

SITE SURVEY REPORT

SITE NAME: Morgan Ridge

DATES VISITED: September 11, 2019

INVESTIGATORS: Mike Schafale

REPORT AUTHOR: Mike Schafale

DATE OF REPORT: September 2019

BACKGROUND INFORMATION/PURPOSE OF VISIT: This visit was requested by Warren Mitchell, civil engineer, at the recommendation of Allison Weakley of the Chatham County Planning Board. A plan is being developed for a conservation subdivision on the tract.

OWNER: Robert Bruce and Douglas Page

OWNER CONTACT + NOTES: The survey was arranged by Warren Mitchell, the engineer for the project and a development partner, who participated in the visit.

COUNTY: Chatham

QUAD: Bynum

LOCATION / ACCESS: The tract is about 6.3 air miles southwest of downtown Carrboro. It was accessed from the south from Emily Lane; however the planned subdivision access is from the north from Jones Ferry Road.

GENERAL DESCRIPTION: Morgan Ridge is a broad, gently sloped ridge top, giving way to steeper side slopes. The area is underlain by diorite and gabbro and shows evidence of soils with unusually high pH and base saturation. Unusual topography is present on the ridge top as well, including an unusually flat area and a small depression. Parts of the area are also unusually rocky, with numerous boulders on some knobs. Though successional pine forests are embedded, much of the tract supports a Dry Basic Oak—Hickory Forest community that is quite mature and in excellent condition. This forest is dominated by a combination of southern shagbark hickory, post oak, and white oak. The depression on the ridge top contains an Upland Depression Swamp Forest community, also in excellent condition. Small patches of Dry Oak—Hickory Forest and Dry-Mesic Oak—Hickory Forest are also in excellent condition.

SIGNIFICANCE OF SITE: High significance (R3 C4). The most significant element is the Dry Basic Oak—Hickory Forest but the Upland Depression Swamp Forest is also highly significant.

SPECIAL STATUS SPECIES: None known.

POTENTIAL FOR OTHER SPECIAL STATUS SPECIES: There is a possibility for four-toed salamanders breeding in the Upland Depression Swamp. The extensive moss cover

OTHER NOTEWORTHY SPECIES AND FEATURES:

SIZE: About 77 acres in the two parcels.

ELEVATION: 500-631 feet.

TOPOGRAPHY: The center of the area is a broad ridge, with steep side slopes to a creek on the west and gentler slopes on the east. The ridge top includes an unusually flat area and a small depression that holds water during wet seasons.

HYDROLOGY AND MOISTURE: Most of the area is dry, with dry-mesic conditions on the slopes and seasonally ponded water in the depression.

PRESENCE OF STREAMS AND SEEPS: Two intermittent streams are present on the east side of the tract, and another stream is present just beyond the property line on the west side. A couple of seepage springs are present. One spring was visited. Water emerges in a boulder area with mucky soil between the boulders and forms the beginning of a stream. Denser and larger boulders cover the steeper slope above the spring. There was no well-developed Low Elevation Seep community there.

GEOLOGY: The geologic map of the Bynum quadrangle depicts most of the tract as diorite of the West Farrington pluton. Two dikes of gabbro are mapped within the tract. The vegetation suggests that gabbro may be more extensive on the ridge.

The ridge top is very rocky, with spheroidal boulders present in most area. Some small knolls have extensive boulder cover. A couple of rocks that were broken to examine are diorite.

SOIL:

The soil map depicts most of the flatter ridge top area, as well as the eastern slope, as Helena (Fine, mixed, semiactive, thermic Aquic Hapludults). The northern and southern edges of the ridge, as well as some of the west slope, are mapped as Wedowee (Fine, kaolinitic, thermic Typic Kanhapludults). The lower west slope is mapped as Georgeville (Fine, kaolinitic, thermic Typic Kanhapludults). These map units do not correspond to the natural communities on the site and what they suggest about soil properties. At least some areas appear to be inclusions of a montmorillonitic soil such as Iredell, and others are inclusions of a much rockier soil.

