

**RED-COCKADED WOODPECKER (RCW) SURVEY,
FORAGING HABITAT ANALYSIS AND BIOLOGICAL
ASSESSMENT FOR THE CONSTRUCTION OF AN ACCESS
ROAD AND PARKING LOT AT WHITEHALL,
SOUTHERN PINES, MOORE COUNTY, NORTH CAROLINA**

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1. INTRODUCTION

The Town of Southern Pines is proposing to construct a paved one-way access drive loop to existing structures and a gravel parking lot at the Whitehall Recreation Area owned by the Town in Moore County, North Carolina (NC). The proposed project will impact foraging habitat associated with an active cluster (SOPI 26) of the federally Threatened red-cockaded woodpecker (*Dryobates borealis*) (RCW). This assessment evaluates the impacts of this project on the RCW pursuant to Section 9 of the Endangered Species Act (ESA), as amended.

2. PROJECT AREA

The project is located in the Greater Sandhills of south-central NC (Figure 1), an area characterized by pine-forested, gently rolling topography and sandy soils. Elevations in the immediate project area range from 400-500 feet (ft.) above mean sea level. Upland soils are well drained and consist predominately of Candor sand and Ailey, Gilead and Vaucluse loamy sands (US Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) 2019). The most widespread wetland soil is Bibb loam. The project area is located in the Cape Fear River Basin. Major hydrological features include Reservoir Park Lake, Mill Creek and unnamed tributaries thereof.

Historically, upland vegetative communities in the project area were predominately Xeric Sandhill Scrub, Pine-Scrub Oak Sandhill and Mesic Pine Savanna. The most widespread palustrine communities were Streamhead Pocosin and Coastal Plain Small Stream Swamp.

The Xeric Sandhill Scrub community had a longleaf pine (*Pinus palustris*) overstory, turkey oak (*Quercus laevis*) understory and a Carolina wiregrass (*Aristida stricta*) ground cover. It occurred on very dry sandy sites such as ridges. The Pine-Scrub Oak Sandhill community had

