

BASELINE MONITORING DOCUMENT AND AS-BUILT BASELINE REPORT

**Hockett Dairy Farm Site
Riparian Buffer Restoration
EEP Project ID Number 003993 – EEP Site 95013**

**Randolph County, North Carolina
Cape Fear River Basin
HUC 03030003010070**



Prepared for:



**NC Department of Environment and Natural Resources
Ecosystem Enhancement Program
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**Data Collection Period: February 2013
Submission Date: May 2013**

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EXECUTIVE SUMMARY

“This mitigation plan has been written in conformance with the requirements of the following:

- Federal rule for compensatory mitigation project sites as described in the Federal Register Title 33 Navigation and Navigable Waters Volume 3 Chapter 2 Section § 332.8 paragraphs (c)(2) through (c)(14).
- NCDENR Ecosystem Enhancement Program In-Lieu Fee Instrument signed and dated July 28, 2010.

These documents govern NCEEP operations and procedures for the delivery of compensatory mitigation.”

The Hockett Dairy Buffer Mitigation Project was identified as an opportunity to improve water quality and riparian habitat within the Randleman Lake watershed (03030003 Catalog Unit) through 11.82 acres (514,879 square feet) of riparian buffer restoration. The Hockett Dairy Buffer Mitigation Site is located on Hockett Dairy Road (SR 1938) in Randolph County approximately 12 miles north of Asheboro, NC. The site includes five unnamed tributaries and two ponds that drain into Randleman Lake.

The project’s watershed is primarily used for agricultural production. Much of the surrounding land use is currently a dairy farm. The tributaries have limited hardwood trees present within the buffer, and lack significant ground cover. The mature trees are less than 100 stems per acre. The project area has been in agricultural use for several decades.

The riparian buffer was in poor condition throughout most of the project area. Most of the riparian buffer was devoid of trees or shrubs, and cattle had access to many of the channels and ponds. Row crops were actively cultivated up to the edge of one existing channel. Buffer conditions demonstrated significant degradation with a loss of stabilizing vegetation because of continued agricultural activities and past land management actions. Field counts of woody vegetation greater than five inches dbh, where present, documented the absence of a forested buffer. Saplings necessary for buffer regeneration were minimal or absent.

Buffer restoration was performed on five unnamed tributaries (UT2, UT3, UT4, UT5, and UT6) and two ponds (Pond 2 and Pond 3). Buffer restoration included removal of invasive species where present and planting appropriate bottomland hardwood species. UT2, UT3, and UT4 flow directly into Randleman Lake. UT5 is a tributary to UT4. UT6 flows into an unnamed tributary to Randleman Lake. Pond 2 is at the head of UT2 and Pond 3 is at the head of UT3. Three existing crossings were retained and two existing crossing were upgraded with appropriate sized culverts. The two pond dams and the spillways have been stabilized. The pond dams have crossing such that maintenance can be performed and farm equipment can cross if necessary. Ms. Sue Homewood at the September 1, 2011 field review, determined UT1 was not a suitable channel for buffer restoration because of the lack of a poorly defined channel bank and therefore a lack of connection excluded Pond 1 (**Appendix D**). These areas were not included in the Mitigation Plan. Fencing was constructed along all of the tributaries except UT6, and all crossings were also fenced. Row crops are grown adjacent to UT6, so no fencing was necessary.

The target natural community is a Piedmont Alluvial Forest as described in Schafale and Weakley (1990). This type of community is common throughout Piedmont drainages and when established will provide numerous water quality and ecological benefits. Bare root tree seedlings were planted between February 7 and February 13, 2013. Eight species of hardwood, totaling 10,500 stems, were planted. The average planted density is 888 stems per acre. Twelve CVS vegetation plots of 100 square meters were established to verify and document plantings and provide the baseline for monitoring. Eight of the plots are 10 meters

x 10 meters and four plots are 20 meters x 5 meters. Approximately 90 percent of the site was ripped prior to planting; care was taken to avoid existing desired trees and their root systems.

The result will be a restored riparian habitat that functions to filter nutrient and sediment inputs from the surrounding uplands containing a dairy farm and cultivated crop land. It will also provide soil stability, and increase dissolved oxygen concentrations through shading/cooling of the channel. The permanent conservation easement extends a minimum of 50 feet from the top of bank on all outside bends and is marked with conservation easement signs or fencing.

The site will be monitored on a regular basis and a physical inspection of the site will be conducted a minimum of twice per year throughout the post-construction monitoring period or until performance standards are met. These site inspections will identify site components and features that require routine maintenance. The measure of vegetative success for the site will be the survival of at least 320 5-year old planted trees per acre at the end of year five of the monitoring period. Annual monitoring data will be reported using the NCEEP monitoring template and CVS-NCEEP vegetation monitoring protocol. The monitoring report will provide a project data chronology that will facilitate an understanding of project status and trends, population of EEP databases for analysis, research purposes, and assist in decision making regarding project closeout.

Upon approval for closeout by the NC Division of Water Quality, the site will be transferred to the State of North Carolina (State). The State shall be responsible for periodic inspection of the site to ensure that restrictions required in the conservation easement or the deed restriction document(s) are upheld.

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1.0 PROJECT GOALS, BACKGROUND, AND ATTRIBUTES

1.1 Location and Setting

The Hockett Dairy Farms Riparian Buffer Mitigation Site is located on Hockett Dairy Road (SR 1938) in Randolph County approximately 12 miles north of Asheboro, NC (**Figure 1**). The site is located in the Cape Fear River Basin within Cataloging Unit 03030003010070 (NCDWQ sub-basin 03-06-08). The site has five unnamed tributaries (UT) that drain into Randleman Lake. The project consists of 11.82 acres of buffer restoration.

1.2 Project Goals and Objectives

The Hockett Dairy Buffer Mitigation Project is located in the 03030003 Catalog Unit (CU), in the Cape Fear River Basin. Assets of this CU include the Deep River, the Randleman Reservoir, and major communities including High Point, Asheboro, Siler City, and Sanford. Restoration goals for CU 03030003 as identified in the 2009 Cape Fear River Basin RBRP include protection of several species of mussel and the Cape Fear Shiner. Additional goals include the improvement in water quality to waters draining to Randleman Reservoir.

The Hockett Dairy Buffer Mitigation Project was identified as a buffer opportunity to improve water quality and habitat within the CU. The project goals address stressors identified in the CU. The following table lists the project goals and the project objectives through which the goals will be addressed:

Goals	Objectives
1. Nutrient removal	<ul style="list-style-type: none">• Restore minimum 50-foot riparian buffer by planting appropriate bottomland hardwood species to filter runoff.• Convert active farm fields to forested buffers.• Plant buffer vegetation to shade channel.• Restore riparian buffer habitat to appropriate bottomland hardwood ecosystem.• Restore canopy tree species in the stream buffer areas to shade channel.• Eliminate and control exotic invasive species.• Replace two undersized and failing channel crossings with appropriately sized culverts or ford.• Stabilize two small dams on small farm ponds.
2. Sediment removal	
3. Runoff filtration	
4. Increase dissolved oxygen concentration	
5. Restore riparian habitats	
6. Reduce water temperature	

1.3 Project Structure, Restoration Type, and Approach

The Hockett Dairy Farms mitigation project provides high quality riparian buffer restoration. Stream buffer mitigation for the Hockett Dairy Farms Site involved buffering five streams that flow directly and indirectly into Randleman Lake. The mitigation design divides the site into five distinct reaches (**Figure 6**). Buffer restoration was performed along five channels. Two undersized and failing channel crossings were replaced with appropriately sized culverts to prevent erosion. Two small dams on small farm ponds have been stabilized.

Buffer restoration along the tributaries to Randleman Lake was accomplished through the planting, establishment, and protection of a hardwood forest community. The result is a restored riparian habitat that functions to mitigate nutrient and sediments inputs from the surrounding uplands. This project provides 11.82 acres of stream buffer restoration in the Randleman Lake watershed.

The riparian buffer was in poor condition throughout most of the project area and was devoid of trees or had less than 100 trees per acre (TPA). Saplings necessary for buffer regeneration were minimal or absent due to foraging and maintenance activities. Buffer conditions demonstrated significant degradation with a loss of stabilizing vegetation because of past land management actions and agricultural activities. The conceptual plan is provided in **Figure 6** and the As-built plans are provided in **Appendix C**. Specific restoration treatments for each reach are described below.

Buffer restoration typically included removal of invasive species where present and planting appropriate bottomland hardwood species. Stabilization and implementation of dispersal techniques have been utilized where surface flows have become concentrated. Buffer restoration was performed on five unnamed tributaries (UT2, UT3, UT4, UT5, and UT6). UT2, UT3 and UT4 flow westerly into Randleman Lake. UT5 is a tributary to UT4. UT 6 flows southerly into an unnamed tributary to Randleman Lake. Two ponds are located at the head of UT2 and UT3. Ms. Sue Homewood at the September 1, 2011 field review, determined UT1 was not a suitable channel for buffer restoration because of the lack of a poorly defined channel bank and therefore a lack of connection excluded Pond 1 (**Appendix D**). These areas were not included in the Mitigation Plan. Required fencing has been constructed on the Hockett Dairy Buffer Restoration Site since cattle or livestock are present. Stable stream crossings were constructed to access fields and pastures. The easement boundary is marked with metal poles and conservation easement signs.

1.4 Project History, Contacts, and Attribute Data

Physiography, Topography, and Land Use

The Hockett Dairy Farms Buffer site is located in the Piedmont Physiographic Province and in the Carolina Slate Belt. The region is underlain by felsic metavolcanic rocks, which can be seen in the streambed of UT 2 and UT 3. The topography of the project area is generally rolling with elevations ranging from 670 to 760 feet (**Figure 2**). The five unnamed tributaries to Randleman Lake comprise the principle drainage features. These tributaries have limited hardwood trees present within the buffer and lack significant ground cover. The mature trees are less than 100 stems per acres. The project's watershed is primarily used for agricultural production. Much of the surrounding land use is currently dairy cows and calves or row crop production for dairy silage. Cattle have direct access to streams channels and ponds and are a source of ongoing erosion along the banks and within the adjacent buffer. Cattle are excluded from some channels with fencing on or near the top of bank, resulting in a degraded riparian buffer. The project area has been in agricultural use for several decades (**Figure 3**).

Soils

The Randolph County Soil Survey (NRCS, 2006), shows three mapping units across the project site (**Figure 4**). The map units are Mecklenburg clay loam with a slope phase of 8 to 15 percent, Wynott-Enon complex with a slope phase of 8 to 15 percent, and Wynott-Enon complex with a slope phase of 8 to 15 percent that is moderately eroded. The Wynott-Enon complex is 59 percent Wynott or similar soils and 33 percent Enon or similar soils.

These soils formed residuum weathered from mafic high-grade metamorphic or igneous rocks. These moderate to very deep soils are well drained, greater than six feet to a seasonal high water table, have slow permeability, and medium runoff. Wynott-Enon soils have a high shrink-swell potential and Mecklenburg soils have a moderate shrink-swell potential. Wynott soils are 20 to 40 inches to soft bedrock and 40 to more than 60 inches to hard bedrock. Enon and Mecklenburg soils are more than 60 inches to bedrock. These upland Piedmont soils occur across a range of landforms that include summits, ridges, and side slopes. All soils within the watershed are classified as hydrologic soil groups B and C. These soils are not listed on the National Hydric Soil List.

Water Quality

Water quality assessments are based upon published resource information and field observations. The project is in a mostly rural watershed draining into Randleman Lake, a water supply watershed. Small farms, forested areas, and rural home sites are the most common land uses. Agricultural fields, dairy operations, and home sites are two common disturbances to the natural communities in the project vicinity. Potential threats to stream quality in this area are increased soil erosion and excessive nutrient input, both non-point sources of pollution.

The Cape Fear Basin Wide Assessment Report (October 2005) list a number of impaired waters within the 03-06-08 sub-basin where the project study area is located. The sub-basin watershed is 13 percent urbanized and includes portions of the municipalities of Archdale, Greensboro, Highpoint, Kernersville and Randleman. Nearly 55 percent is forested and 25 percent is managed pastureland. Streams are rated as impaired due to fecal coliform violations and impaired benthic communities due to stressors that include sedimentation, habitat degradation and urban runoff. Total Maximum Daily Load's (TMDL) developed for these streams call for significant reduction in fecal coliform.

