Thomas Brown
Sr. Environmental Engineer

December 4, 2018

Ms. Emily Greer
US Army Corps of Engineers
Regulatory Division
69 Darlington Ave
Wilmington, NC 28403

Dear Ms. Greer:

Please find enclosed a completed Application for Department of the Army Permit. The purpose of this project is to cost-effectively continue operation of the limestone aggregate quarry facility at Rocky Point by expanding the existing quarry area to mine suitable stone reserves in a systematic and economically viable fashion for supply to the surrounding market area.

Please feel free to contact me if you have any questions or need any additional information. Thank you for your time. I look forward to working with you.

Sincerely,

Thomas Brown
Sr. Environmental Engineer

Attachments:
Application for Department of the Army Permit
Addendum to permit application

Martin Marietta, NC East District
2700 Wycliff Rd, Suite 104, Raleigh, NC 27607
t. 919-783-4592 f. 919-787-9577 m. 919-268-5297 e. Thomas.Brown@martinmarietta.com
www.martinmarietta.com

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 - Larry Middle - Last - Roberts	First - Thomas Middle - Last - Brown
Company - Martin Marietta	Company - Martin Marietta
E-mail Address - Larry.Roberts@martinmarietta.com	E-mail Address - Thomas.Brown@martinmarietta.com
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- 413 S. Chimney Rock Rd	Address- 2700 Wycliff Rd, Suite 104
City - Greensboro State - NC Zip - 27409 Country - US	City - Raleigh State - NC Zip - 27607 Country - US
7. APPLICANT'S PHONE NOs. w/AREA CODE	**10. AGENTS PHONE NOs. w/AREA CODE**
a. Residence b. Business c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Thomas Brown 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: 12/02/2019

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
Rocky Point Quarry

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
North East Cape Fear River	Address 1635 Martin Marietta Access Rd
15. LOCATION OF PROJECT Latitude: °N 34.3963 Longitude: °W -77.8630	City - Rocky Point State- NC Zip- 28457

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID 3243-56-6900-0000 Municipality
Section - Township - Rocky Point Range -

17. DIRECTIONS TO THE SITE

From Wilmington, take I-40 west to exit 408 for NC-210. Turn right off the exit onto NC-210 and then turn right again onto Martin Marietta Access Rd. The site is located at 1635 Martin Marietta Access Rd., Rocky Point, NC 28457

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

The project is an expansion of an existing open pit limestone quarry. Please see attached Addendum for more information.

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

The purpose of the project is to continue operation of the limestone aggregate mine at Rocky Point in order to supply the surrounding market need in a systematic and economically viable fashion.

Current reserves without this expansion will no longer be able to serve market demand. This expansion would increase the reserves of Rocky Point Quarry such that it would be able to augment market supply in the short and medium term, depending upon material quality and market demand.

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

20. Reason(s) for Discharge

Within the proposed mining area there exists several wetlands and streams as shown on the attached maps. Discharges to jurisdictional waters would be the result of side casting material during the removal of overburden and the mining process. The True impact to these wetlands and streams would result from excavation. Because of this, it is impossible to estimate cubic yards of fill, as there would be no direct fill placed in these areas. Please reference the attached Addendum for more information.

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

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

Acres Please see attached Addendum

or

Linear Feet

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

Please see attached Addendum for further information.

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

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- PLEASE SEE ATTACHED MAILING LABLES

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
Pender County	Zoning	10964		2013-06-07	
NCDEMLR	Mining	71-09		2013-06-27	
NCDEMLR NPDES	Discharge	NCG020166		2015-10-01	

* 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 — DATE: 12/02/2019

SIGNATURE OF AGENT — DATE: 12/2/2019

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.

Pre-Construction Notification (PCN) Form

For Nationwide Permits and Regional General Permits

(along with corresponding Water Quality Certifications)

September 29, 2018 Ver 3

1a. Name of project:

Martin Marietta Rocky Point Quarry

1a. Who is the Primary Contact?

Thomas Brown, Martin Marietta

1b. Primary Contact Email:

Thomas.Brown@Martinmarietta.com

1c. Primary Contact Phone:

(919)268-5297

Site Coordinates

Latitude:

34.3962

Longitude:

-77.86023

A. Processing Information

County (or Counties) where the project is located:

Pender

Nearest Body of Water

Is this project a public transportation project?

○ Yes ◉ No

1a. Type(s) of approval sought from the Corps:

☑ Section 404 Permit (wetlands, streams and waters, Clean Water Act)

☐ Section 10 Permit (navigable waters, tidal waters, Rivers and Harbors Act)

1b. What type(s) of permit(s) do you wish to seek authorization?

☐ Nationwide Permit (NWP)

☐ Regional General Permit (RGP)

☑ Standard (IP)

1c. Has the NWP or GP number been verified by the Corps?

◉ Yes ○ No

1d. Type(s) of approval sought from the DWR:

☐ 401 Water Quality Certification - Regular

☐ 401 Water Quality Certification - Express

☐ Non-404 Jurisdictional General Permit

☐ Riparian Buffer Authorization

☑ Individual Permit

1e. Is this notification solely for the record because written approval is not required?

For the record only for DWR 401 Certification: ○ Yes ◉ No

For the record only for Corps Permit: ○ Yes ◉ No

1f. Is this an after-the-fact permit application?

○ Yes ◉ No

1g. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts?

◉ Yes ○ No

Acceptance Letter Attachment

credit reservation_NECFUMB_October 23_2019.pdf	90.59KB
Mitigation Services Rocky Point Quarry Acceptance letter.pdf	79.43KB

1h. Is the project located in any of NC's twenty coastal counties?

◉ Yes ○ No

1i. Is the project located within a NC DCM Area of Environmental Concern (AEC)?

○ Yes ◉ No ○ Unknown

1j. Is the project located in a designated trout watershed?

○ Yes ◉ No

B. Applicant Information

1d. Who is applying for the permit?

☑ Owner ☐ Applicant (other than owner)

1e. Is there an Agent/Consultant for this project?*

○ Yes ◉ No

2. Owner Information

2a. Name(s) on recorded deed:

Plum Creek Timberlands

2b. Deed book and page no.:

3451/321

2c. Responsible party:

Larry Roberts, Martin Marietta, Lessee

2d. Address

Street Address

413 S. Chimney Rock Rd

Address Line 2

City

Greensboro

State / Province / Region

NC

Postal / Zip Code

27409

Country

USA

2e. Telephone Number:

(336)389-6633

2f. Fax Number:

2g. Email Address:*

Larry.Roberts@Martinmarietta.com

C. Project Information and Prior Project History

1. Project Information

1b. Subdivision name:

(if appropriate)

1c. Nearest municipality / town:

Rocky Point, NC

2. Project Identification

2a. Property Identification Number:

3243-56-6900-0000

2b. Property size:

2529

2c. Project Address

Street Address

1635 Martin Marietta Access Rd

Address Line 2

City

Rocky Point

State / Province / Region

NC

Postal / Zip Code

28457

Country

3. Surface Waters

3a. Name of the nearest body of water to proposed project:

Old Creek / North East Cape Fear River

3b. Water Resources Classification of nearest receiving water:*

C;SW, B;SW

3d. Please provide the 12-digit HUC in which the project is located.

03030007

3c. What river basin(s) is your project located in?*

Cape Fear

4. Project Description and History

4a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application:*

Please see attached application and Addendum

4b. Have Corps permits or DWR certifications been obtained for this project (including all prior phases) in the past?*

(•) Yes ( ) No ( ) Unknown

4c. If yes, please give the DWR Certification number or the Corps Action ID (exp. SAW-0000-00000).

AID 199201956, AID 200301159
DWQ Project no. 03-1023

Project History Upload

4d. Attach an 8 1/2 X 11 excerpt from the most recent version of the USGS topographic map indicating the location of the project site. (for DWR)

4e. Attach an 8 1/2 X 11 excerpt from the most recent version of the published County NRCS Soil Survey map depicting the project site. (for DWR)

4f. List the total estimated acreage of all existing wetlands on the property:

4g. List the total estimated linear feet of all existing streams on the property:

4h. Explain the purpose of the proposed project:*

Please see attached Application and Addendum

4i. Describe the overall project in detail, including indirect impacts and the type of equipment to be used:*

Please see attached Application and Addendum

4j. Please upload project drawings for the proposed project.

11-20 Supporting Maps.pdf 5.88MB

5. Jurisdictional Determinations

5a. Have the wetlands or streams been delineated on the property or proposed impact areas?*

(•) Yes ( ) No ( ) Unknown

Comments:

5b. If the Corps made a jurisdictional determination, what type of determination was made?*

( ) Preliminary ( ) Approved (•) Not Verified ( ) Unknown ( ) N/A

Corps AID Number:

5c. If 5a is yes, who delineated the jurisdictional areas?

Name (if known): Beth Reed

Agency/Consultant Company: Kimley Horn

Other:

5d1. Jurisdictional determination upload

6. Future Project Plans

6a. Is this a phased project?*

( ) Yes (•) No

Are any other NWP(s), regional general permit(s), or individual permits(s) used, or intended to be used, to authorize any part of the proposed project or related activity?

D. Proposed Impacts Inventory

1. Impacts Summary

1a. Where are the impacts associated with your project? (check all that apply):

☑ Wetlands ☑ Streams-tributaries ☐ Buffers
☑ Open Waters ☐ Pond Construction

2. Wetland Impacts

2a. Site # * (?)	2a1 Reason * (?)	2b. Impact type * (?)	2c. Type of W. *	2d. W. name *	2e. Forested *	2f. Type of Jurisdicition * (?)	2g. Impact area *
1	Mining	P	Bottomland Hardwood Forest	See Attached	Yes	Both	63.050 (acres)
1	Mining	P	Isolated Wetlands	See Attached	Yes	DWR	0.490 (acres)

2g. Total Temporary Wetland Impact

0.000

2g. Total Permanent Wetland Impact

63.540

2g. Total Wetland Impact

63.540

2h. Comments:

Please see attached impact table for more details

3. Stream Impacts

	3a. Reason for impact * (?)	3b.Impact type *	3c. Type of impact *	3d. S. name *	3e. Stream Type * (?)	3f. Type of Jurisdiction *	3g. S. width *	3h. Impact length *
S1	Mining	Permanent	Excavation	See Attached	Perennial	Both	3 Average (feet)	6,497 (linear feet)
S2	Mining	Permanent	Excavation	See Attached	Jurisdictional Ditch	Both	3 Average (feet)	7,225 (linear feet)

3i. Total jurisdictional ditch impact in square feet:

21,675

3i. Total permanent stream impacts:

13,722

3i. Total temporary stream impacts:

0

3i. Total stream and ditch impacts:

13

3j. Comments:

Please see attached impact table for more details

4. Open Water Impacts

4a. Site #	4a1. Impact Reason	4b. Impact type	4c. Name of waterbody	4d. Activity type	4e. Waterbody type	4f. Impact area
1	Mining	P	See Attached	Excavation	Pond	1.07

4g. Total temporary open water Impacts:

0.00

4g. Total permanent open water impacts:

1.07

4g. Total open water impacts:

1.07

4h. Comments:

Please see attached impact table for more details

E. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing the project:

Please see attached Application and Addendum

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques:

Please see attached Application and Addendum

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?

(•) Yes ( ) No

2c. If yes, mitigation is required by (check all that apply):

☑ DWR ☑ Corps

2d. If yes, which mitigation option(s) will be used for this project?

☑ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank:

North East Cape Fear Umbrella Mitigation Bank

3b. Credits Purchased/Requested (attach receipt and letter)

Type:	Quantity:
Non-riparian wetland	126.1
Stream	11107

Attach Receipt and/or letter

credit reservation_NECFUMB_October 23_2019.pdf 90.59KB

3c. Comments

6. Buffer mitigation (State Regulated Riparian Buffer Rules) - required by DWR

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation? If yes, you must fill out this entire form - please contact DWR for more information.

○ Yes ◉ No

F. Stormwater Management and Diffuse Flow Plan (required by DWR)

1. Diffuse Flow Plan

1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?

○ Yes ◉ No

If no, explain why:

2. Stormwater Management Plan

2a. Is this a NCDOT project subject to compliance with NCDOT's Individual NPDES permit NCS000250? *

○ Yes ◉ No

2b. Does this project meet the requirements for low density projects as defined in 15A NCAC 02H .1003(2)?

◉ Yes ○ No

Comments:

G. Supplementary Information

1. Environmental Documentation

1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? *

○ Yes ◉ No

2. Violations (DWR Requirement)

2a. Is the site in violation of DWR Water Quality Certification Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), or DWR Surface Water or Wetland Standards or Riparian Buffer Rules (15A NCAC 2B .0200)? *

○ Yes ◉ No

3. Cumulative Impacts (DWR Requirement)

3a. Will this project result in additional development, which could impact nearby downstream water quality? *

○ Yes ◉ No

3b. If you answered "no," provide a short narrative description.

4. Sewage Disposal (DWR Requirement)

4a. Is sewage disposal required by DWR for this project? *

○ Yes ◉ No ○ N/A

5. Endangered Species and Designated Critical Habitat (Corps Requirement)

5a. Will this project occur in or near an area with federally protected species or habitat? *

○ Yes ◉ No

5b. Have you checked with the USFWS concerning Endangered Species Act impacts? *

○ Yes ◉ No

5d. Is another Federal agency involved? *

○ Yes ◉ No ○ Unknown

5e. Is this a DOT project located within Division's 1-8?

○ Yes ◉ No

5f. Will you cut any trees in order to conduct the work in waters of the U.S.?

◉ Yes ○ No

5g. Does this project involve bridge maintenance or removal?

○ Yes ◉ No

5h. Does this project involve the construction/installation of a wind turbine(s)?*

○ Yes ◉ No

5i. Does this project involve (1) blasting, and/or (2) other percussive activities that will be conducted by machines, such as jackhammers, mechanized pile drivers, etc.?

◉ Yes ○ No

If yes, please provide details to include type of percussive activity, purpose, duration, and specific location of this activity on the property.

5j. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? *

Natural Heritage Program Data

Consultation Documentation Upload

6. Essential Fish Habitat (Corps Requirement)

6a. Will this project occur in or near an area designated as an Essential Fish Habitat? *

○ Yes ◉ No

6b. What data sources did you use to determine whether your site would impact an Essential Fish Habitat? *

Natural Heritage Program Data

7. Historic or Prehistoric Cultural Resources (Corps Requirement)

7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status? *

○ Yes ◉ No

7b. What data sources did you use to determine whether your site would impact historic or archeological resources? *

On the ground knowledge of the site

7c. Historic or Prehistoric Information Upload

8. Flood Zone Designation (Corps Requirement)

8a. Will this project occur in a FEMA-designated 100-year floodplain? *

◉ Yes ○ No

8b. If yes, explain how project meets FEMA requirements:

Please see attached letter from Pender County Floodplain Administrator

8c. What source(s) did you use to make the floodplain determination? *

FEMA Maps and Pender County Maps

Miscellaneous

Comments

Miscellaneous attachments not previously requested.

MM Rocky Point Corps Cover Letter.pdf	384.75KB
MM Rocky Point DWR Cover Letter.pdf	403.71KB
Martin Marietta Rocky Point DA Permit Application 12-4-2019.pdf	2.35MB
Martin Marietta Rocky Point Application Addendum12-2-2019.pdf	9.16MB

Signature

*

☑ By checking the box and signing below, I certify that:

- I have given true, accurate, and complete information on this form;
- I agree that submission of this PCN form is a "transaction" subject to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the PCN form.

Full Name: *

Thomas Brown

Signature

Date

12/4/2019

Addendum to the Application for Department of the Army Permit

Martin Marietta Materials, Inc., Rocky Point Quarry

December 4, 2019

Addendum Document

Project Purpose

Basic: The basic purpose of this project is to cost-effectively mine construction grade aggregate reserves at the existing Rocky Point Quarry facility.

Overall: The overall project purpose is to cost-effectively continue operation of the limestone aggregate quarry facility at Rocky Point by expanding the existing quarry area to mine suitable stone reserves in a systematic and economically viable fashion for supply to the surrounding market area.

Rocky Point Quarry currently has limited available reserves to supply the growing market it serves. Without augmentation, it will be unable to meet market demand. The expansion sought should allow Rocky Point Quarry to serve the market for the short and medium term, depending upon material quality and market demand.

Project History

The Rocky Point Quarry has been in operation since 1983, with appropriate 404/401 authorizations.

In 1992 a request to expand the quarry along with monitoring well data was sent to the Corp of Engineers by Triangle Wetland Consultants on behalf of MMM. It was determined that wetland hydrology did not exist in the area of the requested expansion and a letter to that effect was issued by the Corps of Engineers on May 13, 1992, Action ID 199201956.

In 2003, an Application for Department of the Army Permit was submitted by Kimley-Horn on behalf of MMM. This permit was issued by the Corps on September 29, 2004, and authorized impacts to 6.92 acres of wetland impacts, Action ID 200301159. MMM has undertaken the authorized wetland impacts and also mitigated for these impacts by payment to NC DEQ NCEEP and by preservation through the recording of a conservation easement. The corresponding 401 certification was issued on March 15, 2004, DWQ Project No. 03-1023.

