P.O. Box 244 Bunnlevel, NC 28323 (910) 890-2779

December 13, 2012

David Bailey, Regulatory Specialist
US Army Corps of Engineers
69 Darlington Avenue
Wilmington, NC 28403

Re: USACE Individual Permit Application Submittal
Williamsburg Plantation Subdivision; City of Jacksonville, Onslow County, NC
Applicant: John Koenig, Inc., 235 Green Street, Fayetteville, NC 28301 910-864-1978
USACE Action ID# SAW-2010-01947

Dear David,

1. Project Overview

The proposed Williamsburg Plantation Subdivision project involves the construction of single-family housing, multi-family housing, and supporting infrastructure (i.e. roads, sidewalks, storm water management, wastewater collection, utility lines, etc.). As the City of Jacksonville has continued to grow, primarily due to Camp Lejeune and the Base Realignment & Closure (BRAC) program, available land and housing have decreased to a level that requires additional housing construction on marketable properties. The proposed tracts of land that are to be developed into the Williamsburg Plantation subdivision are currently owned by John Koenig, Inc. of Fayetteville, NC. The owner wishes to develop these tracts due to their prime location within the City, the highly desirable and marketable land adjacent to the New River, and location relative to existing transportation access and other developed areas.

2. Location & Description

The property for this subdivision is 1,253 acres of undeveloped property in the city limits of Jacksonville, NC, located in Onslow County. The property is located along the New River approximately 1.5 miles upstream of the US-17 bridge crossing over the New River (White Oak River Basin, 14-digit HUC 3030001010040). The property is located immediately southwest of the intersection of Williamsburg Parkway and Gum Branch Road (SR 1308). Approximately 607 acres of this property, currently zoned R-7, will be developed into a residential subdivision.

The New River floodplain will remain undeveloped. The property has not been previously developed, but accessible areas have been timbered in the last 10 years. Large portions of the project area are characterized as loblolly pine (*Pinus taeda)* monocultures of various ages, from five to fifty years of age, and deciduous forest in the same range of maturity. A Jurisdictional Determination (JD) was obtained from the Wilmington District US Army Corps of Engineers for the project area (Action ID# 201001947, dated October 24, 2012, see Appendix F).

The project, as proposed, will result in impacts to 0.628 acres of jurisdictional forested Section 404 wetlands and 820 linear feet of streams, utilizing the current design of the development and the road network. All of these impacts are associated with the necessary clearing of road rights-of-way (ROW) to provide access to the proposed lots. It is estimated that 16 road crossings will occur, resulting in the placement of 5,777 cubic yards of permanent fill materials within jurisdictional areas and 1,315 feet of culverts for stormwater conveyance. All impacts will be mitigated through the purchase of credits from the nearest accepted mitigation bank with credits on hand.

The applicant has requested allocation of the necessary credits from the Bachelor's Delight Swamp Mitigation Bank. The confluence of Bachelor's Delight Swamp with the New River is located approximately 2.5 miles upstream of the proposed project.

No Section 404 wetland/stream impacts will result from the development of individual lots. All Section 404wetland areas on the parent tract, excluding the proposed impacts, will be placed in permanent preservation to be administered between USACE and the property's Homeowners Association (HOA). It should be noted that the New River floodplain lies outside of the scope of the parent tracts' JD due to their inaccessibility beyond/west of the existing power line ROW (See Figures 3,5). These floodplain areas, which are permanently inundated by the New River and designated as a Significant Natural Heritage Area, will not be impacted by development or included in the USACE preservation documents.

The following table summarizes the proposed lot sizes and acreages associated with proposed land clearing activities for the Williamsburg Plantation project.

LAND USE SUMMARY FOR WILLIAMSBURG PLANTATION			
	Lot Size & Description	**# Lots**	**Total Acreage**
BUILDABLE UPLANDS	minimum (7,000 sqft) to 1/4 acre	157	35
	1/4 acre to 1/2 acre	685	240
	1/2 acre to 1 acre	180	118
	1 acre to 1.5 acre	45	54
	1.5 acre to 2 acre	8	14
	2 acre +	7	32
	Pellitier Parcels	3	31
	Residential Street ROWs	-	57
	Western Blvd ROW (Future DOT project)	-	26
	Sub-Totals of Buildable Uplands	**1,085**	**607**

JD Section 404 Wetlands on Property	**184**
Floodplains in Addition to JD Section 404 Wetlands	**462**
Sub-Totals Wetlands & Floodplains	**646**

Total Project Area (Parent Tracts)	**1,253**

If you have any questions or comments, please give me a call at your earliest convenience.

Thank you,

Adam Carter, Wetland Solutions, LLC

Cc: John Koenig, Sr.

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

OMB APPROVAL NO. 0710-0003
EXPIRES: 28 FEBRUARY 2013

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - JOHN Middle - Last - KOENIG	First - SAMUEL Middle - ADAM Last - CARTER
Company - JOHN KOENIG, INC.	Company - WETLAND SOLUTIONS, LLC
E-mail Address - john.koenig.inc@gmail.com	E-mail Address - wetlandsolutionsnc@yahoo.com
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- 235 GREEN STREET	Address- P.O. BOX 244
City - Fayetteville State - NC Zip - 28301 Country - USA	City - BUNNLEVEL State - NC Zip - 28323 Country - USA
7. APPLICANT'S PHONE NOs. w/AREA CODE	**10. AGENTS PHONE NOs. w/AREA CODE**
a. Residence b. Business 910-864-1978 c. Fax 910-864-0015	a. Residence b. Business 910 890-2779 c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, SAMUEL ADAM CARTER to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT — DATE: 12-14-12

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
WILLIAMSBURG PLANTATION SUBDIVISION

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
NEW RIVER	Address WILLIAMSBURG PKWY & GUM BRANCH RD
15. LOCATION OF PROJECT Latitude: °N 34.79370 Longitude: °W 77.45180	City - JACKSONVILLE State- NC Zip- 28540

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID see attached list Municipality CITY OF JACKSONVILLE
Section - Township - JACKSONVILLE Range -

17. DIRECTIONS TO THE SITE

Total distance = 53 miles

From the USACE Wilmington District Office, take US-17 north to City of Jacksonville. Cross New River on US-17 Business. Proceed 1.0 mile and turn left on Henderson Drive. Proceed 1.9 miles and turn left on Gum Branch Road. Proceed 1.5 miles to intersection with Western Hwy. Project is located on the western side of Gum Branch Road.

18. Nature of Activity (Description of project, include all features)

see attached.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

see attached.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

see attached.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
see attached.		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres see attached.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

see attached.

24. Is Any Portion of the Work Already Complete? [X] Yes [ ] No IF YES, DESCRIBE THE COMPLETED WORK

See attached description of the previous Action ID#s assigned to the previous phases of work on the adjoining properties above Williamsburg Plantation.

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- see attached list and map, Appendix H

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT 12-14-12 DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

USACE Individual Permit Application
Williamsburg Plantation Subdivision

City of Jacksonville
Onslow County, North Carolina

December 13th, 2012

Submitted to:
David Bailey, Regulatory Specialist
US Army Corps of Engineers
69 Darlington Avenue
Wilmington, NC 28403

Prepared By:
Adam Carter, Megan Faestel, Chris Leach & Brian Sexton
Wetland Solutions, LLC
Post Office Box 244
Bunnlevel, NC 28323
(910) 890-2779

USACE Individual Permit Application Williamsburg Plantation Subdivision

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Wetland Solutions, LLC
P.O. Box 248, Bunnlevel, NC 28323
Ph. (910) 890-2779

USACE Individual Permit Application Williamsburg Plantation Subdivision

Supplemental Information in Support of Eng. Form 4345 (2/2013 version)

City of Jacksonville
Onslow County, North Carolina

16) OTHER LOCATION DESCRIPTIONS, IF KNOWN

Onslow County Tax Parcel ID

PIN	4367-0119-7589
PIN	4367-0127-1008
PIN	4367-0158-8743
PIN	4367-0759-7993
PIN	4367-0779-4117
PIN	4368-0333-5395
PIN	4368-0450-1883
PIN	4368-0450-5235
PIN	4368-0470-1563

17) DIRECTIONS TO THE SITE

Total distance = 53 miles
From the USACE Wilmington District Office, take US-17 north to City of Jacksonville. Cross New River on US-17 Business. Proceed 1.0 mile and turn left on Henderson Drive. Proceed 1.9 miles and turn left on Gum Branch Road. Proceed 1.5 miles to intersection with Western Pkwy. Project is located on the western side of Gum Branch Road.

18) NATURE OF ACTIVITY

The proposed Williamsburg Plantation Subdivision project involves the construction of single-family housing, multi-family housing, and supporting infrastructure (i.e. roads, sidewalks, storm water management, wastewater collection, utility lines, etc.).

19) PROJECT PURPOSE

As the City of Jacksonville has continued to grow, primarily due to Camp Lejeune and the Base Realignment & Closure (BRAC) program, available land and housing have decreased to a level that requires additional housing construction on marketable properties. The proposed tracts of land that are to be developed into the Williamsburg Plantation subdivision are currently owned by John Koenig, Inc. of Fayetteville, NC. The owner wishes to develop these tracts due to their prime location within the City, the highly desirable and marketable land adjacent to the New River, and location relative to existing transportation access and other developed areas.

20) REASON(S) FOR DISCHARGE

All proposed impacts are associated with the necessary roadway requirements to provide access to upland areas on site and in compliance with the COJ interconnectivity requirements. The following table summarizes the proposed lot sizes and acreages associated with proposed land clearing activities for the Williamsburg Plantation project.

LAND USE SUMMARY FOR WILLIAMSBURG PLANTATION			
	Lot Size & Description	**# Lots**	**Total**
BUILDABLE UPLANDS	minimum (7,000 sqft) to 1/4 acre	157	35
	1/4 acre to 1/2 acre	685	240
	1/2 acre to 1 acre	180	118
	1 acre to 1.5 acre	45	54
	1.5 acre to 2 acre	8	14
	2 acre +	7	32
	Pellitier Parcels	3	31
	Residential Street ROWs	-	57
	Western Blvd ROW (Future DOT project)	-	26
	Sub-Totals of Buildable Uplands	**1,085**	**607**

JD Section 404 Wetlands on Property	**184**
Floodplains in Addition to JD Section 404 Wetlands	**462**
Sub-Totals Wetlands & Floodplains	**646**
Total Project Area (Parent Tracts)	**1,253**

21) TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE

Total estimated fill material to be discharged into wetland areas = 5,777 cy.
Total linear feet of culverts to be installed for roadway crossings = 1,315 feet.
All fill materials shall be clean structural fill (NCDOT #57 stone, select materials, rip-rap), that is to be compacted to NCDOT roadway design specifications/standards.

22) SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED

Total acres of riparian wetland impacts = 0.628 acres
Total linear feet of stream impacts = 820 feet perennial streams

23) DESCRIPTION OF AVOIDANCE, MINIMIZATION, AND COMPENSATION

a) AVOIDANCE & MINIMIZATION

The USACE's policies on avoidance, minimization, and mitigation measures for jurisdictional areas have been the primary guidance when designing the proposed subdivision. In addition, the City of Jacksonville's Land Use Plan, Zoning Ordinance, Stormwater Ordinance, and Subdivision Ordinance were used to identify design constraints previously determined for these areas.

Roadway crossing locations were selected based on the existing lay of the land, narrowest point of existing hydrology/hydrography, minimal grading requirements to cut in the roadbeds, minimum turning radii, ROW width requirements, 750' max cul-de-sac length for fire department turnarounds, and 24% maximum impervious area for low-density.

It should be noted that the New River floodplain lies outside of the scope of the parent tracts' JD due to their inaccessibility beyond/west of the existing power line ROW (See Figures 3,5). These floodplain areas, which are permanently inundated by the New River and designated as a Significant Natural Heritage Area, will not be impacted by development or included in the USACE preservation documents. A draft copy of the preservation plat and restrictive covenants for this property is provided in Appendix F).

In addition, all Section 404 wetland areas on the parent tracts, excluding the proposed impacts, will be placed in permanent preservation to be administered between USACE and the property's Homeowners Association (HOA).

b) MITIGATION & COMPENSATION

In order to mitigate for the proposed Section 404 wetland and stream impacts for this project, the applicant has requested allocation of the necessary Section 404 wetland/stream credits from the Bachelor's Delight Swamp Mitigation Bank. The confluence of Bachelor's Delight Swamp with the New River is located approximately 2.5 miles upstream of the proposed project. The contact information for this mitigation bank is listed below:

Bachelors Delight Mitigation Bank
c/o Land Management Group, Inc.
Attn: Christian Preziosi
3805 Wrightsville Avenue, Suite 15
Wilmington, NC 28403
cpreziosi@lmgroup.net

Mitigation of direct impacts during construction of the proposed project will be accomplished through compliance with the following applicable permits: Permanent Stormwater Control permit issued by NCDENR Division of Water Quality (Jacksonville is NPDES Phase II Municipality), Erosion & Sedimentation Control permit issued by NCDENR Division of Land Resources. No wetland/stream impacts will result from the development of individual lots due to their preservation status.

Mitigation of secondary and cumulative impacts will be mitigated through the City of Jacksonville's multiple ordinances that address growth and environmental issues. These ordinances, plans, and regulations were adopted in order to minimize impacts to water, land, and environmental resources within the City's jurisdiction that may occur as a result of anticipated growth and development. Copies of these ordinances are available on-line, with web sites as cited in Section 8, References. Electronic copies of these ordinances and applicable sections are included in the pdf submittal on CD.

24) IS ANY PORTION OF THE WORK ALREADY COMPLETE?

Yes. The following table summarizes wetland and stream impacts permitted through previous phases that have been constructed. These past phases are located adjacent to the tracts proposed for development (uphill toward Gum Branch Road) and are indicated in several Appendix C maps as "Previous Phases of Development."

Previous Phase	Action ID#, DWQ#	Riparian Wetland	Non-riparian Wetland	Stream	Open Water
Regency Park I & II	2002-00602	0.061	0.069	-	-
		0.006	0.287	-	-
		-	0.074	-	-
Regency Park III	2002-00602	0.080	-	99	-
Hyde Park	1999-1103	0.239	-	-	-
Kensington Park	2006-00272;DWQ# 052253	0.090	0.008	86	-
Fraser Park	N/A	-	-	-	-
Emerson Park	N/A	-	-	-	-
Huntington Park	DWQ# 041020	0.221	-	-	0.046
		0.200	-	-	-
		0.480	-	-	-
		0.010	-	-	-
		1.387	**0.438**	**185**	**0.046**

25) ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, ETC., WHOSE PROPERTY ADJOINS THE WATERBODY

See Appendix H.

26) List Of Other Certificates or Approvals/Denials Received from Other Federal, State, or Local Agencies for Work Described in This Application.

The City of Jacksonville administers in-house much of the State permitting programs that relate to public utilities and land disturbance projects. These include the following COJ-issued permits and their State-equivalent permitting authorities:

- Water system extensions - NCDENR-Public Water Supply
- Wastewater system extensions - NCDENR-Division of Water Quality
- Temporary erosion control - NCDENR-Land Quality Section
- Permanent Stormwater Control - NCDENR-Division of Water Quality

Other permits that are required for this project are as follows:

- USACE Individual Permit (submitted, under review)
- DWQ 401 Water Quality Certification (submitted, under review)
- CAMA Consistency Determination (submitted, under review)
- US Fish & Wildlife concurrence (submitted, under review)
- NCDOT encroachment agreements

Applications for these permits, which are not part of the CAMA/Corps review that is currently underway, will commence once final conceptual design of Williamsburg Plantation has been approved by the US Army Corps of Engineers, Wilmington District Office. An Individual Permit (IP) application has been submitted to the Corps simultaneously with this CAMA submission. Because every individual lot will be examined for constructability relative to potential/future Section 404 wetland impacts, as well as the merits of the proposed road network as currently designed, final layout of the subdivision can only occur after the Corps approves the concept of development and its reasonably foreseeable impacts to jurisdictional streams/ Section 404wetlands. Once the Corps is satisfied that every effort has been made to accurately depict the property owner's intent to reasonably foresee the development plan that can be implemented in appropriate phases to the extent practicable, final design of all streets and utilities will be concluded and submitted for the appropriate permits. Construction will begin in phases, as approved in the Corps-issued IP, after appropriate mitigation payments have been made and all permits are in hand.

I. ALTERNATIVES ANALYSIS

I.a. NO ACTION ALTERNATIVE

The no action alternative would restrict the property owners use of private lands that have been planned for development for many years. The applicant/owner has owned these properties for more than twenty years and has been a responsible steward of these lands as well as adjoining properties that have already been developed (Kensington Park, St. James, Emerson, etc.). If the applicant/owner does not pursue the proposed development actions, it is certain that other landowners within the City of Jacksonville's corporate limits and ETJ will seek to develop lands for additional housing in support of Camp Lejeune's growth (BRAC, continuing operations) as well as the City of Jacksonville's complimentary growth. The applicant/owner is within their property owner's rights to seek development of these properties for economic pursuits and appropriate personal uses of the property that are in accordance with the City of Jacksonville's Land Use Plan and other supporting documents. Therefore, the no action alternative is not considered a viable option to the proposed actions.

I.b. ALTERNATIVE LOCATIONS

For similar reasons described above, the landowners legally authorized actions on private lands preclude this alternative from being the preferred alternative. In support of this determination, please reference the map entitled, *Large Contiguous Land Tracts, North Onslow County,* located in Appendix B. The location of trhese properties relative to the existing water and wastewater utilities available in the City of Jacksonville's ETJ limits cannot be duplicated at the proposed acreages (600+). This map includes all large tracts of land (200 acres and greater) that are privately held (in red) as well as publicly held (in green).

The lack of available lands in private ownership that can be purchased, accessed and developed in similar fashion to the proposed project, within reasonable proximity to the COJ existing water and wastewater utility systems, supports the determination that this alternative is not reasonable or preferable over the proposed actions.

I.c. PREFERRED ALTERNATIVE

For similar reasons described above, the landowners legally authorized actions on private lands preclude this alternative from being the preferred alternative. In support of this determination, please reference the map entitled, *Large Contiguous Land Tracts, North Onslow County,* located in Appendix B. The location of these properties relative to the existing water and wastewater utilities available in the City of Jacksonville's ETJ limits cannot be duplicated at the proposed acreages (600+). This map includes all large tracts of land (200 acres and greater) that are privately held (in red) as well as publicly held (in green).

The lack of available lands in private ownership that can be purchased, accessed and developed in similar fashion to the proposed project, within reasonable proximity to the COJ existing water and wastewater utility systems, supports the determination that this alternative is not reasonable or preferable over the proposed actions.

WETLAND & STREAM IMPACTS SUMMARY FOR WILLIAMSBURG PLANTATION (12-13-2012)

PROPOSED IMPACTS - PHASE 1 & PHASE 2

PHASE 1 SUMMARY

Impact #	Drainage Area #	Proposed Wetland Impact Area (sq ft)	Proposed Wetland Impact Area (acres)	Proposed Stream Impact Length (ft)	Proposed Stream Impact Width (ft)	Proposed Stream Impact Area (sq ft)	Proposed Impacts Fill (cy)	Drainage Area @ Impact Location (Acres)	Proposed Pipe Diameter (inches)	Proposed Pipe Length (ft)	DESCRIPTION
A	3	1,977	0.045	-	-	-	220	3.00	30"	105	degraded, linear wetland
B	3	814	0.019	-	-	-	40	1.50	18"	66	degraded, linear wetland
H	1	1,687	0.039	-	-	-	62	5.10	30"	64	hillside seep
J	1	1,880	0.043	-	-	-	60	1.00	24"	90	hillside seep
K	1	2,215	0.051	65	2.5	163	328	107.50	66"	88	perennial stream, headwater forest
L	1	828	0.019	-	-	-	34	5.00	30"	72	hillside seep
O	1	764	0.018	-	-	-	50	1.50	18"	72	degraded, linear wetland
P	1	1,065	0.024	-	-	-	296	0.10	-	-	hillside seep
PHASE 1 TOTALS	**-**	**11,230**	**0.258**	**65**	**-**	**163**	**1,090**	**-**	**-**	**557**	
PROPOSED MITIGATION COSTS* (nearest 0.1 acre)			**$ 20,088**	**$ 23,725**	**$ 43,813**	**TOTALS**					
COST PER UNIT (acres or stream footage)			**$ 66,961**	**$ 365**							

PHASE 2 SUMMARY

C	3	609	0.014	35	3	105	20	29.80	42"	64	headwater forest, RPW present
D	3	2,310	0.053	96	2.5	240	214	5.76	30"	88	headwater forest, RPW present
E	3	824	0.019	29	5	145	15	33.00	42"	64	headwater forest, RPW present
F	3	-	-	125	5	625	318	53.90	48"	100	perennial stream, headwater forest
G	3	-	-	85	3.5	298	88	28.60	48"	76	perennial stream, headwater forest
I	1	-	-	149	4	596	460	49.00	60"	130	perennial stream, headwater forest
M	1	1,225	0.028	90	2.5	225	272	8.70	30"	104	perennial stream, headwater forest
N	1	11,175	0.257	146	6	876	3,300	428.00	84" x 2	132	perennial stream, bottomland hardwood forest
PHASE 2 TOTALS	**-**	**16,143**	**0.371**	**755**	**-**	**3,110**	**4,687**	**-**	**-**	**758**	
PROPOSED MITIGATION COSTS* (nearest 0.1 acre)			**$ 26,784**	**$ 275,575**	**$ 302,359**	**TOTALS**					
COST PER UNIT (acres or stream footage)			**$ 66,961**	**$ 365**							

GRAND TOTALS	**27,373**	**0.628**	**820**	**-**	**3,272**	**5,777**	**-**	**-**	**1,315**	
	-	**$ 46,873**	**$ 299,300**	**$ 346,173**	**TOTALS**					

* The selected mitigation bank, Bachelor's Delight Swamp, has advised that credits are sold in 0.1-acre increments. Costs are equal to NCEEP's current fee schedule for riparian wetlands and streams.

DRAINAGE AREA SUMMARY 12-13-2012

Drainage Area #	Total Drainage Area in Watershed (Acres)	Drainage Areas in Tract Boundary (Acres)	Drainage Areas in Tract Boundary (%)	Stream Footage in Tract Boundary (ft)	Stream Footage in Tract Boundary (ft)	JD Wetlands in Drainage Areas (acres)	JD Wetlands in Drainage Areas (acres)
1	606	238	19%	18,306	57%	54.21	29%
2	259	86	7%	1,272	4%	33.91	18%
3	1,147	369	29%	12,406	39%	95.98	52%
Add. Floodplain Areas	-	560	45%	-	-	-	-
TOTALS	**2,012**	**1,253**	**100%**	**31,984**	**100%**	**184.09**	**100%**

wetland solutions

P.O. Box 244 Bunnlevel, NC 28323 (910) 890-2779

Biological Assessment
Williamsburg Plantation Subdivision

City of Jacksonville
Onslow County, North Carolina

December 13th, 2012

Submitted to:
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Biological Assessment
Williamsburg Plantation Subdivision

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Biological Assessment
Williamsburg Plantation Subdivision

City of Jacksonville
Onslow County, North Carolina

1. Introduction

The proposed Williamsburg Plantation Subdivision project would involve the conversion of previously undeveloped property in Onslow County to single-family and multi-family housing. The purpose of this Biological Assessment (BA) is to address any potential impacts the proposed project activities might have on any species listed as endangered or threatened under Sections 7 and 9 of the Endangered Species Act as well as any critical habitat listed within the project area. Because some of the elements of the project may require permitting under Sections 404 or 401 of the Clean Water Act (CWA) and are considered "major construction activities", this assessment will also summarize any impacts to jurisdictional waters of the United States within the project area.

As of December 2012, the following nine species were federally-listed as endangered in Onslow county: Eastern puma (*Puma concolor couguar)*, leatherback sea turtle (*Dermochelys coriacea),* red-cockaded woodpecker (*Charadrius melodus)*, shortnose sturgeon (*Acipenser brevirostrum)*, West Indian manatee (*Trichechus manatus)*, Cooley's meadowrue (*Thalictrum cooleyi)*, golden sedge (*Carex lutea)*, pondberry (*Lindera melissifolia)*, and rough-leaf loosestrife (*Lysimachia asperulaefolia)*. Species federally-listed as threatened in Onslow County include: the green sea turtle (*Chelonia mydas)*, loggerhead sea turtle (*Caretta caretta)*, piping plover (*Charadrius melodus)*, and seabeach amaranth (*Amaranthus pumilus)*. Also included within the scope of this assessment is the bald eagle (*Haliaeetus leucocephalus)* which is protected under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act. One critical habitat designation for the threatened Piping plover is also listed for Onslow County, although it is restricted to the coastal shoreline areas.

2. Project Overview

The proposed Williamsburg Plantation Subdivision project involves the construction of single-family housing, multi-family housing, and supporting infrastructure (i.e. roads, sidewalks, storm water management, wastewater collection, utility lines, etc.). As the City of Jacksonville has continued to grow, primarily due to Camp Lejeune and the Base Realignment & Closure (BRAC) program, available land and housing have decreased to a level that requires additional housing construction on marketable properties.

The proposed tracts of land that are to be developed into the Williamsburg Plantation subdivision are currently owned by John Koenig, Inc. of Fayetteville, NC. The owner wishes to develop these tracts due to their prime location within the City, the highly desirable and marketable land adjacent to the New River, and location relative to existing transportation access and other developed areas.

The following table summarizes the proposed lot sizes and acreages associated with proposed land clearing activities for the Williamsburg Plantation project.

LAND USE SUMMARY FOR WILLIAMSBURG PLANTATION			
	Lot Size & Description	**# Lots**	**Total Acreage**
BUILDABLE UPLANDS	minimum (7,000 sqft) to 1/4 acre	157	35
	1/4 acre to 1/2 acre	685	240
	1/2 acre to 1 acre	180	118
	1 acre to 1.5 acre	45	54
	1.5 acre to 2 acre	8	14
	2 acre +	7	32
	Pellitier Parcels	3	31
	Residential Street ROWs	-	57
	Western Blvd ROW (Future DOT project)	-	26
	Sub-Totals of Buildable Uplands	**1,085**	**607**

JD Section 404 Wetlands on Property	**184**
Floodplains in Addition to JD Section 404 Wetlands	**462**
Sub-Totals Wetlands & Floodplains	**646**

Total Project Area (Parent Tracts)	**1,253**

3. Location & Description of Project Area

The project area is located in central Onslow County within the Carolina Flatwoods level IV ecoregion of the Middle Atlantic Coastal Plain. The project area lies within the White Oak River Basin and major hydrological features in the project area include the New River and its associated unnamed tributaries. Land use in the area is predominantly residential and commercial interspersed with areas of undeveloped or previously logged forest. Soils in upland areas are dominated by Baymeade fine sand, Craven fine loam, Lynchburg fine, sandy loam, and Pactolus fine loam. Wetland soils which are associated with the New River floodplain consist primarily of Dorovan muck. (USDA, 1992).

4. Ecological Communities

4.1. Loblolly Pine Monocultures

The proposed development is designed predominantly within upland areas on the eastern side of the New River. These upland areas are dominated by early and mid- to early successional loblolly pine (*Pinus taeda*) monocultures. The early-successional loblolly pine monocultures are

dominated by densely spaced, young loblolly pines while the mid-successional monocultures also include an understory of sweetgum (*Liquidambar styraciflua)* and wax myrtle (*Myrica cerifera*). Wax myrtle is more commonly found along the edges near roads. Woody vines in these areas include muscadine grape (*Vitis rotundifolia*), crossvine (*Bignonia capreolata*) and common greenbrier (*Smilax rotundifolia*). The herbaceous layer in these areas is minimal and Carolina wiregrass (*Aristida stricta*) is only sparsely present throughout these monocultures.

4.2. Coastal Plain Bottomland Hardwoods (Blackwater Subtype)

Typical overstory species in these areas include willow oak (*Quercus phellos*), American beech (*Fagus grandifolia*), tulip poplar (*Liriodendron tulipifera*), white oak (*Q. alba*), and red maple (*Acer rubrum*). The understory consists of American beech, American holly (*Ilex opaca*), flowering dogwood (*Cornus florida*) and ironwood (*Carpinus caroliniana*). The sparse herbaceous layer includes Christmas fern (*Polystichum acrostichoides*) and heartleaf (*Hexastylis arifolia*).

4.3. Bottomland Hardwood Forest/Riverine Wetland

Transitional areas between bottomland hardwoods and cypress/gum swamp communities. Dominant canopy species in these floodplain communities were variable and include swamp chestnut oak (*Q. michauxii*), bald cypress (*Taxodium distichum*), sweetgum, water oak (*Q. nigra*), and red maple. Understory species include ironwood, American holly, red maple, and sweetgum. Woody vine species include poison ivy (*Toxicodendron radicans*) and common greenbrier. Giant cane (*Arundinaria gigantea*) was common but irregularly dispersed.

4.4. Cypress – Gum Swamp (Riverine wetlands)

These areas are defined by species that are either obligate or facultative wetland species. Dominant canopy species include bald cypress, pond pine (*Pinus serotina*), sweetgum, water tupelo (*Nyssa aquatica*), and loblolly bay (*Gordonia lasianthus*). Understory species include red bay, silky willow (*Salix sericea*), sweetbay magnolia (*Magnolia virginiana*). The shrub and herbaceous layers are limited but include dwarf palmetto (*Sabal minor*) and soft rush (*Juncus effusus*). Switch cane in these areas was limited to the slopes between these and other areas.

4.5. Mixed Deciduous/Coniferous

Transitional areas between loblolly monocultures and bottomland hardwoods. Dominant species include loblolly pine, water oak, ironwood, American holly, and flowering dogwood. The shrub layer includes gallberry (*Ilex coriacea*), red bay (*Persea borbonia*), and American holly. Herbaceous species include *Andropogon spp*. and switchgrass (*Panicum virgatum*).