The site drains directly into Randleman Lake. Randleman Lake has a best usage classification of Water Supply IV (WS-IV);CA: These waters are protected and used as sources of water supply for drinking, culinary or food processing purposes and are also protected for Class C uses. WS-IV waters are generally in moderately to highly developed watersheds. The CA designation identifies waters that are within a designated Critical Supply Watershed and are subject to a special management strategy specified in 15A NCAC 2B .0248. The 100-year floodplain (FEMA Zone AE) is located below UT 1 and UT 2 (**Figure 5**). The US fish and Wildlife Service does not show National Wetlands Inventory (NWI) wetlands within the project area (**Figure 5**).

2.0 SUCCESS CRITERIA

Vegetative Success Criteria

Specific and measurable success criteria for plant density within the riparian buffer on the site is based on the recommendations found in the NCDENR Buffer Restoration guidance documents and correspondence from review agencies on buffer restoration sites recently approved. The measure of vegetative success for the site will be the survival of at least 320 5-year old planted trees per acre at the end of year five of the monitoring period.

Invasive and noxious species have been controlled. These species will be monitored so that none become dominant or alter the desired community structure of the site. If necessary, EBX will develop a species-specific control plan.

Method of Reporting Success Criteria

As-built drawings documenting buffer restoration activities have been developed after completion of the planting on the mitigation site (**Appendix C**). The as-built report includes all information required by NCEEP mitigation plan guidelines including photographs, sampling plot locations, and a description of initial species composition by community type. The report also includes a list of the species planted and the associated densities. Baseline vegetation monitoring follows CVS-NCEEP Protocol for Recording Vegetation Version 4.0. Level 1 and Level 2 monitoring has conducted. This baseline report follows the Baseline Monitoring Report Template and Guidance version 2.0 (10/14/10).

The monitoring program has been implemented to document system development and progress toward achieving the success criteria. The restored buffer vegetation will be assessed in the fall annually to determine the success of the mitigation. The monitoring program will be undertaken for five years or until the final success criteria are achieved, whichever is longer.

Monitoring reports will be prepared in the fall of each year of monitoring and submitted to NCEEP. The monitoring reports will include all information and be in the format required by NCEEP in Version 2.0 of the NCEEP Monitoring Report Template.

3.0 MONITORING PLAN GUIDELINES

3.1 Vegetation

The vegetative success criteria are defined in Section 2.0. In order to determine if the success criteria are achieved and the planted areas are developing toward the target community, NCEEP-CVS Protocol for Recording Vegetation Version 4.0 will be utilized. The vegetation monitoring will include Level I and Level II plots distributed across the planted area. An interim vegetation monitoring will occur in spring after leaf-out has occurred. The CVS monitoring will be conducted toward the end of the growing season. Individual plot data for will be provided to NCEEP and CVS following NCEEP-CVS guidance.

Annual monitoring data will be reported using the EEP monitoring template. The monitoring report shall provide a project data chronology that will facilitate an understanding of project status and trends, population of EEP databases for analysis, research purposes, and assist in decision making regarding project closeout.

Table 1. Annual Monitoring Requirements

Required	Parameter	Quantity	Frequency	Notes
X	Vegetation	12 Plots Located randomly across the project area	Annual	Vegetation will be monitored using the Carolina Vegetation Survey (CVS) protocols
X	Exotic and nuisance vegetation	N/A	Semi-Annual	Exotic vegetation will be evaluated and spot treatment applied as needed
X	Project boundary	N/A	Semi-annual	Locations of fence damage, vegetation damage, boundary encroachments, etc. will be mapped

3.2 Digital Photo Reference Stations

Reference photos have been taken and will be used to visually document restoration success. Reference photo stations are marked with wooden stakes. Reference stations will be photographed annually for at least seven years following construction. Photographers will make every effort to maintain consistently the same area in each photo over time. Photographs will be used to subjectively evaluate vegetation establishment. A series of photos over time should indicate successional maturation of riparian vegetation.

3.3 The Watershed

The site watershed is rural and predominantly forested and agricultural with limited residential. Changes to the site watershed will be noted in the annual monitoring report. Specifically, watershed changes that threaten the project success and stability will be documented.

3.4 Monitoring Plan View

A monitoring plan view is located in **Appendices A**. This figure shows locations of all Vegetation Monitoring Plots, stream crossings and a general overview of the Site.

4.0 MAINTENANCE AND CONTINGENCY PLANS

4.1 Maintenance Plan

The site will be monitored on a regular basis and a physical inspection of the site will be conducted a minimum of once per year throughout the post-construction monitoring period until performance standards are met. These site inspections will identify site components and features that require routine maintenance. Routine maintenance should be expected most often in the first two years following site construction and may include the following:

Table 2. Proposed Maintenance Schedule

Component/Feature	Maintenance through project close-out
Vegetation	Vegetation shall be maintained to ensure the health and vigor of the targeted plant community. Routine vegetation maintenance and repair activities may include supplemental planting, pruning, mulching, and fertilizing. Exotic invasive plant species shall be controlled by mechanical and/or chemical methods. Any vegetation control requiring herbicide application will be performed in accordance with NC Department of Agriculture (NCDA) rules and regulations.
Site Boundary	Site boundaries have been identified in the field to ensure clear distinction between the mitigation site and adjacent properties. Boundaries are identified by fence, marker, and bollard. Additional marking may be used in the future such as post, tree-blazing, or other means as allowed by site conditions and/or conservation easement. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as needed basis.
Ford Crossing	Ford crossings within the site may be maintained only as allowed by Conservation Easement or existing easement, deed restrictions, rights of way, or corridor agreements.
Road Crossing	Road crossings within the site may be maintained only as allowed by Conservation Easement or existing easement, deed restrictions, rights of way, or corridor agreements.

4.2 Long-Term Management Plan

Upon approval for closeout by the NC Division of Water Quality, the site will be transferred to the State of North Carolina (State). The State shall be responsible for periodic inspection of the site to ensure that restrictions required in the conservation easement or the deed restriction document(s) are upheld.

4.3 Adaptive Management Plan

Upon completion of site construction post-construction monitoring protocols previously defined in this document will be implemented. Project maintenance will be performed as described previously in this document. If, during the course of annual monitoring it is determined the site's ability to achieve site performance standards are jeopardized, EEP will be notified of the need to develop a Plan of Corrective Action.

5.0 BASELINE DATA COLLECTION

5.1 Verification of Plantings

Bare root tree seedlings were planted between February 7 and February 13, 2013. Eight species of hardwood, totaling 10,500 stems, were planted (**Table 3**). The average planted density is 681 stems per acre. Twelve CVS vegetation plots of 100 square meters were established to verify and document plantings and provide the baseline for monitoring. Nine of the plots are 10 meters x 10 meters and three plots are 20 meters x 5 meters. Most of the site was ripped prior to planting.

Table 3. Planted Stems

Common Name	Scientific Name	Stems
River birch	<i>Betula nigra</i>	2,000
Eastern redbud	<i>Cercis canadensis</i>	1,000
Green ash	<i>Fraxinus pennsylvanica</i>	1,500
Sycamore	<i>Platanus occidentalis</i>	1,500
Swamp chestnut oak	<i>Quercus michauxii</i>	1,500
Water oak	<i>Quercus nigra</i>	1,000
Northern red oak	<i>Quercus rubra</i>	1,000
Willow oak	<i>Quercus phellos</i>	1,000
Total stems planted		10,500

5.2 Vegetation Photo Documentation



Photo 1-Vegetation Plot #1 along UT 2.



Photo 2-Vegetation Plot #2 along UT 2.

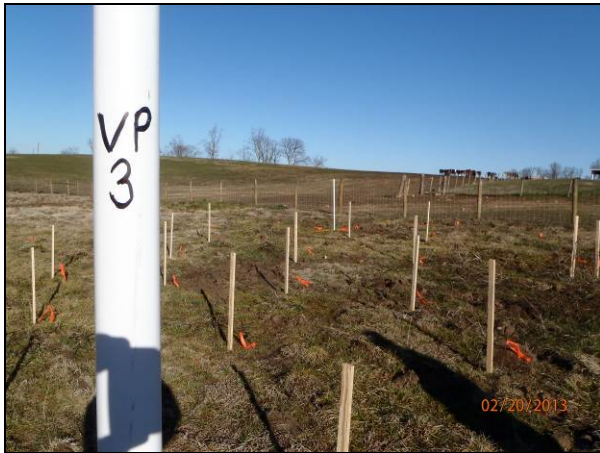


Photo 3- Vegetation Plot #3 above Pond 3.



Photo 4-Vegetation Plot #4 along UT3.



Photo 5-Vegetation Plot #5 along UT3.



Photo 6- Vegetation Plot #6 at head of UT4.



Photo 7-Vegetation Plot #7 along UT4.

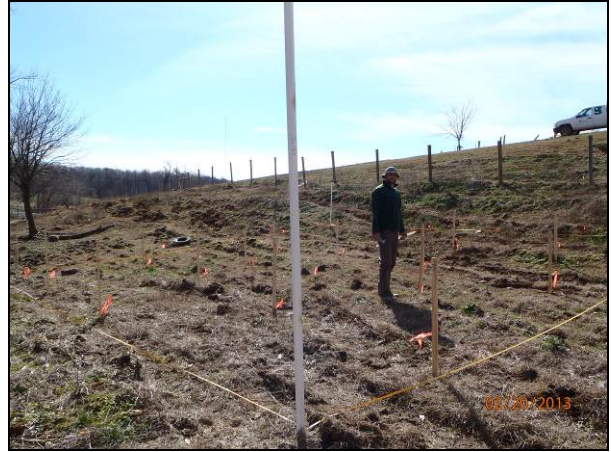


Photo 8-Vegetation Plot #8 along UT4.



Photo 9-Vegetation Plot #9 along UT4.



Photo 10-Vegetation Plot #10 along UT5.



Photo 11- Vegetation Plot #11 along UT6.



Photo 12-Vegetation Plot #12 along UT6.



Photo 13-Pond 2 at head of UT2.



Photo 14-Pond 2 Spillway.



Photo 15- Downstream in UT2 below Pond 2



Photo 16- Above Pond 3 at head of UT3.



Photo 17- Spillway below Pond 3.



Photo 18-Upstream UT 3.



Photo 19- Erosion control structure on UT3.



Photo 20- Upstream UT4.



Photo 21- UT5-downstream.



Photo 22-UT6-upstream.

