC Department of Health and Environmental Control (SCDHEC).

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

Entity to apply control agents:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

\$20,000

Potential sources of funding:

Colleton County 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy:

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**2. Back River Reservoir
(Berkeley County)**

Problem plant species:

Hydrilla, Water hyacinth, Fanwort, Water primrose, Cutgrass, Phragmites

Management objectives:

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

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

Reduce hydrilla and fanwort in 62.50-acre area adjacent to Dominion Energy's Williams Station intake to enhance water flow, minimize clogging of water intake, and enhance public boating and fishing use in this area.

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method:

Problem Species	Control Agent
Water hyacinth, Water primrose	Triclopyr, Diquat, Imazamox, Penoxsulam, Imazapyr, Glyphosate, ProcellaCOR-SC, Flumioxazin
Cutgrass	Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Hydrilla	Copper*, Copper*/Diquat, ProcellaCOR-SC
Fanwort, Coontail	Copper*, Copper*/Diquat
Phragmites	Imazapyr, Glyphosate, Imazamox

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

Area to which control is to be applied:

Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC and Penoxsulam - 300 acres of water hyacinth, water primrose and cutgrass throughout the lake.

Copper*/Diquat, Penoxsulam, ProcellaCOR-SC - 167 acres of hydrilla; 2 treatments of 62.50-acre area near Dominion Energy intake, 2 acres of hydrilla adjacent to Bushy Park Landing, 25 acres of hydrilla in Foster Creek (2 treatments of 12.50 acres each), 15 acres of hydrilla in Chicken Creek (2 treatments of 7.5 acres each).

Rate of control agents to be applied:

Triclopyr - 0.500 - 0.750 gallons per acre.

Diquat - 0.500 gallons per acre.

Imazamox - 0.250 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Copper* - up to 1 ppm (about 10- 16 gallons per acre).

Copper*/Diquat - 4 gallons/2 gallons per acre

Imazapyr – 0.250 - 0.750 gallons per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agents:

Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin and Penoxsulam - spray on surface of foliage with appropriate surfactant.

Copper*, Copper*/Diquat, ProcellaCOR-SC - subsurface injection from airboat.

Timing and sequence of control application:

Three hundred (300) acres of water hyacinth, water primrose and cutgrass treated with Triclopyr, Imazamox, Imazapyr, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin (May-October), Diquat (October, November). The initial treatments are to be followed in 1-2 days with a cleanup treatment.

12.50 acres of hydrilla in Foster Creek to be treated 2 times (April-October) with Copper, Copper/Diquat, ProcellaCOR-SC.

7.50 acres of hydrilla in Chicken Creek to be treated 2 times (April-October) with Copper, Copper/Diquat, ProcellaCOR-SC.

Hydrilla and fanwort located adjacent to public boat ramp to be treated with Copper*, Copper*/Diquat, ProcellaCOR-SC.

Hydrilla and fanwort located near the Dominion Energy water intake to be treated periodically during the year with Copper*, Copper*/Diquat, ProcellaCOR-SC (up to three times in the same 62.50-acre area), treatment area may be expanded as control is realized in target area.

Other control application specifications:

Herbicide used only upon approval by the SCDHEC.

All herbicide treatments conducted within 1600 feet of the Charleston Commissioners of Public Works (CPW) water intake will use Triclopyr at a rate of 0.5 gallons per acre or less or Penoxsulam at a rate of 2 to 6 oz/acre. Diquat treatments will be conducted at least 1600 feet from the intake. Following any application of Diquat within 1600 feet of the CPW water intake, herbicide residue concentrations may be monitored according to a plan agreed to by the SCDNR, CPW, and the SCDHEC.

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

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

Entity to apply control agents:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

\$55,000

Potential sources of funding:

Water primrose and water hyacinth -

Charleston Water System 30%

Dominion Energy 20%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Hydrilla and fanwort (near Dominion Energy intake) -

Dominion Energy. 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

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

CPW 30%

Dominion Energy 20%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy:

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**3. Baruch Institute
(Georgetown County)**

Problem plant species:

Phragmites

Management objective:

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

Selected control method:

Problem Species	Control Agent
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Phragmites

Imazapyr, Glyphosate, Imazamox

Area to which control is to be applied:

50 acres of phragmites throughout area

Rate of control agent to be applied:

Imazapyr - 0.250 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Imazamox - up to 5 % solution for spot spray.

Method of application of control agent:

Helicopter - 50 acres of Imazapyr, Glyphosate, Imazamox with appropriate surfactant applied to phragmites.

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

Timing and sequence of control application:

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

Other control application specifications:

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator

Estimated cost of control operations:

\$15,000

Potential sources of funding:

Baruch Institute 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy:

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

4. **Black Mingo Creek (Georgetown County)**

Problem plant species:

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

Management objective:

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method:

Problem Species	Control Agent
Alligatorweed, Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Frog's bit, Parrot feather	Diquat, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Water Hyacinth	Diquat, Triclopyr, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied:

50 acres of problematic plants throughout river

Rate of control agent to be applied:

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 0.250 - 0.750 gallons per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent:

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application:

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

Other control application specifications:

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

\$10,000

Potential sources of funding:

Georgetown County 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy:

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**5. Black River
(Georgetown County)**

Problem plant species:

Alligatorweed, Water Primrose, Parrot feather, Frog’s bit, Pennywort, Phragmites, Water hyacinth

Management objective:

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method:

Problem Species	Control Agent
Alligatorweed, Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Frog’s bit, Parrot feather	Diquat, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Phragmites	Imazapyr, Imazamox, Glyphosate
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Water hyacinth	Triclopyr, Diquat, Imazapyr, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied:

120 acres of problematic plants throughout river

Rate of control agent to be applied:

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 0.250 - 0.750 gallons per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent:

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application:

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

Other control application specifications:

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

\$30,000

Potential sources of funding:

Georgetown County 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy:

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

6. **Bonneau Ferry WMA (Berkeley County)**

Problem plant species:

Water Primrose, Water hyacinth, Cattails, Lotus, Cutgrass, Pennywort, Frog’s bit, Parrotfeather, Duckweed, Fanwort, Coontail

Management objective:

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

Selected control method:

Problem Species	Control Agent
Water primrose, Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Cattails, Cutgrass, Parrotfeather	Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin
Water hyacinth, Frog’s bit	Triclopyr, Diquat, Imazamox, ProcellaCOR-SC, Penoxsulam, Flumioxazin
Duckweed	Flumioxazin
Fanwort, Coontail	Copper*, Copper*/Diquat

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

Area to which control is to be applied:

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

Rate of control agent to be applied:

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 0.250 - 0.750 gallons per acre.

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

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 5 to 12 oz/ac as a foliar application, submersed application 1 lb/ac foot.

Glyphosate - up to 0.937 gallons per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Copper* - up to 1 ppm (about 10- 16 gallons per acre).

Copper*/Diquat - 4 gallons/2 gallons per acre

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

Method of application of control agent:

Helicopter - 20 acres of Imazapyr, Glyphosate, Imazamox with appropriate surfactant.

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

Timing and sequence of control application:

Apply when plants are actively growing.

Other control application specifications:

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator

Estimated cost of control operations:

\$5,750

Potential sources of funding:

SCDNR 100% (50/50 split between ANS and WMA)

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

Long term management strategy:

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**7. Broadway Lake
(Anderson County)**

Problem plant species:

Hydrilla, Brittle Naiad

Management objective:

Reduce or remove vegetation infestation at public access points and navigation channels.

Treat native vegetation only in areas where it is impeding navigation or access.

Selected control method:

Problem Species	Control Agent
Hydrilla, Brittle naiad Loid Grass Carp	Copper*, Copper*/Diquat, ProcellaCOR-SC, Fluridone, Trip-

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

Area to which control is to be applied:

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

Rate of control agent to be applied

Copper* - up to 1 ppm (about 10- 16 gallons per acre).

Copper*/Diquat - 4 gallons/2 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Fluridone - 0.075 to 0.250 ppm

Triploid grass carp: initial stocking to control vegetation at a rate of 10 fish per vegetated acre (450 fish) and then stock to slowly reduce total population until a 1 fish per 8 surface acre density is reached. Adjust stocking as needed if vegetation acreage increases.

Method of application of control agent

Copper*, Copper*/Diquat, ProcellaCOR-SC, Fluridone (liquid) - subsurface injection from airboat.

Fluridone (Granular) – spread evenly in vegetated areas.

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

\$4,500

Potential sources of funding

Anderson County 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**8. Charleston County Parks
(Caw Caw Interpretative Center, Laurel Hill Plantation)
(Charleston County)**

Problem plant species:

Phragmites, milfoil, waterlily, hydrilla, water primrose, water hyacinth, Chinese tallow

Management objective:

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

Selected control method:

<u>Problem Species</u>	<u>Control Agent</u>
Watermilfoil	2,4-D, Triclopyr/2,4-D, Imazamox, ProcellaCOR-SC
Waterlily	2,4-D, Imazapyr, Glyphosate, Imazamox, ProcellaCOR-SC
Phragmites	Imazapyr, Glyphosate, Imazamox
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Water hyacinth	Triclopyr, Diquat, Imazapyr, ProcellaCOR-SC, Flumioxazin
Hydrilla	Copper*, Copper*/Diquat, ProcellaCOR-SC
Chinese Tallow	Imazapyr, Imazamox, Glyphosate

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

Area to which control is to be applied:

5 acres

Rate of control agent to be applied:

Imazapyr - 2 to 3 pints per acre.
 Triclopyr/2,4-D – 200 lbs per acre.
 Imazamox - up to 5% solution for spot spray.
 Glyphosate - up to 0.937 gallons per acre.

2,4-D - up to 5 gallons per acre.

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Copper* - up to 1 ppm (about 10- 16 gallons per acre).

Copper*/Diquat - 4 gallons/2 gallons per acre

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

Method of application of control agent:

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

Timing and sequence of control application:

Apply when plants are actively growing.

Other control application specifications:

Monitor plant growth prior to treatment.

Other control application specifications :

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent:

Commercial applicator, SCDNR staff.

Estimated cost of control operations:

\$1,000

Potential sources of funding:

Charleston Co. Parks 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy:

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

9. Combahee River (Colleton County)

Problem plant species:

Water hyacinth, Alligatorweed, Parrot feather, Frog’s bit, Hydrilla, Water primrose

Management objective:

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method:

Problem Species	Control Agent
Water hyacinth	Triclopyr, Diquat, Imazapyr, ProcellaCOR-SC, Flumioxazin
Alligatorweed	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Frog’s bit, Parrot feather	Diquat, Penoxsulam, ProcellaCOR-SC
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Hydrilla	Copper*, Copper*/Diquat, ProcellaCOR-SC

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

Area to which control is to be applied:

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

Rate of control agent to be applied

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 2 to 3 pints per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 6 pints per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Copper* - up to 1 ppm (about 10- 16 gallons per acre).

Copper*/Diquat - 4 gallons/2 gallons per acre

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

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

\$20,000

Potential sources of funding

Colleton County 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- d) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- e) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- f) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- g) Continue to coordinate treatment areas with local conservation groups.

**10. Cooper River
(Berkeley County)**

Problem plant species

Hydrilla, Water hyacinth, Water primrose, Brazilian elodea, Fanwort

Management objectives

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

Reduce water primrose growth along boat channels to maintain navigation.

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Problem Species	Control Agent
Water hyacinth	Triclopyr, Diquat, Imazamox, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Hydrilla	Copper*, ProcellaCOR-SC

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

Area to which control is to be applied

Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Penoxsulam, Flumioxazin - 500 acres of water hyacinth and water primrose throughout river system and in narrow boat channels in French Quarter Creek, Rice Hope Plantation rice field, and Berkeley Country Club rice field.

Copper, ProcellaCOR-SC - 48 acres (16 acres treated 3 times yearly, spring and fall) to open boat trails in Pimlico, Berkeley Yacht Club and Rice Hope Plantation rice fields and French Quarter Creek canal.

Rate of control agents to be applied

Imazapyr - 2 to 4 pints per acre.

Diquat - 2 quarts per acre.

Triclopyr - up to 4 quarts per acre

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

*Copper - up to 1 ppm (about 16 gallons per acre).

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

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

Method of application of control agent

Triclopyr, Diquat, Imazapyr, Penoxsulam, ProcellaCOR-SC, Flumioxazin - spray on surface of foliage with appropriate surfactant.

Copper*, ProcellaCOR-SC - subsurface injection from airboat.

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

\$42,000

Potential sources of funding

Berkeley County 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- d) Long term management must include consideration of water hyacinth control in many privately owned rice fields to which the public does not have boat access. Water hyacinth from these rice fields can reinfest public areas.

**11. Donnelley WMA/Bear Island WMA/ACE Basin
(Colleton County)**

Problem plant species

Frog's bit, Cattails, Cutgrass, Phragmites, Swamp loosestrife, Cuban bulrush, Chinese tallow

Management objective

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

Selected control method

Problem Species	Control Agent
Frog's bit	Triclopyr, Penoxsulam, ProcellaCOR-SC, Flumioxazin

Phragmites, Cattails, Chinese tallow	Imazapyr, Imazamox, Glyphosate
Cutgrass, Swamp loosestrife	Imazapyr, Imazamox, Glyphosate
Cuban bulrush	ProcellaCOR-SC, Triclopyr, Flumioxazin, Diquat

Area to which control is to be applied

200 acres of Frog’s bit, Phragmites, Cattails, Cutgrass, Swamp loosestrife, Chinese tallow, and Cuban bull rush throughout the area.

Rate of control agent to be applied

Triclopyr - 0.500 to 0.750 gallons per acre

Imazapyr - 2 to 3 pints per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 0.937 gallons per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

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

Entity to apply control agent

Commercial applicator

Estimated cost of control operations

\$100,000

Potential sources of funding

Donnelley WMA/USF&W/Nature Conservancy 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

12. **Dungannon Plantation Heritage Preserve (Charleston County)**

Problem plant species

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

Management objective

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

Selected control method

Problem Species	Control Agent
Frog’s bit, Water primrose, Bur marigold	Triclopyr, Imazapyr, Imazamox, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Cattails	Imazapyr, Imazamox, Glyphosate
Cutgrass, Swamp loosestrife	Imazapyr, Imazamox, Glyphosate

Area to which control is to be applied

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

14 acres of Cattails, Cutgrass, and Swamp loosestrife

Rate of control agent to be applied

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 2 to 3 pints per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 6 pints per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

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

Entity to apply control agent

Commercial applicator

Estimated cost of control operations

\$10,000

Potential sources of funding

Dungannon HP 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Enhance aquatic plant communities to benefit waterfowl and to increase nesting activities of Wood storks and other waterfowl.

**13. Goose Creek Reservoir
(Berkeley County)**

Problem plant species

Hygrophila, Water hyacinth, Water primrose, Water lettuce, Hydrilla, Watermilfoil, Fanwort, Common salvinia, Duckweed, Spatterdock, Bladderwort

Management objective

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

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

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

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

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

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Problem Species	Control Agent
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Water primrose, Hygrophila	Triclopyr, Triclopyr/2,4-D, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Water hyacinth, Water lettuce	Triclopyr, Diquat, Penoxsulam, Flumioxazin, ProcellaCOR-SC
Watermilfoil, fanwort	Diquat, 2,4-D, Imazamox
Hydrilla, Hygrophila	Endothall, *Copper, triploid grass carp, ProcellaCOR-SC
Common salvinia, Duckweed	Fluridone, Diquat, Penoxsulam, Flumioxazin
Spatterdock	Triclopyr, Imazapyr, Imazamox, ProcellaCOR-SC, Flumioxazin
Filamentous Algae	*Copper
Bladderwort	Triploid grass carp, Copper*, Fluridone, ProcellaCOR-SC

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

Area to which control is to be applied

Triclopyr, Imazapyr, Imazamox, Glyphosate- 100 acres water primrose in upper reservoir and boat ramp.

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

Triclopyr, Diquat, Penoxsulam, ProcellaCOR-SC - 100 acres of water hyacinth and water lettuce throughout the reservoir.

Diquat, 2,4-D, Penoxsulam, ProcellaCOR-SC - 20 acres of submersed growth throughout the reservoir.

Triclopyr, Imazapyr, Imazamox, Glyphosate, Endothall – up to 30 acres of Hygrophila throughout the reservoir.

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

Fluridone, Diquat, Penoxsulam, Flumioxazin – 50 acres of duckweed near populated areas of the reservoir.

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

Rate of control agents to be applied

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - up to 4 pints per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 6 pints per acre.

2,4-D - up to 5 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 5 to 12 oz/ac as a foliar application, submersed application 1 lb/ac foot.

Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

**Triploid Grass Carp – Temporarily suspend stocking based on lack of hydrilla being seen. Continue intensive surveying for sprouting tubers. 800 fish in the entire reservoir. Based on a 32% mortality to maintain existing population.

Method of application of control agents

Triclopyr, Imazapyr, Glyphosate, Diquat, Flumioxazin, Penoxsulam, ProcellaCOR-SC - spray on surface of foliage with appropriate surfactant.

Diquat, 2,4-D, Penoxsulam, ProcellaCOR-SC - subsurface injection from airboat.

The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in Goose Creek Reservoir to provide long-term control of hydrilla. A maintenance stocking plan approved for other water bodies provided for stocking a small number of grass carp, 1 carp to 8 or 10 surface acres, to control hydrilla while encouraging the expansion of a diverse, native aquatic plant community.

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

Entity to apply control agents

Herbicides - Commercial Applicator, SCDNR staff.

Triploid Grass Carp - SCDNR or a commercial supplier with supervision by the SCDNR.

Estimated cost of control operations

\$45,000

Potential sources of funding

Charleston Water System 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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

14. Lake Blalock (Spartanburg County)

Problem plant species:

Chara

Management objective:

Reduce or remove vegetation infestation at public access points and navigation channels.

Treat native vegetation only in areas where it is impeding navigation or access.

Selected control method:

Problem Species	Control Agent
Chara	Triploid grass carp, Copper*, Fluridone, ProcellaCOR-SC

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

Area to which control is to be applied:

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

Rate of control agent to be applied

Triploid grass carp: initial stocking of 35 fish to control Chara and then stock to slowly reduce total population until a 1 fish per 6 surface acre density is reached. Adjust stocking as needed if vegetation acreage increases.

Copper* - up to 1 ppm

Fluridone – up to 30 ppb in treatment area

ProcellaCOR-SC - 1-5 PDUs per acre for submersed application.

Method of application of control agent

Copper*, Fluridone, ProcellaCOR-SC - subsurface application by airboat.

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

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

\$350

Potential sources of funding

Spartanburg CPW 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- d) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- e) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- f) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**15. Lake Bowen, Reservoir #1
(Spartanburg County)**

Problem plant species

Muskgrass (Chara), Bladderwort

Note: Reservoir 1, which is fed by Lake Bowen, is a direct potable water supply lake for Spartanburg Water. Control in either water body of algae/diatoms or bacteria that increases levels of Geosmin or MIBs, which affects potable water supplies, will be accomplished for Spartanburg Water by independent contractors. All contractors must be properly certified and licensed. SCDNR will be pre-notified of the details and timing of this control so as not to cause unexpected problems with any control carried out for regular aquatic plant management activities by either SCDNR or Spartanburg Water’s contractors. For information concerning taste and odor issues for potable water please contact Spartanburg Water directly.

Management objective

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

Selected control method

Problem Species	Control Agent
Chara, Bladderwort	Triploid grass carp, Copper*, Fluridone, ProcellaCOR-SC

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

Area to which control is to be applied

175 acres in lake.

Rate of control agent to be applied

Triploid grass carp: initial stocking to control Bladderwort and then stock to slowly reduce total population until a 1 fish per 6 surface acre density is reached. Adjust stocking as needed if vegetation acreage increases.

**Lake Bowen – 60 triploid grass carp for maintenance control
Reservoir #1 – 20 triploid grass carp for maintenance control**

Copper* - up to 1 ppm

Fluridone – up to 30 ppb in treatment area

ProcellaCOR-SC - 1-5 PDUs per acre for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agents

Copper*, Fluridone, ProcellaCOR-SC - subsurface application by airboat.

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

Timing and sequence of control application

Herbicide - Apply when plants are actively growing.

Triploid grass carp to be released as soon as possible in the spring of 2024 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Other control application specifications

If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments for Lake Bowen and Reservoir #1 will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake and additional incremental stockings may be necessary based on the possibility of escape via the outflow at the dam. Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator

Estimated cost of control operations

\$1,000

Potential sources of funding

Spartanburg CPW 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) A long-term integrated management strategy has been implemented to control submersed nuisance species. Triploid grass carp have been stocked to control submersed nuisance species growth lake-wide and approved aquatic herbicides are used to control localized growth in priority use areas. Future plans include annual

maintenance stocking of grass carp to maintain the population at a level that is sufficient to maintain control of submersed nuisance species but to minimize impacts on desirable native plant populations.

- d) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- e) Periodically revise the management strategy and specific control sites as new environmental data, management agents and techniques, and public use patterns become available.

16. Lake Cunningham (Greenville County)

Problem plant species

Brazilian elodea, Fragrant waterlily, Water primrose, Spatterdock

Management objective

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

<u>Problem Species</u>	<u>Control Agent</u>
Brazilian elodea	Copper*, triploid grass carp
Water primrose	Triclopyr, Imazapyr, Imazamox, Flumioxazin
Fragrant waterlily, spatterdock	Triclopyr, Imazapyr, Imazamox, ProcellaCOR-SC, Flumioxazin

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

Area to which control is to be applied

10 acres of problematic plants throughout Lake Cunningham.

Rate of control agent to be applied

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 2 to 3 pints per acre.

Imazamox - 1 to 4 pints per acre.

Copper* – up to 1 ppm.

ProcellaCOR-SC - 1-5 PDUs per acre for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Triploid grass carp – Stock to maintain 1 fish per 8 surface acre density when population levels dictate.

Method of application of control agent

Herbicides spray on surface of foliage with appropriate surfactant from boat or subsurface injection from airboat.

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

Timing and sequence of control application

Herbicide - Apply when plants are actively growing.

Triploid grass carp to be released as soon as possible in the spring of 2024 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Other control application specifications

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

Entity to apply control agent

Commercial applicator

Estimated cost of control operations

\$10,000

Potential sources of funding

Greer CPW 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) A long-term integrated management strategy has been implemented to control Brazilian elodea. Triploid grass carp have been stocked to control Brazilian elodea growth lake-wide and approved aquatic herbicides are used to control localized growth in priority use areas. Future plans include annual maintenance stocking of grass carp to maintain the population at a level that is sufficient to maintain control of Brazilian elodea but to minimize impacts on desirable native plant populations.
- d) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

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

17. Lake Greenwood (Greenwood and Laurens County)

Problem plant species

Slender naiad, Hydrilla, Water primrose, Eel grass (Vallisneria)

Management objectives

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

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes. When possible, some of this problematic vegetation may be transplanted to undeveloped areas to improve overall fish and wildlife habitat.

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

Selected control method

Triploid grass carp – stock 390 sterile grass carp to start moving to a 1 carp to 6 surface acre ratio due to a very low amount of hydrilla seen in the system over the last few years.

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

<u>Problem Species</u>	<u>Control Agent</u>
Slender naiad, Hydrilla	Endothall, Fluridone, Triploid Grass Carp, Copper*, ProcellaCOR-SC, Diquat
Vallisneria (Eel grass)	Endothall, Fluridone, Copper*, Diquat
Water primrose	Triclopyr, Glyphosate, Imazapyr, Imazamox

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

Area to which control is to be applied

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

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

Rate of control agents to be applied

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

Imazapyr – 0.250 – 0.750 gallons per acre

Imazamox _ up to 5% spot spray

Fluridone - 0.075 to 0.250 ppm

Copper* _ up to 1 ppm

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Triploid Grass Carp – Stock to maintain 1 to 5 surface acres density when population dictates and to add different age class fish. 390 sterile grass carp to start moving to a density of 1 grass carp per 6 surface acres (1900 fish). The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in Lake Greenwood to provide long-term control of hydrilla. The Aquatic Plant Management Council, with recommendations from DNR and Lake Greenwood staff, agrees that the adaptive stocking plan should be continued, based on current observations of collected data, Herbicide treatments may be utilized to provide temporary control of hydrilla when necessary. Changes to the strategy will be implemented if survey results, regrowth, or habitat loss warrant.

Method of application of control agents

Endothall, Fluridone, Copper* - Subsurface application by airboat.

Triclopyr, Glyphosate, Imazapyr, Imazamox - spray on surface of foliage with appropriate surfactant.

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

Timing and sequence of control application

Agent to be applied when plants are actively growing.

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

Triploid grass carp to be released as soon as possible in the spring of 2024 (March-May).

Other control application specifications

Herbicide used only upon approval by the SCDHEC.

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

Hydrilla may require multiple treatments.

Entity to apply control system

Commercial applicator

Estimated cost of control operations

\$10,000

Potential sources of funding

Greenwood County 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

18. Lake Keowee
(Pickens and Oconee County)

Problem plant species

Hydrilla, Slender naiad

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.

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Triploid grass carp – stock sterile grass carp as needed for maintenance of Hydrilla

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

Problem Species

Slender naiad, Hydrilla

Control Agent

Endothall, Fluridone, ProcellaCOR-SC, Triploid Grass Carp, Copper*, Fall/winter water level drawdown

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

Area to which control is to be applied

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

Herbicide - 10 acres

Drawdown - entire lake

Rate of control agent to be applied

1500 sterile grass carp for maintenance of hydrilla in main lake

55 sterile grass carp for maintenance of hydrilla in the intake canal behind the wall

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

Fluridone - 0.075 to 0.250 ppm

Copper* - up to 1 ppm

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Triploid Grass Carp – Future stocking to attain and maintain 1 to 10 surface acres density when population dictates.

Drawdown - to the greatest extent possible within project limits.

Method of application of control agent

Endothall, Fluridone, Copper*, ProcellaCOR-SC - Subsurface application by airboat.