4.6. Mesic Mixed Hardwood Forest (Coastal Plain Subtype)

The dominant canopy species in American beech, interspersed with tulip poplar, water oak and red maple. Understory species include ironwood, flowering dogwood, and red maple. The sparse shrub layer is composed of hop hornbeam (*Ostrya virginiana*), American holly, and sourwood (Oxydendrum arboretum). The only regularly occurring herbaceous species was Christmas fern.

4.7. Potential Rough-Leaf Loosestrife Habitat

Several areas within the maintained utility line corridors appear to have community structure, soil and hydrological conditions that may provide suitable habitat for the rough-leaved loosestrife. Because the rough-leaved loosestrife shares similar requirements in hydrology, soil, and community structure with the golden sedge, Cooley's meadow-rue and pondberry (described below), these areas were considered potential habitat for those species as well. See *Figure 3* below for the location of areas identified as potentially suitable for these species.

4.8. Survey Methods for Listed Species Habitat

Prior to any surveys, USGS Topographic maps, USDA Soil maps and aerial photographs were reviewed to identify those areas that might contain habitat for listed species (*see Figure 2)* Species to be included in potential surveys were identified as described above. Jurisdictional waters/wetlands within the project area were previously delineated. All delineations were completed in accordance with the 1987 Corps of Engineers Wetland Delineation Manual (USACE, 1987) and the Interim Regional Supplement to the COE Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region.

Surveys to identify community types and potential habitat for listed species were conducted in January 2011 and April 2011. Species determinations made during these surveys were augmented using wetland data sheets completed between November 2007 and January 2008. All surveys to identify potential habitat for listed species were completed on foot and expedited with the use of ATV. Although the maintained utility lines are not included in the proposed development areas, these areas were surveyed on foot due to their proximity to the proposed development. Transects of all areas were conducted and areas that could potentially support listed species were identified and as shown on *Figure 3*. These surveys included identification of potential foraging and nesting habitat for eagles and red-cockaded woodpecker.

More detailed surveys were conducted on June 2, 2011. The purpose of these surveys was to determine the presence of listed species within those areas previously identified as potentially suitable. These areas were visually assessed on foot. A listing of observed plant and animal species is included below in *Table 1*.

Table 1: Observed Plant & Animal Species List from Detailed Surveys

Species*	Common Name	AREA A	AREA B	AREA C†	AREA D
Acer floridanum	Southern sugar maple		3		
Acer rubrum	Red maple	2			
Albizia julibrissin	Silk tree			1	
Alnus serrulata	Brook-side alder			1	
Amelanchier sp	Service berry				2
Andropogon virginicus	Broomsedge				3
Arundinaria tecta	Switchcane	2	4	1	
Baccharis halimifolia	Eastern baccharis			1	
Bignonia capreolata	Crossvine		2		

Species*	Common Name	AREA A	AREA B	AREA C†	AREA D
Callicarpa americana	American beauty berry	2			
Campsis radicans	Trumpet creeper		2		
Carex lurida	Shallow sedge		2		
Carpinus caroliniana	American hornbeam				3
Carya alba	Mockernut hickory		4		
Clethra alnifolia	Coast pepper-bush				4
Cornus florida	Flowering dogwood	3	4		
Dichanthelium sp	Witchgrass		2		
Diospyros virginiana	Common persimmon	2		1	
Euonymous americana	Strawberry bush	2	2		
Eupatorium capilifolium	Small dog fennel			1	
Fagus grandifolia	American beech		3		
Fraxinus pennsylvanica	Green ash		3		
Gelsemium sempervirens	Yellow jessamine				3
Helenium amarum	Five-leaf sneezeweed			1	
Hexastylis arifolia	Little brownjug		2		
Hypericum hypericoides	St. Andrews cross		2		
Ilex glabra	Inkberry	2			
Ilex opaca var opaca	American holly				3
Juncus effusus	Soft rush		3	1	
Lespedeza cuneata	Chinese bushclover		4	1	
Liquidambar styraciflua	Sweetgum	4	6	1	6
Liriodendron tulipifera	Tulip poplar	4	5	1	3
Luzula sp	Woodrush			1	
Magnolia virginiana	Sweetbay magnolia				4
Mitchella repens	Partridge-berry	2	2		
Morella cerifera	Small wax myrtle	3		1	3
Nyssa sylvatica	Swamp tupelo		6	1	4
Osmundastrum cinnamomeum	Cinnamon fern				2
Ostrya virginica	Eastern hop hornbeam	3	7		
Oxydendrum arboreum	Sourwood	4			
Pinus taeda	Loblolly pine	7	7	1	5
Prunus sp	Cherry/Plum	5			
Pteridium aquilinum	Bracken fern		5		2
Quercus alba	White oak	5	4		5
Quercus laevis	Turkey oak	3	3		
Quercus michauxii	Swamp chestnut oak	4			
Quercus nigra	Water oak	7	4	1	7
Sassafras albidum	Sassafras	2	2		2
Scirpus sp	Bulrush			1	
Smilax bona-nox	Saw greenbrier		3		
Smilax glauca	Cat greenbrier	2			2
Smilax rotundifolia	Common greenbrier	3	4	1	5
Symplocos tinctoria	Common sweet leaf	4			
Trachelospermum difforme	Climbing dogbane		2		
Typha latifolia	Broadleaf cattail				
Vaccinium arboreum	Farckleberry	4			2
Vaccinium corymbosum	Highbush blueberry	2			7

Species*	Common Name	AREA A	AREA B	AREA C†	AREA D
Vaccinium tenellum	Gale-leaf blueberry	2			
Vitis rotundifolia	Muscadine grape	2	5	1	5
Vitis sp	Grape	2		1	

*Nomenclature follows Weakley 2010
† AREA C presence only data

Cover Codes	Percentage
1	present
2	0 - 1
3	1 - 2
4	2 - 5
5	5 - 10
6	10 - 25
7	25 - 50
8	50 - 75
9	75 - 90

5. Results & Discussion – Listed Species

Species addressed in this document were chosen due to known occurrences in Onslow County. This was determined by reviewing U.S. Fish and Wildlife Service (USFWS) Threatened and Endangered Species Database System (TESS) (USFWS, 2009a) records and reviewing North Carolina Natural Heritage Program (NCNHP) records. *See Table 2 and Figure 4 below.*

There are 14 species listed by the USFWS as threatened or endangered in Onslow County, North Carolina (USFWS, 2007a). Based on consultation with Mr. Howard Hall of the USFWS Raleigh Field Office on November 11, 2010, the American alligator (*Alligator mississippiensis)* which is listed as threatened due to similarity of appearance will not need to be addressed within the scope of this project. Additionally, Mr. Hall indicated the West Indian manatee (*Trichechus manatus)* can also be excluded from consideration due to lack of suitable habitat (i.e., streams of at least 3 feet in depth with direct connection to navigable waters). In addition to those species listed as threatened or endangered, the Bald eagle (*Haliaeetus leucocephalus*) was included in this assessment in accordance with the Bald and Golden Eagle Protection Act (16 U.S.C. 668a-c) and the Migratory Bird Treaty Act (16 U.S.C. 703-712).

At the request of the US Army Corps of Engineers, Wilmington District, a search of the North Carolina Natural Heritage Program (NCNHP) species listing database was conducted (NCDENR, 2001). This search, which is defined by USGS topographic quadrangle, identified only one species listed as endangered (red-cockaded woodpecker) and one species listed as threatened due to similarity of appearance (American alligator). It should be noted that both of these records are listed in this NCNHP database as "Historical". The results of this data search are listed below in *Table 3*. No information concerning listed species or habitats was available through the USFWS "Information, Planning and Conservation System" online resources ("IPaC"). *See Table 2 and Figure 4 below.*

Table 2: Species listed for Onslow County under the Endangered Species Act (USFWS, 2007a)

Common Name	Scientific name	Federal Status*	Record Status
Vertebrate:			
American alligator	*Alligator mississippiensis*	T (S/A)	Current
Bald eagle	*Haliaeetus leucocephalus*	BGPA	Current
Eastern puma (=cougar)	*Puma concolor couguar*	E	Historical
Green sea turtle	*Chelonia mydas*	T	Current
Leatherback sea turtle	*Dermochelys coriacea*	E	Current
Loggerhead sea turtle	*Caretta caretta*	T	Current
Piping plover	*Charadrius melodus*	T	Current
Red-cockaded woodpecker	*Picoides borealis*	E	Current
Shortnose sturgeon	*Acipenser brevirostrum*	E	Historical
West Indian manatee	*Trichechus manatus*	E	Current
Invertebrate: None			
Vascular Plant:			
Cooley's meadowrue	*Thalictrum cooleyi*	E	Current
Golden sedge	*Carex lutea*	E	Current
Pondberry	*Lindera melissifolia*	E	Current
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E	Current
Seabeach amaranth	*Amaranthus pumilus*	T	Current
Nonvascular Plant: None			
Lichen: None			

*E = Endangered; T = Threatened; BGPA = Bald and Gold Eagle Protection Act

Table 3: NC Natural Heritage Program
Two-Mile USGS Topographic search, Jacksonville North quadrangle

TOPOGRAPHIC MAP RECORD SEARCH RESULTS

Search Criteria: [Topo Map Name is like 'Jacksonville North] [Any Scientific Name] [Any Common Name] [Any State Rank] [Any Global Rank] [Any Name Category] [Any Protection Status]

Records Returned: [Invertebrate Animal: 1] [Natural Community: 3] [Vertebrate Animal: 2] [Total: 6]

Name Category	Scientific Name (click for map)	Common Name	State Status	Federal Status	State Rank	Global Rank	Topo Map	Topo Map Status
Invertebrate Animal	Chlorochroa dismalia	Dismal Swamp Green Stink Bug	SR		S1?	GU	Jacksonville North	Historical
Natural Community	High pocosin				S4	G4	Jacksonville North	Current
Natural Community	Pond pine woodland				S4	G4G5	Jacksonville North	Current
Natural Community	Tidal cypress--gum swamp				S3	G4	Jacksonville North	Current
Vertebrate Animal	Alligator mississippiensis	American Alligator	T	T(S/A)	S3	G5	Jacksonville North	Historical
Vertebrate Animal	Picoides borealis	Red-cockaded Woodpecker	E	E	S2	G3	Jacksonville North	Historical

Explanation of codes NC Topographic Map Index

Results current as of Thursday, 25 November 2010 @ 21:00:24 EST

NORTH CAROLINA NATURAL HERITAGE PROGRAM
DIVISION OF NATURAL RESOURCES PLANNING AND CONSERVATION
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
1601 MSC
RALEIGH NC 27699-1601

6. Species Accounts – Vertebrates

6.1. Red-Cockaded Woodpecker (*Picoides Borealis*)

The Red-cockaded woodpecker (RCW) was listed as endangered under the Endangered Species Act (ESA) in 1970. The RCW is about the size of the common cardinal and is distinguished from similar species such as the hairy woodpecker (*P. villosus*) and downy woodpecker (*P. pubescens*) by its red cockade, large white cheek patches and barred back (National Geographic, 1987). Juveniles lack the red cockade but may have a red patch in the center of their black crown. This patch disappears during the fall of their first year at which time their red-cockades appear. Female RCW lack the red cockade (USFWS, 2009b).

The RCW requires large stands of mature or old growth pine forests with limited understory and a groundcover dominated by wiregrass or other bunch grasses. RCW are unique in that they bore their nest cavities in living trees, unlike other cavity nesters that typically use dead trees. Longleaf pines (*Pinus palustris*) are most commonly preferred, but other species of southern pine are also acceptable. Cavities are excavated in mature pines, generally over 80 years old. Because the RCW makes its cavity completely within the heartwood of these larger (older trees), the longleaf seems to be preferred, perhaps due to its susceptibility to a fungus called red heart disease. This fungus attacks the heartwood making it softer and easier to excavate (USFWS, 2003). Cavity excavation takes one to six years. Foraging habitat also consists of open pine forest/savannahs with limited understory and abundant bunchgrasses but may include younger trees (30 years and older).

RCW are territorial, non-migratory cooperative breeders. They normally form colonies consisting of one breeding pair assisted by zero to four non-breeding males from previous clutches. The aggregate of cavity trees is called a cluster and may include 1 to 20 or more cavity trees on 3 to 60 acres. The average cluster covers approximately 10 acres. Cavity trees that are being actively used have numerous, small resin wells which exude sap. The birds keep the sap flowing apparently as a cavity defense mechanism against rat snakes and other predators. The typical territory for a group ranges from about 125 to 200 acres, but territories of around 60 acres to an upper extreme of more than 600 acres have been observed. Territory size is directly related to both habitat suitability and population density (USFWS, 2003).

In mid-April, the female RCW usually lays a clutch of three to five white eggs in the breeding male's roost cavity. Eggs hatch after 10-12 days of incubation and nestlings fledge from the nest cavity 24-27 days after hatching. RCW require a lot of care from parents and helpers who will feed the nestlings and clean the cavity of waste during the nestling period. After fledging, the young birds continue to be fed by adults for up to six months at which time the majority of fledglings disperse from the territory where they hatched. Personnel from Wetland Solutions visited Weymouth Woods, a managed area for the RCW in Southern Pines for the purpose of familiarizing themselves with the RCW. While at Weymouth Woods, one RCW (female) was observed, as were both active and inactive cavities. Neither individual RCW nor active cavities were observed during the biological survey for Williamsburg Plantation. Surveys for suitable nesting and foraging habitat revealed no suitable habitat within the action area of this project.

Biological determination: No effect

6.2. Bald Eagle (*Haliaeetus Leucocephalus)*

After seriously declining in numbers from the late 19th century to 1970, bald eagle populations have recovered and the bald eagle was delisted in 2007. Breeding populations have become established across many areas of the lower 48 states including Florida, the Northeast, Great Lakes, the Greater Yellowstone area and the Pacific Northwest (NCDENR, 2001). Although it was removed from the endangered species list, the bald and golden eagles remain protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Bald eagle distribution varies seasonally but they are known to nest near rivers, lakes, coastlines and other open waters. They often nest in the tallest, most mature trees that have limbs large enough to hold their nests, which can weigh as much as 1,000 ponds. Nest or foraging areas often include snags and other perches with an open view to the water. The New River widens approximately 1 mile to the south of the project, creating potential foraging habitat. However, there were no individual eagles or nests observed during surveys conducted for this assessment. Based on these surveys and information provided in the National Bald Eagle Management Guidelines (USFWS, 2007b), no bald eagles will be disturbed or adversely affected within the action area of this project.

Biological determination: No effect

6.3. Eastern Puma (*Puma Concolor Cougar)*

The eastern puma is a large, long-tailed cat that can grow to 8 feet in length. It is buffy brown to reddish brown in color above, and pale white below. The eastern puma is secretive and nocturnal and little is known about its habitat preferences. It is believed to range from 5 to 20 miles daily for females and up to 25 miles for males. It feeds primarily on deer, but will also feed on small mammals, turkeys and livestock. Sightings have been reported in North Carolina, and the number of sightings has increased, but as of March 2007, none of these sightings have been confirmed as cougars (USFW, 2007c). No suitable habitat exists within the project area and no cougars or signs of cougars have been observed on the project site.

Biological determination: No effect

6.4. Green Sea Turtle (*Chelonia Mydas)*

The green sea turtle is a large sea turtle that can grow to 5' long and weigh up to 700 pounds. The adult green sea turtle are herbivorous, feeding on sea grasses and algae. Juveniles will also feed on jellyfish, crustaceans and sponges. Green sea turtles migrate great distances between feeding areas and nesting sites. Mating occurs every two to four years and nesting usually occurs on sandy beaches where the females can dig with their flippers (NatGeo, 2011).

Threats to the sea turtle include hunting for their meat and eggs, collisions with boats, drowning due to fishing net entanglement and destruction of nesting habitat. Formal surveys were not conducted as there is no suitable habitat within the project area and no direct or indirect impacts are anticipated from the proposed project.

Biological determination: No effect

6.5. Leatherback Sea Turtle (*Dermochelys Coriacea)*

The Leatherback sea turtle is the largest living turtle. Unlike other sea turtles, the leatherback's carapace is rubber-like and flexible. Leatherbacks are known to nest around the globe, but the majority of nests in the Atlantic are found in the greater Caribbean area. Nesting on the east coast, which occurs predominantly in Florida and Georgia normally begins in May. Females prefer high energy beaches with deep, unobstructed access (USFWS, 1992). Leatherbacks are used less for meat and eggs than other sea turtles but are threatened in a number of other ways including beach erosion and beach nourishment. Beach nourishment (replacement of sand lost from erosion) can bury nests, disrupt nesting and cause compaction that prevents the female from digging nests. Leatherbacks are also threatened by collision with boats and drowning caused by fishing net entanglement. Studies have also shown that artificial lighting can cause disorientation and result in high mortality for hatchlings as they try to reach the ocean (USFWS, 1992). Formal surveys were not conducted as there is no suitable terrain within the project area and no direct or indirect impacts are anticipated from the project.

Biological determination: No effect

6.6. Loggerhead Sea Turtle (*Caretta Caretta)*

Loggerhead sea turtles are named for their relatively large heads and feature a heart shaped carapace that is reddish-brown color in adults and sub-adults. Near shore coastal areas are used by juveniles until maturation and for foraging and interesting habitat by adults. Bays, sounds and estuaries along the Atlantic coast are seldom used by adults (NOAA, 2011). Loggerhead turtles nest on ocean beaches and occasionally on estuarine shorelines with suitable beaches (USFWS, 2001a). Loggerheads face many of the same threats as other turtles, on both nesting beaches and in the marine environment. The greatest threat is incidental capture in fishing gear, primarily in longlines and gillnets, but also in trawls, traps and pots, and dredges. Harvesting for meat still occurs in many places (e.g., the Bahamas, Cuba, and Mexico) (National Marine Fisheries Service, 2011). Formal surveys were not conducted as there is no suitable habitat within the project area and no direct or indirect impacts are anticipated from the proposed project.

Biological determination: No effect

6.7. Piping Plover (*Charadrius Melodus)*

The Atlantic coast piping plover was listed as threatened in 1986. It breeds along the Atlantic coast from Newfoundland to South Carolina, the Northern Great Plains, and the Great Lakes Region. They are considered threatened on their wintering grounds, which extends from North Carolina south to the Gulf Coast and the Caribbean. The piping plovers nests on various zones of coastal and barrier island sandy beaches. Foraging habitats include intertidal zones of ocean beaches, mudflats, wrack lines and shorelines of other coastal features such as salt marshes, ponds and lagoons (USFWS, 1996a). The nearest critical habitat to the project area is shown below in *Figure 5*. No nesting or foraging habitat exists within the project area and no direct or indirect impacts are anticipated.

Biological determination: No effect
Biological determination for critical habitat: No effect

6.8. Shortnose Sturgeon (*Acipenser Brevirostrum)*

Shortnose sturgeon are bottom dwellers that move from ocean waters and estuaries to freshwater rivers between February and May. Spawning occurs in hard bottom, fast moving freshwater streams between April and June. Juveniles remain upstream for five years (National Marine Fisheries Service, 1998). Formal surveys were not conducted but no impacts to fish species or their habitat are expected within the scope of this project. Additionally, the use of erosion control best management practices during the construction phase of the project, coupled with the existence of substantial wetland areas between the project and any potential habitat, should render any potential indirect impacts negligible.

Biological determination: No effect

6.9. West Indian Manatee (Trichechus Manatus)

This species was excluded from consideration based on consultation with US Fish and Wildlife Service as discussed earlier.

Biological determination: No effect

7. Species Accounts – Vascular Plants

7.1. Rough-Leaved Loosestrife (*Lysimachia Asperulifolia*)

The Rough-leaved loosestrife (RLL) is an herbaceous, rhizomatous perennial belonging to the Primulaceae family. It flowers from May to June with seed maturation occurring between July and October. This species can be recognized by its 5-merous yellow flowers and its 3-whorled lanceolate leaves that turn red in autumn.

The RLL prefers full sun and is shade intolerant. It most often occurs in the grass-shrub ecotone between Longleaf pine upland and pond pine pocosin, especially those areas that are fire-maintained. RLL has also been associated with other community types such as low pocosin, high pocosin, wet pine flatwoods, pine savannah, streamhead pocosin and sandhill seep. RLL has also been found in roadside depressions, power line rights of way and firebreaks. It prefers moist to seasonally saturated sand or shallow organic soil over sand (USFWS, 1995) and is listed by the USDA as a wetland obligate (USDA, 2009).

Surveys for RLL could not be conducted at the time of this biological assessment. However, surveys were conducted for potential habitat, for RLL as well as the other three listed vascular plants described below. Habitat ranged from unsuitable to potential habitat within power line rights of way as shown on *Figure 3*.

It should be noted, the RLL was not listed as occurring within the project area in the recovery plan published by the USFWS in 1995 (USFWS, 1995).

Biological determination: No effect

7.2. Cooley's Meadow-Rue (*Thalictrum Cooleyi)*

Cooley's meadow-rue is a rhizomatic perennial herb of the buttercup family (Ranunculaceae). It normally grows to a meter in height, with stems that are erect under sunny conditions and lax, leaning or trailing in shady conditions. Its compound leaves are divided into three leaflets, each approximately 2 cm long. The small, white flowers have no petals, but the male plant features pale yellow to white sepals and the female plant has green sepals. The plant flowers in June to early July with fruit maturation occurring from August to September (USFWS, 1994).

Cooley's meadow-rue is endemic to the Southeastern coastal plains with populations in North Carolina, Georgia and Florida. Counties in North Carolina with known occurrences include Brunswick, Columbus, Onslow and Pender. Cooley's meadow-rue occurs in moist grass-sedge bogs and savannahs in open, frequently disturbed areas such as roadside ditches, utility line rights-of-way, ecotones between forests and bogs, and forest clearings dominated by grasses or sedges. It is found on circumneutral (pH near 7) fine, sandy loams that are at least seasonally saturated or moist (USFWS, 2007d).

Major threats to Cooley's meadow-rue include fire suppression, residential and commercial development, drainage of habitat for forestry or agriculture, and direct herbicide application (NCDENR, 2010). Based on the 5-Year Review (USFWS, 2007d), monitoring efforts conducted up to the date of that report are insufficient to accurately determine population trends.

Biological determination: No effect

7.3. Golden Sedge (*Carex Lutea)*

Golden sedge is a perennial herb of the sedge family endemic to North Carolina. It can grow a meter in height or more and produces fertile culms with yellowish green grass-like leaves and two to four fertile flowering spikes. The terminal spike is male and the female lateral spikes, which are normally bright yellow in color, are subtended by bracts. The terminal male spike and the upper female spike are sessile, while the lower lateral female spikes have peduncles (USFWS, 2010).

Golden sedge's bright yellow color helps differentiate this species from others that occur in the same habitat. It is most readily identified from mid-April to mid-June during flowering and fruiting. Golden sedge grows in sandy soils overlaying limestone, which produces a higher pH than is typically found in this Coastal Plain region. Soils supporting the species are very wet to periodically shallowly inundated. The species prefers the ecotone between pine savannas and adjacent wet hardwood or hardwood/conifer forests. Most plants occur in the partially shaded savanna/swamp where occasional to frequent fires favor an herbaceous ground layer (USFWS, 2010).

Other species with which this sedge grows include tulip poplar (*Liriodendron tulipifera*), pond cypress (*Taxodium ascendens*), red maple (*Acer rubrum* var. *trilobum*), wax myrtle (*Myrica cerifera* var. *cerifera*), colic root (*Aletris farinosa*), and several species of beakrush (*Rhynchospora* spp.). At most sites, golden sedge shares its habitat with Cooley's meadowrue (*Thalictrum cooleyi*), another federally endangered plant species, and with Thorne's beakrush (*Rhynchospora thornei*), a species of concern.

All known populations of golden sedge occur in the northeast Cape Fear River watershed in Pender and Onslow counties, North Carolina. The remaining populations of golden sedge are currently threatened by habitat alteration including fire suppression, conversion of its limited habitat for residential, commercial, or industrial development, highway and utility expansion, right-of-way management with herbicides, and wetland drainage activities associated with silviculture, agriculture and development projects (USFWS, 2010).

Biological determination: No effect

7.4. Pondberry (*Lindera Melissifolia)*

Pondberry is a deciduous shrub which grows approximately 6 feet high and spreads vegetatively by stolons. Pondberry is distinguished from the two other North American members of its genus (*Lindera benzoin* and *L. subcoriacea*) by its drooping, thin membranaceous, ovately to elliptically shaped leaves that have a strong sassafras-like odor when crushed. Pale yellow flowers appear in early spring from February to March, prior to leaf development. Mature fruits, which are bright red and oval-shaped, can be found in October. The plants grow in clones of numerous stems, with young stems replacing dead ones at the base. Thus, a mature colony usually consists of numerous dead stems along with younger leafy ones (USFWS 1993a).

Pondberry is associated with seasonally flooded wetlands including sandy sinks, pond margins and swampy depressions in pinelands. NC population sites have sandy soils with high peat content, a high water table and experience frequent or intense fires (USFWS 1993a).

Biological determination: No effect

7.5. Seabeach Amaranth (*Amaranthus Pumilus)*

Seabeach amaranth was federally listed as threatened on April 7, 1993. It is an annual herb endemic to Atlantic coastal plain and occurs on sand dunes and beaches, mostly on foredunes and at high tide level. It can be many-branched, either prostrate or ascending and often forms mats. The stems are fleshy and pink-red or reddish, with small rounded leaves that are clustered toward the tip of the stem. Flowers and fruits are relatively inconspicuous and are borne in clusters along the stems. Flowering begins sometimes as early as June in the Carolinas but more typically commencing in July and continuing until their death in late fall or early winter. Seed production begins in July or August and reaches a peak in most years in September (USFWS, 1996b).

Many threats exist, including construction of sea walls and dune fencing, development, heavy recreational use, and off-road vehicle traffic. No suitable habitat exists within the project area.

Biological determination: No effect

8. Project Effects

8.1. Upland & Wetland Impacts

The property for this subdivision is 1,253 acres of undeveloped property in the city limits of Jacksonville, NC, located in Onslow County. The property is located along the New River approximately 1.5 miles upstream of the US-17 bridge crossing over the New River (White Oak River Basin, 14-digit HUC 3030001010040). The property is located immediately southwest of the intersection of Williamsburg Parkway and Gum Branch Road (SR 1308), as shown on the project *Vicinity Map, Figure 1*. Approximately 607 acres of this property, currently zoned R-7, will be developed into a residential subdivision. The New River floodplain will remain undeveloped. The property has not been previously developed, but accessible areas have been timbered in the last 10 years. Large portions of the project area are characterized as loblolly pine (*Pinus taeda)* monocultures of various ages, from five to fifty years of age, and deciduous forest in the same range of maturity.

A Jurisdictional Determination (JD) was obtained from the Wilmington District US Army Corps of Engineers for the project area (Action ID# 201001947, dated October 24, 2012, see Appendix F). The project, as proposed, will result in impacts to 0.628 acres of jurisdictional forested Section 404 wetlands and 820 linear feet of streams, utilizing the current design of the development and the road network. All of these impacts are associated with the necessary clearing of road rights-of-way (ROW) to provide access to the proposed lots. It is estimated that 16 road crossings will occur, resulting in the placement of 5,777 cubic yards of permanent fill materials within jurisdictional areas and 1,315 feet of culverts for stormwater conveyance. All impacts will be mitigated through the purchase of credits from the nearest accepted mitigation bank with credits on hand.

The applicant has requested allocation of the necessary credits from the Bachelor's Delight Swamp Mitigation Bank. The confluence of Bachelor's Delight Swamp with the New River is located approximately 2.5 miles upstream of the proposed project.

No Section 404 wetland/stream impacts will result from the development of individual lots. All Section 404wetland areas on the parent tract, excluding the proposed impacts, will be placed in permanent preservation to be administered between USACE and the property's Homeowners Association (HOA). It should be noted that the New River floodplain lies outside of the scope of the parent tracts' JD due to their inaccessibility beyond/west of the existing power line ROW (See Figures 3,5). These floodplain areas, which are permanently inundated by the New River and designated as a Significant Natural Heritage Area, will not be impacted by development or included in the USACE preservation documents.

8.2. Proposed Mitigation

In order to mitigate for the proposed Section 404 wetland and stream impacts for this project, the applicant has requested allocation of the necessary Section 404 wetland/stream credits from the Bachelor's Delight Swamp Mitigation Bank. The confluence of Bachelor's Delight Swamp with the New River is located approximately 2.5 miles upstream of the proposed project. The contact information for this mitigation bank is listed below:

Bachelors Delight Mitigation Bank
c/o Land Management Group, Inc.
Attn: Christian Preziosi
3805 Wrightsville Avenue, Suite 15
Wilmington, NC 28403
cpreziosi@lmgroup.net

In addition, all Section 404 wetland areas on the parent tract, excluding the proposed impacts, will be placed in permanent preservation to be administered between USACE and the property's Homeowners Association (HOA). It should be noted that the New River floodplain lies outside of the scope of the parent tracts' JD due to their inaccessibility beyond/west of the existing power line ROW (See Figures 3,5). These floodplain areas, which are permanently inundated by the New River and designated as a Significant Natural Heritage Area, will not be impacted by development or included in the USACE preservation documents. A draft copy of the preservation plat and restrictive covenants for this property is provided in Appendix F).

The USACE's policies on avoidance, minimization, and mitigation measures for jurisdictional areas have been the primary guidance when designing the proposed subdivision. In addition, the City of Jacksonville's Land Use Plan, Zoning Ordinance, Stormwater Ordinance, and Subdivision Ordinance were used to identify design constraints (i.e. 750' max cul-de-sac length for fire department turnarounds, 24% impervious area for low-density) previously determined for these areas.