COMMENTS ON PHYSICAL DESCRIPTION:

NATURAL COMMUNITY DESCRIPTION

Dry Basic Oak—Hickory Forest: Occurs on the ridge top, in the flat area and in some of the gently sloping rocky areas on top, and on the west-facing slopes. The canopy is dominated by white oak (*Quercus alba*), southern shagbark hickory (*Carya carolinae-septentrionalis*), and post oak (*Quercus stellata*), with abundant white ash (*Fraxinus americana*), Biltmore ash (*Fraxinus biltmoreana*), pignut hickory (*Carya glabra*), and mockernut hickory (*Carya tomentosa*). Occasional loblolly pine (*Pinus taeda*), shortleaf pine (*Pinus echinata*), southern red oak (*Quercus falcata*), and other tree species are present. The understory is dominated by eastern red-cedar (*Juniperus virginiana*) in most places. Winged elm (*Ulmus alata*) is also common, and flowering dogwood (*Cornus florida*) is present. Shrubs are sparse. In some areas, muscadine grape (*Muscadinia rotundifolia*) cover the ground. Elsewhere, few-flowered nutrush (*Scleria oligantha*) is the most abundant herb. This forest is quite mature, with canopy trees averaging 12-14" dbh and trees 16-18" dbh or more present. The community is unusually dry. In many parts, post oak is more abundant than white oak, suggesting it is transitional to Xeric Hardpan Forest (Basic Rocky Subtype).

Dry Oak—Hickory Forest (Piedmont Subtype): This acidic community occurs in some portions of the ridge top and upper slopes, including some bouldery areas but not the unusually flat area. Though it was not obvious that the underlying rock is different, it may be. Some of the planned septic fields were in this community, but it is less extensive in the site overall than the basic community. The canopy is dominated by white oak, with southern red oak an abundant associate. Southern shagbark, post oak, and ash are nearly or completely absent, and other hickories are less abundant. The understory includes flowering dogwood, red maple (*Acer rubrum*), and sourwood (*Oxydendrum arboreum*). Though the shrub layer is not dense, southern blueberry and deerberry are fairly abundant. Herbs are few. This forest is quite mature in most parts, comparable to the Dry Basic Oak—Hickory Forest.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype): This forest was seen on the slopes on the east side and on some lower ridge areas. The canopy is dominated by white oak and has large amounts of red oak (*Quercus rubra*). Pignut and mockernut hickory are present in moderate numbers and there are occasional pines. The understory includes flowering dogwood, red maple, and a little sourwood. Shrubs consist primarily of deerberry. Only a limited area of this community was seen in good condition.

Upland Depression Swamp Forest: A well developed example of this community occurs in the depression on the ridge top. It is bordered by the unusually flat area on three sides, with a distinct rocky slope to a higher part of the ridge on the other side. It holds water in the winter but was dry at the time of this visit. The canopy consists almost completely of willow oak (*Quercus phellos*). A few smaller sweetgum (*Liquidambar styraciflua*) are present but there is no other understory. There are sparse shrubs that include highbush blueberry (*Vaccinium corymbosum*) and deciduous holly (*Ilex decidua*). There is a dense herb layer, much of it consisting of mosses. Peat moss (*Sphagnum lescurii*) dominates large patches, and pine tree moss (*Climacium americanum*) also dominates some areas. Joor's sedge (*Carex jorii*) (?) is prominent, though not dense. Particularly interesting, *Rhynchospora corniculata* and *Carex lupulina*, both species more typical of Coastal Plain river swamps, are present. Slender spikegrass (*Chasmanthium laxum*) dominates the zone around the outer edge. Canopy trees average 12" dbh.

OTHER COMMUNITIES PRESENT:

A small area of Piedmont Headwater Stream Forest is present along the intermittent creeks. It is dominated by tulip poplar (*Liriodendron tulipifera*), but was not examined in detail.

Successional forests dominated by loblolly pine or tulip poplar are fairly extensive in the tract.

ANIMAL HABITAT COMPONENTS

POOLS AND SEEPS : Two or three seeps are known on the east side of the tract. The Upland Depression Swamp Forest is a seasonal pool that may be important for amphibian breeding. Such sites often are a focus for both frogs and salamanders.