6.0 REFERENCES

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Appendix A
Tables and Figures

**Table 1. Project Components and Mitigation Credits
Hockett Dairy, Randolph County
EEP Project ID Number 003993 EEP Site 95013**

Mitigation Credits									
	Stream		Riparian Wetland		Non-riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	N/A	N/A	N/A	N/A	N/A	N/A	Restoration	N/A	N/A
Totals*	N/A	N/A	N/A	N/A	N/A	N/A	11.82 Ac.	N/A	N/A
Project Components									
Reach ID	Stationing/ Location		Existing Footage (LF)	Approach (PI, PII, etc.)	Restoration -or- Restoration Equivalent		Restoration Area (acres)	Mitigation Ratio	
Reach UT2	N/A		733	N/A	Buffer Restoration		1.72	1:1	
Reach UT3	N/A		817	N/A	Buffer Restoration		1.85	1:1	
Reach UT4	N/A		1884	N/A	Buffer Restoration		4.62	1:1	
Reach UT5	N/A		466	N/A	Buffer Restoration		0.89	1:1	
Reach UT6	N/A		797	N/A	Buffer Restoration		1.84	1:1	
Pond 2	N/A		378*	N/A	Buffer Restoration		0.52	1:1	
Pond 3	N/A		338*	N/A	Buffer Restoration		0.38	1:1	
							Total	11.82	

*perimeter

Component Summation							
Reach ID	Stationing/ Location	Existing Footage (LF)	Approach (PI, PII, etc.)	Restoration -or- Restoration Equivalent	Restoration Area (acres)	Mitigation Ratio	
Reach UT2	N/A	733	N/A	Buffer Restoration	1.72	1:1	
Reach UT3	N/A	817	N/A	Buffer Restoration	1.85	1:1	
Reach UT4	N/A	1,884	N/A	Buffer Restoration	4.62	1:1	
Reach UT5	N/A	466	N/A	Buffer Restoration	0.89	1:1	
Reach UT6	N/A	797	N/A	Buffer Restoration	1.84	1:1	
Pond 2	N/A	* 378	N/A	Buffer Restoration	0.52	1:1	
Pond 3	N/A	* 338	N/A	Buffer Restoration	0.38	1:1	
					Total	11.82	

*perimeter

BMP Elements			
Element	Location	Purpose/Function	Notes
N/A	N/A	N/A	N/A

**Table 2. Project Activity and Reporting History
Hockett Dairy, Randolph County
EEP Project ID Number 003993 EEP Site 95013**

Activity or Report	Data Collection Complete	Completion or Delivery
Mitigation Plan	January 2012	May 2012
Final Design - Construction Plans	NA	May 2012
Construction	NA	October 2012
Temporary S&E mix applied to entire project area	NA	June 2012
Permanent seed mix applied to _____	NA	June 2012
Containerized and B&B plantings for reach _____	NA	February 2013
Baseline Monitoring Document (Year 0 Monitoring - baseline)	February 2013	March 2013
Year 1 Monitoring	Fall 2013	
Year 2 Monitoring	Fall 2014	
Year 3 Monitoring	Fall 2015	
Year 4 Monitoring	Fall 2016	
Year 5 Monitoring	Fall 2017	

**Table 3. Project Contact Table
Hockett Dairy, Randolph County
EEP Project ID Number 003993 EEP Site 95013**

Designer	WK Dickson & Co., Inc.
Primary project design POC	Daniel Ingram - (919) 782-0495
Construction Contractor	KBS Earthworks
Construction contractor POC	Kory Strader - (336) 362-0289
Planting Contractor	Strader Fencing
Planting contractor POC	Kenneth Strader - (336) 697-7005
Seeding Contractor	Strader Fencing
Planting contractor POC	Kenneth Strader - (336) 697-7005
Seed Mix Sources	Evergreen Seed, Inc
Nursery Stock Suppliers	ArborGen
Monitoring Performers	WK Dickson & Co., Inc.
Vegetation Monitoring POC	Daniel Ingram - (919) 782-0495

Table 4. Project Baseline Information and Attributes
Green Valley, Randolph County
EEP Project ID Number 003993 EEP Site 95013

Project Information	
Project Name	Hockett Diary Buffer Mitigation Site
County	Randolph
Project Area (acres)	12.99
Project Coordinates (latitude and longitude)	35° 53' 55.219" N, 79° 49' 37.381" W
Project Watershed Summary Information	
Physiographic Province	Piedmont Physiographic Province
River Basin	Cape Fear River Basin
USGS Hydrologic Unit 8-digit	03030003
USGS Hydrologic Unit 14-digit	03030003010070
DWQ Sub-basin	03-06-08
Project Drainage Area (acres)	Reach UT2 19.4 acres Reach UT3 31.2 acres Reach UT4 76.3 acres Reach UT5 9.1 acres Reach UT6 34.4 acres
Project Drainage Area Percentage of Impervious Area	0.6%
CGIA Land Use Classification	2.5 Residential 144.3 Cropland and Pasture 12.6 Other Agricultural Land 19.1 Passively Managed Forest Stands

Table 5. Reach Summary Information Green Valley, Randolph County EEP Project ID Number 003993 EEP Site 95013					
Parameters	Reach UT2	Reach UT3	Reach UT4	Reach UT5	Reach UT6
Length of reach (linear feet)	Length of reach (linear feet)	733	817	1884	466
Valley Classification	Valley Classification	X	X	X	X
Drainage area (acres)	Drainage area (acres)	19.4	31.2	76.3	9.1
NCDWQ stream identification score	NCDWQ stream identification score	29	27.5	19-25.5	21
NCDWQ Water Quality Classification	NCDWQ Water Quality Classification	WS-IV;CA	WS-IV;CA	WS-IV;CA	WS-IV;CA
Morphological Description (stream type)	Morphological Description (stream type)	E	E	G	G
Evolutionary trend	Evolutionary trend	Stable	Stable	Stable	Stable
Underlying mapped soils	Underlying mapped soils	Wynott-Enon complex WvC2	Mecklenburg CL MeC2,	Mecklenburg CL MeC2, Wynott-Enon complex WvC2	Mecklenburg CL MeC2
Drainage class	Drainage class	well	well	well	well
Soil Hydric status	Soil Hydric status	Non-hydric	Non-hydric	Non-hydric	Non-hydric
Slope (ft/ft)	Slope	0.04%	0.03%	0.02%	0.04%
FEMA classification	FEMA classification	Zone AE	Zone AE	Zone AE	Zone AE
Native vegetation community	Native vegetation community	Pasture	Pasture	Pasture	Pasture
Percent composition of exotic invasive vegetation	Percent composition of exotic invasive vegetation	10%	10%	15%	5%

Table 6. Regulatory Considerations Green Valley, Randolph County EEP Project ID Number 003993 EEP Site 95013			
Regulation	Applicable	Resolved	Supporting Documentation
Waters of the United States - Section 404	Yes	Yes	see Appendix B
Waters of the United States - Section 401	Yes	Yes	see Appendix B
Endangered Species Act	Yes	Yes	see Appendix B
Historic Preservation Act	Yes	Yes	see Appendix B
Coastal Zone Management Act (CZMA)/Coastal Area Management Act (CAMA)	No	N/A	N/A
FEMA Floodplain Compliance	No	N/A	N/A
Essential Fisheries Habitat	No	N/A	N/A

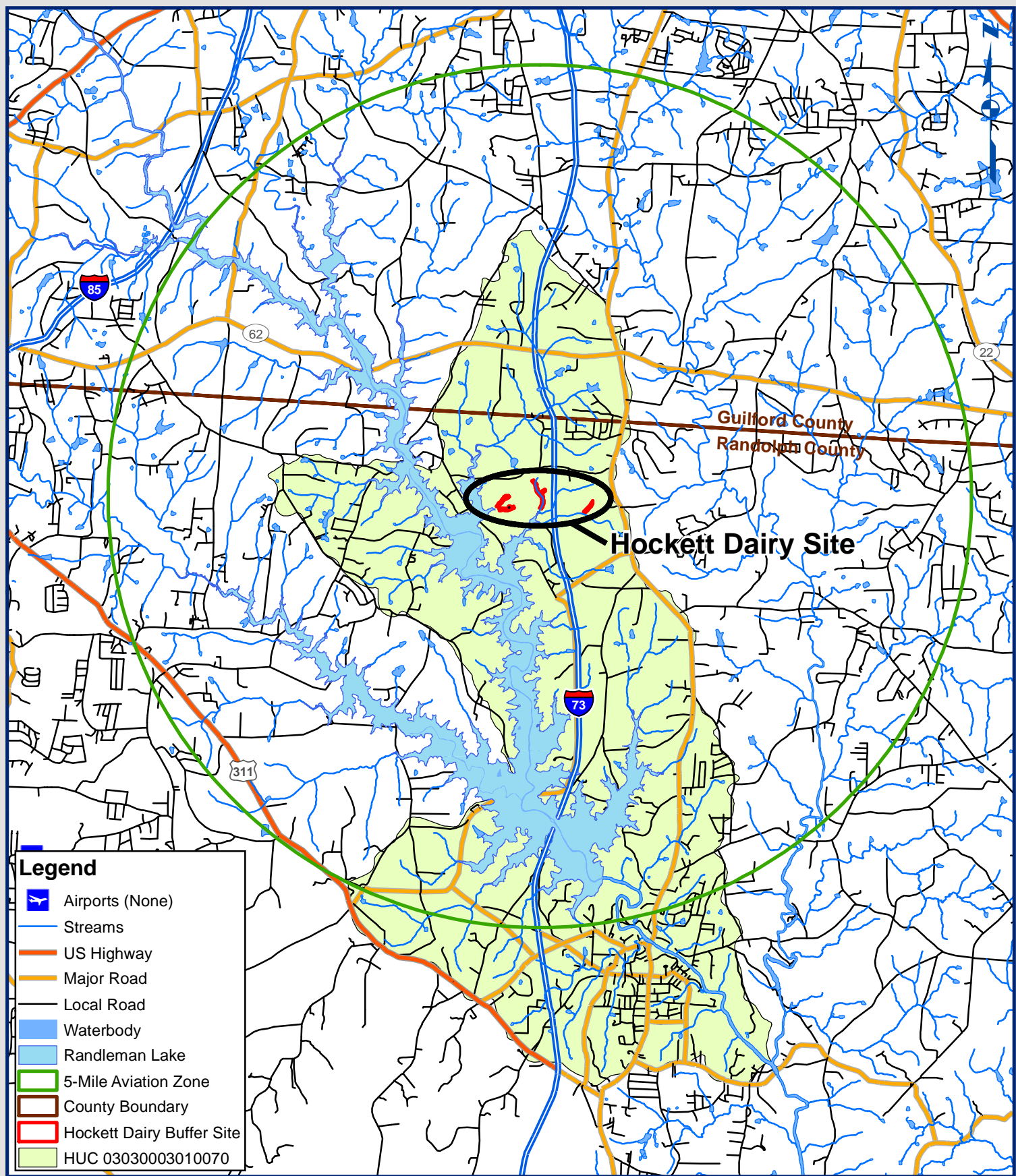
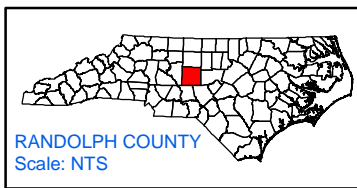
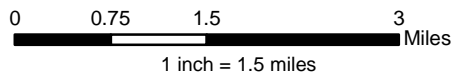


Figure 1.
Project Vicinity Map
Hockett Dairy Buffer Restoration Site



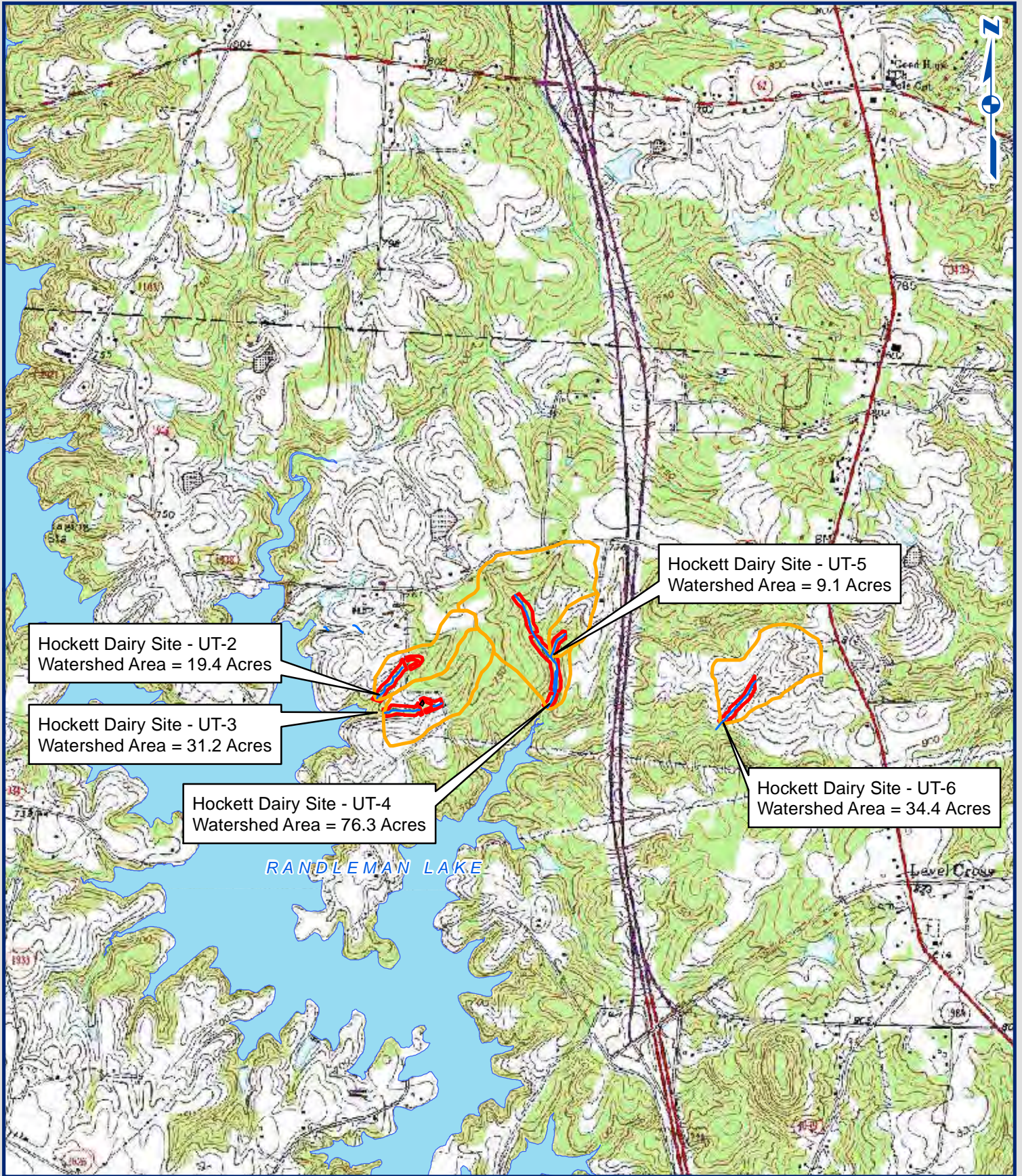
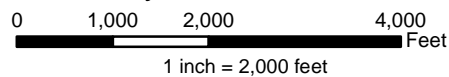