Mitigation of direct impacts during construction of the proposed project will be accomplished through compliance with the following applicable permits: Permanent Stormwater Control permit issued by NCDENR Division of Water Quality (Jacksonville is NPDES Phase II Municipality), Erosion & Sedimentation Control permit issued by NCDENR Division of Land Resources. No wetland/stream impacts will result from the development of individual lots due to their preservation status.

Mitigation of secondary and cumulative impacts will be mitigated through the City of Jacksonville's multiple ordinances that address growth and environmental issues. These ordinances, plans, and regulations were adopted in order to minimize impacts to water, land, and environmental resources within the City's jurisdiction that may occur as a result of anticipated growth and development. Copies of these ordinances are available on-line, with web sites as cited in Section 9, References. Electronic copies of these ordinances and applicable sections are included in the pdf submittal on CD.

8.3. Archaeological Effects

All field work and archival research for the archaeological assessment has been completed by Archaeological Consultants of the Carolinas, Inc. (ACC), of Clayton, NC. After compiling all of this data, ACC has prepared the final report and submitted to SHPO on April 2nd, 2012. This review is ongoing and should be completed by the end of April 2012. Any comments received from SHPO regarding this project will be addressed and incorporated into the final BA documents, etc.

One site of archaeological significance (Site 31ON1833) has been identified as *NRHP Potentially Eligible/Un-assessed* adjacent to the New River floodplain. This site is located at the extreme southwestern corner of the property, measures 7.76 acres, and is not planned for residential development due to its location and elevations near the 100-year floodplain. Therefore, Site 31ON1833 will be placed in permanent preservation in order to prevent any disturbance or further mitigation measures as recommended in the archaeological assessment. Mitigation by complete avoidance will ensure that the Williamsburg Planation Subdivision can move forward without pursuing a more intensive Phase II or Phase III Archaeological Survey.

8.4. Other Effects

Noise is also a potential problem with major construction activities. Due to the level of development within the action area and the apparent absence of listed species that would be affected by noise, noise should not have a detrimental effect within the action area of this project.

8.5. Conclusions

No protected species were detected during the biological survey for this project. While potentially suitable habitat for the listed vascular plant species was identified as described above, we recommend determinations of "No Effect" for the following species: eastern puma, red-cockaded woodpecker, bald eagle, shortnose sturgeon, West Indian manatee, green sea turtle, leatherback sea turtle, loggerhead sea turtle, piping plover, seabeach amaranth, rough-leaved loosestrife, Cooley's meadowrue, golden sedge and pondberry,

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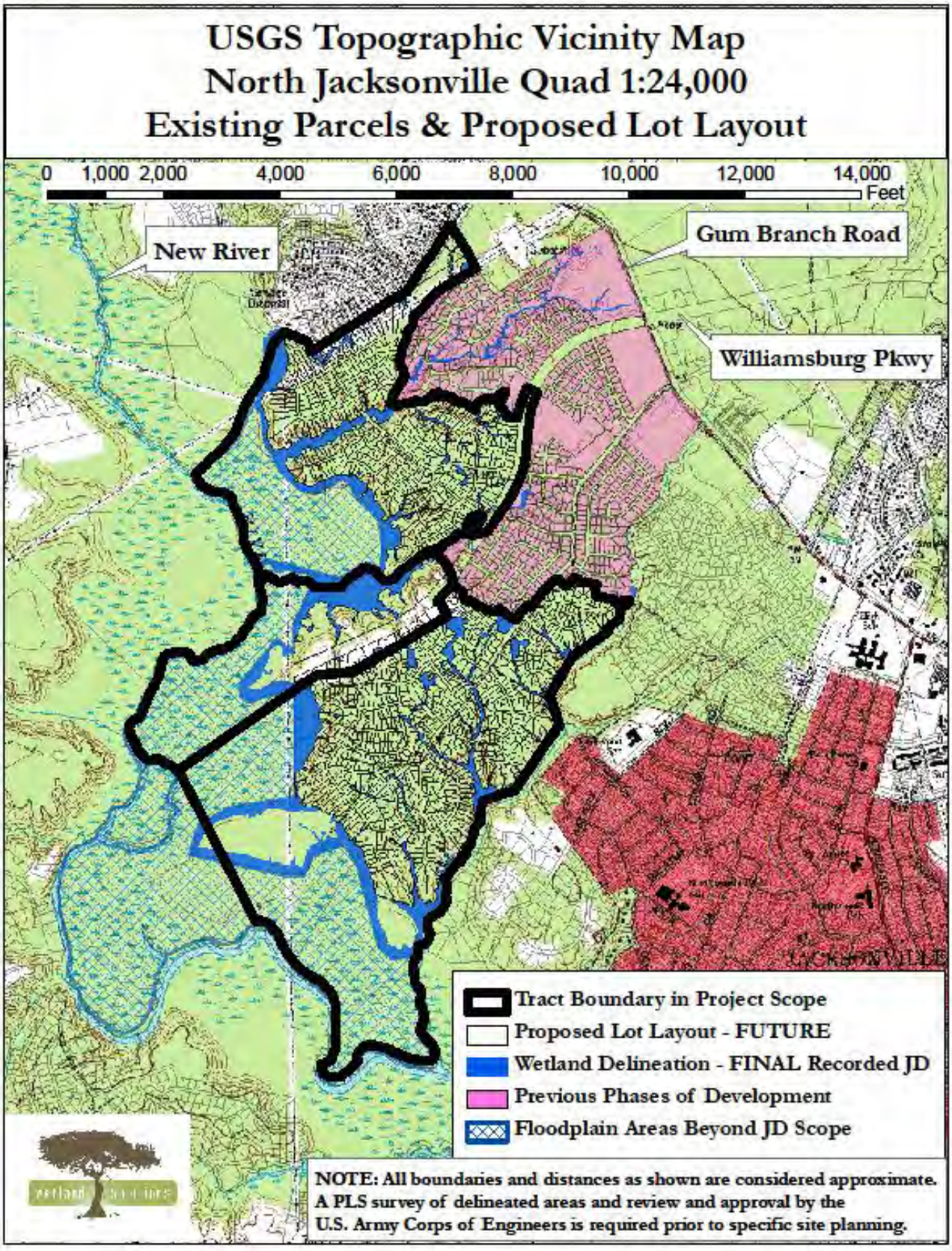
Biological Assessment
Williamsburg Plantation Subdivision

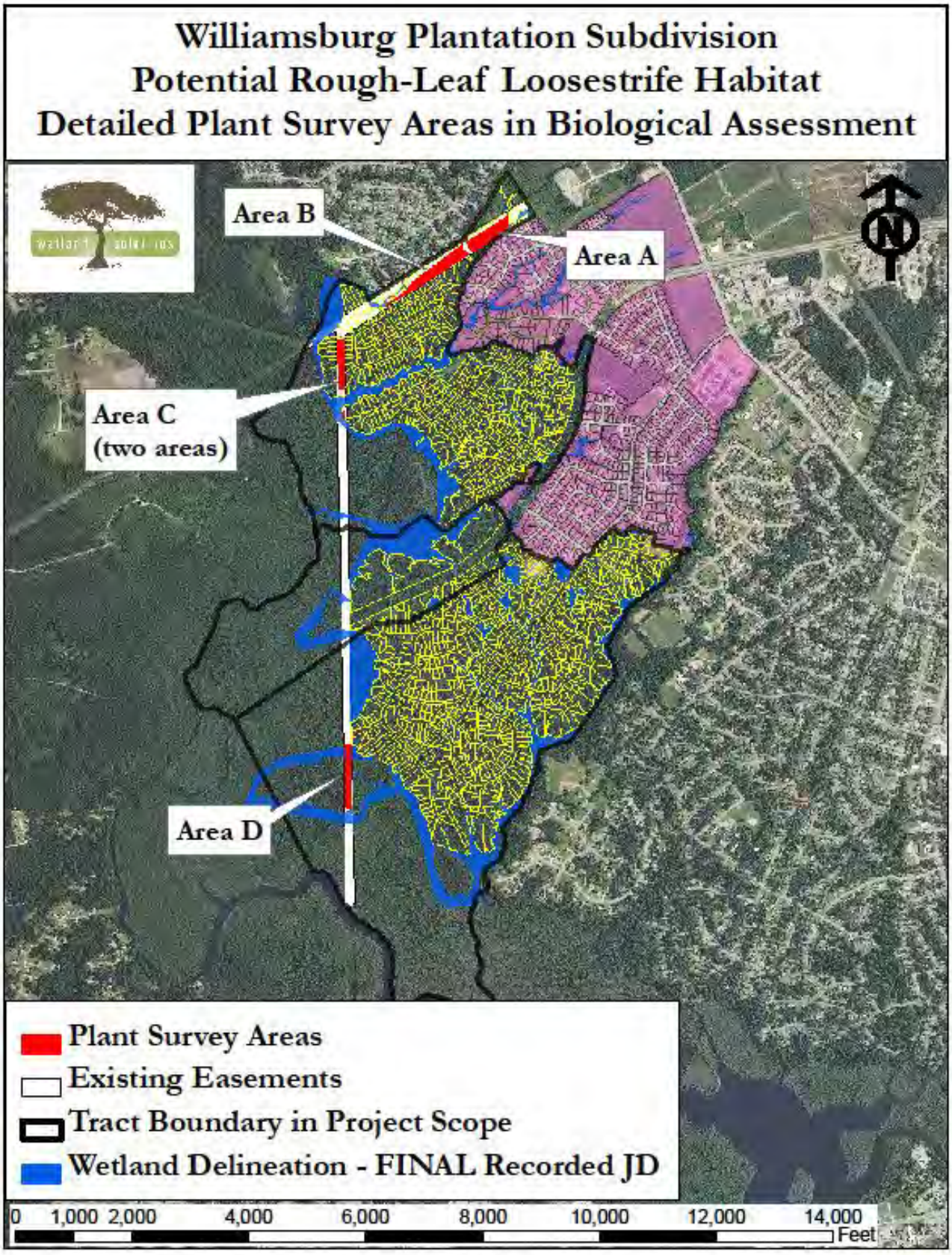
City of Jacksonville
Onslow County, North Carolina

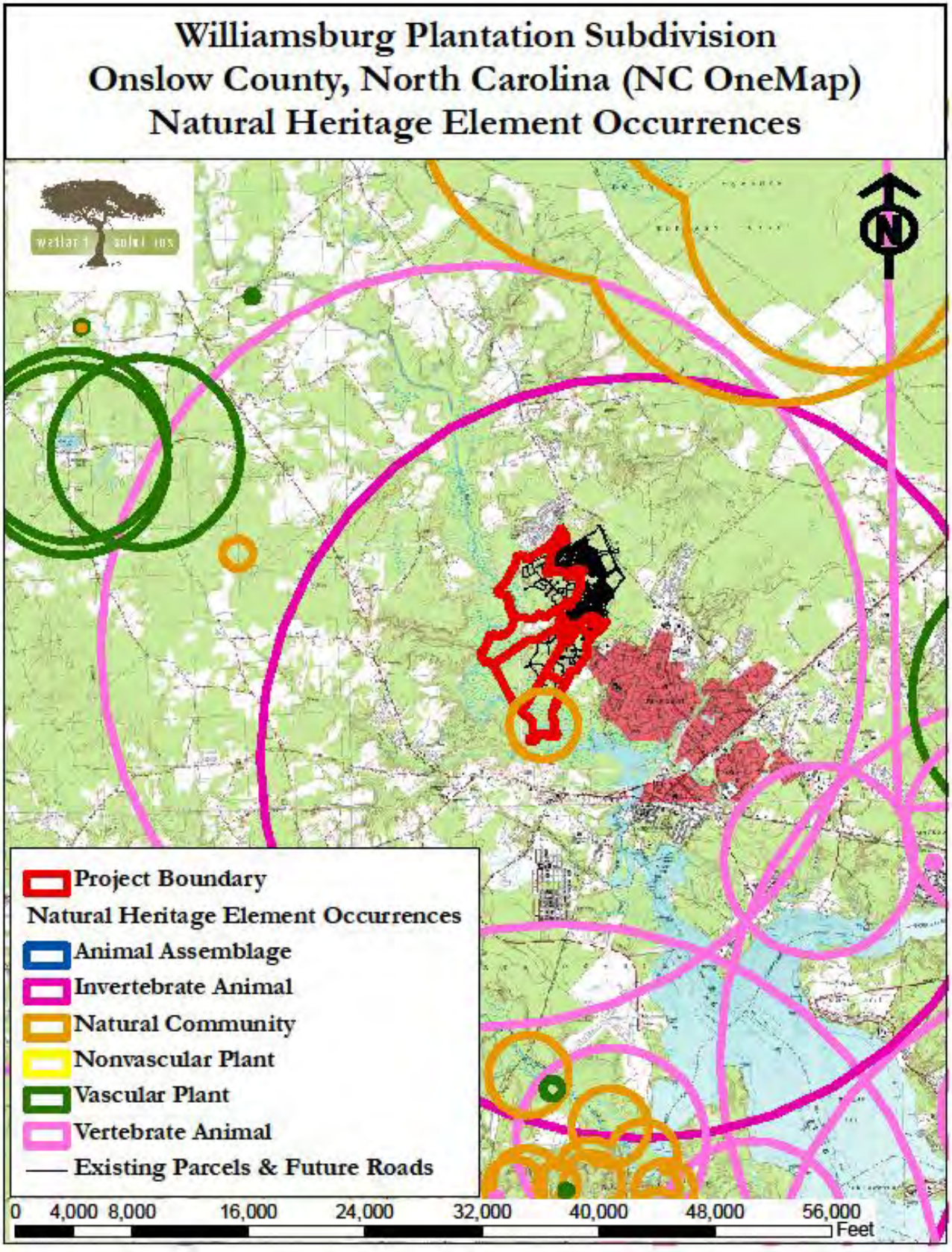
Appendix A
Project Maps

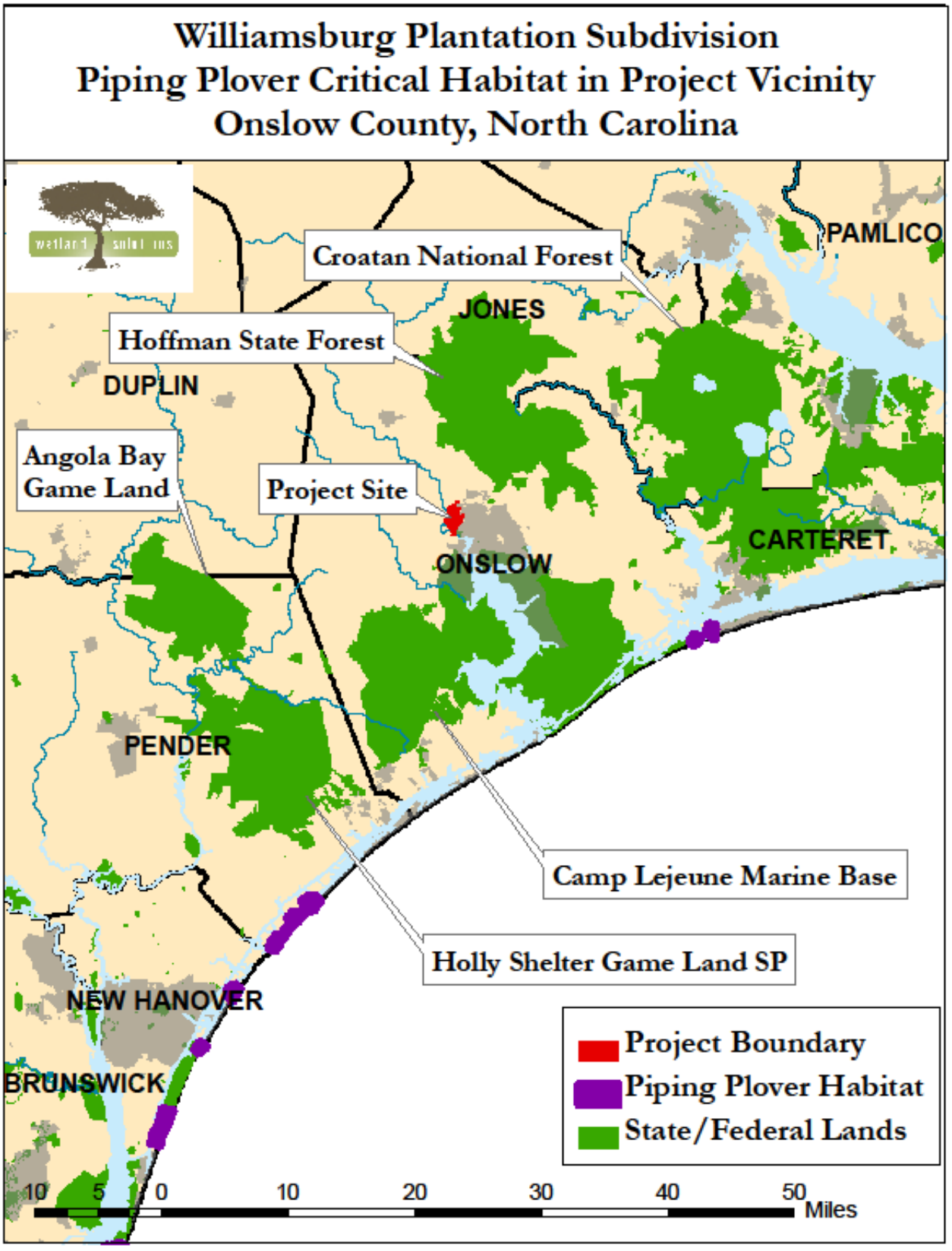
- Figure 1 - Project Vicinity Map
- Figure 2 - USGS Topographic Map: Existing Parcels & Proposed Lot Layout
- Figure 3 - Potential Rough-Leaf Loosestrife Habitat
- Figure 4 - Natural Heritage Element Occurrences
- Figure 5 – Piping Plover Critical Habitat in Project Vicinity


Williamsburg Plantation Subdivision
Biological Assessment - Project Vicinity Map
7.5' USGS Topographic Map - North Jacksonville Quad
GREENE
BEAUFORT
WAYNE
LENOIR
CRAVEN
PAMLICO
JONES
SAMPSON
DUPLIN
CUMBERLAND
CARTERET
ONSLOW
BLADEN
PENDER
City of Jacksonville
COLUMBUS
NEW HANOVER
BRUNSWICK
Project Boundary
10 5 0 10 20 30 40 50 60
Miles


USGS Topographic Vicinity Map
North Jacksonville Quad 1:24,000
Existing Parcels & Proposed Lot Layout
0 1,000 2,000 4,000 6,000 8,000 10,000 12,000 14,000
Feet
New River
Gum Branch Road
Williamsburg Pkwy
Tract Boundary in Project Scope
Proposed Lot Layout - FUTURE
Wetland Delineation - FINAL Recorded JD
Previous Phases of Development
Floodplain Areas Beyond JD Scope
NOTE: All boundaries and distances as shown are considered approximate.
A PLS survey of delineated areas and review and approval by the
U.S. Army Corps of Engineers is required prior to specific site planning.


Williamsburg Plantation Subdivision
Potential Rough-Leaf Loosestrife Habitat
Detailed Plant Survey Areas in Biological Assessment
Area B
Area A
Area C
(two areas)
Area D
N
Plant Survey Areas
Existing Easements
Tract Boundary in Project Scope
Wetland Delineation - FINAL Recorded JD
0 1,000 2,000 4,000 6,000 8,000 10,000 12,000 14,000
Feet


Williamsburg Plantation Subdivision
Onslow County, North Carolina (NC OneMap)
Natural Heritage Element Occurrences
N
Project Boundary
Natural Heritage Element Occurrences
Animal Assemblage
Invertebrate Animal
Natural Community
Nonvascular Plant
Vascular Plant
Vertebrate Animal
Existing Parcels & Future Roads
0 4,000 8,000 16,000 24,000 32,000 40,000 48,000 56,000
Feet


Williamsburg Plantation Subdivision
Piping Plover Critical Habitat in Project Vicinity
Onslow County, North Carolina
Croatan National Forest
Hoffman State Forest
Angola Bay Game Land
Project Site
Camp Lejeune Marine Base
Holly Shelter Game Land SP
PAMLICO
JONES
DUPLIN
ONSLOW
CARTERET
PENDER
NEW HANOVER
BRUNSWICK
Project Boundary
Piping Plover Habitat
State/Federal Lands
10 5 0 10 20 30 40 50
Miles

Biological Assessment
Williamsburg Plantation Subdivision

City of Jacksonville
Onslow County, North Carolina

Appendix B
Photographs of Area of Study
Williamsburg Plantation

Appendix B-1:
Young coniferous and Deciduous Mixed Forest

Appendix B-2:
Bottomland Hardwood Forest

Appendix B-3:
Riverine Wetlands

Appendix B-4:
Bottomland Hardwood Forest

Appendix B-5:
Bottomland Hardwood Forest

Appendix B-6:
Pinus taeda Monoculture (early successional)

Archaeological Survey of Portions of the Proposed Williamsburg Plantation Extension Tracts Onslow County, North Carolina

ARCHAEOLOGICAL CONSULTANTS OF THE CAROLINAS, INC.
2012

Archaeological Survey of Portions of the Proposed Williamsburg Plantation Expansion Tracts Onslow County, North Carolina

ER 11-0234

Prepared for

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Archaeological Consultants of the Carolinas, Inc.
2012

Management Summary

The proposed Williamsburg Plantation expansion tracts are located west of Gum Branch Road immediately north of the Jacksonville city limits in Onslow County, North Carolina. These tracts border the New River. In October 2011, Archaeological Consultants of the Carolinas, Inc. (ACC), conducted archival research on and an archaeological reconnaissance of the project tracts. This reconnaissance was conducted on behalf of Prestige Homes, LLC, with the goal of developing a Scope of Work (SOW) for subsequent Phase I intensive archaeological survey. This SOW was reviewed and approved by the State Historic Preservation Office (SHPO).

An intensive survey of the portions of the proposed expansion tracts delineated in the SOW was conducted in January and February 2012. This archaeological survey focused primarily on the pronounced bluffs along wetland margins and creek banks and on upland areas with deep, well-drained soils. The areas investigated total approximately 314 acres. Survey consisted of the excavation of shovel tests at 30 meter intervals along parallel transects spaced 30 meters apart. Soil profiles exposed in shovel tests varied slightly from area to area but were generally comprised of 15 to 20 cm of dark brown or dark gray sandy loam overlaying pale brown sandy loam. In select areas, subsoil or the water table were encountered at depths ranging between 30 to 50 cm.

A total of 26 archaeological resources were identified during this survey. This includes those potential sites that were identified during the reconnaissance which were relocated and fully delineated. Eleven of these resources are archaeological sites. The remaining 15 resources are classified as isolated finds, having less than three artifacts. These resources are summarized in Table 1. Of the archaeological sites identified and evaluated during this survey, only one (31ON1833) is being recommended as *potentially eligible/unassessed* for the NRHP. Site 31ON1833 yielded abundant temporally diagnostic ceramics dating to the Woodland Period (BC 1000 - AD 1450) overlaying deeply buried lithic debitage that may date to the preceding Archaic Period (BC 8000 - 1000). None of the isolated finds meet eligibility criteria for inclusion on the NRHP.

Table 1. Archaeological Resources Documented during this Investigation.

Resource Number	Component	NRHP Eligibility Recommendation
31ON1831	Woodland Period	Not Eligible
31ON1832	Middle Woodland Period	Not Eligible
31ON1833	Early - Late Woodland Periods	*Potentially Eligible/Unassessed*
31ON1834	Woodland Period	Not Eligible
31ON1835	Woodland Period	Not Eligible
31ON1836	Middle Woodland Period	Not Eligible
31ON1837	Middle Woodland Period	Not Eligible
31ON1838	Early Woodland Period	Not Eligible
31ON1839	Middle Woodland Period	Not Eligible

31ON1840	Middle Woodland Period	Not Eligible
31ON1841	Middle Woodland Period	Not Eligible
Isolate 31ON1842	Woodland Period	Not Eligible
Isolate 31ON1843	Unknown Prehistoric	Not Eligible
Isolate 31ON1844	Unknown Prehistoric	Not Eligible
Isolate 31ON1845	Unknown Prehistoric	Not Eligible
Isolate 31ON1846	Unknown Prehistoric	Not Eligible
Isolate 31ON1847	Unknown Prehistoric	Not Eligible
Isolate 31ON1848	Unknown Prehistoric	Not Eligible
Isolate 31ON1849	Woodland Period	Not Eligible
Isolate 31ON1850	Woodland Period	Not Eligible
Isolate 31ON1851	Unknown Prehistoric	Not Eligible
Isolate 31ON1852	Woodland Period	Not Eligible
Isolate 31ON1853	Unknown Prehistoric	Not Eligible
Isolate 31ON1854**	Unknown Historic	Not Eligible
Isolate 31ON1855**	Unknown Historic	Not Eligible
Isolate 31ON1856	Unknown Prehistoric	Not Eligible

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Chapter 1. Introduction and Methods of Investigation

Introduction

In October 2011, Archaeological Consultants of the Carolinas, Inc. (ACC), conducted archival research on and an archaeological reconnaissance of the Williamsburg Plantation expansion tracts in Jacksonville, North Carolina (Figure 1). This reconnaissance was conducted on behalf of Prestige Homes, LLC, with the goal of developing a Scope of Work (SOW) for subsequent Phase I intensive archaeological survey. This SOW was reviewed and approved by the State Historic Preservation Office (SHPO). An intensive survey of the portions of the proposed expansion tracts delineated in the SOW was conducted in January and February 2012.

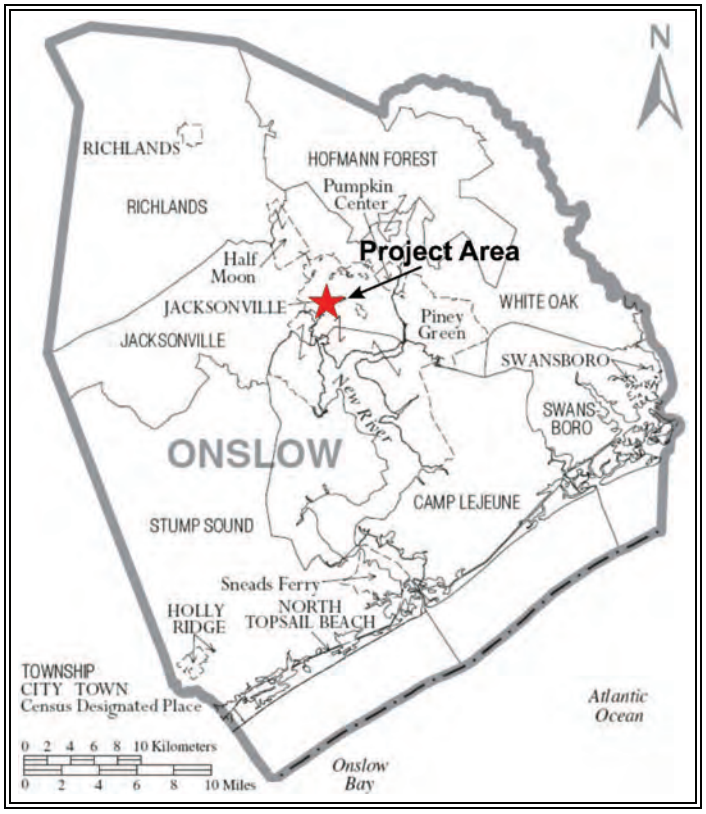

Figure 1. Map showing project location in Onslow County.

Tract Description

The proposed Williamsburg Plantation expansion tracts are located west of Gum Branch Road immediately north of the Jacksonville city limits in Onslow County, North Carolina. These tracts border the New River. Nearly 30 percent of the acreage in the project tracts is delineated wetlands. This includes marsh associated with the New River and smaller waterways that extend in the tracts (Figure 2). Topographically, one of the most significant features of these tracts are pronounced bluff lines along most of the high-ground/marsh margin. In the northern tract, shovel testing identified deep, well-drained sandy soils along the bluff, particularly in those areas overlooking the New River floodplain. These uplands are characterized by a mixed pine and hardwood forest (Figure 2). The southern tract is similar to the northern tract in that it, too, has a prominent bluff line along the New River floodplain. However, the southern tract also has a prominent bluff margin bordering a tributary of the New River. Although this tributary is unnamed on project maps, local informants refer to it as Royal Creek. Old logging roads, hunting trails, and a transmission line (Figure 3) extend through all portions of the project tract.

Figure 2. General view of the pine and hardwood forest in the project tract.

Figure 3. View of the transmission line and wetland in the project tract.

Methods of Investigation

Archival research on the project area was conducted prior to the instigation of field work. This research consisted of a review of archaeological site forms, maps, and reports on file at the Office of State Archaeology (OSA) in Raleigh. This review served to identify previously recorded resources in the project vicinity. A review of seventeenth and eighteenth century land grants was also conducted at the North Carolina State Archives, also in Raleigh. Historic maps of Onslow County and the project vicinity were obtained from a wide variety of published and online sources. These maps were used to determine past land use, the possible presence of structural remains or historic landscape features. A review of records at the Jacksonville Courthouse and Tax Assessor's Office was conducted to determine the chain-of-title of the project tract. Onslow County soil data was retrieved from the United States Department of Agriculture (USDA) online depository. Finally, consultations were held with a number of individuals knowledgeable about the project area, including Ms. Lisa Whitman-Grice (Director of the Onslow County Museum) and Mr. Dennis Jones (Onslow County Museum Historian).

The field reconnaissance consisted of a combination of walkover and limited shovel testing. Roads, trails, sewer lines, and power lines provided good access to many different settings within the tracts, and provided areas of disturbances that facilitated ground surface observations. On landforms that appeared to have high potential for the presence of archaeological deposits, judgementally placed shovel tests were excavated.