ROCK DENNING SITES: Abundant boulders offer numerous small dens.

BIG TREES/LARGE CAVITIES: Trees up to 20" dbh were seen.

SNAGS AND LOGS: Moderate numbers of down logs are present.

AQUATIC HABITAT FACTORS: Not examined.

SITE INTEGRITY

LAND USE IMPACTS: Land use varied substantially across the tract. Pine-dominated and tulip poplar-dominated areas may have been cleared pastures or cultivated fields. Successional forest on the west slope, too steep for cultivation, may result from a clearcut a few decades ago. More mature hardwood areas have not been logged in many decades and were never cleared.

An old ditch extends eastward from the Upland Depression Swamp, indicating a past effort to drain it. The effort appears to have been unsuccessful, as the depression still holds water. However, the ditch may possibly have reduced maximum water levels.

EXOTIC/WEEDY SPECIES: Stilt grass (*Microstegium vimineum*) is abundant along the creeks. It is scarce elsewhere.

DIRECT HUMAN INTRUSION: High. Houses are present on the edges of the tract. Hunting blinds are present, including one on the edge of the Upland Depression Swamp. Test of soil for septic fields was done by using an excavator to dig large holes. Several areas are dotted with these pits and spoil piles.

DISTURBANCE SENSITIVE SPECIES: None noted.

FIRE REGIME: No evidence of recent fire was noted. This site would burn under natural conditions, by fire spreading from the surrounding landscape as well as lightning ignition on the hilltop. Under a natural fire regime, the understory and to some degree the canopy of the dry forests would be more open.

ADJACENT LAND USE/OFFSITE STRESSES: Housing developments border the site to the south and are widespread in the surrounding landscape in most directions.

RELATION/CONNECTION TO OTHER SITES AND HABITAT PATCHES: The Terrells Mountain natural area is 0.3 mile to the northwest, separated by successional forests and low density houses.

DEGREE OF THREAT/POTENTIAL FOR CHANGE: Plans are being made for a residential development on the tract.

BOUNDARY EXPLANTATION/JUSTIFICATION: The natural area boundary encompasses the significant ecological features at Morgan Ridge. The primary part of the natural area is the area with high quality natural communities, including those not extensive enough to record as EOs as well as the Dry Basic Oak—Hickory Forest and the Upland Depression Swamp. A secondary area of successional forest that is embedded within the higher quality forests is included in the site as a buffer. Poorer quality forests on the periphery are excluded.

RECOMMENDATIONS FOR PROTECTION: The most significant part of the natural area is the flat ridge top area of oak forest and the depression. The least significant is the pine forest embedded in the middle of the site. The peripheral portions of the tract that are not included in the natural area boundary are also of lower significance.

MANAGEMENT RECOMMENDATIONS AND RESTORATION NEEDS: Ideal management would include prescribed burning.

NEED FOR FURTHER STUDY: Herpetological survey of the depression when it is filled with water.

REFERENCES:

Bradley, P.,J., H.D. Hanna, E.F. Stoddard, and R. Bechtel. 2013. Geologic map of the Bynum 7.5-Minute Quadrangle, Orange, Chatham, and Alamance Counties, North Carolina. NC Geological Survey Open File Report.

MAPS

- Map of community type field observations
- Map of natural area boundaries
- Map of previously planned conservation subdivision

PLANT SPECIES OBSERVED:

THOROUGHNESS OF LIST: (Moderate)

- B = Dry Basic Oak—Hickory Forest
- D = Dry Oak—Hickory Forest
- O = Dry-Mesic Oak—Hickory Forest
- U = Upland Depression Swamp Forests
- x = successional forests