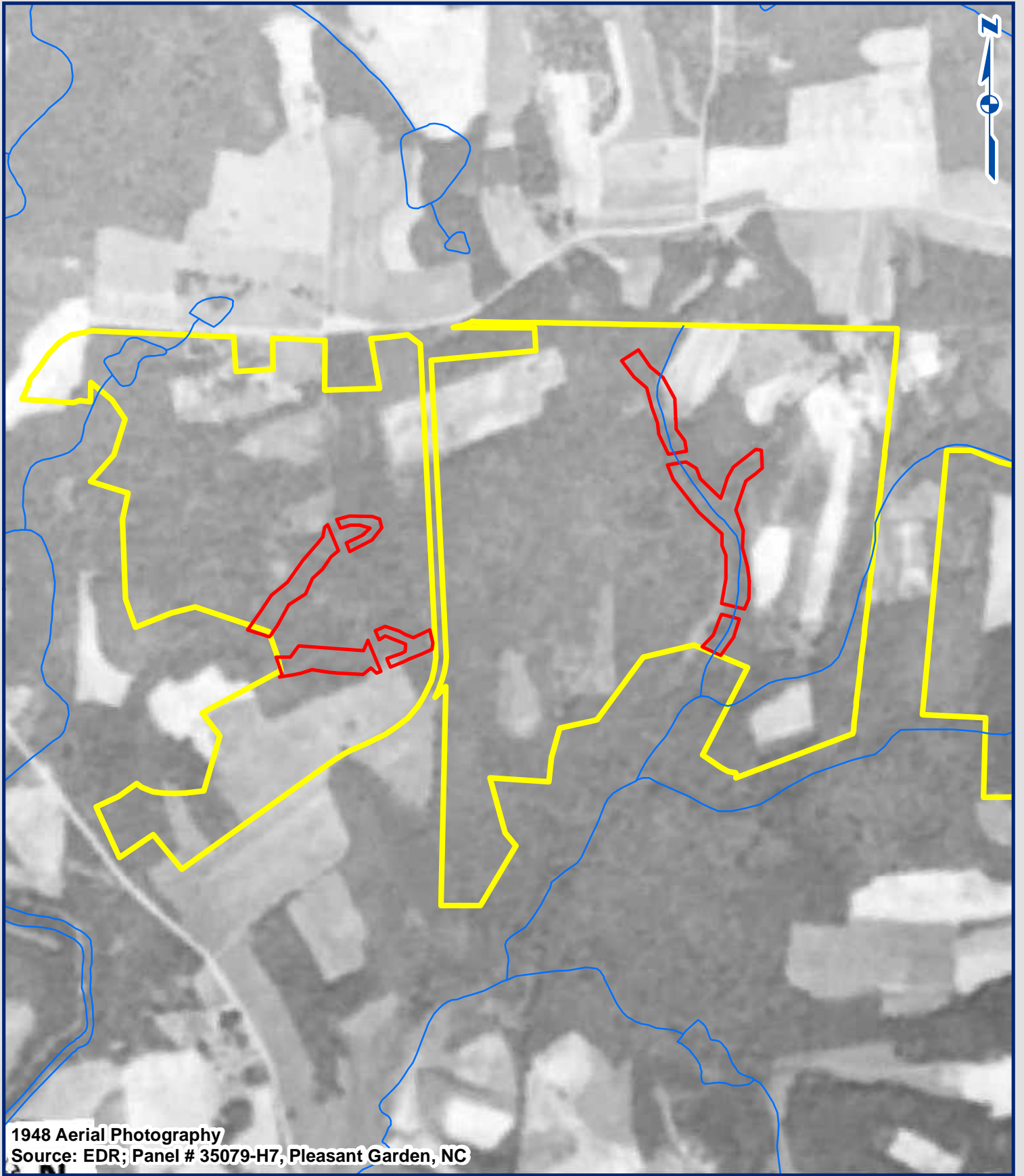


Figure 2.
USGS/Watershed Map
Hockett Dairy Buffer Restoration Site



Legend

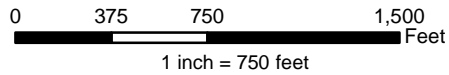
-  Streams
-  Hockett Dairy Buffer Site
-  Randleman Lake
-  Drainage Area






1948 Aerial Photography
Source: EDR; Panel # 35079-H7, Pleasant Garden, NC



Figure 3.
Historical Aerial Map (1948)
Hockett Dairy Buffer Restoration Site



Legend

-  Streams
-  Hockett Dairy Buffer Site
-  Parcel Boundary Lines

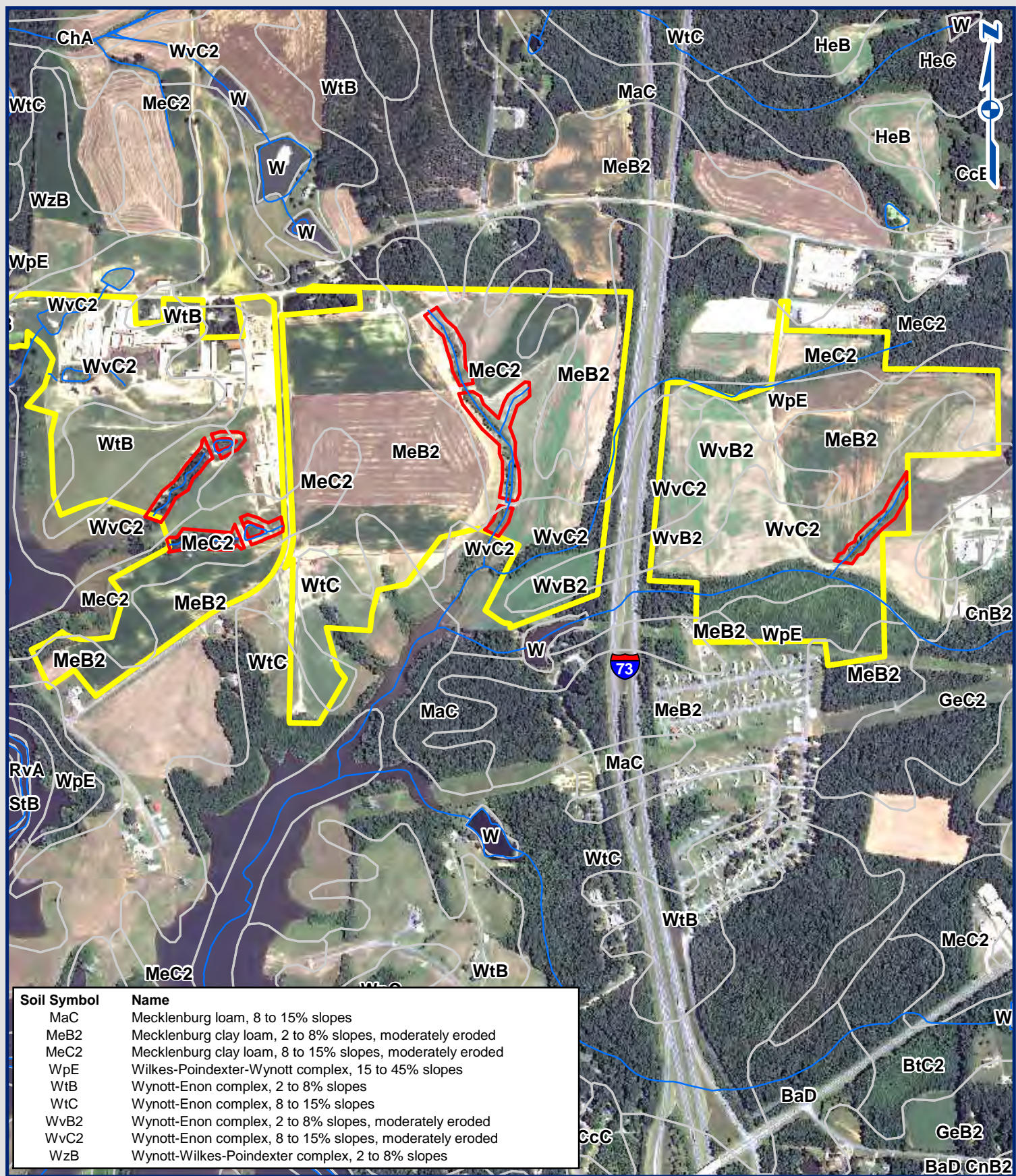
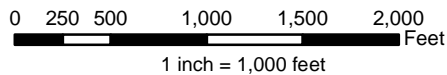


Figure 4.
Soils Map
Hockett Dairy Buffer Restoration Site



Legend

- Streams
- Randolph County Soils
- Hockett Dairy Buffer Site
- Parcel Boundary



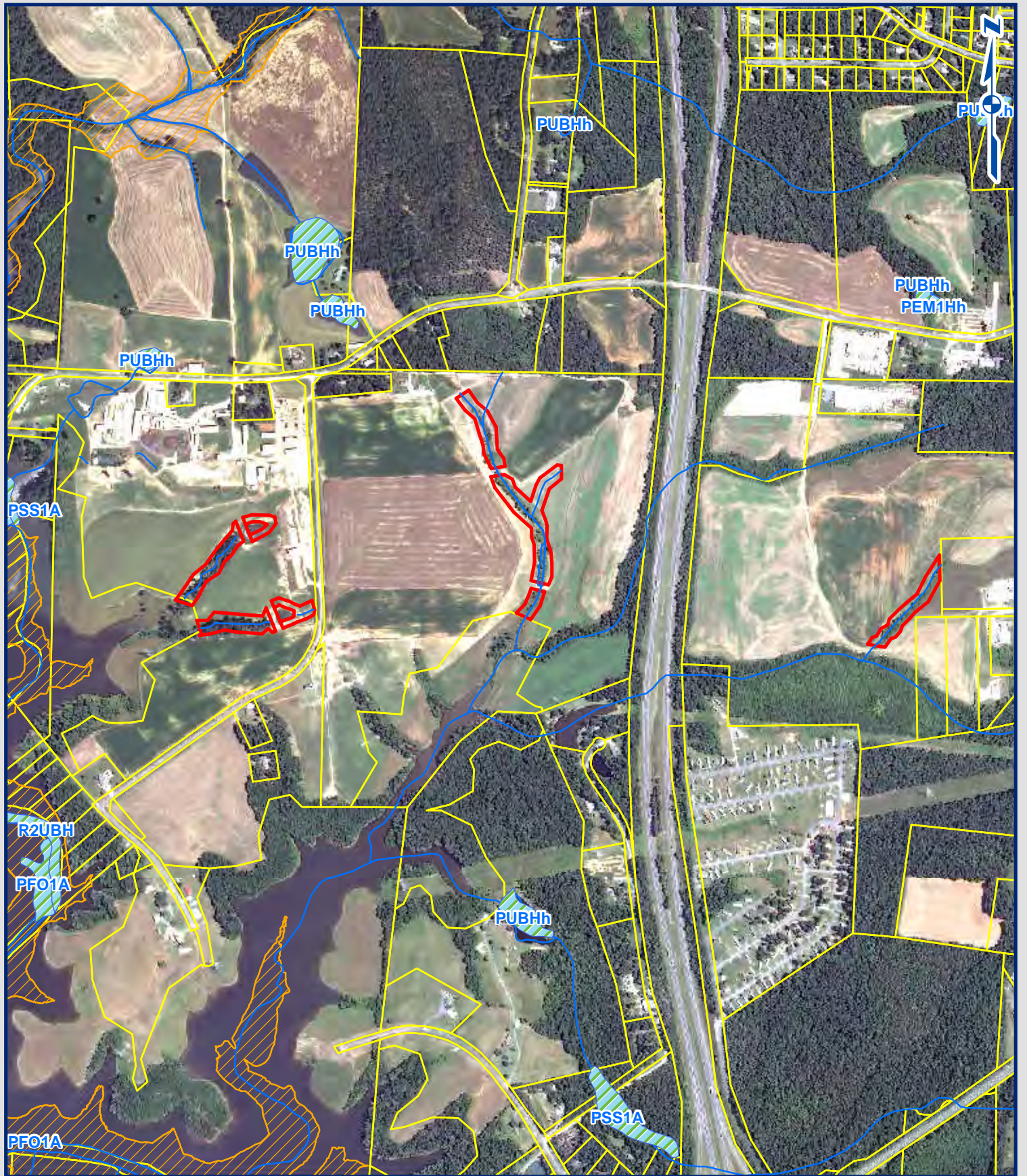
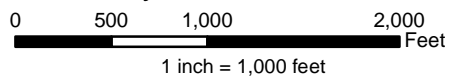







