CLEMSON UNIVERSITY: OFFICE OF LAND MANAGEMENT

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREA INVENTORY AND GUIDELINES

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THE CLEMSON EXPERIMENTAL FOREST
NATURAL RESOURCE AREA INVENTORY AND GUIDELINES

OVERVIEW

Presented here is the Natural Resource Area Inventory for the Clemson Forest. The inventory has been prepared from surveys and related work conducted during 2006 and 2007 by a four person team appointed by the Director of Land Management for Clemson University.

Inventory preparation included review of existing information about Forest natural resource areas, discussions with people knowledgeable about the Forest, and a series of team field trips.

The initial step was mapping 13 Natural Resource Divisions recognized within the Forest based on topography, watersheds, and flora and fauna. Within each Division efforts then focused on identifying notable natural areas and creating a framework to provide needed protection for these resources and the lands encompassing them. This has been accomplished by mapping the resource locations and adopting a series of land classes with management and protection guidelines.

This Inventory process considered 18,663 acres. The great majority of these acres were under intensive row crop production prior to Clemson University ownership. Today these particular acres are largely utilized for production of forest products, forestry research, education, recreation and wildlife management, resulting in a mix of successional habitats that are important to conservation. However some Forest areas were not intensively farmed. These latter areas, along with streams and wetlands, harbor some of the most natural settings on the Forest, areas worthy of recognition and extra protection. Under this Inventory 3,823 acres (21%) will receive extra protective management by being designated as Special Natural Resource Areas or as Buffers for streams or Lake Hartwell. In addition, agricultural ecotones and habitat management areas are established and recognized as ways to enhance game and non-game wildlife.

The Inventory also establishes a process for periodic review and update by a select team representing pertinent areas of the University community.

University faculty, students, and other researchers are encouraged to inform the Forest Manager's Office whenever they discover what they consider to be a unique or otherwise noteworthy natural resource on the Clemson Forest. This will allow for its consideration under this Inventory and its processes.

INTRODUCTION

Consistent with its mission, the 17,500+ acre Clemson Experimental Forest ("Clemson Forest", or simply "the Forest") has been managed over the years to provide for research and educational opportunities, wildlife enhancements, commercial timber, and public recreation. These efforts have involved various Departments of Clemson University, state and federal resource agencies, and volunteer based conservation groups. This work has also documented the occurrence of unique or otherwise important natural resources on the Forest, and forest managers have long incorporated protection of those documented resources in their forestry work plans.

The present inventory and planning process (begun in 2005) represents an overview of the Forest and adjacent agricultural lands (total of 18,663 acres) to further document special natural resources and natural resource areas, and to identify them on maps. The process has been coordinated by a four person Natural Resource Planning Team appointed by Clemson's Office of Land Management. The team members have met weekly over the past 1-2 years to discuss the planning process and action items. During this time they also met with many people familiar with the Forest's resources, and have conducted numerous field trips to the Forest. This effort has provided a natural resource inventory that incorporates information from: **A)** the decades of work already accomplished on the Forest, **B)** individuals with pertinent knowledge of the Forest including Clemson faculty, natural resource agency personnel, conservation group members, **C)** the recently implemented Creative Inquiry program that involves undergraduate research on the Forest, and **D)** field inventory efforts by the Natural Resource Team.

OBJECTIVES

The Clemson Forest is a mosaic of upper piedmont habitat types, most of which reflect the direct intervention of humans. Of those areas of the Forest reflecting more natural conditions, some are exceptional for such aspects as their plant and animal species diversity and/or composition, their scenic qualities, their contribution to wildlife conservation, their educational values, or some combination of these. These areas are a major focus of this planning process.

The major objectives of this Natural Resource Planning effort are:

1) To identify, map, and briefly describe each of the Forest's important natural resources and resource areas,
2) To provide guidelines that will help ensure that important natural resources, and resource areas, receive appropriate management and protection, and
3) To provide a process for future inventory review and update as new information about the Forest's resources becomes available.

In addition the inventory should also: a) be useful to present and future Clemson Forest managers in their efforts to ensure forestry and other land management work remains compatible with protection of major natural resources, and b) increase awareness of needs/opportunities for further study, research, and educational work associated with the Clemson Forest and its natural resources.

INVENTORY DEVELOPMENT AND PROCESSES

Process for Objective #1: To identify, map and briefly describe each of the Forest's important natural resources and resource areas

Field inventory work was done in conjunction with the 13 major "natural divisions" of the Forest (see Figure 1). These divisions were identified and mapped by the Natural Resource Team as a first stage in this planning work (during 2005). They provide a sectioning of the Forest based on major landforms, watersheds, and other physical/management features, and provide a useful basis for natural resource planning. A general description of the respective features of each natural division is provided in Appendix 1.

The Natural Resource Team then (2006-07) began visiting areas of the Clemson Forest as part of the inventory process. Aerial photos, information received from consulted individuals (CU faculty, resource agencies, conservation groups, student researchers), and the extensive knowledge of the Forest Staff served as a basis for prioritizing areas to be examined. Notes were made on such resources as notable stands of mature forest, rock outcrops, special wildlife areas, wetlands, rare species, stream conditions, waterfalls, areas of natural beauty, and others. A list of resource types inventoried during this work is provided in Table 1. The general location of inventoried natural resources was mapped for use in plan development.

Process for Objective #2: To provide guidelines that will help ensure that important natural resources, and resource areas, receive appropriate management and protection

A series of land classes, with guidelines, was developed for the Forest to help meet this objective. Several of the "classes" have restrictions within their guidelines regarding allowed activities. These land classes and their respective guidelines will help insure protective management for important natural resource areas. Some discussion of the land classes is provided here. See Table 2 for definitions and guidelines associated with each land class.

1. Agricultural Ecotone: For many years wildlife biologists have recognized value in establishment of an ecotone to help create a natural and gradual vegetation transition between intensively managed agricultural fields and adjacent forest stands. These ecotone buffers are typically recommended to be 30 ft or more in width and line the outer edges of the agricultural fields. The ecotones consist of a zone of natural weedy herbs and small shrubs that are allowed to grow here. Their

natural resource function is to create the valuable habitat that ecotones provide for wildlife. Numerous songbirds, nesting wild turkeys and quail, small mammals including native mice, voles, and shrews, and reptiles, such as black racers, will benefit from such habitats. To enhance wildlife habitats around fields on the Forest, this inventory provides for an "Agricultural Ecotone" land class with respective guidelines.

2. Agricultural Lands: These are lands currently being utilized for agricultural purposes including crops, pasture, and hayfields.

3. Intensive Habitat Management Areas: Within the overall Forest, and its mix of valuable wildlife habitats, there are some areas managed intensively for game and non-game habitat. This is typically done in conjunction with the SC Dept Natural Resources. These are areas where certain plants are grown, or encouraged, areas kept in early successional stages by periodic mowing, control of water levels, or other efforts. Some of these have been managed in these manners for many years. In this inventory those areas are recognized as 'intensive habitat management areas".

4. Lake Hartwell Buffer: The Corps of Engineers owns and maintains a strip of project land around the shoreline of Lake Hartwell that buffers the lake from impacts associated with land disturbing activities. The distance covered by this strip varies in locations. In order to help protect/enhance water quality and aesthetic factors associated with Lake Hartwell, this inventory establishes a "Lake Hartwell Buffers class, with guidelines, on adjoining Clemson Forest land where it is needed to extend protection to a minimum of 100ft from the lake's full pool shoreline.

5. Mixed Successional Habitats: Wildlife abounds on the Clemson Forest. However, its composition has changed over the decades. In the 1930's few deer, wild turkey, or beaver could be found on the Forest or surrounding areas, which at that time was largely barren and eroding farm fields. Today these species of wildlife thrive on the Forest in large part due to sound management work done over the years by the SC Dept of Natural Resources and the staff of the Clemson Forest. Changes continue today for the Forest's wildlife. In more recent years bald eagles, river otters, and now even black bears have become part of the Clemson Forest community. All these positive changes have occurred due to: a) long term protection of this large and now forested tract of land, b) professional wildlife management efforts, and c) scientific forestry methods that produce a quality mix of woodland habitats. These woodlands dominate the Clemson Forest and are the heart and soul of its wildlife habitat. Because they consist of a mixture of young, middle age, and older pine stands, hardwood stands, and mixed stands, we designate them in this inventory as "mixed successional habitats".

6. Notable Resource Locations: These are isolated locations of limited size where unique resources occur that are outside of an otherwise protected areas. An example might be the location(s) of a rare species of plant that is neither within a stream buffer nor within a Special Natural Resource Area. The location of the resource in conjunction with any area needed to buffer or manage the resource constitutes the "notable resource location".

7. Special Management Areas: In some locations utility right's-of-way traverse the Forest. Management of these linear areas is largely dictated by utility maintenance and safety needs. In general, these areas are kept in early stages of plant succession, and thus provide valuable habitat for some species of game and non-game wildlife. The Clemson Forest staff works in partnership with the utilities to insure appropriate management of these rights-of-way.

8. Special Natural Resource Areas: In some locations the abundance and/or distribution of special natural resources, their distance from streams, and/or their unique nature called for protection of areas beyond those covered by stream buffers. In order to accomplish this, a land classification called "Special Natural Resource Area" was created. Eighteen such areas were identified during this planning effort. Among these areas are ecological showcase settings of the Clemson Forest.

9. Stream Buffers : It became obvious from the start of this planning process that many of the Forest's special natural resources are associated with its streams. In order to help ensure protection for these linear and high value natural resource zones, the "stream buffer" land class for the Forest has been expanded. Historically the buffers have been 40 ft minimum on each side of the streams, with the primary goal of protecting water quality. Based on field observations during this work, and input from experts, the standard width of stream buffers have been expanded to: A) 100ft on each side of perennial streams, and B) 50 ft on each side of intermittent streams. In addition, a new objective for these buffers now includes protection of the abundant botanical/zoological resources found in these riparian areas, as well as protection of water quality in the streams. This expanded "Stream Buffer" land class and its guidelines will provide significant additional protection for both water quality and notable botanical and zoological resources.

Process for Objective #3: Provide for future inventory review and updates

The Natural Resource Inventory will be incorporated into the overall management plan of the CEF. While it is expected that these areas will remain in their natural state over time there needs to be a process for updating/modifying the Inventory as well as an annual evaluation of the effectiveness of and adherence to the Plan.

It is recognized that many of these areas are and will continue to be used for teaching, research, outreach and recreational purposes. Most of the areas

identified are not currently harvested for timber nor planned to be harvested for commercial purposes. This will be reflected in the timber management plan as it is developed. However, it must be understood that some timber harvesting might be necessary to control disease and insects to ensure a healthy forest. Likewise, there will be a need over time for new educational programs that might effectively utilize these areas. To that end and to ensure the continuity/integrity of the Natural Resource Inventory, all new programs/activities which propose to use or might impact these areas must have prior approval from the Office of Land Management.

Proposed new programs/uses will be submitted through the forest Manager to a Natural Resource Inventory Review Team for consideration. This team will evaluate the proposals and submit their recommendation to the Director of Land Management. The Team will be comprised of a faculty member (or department chair) form the Department of Forestry and Natural Resources and one from the Department of Biological Sciences, the Forest Manager will serve as a non-voting resource person to the Team. (note: during the transition period for implementation of this inventory the team that developed the Inventory will serve in an advisory/resource capacity to the Natural Resource Inventory Review Team)

Faculty and others might know of areas of special biological diversity that should be considered for inclusion in the Plan. These areas should be made know in writing to the Team through the Forest Manager with a request for inclusion in the Plan. The Team will also provide on an annual basis an evaluation of management of these areas for the purposes stated herein and make recommendations for improvements and or changes.

THE NATURAL RERSOURCE PLAN

The Inventory is presented in two sections: A) the North Forest region (Forest lands north of Hwy 123), and B) the South Forest region (south of Hwy 123). For each of the two regions an overview map of the major natural resource areas is provided (see Figures 2 and 3). Details about each of the identified areas, by Forest natural division, are shown and explained in Attachments 1 – 13. Within these attachments are provided: A) the natural resource land class maps for each natural division, B) a general description of each "special natural resource area", C) a map showing identified natural resource elements within each natural division, and D) an explanation of each identified natural resource element.

These natural resource maps (Figures 2 and 3) and their supporting detailed information (Attachments 1 – 13), in conjunction with the Land Classes and Guidelines provided in Table 2, constitute the Natural Resource Inventory for the Clemson Forest. This inventory will now be managed by the Office of Land Management as provided for in Process #3.

TABLE 1

CLEMSON EXPERIMENTAL FOREST
NATURAL RESOURCE INVENTORY CHECK LIST
(Natural resource features recorded/mapped during inventory work for the Natural Resource Plan)

Terrestrial Habitat Types:
1. UF: Upland Forests (notable examples)

2. BF: Bottomland Forests (notable examples)

3. RO: Rock Outcrops (notable bedrock outcrops)

4. PC: Unique plant communities (also recorded under aquatic habitats)

Aquatic Habitat Types:
1. FW: Floodplain Wetlands (areas adjacent to major streams that retain flood waters after heavy precipitation)

2. AW: Alluvial wetlands

3. BP: Beaver ponds (in this case – large, long established ponds, existing over many years).

4. SS: Springs, seepages

5. WF: Water Falls

6. ST: Quality streams (streams with fish, amphibians, scenic aspects, etc)

7. IMP: Man-made impoundments

Other Designated Resource Types
1. HM: Intensive Habitat Management Areas (areas worked to enhance habitat for species of game and non-game wildlife)

2. B: Notable Botanical "Feature" (Localized, but important botanical features, including rare species, unique associations, aesthetic species, etc found within, or outside of, an otherwise designated protected area).

3. Z: Notable Zoological "Feature" (Localized, but important zoological feature, including rare species, unique associations, breeding sites, aesthetic species, etc, found within, or outside of, an otherwise designated protected area).

4. SC: Scenic areas (areas of special natural aesthetic value)

TABLE 2

CLEMSON EXPERIMENTAL FOREST
LAND CLASSSES AND GUIDELINES FOR NATURAL RESOURCE PROTECTION

The below "land classes" are shown on the natural resource land classmaps. Some are quite restricted in their application and distribution, while others are widely distributed.

1. AGRICULTURAL ECOTONE: Ecotones (vegetational transitions between intensively managed agricultural lands and forested lands) will be established around the edges of all hay and crop fields to enhance wildlife habitat values.

Guidelines: Ecotones will be a minimum of 30 ft in width. They will be left to grow (in herbs/shrubs) on a 2 - 5 year cycle. To keep it from becoming an extension of the forest, ecotone areas will be mowed at the end of each cycle. Ecotones can be managed for select plants that benefit wildlife. Management can include use of herbicides, planting, controlled burns, etc).

2. AGRICULTURAL LANDS: These are lands currently under agricultural management (crops, pasture, hay, fields).

Guidelines: Agricultural ectones will be established, as shown on the Natural Resource Plan.

3. INTENSIVE HABITAT MANAGEMENT AREA: Areas (forests stands, wetlands, meadows, other) actively managed for habitat values through specific applications, including plantings, controlled burns, water control, and protection of valuable food producing trees/shrubs.

Guidelines: Activities for each individual area are discussed under their respective "Explanatory Information" sections.

4 . LAKE HARTWELL BUFFER: Forest lands adjoining Corps of Engineer holdings around the periphery of Lake Hartwell that are within 100ft of the full pool shoreline. Designated to help protect water quality and/or aesthetic values associated with Lake Hartwell.

Guidelines: Within this land class there will be no clear cutting of timber nor any land disturbing activities. The ground cover and the general nature of the forest canopy will not be disturbed or altered in any major way.

5. MIXED SUCCESSIONAL HABITATS: Areas (typically forested) representing various stages of natural succession. The maintenance of this group of habitat types over large, consolidated, piedmont areas such as the Clemson Forest, provides for a wide range of habitats for wildlife species ranging in size (and habitat needs) from small neo-

tropical songbirds (warblers, vireos, sparrows, etc) to major omnivorous and predatory mammals (bobcats and black bears).

Guidelines: An effective mix of these habitat types will be maintained through the ongoing (and long established) forest management program of the Clemson Forest, as coordinated by the Forest Manager.

6. NOTABLE RESOURCE LOCATION: Specific locations of limited area containing an important botanical or zoological element (rare plant, unique faunal element, etc) that is not already within protected areas.

Guidelines: Specific protective steps for each identified "unique natural resource location" will be determined in consultation with the Forest Managers Office.

7. SPECIAL MANAGEMENT AREAS: These are utility rights-of-way that traverse the Forest.

Guidelines: These areas are managed consistent with the major needs of the utility. In most cases management is related to safety and maintenance considerations.

8. SPECIAL NATURAL RESOURCE AREA: Expansive contiguous areas identified as having many special natural resources. The prime management goals of these areas, and the highest value use of these areas, will be the continued protection of these resources.

Guidelines: These are protected areas. No disturbances will be planned in these areas except as provided for in Process #3. These include activities associated with land management, timber management, research, and recreation. However, existing roads, trails, intensive habitat management areas, and other land management, teaching, outreach and recreation facilities can be continued and maintained through routine practices. It will be a goal to work toward insuring that existing roads and trails have minimal impacts related to sedimentation, and on the botanical, faunal, and water resources of their respective areas.

9. STREAM BUFFERS: "Stream Buffer" applies to areas adjacent to streams and wetlands that are not already protected by the "Special Natural Resource Area" classification. Stream Buffers are managed to: 1) help protect water quality and 2) protect the highly diverse botanical and zoological resources that occur within and along many streams. Two classes of "Stream buffer" are recognized.
Class A Stream Buffer: are those that occur along perennial streams. Class A stream buffers will extend 100 ft from each side of the stream, or further if judged appropriate by the Forest Manager.
Class B Stream Buffer: are those that occur along intermittent streams. The Class B "stream buffers" will extend 50 ft from each side of the streams, or further if judged appropriate by the Forest Manager.

Guidelines: The guidelines for both classes of "Stream Buffer" are the same as those for "Special Natural Resource Area" (see above). Exception: 100 ft stream buffers are not required along the channelized sections of Eighteen Mile Creek presently in row crop production. These areas are within the "Eighteen Mile Creek Forest and Wetlands Natural Division". However, if these fields are returned to forested conditions in the future, the standard buffer guidelines will then apply.

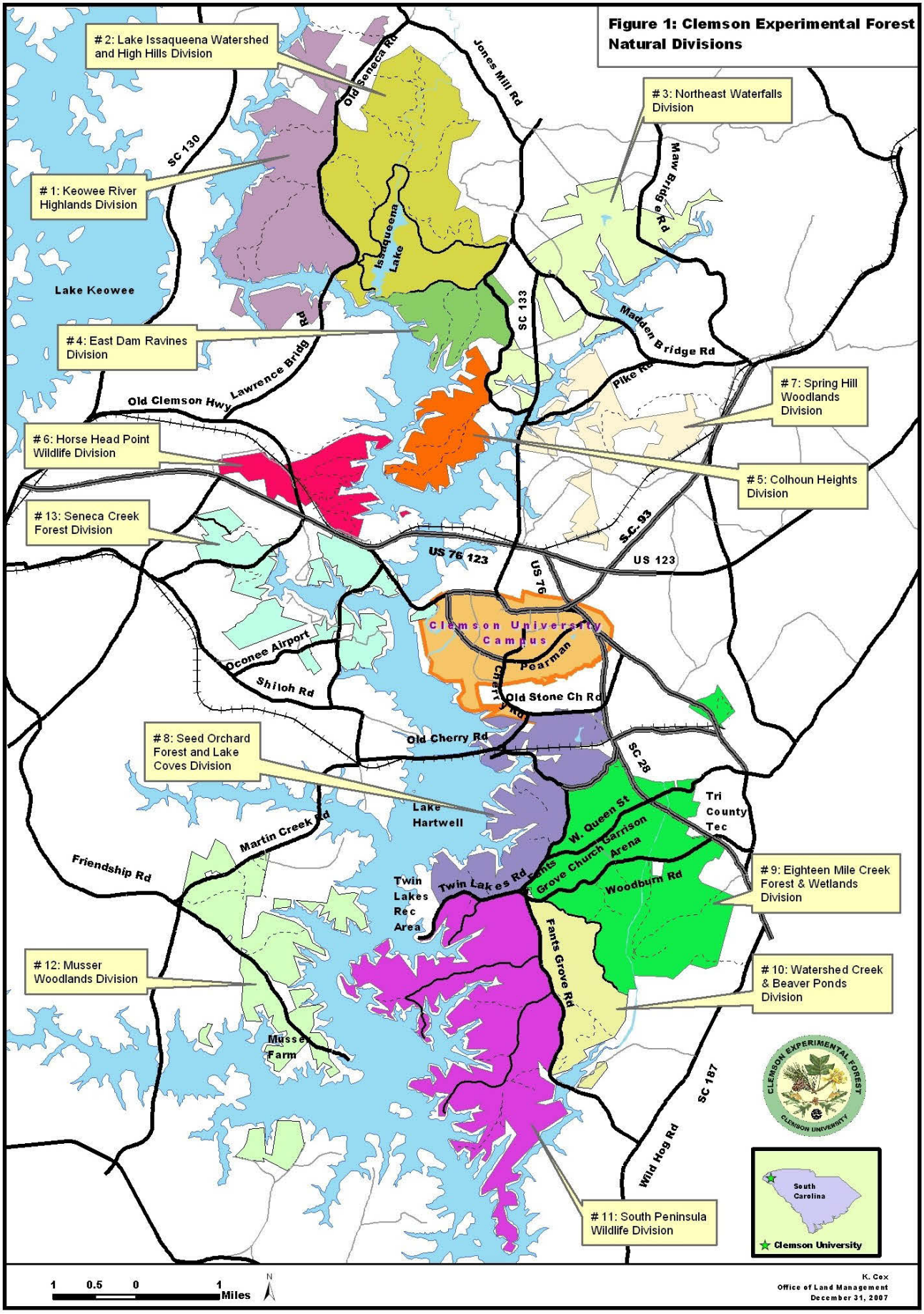
Figure 1: Clemson Experimental Forest Natural Divisions
2: Lake Issaqueena Watershed and High Hills Division
3: Northeast Waterfalls Division
1: Keowee River Highlands Division
4: East Dam Ravines Division
7: Spring Hill Woodlands Division
6: Horse Head Point Wildlife Division
5: Colhoun Heights Division
13: Seneca Creek Forest Division
8: Seed Orchard Forest and Lake Coves Division
9: Eighteen Mile Creek Forest & Wetlands Division
12: Musser Woodlands Division
10: Watershed Creek & Beaver Ponds Division
11: South Peninsula Wildlife Division
Lake Keowee
Lake Issaqueena
Lake Hartwell
Clemson University Campus
Pearman
Tri County Tec
Twin Lakes Rec Area
Musser Farm
Oconee Airport
Old Seneca Rd
Jones Mill Rd
SC 130
SC 133
SC 93
US 76
US 123
SC 28
SC 187
Old Clemson Hwy
Lawrence Bridge Rd
Madden Bridge Rd
Pike Rd
Shiloh Rd
Old Stone Ch Rd
Old Cherry Rd
Cherry Rd
Martin Creek Rd
Friendship Rd
Twin Lakes Rd
Fants Grove Rd
W. Queen St
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Woodburn Rd
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K. Cox
Office of Land Management
December 31, 2007