Based on the results of the archival research and field reconnaissance, a Scope of Work (SOW) was developed to facilitate Phase I archaeological survey. Per this SOW, the Phase I survey would focus on the pronounced bluffs along wetland margins and creek banks in both tracts. Survey of selected areas of high ground surrounded by wetlands would also be conducted. The areas recommended for intensive examination totaled approximately 314 acres are shown in Figure 4. This SOW was reviewed and approved by the State Historic Preservation Office (SHPO).

Phase I Archaeological Survey

The intensive Phase I archaeological survey of the areas defined during the field reconnaissance was conducted in January 2012. Survey consisted of the excavation of shovel tests at 30 meter intervals along parallel transects spaced 30 meters apart. All shovel tests measured at least 30 cm in diameter. All test fill was screened through 0.25 inch mesh, and each test was excavated to sterile subsoil or until the water table was encountered. Shovel testing was supplemented by comprehensive examination of all exposed ground surface, such as roads. Data on the soil stratigraphy, artifact content, and overall integrity of the deposits were recorded in field notebooks. Artifacts were collected and placed in plastic bags labeled with the date, field site number, grid point locations (i.e., shovel test/transect or north/east coordinate), depth of artifacts, and initials of the excavator.

A site is defined as an area containing more than two artifacts of a possible single occupation in a 30 meter or less diameter of surface exposure, or where surface or subsurface cultural features are present. Artifacts and/or features less than 50 years in age would not be considered a site without a specific research or management reason. Locations with fewer than three artifacts and no features are classified as *isolated finds* or *isolates*. Although isolates are rarely considered to meet NRHP eligibility criteria, their locations and settings are documented.

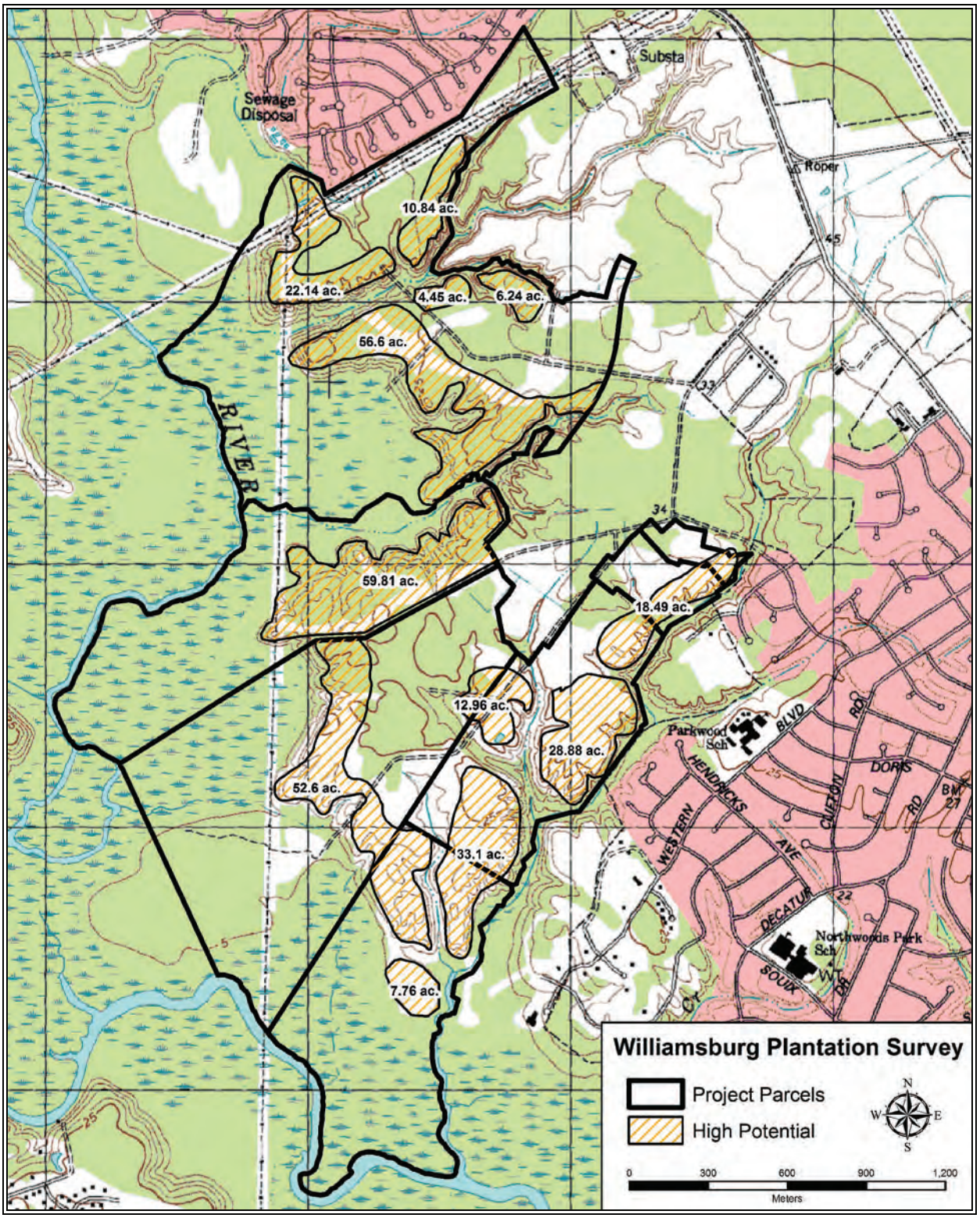

Figure 4. Map showing the Williamsburg Plantation expansion tracts and areas of recommended for intensive archaeological survey (1997 *Jacksonville North, NC* USGS 7.5 minute topographic quadrangle).

To delineate archaeological resources, shovel tests were excavated at 15 meter intervals in cardinal directions from the original artifact-bearing location. Each shovel test was approximately 30 cm in diameter. Shovel test fill was screened through 0.25 inch wire mesh. Details of artifacts, soils, and possible features were recorded in field notebooks. Artifacts were collected and placed in plastic bags labeled with the date, field site number, grid point locations (i.e., transect/shovel test or north/east coordinate), depth of artifacts, and initials of the excavator.

Site settings were photographed with a digital camera. Plan maps of each site showing the locations of shovel tests and surface finds were produced in the field. The locations of each site were recorded using a Trimble Pathfinder Global Positioning System (GPS) unit; the locations were then relayed onto project maps.

Site significance is based on the site's ability to contribute to our understanding of past lifeways, and its subsequent eligibility for listing on the NRHP. Department of Interior regulations (36 CFR Part 60) established criteria which must be met for an archaeological site or historic resource to be considered significant, or eligible for the NRHP (Townsend et al. 1993). Under these criteria, a site can be defined as significant if it retains integrity of "location, design, setting, materials, workmanship, feeling, and association" and if it *A)* is associated with events that have made a significant contribution to the broad pattern of history; *B)* is associated with the lives of persons significant in the past; *C)* embodies distinctive characteristics of a type, period, or method of construction, or represents work of a master, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or *D)* has yielded, or is likely to yield, information important in history or prehistory. Archaeological sites are most frequently evaluated pursuant to Criterion D. However, some historic period archaeological sites can be considered under all four criteria.

The primary goals of this field investigation were to identify archaeological resources and evaluate their potential research value or significance. Although the final determination of the site significance is made by the State Historic Preservation Office (SHPO), whenever possible, sufficient data were gathered to allow us to make a significance recommendation. Sites that exhibited little or no further research potential are recommended *ineligible* for the NRHP and no further investigation would be proposed. Sites for which insufficient data could be obtained at the survey level are considered *unassessed* and preservation or more in-depth investigation would be advocated. It is rare for ample data to be recovered at the survey level of investigation to definitively determine that a site meets NRHP eligibility criteria. However, when this occurs, the site is recommended *eligible* for the NRHP. Again, preservation of the resource would be advocated. If preservation is not possible, mitigation options (e.g., data recovery) would need to be considered.

Laboratory Analysis

Laboratory work begins with washing all recovered artifacts. A provenience number, based on the context of the artifact (i.e., surface or subsurface), is assigned to each positive shovel test location or surface collection area. Within each provenience, each individual artifact or artifact class is then assigned a number. Artifacts are cataloged based on specific morphological characteristics such as material in the case of lithics, and decoration and temper type in the case of prehistoric ceramics. Artifact descriptions, counts, and weights are recorded. All diagnostic and cross-mended artifacts are labeled with a solution of Acryloid B-72 and acid-free permanent ink.

At the conclusion of this project, all project related material, including field notes, artifacts, and project maps, will be prepared for curation based on standards set forth in 36 CFR 79 (*Curation of Federally Owned and Administered Archaeological Collections: Final Rule)* and in the OSA curation guidelines. These standards and guidelines require that all project-related material be placed in archivally stable storage bags and boxes. Upon acceptance of the final project report by the SHPO, the project material will be submitted to OSA for permanent curation.

Report Preparation

Report preparation involved the compilation of all data gathered during the previous tasks. The following chapter provides environmental and cultural overviews for the project area. Next, the results of the field investigation are discussed. Each identified site is described, shown on project maps, and NRHP eligibility recommendations are advanced. The data obtained through laboratory analysis are included in site descriptions. Finally, a summary of the overall project is presented along with management recommendations, as appropriate.

Chapter 2. Environmental and Cultural Overviews

In an attempt to interpret cultural resources, it is necessary to understand the larger context within which they occur. The natural environment, technological development, and ideological values are all intertwined in shaping the way humans live. In this chapter, details about the local environment and cultural development in the region are presented to provide a context within which cultural resources can be assessed. This basic framework is an important tool in evaluating the National Register of Historic Places (NRHP) eligibility of these resources.

Environmental Overview

Onslow County is located in the lower Coastal Plain of North Carolina (Figure 5). Elevation in the county ranges from sea level to 19 meters above sea level at the town of Richlands (Barnhill 1992). Within the survey tract, the elevation is between 0 and 35 feet above sea level.

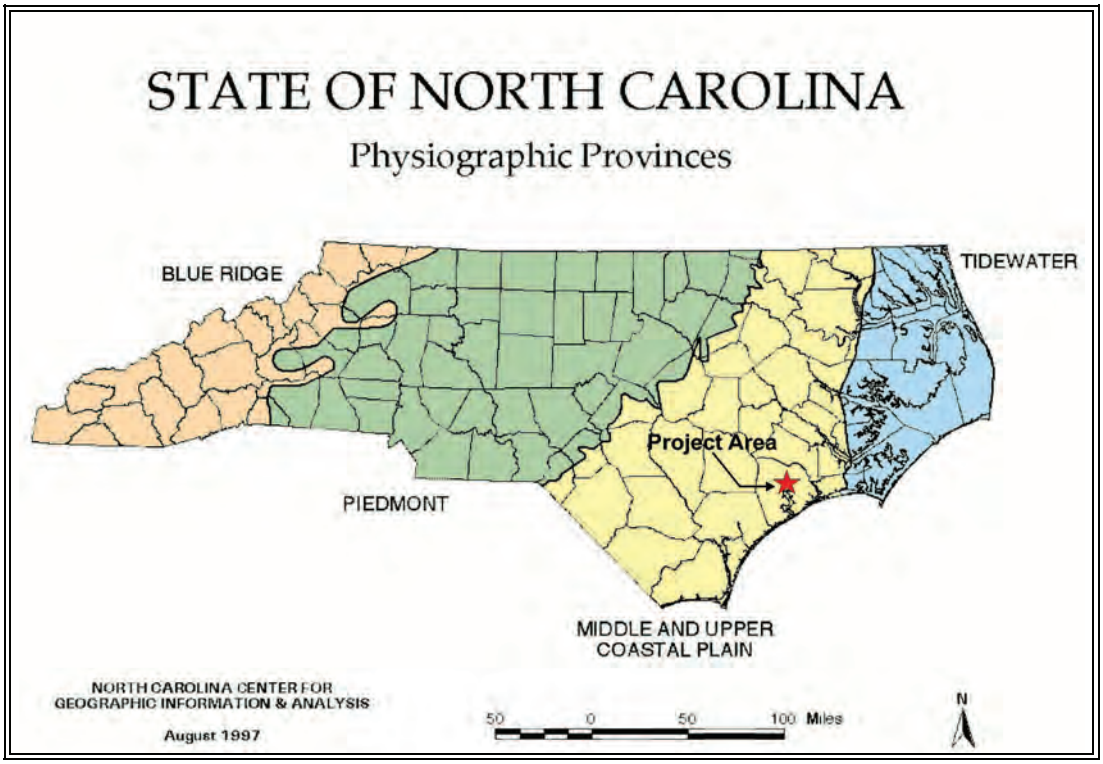

Figure 5. Physiographic provinces of North Carolina.

Onslow County is located in the South Coastal Plain climatic subregion. The climate of the project region is subtropical, with mild winters and hot, humid summers. The average high summer temperature is 89 degrees Fahrenheit (F). The average winter high temperature is 56 degrees F. Annual precipitation is approximately 53 inches (Clements 1988).

The project area falls within the White Oak River Basin. Onslow County contains two major drainages within the White Oak River Basin: the New River and the White Oak River (Figure 6). The New River runs due south through the county and is distinguished as the only river in the continental United States with its headwaters and mouth in the same county (Onslow County On-line [OCO] 2006). The New River forms the western boundary of the project tract. The White Oak River forms the northern border of Onslow County.

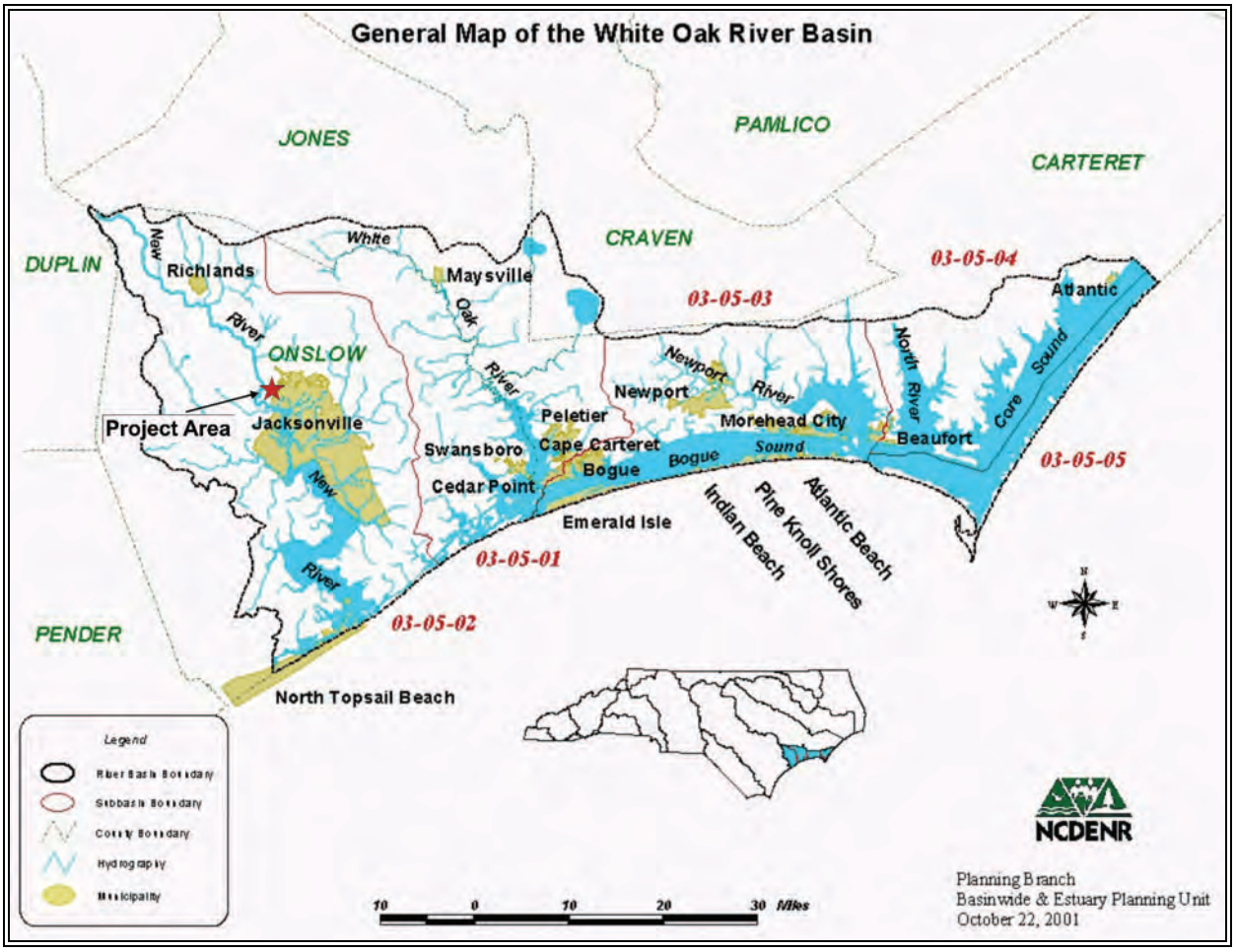

Figure 6. Map of the White Oak River Basin showing the location of the project area.

Soils

There are nine soil types present in the Williamsburg Plantation tract (Figure 7; Table 2). These soil types are typically level to gently sloping (0-6% slope) with the exception of Marvyn loamy fine sand, which has a slope range of 6 to 15 percent. The soils in the tract typically form on marine terraces, although Dorovan muck forms on floodplains. Three of the soils types (Dorovan, Lynchburg, and Torhunta) are poorly drained. The remaining six soils types are moderately well to well-drained. A small portion (0.7 %) of the project tract is classified as water. These areas form the southeast tract boundary (United States Department of Agriculture [USDA] 2012).

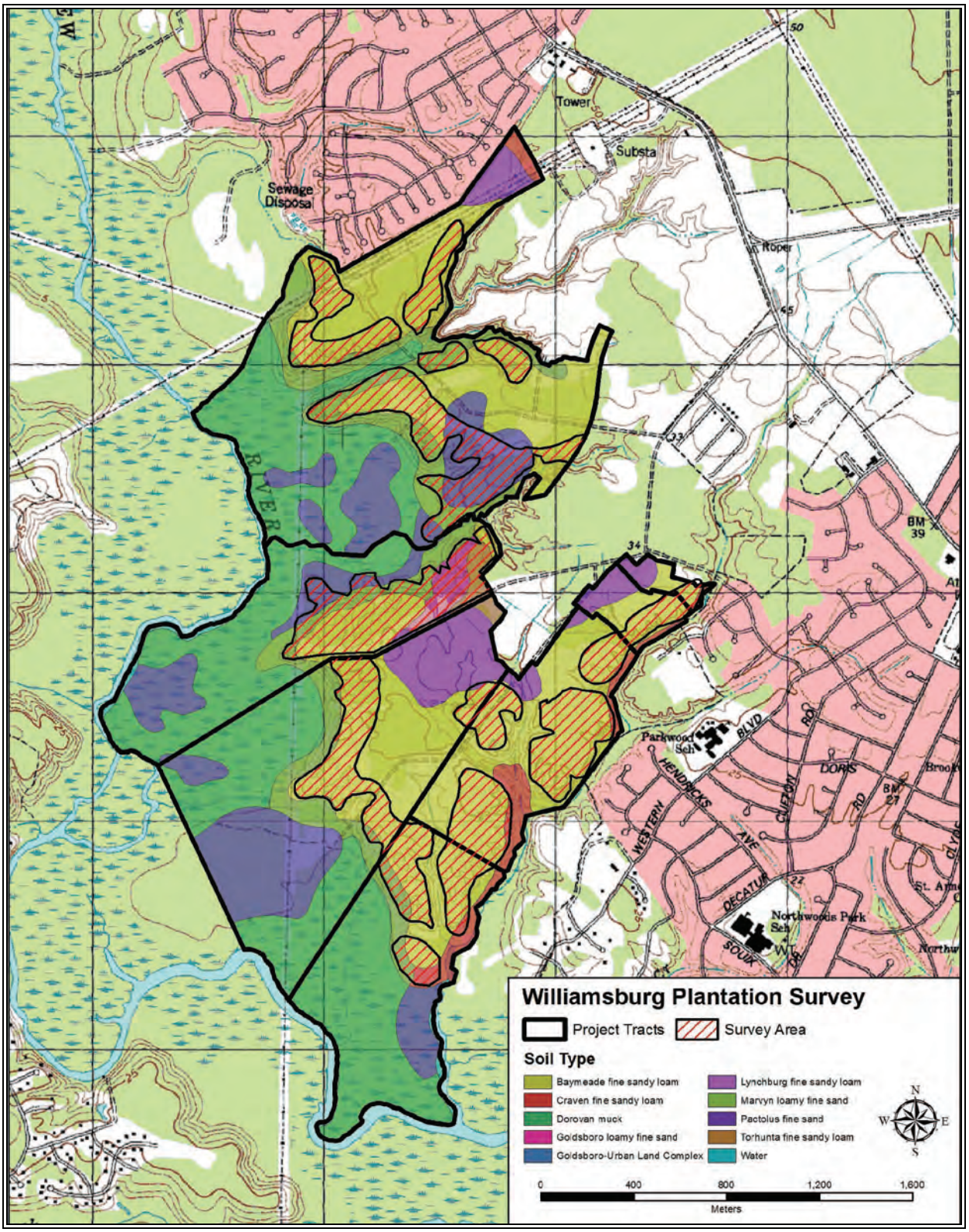

Figure 7. Soil map for the Williamsburg Plantation expansion tracts (USDA 2012; 1997 *Jacksonville North, NC* USGS 7.5 minute topographic quadrangles).

Table 2. Summary of Soils Present in the Williamsburg Plantation Expansion Tracts (USDA 2012).

Soil Type	Characteristics	Percent Coverage
Baymeade fine sandy loam	well-drained, 0-6% slope, forms on ridges on marine terraces	36.1
Craven fine sandy loam	moderately well drained, 1-4% slope, forms on flats and ridges on marine terraces	2.5
Dorovan muck	very poorly drained, 0-1% slope, forms on floodplains	29.5
Goldsboro fine sandy loam	moderately well drained, 0-2% slope, forms on flats and broad interstream divides on marine terraces	0.9
Goldsboro-Urban land complex	moderately well drained, 0-5% slope, forms on flats and broad interstream divides on marine terraces	0.1
Lynchburg fine sandy loam	somewhat poorly drained, 0-2% slope, forms on flats and broad interstream divides on marine terraces	5.2
Marvyn loamy fine sand	well-drained, 6-15% slope, forms on ridges on marine terraces	9.9
Pactolus fine sand	moderately well drained, 0-2% slope, forms on ridges on marine terraces	14.5
Torhunta fine sandy loam	very poorly drained, 0-2 % slope, forms on flats and Carolina Bays on marine terraces and depressions on stream terraces	0.7
water	-	0.6

Cultural Overview

Prehistoric Overview

The various periods of human settlement are characterized primarily by technological distinctions, but social organizations also helped inhabitants adapt to their surroundings. These technological and social classifications are used to divide prehistory into distinctive time periods. Table 3 provides a brief chronology of Native American occupation of the project region based on previous research done by Coe (1964), Herbert and Mathis (1996), Hargrove and Eastman (1997), Ward and Davis (1999), and others.

Paleoindian Period (12,000 - 8,000 BC)

The Paleoindian Period refers to the earliest human occupations of the New World, the origins and age of which remain a subject of debate. The most accepted theory dates the influx of migrant bands of hunter-gatherers to approximately 12,000 years ago. This time period corresponds to the exposure of a land bridge connecting Siberia to the North American continent during the last ice age (Driver 1998; Jackson et al. 1997). Research conducted over the past few decades has begun to cast doubt on this theory.

Table 3. Native American Chronology for the Southern North Carolina Coast.

Temporal Period	Phase	Diagnostic Artifacts	Settlement	Subsistence
Paleoindian (10,000-8,000 BC)	Clovis _____ Dalton	large, fluted lanceolate projectile points/knives	small, seasonal camps	intensive foraging, focus on large fauna
Archaic (8,000-1,000 BC)	Taylor Kirk/Palmer Lecroy _____ Morrow Mtn. Guilford _____ Savannah River	side-notched projectile points corner--notched projectile points _____ stemmed points _____ large Savannah River Points Stallings Island fiber tempered and Thoms Creek sand tempered ceramics in southern part of NC coast	larger, seasonal camps; base camps first shell middens in the Carolinas	intensive foraging use of marine resources
Woodland (1,000 BC- 1450 AD)	Hamps Landing New River Hanover _____ Cape Fear _____ White Oak	Limestone/marl tempered pottery, triangular points large triangular points (Roanoke Triangular) sand tempered pottery cord marked surface treatments grog tempered ceramics w/a variety of surface decorations _____ sand tempered ceramics w/ fabric and cord marked surface decorations; small triangular projectile points _____ shell tempered ceramics w/various surface decorations	 small, dispersed villages; focus on flood plain areas flexed burials and cremations _____ large, permanent villages; deer skin trade Tuscarora War	intensive foraging supplemented by horticulture; agriculture; continued focus on shellfish _____ European trade intensive agriculture, focus remains on corn; supplemented by European grains

Investigations at Paleoindian sites have produced radiocarbon dates predating 12,000 years. The Monte Verde site in South America has been dated to 10,500 BC (Dillehay 1997; Meltzer et al. 1997). In North America, the Meadowcroft Rockshelter in Pennsylvania had deposits dating to 9,500 BC. Current research conducted at the Topper Site indicates occupations dating between 15,000 to 19,000 (or more) years ago (Goodyear 2006). Two sites, 44SM37 and Cactus Hill, in Virginia have yielded similar dates. One contentious point about these early sites is that the occupations predate what has been recognized as the earliest New World culture, Clovis. Artifacts identified at pre-Clovis sites include flake tools and blades, prismatic blades, bifaces, and lanceolate-like points (Adovasio et al. 1998; Goodyear 2006; Johnson 1997; McAvoy and McAvoy 1997; and McDonald 2000).

The major artifact marker for the Clovis period is the Clovis lanceolate fluted point (Gardner 1974, 1989; Griffin 1967). First identified in New Mexico, Clovis fluted points have been recovered throughout the United States. However, most of the identified Clovis points have been found in the eastern United States (Ward and Davis 1999). Most Clovis points have been recovered from surface contexts, although some sites (e.g., Cactus Hill and Topper sites) have contained well-defined subsurface Clovis contexts.

The identification of pre-Clovis sites, higher frequencies of Clovis points on the east coast of the United States (the opposing side of the continent where the land bridge was exposed during the last glaciation), and the lack of predecessors to the Clovis point type have led some researchers to hypothesize other avenues of New World migration (Bonnichsen et al. 2006). These alternative migration theories contend that the influx of people to the Americas occurred prior to the ice-free corridor 12,000 years ago and that multiple migration episodes took place. These theories include overland migrations similar to the one presumed to have occurred over the Bering land bridge and water migrations over both the Atlantic Ocean and the Pacific rim (Stanford et al. 2006). Coastal migration theories envision sea faring people using boats to make the journey, evidence for which has not been identified (Adovasio and Page 2002).

In the southeastern United States, Clovis was followed by smaller fluted and non-fluted lanceolate spear points, such as Dalton and Hardaway point types, that are characteristic of the later Paleoindian Period (Goodyear 1982). The Hardaway point, first described by Coe (1964), is seen as a regional variant of Dalton (Oliver 1985; Ward 1983).

Most Paleoindian materials occur as isolated surface finds in the eastern United States (Ward and Davis 1999); this indicates to many scholars that population density was extremely low during this period and that groups were small and highly mobile (Meltzer 1988). It has been noted that group movements were probably well-scheduled and that some semblance of territories was probably maintained to ensure adequate arrangements for procuring mates and maintaining population levels (Anderson and Hanson 1988).

O'Steen (1996) analyzed Paleoindian settlement patterns in the Oconee River valley in northeastern Georgia and noted a pattern of decreasing mobility throughout the Paleoindian period. Sites of the earliest portion of the period seem to be restricted to the floodplains, while later sites were distributed widely in the uplands, showing an exploitation of a wider range of environmental resources. If this pattern holds true for the Southeast in general, it may be a result of changing environments trending toward increased deciduous forest and decreasing availability of Pleistocene megafauna and the consequent increased reliance on smaller mammals for subsistence; population growth may have also been a factor.

Archaic Period (8,000 - 1,000 BC)

The Archaic period has been the focus of considerable research in the Southeast. However, for the Coastal area of North Carolina, much data are still needed to refine the chronology and gain a better understanding of subsistence strategies and site size and function of Archaic time period. Most of what is known of this time period comes from surface collections (Ward and Davis 1999). The chronological sequence defined by Coe (1964) for the Archaic North Carolina Piedmont is applicable to the Coast and Coastal Plain.

Early Archaic (8,000 - 6,000 BC). The Early Archaic period is marked by a shift from a boreal forest to more northern hardwoods. Southern pines became the dominant species as the Oak-Hickory forest retreated to the Piedmont (Delcourt and Delcourt 1981; Delcourt and Delcourt 1985). Site types are generally of two kinds: base camps at stream confluences and small temporary procurement sites located in areas with seasonally variable resources (Phelps 1981, 1983; Ward and Davis 1999). The smaller temporary procurement camps and the larger base camps are found at a ratio of ten to one (Ward and Davis 1999). Palmer and Kirk corner-notched spear points are diagnostic of the time period.

Middle Archaic (6,000 -3,000 BC). Settlement and subsistence strategy remained constant through the Middle Archaic, although there is a noted increase in site frequency (Ward and Davis 1999). Stanly Stemmed, Morrow Mountain Stemmed, and Guilford Lanceolate spear points are the primary diagnostic artifacts of this time period. Morrow Mountain and Guilford phases are believed to have been introduced from the west (Coe 1964). Phelps (1964) referred to this as the "Western Intrusive horizon." Halifax projectile points have also been found in the north Coastal Plain of North Carolina. These points date to approximately 4,000 BC and were introduced from peoples living to the north (Coe 1964).