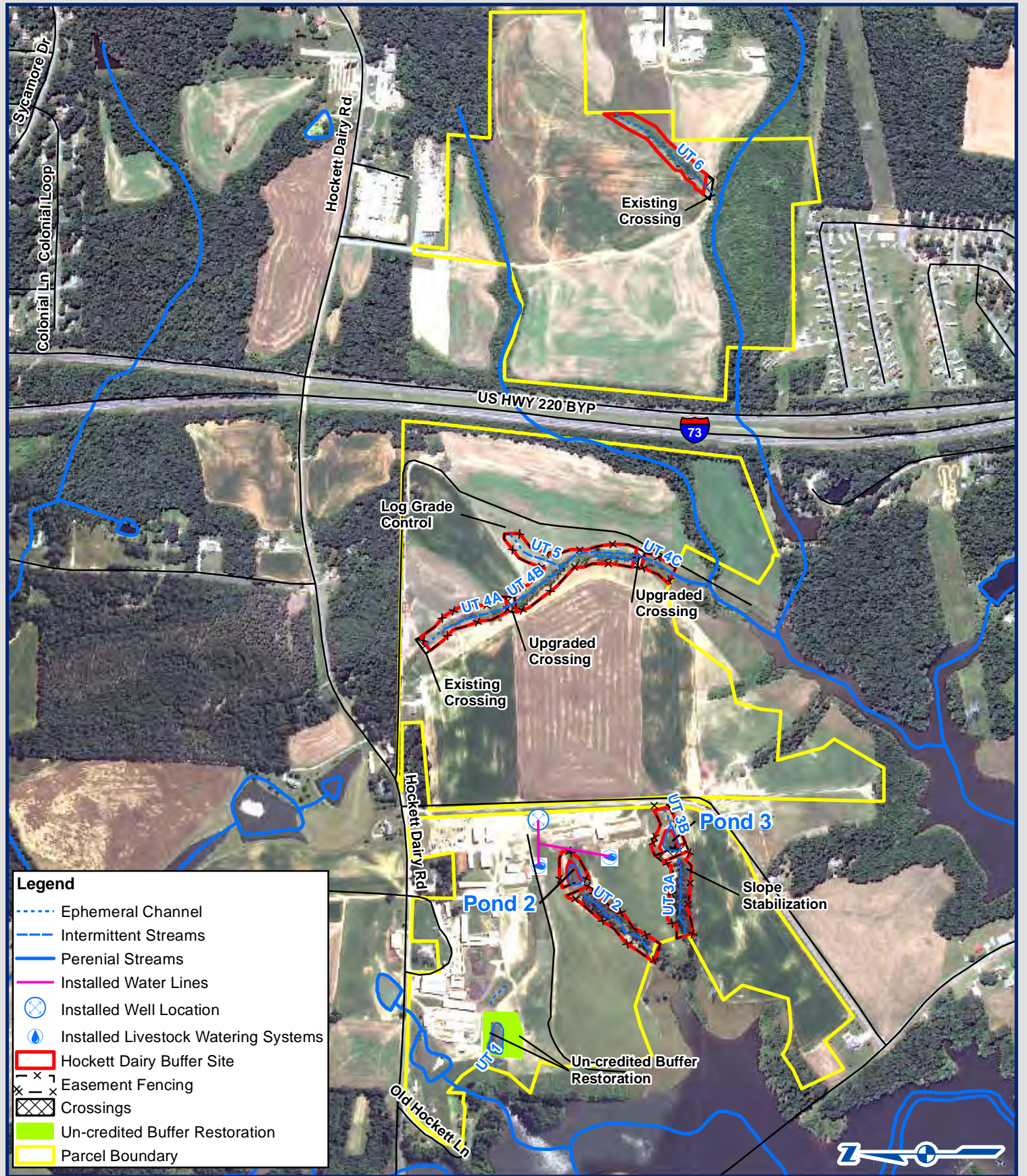
Figure 5.
 FEMA Flood Insurance and NWI Map
 Hockett Dairy Buffer Restoration Site



Legend

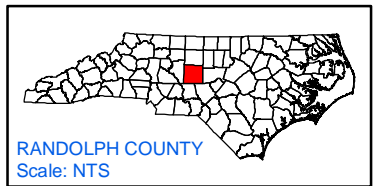
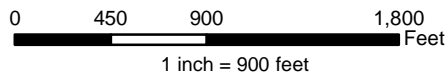
-  Streams
-  NWI Wetlands
-  FEMA Zone AE - Detailed 100yr. Floodplain
-  Hockett Dairy Buffer Site
-  Parcel Boundary





- Legend**
- Ephemeral Channel
 - - - - - Intermittent Streams
 - Perennial Streams
 - Installed Water Lines
 - ⊗ Installed Well Location
 - ⊕ Installed Livestock Watering Systems
 - ▭ Hockett Dairy Buffer Site
 - x - Easement Fencing
 - ⊗ Crossings
 - ▭ Un-credited Buffer Restoration
 - ▭ Parcel Boundary

Figure 6.
 Conceptual Design
 Hockett Dairy Buffer Restoration Site



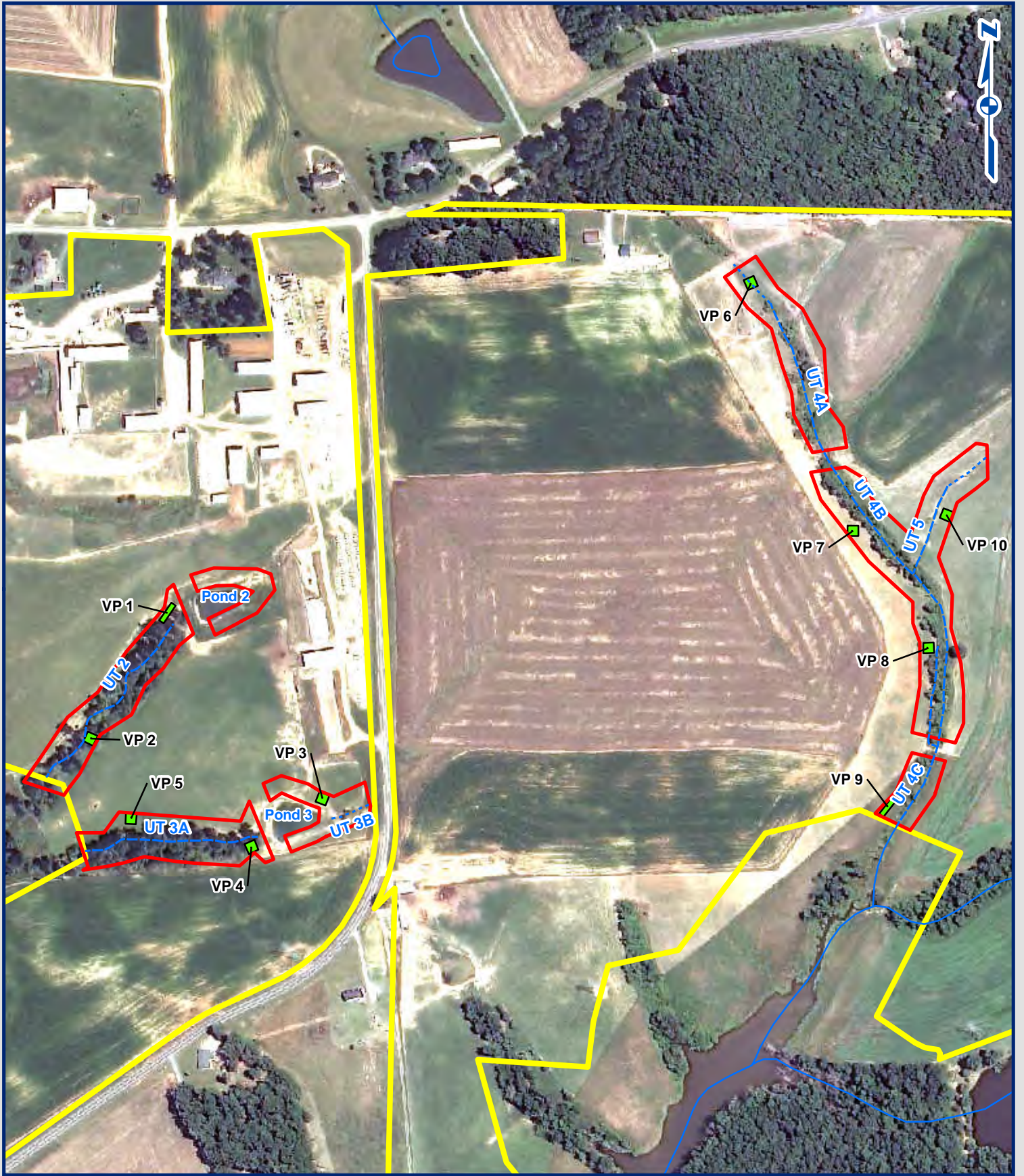
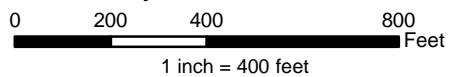