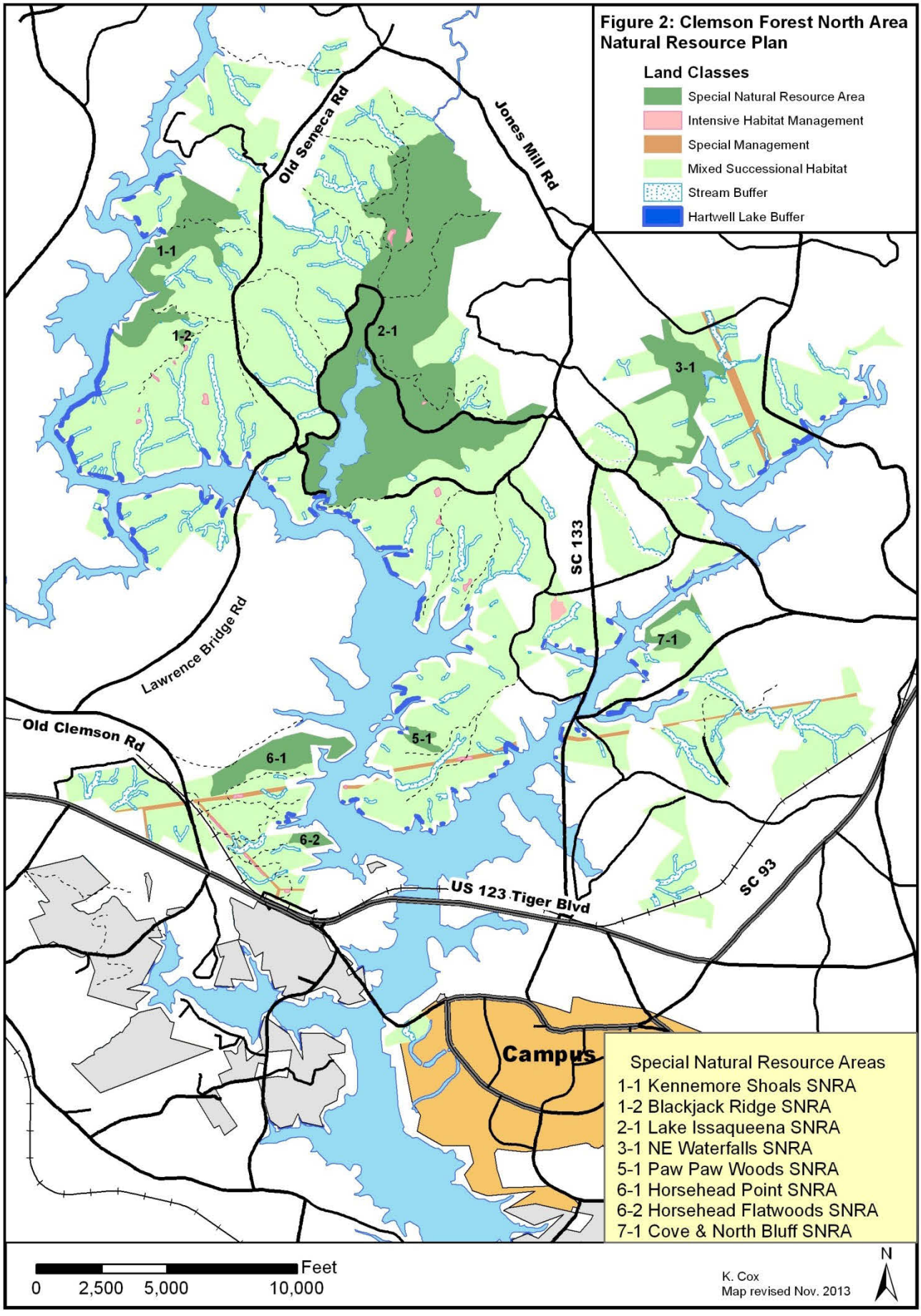
Figure 2: Clemson Forest North Area
Natural Resource Plan
Land Classes
Special Natural Resource Area
Intensive Habitat Management
Special Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
Old Seneca Rd
Jones Mill Rd
SC 133
Lawrence Bridge Rd
Old Clemson Rd
US 123 Tiger Blvd
SC 93
Campus
1-1
1-2
2-1
3-1
5-1
6-1
6-2
7-1
Special Natural Resource Areas
1-1 Kennemore Shoals SNRA
1-2 Blackjack Ridge SNRA
2-1 Lake Issaqueena SNRA
3-1 NE Waterfalls SNRA
5-1 Paw Paw Woods SNRA
6-1 Horsehead Point SNRA
6-2 Horsehead Flatwoods SNRA
7-1 Cove & North Bluff SNRA
Feet
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K. Cox
Map revised Nov. 2013
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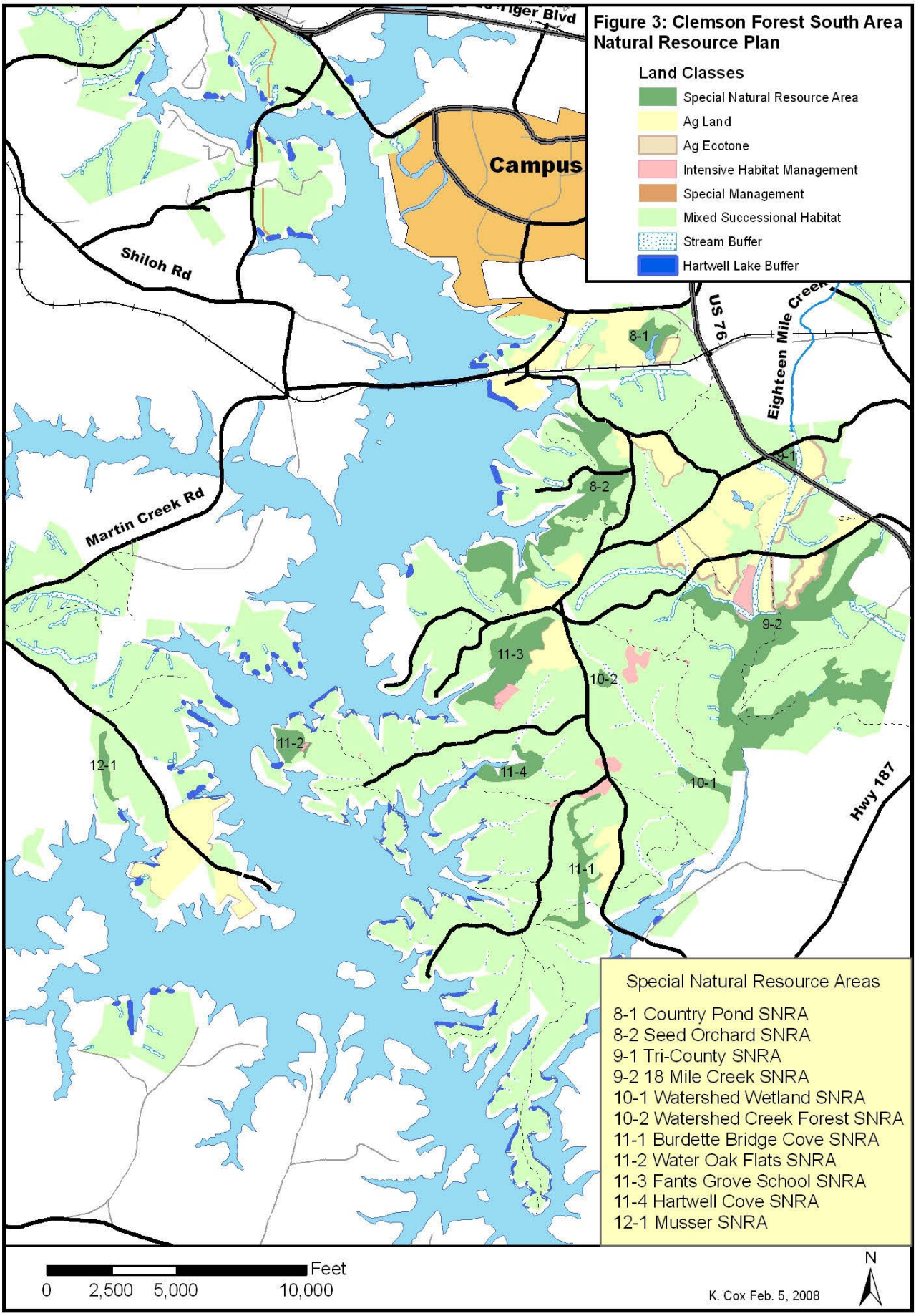
Figure 3: Clemson Forest South Area Natural Resource Plan
Land Classes
Special Natural Resource Area
Ag Land
Ag Ecotone
Intensive Habitat Management
Special Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
Campus
Shiloh Rd
Martin Creek Rd
US 76
Eighteen Mile Creek
Hwy 187
8-1
8-2
9-1
9-2
10-1
10-2
11-1
11-2
11-3
11-4
12-1
Special Natural Resource Areas
8-1 Country Pond SNRA
8-2 Seed Orchard SNRA
9-1 Tri-County SNRA
9-2 18 Mile Creek SNRA
10-1 Watershed Wetland SNRA
10-2 Watershed Creek Forest SNRA
11-1 Burdette Bridge Cove SNRA
11-2 Water Oak Flats SNRA
11-3 Fants Grove School SNRA
11-4 Hartwell Cove SNRA
12-1 Musser SNRA
Feet
0 2,500 5,000 10,000
K. Cox Feb. 5, 2008
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CLEMSON EXPERIMENTAL FOREST
NATURAL RESOURCE INVENTORY

ATTACHMENTS

NOTES:

The following 13 Attachments and Appendix 1 provide additional information about the natural resources of the Clemson Experimental Forest. Information is presented by natural divisions of the Forest. Each of the Attachments contain up to four items including:

1) a natural resource land class map showing the land classes within that natural division and their general locations
2) a general description of any "Special Natural Resource Area" found within that natural division
3) a map showing the results of the natural resource inventory for that natural division
4) a brief description of each item shown on the natural resource inventory map

A description of the land classes shown on the attachment maps, and their respective guidelines, are provided in the text of the Natural Resource Inventory and in its Table 2.

A Note Regarding Stream Buffers: There are two classes of Stream Buffers, as explained in the text of the Natural Resource Plan. On the Attachment maps the Class A (100ft each side of the stream) Buffers are shown as wide buffers with the stream indicated by a solid blue line. The Class B (50ft each side of stream) Buffers are shown as narrower buffers with the stream indicated as a dashed blue line.

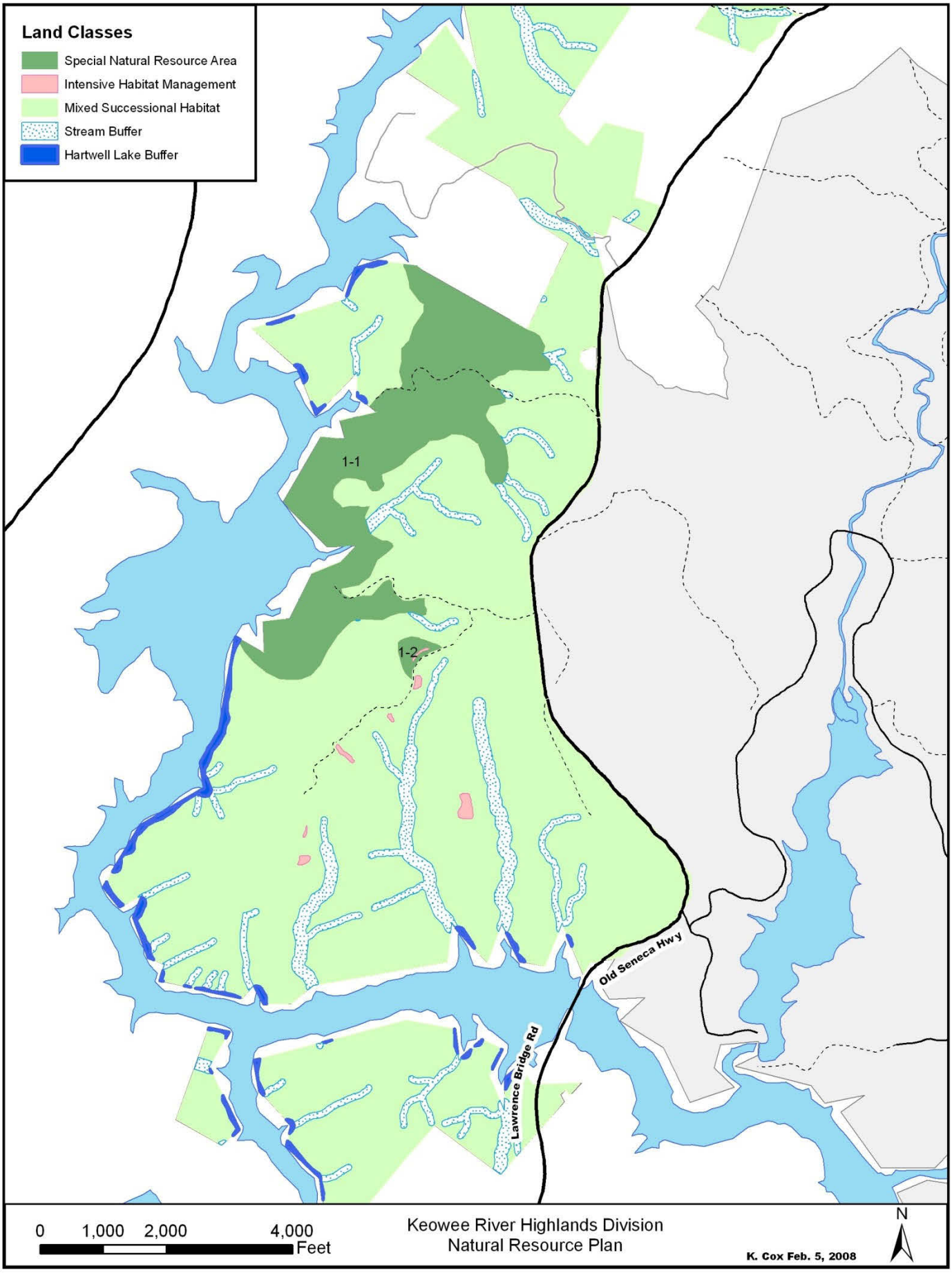
ATTACHMENT 1

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

KEOWEE RIVER HIGHLANDS NATURAL DIVISION


Land Classes
Special Natural Resource Area
Intensive Habitat Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
1-1
1-2
Old Seneca Hwy
Lawrence Bridge Rd
0 1,000 2,000 4,000 Feet
Keowee River Highlands Division
Natural Resource Plan
K. Cox Feb. 5, 2008
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KEOWEE RIVER HIGHLANDS NATURAL DIVISION

SPECIAL NATURAL RESOURCE AREAS
GENERAL DESCRIPTION

SNRA 1-1: KENNEMORE SHOALS SNRA (214 acres, see Map)

Features
Mature upland forest communities
Highly diverse shrub and ground cover vegetation
High quality streams with amphibian and fish populations
Scenic woodlands, rock outcrops, and streams with waterfalls

GENERAL DESCRIPTION: Tucked away in the most northwestern part of the Clemson Forest is a series of high ridges that climb more than 200 ft above Lake Hartwell. Each of these is drained by one or more small but high quality streams that flow into the lake. The best examples of these are contained within the Kennemore Shoals SNRA which features a rich hardwood cove type forest drained by several small high quality streams. The major aspects of the area are a deep shaded forest with the sound of small streams flowing over falls and cascades. Schools of small fish live in the stream's pools, and leopard frogs and cricket frogs occur along its banks. Woodland songbird species that prefer the canopy of mature forests add their voices to this setting.

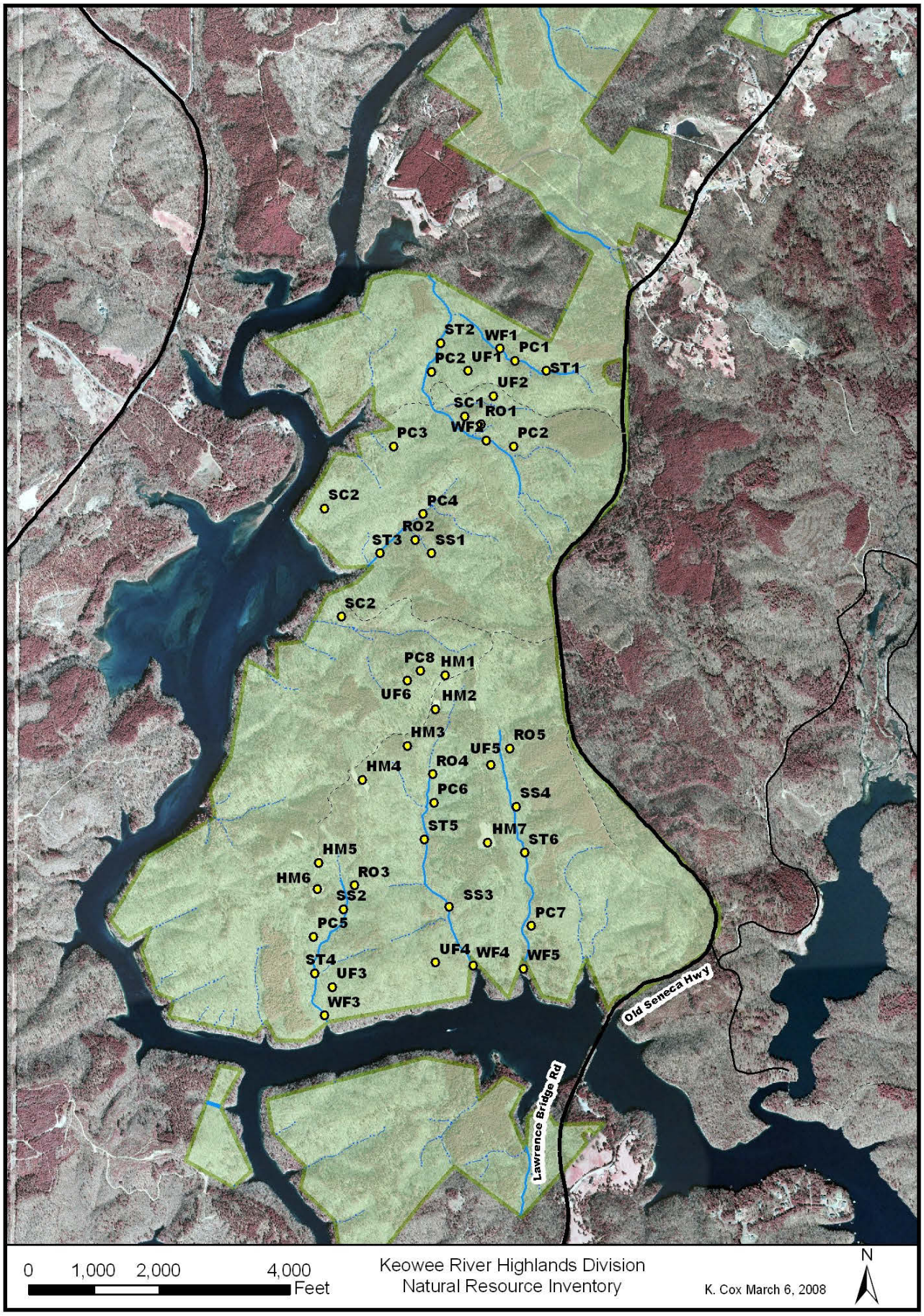
Large rock outcrops with numerous cracks and crevices provide micro habitats, as do the fallen logs common to a mature forest. Along the streams and on lower slopes the conditions favor tree species that prefer moist conditions and include northern red oak, cucumber magnolia, American beech, and white ash among others. Here also are dense colonies of ferns and wildflowers. Upslope, where dry conditions prevail, the tree composition changes to one dominated by southern red oak, scarlet oak, and chestnut oak with a much sparser understory.

The streams here have clean rocky substrates, and seem to show little or no impact from human activities. Schools of fishes occur in most pools. Frogs inhabit the banks, and, turning rocks in the stream reveals an abundance of aquatic insects and salamanders. A "mountain like" quality of these settings is reflected by the presence here of the black bellied salamander, a species typical of the mountains, but not of the piedmont.

In addition to the forest coves and ridges, this area contains a scenic woodland adjacent to Lake Hartwell. Dominated by oaks, hickories, sweetgum, shortleaf pine, and others, this area slopes up to a high hill on which grows the only native population of eastern hemlock on the Clemson Forest. Hemlocks to over 2 ft in diameter occur here. During winter this area provides a scenic view northward toward the mountains.

SNRA1-2 Blackjack Ridge SNRA (5 acres, See Map)
Features
Xeric upland forest community
Mature stand of blackjack oak, post oak, and associated species.

GENERAL DESCRIPTION: Some of the ridges of the Keowee Highlands Natural Division support communities reflecting very dry conditions that occur there. This SNRA is situated on top of one of these ridges and supports a mature stand of xeric forest dominated by blackjack oak, post oak, sourwood, and associates. Shrubs include members of the heath (blueberry) family.
This community is likely enhanced by periodic controlled burns. Such burns may need to be planned in the future to help mainatin the forest community in this SNRA.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PC8
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Natural Resource Inventory
K. Cox March 6, 2008
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KEOWEE RIVER HIGHLANDS NATURAL DIVISION

NATURAL RESOURCE PLAN
EXPLANATORY INFO (See Inventory Map)

TERRESTRIAL HABITATS

Upland Forests

UF1: a mature and diverse stand of hardwoods consisting of oaks, hickories, beech, and sourwood along lower slopes and stream flats. Scattered ash, cucumber magnolia, and basswood occur in richer soil areas.

UF2: Mature forest along upper slopes and ridges dominated by drier site trees such as scarlet oak, southern red oak, and chestnut oak.

UF3: UF4, UF5: Mature hardwood and pine/hardwood dominated stands occur along the mid to lower slopes of the three southern tributaries draining this area. Some of the dominant canopy species include white oak, northern red oak, American beech, red maple, hickories, and others.

UF6: Mature stand of blackjack oak, post oak and other xeric area tree species.

Rock Outcrops

RO1: Several large bedrock outcrops occur along the mid portions of this slope providing scenic beauty, and unique habitats for select plants (resurrection fern) and animals (possible green salamander, eastern wood rat, etc).

RO2: A large bedrock outcrop beside a small tributary supporting ferns and other wet area plants.

RO3, RO4, RO5: major areas of rock outcrop occur along lower slopes in these ravines.

Unique Plant Communities

PC1: A steep slope above this small tributary contains dense growths of mountain laurel.

PC2: Stream banks, flats, and lower slopes along this stream contain diverse communities of native shrubs (pawpaw, buckeye, beauty berry, wild azalea, American holly, others), wildflowers (jack-in-the-pulpit, blood root, hepatica, wild geranium, others), and ferns (royal fern, cinnamon fern, New York fern, others).

PC3: A rounded hill in this location contains a community dominated by eastern hemlock trees, a unique situation for the Clemson Forest.

PC4: A rich botanical assemblage occurs along this small stream, and in association with rock outcrops found there.

PC5, PC6, PC7: Along the lower to mid slopes of these three ravines are diverse plant communities with showy shrubs and understory trees (wild azaleas, sweet pepper bush, silverbell, pawpaw, spice bush), and wildflowers (blood root, hepatica, wild geranium, horse balm, and many others). Dense growths of ferns (cinnamon fern, royal fern, others) occur in select areas along the streams. These rich botanical areas occur throughout the length of these tributaries.

PC8: Xeric plant community dominated by various members of the blueberry family (sparkleberry, etc), bracken fern, others.

AQUATIC HABITATS

Springs, Seepages

SS1: A hillside seepage spilling over a rock outcrop occurs here, adjacent to a small tributary.

SS2, SS3, SS4: Seepage areas, with damp, mucky soils, occur at various locations along the three southern tributaries of this area. They support growths of woody plants (Possum haw, alder, red maple) and in some cases beautiful growths of ferns such as cinnamon fern, royal fern, wood fern, and others).

Waterfalls

WF1: A series of small waterfalls and cascades occur along this small tributary

WF2: A scenic waterfall area within over six feet in drop occurs on this small tributary among a notable area of exposed rock.

WF3, WF4, WF5: Each of the southern three tributaries of this area contain small and scenic waterfall and cascade areas, most supporting distinct plant growth associated with these types of habitats.

Quality Streams

ST1: This small tributary is a scenic steep gradient stream flowing over bedrock. There are a number of small waterfalls, runs, and pools throughout its length. It supports populations of small fish, and amphibians.

ST2: A small beautiful stream flowing through a mature hardwood forest supporting abundant fishes and amphibians. Substrates range from bedrock, to cobbles, to sand. The surrounding hardwood forest makes this a very attractive setting.

ST3: A small stream supporting abundant salamander populations.

ST4, ST5, ST6: These three small streams flow over various substrates ranging from bedrock to sand deposits. They all support fishes and amphibians. They flow through beautiful stands of mature forest.

OTHER DESIGNATED RESOURCE TYPES

Intensive Habitat Management Areas

HM1 through HM7: These seven areas range in size from one to several acres. They are maintained and managed for production of wildlife foods, early successional habitats, and wildlife cover.

Scenic Areas

SC1: Highly scenic stream and mature woodland setting

SC2: Scenic woodland just above Lake Hartwell with mature hardwoods and eastern hemlock.

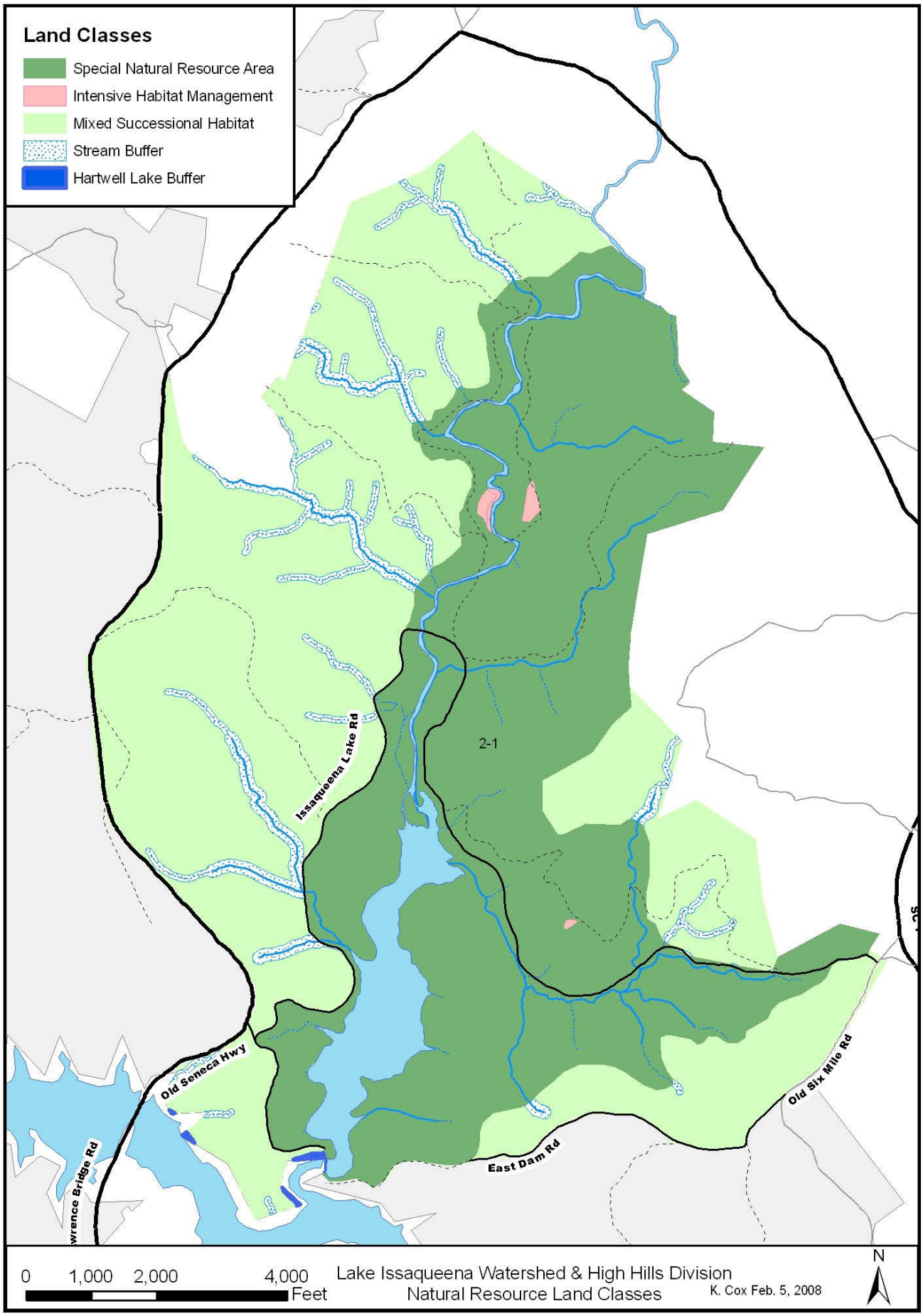
ATTACHMENT 2

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

LAKE ISSAQUEENA WATERSHED AND HIGH HILLS NATURAL DIVISION


Land Classes
Special Natural Resource Area
Intensive Habitat Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
2-1
Issaqueena Lake Rd
Old Seneca Hwy
East Dam Rd
Old Six Mile Rd
0 1,000 2,000 4,000 Feet
Lake Issaqueena Watershed & High Hills Division
Natural Resource Land Classes
K. Cox Feb. 5, 2008
N