Late Archaic (3,000 - 1,000 BC). This time period marks a shift of settlements from upland tributary streams to the mouths of major rivers. This shift allowed native peoples to include marine and estuarine resources in their diet. The predominant characteristic tool type of the Late Archaic is the Savannah River spear point. These large points are stemmed with triangular blades and may have been used as knives as well as spear points.

The earliest well dated ceramic types in the Southeast are fiber tempered Stallings wares and the sand tempered Thoms Creek wares and are found primarily in the coastal regions of South Carolina and Georgia. Stallings and Thoms Creek wares have been recovered from sites in the coastal plain of North Carolina. Stallings sherds have been found as far north as the Tar River drainages and sand tempered Thoms Creek wares tend to be limited to Brunswick and New Hanover counties (Ward and Davis 1999). These ceramics tend to be found in association with Late Archaic Savannah River phase contexts, leading some researchers to date them to Late Archaic Period (Sassaman 1993). However, many North Carolina archaeologists see the introduction of ceramic technology as a hallmark of the Woodland Period.

Woodland Period (1,000 BC - 1450 AD)

A transition between the preceramic Archaic cultures and the Woodland cultures has been identified by Oliver (1985). Stemmed point types continue and are represented by the Gypsy/Thelma/Swannanoa point types in the Early Woodland subperiod (1,000 BC-300 AD). Throughout much of the southeast, the Woodland Period represents a time of technological and social change preceding the Mississippian Period, which is marked by chiefdoms and agricultural-based subsistence. "Mississippianization" of local groups is not recognized in much of coastal North Carolina. Consequently, the Woodland Period extended to the early eighteenth century, a period of close contact between Native Americans and Europeans.

Early Woodland (1,000 BC - 300 BC). Along the North Carolina coast, Early Woodland sites consist of shell middens near tidal marshes and ceramic and/or lithic scatters in different environmental zones. Site type categories established by Trinkley (1990) for this portion of the state include seasonal camps located in upland settings at springs or stream confluences, small seasonal campsites located on swamp edges, and large semipermanent camps on swamp edges. Site location patterns suggest a dispersed, highly mobile lifeway that continued from the Late Archaic into the Woodland.

Two ceramic types are associated with the Early Woodland along the southern coast of North Carolina. New River ceramics are coarse sand tempered and exhibit surface treatments that are dominated by cord marking, but also include fabric impressing, net impressing, and simple stamping (Loftfield 1975; Mathis 1999; Ward and Davis 1999). Hamps Landing ceramics are characterized by limestone or marl temper and have plain, faint thong marked, cord marked, fabric impressed, and simple stamped surfaces (Ward and Davis 1999).

The Hamp's Landing ceramic series was identified in the mid-1990s. At the Hamps Landing site (31NH142), these wares were recovered from strata also containing Thoms Creek ceramics. At the Topsail Island site (31ON190), charcoal obtained from a pit feature containing Hamps Landing ceramics dated to 1945 BC, suggesting that Hamps Landing ceramics were contemporaneous with Thoms Creek wares (Ward and Davis 1999). The dating of Hamps Landing wares remains controversial. The radiocarbon date obtained from the Topsail Island site was questioned even by the site archaeologists. Jones and his colleagues felt that the Hamps Landing wares were more similar to Hanover than to Thoms Creek ceramics (Jones et al. 1997). Hargrove (1993) has suggested that the stratigraphic position of the Hamps Landing ceramics at the Hamps Landing site falls within an Early to Middle Woodland transition period rather than into the Late Archaic period.

Middle Woodland (300 BC - 1000 AD). Sites dating to this period include small single house shell middens, more significant shell middens, and shell-less sites in the interior that vary in size and artifact density. Trinkley (1990) notes that the site types from Early Woodland continue into the Middle Woodland but with the addition of sand burial mounds. By this time, the bow and arrow had been introduced as reflected in the occurrence of small triangular points. Settlements became more permanent and sand burial mounds begin to occur in coastal regions. The low, sand burial mounds have been identified at several archaeological sites in the region. Estuarine resources made a significant contribution to the subsistence of Middle Woodland peoples, but whether the sites were permanent or seasonal is not clearly understood (Drucker and Jackson 1984; Espenshade and Brockington 1989; Trinkley 1976, 1980). Domestic plants also became a more important part of the diet (Ward and Davis 1999).

The two ceramic series associated with the Middle Woodland in the southern coastal plain are the grog tempered Hanover wares and the sand tempered Cape Fear wares. Hanover wares are typically cord marked or fabric impressed (Ward and Davis 1999). Cape Fear ceramics have similar decorations, although South (1976) observed rare net impressing on these wares (Ward and Davis 1999).

Late Woodland (AD 1000 - 1450). Sand burials continued to be used during the Late Woodland with burials generally being secondary and bundled. Cremations or charred remains are common (Jones et al. 1997). House structures include both circular and rectangular outlines but it is unclear whether the two house styles indicate seasonal differences or the presence of Algonquin speakers in the area (Loftfield 1990; Mathis 1995). The Late Woodland in the southern Coastal Plain of North Carolina is characterized by the White Oak Phase. South (1976), working in Brunswick and New Hanover counties, described the "Oak Island" series as being shell tempered pottery that included cord marked, net impressed, fabric impressed, and plain surface treatments. Working near the White Oak River, South (1962) identified shell tempered fabric impressed sherds that he defined as White Oak fabric impressed. Loftfield (1976) expanded the definition of White Oak to include simple stamped and smoothed surfaces based on work conducted in Onslow and Carteret County. Few researchers, today, distinguish between South's "Oak Island" and Loftfield's "White Oak" ceramic series (Ward and Davis 1999). However, it is believed by some that many of the shell tempered Oak Island sherds identified by South (1976) are actually limestone tempered and part of the Early Woodland Hamps Landing series, and that the term White Oak should be used to define the shell tempered Oak Island ceramics (Ward and Davis 1999).

Historic Overview

After Colombus's venture to the New World, the Spanish, French, and English all made strong efforts to colonize and explore the land, including the areas that make up the Carolinas today. In 1524, Giovanni de Verrazzano explored the Carolina coast under the service of King Frances I of France. He anchored his ship, *La Dauphine* near Cape Fear and was probably the first European to land on Brunswick County soil. Two years later the Spaniard, Luis Vasquez de Ayllon, led an expedition to the same spot and moved further down the river where he made an unsuccessful attempt at a settlement. It was not until 1584 that more settlers returned, this time the English. Sir Walter Raleigh had been granted a charter by Queen Elizabeth to establish colonies in the New World. Many attempts failed, including the famous "lost colony" of Roanoke. He lost his charter, but a group of his former associates secured another, the Virginia charter, and went on to establish Jamestown in 1607, the first permanent settlement in the Americas (Powell 1989).

The disastrous mismanagement and resulting loss of life in Virginia during the first two decades of the colony's existence resulted in the revocation of the Virginia Company's charter in 1624 (Noël Hume 1994). In 1663, King Charles II chartered the Province of Carolina to eight Lords Proprietors. Shortly after, in 1664, the province was divided into three precincts: Albemarle, Bath, and Clarendon (Corbitt 2000). The area that now represents Onslow County was in Bath, where settlers under the leadership of William Hilton from Massachusetts colonized as early as 1663 (Corbitt 2000).

Tensions grew between the European settlers and the natives, and soon the Chowanoc War began in 1675. Natives were no match for colonists with firearms, and after a couple of years the Chowanoc were forced onto a reservation in Gates County (Ward and Davis 1999). Following the Chowanoc War, relations with the natives did not improve over time.

The Lords Proprietors gave colonists permission to deal with the natives as they saw fit, and colonists continued to encroach upon native lands with little or no compensation. The open and illegal trade of Native American slaves compounded the problem. The Tuscaroras sought permission to move to Pennsylvania, but were denied when North Carolina failed to certify their past good behavior. Seeing no alternative, on September 22, 1711 the Tuscarora killed 130 colonists. The Tuscarora War lasted three and half years and

left 200 colonists and 1,000 Native Americans dead, and approximately 1,000 more sold into slavery (Ward and Davis 1999:274). Many Tuscarora were forced from their homes and placed on reservations or migrated to Pennsylvania and New York.

The Tuscarora War effectively cleared the region of Native Americans, allowing for more European settlers to move into the area. One of the first towns founded in present day Onslow County was the town of Swansboro along the White Oak River. It had been called Weeks Wharf, Bogue, and New Town before being officially named Swansboro in 1746 (Anon 1950). In 1722, North Carolina became a royal colony. By that time, Bath County had been subdivided into precincts with present day Onslow County within the Carteret Precinct. In 1739, Bath County was dissolved and its precincts were instated as counties (Corbitt 2000).

By 1734, so many people had moved into the region that it became necessary to form a new local government. Onslow County was formed as Onslow Precinct of Bath County from part of New Hanover County in 1734. It was bordered to the north by the White Oak River and contained the New River along with its major branches and creeks. The county was named after Arthur Onslow, a long established Speaker of the House of Commons in British Parliament (Corbitt 2000). The location of the courthouse was originally set at "the courthouse on New River" but was held in various locations, including private residences (Corbitt 2000:165).

In 1741, the town of Johnston was established and the first publicly funded ferry was built to facilitate transportation between Johnston and the town of Whitehouse. When the courthouse was moved to Johnston in 1744, the ferry allowed for residents of the county to travel there to conduct business (Corbitt 2000). A large amount of the county's expenditures was used for public works, including the courthouse and jail (Watson 1995).

In the 1740s, slaves made up only 15 percent of the population of Onslow County, but by the 1770s that number had jumped to 45 percent. However, only eight people are recorded as having more than ten slaves in 1771 (Watson 1995). Slaves were used for labor in the agricultural development of the county. While Indian corn and livestock were the predominant resources, people also grew peas, fruit, flax, cotton, and tobacco. Fishing and hunting were relied upon as well, and the forests of the region provided lumber, turpentine, tar, and pitch (Watson 1995).

During the Revolutionary War in 1781, Earl Cornwallis wrote to General Clinton "North Carolina is, of all the provinces in North America, the most difficult to attack... on account of its great extent, of its numberless rivers and creeks, and the total want of interior navigation" (Carrington 1974). In spite of these setbacks the British did fight in North Carolina, though unsuccessfully. British commanders focused much of their strength on dividing the north and the south somewhere along the Virginia line, but they were hindered by the low number of Loyalist supporters in the area as well as their minimal knowledge of the land. Two large battles were won along the North Carolina/South Carolina border that helped turn the tide toward eventual American victory. The October 7, 1780 Battle of Kings Mountain was an enormous victory of Patriots over Loyalists that caused Cornwallis to withdraw out of North Carolina back into South Carolina (Cleveland County Government [CCG] 2005). Not long after, at Cowpens, on January 17, 1781, the Americans defeated the British again under the command of Daniel Morgan. Nine months later Cornwallis surrendered to Washington in Yorktown, Virginia (National Park Service [NPS] 2005). Most of Onslow County was spared from any battles during the Revolution, although in 1781 the county was raided for supplies by British troops under the direction of Major James Craig (Brown 1960).

In 1787, the port district of Swansboro was established, complimenting the existing districts of Brunswick (Wilmington), Beaufort, Bath, Roanoke, and Currituck. Trade through Port Swansboro was relatively insignificant. Twenty-two vessels, mostly small sloops and schooners, entered the port from July 1, 1789 to March 10, 1790. Trade beyond the state boundaries was mainly linked to South Carolina, but a few vessels arrived from the West Indies and New England (Watson 1995:55). Improvements to river transportation were undertaken in 1800 when the White Oak River was divided into districts, and in 1810 Swansboro commissioners were vested with the power to remove obstructions which might impede the movement of vessels along the river (Watson 1995).

Richlands Plantation, located in the northwest portion of Onslow County east of the present town of Richlands, was one of the largest naval stores producers in the region during the nineteenth century. Richlands plantation was owned by John Avirett. Having been in the county since pre-Revolutionary War times, the Aviretts became one of Onslow County's most prominent antebellum landholding families. Most of what we know about the plantation was recorded by John Avirett's his son, James B. Avirett (1901; Polson and Brown 1989; Watson 1995).

John Avirett was born in 1797 in Onslow County. His father, also named John Avirett, hosted George Washington on his southern tour (Cecelski 2000). Avirett was involved in local politics. He served as the Justice of the Peace for Onslow County and was on the Council of State. By 1850 John Avirett was the second wealthiest man in Onslow County (Watson 1995). James B. Avirett was born in 1837 and grew up on Richlands Plantation.

At its height, John Avirett owned 2,500 arable acres and 20,060 acres of timberland near the New River (Polson and Brown 1989; Watson 1995) with the turpentine orchard stretching from the New River to White Oak pocosin (Cecelski 2000). In 1850, his land was worth an estimated $25,000. In addition, he owned 125 slaves, two turpentine distilleries (including one steam distillery), and several cooperage shops. His cooperage shops produced the barrels for the turpentine at a rate of 42 barrels per cooper per week. Annual income for the plantation was approximately $60,000. Turpentine production totaled 30,000 barrels a year. Crops grown on the arable land included tobacco, sorghum, cotton, wheat, oats, rye, and corn. Limestone and marl, which was abundant in the area, was used in the agricultural fields to improve the yield. Small amounts of rice were grown along the river banks (Avirett 1901).

Many plantation owners used white overseers to supervise the work of the slaves. However, Avirett believed that white overseers were not to be trusted. Instead, Avirett used a black foreman named "Uncle Phillip." There were also subordinate foremen, who were in charge of individual activities including hoeing, ditching, boxing, turpentine production, and grist milling (Avirett 1901).

Avirett (1901) noted that the turpentine plantations could not be insured as the timber as well as their products (e.g., turpentine, rosin, tar), were all combustible. To help alleviate the potential for disaster, approximately 20 white families lived throughout the pine lands. They lived in cabins, rent free, in return for providing necessary services. Foremost was the suppression of fire. Each family was required to extinguish fires, mostly begun by lightning strikes, before they got out of hand. Other families were to be called for help if the fire became too big for one family to control. These families were also in charge of salting and caring for the cattle and sheep. Sheep were penned up every night to be protected from dogs, wildcats, and bears. The families also attended to the honey bees on the plantation. They collected the honey when it got cold and delivered it to the main house for their use. Lastly, as part of the contract, the men were to work on the estate's road system. Most of the families provided for themselves. The men hunted and fished during the day, and the

women tended to garden plots. The Richlands Plantation did serve as a market for game, poultry, and berries collected by these families (Avirett 1901).

Captain Otway Burns is another renowned Onslow County native, born near Swansboro. He served as a privateer in command of the *Snap Dragon* during the War of 1812. Burns had been a sailing master before the war, trading between New Bern and Portland, Maine. The *Snap Dragon* had three successful voyages under Burns, before it was lost to the British under another captain's command. In 1818, Burns also built and financed the *Prometheus*, the first steamboat built in North Carolina (Watson 1995).

Jacksonville was authorized as the county seat in 1842, but it was not laid out until after 1849. During the middle 1800s, the need for improved transportation saw the establishment of numerous plank road construction companies, including the Jacksonville and Trent River Plank Road Company in 1852, and the Richlands and New River Plank Road Company in 1855. Ultimately, attempts to connect Onslow County with markets in Wilmington and New Bern by plank roads were not successful (Watson 1995).

During the Antebellum period, rice and cotton became increasingly important crops. The number of slaves in the county rose from 174 in 1790 to 3,499 in 1860. Livestock populations increased. Swansboro became a prominent center for ship and steamboat production (Watson 1995). Turpentine production also increased in the county. However, some planters (including Avirett) sold off their land, likely due to the mass destruction and deforestation caused by the collecting of pine products. In fact, Cecelski (2000) suggests that the entire North Carolina naval stores industry was affected by the self-destructive force of the turpentine boom of the 1840s and 1850s. They often collected only the first season's pine sap because it brought the highest price. Pines only lived about six years after being boxed, which resulted in thousands of acres of dying forests.

North Carolina saw much more fighting on its own soil during the Civil War than it had during the Revolutionary War. The fall of New Bern in 1862 alarmed the North Carolinians who responded by initiating military training camps all over the state (Trotter 1989). Onslow County supplied five infantry and two cavalry companies to the confederacy equaling nearly one fifth of the county's population. The residents of the county suffered as there were repeated assaults to their saltworks and the general problems of poverty and hunger in the region (Watson 1995).

After the Civil War, the South was divided into five military districts with a general commander to help organize elections and the rebuilding of government. The Carolinas were overseen by Major General Daniel Sickles. All of the Southern states were required to ratify the Fourteenth Amendment, which gave citizenship and civil liberties to freed blacks, and allowed universal suffrage before they could rejoin the Union (Powell 1989). North Carolina reentered the Union in 1868.

Local economies in most of the southern states were devastated after the Civil War due to the loss of slave labor and damage to property and fields. Few farmers had the money to pay for field labor and many had to sell their land (York 1992). Farm size also began to decline during this time period as tenancy increased (Piehl 1979). The tenant farmer system led to economic and social problems in the region, and many African American laborers could afford to migrate to other parts of the county. This migration began at the end of the 1870s and continued through the 1890s (Watson 1979). The population of Onslow County dropped from 8,856 to 7,569 during this time (U.S. Census 1870-1890). Shipbuilding declined and crop and livestock production failed. The construction of railroad lines through the county connecting Swansboro with New Bern and Wilmington allowed for increased mercantilism between the towns (Watson 1995). During the late 1800s,

maritime trade centered on White Oak River and Swansboro. Naval stores, cotton, peanuts, lumber and fish were common exports (Watson 1995).

The outbreak of World War II and the establishment of Camp Lejeune brought about the most important change in Onslow County during the twentieth century. Camp Lejeune became operational in 1941. The construction of the base changed the demographics of the county as increasing numbers of single men and young families moved into the area. However, it also disrupted local life, as 720 families (2,400 people) were left homeless when their homes and/or land were taken by the government for the base construction. It took an average of two years between the time residents were evicted and they were paid some form of compensation for the loss of their property (Watson 1995). Camp Lejeune grew to be the largest Marine Corps training base in the country, covering 151,000 acres, almost 30 percent of the county's land.

Today, Onslow County has more than 150,000 residents. It encompasses 900 square miles, with about 15 percent being open water. Jacksonville has become increasingly urbanized and Swansboro has grown as the lumber industry has become more profitable there (OCO 2006). Agriculture and fishing are still large industries in the county, although retail sales have now become the largest driving force in local economy (Greater Topsail Area Chamber of Commerce [GTACC] 2004).

History of the Project Tract

The project area falls within the large land holdings of members of the Dudley family. During the eighteenth and nineteenth centuries, this family was influential in the area. According to census data, Christopher Dudley, Esquire was in North Carolina as early as 1717. His son, Christopher, accumulated thousands of acres in the project vicinity through 1799. In 1790, Christopher (junior) owned 17 slaves; his slave holdings increased to 60 by 1800. Thomas Dudley acquired 3,300 acres between 1729 and 1785. In 1790, he is shown as owning nine slaves in the first North Carolina census. In 1800, he owned only six slaves, and owned only four in 1810.

Edward Bishop Dudley was born in 1789 in the project vicinity. He was a Lieutenant Colonel in the Onslow Regiment of Volunteers who were charged with protecting Wilmington during the War of 1812. He was instrumental in the formation and success of the Whig party in North Carolina on to become the first governor of the state elected by popular vote. He served as governor from 1836 to 1841 (Hill 2007). He also organized the Wilmington and Weldon Railroad, which was the longest continuous rail line in the world at the time of its completion in 1840 at 161 miles (Gilbert and Jefferies 1969). Edward Dudley owned tens of thousands of acres of land in the county. The 1830 Federal Census lists him as owning 159 slaves. On the 1850 census, he is listed as a farmer owning 20,000 acres and 140 slaves ranging in age from 2 months to 95 years. This same record shows his son, Robert, living in his household. Robert is also listed as a farmer. After Edward's death in 1855, his son, Robert, began selling off the land holdings. The 1860 Federal Census shows Robert's real estate valued at $4,000, although the value of his personal estate exceeded $15,000. There are few records for the white Dudleys in the project area after 1860; however, a large number of black Dudleys are shown in the federal census from 1870 into the twentieth century, some of whom may have been slaves of the Dudley family who remained in the area after their emancipation.

There are gaps in the ownership records for the project area; however, in 1942 it was owned by the John L. Roper Lumber Company. Captain John L. Roper, a Virginian, began this company following the Civil War and specialized in North Carolina pine. Captain Roper retired in 1905, but the Roper Lumber Company

continued operation throughout the eastern seaboard. In 1942, the project area property was transferred to the North Carolina Pulp Company. The North Carolina Pulp Company was established in 1937 and merged with Weyerhauser in 1957 (Lilly 2012). Weyerhauser held the property until the mid 1980s when it was purchased by John Koenig. From that time on, title to the property has passed through a number of entities including Woodland Developers, LLC, and the Westminster Company. It is presently owned by Mr. Koenig, who is the developer of the Williamsburg Plantation subdivision.

Chapter 3. Results of Investigation

Background Research Results

A review of the archaeological site files was conducted at the North Carolina Office of State Archaeology (OSA) in Raleigh prior to the initiation of field investigations. Only one archaeological investigation has been conducted in the project area. This investigation was a survey of the proposed Western Blvd. Extension corridor which comes into close proximity to the project tracts. This survey was conducted in 1979. It did not identify any archaeological resources in the project area (Coats 1979). No archaeological resources had been recorded within the tract boundaries prior to our investigation.

Field Investigation Results

Approximately 314 acres of the Williamsburg Plantation Expansion tracts were slated for archaeological survey. Shovel tests were excavated at 30 meter intervals along parallel transects spaced 30 meters apart. Shovel test soil profiles varied throughout the tracts depending on the specific environmental setting. However, most soil profiles exhibited 10 to 20 cm of grayish brown sand overlaying brown or yellowish brown sandy loam to a depth of 50 to 60 cm. Yellow or red sandy clay subsoil was typically encountered below that depth. Eleven archaeological sites were recorded during this investigation. Each is discussed individually below. Fifteen isolated finds were also recorded and are discussed as a group following the archaeological site discussion. Figure 8 shows the location of all recorded archaeological resources.

Archaeological Sites

Site 31ON1831

Site Type: Prehistoric artifact scatter	**Topographic Setting**: Upland flat
Component(s): Woodland	**Vegetation:** Mixed pines and hardwoods
UTMs (NAD27): 3853141 N 275442 E	**NRHP Recommendation:** Ineligible

Site 31ON1831 is a prehistoric artifact scatter located at the northern end of the project area (Figure 8). The site is situated on an upland flat. Although the site area is relatively level, the landform slopes down steeply to the east to an intermittent stream. A woods trail is present west of the site. The site vicinity is characterized by a mixed pine and hardwood forest.

Site dimensions measure 30 by 15 meters based on the distribution of positive shovel tests and the edge of the landform (Figure 9). Typical soil profiles in the site vicinity consisted of 25 cm of dark grayish brown sandy loam overlaying grayish brown sandy loam to a depth of 60 cm. Pale brown sandy loam was present between 60 and 100+ cm below the ground surface.

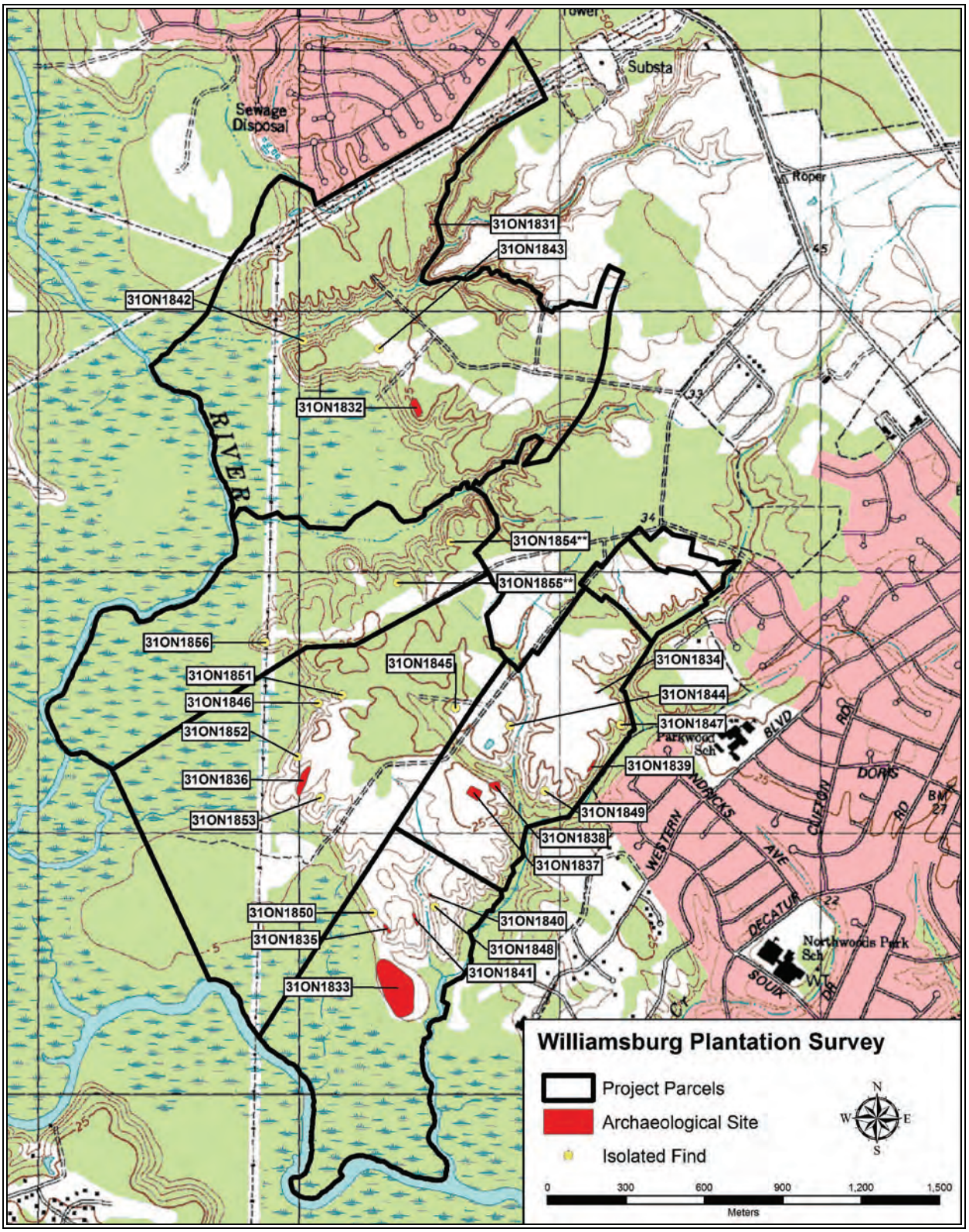

Figure 8. Map showing the Williamsburg Expansion tracts and identified archaeological resources (1997 *Jacksonville North, NC* USGS 7.5 minute topographic quadrangle).

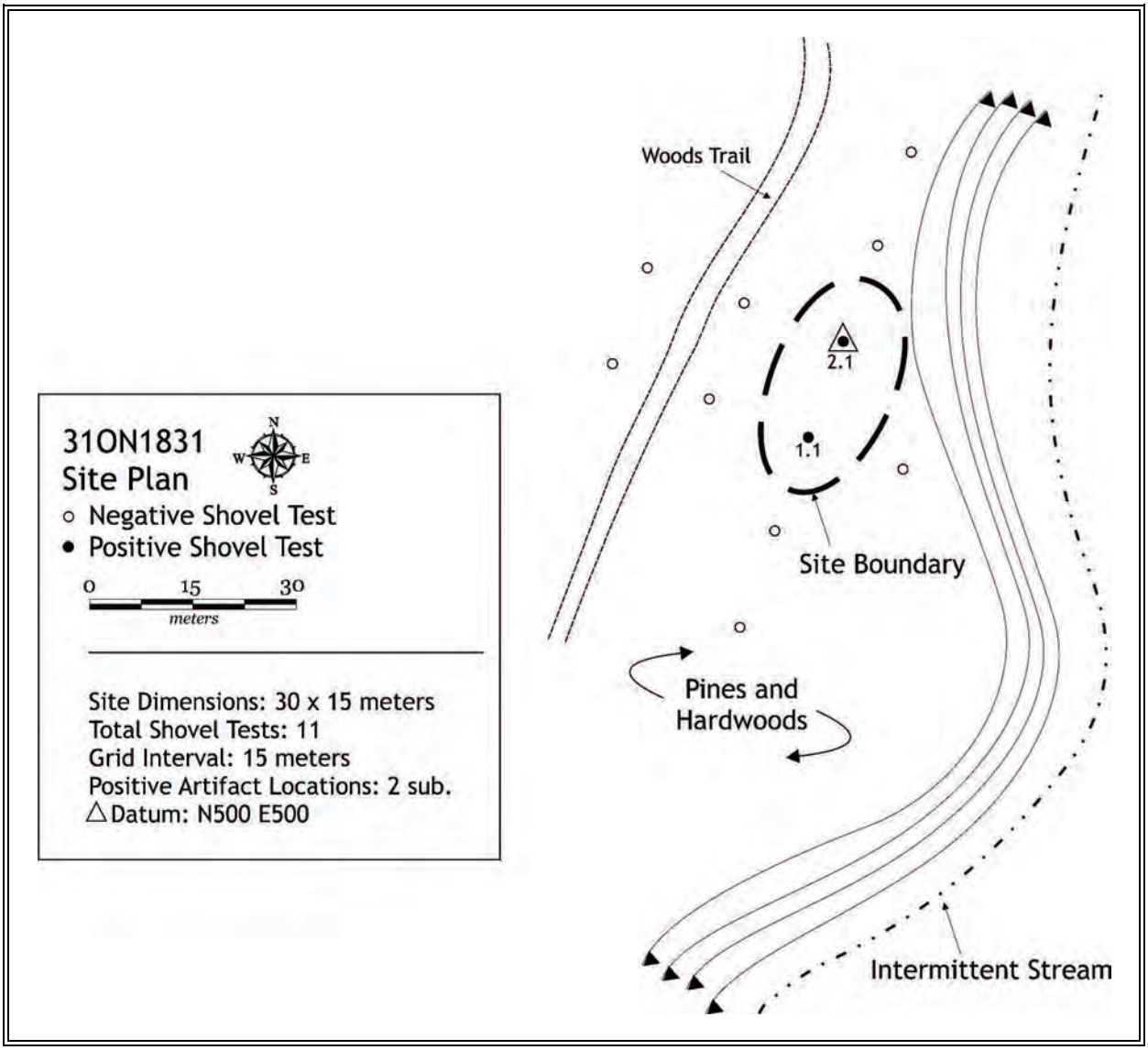

Figure 9. Plan map of site 31ON1831.