Figure 7a.
Monitoring Plan View
Hockett Dairy Buffer Restoration Site



Legend

- Streams
- Vegetation Plots
- Hockett Dairy Buffer Site
- Parcel Boundary



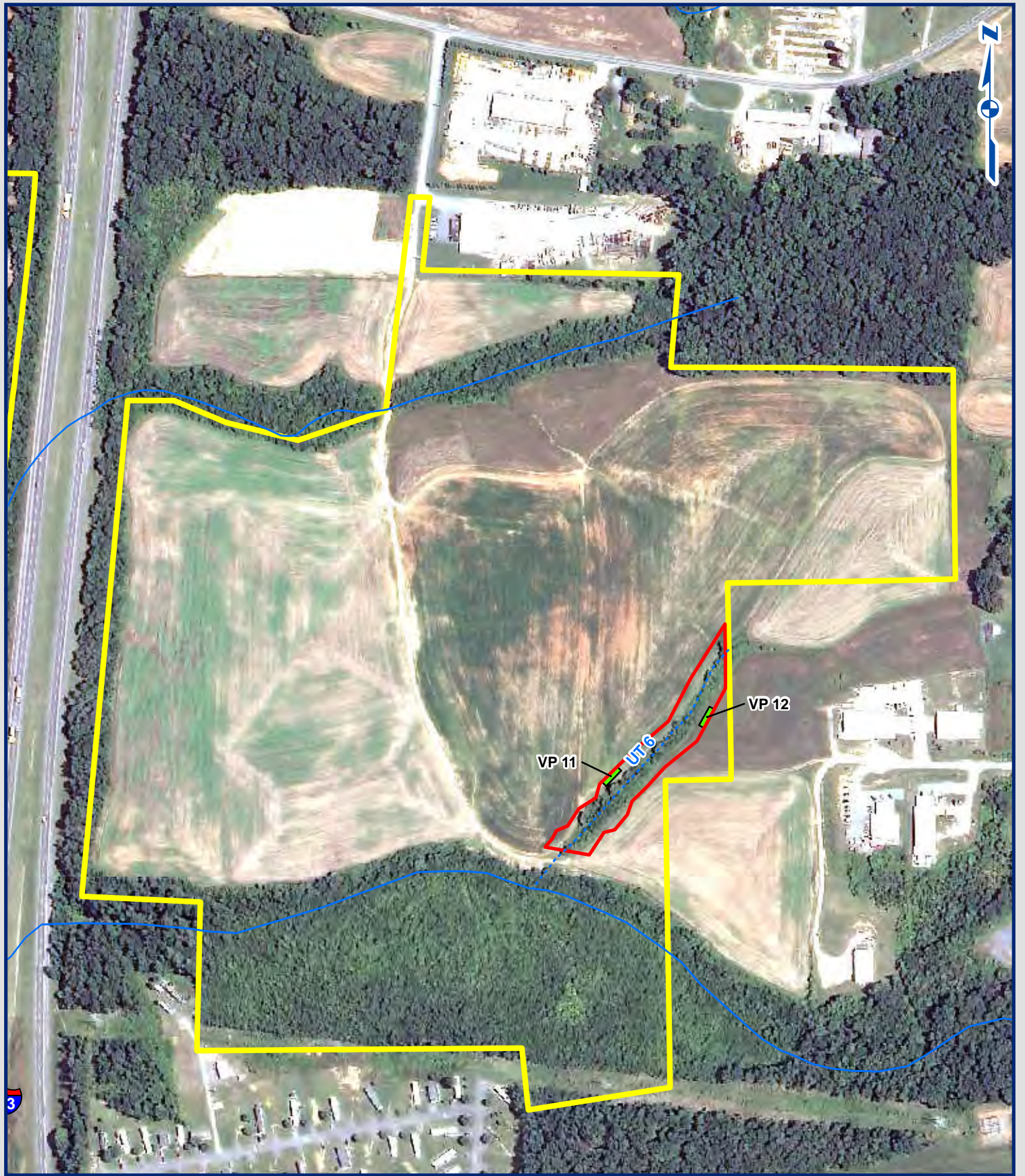
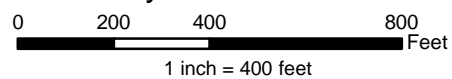


Figure 7b.
Monitoring Plan View
Hockett Dairy Buffer Restoration Site



Legend

- Streams
- Vegetation Plots
- Hockett Dairy Buffer Site
- Parcel Boundary



Appendix B

Vegetation Data

Table B.2 Vigor by Species – Hockett Dairy Site (Baseline Monitoring)

	Species	CommonName	4	3	2	1	0	Missing	Unknown
	Betula nigra	river birch			54	4			
	Fraxinus pennsylvanica	green ash			27	1			
	Quercus	oak			127	6			
	Platanus occidentalis	American sycamore			42	3			
TOT:	4	4			250	14			

*When baseline monitoring was performed, most of the planted bare root stems were absent of leaves making it difficult to get a true identification.

Table B.3 Damage by Plot – Hockett Dairy Site (Baseline Monitoring)

	plot	Count of Damage Categories (no damage)	- Enter other damage -	Human Trampled
	003993-01-0001	0	26	
	003993-01-0002	0	23	
	003993-01-0003	0	21	
	003993-01-0004	2	22	2
	003993-01-0005	0	25	
	003993-01-0006	0	23	
	003993-01-0007	0	20	
	003993-01-0008	0	18	
	003993-01-0009	0	21	
	003993-01-0010	0	20	
	003993-01-0011	0	24	
	003993-01-0012	1	19	1
TOT:	12	3	262	2

Table B.4 Damage by Species – Hockett Dairy Site (Baseline Monitoring)

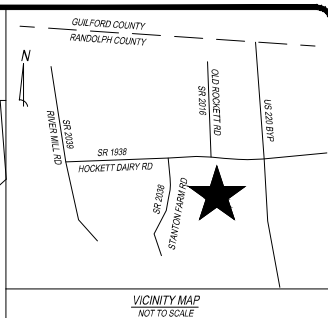
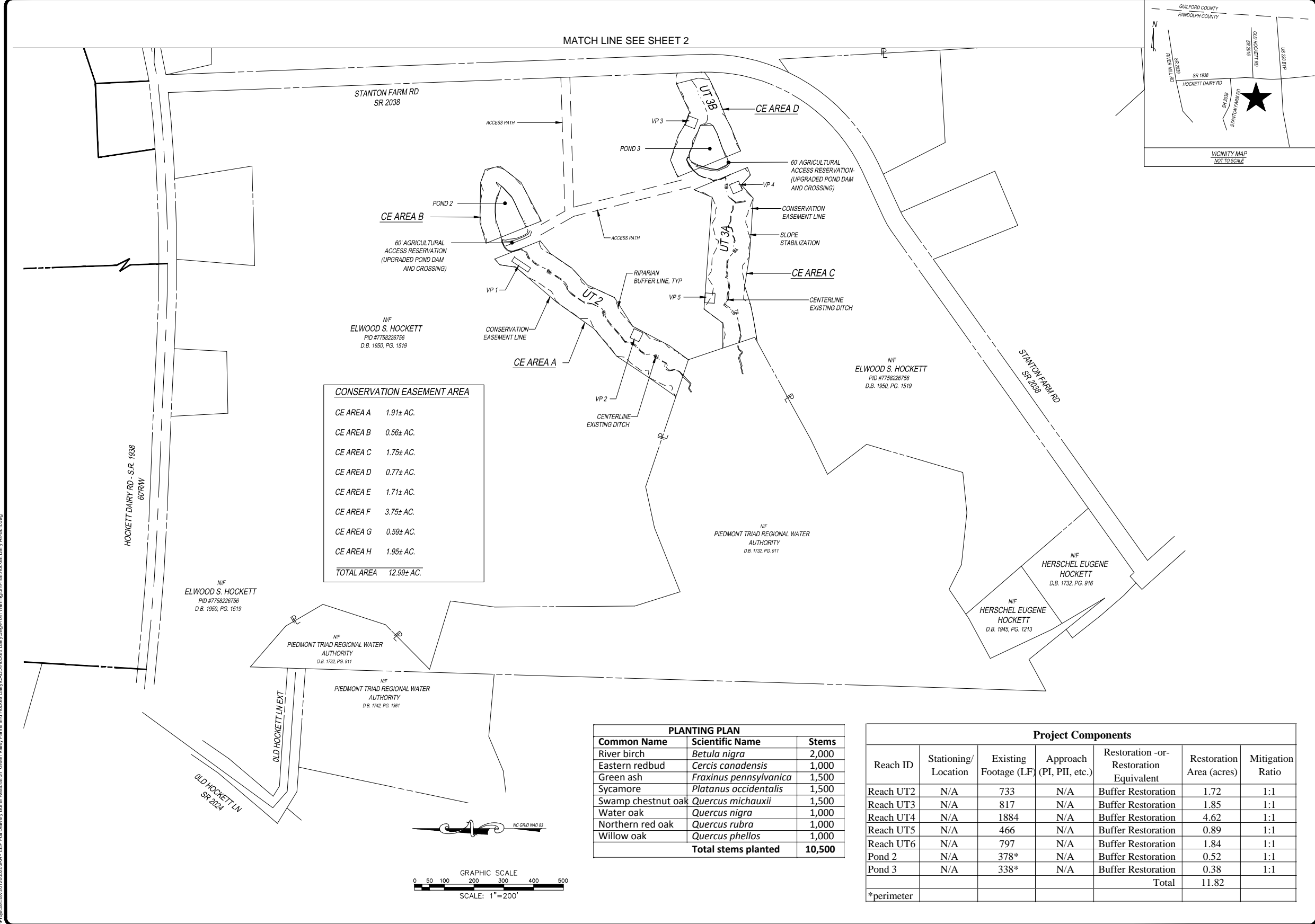
	<i>Species</i>	<i>CommonName</i>	<i>Count of Damage Categories</i>			
			<i>(no damage)</i>	<i>Enter other damage</i>	<i>Human Trampled</i>	
	Betula nigra	river birch	1	57	1	
	Fraxinus pennsylvanica	green ash	0	28		
	Platanus occidentalis	American sycamore	0	45		
	Quercus	oak	2	132	1	1
TOT:	4	4	3	262	2	1

Table B.5 Stem Count by Plot and Species – Hockett Dairy

	Comment	Species	SpType	CommonName	Total Planted Stems		avg# stems	plot											
					# plots			003993-01-0001	003993-01-0002	003993-01-0003	003993-01-0004	003993-01-0005	003993-01-0006	003993-01-0007	003993-01-0008	003993-01-0009	003993-01-0010	003993-01-0011	003993-01-0012
		Betula nigra	Tree	river birch	58	12	4.83	11	4	7	1	4	3	5	2	5	4	10	2
		Fraxinus pennsylvanica	Tree	green ash	28	10	2.8	3	3		3	3	2	1		2	7	2	2
		Platanus occidentalis	Tree	American sycamore	45	7	6.43		8		4	9	6	3	7		8		
		Quercus	Shrub Tree	oak	133	12	11.08	12	8	14	16	9	12	11	9	14	1	11	16
TOT:	0	4	4	4	264	4		26	23	21	24	25	23	20	18	21	20	23	20

Appendix C
As-Built Plan Sheets

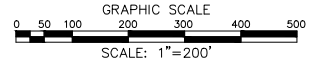
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CONSERVATION EASEMENT AREA	
CE AREA A	1.91± AC.
CE AREA B	0.56± AC.
CE AREA C	1.75± AC.
CE AREA D	0.77± AC.
CE AREA E	1.71± AC.
CE AREA F	3.75± AC.
CE AREA G	0.59± AC.
CE AREA H	1.95± AC.
TOTAL AREA	12.99± AC.

PLANTING PLAN		
Common Name	Scientific Name	Stems
River birch	<i>Betula nigra</i>	2,000
Eastern redbud	<i>Cercis canadensis</i>	1,000
Green ash	<i>Fraxinus pennsylvanica</i>	1,500
Sycamore	<i>Platanus occidentalis</i>	1,500
Swamp chestnut oak	<i>Quercus michauxii</i>	1,500
Water oak	<i>Quercus nigra</i>	1,000
Northern red oak	<i>Quercus rubra</i>	1,000
Willow oak	<i>Quercus phellos</i>	1,000
Total stems planted		10,500

Project Components						
Reach ID	Stationing/Location	Existing Footage (LF)	Approach (PI, PII, etc.)	Restoration -or- Restoration Equivalent	Restoration Area (acres)	Mitigation Ratio
Reach UT2	N/A	733	N/A	Buffer Restoration	1.72	1:1
Reach UT3	N/A	817	N/A	Buffer Restoration	1.85	1:1
Reach UT4	N/A	1884	N/A	Buffer Restoration	4.62	1:1
Reach UT5	N/A	466	N/A	Buffer Restoration	0.89	1:1
Reach UT6	N/A	797	N/A	Buffer Restoration	1.84	1:1
Pond 2	N/A	378*	N/A	Buffer Restoration	0.52	1:1
Pond 3	N/A	338*	N/A	Buffer Restoration	0.38	1:1
Total					11.82	
*perimeter						



REV. NO.	DESCRIPTION	DATE

PROJECT MANAGER GVC	DRAWING SCALE 1"=200'
DRAWN BY JRM	PROJECT DATE JAN 2012
APPROVED BY GVC	PROJECT NUMBER 2011017500RA
FILE NAME Hockett Dairy ease	PLOT DATE