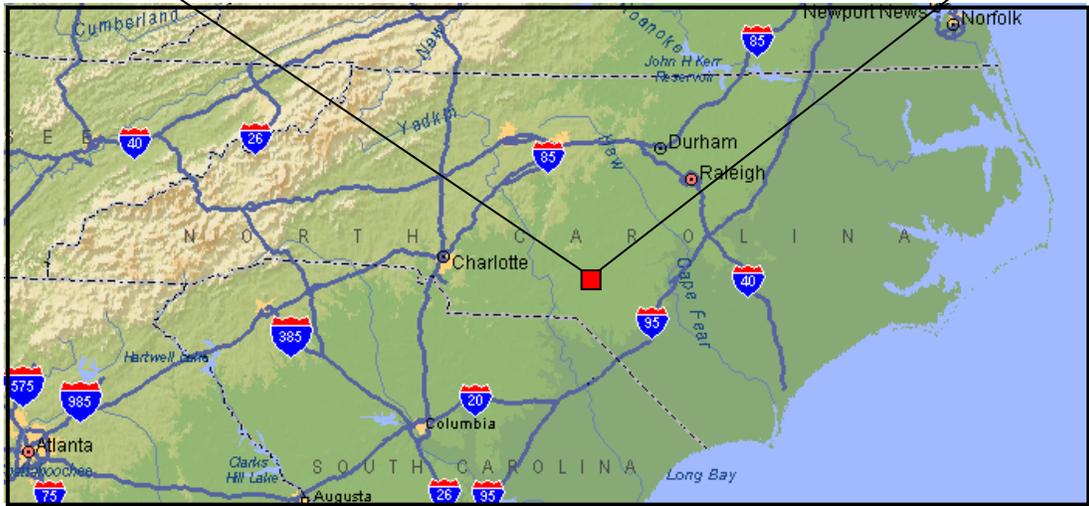
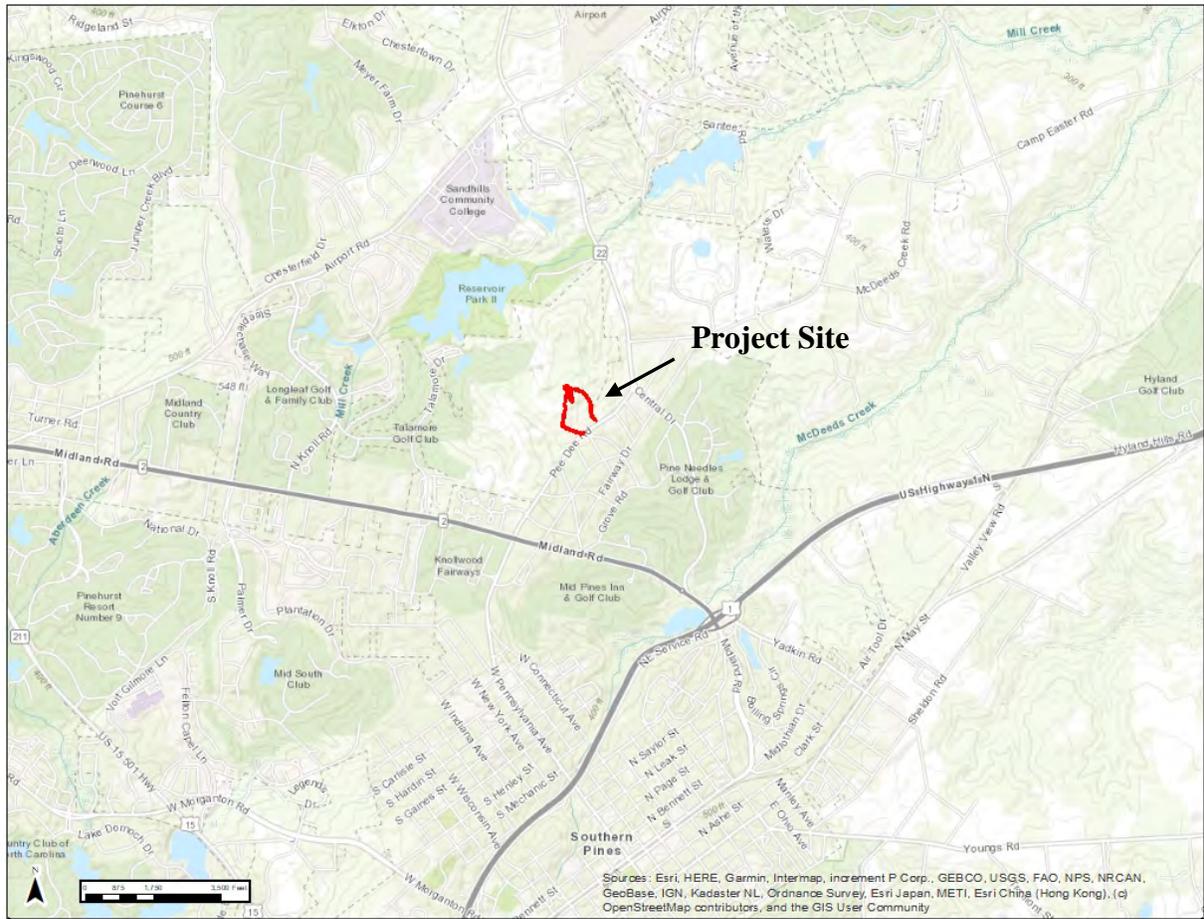


Figure 1. Location of the proposed access driveway and parking lot at Whitehall in Southern Pines, Moore County, NC.

a longleaf pine overstory, mixed scrub oak (*Quercus* spp.) or xeric hardwood understory and an often diverse ground cover dominated by Carolina wiregrass.

Mesic Pine Savanna on frequently burned, undisturbed sites typically had a canopy of longleaf pine and an open or sparse midstory of mesic hardwoods, especially sweetgum (*Liquidambar styraciflua*). The ground cover was dominated by Carolina wiregrass and a very diverse assemblage of herbaceous plants. In unburned or rarely burned sites, the midstory was sparse to dense and the ground cover was sparser and less diverse, sometimes dominated by bracken fern (*Pteridium latiusculum*).

Streamhead Pocosins occurred in small drainages, on poorly drained flats and along some of the larger streams. Dense thickets of shrubs and vines characterized this habitat, along with an overstory of pond pine (*P. serotina*), sometimes mixed with loblolly pine (*P. taeda*), tulip poplar (*Liriodendron tulipifera*), swamp blackgum (*Nyssa biflora*) and red maple (*Acer rubrum*). Typical understory vegetation consisted of swamp bay (*Tamala palustris*), fetterbush (*Lyonia lucida*), sweet gallberry (*Ilex coriacea*), inkberry (*I. glabra*), titi (*Cyrilla racemiflora*), sweet pepperbush (*Clethra alnifolia*), switch cane (*Arundinaria tecta*) and laurel-leaved greenbrier (*Smilax laurifolia*). Cinnamon fern (*Osmundastrum cinnamomeum*) was common in the sparse herb layer. Small stands of Atlantic white cedar (*Chamaecyparis thyoides*) sometimes occurred in these communities.