LAKE ISSAQUEENA WATERSHED AND HIGH HILLS NATURAL DIVISION

SPECIAL NATURAL RESOURCE AREAS
GENERAL DESCRIPTION

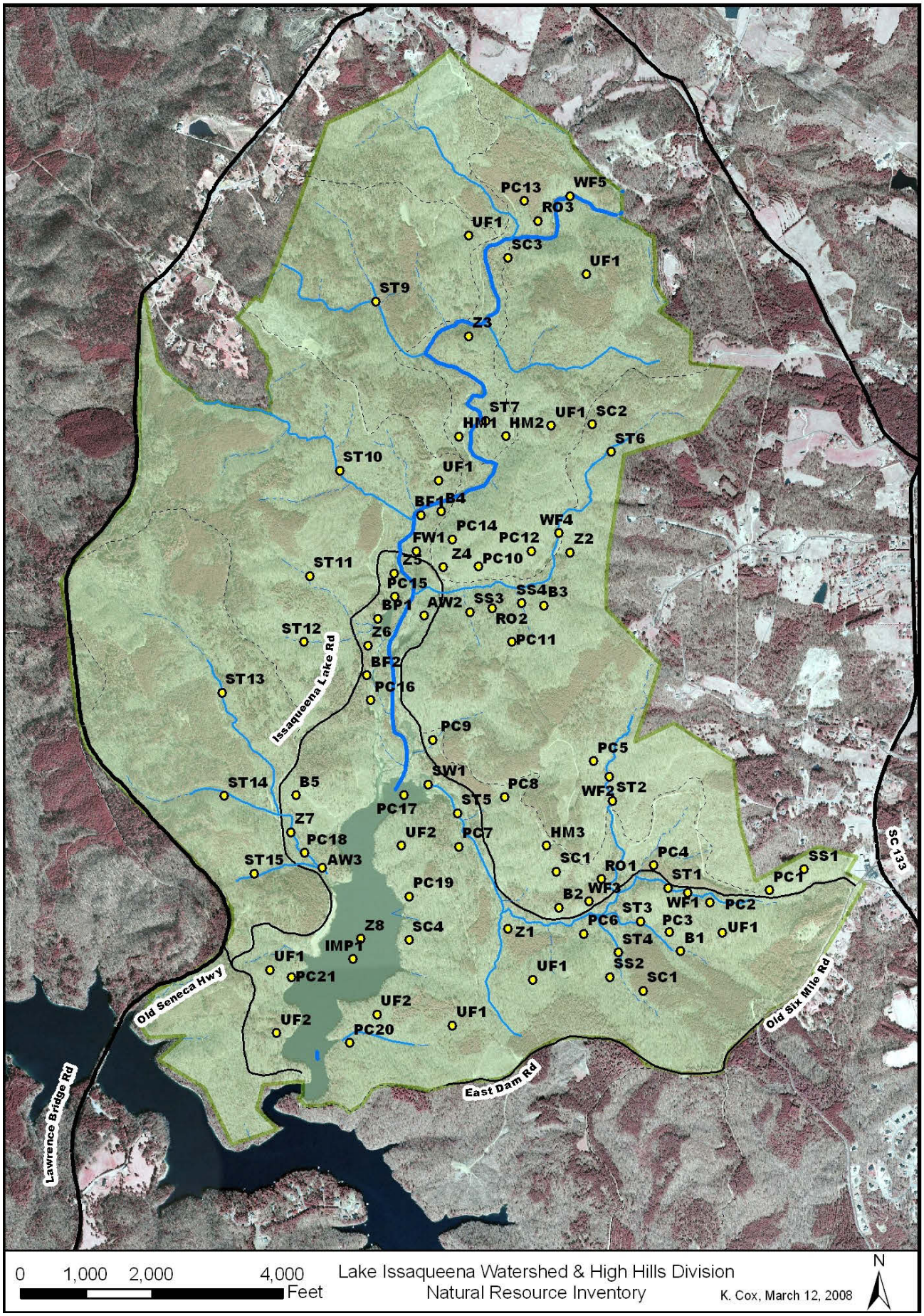
SNRA 2-1: LAKE ISSAQUEENA SNRA (1216 acres, see map)
Features:
Picturesque 100 acre Lake Issaqueena
Highly scenic and extensive stands of mature oak-hickory forest.
Extensive areas of showy flowering shrubs and wildflowers
Many streams supporting over 22 species of fish and abundant amphibians and reptiles
Type localities for several aquatic insect species
Extensive wetlands harboring beaver, river otter, wading birds, and 12 species of frogs
The only known locations for breeding wood frogs and spotted salamanders on the Forest
Habitats for numerous songbirds, hawks, owls, waterfowl, and wading birds
Occurrence of bald eagles, osprey, black bear
Scenic waterfalls, and aesthetic stream settings throughout

GENERAL DESCRIPTION: This is large, biologically diverse, and scenic natural resource area of the highest quality. It consists of a series of high rounded hills, steep slopes, and intervening valleys, all of which drain into Lake Issaqueena. It includes some of the finest examples of oak-hickory forest remaining in upstate South Carolina, beautiful piedmont streams cascading over bedrock ledges and rapids, and wetland communities that range from large water-lily choked beaver ponds to small woodland seepages harboring rare orchids. Scattered among these dominant habitat types are old house sites with their own groupings of unique plant species, some of which were planted by the settlers. And, importantly, this area contains 100 acre Lake Issaqueena, a crown jewel of the Clemson Forest.

Throughout the upland forest communities individual oaks, hickories, pines, American beech, and other tree species frequently exceed 2 ft in diameter and provide a dense canopy shading the forest floor. Flowering shrubs such as sweet shrub, wild azalea, painted buckeye, and mountain laurel provide an interesting understory, while wildflowers abound in some locations. Streams draining these uplands are highly scenic, support their own stream bank flora including many ferns, and support a diverse assemblage of fish, amphibian, reptile, and insect species.

Wetland communities support zones of showy shrubs and herbaceous vegetation. Wildlife is abundant. Beaver, river otters, wading birds, and water fowl are common inhabitants of these areas. Numerous species of amphibians (12 species of frogs) occur here, including the wood frog (a peripheral species here) and spotted salamander. Bird life is abundant here year-round, and provides prime “watching opportunities”.

Lake Issaqueena is a setting of great natural beauty. The oak-hickory-pine forests covering its “viewshed” provide scenic splendor for viewing, as well as important habitat for many species of wildlife.


PC13
WF5
RO3
UF1
SC3
UF1
ST9
Z3
ST7
UF1
SC2
HM1
HM2
ST6
ST10
UF1
BF1
B4
PC14
WF4
FW1
PC12
Z2
Z4
PC10
ST11
Z5
PC15
SS4
B3
BP1
AW2
SS3
RO2
ST12
Z6
PC11
Issaqueena Lake Rd
BF2
ST13
PC16
PC9
PC5
SW1
ST14
B5
PC8
WF2
ST2
ST5
PC17
Z7
HM3
UF2
PC7
PC18
SC1
PC4
SS1
ST15
AW3
RO1
ST1
PC1
PC19
B2
WF3
WF1
PC2
ST3
PC6
PC3
UF1
Z8
SC4
Z1
ST4
B1
IMP1
UF1
SS2
UF1
PC21
SC1
Old Seneca Hwy
UF2
UF2
UF1
PC20
Old Six Mile Rd
East Dam Rd
Lawrence Bridge Rd
SC 133
0
1,000
2,000
4,000
Feet
Lake Issaqueena Watershed & High Hills Division
Natural Resource Inventory
K. Cox, March 12, 2008
N

LAKE ISSAQUEENA WATERSHED AND HIGH HILLS NATURAL DIVISION
NATURAL RESOURCE INVENTORY
EXPLANATORY INFORMATION (See Inventory Map)

TERRESTRIAL HABITATS

Upland Hardwood Forests

UF1: Many slopes adjacent to tributaries of Lake Issaqueena contain mature, scenic, and botanically interesting stands of hardwood forests. For the most part these forests are oak-hickory or mixed pine-hardwood stands. Many trees are over 2 ft in diameter.

UF2: These are the highly scenic and mature pine-hardwood and oak-hickory stands bordering the main body of Lake Issaqueena. They are a major feature of the lake setting.

Bottomland Forests

BF1: Mature stands of bottomland hardwood forests occur along the lower reaches of Six Mile Creek.

BF2: Bottomland forest, including planted bald cypress, along tributary to Lake Issaqueena

Rock Outcrops

RO1: Rock outcrops occur immediately adjacent to, and upslope of, this small tributary stream.

RO2: Rock outcrops occur on the slopes here above Wildcat Creek

RO3: Rock outcrops occur here as boulders, and as smooth rounded rock faces, above Six Mile Creek.

Plant Communities

PC1: Assemblage of seepage area species along upper Indian Creek.

PC2: Mountain laurel/American beech dominated slope above Indian Creek

PC3: Rich wildflower/fern areas along tributary to Indian Creek

PC4: Unique plant assemblage in large old house site.

PC5: Area of ferns and wildflowers among rocks and along stream banks

PC6: Area of rich ferns and wildflowers along lower reach of Indian Cr tributary

PC7: Forested slope with abundant showy wildflowers (black cohosh, etc) and shrubs (painted buckeye, etc)

PC8, 9: Diverse species of wildflowers, ferns, shrubs occur along these two Lake Issaqueena tributaries

PC10: Great numbers of trilliums, wild geraniums, other wildflowers occur in forests beside Wildcat Creek

PC11: Rich fern and wildflowers associated with seepage areas

PC12: Showy native shrubs and wildflowers on slopes and rocks around Wildcat Creek Falls

PC13: Xeric habitat plants growing on and around rock outcrops above Six Mile creek

PC 14: Diverse assemblage of wildflowers on steep woodland slopes.

PC15: See under Aquatic Habitat Types

PC16: See under Aquatic Habitat Types

PC17: See under Aquatic Habitat Types

PC18: See under Aquatic Habitat Types

PC19, 20, 21: Rich assemblage of ferns, shrubs, and wildflowers in hardwood forests along eastern and lower southwestern shores of Lake Issaqueena.

AQUATIC HABITATS

Floodplain Wetlands

FW1: Expansive floodplain depression in bottomland forest beside Six Mile Creek

Alluvial Wetlands

AW1: Wetlands at the mouth of Indian Creek. These are beaver influenced, with a series of frequently modified beaver ponds.

AW2: Expansive wetlands extending from the mouths of Wildcat Creek and Six Mile Creek down to the "Lakeside Area" These are beaver influenced.

AW3: Wetland at the mouth of small tributary on west side of Lake Issaqueena. These are beaver influenced.

Beaver Ponds

BP1: A series of long standing beaver ponds on tributaries to Lake Issaqueena.

Springs/Seepages

SS1: Small seepages feeding a headwater tributary of Indian Creek.

SS2: Small seepage feeding tributary of Indian creek

SS3, 4: Seepages along a couple of tributaries of Wildcat Creek.

Waterfalls

WF1: Series of waterfalls and cascades along upper Indian creek

WF2: Series of small waterfall and cascades on tributary to Indian Creek

WF3: Series of waterfalls and cascades on Indian creek

WF4: Wildcat Creek Falls

WF5: Six Mile Creek Falls

Quality Streams

ST1: Upper reaches of Indian Creek, which contain small fishes and amphibian populations

ST2: Tributary of Indian Creek that supports abundant amphibians and fishes, including yellowfin shiners and blue head chubs.

ST3, 4: Small scenic tributaries of Indian creek, supporting small fishes and amphibians

ST5: Lower reaches of Indian Creek which supports abundant fishes, amphibians, and reptiles.

ST6: Wildcat creek is one of the highest quality streams on the Clemson Forest in terms of natural substrate and biodiversity, including fish, amphibians, and insect life.

ST7: The largest stream in the northern section of the Forest, Six Mile creek supports 26 species of fishes and abundant amphibian and reptile life.

ST8, ST9, ST10, ST11, ST12, ST13, ST14, ST15: These represent a series of small but biologically significant tributaries on the western side of the Lake Issaqueena drainage.

Man-made Impoundments

IMP1: 100 acre Lake Issaqueena

Unique Plant Communities (aquatic)
PC15: Extensive shrubby and herbaceous wetland communities
PC16: extensive colonies of submerged and emergent wetland vegetation
PC17: Upper end of Lake Issaqueena contains large colonies of pond lily and other wetland plants.
PC18: A planted stand of mature bald cypress with other wetland species.

OTHER DESIGNATED RESOURCE TYPES

Intensive Wildlife Management Area
HM1, HM2, HM3: These three areas are open fields that are maintained and managed as areas of early succession for select game and non-game wildlife.

Botanical Feature
B1: Oconee Bells (planted?) occurs in several locations along this tributary.
B2: Ginseng occurs along this forested slope
B3: Lily-leaved twayblade orchids occur in seepages here
B4: Monkshood occurs at several locations along the slope of this forested hillside
B5: Extensive colony of pink lady slipper orchids occur on this hillside

Zoological Feature
Z1: Indian creek supports diverse fish and amphibian populations
Z2: Wildcat Creek supports diverse amphibian, fish, and unique insect populations.
Z3: Six Mile Creek supports 22 species of fish and diverse amphibian and reptile populations
Z4: Wood Frogs (peripheral species) and spotted salamanders (one of two breeding sites on the Forest) breed in this floodplain wetland depression
Z5: This wetland is notable for its diverse amphibian and bird populations
Z6: Redheaded woodpecker colony inhabits woodlands beside, and in, these alluvial wetlands
Z7: Series of depressions in this bottomland forest support breeding amphibians including spotted salamanders (the state amphibian of SC)
Z8: Lake Issaqueena supports diverse fish populations, wintering waterfowl, breeding wood ducks, and many wading birds. Bald eagles have been observed here in recent years

Scenic Areas
SC1: The mature hardwood forests as viewed from the trail system that traverses the area, provide a beautiful picturesque setting, These forest stands, their beauty, and natural diversity, are a legacy of Clemson University.
SC2: Wildcat Creek, and especially in the area of Wildcat Creek falls, presents a series of beautiful and highly photogenic settings that are an attraction for many people.
SC3: Six Mile Creek, throughout much of its length, with its rocky shoals and mountain laurel lined stream banks, is a setting of high natural beauty.
SC4: Lake Issaqueena, through the seasons, provides a landscape of the highest aesthetic values.

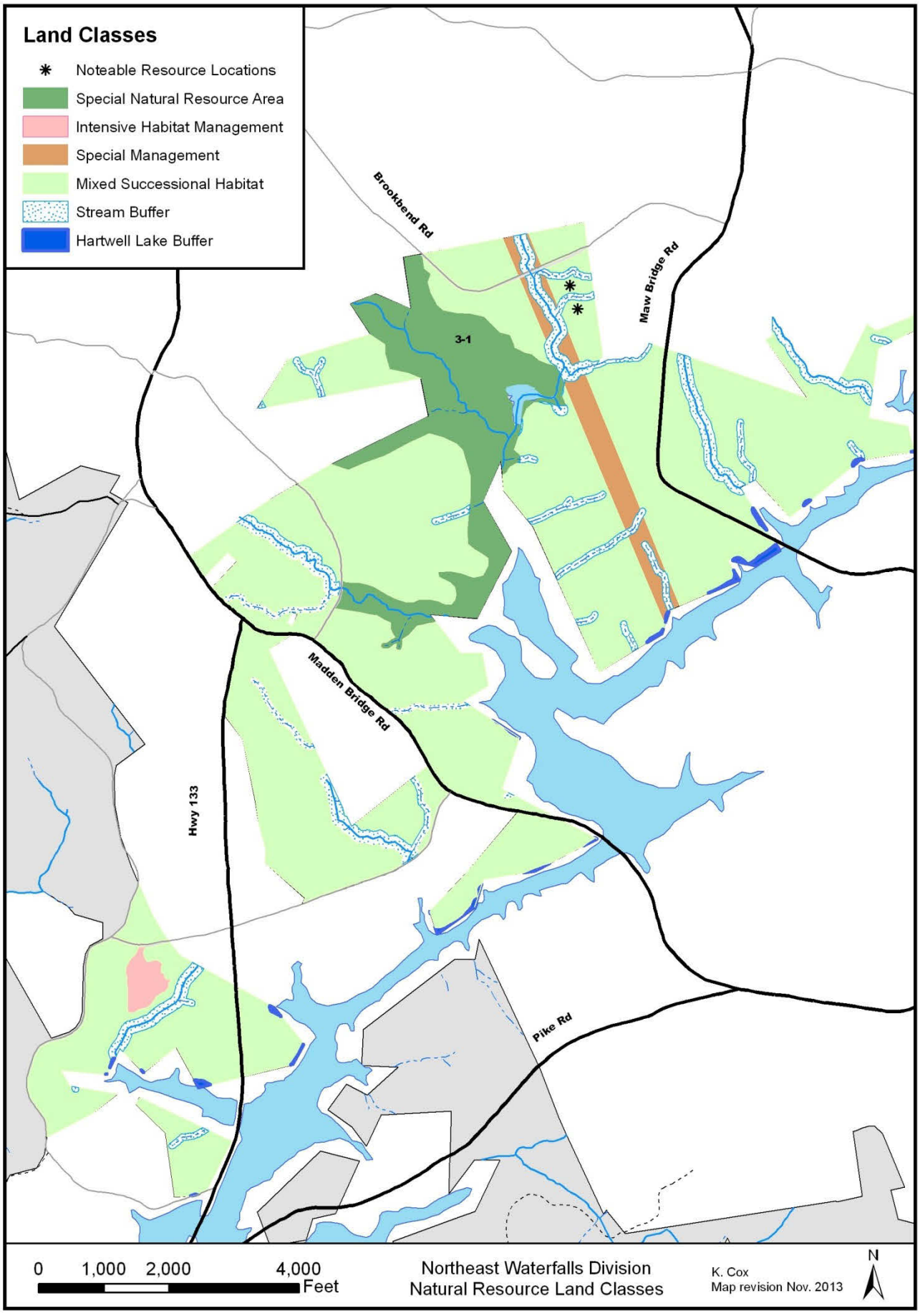
ATTACHMENT 3

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

NORTHEAST WATERFALLS NATURAL DIVISION


Land Classes
Noteable Resource Locations
Special Natural Resource Area
Intensive Habitat Management
Special Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
Brookbend Rd
Maw Bridge Rd
3-1
Madden Bridge Rd
Hwy 133
Pike Rd
0 1,000 2,000 4,000 Feet
Northeast Waterfalls Division
Natural Resource Land Classes
K. Cox
Map revision Nov. 2013
N

NORTHEAST WATERFALLS NATURAL DIVISION

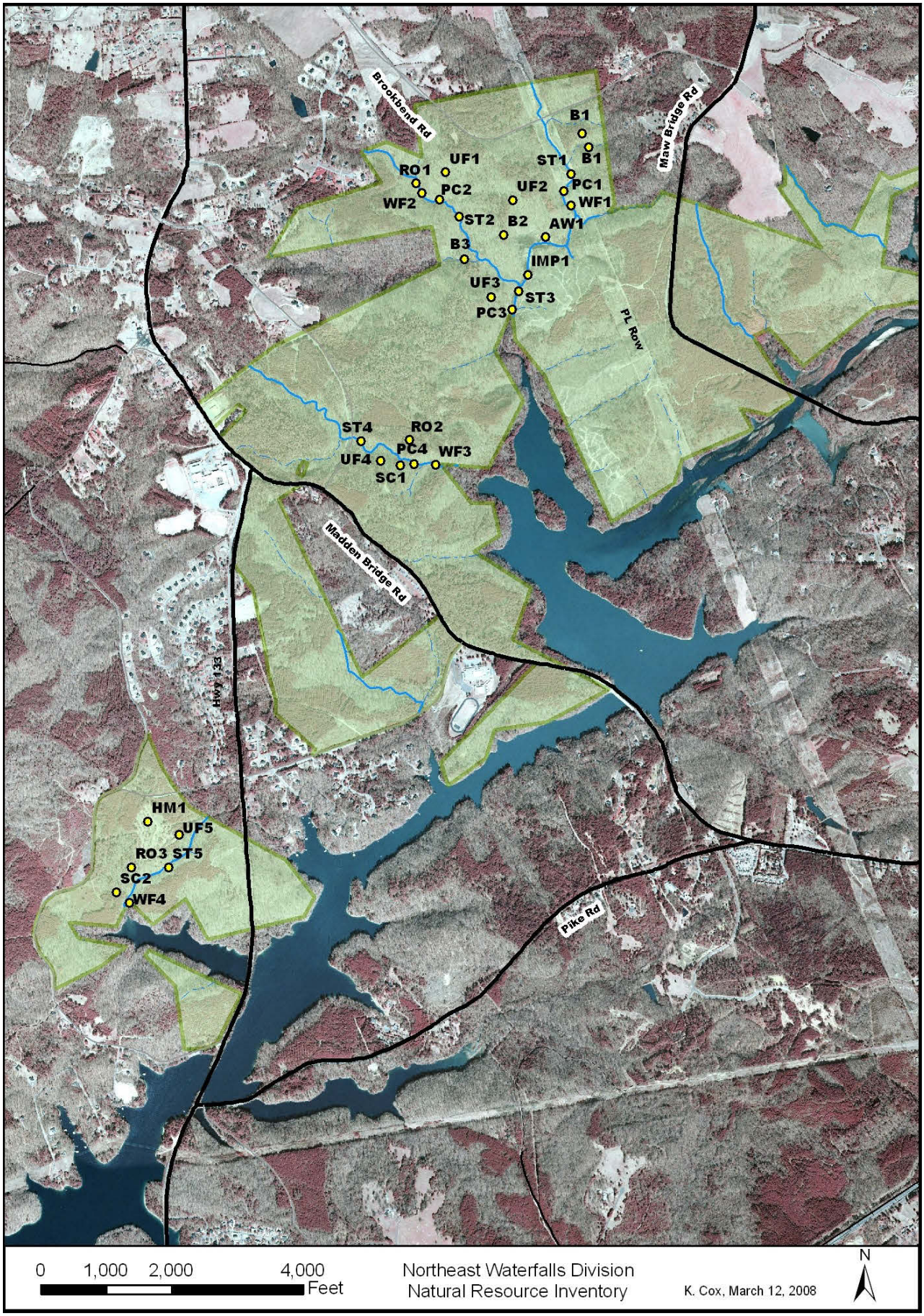
SPECIAL NATURAL RESOURCE AREAS
GENERAL DESCRIPTION

SNRA 3-1: NORTHEAST WATERFALLS SRNA (161 acres, see Map)
Features:
Highly aesthetic natural resource features including stream, waterfall, wetland, and botanical settings
Scenic waterfalls and cascades in the watersheds of Todd Creek and Waldrop Stone Creek
Mature and highly scenic hardwood forest stands
Diverse botanical communities including shrub and herbaceous layers
High quality streams
Notable wetland community in association with Todd Creek Pond

GENERAL DESCRIPTION: This is an area of highly scenic streams, woodlands, and wetlands situated among rolling hills and steep valleys. Ridge tops of pines and dry site hardwoods (post oaks, southern red oaks) extend down slope to mesic forest stands (northern red oaks, cucumber magnolias, American beech) along the streams. These stands typically consist of mature trees of 2 ft in diameter or more. Along the more sheltered lower slopes and streams are aesthetic displays of mountain laurel, wild azaleas, witch hazel, sweet shrub, spice bush, among other species. Here also are showy growths of cinnamon fern, royal fern, wood fern, and broad beech ferns. Wildflowers are abundant. The streams are high quality and contain abundant populations of small fishes, frogs, and salamanders (including the black bellied salamander, a species associated with mountain habitats).

The steep topography of this area provides for some very showy waterfalls that provide numerous micro-habitats for spray zone plant species. Waldrop Stone Falls is a high falls with numerous ledges and splash pools that drops about 30 ft. Ferns, liverworts, and select wildflowers grow among its ledges and side-pockets, while various species of salamanders live among its rocky crevices. A steep slope beside the falls is rich in wildflowers. Todds Creek falls is located within a transmission ROW. It is an abrupt rock-faced falls of 10 ft. Its aesthetics and biological values are enhanced significantly by flowering shrubs that line the stream banks, and a rich diversity of wildflowers that grow in the open sunny areas along its stream banks. In addition to these two major waterfalls, there are many smaller areas of "falls" and cascades along the routes of the streams within this SNRA.

A Civilian Conservation Corps dam (built in 1930's) impounds Todd Creek. Today the impoundment is largely filled with sediment that is supporting a dense growth of herbaceous and woody wetland vegetation. A visit to this pond reveals its abundant use by frogs, fishes, and wetland habitat bird species. Todd Creek downstream of this dam is a highly scenic stream with rocky shoals and pools.


Brookbend Rd
Maw Bridge Rd
Madden Bridge Rd
Pike Rd
Hwy 133
PL Row
B1
B1
ST1
UF1
RO1
PC2
WF2
UF2
PC1
WF1
ST2
B2
AW1
B3
IMP1
UF3
ST3
PC3
ST4
RO2
PC4
WF3
UF4
SC1
HM1
UF5
RO3
ST5
SC2
WF4
0
1,000
2,000
4,000
Feet
Northeast Waterfalls Division
Natural Resource Inventory
K. Cox, March 12, 2008
N

NORTHEAST WATERFALLS NATURAL DIVISION
NATURAL RESOURCE INVENTORY
EXPLANATORY INFO (See Inventory Map)

TERRESTRAIL HABITATS

Upland Forests

UF1: Mature and highly scenic hardwood dominated forest on mid to lower slopes above tributary to Todd Creek. Oaks, hickories, beech to 2ft or more in diameter. Diverse understory of shrubs, wildflowers, and ferns.

UF2: Mature upland forest of mixed hardwoods and pines on upper slope. Understory of dry site shrubs and wildflowers, including large colony of dwarf pawpaw.

UF3: Mature stand of mixed hardwood and pine forest on lower slopes and flats along the most downstream reaches of Todds Creek.

UF4: Mature and highly scenic stand of mixed oak, hickory, pine forest along slopes and flats bordering Waldrop Stone Creek. At most downstream reaches of the creek, in association with Waldrop Stone Falls are more mesic site species of trees (beech, northern red oak, magnolia, basswood)

UF5: Scenic, open stand of forest associated with stream and waterfall on unnamed tributary.

Rock Outcrops

RO1: A series of rock outcrops occur in the lower levels of this ravine throughout its length.

RO2: A series of rock outcrops occur in woodlands above Waldrop Stone Creek.

RO3: A series of bedrock outcrops occur above this small tributary of Lake Hartwell

Unique Plant Communities

PC1: An assemblage of sunny streamside plants occur along Todd Creek here including boneset, cardinal flower, monkey flower, Joe Pye weed, and others.

PC2: Within this ravine are areas of rich botanical diversity in both the understory (shrubs) and ground cover. Numerous showy wildflowers and ferns occur here.

PC3: Nice examples of rich wildflower displays occur in the forests here along Todds Creek.

PC4: Rich woodland wildflowers and shrubs occur here along the sides and below Waldrop Stone Falls.