Documents related to the above history are contained in USACE files for the Rocky Point Quarry. In the interest of efficiency, duplicates are not provided with this application, but will be provided upon request.

Site Information

Project area: 511 acres
County: Pender
Nearest Waterway: North East Cape Fear River
Nearest Town: Rocky Point
River Basin (HUC): North East Cape Fear River Basin (03030007)
Latitude and Longitude: 34.3958, -77.8637
Site Address: 1635 Martin Marietta Access Rd, Rocky Point, NC 28457

Existing site conditions

The project site is located adjacent to an existing and active limestone quarry known as the Rocky Point Quarry. The Quarry has been active since 1983. Prior to construction of the Quarry, the site was managed and used for timber. The main infrastructure for this quarry is in place and would be used to mine the proposed new areas. The area of the proposed mine expansion is comprised of mostly managed pine forestland with some hardwoods such as sweetgum and red maple. The site is located in the North East Cape Fear River Basin (03030007). A portion of the site is located within the floodplain area of the North East Cape Fear River. Soils on the site consist of fine sands, such as Baymeade in the upland marine terraces and mucky soils such as Dorovan and Muckalee in the wetlands and floodplain areas.

An Extensive wetland delineation has been conducted on the site. This delineation has been reviewed and approved in the field by the Corps of Engineers and has been submitted for written approval.

Land use authorizations allowing for quarrying activities in the existing mining area and areas of proposed expansion were obtained on May 20, 2009 and renewed on July 2, 2013.

The current NC DEQ DEMLR permit will be modified after other permits are obtained.

Development of Alternatives

In order develop potential alternatives, MMM considered factors such as technical and logistical feasibility, economic and business planning requirements, and potential impacts to jurisdictional waters and other environmental resources.

With respect to business planning and systematically and cost-effectively serving the Wilmington market area, MMM is seeking to mine existing economically viable aggregate reserves at its Rocky Point Quarry to supply the market in the short and medium term.

Generally, transportation costs (and haul distances) are significant components of aggregate product cost and price, which constrains the geographic market area any quarry may viably serve.

Expansion of the Rocky Point Quarry is necessary in order for MMM to cost-effectively serve the market area in the short and medium term.

MMM developed the specific alternatives presented below based on extensive exploration of potential expansion of the Rocky Point Quarry in all compass directions. Feasible expansion to the south is detailed below in the preferred alternative, Alternative 2. Feasible expansion to the north is detailed below in Alternative 3. Expansion to the west is not technically feasible due to the location of Interstate Hwy 40. Expansion to the east has been extensively explored in the past and is not currently feasible because: (1) MMM does not own or lease property to the east of the quarry as it does the north and south; (2) numerous residential homes (approximately 30) are located to the east of the quarry which lie off of Rebecca Kennedy Rd and Moore Town Rd., presenting significant cost and feasibility issues; (3) through previous permitting (Action ID 200301159), a large portion of the area to the east was placed in a conservation easement; and (4) the potentially mineable area is also constrained by the floodplain of the North East Cape Fear River and adjacent wetlands, which are located further to the east of the residential properties.

Accordingly, MMM developed the below potential alternatives as to northern and southern expansion of the existing mining area at the facility, and a “no action” alternative.

Alternatives Analysis

Alternative 1: No Action Alternative

The no Action alternative would involve mining what is currently permitted, Area 1, and then closing the Rocky Point Quarry.

The local reserves currently available to supply the Wilmington market area fall short of market demand. If the Rocky Point Quarry were to close, service to the Wilmington market would require significant amounts of aggregate material to be trucked or railed into the area. This additional transportation (by truck or rail) would significantly raise the cost of supplying road construction and construction materials such as concrete and asphalt to the Wilmingon market area. Furthermore, the material shipped from other parts of the state would likely be granite instead of limestone. Granite works well for many products, but limestone is preferred by concrete customers due to its chemical makeup allowing for the reduction of cement used in the mix. This could, in turn, raise the overall price of concrete in the Wilmington market. A local supply of stone is preferred over rail or truck supply due to a number of factors, including transportation costs. Furthermore, trucking and/or railing more material into the Wilmington area market would significantly increase emissions and fuel consumption. The no action alternative would not result in economically viable continued service to the Wilmington market area by local supply from the Rocky Point Quarry and would not meet the basic or overall project purposes.

Alternative 2: Preferred Alternative, Area 2, Area 2A and Area 3

Area 2 is located directly south of the current mining area. It is separated from the current mining area by a Stream and wetland system that begins as a ditch on the west side of the site. A 100ft wide haul road crossing is proposed in the ditch portion of this system as shown on the attached map. Forestry ditches exist in the north west corner of area 2. These ditches connect into a drainage system that flows to the south. Wetlands located in area 2 are mostly non-riparian, depressional, with only 1.82 acres being riparian.

Area 2 is approximately 292 acres and contains a total of 13.55 acres of wetlands, 1693 linear feet of stream, 1.07 acres of open water and 6703 linear feet of jurisdictional ditches, all of which would be impacted by mining this area. The available reserves in this area are estimated to be able to augment supply for the short and medium term, depending on quality and market demands.

Area 2A is located directly south of Area 2. Area 2A is approximately 93.5 acres and geology estimates show this area to contain approximate reserves that would be able to augment short term supply, depending on material quality and market demands.

Area 2A contains a total of 10.65 acres of jurisdictional wetlands, 0.49 acre of isolated wetlands, 4804 linear feet of jurisdictional streams and 522 linear feet of jurisdictional ditches, all of which would be impacted by mining in this area. The three streams proposed for impact all scored

perennial on the NC Stream Identification Form when the wetland determination was completed, but Streams S4 and S5 were dry when the NC Stream Assessment Method (NCSAM) forms were completed. MMM believes that these streams scored as perennial due to their excavated depth. The NCSAM evaluation shows that stream S4 (1686 LF) which is very similar in quality to stream S5 (201 LF), scored as a low-quality perennial stream and stream S2 scored as a medium quality perennial stream. Stream S2 currently carries some of the flow from the site's pit discharge which is believed to add to its NCSAM score due to the added flow of clean clear water. All of these stream features have been modified in the past by forestry activity such as channelization and excavation.

Area 3 is located south east of the current mining area. Area 3 is separated from the current pit by an area of probable low-quality material and a zoned no mining area. A haul road, utilizing existing crossing locations would be built to move material from Area 3 to the current yard. Some upgrades may be required if the current culverts cannot support mining equipment, but no additional impacts are expected at this time as these crossings were built wide enough for logging equipment to pass. Area 3 is approximately 163 Acres and contains 38.85 acres of wetlands, all of which would be impacted by mining in this area. Though there are more wetland impacts than area 2 and 2A, Area 3 has no stream impacts. Estimates show that this area would likely be able to augment short term supply, depending on material quality and market conditions. In sum, Alternative 2 would result in total impacts to 1.07 acres of open water, 63.05 acres of jurisdictional wetlands, 0.49 acre of isolated wetlands, and 7,225 linear feet of ditches.

Alternative 2 is the Least Environmentally Damaging Practicable Alternative that meets the basic and overall project purpose by providing access to reserves in order to cost-effectively augment the near term and medium-term supply of limestone aggregate to the Wilmington market area.

Alternative 3: Areas 4 and 5

The property known as the Shew Tract lies to the north of the current permitted mine area. It is separated from the processing plant and yard by a mined-out pit within the current mine boundary and by Rebecca Kennedy Rd. The site is bisected by a large power line and a portion of the site was previously a sand mine. The minable areas on the Shew Tract are labeled as Areas 4 and 5.

Mining these areas would provide access to reserves that would be able to augment short term supply to the market, which if combined with other alternatives, could assist in reaching the applicant's stated purpose for this project. Direct impacts to jurisdictional waters would total approximately 34 acres of wetlands and approximately 650 linear feet of streams.

However, mining Areas 4 and 5 would require hauling or conveying material across Rebecca Kennedy Rd with a long haul to the plant site. The large power line adds to the difficulty of mining the site as it will need to be avoided and/or relocated which may not be feasible. This additional material handling cost and lack of feasibility, along with the limited reserves (augmenting supply only short term) when compared to Alternative 2 (augmenting supply short

and medium term) would result in this alternative not meeting cost-effectiveness and feasibility requirements at this time.

Additionally, this Alternative alone would not provide sufficient reserves supply the market in the medium term, and therefore does not meet the basic and overall project purposes.

Alternative 4: Area 6, Oxbow

The wetland areas in Area 6 have not been formally delineated, but through the use of LIDAR and aerial imagery wetlands are estimated to be approximately 200 acres of the 400-acre area. An area of high ground exists in toward the middle of area 6 and a smaller pit could be opened here, but would still result in substantial wetland impacts. Furthermore, the wetlands in this area are believed to be higher quality due to their connection to the North East Cape Fear Floodplain. A portion of Area 6 is also shown as an NHP Natural Area (NHNA) as shown on the attached letter and map from the NC Natural Heritage Program.

For the reasons stated above, MMM believes that this would not be the least environmentally damaging alternative.

Avoidance, Minimization and Compensation

Avoidance

In order to avoid wetland impacts, MMM conducted careful investigations of the property. The location of available reserves has been established to the extent practicable. MMM has not proposed mining in certain areas - even though mining these areas would be cost-effective and economically viable - in order to entirely avoid impacting wetlands in those areas. One example of this is the wetland area just south of Area 3. MMM had initially planned to mine this area, as shown on the maps submitted in the pre-application meeting. Changing the shape of area 3 has entirely avoided approximately 22 acres of wetlands impacts, but also reduced available reserves by over a year of service to the market. Furthermore, MMM is avoiding Area 6 entirely, which has been determined to contain a substantial amount of reserves, but also contains a higher quality floodplain wetland system, as explained in alternative 4. At this time, MMM is also proposing to avoid impacts to Areas 4 and 5. As described in Alternative 3, this would avoid impacts to approximately 34 acres of wetlands and approximately 650 linear feet of stream.

Minimization

To minimize impacts to wetlands and other waters, MMM uses stormwater management and erosion control techniques that preserve downstream water quality. MMM will use stripping techniques that will not allow the loss of material downstream or into adjacent wetlands. As the overburden is removed or stripped from the site, all runoff will be directed to the pit or other erosion control structure. A minimum 50ft wooded buffer will be maintained around all wetlands and waters not directly impacted by this requested permit.

Compensation

MMM proposes to mitigate for 4610 linear feet of impacts to stream S2 at a 2:1 ratio, 1686 linear feet of impacts to stream S4 and 201 linear feet of impacts to stream S5 at a 1:1 ratio, 63.05 acres of impacts to non-riparian wetland at a 2:1 Ratio and 1.82 acres of impacts to riparian wetland at a 2:1 ratio by purchasing 11,107 Stream Credits, 122.46 Non-Riparian Wetland Credits and 3.64 Riparian Wetland Credits.

Due to the availability of banked stream mitigation credits within this HUC, MMM is proposing to phase the project into 3 phases. Phase one would be Area 2, Phase 2 would be Area 2A and Phase 3 would be Area 3. As outlined in the attached letter dated October 23, 2019 from Land Management Group, MMM has been working with The Northeast Cape Fear Umbrella Mitigation Bank to provide the mitigation for this project. At this time, the bank does not have enough available stream mitigation credits to cover all of the phases. For this reason, MMM is proposing to phase the project as outlined in the timeline below to allow for the release of credits. If the Bank is unable to provide the stream credits, MMM has obtained an acceptance

letter from Mitigation Services for the credits which the bank does not currently hold. MMM is also proposing to phase out the mitigation payment and impacts for area 3, as this area would be a separate pit that would not be opened until areas 2 and 2A are nearing completion.

Estimated Mitigation Timeline

2020 Continue mining current permitted area

2021 Phase 1 – Mitigate for impacts associated with Area 2 and begin mining area 2.

2026 Phase 2 – Mitigate for impacts associated with Area 2A and begin mining area 2A.

2029 Phase 3 – Mitigate for impacts associated with Area 3 and begin mining area 3.

Floodplain

A FEMA floodplain permit from Pender County has been requested. The Pender County Floodplain Administrator has visited the site and conditionally approved the plan as proposed in this application. As stated in the attached letter dated November 6, 2019, Pender County will issue the floodplain development permit after all state and federal permits have been acquired.

Endangered Species Act (ESA)

A query of the North Carolina National Heritage Program database indicates that there are no records for rare species, important natural communities, natural areas or conservation/managed areas within the boundary of the preferred alternative. A portion of Area 6, which MMM is proposing to avoid, is an NHP Natural Area (NHNA) as shown on the attached letter and map from the NC Natural Heritage Program.

National Historic Preservation Act

Martin Marietta is not aware of any properties or structures that are listed or eligible for listing with the National Register of Historic Properties within the immediate vicinity of the project area, and will address any such circumstances that may come to its attention in the notice and comment process.

Impact Summary Table

Area 2			Totals
Stream (Linear Ft)	S2	1693	1693
Ditch (Linear Ft)	JD5	1470	6703
	JD7	1403	
	JD8	1022	
	JD9	1733	
	JD14	907	
	JD12	68	
Road Crossing	JD13	100	
Wetland (Acres)	W16	1.18	13.55
	W14	1.82	
	W24	0.03	
	W23	0.02	
	W19	0.01	
	W20	0.01	
	W44	0.11	
	W18	7.89	
	W21	0.01	
	W25	2.47	
Open Water (Acres)	P1	0.32	1.07
	P2	0.74	

Area 2A			Totals
Stream (Linear Ft)	S2	2917	4804
	S4	1686	
	S5	201	
Ditch (Linear Ft)	JD 10	522	522
Wetland (Acres)	W26	0.01	10.65
	W27	0.02	
	W28	0.07	
	W29	0.14	
	W30	0.28	
	W33	0.02	
	W34	0.01	
	W35	0.18	
	W36	0.05	
	W41	5.27	
	W42	4.60	
Isolated Wetland (Acres)	W39	0.35	0.49
	W37	0.09	
	W38	0.06	

Area 3			Totals
Wetland (Acres)	W2	38.85	38.85

Total Impacts		
Stream	6497	Linear Ft
Ditch	7225	Linear Ft
Wetland	63.05	Acers
Isolated wetland	0.49	Acre
Open Water	1.07	Acres

Mitigation		
Phase 1	Impacts	Mitigation
Stream 2:1	1693	3386.00
Wetland 2:1	13.55	27.10
Phase 2	Impacts	Mitigation
Stream 2:1	2917	5834.00
Stream 1:1	1887	1887.00
Wetland 2:1	10.65	21.30
Phase 3	Impacts	Mitigation
Wetland 2:1	38.85	77.7