Coastal Plain Small Stream Swamp communities were found along small to medium-sized streams and were predominately forested with swamp blackgum, red maple, tulip poplar and pond pine. Midstory species included red maple, sweetbay magnolia (*Magnolia virginiana*) and titi and understory species include coastal fetterbush (*Leucothoe axillaris*), Virginia sweetspire (*Itea virginica*) and yellowroot (*Xanthorhiza simplicissima*). The ground cover included cinnamon fern and netted chain-fern (*Lorinseria areolata*).

The Sandhills area contains the second largest metapopulation of RCWs and is a designated Primary Core Recovery Population (US Fish and Wildlife Service (USFWS) 2003). This metapopulation includes RCWs on the Fort Liberty Military Reservation (FL), Camp Mackall (CM), Sandhills Game Land (SGL), Calloway Tract, McCain Tract, Carver's Creek State Park, Weymouth Woods Sandhills Nature Preserve and on private lands around Southern Pines and Pinehurst (SOPI). In 2005, the Sandhills East Primary Core Population, which includes FL, reached its population goal of 350 potential breeding groups (pbgs) (USFWS 2006)

and the Sandhills West Essential Support Population, which includes the SGL and CM, reached its population goal of 100 pbgs in 2002 (NC Sandhills Conservation Partnership, unpublished data).

3. PROJECT SITE

The project site is located on Pee Dee Road (Rd.), west of Central Drive and north of United States Highway 1 in Southern Pines, Moore County, NC (Figure 2). The site is bordered by the Southern Pines Reservoir Park to the north, residential development to the east and south and undeveloped, forested habitat to the west.

4. PROJECT DESCRIPTION

A paved one-way drive loop will enter the property from Pee Dee Rd. starting at the Elizabeth Rounds Park parking lot before merging into the existing Whitehall Trail. Approximately 70 ft. of new trail will be cleared between the existing trail and the parking lot. The one-way drive will be widened to 14 ft. with minimal tree removals along the edge. The existing dirt path along Indian Trail that leads to the main house will be converted into a gravel driveway (Figure 2).

An approximately 0.15 acre gravel parking lot will be constructed adjacent to the Whitehall Carriage House (Figure 2).

5. METHODS

Natural vegetative communities were classified according to Schafale (2023) and plant nomenclature follows Weakley (2022).

5.1. RCW Survey

JCA biologists conducted ground surveys for RCW cavity trees within the proposed Whitehall project site and within the SOPI 26 foraging partition in October 2024 (Figure 2). Surveys were conducted and transects spaced so that all suitable habitat was viewed at least once.

RCW foraging habitat was defined as pine or pine-hardwood stands at least 30 years of age or older and RCW nesting habitat was defined as pine or pine-hardwood stands 60 or more