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

Drawdown - draw lake down.

Timing and sequence of control application

Agent to be applied when plants are actively growing.

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

1500 + 55 Triploid grass carp to be released as soon as possible in the spring of 2024 (March-May).

Drawdown - Drawdown Lake from October through February.

Other control application specifications

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

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

Entity to apply control system

Herbicide application - Commercial applicator or Duke Energy

Drawdown - Duke Energy

Estimated cost of control operations

Herbicide application - \$0

Triploid Grass Carp - \$15,000

Drawdown - Undetermined

Potential sources of funding

Duke Energy 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**19. Lake Lyman
(Spartanburg County)**

Problem plant species:

Water primrose

Management objective:

Reduce or remove vegetation infestation at public access points and navigation channels.

Treat native vegetation only in areas where it is impeding navigation or access.

Selected control method:

Problem Species	Control Agent
Water primrose	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin

Area to which control is to be applied:

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

Rate of control agent to be applied

Diquat - 0.500 gallon per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 2 to 3 pints per acre.

Imazamox - 1 to 4 pints per acre.

Glyphosate - up to 6 pints per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

\$10,000

Potential sources of funding

SJWD Water District 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- d) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- e) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- f) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**20. Lake Monticello (Recreation Lake)
(Fairfield County)**

Problem plant species

Hydrilla

Management objectives

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

Selected control method

Problem Species

Hydrilla

Control Agent

Endothall, Fluridone, ProcellaCOR-SC, Triploid Grass Carp, Copper*

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

Area to which control is to be applied

Hydrilla - Perform maintenance stocking in future years as needed (1 per 6 acres- 30 carp) to provide long term control option.

Rate of control agents to be applied

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

Fluridone - 0.075 to 0.250 ppm

Copper* - up to 1 ppm

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Triploid Grass Carp – Perform maintenance stocking in future years (1 per 6 acres- 30 carp) to provide long term control option.

Method of application of control agents

Endothall, Fluridone, Copper*, ProcellaCOR-SC - Subsurface application by airboat.

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

Timing and sequence of control application

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

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

Other control application specifications

Herbicide used only upon approval by the SCDHEC.

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

Hydrilla may require multiple treatments.

Entity to apply control system

Commercial applicator

Estimated cost of control operations

\$250

Potential sources of funding

Triploid grass carp:

Dominion Energy, Fairfield County 50%, SCDNR 50% (up to \$30,000 cost share per waterbody)

Mechanical harvester:

Dominion Energy, Commercial marina operators, and residential property owners.

Aquatic herbicides:

Dominion Energy, Fairfield County 50%, SCDNR 50% (up to \$30,000 cost share per waterbody)
(Percentage of match subject to change based on availability of Federal and State funding.)

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**21. Lake Murray
(Lexington, Newberry, Richland and Saluda Counties)**

Problem plant species

Hydrilla, Water Primrose, Illinois Pond Weed, Curly-leaf pondweed, Southern Naiad, Alligatorweed

Management objectives

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

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

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Triploid grass carp – stock triploid grass carp to control vegetation.

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

Problem Species	Control Agents
Hydrilla, Illinois Pondweed	Copper*, Endothall, Fluridone, Imazamox, ProcellaCOR-SC
Curly-leaf Pondweed	Copper*, Diquat, Endothall, Fluridone, Imazamox
Water primrose	Triclopyr, Imazapyr, Imazamox, Glyphosate
Southern Naiad	Diquat, Endothall, Fluridone, Flumioxazin
Alligatorweed	Triclopyr, Imazapyr, Imazamox, Glyphosate, Flumioxazin

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

Area to which control is to be applied

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

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

Rate of control agent to be applied

Triploid Grass Carp: Stock 3,200 sterile grass carp to gain control of resurgence of hydrilla and the new population of curly-leaf pondweed. This will bring the total population to 10,000 fish, a ratio of 1 fish to 5 surface acres. Vegetation acreage will be fully assessed to determine future stocking rates. In the future, the population may need annual stockings to add different age class fish. The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in Lake Murray to provide long-term control of hydrilla and curly-leaf pondweed while limiting damage to native vegetation. The Aquatic Plant Management Council, with recommendations from SCDNR and Lake Murray staff, agrees that the adaptive stocking plan should be continued, based on current observations of collected data. Herbicide treatments may be utilized to provide temporary control of hydrilla when necessary. Changes to the strategy will be implemented if survey results, regrowth, or habitat loss warrant.

Water primrose treatment:

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 2 to 4 pints per acre.

Imazamox - 1 to 4 pints per acre.

Method of application of control agent

Triploid grass carp - See above.

All agents to be applied when plants are actively growing.

Timing and sequence of control application

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

Apply herbicides to aquatic vegetation as it becomes problematic.

Other control application specifications

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

Control by Residential/Commercial Interests:

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

1) Mechanical harvesters – Commercial aquatic plant harvesting services may be hired to remove hydrilla and Illinois pondweed from areas adjacent to residential and commercial property

after notification of Dominion Energy. Harvesting precautions as stated in item above must be adhered to.

2) Aquatic herbicides – Dominion Energy opposes regular or general application of herbicides in Lake Murray, therefore, aquatic herbicides may not be applied in the lake by lake front property owners.

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

Entity to apply control agent

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

Aquatic herbicides - Commercial applicator under supervision by the SCDNR.

Estimated cost of control operations

Triploid grass carp - \$29,000

Aquatic herbicides - \$20,000

Potential sources of funding

Triploid grass carp:

Dominion Energy, Lexington and Richland Counties 50%

SCDNR 50% (up to \$30,000 cost share total per waterbody)

Mechanical harvester:

Dominion Energy, Commercial marina operators, and residential property owners.

Aquatic herbicides:

Dominion Energy, Lexington and Richland Counties 50%

SCDNR 50% (up to \$30,000 cost share total per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

22. Lake Wateree (Fairfield, Kershaw and Lancaster Counties)

Problem plant species

Hydrilla, Filamentous algae

Management objective

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

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

Selected control method

Fall/winter water level drawdown

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

Problem Species

Hydrilla

Filamentous algae

Control Agent

Endothall, Fluridone, Triploid Grass Carp,
ProcellaCOR-SC, Copper*

Copper*, peroxide-based products

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

Area to which control is to be applied

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

Drawdown - Entire Lake

Rate of control agent to be applied

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

Fluridone - 0.075 to 0.250 ppm

Copper* - up to 1 ppm

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Drawdown - To the greatest extent possible within project limits.

Method of application of control agent

Endothall, Fluridone, ProcellaCOR-SC, Copper*, peroxide-based products - Subsurface application by airboat.

Copper* - spray on surface of foliage with appropriate surfactant.

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

Drawdown - Draw lake down

Timing and sequence of control application

Agent to be applied when plants are actively growing.

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

Drawdown - Drawdown lake from October through February.

Other control application specifications

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

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

Entity to apply control agent

Herbicide application - Commercial applicator or Duke Energy

Drawdown - Duke Energy

Estimated cost of control operations

Herbicide application - \$3,000.00 (Hydrilla has been observed in a few spots, prior to a drawdown. Application may be needed if plants reoccur after lake returns to full pool.)

Drawdown - Undetermined

Potential sources of funding

Duke Energy 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.

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

**23. Little Pee Dee River
(Marion and Horry Counties)**

Problem plant species

Alligatorweed, Water hyacinth

Management objective

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

Selected control method

Problem Species	Control Agent
Water hyacinth	Triclopyr, Diquat, Imazamox, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Alligatorweed	Triclopyr, Diquat, Imazapyr, Imazamox, Glyphosate, Flumioxazin
Biological Control	Alligatorweed flea beetles (<i>Agasicles hygrophila</i>)

Area to which control is to be applied

30 acres of alligatorweed and water hyacinth throughout river

Rate of control agent to be applied

Imazapyr - 0.250 to 0.750 gallons per acre.
 Diquat - 0.500 gallons per acre.
 Triclopyr - 0.250 to 0.750 gallons per acre.
 Imazamox - 0.125 to 0.750 gallons per acre.
 Glyphosate - up to 0.937 gallons per acre.
 Penoxsulam - 2 to 6 fluid ounces per acre as foliar application.
 ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.
 Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant.
 Biological Control - Release in the vicinity of alligatorweed populations to supplement existing populations of alligatorweed flea beetles

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator or SCDNR staff

Estimated cost of control operations

\$20,000

Potential sources of funding

Horry and Marion Counties 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**24. Lumber River
(Marion and Horry Counties)**

Problem plant species

Alligatorweed

Management objective

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

Selected control method

Herbicides - Triclopyr, Imazapyr, Imazamox, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin

Biological Control - Alligatorweed flea beetles (*Agasicles hygrophila*)

Area to which control is to be applied

5 acres of problematic plants throughout river

Rate of control agent to be applied

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 0.250 to 0.750 gallons per acre.

Imazamox - 0.250 to 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant.

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

Timing and sequence of control application

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

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator, SCDNR staff

Estimated cost of control operations

\$1,500

Potential sources of funding

Horry and Marion counties 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

25. Pee Dee River (Georgetown County)

Problem plant species

Water hyacinth, Phragmites, Common salvinia

Management objective

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

Selected control method

Problem Species	Control Agents
Water hyacinth	Diquat, Triclopyr, Imazamox, Imazapyr, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Phragmites	Imazapyr, Glyphosate, Imazamox
Common salvinia	Fluridone, Diquat, Penoxsulam, Flumioxazin

Area to which control is to be applied

25 acres of water hyacinth throughout river and adjacent public rice fields.

5 acres of phragmites in the Sandy Island area.

5 acres of common salvinia throughout river and adjacent public rice fields

Rate of control agent to be applied

Diquat - 0.500 gallons per acre.

Glyphosate – up to 0.937 gallons per acre

Triclopyr - 0.500 to 0.750 gallons per acre.

Imazapyr - 0.250 to 0.750 gallons per acre.

Imazamox - 0.250 to 0.750 gallons per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot as submersed application, 1-2 PDUs per acre foliar application.

Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 6-12 oz/acre for foliar application to common salvinia.

Method of application of control agent

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

Timing and sequence of control application

Diquat, Triclopyr, Imazamox, Imazapyr, Glyphosate, Penoxsulam, ProcellaCOR-SC, Flumioxazin - to be applied periodically to water hyacinth from May through October.

Imazapyr, Imazamox, Glyphosate - Apply when plants are actively growing.

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator or SCDNR staff

Estimated cost of control operations

\$10,000

Potential sources of funding

Georgetown County 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**26. Prestwood Lake
(Darlington County)**

Problem plant species

Milfoil, Watershield, Filamentous algae, Water hyacinth

Management objective

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

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

<u>Problem Species</u>	<u>Control Agent</u>
Filamentous algae	Copper*
Water milfoil	Imazamox, Flumioxazin, 2,4-D, Triclopyr OTF

Water hyacinth	Triclopyr/2,4-D, Diquat, Triploid Grass Carp, ProcellaCOR-SC Imazamox, Triclopyr, Triclopyr/2,4-D, Diquat, ProcellaCOR-SC, Flumioxazin
Watershield	2,4-D, Triclopyr OTF, Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin

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

Area to which control is to be applied

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

Rate of control agent to be applied

Copper* – up to 1 ppm.

Imazamox – up to 0.500 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, submersed application 1 lb/ac foot.

2,4-D - up to 5 gallons per acre.

Triclopyr – up to 1 gallon per acre

Triclopyr/2,4-D - up to 200 pounds per acre.

Triclopyr OTF – 40 pounds per acre

Diquat - 2 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

*Triploid Grass Carp –0 fish

Method of application of control agent

Copper*, Imazamox, 2,4-D, Diquat, ProcellaCOR-SC - application by airboat with adjuvant.

Copper* - subsurface application with appropriate surfactant.

Triclopyr/2,4-D, Triclopyr OTF - Granular broadcast evenly from airboat.

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

Timing and sequence of control application

Agent to be applied when plants are actively growing.

Other control application specifications

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

Entity to apply control agent

Commercial applicator or SCDNR staff

Estimated cost of control operations

\$10,000

Herbicide application - \$9,000

Triploid Grass Carp – \$1,000

Potential sources of funding

City of Hartsville 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**27. Samworth WMA
(Georgetown County)**

Problem plant species

Water hyacinth, Phragmites, Zizaniopsis, Common salvinia

Management objective

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

Selected control method

Problem Species	Control Agents
Water hyacinth	Diquat, Triclopyr, Imazamox, Imazapyr, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Phragmites, Zizaniopsis	Imazapyr, Imazamox, Glyphosate
Common salvinia	Fluridone, Diquat, Penoxsulam, Flumioxazin

Area to which control is to be applied

80 acres of water hyacinth throughout river and adjacent public rice fields.

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

Rate of control agent to be applied

Diquat - 0.500 gallons per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Glyphosate – up to 0.937 gallons per acre.

Imazapyr - 0.250 to 0.750 gallons per acre.

Imazamox - 0.250 to 0.750 gallons per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 6-12 oz/acre for foliar application to common salvinia.

Method of application of control agent

Helicopter, airboat - 50 acres of herbicide applied to water hyacinth and common salvinia. 10 acres of Imazapyr, Glyphosate applied to phragmites, Zizaniopsis.

Timing and sequence of control application

Diquat, Triclopyr, Imazamox, Imazapyr, Glyphosate, Penoxsulam, ProcellaCOR-SC - to be applied periodically to water hyacinth from May through October.

Imazapyr, Imazamox, Glyphosate - Apply when plants are actively growing.

Other control application specifications

Label rate of herbicide will be stringently adhered to.

Entity to apply control agent

Commercial applicator or SCDNR staff

Estimated cost of control operations

\$30,000

Potential sources of funding

Samworth WMA 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

28. Santee Coastal Reserve WMA (Charleston and Georgetown Counties)

Problem plant species

Phragmites

Management objective

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

Selected control method

Imazapyr, Imazamox, Glyphosate

Area to which control is to be applied

3,000 acres of phragmites throughout the rice fields.

Rate of control agent to be applied

Imazapyr - 0.500 to 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazamox - 0.500 to 0.750 gallons per acre.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

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

Entity to apply control agent

Commercial applicator, SCDNR staff

Estimated cost of control operations

\$600,000

Potential sources of funding

Santee Coastal Reserve 50%
SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**29. Santee Delta WMA
(Georgetown County)**

Problem plant species

Phragmites

Management objective

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

Selected control method

Imazapyr, Imazamox, Glyphosate

Area to which control is to be applied

300 acres of Phragmites throughout the rice fields.

Rate of control agent to be applied

Imazapyr - 0.500 to 0.750 gallons per acre.
 Glyphosate – up to 0.937 gallons per acre
 Imazamox - 0.500 to 0.750 gallons per acre.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

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

Entity to apply control agent

Commercial applicator, SCDNR staff

Estimated cost of control operations

\$60,000

Potential sources of funding

Santee Coastal Reserve 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**30. Waccamaw River
(Horry County)**

Problem plant species

Water hyacinth, Phragmites, Common salvinia

Management objective

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Problem Species	Control Agents
Water hyacinth	Diquat, Triclopyr, Imazamox, Penoxsulam, ProcellaCOR-SC, Flumioxazin
Phragmites	Imazapyr, Imazamox, Glyphosate
Common salvinia, Duckweed	Fluridone, Diquat, Penoxsulam, Flumioxazin

Area to which control is to be applied

200 acres throughout river system where needed.

Rate of control agent to be applied

Diquat - 0.500 gallons per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Glyphosate – up to 0.937 gallons per acre.

Imazapyr - 0.500 to 0.750 gallons per acre.

Imazamox - 0.500 to 0.750 gallons per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 6-12 oz/acre for foliar application to common salvinia and duckweed.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

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

Other control application specifications

Herbicide used only upon approval by SCDHEC. Treatment of control area will be conducted in a manner that will not significantly degrade water quality.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

\$ 40,000

Potential sources of funding

Horry County 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**31. Yawkey Wildlife Center
(Georgetown County)**

Problem plant species

Phragmites, Cattails, Cutgrass

Management objective

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

Selected control method

Imazapyr, Imazamox, Glyphosate

Area to which control is to be applied

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

Rate of control agent to be applied

Imazapyr - 0.500 to 0.750 gallons pints per acre.

Imazamox - 0.500 to 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Timing and sequence of control application

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

Other control application specifications

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

Entity to apply control agent

Commercial applicator, SCDNR staff

Estimated cost of control operations

\$12,000

Potential sources of funding

Yawkey Foundation 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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 Cooper Lakes

32. Lake Marion

(Calhoun, Clarendon, Orangeburg, Berkeley, and Sumter Counties)

33. Lake Moultrie

(Berkeley County)

NOTE: The following management plan applies to both lakes.

Problem plant species

Hydrilla, Brazilian elodea, Alligatorweed, Water hyacinth, Water primrose, Crested floating heart, Giant salvinia, Common salvinia, **Giant cutgrass, ** algae **Cattail, **Fanwort, **Watermilfoil, **Waterwillow

**Species are only treated when they impede access or navigation in priority use areas, or when they pose a threat to drinking water quality.

Management objectives

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

Control hydrilla growth throughout the main lakes and sub-impoundments to minimize its spread within the lakes, help prevent its spread to adjacent public waters, and minimize adverse impacts to native plant populations, electric power generation, agricultural irrigation withdrawals, public drinking water withdrawals, and public use and access.

Control water hyacinth populations throughout the lakes to enhance boating, fishing, hunting, public access and prevent spread to other areas of the lake to minimize adverse impacts to native plant populations, agricultural irrigation withdrawals, public drinking water withdrawals, and public use and access.

Control Crested floating heart populations throughout the lakes to enhance boating, fishing, hunting, public access and prevent spread to other areas of the lake to minimize adverse impacts to native plant populations, agricultural irrigation withdrawals, public drinking water withdrawals, and public use and access.

Control and eradicate giant salvinia populations throughout the lakes to enhance boating, fishing, hunting, public access and prevent spread to other areas of the lake to minimize adverse impacts to native plant populations, agricultural irrigation withdrawals, public drinking water withdrawals, and public use and access.

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

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

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

Selected control method

Problem Species	Control Agents
Hydrilla	Endothall, Fluridone, Copper*, Komeen Crystal, ProcellaCOR-SC, Triploid grass carp
Algae	Copper*, Endothall, peroxygen compounds
Water hyacinth	Diquat, Triclopyr, Imazamox, 2,4-d, ProcellaCOR-SC
Giant Salvinia	Diquat, Triclopyr, 2,4-d, Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsul furon-Methyl (Special Local Need Registration), salvinia weevils (<i>Cyrtobagous salviniae</i>)
Fanwort	Flumioxazin, Fluridone
Coontail, slender naiad, slender pondweed	Endothall, Fluridone, Diquat, Flumioxazin
Water primrose, alligatorweed, giant cutgrass	Glyphosate, Imazapyr, Triclopyr, Imazamox, Flumioxazin, ProcellaCOR-SC
Crested floating heart	Endothall, Imazamox / Glyphosate, Triclopyr/2,4-D, Fluridone, ProcellaCOR-SC, Flumioxazin

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

Area to which control is to be applied

Water hyacinth - Approximately 200 acres throughout the system but mostly in upper Lake Marion above I-95 Bridge.

Hydrilla – Approximately 5,000 acres throughout the system. Release triploid grass carp near areas of the lake system with the greatest hydrilla growth and use herbicide applications to provide immediate short-term control of localized growth in those areas.

Crested floating heart - Approximately 700 acres in priority areas such as public and commercial access sites (boat ramps, piers, swimming areas, marinas, and residential shoreline areas in the main lake), and State and Federal wildlife management areas.

Giant cutgrass - Approximately 600 acres along shoreline areas throughout lake system, as well as within State and Federal wildlife management areas.

Other target species - Approximately 400+ 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 and Common Salvinia- Approximately 7,000 acres throughout the system, focusing on the densest populations above I-95 bridge.

Isolated Sub-Impoundments:

Fountain Lake Impoundment (53 acres), Dean’s Swamp Impoundment (100 acre), Church Branch Impoundment (80 acres)

The general management strategy is to transition from hydrilla dominated plant communities to ones dominated by a diversity of native plant species, which are beneficial to wildlife, by use of aquatic herbicides. Specific control methods for the sub-impoundments will be determined cooperatively between Santee Cooper and SCDNR staff.

Fountain Lake Impoundment - 500 triploid grass carp
Dean's Swamp Impoundment - 1,100 triploid grass carp
Church Branch Impoundment - 0 triploid grass carp

Methods and goals will be consistent with both groups' interests for control of invasive plant species such as hydrilla while promoting vegetation beneficial to wildlife and waterfowl through other habitat enhancement projects.

Rate of control agents to be applied

Endothall - 3.0-4.0 ppm (full water column treatment)
Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.
Triclopyr - 0.375 to 0.750 gallons per acre for emergent species, per label for submersed plants.
Imazapyr - 0.250 to 0.750 gallons per acre.
Fluridone AS - 10 to 30 ppb.
*Copper- up to 1 ppm.
Glyphosate - up to 1.25 gallons per acre.
Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).
Imazamox - 0.250 to 1.00 gallons per acre.
Triclopyr/2,4-D – up to 320 pounds per acre.

Penoxsulam – 4 oz per acre

Carfentrazone – 4 to 8 oz per acre
Komeen Crystal - 0.5-1.0 ppm

Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)
ProcettaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.
Flumioxazin - 6-12 oz. per surface acre (not to exceed 400ppb)

Triploid grass carp – The Aquatic Plant Management Council is committed to maintenance stocking of triploid grass carp in the Santee Cooper Lakes to provide long-term control of hydrilla. The Aquatic Plant Management Council, with recommendations from SCDNR and Santee Cooper staff, annually reviews the stocking rate on the system, based on current observations of collected survey data, historical relevant data sets, and triploid grass carp surveys conducted jointly by SCDNR and Santee Cooper staff. Since 2019, the aquatic vegetation acreage numbers have been determined using multispectral analysis of satellite imagery only. No additional acreage from boat or drone surveys has been added. SCDNR Freshwater Fisheries staff are continuously studying the age and health of the carp population. Recent data indicates young grass carp are robust and in good condition, meaning that aquatic vegetation is abundant enough to keep the population well fed.

A reduced rate stocking of 10,000 grass carp occurred annually from 2017-2022, which moderated the decline in the grass carp population and diversified the age structure of the population. In 2022, the Santee Cooper staff saw an increase in hydrilla acreage. In the spring of 2023, 11,025 sterile grass carp were stocked to replace the fish lost in 2022 due to normal mortality, which kept the total number of fish at 34,450, a ratio of 1 grass carp per 4.64 surface acres of water. In 2023, the aquatic vegetation survey detected a total of 5,232 acres of hydrilla, a 6,721% increase from 2022. In response to this, Santee Cooper staff recommends a ratio of 1 grass carp per 4 surface acres of water to bring the standing stock population from 34,451 to 40,006 fish. This would require the stocking of 16,580 carp in the spring of 2024. When compared to historic stockings, this is a conservative approach to reducing the hydrilla acreage.

Annual data should include estimates of hydrilla acreage, estimates of native vegetation acreage, and triploid grass carp surveys. Grass carp surveys should function to further assess the relative condition of the population and aid in yearly stocking decisions. All efforts will be made to determine an appropriate balance in the Santee Cooper system by maintaining control of hydrilla while promoting beneficial native vegetation. Herbicide treatments may be utilized to provide temporary control of hydrilla when necessary. Changes to the strategy will be implemented if survey results, regrowth, or habitat loss warrant.

Method of application of control agents

Endothall, Copper, Fluridone, ProcellaCOR-SC, Komeen Crystal – Granular application, subsurface application by airboat or surface application by helicopter.

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

Salvinia weevil- Using industry standards for stocking while targeting areas of the lake with the greatest salvinia growth.

Triclopyr, Glyphosate, Imazapyr, Imazamox, ProcellaCOR-SC - spray on surface of foliage with appropriate surfactant.

Triclopyr/2,4-D – Distribute granular product evenly over the surface at the prescribed rate.

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

Timing and sequence of control application

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

Triploid grass carp – TBD fish to be released as soon as possible in 2024. If available, all sterile grass carp will be a minimum of 10-12 inches in length. Sterile grass carp shipments for the Santee Cooper Lakes will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

Salvinia weevils- released as early as possible in 2024.

Other control application specifications:

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

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

Entity to apply control agents

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

Triploid Grass Carp - Commercial supplier with supervision by SC Public Service Authority and/or SCDNR.

Estimated cost of control operations

\$1,600,000

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 2024 and available funds provided by South Carolina Public Service Authority.

Potential sources of funding

SC Public Service Authority 100%

Long term management strategy

- a) Support the management goals established by the DNR and Santee Cooper (Appendix E) which attempts to achieve a diverse assemblage of native aquatic vegetation in a minimum of 10% of the total surface area of the lake and to effectively control non-native invasive species.
- b) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- c) A long-term integrated adaptive management strategy has been implemented to control hydrilla. Triploid grass carp have been stocked to control hydrilla growth lake-wide and approved aquatic herbicides are used to control localized growth in priority use areas. Future plans include annual stocking of grass carp to maintain the population at a level that is sufficient to maintain control of hydrilla but to minimize impacts on desirable native plant populations.
- d) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- e) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.
- f) Periodically revise the management strategy and specific control sites as new environmental data, management agents and techniques, and public use patterns become available.

Santee Cooper Area WMA's

34. Hatchery WMA

(Includes Pond1 adjacent to old ramp)

(Berkeley County)

Problem plant species

Crested Floating Heart, Cattails, Hydrilla, Water Primrose, Giant salvinia, Common salvinia, Alligatorweed

Management objective

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

Selected control method

Problem Species	Control Agents
Crested Floating Heart	Triclopyr, Imazamox, Flumioxazin, ProcellaCOR-SC
Cattails	Imazapyr, Glyphosate, Imazamox
Hydrilla	Fluridone, ProcellaCOR-SC
Water Primrose, Alligatorweed	Imazapyr, Glyphosate, Triclopyr, Imazamox, ProcellaCOR-SC, Flumioxazin
Giant Salvinia	Diquat, Triclopyr, 2,4-d Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsulfuron-Methyl (Special Local Need Registration), salvinia weevils (<i>Cyrtobagous salviniae</i>)

Area to which control is to be applied

70 acres (Lake Moultrie), 3 acres (Pond 1)

Rate of control agent to be applied

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.