Supporting Maps

-Overall Aerial Map

-Vicinity Road Map

-Vicinity Aerial Map

-Street Map

-Area 2 and Area 2A Map

-Area 3 Map

-Road Crossing Map

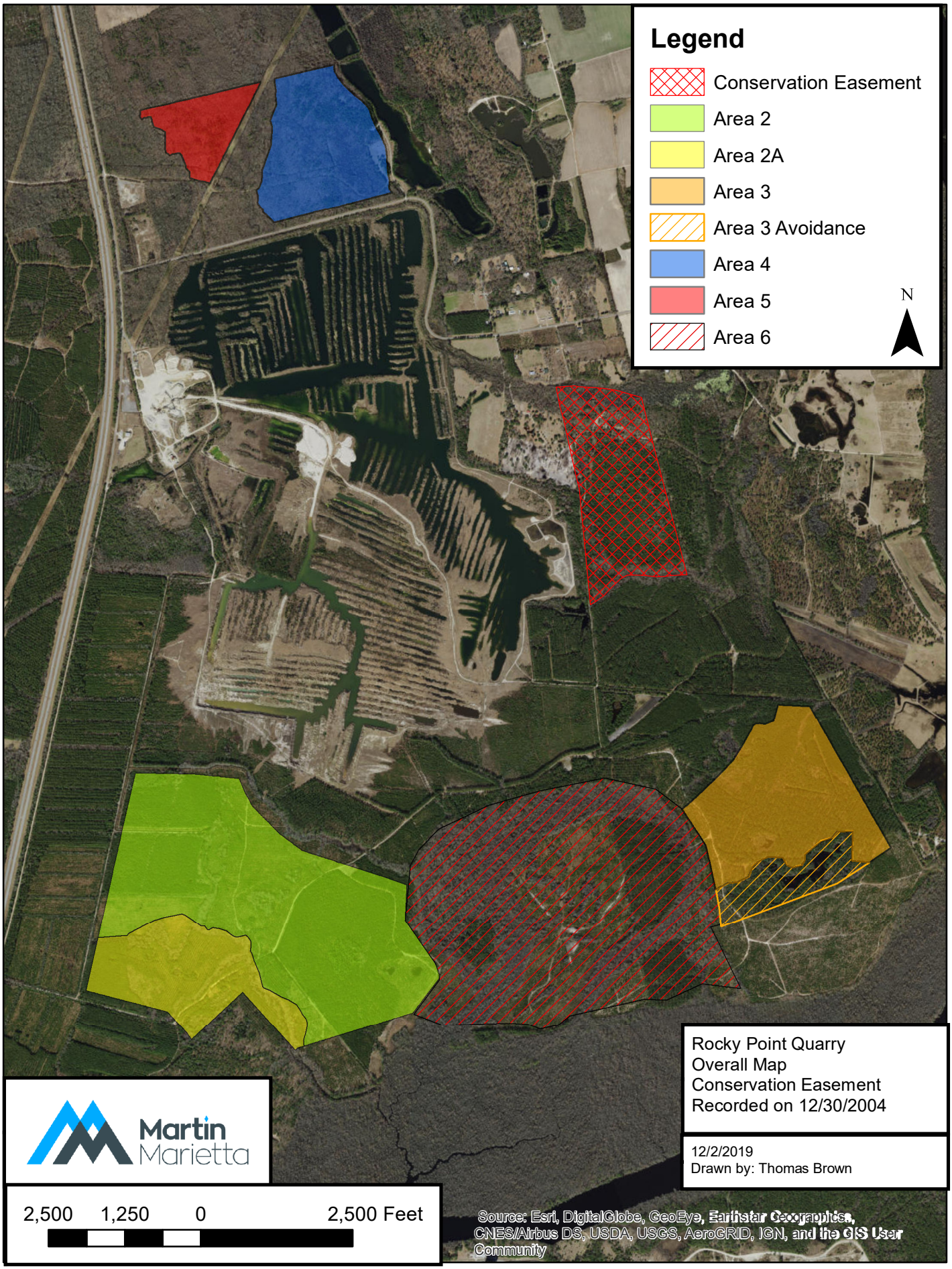
-Area 4 and 5 Map

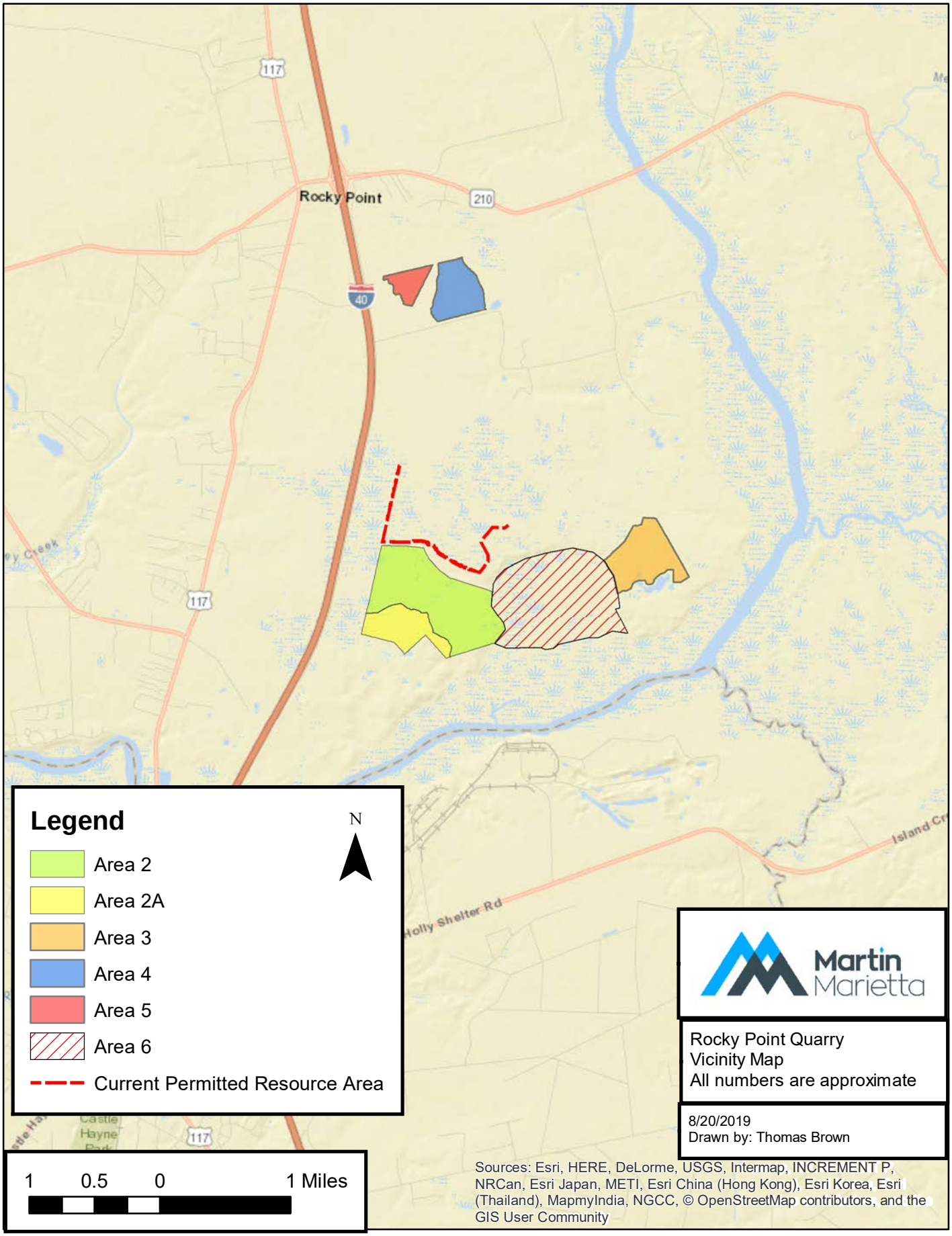
-Area 6 Map

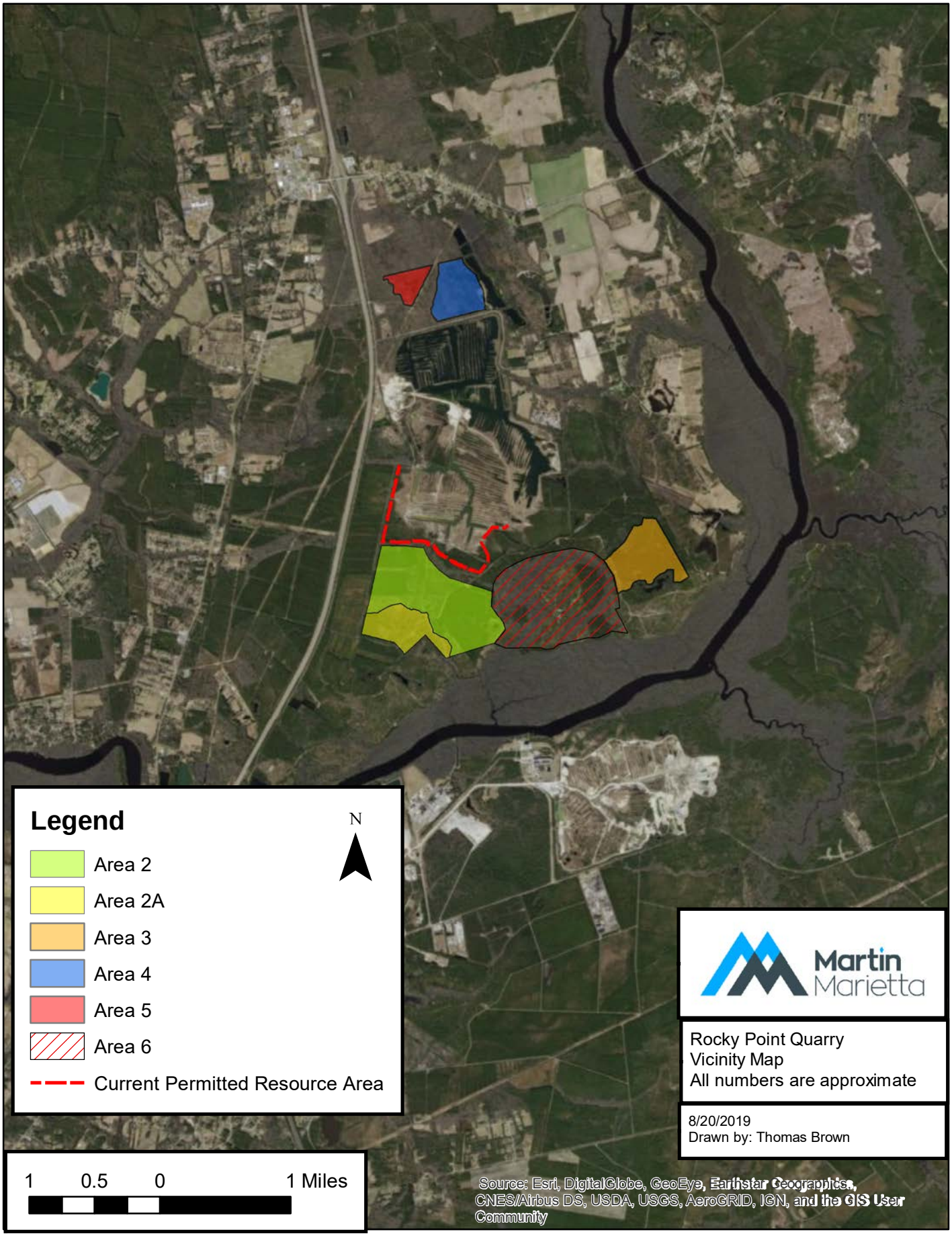
-Area 4 and 5 Soil Map

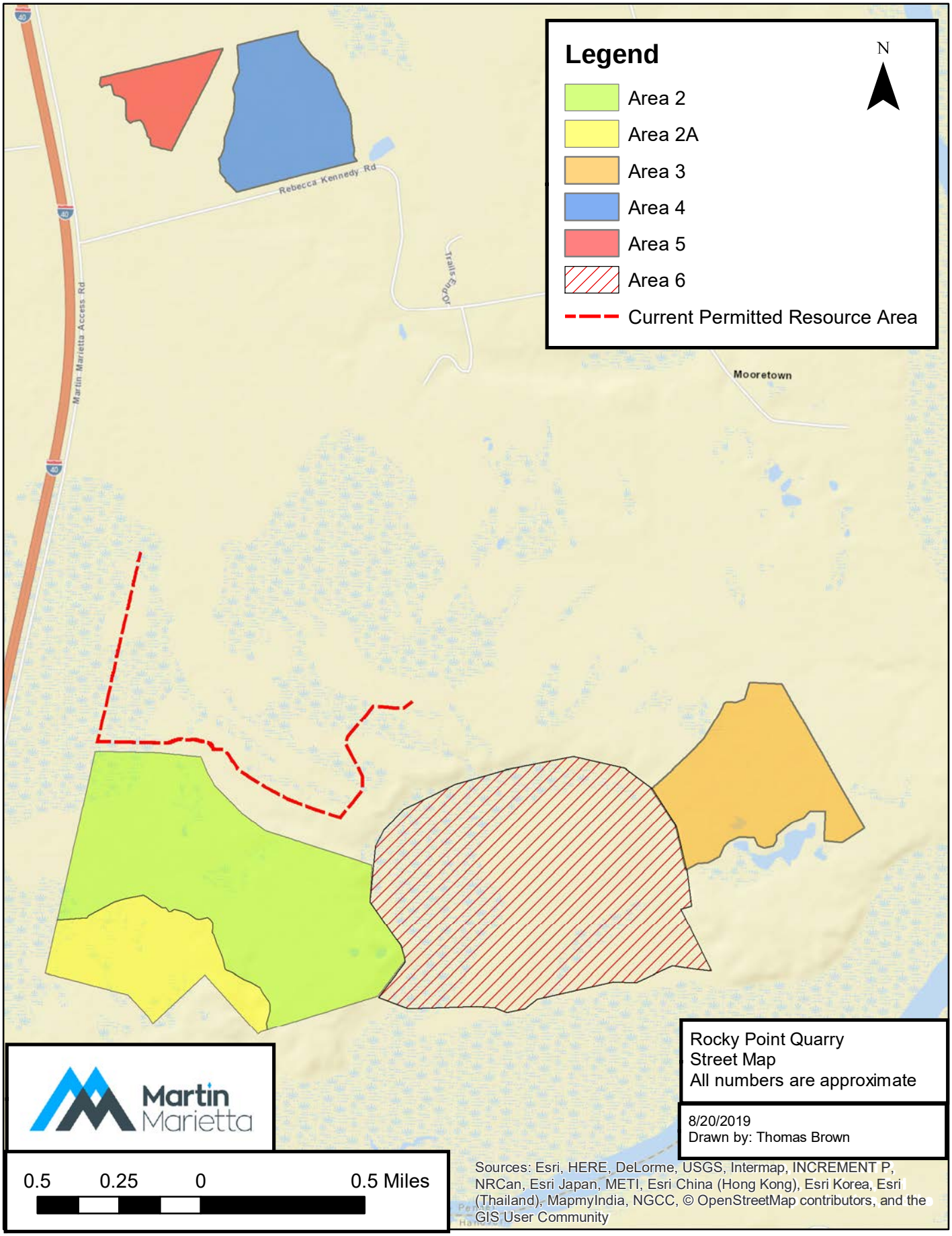
-Southern area Soil Map

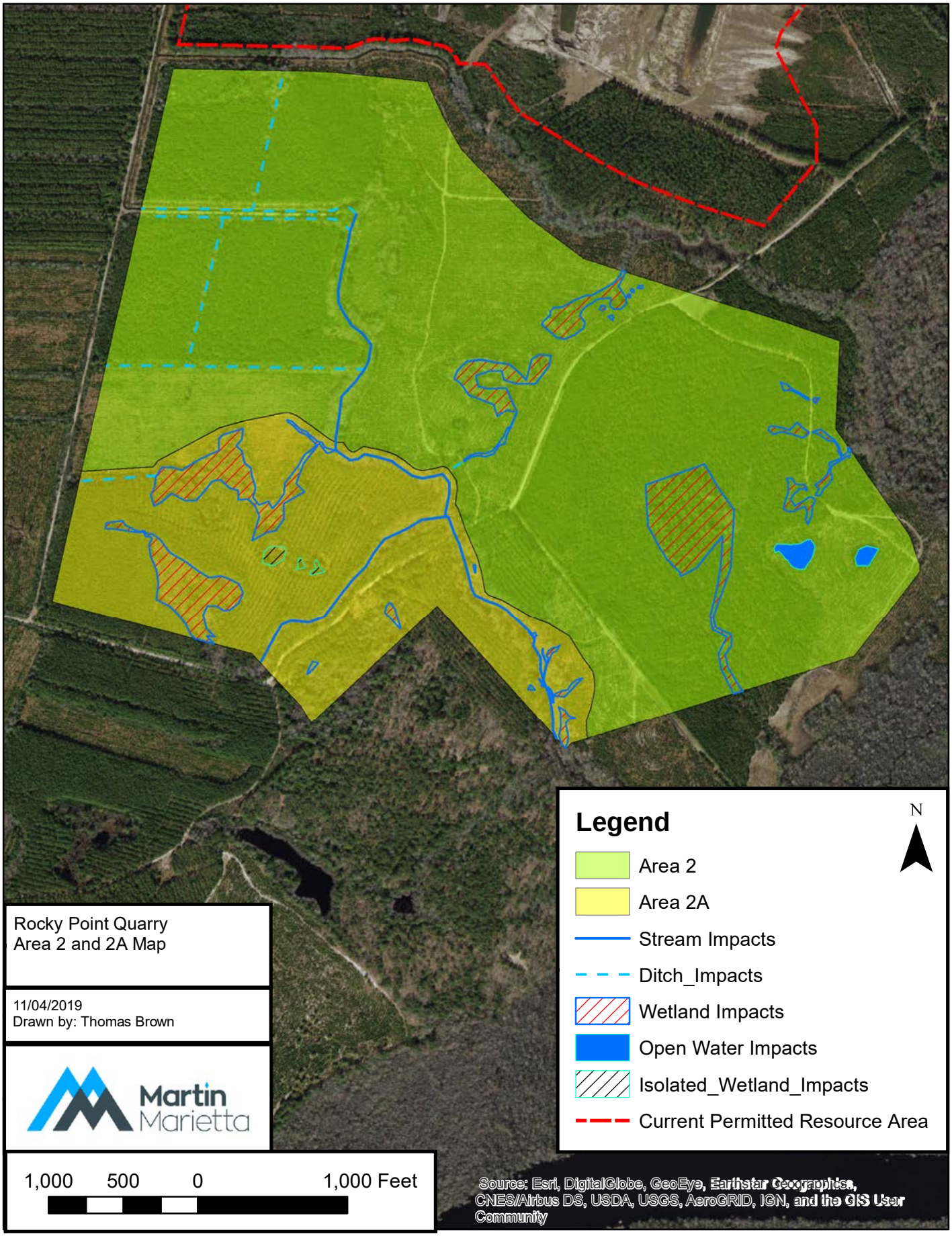
-JD Maps provided by Kimley Horn

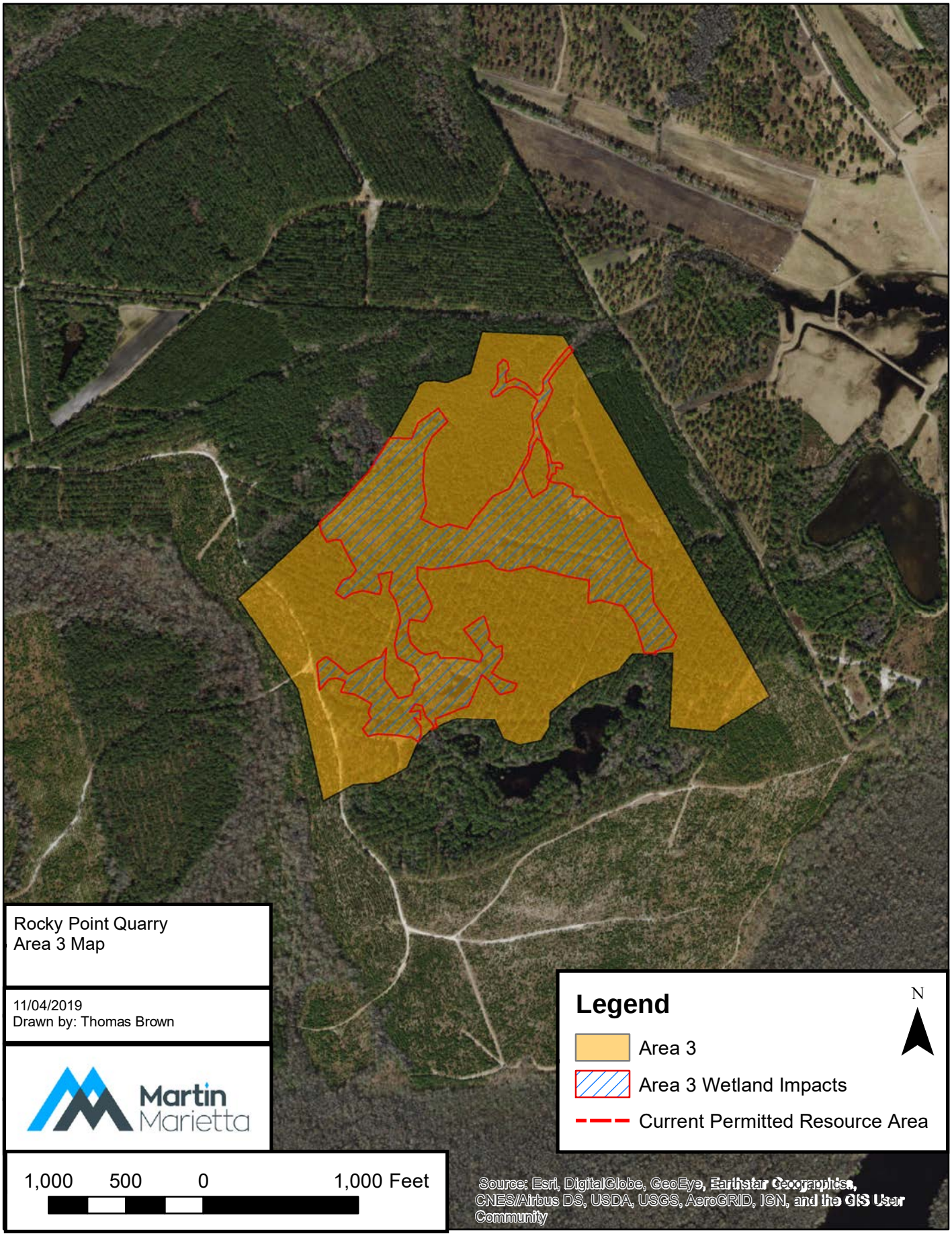

Legend
Conservation Easement
Area 2
Area 2A
Area 3
Area 3 Avoidance
Area 4
Area 5
Area 6
N
Rocky Point Quarry
Overall Map
Conservation Easement
Recorded on 12/30/2004
12/2/2019
Drawn by: Thomas Brown
Martin Marietta
2,500 1,250 0 2,500 Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

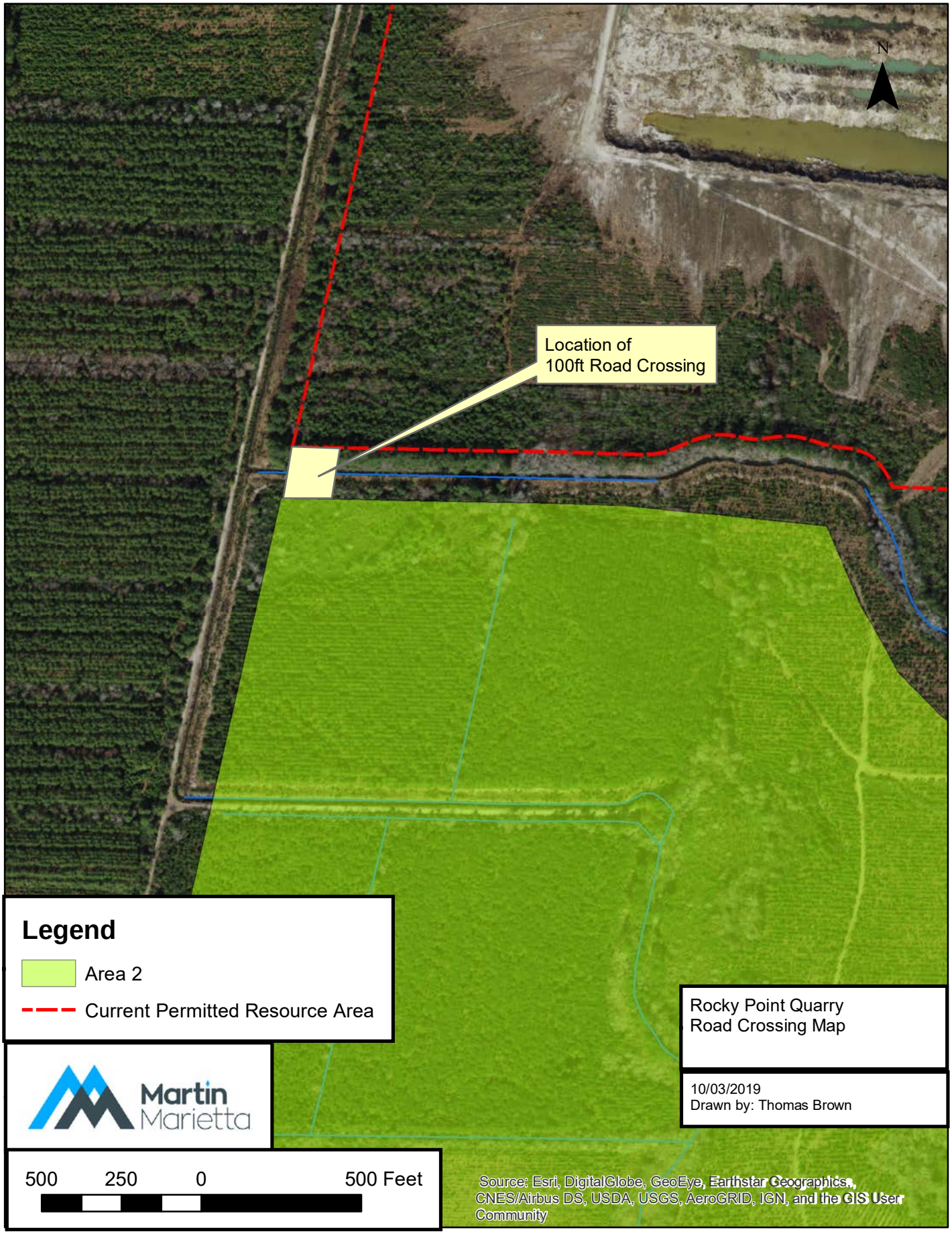

Rocky Point
117
210
40
Holly Shelter Rd
Legend
N
Area 2
Area 2A
Area 3
Area 4
Area 5
Area 6
Current Permitted Resource Area
1 0.5 0 1 Miles
Martin Marietta
Rocky Point Quarry
Vicinity Map
All numbers are approximate
8/20/2019