AQUATIC HABITATS

Alluvial Wetlands

AW1: An expansive wetland area with emergent vegetation occurs as part of an impoundment on Todds Creek.

Waterfalls

WF1: A significant and scenic waterfall occurs here on Todds Creek

WF2: A series of waterfalls and major cascades occur along this tributary to Todds Creek

WF3: A notable and highly scenic waterfall on Waldrop Stone Creek

WF4: A three tiered waterfall occurs here on an un-named tributary to Lake Hartwell.

Quality Streams

ST1: Todd Creek is a highly scenic stream flowing over bedrock and various other substrates. It contains populations of various fish species, salamanders, and reptiles.

ST2: This is a highly scenic tributary to Todd Creek flowing through a beautiful mature hardwood forest and surrounded by showy wildflowers and shrubs. It supports fishes and abundant amphibians.

ST3: Todd Creek downstream of the CCC impoundment is a beautiful stream flowing over a rocky substrate. It supports fish and amphibian life while flowing through a beautiful forested area.

ST4: Waldrop Stone Creek is a highly scenic steam flowing over bedrock and other substrates. It has deep pools, riffles, and other habitat types within its reaches. It flows through a beautiful forested area with wildflowers and large ferns.

ST5: This small scenic stream supports fish and amphibians.

Man-Made Impoundments

IMP1: This is a 1 acre impoundment on Todd Creek created by the Civilan Conservation Corps during the 1930s.

OTHER DESIGNATED RESOURCE TYPES

Notable Botanical Features

B1: *Nestronia umbellula* site – this shrub is a " listed species" in SC.

B2: A large population of Bunch Flower, a member of the lily family, occurs along this slope.

B3: The only recorded population on the Forest of the shrub witch hazel occurs along this small tributary.

Scenic Areas

SC1 : Highly scenic woodlands and stream views around Waldrop Stone Falls area.

SC2 : Scenic woodlands and waterfall.

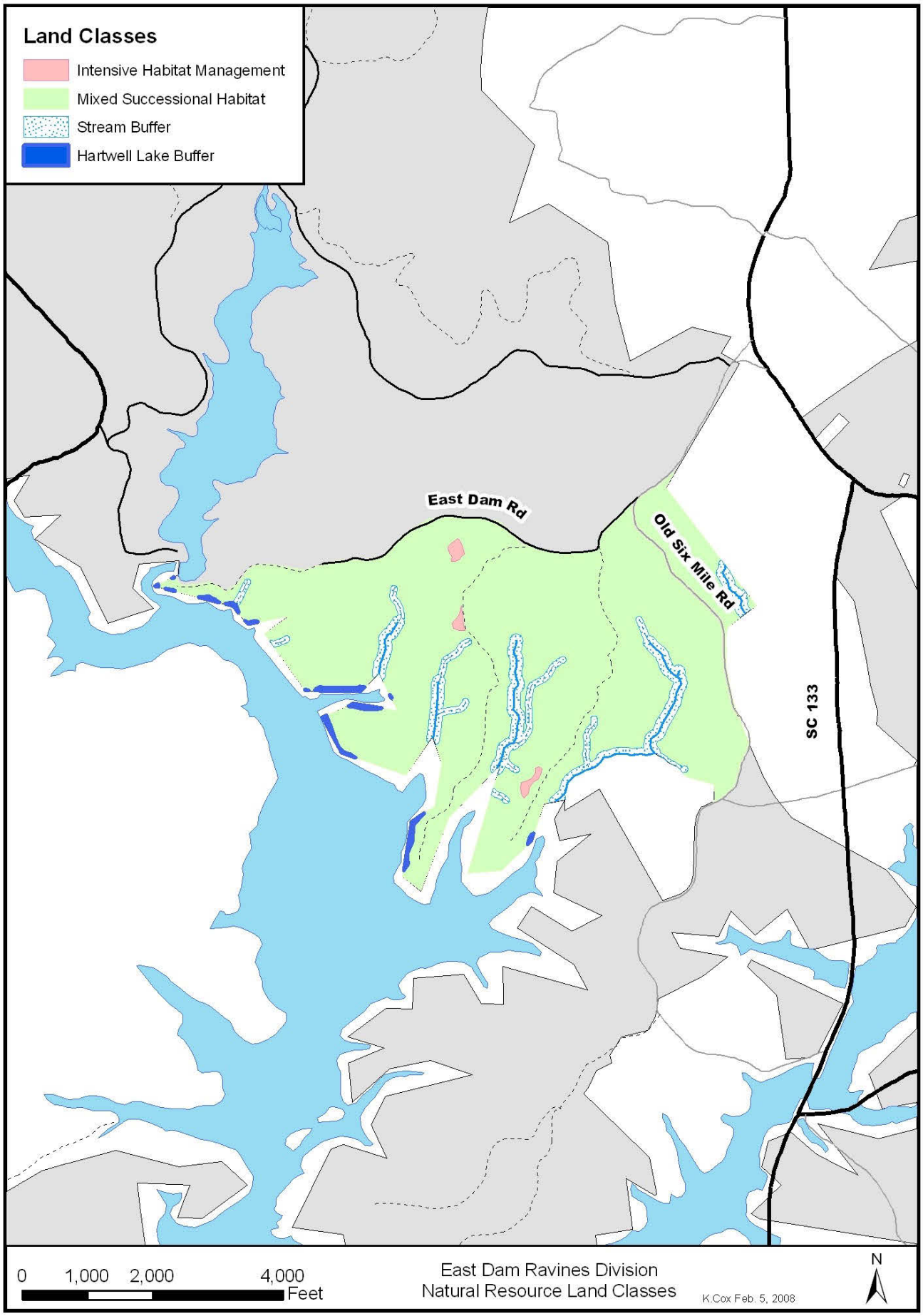
ATTACHMENT 4

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

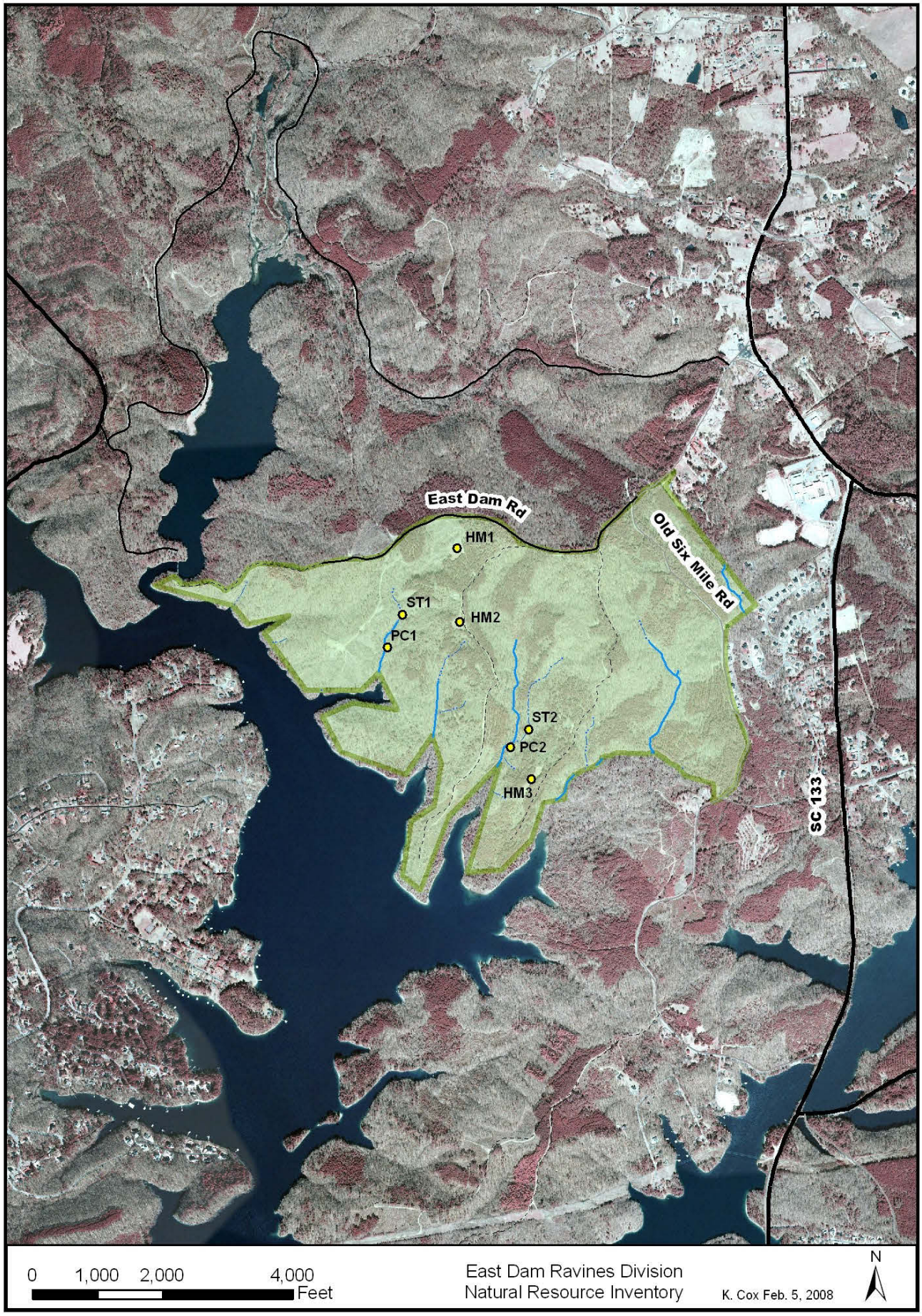
EAST DAM RAVINES NATURAL DIVISION


Land Classes
Intensive Habitat Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
East Dam Rd
Old Six Mile Rd
SC 133
0
1,000
2,000
4,000
Feet
East Dam Ravines Division
Natural Resource Land Classes
K.Cox Feb. 5, 2008
N

EAST DAM RAVINES NATURAL DIVISION

SPECIAL NATURAL RESOURCE AREAS

No Special Natural Resource Areas are recognized in this Natural Division. Inventoried natural resources in this Division are protected through the Stream Buffer application.


East Dam Rd
Old Six Mile Rd
HM1
ST1
HM2
PC1
ST2
PC2
HM3
SC 133
0 1,000 2,000 4,000 Feet
East Dam Ravines Division
Natural Resource Inventory
K. Cox Feb. 5, 2008
N

EAST DAM RAVINES NATURAL DIVISION

NATURAL RESOURCE PLAN
EXPLANATORY INFOTRMATION (See Inventory Map)

TERRESTRIAL HABITATS

Unique Plant Communities

PC1, PC2: Populations of wildflowers and ferns occur along the lower reaches of the slopes above these two streams.

AQUATIC HABITATS

Quality Streams

ST1, ST2: These two tributaries of Lake Hartwell flow though nice woodlands, provide scenic settings, and support populations of small fishes and amphibians.

OTHER DESIGNATED RESOURCE TYPES

Intensive Habitat management Areas

HM1, HM2, HM3 : These are open fields that are maintained as such, and managed as early successional areas for species of game and non-game wildlife.

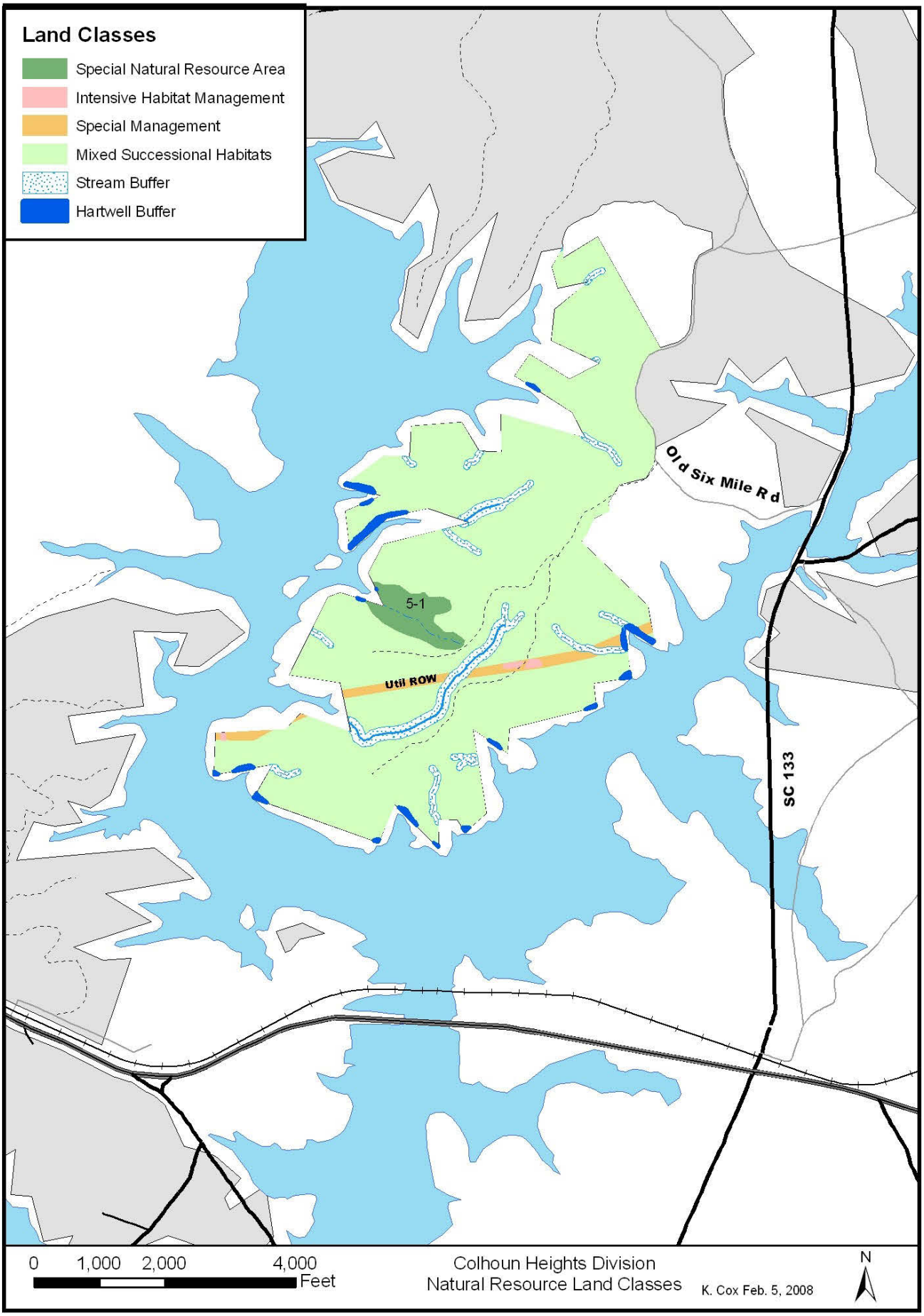
ATTACHMENT 5

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

COLHOUN HEIGHTS PENINSULA NATURAL DIVISION


Land Classes
Special Natural Resource Area
Intensive Habitat Management
Special Management
Mixed Successional Habitats
Stream Buffer
Hartwell Buffer
Old Six Mile Rd
5-1
Util ROW
SC 133
0
1,000
2,000
4,000
Feet
Colhoun Heights Division
Natural Resource Land Classes
K. Cox Feb. 5, 2008
N

COLHOUN HEIGHTS NATURAL DIVISION

SPECIAL NATURAL RESOURCE AREA
GENERAL DESCRIPTION

SNRA 5-1: PAW PAW WOODS SNRA (18 acres, see map)
Features:
Mature hardwood forest on slopes
Steep north facing slope
Rich herbaceous vegetation
Rock outcrops

GENERAL DESCRIPTION: This ravine is dominated by a mature oak-hickory forest with some large short-leaf pines on its upper sections. Pawpaw colonies dominate much of the lower slopes and flats in mid-areas of the cove. Outcrops of bedrock occur on both sides of the ravine in its upper reaches. A major feature of this area is a high and steep north facing slope that borders the south side of the ravine. This rich soil slope has abundant ferns and should be an excellent site for springtime wildflowers.


Old Six Mile Rd
SC 133
UF2
UF1
RO1
PC1
HM1
HM2
Util ROW
ST1
WF1
SC1
PL ROW
PL ROW
0
1,000
2,000
4,000
Feet
Colhoun Heights Division
Natural Resource Inventory
K. Cox March 6, 2008
N

COLHOUN HEIGHTS NATURAL DIVISION

NATURAL RESOURCE INVENTORY
EXPLANATORY INFO (See Inventory Map)

TERRESTRIAL HABITATS

Upland Forests

UF1: A mature stand of hardwood forest on slopes of a steep east-west ravine.
UF2: A mature stand of oak-hickory forest covers the steep slopes of this ravine.

Rock Outcrops

RO1: Bedrock outcrops occur along both sides of the upstream reaches of the ravine.

Plant Communities

PC1: Rich herbaceous layer on steep north facing slope.

OTHER DESIGNATED HABITAT TYPES

Scenic Areas

SC1: Numerous scenic settings occur along this small tributary of Lake Hartwell. The stream flows adjacent to the historic "spring house" of the John E. Colhoun home (Keowee Heights)

AQUATIC HABITATS

Quality Streams

ST1: This small tributary flowing through a woodland setting sustains populations of small fish and amphibians.

Waterfalls

WF1: A series of small waterfalls and cascades occur along the lower reaches of this stream.

OTHER DESIGNATED RESOURCE TYPES

Intensive Habitat Management Areas

HM1, HM2: These two non-forested areas are periodically planted to provide food and cover for game and non-game wildlife.

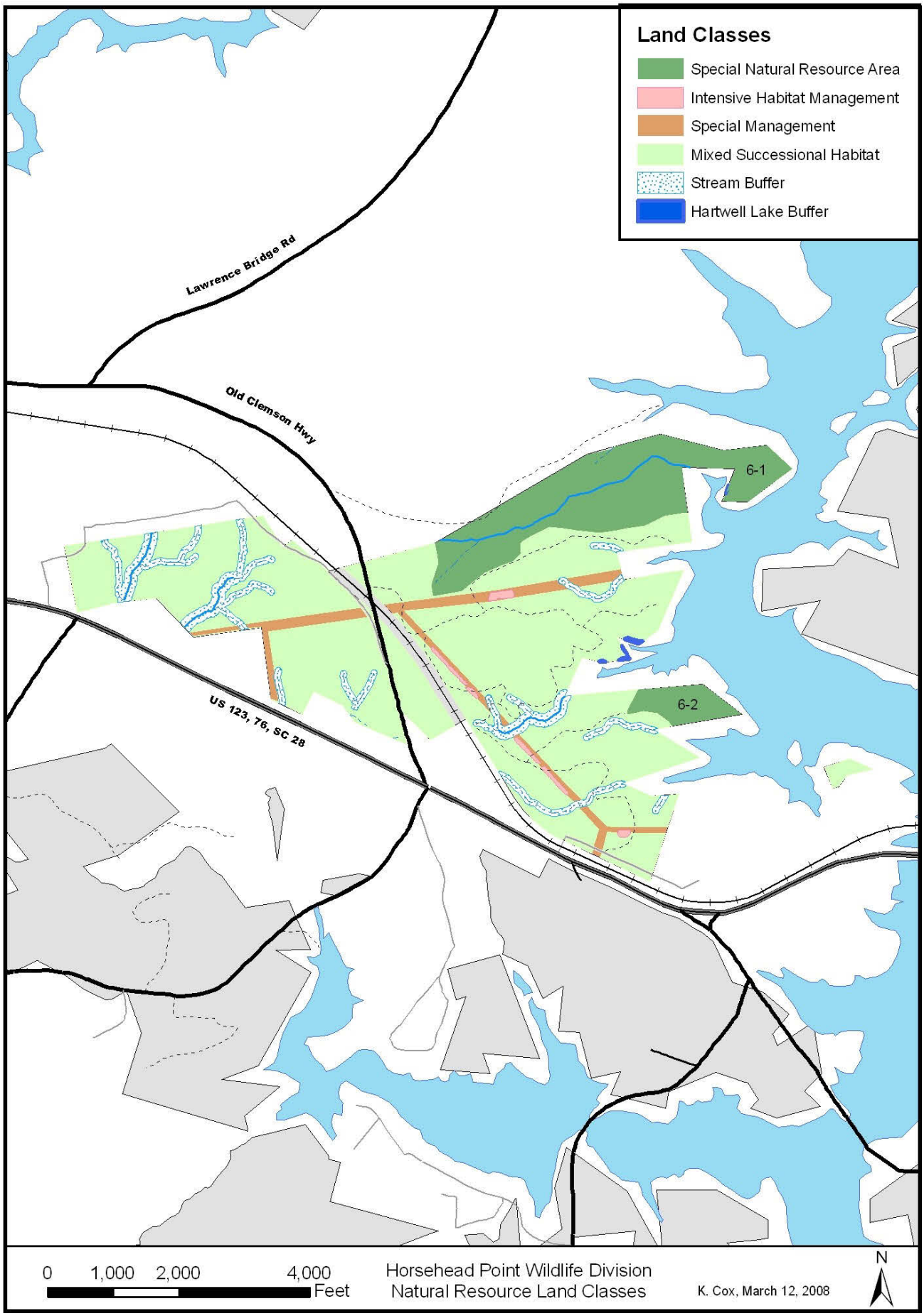
ATTACHMENT 6

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

HORSEHEAD POINT WILDLIFE NATURAL DIVISION


Land Classes
Special Natural Resource Area
Intensive Habitat Management
Special Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
Lawrence Bridge Rd
Old Clemson Hwy
US 123, 76, SC 28
6-1
6-2
0
1,000
2,000
4,000
Feet
Horsehead Point Wildlife Division
Natural Resource Land Classes
K. Cox, March 12, 2008
N

HORSEHEAD POINT WILDLIFE NATURAL DIVISION

SPECIAL NATURAL RESOURCE AREAS
GENERAL DESCRIPTION

SRNA 6-1: HORSEHEAD POINT SNRA (110 acres, see Map)
Major Natural Resource Features:
Mature forest communities on north and south facing slopes
Quality examples of mesic and xeric woodland communities
Extensive rock outcrops
Rich shrub and herbaceous vegetation layers
Quality stream
Many small "waterfalls/cascades"
Highly scenic natural settings

GENERAL DESCRIPTION: A very scenic natural resource area featuring both a high and dry south facing ridge and a sheltered, moist north facing slope. It is a topographically and biologically diverse area dominated by mature hardwood forests and featuring major rock outcrops, a scenic stream, and rich plant communities. Trees over 2ft in diameter occur throughout. Its biological and scenic resources make this area is a natural jewel of the Clemson Forest.

A high east-west ridgeline rising 150 ft above adjacent Lake Hartwell divides the area with the dry south facing slope on one side, and moist north facing slope on the other. Plant communities on these respective slopes reflect the local moisture conditions, making the overall area one of high diversity and special botanical interest. In addition to containing very scenic qualities, the ridge provides very scenic wintertime views of the surrounding Clemson Forest and other areas of Lake Hartwell.

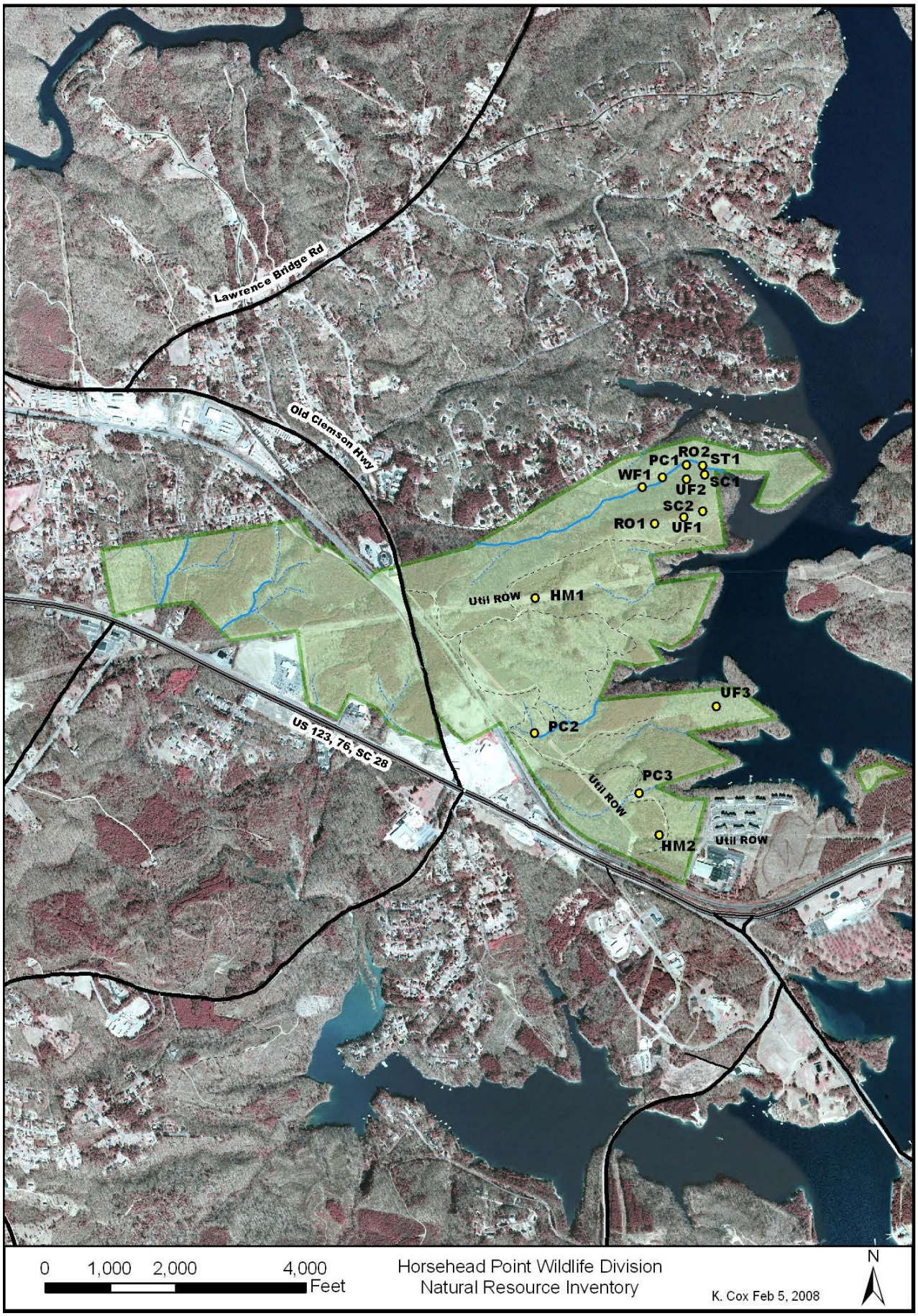
The south facing slope is dominated by trees associated with dry conditions including southern red oak, post oak, scarlet oak, and with many white oaks and hickories (mockernut, pignut), while the north facing slope supports trees common on moist sites such as northern red oak, American beech, silverbell, among other oaks and hickories. Shrub and herbaceous layer species also reflect the two extreme moisture conditions provided by this Special Natural Resource Area. The north facing slope containing mountain laurel, wild azaleas, storax, and pawpaw over ground covers of many spring ephemeral wildflowers. The south facing slope's shrub community is largely members of the blueberry family. Wildflowers are relatively sparse under these drier conditions.