Triclopyr - 0.375 to 0.750 gallons per acre for emergent species, per label for submersed plants.

Triclopyr/2,4-D – 200 lbs per acre.

Imazapyr – 0.500 – 0.750 gallons per acre.

Glyphosate – up to 0.937 gallons per acre.

Imazamox – up to 1 gallon per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, 5 to 12 oz/ac as a foliar application, submersed application 1 lb/ac foot.

Fluridone – up to 45 ppb

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Penoxsulam – 4 oz per acre

Carfentrazone – 4 to 8 oz per acre

Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator or SCDNR staff.

Estimated cost of control operations

\$20,000

Potential sources of funding

Hatchery WMA 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**35. Hickory Top WMA (and Greentree Reservoir)
(Clarendon County)**

Problem plant species

Hyacinth, Giant Salvinia, Common salvinia, Cutgrass, Cattails, Misc. Woody Species

Management objective

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

Selected control method

Problem Species	Control Agents
Water hyacinth	Diquat, Triclopyr, Imazamox, 2,4-d, ProcellaCOR-SC
Giant Salvinia	Diquat, Triclopyr, 2,4-d, Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsulfuron-Methyl (Special Local Need Registration), salvinia weevils (<i>Cyrtobagous salviniae</i>)

Cutgrass, Cattails, Misc. Woody Species Imazapyr, Glyphosate, Imazamox

Area to which control is to be applied

50 acres

Rate of control agent to be applied

Imazapyr – 0.500 – 0.750 gallons per acre.

Glyphosate – up to 0.937 gallons per acre.

Imazamox – up to 1.000 gallon per acre.

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.

Triclopyr - 0.375 to 0.750 gallons per acre for emergent species, per label for submersed plants.

Triclopyr/2,4-D – up to 320 pounds per acre.

Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)

Penoxsulam – 4 oz per acre

Carfentrazone – 4 to 8 oz per acre

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin - 6-12 oz. per surface acre (not to exceed 400ppb)

Method of application of control agent

Foliar application using appropriate surfactant from airboat, ATV, or helicopter.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator or SCDNR staff.

Estimated cost of control operations

\$60,000

Potential sources of funding

Hickory Top WMA 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species

where appropriate, and public education of the benefits of aquatic vegetation in general.

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

36. Potato Creek WMA (Clarendon County)

Problem plant species

Hydrilla, Water Hyacinth, Water Primrose, Bladderwort, Cutgrass, Lotus, Giant salvinia, Common salvinia

Management objective

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

Selected control method

Problem Species	Control Agents
Hydrilla, Bladderwort, Lotus	Fluridone, ProcellaCOR-SC
Water Hyacinth	Triclopyr, Flumioxazin
Water Primrose, Lotus	Triclopyr, Imazapyr, Glyphosate, Imazamox, Flumioxazin
Cattails	Imazapyr, Glyphosate, Imazamox
Giant Salvinia	Diquat, Triclopyr, 2,4-d, Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsulfuron-Methyl (Special Local Need Registration), salvinia weevils (Cyrtobagous salviniae)

Area to which control is to be applied

20 acres

Rate of control agent to be applied

Fluridone – up to 45 ppb.

Triclopyr - 0.500 – 0.750 gallons per acre.

Imazapyr – 0.500 – 0.750 gallons per acre.

Glyphosate – up to 0.937 gallons per acre.

Imazamox – up to 1.000 gallon per acre.

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.

Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)

Penoxsulam – 4 oz per acre

Carfentrazone – 4 to 8 oz per acre

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Foliar application using appropriate surfactant from airboat. Subsurface application spread evenly using appropriate rate.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator or SCDNR staff.

Estimated cost of control operations

\$6,000

Potential sources of funding

Potato Creek WMA 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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

**37. Sandy Beach WMA
(Berkeley County)**

Problem plant species

Crested Floating Heart, Cattails, Cutgrass, Lotus, Water Primrose, Misc. Woody Species, Hydrilla, Giant salvinia, Common salvinia

Management objective

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

Selected control method

Problem Species	Control Agents
Crested Floating Heart	Imazamox, Flumioxazin, ProcellaCOR-SC
Cattails, Cutgrass, Misc. Woody Species	Imazapyr, Glyphosate, Imazamox
Lotus, Water Primrose	Triclopyr, 2,4-d, Flumioxazin
Hydrilla	Fluridone, ProcellaCOR-SC (ditches within WMA)
Giant Salvinia	Diquat, Triclopyr, 2,4-d Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsulfuron-Methyl (Special Local Need Registration), salvinia weevils (<i>Cyrtobagous salviniae</i>)

Area to which control is to be applied

40 acres

Rate of control agent to be applied

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.
Triclopyr – 0.500 – 0.750 gallons per acre.
Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
Imazamox – up to 1.000 gallon per acre.
Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, up to 0.750 lbs per acre for submersed application.
2,4-d – up to 1.000 gallon per acre.
Fluridone – up to 45 ppb.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.
Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)
Penoxsulam – 4 oz per acre
Carfentrazone – 4 to 8 oz per acre

Method of application of control agent

Foliar application using appropriate surfactant from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

\$10,000

Potential sources of funding

Sandy Beach WMA 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations

38. Santee Cooper WMA (Orangeburg County)

Problem plant species

Crested Floating Heart, Cattails, Cutgrass, Lotus, Water Primrose, Misc. Woody Species, Water lily, Giant salvinia, Common salvinia

Management objective

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

Treat native vegetation only in areas where it is impeding navigation, access, or water intakes.

Selected control method

Problem Species	Control Agents
Crested Floating Heart, Water lily	Imazamox, Flumioxazin, ProcellaCOR-SC
Cattails, Cutgrass, Misc. Woody Species, Water lily	Imazapyr, Glyphosate, Imazamox
Lotus, Water Primrose	Triclopyr, 2,4-d, Flumioxazin
Giant Salvinia	Diquat, Triclopyr, 2,4-d Flumioxazin, Fluridone, Carfentrazone, Penoxsulam, Metsulfuron-Methyl (Special Local Need Registration), salvinia weevils (<i>Cyrtobagous salviniae</i>)

Area to which control is to be applied

150 acres on multiple waterbodies based on priority.

Rate of control agent to be applied

Diquat - 0.500 gallons per acre for floating plants; 2 gallons per acre for submersed plants.

Triclopyr – 0.500 – 0.750 gallons per acre.

Imazapyr – 0.500 – 0.750 gallons per acre.

Glyphosate – up to 0.937 gallons per acre.

Imazamox – up to 1.000 gallon per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, submersed application up to 0.750 lbs per acre.

2,4-d – up to 1.000 gallon per acre.

Fluridone AS - 10 to 30 ppb.

Fluridone Q, Fluridone PR, Fluridone One - up to 40 ppb (approx 10 pounds/acre).

Carfentrazone – 4 to 8 oz per acre

Penoxsulam – 4 oz per acre

Metsulfuron-Methyl- 0.5-1.0 dry ounce per surface acre (refer to Special Local Need 24(c) registration)

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agent

Foliar application using appropriate surfactant from airboat or helicopter

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator, SCDNR staff.

Estimated cost of control operations

\$30,000

Potential sources of funding

Santee Cooper WMA 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species

where appropriate, and public education of the benefits of aquatic vegetation in general.

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

**South Carolina Department of Parks, Recreation and Tourism
State Park Lakes (SCPRT)**

**39. Aiken State Park
(Aiken County)**

Problem plant species

Floating Heart, Cattails, Lemon Bacopa, Watershield

Management objective

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

Selected control method

Problem Species	Control Agents
Floating Heart	Triclopyr/2,4-D, ProcellaCOR-SC
Cattails	Imazapyr, Glyphosate
Watershield	2,4-D, Triclopyr OTF, Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin
Lemon Bacopa	ProcellaCOR-SC

Area to which control is to be applied

10 acres in three lakes

Rate of control agent to be applied

Triclopyr/2,4-D – 200 lbs per acre.
Imazapyr – 0.500 – 0.750 gallons per acre.
Glyphosate – up to 0.937 gallons per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$10,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**40. Barnwell State Park (Swimming Lake)
(Barnwell County)**

Problem plant species

Waterlily, Cattails, Pondweed, Maidencane

Management objective

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

Selected control method

Problem Species	Control Agents
Waterlily, Pondweed	Triclopyr/2,4-D, ProcellaCOR-SC
Cattails, Maidencane	Imazapyr, Glyphosate

Area to which control is to be applied

4 acres in swimming lake.
3 acres in upper lake.

Rate of control agent to be applied

Triclopyr/2,4-D – 200 lbs per acre.

Imazapyr – 0.500 – 0.750 gallons per acre.

Glyphosate – up to 0.937 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$7,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**41. Charles Towne Landing State Park
(Charleston County)**

Problem plant species

Duckweed, Alligatorweed, Pennywort, Cyanobacteria, Algae

Management objective

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

Selected control method

Problem species	Control Agent
Duckweed	Fluridone, Flumioxazin, Penoxsulam
Alligatorweed	Triclopyr, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin
Pennywort	Triclopyr, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC
Algae (planktonic)	*Copper

Area to which control is to be applied

Fluridone, Penoxsulam - 3 acres

Triclopyr, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin - 4 acres

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

Rate of control agents to be applied

Fluridone - 0.125 gallons per acre.

Imazapyr – 0.250 – 0.750 gallons per acre.

Imazamox – 0.500 – 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Triclopyr - 0.500 to 0.750 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, submersed application up to 0.09375 gallons per acre.

Penoxsulam - 2 to 12 fl oz per acre.

*Copper- up to 1 ppm.

Method of application of control agents

Fluridone, Penoxsulam - Apply subsurface throughout lake

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Timing and sequence of control application.

Herbicides to be applied when plants are actively growing

Other control application specifications

None

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$4,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**42. Cheraw State Park (Lake Juniper)
(Chesterfield County)**

Problem plant species

Floating heart, Waterlily, Spatterdock, Watermilfoil

Management objective

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

Selected control method

Problem Species	Control Agents
Floating heart, Waterlily, Spatterdock, Watermilfoil	Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin
Floating heart, Spatterdock	Imazapyr, Glyphosate, Flumioxazin

Area to which control is to be applied

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

Rate of control agent to be applied

Triclopyr/2,4-D – 200 lbs per acre.

Imazapyr – 0.500 – 0.750 gallons per acre.

Glyphosate – up to 0.937 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$6,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**43. Croft State Park
(Spartanburg County)****Problem plant species**

Hydrilla

Management objective

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

Selected control method

Hydrilla – Triploid Grass Carp

Area to which control is to be applied

50 acres

Rate of control agent to be applied

Triploid Grass Carp – 125 fish

Method of application of control agent

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

Timing and sequence of control application

Triploid grass carp to be released as soon as possible in the spring of 2024 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Other control application specifications

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

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

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator contracted and monitored by SCPRT.

Estimated cost of control operations

\$1,250

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

44.H. Cooper Black State Recreation Area (Chesterfield County)

Problem plant species

Waterlily, Watershield, Spatterdock

Management objective

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

Selected control method

2,4-D, Imazapyr, Imazamox, Glyphosate, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

2 acres in lake.

Rate of control agent to be applied

Imazapyr – 0.250 – 0.750 gallons per acre.

Imazamox – 0.500 – 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

2,4-D – up to 5 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Subsurface injection from airboat.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$1000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**45. Hunting Island State Park
(Beaufort County)**

Problem plant species

Duckweed, Parrot's feather

Management objective

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

Selected control method

Fluridone, Flumioxazin, Penoxsulam, ProcellaCOR-SC

Area to which control is to be applied

1 acre adjacent to the parks use area

Rate of control agent to be applied

Fluridone - 0.125 gallons per acre.

Flumioxazin –2 oz/ac as an efficacy booster for foliar application, 5 to 12 oz/ac as a foliar application, submersed application 1 lb/ac foot.

Penoxsulam - 2 to 12 fl oz per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$1,200

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**46. Huntington Beach State Park
(Georgetown County)****Problem plant species**

Phragmites, Cutgrass, Cattails, Algae (filamentous *Cladophora*)

Management objective

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

Selected control method

Phragmites, Cutgrass, Cattails: Imazapyr, Imazamox, Glyphosate

Algae: Copper*, Diquat

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

Area to which control is to be applied

20 acres in 3 different lakes.

Rate of control agent to be applied

Imazapyr - 0.500 – 0.750 gallons per acre.

Imazamox - 0.500 – 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

*Copper- 2 gallons per acre for algae.

Diquat - 1 gallon per acre for algae

Method of application of control agent

Spray on surface of foliage with appropriate surfactant.

Spray on surface or inject into water for algae.

Timing and sequence of control application

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

Other control application specifications

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

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$6,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**47. Kings Mountain State Park - Crawford Lake, Lake York
(York County)**

Problem plant species

Slender naiad, Misc. species

Management objective

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

Selected control method

Endothall
Flumioxazin
Triploid Grass Carp

Area to which control is to be applied

4 acres in swimming and paddle boat area, Crawford Lake
Entirety of Lake York

Rate of control agent to be applied

Endothall - Four (4) gallons per acre.
Flumioxazin – 1.6 pounds per acre foot.
Triploid Carp – 15 fish per vegetated acre.

Method of application of control agent

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

Timing and sequence of control application

Apply in May or June when naiad growth is initiated.
Triploid grass carp to be released as soon as possible in the spring of 2024 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Other control application specifications

Monitor plant growth prior to treatment. Treatment of the control area is to be conducted in a manner that will not significantly degrade water quality. This may require that only a portion of the control area be treated at any one time.
If available, all sterile grass carp will be a minimum of 12 inches in length. Sterile grass carp shipments will be certified by the SCDNR for sterility and checked for size and condition prior to stocking in the lake.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$2,000

Potential sources of funding

SCPRT 50%
SCDNR 50% (up to \$30,000 cost share per waterbody)
(Percentage of match subject to change based on availability of Federal and State funding.)

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**48. Lee State Park
(Lee County)**

Problem plant species

Watermilfoil, Bladderwort

Management objective

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

Selected control method

Triclopyr/2,4-D, ProcellaCOR-SC

Area to which control is to be applied

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

Rate of control agent to be applied

Triclopyr/2,4-D - 200 lbs per acre.
ProcellaCOR-SC - 1-5 PDUs per acre foot

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$1,500

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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. Little Pee Dee State Park (Dillon County)

Problem plant species

Spatterdock, Water lily, Watershield, Spikerush

Management objective

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

Selected control method

Triclopyr/2,4-D-, Imazamox, Glyphosate, Imazapyr, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

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

Rate of control agent to be applied

Triclopyr/2,4-D - 200 lbs per acre.

Imazamox – 0.500 – 0.750 gallons per acre.

Imazapyr - 0.500 – 0.750 gallons per acre.

Glyphosate – up to 0.937 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$3,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**50. Misty Lake State Park
(Aiken County)**

Problem plant species

Water primrose, Milfoil, Bladderwort, Naiad

Management objective

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

Selected control method

Triclopyr, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

2 acres in lake.

Rate of control agent to be applied

Triclopyr – 0.500 – 0.750 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant. Spray on surface or inject into water for submersed vegetation.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$2,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**51.N.R. Goodale State Park
(Kershaw County)**

Problem plant species

Waterlily, Watershield, Bladderwort

Management objective

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

Selected control method

2,4-D, Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

20 acres in lake.

Rate of control agent to be applied

2,4-D - Up to 5 gallons per acre.

Triclopyr/2,4-D – 200 lbs per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$10,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

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

- e) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- f) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

52. Paris Mountain State Park (Greenville County)

Problem plant species

Slender Naiad, Watershield, Pondweed

Management objective

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

Selected control method

Triclopyr/2,4-D, Imazamox, Glyphosate, Imazapyr

Area to which control is to be applied

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

Lake Buckhorn: Watershield, pondweed treat 1 acre

Rate of control agent to be applied

Triploid Grass Carp – 15 fish per vegetated acre

Triclopyr/2,4-D - 200 lbs per acre.

Method of application of control agent

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

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

Timing and sequence of control application

Triploid grass carp to be released as soon as possible in the spring of 2024 (March-May). RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS.

Herbicide - Apply when plants are actively growing.

Other control application specifications

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

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

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$1,300

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**53. Poinsett State Park
(Sumter County)**

Problem plant species

Water primrose, Spatterdock, Cattails, Water milfoil

Management objective

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

Selected control method

Imazapyr, Glyphosate, Imazamox, Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

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

Rate of control agent to be applied

Imazamox - Up to 1 gallon per acre.

Imazapyr - Up to 0.750 gallons per acre.

Glyphosate - Up to 0.750 gallons per acre.

Triclopyr/2,4-D – 200 lbs per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$1,500

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

54. Ramsey Grove State Park (Georgetown County)

Problem plant species

Water primrose, Bladderwort

Management objective

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

Selected control method

Triclopyr, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

10 acres in lake.

Rate of control agent to be applied

Triclopyr – 0.500 – 0.750 gallons per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Herbicide - Spray on surface of foliage with appropriate surfactant. Spray on surface or inject into water for submersed vegetation.

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$10,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

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

- e) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- f) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

55. Sesquicentennial State Park (Richland County)

Problem plant species

Waterlily, Watershield, Fanwort, Water milfoil

Management objective

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

Selected control method

2,4-D, Triclopyr/2,4-D ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

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

Rate of control agent to be applied

2,4-D - Up to 5 gallons per acre.

Triclopyr/2,4-D – 200 lbs per acre.

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin –2 oz/ac as an efficacy booster for foliar application, submersed application 1-3 pounds per acre foot.

Komeen – 2 gallons per acre.

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

Commercial applicator monitored by SCPRT.

Estimated cost of control operations

\$3,000

Potential sources of funding

SCPRT 50%

SCDNR 50% (up to \$30,000 cost share per waterbody)

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**South Carolina Department of Natural Resources
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*Total price and cost share is for herbicide costs only based on state contract costs. Freshwater Fisheries staff will apply based on label rates.

**56. Lake Cherokee
(Cherokee County)**

Problem plant species

Water primrose, Chara, Hydrilla

Management objective

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

Selected control method

Problem species	Control Agent
Water Primrose	Triclopyr, Flumioxazin
Chara	Triploid grass carp, Copper*, Fluridone, ProcellaCOR-SC
Hydrilla	Triploid grass carp, Komeen/Diquat, ProcellaCOR-SC

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

Area to which control is to be applied

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

Release triploid grass carp during late spring in close proximity to areas of the lake with the greatest problematic growth and use herbicide applications to provide immediate short-term control of localized growth in those areas.

Rate of control agent to be applied

Triclopyr - 0.500 – 0.750 gallons per acre.

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

Copper* - up to 1 ppm

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Triploid Grass Carp – 10 fish per vegetated acre.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant. Submersed vegetation should be treated using either a surface spray or trail hoses depending on the herbicide used.

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

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.
- c) Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.

**57. Lake Edwin Johnson
(Spartanburg County)**

Problem plant species

Water primrose, Hydrilla, Pondweed

Management objective

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

Selected control method

Problem species	Control Agent
Water Primrose	Triclopyr, Flumioxazin

Pondweed

Komeen/Diquat

Hydrilla

Triploid Grass Carp, Komeen/Diquat, ProcellaCOR-SC

Rate of control agent to be applied

Triclopyr - 0.500 – 0.750 gallons per acre.

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

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Triploid Grass Carp – 10 fish per vegetated acre. For 2024, the lake manager has requested 150 carp to be stocked.

Area to which control is to be applied

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

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

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

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

Other control application specifications

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

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

Entity to apply control agent

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

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**58. Jonesville Reservoir
(Union County)**

Problem plant species

Water primrose, Pondweed

Management objective

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

Selected control method

Triclopyr, Glyphosate, Flumioxazin

Area to which control is to be applied

10 acres in lake.

Rate of control agent to be applied

Triclopyr - 0.500 – 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**59. Mountain Lakes
(Chester County)****Problem plant species**

Water primrose, Alligatorweed, Parrotfeather

Management objective

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

Selected control method

Triclopyr, Glyphosate, Flumioxazin

Area to which control is to be applied

5 acres in lake.

Rate of control agent to be applied

Triclopyr - 0.500 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**60. Lancaster Reservoir
(Lancaster County)**

Problem plant species

Water primrose, Alligatorweed

Management objective

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

Selected control method

Triclopyr, Glyphosate, Flumioxazin

Area to which control is to be applied

8 acres in lake.

Rate of control agent to be applied

Triclopyr - 0.500 - 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**61. Sunrise Lake
(Lancaster County)**

Problem plant species

Pondweed

Management objective

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

Selected control method

Glyphosate

Area to which control is to be applied

15 acres in lake.

Rate of control agent to be applied

Glyphosate - up to 0.937 gallons per acre.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

62. Lake Ashwood (Lee County)

Problem plant species

Waterlily

Management objective

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

Selected control method

Triclopyr/2,4-D, ProcellaCOR-SC, Flumioxazin

Area to which control is to be applied

<5 acres of spotty coverage

Rate of control agent to be applied

Triclopyr/2,4-D - 200 pounds per acre

ProcellaCOR-SC - 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

63. Lake Edgar Brown (Barnwell County)

Problem plant species

Water primrose, Coontail, water hyacinth

Management objective

Reduce or remove problem plants to the extent they do not interfere with recreational opportunities. Control efforts will extend into the Turkey Creek area adjacent to the Barnwell Hatchery.

Selected control method

Water Primrose - Imazapyr, Glyphosate, Triclopyr, Flumioxazin

Water Hyacinth - Imazapyr, Glyphosate, Triclopyr, Flumioxazin, ProcellaCOR-SC

Coontail - Diquat

Area to which control is to be applied

60 acres in lake.

Rate of control agent to be applied

Imazapyr - up to 0.750 gallons per acre.

Glyphosate - up to 0.937 gallons per acre.

Triclopyr – 0.500 - 0.750 gallons per acre.

ProcellaCOR-SC – 1-5 PDUs per acre foot for submersed application, 1-2 PDUs per acre for foliar application.

Flumioxazin – 2 oz/ac as an efficacy booster for foliar application, submersed application 1 lb/ac foot.

Method of application of control agent

Spray on surface of foliage with appropriate surfactant

Timing and sequence of control application

Apply when plants are actively growing.

Other control application specifications

Monitor plant growth prior to treatment.

Entity to apply control agent

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**64. Lake George Warren
(Hampton County)**

Problem plant species

Water primrose, Cattails, Coontail, Naiad

Management objective

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

Selected control method

Glyphosate, Imazapyr, Triploid Grass Carp

Area to which control is to be applied

20 acres in lake.

Rate of control agent to be applied

Glyphosate - up to 0.937 gallons per acre.

Imazapyr - 0.250 - 0.500 gals/ac

If conditions warrant, release triploid grass carp during late spring near the areas of the lake with the greatest problematic growth and use herbicide applications to provide immediate short-term control of localized growth in those areas. For 2024, the lake manager has requested 500 carp to be stocked.

Method of application of control agent

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

Timing and sequence of control application

Apply when plants are actively growing.

Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

Other control application specifications

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

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

Entity to apply control agent

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

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

65. Lake Thicketty (Cherokee County)

Problem plant species

Hydrilla

Management objective

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

Selected control method

Triploid grass carp, Copper*

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

Area to which control is to be applied

5 acres in lake.

Rate of control agent to be applied

Approximately 5 acres in priority areas such as, public access sites (boat ramps, piers, swimming areas, marinas) and residential shoreline areas. If conditions warrant, release triploid grass carp in close proximity to areas of the lake with the greatest hydrilla growth and use herbicide applications to provide immediate short-term control of localized growth in those areas. 10 fish per vegetated acre.

Copper* - up to 1 ppm

Glyphosate- up to 1 gallon per acre.

Method of application of control agents

Copper*- subsurface application by airboat.

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

Timing and sequence of control application

All herbicides to be applied when plants are actively growing.

Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

Other control application specifications

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

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

Entity to apply control agent

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

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

**66. Dargan's Pond
(Darlington County)**

Problem plant species

Pondweed

Management objective

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

Selected control method

Glyphosate, Triploid Grass Carp

Area to which control is to be applied

15 acres in lake.

Rate of control agent to be applied

Glyphosate - up to 0.937 gallons per acre.

Triploid Grass Carp – 10 fish per vegetated acre

Method of application of control agents

Glyphosate - subsurface application by airboat.

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

Timing and sequence of control application

All herbicides to be applied when plants are actively growing.

Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

Other control application specifications

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

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

Entity to apply control agent

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

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

67. Lake Paul Wallace (Marlboro County)

Problem plant species

Hydrilla, Naiad

Management objective

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

Selected control method

Fluridone, Triploid Grass Carp

Area to which control is to be applied

200 acres in lake.

Rate of control agent to be applied

Fluridone – up to 30 ppb in treatment area

Triploid Grass Carp – 10 fish per vegetated acre. For 2024, the lake manager has requested 2,500 carp to be stocked.

Method of application of control agents

Fluridone – Granular or subsurface application by airboat.

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

Timing and sequence of control application

All herbicides to be applied when plants are actively growing.

Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

Other control application specifications

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

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

Entity to apply control agent

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

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using 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.

68. Draper WMA Lakes (York County)

Problem plant species

Naiad

Management objective

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

Selected control method

Fluridone, Triploid Grass Carp

Area to which control is to be applied

5 acres in 3 lakes.

Rate of control agent to be applied

Fluridone – up to 30 ppb in treatment area

Triploid Grass Carp – 10 fish per vegetated acre

Method of application of control agents

Fluridone – Granular or subsurface application by airboat.