Drawn by: Thomas Brown
Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

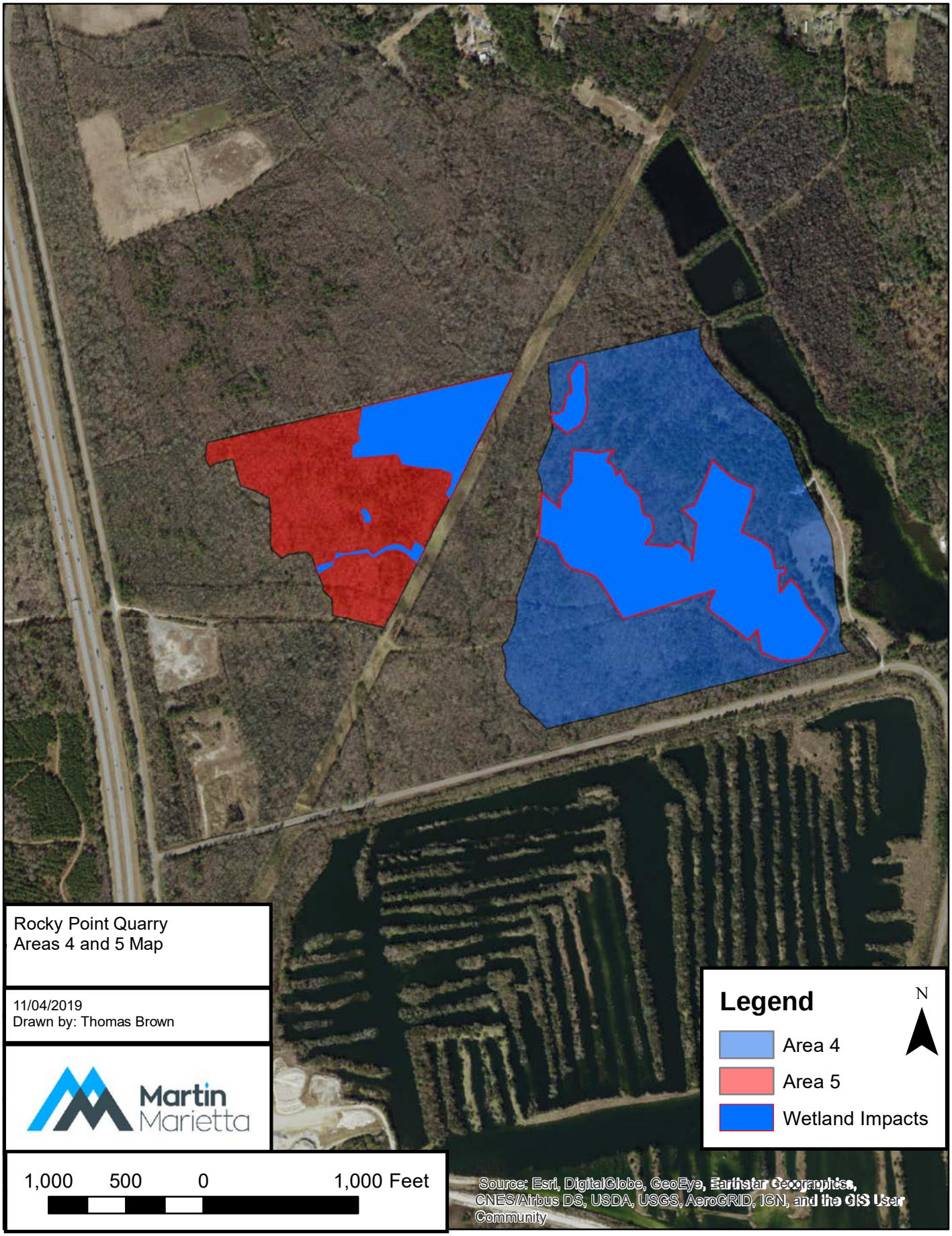

Legend
N
Area 2
Area 2A
Area 3
Area 4
Area 5
Area 6
Current Permitted Resource Area
Martin Marietta
Rocky Point Quarry
Vicinity Map
All numbers are approximate
8/20/2019
Drawn by: Thomas Brown
1 0.5 0 1 Miles
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

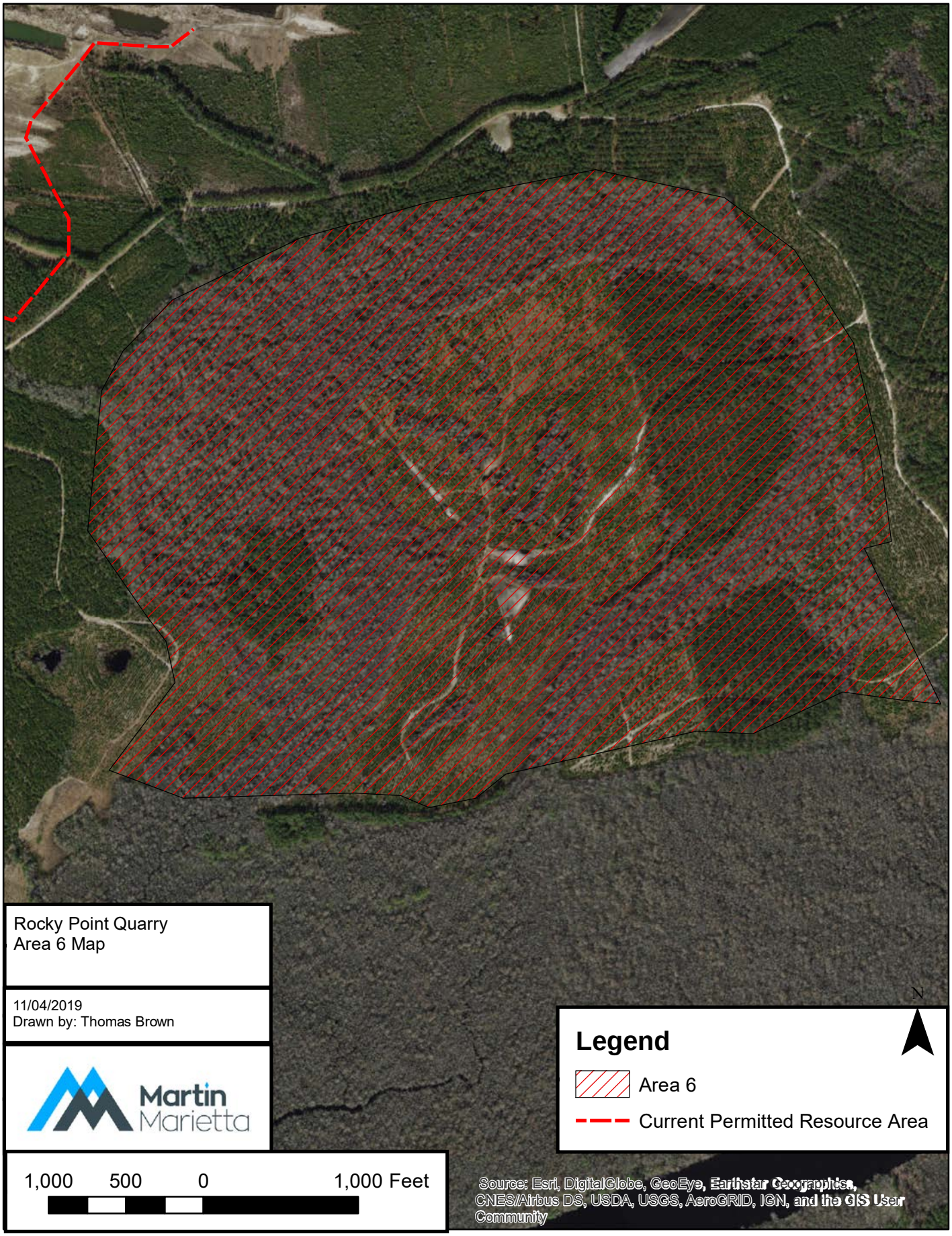

Legend
N
Area 2
Area 2A
Area 3
Area 4
Area 5
Area 6
Current Permitted Resource Area
Rebecca Kennedy Rd
Martin Marietta Access Rd
Trails End Dr
Mooretown
Rocky Point Quarry
Street Map
All numbers are approximate
8/20/2019
Drawn by: Thomas Brown
Martin Marietta
0.5 0.25 0 0.5 Miles
Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community


Legend
N
Area 2
Area 2A
Stream Impacts
Ditch_Impacts
Wetland Impacts
Open Water Impacts
Isolated_Wetland_Impacts
Current Permitted Resource Area
Rocky Point Quarry
Area 2 and 2A Map
11/04/2019
Drawn by: Thomas Brown
Martin Marietta
1,000 500 0 1,000 Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