The rock outcrops provide special micro-habitats, both in the extremely dry and moist settings, and on the lower north facing slope. In moist sites they are covered with growths of ferns, mosses, and liverworts, while in the dry sites they feature lichens. In both cases they also provide potentially important habitat for amphibians, reptiles, and small mammals.

A highly scenic perennial stream with small waterfalls/cascades flows at the base of the north facing slope. Surrounded by mountain laurels, ferns, and rich growths of wildflowers, this stream is a major natural resource feature. Fish and amphibian populations occur throughout the length of the stream.

SNRA 6-2: HORSEHEAD FLATWOODS SNRA (16 acres, see Map)
Features :
Mature oak-hickory forest on expansive flat upland area

GENERAL DESCRIPTION: The most notable feature of this Special Natural Resource Area includes the occurrence of a mature oak-hickory forest community on an extensive area of flat uplands. This is the only known area in the CEF where this condition has been encountered. Here is an historic example of what the general forest conditions were like throughout most of the piedmont, even on flat or very gently rolling landscapes (flat upland areas were typically farmed in the early 20th century and reclaimed through various intensive forest management techniques). While the CEF provides some wonderful examples of mature forest stands on slopes, this flatwoods example is unique, qualifying it for recognition as a Special Natural Resource Area.


Lawrence Bridge Rd
Old Clemson Hwy
US 123, 76, SC 28
PC1
RO2
ST1
WF1
SC1
UF2
SC2
RO1
UF1
Util ROW
HM1
UF3
PC2
PC3
Util ROW
HM2
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Feet
Horsehead Point Wildlife Division
Natural Resource Inventory
K. Cox Feb 5, 2008
N

HORSEHEAD POINT WILDLIFE NATURAL DIVISION

NATURAL RESOURCE INVENTORY
EXPLANATORY INFO (see Inventory Map)

TERRESTRIAL HABITAT FEATURES

Upland Forests

UF1: Mature and scenic oak-hickory forest on the dry south facing slope below Horsehead Ridge. Dry site tree species, many of which are 2ft or more in diameter, dominate the area.

UF2: Mature and highly scenic oak-hickory forest on a mesic north facing slope below Horsehead Ridge. Mesic area species characterize much of the area, with many trees 2ft in diameter, or more.

UF3: Mature oak-hickory forest community on extensive area of flat uplands.

Rock Outcrops

RO1: Rock Outcrop 1. Notable areas of rock outcrop extend along the mid to upper sections of the south facing slope below Horsehead Ridge.

RO2: Rock Outcrop 2. Many areas of rock outcrop occur just upslope of Horsehead Creek, and beside the creek.

Unique Plant Communities

PC1: A rich and diverse community of shrubs and wildflowers occur on this north facing slope, especially along its lower reaches.

PC2, PC3: Notable wildflower communities occur adjacent to these streams.

AQUATIC HABITAT FEATURES

Waterfalls

WF1: Waterfall 1. A series of small, scenic, waterfalls and cascades occur along the length of Horsehead Creek.

Quality Streams

ST1: Stream 1. This perennial stream flows over bedrock, cobble and sandy substrates through the forested Horsehead Valley. In many locations it flows over small waterfalls and cascades providing for highly scenic and botanically interesting settings. Fish and amphibian populations occur throughout the stream.

OTHER DESIGNATED RESOURCE TYPES

Intensive Habitat Management Areas

HM1, HM2: These two non-forested areas are planted to provide food for game and non-game wildlife species.

Scenic Areas

SC1: Highly scenic woodland and stream setting with small waterfalls and cascades.

SC2: Mature south facing hardwood forest with bedrock outcrops and providing scenic views.

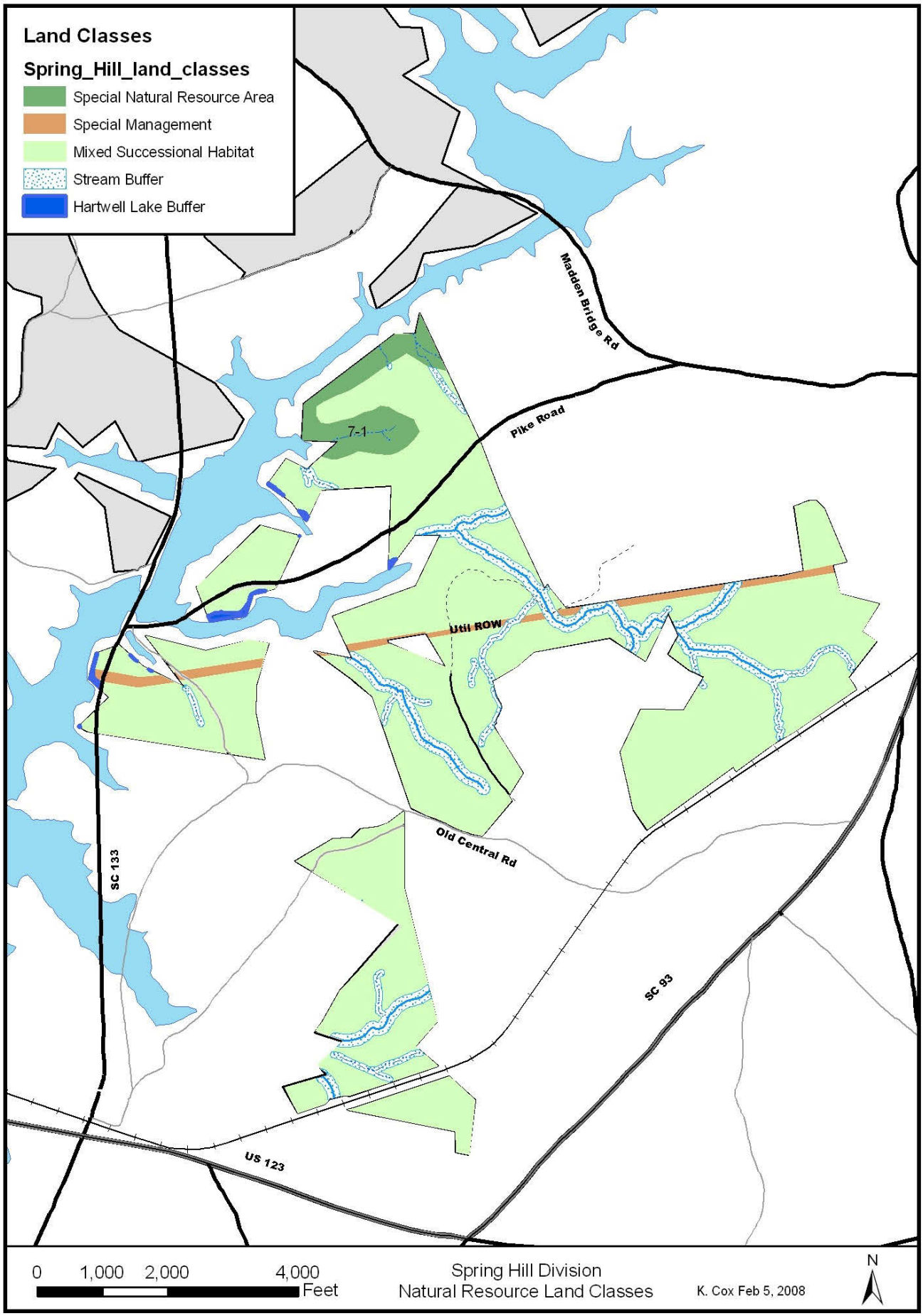
ATTACHMENT 7

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

SPRING HILL WOODLANDS NATURAL DIVISION


Land Classes
Spring_Hill_land_classes
Special Natural Resource Area
Special Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
Madden Bridge Rd
Pike Road
7-1
Util ROW
Old Central Rd
SC 133
SC 93
US 123
0 1,000 2,000 4,000 Feet
Spring Hill Division
Natural Resource Land Classes
K. Cox Feb 5, 2008
N

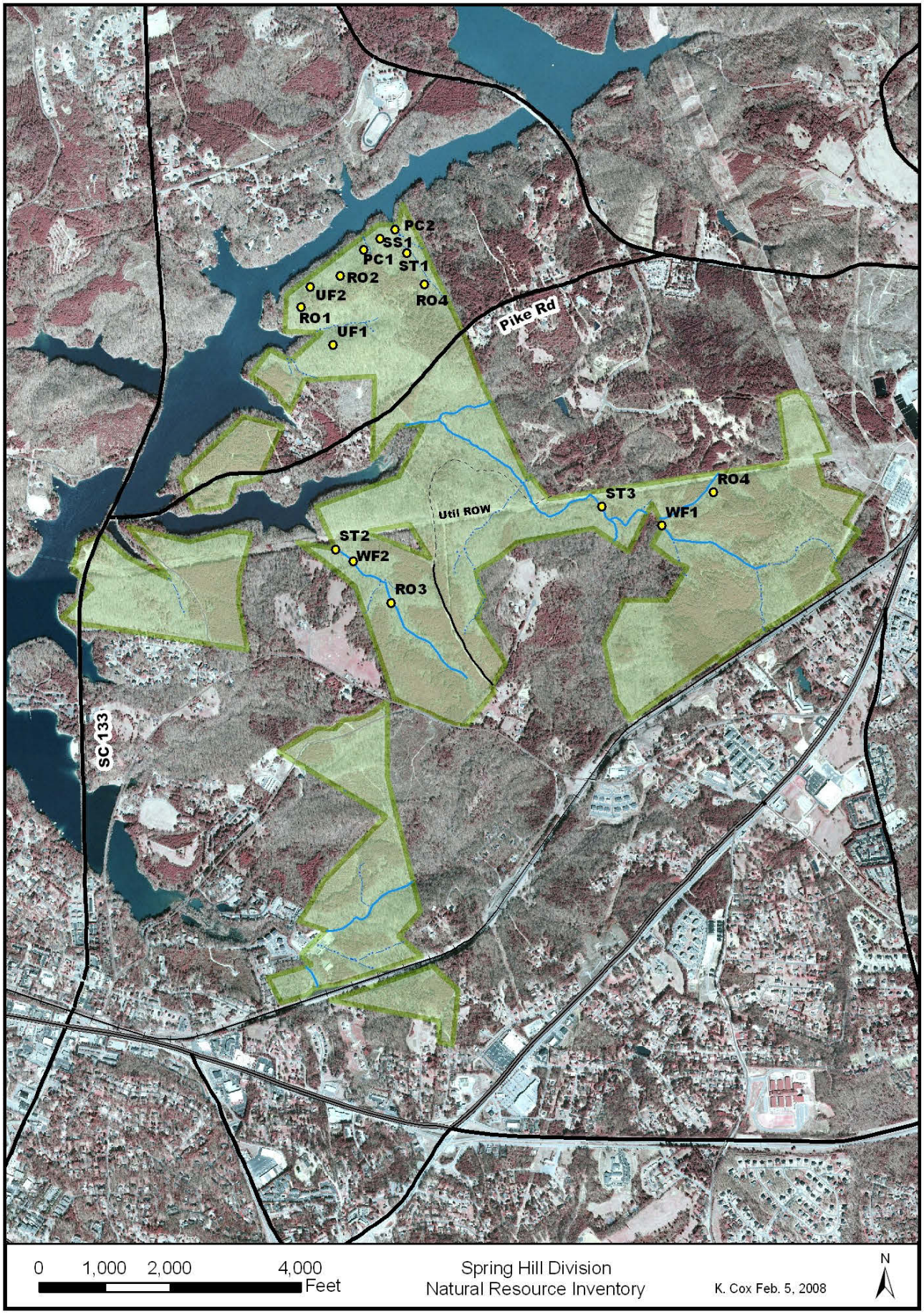
SPRING HILL WOODLANDS NATURAL DIVISION

SPECIAL NATURAL RESOURC AREAS
GENERAL DESCRIPTION

SNRA 7-1: COVE AND NORTH BLUFF SNRA (38 acres, see Map)
Features
Mature hardwood forested cove with steep north and south facing slopes
Mature oak-hickory forest on north facing slope above the Lake Hartwell
Significant bedrock outcrops around the upper slopes of the cove and lake shore forest

GENERAL DESCRIPTION: A deep and secluded hardwood cove is a major feature of this SNRA. The cove is oriented east to west and presents a very steep hardwood forested north facing slope. Many trees are 2ft or more in diameter. Across the upper reaches of the south facing slope are an extensive series of large bedrock outcrops. Except for vehicle sounds from nearby Hwy 133, this cove presents the visitor with the experience of isolation. Down along its lower slopes there is no other suggestion of modern activities, and the mature forest presents a feeling of great age.

Across the western rim of the cove the land slopes down to the shoreline of the Twelve Mile Creek arm of Lake Hartwell. This north facing slope also contains a nice upland forest. A small seepage area and stream cascading over bedrock add diversity to this slope. Wildflowers and ferns occur along these slopes and making them scenic natural gardens.


PC2
SS1
PC1
ST1
RO2
UF2
RO4
RO1
UF1
Pike Rd
RO4
ST3
Util ROW
WF1
ST2
WF2
RO3
SC 133
0
1,000
2,000
4,000
Feet
Spring Hill Division
Natural Resource Inventory
K. Cox Feb. 5, 2008
N

SPRING HILL WOODLANDS NATURAL DIVISION

NATURAL RESOURCE PLAN
EXPLANATORY INFO (see Inventory Map)

TERRESTRAIL HABITATS

Upland Forests

UF1: Mature hardwood forest on the steep north and south facing slopes of a ravine
UF2: Mature oak-hickory forest on north facing slope above Lake Hartwell

Rock Outcrops

RO1: A series of large outcrops occur along the upper south facing slope of this ravine
RO2: A series of large outcrops occur in various locations along the upper reaches of this north facing slope above Lake Hartwell
RO3: Rock outcrops along this small tributary to Lake Hartwell
RO4: Rock outcrops in the forest and adjacent to this small stream

Unique Plant Communities

PC1: Ferns (maidenhair, cinnamon, others) associated with a small seepage area
PC2: Woodland wildflowers and ferns associated with this small tributary to Lake Hartwell

AQUATIC HABITATS

Waterfalls

WF1: Waterfalls and cascades associated with reaches of this small stream
WF2: Waterfalls and cascades associated with this small and highly scenic stream

Springs/Seepages

SS1: A seepage area with maidenhair ferns and other wet area species occurs here above the shore of Lake Hartwell

Quality Streams

ST1: This small scenic tributary flows over bedrock and sandy substrates and supports populations of fishes and amphibians.
ST2, ST3: These two small streams both have highly scenic reaches flowing over bedrock, with cascades and waterfalls. Both support fish and amphibian populations.

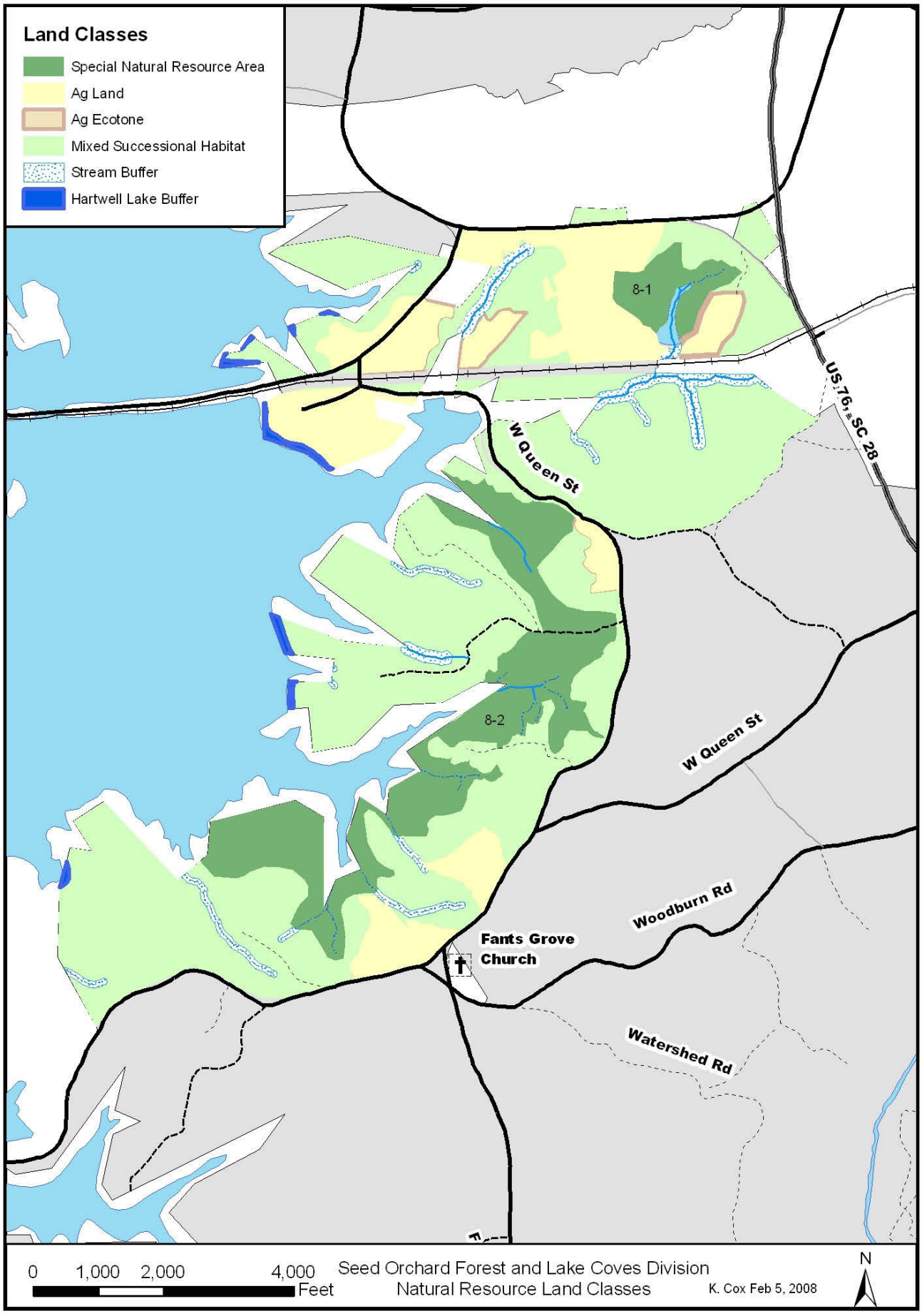
ATTACHMENT 8

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

SEED ORCHARD FOREST AND LAKE COVES NATURAL DIVISION


Land Classes
Special Natural Resource Area
Ag Land
Ag Ecotone
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
8-1
8-2
US 76; SC 28
W Queen St
W Queen St
Woodburn Rd
Fants Grove
Church
Watershed Rd
0 1,000 2,000 4,000 Feet
Seed Orchard Forest and Lake Coves Division
Natural Resource Land Classes
K. Cox Feb 5, 2008
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SEED ORCHARD FOREST AND LAKE COVES NATURAL DIVISION

SPECIAL NATURAL RESOURCE AREAS
GENERAL DESCRIPTIONS

SRNA #8-1: COUNTRY POND SNRA (33 acres, see Map)
Features:
Scenic country pond surrounded by woodlands and pasture
Extensive wetlands
Scenic and mature pine-oak-hickory forest surrounding the pond
Diverse amphibian, water bird, and songbird populations
Outstanding "nature observation" and "wildlife viewing" location

GENERAL DESCRIPTION: This is a well hidden scenic jewel, and an area of incredible wildlife habitat. It is tucked into a small woodland area not 200 yards off of heavily traveled Hwy 76 near Old Stone Church, and close to the Clemson campus. Its main feature is a 2 acre pond that is largely surrounded by a mature pine-hardwood forest, with pasturelands of the LaMaster Dairy along its lower reaches. The pond's clear waters, along with the scenic surroundings, provide a natural lure and invitation for visitors to come hike along its shoreline. Its attributes are also attractive to wildlife, as evidenced by its abundance and diversity.

Beavers have impounded the headwater tributaries of the pond, creating a series of small but readily observable "beaver dams and ponds". These add great wildlife and wetland habitat values to this area, and also provide excellent "wildlife viewing" opportunities.

A visit to this pond is sure to reveal even to the casual observer some notable wildlife observations including various species of frogs and toads that utilize the pond shores and its wetland habitats, large wading birds such as great blue herons, or many species of songbirds that utilize the surrounding forest. Within the pond turtles ply the waters, including musk turtles, mud turtles, snapping turtles, painted turtles, and yellow-bellied turtles. Close observations around the wetlands can provide a glimpse of beaver, otter, mink, muskrat, and other mammals. Wild turkey frequent the woodland/pasture edges. Wood ducks use the area during warm months, and mallards, buffleheads, hooded mergansers, ring-necks, and other ducks use it during winter.

Wildflowers range from excellent displays of springtime blooms along the forest edges, to interesting wetland species.

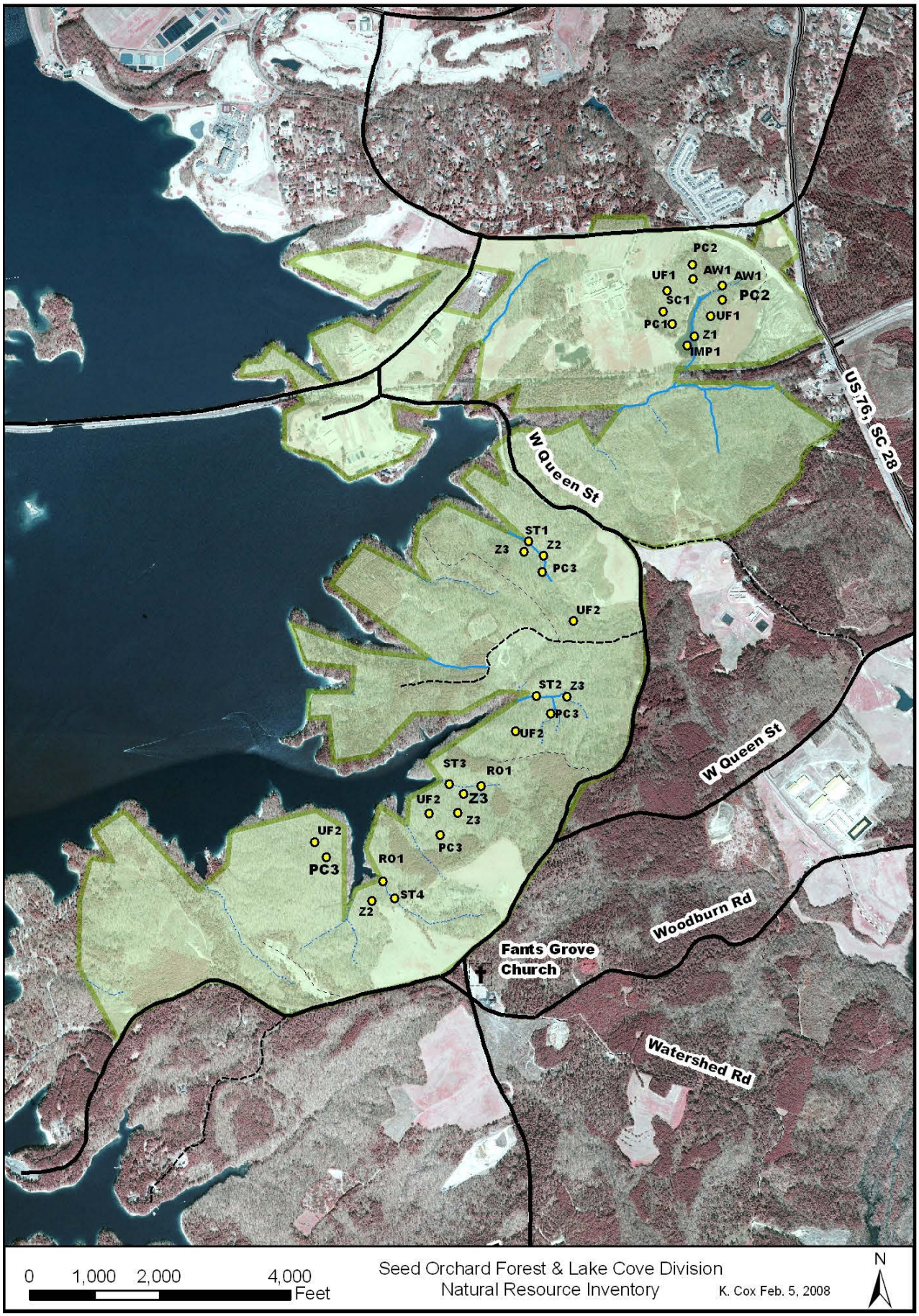
SRNA #8-2: SEED ORCHARD SNRA (203 acres, see Map)
Features:
Mature and scenic pine-hardwood forest community
Rich, diverse understory and ground layer vegetation
Quality perennial tributaries of L. Hartwell
Rock outcrops

GENERAL DESCRIPTION : This mature forest traverses a series of ridges and ravines that drain into Lake Hartwell in the general area of "Seed Orchard Road". Many trees are over 2ft in diameter, with some up to 3 ft. Some of the canopy species include white oak, southern and northern red oaks, yellow poplar, hickories, short-leaf pine, sourwood, blackgum, and American beech, among others. These trees tower over the numerous horse riders, hikers, and mountain bikers that routinely traverse the trail system in these woodlands, and provide a sense of the original piedmont forest communities that once occurred throughout the upstate region. Specimen "seed trees", utilized as sources of seed in the development of South Carolina's forestry industry, occur in this area and are indicated by signage.

Perennial streams are small, but biologically significant. Flowing over diverse substrate types these streams support populations of creek dwelling salamanders and some small fish species. In some locations these streams provide highly scenic locations with ferns, climbing vines, and bedrock outcrops adding to the "picture".

This forest stand supports fine populations of woodland songbirds during their spring migration and nesting season. Species such as acadian flycatcher, Louisiana waterthrush, hooded warbler, black and white warbler, wood thrush, ovenbird, and yellow-billed cuckoo are just some of the numerous species that feed, and/or nest in this forest. All of these are species generally associated with mature forest communities. During spring months, when the northern migration is in progress, these woodlands are alive with songs of tropical migrants, some of which will nest here, and others that are still en-route to more northern locations.