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

Timing and sequence of control application

All herbicides to be applied when plants are actively growing.

Triploid grass carp – If conditions warrant, triploid grass carp to be released as soon as possible.

Other control application specifications

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

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

Entity to apply control agent

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

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

Estimated cost of control operations

\$*

Potential sources of funding

SCDNR (WFF division) 100%

SCDNR 0%

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

Long term management strategy

- a) Manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts to water use activities and the environment using federal and state approved control methods.
- b) Maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations through selective control of nuisance plant populations where feasible, introduction of native plant species where appropriate, and public education of the benefits of aquatic vegetation in general.**
- c) **Seek to prevent further introduction and distribution of problem species through public education, posting signs at boat ramps, regular surveys of the water body, and enforcement of existing laws and regulations.**

South Carolina Border Lakes

Approval for Lake Wylie was accomplished by SCDNR staff in conjunction with staff from North Carolina Natural Resource agencies, Duke Energy staff, and the Lake Wylie Marine Commission.

69. Lake Wylie

(York County, SC; Gaston and Mecklenburg County, NC)

Problem plant species

Hydrilla, Alligatorweed

Management objective

Reduce hydrilla growth lake-wide and prevent the spread of hydrilla to other systems.

Achieve measurable reduction of hydrilla within two or three years and once hydrilla has been controlled, prevent it from reestablishing.

Control hydrilla by using a low enough density of triploid grass carp that potentially other forms of native vegetation can become established.

Selected control method

Triploid (sterile) grass carp used lake wide for long-term control.

Registered and properly applied herbicides should be used for initial suppression and by homeowners for spot treatments.

Area to which control is to be applied

Triploid grass carp will be released from boat ramps near the greatest concentration of hydrilla.

Rate of control agent to be applied

Recommendation for supplemental grass carp stocking in the spring of 2024. Because of the loss of sterile grass carp to mortality (disease, predation, fishing, bow hunting, etc.) we recommend 576 grass carp, be stocked in the lake during the spring of 2024. This is a supplemental stocking of 32% (average of national grass carp annual mortality curves, Phil Kirk pers. com.) of the original 1800 grass carp introduced in 2009. Duke Energy will continue to monitor the effectiveness of the introduced fish.

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

Method of application of control agents

Herbicide- subsurface application by airboat.

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

Timing and sequence of control application

Herbicide applications - To be applied when plants are actively growing.

Triploid grass carp to be released as soon as possible in the spring of 2024 (March-May) and yearly at the same time for at least the next three years. RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS. After hydrilla has been controlled, follow up stocking,

currently estimated at maintaining triploid grass carp stocking densities of approximately 1 fish per every 8 surface acres of Lake Wylie will be continued using mortality estimates derived from the population and population models.

Other control application specifications

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

Triploid grass carp will be a minimum of 12 inches total length. All shipments will be examined for condition and length specified in the contract with the vendor.

Estimated cost of control operations

All work to be done in North Carolina Section of the lake.

Entity to apply control agent

Herbicide application - Commercial applicator or Duke Energy

Drawdown - Duke Energy

Potential sources of funding

Duke Energy 100% - All control work at present time is in North Carolina.

Long term management strategy

- a) Manage hydrilla's potential adverse impacts to the Lake Wylie ecosystem using primarily triploid grass carp after initial suppression using approved herbicides.
- b) Maintain or enhance native aquatic vegetation by maintaining the lowest possible stocking rates of triploid grass carp, especially once major stands of hydrilla have been controlled.
- c) Seek to prevent further introduction and distribution of problem aquatic species through public education and enforcement of existing laws and regulations.
- d) Periodically revise management plans and strategy as new environmental data becomes available.
- e) Plan for long-term control of hydrilla, once control has been achieved, by maintaining very low densities of triploid grass carp. Stockings will be determined from mortality estimates generated from triploid grass carp collected on Lake Wylie and the use of age-structure population models developed for fisheries.

**70. Lake Thurmond
(South Carolina - Georgia)**

Lake Thurmond is a U.S. Army Corps of Engineers (USACOE) lake which borders South Carolina and Georgia. The control and maintenance issues associated with this lake fall under the jurisdiction of the USACOE. The USACOE coordinates with both Georgia and SC natural resource agencies on a variety of issues that affect natural resource management. A consensus has not been reached by the entities involved on management activities for invasive species, specifically hydrilla. Ongoing meetings and correspondence will continue on this and many other subjects.

NOTE: The following description is not binding for management activities but represents the Aquatic Plant Management Council's opinion on managing hydrilla in Lake Thurmond.

Problem plant species

Hydrilla

Management objective

Reduce hydrilla growth lake-wide and prevent the spread of hydrilla to other systems.

Achieve measurable reduction of hydrilla within two or three years and once hydrilla has been controlled, prevent it from reestablishing.

Control hydrilla by using a low enough density of triploid grass carp that potentially other forms of native vegetation can become established.

Selected control method

Triploid (sterile) grass carp used lake wide for long-term control.

Registered and properly applied herbicides should be used for initial suppression and by homeowners for spot treatments.

Area to which control is to be applied

Triploid grass carp will be released from boat ramps near the greatest concentration of hydrilla.

Rate of control agent to be applied

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

Drawdown - To the greatest extent possible within project limits.

Method of application of control agents

Herbicide- subsurface application by airboat.

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

Drawdown - Draw lake down

Timing and sequence of control application

Herbicide applications - To be applied when plants are actively growing.

Triploid grass carp to be released as soon as possible. RESULTS FROM GRASS CARP MAY NOT BE EVIDENT FOR TWO OR MORE YEARS. After hydrilla has been controlled, follow up stocking, currently estimated at maintaining triploid grass carp stocking densities of approximately 1 fish per every 8 surface acres of Lake Thurmond will be continued using mortality estimates derived from the population and population models.

Drawdown - Drawdown lake from October through February.

Other control application specifications

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

Triploid grass carp will be a minimum of 12 inches total length. All shipments will be examined for condition and length specified in the contract with the vendor.

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

Estimated cost of control operations

No estimate available

Entity to apply control agent

Herbicide application - Commercial applicator or USACOE

Drawdown - USACOE

Potential sources of funding

USACOE 100%

Long term management strategy

- a) Manage hydrilla's potential adverse impacts to the Lake Thurmond ecosystem using primarily triploid grass carp after initial suppression using approved herbicides.
- b) Maintain or enhance native aquatic vegetation by maintaining the lowest possible stocking rates of triploid grass carp, especially once major stands of hydrilla have been controlled.
- c) Seek to prevent further introduction and distribution of problem aquatic species through public education and enforcement of existing laws and regulations.
- d) Periodically revise management plans and strategy as new environmental data becomes available.
- e) Plan for long-term control of hydrilla, once control has been achieved, by maintaining very low densities of triploid grass carp. Stockings will be determined from mortality estimates generated from triploid grass carp collected on Lake Thurmond and the use of age-structure population models developed for fisheries.

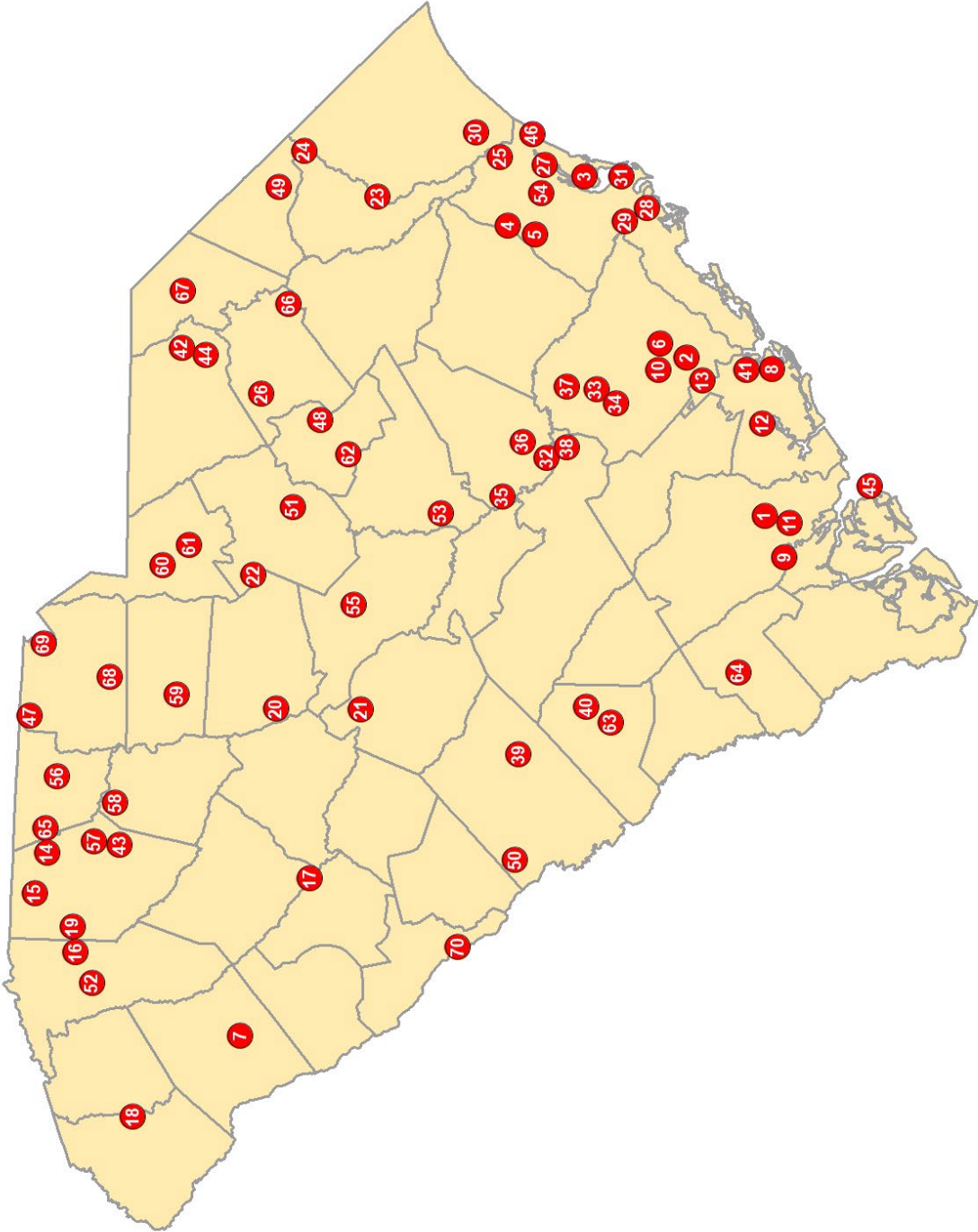
Summary of Proposed Management Operation Expenditures for 2024-2025

	Water Body Name	Total Cost	Local	State	Federal	Local Sponsor
1	Ashepool	\$20,000	\$10,000	\$10,000	\$0	Colleton County
2	Back River Reservoir	\$55,000	\$27,500	\$27,500	\$0	Dominion Energy, Chas. Water Sys.
3	Baruch	\$15,000	\$7,500	\$7,500	\$0	Baruch
4	Black Mingo Creek	\$10,000	\$5,000	\$5,000	\$0	Georgetown Co.
5	Black River	\$30,000	\$15,000	\$15,000	\$0	Georgetown Co.
6	Bonneau Ferry WMA	\$5,750	\$2,875	\$2,875	\$0	SCDNR, WFF Div.
7	Broadway Lake	\$4,500	\$2,250	\$2,250	\$0	Anderson County
8	Charleston Co. Parks	\$1,000	\$500	\$500	\$0	Charleston Parks
9	Combahee River	\$20,000	\$10,000	\$10,000	\$0	Colleton Co.
10	Cooper River	\$42,000	\$21,000	\$21,000	\$0	Berkeley Co.
11	Donnelley/Bear Island WMA	\$100,000	\$70,000	\$30,000	\$0	SCDNR, WFF Div.
12	Dungannon WMA	\$10,000	\$5,000	\$5,000	\$0	SCDNR, WFF Div.
13	Goose Creek Reservoir	\$45,000	\$22,500	\$22,500	\$0	Chas. Water Sys.
14	Lake Blalock	\$350	\$175	\$175	\$0	Spartanburg CPW
15	Lake Bowen	\$1,000	\$500	\$500	\$0	Spartanburg CPW
16	Lake Cunningham	\$10,000	\$5,000	\$5,000	\$0	Greer CPW
17	Lake Greenwood	\$10,000	\$5,000	\$5,000	\$0	Greenwood Co.
18	Lake Keowee	\$15,000	\$7,500	\$7,500	\$0	Duke Energy
19	Lake Lyman	\$10,000	\$5,000	\$5,000	\$0	SJWD Water District
20	Lake Monticello (Rec. Lake)	\$250	\$250	\$0	\$0	Dominion Energy
21	Lake Murray	\$49,000	\$24,500	\$24,500	\$0	Dominion Energy, Lex. & Rich. Cos.
22	Lake Wateree	\$3,000	\$1,500	\$1,500	\$0	Duke Energy
23	Little Pee Dee River	\$20,000	\$10,000	\$10,000	\$0	Horry & Marion Cos.
24	Lumber River	\$1,500	\$750	\$750	\$0	Horry & Marion Cos.
25	Pee Dee River	\$10,000	\$5,000	\$5,000	\$0	Georgetown Co.
26	Prestwood Lake	\$10,000	\$5,000	\$5,000	\$0	City of Hartsville
27	Samworth WMA	\$30,000	\$15,000	\$15,000	\$0	SCDNR, WFF Div.
28	Santee Coastal Reserve	600,000	270,000	30,000	\$0	SCDNR, WFF Div.
29	Santee Delta WMA	\$60,000	\$30,000	\$30,000	\$0	SCDNR, WFF Div.
30	Waccamaw River	\$40,000	\$20,000	\$20,000	\$0	USF&W/Horry Co.
31	Yawkey Wildlife Center	\$12,000	\$6,000	\$6,000	\$0	SCDNR, WFF Div.
	Santee Cooper Lakes					
32	Lake Marion	\$1,000,000	\$1,000,000	\$0	\$0	Santee Cooper
33	Lake Moultrie	\$600,000	\$600,000	\$0	\$0	Santee Cooper
	Santee Cooper Area WMA's					
34	Hatchery WMA	\$20,000	\$10,000	\$10,000	\$0	SCDNR, WFF Div.

35	Hickory Top WMA	\$60,000	\$30,000	\$30,000	\$0	SCDNR, WFF Div.
36	Potato Creek WMA	\$10,000	\$5,000	\$5,000	\$0	SCDNR, WFF Div.
37	Sandy Beach WMA	\$10,000	\$5,000	\$5,000	\$0	SCDNR, WFF Div.
38	Santee Cooper WMA	\$30,000	\$15,000	\$15,000	\$0	SCDNR, WFF Div.
	State Parks					
39	Aiken State Park	\$10,000	\$5,000	\$5,000	\$0	SCPRT
40	Barnwell SP	\$7,000	\$3,500	\$3,500	\$0	SCPRT
41	Charlestown Landing SP	\$4,000	\$2,000	\$2,000	\$0	SCPRT
42	Cheraw SP	\$6,000	\$3,000	\$3,000	\$0	SCPRT
43	Croft SP	\$1,200	\$600	\$600	\$0	SCPRT
44	H Cooper Black SP	\$1,000	\$500	\$500	\$0	SCPRT
45	Hunting Island SP	\$1,200	\$600	\$600	\$0	SCPRT
46	Huntington Beach SP	\$6,000	\$3,000	\$3,000	\$0	SCPRT
47	Kings Mountain SP	\$2,000	\$1,000	\$1,000	\$0	SCPRT
48	Lee SP	\$1,500	\$750	\$750	\$0	SCPRT
49	Little Pee Dee SP	\$3,000	\$1,500	\$1,500	\$0	SCPRT
50	Misty Lake SP	\$2,000	\$1,000	\$1,000	\$0	SCPRT
51	NR Goodale	\$10,000	\$5,000	\$5,000	\$0	SCPRT
52	Paris Mountain SP	\$1,300	\$650	\$650	\$0	SCPRT
53	Poinsett SP	\$1,500	\$750	\$750	\$0	SCPRT
54	Ramsey Grove SP	\$10,000	\$5,000	\$5,000	\$0	SCPRT
55	Sesquicentennial SP	\$3,000	\$1,500	\$1,500	\$0	SCPRT
*	56-68 done entirely by SCDNR State Lakes Program, budget not provided					
	69-70 are border lakes with either Federal or other State jurisdictions, budget not provided					
	SCDNR Total	\$1,240,350	\$610,300	\$330,000	\$0	
	State Park Lake Total	\$70,700	\$35,350	\$35,350	\$0	
	Santee Cooper Total	\$1,600,000	\$1,600,000	\$0	\$0	
	SCDNR / State Parks Total	\$1,311,050	\$645,650	\$375,350	\$	
	Grand Total	\$2,911,050	\$2,245,650	\$375,350	\$	

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 2024 (Percentage of match subject to change based on availability of State funding.) * Control operations on Lakes Marion and Moultrie may receive federal funds from the Corps of Engineers' St. Stephen Plant, if control activities are directly related to maintaining operation of the St. Stephen Hydropower Facility. Those funds should be used whenever possible instead of APC cost-share funds from the Charleston District.

Location of 2024 Management Sites



Appendices

APPENDIX A

Major River Basins in South Carolina



APPENDIX B

Additional Documentation for NPDES General Permit

NPDES Required Information Details

Aquatic Nuisance Species Program Emergency Numbers

SCDNR Columbia Office 803-734-4016	Chemical Spill/Fish Kill Emergency Number (SCDHEC) 888-481-0125	Clemson Department of Pesticide Regulation 864-646-2150
SCDNR Emergency Number 800-922-5431	SCDHEC Statewide Fish Kill Coordi- nator - Jim Rice 803-896-4114(O) 803-960-0539(C)	Poison Control Hotline 800-222-1222
Radio Room – Law Enforcement 803-955-4000		National Response Center 800-424-8802
Julie Holling SCDNR Program Manager ANS Program 2730 Fish Hatchery Road West Columbia, SC 29172 803-755-2836 Voice 803-528-4720 Cell	Jay Tenney SCDNR Technician ANS Program 2730 Fish Hatchery Road West Columbia, SC 29172 803-755-2836 Voice 803-600-7541 Cell	John Crabb President Estate Management Services 305 Indigo Drive Brunswick, GA 31525 Toll-Free: 888-307-6637 Phone: 912-466-9800

DNR Region	Counties	Freshwater Fisheries Fish Kills	Wildlife Problems	Law Enforcement	Marine Resources
Region I (Clemson) 311 Natural Resources Drive Clemson, SC 29631 (864) 654-1671	Oconee, Pickens, Greenville, Spartanburg, Anderson, Lau- rens, Abbeville, Greenwood, Union, Cherokee, McCor- mick, and Edgefield	Dan Rankin 864-986-6246 864-982-2175 (Cell)	Pat Cloninger 864-986-6248 864-506-5402 (Cell)	CPT DJ Riley 864-654-8266 864-982-1785 (Cell)	Saltwater Fish Kills Only
Region II (Florence) 295 S. Evander Drive Florence, SC 29506 (843) 661-4766	York, Chester, Fairfield, Lan- caster, Kershaw, Lee, Ches- terfield, Marlboro, Darling- ton, Dillon, Florence, Mar- ion, Williamsburg	Robert Stroud 803-366-7024 803-609-7018 (Cell)	Sam Stokes 843-661-4768 843-870-3771 (Cell)	CPT Matt McCaskill 864-661-4766 843-616-3777 (Cell)	Saltwater Fish Kills Only
Region III (Columbia) PO Box 167 1000 Assembly St. Columbia, SC 29202 (803) 734-4303	Newberry, Saluda, Aiken, Lexington, Richland, Cal- houn, Orangeburg, Barnwell, Allendale, Bamberg, Sumter, Clarendon	Jason Bettinger 803-353-8232 803-904-6710 (Cell)	Willie Simmons 803-734-3898 803-609-7010 (Cell)	CPT Ken Simmons 803-755-1822 803-609-6924 (Cell)	Saltwater Fish Kills Only
Region IV (Charleston) PO Box 12559 217 Ft. Johnson Rd. Charleston, SC 29412 (843) 953-9307	Horry, Hampton, Georgetown, Berkeley, Charleston, Dorchester, Colleton, Jasper, Beaufort	Vacant 843-825-3387 843-870-5807 (Cell)	Alicia Farrell 843-953-5291 843-729-1955 (Cell)	CPT Henry Stackhouse 843-953-9307 843-870-5629 (Cell)	Mike Denson 843-953-9819 843-214-8178 (Cell)

Pest Management Area Description

(See AQUATIC PLANT MANAGEMENT STRATEGY section for Specific Water body.)

Control Measure Description

(See AQUATIC PLANT MANAGEMENT STRATEGY section for Specific Water body.)

Schedules and Procedures

(See AQUATIC PLANT MANAGEMENT STRATEGY section for Specific Water body.)

PESTICIDE SPILL POLICY AND PROCEDURES

- a. Put on protective clothing as may be appropriate: rubber boots, aprons, gloves, mask, and respirator. Use special caution if two different materials are spilled and mix together. They may react chemically to form noxious fumes.
- b. Immediately contain the spill. Use absorbents, dikes, mops or brooms, dirt or sand to retard the spread of the spill.
- c. Notify your Contacts listed above or person in charge.
- d. Recover the spill into containers (usually 5-gallon buckets or 30-gallon drums). Each warehouse should have at least one clean, empty 30-gallon drum for the purpose.
- e. After sealing each recovered material container, mark it or attach a tag clearly to identify its contents, approximate quantity and date.
- f. Move containers of spilled materials to a secure area.
- g. Prepare a spill report giving relevant information including date; location; material spilled; approximate quantity; actions taken; location of recovered material; cause or circumstances leading to spill; and recommendations on how to avoid this problem in the future.
- h. Contact the office for disposal instructions.

DO NOT USE OR DISPOSE OF SPILLED MATERIALS WITHOUT PRIOR REVIEW.

- i. Depending on the circumstances, the best disposal method will differ. Some potential alternatives are:
 1. Use in the normal course of business;
 2. Dilute and wash into sanitary sewer;
 3. Shipment to an approved hazardous waste facility; neutralization / detoxification on site.
 4. Since a decision on how best to dispose of a spill may be quite complex, we may want input from manufacturers, regulatory officials or technical advisors. Consult the office before acting.

SPILL RESPONSE

Purpose: To ensure the safety of all individuals participating in or affected by herbicide use, to minimize the SCDNR's and Contractor's exposure to liability, to ensure the appropriate and effective application of herbicides as a management tool, and to minimize detrimental effects to the environment.

The following information will be provided following the discovery and initial telephonic reporting of the spill:

1.	Time spill occurred or was first observed: _____
2.	Name of person first observing spill: _____
3.	Location of initial spill and present location if moving: * _____
4.	Type of spilled material: _____
5.	Estimate of amount spilled or rate of release if continuing: _____
6.	Environmental conditions e.g., wind direction and speed, wave action, and currents: _____
7.	If from mobile container (e.g., 2.5, 5, 15, 30, 55, tote): _____
8.	Description of area likely to be affected by spill --e.g., riverbanks, lakes, land areas, wildlife areas: _____ _____
9.	Cause of spill, if determined: _____
10.	Action taken to combat spill, if any: _____ _____ _____
11.	Activities or authorities notified: _____ _____ _____
12.	_____ *Please provide lat/long and attach detailed map of spill area if possible.

SPILL KIT CONTENTS

A spill kit is required to be assembled and placed in locations where pesticides are mixed, and on vehicles, which transport pesticides.

Shop Kit Quantity	Vehicle Kit Quantity	Item
1 (55 gal)	1 (5 gal)	open-head drum
1	1	pesticide spill policy and procedures
4	2	pairs of nitrile gloves
2	1	pairs of unvented goggles
2	1	respirator and pesticide cartridges
2	1	aprons (chemical resistant)
2	1	pairs of rubber boots
2	1	pairs of Tyvek coveralls
1	1	dustpan
1	1	shop brush
12	6	heavy ply, polyethylene bags w/ties
1	1	first aid kit
80	10	lbs absorbent material
1	1	dozen blank labels
0	1	portable eyewash
1	0	synthetic fiber push broom
1	0	square-point "D" handle shovel

SCDNR Required Practices

Required practices, described below, are designed to ensure that the SCDNR's standards for use of herbicides meet or exceed the U.S. EPA's Worker Protection Standard for Agricultural Pesticides.

- a. **Prior to implementing use of any herbicide, the need for its use relative to management goals shall be described in the SC Aquatic Plant Management Plan, and/or in a Weed Plan specific to the site.**
- b. **Only employees or contractors, who are certified/licensed by state and/or local regulations, are authorized to apply herbicides.**
- c. **Application techniques, monitoring strategies, and impacts/progress toward goals and required reporting information shall be documented.**
- d. **Standard safety practices for storage, mixing, transportation, disposal of containers and unused herbicide, and spill management will be followed.**
- e. **Herbicide containers and related equipment will be stored in a secure containment area away from people, animals and food. Herbicide containers will be stored closed and inspected periodically. Hazardous waste will be labeled appropriately and include accumulation start dates.**

- f. Additional training required for the proper use and maintenance of personal protective equipment (PPE) and other equipment or required by the Occupational Safety and Health Administration (OSHA) shall be coordinated.
- g. The point(s) of contact and threshold size for spills that must be reported shall be verified in advance with the appropriate local agency. This information and other emergency related information shall be provided to all applicators and initial responders through a written contingency plan.
- h. Directions and contact numbers of the nearest emergency medical treatment facility will be provided to all applicators.
- i. Investigations of herbicide related accidents and receipt of employee suggestions or complaints relating to safety and health issues involving herbicides will be used as a feedback mechanism that can be used to improve the program.
- j. Decontamination kits must be readily available and must include two one-gallon (or more) containers filled with potable water, eyewash kits or eyewash bottles with buffered isotonic eyewash, hand or body soap, paper or other disposable towels, a full Tyvek coverall with foot covers, and a map and directions to the nearest medical facility. Whenever possible, those who apply herbicides shall have access (within 15 minutes travel time or at the nearest vehicle access point, whichever is closest) to an eyewash kit and either a 1) shower or large sink, or 2) emergency decontamination and first aid kits.
- k. Treated areas should be closed to public access until they are judged safe for re-entry (or until the herbicide dries or for the minimum period required by the product label, whichever is longer). Posting is not required in most places, but where it is required (usually by local statute), place notices at points of entry or the perimeter of treated areas. Posting notices should include a statement that the area has been or will be treated, name of the herbicide, date of treatment, appropriate precautions to be taken or the date when re-entry is judged to be safe, and a phone number for additional information. Notices should be removed after it is judged safe to re-enter the area.
- l. Under the NPDES Permit requirements, the SCDNR is required to maintain records for all herbicide application activities. These records shall include information on site(s), purpose(s), name(s) and amount(s) of product(s) used, name(s) of applicator(s), and licensing requirements for all herbicide applications in the previous 12 months. In addition, a yearly report shall include the same information, with estimates for the upcoming 12 months.