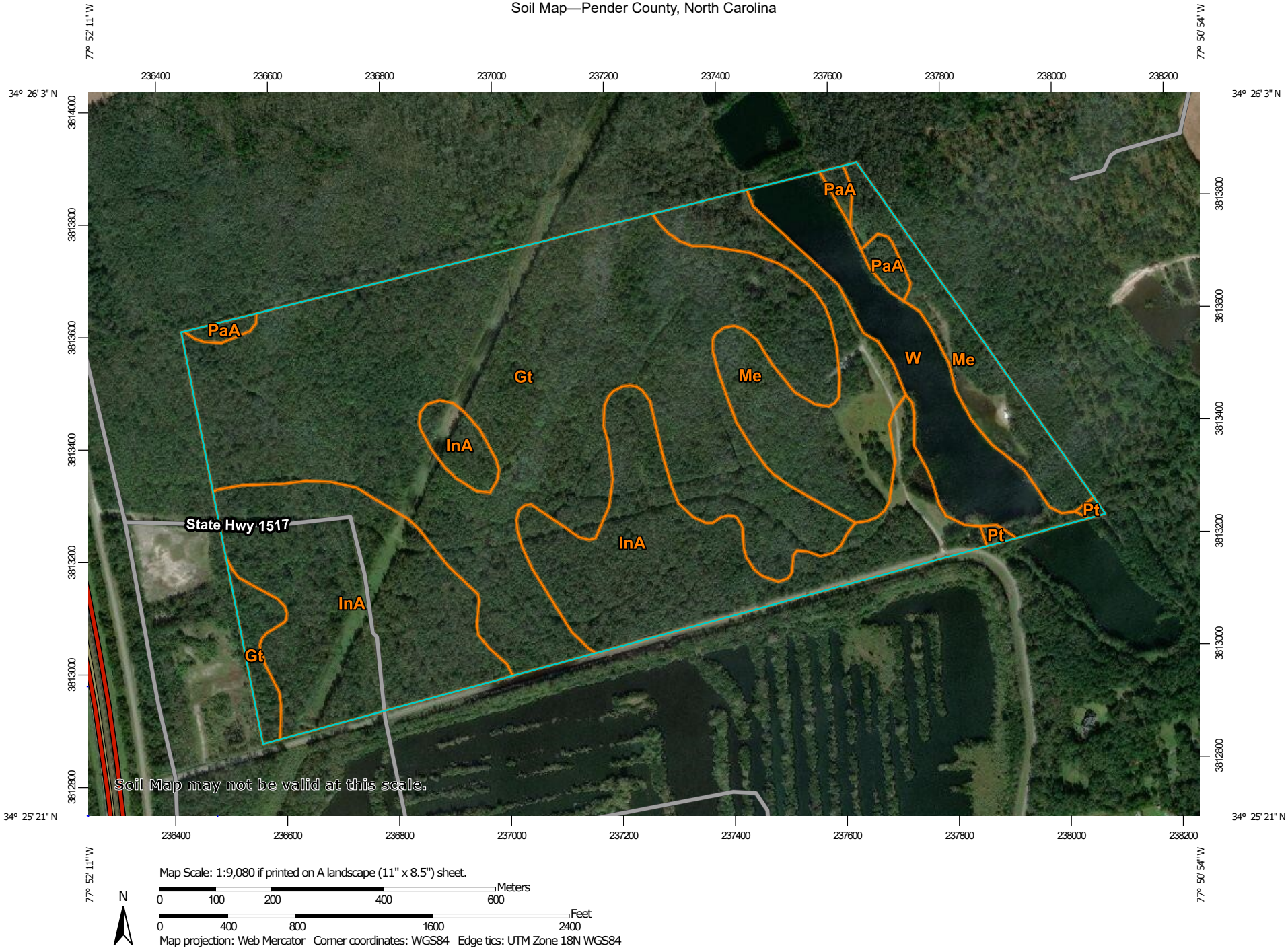

Rocky Point Quarry
Area 3 Map
11/04/2019
Drawn by: Thomas Brown
Martin Marietta
1,000 500 0 1,000 Feet
Legend
N
Area 3
Area 3 Wetland Impacts
Current Permitted Resource Area
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


N
Location of
100ft Road Crossing
Legend
Area 2
Current Permitted Resource Area
Martin Marietta
500 250 0 500 Feet
Rocky Point Quarry
Road Crossing Map
10/03/2019
Drawn by: Thomas Brown
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Rocky Point Quarry
Areas 4 and 5 Map
11/04/2019
Drawn by: Thomas Brown
Martin Marietta
1,000 500 0 1,000 Feet
Legend
N
Area 4
Area 5
Wetland Impacts
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Rocky Point Quarry
Area 6 Map
11/04/2019
Drawn by: Thomas Brown
Martin Marietta
1,000 500 0 1,000 Feet
N
Legend
Area 6
Current Permitted Resource Area
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Soil Map—Pender County, North Carolina



Map Scale: 1:9,080 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Pender County, North Carolina
Survey Area Data: Version 20, Sep 10, 2018

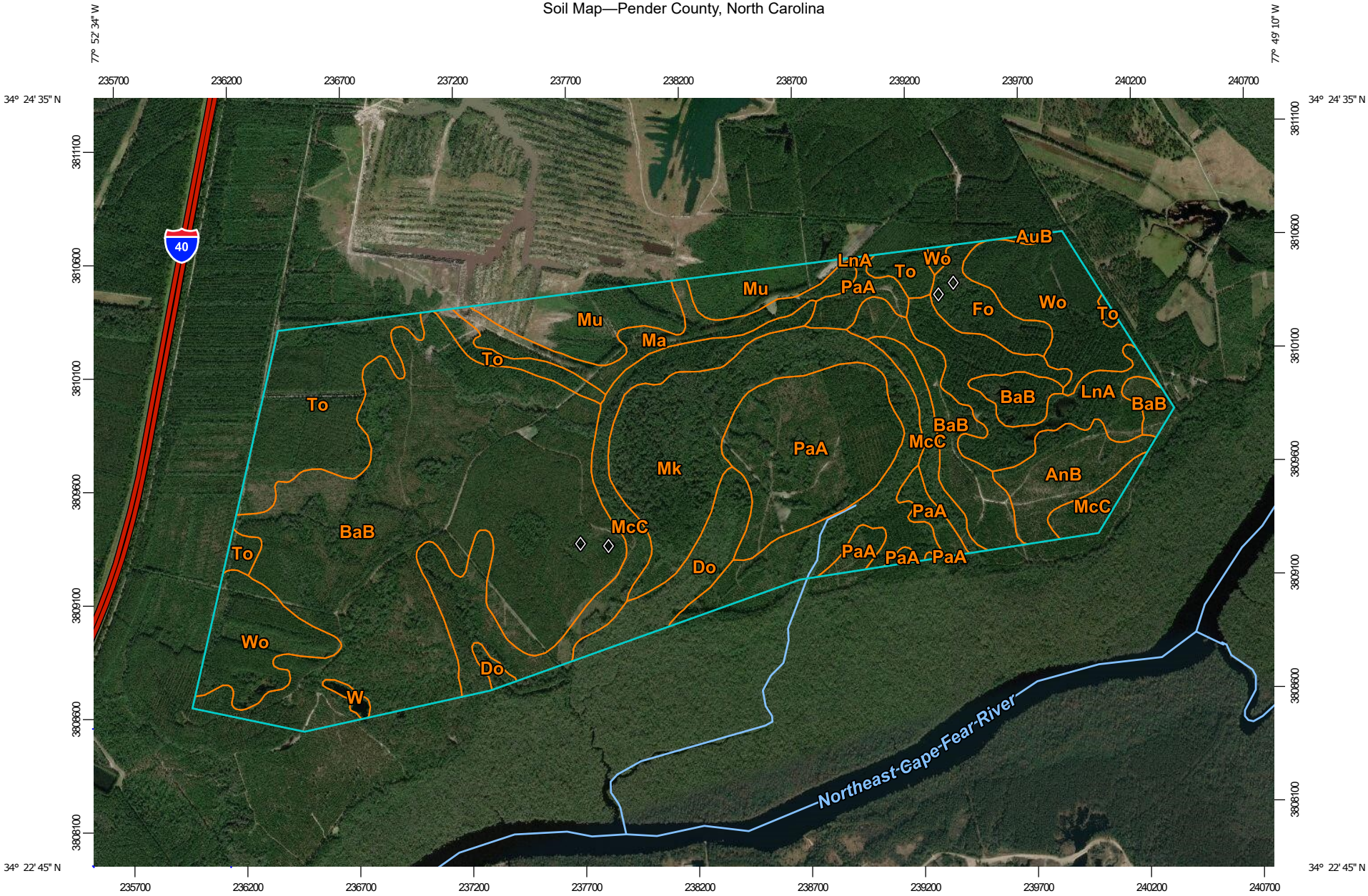
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Aug 24, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Gt	Grifton loamy fine sand	119.9	47.2%
InA	Invershiel-Pender complex, 0 to 2 percent slopes	75.0	29.5%
Me	Meggett loam	35.8	14.1%
PaA	Pactolus fine sand, 0 to 2 percent slopes	3.0	1.2%
Pt	Pits	0.6	0.2%
W	Water	19.9	7.8%
Totals for Area of Interest		**254.2**	**100.0%**


77° 52' 34" W
77° 49' 10" W
34° 24' 35" N
34° 22' 45" N
235700
236200
236700
237200
237700
238200
238700
239200
239700
240200
240700
3811100
3810600
3810100
3809600
3809100
3808600
3808100
40
AuB
LnA
To
Wo
PaA
Mu
Fo
Wo
To
Mu
Ma
To
To
BaB
LnA
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McC
PaA
Mk
AnB
McC
PaA
BaB
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Do
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PaA
PaA
Wo
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Northeast Cape Fear River
Map Scale: 1:23,900 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 350 700 1400 2100
Feet
0 1000 2000 4000 6000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Pender County, North Carolina
Survey Area Data: Version 20, Sep 10, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

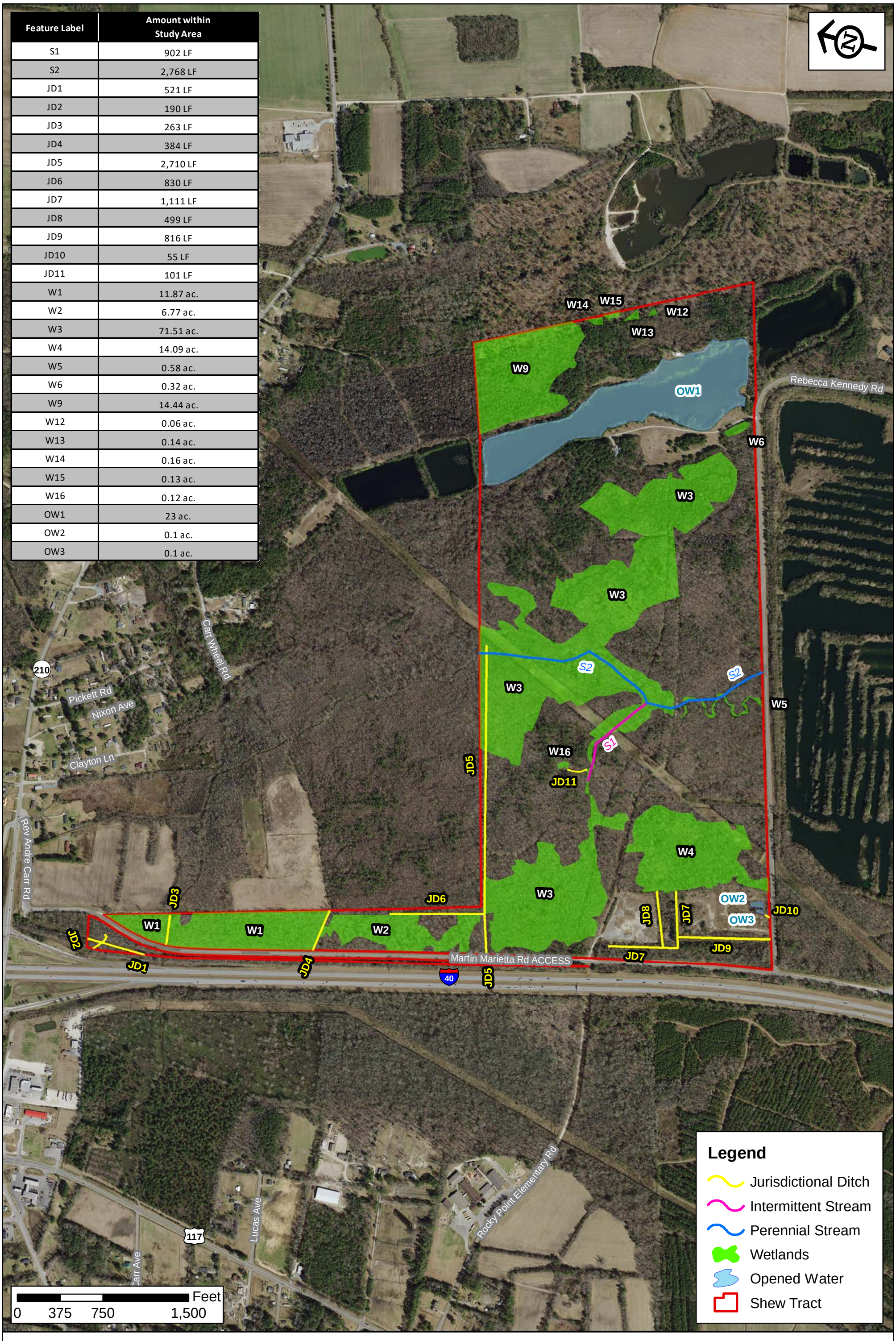
Date(s) aerial images were photographed: Dec 31, 2009—Nov 28, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

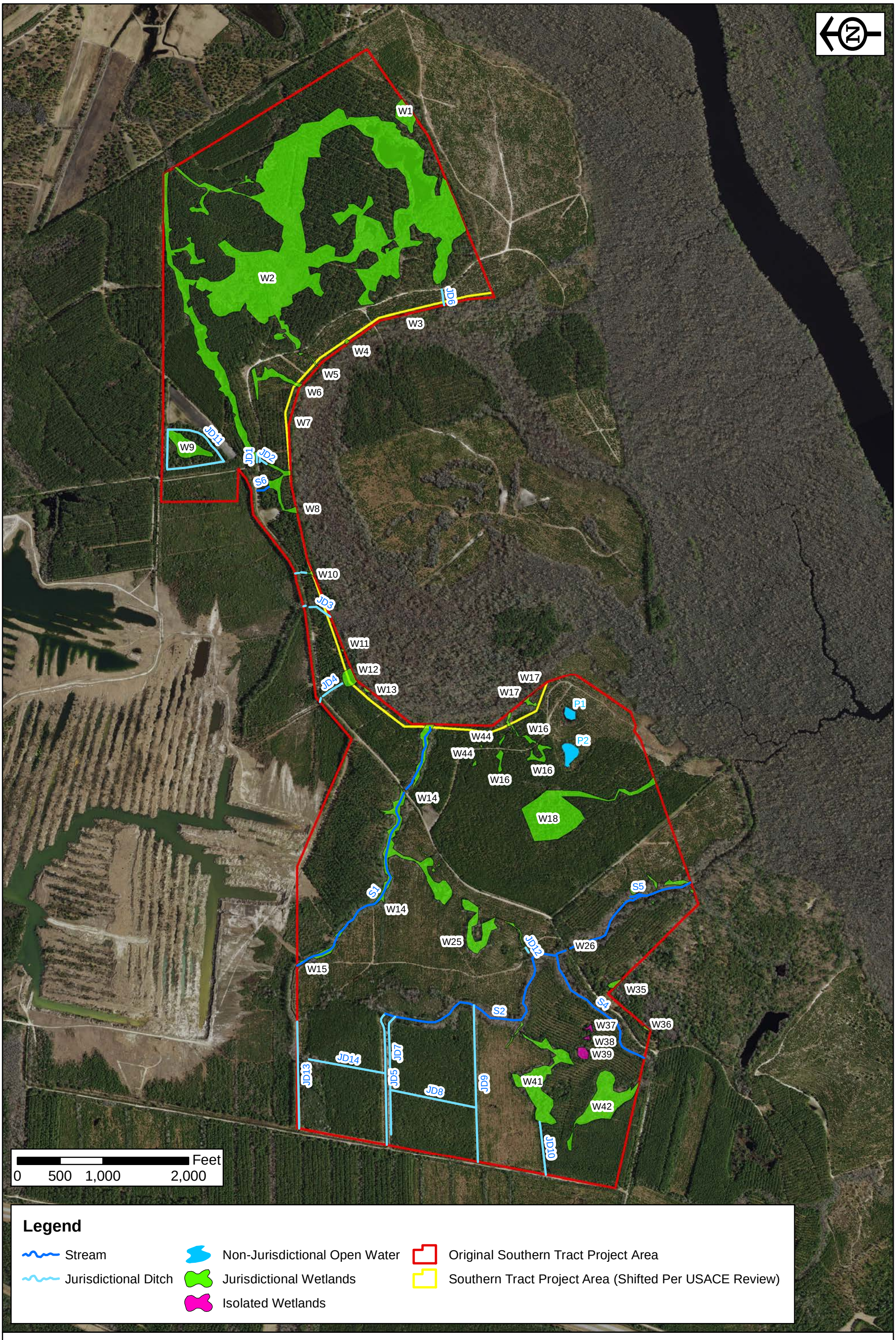
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AnB	Alpin fine sand, 1 to 6 percent slopes	43.8	2.9%
AuB	Autryville fine sand, 1 to 4 percent slopes	1.3	0.1%
BaB	Baymeade fine sand, 1 to 4 percent slopes	506.4	33.7%
Do	Dorovan muck, frequently flooded	44.8	3.0%
Fo	Foreston loamy fine sand	28.1	1.9%
LnA	Leon fine sand, 0 to 2 percent slopes	69.5	4.6%
Ma	Mandarin fine sand	42.6	2.8%
McC	Marvyn and Craven soils, 6 to 12 percent slopes	124.6	8.3%
Mk	Muckalee loam, frequently flooded	184.8	12.3%
Mu	Murville muck	72.2	4.8%
PaA	Pactolus fine sand, 0 to 2 percent slopes	145.2	9.7%
To	Torhunta mucky fine sandy loam	121.1	8.1%
W	Water	3.5	0.2%
Wo	Woodington fine sandy loam	114.3	7.6%
Totals for Area of Interest		**1,502.3**	**100.0%**

Feature Label	Amount within Study Area
S1	902 LF
S2	2,768 LF
JD1	521 LF
JD2	190 LF
JD3	263 LF
JD4	384 LF
JD5	2,710 LF
JD6	830 LF
JD7	1,111 LF
JD8	499 LF
JD9	816 LF
JD10	55 LF
JD11	101 LF
W1	11.87 ac.
W2	6.77 ac.
W3	71.51 ac.
W4	14.09 ac.
W5	0.58 ac.
W6	0.32 ac.
W9	14.44 ac.
W12	0.06 ac.
W13	0.14 ac.
W14	0.16 ac.
W15	0.13 ac.
W16	0.12 ac.
OW1	23 ac.
OW2	0.1 ac.
OW3	0.1 ac.