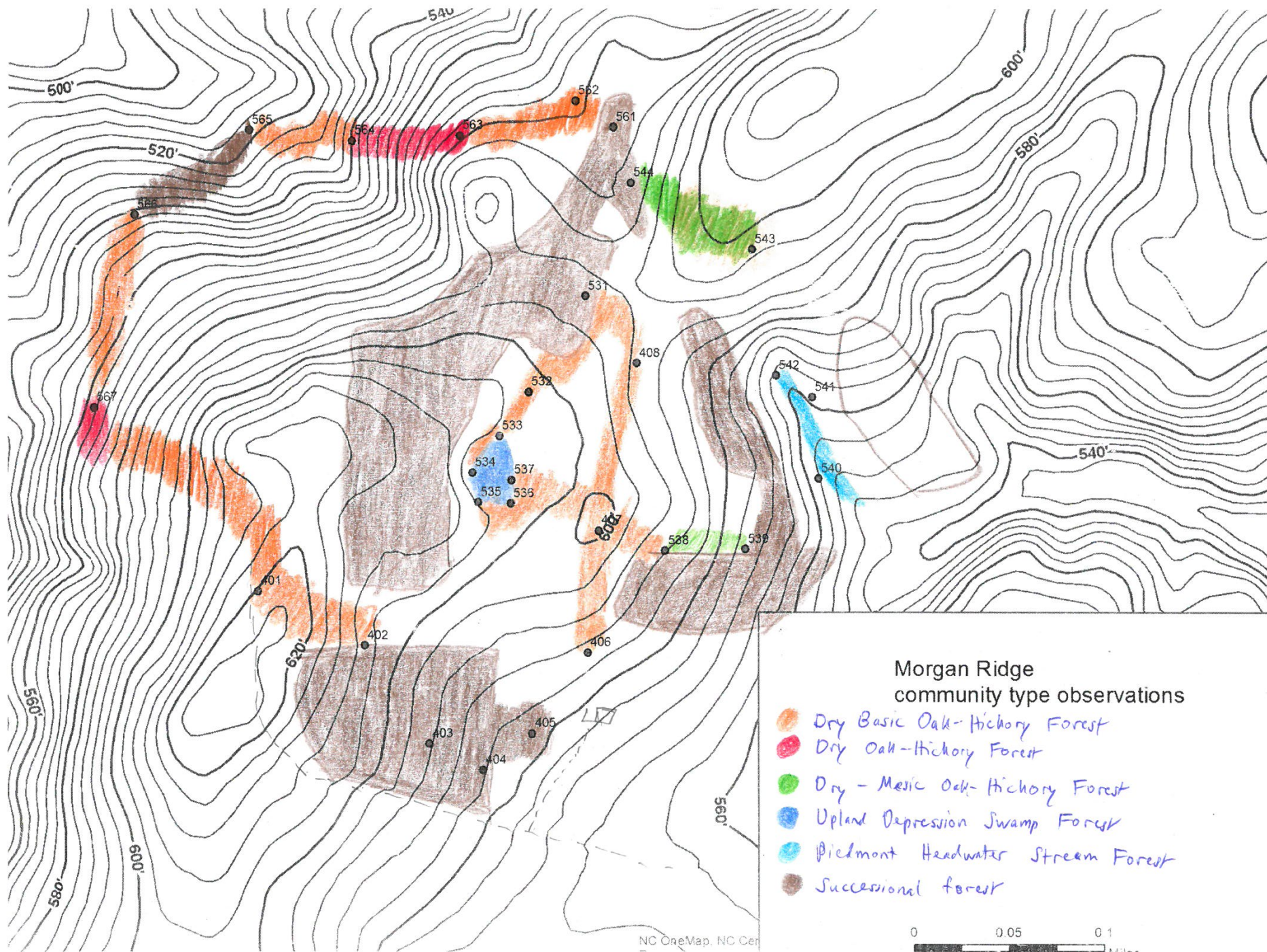
canopy

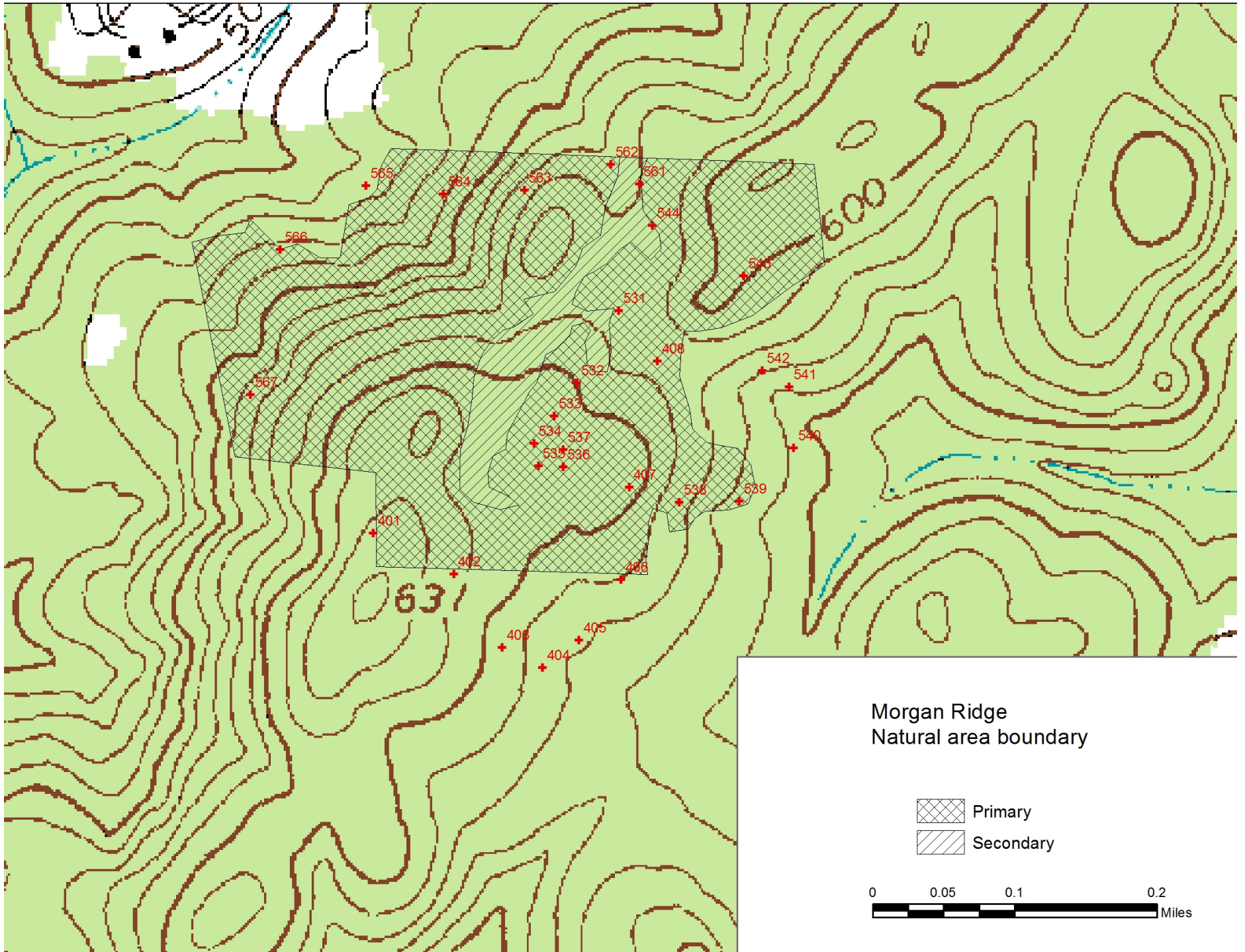
<i>Carya carolinae-septentrionalis</i>	southern shagbark hickory	B, (D)	c
<i>Carya glabra</i>	pignut hickory	B, D, O	c
<i>Carya tomentosa</i>	mockernut hickory	B, D, O	c
<i>Fraxinus americana</i>	white ash	B	c
<i>Fraxinus biltmoreana</i>	Biltmore ash	B	c
<i>Pinus echinata</i>	shortleaf pine	B, D, O	c
<i>Pinus taeda</i>	loblolly pine	x, D, B, O	c
<i>Quercus alba</i>	white oak	B, D, O	c
<i>Quercus falcata</i>	southern red oak	D, B	c
<i>Quercus phellos</i>	willow oak	U	c
<i>Quercus stellata</i>	post oak	B	c
<i>Quercus velutina</i>	black oak	B, D, O	c

understory

<i>Acer floridanum</i>	southern sugar maple	B	u
<i>Acer rubrum</i>	red maple	O	u
<i>Cornus florida</i>	flowering dogwood	O, D, B	u
<i>Ilex opaca</i>	American holly	O	u
<i>Juniperus virginiana</i>	eastern red-cedar	B	u