Scenic views of secluded coves on Lake Hartwell are available to the users of the trail system here. In these locations, in addition to songbirds, it is not uncommon to view wading birds (herons), birds of prey (hawks, an occasional bald eagle), aquatic turtles, and waterfowl, among other wildlife.


PC2
AW1
UF1
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SC1
PC2
UF1
PC1
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ST1
Z3
Z2
PC3
UF2
ST2
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PC3
UF2
W Queen St
ST3
RO1
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PC3
UF2
PC3
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Woodburn Rd
Fants Grove
Church
Watershed Rd
0
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Feet
Seed Orchard Forest & Lake Cove Division
Natural Resource Inventory
K. Cox Feb. 5, 2008
N

SEED ORCHARD FOREST AND LAKE COVES NATURAL DIVISION

NATURAL RESOURCE INVENTORY
EXPLANATORY INFO (see Inventory Map)

Terrestrial Habitats

Upland Forests

UF1: A stand of mature mixed pine-hardwood forest surrounding much of the "Old Stone Church Pond", and providing visual and biological buffer to the very scenic Old Stone Church Pond. The mature nature of this forest also allows it to provide valuable habitat factors for wildlife populations.

UF2: An outstanding example of a mature pine-hardwood forest (with trees up to 3 ft in diameter) occurs on a series of ridges and ravines in this area.

Rock Outcrops

RO1: Isolated rock outcrops occur along several tributaries to Lake Hartwell within the SNRA.

Plant Communities

PC1: See under aquatic habitats

PC2: See under aquatic habitats

PC3: The sheltered and rich soil areas in the understory of these mature forests contain diverse displays of showy shrubs and wildflowers. Some species include mayapple, jack-in-the-pulpit, black cohosh, wild geranium, hepatica, blood root, pawpaw, sweet shrub, maple-leaf viburnum, wild azalea, and many others.

Aquatic Habitats

Alluvial Wetlands

AW1: A series of outstanding wetlands and small ponds, influenced by beaver activity, occur on each major tributary of the pond.

Streams

ST1, 2, 3, 4: A series of small tributary streams flowing over areas of bed rock, cobbles, and sandy substrates and providing quality stream habitats for amphibians and populations of small fishes.

Man-Made Impoundment

IMP1: Old Stone Church Pond, a highly aesthetic and biologically productive 2 acre impoundment.

Plant Communities

PC1: Extensive shallow areas along these shorelines function as wet meadows with dense and diverse plant communities of sedges, rushes, and some wetland wildflowers.

PC2: Communities of wetland associated species occur in and immediately adjacent to these alluvial wetlands including: duck potato, arrow arum, lobelias, alders, sedges, rushes, and others.

Other Designated Resources Types

Zoological Features

Z1: An exceptional assemblage of wildlife including fish, amphibians, reptiles, birds, and mammals. In many cases these animals are observable due to the open nature of the habitats.

Z2: Populations of several species of stream salamanders (dusky salamander, two-lined salamander, others) occur in the tributary streams of the area.

Z3: These forest stands are important for certain species of songbirds. Some of those species recorded here include: acadian flycatcher, La waterthrush, hooded warbler, black and white warbler, wood thrush, ovenbird, and yellow-billed cuckoo. All of these are species generally associated with mature forest communities.

Scenic Areas

SC1: At Old Stone Church Pond the combination of diverse and aesthetic habitats that occur here create a highly scenic location that is appreciated by all visitors.

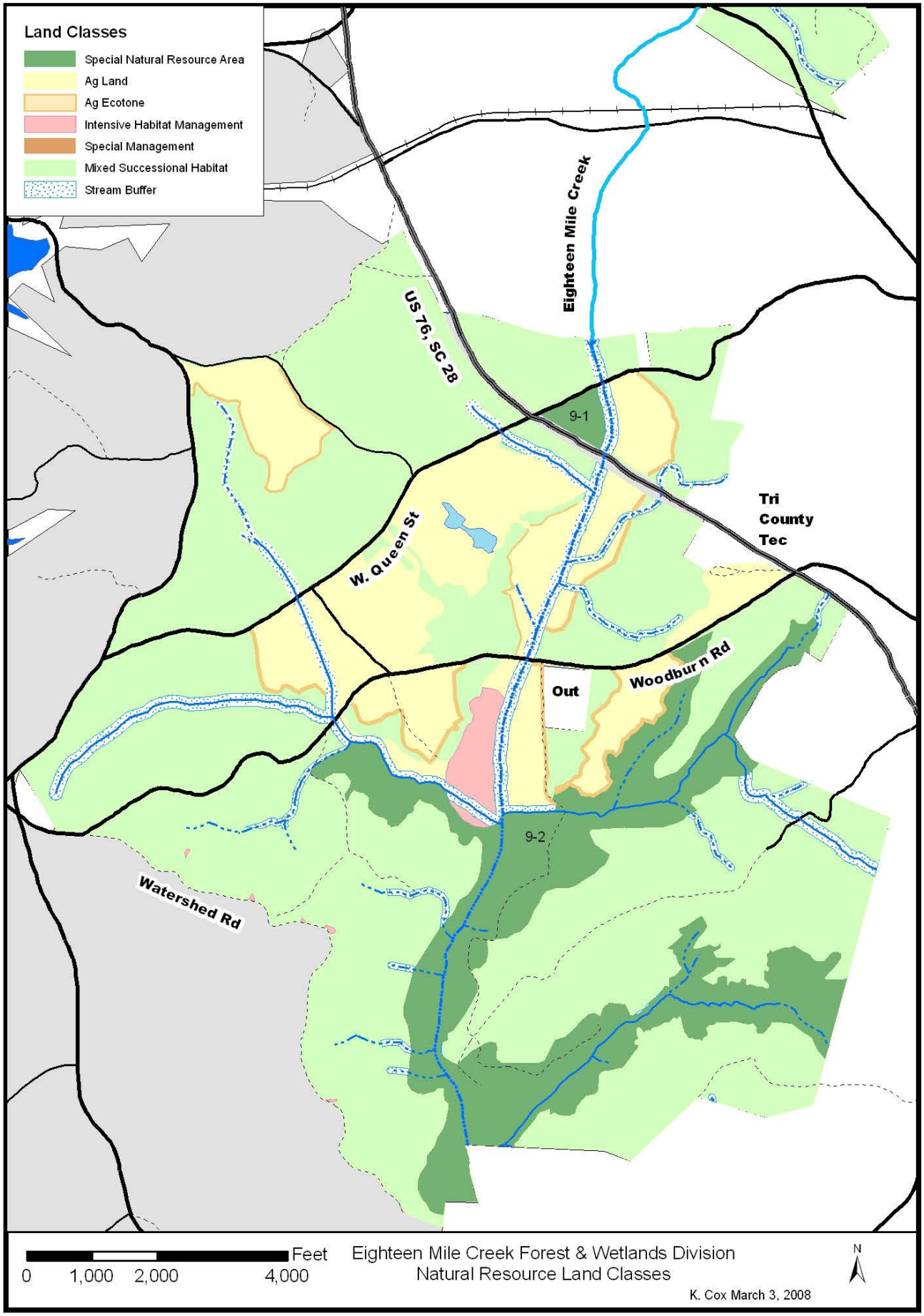
ATTACHMENT 9

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

EIGHTEEN MILE CREEK FOREST AND WETLANDS NATURAL DIVISION


Land Classes
Special Natural Resource Area
Ag Land
Ag Ecotone
Intensive Habitat Management
Special Management
Mixed Successional Habitat
Stream Buffer
Eighteen Mile Creek
US 76, SC 28
9-1
Tri
County
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W. Queen St
Woodbur n Rd
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9-2
Watershed Rd
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Feet
Eighteen Mile Creek Forest & Wetlands Division
Natural Resource Land Classes
N
K. Cox March 3, 2008

18 MILE CREEK FOREST AND WETLANDS NATURAL DIVISION
SPECIAL NATURAL RESOURCE AREAS
GENERAL DESCRIPTIONS

SNRA 9-1: Tri-County SNRA (11 acres, see Map)
Features:
Mature bottomland hardwood forest
Floodplain wetland
Notable Breeding location for amphibians

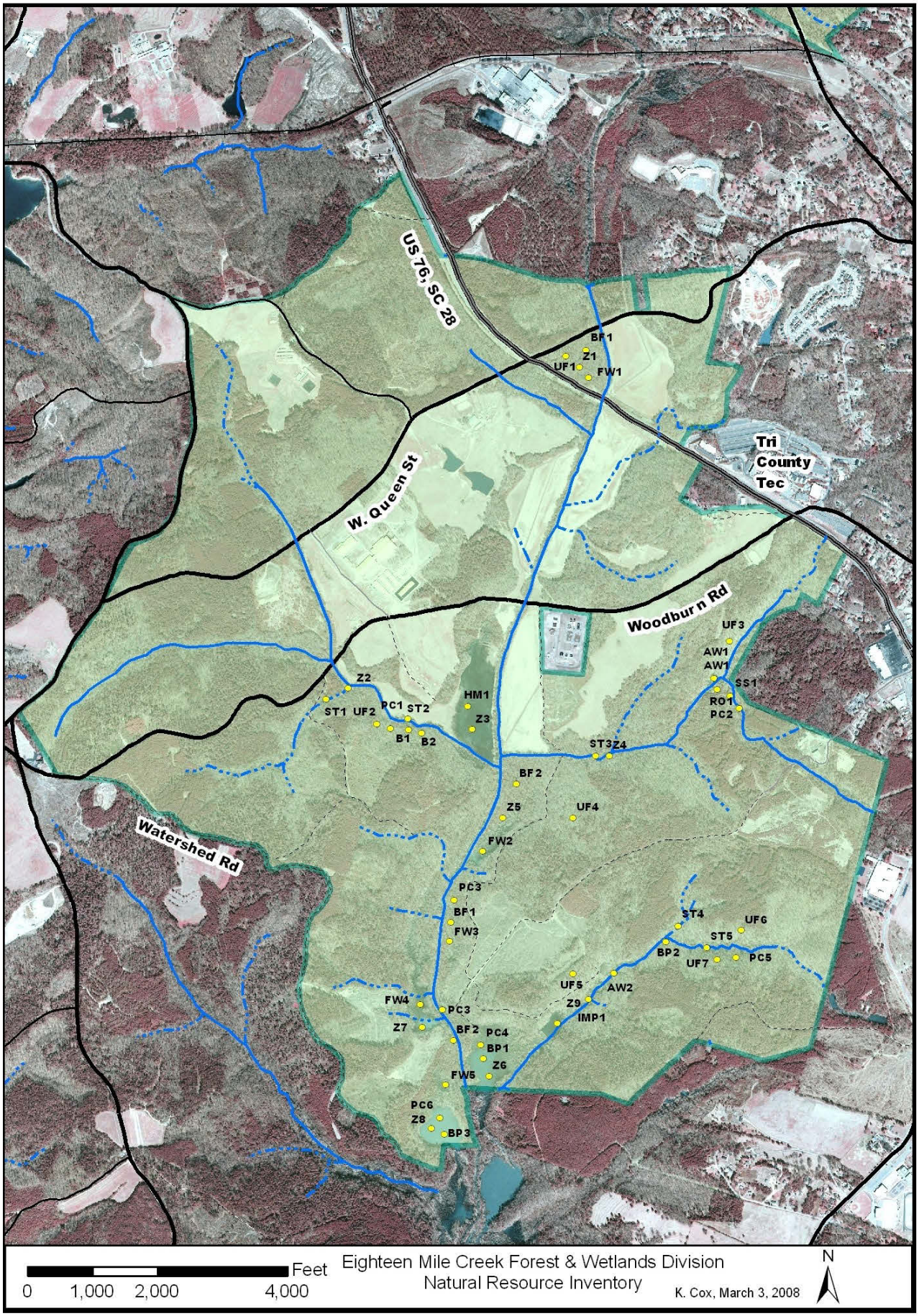
GENERAL DESCRIPTION: This is a rather small section of bottomland and adjacent upland forest along 18 mile Creek. The bottomland section consists of mature river birch, hackberries, and sweetgum. The uplands are a mix of various species. A low area (approx 50 by 100 ft) within the bottomland forest floods during fall/winter rains and provides important amphibian breeding habitat. Most notably the marbled salamander breeds here. This is an area utilized as breeding habitat by amphibians, and is currently the only known breeding location for marbled salamanders on the Forest.

SNRA 9-2: 18 MILE CREEK SNRA (394 acres, see Map)
Features:
Piedmont Cove Forest (George Aull Natural Area)
Extensive mature upland forested areas
Mature bottomland hardwood forest
Rich native wildflower areas
Extensive wetlands including floodplain areas and beaver ponds
13 species of frogs and toads
Habitat for diverse assemblage of songbirds, birds of prey, and waterfowl

GENERAL DESCRIPTION: This area represents an interconnected series of diverse habitat types including streams, wetlands (beaver ponds, seepages, floodplain depressions), and mature hardwood forests (both upland and bottomland), making this one of the most interesting biological areas on the Clemson Forest. Upland forests include: A) the George Aull Natural Area, a highly scenic and floristically rich piedmont cove; B) a grove of mature American beech on a slope above wetlands, C) mixed stands of oaks, hickories, sourwood, black gum, poplar, and short-leaf pine, and D) an area of bedrock outcrop supporting a xeric community dominated by red cedars and with growths of prickly pear cactus. Many trees in these mature stands are 2 ft in diameter, with some outstanding examples in excess of 3 ft. Many stands are associated with ravine slopes leading down to small perennial tributaries of 18 Mile Creek. Along the lower portions of these slopes, especially those with a north facing aspect, are numerous species of wildflowers and ferns.

Bottomland forest communities are associated with the floodplain of 18 Mile Creek. These include mixed stands dominated by river birch, green ash, hackberry, sycamore, and sweetgum

among other species. The understory is dense in some locations and includes growths of pawpaw, spice bush, green briar, and river cane.
Wetlands support a diverse assemblage of vegetation including emergent herbaceous species such as bur reed, lizard tail, arrow arum, duck potato, pickerelweed, spatterdock, and others. Common woody plants in these wetlands include tag alder and buttonbush. Open water occurs in the deepest areas of these ponds.
The wetlands here support a great variety of wildlife including: 13 species of frogs and toads; many birds associated with wetlands (including osprey, bald eagle, herons, egrets, least bittern, and others). During winter these areas serve as resting and feeding habitat for a mix of waterfowl. In spring/summer they provide breeding habitat for wood ducks. Seeing flights of 100+ wood ducks in late springtime is not unusual. During late spring 4 species of aquatic turtles have been observed migrating from these wetlands into adjacent forests to lay their eggs. A series of forest back-roads and trails traverse the area and provide excellent opportunity to observe these habitats and their wildlife.


US 76, SC 28
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Woodbur n Rd
Watershed Rd
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UF2
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HM1
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UF4
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AW2
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IMP1
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BF2
PC4
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Z6
FW5
PC6
Z8
BP3
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Eighteen Mile Creek Forest & Wetlands Division
Natural Resource Inventory
K. Cox, March 3, 2008
N

18 MILE CREEK FOREST AND WETLANDS NATURAL DIVISION

NATURAL RESOURCE INVENTORY
EXPLANATORY INFO (see Inventory Map)

TERRESTRIAL HABITATS

Upland Forests

UF1: A mature pine/hardwood forest serving as non-breeding habitat for adult marbled salamanders. This is the only known occurrence of a marbled salamander population on the Forest.

UF2: Outstanding example of a mature mesic hardwood stand along a north facing slope.

UF3: Stands of mature hardwoods on both sides of a stream and series of beaver ponds. within this stand is a group of rock outcrops that support xeric plant communities.

UF4: A mixture of mature and immature hardwoods, and some pines east of the woods road. This stand is a an upland extension of the bottomland forest along 18 Mile Creek, and functions as part of the core habitat for amphibians and reptiles making seasonal movements between upland and bottomland areas.

UF5: Mature hardwoods occur from the crest of the hill above the road, down to the wetland edges below the road. A highlight here is a stand of mature American beech along on the slope above the road.

UF6: Outstanding examples of mature hardwood forests immediately adjacent to the designated George Aull Natural Area (on both sides of the creek).

UF7: A mature piedmont cove forest, providing one of the richest and most diverse upland communities on the entire Forest. Known as the George Aull Natural Area.

Bottomland Hardwood Forests

BF1: A mature stand of bottomland forest providing habitat for a breeding population of marbled salamanders, the only known such population on the Forest .

BF2: This stand of mature and immature bottomland hardwoods occurs along the eastern floodplain of 18 Mile Creek.

Rock Outcrops

RO1: A series of rounded bedrock outcrops on slopes above beaver ponds, and supporting xeric species, including red cedar and prickly pear cactus.

Unique Plant Communities (terrestrial)

PC1: A rich shrub and herb flora occur on this hardwood dominated north facing slope.

PC2: Xeric communities associated with bedrock outcrops. Including prickly pear cactus, red cedars, and associates.

PC3: Shrub and herb layers along 18 Mile Cr illustrate species typical of bottomland hardwood settings.

PC4: See under Aquatic Habitats

PC5: The woody understory and herbaceous ground layer in these upland forests is very rich and diverse, reflecting conditions within a "cove forest".
PC6: See under Aquatic Habitats

AQUATIC HABITATS

Floodplain Wetlands

FW1: A floodplain depression within a bottomland hardwood forest adjacent of Eighteen mile Creek. This is the only known breeding site for marbled salamanders on the Forest.

FW2, FW3, FW4, FW5: A series of sloughs in the bottomlands along 18 Mile Creek. They retain standing water much of the year and provide important habitat.

Alluvial Wetlands

AW1: A series of wetlands associated with streams just south of Woodburn Road. These are associated with beaver activity in this area.

AW2: Wetlands along George Aull creek, largely between beaver ponds in this area.

Beaver Ponds

BP1: A large (20+ acre) beaver pond at the base of a hardwood slope. This pond shows excellent examples of vegetation zoneation, with herbaceous and woody vegetation zones, and a large open body of water in the pond center.

BP2: A 5 – 10 acre beaver pond surrounded by pine and hardwood forests. Extensive areas of dead standing timber exist in its headwaters, as do large areas of alluvial wetlands.

BP3: A large (30 acre) beaver pond near the end of Watershed Road. This pond has extensive open water, with tree stumps and standing dead timber.

Springs, Seepages

SS1: A spring fed pond occurs on a terrace here, supporting breeding populations of amphibians.

Quality Streams

ST1: A small un-named branch supporting breeding populations of bluehead chubs and yellowfin shiners.

ST2: A small un-named stream supporting numerous small fishes and amphibians.

ST3: A small un-named stream supporting fishes, amphibians, and (based on footprints along its shore) numerous species of larger wildlife species.

ST4: A small un-named stream supporting fishes and amphibian populations.

ST5: George Aull Creek – a small and scenic stream draining the George Aull Natural Area.

Man-Made Impoundments

IMP1: This impoundment, which supports waterfowl, amphibians, and a population of the swamp darter, is a man-made pond that has been "beaver enhanced".

Unique Plant Communities (aquatic)

PC4: A series of wetland vegetation zones within an established beaver pond, including

woody, herbaceous, and submerged vegetation.
PC6: Same as PC4 above.

OTHER DESIGNATED RESOURCE TYPES

Intensive Habitat Management Areas

HM1 : Seasonally flooded/planted field for waterfowl and amphibian management. Has outstanding wildlife viewing and wetland education resources.

Botanical Features

B1: Bunch flower, a showy and noteworthy member of the lily family, occurs on this north facing slope.
B2: Nodding trillium, a beautiful and noteworthy species of trillium, occurs along the base of this slope.

Zoological Features

Z1: The marbled salamander, a large member of the mole salamander family, breeds in this wetland. Its only known breeding site on the Forest.
Z2: Bluehead chubs and yellowfin shiners are two of the small fish species that occur in this stream
Z3: Winter waterfowl and abundant and diverse amphibian populations occur in this managed wetland. Waterfowl hunting occurs here as a popular activity.
Z4: Many species of amphibians, turtles, fishes, wading birds, and osprey are frequently observed here in wetland areas.
Z5: A highly diverse group of wildlife utilize the bottomlands and adjacent uplands in this area. Of special note are several species of aquatic turtles that come inland here to lay eggs in mid springtime in adjacent uplands.
Z6, Z7, Z8: Abundant and diverse groups of fish, birds, amphibians, and reptiles utilize these large beaver ponds and floodplain wetlands, including two species of treefrogs (Green and Squirrel Treefrogs) that are typically associated with coastal plain habitats.
Z9: The swamp darter, a largely coastal plain fish, occurs in ponds here.

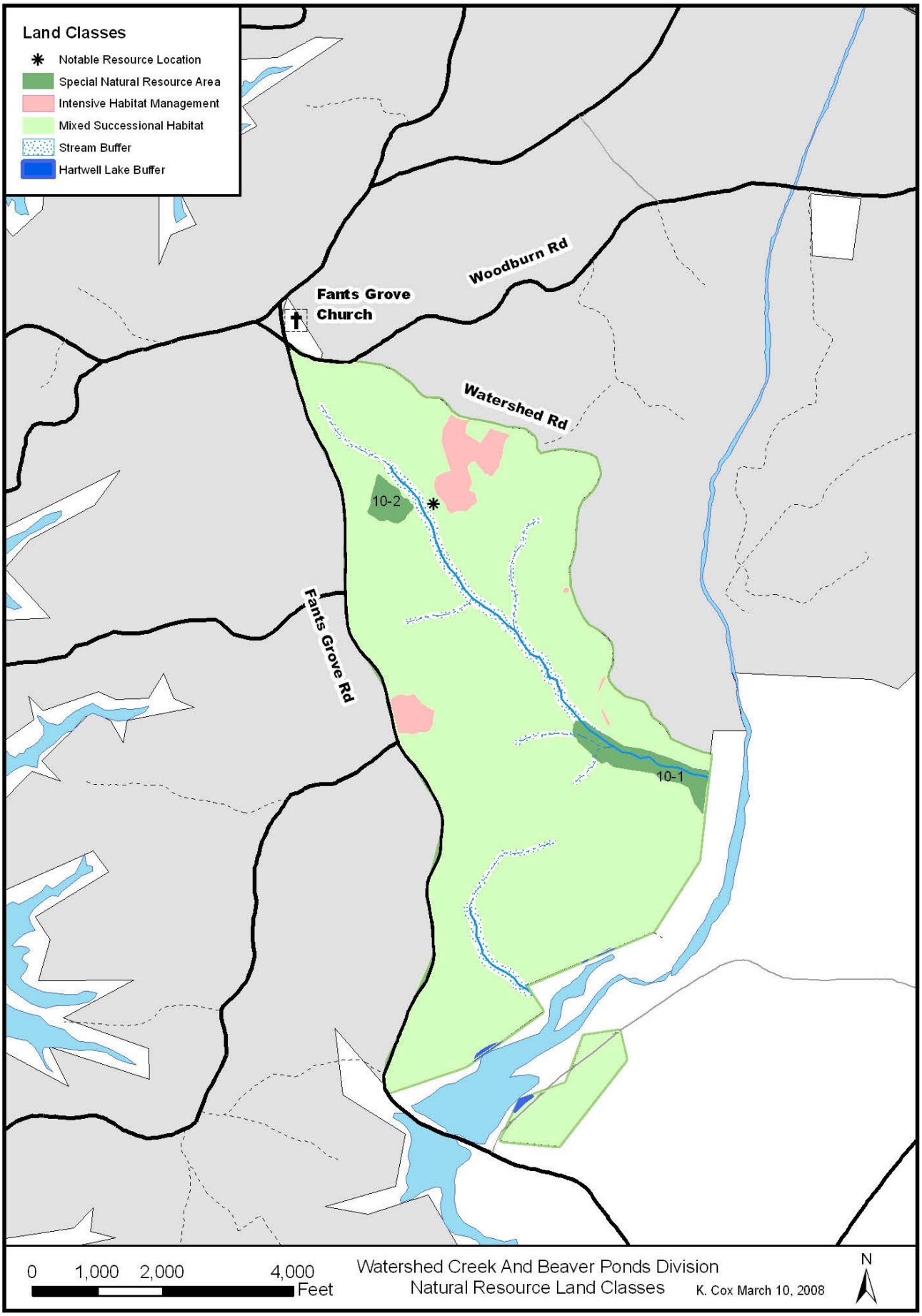
ATTACHMENT 10

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

WATERSHED ROAD MEADOWS AND BEAVER PONDS NATURAL DIVISION


Land Classes
Notable Resource Location
Special Natural Resource Area
Intensive Habitat Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
Woodburn Rd
Fants Grove Church
Watershed Rd
10-2
Fants Grove Rd
10-1
0 1,000 2,000 4,000 Feet
Watershed Creek And Beaver Ponds Division
Natural Resource Land Classes
K. Cox March 10, 2008
N

WATERSHED ROAD MEADOWS AND BEAVER PONDS
NATURAL DIVISION

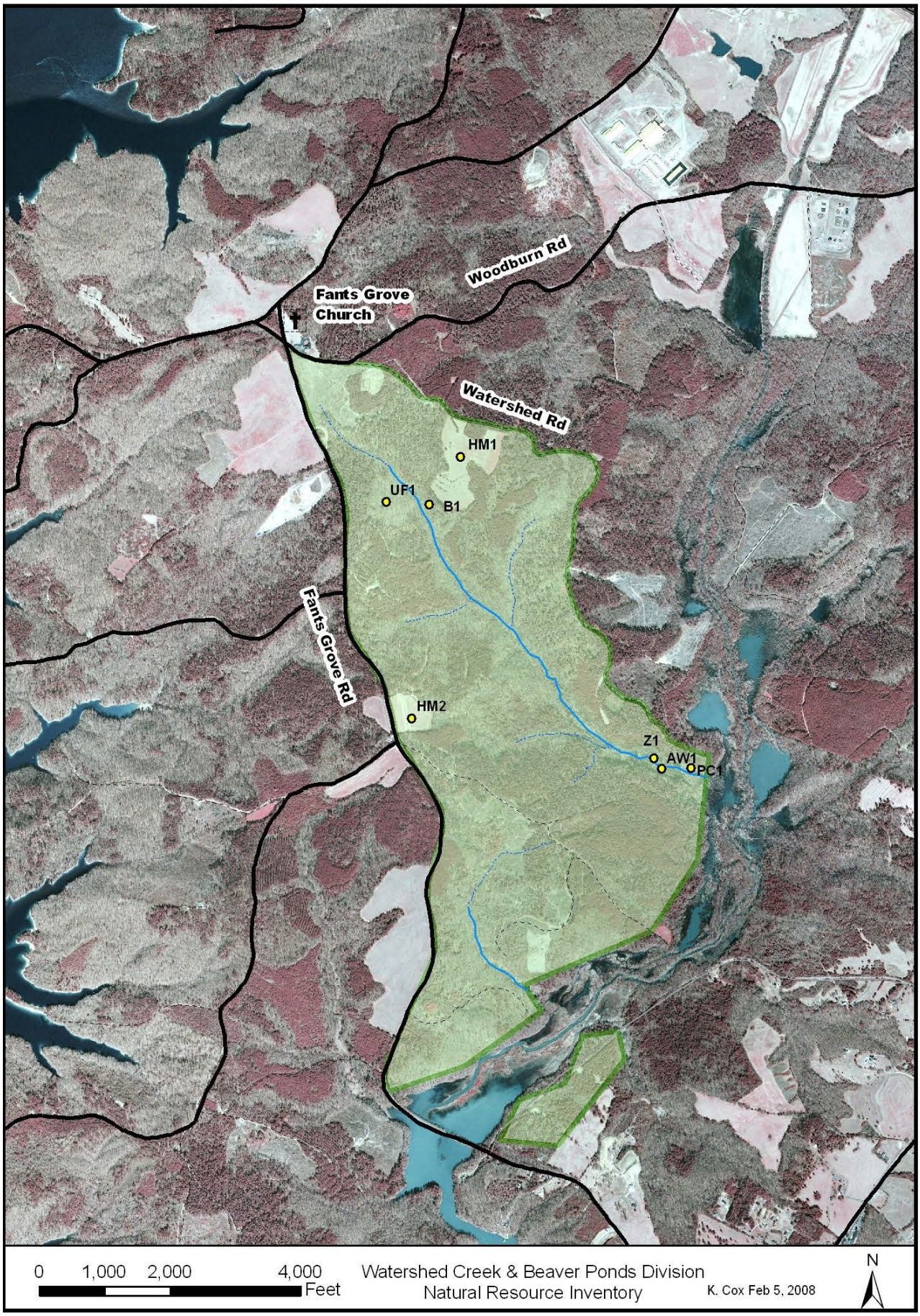
SPECIAL NATURAL RESOURCE AREAS
GENERAL DESCRIPTION

SNRA 10-1: WATERSHED CREEK WETLANDS SNRA (19 acres, see Map)
Features:
Extensive wetlands along lower reaches of Watershed Creek
Major areas of wetland vegetation
Important amphibian breeding location

An area of extensive wetlands associated with the lower reaches of Watershed Creek. Zones of woody and herbaceous wetland vegetation extend along the stream. The wetlands are enhanced by beaver activity and by weirs placed here in recent decades to study stream flows. This area provides excellent habitat for otters, mink, and wading birds. At the confluence of Watershed Creek with 18 Mile Creek the floodplains and associated wetlands open into an expansive area of natural features. Here wetland fauna including amphibians, wading birds, and aquatic mammals are abundant. Bald eagles and osprey are sometimes observed here.