Kimley»Horn

Figure 3: Jurisdictional Features Map
Rocky Point Quarry - Shew Tract
Pender County, NC
May 2018



Kimley»Horn

Figure 3: Jurisdictional Features Map
Southern Tract - Rocky Point Quarry
Martin Marietta Materials
March 2018

Supporting Documents

-North East Cape Fear Umbrella Mitigation Bank Reservation Letter

-NCDEQ Division of Mitigation Services Acceptance Letter

-NC Natural Heritage Letter and map

-Pender County FEMA Letter

NORTHEAST CAPE FEAR UMBRELLA MITIGATION BANK
Agent: Land Management Group, Inc.
3805 Wrightsville Avenue, Suite 15
Wilmington, NC 28403

Credit Reservation Letter

October 23, 2019

Martin Marietta
Attn. Thomas Brown
2700 Wycliff Road Suite 104
Raleigh, NC 27607

Project: Rocky Point Quarry
Pender County, North Carolina

Dear Mr. Brown:

Pursuant to your recent credit reservation request, the Northeast Cape Fear Umbrella Mitigation Bank (Bank) is providing preliminary acceptance to supply mitigation credits for impacts to jurisdictional wetlands and streams associated with the Rocky Point Quarry Project referenced above. Please refer to the table below depicting the type and quantity of credits requested as well as the amount of pending stream credits (with anticipated release dates occurring annually from February 2021 through February 2026).[1]

Mitigation Type	Credits Requested (Existing Inventory)	Credits Requested (Pending Annual Release – Anticipated February 2021 thru 2026 from Davis Farm Mitigation Site)	Total Credits Reserved
Stream	750	10,357	11,107
Non-Riparian Wetland	126.1	N/A	126.1

Note that the quantity of stream credits reserved under the pending credit release are subject to change pending the review and concurrence by the U.S. Army Corps of Engineers (USACE). It is understood that should pending stream credits not be available through the NECFUMB at the time of the project need, Martin Marietta may utilize stream credits from the North Carolina Division of Mitigation Services (NC DMS).

Upon request for credit transfer (and pending the stream credit release), the Bank will issue an invoice for the final mitigation credit types and quantities. Upon receipt of payment, the Bank will

[1] Stream credits anticipated to be released and available prior to construction of Applicant's project phases.

provide an executed Mitigation Responsibility Transfer Form, thereby accepting full responsibility for the required mitigation for the project.

If you have any questions or need additional information, please contact me by phone at (910) 452-0001 or by email at cpreziosi@lmgroup.net.

Sincerely,

Northeast Cape Fear Umbrella Mitigation Bank

Christian Preziosi
Land Management Group (agent)

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
TIM BAUMGARTNER
Director

NORTH CAROLINA
Environmental Quality

August 14, 2019

Larry Roberts
Martin Marietta
413 S. Chimney Rock Road
Greensboro, NC 27409

Expiration of Acceptance: 2/13/2020

Project: Martin Marietta Rocky Point Quarry

County: Pender

The purpose of this letter is to notify you that the NCDEQ Division of Mitigation Services (DMS) is willing to accept payment for compensatory mitigation for impacts associated with the above referenced project as indicated in the table below. Please note that this decision does not assure that participation in the DMS in-lieu fee mitigation program will be approved by the permit issuing agencies as mitigation for project impacts. It is the responsibility of the applicant to contact permitting agencies to determine if payment to the DMS will be approved. You must also comply with all other state, federal or local government permits, regulations or authorizations associated with the proposed activity including G.S. § 143-214.11.

This acceptance is valid for six months from the date of this letter and is not transferable. **If we have not received a copy of the issued 404 Permit/401 Certification within this time frame, this acceptance will expire.** It is the applicant's responsibility to send copies of the permits to DMS. Once DMS receives a copy of the permit(s) an invoice will be issued based on the required mitigation in that permit and payment must be made prior to conducting the authorized work. The amount of the in-lieu fee to be paid by an applicant is calculated based upon the Fee Schedule and policies listed on the DMS website.

Based on the information supplied by you in your request to use the DMS, the impacts for which you are requesting compensatory mitigation credit are summarized in the following table. The amount of mitigation required and assigned to DMS for this impact is determined by permitting agencies and may exceed the impact amounts shown below.

River Basin	Impact Location (8-digit HUC)	Impact Type	Impact Quantity
Cape Fear	03030007	Warm Stream	5,126.000

Upon receipt of payment, DMS will take responsibility for providing the compensatory mitigation. The mitigation will be performed in accordance with the In-Lieu Fee Program instrument dated July 28, 2010 and 15A NCAC 02B .0295 as applicable. Thank you for your interest in the DMS in-lieu fee mitigation program. If you have any questions or need additional information, please contact Kelly Williams at (919) 707-8915.

Sincerely,

James. B Stanfill
Asset Management Supervisor

cc: Thomas Brown, agent

NCNHDE-9886

July 31, 2019

Thomas Brown
Martin Marietta
2700 Wycliff Rd, Suite 104
Raleigh, NC 27607
RE: Rocky Point; 1

Dear Thomas Brown:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

A query of the NCNHP database indicates that there are records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the proposed project boundary. These results are presented in the attached 'Documented Occurrences' tables and map.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists. Tables of natural areas and conservation/managed areas within a one-mile radius of the project area, if any, are also included in this report.

If a Federally-listed species is documented within the project area or indicated within a one-mile radius of the project area, the NCNHP recommends contacting the US Fish and Wildlife Service (USFWS) for guidance. Contact information for USFWS offices in North Carolina is found here: https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=37.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

Also please note that the NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve, Registered Heritage Area, Clean Water Management Trust Fund easement, or an occurrence of a Federally-listed species is documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact Rodney A. Butler at rodney.butler@ncdcr.gov or 919-707-8603.

Sincerely,
NC Natural Heritage Program

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Intersecting the Project Area
Rocky Point
Project No. 1
July 31, 2019
NCNHDE-9886

No Element Occurrences are Documented within the Project Area

There are no documented element occurrences (of medium to very high accuracy) that intersect with the project area. Please note, however, that although the NCNHP database does not show records for rare species within the project area, it does not necessarily mean that they are not present; it may simply mean that the area has not been surveyed. The use of Natural Heritage Program data should not be substituted for actual field surveys if needed, particularly if the project area contains suitable habitat for rare species. If rare species are found, the NCNHP would appreciate receiving this information so that we may update our database.

Natural Areas Documented Within Project Area

Site Name	Representational Rating	Collective Rating
Northeast Cape Fear River Floodplain	R1 (Exceptional)	C1 (Exceptional)

Managed Areas Documented Within Project Area*

Managed Area Name	Owner	Owner Type
NC Clean Water Management Trust Fund Easement	NC DNCR, Clean Water Management Trust Fund	State
North Carolina Coastal Land Trust Easement	North Carolina Coastal Land Trust	Private
North Carolina Coastal Land Trust Preserve	North Carolina Coastal Land Trust	Private

*NOTE: If the proposed project intersects with a conservation/managed area, please contact the landowner directly for additional information. If the project intersects with a Dedicated Nature Preserve (DNP), Registered Natural Heritage Area (RHA), or Federally-listed species, NCNHP staff may provide additional correspondence regarding the project.

Definitions and an explanation of status designations and codes can be found at https://ncnhde.natureserve.org/content/help. Data query generated on July 31, 2019; source: NCNHP, Q2 Apr 2019. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area
Rocky Point
Project No. 1
July 31, 2019
NCNHDE-9886

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Bird	14375	Picoides borealis	Red-cockaded Woodpecker	1979-02	H	4-Low	Endangered	Endangered	G3	S2
Dragonfly or Damselfly	33765	Somatochlora georgiana	Coppery Emerald	2004-Pre	H?	5-Very Low	---	Significantly Rare	G3G4	S2?
Freshwater Fish	38937	Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	2018-09	E	4-Low	Endangered	Endangered	G3T3	S2
Freshwater Fish	33045	Heterandria formosa	Least Killifish	2002-05-26	E	3-Medium	---	Special Concern	G5	S2
Mammal	24390	Corynorhinus rafinesquii macrotis	Eastern Big-eared Bat	2006-Pre	E	5-Very Low	---	Special Concern	G3G4T3	S3
Mammal	18854	Myotis austroriparius	Southeastern Bat	1986	A?	4-Low	---	Special Concern	G4	S2
Mammal	32126	Myotis septentrionalis	Northern Long-eared Bat	1994-Post	E	5-Very Low	Threatened	Threatened	G1G2	S2
Mammal	17664	Trichechus manatus	West Indian Manatee	2018-08-13	E	5-Very Low	Threatened	Threatened	G2	S1N
Natural Community	3672	Tidal Swamp (Cypress--Gum Subtype)	---	1991-08-22	C	3-Medium	---	---	G3G4	S4
Natural Community	12633	Wet Pine Flatwoods (Typic Subtype)	---	2010	CD	3-Medium	---	---	G3	S3
Natural Community	16499	Xeric Sandhill Scrub (Coastal Fringe Subtype)	---	2006	B	3-Medium	---	---	G2?	S2
Reptile	3970	Alligator mississippiensis	American Alligator	2018-02-26	E	4-Low	Threatened Similar Appearance	Threatened	G5	S3
Vascular Plant	22787	Aristida condensata	Big Three-awn Grass	2005-11-08	D?	2-High	---	Threatened	G4?	S2
Vascular Plant	14003	Bacopa caroliniana	Blue Water-hyssop	1981-05-22	E	3-Medium	---	Threatened	G4G5	S1

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Vascular Plant	16150	Cardamine longii	Long's Bittercress	1981-05-22	H	3-Medium	---	Special Concern Vulnerable	G3?	S2
Vascular Plant	5225	Cardamine longii	Long's Bittercress	1997-05-11	A	3-Medium	---	Special Concern Vulnerable	G3?	S2
Vascular Plant	9525	Dionaea muscipula	Venus Flytrap	2002-05-29	D	2-High	---	Special Concern Vulnerable	G2	S2
Vascular Plant	17837	Epidendrum magnoliae	Green Fly Orchid	1981	E	3-Medium	---	Threatened	G4	S1S2
Vascular Plant	27006	Lupinus villosus	Lady Lupine	1997-05-11	BC	3-Medium	---	Significantly Rare Peripheral	G5	S1
Vascular Plant	27013	Oenothera riparia	Riverbank Evening-primrose	2004-06-18	C	3-Medium	---	Significantly Rare Limited	G2G3	S2S3
Vascular Plant	23312	Tridens chapmanii	Chapman's Redtop	2005-11-08	BC	2-High	---	Threatened	G5T3	S1S2

Natural Areas Documented Within a One-mile Radius of the Project Area

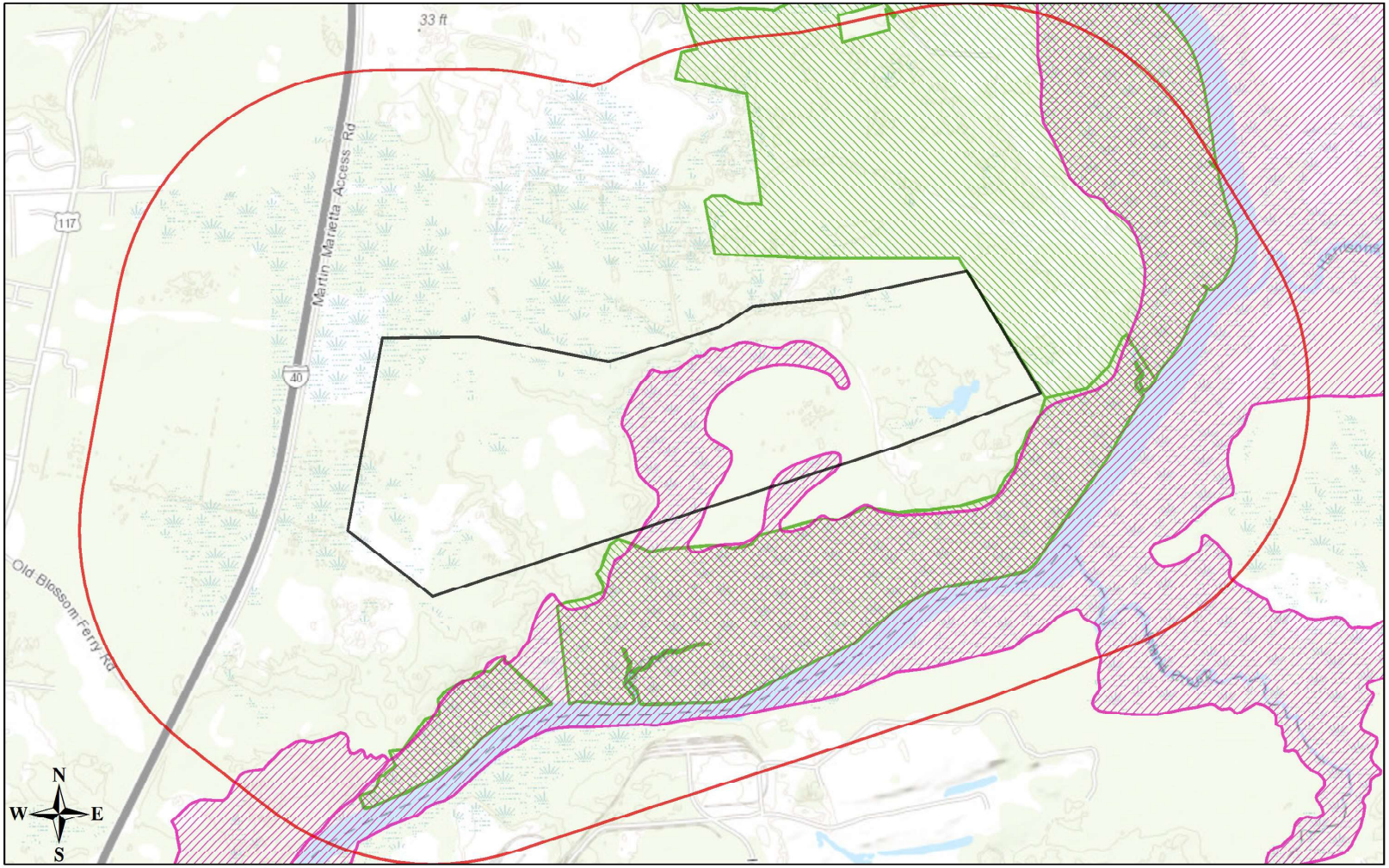
Site Name	Representational Rating	Collective Rating
Rocky Point Sandhills	R2 (Very High)	C4 (Moderate)
Northeast Cape Fear River Floodplain	R1 (Exceptional)	C1 (Exceptional)

Managed Areas Documented Within a One-mile Radius of the Project Area

Managed Area Name	Owner	Owner Type
NC Clean Water Management Trust Fund Easement	NC DNCR, Clean Water Management Trust Fund	State
North Carolina Coastal Land Trust Easement	North Carolina Coastal Land Trust	Private
North Carolina Coastal Land Trust Preserve	North Carolina Coastal Land Trust	Private

Definitions and an explanation of status designations and codes can be found at https://ncnhde.natureserve.org/content/help. Data query generated on July 31, 2019; source: NCNHP, Q2 Apr 2019. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

NCNHDE-9886: Rocky Point



July 31, 2019

- Project Boundary
- Buffered Project Boundary
- NHP Natural Area (NHNA)
- Managed Area (MAREA)

1:32,586

0 0.275 0.55 1.1 mi

0 0.425 0.85 1.7 km

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Pender County
Planning and Community Development

805 S. Walker Street
PO Box 1519
Burgaw, NC 28425

Phone: 910-259-1202
Fax: 910-259-1295
www.pendercountync.gov

November 6, 2019

Mr. Thomas Brown
Martin Marietta Inc.
2700 Wycliff Road, Suite 104, Raleigh, NC 27607

Dear Mr. Brown,

Please let this letter serve as notification that the proposed expansion of mining activity at Martin Marietta's Rocky Point mining site has been reviewed by Pender County Planning and Community Development staff. Staff has been on-site to conduct a review of the proposed expansion areas to ensure compliance with the current Flood Damage Prevention Ordinance, as part of the proposed expansion is within an Approximate A Flood Zone. Staff did not find any violations of the Flood Damage Prevention Ordinance during the visit.