Adverse Incident Response

Any incident which results in adverse impacts to fish, wildlife, or non-target plant species will be reported to the appropriate contacts as listed in the Section 1 contacts table. Additionally, the causes of the adverse impact will be determined through a scientific assessment to prevent or mitigate future problems.

Pesticide Monitoring Requirements

- a. While there are no specific pesticide residue monitoring requirements the SCDNR will maintain the following information along with any required monitoring data:
- b. Records of equipment maintenance and calibration are to be maintained only by the entity performing the pest application activity (on behalf of self or client).
- c. A copy of the NOI submitted to the Department and any correspondence exchanged between you and the Department specific to coverage under this permit;
- d. The date on which you knew or reasonably should have known that you would exceed an annual treatment area threshold during any calendar year, as identified in Part 1.2.2;
- e. Surveillance method(s) used, date(s) of surveillance activities, and findings of surveillance;
- f. Target pest(s);
- g. Pest density prior to pesticide application;
- h. Company name and contact information for pesticide applicator;
- i. Pesticide application date(s);
- j. Description of treatment area, including location and size (acres or linear feet) of treatment area and identification of any waters, either by name or by location, to which you discharged any pesticide(s) (a GIS record of the specific area where discharge of herbicide occurs);
- k. Name of each pesticide product used, including the EPA registration number;
- l. Quantity of pesticide applied (and specify if quantities are for the pesticide product as packaged or as formulated and applied);
- m. Concentration (%) of active ingredient in formulation;
- n. For pesticide applications directly to waters, the effective concentration of active ingredient required for control;
- o. Any unusual or unexpected effects identified to non-target organisms;
- p. Documentation of any equipment cleaning, calibration, and repair (to be kept by pesticide application equipment operator); and
- q. A copy of your PDMP, including any modifications made to the PDMP during the term of this permit.

General Specifications

- a. The Contractor and SCDNR shall utilize equipment specifically designed for commercial application of herbicides. Equipment shall be kept in good operating condition at all times and must meet or exceed all safety requirements for this type of work. The equipment must be calibrated to disperse herbicides at the prescribed rate as outlined in the plan and records of said calibration shall be maintained. As a minimum requirement, the equipment shall meet the following conditions:
- b. The Contractor shall have a minimum of two watercraft (airboats) and a skiff with a "mudmotor" capable of traveling through heavily vegetated waterways. The watercraft shall be equipped with depth finders capable of locating vegetation underwater, such as an Eagle Ultra or equivalent make and model. The Contractor shall also have a computerized herbicide delivery spray system which is calibrated and has Global Positioning System capability on each watercraft capable of recording exact positions of all

treatments. Such unit shall be capable of creating a file, such as a shape file, which will be capable of being imported into a Geographic Information System program such as ESRI's ArcView or any Arc Info based software and will provide SCDNR with a copy of such file in a timely manner. All data will become the property of SCDNR. The watercraft shall be capable of operation by one or two persons and shall be set up for underwater injection, handgun application, or granular broadcast application. A helicopter contract or access must also be available to the Contractor for performing aerial application of herbicides as needed at specified sites when needed.

- c. SCDNR reserves the right to inspect and approve all equipment to be utilized prior to the award. Non-conformance of equipment to SCDNR standards shall be reason for rejection of daily work.
- d. Regulations and Standards:
- e. The work shall comply with all laws, ordinances, and regulations of all legally constituted authorities that have jurisdiction over any part of this work. These requirements supplement these specifications and shall take precedence in case of conflict.
- f. All work shall be performed and completed in a thoroughly workman like manner in accordance with best modern practices and any permit requirements, regardless of any omissions from the attached specifications and/or drawings.

Qualifications

- a. The Contractor must have a minimum of five years of professional experience around chemical aquatic weed control on large public waterbodies.
- b. All persons applying chemicals must be certified by the Clemson University Department of Pesticide Regulation in Category 5 (Aquatic Pest Control) or must work under the direct supervision of a person so tested and present on the spray boat.
- c. All persons applying chemicals must be capable of identifying target plants in the field.
- d. The Contractor must maintain liability insurance coverage of at least Five Million Dollars (\$5,000,000) to fulfill requirements of PART II.A.12.

APPENDIX C

Enabling Legislation

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

Title 49 – Waters, Water Resources and Drainage

CHAPTER 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 - Agriculture

Chapter 9 - State Crop Pest Commission

SECTION 46-9-10. Commission established; duties and responsibilities; membership of commission.

The State Crop Pest Commission is established. It shall execute this chapter, Section 46-1-140, Chapters 10, 13, 25, 26, 33, 35, and 37 of this title and other duties and responsibilities assigned by law. The commission consists of no less than three members of the Agriculture and Natural Resources Committee of the Clemson University Board of Trustees, or the committee's successor, as designated by the board.

SECTION 46-9-15. Definitions.

(5) "Plant pest" means a living stage of insects, mites, nematodes, slugs, animals, protozoa, snails or other invertebrate animals, bacteria, weeds, fungi, other parasite plants or their reproductive parts, or viruses, or organisms similar to or allied with the foregoing, including genetically engineered organisms or infectious substances which directly or indirectly may injure or cause disease or damage in plants or

their parts or processed, manufactured, or other products of plants, and which may be a serious agricultural threat to the State, as determined by the director.

SECTION 46-9-40. Authority to promulgate and enforce regulations; other powers of commission.

The commission, in accordance with the Administrative Procedures Act, may promulgate and enforce reasonable regulations as in the judgment of the commission may be necessary to eradicate or prevent the introduction, spread, or dissemination of plant pests, including genetically engineered plants or plant pest organisms, and prevent fraud or misrepresentation in the sale and dissemination of fruit trees, nut trees, shade and ornamental trees, vines, shrubs, plants, bulbs, and roots for propagation purposes. The commission may regulate or prohibit the shipment within, or the importation into, this State of plants, farm products, or other articles of any nature or character from a state, territory, or foreign country when, in the opinion of the commission, the regulation or prohibition is necessary to prevent the introduction or dissemination of plant pests.

The commission may carry out operations, including quarantines or measures to locate, suppress, control, or eradicate or to prevent or retard the spread of plant pests, independently or in cooperation with counties or their political subdivisions, municipalities, farmers' associations or similar organizations, individuals, federal agencies, or agencies of other states, by regulation, compliance agreement, judicial action, or other appropriate means.

Title 46, Chapter 23 - South Carolina Noxious Weed Act

SECTION 46-23-30. Commission may prevent introduction and dissemination of noxious weeds in State; remedies of owner of property destroyed or disposed of; regulations.

(a) The commission may, when it deems it necessary as an emergency measure in order to prevent the introduction into or the dissemination within South Carolina of any noxious weed new to or not theretofore widely prevalent or distributed within and throughout the State, 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. Provided, that no such noxious weed, product, article, or means of conveyance shall be destroyed, exported, or returned to the shipping point or so ordered to be destroyed, exported, or returned to the shipping point, unless in the opinion of the commission, there is no less drastic action which would be adequate to prevent the introduction or dissemination of noxious weeds.

SECTION 46-23-80. Penalty.

Any person who violates any provision of this chapter is guilty of a misdemeanor and, upon conviction, shall be punished by a fine not exceeding five hundred dollars, or by imprisonment not exceeding one year, or both.

SECTION 50-13-1415 -Importation, possession, or placing water hyacinth and hydrilla in waters of the state.

No person shall possess, sell, offer for sale, import, bring, or cause to be brought or imported into this

State, or release or place into any waters of this State any of the following plants:

- (1) Water Hyacinth
- (2) Hydrilla

Provided, however, that the department may issue special import permits to qualified persons for research purposes only.

The department shall prescribe the methods, control, and restrictions which are to be adhered to by any person or his agent to whom a special permit under the provisions of this section is issued. The department is authorized to promulgate such regulations as may be necessary to effectuate the provisions of this section and the department, by regulation, is specifically authorized to prohibit additional species of plants from being imported, possessed, or sold in this State when, in the discretion of the department, such species of plants are potentially dangerous.

SECTION 50-13-1630. Importing, possessing or selling certain fish unlawful; special permits for research; Department shall issue rules and regulations.

(A) A person may not possess, sell, offer for sale, import, bring, or cause to be brought or imported into this State or release into the waters of this State the following fish or eggs of the fish:

- (1) carnero or candiru catfish (*Vandellia cirrhosa*);
- (2) freshwater electric eel (*Electrophorus electricus*);
- (3) white amur or grass carp (*Ctenopharyngodon idella*);
- (4) walking catfish or a member of the Clariidae family (*Clarias*, *Heteropneustea*, *Gymnallabes*, *Channallabes*, or *Heterobranchus* genera);
- (5) piranha (all members of *Serrasalmus*, *Rooseveltiella*, and *Pygocentrus* genera);
- (6) stickleback;
- (7) Mexican banded tetra;
- (8) sea lamprey;
- (9) rudd (*Scardinius erythrophthalmu*-Linneaus); and
- (10) snakehead (all members of family Channidae).

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

(C) (1) The department may issue special permits for the stocking of sterile white amur or grass carp hybrids in the waters of this State. The special permits must certify that the permittee's white amur or grass carp hybrids have been tested and determined to be sterile. The department may charge a fee of one dollar for each white amur or grass carp hybrid that measures five inches or longer or twenty-five cents for each white amur or grass carp hybrid that measures less than five inches. The fee collected for sterility testing must be retained by the department and used to offset the costs of the testing.

(2) The department is authorized to promulgate regulations to establish a fee schedule to replace the fee schedule contained in item (1) of this subsection. Upon these regulations taking effect, the fee schedule contained in item (1) of this subsection no longer applies.

(D) The department may issue special permits for the importation, breeding, and possession of nonsterile white amur or grass carp hybrids. The permits must be issued pursuant to the requirements con-

tained in Chapter 18 of this title. Provided, however, that no white amur or grass carp hybrids imported, bred, or possessed pursuant to a special permit issued pursuant to this section may be stocked in the waters of this State except as provided in subsection (C) of this section.

- (E) It is unlawful to take grass carp from waters stocked as permitted by this section. Grass carp caught must be returned to the water from which it was taken immediately.
- (F) The department must prescribe the qualifications, methods, controls, and restrictions required of a person or his agent to whom a special permit is issued. The department must condition all permits issued under this section to safeguard public safety and welfare and prevent the introduction into the wild or release of nonnative species of fish or other organisms into the waters of this State. The department may promulgate regulations necessary to effectuate this section and specifically to prohibit additional species of fish from being imported, possessed, or sold in this State when the department determines the species of fish are potentially dangerous.

South Carolina Code of Regulations

Chapter 27 Clemson University (Statutory Authority: 1976 Code §§ 46–9–40; 46–13–30; 46–13–55)

ARTICLE 10

DESIGNATION OF PLANT PESTS

27–135. Designation of Plant Pests.

1. The Commission hereby delegates to the Director the authority to determine and implement appropriate measures to eradicate, control, or slow the spread of plant pests in South Carolina. This authority extends to a decision that a plant pest has become so widespread that the initiation or continuation of control measures would be ineffective.
2. An advisory committee made up of at least 5 members will meet at least annually to review and make recommendations on the official listing of plant pests in SC. The committee members will be: The State Plant Regulatory Official for South Carolina (or designee), the USDA State Plant Health Director for South Carolina (or designee), a Clemson University Cooperative Extension Service Representative, and at least 2 at large representatives from other stakeholder agencies, such as the SC Department of Natural Resources, the SC Forestry Commission, or the SC Department of Agriculture. At large members shall be nominated and voted on by the advisory committee at its annual meeting. Additional at large members may be nominated and voted in at the annual advisory committee meeting. At large members from stakeholder agencies shall each serve a three-year term.
3. The official listing of plant pests in SC shall be maintained and made publicly available on Clemson's website located at: www.clemson.edu/invasives .

APPENDIX D

Aquatic Plant Problem Identification Form

Aquatic Plant Problem Site Identification Form

Name and location of affected water body

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

Public or private water

Name of problem plant (if known)

Does the plant grow above or below the surface of the water?

Approximate area of water covered by the problem plant

Type of water use(s) affected by the plant

Length of time problem has existed

Plant control methods that have been used

Contact for additional information: _____

Name _____

Address _____

Phone _____

Please Return To: Aquatic Nuisance Species Program

SC Department of Natural Resources

2730 Fish Hatchery Road

West Columbia, South Carolina 29170

(803) 755-2836 email: invasiveweeds@dnr.sc.gov

**** Please include a sample of the plant, if possible, or a detailed digital image. Wrap the plant in a moist towel and place in a "baggie". The sample or photo should include flowers, if visible, along with leaf structure and stem. A photo or drawing of the affected area with an approximate acreage should also accompany this form.**

APPENDIX E

Aquatic Plant Control Agents

Aquatic Plant Control Agents

Listed below are the major aquatic plant control agents which are currently available for use in South Carolina. While the list is not all inclusive, it does contain those agents considered most useful for aquatic plant management. Costs for the agents are approximations and will vary somewhat depending on the source and amount purchased. Application costs are approximations of commercial applicator rates.

I. Chemical Control

A. Diquat (Reward, Tribune, Solera)

Target Plants

Submersed species - Bladderwort, coontail, elodea, naiad, pondweeds, watermilfoil, and hydrilla. Floating species - Pennywort, Salvinia, water hyacinth, water lettuce, and duckweed.

Application Rate

Submersed species - One to two gallons per surface acre. Floating species - One half to one gallon per surface acre, depending on target species.

Cost -Diquat costs approximately \$99 per gallon. Assuming an application rate of two gallons per acre and an application cost of \$41 per acre, the total cost would be \$239 per acre per application for submersed species. The treatment cost for floating species at one-half gallon per acre rate would be \$90 per acre.

Use Considerations -Diquat is not toxic to fish or wildlife at normal use concentrations. It is non-volatile and nonflammable but can cause irritation to eyes and skin upon contact. Its effectiveness is greatly reduced at temperatures below 50-60°F, by overcast conditions, and by turbid waters.

Water Use Restrictions - Water treated with Diquat cannot be used for drinking for up to 3 days, livestock consumption for one day, irrigation of food crops for 5 days, and irrigation of turf and ornamentals for up to 3 days depending on application rate or until approved analysis indicates that diquat ion concentrations are less than 0.02 ppm. There are no fishing or swimming restrictions. Do not apply this product within 1600 feet upstream of an operating water intake in flowing water bodies (rivers, streams, canals) or within 400 feet of an operating water intake in standing water bodies (lakes, reservoirs). To make applications within these restricted areas, the intake must be turned off for the time periods specified on the Federal label for the appropriate use category (Drinking, Livestock consumption, Irrigation) or until the treated area contains less than 0.02 ppm of diquat dibromide.

B. 2,4-D (Aqua-Kleen, Navigate, Hardball, Sinkerball, Renovate Max G)

Target Plants

Emergent species - Broadleaf species such as water primrose, waterlily, spatterdock, watershield, smartweed, pondweeds, and floating heart. Submersed species - Watermilfoil, bladderwort, and coontail.

Floating species - Water hyacinth.

Application Rate

Granular form (2,4-D BEE) - 150 to 200 pounds per acre depending on target species. Liquid form - (2,4-D DMA) - 5 gallons per acre.

Cost

The granular form of 2,4-D costs about \$36 per pound. Assuming an application rate of 200 pounds per acre and an application cost of \$47 per acre, the total cost would be \$519 per application. The liquid

form of 2,4-D costs approximately \$31 per gallon. Assuming an application rate of 5 gallons per acre and an application cost of \$41 per acre, the total cost would be \$196 per application

Use Considerations - The recommended formulations of 2,4-D are not toxic to fish or wildlife at normal use concentrations. This chemical is nonflammable and noncorrosive.

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

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

Target Plants

Algae - Cutrine Plus, K-TEA, Captain

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

Application Rate

Algae - Treatment concentration of 0.2-0.5 parts per million of copper. Submersed species - 0 part per million of copper (12-16 gallons per acre) or mix two gallons of copper complex and two gallons of Diquat per acre.

Cost - Copper products cost about \$17 per gallon. Assuming an application rate of 16 gallons per acre and an application cost of \$41 per acre, the total cost would be \$313 per acre.

Use Considerations - Copper may be toxic to fish and aquatic invertebrates at recommended application rates, especially in soft water. Copper-based product should be carefully applied and monitored to minimize the risk of fish kills.

Water Use Restrictions - Copper complexes may be used in domestic and irrigation water supplies without water use restrictions.

D. Endothall - (AquaStrike, Aquathol, Aquathol K, Aquathol Super K granular, Hydrothol 191 granular and liquid)

Target Plants

Aquathol products are effective for submersed species such as naiads, bladderwort, coontail, watermilfoil, pondweed, hydrilla, and cabomba

Hydrothol 191 is effective on the species listed above as well as filamentous and macrophytic algae.

Application Rate

Aquathol

Liquid form (Aquathol K) - three gallons or more per acre depending on the target species. Granular form - Aquathol: 54-323 pounds per acre depending on water depth and the target species.

Aquathol Super K: 22-66 pounds per acre depending on the water depth and the target species.

Hydrothol 191

Heavy Infestations - Evenly spread 160 - 270 pounds per acre foot of water (0 - 0 ppm) applied evenly.

Moderate or light infestations - Use 55 - 110 pounds per acre foot (0 - 0 ppm) applied evenly.

Cost

Aquathol

Aquathol K costs approximately \$57 per gallon. Assuming an application rate of 5 gallons per acre and an application cost of \$41 per acre, the total cost would be \$326 per acre. Aquathol Super K costs about

\$15 per pound at an application rate of 30 pounds per acre and an application cost of \$47 per acre, the total cost would be \$510 per acre.

Hydrothol 191

Hydrothol 191 costs approximately \$64 per gallon. Assuming an application rate of 7 gallons per acre and an application cost of \$41, the total cost would be \$492 per acre.

Hydrothol 191 granular costs approximately \$78 per pound. Assuming an application rate of 240 pounds per acre and an application cost of \$47, the total cost would be \$714 per acre.

Use Considerations - Concentrated endothall formulations are toxic to man if ingested or absorbed through the skin. They are also irritating to the skin and eyes. Avoid contact with or drift to other crops or plants as injury may result. Generally, not toxic to fish at normal use concentrations, however, fish may be killed by dosages of Hydrothol 191 in excess of 0.3 ppm.

Water Use Restrictions - Water treated with endothall cannot be used for watering livestock, preparing agricultural sprays for food crops, for irrigation or domestic purposes for 7 to 25 days after treatment (depending on treatment concentration) or until such time that the water does not contain more than 0.2 ppm of endothall. Do not use fish from treated areas for feed or food for three days after treatment.

Aquastrike

Aquastrike costs approximately \$73 per gallon.

Use Considerations - AquaStrike is a convenient combination of Aquathol K and Diquat. AquaStrike is designed and formulated for fast and effective control of many submersed nuisance and exotic aquatic plants, especially spike rush when used with a Flumioxazin product.

Water Use Restrictions – Do not use water treated with Aquastrike for irrigation to food crops or ornamentals for 7 days. Do not treat within 600 feet of a potable water intake. There are no fishing or swimming restrictions.

E. Glyphosate (Rodeo, Aquastar, Touchdown Pro, Glypro)

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

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

Cost - Glyphosate products range in price from \$21-\$39 per gallon. At an application rate of 5 pints per acre and an application cost of \$41 per acre, the total would range from \$63-\$78 per acre per application.

Use Considerations - Glyphosate is not toxic to mammals, birds or fish at recommended use concentrations. Glyphosate products with aquatic labels can be used in and around aquatic sites, including all bodies of fresh and brackish water which may be flowing or nonflowing.

Water Use Restrictions - Do not apply within 0.5 miles upstream of potable water intakes unless water intake is shut off for 48 hours. There are no restrictions on water use for irrigation or recreation after treatment.

F. Flumioxazin (Clipper, Schooner)

Target Plants – Duckweed, water meal, water lettuce, frog's-bit, water fern, alligatorweed

Application Rate - Up to 12 ounces of formulated product per acre, on surface applications or 200 -400 ppb for subsurface treatment.

Cost - Flumioxazin products range in price from \$120-140 per pound. At an application rate of 12 ounces per acre and an application cost of \$41 per acre, the total would range from \$131-\$146 per acre per application.

Use Considerations - Flumioxazin is not toxic to mammals, birds or fish at recommended use concentrations. Flumioxazin products with aquatic labels can be used in and around aquatic sites, including all bodies of fresh and brackish water which may be flowing or nonflowing.

Water Use Restrictions There are no restrictions on potable water use or recreation after treatment. Treated water may not be used for irrigation purposes on food crops until at least five (5) days after application. Do not use in water utilized for crawfish farming. Do not re-treat the same section of water with *Clipper* Herbicide more than 6 times per year. Do not exceed 400 ppb of *Clipper* Herbicide during any one application. On surface spray applications of less than 3 feet of depth there is a 12-hour restriction for irrigation of turf and landscape ornamentals and a restriction of subsurface treatment applications of 1 to 3 days depending on the concentration used. There is also a 5-day restriction for ornamentals grown for production in greenhouses and nurseries for both surface and subsurface application.

G. Fluridone (Sonar, Avast)

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

Application Rate - Liquid form (Sonar AS, Avast) - 1-4 pints per acre depending on water depth. Pellet forms (Sonar PR, Sonar SRP, Avast SRG) - 15 to 80 pounds per acre depending on water depth.

Cost - The liquid formulation ranges from \$1468-\$1650 per gallon. Assuming an application rate of 5 pints per acre (2 pounds active ingredient per acre) and an application cost of \$40 per acre, the total cost would be \$349 per acre per application. The pellet formulations range in price from \$200-\$200 per pound. Assuming an application rate of 20 pounds per acre (2 pounds active ingredient per acre) and an application cost of \$47 per acre, the total cost would be \$567 per acre per application.

Use Considerations - In large lakes and reservoirs fluridone should be applied to areas greater than five acres. This herbicide requires a long contact time and is not effective in sites with significant water movement or rapid dilution. Fluridone is slow acting and may require 30 to 90 days to achieve desired control under optimal conditions. Unlike other aquatic herbicides, fluridone has proven effective in inhibiting viable hydrilla tuber production.

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

H. Imazapyr (Habitat)

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

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

Cost - Habitat (Imazapyr) costs \$245 per gallon. Assuming the application rate of 16 oz. per acre and an application cost of \$41 per acre, the total cost would be \$78 per acre.

Use Considerations - Applications to public waters can only be made by federal, state, or local agencies or those applicators which are licensed or certified as aquatic pest control applicators and are authorized by state or local agencies. Do not use in close proximity to hardwoods.

Water Use Restrictions - Do not apply within 1/2 mile of potable water intakes. For applications within 1/2 mile of a potable water intake, the intake must be turned off for a minimum of 48 hours. Do not apply within 1 mile of active irrigation intakes on still or slow-moving waters. Irrigation water usage may be continued 120 days after application or when Habitat (Imazapyr) residue levels are determined by laboratory analysis to be 0 ppb or less.

Aerial Applications may only be made by helicopter.

I. Imazamox (Clearcast)

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

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

Cost -Clearcast (Imazamox) costs \$175 per gallon. Assuming the application rate of 16 oz. per acre and an application cost of \$41 per acre, the total cost would be \$63 per acre.

Use Considerations - Applications to public waters can only be made by federal, state, or local agencies or those applicators which are licensed or certified as aquatic pest control applicators and are authorized by state or local agencies. Can be used in close proximity to hardwoods

Water Use Restrictions - Do not apply within ½ mile of potable water intakes. For applications within ½ mile of a potable water intake, the intake must be turned off for a minimum of 48 hours. Do not apply within 1 mile of active irrigation intakes on still or slow-moving waters. Irrigation water usage may be continued 120 days after application or when Habitat (Imazapyr) residue levels are determined by laboratory analysis to be 0 ppb or less.

Aerial Applications may only be made by helicopter.

J. Triclopyr (Renovate 3, Tahoe)

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

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

Cost - Triclopyr products cost \$96 per gallon. Assuming the application rate of 2 qts per acre and an application cost of \$41 per acre, the total cost would be \$89 per acre.

Use Considerations - Triclopyr is not toxic to fish or wildlife at normal use concentrations. It can cause severe irritation to eyes and skin upon contact. It is suggested that it is used in a manner to reduce the possibility of drift. The proper personal protective equipment should be used as prescribed by the Federal label.

Water Use Restrictions - For floating and emergent applications do not apply within 200 feet of operating potable water intakes when using 4 - 8 qts. per acre. There are no setback restrictions for potable water intakes when 2 qts. per acre or less is applied to emergent vegetation. To make applications within these restricted areas, follow the label directions. There are no restrictions on the use of treated water for recreational purposes or for livestock consumption.