Artifacts recovered from 31ON1831 consist of one metavolcanic flake and two cord marked body sherds with fine/medium sand temper. The ceramic sherds could not be identified by type and can only be dated to the general Woodland Period. The flake is not culturally diagnostic.

Site 31ON1831 is a very small scatter of prehistoric artifacts. Despite the presence of diagnostic artifacts, no cultural features or organic remains were identified. The small size of the site does not allow for the identification of activity areas. This site will not add significantly to our understanding of the Middle Woodland Period in the project area and is recommended not eligible for the NRHP.

Site 31ON1832

Site Type: Prehistoric artifact scatter
Component(s): Middle Woodland
UTMs (NAD27): 3852425 N 275420 E
Topographic Setting: Upland flat
Vegetation: Mixed pines and hardwoods
NRHP Recommendation: Ineligible

Site 31ON1832 is a prehistoric artifact scatter located in the northern portion of the project area (see Figure 8). The site is situated at the edge of an upland flat. Steep down slope leading to an unnamed drainage is located south of the site. A trail extends through the site from north to south, before turning west at the southern end of the site. The surrounding forest contains a mix of pines and hardwoods.

The distribution of positive shovel tests forms site boundaries measuring 75 by 30 meters (Figure 10). Soil profiles from positive shovel tests typically exhibited 15 to 30 cm of brown sandy loam overlaying yellow brown sandy loam to a depth of 80 cm. Reddish yellow sandy clay was present below that depth. In some areas, the soil was much shallower with reddish yellow clay present at 40 cm below the surface.

Nine artifacts were recovered from this site (Table 4). These artifacts include seven flakes/flake fragments and two ceramic sherds. The flakes/flake fragments are made of metavolcanic and quartz. One sherd is a Hanover cord marked sherd with grog temper and is generally associated with the Middle Woodland Period. The residual sherds and lithics are not diagnostic of any particular cultural period. Artifacts were recovered from depths of up to 70 cm. However, six of nine artifacts were recovered within 30 cm of the ground surface, including the ceramics.

Table 4. Summary of Artifacts Recovered from 31ON1832.

Artifact	Count	Comments
Ceramics cord marked sherd, grog temper	1	Hanover; Middle Woodland
residual sherd	1	possibly Hanover
Lithics metavolcanic flake/flake fragment	4	
quartz flake/flake fragment	3	all with cortex

Site 31ON1832 is a Middle Woodland artifact scatter. Organic remains and cultural features were not identified at the site. Logging and cultivation of the project area has disturbed the site deposits, particularly those deposits within 30 cm of the ground surface. This site is not likely to contain well-preserved, intact deposits. Site 31ON1832 has no further research potential and is recommended not eligible for the NRHP.

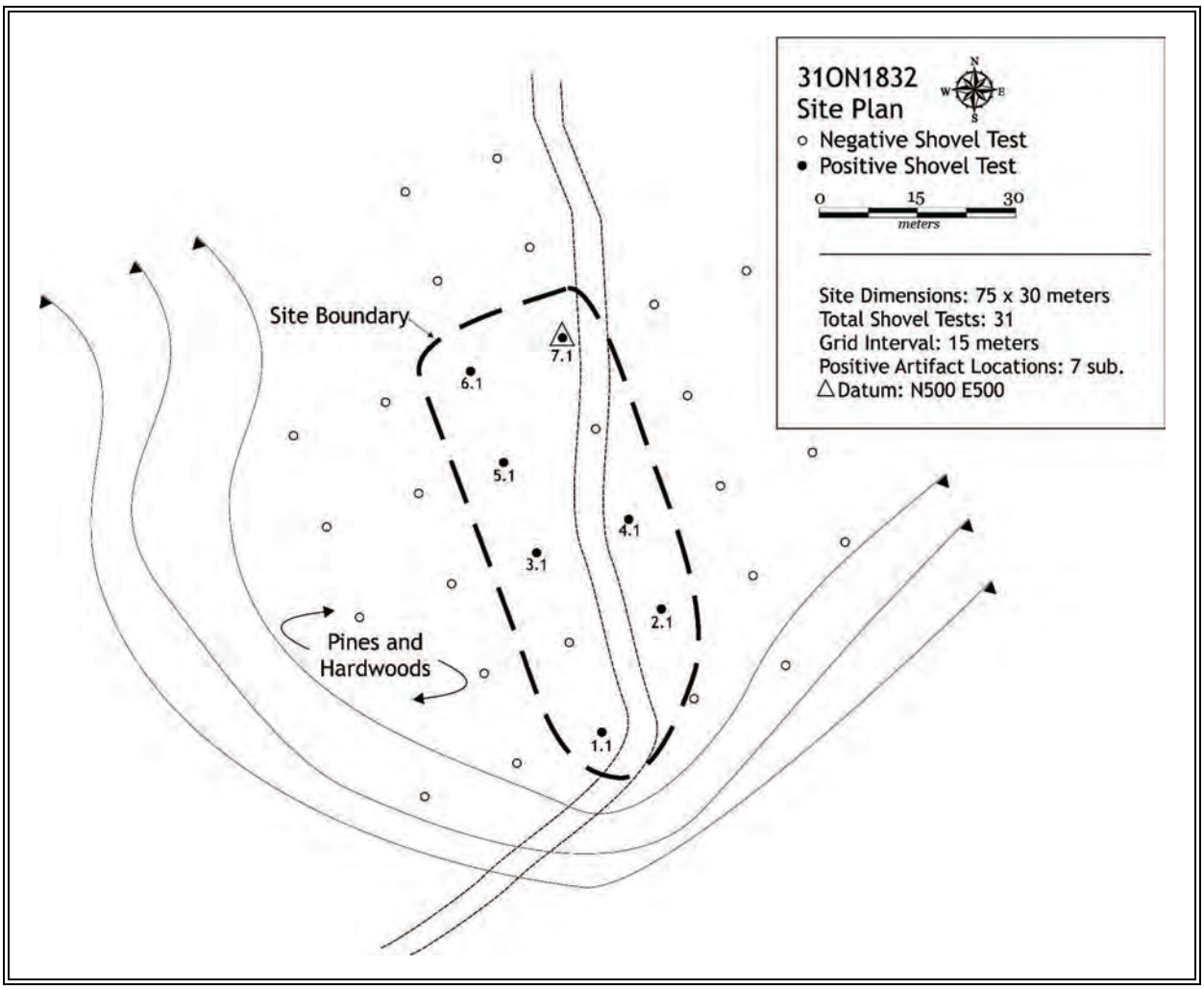

Figure 10. Plan map of site 31ON1832.

Site 31ON1833

Site Type: Prehistoric artifact scatter; Historic artifact scatter
Component(s): Early-Late Woodland, Unknown Historic
UTMs (NAD27): 3850201 N 375345 E

Topographic Setting: Upland flat
Vegetation: Mixed pines and hardwoods
NRHP Recommendation: Unassessed

Site 31ON1833 is a prehistoric artifact scatter with a few intrusive pieces of historic material. It is located at the southern end of the survey area (see Figure 8). The site is situated on a upland adjacent to a wetland associated with the New River and one of its unnamed tributaries. A trail extends from north to south along the western edge of the landform and along the western site boundary. Pines and hardwoods characterize the surrounding forest.

Positive shovel tests and the wetland were used to define site boundaries measuring 210 by 120 meters (Figure 11). Soil profiles typically exhibited 20 cm of dark gray sandy loam overlaying brown sand to a depth of 35 cm. Yellowish brown sand was present to a depth of 75 to 100 cm.

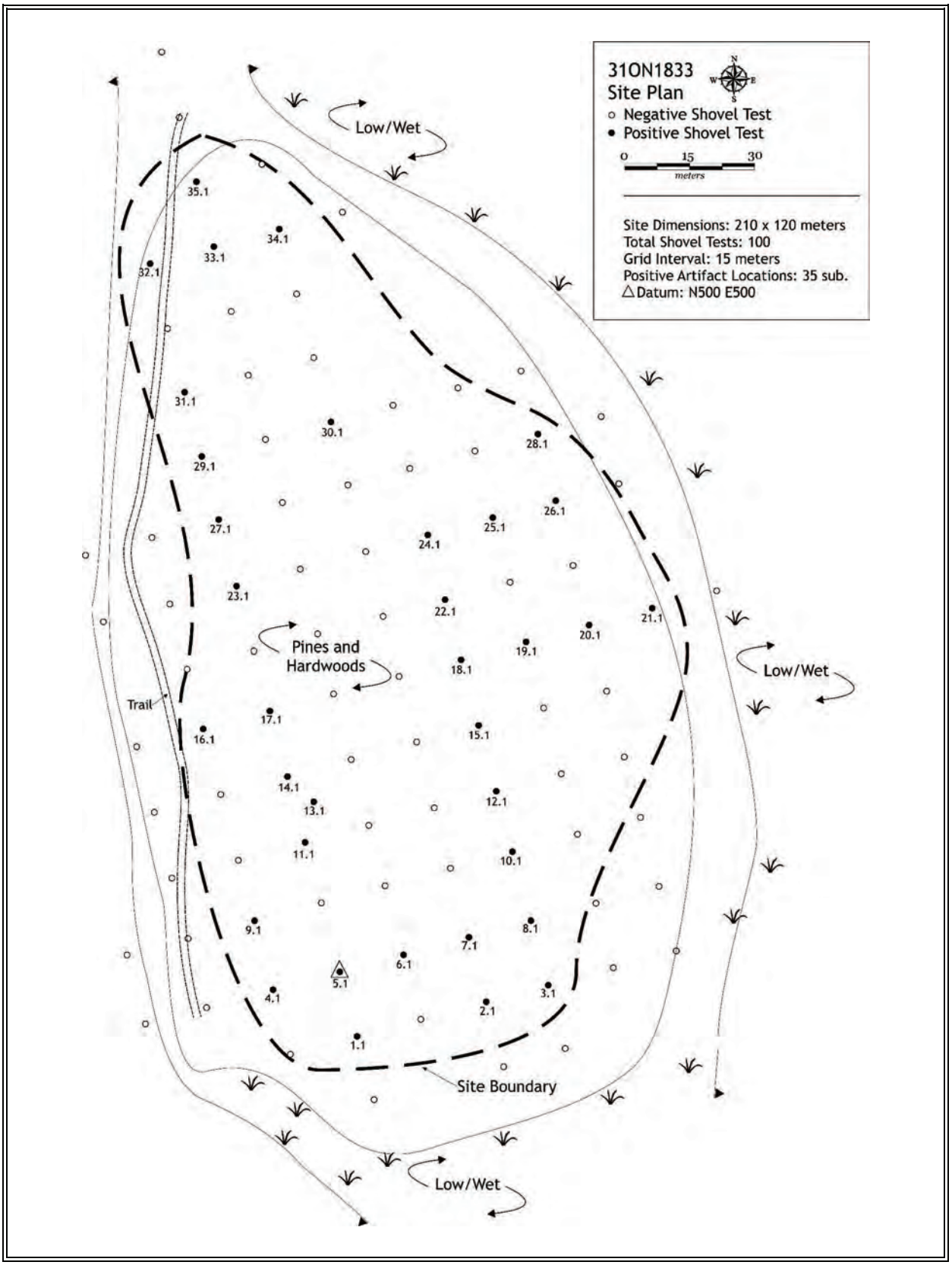

Figure 11. Plan map of site 31ON1833.

The historic assemblage includes five pieces of clear bottle glass. All were recovered from a single shovel test (Provenience 9.1) in close proximity to the trail. These artifacts are likely intrusive and are related to prior land use activities (i.e., logging, cultivation, hunting) at the site.

A total of 115 prehistoric artifacts were recovered from 31ON1833 (Table 5). These included 80 ceramic sherds and 35 lithic artifacts. Identified surface treatments include fabric impressing and cord marking. Tempering agents identified include sand (fine to very coarse grain size), limestone, grog (crushed ceramic), and shell. Diagnostic ceramics consist of Early Woodland Hamp's Landing (limestone tempered), Middle Woodland Hanover (grog tempered), and Late Woodland White Oak (shell tempered) wares. It was not possible to definitively type the sand tempered sherds, so they can only be dated to the general Woodland Period.

Table 5. Summary of Prehistoric Artifacts Recovered from 31ON1833.

Artifact	Count	Comments
Ceramics fabric impressed, very coarse sand/granular temper	1	Woodland
cord marked, very coarse sand temper	1	Woodland
fabric impressed, fine sand temper	1	Woodland
fabric impressed, limestone temper	1	Hamp's Landing; Early Woodland
fabric impressed, coarse sand and grog	6	Hanover; Middle Woodland
fabric impressed, grog temper	33	Hanover; Middle Woodland
cord marked, grog temper	3	Hanover; Middle Woodland
unidentified decoration, grog temper	7	Hanover; Middle Woodland
unidentified decoration, shell temper	1	White Oak, Late Woodland
residual sherd	26	Woodland
Lithics metavolcanic flake/flake fragment	5	all fine grained Rhyolite
quartz flake/flake fragment	24	15 with cortex
quartz pebble	1	possibly heat treated; tool or FCR?
chert flake/flake fragment	5	1 with cortex and heat treated

Hanover is the most common ceramic type and is scattered throughout the site, indicating extensive use of the landform during the Middle Woodland Period. The Hamp's Landing sherd was recovered from the central portion of the site (Provenience 19.1). The Late Woodland White Oak sherd was recovered from Provenience 30.1 near the northern end of the site. The low frequency of Early and Late Woodland artifacts suggests that these occupations were ephemeral. The Early Woodland Hamp's Landing and Middle Woodland Hanover sherds were recovered between 0 and 30 cm below the surface. The Late Woodland White Oak was recovered between 0 and 20 cm below surface. The difference in depths between the earlier and later artifacts suggests that the site may retain some level of stratigraphic integrity.

The lithic assemblage is composed of 34 flakes/flake fragments and one quartz pebble. Lithic raw materials include metavolcanic, chert and quartz. None of these artifacts can be attributed to a particular cultural period. There are no distinctive concentrations of lithic artifacts or raw materials at the site. Most of the artifacts (ceramics and lithics) were recovered within 40 cm of the ground surface. However, deposits extended to depths approaching 70 cm. In some instances (Proveniences 2.1/2, 13.1, and 27.1), a distinct stratigraphic break between artifacts was observed, indicating deep deposits and possible stratigraphically (and temporally) distinct occupations. These deep deposits may indicate a possible, as yet unrecognized, Archaic component.

Site 31ON1833 is a large scatter of prehistoric artifacts dating to the Early through Late Woodland Periods with a minor historic component. The historic component is minimal, likely intrusive, and has no further research potential. The prehistoric component contains several diagnostic ceramics. Specific loci for the Early and Late Woodland Period occupations may be identified by the distribution of the Hamp's Landing and White Oak ceramics. The site also appears to retain some stratigraphic integrity based on the depths of the ceramic and lithic deposits. Although no cultural features were identified during the survey, there appears to be little observable disturbance to the site, and the potential for identifying intact cultural deposits (i.e., features) is good. 31ON1833 has the potential to yield important data pertaining to the ceramic chronology, lithic reduction strategies, and settlement patterns of Woodland Period peoples. Additional work is necessary to fully determine the research potential of this site. Therefore, we recommend 31ON1833 be considered unassessed with respect to NRHP criteria pending further investigation.

Site 31ON1834

Site Type: Prehistoric artifact scatter	**Topographic Setting**: Ridge toe
Component(s): Woodland	**Vegetation:** Mixed pines and hardwoods
UTMs (NAD27): 3851334 N 276112 E	**NRHP Recommendation:** Ineligible

Site 31ON1834 is a prehistoric lithic scatter located in the east-central portion of the project area (see Figure 8). The site is situated on a narrow, relatively level ridge toe. A steep down slope toward an unnamed tributary of the New River is present east of the site deposits. Steep ridge side slope is present north and south of the deposits. An existing sewer line corridor bounds the site on the east. A mixed pine and hardwood forest characterizes the site vicinity.

Site dimensions measuring 15 by 75 meters were established based on the distribution of positive shovel test and the landform (Figure 12). Typical soil profiles in the site vicinity consisted of 20 cm of grayish brown sandy loam overlaying yellowish brown sandy loam to a depth of 30 cm. Mottled sandy clay subsoil was present below 30 cm.

Excavations at 31ON1834 yielded two quartz flakes/flake fragments, one quartz projectile point fragment, and one residual sherd. The residual sherd can be placed within the broad Woodland Period, but none of the artifacts can be attributed to a specific subperiod.

Site 31ON1834 is a Woodland artifact scatter. No diagnostic artifacts, organic remains, or cultural features were identified at the site. The site has been adversely impacted by logging and cultivation and is not likely to contain well-preserved, intact cultural deposits. 31ON1834 is recommended not eligible for the NRHP.

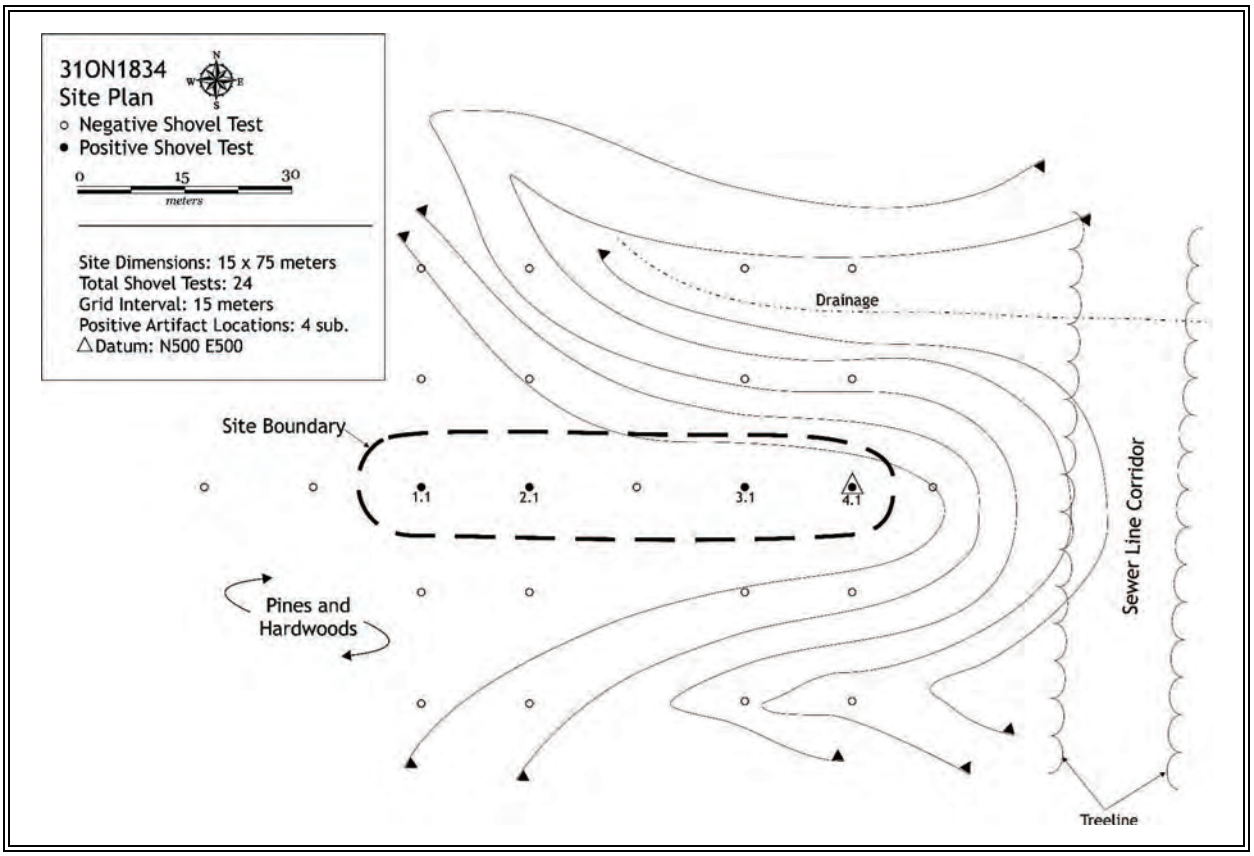

Figure 12. Plan map of site 31ON1834.

Site 31ON1835

Site Type: Prehistoric artifact scatter
Component(s): Woodland
UTMs (NAD27): 3850428 N 275305 E
Topographic Setting: Upland flat
Vegetation: Mixed pines and hardwoods
NRHP Recommendation: Ineligible

Site 31ON1835 is a prehistoric artifact scatter located in the southern portion of the project tract, approximately 120 meters north of 31ON1833 (see Figure 8). This site is situated on the edge of an upland flat and extends slightly down the side slope which slopes down to the west toward a marsh associated with the New River. Mixed pine and hardwood forest characterizes the site vicinity.

Positive shovel tests at the site form boundaries measuring 45 by 15 meters (Figure 13). Shovel test soil profiles exhibited 10 cm of very dark gray sandy loam overlaying brown sandy loam to a depth of 30 cm. Yellowish brown sandy loam was present between 30 and 50 cm, below which pale brown sandy loam was encountered.

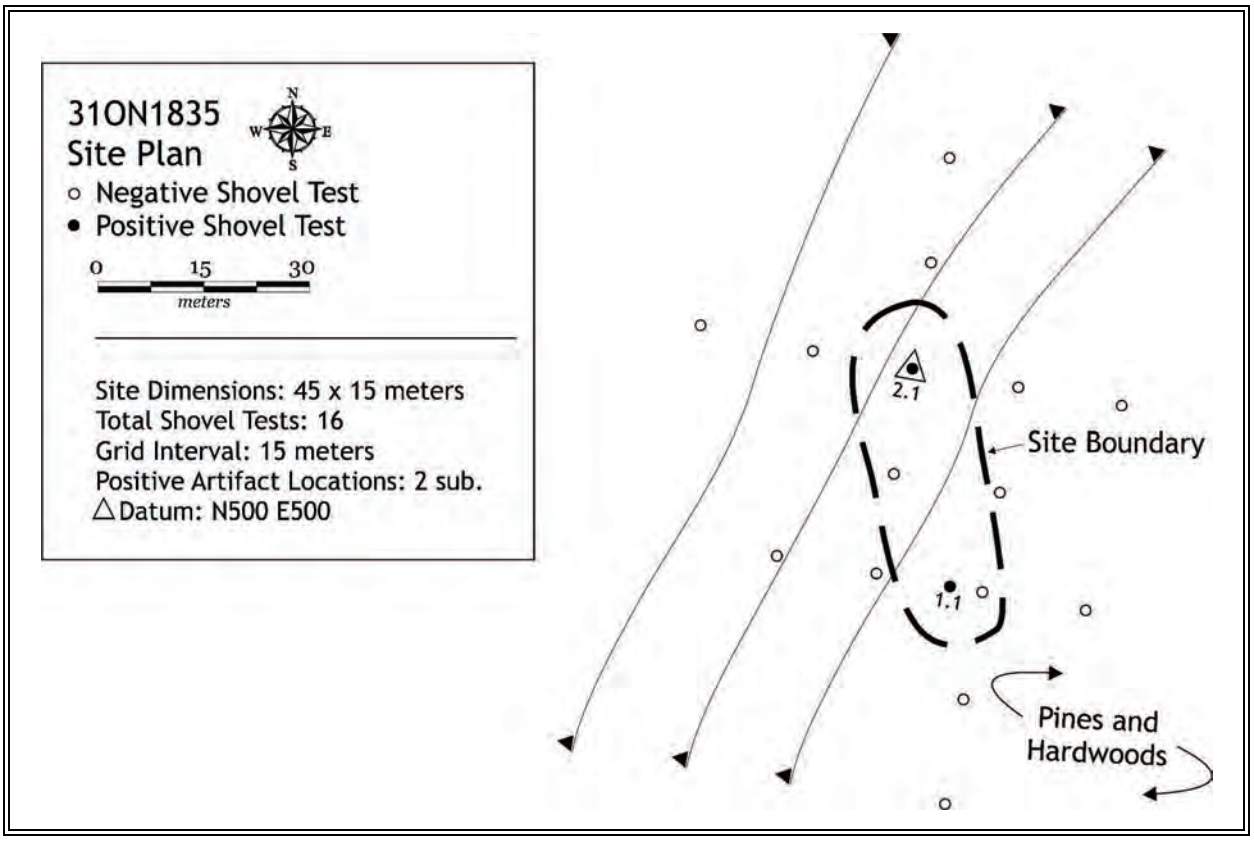

Figure 13. Plan map of site 31ON1835.

Artifacts recovered from site 31ON1835 consist of one metavolcanic flake/flake fragment and two ceramic sherds. Surface treatments include fabric impressed and an unidentified decoration. Both sherds are sand tempered. Neither sherd has characteristics distinctive of a particular ceramic type. They can only be associated with the general Woodland Period. The ceramics were recovered within 15 cm of the ground surface. The flake was recovered between 20 and 40 cm below the surface.

Site 31ON1835 yielded an extremely small artifact assemblage. No diagnostic artifacts, cultural features, or organic remains were identified. The cultural deposits are shallow and have been disturbed by logging and agricultural activities. This site will not contribute new or significant data pertaining to the Woodland Period. Site 31ON1835 is recommended not eligible for the NRHP.

Site 31ON1836

Site Type: Prehistoric artifact scatter
Component(s): Middle Woodland
UTMs (NAD27): 3850995 N 274982 E

Topographic Setting: Ridge nose
Vegetation: Mixed pines and hardwoods
NRHP Recommendation: Ineligible

Site 31ON1836 is a prehistoric artifact scatter located in the west-central portion of the survey area (see Figure 8). The site is situated on a ridge nose that slopes down to the southwest. Steeper ridge side slopes are present northwest and southeast of the site. The surrounding forest contains a mix of pines and hardwoods.

Dimensions of the site measure 120 by 30 meters (Figure 14). These boundaries were determined based on the distribution of positive shovel tests and the landform. Soil profiles consisted of 15 cm of grayish brown sandy loam overlaying brown sandy loam to a depth of 35 cm. Yellowish brown sandy loam, grading to pale brown, was present below 35 cm and extended to depths greater than 75 cm below surface.

A total of 25 artifacts were collected from this site (Table 6). They include 14 ceramic sherds, one piece of fired clay, and 10 flakes/flake fragments. The ceramics include both rim and body sherds. Fabric impressed, net impressed, and cord marked account for the identifiable surface treatments. Tempering agents include various grain sizes of sand and grog. Middle Woodland Hanover (grog tempered) ceramics are the only diagnostic wares in the assemblage. The sand tempered wares could not be identified by type. The lithic assemblage consists of non-diagnostic debitage. Lithic raw materials include quartz and metavolcanics.

Table 6. Summary of Artifacts Recovered from 31ON1836.

Artifact	Count	Comments
Ceramics fabric impressed, fine/medium sand temper	1	Woodland
fabric impressed, medium sand temper	1	Woodland
net impressed, coarse/very coarse sand temper	1	Woodland
cord marked, grog temper	2	Hanover, Middle Woodland
net impressed, grog temper	1	Hanover; Middle Woodland
unidentified decoration, very coarse sand temper	1	Woodland
residual sherd	7	Woodland
fired clay	1	
Lithics metavolcanic flake/flake fragment	3	
quartz flake/flake fragment	7	

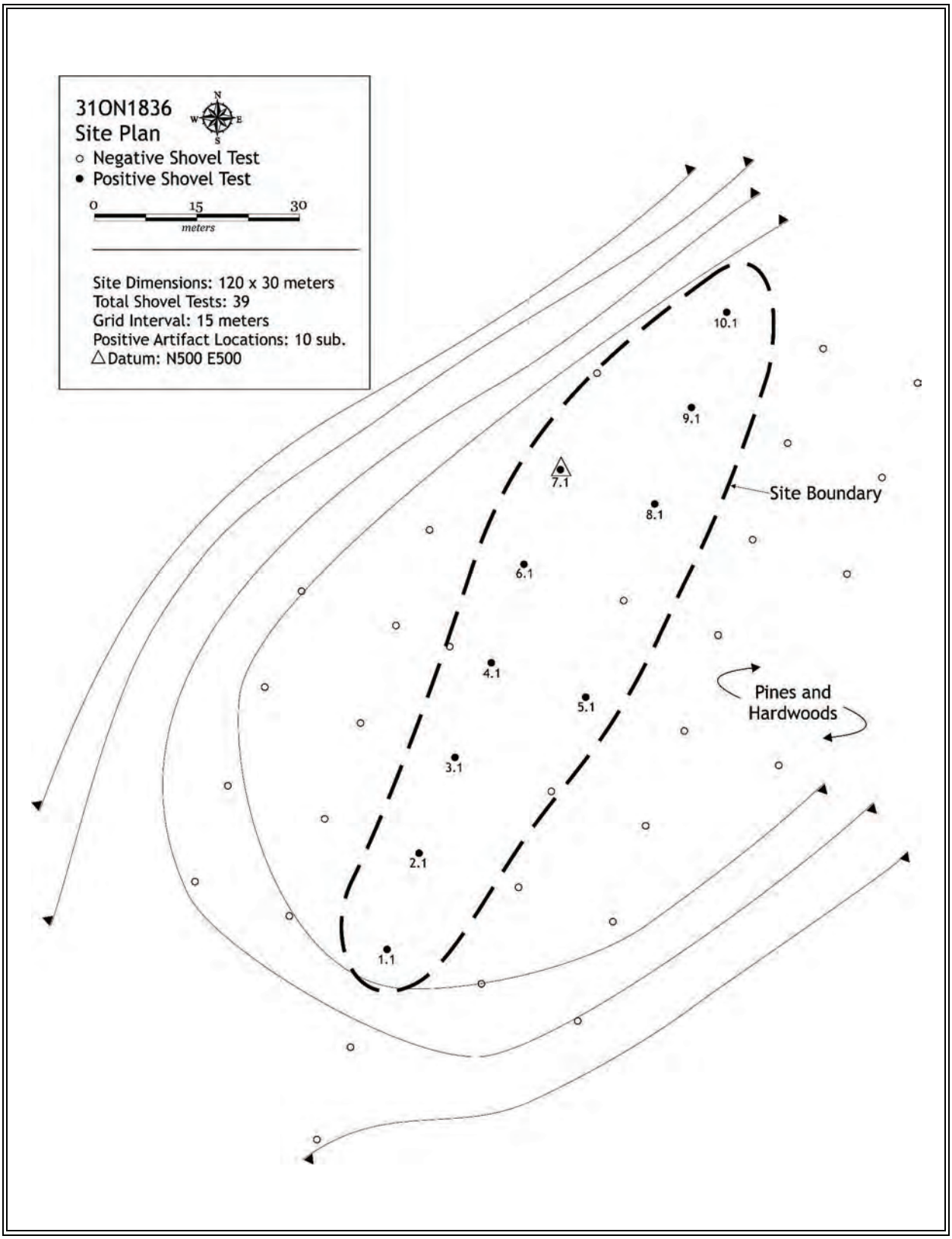

Figure 14. Plan map of site 31ON1836.