As part of the permitting process, however, Pender County does not issue floodplain development permits until all state and federal permits have been acquired by the applicant. This letter is meant to inform regulatory agencies at the state and federal level that upon receipt of all necessary permits, Pender County will issue a floodplain development permit based on the proposed activities.

In accordance with the Pender County Unified Development Ordinance, Martin Marietta must submit a Major Site Development Plan for the expansion, which must be approved at the administrative level. This approval process will further allow planning staff to ensure proposed expansion activity is in compliance with the Unified Development Ordinance and the Special Use Permits currently governing the site. Much like the floodplain development permit, administrative review of the Major Site Development Plan includes review of all applicable state and local permits before County staff can issue local approval.

Please do not hesitate to contact me if you have any questions.

Sincerely,

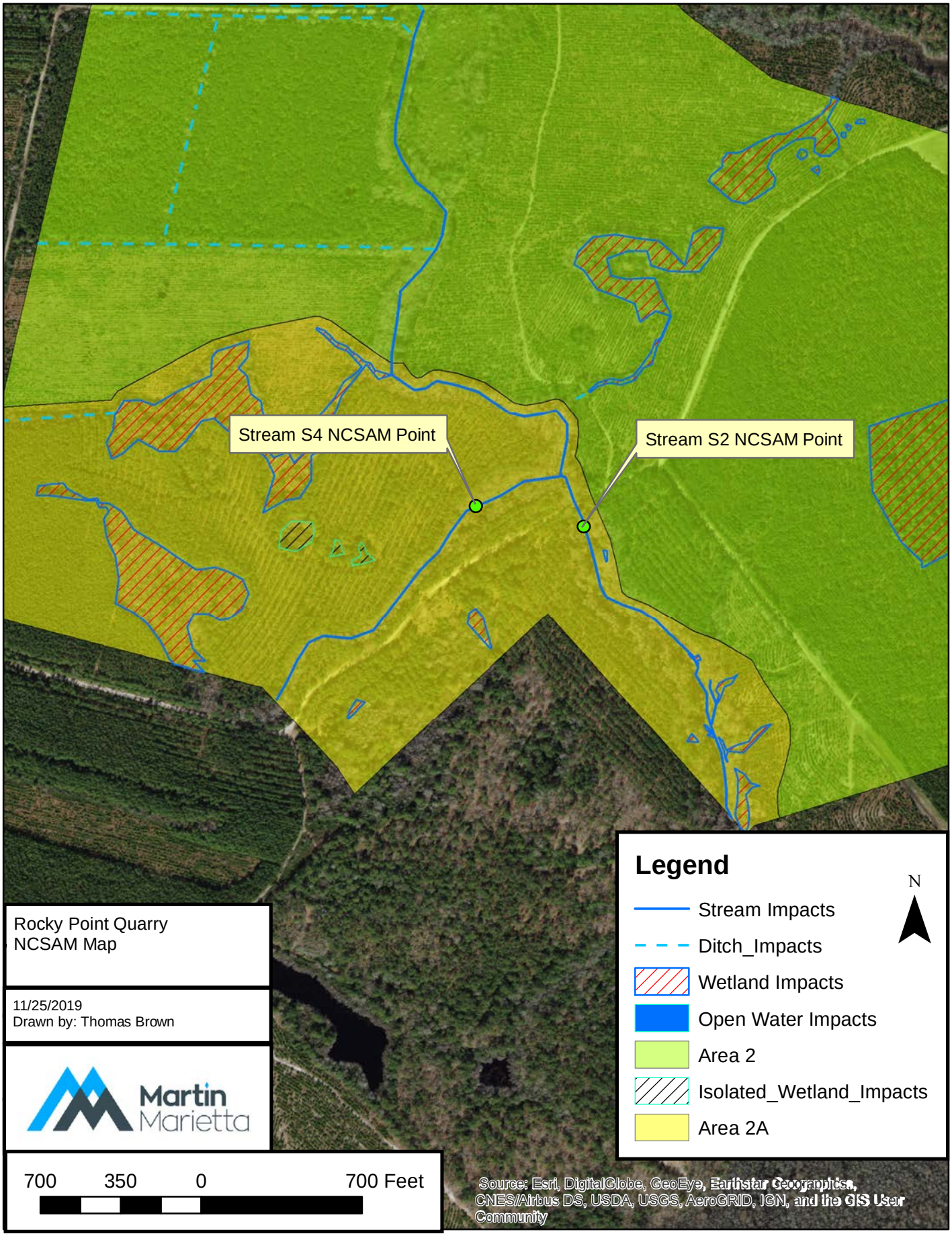
Daniel Adams, CFM
Floodplain Administrator
Planning and Community Development
(910) 259-0231 (910) 259-1295 (fax)

NCSAM Maps and Data

- NCSAM Assessment Map

-S2 NCSAM Form

-S4 NCSAM Form


Stream S4 NCSAM Point
Stream S2 NCSAM Point
Legend
N
Stream Impacts
Ditch_Impacts
Wetland Impacts
Open Water Impacts
Area 2
Isolated_Wetland_Impacts
Area 2A
Rocky Point Quarry
NCSAM Map
11/25/2019
Drawn by: Thomas Brown
Martin Marietta
700 350 0 700 Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

NC SAM FIELD ASSESSMENT FORM
Accompanies User Manual Version 2.1

USACE AID #: NCDWR #:

INSTRUCTIONS: Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle, and circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions and explanations of requested information. Record in the "Notes/Sketch" section if supplementary measurements were performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.

NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).

PROJECT/SITE INFORMATION:

1. Project name (if any): Rocky Point Quarry S2
2. Date of evaluation: 8/1/2019
3. Applicant/owner name: Martin Marietta
4. Assessor name/organization: Thomas Brown
5. County: Pender
6. Nearest named water body on USGS 7.5-minute quad: North East Cape Fear River
7. River basin: Cape Fear
8. Site coordinates (decimal degrees, at lower end of assessment reach):

STREAM INFORMATION: (depth and width can be approximations)

9. Site number (show on attached map): S2
10. Length of assessment reach evaluated (feet): 100
11. Channel depth from bed (in riffle, if present) to top of bank (feet): ~10 ☐Unable to assess channel depth.
12. Channel width at top of bank (feet): ~20
13. Is assessment reach a swamp steam? ☐Yes ☒No
14. Feature type: ☒Perennial flow ☐Intermittent flow ☐Tidal Marsh Stream

STREAM CATEGORY INFORMATION:

15. NC SAM Zone: ☐ Mountains (M) ☐ Piedmont (P) ☒ Inner Coastal Plain (I) ☐ Outer Coastal Plain (O)
16. Estimated geomorphic valley shape (**skip for Tidal Marsh Stream**):
☐A  (more sinuous stream, flatter valley slope)
☒B  (less sinuous stream, steeper valley slope)
17. Watershed size: (**skip for Tidal Marsh Stream**) ☐Size 1 (< 0.1 mi^2) ☒Size 2 (0.1 to < 0.5 mi^2) ☐Size 3 (0.5 to < 5 mi^2) ☐Size 4 (≥ 5 mi^2)

ADDITIONAL INFORMATION:

18. Were regulatory considerations evaluated? ☒Yes ☐No If Yes, check all that apply to the assessment area.
☐Section 10 water ☐Classified Trout Waters ☐Water Supply Watershed (☐I ☐II ☐III ☐IV ☐V)
☐Essential Fish Habitat ☐Primary Nursery Area ☐ High Quality Waters/Outstanding Resource Waters
☐Publicly owned property ☐NCDWR Riparian buffer rule in effect ☐Nutrient Sensitive Waters
☐Anadromous fish ☐303(d) List ☐CAMA Area of Environmental Concern (AEC)
☐Documented presence of a federal and/or state listed protected species within the assessment area.
List species:
☐Designated Critical Habitat (list species)
19. Are additional stream information/supplementary measurements included in "Notes/Sketch" section or attached? ☐Yes ☒No

1. Channel Water – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
☒A Water throughout assessment reach.
☐B No flow, water in pools only.
☐C No water in assessment reach.

2. Evidence of Flow Restriction – assessment reach metric
☐A At least 10% of assessment reach in-stream habitat or riffle-pool sequence is severely affected by a flow restriction or fill to the point of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impoundment on flood or ebb within the assessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates, debris jams, beaver dams).
☒B Not A

3. Feature Pattern – assessment reach metric
☒A A majority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
☐B Not A

4. Feature Longitudinal Profile – assessment reach metric
☒A Majority of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over widening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these disturbances).
☐B Not A

5. Signs of Active Instability – assessment reach metric
Consider only current instability, not past events from which the stream has currently recovered. Examples of instability include active bank failure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
☒A < 10% of channel unstable
☐B 10 to 25% of channel unstable
☐C > 25% of channel unstable

6. Streamside Area Interaction – streamside area metric
Consider for the Left Bank (LB) and the Right Bank (RB).

LB	RB	
☐A	☐A	Little or no evidence of conditions that adversely affect reference interaction
☒B	☒B	Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect reference interaction (examples: limited streamside area access, disruption of flood flows through streamside area, leaky or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching])
☐C	☐C	Extensive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access [examples: causeways with floodplain and channel constriction, bulkheads, retaining walls, fill, stream incision, disruption of flood flows through streamside area] or too much floodplain/intertidal zone access [examples: impoundments, intensive mosquito ditching]) or floodplain/intertidal zone unnaturally absent or assessment reach is a man-made feature on an interstream divide

7. Water Quality Stressors – assessment reach/intertidal zone metric
Check all that apply.

- ☐A Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)
- ☐B Excessive sedimentation (burying of stream features or intertidal zone)
- ☐C Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem
- ☐D Odor (not including natural sulfide odors)
- ☐E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in "Notes/Sketch" section.
- ☐F Livestock with access to stream or intertidal zone
- ☐G Excessive algae in stream or intertidal zone
- ☐H Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc)
- ☐I Other: _____ (explain in "Notes/Sketch" section)
- ☒J Little to no stressors

8. Recent Weather – watershed metric (skip for Tidal Marsh Streams)
For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a drought.

- ☐A Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours
- ☐B Drought conditions and rainfall exceeding 1 inch within the last 48 hours
- ☒C No drought conditions

9. Large or Dangerous Stream – assessment reach metric
☒Yes ☐No Is stream is too large or dangerous to assess? If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition).

10. Natural In-stream Habitat Types – assessment reach metric
10a. ☐Yes ☒No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snagging) **(evaluate for Size 4 Coastal Plain streams only, then skip to Metric 12)**

10b. **Check all that occur** (occurs if > 5% coverage of assessment reach) **(skip for Size 4 Coastal Plain streams)**

- ☐A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
- ☐B Multiple sticks and/or leaf packs and/or emergent vegetation
- ☐C Multiple snags and logs (including lap trees)
- ☐D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter
- ☐E Little or no habitat

Check for Tidal Marsh Streams Only

- ☐F 5% oysters or other natural hard bottoms
- ☐G Submerged aquatic vegetation
- ☐H Low-tide refugia (pools)
- ☐I Sand bottom
- ☐J 5% vertical bank along the marsh
- ☐K Little or no habitat

*************************************REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS*****************************

11. Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

11a. ☐Yes ☐No Is assessment reach in a natural sand-bed stream? **(skip for Coastal Plain streams)**

11b. Bedform evaluated. **Check the appropriate box(es).**

- ☐A Riffle-run section **(evaluate 11c)**
- ☐B Pool-glide section **(evaluate 11d)**
- ☐C Natural bedform absent **(skip to Metric 12, Aquatic Life)**

11c. In riffle sections, check all that occur below the normal wetted perimeter of the assessment reach – whether or not submerged. **Check at least one box in each row (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)**. Not Present (NP) = absent, Rare (R) = present but < 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.

NP	R	C	A	P	
☐	☐	☐	☐	☐	Bedrock/saprolite
☐	☐	☐	☐	☐	Boulder (256 – 4096 mm)
☐	☐	☐	☐	☐	Cobble (64 – 256 mm)
☐	☐	☐	☐	☐	Gravel (2 – 64 mm)
☐	☐	☐	☐	☐	Sand (.062 – 2 mm)
☐	☐	☐	☐	☐	Silt/clay (< 0.062 mm)
☐	☐	☐	☐	☐	Detritus
☐	☐	☐	☐	☐	Artificial (rip-rap, concrete, etc.)

11d. ☐Yes ☐No Are pools filled with sediment? (**skip for Size 4 Coastal Plain streams and Tidal Marsh Streams**)

12. Aquatic Life – assessment reach metric (skip for Tidal Marsh Streams)

12a. ☐Yes ☐No Was an in-stream aquatic life assessment performed as described in the User Manual?
If No, select one of the following reasons and skip to Metric 13. ☐No Water ☐Other: _____

12b. ☐Yes ☐No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.

1	>1	Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams.
☐	☐	Adult frogs
☐	☐	Aquatic reptiles
☐	☐	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
☐	☐	Beetles
☐	☐	Caddisfly larvae (T)
☐	☐	Asian clam (*Corbicula*)
☐	☐	Crustacean (isopod/amphipod/crayfish/shrimp)
☐	☐	Damselfly and dragonfly larvae
☐	☐	Dipterans
☐	☐	Mayfly larvae (E)
☐	☐	Megaloptera (alderfly, fishfly, dobsonfly larvae)
☐	☐	Midges/mosquito larvae
☐	☐	Mosquito fish (*Gambusia*) or mud minnows (*Umbra pygmaea*)
☐	☐	Mussels/Clams (not *Corbicula*)
☐	☐	Other fish
☐	☐	Salamanders/tadpoles
☐	☐	Snails
☐	☐	Stonefly larvae (P)
☐	☐	Tipulid larvae
☐	☐	Worms/leeches

13. Streamside Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)
Consider for the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.

LB	RB	
☐A	☐A	Little or no alteration to water storage capacity over a majority of the streamside area
☒B	☒B	Moderate alteration to water storage capacity over a majority of the streamside area
☐C	☐C	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction, livestock disturbance, buildings, man-made levees, drainage pipes)

14. Streamside Area Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
Consider for the Left Bank (LB) and the Right Bank (RB) of the streamside area.

LB	RB	
☐A	☐A	Majority of streamside area with depressions able to pond water ≥ 6 inches deep
☒B	☒B	Majority of streamside area with depressions able to pond water 3 to 6 inches deep
☐C	☐C	Majority of streamside area with depressions able to pond water < 3 inches deep

15. Wetland Presence – streamside area metric (skip for Tidal Marsh Streams)
Consider for the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal wetted perimeter of assessment reach.

LB	RB	
☐Y	☐Y	Are wetlands present in the streamside area?
☒N	☒N	

16. Baseflow Contributors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
Check all contributors within the assessment reach or within view of <u>and</u> draining to the assessment reach.

☒A	Streams and/or springs (jurisdictional discharges)
☐B	Ponds (include wet detention basins; do not include sediment basins or dry detention basins)
☐C	Obstruction passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir)
☐D	Evidence of bank seepage or sweating (iron in water indicates seepage)
☒E	Stream bed or bank soil reduced (dig through deposited sediment if present)
☐F	None of the above

17. Baseflow Detractors – assessment area metric (skip for Tidal Marsh Streams)
Check all that apply.

☐A	Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
☐B	Obstruction not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
☐C	Urban stream (≥ 24% impervious surface for watershed)
☐D	Evidence that the streamside area has been modified resulting in accelerated drainage into the assessment reach
☐E	Assessment reach relocated to valley edge
☒F	None of the above

18. Shading – assessment reach metric (skip for Tidal Marsh Streams)
Consider aspect. Consider "leaf-on" condition.

☒A	Stream shading is appropriate for stream category (may include gaps associated with natural processes)
☐B	Degraded (example: scattered trees)
☐C	Stream shading is gone or largely absent

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)

Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break.

Vegetated		Wooded		
LB	RB	LB	RB	
☒A	☒A	☒A	☒A	≥ 100 feet wide or extends to the edge of the watershed
☐B	☐B	☐B	☐B	From 50 to < 100 feet wide
☐C	☐C	☐C	☐C	From 30 to < 50 feet wide
☐D	☐D	☐D	☐D	From 10 to < 30 feet wide
☐E	☐E	☐E	☐E	< 10 feet wide or no trees

20. Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)

Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).

LB	RB	
☒A	☒A	Mature forest
☐B	☐B	Non-mature woody vegetation or modified vegetation structure
☐C	☐C	Herbaceous vegetation with or without a strip of trees < 10 feet wide
☐D	☐D	Maintained shrubs
☐E	☐E	Little or no vegetation

21. Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)

Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).

If none of the following stressors occurs on either bank, check here and skip to Metric 22: ☒

Abuts		< 30 feet		30-50 feet		
LB	RB	LB	RB	LB	RB	
☐A	☐A	☐A	☐A	☐A	☐A	Row crops
☐B	☐B	☐B	☐B	☐B	☐B	Maintained turf
☐C	☐C	☐C	☐C	☐C	☐C	Pasture (no livestock)/commercial horticulture
☐D	☐D	☐D	☐D	☐D	☐D	Pasture (active livestock use)

22. Stem Density – streamside area metric (skip for Tidal Marsh Streams)

Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).