K. Penoxsulam (Galleon SC)

Target Plants

Submersed species – Hydrilla, Cabomba, Egeria, Eurasian watermilfoil

Floating species – Floating species – Water hyacinth, Water lettuce, Water fern, Duckweed, Frog's bit, Mosquito fern

Application Rates

0.174 fl oz per acre foot to achieve minimum effective concentration of 25 – 75 ppb.

Floating species – 2- 6 fl oz per acre as foliar application.

Cost – Penoxsulam costs approximately \$1650 per gallon. Assuming an application rate of 11 fl oz per acre and an application cost of \$41 per acre, total cost would be \$183 per acre for submersed plants. Assuming an application rate of 6 fl oz per acre, and an application cost of \$41 per acre, total cost would be \$113 per acre for emergent plants.

Use considerations – Penoxsulam has no potable water restrictions or irrigation restrictions except for irrigation of food crops. It must have prolonged contact times similar to fluridone (>21 days).

Water Use Restrictions - Food crop irrigation waters cannot be used if penoxsulam concentrations are above 1ppb

L. Florpyrauxifen-benzyl (ProcellaCOR-SC)

Target Plants

Submersed/emergent species – Hydrilla, Egeria, Watermilfoil, Eurasian watermilfoil, Lotus, Alligatorweed, Water primrose, Watershield, Crested floating heart, Parrotfeather, Water pennywort

Floating species – Floating species – Water hyacinth, Frog’s bit, Mosquito fern

Submerged species - 1-5 PDU’s per acre foot to achieve effective control based on density and species.

Floating species – 1-2 PDU’s per acre as foliar application.

Cost –ProcellaCOR-SC costs approximately\$3800 per gallon. The application rate is conveniently provided in PDU’s directly from a built-in measurement device. 1 PDU equals approximately 1.35 ounces of product. Application rates for foliar are 1-2 PDU’s per acre and for submersed from 1-5 PDU’s per average acre foot. Assuming an application rate of 4 PDU per acre foot at a dept of 4 feet (4 PDU X 4 ac/ft=16 PDU’s) and an application cost of \$41 per acre, total cost would be \$681 per acre for submersed plants. Assuming an application rate of 1 PDU acre, and an application cost of \$41 per acre, total cost would be \$81 per acre for emergent plants.

Use considerations – ProcellaCOR-SC has no potable water restrictions or irrigation restrictions except for irrigation of food crops and some landscape plants.

Water Use Restrictions - Food crop irrigation waters cannot be used if ProcellaCOR-SC concentrations are above 1 ppb

NOTE: This unique formula requires 40x-100x less active ingredient and achieves significantly longer control. With a *Reduced Risk* classification from the EPA, it is designed to reduce risk *To Our Health, Nontarget Plants, And Our Water Supply*

II. Biological Control

A. Alligatorweed Flea Beetle (*Agasicles hygrophila*)

Target Plant - Alligatorweed

Stocking Rate - 600-1,000 per acre.

Cost - The U.S. Army Corps of Engineers office in Palatka, Florida will provide lots of 6,000 flea beetles for the cost of shipping which is about \$50 per shipment. Flea beetles may also be obtained from the U.S. Department of Agriculture.

Use Considerations - Flea beetles feed only on alligatorweed and pose no threat to desirable plant species. They produce no adverse impact on the aquatic environment. As with all biological control agents, flea beetles may not remain in the area where stocked but may migrate to other areas of alligatorweed infestation. These insects are not able to survive severe winters and may require occasional restocking. The effectiveness of these insects may be enhanced by use with an aquatic herbicide such as 2, 4-D, or Rodeo.

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

Target Plant - Alligatorweed

Cost - Approximately the same as for flea beetle.

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 (*Ctenopharygodon idella*)

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

Cost - Triploid white amur cost \$5 to \$10 each. At a stocking rate of 10 to 15 fish per vegetated acre, the total cost could range from \$60 to \$175 per acre.

Use Considerations - Only the triploid (sterile) white amur may be stocked in South Carolina for aquatic weed control. The introduction and stocking of this fish is regulated by the SCDNR 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 SCDNR.

III. Mechanical Control

Harvesters, Cutters, Dredges and Draglines

Target Plants - All species

Cost - Harvesters range in cost from \$5,000 to over \$150,000 for the initial investment. Operating cost range from \$300 to \$700 per acre.

Use Consideration - Harvesters can be used in irrigation and drinking water supplies without water use restrictions. They may actually spread some plants such as Brazilian elodea and hydrilla by dispersing plant fragments which form new colonies. Harvesting requires the availability of a land disposal site for harvested plants. These devices cannot be used on water bodies which have debris and obstructions which interfere with operation. Harvesters are slow, with a maximum coverage of about five acres per day.

Fiberglass Bottom Screens

Target Plants - All species which root in the bottom.

Cost \$10,000 per acre.

Use Considerations - Bottom screens may be detrimental to bottom-dwelling aquatic organisms. Due to high cost, use is usually restricted to beaches and other swimming areas where a relatively small area of control is required.

IV. Environmental Alterations

Water Level Manipulation - Some species of aquatic plants can be controlled by a periodic raising or lowering of water level. Shoreline grasses, cattails, and Phragmites can be controlled, to some extent, by maintaining higher than normal water levels during the plant growing season. Periodic lowering of water and drying of the bottom can reduce abundance of a number of submersed and emersed species. Disadvantages are that water level fluctuation can adversely affect water uses such as recreation, hydroelectric power production, wildlife protection, and others. Also, some plant species may actually be favored by water level variations. Many factors must be considered before using this method for aquatic plant control.

Reduction in Sedimentation and Nutrient Loading - Sedimentation decreases depth of the water body and increased the area where aquatic plants can grow. Nutrient enrichment resulting from man's activities usually does not create aquatic plant problems but does contribute to existing problems. Reduction in these two environmental factors can assist in aquatic plant management but is not a sufficient control method by itself. The mechanism for control of these factors is through implementation of Best Management Practices for Control of Non-Point Source Pollution developed by the SCDHEC, and through the wastewater discharge permitting program (NPDES) also administered by the SCDHEC.

APPENDIX F

SCDNR and Santee Cooper

Aquatic Plant and Habitat Management Goals for the Santee Cooper Lakes

DRAFT- Currently under legal review by both agencies

MEMORANDUM OF AGREEMENT
BETWEEN SANTEE COOPER AND SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES
REGARDING AQUATIC PLANT AND HABITAT MANAGEMENT GOALS
FOR THE SANTEE COOPER LAKES

This AGREEMENT (hereinafter "Agreement") is between Santee Cooper (hereinafter "S-C") and the South Carolina Department of Natural Resources (hereinafter "DNR"). This Agreement is effective on the date of the last signatory to the Agreement.

WHEREAS, S-C and DNR recognize Lakes Marion and Moultrie (hereinafter "Lakes") as a significant natural resource of the State of South Carolina, and

WHEREAS, in order to provide balanced benefits to natural resources and the multiple uses of the Lakes, DNR and S-C (hereinafter "Parties") agree to cooperate in the management of aquatic vegetation and the habitat that it provides, and

WHEREAS, the Parties' goal is to maintain, at a minimum, 15% of the surface area of the waters within the Santee Cooper Project boundary as beneficial vegetated habitat for waterfowl, wildlife, fish and other aquatic organisms,

WHEREAS, the Parties agree that aquatic vegetation in the Lakes is, in many years and during certain cycles, driven by dynamic environmental forces that cannot be effectively controlled and

THEREFORE, in order to achieve this goal, the Parties agree to the following:

- 1) The aquatic plant management goal for the Lakes is to achieve a diverse assemblage of native aquatic vegetation in and on, at a minimum, 15% of the total surface area of the Lakes and to effectively control non-native invasive species. The aquatic plant coverage should include a combination of submersed, floating leaf, and emergent plant species, as well as diverse wetland habitat. These wetland habitats include Sparkleberry/Stumphole swamp and similar areas dominated by wetland tree and shrub species, such as Cypress, Tupelo, Black Willow and Buttonbush, as well as managed wetlands within SCDNR Wildlife Management Areas and US Fish & Wildlife Service Santee National Wildlife Refuge. The goal is to establish and maintain habitat and food for native fish and wildlife species throughout the lake system.
- 2) S-C will annually monitor the vegetative community and extent of coverage. This monitoring may include aerial photography, visual surveys, hydro-acoustic transects and other appropriate measures as deemed necessary by the Parties in the annual work plan, in order to map plant species and coverage. An annual report of the monitoring results will be completed at the end of each growing season and provided to the Parties prior to preparation of the work plan for the following year.
- 3) The Parties will cooperate in monitoring the health of the fishery and in monitoring of wintering waterfowl populations. Wintering waterfowl population monitoring may consist of aerial or other

census techniques as deemed appropriate by the Parties. When waterfowl census is utilized, DNR will provide personnel and prepare an annual report to be distributed to both agencies, and S-C will provide the flight time.

4) Sterile grass carp will continue to be a major component of the long-term management strategy in controlling hydrilla (*Hydrilla verticillata*). The Parties will meet at least annually to review the monitoring data and to develop recommendations for maintenance stocking levels and other control strategies. These recommendations will be jointly presented to the South Carolina Aquatic Plant management Council (hereinafter "Council"). The implementation of these recommendations will be subject to approval by the Council.

5) 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 or poses a threat to the Lakes.

6) Localized aquatic vegetation control using approved chemical or mechanical methods may be necessary in areas where vegetation interferes with power production, drinking water withdrawals, navigation, recreation or other legitimate uses of the Lakes regardless of plant coverage and distribution.

7) In order to enhance native plant growth and habitat throughout the lake system, the Parties will cooperate in implementing adaptive management techniques. These techniques could include such measures as, introducing desirable native plant species, enhancing wildlife/waterfowl management areas, and implementing strategic lake level management measures.

8) The Parties will meet annually to review the results of monitoring and treatment programs, to determine the effectiveness of the programs, and to develop annual work plans.

9) The Parties will meet annually to conduct a comprehensive review of the programs and to determine the success in meeting the overall management goals. Based upon this review, the provisions of this agreement may be modified, as deemed appropriate, by the mutual consent of the Parties.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the date hereof.

Santee Cooper

By:

Date:

South Carolina Department of Natural Resources

By:

Date:

- NOTE: This is a draft of the agreement which is currently being reviewed by SCDNR and Santee Cooper lawyers for revision.

APPENDIX G

Summary of Public Comments, Responses, and Plan Modifications to the Draft 2024 South Carolina Aquatic Plant Management Plan

Positive: 4

Negative: 64

Neutral: 17

Comments:

From: D. D.

Subject: Problematic Weeds in The Cooper River

Date: Thur. 1/25/2024 3:25 PM

Please consider treatment in the Cooper River. I've fished the Cooper since 1976 and the weeds are the worst I've ever seen. From hwy 52 towards the coast as deemed necessary. Thank you

From: R. V.

Subject: 2024 Aquatic Plant Management Plant Draft

Date: Thur. 1/25/2024 3:49 PM

To whom it may concern. After careful perusal of the draft, I can for see one potential problem. In conduction the required surveys, you propose to provide these surveys to entities and enterprises for completion. These public and more the private entities and enterprises may in all likelihood, falsify information for their benefit in both permissible use and financial gain.

Perhaps it would prove to be more diligent and prudent for these areas of concern to be physically inspected without the inclusion of these users, by state and/or federal water quality inspectors.

The question raised by allowing these entities and enterprises to "self inspect and report" is this: will they provide honest and accurate data and information? With South Carolina being a state that relies heavily upon our natural resources, such potentially erroneous and inaccurate data and information could prove to be disastrous to our waterways and our states economy.

Therefore, I highly recommend that policing these entities and enterprises in some physical manner during their collection of data to ensure accurate data and information is presented to the state. The alternative to this would be for the state or an authorized agency/service to perform the data and information collection, ultimately removing this responsibility from the entities and enterprises.

I thank you in advance for your consideration of my comments.

Most sincerely,

R. V.

Summerville, SC

From: D. S.

Subject: Draft 2024 South Carolina Aquatic Plant Management Plan

Date: Thur. 1/25/2024 3:57 PM

I fully disagree with the implementation of above average carp stocking.

The lakes should retain at minimum 10% hydrilla coverage for its massive benefit to Wildlife and Fisheries.

Respectfully,
D.S.

From: C. B.

Subject: GRASS CARP

Date: Thur. 1/25/2024 4:55 PM

Hello,

I am writing in regard to the new proposal to add 17,000 new grass carp to the Santee Cooper lakes.

I strongly disagree with the decision to stock any new grass carp. I have hunted and fished the lakes for the last 30+ years. I thought that we were on the right track with the reemergence of eelgrass and many of the other natural grasses in the last 2 years. Just this past November I stood with my 13- & 16-year-old sons and watched an otter hunt baitfish just steps away from where we were standing. It's obvious for any outdoorsman that life is returning to our lakes in a big way. Migrating birds, fish, as well as amphibians and crustaceans are all currently thriving. I hate to think that we are going back to the days of barren sand bottoms and a fraction of the wildlife that is there today. NO NEW CARP.

A concerned Sportsman,

C. B.

From: J. S.

Subject: Weeds

Date: Thur. 1/25/2024 5:03 PM

Ever since y'all started, killing the Hydrilla in Lake Murray and Santee, the duck hunting, has went to crap. Also, the fishing. The only thing it helps as far as I can see. Is these pleasure, boaters, and JetSki take up the whole lake so you can't even fish anymore. Hadn't read your report just my opinion along with every other Hunter and fisherman in this state.

From: J. R.

Subject: Why Plan?

Date: Thur. 1/25/2024 6:34 PM

DNR has been "planning" to treat areas in the Cooper River for several years, and it hasn't happened yet....

Just spray whatever you feel like.

From: J. S.

Subject: Elimination of aquatic plants

Date: Thur. 1/25/2024 6:47 PM

I am against eliminating aquatic plants in our lakes and waterways. Wildlife need these plants to thrive.. juvenile fish..waterfowl....our drinking water comes from these lakes ..We don't want to be like camp lejeune.

From: J. W.

Subject: Grass Carp

Date: Thur. 1/25/2024 7:24 PM

I strongly disagree with the restocking of the grass carp into the Santee Cooper lake system. Santee Cooper lakes should have a minimum of 10 percent of hydrilla and other grasses, which are beneficial to lake wildlife and fisheries

From: G. W.

Subject: Problem Plant Species-Prestwood Lake (Darlington County)

Date: Thur. 1/25/2024 10:03 PM

As a resident of Hartsville as well as living on Prestwood Lake, I thank you for including our lake in your control plan. Your efforts do not go unnoticed.

From: C. F.

Subject: weeds

Date: Fri. 1/26/2024 8:59 AM

east branch cooper river taken over .

From: D. H.

Subject: ACE Basin Region Phragmites

Date: Fri. 1/26/2024 9:58 AM

Historically there have been pockets of phragmites located in the tidal marsh along the Edisto, Ashepoo, and Combahee rivers. In past years the SCDNR teamed with partners to conduct surveys to identify areas of phragmites on the river systems and treat those areas.

I suggest SCDNR include phragmites surveillance and control in the ACE Basin River systems as part of the 2024-2025 Plan.

Thank you,

D. H.

From: A. C.

Subject: Grass carp

Date: Fri. 1/26/2024 12:14 PM

Good afternoon,

I have some concerns with the proposed 17,000 grass carp being stocked in the lakes. In realtors I fully disagree with the stocking of any additional grass carp along with the general sportsman populous. Our Santee Cooper lakes should have, at minimum 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both lake wildlife and fisheries .

If weeds around docks and landings are an issue this can be controlled with spot spraying and pellets. In my years of observations, when triploid grass carp or tilapia have been released into large ponds with good bass and bluegill populations they immediately start to plummet.

These weeds are the exact protection and breeding grounds for micro fauna and bait fish that support our game fish. In addition to this the weed cover provides shelter for game fish from the massive population of cormorants that we still are not allowed to help control.

The releasing of carp in our lakes not only hurts fishing and bio diversity, it directly affects migratory waterfowl that use our lakes as a stopping point when headed south. Millions of dollars are poured into the SC economy every year for our hunting and fishing. Carp are not a game species and water sports do not pay the bills. Please consider other options that would allow everyone to exist cohesively on the lakes while still enjoying their passions.

Sincerely,

A. C.

From: D. C.
Subject: 2024 Aquatic Plant Management Plan Comments
Date: Fri. 1/26/2024 2:26 PM
Thank you for allowing me to comment on this plan.

I live on the shores of Lake Marion and as such fully support the 2024 Aquatic Plant Management Plan. Of particular concern is the increase in hydrilla. I've seen what it can do when left unchecked and think the proposed increase in sterile carp is warranted and much appreciated.

Thank you for all you do keeping our waters safe and usable by boaters and fishermen alike.

D. C.

From: R. S.
Subject: SAV
Date: Fri. 1/26/2024 8:00 PM

I fully disagree with the stocking of any additional grass carp. Our Santee Cooper lakes should have, at minimum 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both lake wildlife and fisheries .

From: C. H.
Subject: NO MORE CARP
Date: Sat. 1/27/2024 3:13 PM

I fully disagree with the stocking of any additional grass carp. Our Santee Cooper lakes should have, at minimum 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both lake wildlife and fisheries .

Benefits were seen this year as higher numbers of waterfowl used areas of the lake holding vegetation. There has to be a balance between recreational usage and vegetation that benefits wildlife and fishes.

Sincerely,
C. H.

From: C. W.
Subject:
Date: Sat. 1/27/2024 6:17 PM

I fully disagree with the stocking of any additional grass carp. Our Santee Cooper lakes should have, at minimum 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both lake wildlife and fisheries .

From: J. F.
Subject: Stop the removal and spraying of aquatic vegetation
Date: Sat. 1/27/2024 6:52 PM

There is no need for the removal and spraying of aquatic vegetation in our SC lakes and rivers. These aquatic plants serve as precious habitat and vital food resources for both various wildlife and aquatic life. If the homeowners that own lake front property do not like this vegetation they should have considered it before buying the property, we shouldn't kill native plants and hurt wildlife habitat to meet their needs. I personally have seen the terrible negative effects this spraying has had on lakes, there was 100s of thousand of fish killed in lake Bowen due to these chemicals. STOP THE SPRAYING!

From: D. D.

Subject: Aquatic management

Date: Sat. 1/27/2024 7:11 PM

To who ever pretends they read these:

It's become blatantly obvious to SC residents who actually hunt and fish in SC that the SCDNR cares less about fish and waterfowl than the USFS cares about turkeys and deer fawns they burn to death every spring. The SCDNR has intentionally overstocked carp and sprayed poison into our water bodies to kill every bit of fish and wildlife they can possibly kill. The DNR strategically used the grass carp and poison to remove the bottom link of the food chain. Once all the vegetation was gone from the water, the smaller fish have no where to hide. They've all been eaten or starved to death. Once those smaller fish are gone, the larger fish starve to death. The same with ducks, that vegetation was a large part of their diet but they would have also eaten invertebrates that have died off with no vegetation. What is left? A giant bowl of water. It keeps the wake boarders and power companies happy but what of the people that actually pay for the DNRs budget? Well to shut the fisherman up, they've invested a pile of money into stocking fish that should have been here naturally. Money they could have been used elsewhere if they hadn't killed off all the food chain. What about the duck hunters? Well the DNR just ignores them completely. The only group that made out alright is the gator hunters since the gators cant hide in the weeds now. But to get a gator tag takes years of buying into points so they gain the money they were after anyways.

In conclusion: the 14 comments you've cherry picked to show in the 2023 survey shows that you did not want anyone to see more than 1 hunters comments so I'm positive I will be ignored. Just know that one day, the hunters and fisherman of SC will grow sick enough of this leadership to finally do away with the DNR all together. I for one have already pulled any funding i possibly can and will continue to speak out against these actions and lead others towards pulling theirs. I will not fish or hunt another day here when i can travel for a similar price and actually find success in states that are not ran by liberal anti hunters.

Thank you,

D. D.

From: unknown

Subject:

Date: Sat. 1/27/2024 7:38 PM

I am totally against releasing any more grass carp in our lake systems of Santee Cooper

From: S. L.

Subject: Santee Cooper

Date: Sat. 1/27/2024 7:49 PM

I fully disagree with the stocking of any additional grass carp. Our Santee Cooper lakes should have, at minimum 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both lake wildlife and fisheries .

Regards,

S. L.

From: C. P.

Subject: Spraying weeds on public lakes

Date: Sat. 1/27/2024 8:03 PM

As a true outdoorsmen that cares about wildlife conservation. I believe it is important to our wildlife in South Carolina to let these resources grow and to not spray them off. They provide so much for the animals around us why you would want to take that away from them beats me. Instead of spraying and killing it why not plant recourses for the wildlife to feed off of. Year after year it provides cover for ducks and fish food for the deer. Why are y'all not planting some lakes with food for waterfowl to advocate people spending time in the outdoors making the lakes prettier. It blows my mind to who ever thought it was okay to spray ever. The amount of things that would changed if y'all stopped spraying. I believe yall should let the people of the state decide I guarantee 70% of people would say to leave it alone. Not that my email will do anything for this but the spraying is hurting a lot for the wildlife and the outdoorsmen. Waterfowl is a huge one we do nothing in my areas of the upstate and we have 4 lake chain system russle and Clarkshill lake being an awesome lake to try and preserve waterfowl there's no refuges why we're in a prime spot. I have stopped hunting around here for waterfowl and started going out of state to hunt because it's gotten so bad. If it's funds say something the amount of waterfowl hunters there is now would be glad to raise main to pay to have implements put in to help with waterfowl. But waterfowl have no food here on the lakes especially puddler ducks so they don't ever come here.

From: N. R.

Subject: Aquatic 2024 plan

Date: Sat. 1/27/2024 8:03 PM

I as well as the majority of sportsman's in the state DO NOT SUPPORT any new release of grass carp or the spraying of any Aquatic vegetation. It is crucial to the waterfowl population as well as other wildlife if anything we need more natural vegetation available for waterfowl and other aquatic wildlife. I cannot understand why SCDNR would not be on board with the sportsman's and outdoorsmen/women of this state our waterfowl population/habitat is atrocious in this state. The "leaders" of this plan and many others in SCDNR would rather listen to the non sportsman's. Half the time I hear and see people notice any type of vegetation in any body of water and automatically assume it's hydrilla. It's time for a change lookout for the Sportsman's of the state it's crucial to the youth and hunting traditions that will hopefully be continued to be passed down for years to come.

From: E. F.

Subject: Waterfowl Hunting Related/ Food Source

Date: Sat. 1/27/2024 8:05 PM

I want to start off by saying thank you to each and every one of you! Yall do alot of great things in our beautiful state!

My comments related to aquatic plants are as follows:

Years back before the boom of the control of aquatic plants. South Carolina was a meca for waterfowl! There were so much more ducks staying and feeding instead of just hitting the water to roost only to leave out and move for food!

I feel we do need to control it in some aspects but I do not feel they need to be eradicated!

One example is Lake Murray when it had hydrilla, one it was an amazing fishing lake but not only that it HELD WATERFOWL! PLEASE STOP KILLING OFF ALL AQUATIC PLANTS WE NEED NATURAL WATERFOWL FOOD IN SC !

Thank you again for listening/reading my regards!

Thank yall for all you do as well !

From: J. C.

Subject: Aquatic Plant Program

Date: Sat. 1/27/2024 8:29 PM

To whom it may concern,

As an avid outdoorsman here in the upstate of South Carolina, I would like to offer my opinion of the Aquatic Plant Program.

Over the years I grew up hunting and fishing on mainly lakes Clarkhill, Hartwell, Russell and Greenwood. Within the Past ten years especially I, along with other have noticed how the spraying of the lakes and also the addition of grass carps have altered the Waterfowl numbers and fishing on those lakes.

As for the waterfowl, I am limited to only hunting on the weekends due to my work schedule. However, I can remember seeing 100s of diver ducks like Redhead, Ringnecks, Scaup, coots and Canvasback whenever the lakes held hydrilla. Clarkhill used to hold over 10,000 waterfowl and those numbers are down in the hundreds now if I'm not mistaken. I understand something should be done to control the grasses in the lake but I believe there could be designated areas where the grasses should be allowed.

As for the fishing, I have noticed that within the past 10 years of bass fishing, the fish have developed some sores on them. Rumors that I have heard say that the sores on the bass and other species are from the chemicals used to spray for the grass. Those grasses that are killed offer food and shelter for all types of fish.

If I could offer some added advice. I would love to see the state turn Lake Russell in to a sportsman's lake. There are no houses on the lake for the most part. There are trees all over especially in the upper part. It would be easy to lower and elevate the water levels due to the lake needing to be at full pool at all times. It would be nice to lower the lake in late summer and plant it for waterfowl in the winter months. It may also be beneficial to just let that lake have the hydrilla and other grasses that benefit both wintering waterfowl and create a different type of fishery on the Savannah River chain.

If you have made it this far, thank you for what you do! Please help make SC a great place to hunt and fish again!

Thanks,

J. C.

From: M F.

Subject: Don't spray!!!

Date: Sat. 1/27/2024 9:13 PM

Let the number of waterfowl increase in this state! So many people want this.

From: unknown

Subject: Grass carp

Date: Sat. 1/27/2024 9:17 PM

I Fully disagree with the stocking of any additional grass carp. Our Santee Cooper Lakes should have, at least a minimum of 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both wildlife and fisheries

From: W. T.

Subject: PLEASE STOP KILLING ALL THE VEGETATION

Date: Sat. 1/27/2024 9:28 PM

I've seen more ducks in sc this year with the vegetation thriving vs lowering the lake and killing it off for pleasure boaters. Hunters and fishermen generate 3 times the revenue than pleasure boaters ever will. Please quit taking this away from us

From: C. M.