SNRA 10-2: WATERSHED CREEK FOREST SNRA (8 acres, see Map)
Features:
A mature pine-hardwood forest on slope above Watershed creek

GENERAL DESCRIPTION: This is a mature forest stand dominated by oaks and hickories. White oaks, yellow poplars, and hickories over 2 ft in diameter occur here. Some American beech of 3 ft in diameter are also present. The understory includes pawpaw, maple-leaf viburnum, ironwood, and other small trees and shrubs. At the base of the slope Watershed Creek provides habitat for small fish and amphibian populations.


Woodburn Rd
Fants Grove Church
Watershed Rd
HM1
UF1
B1
Fants Grove Rd
HM2
Z1
AW1
PC1
0 1,000 2,000 4,000 Feet
Watershed Creek & Beaver Ponds Division
Natural Resource Inventory
K. Cox Feb 5, 2008
N

WATERSHED ROAD MEADOWS AND BEAVER PONDS
NATURAL DIVISION

NATURAL RESOURCE INVENTORY
EXPLANATORY INFORMATION (see Inventory Map)

TERRESTRIAL HABITATS

Upland Forests

UF1: A mature pine-hardwood forest stand with trees up to 3 ft in diameter.

AQUATIC HABITATS

Alluvial Wetlands

AW1: Alluvial wetlands occur along the lower sections of Watershed Creek. Some of these are enhanced by beaver activity and some by past watershed study activitites.

Unique Plant Communities (aquatic)

PC1: Expansive zones of wetland vegetation occur in association with wet areas along the lower section of Watershed Creek.

OTHER DESIGNATED RESOURCE TYPES

Intensive Habitat Management Area

HM1: This area is cultivated and planted with select species of annual and perennial vegetation that provide food and cover for game and non-game species. Plantings include annual crops and tree/shrub orchards.

HM2: This area is cultivated and planted with species that provide food and cover for game and non-game wildlife species .

Zoological Feature

Z1: A diverse assemblage of amphibians, including at least 10 species of frogs and toads, utilize this wetland area.

Botanical Features

B1: Pink Lady's slipper orchids grow here in the edge of a piney woodland.

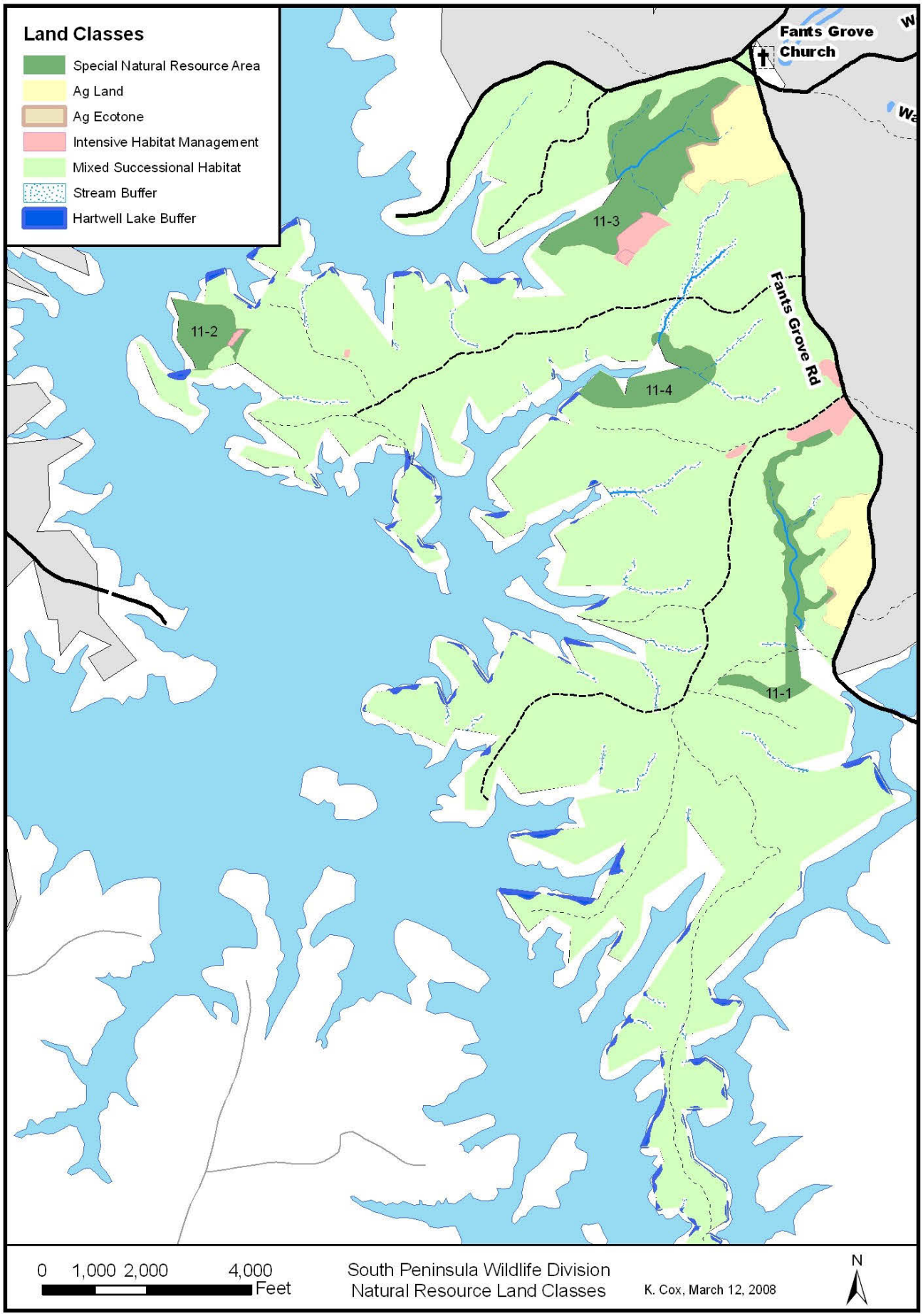
ATTACHMENT 11

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

SOUTH PENINSULA WILDLIFE NATURAL DIVISION


Land Classes
Special Natural Resource Area
Ag Land
Ag Ecotone
Intensive Habitat Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
Fants Grove Church
11-3
11-2
11-4
Fants Grove Rd
11-1
0 1,000 2,000 4,000
Feet
South Peninsula Wildlife Division
Natural Resource Land Classes
K. Cox, March 12, 2008
N

SOUTH PENINSULA WILDLIFE NATURAL DIVISION

SPECIAL NATURAL RESOURCE AREAS
GENERAL DESCRIPTIONS

SNRA #11-1: BURDETTE BRIDGE COVE SNRA (51 acres, see Map)
Features:
Burdette Creek, which originates on the Clemson Forest
Extensive wetlands along lower reaches of the creek
Diverse wetland plant communities
Mature hardwood forests bordering wetland areas.

GENERAL DESCRIPTION: A small stream with expansive beaver influenced wetlands along much of its lower reaches. Stands of mature hardwoods occur along portions of its length and into surrounding uplands. It provides a rich setting of botanical diversity and wildlife habitats.

SNRA #11-2: WATER OAK FLATS SNRA (27 acres, see Map)
Features:
Expansive stand of mature water oaks
Unique wildlife habitat

GENERAL DESCRIPTION: This is a mature stand of water oaks on a gentle slope adjacent to Lake Hartwell at Schoenike's Island. The stand consists of water oaks (up to 2 ft in diameter) interspersed with hackberry, black cherry, and other species. As is typical of many water oak stands, the under story and ground cover are very sparse. The water oaks provide a great abundance of small size acorns that are valuable as food for game (waterfowl) and non-game species (songbirds of many species).

SNRA 11-3: FANTS GROVE SCHOOL SNRA (108 acres, see Map).
Features:
Mature oak-hickory forest on slopes
Rich herbaceous vegetation
Quality streams
Rock outcrops
Seepages
Extensive alluvial wetlands

GENERAL DESCRIPTION: This is a highly picturesque and mature oak-hickory forest that extends from ridge to ridge within a moderately sloped system of ravines. A small perennial stream that heads near Fants Grove Church flows through the ravine and enters Lake Hartwell in the cove where the Outdoor Lab is situated. Several small tributaries join the main stem of the stream within the ravine system. Small seepages occur along the tributaries and support notable growths of ferns (cinnamon fern, royal fern, others). This stream system is of high quality and supports schools of small fish, salamanders, and frogs. It flows alternately over sand, gravel,

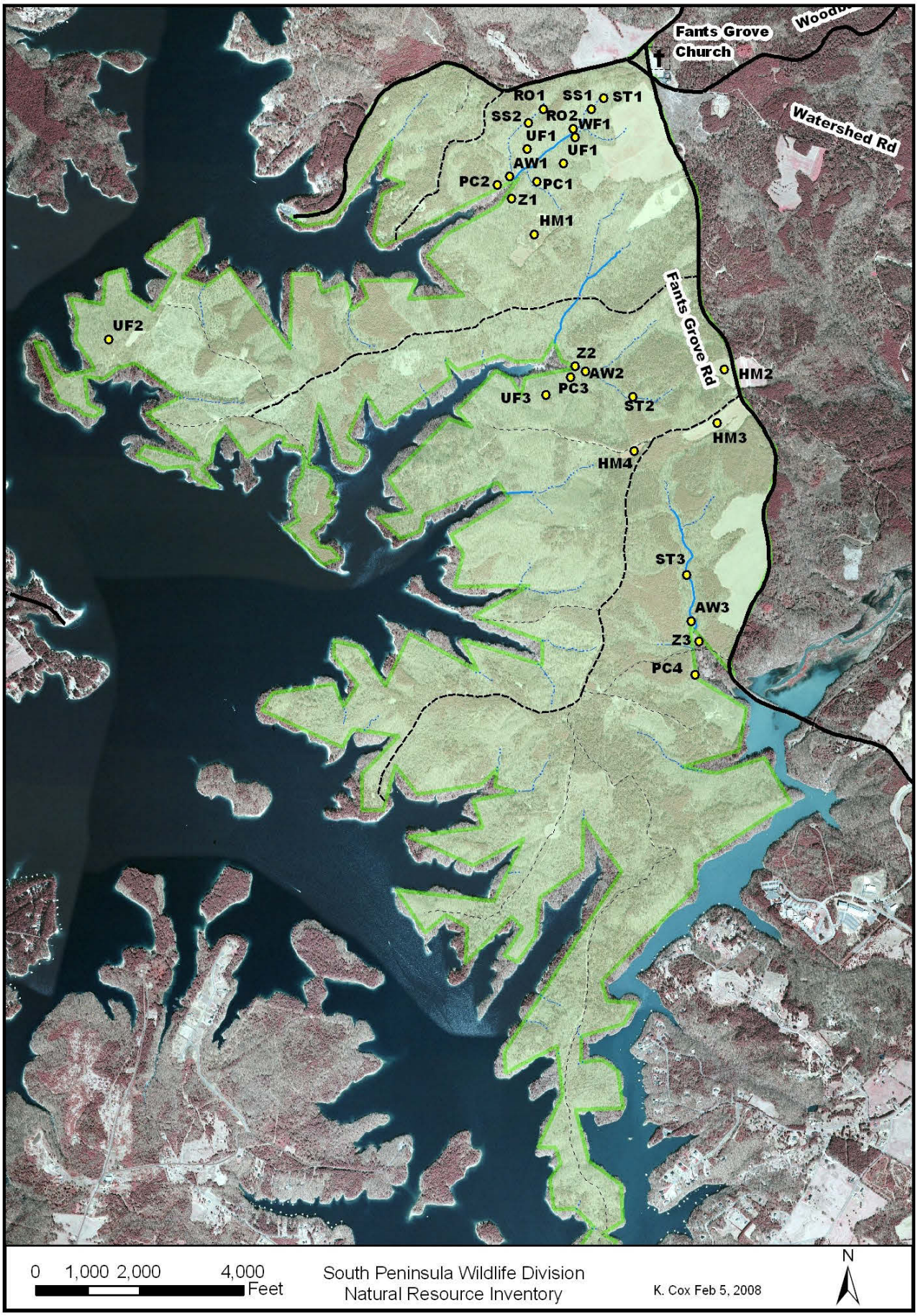
cobbles, and bedrock. Some bedrock locations provide for scenic miniature waterfalls and rock gorges.

The dominant trees on the slopes include dry site species near the crest of the adjoining ridges (post oaks, southern red oaks, short-leaf pine), to more mesic site species on the mid slopes (white oak, black oak, sourwood, yellow poplar), and lower slopes (American beech, northern red oak). Many mature trees here are over 2 ft in diameter, with some beech up to 3 ft diameter. Except for natural tree fall the canopy is largely closed. Notable woodland wildflowers grow in many locations including wild geranium, bloodroot, black cohosh, jack-in-the-pulpit, and many of their associates. The upper reach of this ravine system was once the site of Fants Grove School and is marked by signage.

The three tributaries all come together and then empty into the cove of Lake Hartwell. At the head of this cove there are extensive areas of woody and herbaceous wetland vegetation, making a highly pleasing and diverse setting for wildlife and for nature observation. This area is frequented by wetland wildlife species including amphibians, reptiles, and songbirds. Beaver activities are also in evidence here.

SNRA #11-4: HARTWELL COVE SNRA (41 acres, see Map)
Features:
Mature hardwood forest on slope
Rich herbaceous flora
Alluvial wetlands

GENERAL DESCRIPTION . This is a beautiful slope dominated by mature hardwood forest over the headwaters of a quiet Lake Hartwell cove. Trees of over 2ft diameter dominate the setting, including various species of oaks, hickories, and their associates. Shrub buckeye, pawpaw, and wild azaleas are in the understory, while numerous wildflowers provide local ground cover. The streams flowing into Lake Hartwell at the head of this cove are presently impounded by beaver activity and provide extensive wetland habitats. Amphibians are abundant in the wetlands at this site.


Fants Grove Church
Watershed Rd
Fants Grove Rd
RO1
SS1
ST1
SS2
RO2
WF1
UF1
UF1
AW1
PC2
PC1
Z1
HM1
UF2
Z2
AW2
PC3
UF3
ST2
HM2
HM3
HM4
ST3
AW3
Z3
PC4
0 1,000 2,000 4,000 Feet
South Peninsula Wildlife Division
Natural Resource Inventory
K. Cox Feb 5, 2008
N

SOUTH PENINSULA WILDLIFE NATURAL DIVISION

NATURAL RESOURCE INVENTORY
EXPLANATORY INFO (see Inventory Map)

TERRESTRIAL HABITATS

Upland Forests

UF1: Excellent example of a mature (trees to 3ft diameter) and scenic oak-hickory forest on slopes leading down to a series of small streams and wetlands.

UF2: A mature and expansive stand of water oaks (to 30 inches diameter) on flats and gentle slopes above Lake Harwell.

UF3: A mature hardwood forest (trees to 30 in diameter) above a cove on Lake Hartwell.

Rock Outcrops

RO1: A large outcrop of bedrock at the head of a small tributary.

RO2: Scattered rock outcrops on slopes above, and immediately adjacent to, streams.

Unique Plant Communities

PC1: Areas along the slopes (especially lower sections) within the oak-hickory forest that support growths of wildflowers and showy native shrubs.

PC2: See under aquatic habitats

PC3: Areas along these hardwood forest slopes contain fine displays of woodland wildflowers and native shrubs.

PC4: see under aquatic habitats

AQUATIC HABITATS

Alluvial Wetlands

AW1: Alluvial wetlands, influenced by beaver activity, occur at the head of this Lake Hartwell cove. Extensive growths of woody and herbaceous wetland Vegetation occur here. .

AW2: Expansive wetlands, influenced by beaver activities, occur at the head of this Lake Hartwell cove.

AW3: Alluvial wetlands, influenced by beaver activity, occur along the reaches of Burdette Creek.

Springs/Seepages

SS1: This spring (seepage) occurs at the head of a tributary. It is recognized as having been the source of water for the Fants Grove School that once stood nearby.

SS2: Several small seepages (10 ft x 10ft) occur near the channels of these tributaries and support dense growths of ferns and other herbaceous vegetation.

Waterfalls

WF1:Small but scenic waterfalls and cascades occur along these tributaries providing

natural beauty and splash pools that support small schools of stream fishes.

Streams

ST1: This small but perennial stream and its tributaries flow through alternating pools and riffles, the latter consisting of substrates of extensive cobble, gravel, and bedrock. All originate on, and have their entire watersheds on, CEF lands. They flow together prior to entering Lake Hartwell through a series of wetland settings.

ST2: Small stream flowing at the base of a steep slope, and supporting abundant amphibian populations (breeding frogs of various species)

ST3: Stream supporting amphibian and fish populations, and providing extensive wetland Settings.

Plant Communities

PC2: Areas within the wetlands supporting extensive examples of herbaceous and woody wetland plant species.

PC4: Extensive wetland plant communities occur along the lower reaches of Burdette Creek.

OTHER DESIGNATED RESOURCE TYPES

Intensive Habitat Management Areas

HM1: This area is maintained as a shrub habitat (presently dominated by plum shrubs) for game and non-game species that nest among the dense branches and feed on the fruits.

HM2, HM3, HM4: These areas are cultivated and planted with select plants that provide foods and cover from game and non-game wildlife.

Zoological Features

Z1, Z2, Z3: Assemblages of amphibian populations are associated with alluvial wetlands at the lower sections of these streams.

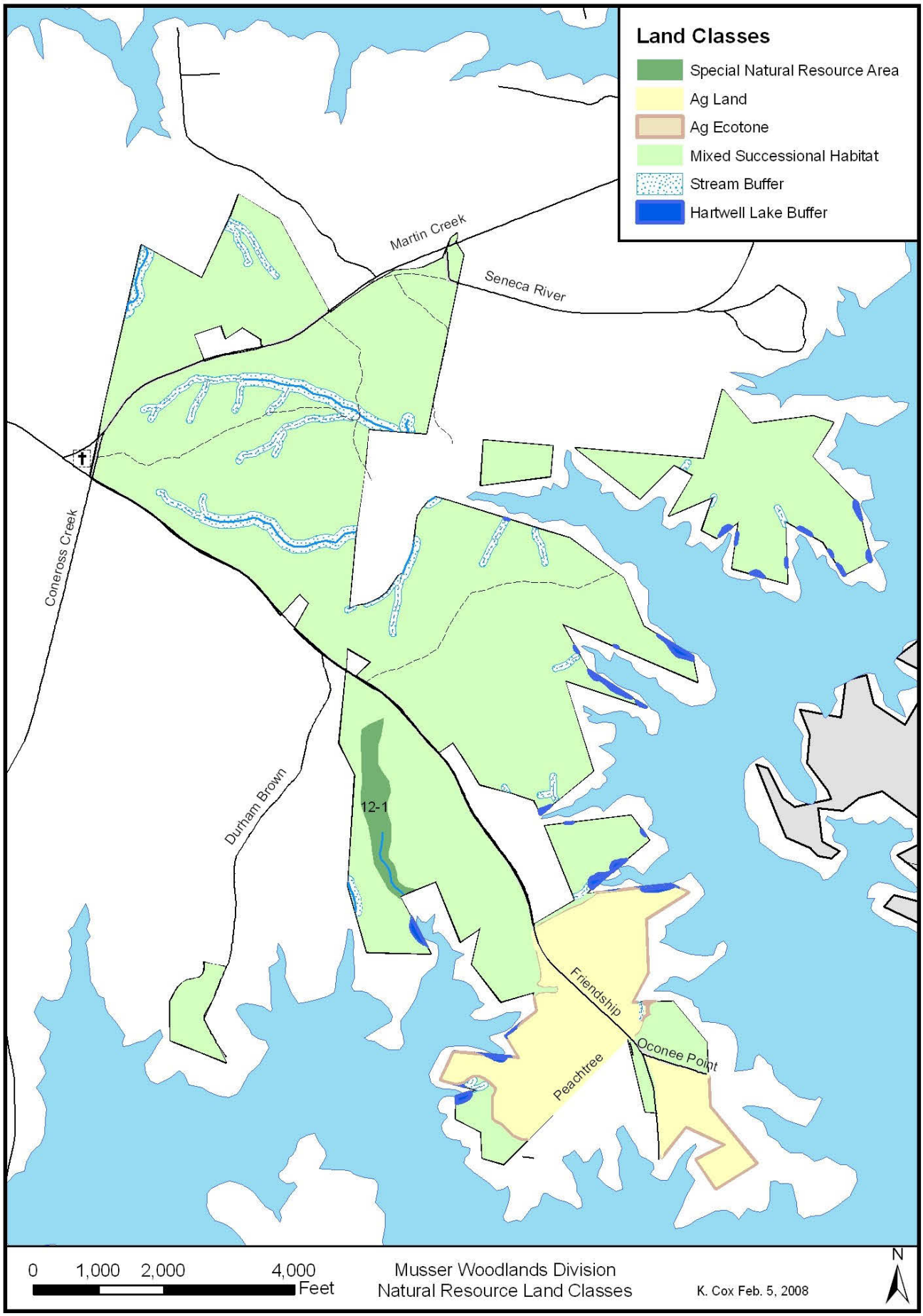
ATTACHMENT 12

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

MUSSER WOODLANDS NATURAL DIVISION

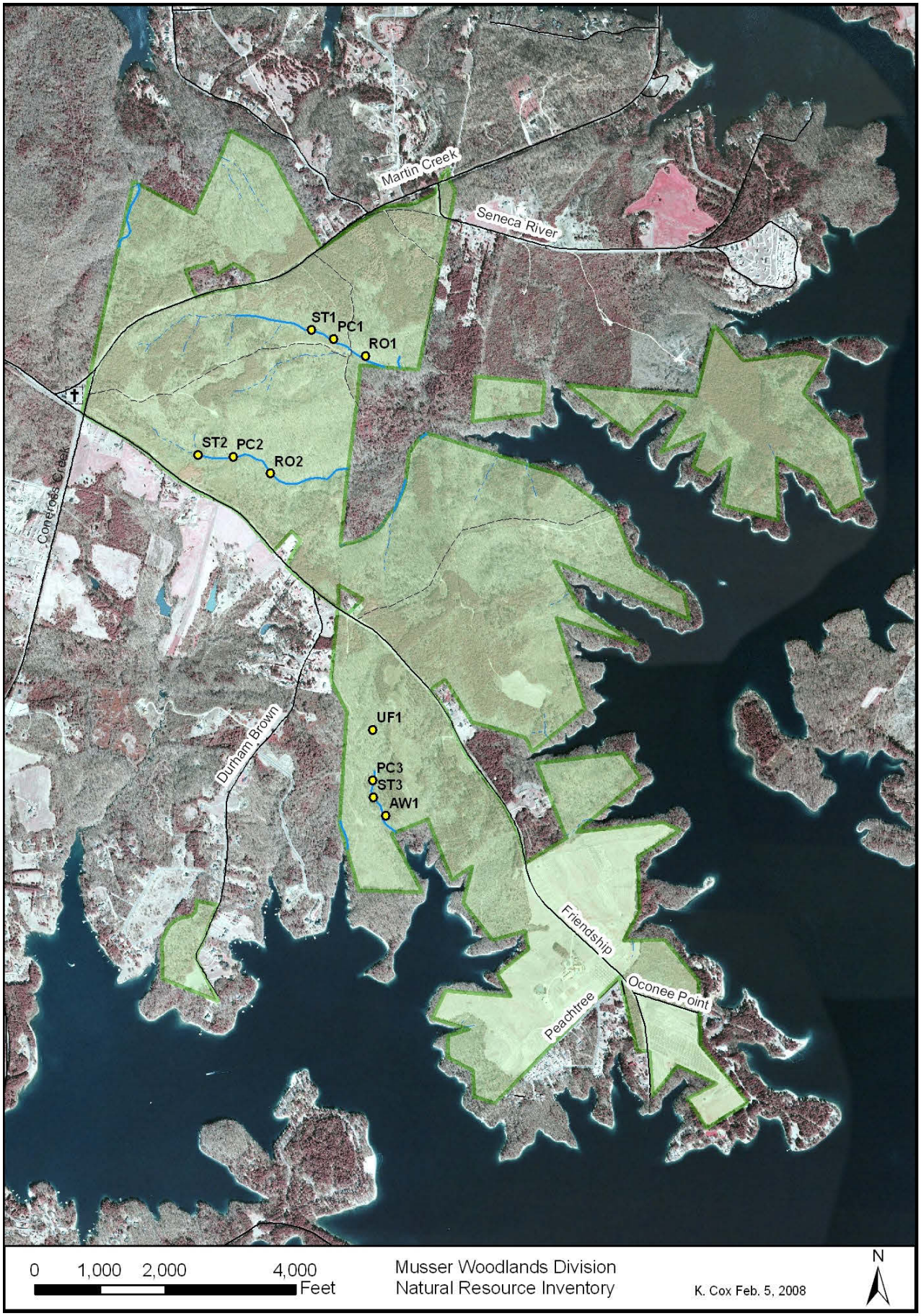

Land Classes
Special Natural Resource Area
Ag Land
Ag Ecotone
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
Martin Creek
Seneca River
Coneross Creek
Durham Brown
12-1
Friendship
Oconee Point
Peachtree
0
1,000
2,000
4,000
Feet
Musser Woodlands Division
Natural Resource Land Classes
K. Cox Feb. 5, 2008
N

MUSSER WOODLANDS NATURAL DIVISION

SPECIAL NATURAL RESOURCE AREAS
GENERAL DESCRIPTION

SNRA 12-: MUSSER WOODLANDS SNRA (20 acres, see Map)
Features:
Mature upland hardwood forest
Extensive wetlands
Fish and amphibian habitats associated with wetlands
Quality songbird and waterfowl habitats

GENERAL DESCRIPTION: This area is a system consisting of an upland forest, stream, and wetland. The uplands are dominated by mature hardwoods up to and some in excess of 2ft in diameter. The forest slopes down to a quality stream supporting small fish and amphibians. Near the lower end of the stream it broadens out into an expansive wetland area supporting various species of frogs, songbirds, and other semi-aquatic species.