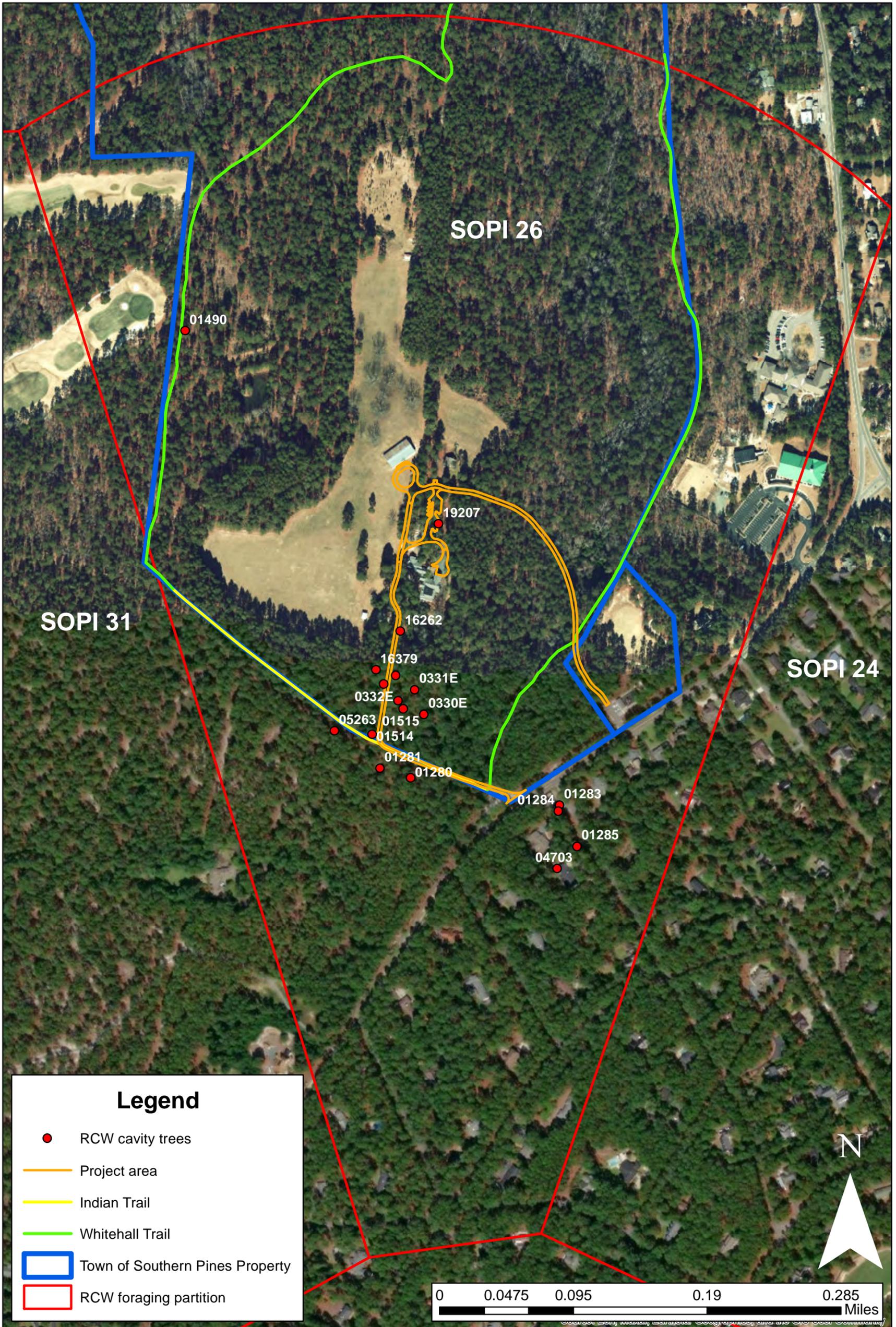


Figure 2. Location of Whitehall project site, red-cockaded woodpecker (*Dryobates borealis*) (RCW) SOPI Cluster 26 foraging habitat partition and cavity trees, Southern Pines, Moore County, North Carolina.

years old or younger stands with remnant mature pines (USFWS 2003). Open areas with no pine trees were not surveyed.

5.2. Foraging Habitat Analysis

A foraging habitat analysis (FHA) was completed for SOPI 26 in October 2024 by JCA biologists. North-south transects were plotted on aerial photography 5 chains apart (1 chain = 66 ft.) within the 0.25 and 0.5-mile radius RCW foraging habitat partitions. Sample plots were placed 5 chains apart along the transect lines. Foraging substrate was measured with a 10-factor basal area (BA) prism using the prism-plot method. Pine BA, the number of pine stems ≥ 4 inches in diameter at breast height (dbh) in 2-inch diameter classes and the age of a representative dominant pine were obtained in each plot.

Stands were delineated in the field on aerial photographs according to characteristics such as pine age or density. Hardwood encroachment in a given pine stand was assessed by the density and height of the midstory in accordance with the 2003 RCW Recovery Plan (USFWS 2003) and its designation of quality requirements for RCW foraging habitat. Determining midstory density was subjective, but followed these basic criteria: a stand with a sparse hardwood midstory had few or no hardwoods present, a stand with a dense hardwood midstory had limited visibility and movement through the stand was difficult, and a stand with a moderately dense hardwood midstory was intermediate. Each habitat type was further subdivided according to hardwood midstory height. Midstory hardwoods less than 7 ft. in height were considered low, hardwoods 7-15 ft. high were considered moderate and hardwoods more than 15 ft. high were considered tall.

Impacts were assessed pursuant to Section 9 of the Endangered Species Act, as amended, using the 2003 RCW Recovery Plan – Standard for Managed Stability (SMS) foraging habitat guidelines (USFWS 2003). The SMS requires a minimum of 3,000 square feet (ft.²) of pine BA in stems ≥ 10 inches dbh on at least 75 acres of good quality foraging habitat as defined below (USFWS 2003).