LB	RB	
☒A	☒A	Medium to high stem density
☐B	☐B	Low stem density
☐C	☐C	No wooded riparian buffer or predominantly herbaceous species or bare ground

23. Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)

Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide.

LB	RB	
☒A	☒A	The total length of buffer breaks is < 25 percent.
☐B	☐B	The total length of buffer breaks is between 25 and 50 percent.
☐C	☐C	The total length of buffer breaks is > 50 percent.

24. Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams)

Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.

LB	RB	
☐A	☐A	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.
☒B	☒B	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
☐C	☐C	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.

25. Conductivity – assessment reach metric (skip for all Coastal Plain streams)

25a. ☐Yes ☒No Was conductivity measurement recorded?
If No, select one of the following reasons. ☐No Water ☐Other: _____

25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter).
☐A < 46 ☐B 46 to < 67 ☐C 67 to < 79 ☐D 79 to < 230 ☐E ≥ 230

Notes/Sketch:

Draft NC SAM Stream Rating Sheet
Accompanies User Manual Version 2.1

Stream Site Name	Rocky Point Quarry	Date of Assessment	8/1/2019
Stream Category	Ib2	Assessor Name/Organization	Thomas Brown

Notes of Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Additional stream information/supplementary measurements included (Y/N)	NO
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)	Perennial

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	**MEDIUM**	
(2) Baseflow	**HIGH**	
(2) Flood Flow	**MEDIUM**	
(3) Streamside Area Attenuation	**MEDIUM**	
(4) Floodplain Access	**MEDIUM**	
(4) Wooded Riparian Buffer	**HIGH**	
(4) Microtopography	NA	
(3) Stream Stability	**MEDIUM**	
(4) Channel Stability	**HIGH**	
(4) Sediment Transport	**HIGH**	
(4) Stream Geomorphology	**LOW**	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	**HIGH**	
(2) Baseflow	**HIGH**	
(2) Streamside Area Vegetation	**HIGH**	
(3) Upland Pollutant Filtration	**HIGH**	
(3) Thermoregulation	**HIGH**	
(2) Indicators of Stressors	**NO**	
(2) Aquatic Life Tolerance	**HIGH**	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	**HIGH**	
(2) In-stream Habitat	**HIGH**	
(3) Baseflow	**HIGH**	
(3) Substrate	**HIGH**	
(3) Stream Stability	**MEDIUM**	
(3) In-stream Habitat	**HIGH**	
(2) Stream-side Habitat	**HIGH**	
(3) Stream-side Habitat	**HIGH**	
(3) Thermoregulation	**HIGH**	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	**HIGH**	

NC SAM FIELD ASSESSMENT FORM
Accompanies User Manual Version 2.1

USACE AID #: NCDWR #:

INSTRUCTIONS: Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle, and circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions and explanations of requested information. Record in the "Notes/Sketch" section if supplementary measurements were performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.

NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).

PROJECT/SITE INFORMATION:

1. Project name (if any): Rocky Point Quarry Stream S4
2. Date of evaluation: 8/1/2019
3. Applicant/owner name: Martin Marietta
4. Assessor name/organization: Thomas Brown
5. County: Pender
6. Nearest named water body on USGS 7.5-minute quad:
7. River basin: Cape Fear
8. Site coordinates (decimal degrees, at lower end of assessment reach): 34.39226 -77.8616

STREAM INFORMATION: (depth and width can be approximations)

9. Site number (show on attached map): S4
10. Length of assessment reach evaluated (feet):
11. Channel depth from bed (in riffle, if present) to top of bank (feet): 4 ☐Unable to assess channel depth.
12. Channel width at top of bank (feet): 6
13. Is assessment reach a swamp steam? ☐Yes ☒No
14. Feature type: ☒Perennial flow ☐Intermittent flow ☐Tidal Marsh Stream

STREAM CATEGORY INFORMATION:

15. NC SAM Zone: ☐ Mountains (M) ☐ Piedmont (P) ☐ Inner Coastal Plain (I) ☒ Outer Coastal Plain (O)
16. Estimated geomorphic valley shape (**skip for Tidal Marsh Stream**):
☒A  (more sinuous stream, flatter valley slope)
☐B  (less sinuous stream, steeper valley slope)
17. Watershed size: (**skip for Tidal Marsh Stream**) ☐Size 1 (< 0.1 mi^2) ☒Size 2 (0.1 to < 0.5 mi^2) ☐Size 3 (0.5 to < 5 mi^2) ☐Size 4 (≥ 5 mi^2)

ADDITIONAL INFORMATION:

18. Were regulatory considerations evaluated? ☒Yes ☐No If Yes, check all that apply to the assessment area.
☐Section 10 water ☐Classified Trout Waters ☐Water Supply Watershed (☐I ☐II ☐III ☐IV ☐V)
☐Essential Fish Habitat ☐Primary Nursery Area ☐ High Quality Waters/Outstanding Resource Waters
☐Publicly owned property ☐NCDWR Riparian buffer rule in effect ☐Nutrient Sensitive Waters
☐Anadromous fish ☐303(d) List ☐CAMA Area of Environmental Concern (AEC)
☐Documented presence of a federal and/or state listed protected species within the assessment area.
List species:
☐Designated Critical Habitat (list species)
19. Are additional stream information/supplementary measurements included in "Notes/Sketch" section or attached? ☐Yes ☒No

1. Channel Water – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)

☐A Water throughout assessment reach.
☐B No flow, water in pools only.
☒C No water in assessment reach.

2. Evidence of Flow Restriction – assessment reach metric

☐A At least 10% of assessment reach in-stream habitat or riffle-pool sequence is severely affected by a flow restriction or fill to the point of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impoundment on flood or ebb within the assessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates, debris jams, beaver dams).
☒B Not A

3. Feature Pattern – assessment reach metric

☒A A majority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
☐B Not A

4. Feature Longitudinal Profile – assessment reach metric

☒A Majority of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over widening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these disturbances).
☐B Not A

5. Signs of Active Instability – assessment reach metric

Consider only current instability, not past events from which the stream has currently recovered. Examples of instability include active bank failure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).

☒A < 10% of channel unstable
☐B 10 to 25% of channel unstable
☐C > 25% of channel unstable

6. Streamside Area Interaction – streamside area metric
Consider for the Left Bank (LB) and the Right Bank (RB).

LB	RB	
☐A	☐A	Little or no evidence of conditions that adversely affect reference interaction
☒B	☒B	Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect reference interaction (examples: limited streamside area access, disruption of flood flows through streamside area, leaky or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching])
☐C	☐C	Extensive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access [examples: causeways with floodplain and channel constriction, bulkheads, retaining walls, fill, stream incision, disruption of flood flows through streamside area] or too much floodplain/intertidal zone access [examples: impoundments, intensive mosquito ditching]) or floodplain/intertidal zone unnaturally absent or assessment reach is a man-made feature on an interstream divide

7. Water Quality Stressors – assessment reach/intertidal zone metric
Check all that apply.

- ☐A Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)
- ☐B Excessive sedimentation (burying of stream features or intertidal zone)
- ☐C Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem
- ☐D Odor (not including natural sulfide odors)
- ☐E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in "Notes/Sketch" section.
- ☐F Livestock with access to stream or intertidal zone
- ☐G Excessive algae in stream or intertidal zone
- ☐H Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc)
- ☐I Other: _____ (explain in "Notes/Sketch" section)
- ☒J Little to no stressors

8. Recent Weather – watershed metric (skip for Tidal Marsh Streams)
For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a drought.

- ☐A Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours
- ☐B Drought conditions and rainfall exceeding 1 inch within the last 48 hours
- ☒C No drought conditions

9. Large or Dangerous Stream – assessment reach metric
☐Yes ☒No Is stream is too large or dangerous to assess? If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition).

10. Natural In-stream Habitat Types – assessment reach metric
10a. ☐Yes ☒No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snagging) **(evaluate for Size 4 Coastal Plain streams only, then skip to Metric 12)**

10b. **Check all that occur** (occurs if > 5% coverage of assessment reach) **(skip for Size 4 Coastal Plain streams)**

- ☐A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
- ☒B Multiple sticks and/or leaf packs and/or emergent vegetation
- ☐C Multiple snags and logs (including lap trees)
- ☐D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter
- ☐E Little or no habitat

Check for Tidal Marsh Streams Only

- ☐F 5% oysters or other natural hard bottoms
- ☐G Submerged aquatic vegetation
- ☐H Low-tide refugia (pools)
- ☐I Sand bottom
- ☐J 5% vertical bank along the marsh
- ☐K Little or no habitat

**************************************REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS**************************************

11. Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

11a. ☒Yes ☐No Is assessment reach in a natural sand-bed stream? **(skip for Coastal Plain streams)**

11b. Bedform evaluated. **Check the appropriate box(es).**

- ☐A Riffle-run section **(evaluate 11c)**
- ☐B Pool-glide section **(evaluate 11d)**
- ☒C Natural bedform absent **(skip to Metric 12, Aquatic Life)**

11c. In riffle sections, check all that occur below the normal wetted perimeter of the assessment reach – whether or not submerged. **Check at least one box in each row (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)**. Not Present (NP) = absent, Rare (R) = present but < 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.

NP	R	C	A	P	
☐	☐	☐	☐	☐	Bedrock/saprolite
☐	☐	☐	☐	☐	Boulder (256 – 4096 mm)
☐	☐	☐	☐	☐	Cobble (64 – 256 mm)
☐	☐	☐	☐	☐	Gravel (2 – 64 mm)
☐	☐	☐	☐	☐	Sand (.062 – 2 mm)
☐	☐	☐	☐	☐	Silt/clay (< 0.062 mm)
☐	☐	☐	☐	☐	Detritus
☐	☐	☐	☐	☐	Artificial (rip-rap, concrete, etc.)

11d. ☐Yes ☐No Are pools filled with sediment? (**skip for Size 4 Coastal Plain streams and Tidal Marsh Streams**)

12. Aquatic Life – assessment reach metric (skip for Tidal Marsh Streams)

12a. ☐Yes ☒No Was an in-stream aquatic life assessment performed as described in the User Manual?
If No, select one of the following reasons and skip to Metric 13. ☒No Water ☐Other: _____

12b. ☐Yes ☒No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.

1	>1	Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams.
☐	☐	Adult frogs
☐	☐	Aquatic reptiles
☐	☐	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
☐	☐	Beetles
☐	☐	Caddisfly larvae (T)
☐	☐	Asian clam (*Corbicula*)
☐	☐	Crustacean (isopod/amphipod/crayfish/shrimp)
☐	☐	Damselfly and dragonfly larvae
☐	☐	Dipterans
☐	☐	Mayfly larvae (E)
☐	☐	Megaloptera (alderfly, fishfly, dobsonfly larvae)
☐	☐	Midges/mosquito larvae
☐	☐	Mosquito fish (*Gambusia*) or mud minnows (*Umbra pygmaea*)
☐	☐	Mussels/Clams (not *Corbicula*)
☐	☐	Other fish
☐	☐	Salamanders/tadpoles
☐	☐	Snails
☐	☐	Stonefly larvae (P)
☐	☐	Tipulid larvae
☐	☐	Worms/leeches

13. Streamside Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)
Consider for the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.

LB	RB	
☐A	☐A	Little or no alteration to water storage capacity over a majority of the streamside area
☒B	☒B	Moderate alteration to water storage capacity over a majority of the streamside area
☐C	☐C	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction, livestock disturbance, buildings, man-made levees, drainage pipes)

14. Streamside Area Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
Consider for the Left Bank (LB) and the Right Bank (RB) of the streamside area.

LB	RB	
☐A	☐A	Majority of streamside area with depressions able to pond water ≥ 6 inches deep
☒B	☒B	Majority of streamside area with depressions able to pond water 3 to 6 inches deep
☐C	☐C	Majority of streamside area with depressions able to pond water < 3 inches deep

15. Wetland Presence – streamside area metric (skip for Tidal Marsh Streams)
Consider for the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal wetted perimeter of assessment reach.

LB	RB	
☐Y	☐Y	Are wetlands present in the streamside area?
☒N	☒N	

16. Baseflow Contributors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
Check all contributors within the assessment reach or within view of <u>and</u> draining to the assessment reach.

☐A Streams and/or springs (jurisdictional discharges)
☐B Ponds (include wet detention basins; do not include sediment basins or dry detention basins)
☐C Obstruction passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir)
☐D Evidence of bank seepage or sweating (iron in water indicates seepage)
☒E Stream bed or bank soil reduced (dig through deposited sediment if present)
☐F None of the above

17. Baseflow Detractors – assessment area metric (skip for Tidal Marsh Streams)
Check all that apply.

☐A Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
☐B Obstruction not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
☐C Urban stream (≥ 24% impervious surface for watershed)
☐D Evidence that the streamside area has been modified resulting in accelerated drainage into the assessment reach
☒E Assessment reach relocated to valley edge
☐F None of the above

18. Shading – assessment reach metric (skip for Tidal Marsh Streams)
Consider aspect. Consider "leaf-on" condition.

☒A Stream shading is appropriate for stream category (may include gaps associated with natural processes)
☐B Degraded (example: scattered trees)
☐C Stream shading is gone or largely absent

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)

Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break.

Vegetated		Wooded		
LB	RB	LB	RB	
☒A	☒A	☒A	☐A	≥ 100 feet wide or extends to the edge of the watershed
☐B	☐B	☐B	☒B	From 50 to < 100 feet wide
☐C	☐C	☐C	☐C	From 30 to < 50 feet wide
☐D	☐D	☐D	☐D	From 10 to < 30 feet wide
☐E	☐E	☐E	☐E	< 10 feet wide or no trees

20. Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)

Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).

LB	RB	
☒A	☒A	Mature forest
☐B	☐B	Non-mature woody vegetation or modified vegetation structure
☐C	☐C	Herbaceous vegetation with or without a strip of trees < 10 feet wide
☐D	☐D	Maintained shrubs
☐E	☐E	Little or no vegetation

21. Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)

Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).

If none of the following stressors occurs on either bank, check here and skip to Metric 22: ☒

Abuts		< 30 feet		30-50 feet		
LB	RB	LB	RB	LB	RB	
☐A	☐A	☐A	☐A	☐A	☐A	Row crops
☐B	☐B	☐B	☐B	☐B	☐B	Maintained turf
☐C	☐C	☐C	☐C	☐C	☐C	Pasture (no livestock)/commercial horticulture
☐D	☐D	☐D	☐D	☐D	☐D	Pasture (active livestock use)

22. Stem Density – streamside area metric (skip for Tidal Marsh Streams)

Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).

LB	RB	
☒A	☒A	Medium to high stem density
☐B	☐B	Low stem density
☐C	☐C	No wooded riparian buffer or predominantly herbaceous species or bare ground

23. Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)

Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide.

LB	RB	
☒A	☒A	The total length of buffer breaks is < 25 percent.
☐B	☐B	The total length of buffer breaks is between 25 and 50 percent.
☐C	☐C	The total length of buffer breaks is > 50 percent.

24. Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams)

Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.

LB	RB	
☐A	☐A	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.
☒B	☒B	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
☐C	☐C	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.

25. Conductivity – assessment reach metric (skip for all Coastal Plain streams)

25a. ☐Yes ☒No Was conductivity measurement recorded?
If No, select one of the following reasons. ☒No Water ☐Other: _____

25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter).
☐A < 46 ☐B 46 to < 67 ☐C 67 to < 79 ☐D 79 to < 230 ☐E ≥ 230

Notes/Sketch:

Draft NC SAM Stream Rating Sheet
Accompanies User Manual Version 2.1

Stream Site Name	Rocky Point Quarry Stream S4	Date of Assessment	8/1/2019
Stream Category	Oa2	Assessor Name/Organization	Thomas Brown

Notes of Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	NO
Additional stream information/supplementary measurements included (Y/N)	NO
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)	Perennial

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	**LOW**	
(2) Baseflow	**LOW**	
(2) Flood Flow	**MEDIUM**	
(3) Streamside Area Attenuation	**MEDIUM**	
(4) Floodplain Access	**MEDIUM**	
(4) Wooded Riparian Buffer	**HIGH**	
(4) Microtopography	**LOW**	
(3) Stream Stability	**MEDIUM**	
(4) Channel Stability	**HIGH**	
(4) Sediment Transport	NA	
(4) Stream Geomorphology	**LOW**	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	**MEDIUM**	
(2) Baseflow	**LOW**	
(2) Streamside Area Vegetation	**HIGH**	
(3) Upland Pollutant Filtration	**HIGH**	
(3) Thermoregulation	**HIGH**	
(2) Indicators of Stressors	**NO**	
(2) Aquatic Life Tolerance	**OMITTED**	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	**LOW**	
(2) In-stream Habitat	**LOW**	
(3) Baseflow	**LOW**	
(3) Substrate	**LOW**	
(3) Stream Stability	**MEDIUM**	
(3) In-stream Habitat	**LOW**	
(2) Stream-side Habitat	**HIGH**	
(3) Stream-side Habitat	**HIGH**	
(3) Thermoregulation	**HIGH**	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	**LOW**	