The distribution of the artifacts do not show any apparent patterns. The ceramics are evenly distributed throughout the site. The lithics are also relatively evenly distributed, although three of the four shovel tests that yielded lithic artifacts are located in the central and northern portions of the site. Artifacts were typically recovered within 30 cm of the ground surface. The two exceptions are Proveniences 3.1 and 4.1 which had deposits extending to 40 and 50 cm, respectively.

Site 31ON1838 is a Middle Woodland artifact scatter. The site has been disturbed by logging and agricultural activities. The deposits are relatively shallow, increasing their likelihood of being disturbed and mixed. The potential for identifying well-preserved, intact deposits (i.e., cultural features) and stratigraphically distinct occupations is low. Specific activity areas were also not discernable from the artifact distributions. This site has no further research potential and is recommended not eligible for the NRHP.

Site 31ON1837

Site Type: Prehistoric artifact scatter
Component(s): Middle Woodland
UTMs (NAD27): 3850948 N 275640 E
Topographic Setting: Upland flat
Vegetation: Mixed pines and hardwoods
NRHP Recommendation: Ineligible

Site 31ON1837 is a prehistoric artifact scatter located in the east-central portion of the project area (see Figure 8). The site is situated on an upland flat. There is virtually no topographic relief in the immediate site vicinity. An old logging road/trail is located approximately 45 to 60 meters southwest of the site. A mixed pine and hardwood forest characterizes the site vicinity.

The distribution of positive shovel tests forms site boundaries measuring 60 by 60 meters (Figure 15). Typical shovel test soil profiles consisted of 10 cm of dark gray sandy loam overlaying grayish brown sandy loam to a depth of 30 cm. Yellowish brown sandy loam, grading to pale brown/white sand, was present between 40 and 70+ cm below surface.

A total of 11 artifacts were recovered from 31ON1837 (Table 7). They include lithic debitage and prehistoric ceramics. The lithic assemblage includes quartz and metavolcanic flakes/flake fragments and one piece of shatter. The ceramic assemblage consists of six sherds. Cord marking and simple stamping account for the identified surface treatments. Two of the sherds are diagnostic Hanover wares. One has an unidentified decoration, and one is cord marked. Hanover wares are typically associated with the Middle Woodland Period. The remaining sherds could not be specifically identified to type.

The majority of the artifacts were recovered within 30 cm of the surface, although deposits did extend up to 60 cm in some areas. Artifacts are widely dispersed, and their distribution does not show any particular pattern.

Site 31ON1837 is a Middle Woodland artifact scatter. The site has low artifact density, and the artifact assemblage is limited. The site deposits have been disturbed by logging and cultivation leaving little potential for the presence of intact cultural deposits. Site 31ON1837 will not yield significant data pertaining to the Middle Woodland period and is recommend not eligible for the NRHP.

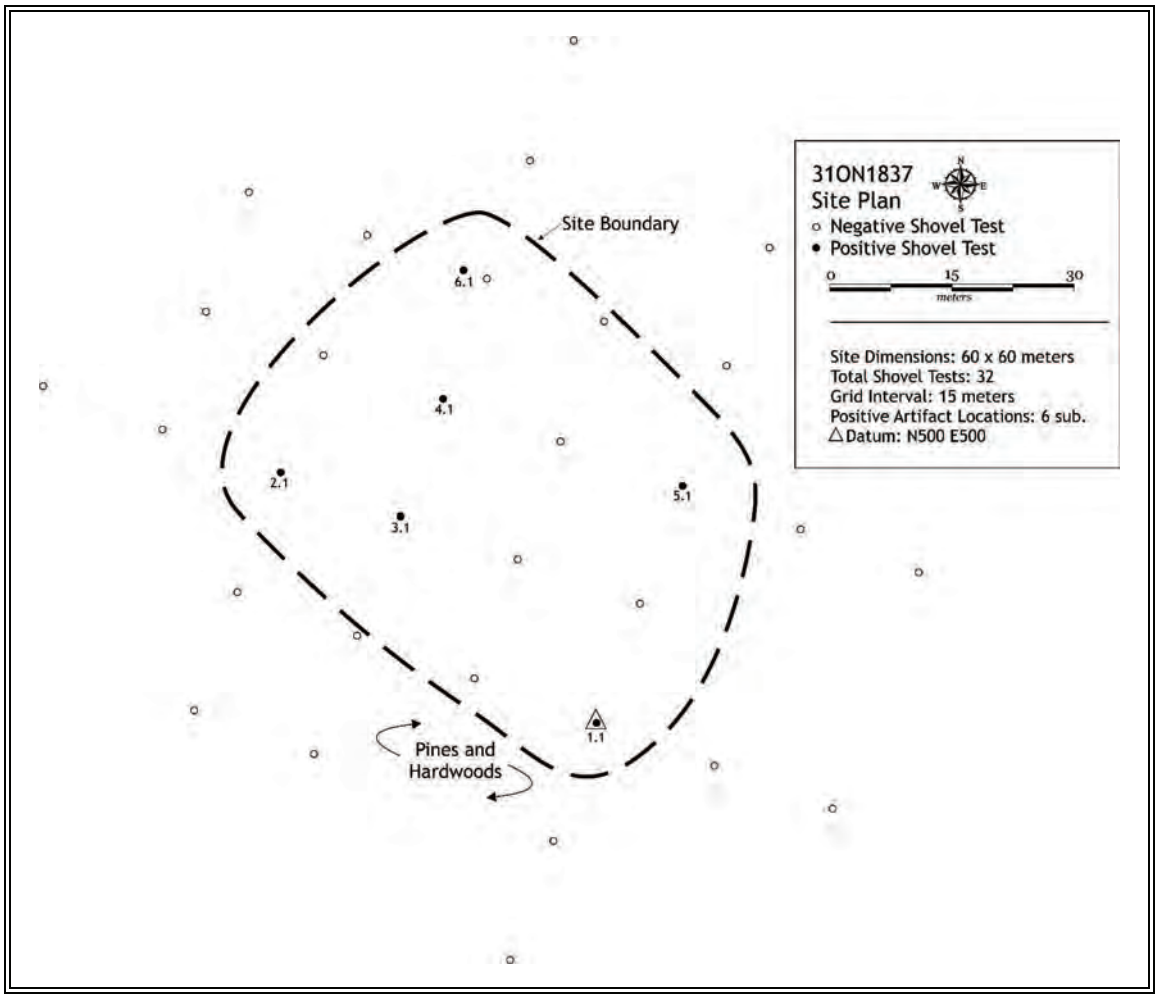

Figure 15. Plan map of site 31ON1837.

Table 7. Summary of Artifacts Recovered from 31ON1837.

Artifact	Count	Comments
Ceramics cord marked, fine sand temper	1	Woodland
cord marked, grog temper	1	Hanover; Middle Woodland
unidentified decoration, grog temper	1	Hanover; Middle Woodland
residual sherd	3	1 simple stamped
Lithics metavolcanic flake/flake fragment	3	
quartz flake/flake fragment	1	with cortex
quartz shatter	1	with cortex, possible core fragment

Site 31ON1838

Site Type: Prehistoric artifact scatter
Component(s): Early Woodland
UTMs (NAD27): 3850975 N 275721 E
Topographic Setting: Upland flat
Vegetation: Mixed pines and hardwoods
NRHP Recommendation: Ineligible

Site 31ON1838 is a prehistoric artifact scatter located approximately 60 meters east of site 31ON1837 (see Figure 8). The site is situated at the edge of an upland flat. Steep side slope is present north of the site. At the bottom of the side slope is a small intermittent drainage. Pines and hardwoods characterize the surrounding forest. Push piles extend through the site. A large, shallow depression is present at the southern end of the site.

Site dimensions measure 56 by 60 meters based upon the distribution of positive shovel tests and the landform (Figure 16). Typical soil profiles observed at the site consisted of 15 cm of dark gray sandy loam overlaying yellow or pale brown sandy loam to a depth of 40 cm. Pale brown clay loam was present below 40 cm.

Positive shovel tests yielded nine artifacts (Table 8). The assemblage includes four ceramics and five non-diagnostic quartz flakes/flake fragments. The ceramics exhibited fabric impressed and cord marked surface treatments. One sherd has an unidentifiable decoration. Identified tempering agents include limestone and sand. The limestone tempered sherds are Hamp's Landing dating to the Early Woodland Period. The sand tempered sherds could not be identified to type. All artifacts were recovered within 40 cm of the ground surface.

Table 8. Summary of Artifacts Recovered from 31ON1838.

Artifact	Count	Comments
Ceramics fabric impressed, fine sand temper	1	Woodland
fabric impressed, limestone tempered	1	Hamp's Landing; Early Woodland
unidentified decoration, limestone tempered	1	Hamp's Landing; Early Woodland
cord marked, medium sand temper	1	Woodland
Lithics quartz flake/flake fragment	5	all with cortex

Site 31ON1838 is a scatter of ceramics and lithics dating from the Early Woodland Period. The site deposits are shallow and have been disturbed by logging and cultivation. Additional disturbance is indicated by the push piles and depression. This site deposits will not yield significant data pertaining to the Early Woodland Period and have no further research potential. Site 31ON1838 is recommended not eligible for the NRHP.

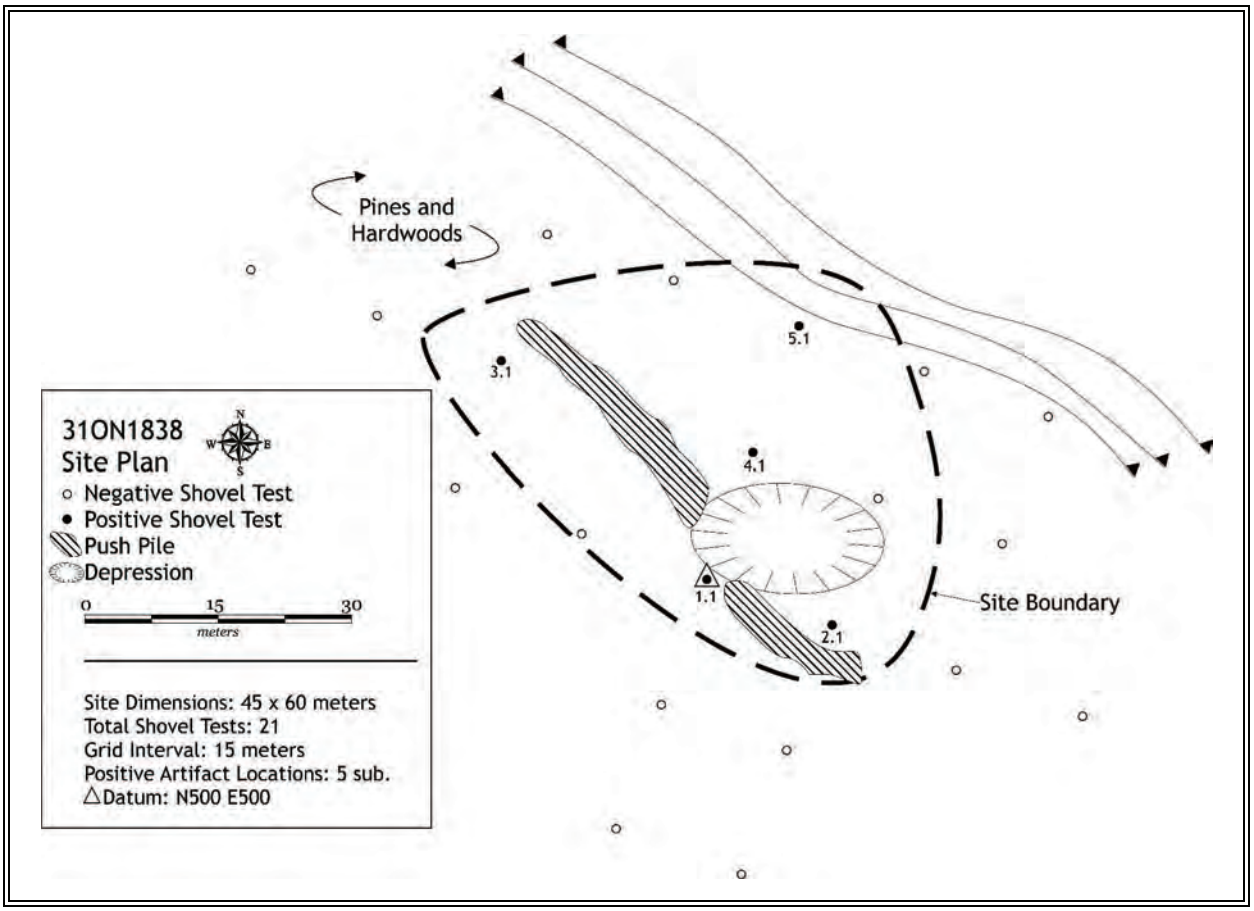

Figure 16. Plan map of site 31ON1838.

Site 31ON1839

Site Type: Prehistoric artifact scatter	**Topographic Setting**: Bluff
Component(s): Middle Woodland	**Vegetation:** Mixed pines and hardwoods
UTMs (NAD27): 3851048 N 276088 E	**NRHP Recommendation:** Ineligible

Site 31ON1839 is a prehistoric artifact scatter located along the eastern boundary of the project area (see Figure 8). The site is situated on a bluff edge overlooking an unnamed tributary of the New River. Steep slope leading down to the unnamed creek borders the site on the east. The site is surrounded by mixed pine and hardwood forest.

The distribution of positive shovel tests forms site boundaries measuring 20 by 60 meters (Figure 17). Soil profiles exhibited 30 cm of dark grayish brown sandy loam overlaying yellowish brown sandy loam. Yellow sandy clay was present below 60 cm.

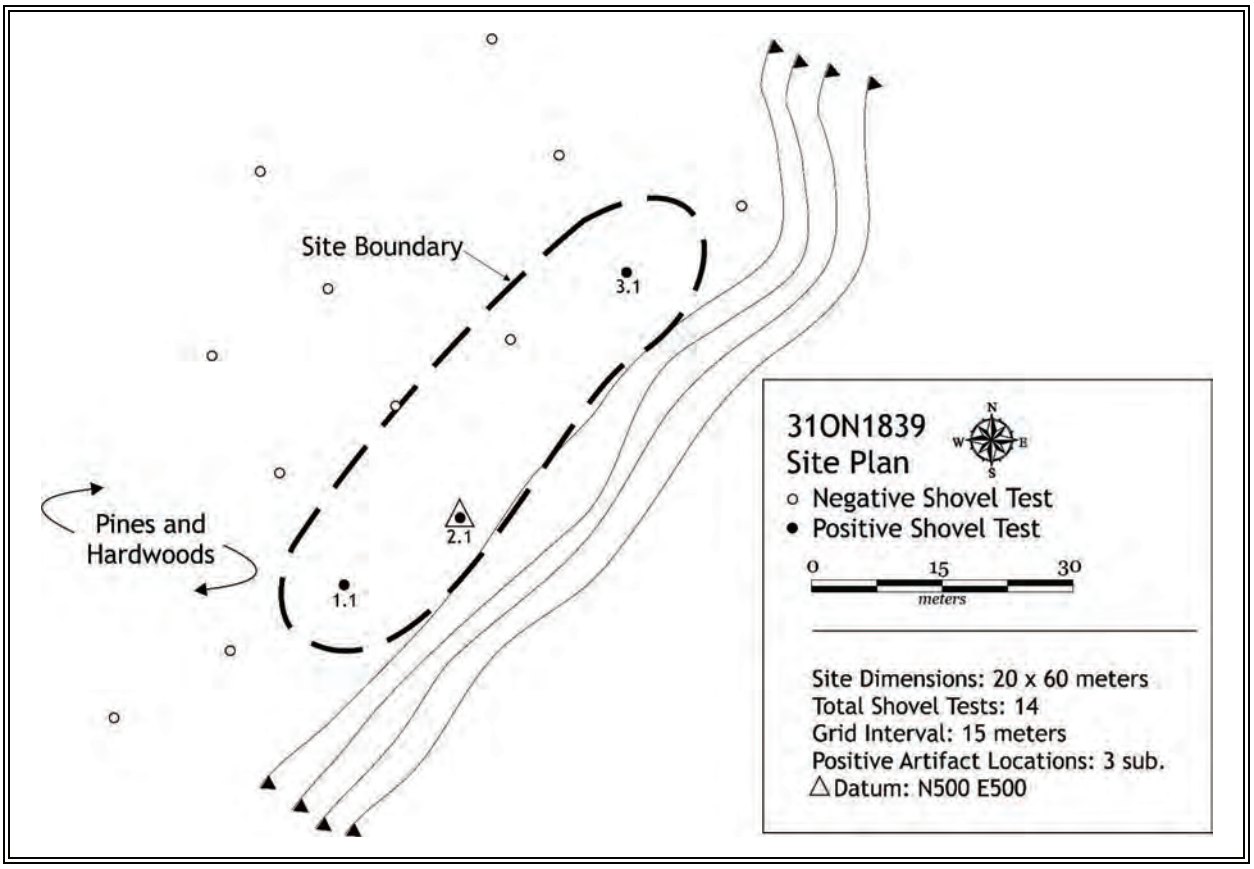

Figure 17. Plan map of site 31ON1839.

Artifacts recovered from 31ON1839 include one grog tempered sherd with an unidentifiable decoration, two residual sherds, one quartz cobble fragment, and three metavolcanic flakes/flake fragments. The grog tempered sherd and one of the residual sherds are Hanover wares and date to the Middle Woodland. Artifacts were typically recovered within 30 cm of the ground surface.

Site 31ON1839 is a scatter of Middle Woodland artifacts. The artifact assemblage is limited and has been disturbed by past logging and cultivation. The potential for identifying intact cultural features is low. This site does not retain sufficient data to address pertinent research questions pertaining to the Middle Woodland Period. Therefore, 31ON1839 is recommended not eligible for the NRHP.

Site 31ON1840

Site Type: Prehistoric ceramic scatter
Component(s): Middle Woodland
UTMs (NAD27): 3850557 N 275470 E

Topographic Setting: Ridge toe
Vegetation: Mixed pines and hardwoods
NRHP Recommendation: Ineligible

Site 31ON1840 is a prehistoric ceramic site located in the southern portion of the project area (see Figure 8). The site is situated on a ridge toe that slopes down to the south. An unnamed creek is located at the bottom of the landform. Pines and hardwoods characterize the site vicinity.

Site boundaries measuring 15 by 15 meters were established based on a single positive shovel test (Figure 18). Soil profiles exhibited 10 cm of dark grayish brown sandy loam overlaying yellow sandy loam to a depth of 50 cm. Yellow sandy clay was present below 50 cm.

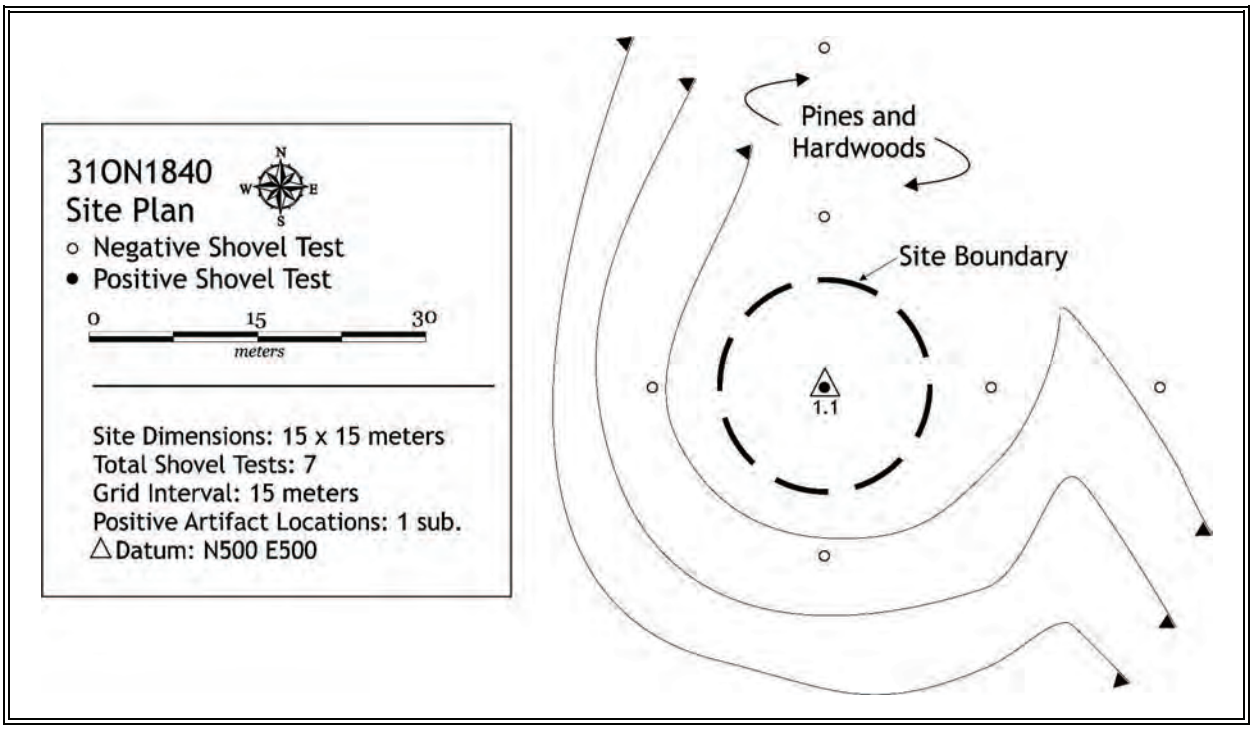

Figure 18. Plan map of site 31ON1840.

Site 31ON1840 yielded three Hanover Fabric Impressed sherds, two of which mend. This would date the site occupation to the Middle Woodland period. The artifacts were recovered between 0 and 20 cm below surface.

Site 31ON1840 is a small site consisting of Middle Woodland Hanover sherds. The site deposits are minimal and have been disturbed by past land-use activities. No lithic artifacts, organic remains, or cultural features were identified. The site will not contribute significantly to our understanding of the Middle Woodland Period and is recommended not eligible for the NRHP.

Site 31ON1841

Site Type: Prehistoric ceramic scatter
Component(s): Middle Woodland
UTMs (NAD27): 3850466 N 275413 E

Topographic Setting: Ridge top
Vegetation: Mixed pines and hardwoods
NRHP Recommendation: Ineligible

Site 31ON1841 is a prehistoric ceramic scatter located approximately 90 meters southwest of site 31ON1840 (see Figure 8). The site is situated at the edge of a relatively level ridge. Steep ridge side slope leading down to an unnamed creek borders the site on the east. The surrounding forest contains a mix of pines and hardwoods.

Site boundaries measure 60 by 15 meters (Figure 19). These dimensions were based on the distribution of positive shovel tests. Soil profiles consisted of 20 cm of grayish brown sandy loam overlaying brown sandy loam to a depth of 40 cm. Pale yellow sandy clay was present below 40 cm.

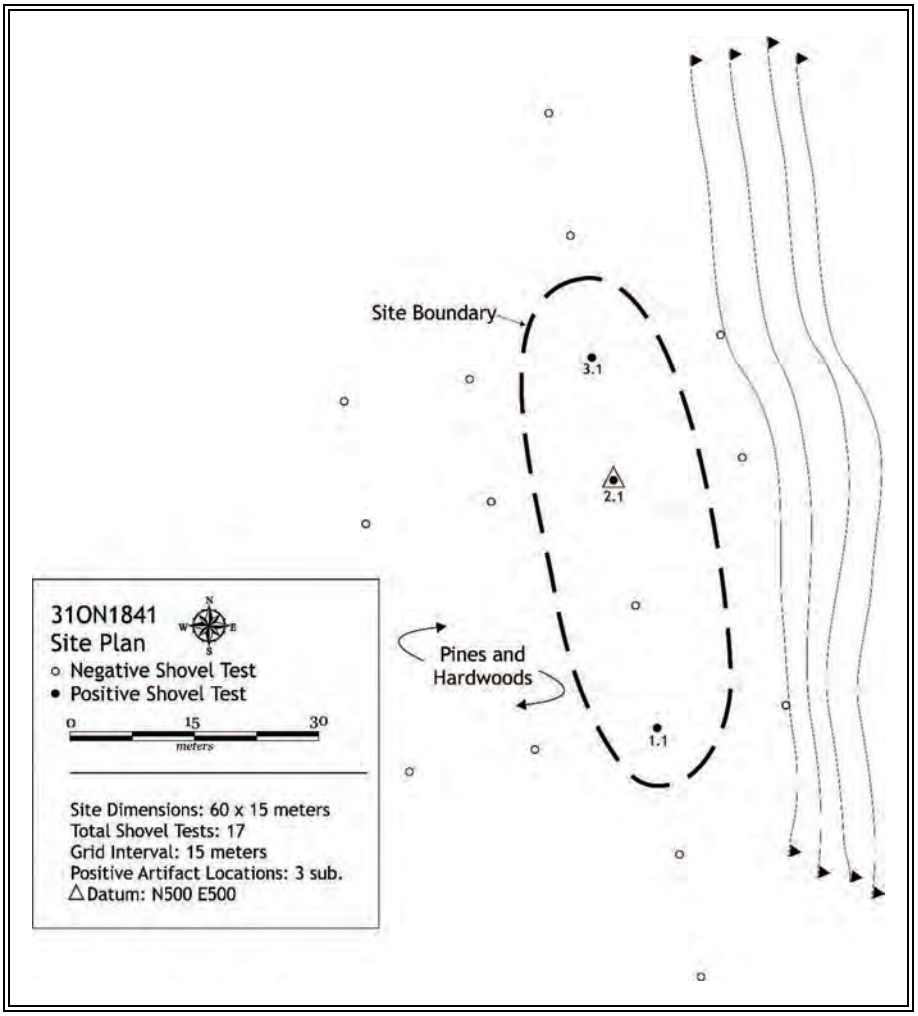

Figure 19. Plan map of site 31ON1841.

Two fabric impressed sherds with grog temper and four residual sherds, also with grog temper, were recovered at site 31ON1841. There ceramics are attributed to the Middle Woodland Hanover series. Ceramics were recovered within 30 cm of the ground surface.

Site 31ON1841 is scatter of Middle Woodland Hanover sherds. The artifact assemblage is limited with no lithic artifacts identified. Cultural features and organic remains were also not observed at the site. The shallow deposits have been disturbed by logging and cultivation. The lack of well-preserved, intact deposits leaves the site with no further research potential. Site 31ON1841 is recommended not eligible for the NRHP.

Isolated Find Discussion

Fifteen isolated finds were identified during the survey (Table 9). Their locations are shown in Figure 8. Of these isolated finds, two are historic and 13 are prehistoric. The historic isolates consist of brick, metal, and glass. None of the historic isolates can be dated to a specific time period. The prehistoric isolates consist of metavolcanic, quartz, and chert debitage, residual and cord marked sherds. None of the lithic artifacts are culturally diagnostic. The ceramic sherds cannot be identified by specific type and can only be affiliated with the general Woodland Period. In all instances, supplemental shovel testing at these resources was conducted at 15 meter intervals, but no more than two artifacts were identified. These isolated finds do not retain sufficient data to address current research issues pertaining to the history or prehistory of the region. Therefore, all 15 isolated finds are recommended not eligible for the NRHP.

Table 9. Summary of Isolated Finds Identified in the Williamsburg Expansion Tracts.