Subject: Invasive weed control

Date: Sat. 1/27/2024 9:36 PM

As a duck hunter, I would like to see my well earned money being spent on something to help duck hunting in the state. Less grass carp, less destruction of the hydrilla, less giving into the duck impoundments, less LEGALIZED baiting or either allow EVERYONE to bait. It is pathetic that a lawyer is allowed to, plain as day and legally, plant a cornfield with zero intentions of using it as a cornfield, only to flood it for ducks but we can't dump a bag of corn in a beaver pond.

From: D. S.

Subject: Invasive weeds questions

Date: Sat. 1/27/2024 9:54 PM

I'm just curious if you disclose the problems that these "problem weeds" are causing to the lakes. I'm just confused as to how eelgrass which was purposely planted in the lakes is much different than some of the problem weeds.

From: R. R.

Subject: Appreciating the Ecological Benefits of Hydrilla for Waterfowl and Fish

Date: Sat. 1/27/2024 10:10 PM

I hope this email finds you well. I am writing to bring attention to the ecological benefits of hydrilla in our aquatic ecosystems, particularly in relation to its positive impact on waterfowl and fish populations. Hydrilla, despite being considered an invasive species in some regions, plays a crucial role in providing habitat and sustenance for waterfowl. The dense underwater vegetation created by hydrilla serves as ideal nesting and feeding grounds for various waterfowl and fish species. The structure adds to the aquatic environment contributes to the overall biodiversity, supporting a healthier ecosystem for these birds. Additionally, hydrilla's growth pattern and structure provide excellent shelter for juvenile fish, offering protection from predators and creating favorable conditions for their development. The presence of hydrilla enhances the overall fish habitat, promoting increased spawning and recruitment of fish populations.

I understand the concerns related to hydrilla's invasive nature and potential impact on recreational activities, but it is essential to recognize the ecological balance it brings to our water systems. A comprehensive approach that considers the positive aspects of hydrilla alongside management strategies may lead to a more sustainable coexistence.

I encourage the South Carolina Department of Natural Resources to explore alternative perspectives on hydrilla management, taking into account its role in supporting waterfowl and fish populations. Collaborative efforts that balance environmental conservation and recreational interests will contribute to the long-term health and resilience of our aquatic ecosystems.

Thank you for your attention to this matter, and I appreciate your dedication to preserving and managing our state's natural resources.

Sincerely,

R. R.

From: B. D.

Subject: Lake Marion/moultrie

Date: Sat. 1/27/2024 10:24 PM

To whom it concern, I live in Summerton and frequent these lakes very often weather it be riding/fishing in the spring and summer or hunting in the cold months. To me the invasive plants are a double edged

sword. Plants like smartweed and hydrilla and other plants of that nature are more beneficial to me than harm. They improve hunting tremendously. They provide great food value for ducks and are also good for fishing. I would love to see these types of plants to thrive within reason. On the other end plants like giant salvinia don't provide the equal food value and do nothing but clog usually hunting spots and make it hard to even walk through. Thankyou for allowing my thoughts and I hope you will take them into consideration.

From: T. B.

Subject: Aquatic Vegetation

Date: Sat. 1/27/2024 10:43 PM

Hello,

I am writing in response to the Facebook post regarding public response to the states aquatic vegetation program. Although I am not a citizen of the state, I live in Georgia, bordering SC in the region around Clark's Hill and the Savannah River. The damage that the US Corps has done to Clark's Hill is nothing short of disgusting. I just want to voice my opinion, so that hopefully something similar does not happen again

I grew up duck hunting Clark's Hill and made some amazing memories along the way. However, that has stopped due to the removal of aquatic vegetation. I also know that the overwhelming majority of hunters and fisherman in the area feel the same way. While I do understand that hydrilla is an invasive species and can be hard to control, the removal has completely depleted an entire ecosystem. I want to see these memories come to life again for me, my children, and my children's children. I hope that my words can be used to help control damage done.

T. B.

From: C. S.

Subject: Spraying the lake

Date: Sun. 1/28/2024 5:09 AM

Spraying the lake needs to stop. It is not good for the fishery or the wildlife. Eliminates food for ducks and can not be good for fish. I have caught fish in specific spots very well and when those spots get sprayed it immediately turns them off. I am no biologist but that can not be good for the fish. This probably won't make a bit of difference because y'all will do what y'all want because you "know better" than all of the people that will tell you to stop, but if this is what I can do I've got to try. Please stop spraying our lake across all of Santee. It has far more hurt our lake than it will ever benefit and there's no way yall can prove it hasn't.

From: M. E.

Subject: NO MORE CARP

Date: Sun. 1/28/2024 9:22 AM

Please do not release any carp in santee cooper. Also let hydrilla come back to the lakes. There are power producing lakes all over the country that have hydrilla and they do just fine. There is no good reason for making our lake a under water wasteland.

Date: Tues. 2/13/2024 5:45 PM (response to ANS reply)

Hydrilla should be left alone on santee and moultrie except in populated ares. The excuse that it can't be controlled is a myth. Plenty of lakes across the country have hydrilla and they are just fine no need to wipe it out. All fish species trive in it. Just my two cents y'all will do the complete opposite of what is good for the lake. When we had a lake full of hydrilla santee and moultrie where one of the top fishing destinations in the United States.

From: A. P.

Subject: Santee!

Date: Sun. 1/28/2024 9:57 AM

Please for the love of the sportsman stop the spray!

From: S. H.

Subject: Comments on 2024 DRAFT S.C. Aquatic Plant Management Plan

Date: Sun. 1/28/2024 10:01 AM

Hello, my name is Sal Hodson I'm a long-term Duckhunter and resident of South Carolina had 100 all over the country and have seen weed control management done a lot more effectively. I want to propose the idea of reduced spraying, and instead trying to drive out some of the nuisance species with native species by implementing/transplanting them to try to take over/compete with the nuisance species.

From: J. C.

Subject:

Date: Sun. 1/28/2024 10:07 AM

Me as a farmer do understand how grass can get out of control but also understand the needs of wildlife and their should be no grass carp add as you can not control them. The grass should be controlled by spraying and this should be done after bedding and hacking so that it all has cover for protection . I deal with this every year as I plant and step out my back door looking at a 6 acer feel with 70 head of deer and only 3 of them are buck and the other are does and I ask myself why is there a limit on does right now so do we have to many or is that just mother nature taking them all to the only food around here . Today the scdnr is become like all of sc its about the money and the computers and they forget about the people how don't have one and most of all the wildlife they are to protect . So a check to see if anyone reads this email me back protect . And I'll keep this for a meeting if I don't hear back

From: Z. P.

Subject: Killing the wildlife

Date: Sun. 1/28/2024 11:05 AM

To whom it concerns,

The spraying of grasses and other aquatic vegetation is driving out and killing the wildlife in South Carolina. As an avid hunter and outdoorsman it disappoints me to see SCDNR cater to the everyone except the the hunters and outdoorsmen that they so call are trying to help out. The more vegetation the you spray and kill drives out wild life like all forms of waterfowl. Waterfowl use the grasses and a huge food source. Killing it all drives them out or to a corn pond around the state. Those which are privately owned or you have to pay to be a member of and 85% of people that live in SC cannot afford to be apart of. The vegetation on the lakes also serve as great cover and food source for fish. You are also destroying tons of habitat for fish as in largemouth bass and bream. SCDNR does not care about the wildlife or conservation of the state only the money that they can bring in and the make and use of recreational lakes, discouraging hunters and outdoorsman to go to those fisheries and land to do something they enjoy. I hope this act comes to a stop and the lakes in SC be returned to the former glory they once were. Unfortunately until SCDNR starts caring more about the outdoorsman and less about the money things will not change.

Great regards,

Z. P.

From: W. S.

Subject: Stocking of carp

Date: Sun. 1/28/2024 3:16 PM

I oppose any further introduction of grass-eating carp into the lakes of S.C.

W. S.

From: E. G.

Subject: Invasive weed - Lake Marion

Date: Sun. 1/28/2024 6:12 PM

I have been fishing, hunting and boating on lake Marion for the last 45 years. Both hunting and fishing has decreased in value as the vegetation has been sprayed and limited.

I oppose constant yearly spraying, as wildlife needs several years to have a chance to recover. Duck hunting has especially been severely limited to anyone that hunts public waters because of limited vegetation. So please stop spraying!

E. G.

From: K. W.

Subject: Aquatic Plant Management Plan

Date: Sun. 1/28/2024 6:27 PM

Please, please stop spraying the lakes of SC.

From: T. M.

Subject: Santee Cooper aquatic vegetation

Date: Sun. 1/28/2024 8:18 PM

Please don't kill any of the vegetation on lakes Marion and moultrie please!!!!

From: A. B.

Subject: Make duck hunting good again

Date: Sun. 1/28/2024 10:37 PM

Dear scdnr, my name is Andrew Brunson and I have a lifetime combination hunting license for South Carolina. One of my favorite things to do is duck hunt and y'all spraying is ruining that. Me and my buddies work really hard to get on ducks and all we hear are stories from our dads or other older fellas about how good the duck hunting was back in the day. Please stop spraying the lakes and taking away natural food for the ducks. I would hate to give up on something I love just because y'all ruined it. Every other outdoorsman I know agrees with me so if y'all really care what the people want y'all would actually do something to help make duck hunting better in South Carolina.

Sincerely, A. B.

From: B. S.

Subject: Hydrilla and the santee cooper lake system

Date: Sun. 1/28/2024 11:39 PM

I fully disagree with the stocking of any additional grass carp. Our Santee Cooper lakes should have, at minimum 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both lake wildlife and fisheries further more I know it may never be like the golden days my father or grandfather tell us stories about but I sure would love for my kids to have the opportunities to tell their grandkids stories of hunting on these beautiful sc lakes if it keeps trending in the direction it was trending in eventually the traditions of duck hunting in these lakes will soon die off

Thanks

B. S.

From: J. B.
Subject: Santee cooper aquatic vegetation
Date: Mon. 1/29/2024 9:23 AM
Please stop killing the grass and other vegetation types in lakes marion and Moultrie

From: C. H.
Subject: Aquatic vegetation santee cooper lakes
Date: Mon. 1/29/2024 9:55 AM
Hello,
I want to express my concern for you all killing the grass. Please please do something about this.

C. H.

From: A. H.
Subject: No more grass carp
Date: Mon. 1/29/2024 10:42 AM
I fully disagree with the stocking of any additional grass carp and the continued spraying of aquatic plants that are beneficial. Our Santee Cooper lakes should have, at minimum 10%-20% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both lake wildlife and fisheries.

From: W. M.
Subject:
Date: Mon. 1/29/2024 11:02 AM
Dear SCDNR,

All of my freinds, family, and colleges hunt and fish and are active conservationists of South Carolina. Every person who discusses the invasive plant issue has been screaming at the biologist to stop spraying for aquatic plants. Between the comorants, and the spraying you will hardly be able to catch a fish anymore. The ducks have no food on the lake. The grass carp so not help and you are killing more good stuff than invasive plants. Please put a stop to this nonsense and just do things to better the environment.

From: T. B.
Subject:
Date: Mon. 1/29/2024 5:31 PM
The spraying needs to stop!!! Just go look at the trees that are dying I know that the chemicals used can not be good for them also for the animals fish birds alligators ducks... everything that makes our lakes beautiful it's a shame that my kids and their kids will not get to see the lakes the way I saw them growing up please if you care quit with the spraying and figure something else out help make our lakes great!!

From: W. H.
Subject: Aquatic vegetation
Date: Mon. 1/29/2024 6:06 PM
In my opinion I'd say stop spraying and killing the aquatic vegetation, it's making hunting on public land on Marion and Moultrie almost impossible I myself and a bunch of hunters would like to see the santee lakes hunting go back to what it once was. The duck hunting majority doesn't have 10 plus thousand dollars to lease a blind at a duck club with impoundments. Not to mention if the hunting got back to what it once was on the lakes the amount income it would bring to local businesses when it comes to lodging,

food, and other accommodations. I know killing the aquatic vegetation isn't the only cause for the decline of waterfowl on the santee lakes but I feel like it would be a good first step into getting the hunting back to what it was before.

From: D. G.

Subject: Santee Cooper Grass

Date: Mon. 1/29/2024 7:49 PM

Please do not spray the grass or put grass carp in lake to control it. For the fish and ducks Thanks, D. G.

From: J. R.

Subject: Please don't spray

Date: Mon. 1/29/2024 10:37 PM

I have duck hunted all over the country and no offense SC DNR is really good at doing the very minimal for waterfowl in this state. Please keep that tradition alive and not spray the the lake(just leave it alone like anything else in this state) . Let it be. There is also no way possible the chemicals being sprayed are healthy. On a side note why are farm raised ducks still legal.? There is so much data out there stating the farm raised mallard is terrible for the flyaway. Why can I go kill ringnecks, teal and wood ducks but the mallard went from the king to almost non existent in our state? You hear stories of mallards flying from the refuge to the swamp all day. Hotels being booked up, Arkansas people coming to our state to hunt. It just makes you wonder.....leaving grass on the lake would be one factor that would help everything get back to "normal". If you ever need a in person representative on this topic from someone that has spent a lot of time on SC public land and other states I would gladly sacrifice my time to discuss this topic further!!!

Date: Wed. 2/14/2024 8:53 PM (response to ANS reply)

Thanks for replying Julie. Some of that 15% of native vegetation would never be looked at by a duck for consumption. Yes, I will agree there is more vegetation now than there was in years past. 15%, that's pretty weak.

From: T. B.

Subject: Aquatic grass management

Date: Tues. 1/30/2024 7:37 AM

Good morning,

Do not spray chemicals into our lakes to kill grass as it provides crucial habitats to our state's fish species. Every sportsmen who invests in fishing/hunting licenses the CORRECT way, the ones who respect the laws/limits surrounding our fisheries and game animals is AGAINST your agenda. Also need to crack down on enforcing the current regulations instead of becoming a tax collection agency.

Sincerely, a tax paying citizen who cares deeply about his states incredible ecosystems and resources.

From: U. P.

Subject:

Date: Tues. 1/30/2024 7:47 PM

I Fully disagree with the stocking of any additional grass carp. Our Santee Cooper Lakes should have, at least a minimum of 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both wildlife and fisheries

From: A. H.

Subject: Cooper River invasive species

Date: Wed. 1/31/2024 8:18 PM

Thank you so much for the information. I realize resources are extremely limited on certain projects and it is understandable. However, living on the Cooper River, I spend double the money allotted for the Cooper in our rice fields fighting these species. Hopefully with all of us working and trying, we will at least achieve a positive outcome!

Thank you,

A. H.

G. M., Gippy and Lewisfield Plantations

From: C. D.

Subject: Aquatic Plant Management Plan Comment

Date: Wed. 1/31/2024 5:11 PM

To whom it may concern,

As a concerned resident of Bonneau, SC in Berkeley County I wanted to share my input on the 2024 Aquatic Plant Management Plan. I enjoy using the Santee Cooper Lakes throughout the year be it from duck season in the winter, to family boating in the summer, and deer hunting in the fall. I strongly suggest the restriction of releasing anymore grass carp in this lake system. A grass carp is a destructive animal to a lot of aquatic vegetation including non invasive species of aquatic vegetation. I also strongly disagree with the use of wide range "spraying" herbicides as it causes destruction to a wide range of aquatic vegetation in our lakes. Site specific spraying for certain invasive plants is more reasonable in areas that pertain to passage or such but is not at all needed in the entirety of the lakes. I would love to see our lakes flourish again with an abundance of wildlife and fish that benefit from a lot of these aquatic plants. I would hate to see our lake system turned into a worse state of desert like lake bottoms that do not support or benefit many animals. Migrating ducks have long enjoyed our area until the use of these tactics have become more prevalent and common. Fish life of all different stages greatly benefit from allowing more aquatic vegetation as well. I hope we can work together to come to a better conclusion than spraying and releasing grass carp. Thank you for your time.

Sincerely

C. D.

From: N. W.

Subject: Aquatics control of Santee Cooper Lakes including Santee National Wildlife Refuge

Date: Wed. 1/31/2024 7:47 PM

I have always seen Giant Cutgrass included as a nuisance species but have never seen any treatment other one year in a small section of the Blackbottom area of the Refuge. for years Cutgrass has invaded black water ponds and spawning areas which are now totally filled in and becoming dry land. Fish populations, primarily bass, throughout the lake have declined because of loss of spawning habitat and/or mucky bottoms. In addition, Cutgrass continues to incircle and enter areas which then collect silt and then contribute to water too shallow to navigate.

Final thought, hydrilla is very hard to selectively control but we need to only concentrate in residential areas, give the grass 4-5 years to promote good spawning habitat and greater survival of fry . We have seen better results just from 1 year of eelgrass. Thanks, N. W.

From: J. P.

Subject: Aquatic plant management plan

Date: Thurs. 2/1/2024 8:41 AM

I oppose the 2024 aquatic management plan for the Sante Cooper lakes releasing grass carp and spraying vegetation this year as well as all other bodies of water.

From: H. C.

Subject: Aquatic weeds

Date: Thurs. 2/1/2024 9:14 AM

Now that duck season is officially over, I can say we seen more birds in open water feeding on hydrilla seeds than any year in the past 5 years. I say balance it out so we're not took over by invasive weeds. I say take the invasive weeds that are no good out of our lakes. Leave what's good for our natural resources. Our fish and our waterfowl. South Carolina is already behind in the waterfowl industry. We need more ducks!!! Keep the weeds!!!

From: C. F.

Subject: Aquatic Plant Management Plan

Date: Fri. 2/2/2024 12:34 PM

To whom it may concern:

I want to start by saying that I was fortunate enough to grow up in South Carolina and experience living on Lake Murray and in the Midlands. I love this state and have made it a point to build my dream home and start my family in Chester county.

My goal is for my children to grow up in an outdoor environment with an abundance of wildlife. As a child I grew up catching fish off the hydrilla on Lake Murray. The eradication of these weeds severely degraded our ability to catch fish on our home lake thus made us fish less often.

Lake Murray used to be a Waterfowl hunting destination for the state. I used to see Mallards in droves across the lake when the aquatic plants were more prominent. Since these efforts to remove these plants began, I have seen far less birds migrate in and mallards become a rarity in a Waterfowl hunters take. In 2022, the aquatic plants in lake Murray flourished and with that we saw a migration like I haven't seen in many years. We saw rafts of Readheads, Scaup, and buffleheads in abundance across the lake. However, the energy company decided to drain the lake to kill the plants and this winter not even the coots migrated in their normal numbers.

I was fortunate enough to draw a hunt on the Santee coastal preserve this year and I saw duck numbers unlike anything else in this state. Those were cultivated not with rice impoundments and flooded corn fields but with natural grasses and proper habitat management. All of the impoundments, private and public, in the state are a drop in the bucket compared to the main reservoirs. Spraying the Santee lakes and Lake Murray has done a massive disservice to all that call this state home.

I believe that it is very important to prioritize the management of natural resources in this state and that includes our wildlife. From a perspective of a waterfowl hunter and a fisherman, it perplexes me how the State Department of Natural Resources is spending millions to degrade the natural habitat of the wildlife that call this state home. I ask you to please compare the budgets for improving wildlife management areas habitat to the budget you have for actively destroying habitat and reconsider what is your job and your responsibility is for the wildlife in this state.

Thank you for your consideration.

C. F.

From: J. B.

Subject: Fwd: SCDNR: Draft 2024 Aquatic Plant Management Plan available for public review until Feb. 27

Date: Sat. 2/3/2024 8:51 AM

Couple general observations/comments for your review are enclosed.

Thank you,

J. B.

Comments and questions imbedded in Part 1 ("Text" followed by comments):

1. "Plants must interfere with at least one intended water use before a problem can be considered to exist." Is this defined somewhere? What does "one intended water use" mean? or maybe clarify "water use" in the sentence?
2. "This survey will be in the form of a questionnaire (Appendix C) mailed to..." Is this survey made publicly available besides mail? Posted on DNR, DHEC,
3. "Early Detection Rapid Response (EDRR) protocol" Where can I find out more about EDRR? How is this different from the Appendix C survey?
4. "monitored by field inspection" who is required to complete field inspection? Is this documented and reviewed by some agency?
5. "The need for evaluation of environmental effects of the program will be determined by the SC Department of Health and Environmental Control." Isn't evaluation of short and or long term program effectiveness and evaluation of adverse impacts always conducted?
6. "may require that the entity applying the control agent conduct routine water quality monitoring during and after the control application" Is the monitoring plan requirements outlined and reviewed prior to control application?
7. "The Department of Health and Environmental Control will notify the Department of Natural Resources of such adverse impacts." Communication between Departments should be routine and frequent. Adverse events such as fish/bird kills likely occur before water monitoring results are received.
8. "National Pollutant Discharge Elimination System Permit requirements" Does the control applicator apply for a NPDES permit to perform aquatic control?

From: J. A.

Subject: Grass on santee.

Date: Mon. 2/5/2024 10:16 AM

Killing the grass on santee is absolutely destroying the panfish, panfish live and feed underneath this grass and also have a little protection from predators. If you want to see how bad our lake is, go to Florida for instance. Grass everywhere and it's probably safe to say 10x the fish, maybe more! If y'all keep spraying the good grass on santee it will be good for absolutely nothing but a waste water plant! No ducks, no panfish.

From: G. H.

Subject: Invasive Weeds

Date: Mon. 2/5/2024 11:11 AM

The killing of all the grass and weeds in lake Marion is ridiculous. I understand that it can get out of control with growth but that takes years. All types of fish live in and under grass beds and weedbeds. It also provides protection for fish from other predator fish. Over the last several years the fishing especially in upper end of lake Marion has went downhill. Constant spraying and killing weeds and not considering the effect the decomposing matter has on fish. I often fish in other states in grass and weedbeds for crappie. The fishing is phenomenal and the quality of fish you catch is unreal. Santee could be like that again if you let the grass and weedbeds grow. Also you need to up the size limit of Crappie to 10 inches minimum.

From: A. S.

Subject: Invasive Weeds

Date: Mon. 2/5/2024 1:57 PM

Let the invasive weeds grow nature will cull what not needs to be there and the wildlife will be more abundant during seasons

From: A. E.

Subject: Invasive Weeds

Date: Mon. 2/5/2024 3:24 PM

I think the state should double the invasive weed control plan. Water hyacinth has all together choked out every bit of open water in the upper Combahee river. All of my impoundments and rice fields adjacent to the river are loaded. We spend \$25,000 annually to control on this private property. But if the state doesn't control them in the river it is a waste of time.

A. E., Cherokee Plantation

From: H. C.

Subject: Recommendations for Upper Lake Marion

Date: Mon. 2/5/2024 4:11 PM

I have read the proposal for the control of invasive weed in Lake Marion. I understand the importance of trying to eliminate or reduce the amount however some effort should be done to kill it where it multiplies. In the upper part of lake Marion (Stumphole Area) large sections of the swamp are covered with the invasive weed and the airboats used to spray can not reach those parts of the swamp. Only when the wind or high water causes the some of the weed to be pushed into open water that airboats can spray to kill it. The problem is they are fighting a losing battle. The same areas where the weed finally is in the open are constantly sprayed numerous times. This is a constant problem with people that are trying to fish since the spraying does cause the area to be "fish less"! In addition the weed that is sprayed dies and sinks to the bottom. This has the effect of build up of dead weed that is causing some of our coves and banks to become shallow. In addition the "fish beds" are destroyed. The cove I live on was sprayed over 8 times last year.

If you really are trying to eliminate the invasive weed then you need to get smaller boats that can get back into the "woods"! Invasive weeds are growing there that have never been sprayed. Airboats are great for open water but they are useless in the wooded swamp.

If you have any questions I will be glad to provide any feedback. I don't dislike the spraying I just think it can be done more efficiently and effectively!

Thank you!

H. C.

From: Z. T.

Subject: Lake Grasses

Date: Mon. 2/5/2024 6:05 PM

Please leave the vegetation in the lakes alone and please do not add any more grass carp. The grasses provide habitat for many of the freshwater fish species as well as waterfowl.

The idea behind spraying herbicide into the states water systems is just criminal. I've been an avid outdoorsman my entire life and I've seen nothing but steady decline in the wildlife numbers since the early 2000s (especially waterfowl) so instead of spending our tax dollars further driving the decline of wildlife in our great state. Instead use those funds to properly maintain WMA and public lands and water resources.

I know I'm not alone in my opinions just check out your facebook post comment's.

Sincerely, Z. T.

From: T. B.

Subject: Grass Carp

Date: Mon. 2/5/2024 8:34 PM

I fully disagree with the stocking of any additional grass carp. Our Santee Cooper lakes should have, at minimum 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both lake wildlife and fisheries .

Sincerely

T. B.

From: W. K.

Subject: Aquatic management plan comments

Date: Mon. 2/5/2024 9:48 PM

I recently read through the annual aquatic management report. Based upon what we have seen in the past from the stocking of grass carp, and based upon the fact that our neighbors are finally waking up to the negative affects of the stocking (and subsequently removing, not restocking triploid grass carp), I am very disappointed that the plan recommends further stocking.

I fully disagree with continued stocking of grass carp. They feed non-selectively on invasive and native aquatic plants plants. They remove vital native grasses which provide effective nurseries for fish, and feeding grounds for wintering birds. Hunters and fishermen alike know that our lakes are most productive when a minimum of 10% of lake acreage contains aquatic vegetation. Our lakes are healthier and stronger that way.

There is no reason why we can't more efficiently target invasive hotspots by spraying.

Grace and peace,

W.

From: M. R.

Subject: 2024 SC Aquatic Plant Management Plan

Date: Tues. 2/6/2024 10:54 AM

Good morning,

Please mark this down as a NEGATIVE response. Please, please, please stop spraying. Please quit catering to the tourist/summer lake activity. These people want to kill the natural grass habitat all so they can drink and party and, 90% of the time, litter trash on the lake without having to worry about some grass getting in their motor. All to only step foot back on the lake the following summer while outdoorsmen have to live with the consequences 12 months out of the year. Please put the wildlife first and not the crowd that cares nothing of the wildlife and only uses our natural bodies of water a handful of times a year.

M. R.

From: W. O.