<i>Liquidambar styraciflua</i>	sweetgum	U	u
<i>Oxydendrum arboreum</i>	sourwood	O, D, (B)	u
<i>Ulmus alata</i>	winged elm	B	u
shrubs			
<i>Ilex decidua</i>	deciduous holly	U	s
<i>Vaccinium tenellum</i>	southern blueberry	D, (B)	s
<i>Vaccinium arboreum</i>	huckleberry	B, D	s
<i>Vaccinium corymbosum</i>	highbush blueberry	U	s
<i>Vaccinium stamineum</i>	deerberry	D	s
vines			
<i>Muscadinia rotundifolia</i>	muscadine grape	B, D, O	v
herbs			
<i>Asplenium platyneuron</i>	ebony spleenwort	B, D, O	h
<i>Carex jorii</i>	Joor's sedge	U	h
<i>Climacium americanum</i>	pine tree moss	U	h
<i>Cunila origanoides</i>	dittany	D	h
<i>Nothoscordum sp.</i>	false garlic	B	h
<i>Rhynchospora corniculata</i>	short-bristled horned beaks	U	h
<i>Scleria oligantha</i>	few-flowered nutrush	B, (D)	h
<i>Sphagnum lescurii</i>	peat moss	U	h





MORGAN RIDGE CONSERVATION SUBDIVISION PHASE 2

CHATHAM COUNTY, NC

First Plat Site Plan

July 19, 2019

SITE DATA








Tract #1
 Owner: Robert Bruce Page and Douglas Page
 AKPAR: 69883
 DB:1822 Page:0156
 PIN: 9756-00-37-7676
 Size: 56.25 Acres