1. Pine stands must be at least 30 years of age or older.
2. Average BA of pines ≥ 10 inches dbh should be between 40 and 70 ft.²/acre.
3. Average BA of pines < 10 inches dbh should be less than 20 ft.²/acre.

4. No hardwood midstory exists, or if a hardwood midstory is present, it must be sparse and less than 7 ft. in height.
5. Total stand BA, including overstory hardwoods, should be <80 ft.²/acre.

Additionally, all land counted as foraging habitat must be within 200 ft. of another foraging stand or the cluster and all stands counted as foraging habitat should be within 0.25-mile of the cluster (USFWS 2003).

USFWS guidance (W. McDearman, USFWS, pers. comm.) since the 2003 Recovery Plan has established the following clarifications of the total stand BA requirement:

- Overstory hardwood BA must be ≤ 10 ft.²/acre.
- Total stand BA can exceed 80 ft.²/acre if the maximum limits for overstory hardwood BA and pines <10 inches dbh are not exceeded, and the BA in pines 10-14 inches dbh is 40-70 ft.²/acre (in other words, the excess BA is comprised of pines ≥ 14 inches dbh).

Pine stands that met the SMS overstory guidelines and had a sparse hardwood midstory, a moderately dense hardwood midstory that was low in height or a dense hardwood midstory that was low in height were considered “suitable” foraging habitat.

“Potentially suitable habitat” was described as stands that met most requirements, but exceeded the maximum limits for pine BA in certain dbh classes, hardwood midstory density/height and/or overstory hardwood density. These stands have the necessary pine BA and could meet the SMS with midstory removal, prescribed burning and/or thinning. Stands with suitable overstory characteristics containing a moderately dense or dense midstory that was moderate or tall in height were in this potentially suitable category.

All stands on sites managed for pine dominance that did not fall into the suitable or potentially suitable categories were classified as “future potential habitat.” These stands will require time and management to meet the SMS requirements.

Foraging habitat available for a cluster was first evaluated using a 0.25-mile radius foraging partition. If the minimum SMS requirements were not met within the 0.25-mile radius partition, a 0.50 mile radius partition was used.

RCW foraging habitat separated by more than 200 ft. from other foraging habitat was considered non-contiguous and was not counted as available habitat (USFWS 2003).

The acreage for each stand was calculated using ArcGIS software. The resulting acreages were then multiplied by the average number of pine stems per acre for each 2-inch diameter class in order to get the total pine stems ≥ 10 inches dbh per stand. The appropriate BA conversion number was multiplied by the total pine stems in each 2-inch diameter class to get the pine BA for each 2-inch diameter class. The substrate totals for all stands within a RCW partition were then summed to get the total pine BA and total pine stems ≥ 10 inches dbh available within that partition.

Removals within the RCW partition were calculated using ArcGIS software and were subtracted from the affected habitat types.

6. RESULTS

6.1. Red-cockaded woodpecker (*Dryobates borealis*)

The RCW is a small black and white woodpecker with horizontal bars on its back, spotted flanks and a white belly. The cap and chin stripe are black and the male has a small, difficult to see red spot on each side of the black cap. RCWs are most easily identified by the large white cheek patch that distinguishes them from similar species (USFWS 2003).

The RCW is endemic to mature, fire-maintained pine forests in the southeastern United States, where it was historically common. Typical nesting habitat includes pine or pine-hardwood stands with a minimum age of 80 to 120 years where the RCW excavates nest and roost cavities in living pines. The RCW also requires a large area of pines ≥ 30 years old for foraging habitat with a foraging preference for pine trees ≥ 14 inches dbh (Walters et al. 2002). Logging, fire exclusion and conversion of forestlands to agricultural and other uses have destroyed most of this species' habitat.

6.2. RCW Clusters Impacted by the Project

No new RCW cavity trees were found during ground surveys of the SOPI Cluster 26 0.5-mile foraging partition in October 2024.

SOPI 26 contained 18 trees with RCW cavities in various stages of completion and suitability. Three cavities are currently active and 3 cavities are possibly active. One active cavity tree (#19207) is within the footprint of the proposed gravel parking northeast of the main house at Whitehall (Figure 2). Design changes will be made so there is no disturbance within at

least 50 ft. of the cavity tree. SOPI Cluster 26 has been active for over 20 years and the group successfully nested and fledged 3 young in 2024 (Sandhills Ecological Institute, unpublished data).