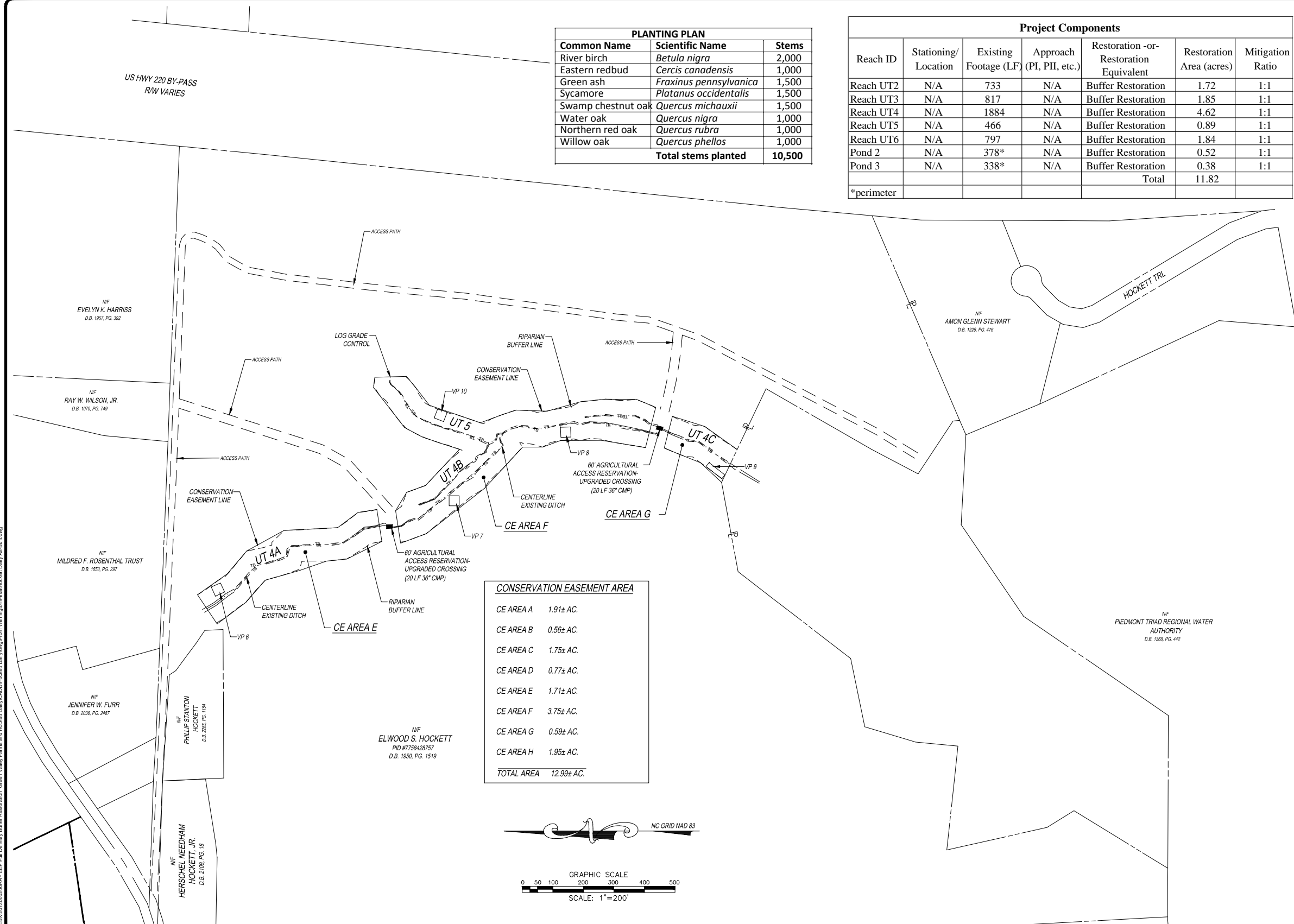
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 NCEEP RFP # 16-003567
 NCEEP PROJECT # 003993-EEP SITE 95013
 NCEEP PROJECT NAME "HOCKETT DAIRY SITE".

EEP PROJECT NAME: HOCKETT DAIRY SITE
 AS-BUILT DRAWING
 ELWOOD S. HOCKETT PROPERTY
 PID #7758226756 AND PID #7758428757
 LEVEL CROSS TOWNSHIP, RANDOLPH COUNTY
 NORTH CAROLINA

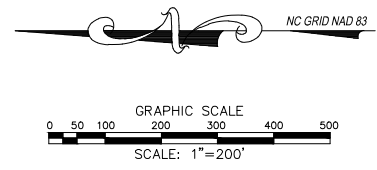
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Sycamore	<i>Platanus occidentalis</i>	1,500
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Water oak	<i>Quercus nigra</i>	1,000
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Willow oak	<i>Quercus phellos</i>	1,000
Total stems planted		10,500

Project Components						
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*perimeter						

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TOTAL AREA	12.99± AC.



MATCH LINE SEE SHEET 1

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DRAWN BY JRM	PROJECT DATE JAN 2012
APPROVED BY GVC	PROJECT NUMBER 2011017500RA
FILE NAME Hocket Dairy eas	PLOT DATE



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WILMINGTON, NC 28401
(910) 762-4200
Office Locations: North Carolina
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Georgia
NC LICENSE NO. F-0374

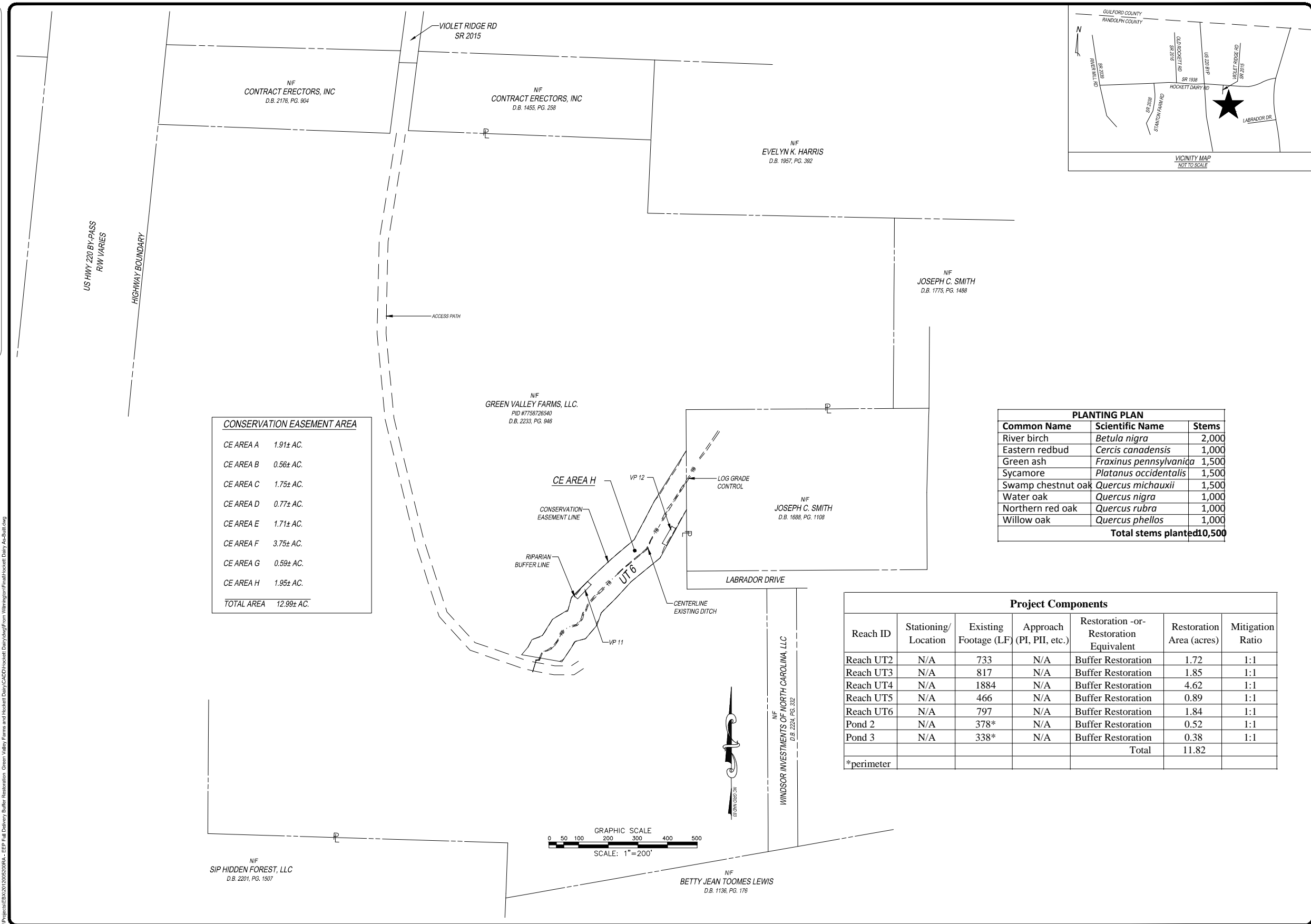
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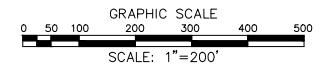
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Pond 2	N/A	378*	N/A	Buffer Restoration	0.52	1:1
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 (910) 762-4200
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 NCEEP PROJECT # 003993-EEP SITE 95013
 NCEEP PROJECT NAME "HOCKETT DAIRY SITE".

EEP PROJECT NAME: HOCKETT DAIRY SITE
 AS-BUILT DRAWING
 GREEN VALLEY FARMS, LLC.
 PID #7758726540
 LEVEL CROSS TOWNSHIP, RANDOLPH COUNTY
 NORTH CAROLINA

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DIRBLE PLANTING METHOD USING THE KBC PLANTING BAR

1. INSERT PLANTING BAR AND PULL HANDLE TOWARD PLANTER.
2. REMOVE PLANTING BAR AND PLACE SEEDLING AT CORRECT DEPTH.
3. INSERT PLANTING BAR 2 INCHES TOWARD PLANTER FROM SEEDLING.
4. PULL HANDLE OF BAR TOWARD PLANTER, FIRING SOIL AT BOTTOM.
5. PUSH HANDLE FORWARD FIRING SOIL AT TOP.
6. LEAVE CONVECTION HOLE OPEN THOROUGHLY.

PLANTING NOTES:
 PLANTING BAG DURING PLANTING, SEEDLINGS SHALL BE KEPT IN A MOIST CANVAS BAG OR SIMILAR CONTAINER TO PREVENT THE ROOT SYSTEMS FROM DRYING.

NOTES:
 BARE ROOTS SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 600 PLANTS PER ACRE.

PLANTING BAR SPECIFICATIONS:
 KBC PLANTING BAR PLANTING BAR SHALL HAVE A BLADE WITH A TRIANGULAR CROSS SECTION, AND SHALL BE 15 INCHES LONG AND 1 INCHES WIDE AND 1 INCH TRACK AT CENTER.

ROOT PRUNING:
 ALL SEEDLINGS SHALL BE ROOT PRUNED, IF NECESSARY, SO THAT NO ROOTS EXTEND MORE THAN 10 INCHES BELOW THE ROOT COLLAR.

COMMON NAME	SCIENTIFIC NAME	PERCENT COMPOSITION
River Birch	<i>Betula nigra</i>	10
Eastern Redbud	<i>Cercis canadensis</i>	10
Green Ash	<i>Fraxinus pennsylvanica</i>	20
American Sycamore	<i>Platanus occidentalis</i>	20
Sweetgum	<i>Quercus michauxii</i>	15
Water Oak	<i>Quercus nigra</i>	10
Northern Red Oak	<i>Quercus rubra</i>	15

BARE ROOT PLANTING

SLOPE STABILIZATION BMP
NOT TO SCALE

NOTES:
 LOGS SHALL BE AT LEAST 10'-15' LONG, 10 INCHES IN DIAMETER, AND HARDWOOD (OAK SPECIES).

CULVERT CROSSING
NOT TO SCALE

REACH	CULVERT SIZE/TYPE
UT-4 (UPSTREAM)	30" CMP
UT-4 (DOWNSTREAM)	30" CMP

NOTES:
 1. CONSTRUCT STREAM CROSSING WHEN FLOW IS LOW.
 2. INSTALL STREAM CROSSING PERPENDICULAR TO FLOW.
 3. CONTRACTOR TO COORDINATE APPROPRIATE BEDDING MATERIAL WITH MANUFACTURER.
 4. FILTER FABRIC USED SHALL BE NCDOT TYPE 2 ENGINEERING FABRIC OR EQUIVALENT.
 5. WIDTH OF THE CROSSING SHALL BE SUFFICIENT (12 MIN.) TO ACCOMMODATE THE LARGEST VEHICLE CROSSING THE CHANNEL.