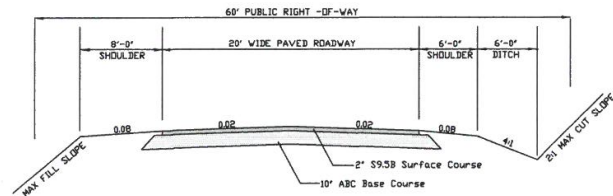
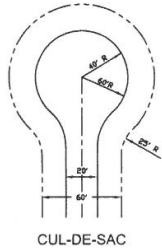
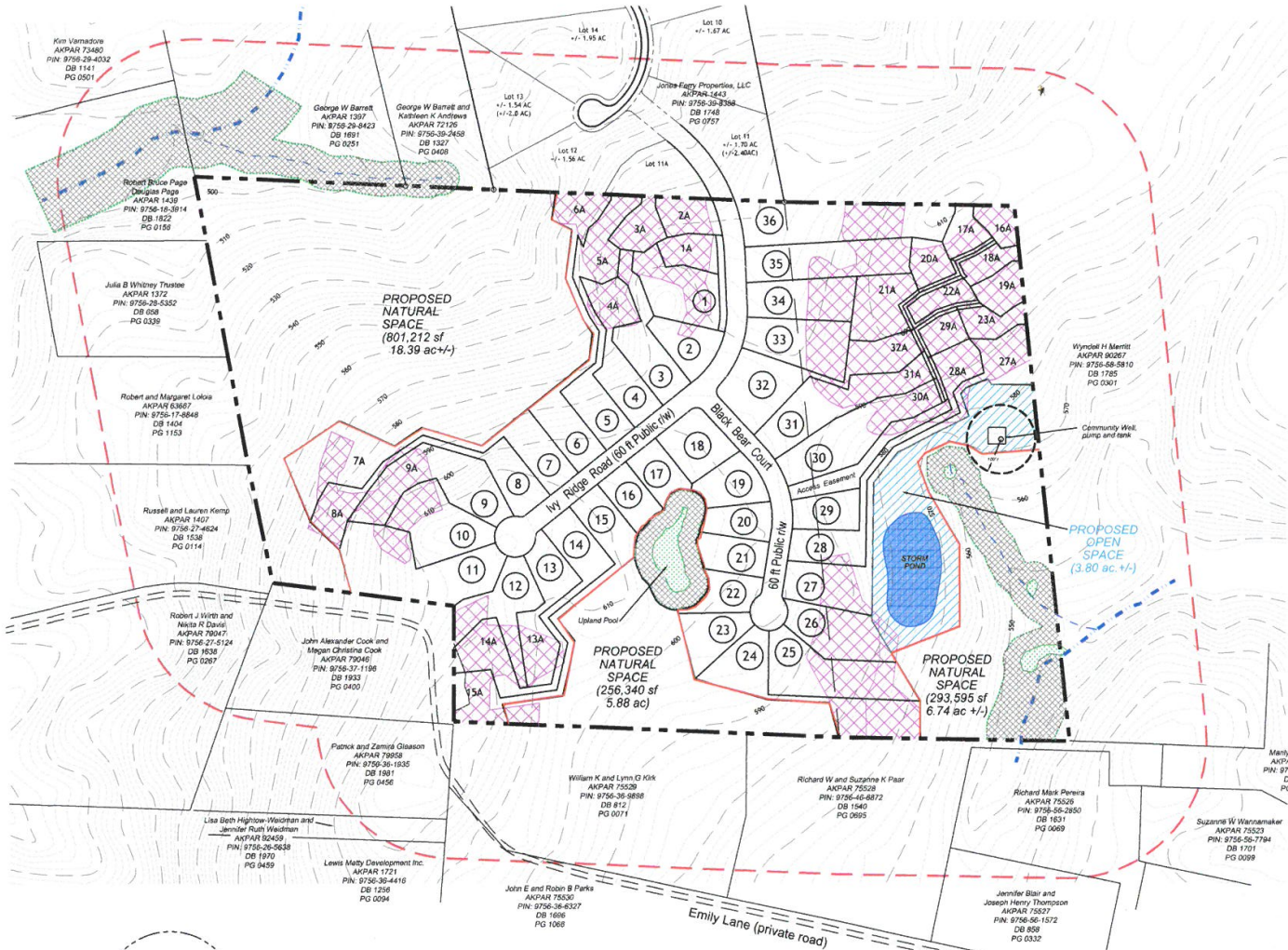
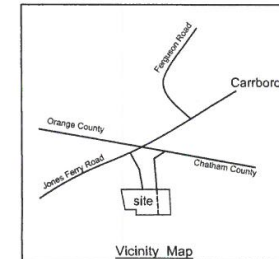
Tract #2
 Owner: William Bruce Page
 AKPAR: 1435
 DB: 16E Page: 0057
 PIN: 9756-00-47-8960
 Size: 24 Acres

CURRENT ZONING: R-1
 WATERSHED: WS-IV PA
 TOTAL ACREAGE: 56.25 AC + 24 AC = 80.25 AC
 TOTAL LOTS ALLOWED: +/- 56 LOTS
 TOTAL LOTS PROPOSED: +/- 36 LOTS
 AVG LOT SIZE +/- 1.25 ACRES GLA
 MINIMUM LOT SIZE +/- 0.75 ACRES GLA
 LENGTH OF ROAD +/-2400 LF

CONSERVATION SPACE
 TOTAL AREA REQ'D: 40% GLA(min) = 32.1 ACRES
 Natural Space(min): 35% GLA = 28.1 ACRES
 Natural Space Provided: 31.0 ACRES (38.6 %)
 Open Space(max): 5% GLA = 4.1 ACRES
 Open Space Provided: 3.8 ACRES (4.7 %)
 TOTAL AREA PROVIDED: 31+3.8 = 34.8 Ac (43.3%)

Stormwater Pond located inside Open Space
 Community Well located inside Open Space
 Septic Fields NOT included in Conservation Space Total
 Steep Slopes on Property (>25%) = 0 sf

-  Represents Suitable Septic Soils
-  Represents Stream buffers
-  Represents Wetlands
-  Conservation Area- Natural Space
-  Conservation Area- Open Space
-  Represents Intermittent Streams
-  Represents Perennial Streams



Typical 20' Edge to Edge Section
(not to scale)