6.3. Foraging Habitat Analysis

The SMS (USFWS 2003) data analyses for the impacted 0.25-mile radius partition for SOPI 26 follows.

6.3.1. Impacts to SOPI Cluster 26 and its Foraging Habitat Partition

The pre-project SMS foraging habitat totals were 6,649.91 ft² of pine BA on 50.55 acres of suitable habitat and 2,552.77 ft² of pine BA on 24.04 acres of potentially suitable habitat (Figure 3, Table 1).

The access road and parking lot project will remove 14.65 ft.² of pine BA on 0.22 acre of potentially suitable habitat within the 0.25-mile radius foraging partition (Table 1).

The post-project SMS foraging habitat totals were 6,649.91 ft² of pine BA on 50.55 acres of suitable habitat and 2,538.12 ft² of pine BA on 23.82 acres of potentially suitable habitat (Figure 3, Table 1). This partition will not meet the SMS requirements post-project within the 0.25-mile radius foraging partition due to a lack of acreage (0.63 acre). However, there is sufficient suitable foraging habitat acreage within the 0.5-mile radius foraging habitat partition (91.32 acres) (Figure 4, Table 2) to meet SMS.

7. BIOLOGICAL CONCLUSION

The proposed driveway and parking lot project will remove approximately 0.22 acre of potentially suitable RCW foraging habitat from the foraging partition associated with active SOPI Cluster 26. The potentially suitable habitat at Whitehall needs to be made suitable (midstory removal). In conclusion, SOPI 26 meets the SMS guidelines post-project using suitable habitat within the 0.5-mile radius foraging habitat partition. No disturbance or clearing within 50 feet of cavity trees will occur.

Biological Determination: Not likely to Adversely Affect

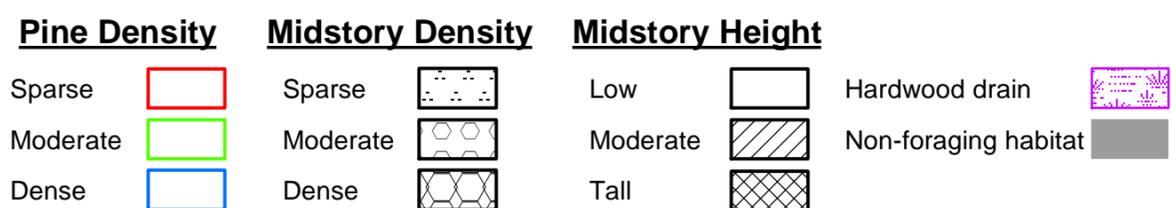
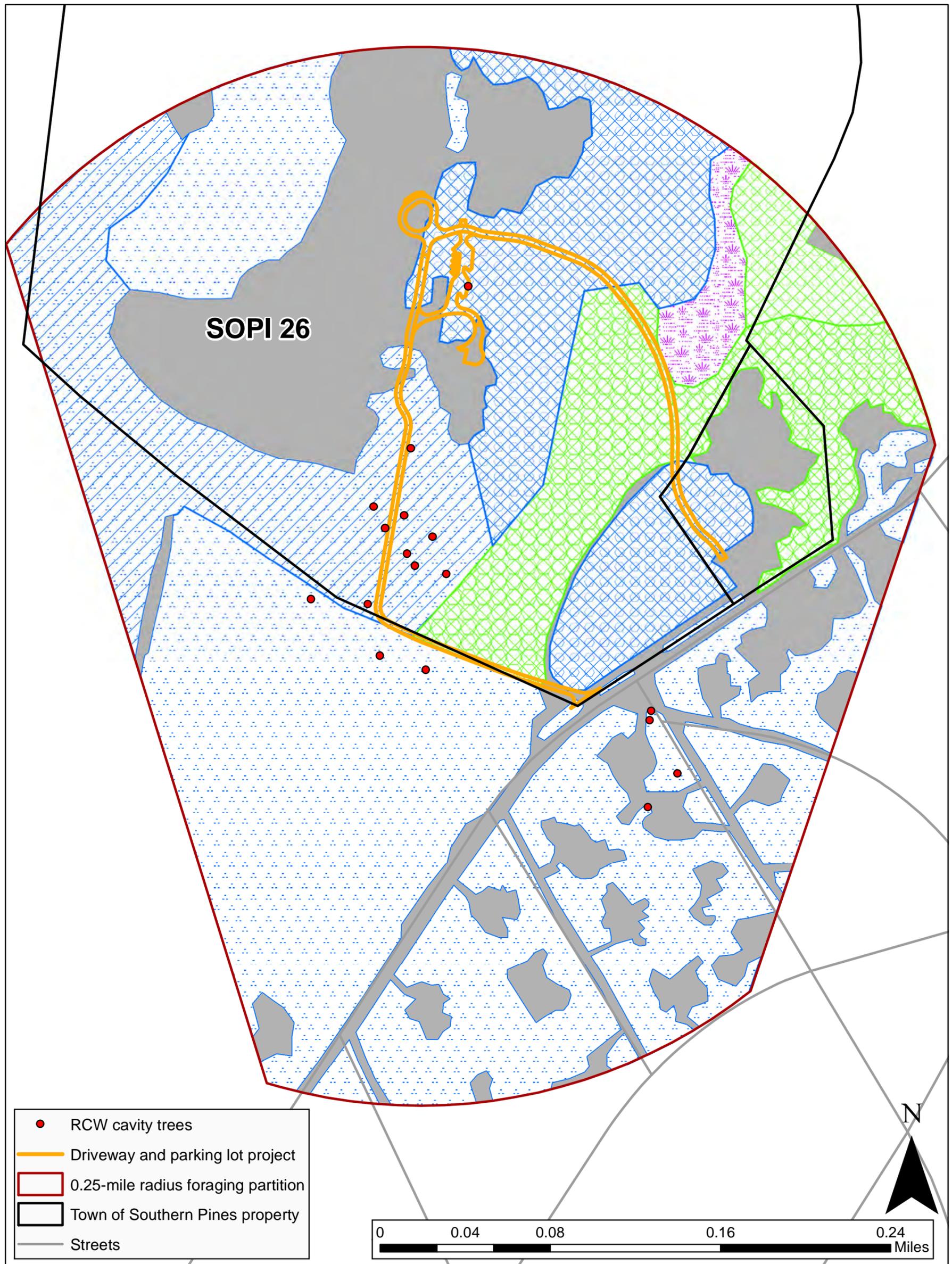