Isolate Number	Description	Comment
31ON1842	cord marked sherd, coarse sand temper	Woodland
31ON1843	chert flake/flake fragment	
31ON1844	quartz flake/flake fragment	
31ON1845	quartz flake/flake fragment	
31ON1846	quartz flake/flake fragment	
31ON1847	metavolcanic flake/flake fragment	
31ON1848	quartz flake/flake fragment	
31ON1849	1 cord marked sherd with fine/medium sand temper 1 quartz flake/flake fragment	Woodland
31ON1850	1 residual sherd 1 metavolcanic flake/flake fragment	Woodland
31ON1851	1 quartz flake/flake fragment 1 quartz cobble fragment	
31ON1852	2 residual sherds	Woodland

Isolate Number	Description	Comment
31ON1853	1 metavolcanic flake/flake fragment 1 quartz flake/flake fragment	
31ON1854**	brick fragment, unidentified metal fragment	
31ON1855**	light olive green bottle glass	
31ON1856	1 metavolcanic flake/flake fragment 1 chert flake/flake fragment	

Chapter 4. Discussion and Recommendations

In October 2011, Archaeological Consultants of the Carolinas, Inc. (ACC), conducted an archaeological reconnaissance of approximately 900 acres within the Williamsburg Plantation expansion tracts. The reconnaissance survey identified approximately 314 aces of uplands within the tract deemed to have a high potential for archaeological remains. The subsequent archaeological survey of 314-acres was conducted in January and February 2012.

The archaeological survey resulted in the identification of 11 archaeological sites (31ON1831-31ON1841) and 15 isolated finds (31ON1842-31ON1856). Most of the archaeological sites and the isolated finds are located along the edges of uplands and ridges overlooking a drainage or other water source (i.e., wetland). With the exception of isolates 31ON1843 and 31ON1855**, all resources are located within 100 meters of a water source. 31ON1843 and 31ON1855** are only slightly more distant at approximately 120 meters. Despite the numerous micro landforms extending from the uplands, only site 31ON1834 and Isolates 31ON1846, 31ON1847, 31ON1849 and 31ON1853 are located on these smaller landforms. The small size of the landform, and correspondingly small size of the archaeological resources, may be indicative of short-term camps related to hunting or resource procurement activities.

The archaeological sites all contain components dating to the Early, Middle, and/or Late Woodland periods. Specifically there are one Early Woodland, six Middle Woodland, and one Early through Late Woodland sites. These components are defined by the ceramic assemblages and include Hamp's Landing (Early Woodland), Hanover (Middle Woodland), and Late Woodland (White Oak) series. Three sites can only be placed within the general Woodland Period. The prehistoric isolated finds include unknown lithic and general Woodland ceramic components. Two of the isolated finds are historic but cannot be dated to a specific time period. In summary, the Williamsburg Plantation expansion tracts were used extensively throughout the Woodland Period, with the most intensive occupation of the area dating to the Middle Woodland Period. Native Americans living within the project tract likely made use of the abundant faunal and floral resources made available by the presence of the New River and its associated wetlands.

Ten of the archaeological sites (31ON1831, 31ON1832, 31ON1834-1841) and all of the isolated finds do not retain sufficient deposits to address current research issues pertaining to the prehistory or history of the region. No further work is advocated for these sites, and they are recommended not eligible for the NRHP. Clearance to proceed with development is recommended for these areas.

Site 31ON1833, however, contains numerous diagnostic artifacts, deep deposits, and has the potential for intact cultural features and good stratigraphic integrity. This site has the potential to address research issues pertaining to ceramic and lithic technology, as well as settlement patterns, of Woodland Period peoples. Additional work is necessary to fully assess the research potential of the site. Therefore, we recommend site 31ON1833 be considered unassessed with regards to NRHP criteria. This site is located in an area where there are currently no plans to develop and will be preserved in place. We recommend that consultations be held with the North Carolina State Historic Preservation Office regarding the possible need for a Memorandum of Agreement or other legal documentation (e.g., deed restrictions) to insure this site's protection into the future.

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Appendix A. Artifact Catalog and Projectile Point Report

Provenience Techniques

Each location from which artifacts were recovered was assigned a unique provenience number. Numbers after the decimal place designate a surface collection (e.g., 0), a general subsurface collection (e.g., 1), or a specific level below surface (e.g., 1, 2, 3, 4, etc.)

Artifact Catalog
Williamsburg Plantation

Site Number: 31ON1831 **Accession Number:** 2012.0042

Provenience Number: 1.1 Site 1, N485 E500, 40-60cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.1	Metavolcanic Flake/Flake Fragment	weighs < 0.1g, fine grained

Provenience Number: 2.1 Site 1, N500 E500, TR 56-9, ST 1, 20-40cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p2	2	5.3	Fine/Medium Sand Temper Cord Marked Body Sherd	2-Woodland, 2 mend

Site Number: 31ON1832 **Accession Number:** 2012.0043

Provenience Number: 1.1. Site 2, N440 E485, 30-50cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.2	Metavolcanic Flake/Flake Fragment	

Provenience Number: 2.1 Site 2, N455 E500, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m2	1	1.7	Concretion	

Provenience Number: 3.1 Site 2, N470 E485, 20-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m3	1	0.6	Quartz Flake/Flake Fragment With Cortex	

Provenience Number: 4.1 Site 2, N470 E500, TR25 ST14, 0-25cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m4	2	2.9	Metavolcanic Flake/Flake Fragment	

Provenience Number: 5.1 Site 2, N485 E485, 50-70cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m5	1	12.4	Metavolcanic Flake/Flake Fragment	large

Provenience Number: 6.1 Site 2, N500 E485, 0-50cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p6	1	1.3	Residual Sherd	Hanover, UID decoration, grog tempered with minimal coarse sand, temper, possibly cord marked
2	m7	1	2.5	Quartz Flake/Flake Fragment With Cortex	

Provenience Number: 7.1 Site 2, N500 E500, TR25 ST13, 0-25cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p8	1	6.9	Grog Temper Cord Marked Body Sherd	Hanover
2	m9	1	1.6	Quartz Flake/Flake Fragment With Cortex	

Site Number: 31ON1833 **Accession Number:** 2012.0044

Provenience Number: 1.1 Site 3, N485 E500, 40-50cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.3	Quartz Flake/Flake Fragment With Cortex	

Artifact Catalog

Provenience Number: 2.1 Site 3, N485 E530, 10-35cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m2	1	0.2	Metavolcanic Flake/Flake Fragment	
2	m3	1	0.4	Quartz Flake/Flake Fragment	
3	p4	1	5.5	VCS/Granular Temper Fabric Impressed Body Sherd	with minimal grog inclusions, Woodland
4	p5	1	2.5	Residual Sherd	matches 2.1:3, Woodland

Provenience Number: 2.2 Site 3, N485 E530, 45-55cm, possible feature

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m6	1	0.2	Quartz Flake/Flake Fragment	
2	m7	1	5.9	Quartz Pebble	heat treated, has indentations, possible fire cracked rock, tool?
3	eb8	0	1.1	Charcoal	
4	p9	7	27.6	Grog Temper Fabric Impressed Rim Sherd	Hanover, rounded rims, 2 vessels, 1 includes 5 sherds that mend and have a thin rim, the other includes 2 sherds that mend and have a fabric impressed interior and exterior

Provenience Number: 3.1 Site 3, N485 E545, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p10	6	9.3	Grog Temper Fabric Impressed Body Sherd	Hanover, 6 mend
2	p11	1	1.1	Residual Sherd	fine/medium sand temper, eroded, Woodland

Provenience Number: 4.1 Site 3, N500 E485, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p12	2	4.2	Grog Temper Fabric Impressed Body Sherd	2-Hanover, 2-mend, eroded exterior

Provenience Number: 5.1 Site 3, N500 E500, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p13	1	7.1	Very Coarse Sand Temper Cord Marked Rim Sherd	Woodland, possibly over stamped, most of lip broken off
2	m14	2	0.7	Quartz Flake/Flake Fragment With Cortex	2 with cortex

Provenience Number: 6.1 Site 3, N500 E515, 10-60cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p15	2	3.6	Residual Sherd	1-UID decoration and grog temper, 1-fabric impressed with grog temper, 2-Hanover
2	m16	2	3.6	Quartz Flake/Flake Fragment With Cortex	2 with cortex

Provenience Number: 7.1 Site 3, N500 E530, TR1 ST3, 20-40cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p17	1	1.1	Grog Temper Fabric Impressed Rim Sherd	Hanover, scraped interior and exterior

Provenience Number: 8.1 Site 3, N500 E545, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p18	1	7	Grog Temper Fabric Impressed Body Sherd	Hanover, eroded exterior

Provenience Number: 9.1 Site 3, N515 E485, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments

Artifact Catalog

1	m19	5	11.4	Clear Bottle Glass

Provenience Number: 10.1 Site 3, N515 E545, 0-25cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p20	2	13.2	Grog Temper Fabric Impressed Rim Sherd	2- Hanover, 2 vessels, 1 with flattened rim, fabric impressed lip, and smoothed over surface, 1 with tapered rim and tight weave.

Provenience Number: 11.1 Site 3, N530 E500, 20-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p21	1	4.6	Grog Temper Fabric Impressed Body Sherd	Hanover, smoothed over
2	p22	5	11	Residual Sherd	5-Hanover, fabric impressed, smoothed over and grog tempered, 3-mend

Provenience Number: 12.1 Site 3, N530 E545, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m23	3	1	Quartz Flake/Flake Fragment With Cortex	1 with cortex

Provenience Number: 13.1 Site 3, N537 N505, TR2 ST1 0-70cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m24	2	5.3	Quartz Flake/Flake Fragment With Cortex	2 with cortex
2	p25	1	0.6	Residual Sherd	cord marked? Hanover

Provenience Number: 14.1 Site 3, N545 E500, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p26	1	3.1	Grog Temper UID Decoration Body Sherd	Hanover, cord marked?, fabric impressed?, smoothed over exterior

Provenience Number: 15.1 Site 3, N545 E545m 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m27	2	0.5	Quartz Flake/Flake Fragment With Cortex	1 with cortex

Provenience Number: 16.1 Site 3, N560 E485, 10-50cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p28	1	3.3	Grog Temper Fabric Impressed Rim Sherd	Hanover
2	p29	1	3.4	Grog Temper Fabric Impressed Body Sherd	smoothed interior, tight weave, Hanover
3	p30	1	3.8	Grog Temper UID Decoration Body Sherd	exterior mostly spalled, smoothed interior, likely fabric impressed, Hanover
4	p31	2	2	Residual Sherd	Woodland
5	p32	4	2.9	Chert Flake/Flake Fragment With Cortex	1 with cortex and heat treated, 3-white
6	m33	1	0.2	Metavolcanic Flake/Flake Fragment	likely Rhyolite

Provenience Number: 17.1 Site 3, N560 E500, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p34	1	10	Grog Temper Fabric Impressed Body Sherd	interior smoothed, tight weave, Hanover

Provenience Number: 18.1 Site 3, N560 E545, 20-35cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p35	1	10.9	Grog Temper Fabric Impressed Rim Sherd	rounded rim, Hanover

Artifact Catalog

2	p36	1	3.2	Grog Temper UID Decoration Body Sherd	smoothed over interior and exterior, Hanover
3	p37	2	2.1	Residual Sherd	2-grog tempered, uid decoration, likely fabric impressed, 2-Hanover

Provenience Number: 19.1 Site 3, N560 E560, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p38	1	2.1	Limestone/Sand Temper Fabric Impressed Body Sherd	limestone and fine sand tempered, Hamps Landing
2	p39	6	16.7	Coarse Sand Temper Fabric Impressed Body Sherd	interior scraped, 5 mend, 1 with organic impressions on exterior, Woodland
3	p40	2	2	Residual Sherd	2-grog tempered, UID decoration, likely fabric impressed, 2-Hanover

Provenience Number: 20.1 Site 3, N560 E575, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	041	1	26.1	Grog Temper Fabric Impressed Body Sherd	Hanover, has ferruginous inclusions
2	p42	2	2.3	Residual Sherd	2-fabric impressed, 1-Hanover with grog temper, 1-Woodland, possibly Hamps Landing with limestone and grog temper that matches 19.1:1,
3	m43	2	4.9	Quartz Flake/Flake Fragment With Cortex	1 primary flake with cortex

Provenience Number: 21.1 Site 3, N560 E590, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m44	1	0.7	Quartz Flake/Flake Fragment	

Provenience Number: 22.1 Site 3, N575 E545, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p45	1	2.2	Residual Sherd	coarse sand temper, fabric impressed, Woodland

Provenience Number: 23.1 Site 3, N590 E500, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p46	1	8.1	Grog Temper Cord Marked Body Sherd	Hanover
2	p47	1	5.5	Grog Temper Fabric Impressed Body Sherd	scraped interior, Hanover

Provenience Number: 24.1 Site 3, N590 E545, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m48	1	0.3	Quartz Flake/Flake Fragment With Cortex	

Provenience Number: 25.1 Site 3, N590 E560, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p49	2	6.7	Grog Temper Fabric Impressed Body Sherd	1 with small amount of very coarse sand temper, 1 with incision? over fabric impressed surface, 2-Hanover
2	p50	1	0.7	Residual Sherd	UID decoration with grog temper, Hanover
3	m51	3	2.2	Quartz Flake/Flake Fragment With Cortex	3 with cortex, 1 of these is a primary flake
4	m52	1	0.2	Chert Flake/Flake Fragment	

Provenience Number: 26.1 Site 3, N590 E575, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments

Artifact Catalog

1	p53	1	6.7	Grog Temper UID Decoration Rim Sherd	scraped interior, possibly cord marked, exterior smoothed over, folded over rim, Hanover
2	p54	3	5.5	Residual Sherd	3 UID decoration, 2-Woodland, 1 possibly net impressed with fine sand and grog? temper, and 1 with coarse sand temper, 1-Hanover with grog temper
3	m55	1	0.2	Quartz Flake/Flake Fragment With Cortex	

Provenience Number: 27.1 Site 3, N605 E500, ceramics 0-20cm, lithics 0-60cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p56	1	2.4	Grog Temper UID Decoration Rim Sherd	smoothed over exterior, flat rim, Hanover
2	p57	1	15.4	Grog Temper Fabric Impressed Body Sherd	Hanover
3	p58	1	23.3	Grog Temper UID Decoration Body Sherd	smoothed over exterior, sooting/residue on interior, possibly fabric impressed, Hanover
4	m59	3	0.9	Metavolcanic Flake/Flake Fragment With Cortex	likely Rhyolite, very fine grained, 1 with cortex

Provenience Number: 28.1 Site 3, N605 E575, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p60	2	1.8	Residual Sherd	2 mend, 2-White Oak
2	m61	1	2.7	Quartz Flake/Flake Fragment With Cortex	

Provenience Number: 29.1 Site 3, N620 E500, 20-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p62	3	20.4	Grog Temper Fabric Impressed Body Sherd	2 match and have sooting/residue on interior and exterior , 3-Hanover

Provenience Number: 30.1 Site 3, N620 E530, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p63	1	7.4	Shell Temper UID Decoration Body Sherd	possibly cord marked, White Oak

Provenience Number: 31.1 Site 3, N635 E500, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p64	1	2.8	Residual Sherd	medium sand temper, UID decoration, possibly cord marked with incising?, Woodland

Provenience Number: 32.1 Site 3, N665 E500, lithic 0-15cm, sherds 0-25cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p65	2	19.3	Grog Temper Cord Marked Body Sherd	with some granular and possibly fiber inclusions, over stamped cord marked, hard paste, Hanover
2	m66	1	0.4	Quartz Flake/Flake Fragment With Cortex	

Provenience Number: 33.1 Site 3, N665 E515, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p67	1	8.5	Grog Temper Fabric Impressed Body Sherd	scraped interior, Hanover

Provenience Number: 34.1 Site 3, N665 E530, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments

Artifact Catalog

1	p68	1	3.1	Grog Temper UID Decoration Body Sherd	with some fine sand in temper, sooting/residue on interior, smoothed over exterior, Hanover

Provenience Number: 35.1 Site 3, N680 E515, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p69	1	3.4	Fine Sand Temper Fabric Impressed Body Sherd	with some grog temper, Hanover

Site Number: 31ON1834 **Accession Number:** 2012.0045

Provenience Number: 1.1 Site 4, N500 E440, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	1.6	Quartz Flake/Flake Fragment With Cortex	

Provenience Number: 2.1 Site 4, N500 E455, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m2	1	0.5	Quartz Flake/Flake Fragment	

Provenience Number: 3.1 Site 4, N500 E485, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p3	1	1.1	Residual Sherd	Woodland

Provenience Number: 4.1 Site 4, N500 E500, J ST101, off sewer line, 0-40cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	a4	1	5.8	Translucent Quartz P. Point Fragment	

Site Number: 31ON1835 **Accession Number:** 2012.0046

Provenience Number: 1.1 Site 7, N470 E510, TR2 ST3, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p1	1	6.3	Fine Sand Temper Fabric Impressed Body Sherd	with ferruginous inclusions in the paste that leached out to create sm. Holes, Woodland
2	p2	1	2	Fine Sand Temper UID Decoration Rim Sherd	rolled rim, body broken off, almost untempered, Woodland

Provenience Number: 2.1 Site 7, N500 E500, TR3 ST2, 20-40cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m3	1	0.8	Metavolcanic Flake/Flake Fragment	possibly chert?

Site Number: 31ON1836 **Accession Number:** 2012.0047

Provenience Number: 1.1 Site 10, N425 E500, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p1	1	1.3	Fine Sand Temper Fabric Impressed Body Sherd	interior surface spalled off, possibly some grog inclusions, Woodland

Provenience Number: 2.1 Site 10, N440 E500, 20-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m2	5	2.2	Quartz Flake/Flake Fragment	

Provenience Number: 3.1 Site 10, N455 E500, 30-40cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p3	2	4.5	Grog Temper Cord Marked Rim Sherd	cord marking on lip and body, scraped interior, 2 mend, Hanover

Artifact Catalog

2	p4	1	1.2	Residual Sherd	over stamped cord marked, grog and coarse sand tempered, Hanover
3	m5	1	10.1	Fired Clay Other	with very coarse sand temper

Provenience Number: 4.1 Site 10, N470 E500, sherds 30-40cm, lithics 0-50cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p6	1	8.1	Coarse/VC Sand Temper Net Impressed Body Sherd	Woodland
2	p7	2	3.2	Residual Sherd	2-Woodland, 1- fabric impressed with fst, 1- net impressed with coarse sand temper
3	m8	1	0.3	Metavolcanic Flake/Flake Fragment	

Provenience Number: 5.1 Site 10, N470 E515, TR17 ST4, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p9	1	4.6	Very Coarse Sand Temper UID Decoration Body Sherd	likely net impressed, interior scraped, organic material in paste, Woodland

Provenience Number: 6.1 Site 10, N485 E500, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m10	2	1.1	Metavolcanic Flake/Flake Fragment	

Provenience Number: 7.1 Site 10, N500 E500, TR18 ST5, 0-25cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p11	1	3.8	Grog/Fine Sand Temper Net Impressed Body Sherd	Hanover
2	p12	1	1.3	Residual Sherd	Woodland

Provenience Number: 8.1 Site 10, N500 E515, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p13	1	2.9	Medium Sand Temper Fabric Impressed Body Sherd	Woodland
2	m14	2	1.4	Quartz Flake/Flake Fragment	

Provenience Number: 9.1 Site 10, N515 E515, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p15	1	1.4	Residual Sherd	Fabric impressed with coarse sand temper, Woodland

Provenience Number: 10.1 Site 10, N530 E515, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p16	2	5.2	Residual Sherd	cord marked?, with coarse/very coarse sand temper, Woodland

Site Number: 31ON1837 **Accession Number:** 2012.0048

Provenience Number: 1.1 Site 12, N500 E500, TR3 ST4, 0-25cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p1	1	7.1	Grog/Coarse Sand Temper UID Decoration Body Sherd	cord marked? fabric impressed?, smoothed over exterior, Hanover

Provenience Number: 2.1 Site 12, N515 E455, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p2	1	7.8	Fine Sand Temper Cord Marked Body Sherd	Woodland

Artifact Catalog

Provenience Number: 3.1 Site 12, N515 E470, 0-60cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m3	2	1.1	Metavolcanic Flake/Flake Fragment	

Provenience Number: 4.1 Site 12, N530 E470, 30-50cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p4	1	4.9	Grog Temper Cord Marked Body Sherd	shell scraped interior, Hanover

Provenience Number: 5.1 Site 12, N530 E500, 20-60cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p5	1	2	Residual Sherd	Woodland
2	m6	1	0.2	Metavolcanic Flake/Flake Fragment	
3	m7	1	0.2	Quartz Flake/Flake Fragment With Cortex	

Provenience Number: 6.1 Site 12, N545 E465, TR2 ST3, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p8	2	3	Residual Sherd	2-Woodland, 1 simple stamped with coarse sand temper
2	m9	1	63.6	Quartz Shatter With Cortex	possibly core fragment

Site Number: 31ON1838 **Accession Number:** 2012.0049

Provenience Number: 1.1 Site 13, N500 E500, TR2 ST6, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	3	1.7	Quartz Flake/Flake Fragment With Cortex	1 with cortex

Provenience Number: 2.1 Site 13, N500 E515, 20-40cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p2	1	3.3	Fine Sand Temper Fabric Impressed Body Sherd	Woodland
2	m3	1	1.2	Quartz Flake/Flake Fragment With Cortex	with cobble cortex

Provenience Number: 3.1 Site 13, N515 E470, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p4	1	2.9	Limestone/Sand Temper Fabric Impressed Body Sherd	with fst, Hamps Landing
2	m5	1	3.6	Quartz Flake/Flake Fragment With Cortex	primary flake with cobble cortex

Provenience Number: 4.1 Site 13, N515 E500, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p6	1	2.3	Limestone/Sand Temper UID Decoration Body Sherd	with c/vcst, Hamps Landing

Provenience Number: 5.1 Site 13, N530 E500, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p7	1	4.9	Medium Sand Temper Cord Marked Body Sherd	Woodland

Site Number: 31ON1839 **Accession Number:** 2012.0050

Provenience Number: 1.1 Site 14, N500 E485, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p1	1	1.8	Residual Sherd	fabric impressed, grog tempered, Hanover

Artifact Catalog

Provenience Number: 2.1 Site 14, N500 E500, TR13 ST1, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p2	1	5	Grog/Coarse Sand Temper UID Decoration Body Sherd	possibly fabric impressed, some fiber in temper, Hanover
2	p3	1	0.5	Residual Sherd	Woodland
3	m4	1	9.3	Quartz Cobble Fragment With Cortex	

Provenience Number: 3.1 Site 14, N515 E530, Judgemental ST1 20-60cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m5	3	0.6	Metavolcanic Flake/Flake Fragment	2 likely Rhyolite

Site Number: 31ON1840 **Accession Number:** 2012.0051

Provenience Number: 1.1 Site 15, N500 E500, TR15, ST1, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p1	3	11.4	Grog Temper Fabric Impressed Body Sherd	2 mend, Hanover

Site Number: 31ON1841 **Accession Number:** 2012.0052

Provenience Number: 1.1 Site 16, N470 E500, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p1	1	4.2	Grog Temper Fabric Impressed Body Sherd	Hanover

Provenience Number: 2.1 Site 16, N500 E500, TR3 ST6, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p2	3	2.6	Residual Sherd	2-mend and have fine cord marking and possible grog tempering, 1 has UID decoration and grog temper, 3-Hanover

Provenience Number: 3.1 Site 16, N515, E500, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p3	1	12.3	Grog Temper Fabric Impressed Body Sherd	Hanover
2	p4	1	1.4	Residual Sherd	UID decoration, and grog temper, Hanover

Site Number: 31ON1842 **Accession Number:** 2012.0053

Provenience Number: 1.1 Isolate 1, N500 E500, MOJ 1, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p1	1	19.7	Coarse Sand Temper Cord Marked Body Sherd	very deptford like, Cape Fear/New River

Site Number: 31ON1843 **Accession Number:** 2012.0054

Provenience Number: 1.1 Isolate 2, N500 E500, TR24 ST11, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.7	Chert Flake/Flake Fragment	possible fine grained metavolcanic

Site Number: 31ON1844 **Accession Number:** 2012.0055

Provenience Number: 1.1 Isolate 3, N500 E500, TR106 ST4, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	2.4	Quartz Flake/Flake Fragment With Cortex	with cobble cortex

Site Number: 31ON1845 **Accession Number:** 2012.0056

Artifact Catalog

Provenience Number: 1.1 Isolate 4, N500 E500, TR9 ST3, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.3	Quartz Flake/Flake Fragment	cultural?

Site Number: 31ON1846 **Accession Number:** 2012.0057

Provenience Number: 1.1 Isolate 5, N500 E500, TR26 ST4, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	3.2	Quartz Flake/Flake Fragment With Cortex	possible utilized edge, possible tool?

Site Number: 31ON1847 **Accession Number:** 2012.0058

Provenience Number: 1.1 Isolate 6, N500 E500, Judgemental ST101, 30-50cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.2	Metavolcanic Flake/Flake Fragment	likely Rhyolite

Site Number: 31ON1848 **Accession Number:** 2012.0059

Provenience Number: 1.1 Isolate 7, N500 E500, TR15 ST2, 30-40cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.4	Quartz Flake/Flake Fragment With Cortex	

Site Number: 31ON1849 **Accession Number:** 2012.0060

Provenience Number: 1.1 Isolate 8, N500 E500, Judgemental ST JX, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p1	1	9.4	Fine/Medium Sand Temper Cord Marked Body Sherd	overstamped, fine cord marking, Cape Fear/New River

Provenience Number: 2.1 Isolate 8, N515 E500, 0--30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m2	1	0.1	Quartz Flake/Flake Fragment	

Site Number: 31ON1850 **Accession Number:** 2012.0061

Provenience Number: 1.1 Isolate 9, N485 E500, 0-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	p1	1	0.8	Residual Sherd	fine/medium sand and shell? temper, UID decoration, possibly fabric impressed, Woodland, possibly White Oak

Provenience Number: 2.1 Isolate 9, N500 E500, TR5 ST1, 0-25cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m2	1	0.8	Metavolcanic Flake/Flake Fragment	

Site Number: 31ON1851 **Accession Number:** 2012.0062

Provenience Number: 1.1 Isolate 10, N500 E500, Judgemental ST X-J-1

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.9	Quartz Flake/Flake Fragment With Cortex	with cobble cortex
2	m2	1	7.3	Quartz Cobble Fragment	

Site Number: 31ON1852 **Accession Number:** 2012.0063

Provenience Number: 1.1 Isolate 11, N500 E500, TR20 ST5, 20-30cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments

Artifact Catalog

1	p1	2	4.4	Residual Sherd	2-Woodland, 1-plain with fine sand temper, 1- fabric impressed with coarse sand temper

Site Number: 31ON1853 **Accession Number:** 2012.0064

Provenience Number: 1.1 Isolate 12, N480 E515, TR15 ST3, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	1.3	Metavolcanic Flake/Flake Fragment	1 likely Rhyolite

Provenience Number: 2.1 Isolate 12, N500 E500. TR16 ST2, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m2	1	1.1	Quartz Flake/Flake Fragment	

Site Number: 31ON1854** **Accession Number:** 2012.0065

Provenience Number: 1.1 Isolate 13, N500 E500m TR21 ST2, 0-20cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	0	20.9	Brick Fragment	
2	m2	1	1	UID Metal Unidentified Form	iron, likely nail fragment

Site Number: 31ON1855** **Accession Number:** 2012.0066

Provenience Number: 1.1 Isolate 14, N500 E500, TR11 ST2, 0-15cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.3	Light Olive Green Bottle Glass	frosted interior and exterior

Site Number: 31ON1856 **Accession Number:** 2012.0067

Provenience Number: 1.0 Isolate 15, N500 E500, power line, surface

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1	m1	1	0.3	Metavolcanic Flake/Flake Fragment	
2	m2	1	0.6	Chert Flake/Flake Fragment	

PPK Fragment Report

Site Number 31ON1834
Provenience: Cat 4.1 1
Lithic Material Translucent Quartz
General Measurements
Length 28.6 mm
Width 20.7 mm
Weight 5.8 g
Fracture Type Unknown
Fragment Type Body
Base Type Unknown
Comments: possibly base broken off and retouched into thin straight base with basal thinning, has pentagonal shape but is thick

Appendix B. Resume of Principal Investigator

Bobby Gerald Southerlin

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PROFESSIONAL POSITIONS

CEO, Archaeological Consultants of the Carolinas, Inc.
Senior Archaeologist, Principal Investigator, Field Director, Zooarchaeologist

AREAS OF SPECIALIZATION

Archaeological Field Investigation Methods
Material Culture Replication (lithics and ceramics)

EDUCATION

M.A. in Anthropology, University of Georgia, 1993.
B.A. in Anthropology, University of South Carolina, 1988.

PROFESSIONAL ORGANIZATION MEMBERSHIP

North Carolina Archaeological Society
North Carolina Professional Council
Georgia Council of Professional Archaeologists
Society for American Archaeology
Archaeological Society of South Carolina
Southeastern Archaeological Conference Society

CULTURAL RESOURCE SURVEYS (Phase I) and ARCHAEOLOGICAL SITE TESTING (Phase II)

- Utility Corridors for ANR Pipeline Company (Detroit), Georgia Power Company (Atlanta), Duke Power Company (Charlotte), Oglethorpe Power Corporation, and Transco Pipeline Company (Houston).
- Transportation Corridors for Georgia Department of Transportation (Atlanta), South Carolina Department of Transportation (Columbia)
- Development Tracts for Consolidated Government of the City of Columbus/Muscogee County (Georgia), Macon County (North Carolina), U.S. Corps of Engineers (Savannah and Mobile Districts), U.S. Forest Service (South Carolina), South Carolina Electric and Gas Company (Columbia), and various private developers (Georgia and South Carolina)

ARCHAEOLOGICAL DATA RECOVERY (Phase III)

- Prehistoric village (31ON1578) and late 18th/early 19th century plantation (31ON1582) for R.A. Management, Charlotte, NC
- Three prehistoric sites (38HR243, 38HR254, and 38HR258) in Horry County, South Carolina for Tidewater Plantation and Golf Club (Myrtle Beach, S.C.)
- Two Prehistoric sites (38LX50 and 38LX141) in Lexington County, South Carolina for the South Carolina Department of Transportation

** A detailed listing of individual projects and publications is available upon request