REV. NO.	DESCRIPTION	DATE

PROJECT MANAGER GVC	DRAWING SCALE 1"=200'
DRAWN BY JRM	PROJECT DATE JAN 2012
APPROVED BY GVC	PROJECT NUMBER 2011017500RA
FILE NAME Hockett Dairy ease	PLOT DATE

community infrastructure consultants

909 MARKET STREET
 WILMINGTON, NC 28401
 (910) 762-4200

Office Locations: North Carolina
 South Carolina
 Georgia
 NC LICENSE NO. F-0374

RELEASED FOR	DATE
APPROVALS	
BIDDING	
CONSTRUCTION	
RECORD DWG.	

AS-BUILT DRAWING
 FOR THE
STATE OF NORTH CAROLINA
 S.P.O. FILE # 76-BF
 NCEEP RFP # 16-003567
 NCEEP PROJECT # 003993-EEP SITE 95013
 NCEEP PROJECT NAME "HOCKETT DAIRY SITE".

EEP PROJECT NAME: HOCKETT DAIRY SITE
AS-BUILT DRAWING
GREEN VALLEY FARMS, LLC.
 PID #7758726540
 LEVEL CROSS TOWNSHIP, RANDOLPH COUNTY
 NORTH CAROLINA

Appendix D
DWQ Correspondence

HOCKETT DAIRY AND GREEN VALLEY FARMS DWQ SITE VISIT SUMMARY

On September 1, 2011 NCDWQ met with NCEEP, EBX, and WK Dickson personnel to review the eligibility of the proposed Hockett Dairy and Green Valley Farms Buffer Mitigation sites in Randolph County, NC. The meeting attendees were:

- Sue Homewood, NCDWQ Surface Water Protection, Winston-Salem Regional Office
- Tim Baumgartner, NCEEP, Full Delivery Manager
- Martin Hovis, EBX
- Daniel Ingram, WK Dickson

The NCDWQ comments for each project site are summarized below. This memorandum also presents EBX's response to the NCDWQ comments.

HOCKETT DAIRY

UT1 –Ms. Homewood (NCDWQ) agreed that buffer restoration would be advantageous at this location due to the immediate proximity of Randleman Lake and the direct nutrient and sediment input from the cattle operations. However, Ms. Homewood felt this drainage lacked a defined channel and was not subject to the Randleman Buffer rules. Ms. Homewood stated that if the channel was contained in a gully such as the one on the back of the upstream dam, then the channel would qualify for buffer restoration credit. Ms. Homewood also stated that she could not define the top of bank location and would not be able to establish the buffer zones. For these reason Ms. Homewood felt the drainage feature was not suitable for mitigation. She did state that if a channel formed by the end of the five-year monitoring then the credits would be allowed. This results in a loss of 0.20 acres of buffer restoration and continued degradation of Randleman Lake.

EBX feels this determination is not appropriate for several reasons. The contributing watershed is 17.6 acres at the downstream end. Recent research by NCDWQ in this ecoregion (Carolina Slate Belt-A) has shown that stream channels form at a mean watershed size of 11.2 acres and intermittent channels are present in 75 percent of 14.47 acre watersheds (Mapping Headwater Streams: Intermittent and Perennial Headwater Stream Model Development and Spatial Application North Carolina Division of Water Quality Final Report for Federal Highway Administration Contract: Feasibility Study WBS: 36486.4.2, January 29, 2008). The upstream pond (Farm Pond 1) also provides hydrologic storage limiting channel forming flows. WK Dickson personnel observed seasonal stream flow in UT1 during the fall of 2010 and winter of 2011. Lastly, Keith Hockett, principle dairy farmer, stated that the UT1 channel was formerly gullied from cattle access and dam failures but was repaired at the request of NCDWQ. There is a defined drainage swale with FACW and OBL vegetation. EBX proposes the extent of the hydrophytic vegetation be considered the channel and buffer restoration be allowed for 50 feet extending outward from that point.

Farm Pond 1 – Ms. Homewood agreed that buffer restoration would be advantageous at this location due to the immediate proximity of Randleman Lake and the direct nutrient

and sediment input from the cattle operations. However, Ms. Homewood felt that Farm Pond 1 lacked a connection to a downstream water body due to UT1 not being subject to the Randleman Buffer Rules. As a result, Farm Pond 1 is not subject to the Randleman Buffer rules. For these reasons Ms. Homewood felt the pond was not suitable for mitigation. She did state that if UT1 was contained in a defined channel then the Pond 1 buffer restoration credits would be allowed. This results in a loss of 0.50 acres of buffer restoration and continued degradation of Randleman Lake. In addition, a supplemental planted area (not for credit) of 0.63 acres is located adjacent to the proposed buffer restoration and would not be included in the project if no buffer credit is allowed on Farm Pond 1. NCDWQ had previously recommended planting this denuded area during a farm inspection.

EBX feels this determination is not appropriate for the reasons discussed above. UT1 should be considered an intermittent stream and subject to the Randleman Buffer Rules and allowing buffer restoration on Farm Pond 1.

UT2 – Ms. Homewood agreed with the Technical Proposal that the proposed 1.52 acres of UT2 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

Farm Pond 2 – Ms. Homewood agreed with the Technical Proposal that the proposed 0.46 acres of Farm Pond 2 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

UT3 – Ms. Homewood agreed with the Technical Proposal that the proposed 1.44 acres of UT3 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

Farm Pond 3 – Ms. Homewood agreed with the Technical Proposal that the proposed 0.54 acres of Farm Pond 3 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

UT4 – Ms. Homewood agreed with the Technical Proposal that the proposed 4.35 acres of UT4 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

UT5 – Ms. Homewood agreed with the Technical Proposal that the proposed 1.00 acres of UT5 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

UT6 – Ms. Homewood agreed with the Technical Proposal that the proposed 1.78 acres of UT6 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

GREEN VALLEY FARMS

UT1 – Ms. Homewood agreed with the Technical Proposal that the proposed 3.55 acres of UT1 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

UT2 – Ms. Homewood agreed with the Technical Proposal that the proposed 2.65 acres of UT2 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

UT3 – Ms. Homewood agreed with the Technical Proposal that the proposed 2.30 acres of UT3 buffer restoration is allowable and appropriate under the Randleman Buffer Rules.

UT4 – Ms. Homewood Ms. Homewood felt the upper 400 linear feet (approximate) of this drainage feature was a linear wetland that lacked a defined channel and was not subject to the Randleman Buffer rules. Ms. Homewood also stated that she could not define the top of bank location and would not be able to establish the buffer zones. For these reason Ms. Homewood felt the upper UT4 drainage feature was not suitable for mitigation. She did state that if a channel formed by the end of the five-year monitoring then the credits would be allowed. This results in a loss of 0.92 acres of buffer restoration and continued degradation of Randleman Lake. Ms. Homewood agreed with the Technical Proposal that the lower 190 linear feet of UT4 buffer restoration is allowable and appropriate under the Randleman Buffer Rules, resulting in 0.28 acres of buffer restoration.

EBX feels this determination is not appropriate for several reasons. The contributing watershed is 19.2 acres. Recent research by NCDWQ in this ecoregion (Carolina Slate Belt-A) has shown that stream channels form at a mean watershed size of 11.2 acres and intermittent channels are present in 75 percent of 14.47 acre watersheds (Mapping Headwater Streams: Intermittent and Perennial Headwater Stream Model Development and Spatial Application North Carolina Division of Water Quality Final Report for Federal Highway Administration Contract: Feasibility Study WBS: 36486.4.2, January 29, 2008). Further, agricultural activities have resulted in heavy sediment loads entering the channel and filling/obscuring the channel. This is supported by the presence of a defined channel in the forested upstream reach. WK Dickson personnel observed seasonal stream flow in UT4 during the fall of 2010 and winter of 2011 and completed a NCDWQ Stream Identification Form that scored 26 points (intermittent). There is a defined drainage way swale with FACW and OBL vegetation. EBX proposes the extent of the hydrophytic vegetation be considered the channel and buffer restoration be allowed for 50 feet extending outward from that point.

Daniel Ingram

From: Martin Hovis [mailto:martin@ebxusa.com]
Sent: Tuesday, February 28, 2012 12:53 PM
To: Daniel Ingram
Subject: RE: Hockett Dairy and Green Valley Farms Buffer Site Cape Fear 03

From: Homewood, Sue [mailto:sue.homewood@ncdenr.gov]
Sent: Monday, February 27, 2012 12:37 PM
To: Martin Hovis
Subject: RE: Hockett Dairy and Green Valley Farms Buffer Site Cape Fear 03

Hi Martin,

I confirm that these statements are all accurate. If there are intermittent or perennial streams in these locations, as determined by the NCDWQ Stream Determination Manual that is in use at that time, then buffer credit would be allowed.

Sue Homewood
NC DENR Winston-Salem Regional Office
Division of Water Quality
585 Waughtown Street
Winston-Salem, NC 27107
Voice: (336) 771-4964
FAX: (336) 771-4630

E-mail correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Martin Hovis [mailto:martin@ebxusa.com]
Sent: Friday, February 24, 2012 1:44 PM
To: Homewood, Sue
Subject: Hockett Dairy and Green Valley Farms Buffer Site Cape Fear 03

Mrs. Homewood

I hope you are doing well.

We are in the process of developing our Mitigation Plans for the Hockett Dairy and Green Valley Farms Buffer sites we were awarded for RFP# 16-003567.

Would you please confirm the following statement to be true regarding the buffer acreage for both Sites?

On September 01, 2011 the NCEEP, NCDWQ and EBX visited the Green Valley Farms and Hockett Dairy Buffer sites. Upon viewing the sites NCDWQ, Sue Homewood, noted two sections of concern.

Hockett Dairy UT1 –Ms. Homewood (NCDWQ) agreed that buffer restoration would be advantageous at this location due to the immediate proximity of Randleman Lake and the direct nutrient and sediment input from the cattle operations. However, Ms. Homewood felt this drainage lacked a defined channel and was not subject to the Randleman Buffer rules. Ms. Homewood stated that if the channel was contained in a gully, such as the one on the back of the upstream dam, then the channel would qualify for buffer restoration credit. Ms. Homewood also stated that she could not define the top of bank location and would not be able to establish the buffer zones. For these reasons Ms. Homewood felt the drainage feature was not suitable for mitigation. She did state that if a channel formed by the end of the five-year monitoring then the credits would be allowed.

Farm Pond 1 – Ms. Homewood agreed that buffer restoration would be advantageous at this location due to the

3/9/2012

immediate proximity of Randleman Lake and the direct nutrient and sediment input from the cattle operations. However, Ms. Homewood felt that Farm Pond 1 lacked a connection to a downstream water body due to UT1 not being subject to the Randleman Buffer Rules. As a result, Farm Pond 1 is not subject to the Randleman Buffer rules. For these reasons Ms. Homewood felt the pond was not suitable for mitigation. She did state that if UT1 was contained in a defined channel then the Pond 1 buffer restoration credits would be allowed.

Green Valley UT4 –Ms. Homewood felt the upper 309 linear feet of this drainage feature was a linear wetland that lacked a defined channel and was not subject to the Randleman Buffer rules. Ms. Homewood also stated that she could not define the top of bank location and would not be able to establish the buffer zones. For these reason Ms. Homewood felt the upper UT4 drainage feature was not suitable for mitigation. She did state that if a channel formed by the end of the five-year monitoring then the credits would be allowed. Ms. Homewood agreed with the Technical Proposal that the lower 190 linear feet of UT4 buffer restoration is allowable and appropriate under the Randleman Buffer Rules, resulting in 0.28 acres of buffer restoration.

EBX plans to plant trees and place a conservation easement over the areas in question (Hockett Dairy UT1 and Farm Pond 1, and Green Valley Farm's UT4 upper 309 Linear Feet) in anticipation that at the end of the 5 year monitoring period there will be a defined channel. We feel the watershed size and defined drainage swale would develop a channel formation if the access of equipment and cattle was eliminated.

Environmental Banc & Exchange, LLC

Martin W. Hovis

Project Manager

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