Figure 3. Red-cockaded woodpecker (*Dryobates borealis*) (RCW) habitat within the 0.25-mile radius foraging habitat partition for SOPI Cluster 26, Southern Pines, Moore County, North Carolina. Also shown is the project site at Whitehall and Elizabeth Rounds Park.

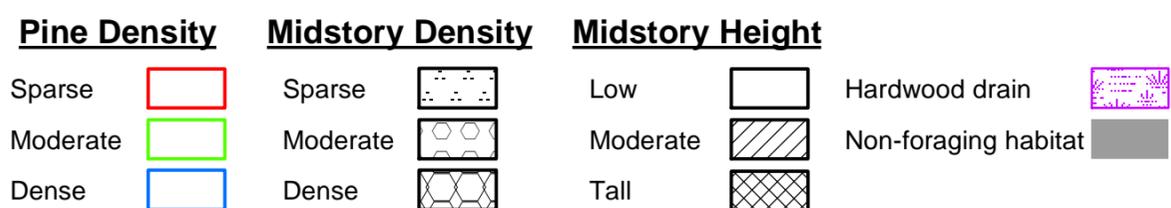
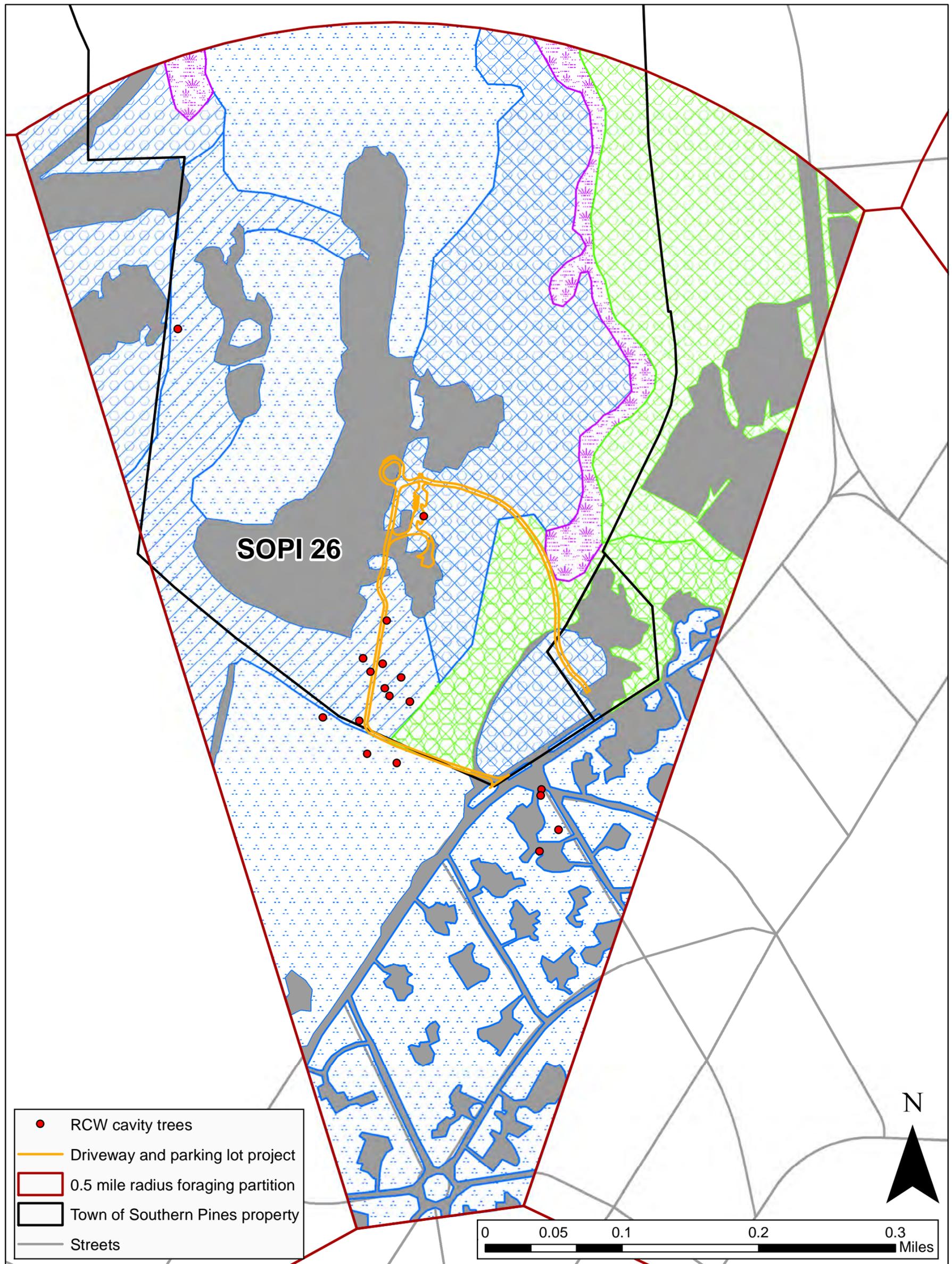


Figure 4. Red-cockaded woodpecker (*Dryobates borealis*) (RCW) habitat within the 0.5-mile radius foraging habitat partition for SOPI Cluster 26, Southern Pines, Moore County, North Carolina. Also shown is the project site at Whitehall and Elizabeth Rounds Park.

8. LITERATURE CITED

- Sandhills Ecological Institute. 2024. RCW population monitoring in Southern Pines and Pinehurst, North Carolina, unpublished.
- Schafale, M.P. 2023. Classification of the Natural Communities of North Carolina, Fourth Approximation. North Carolina Natural Heritage Program, NC Department of Natural and Cultural Resources. 1,235 pp.
- United States Department of Agriculture, Natural Resources Conservation Service. 2019. USDA website: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed October 2024.
- United States Fish and Wildlife Service. 2003. Red-cockaded woodpecker recovery plan: 2nd revision. US Fish and Wildlife Service, Atlanta, Georgia. 296 pp.
- _____. 2006. Fort Bragg reaches recovery milestone for the endangered red-cockaded woodpecker five years earlier than expected. <http://www.fws.gov/southeast/news/2006/r06-035.html>. Accessed 10 November 2014.
- Walters, J.R., S.J. Daniels, J.H. Carter III and P.D. Doerr. 2002. Defining quality of red-cockaded woodpecker foraging habitat based on habitat use and fitness. *Journal of Wildlife Management* 66(4):1064-1082.
- Weakley, A.S., and Southeastern Flora Team 2022. Flora of the southeastern United States: (North Carolina). University of North Carolina Herbarium, North Carolina Botanical Garden. 1,140 pp.