Subject: aquatic plant management

Date: Tues. 2/6/2024 11:06 AM

The mass praying of vegetation is killing our public land's ability to kill ducks. Yes the brazil weed doesn't have any benefits but we need the hydrilla back. Back when the hydrilla was thick we had a lot more birds. Without the supplementation of food in the public waterways the poor man has no chance to draw birds legally. The corn impoundments draw all the birds and don't give anyone else a fair chance. If

yall dont kill all the vegetation that the ducks like they'll come back to public waterways and give everyone better hunts.

From: H. H./W. H. (exact message from two email addresses)

Subject: Disagree Grass Carp Stocking

Date: Tues. 2/6/2024 5:22 PM, Wed. 2/7/2024 11:24 AM

SCDNR, Julie Holling,

I fully disagree with the stocking of any additional grass carp on santee cooper and other lakes, our santee cooper lakes should have a minimum of at least 10% of the lakes acreage open to hydrilla, eel grass, and other grasses which are hugely beneficial to both lake wildlife and fisheries.

I started duck hunting when I was 12 back in 2006 on lake murray. This was post hydrilla eradication/grass carp stocking. There were very few ducks when I started hunting lake murray and I have noticed such a decline since to where I do not even bother to hunt Murray anymore.

The many stories and people that I have talked to that had the privilege of hunting Murray and Parr Reservoir in the late 90s and early 2000s make me wish today was still that way. I firmly believe the eradication of the water vegetation on murray has made the duck population of the midlands area where I live suffer greatly on Parr reservoir and Lake Murray. I would hate to see the same thing continue or get worse on the Santee Cooper lakes.

I have also noticed personally the effect it has had on bank erosion of the islands and shores on Murray, there are several islands on the lake that I have seen 15-30 of shoreline erode away over the last 20 years due to the lack of the "buffer" from water vegetation.

I want SCDNR to care about the wildlife and fisheries habitat on our SC public waters by showing habitat improvement and proof with increase in wintering waterfowl numbers.

Thanks,

H. H./W.H.

From: T. A.

Subject: Comment on SCDNR Aquatic Plant Management Plan

Date: Wed. 2/7/2024 12:57 PM

Hello,

I'd like to submit some comments/feedback on SCDNR's 2024 Aquatic Plant Management Plan.

I don't know if this is the proper place to address this, but I believe there has been a recent outbreak of *Phragmites australis* in the brackish regions of the South Edisto River. I work for the Edisto Island Open Land Trust and monitor all our conservation easements. This invasive reed has suddenly cropped up on three of our private conservation easements on Little Edisto Island within the last 3 years. This outbreak appears to coincide with the most recent round of USACE dredging and spoil site work immediately nearby in Watts Cut off Jehossee Island in the Intracoastal Waterway. I think it would be wise for SCDNR to look into these spoil sites and the surrounding areas to see if USACE may have accidentally introduced the plant into the area and inadvertently created a population that is distributing seeds into the waterways along Edisto Island.

Thank you for your time,

T. A.
Edisto Island Open Land Trust

From: W. W.

Subject: Spraying

Date: Thurs. 2/8/2024 7:42 AM

Please allow aquatic weeds to grow. This gives ducks an actual place in sc to stop and eat

From: D. G.

Subject: Aquatic Management Plan

Date: Fri. 2/9/2024 9:23 AM

I support the 2024 proposed plan.

D. G.

From: A. D.

Subject: SAV's

Date: Fri. 2/9/2024 2:04 PM

I fully disagree with the stocking of any additional grass carp. Our Santee Cooper Lakes should have, at least a minimum of 10% of lake acreage open to hydrilla and other grasses, which are hugely beneficial to both wildlife and fisheries.

From: R. I.

Subject: 2024 aquatic plant management plan

Date: Sun. 2/11/2024 12:48 PM

We do not need additional grass carp released into our lakes - especially the Santee Cooper lakes. Some aquatic vegetation is making a comeback and along with the spraying would be destroyed by these carp.

Santee Cooper and DNR need to work on the giant salvinia and cut grass that have taken over wintering grounds for waterfowl.

I have personally - 2 years ago - taken a group from the Santee Cooper aquatic weed division into Sparkleberry swamp and shown them the cutgrass problem. I was promised something - spraying - would be started and here we are 2 years later and nothing has been started. I know it's not these employees fault, but upper management and DNR tying their hands - not many people see the affected areas so it's not a priority.

Wildlife - waterfowl and fish - should be - and are required by law to be - shown the same attention as power production.

Stop taking the easy ways out - do not release anymore grass eating carp and concentrate on the giant salvinia and cutgrass on the Santee Cooper lakes and swamps.

Sincerely,

R. I.

From: G. B.

Subject: Invasive weeds

Date: Tues. 2/13/2024 7:41 AM

The management of aquatic vegetation in the public waters of this state have been an absolute disaster. As an avid waterfowler and bass fisherman I have seen firsthand the state organization responsible for preserving wildlife and their habitat actively destroy it. Growing up fishing and hunting on Clark's Hill and Lake Murray it hurts to see how these bodies of water have been managed. Ten years ago there was an abundance of food for waterfowl, and a wide array of waterfowl to be had, along with plenty of structure for fish to hide in and exciting fishing that came with it. Now both lakes are nothing but red

clay banks and a few blown down trees and docks for fish structure and absolutely no food to hold ducks for longer than it takes for them to rest and keep moving south. If a nonnative aquatic plant (hydrilla) provides so much food and shelter for wildlife why kill it? If you must kill it why not make an effort to replace it with something native. And, let's call a spade a spade here, a bald eagle is nothing but a glorified buzzard so arguing that the eradication of all aquatic vegetation in an entire lake is somehow beneficial to an already plentiful animal is lost on me. Find a happy medium if you must. In my opinion, and in the opinion of many other sportsmen you have failed to protect our interests and the interests of wild game animals in this state.

From: C. F.

Subject: Please Don't Spray!

Date: Tues. 2/13/2024 11:01 AM

A lot of people would love for the population of waterfowl to increase in this state, taking away their main food source would take our already small number of ducks and geese away.

From: M. C.

Subject: 2024 proposed aquatic plan

Date: Wed. 2/14/2024 1:24 PM

I am writing in opposition of the 2024 proposed aquatic management plan. I do not support the release of any additional triploid grass carp into the Santee Cooper lake systems.

We have all seen the massive destruction that these carp have done to our lake's native SAVs over the years. The overstocking of grass carp by the management council has caused the eradication of all beneficial native SAVs in previous years.

Despite the carp, the beneficial SAVs have made a rebound this past year in particular. It has taken over a decade for the SAVs to thrive to the level that we outdoorsman witnessed this past year. Even the anglers that competed in the Bassmasters Elite Series were surprised to see all of the beneficial SAVs, and spoke in favor of protecting it on Santee Cooper.

Other public waterways like Lake Mattamuskeet have witnessed the destruction that triploid grass carp can cause when introduced to an ecosystem. The State legislators have passed legislation to remove these carp that aggressively attack beneficial SAVs and destroy the native ecosystem.

We have also observed the destruction of SAVs in some of our waterfowl designated WMAs. All beneficial SAVs have been eradicated within the Potato Creek Hatchery WMA. There is no reason for the eradication of the SAVs in this area, and there are private landowners that surround this impoundment that benefit from taking all of the food sources out of this WMA. The public hunters lose another area that could potentially be one of the most successful public areas on Santee.

In my opinion the total hydrilla coverage of that was observed on Santee does not warrant the release of additional triploid grass carp. The risk to our native SAVs is too great, when other strategies could be implemented to manage the hydrilla. The triploid grass carp will attack native SAVs when hydrilla is not present, as witnessed by outdoorsman on Santee.

The native SAVs provide protection for fish, food for waterfowl and other birds, and help filter the nutrients on our Lakes. We must protect it!

M. C.

From: J. S.

Subject: Santee-2024 Aquatic Plan

Date: Wed. 2/14/2024 2:28 PM

I trust this message finds you well. I am writing to express certain concerns that have been observed over the past decade regarding the decision-making processes within the Department of Natural Resources. My intent is to address these matters with a constructive and solution-oriented approach, without allowing frustration to impede the discussion.

It has become apparent, from a top-down perspective within the DNR, that there may be a misalignment with the interests and perspectives of individuals who are avid participants in outdoor activities such as duck hunting and fishing. Over the past decade, there has been a noticeable shift away from prioritizing the needs and concerns of license holders in favor of considerations for lake residents and individuals relocating from northern regions.

In order to enhance the effectiveness and inclusivity of our decision-making processes, it is imperative that we reevaluate our current approach. This includes a more thorough examination of the research methodologies employed in addressing various topics. At present, the term "research" is used, yet it appears that the findings lack substantiation from credible sources, both within our own state and among neighboring southern states with similar ecological conditions.

We have to stop taking the easy way out, like we do with every issue at hand. Including the wild turkey (a shame).

Furthermore, it has come to my attention that individuals within our own organization, who work closely with the DNR, express a sense of disappointment and embarrassment regarding the current leadership and decision-making practices. This sentiment among our colleagues emphasizes the urgency of addressing these issues promptly.

NOOOOOO need for more CARP. A BIG Need for proper management.

From: P. T.

Subject: Aquatic Plant Management Council Comment

Date: Thurs. 2/15/2024 2:57 PM

Hello Julie,

I hope you are doing well!

I want to go on record that I am still adamantly opposed to the stocking of non native invasive grass carp in any of our lakes! The rebound of native submerged aquatic vegetation has been incredible to see especially in the Santee Cooper lakes and Lake Murray. We need more submerged aquatic vegetation to help filter our waterways, not less! Hydrilla is not the devil now that we have giant salvinia, that truly is the devil. Glad to see the introduction of weevils and I hope these mild winters help on weevil survival!

From: C. C.

Subject: Food for ducks

Date: Thurs. 2/23/2024 2:56 PM

Please help maintain the growth of hydrilla grass and eel grass on our lakes. The future of waterfowling in SC is already at risk for our kids. Please help the lakes maintain the proper balance of food to encourage wintering waterfowl to stay in SC

From: Rachael Rosenstein on behalf of Brandon Jones

Subject: Aquatic Plant Management Comments

Date: Tues. 2/27/2024 4:01 PM

Catawba Riverkeeper is a member-funded environmental nonprofit that educates, advocates, and protects the Catawba-Wateree River and all its tributaries. Our organization represents over 7,000 active members who rely on the watershed for drinking water, recreation, and electricity. Lake Wateree is a major reservoir in the watershed which supplies hydroelectric power, recreational access, municipal drinking water, and is a regional economic driver. The lake also has a history of nuisance aquatic vegetation. We appreciate SCDNR and the Council's work to control hydrilla in the reservoir and the opportunity to comment on the draft 2024 SC Aquatic Plant Management Plan. We make the following recommendations:

1. Fund a pilot *Microseira wollei* (lyngbya) treatment.

Since 2014, SC DNR has recognized the presence of filamentous algae in the reservoir and listed copper based herbicide as a control, yet allocated \$0 for application. Although Duke Energy could not complete a survey at Lake Wateree in 2023 due to the drawdown, upstream reservoirs experienced increases in *M. wollei*, including Lake Rhodhiss, Lake Norman, Mountain Island Lake, and Lake Wylie.

During the last Wateree survey (2021) Duke Energy found *M. wollei* at 117 sites. It is widespread across the lake and can cause numerous adverse impacts such as toxin production, harboring fecal bacteria, devaluing property, impeding recreation, and degrading wildlife habitat. Nearby NC reservoirs are piloting different treatments including chelated copper formulations (Lake Gaston and Norman) and ultrasound (Badin Lake). Research by NC State at Lake Gaston suggests that eradication of *M. wollei* populations may require individualized treatments.

Duke Energy's 14 month drawdown for dam modifications shifted submerged habitat and possibly rates of *M. wollei* growth. Successful treatments could be of enormous value for the 2024 and 2025 summers when lake levels return to full pond and the shallow habitat is restored. We recommend that the agency fund a pilot study with various control methods to begin searching for an effective treatment.

In DNR's response to our similar comments last year, it was noted that "...without locating the source of the excess nutrients in the system, any treatments will only provide short-term relief..." We agree and are happy to inform DNR of DHEC's Lower Catawba Nutrient TMDL (nearing completion) and the Lake Wateree 9- Point Watershed Plan which will be addressing both point and nonpoint sources of nutrients into the Lake. Although outside the scope of this Management Plan, we encourage DNR and DHEC to work with stakeholders to implement the recommendations in the Wateree Watershed Plan and mitigate this problem.

2. Plan the introduction of desirable native plant species for 2025.

Since 2002, the long term management strategy for Lake Wateree has included cultivating and introducing desirable native plants. In addition to habitat enhancement, desirable submerged aquatic vegetation (SAV) has been used to limit the growth of nuisance species including *M. wollei*. In 2022 Catawba Riverkeeper applied for a Duke Habitat Enhancement Program grant to pilot the introduction of SAV but did not receive funding due to concerns of species suitability. We are still interested in this type of project if DNR recommends plant species to assuage concerns from the HEP review committee.

There is significant interest and resources available from the Lake Wateree Association, Lake Wateree WaterWatch, researchers at USC, Duke Energy, and our organization to support a SCDNR plan for *M. wollei* treatment and SAV introduction in Lake Wateree.

For the River,
Brandon Jones
Catawba Riverkeeper

From: Randy Kelley

Subject: 2024 SCDNR Draft Aquatic Management Plan

Date: Tues. 2/27/2024 4:35 PM

Water Watch of Lake Wateree Association would again urge DNR to add funding for treatment of filamentous algae on Lake Wateree. You have said that Duke is responsible for funding for treatment. But for the second year, DNR has allocated money for treatment of hydrilla, which we applaud. But isn't filamentous algae at least as big a threat as hydrilla? This is a great opportunity for Duke and SCDNR to combine their initiative and jointly fund an action plan.

As you are aware, lyngbya/microseria are increasing in presence on Lake Wateree. It's not unusual to see smaller, shallow coves with heavy infestations of mats. The Dutchman Creek, Wateree Creek, Lake Wateree State Park, White Oak Creek areas are all good examples of a significant and growing presence of algal mats. Duke's invasive plant species reports do an excellent job showing the locations.

The current drawdown may temporarily slow the spread of filamentous algae on the lake. But with the increasing inflow of nutrients from upstream in the Catawba River basin, the trend is for this problem to continue to worsen. It will not get better on its own. Recent advances in chemistry and application methods have made chemical treatment safe and effective for water and wildlife.

We work closely with the Catawba Riverkeeper Foundation, and we concur and support their response as well.

Thank you for posting the draft plan and allowing public input!

Randy Kelley

Chair, Water Watch of Lake Wateree Association

From: L. C.

Subject: Proposal for the Santee Cooper system

Date: Tues. 2/27/2024 5:23 PM

Dear SCDNR,

I am sending in my comments on the proposed grass control on the Santee Cooper system.

I do not agree with the proposal outlined here for those system.

I do not agree with the release of any more grass carp into the system. Also do not agree with the spraying of all of this grass. We have a very valuable resource here that can be managed to suit everyone. We have a fishery here that is on the verge of a fish explosion of all species. We need this habitat in the lake to provide thousands of more usable acres of habitat and populations of fish.

I feel that the spraying that is proposed will take out all of this grass as we've seen in the past. I also feel that you can control quite a bit of this grass with water levels in the cold months and not wiping it out.

I would say in the few residential areas that it would be ok to treat this with spraying as it becomes a problem but certainly not the majority of the lake where it's so beneficial.

The grass is certainly not a problem now and Mother Nature will do her thing with the fish and duck populations if we will give her a chance. As everyone knows, you will only have a population that you can support. Having thousands more acres of usable habitat in our system will make the 5 county area and the state a destination for the outdoorsman.

L. C.

Date: Tues. 2/27/2024 5:31 PM

My apologies as I accidentally hit the send button in error before finishing.

I agree the water hyacinths need to be treated and cut grass in problem areas.

I strongly disagree with any spraying on the hydrilla, elodea, milfoil, eelgrass or water willow. Also disagree with the grass carp being stocked with concerns of being sterile and actual numbers released. Also their life span.

Please consider only controlling in problem residential and marina areas and let the remainder reach its potential of a world class fishery. There is a way we can all win in this situation and revisit from year to year Thanks L. C.

Response:

1) Objections to grass carp stocking in the Santee Cooper lakes.

At the Council meeting to approve the draft plan, Santee Cooper reported a total of over 24,000 acres of native vegetation in the system, which is 15% of the system. The native vegetation has been increasing over the past few years. The goal of the Council and Santee Cooper is to have enough grass carp in the system to limit the expansion of hydrilla while minimizing negative impacts to native submerged aquatic vegetation.

Also at that meeting, the Region 4 fisheries biologist reported on the status of striped bass, blue catfish, and largemouth bass, all of which have been sampled and studied for decades. He noted that these sport fisheries on the Santee Cooper lakes are in a good place. The crappie fishery is starting to be studied, but not enough work has been done to warrant any conclusive findings.

The state waterfowl biologist, who is a duck hunter, toured the Santee Cooper lakes a little over a year ago and was very pleased with the amount of native vegetation that supports waterfowl. Waterfowl numbers throughout the eastern flyway are down. Research is being done to determine the causes and find ways to improve the numbers.

The primary objective of Santee Cooper aquatic plant management program is to foster a diverse native aquatic plant community by controlling invasive and nuisance aquatic plants throughout Lake Marion and Lake Moultrie while ensuring all lake user group's interest are considered.

Santee Cooper's current program utilizes integrated pest management (IPM) principles. IPM is an effective and environmentally sensitive approach to manage pests. Through continuing education, cooperative university-level research, and professional training, Santee Cooper lake managers are well versed on the latest methodology and product availability. With this knowledge and various control methods, Santee Cooper manages nuisance and invasive aquatic plant species by the most effective means, and with the least possible hazard to people, property, and the environment.

Santee Cooper currently utilizes annual boat surveys, drone surveys and multispectral imagery surveys collected by satellite to monitor aquatic plant populations on Lake Marion and Lake Moultrie. Utilization of satellite imagery began in 2019. Since then, Santee Cooper began reporting acreages detected and analyzed by the third-party vendor to The Council. Boat and drone surveys are used to verify detected species and survey areas where satellite imagery cannot be utilized. Acreage estimates from boat and drone surveys are not added to total acreage reported. This decision was made by Santee Cooper lake management staff to utilize the most consistent data available. While satellite imagery does have limitations and can be impacted by environmental conditions, it provides a higher level of consistency than boat and drone surveys. Lake users also report nuisance and invasive species to Santee Cooper lake managers through website forms, email and phone calls. All reports are documented in a database. These surveys and public notifications allow lake managers to identify problematic species, prioritize treatment areas and select the best management tool.

Santee Cooper's aquatic plant management tools include biological control, chemical control, educational outreach, and mechanical removal when applicable. Grass carp are a biological tool used to target the invasive species *Hydrilla*.

If there is not a sufficient population of grass carp in the system *Hydrilla* can grow rapidly and out-compete native vegetation. If that occurs, larger stockings of carp may be needed to effectively control the *Hydrilla*. Large reactive stockings are a detriment to native vegetation. The Santee Cooper grass carp stocking program goal is to reach a true maintenance stocking protocol. A true maintenance stocking is replacing the annual population mortality. Santee Cooper lake management staff utilize all available data and their direct experience with invasive species management to estimate the correct grass carp population to control *Hydrilla* while limiting negative impacts to native vegetation on the lake system. Santee Cooper lake management staff prefer balanced management strategies over reactive management strategies and seek to avoid large scale stockings.

The Council approved stocking 10,000 grass carp annually from 2017 through 2022 in the Santee Cooper lakes. These stockings did not replace annual mortality and effectively lowered the grass carp population while maintaining a diverse age structure. Having multiple ages classes in the system takes advantage of the higher feeding rate of the younger fish, which can also access shallow water to consume newly sprouted *Hydrilla*. The goal was to have multiple age classes in the system with an overall coverage of 1 triploid carp for every 5-6 surface acres of water, if those numbers were sufficient to adequately control the *Hydrilla*. In 2023, a true maintenance stocking of 11,025 was done to maintain the population at 1 carp per 4.64 surface acres of water (160,000 acres) in hopes that it would keep the *Hydrilla* under control.

The 16,580 triploid grass carp scheduled to be stocked into the Santee Cooper lakes this year will bring the total population back to 40,000 fish, which is a ratio of 1 carp for every 4 surface acres of water. This was recommended because of the 6,700% increase in *Hydrilla* acres detected by the satellite multispectral survey, 79 acres in 2022 to 5,232 acres in 2023. Santee Cooper staff wishes to increase the grass carp population to attempt to control *Hydrilla* without harming the native vegetation. This decision is more favorable than introducing hundreds of thousands of triploid carp into the system periodically as a reaction to increasing numbers of hydrilla. We realize that making large, periodic stockings are a detriment to the system by reducing natives and reducing habitat for fish and wildlife.

EPA approved aquatic herbicides continue to be used to control localized growth in priority use areas. These types of treatments are very expensive, and the resources are not available to do on a broad scale.

2) Objections to grass carp stocking in Lake Murray.

After discussions between staff in DNR's Wildlife and Freshwater Fisheries (WFF) Division and Aquatic Nuisance Species Program (ANS), a resolution was made to stock 3,200 carp. This would increase the total carp population to 10,000, which is a ratio of 1 carp for every 5 acres of water. During this year, a survey of the vegetation will be done to determine the total acreage and what species are present. That information will be discussed with the WFF staff to guide future stocking of grass carp. A report will be made to the Council regarding the survey and the recommendations of the WFF and ANS staff.

3) Stop spraying / don't eliminate aquatic plants.

We do not wish to eliminate all aquatic plants in our lakes and waterways. Our goal is to control the invasive aquatic plants, while trying to promote the natives and allow them to grow unimpeded by the invasives. Those natives provide a more diverse habitat and food source for fish and wildlife

than monocultures of invasive plants. When we can, we try to use biological control but there are only a few instances where that is possible. When herbicide is used, the application targets the species that we wish to control. All the herbicides used are EPA approved for use in aquatic environments and are safer than most of the ones used in terrestrial environments. Applications are made according to the labels, including restrictions around commercial and municipal water intakes. Both Santee Cooper and DHEC do water quality testing. There are a few aquatic herbicides that have the potential to cause fish kills if done improperly. When fish kills occur, DNR and DHEC investigate to determine the cause, the value of the fish and, when appropriate, fine those responsible.

4) Cooper River issues.

The ANS program does work on the Cooper River and gets some cost share from Berkeley County, but funding is limited.

5) Lake Wateree Lyngbya issues.

Lake Wateree is under the control of Duke Energy. Per their FERC license, they are responsible for vegetation control. DNR assists them as they request with consultations, treatments, and sterile grass carp stockings on all their lakes in SC. DNR will cost share with Duke on treatments and carp stockings if they request assistance with those actions.

Lyngbya is not on the prohibited plant list, which is one of the requirements under Duke's FERC license to initiate treatment. Treatments can be done to help control the algae, but treatments will only provide short-term relief and will have to be retreated on a very regular basis, possibly multiple times per year. Potential resolutions would require the cooperation of various user groups of the lake and would need to be led by them.

6) Lake Greenwood issues.

Lake Greenwood is under the control of the Greenwood County Lake Management Department. DNR assists them as they request with consultations, treatments, and sterile grass carp stockings. DNR will cost share with Greenwood County on treatments and carp stockings if they request assistance with those actions.

Vallisneria is a native species that DNR encourages lake owners to allow to grow. However, we understand that it can become problematic. In the cases where it is growing in areas that create issues with navigation and access, we do recommend that it be treated, while allowing it to continue to grow in areas where it is not causing issues or adjacent to undeveloped areas on the lake. The untreated areas provide important fish and wildlife habitat.

7) Savannah River Lakes (Hartwell, Russell & Thurmond/Clark's Hill).

These lakes are under the control of the Army Corps of Engineers. We would be happy to work with them if they are interested in a partnership.

8) Add ACE Basin phragmites.

Many years ago, some phragmites treatments were done in the ACE Basin using grant funding. Our program has not requested any grant funding for phragmites in at least the last 8 years. Because most of the property lines extend all the way to the river channels and the laws regarding our program only allow the funds to be used on public waters, we cannot treat phragmites unless it is adjacent to the rivers or creeks accessible by boat. We would be willing to work with landowners in the ACE Basin and other areas of the state to control phragmites if funding can be secured.

9) Cutgrass at Santee National Wildlife Refuge.

We are aware of the issues that cutgrass can cause. Santee Cooper has done some work on cutgrass in Lake Marion above I-95 as part of a joint project to create open water for waterfowl. Vegetation control on the Santee NWR is limited by their small staff and the complexity of the federal herbicide approval process. Santee Cooper has assisted with work on the Refuge.

10) Water hyacinth on Combahee River.

The ANS Program is aware of the water hyacinth issue on the Combahee River and has been working to address it over the last two years.

11) Giant salvinia in upper Lake Marion.

The Santee Cooper staff is aware that giant salvinia is growing in many backwater and hard to reach areas in the upper part of Lake Marion and in other similar areas of the lakes. Santee Cooper staff, as well as contracted herbicide applicators, work to treat areas that are accessible by airboat. However, many of the giant salvinia infested areas are inaccessible. They are planning to make use of the giant salvinia weevils, a USDA approved biological control agent, to help control this species in those areas.

12) Concern of contractors doing surveys.

Vegetation surveys are generally done by ANS Program staff or by staff within the agencies or organizations in charge of the lakes. The satellite survey done for Santee Cooper is a paid contract. This contract procures satellite imagery and analyzes the multispectral data. Trained Santee Cooper staff perform ground-truth surveys by boat and drone to verify the species present corresponds with the satellite imagery analysis. There is no financial incentive for those involved to misrepresent the findings of their surveys.

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Office of Human Resources,

P.O. Box 167, Columbia, SC 2920

Revised: 3/20/2024