Martin Creek
Seneca River
ST1
PC1
RO1
ST2
PC2
RO2
Conerods Creek
Durham Brown
UF1
PC3
ST3
AW1
Friendship
Oconee Point
Peachtree
0
1,000
2,000
4,000
Feet
Musser Woodlands Division
Natural Resource Inventory
K. Cox Feb. 5, 2008
N

MUSSER WOODLANDS NATURAL DIVISION

NATURAL RESOURCE INVENTORY
EXPLANATORY INFORMATION (see Inventory Map)

TERRESTRIAL HABITATS

Upland Forest
UF1: Stands of mature upland hardwood forests occur here on ravine slopes.

Rock Outcrops
RO1, RO2: Notable rock outcrops occur in the forests adjacent to these streams.

Unique Plant Communities
PC1, PC2, PC3: Rich woodland shrub, wildflower, and fern assemblages occur adjacent to these streams.

AQUATIC HABITATS

Alluvial Wetlands
AW1: A notable area of alluvial wetland occurs at the lower end of this stream where it flows into Lake Hartwell.

Quality Streams
ST1, ST2, ST3: These are scenic streams cascading over bedrock benches, and through rocky shoals. They support small fishes and amphibian populations.

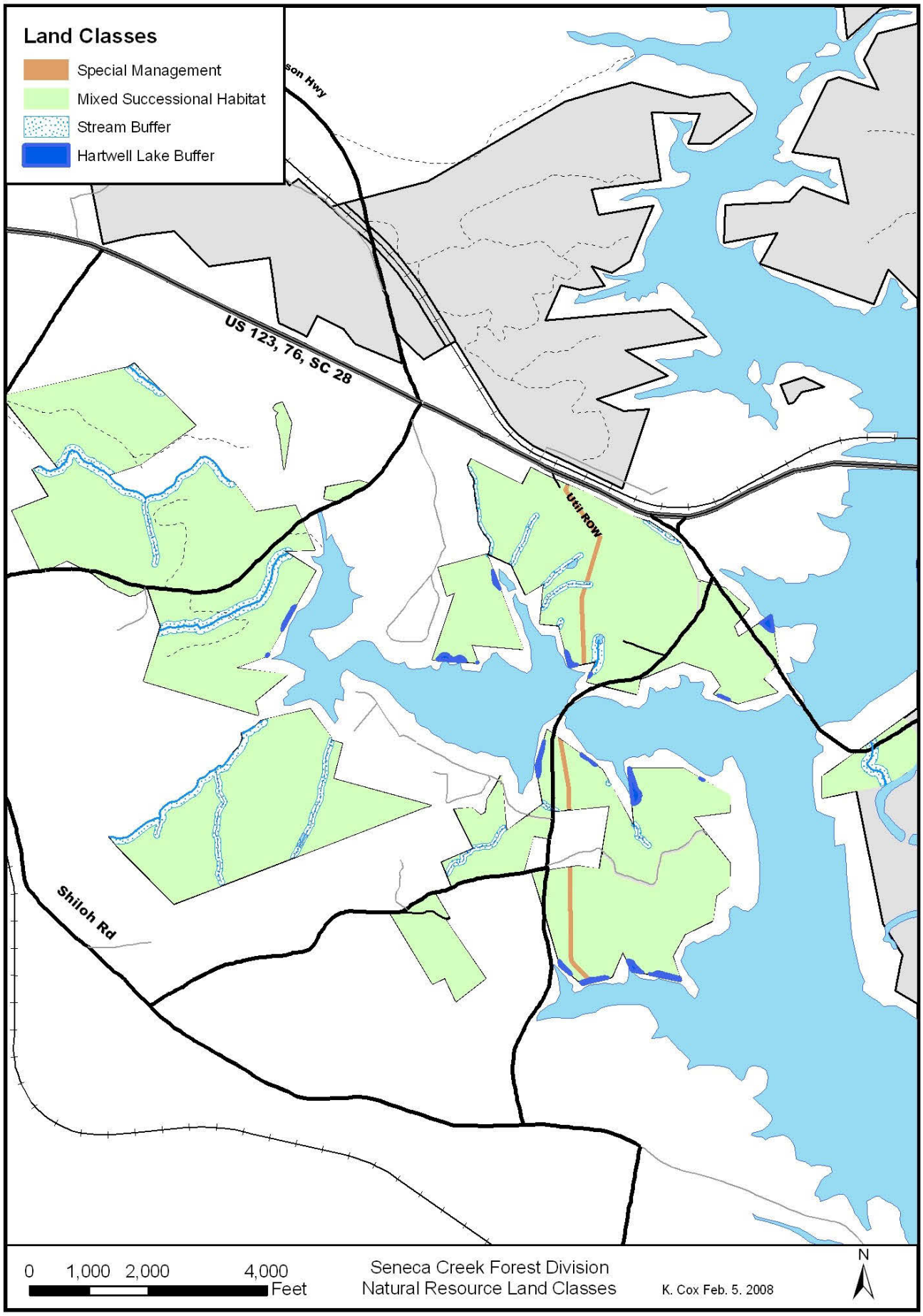
ATTACHMENT 13

CLEMSON EXPERIMENTAL FOREST

NATURAL RESOURCE AREAS AND INVENTORY INFORMATION

FOR

SENECA CREEK FOREST NATURAL DIVISION


Land Classes
Special Management
Mixed Successional Habitat
Stream Buffer
Hartwell Lake Buffer
son Hwy
US 123, 76, SC 28
Util ROW
Shiloh Rd
0 1,000 2,000 4,000
Feet
Seneca Creek Forest Division
Natural Resource Land Classes
K. Cox Feb. 5. 2008
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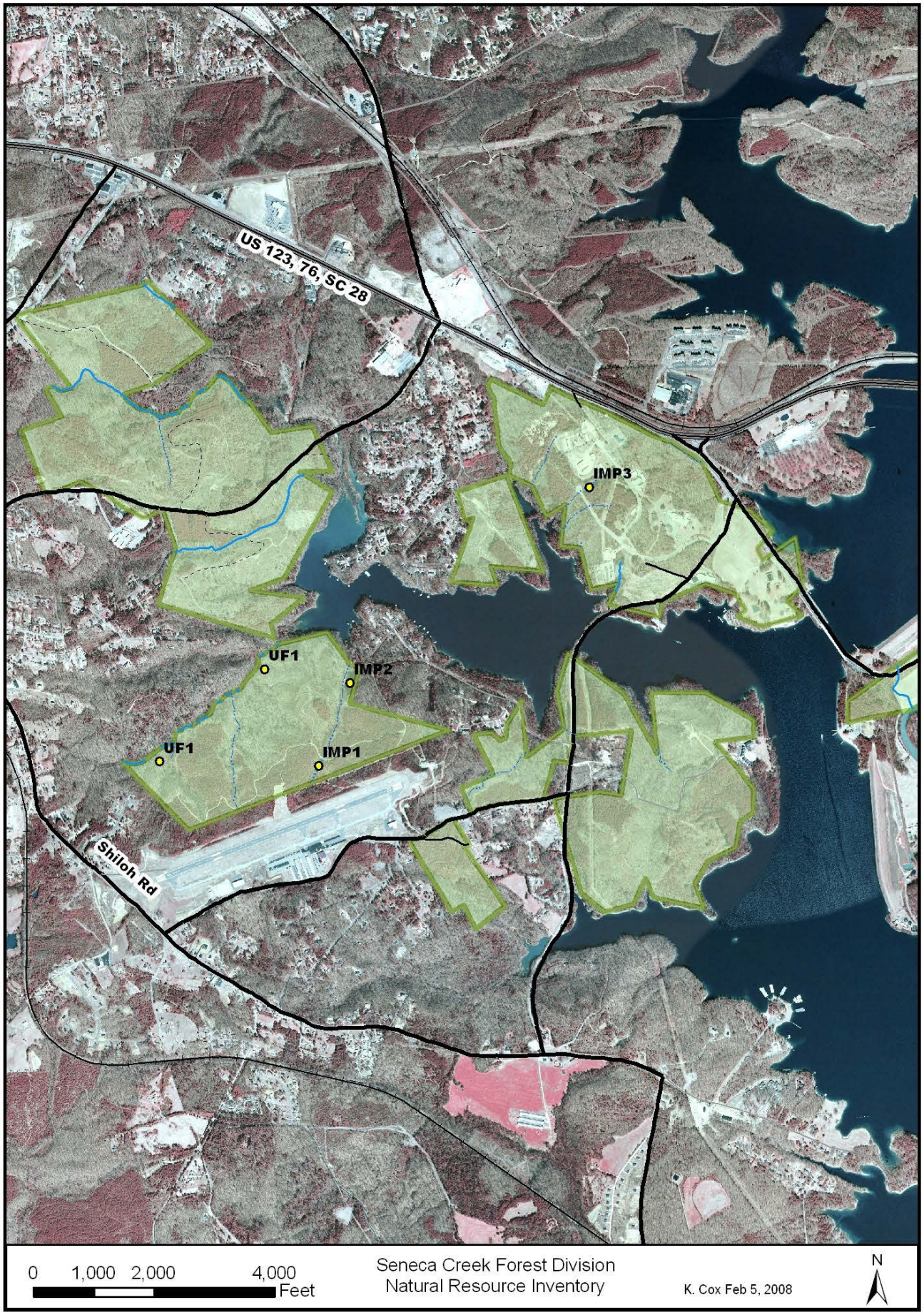
SENECA CREEK FOREST NATURAL DIVISION

SPECIAL NATURAL RESOURCE AREAS

No Special Natural Resource Areas are recognized in this Natural Division. Inventoried natural resources within this Division are protected through the Stream Buffer designation.


US 123, 76, SC 28
IMP3
UF1
IMP2
UF1
IMP1
Shiloh Rd
0 1,000 2,000 4,000 Feet
Seneca Creek Forest Division
Natural Resource Inventory
K. Cox Feb 5, 2008
N

SENECA CREEK FOREST NATURAL DIVISION

NATURAL RESOURCE INVENTORY
EXPLANATORY INFORMATION (see Inventory Map)

TERRESTRAIL HABITATS

Upland Forest

UF1: Mature stands of upland forests occur adjacent to this stream

AQUATIC HABITATS

Man-made Impoundments

IMP1: A clear water impoundment at the headwaters of this small stream.

IMP2: A clear water impoundment within the rock quarry site utilized during construction of Lake Hartwell. This is a beaver enhanced impoundment.

IMP3: Small impoundment at the headwaters of this small tributary.

APPENDIX 1

CLEMSON EXPERIMENTAL FOREST
NATURAL RESOURCE DIVISIONS (Feb 2008)

Introduction : The Clemson Experimental Forest (Clemson Forest or CEF) is 17,000+ acres of undeveloped piedmont landscape. While there has been success in protecting major tracts in South Carolina's mountains and coastal areas, relatively small areas of land has been protected in the piedmont. Rather, the piedmont of South Carolina (and adjoining states) is a highly developed region consisting of very fragmented and human dominated habitats ranging from small woodlots and pastures, to industrial and residential areas. Few large natural tracts are protected or available for public access. In addition, the wildlife values and bio-diversity of a great majority of piedmont lands have been significantly altered, and for the most part degraded. The Clemson Forest represents a unique exception to these general piedmont conditions and thus serves an important role in natural resource conservation.

A broad look at the Clemson Forest in the field and with maps shows a landscape that it can be sectioned into "natural divisions" based on topography, major watersheds, and botanical/wildlife features. Thirteen such "natural divisions" of the Clemson Forest are recognized. This document, and accompanying map (see Figure 1 of the Natural resource Plan), provides a summary of major features of each of these sections.

NATURAL RESOURCE DIVISION DESCRIPTIONS
Provided below are general descriptions of the "natural divisions" of the Clemson Forest. These divisions are shown on Figure 1 of this Natural Resource Plan. The names given to the divisions reflect major natural features and/or natural resource management activities.

#1 KEOWEE RIVER HIGHLANDS DIVISION
Approx 1857 acres. Encompasses the lands west of Lawrence Bridge Road.

Some Major Natural Features
- Expansive, contiguous, tract of mixed successional piedmont woodlands
- Ridges, slopes, and ravines characteristic of the upper piedmont region
- Small scenic streams with amphibian and fish populations
- numerous seepage/boggy areas adjacent to streams
- Mature and diverse hardwood forests along some streams
- Dry upland oak communities (post oak, chestnut oak, blackjack oak)

Notes: *This section is represented by a series of high rounded hills adjacent to the impounded Keowee River portion of Lake Hartwell. These hills are drained by a series of small streams cloaked in mature hardwood forests and rich botanical resources. Ridges have stands of dry site oaks and pine forests.* In the highly developed Piedmont region, any large contiguous area of mixed successional forest types (such as the Keowee River Highlands Section) has high natural resource value related to biodiversity (flora and fauna) and for effective protection and management of game and non-game wildlife (including fishes, amphibians, reptiles, birds, and mammals). This section of the Clemson Forest provides just such values for those kinds of

wildlife. It is also noted by the SC Dept Natural Resources as having one of the highest deer population densities in the upstate of SC. Black bear, the largest species of wildlife on the Clemson Forest, have been observed in these expansive woodlands several times in recent years.

#2 LAKE ISSAQUEENA WATERSHED AND HIGH HILLS DIVISION

Approx 2691 acres**.** Encompasses Lake Issaqueena, its Clemson Forest watershed lands, most of its tributary streams, and the high hills surrounding the lake.

Some Major Natural Features:

- Scenic 100 acre Lake Issaqueena
- High hardwood forested hillsides rising up to 200 feet above Lake Issaqueena
- Clear rocky bottomed streams, including Wildcat Creek the type locality of 5 insect species.
- Woodland seepages
- Extensive wetlands
- Waterfalls
- Extensive areas of showy wildflowers
- Some of the CEF's best showcase oak-hickory forests
- Ravines of mountain laurel and rhododendron

Notes: *The streams that feed Lake Issaqueena drain a series of highly scenic hills and flow through beautiful valleys with abundant displays of wildflowers and ferns. Lake Issaqueena itself is a highly picturesque lake situated among slopes covered with mature hardwood and pine communities.* This is one of the highest quality natural resource areas on the CEF. Its botanical features are outstanding in terms of diversity of wildflowers (species of Trilliums, Orchids, and Sunflowers among many more) and forest stands. Its various local conditions, ranging from dry hardwood slopes to wetlands filled with aquatic vegetation, and from clear streams to seasonally flooded woodlands, provide a great diversity of habitats for fishes, amphibians, reptiles, birds, and mammals. The streams are a major resource asset of this area through their natural beauty and their fish and amphibian populations. The area also contains some of the CEF's highest quality oak-hickory forest, a major legacy of CU's management of these lands over the decades. The natural scenic qualities of Lake Issaqueena, and the surrounding hardwood forest stands, are of the highest order. When people think of the beauty and wild nature of the CEF, this is an area they think of.

#3 NORTHEAST WATERFALLS DIVISION.

Approx 1320 acres. Encompasses the streams and surrounding woodland areas associated with scenic water falls (Waldrop Stone Falls, Todds Creek Falls, others).

Some Major Natural Features :

Scenic waterfalls
Steep hardwood ravines

Scenic forest stands surrounding and/or adjacent to streams and falls.
Clean rocky bottomed Piedmont streams with fish populations
Wetlands associated with sediment filled pond
Mountain faunal elements associated with piedmont streams.
Diverse wildflower/fern areas
Unique botanical features associated with the waterfalls and their environs.

Notes: *This northeastern section contains a mix of steep slopes covered by various forest types. They are drained by steep gradient streams that form scenic waterfalls and cascades. These settings provide natural beauty as well as a diverse assemblage of habitats for plants and animals.* These waterfalls, their associated streams and woodlands provide a mountain type setting in the CEF. Surrounded by growths of ferns, rhododendrons, and mountain laurel, the streams cascade over steep rock ledges and flow through hardwood ravine forests with diverse botanical features. A WPA dam impounds Todd's Creek within a woodland setting. The pond is now largely filled with sediment, and is vegetated with wetland species including cat-tails and sedges.

#4 EAST DAM RAVINES DIVISION

Approx 609 acres. Encompasses ravines and slopes on the south side of the East Dam Road.

Some Major Natural Features:
Ravines with mature hardwood forest stands
Small woodland streams
Springs associated with streams

Notes: *This Section is represented by a series of forested north-south ridges, ravines, and associated streams just east of the Lake Issaqueena watershed.* These pine/hardwood forests are an extension of the Lake Issaqueena Watershed and High Hills Section. They are shown as a separate Section because they are outside of the Lake Issaqueena watershed proper. The small streams of this area originate and flow totally within the Clemson Forest. .

#5 COLHOUN HEIGHTS PENINSULA DIVISION

Approx 623 acres. Encompasses the peninsula at the confluence of the Twelve Mile Creek arm and Keowee River arm of Lake Hartwell.

Some Major Natural Features:
An expansive, contiguous tract of Piedmont woodlands
Mature hardwood stands in ravines with steep north facing slopes
Small woodland streams with fish populations
Diverse assemblage of large trees at historic sites.

Notes: *A series of high rounded hills overlooking two major arms of Lake Hartwell. The ruins of John E Colhoun's home, springhouse, and cemetery are within these forests.* Some of the hardwood stands here contain hop hornbeam and chalk maple, both infrequently recorded on the Forest. According to the SC Dept Natural Resources this peninsula has noted value for biodiversity and its abundant game and non-game wildlife.

#6 HORSEHEAD POINT WILDLIFE DIVISION

Approx 672 acres. Encompasses the tract on the west shore of Lake Hartwell, just north of Highway 123.

Some Major Natural Features

Expansive, contiguous tract of Piedmont woodlands
Scenic woodland ravines with diverse botanical features
Small woodland streams that cascade over rock ledges
High Ridges with extensive rock outcrops
Excellent examples of mature upland piedmont forests

Notes: *This section, represented by a series of high ridges over Lake Hartwell, is well known for its utilization by a diverse assemblage of wildlife species. This area also holds some outstanding natural and scenic areas.* This is a large unbroken forested tract giving it high natural resource value related to flora and fauna diversity and for effective protection and management of game and non-game wildlife. It includes rugged slopes with rock outcrops, and deep ravines containing streams lined with ferns, azaleas, and various wildflowers. The SC Dept Natural Resources has conducted furbearer surveys here over the years and has found this tract to have a high abundance and diversity of these animals (raccoons, foxes, mink, bobcats, otter, etc).

#7 SPRING HILL WOODLANDS DIVISION

Approx 839 acres. Encompasses rolling forested lands on the south side of the Twelve Mile Creek arm of Lake Hartwell.

Some Major Natural Features

Small high gradient streams with small waterfalls and related botanical features
Scenic woodland ravines
Extensive areas of surface rock
Quality examples of mature hardwood forests in ravines and on shores of Lake Hartwell

Notes: *This Division contains some beautiful examples of hardwood forest and a number of small spring fed streams that drain scenic rolling hills*. In many locations exposed bedrock provides scenic beauty and unique habitat factors in woodlands and along streams. Rich and diverse botanical features occur along sections of these streams.

#8 SEED ORCHARD FOREST AND LAKE COVES DIVISION

Approx 1400 acres. Encompasses the Forest lands that drain into those coves of Lake Hartwell that surround the Seed Orchard peninsula.

Some Major Natural features:

- Showcase stands of mature oak-hickory forest
- Scenic areas along the shoreline of Lake Hartwell
- Scenic woodland pond (Old Stone Church Pond)
- Extensive areas of native woodland wildflowers
- Woodland streams
- Diverse and outstanding wildlife habitats

Notes: *The "Seed Orchard Peninsula" on Lake Hartwell contains historic seed orchards where improved tree stocks were developed for South Carolina forestry work in the 20th century. The low hills and ravines of this section today are providing outstanding examples of natural mature forest conditions for the piedmont region of the state.* A potential educational showcase area for both the natural resources of the CEF (hardwood stands, streams, wildflowers, lakeside areas), and for the management activities on the CEF (forestry and wildlife). The scenic qualities of this area, and the lake scenery visible from this area, are outstanding all seasons of the year. The Old Stone Church Pond, with its surrounding woodlands and wetlands, is a notable feature. Here are abundant waterfowl, fishes, reptiles, and amphibians.

#9 EIGHTEEN MILE CREEK FOREST AND WETLANDS DIVISION

Approx 2,763 acres. Encompasses the Eighteen Mile Creek floodplain, some tributaries, and adjacent upland forested areas.

Some Major Natural Features:

- Approx 2 mile reach of Eighteen Mile Creek
- Small woodland tributaries supporting fish populations
- Extensive wetland areas and large beaver ponds.
- A rich Piedmont "Cove Forest" with diverse wildflowers
- Mature mixed hardwood slopes
- A unique stand of mature American beech
- A successful waterfowl management area (managed in co-op with SCDNR)
- Exceptional wildlife viewing

Notes: *This section contains an interconnected system of expansive wetlands and forested slopes along lower Eighteen Mile Creek.* This is a very high quality natural resource area. It consists of major wetlands and floodplain sections adjacent to mature upland forests (this includes the George Aull Natural Area). This combination provides valuable wildlife habitat with a unique assemblage of amphibians, reptiles, songbirds, waterfowl, and wading birds utilizing this area routinely. Inhabitants include species of amphibians and fish that are typically associated with the coastal plain habitats in the lower portions of SC.

#10 WATERSHED ROAD MEADOWS AND BEAVER PONDS DIVISION

Approx 849 acres. Encompasses the Watershed Road area and adjacent stream/wetland system.

Some Major Natural Resources:

A high quality woodland stream that heads within the area
Mature oak-hickory forest stand
Pine forests (of various ages) and fields being actively managed for timber and wildlife.
Expansive wetlands at the lower reaches of the stream provide important amphibian and wading bird habitat.

Notes: *The stream draining this section was utilized over recent decades for studies on watershed responses to various land management activities. Today the lands include expansive meadow type habitats, and beaver dominated wetlands.* This is an area of noted bio-diversity and wildlife abundance. It provides excellent examples of natural resources, and actively managed resources, in a readily accessible location. Osprey and bald eagles have been observed at the lower (downstream) end of this section where it intersects Eighteen Mile Creek.

#11 SOUTH PENINSULA WILDLIFE DIVISION

Approx 2753 acres. Encompasses all of the South Forest lands west of Fants Grove Road and south of the Twin Lakes Peninsula.

Some Major Natural Features

A large unbroken Piedmont forested area with diverse forest communities
Highly scenic and mature oak-hickory forest stands
Small Piedmont streams with populations of fishes and amphibians
Some expansive alluvial wetland areas
Areas with special botanical features
Several recent sightings of black bear here indicate this section is providing year round habitat for these animals.

Notes: *A large peninsula of Lake Hartwell that provides a major refuge and management area for game and non-game wildlife.* This is a large unbroken forested tract giving it high natural resource value related to flora and fauna diversity and for effective protection and management of game and non-game wildlife. The area has a very "folded" shoreline resulting in it having many shoreline coves on Lake Hartwell – providing excellent habitat for wading birds and other semi-aquatic wildlife. The SCDNR reports this area to have excellent deer and wild turkey populations. And, as noted, black bear occur here.

#12 MUSSER WOODLANDS DIVISION

Approx 1542 acres. In addition to the Musser Farm, this section encompasses a series of hardwood ravines.

Some Major Natural Features

Mature hardwood forest on ravine slopes with special botanical features.
Small scenic piedmont streams cascading over bedrock ledges with fish and amphibian populations
Rich botanical features along streams
Beaver pond and associated wetlands

Notes: *The Musser Farm, a horticultural research facility, occurs on part of this section, along with forested slopes over small scenic streams.* This Division represents a patchwork of habitat types. Some of its small streams flow through scenic and botanically rich forested areas. Forest management activities have made this area especially valuable to mast feeding wildlife species.

#13) SENECA CREEK FOREST DIVISION

Approx 1101 acres. Encompasses the lands on the west shore of Lake Hartwell between Hwy 123 and Shiloh Road.

Some Major Natural Features

Large beaver pond within abandoned rock quarry
Small woodland impoundment
Scenic streams with fish and amphibians

Notes: *This Division is most notable for its aquatic resources associated with streams and ponds.*