



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, MOBILE DISTRICT
MONTGOMERY FIELD OFFICE
605 MAPLE STREET
BUILDING 1429, ROOM 105
MAXWELL AFB, ALABAMA 36112

CESAM-RD-I-N
PUBLIC NOTICE: SAM-2012-00625-JSC

February 4, 2013

JOINT PUBLIC NOTICE
U.S. ARMY CORPS OF ENGINEERS
AND
STATE OF ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

**ALABAMA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES AND
FOREVER WILD LAND TRUST PROPOSED STREAM MITIGATION BANK IN
HALE COUNTY, ALABAMA**

TO WHOM IT MAY CONCERN:

This District has received a complete mitigation banking prospectus for the establishment of a mitigation bank referred to as the **Little German Creek Stream Mitigation Bank**. Please communicate this information to interested parties.

BANK SPONSOR: Alabama Department of Conservation and Natural Resources-
State Lands Division
Attention: Mr. Doug Deaton
64 North Union Street, Suite
Montgomery, Alabama 36104

LOCATION: The proposed 275 -acre mitigation bank site is located approximately 13 miles northeast of the City of Demopolis, Hale County, Alabama. The property is surrounded by the approximately 4,500 acre M. Barnett Lawley Forever Wild Field Trial Area. It can be further described as being located within in portions of Sections 3, 4, 5, 6, and 10 of Township 19 North, and Range 4 East. The center coordinates for the proposed bank site are latitude 32.641786° N and longitude 87.674667° W.

OPERATION: The Alabama Department of Conservation and Natural Resources- State Lands Division and the Forever Wild Land Trust (SLD-FW) are proposing to establish the Little German Creek commercial stream mitigation bank to generate compensatory mitigation credits for purchase

by interested Department of Army (DA) permit applicants. Credits may be purchased to fulfill stream mitigation requirements for various project-related stream impacts subject to U.S. Army Corps of Engineers (Corps) regulatory authority pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Approval for recipients of DA permits to use mitigation bank credits will be determined on a case-by-case basis at the time of permit evaluation. All stream credit calculations will be determined using the Mobile District's Standard Operating Procedures Compensatory Stream Mitigation Guidelines (2012). The bank's proposed service area is the Lower Black Warrior Watershed (HUC 03160113). Use of bank outside of the designated service area would be authorized on a case-by-case basis and would require the use of the Mobile District Proximity Factor Method (2009).

OBJECTIVES: The SLD-FW's stated overall objectives are to "produce diverse, highly functional free-flowing streams with natural forest buffers through stream restoration, stream preservation, riparian buffer restoration, and riparian buffer enhancement along approximately 24,367 linear feet of impaired streams. This will be accomplished through removal of man-made dams, Priority 1 and Priority 2 stream restoration, the planting of native riparian buffers, controlling privet and other non-native invasive species, and providing permanent protection and management to an area previously impacted by agricultural and aquaculture activities." Specific details regarding how the sponsor proposes to meet these objectives are found in the attached prospectus for the proposed mitigation bank.

On 10 April 2008 the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency issued new regulations, in the Federal Register, Vol. 73, No. 70, governing compensatory mitigation for losses of aquatic resources. The new regulation, 33 CFR 332 – Compensatory Mitigation for Losses of Aquatic Resources, establishes performance standards and criteria for mitigation projects including mitigation banks. Part 33 CFR 332.8 addresses requirements for establishing, operating, and maintaining mitigation banks that provide credits to satisfy mitigation requirements of the Clean Water Act, Section 404 permit program. Recognizing the potential benefits mitigation banking offers for streamlining the permit evaluation process and providing more effective mitigation for authorized impacts to wetlands, the agencies encourage the establishment and appropriate use if mitigation banks in the Section 404 program. This guidance became effective 9 June 2008.

An interagency group of Federal and State regulatory and resource agency representatives, as appropriate given the projected use for the bank, referred to as the Interagency Review Team (IRT), is signatory to a banking instrument and oversees the establishment, use and operation of a mitigation bank. Information provided in the prospectus will serve as the basis for establishing a banking instrument which will describe in detail the physical and legal characteristics of the bank and how the bank will be established and operated.

The Corps is soliciting comments from the public; Federal, State and local agencies and officials;

February 4, 2013

Indian Tribes; and other interested parties for consideration while evaluating this proposed activity. Copies of all comments received will be distributed to the other members of the IRT and the bank sponsor for full consideration in the development of the mitigation bank.

Comments concerning this Public Notice should be received within 30 days of the date of this public notice and should refer to number **SAM-2012-00625-JSC** and direct your correspondence to the District Commander, U.S. Army Engineer District, Mobile, Montgomery Field Office, 605 Maple Street, Building 1429, Room 105, Maxwell AFB, Alabama 36112; with a copy to the Alabama Department of Environmental Management, Coastal Section, 4171 Commanders Drive, Mobile, Alabama 36615. If you have any questions concerning this publication, please contact Mr. James Cherry, Project Manager, at james.s.cherry@usace.army.mil or telephone number (334) 953-2172.

MOBILE DISTRICT
U.S. Army Corps of Engineers

Enclosures

**PROSPECTUS
LITTLE GERMAN CREEK STREAM MITIGATION BANK
HALE COUNTY, ALABAMA**

Lower Black Warrior Watershed (HUC 3160113)

**SPONSOR:
Alabama Department of Conservation and Natural Resources**

**State Lands Division
and
Alabama Forever Wild Land Trust**

**64 North Union Street, Room 479
Montgomery, AL 36104**



File # SAM-2012-000625-JSC

**SUBMITTED TO:
Mobile District Interagency Review Team
Representing:
U.S. Army Corps of Engineers; Mobile District
U.S. Environmental Protection Agency; Region IV
U.S. Fish and Wildlife Service
Alabama Department of Environmental Management
Mississippi Department of Marine Resources
Mississippi Department of Environmental Quality
Mississippi Department of Wildlife, Fisheries, and Parks**

PREPARED BY:



GOODWYN | MILLS | CAWOOD

February 4, 2013

TABLE OF CONTENTS

I. BANK OBJECTIVES.....1

II. SITE LOCATION.....1

III. PROPOSED SERVICE AREA.....1

IV. PURPOSE AND NEED2

V. ESTABLISHMENT AND OPERATION2

VI. LONG-TERM MANGMENT3

VII. SPONSOR QUALIFICATIONS.....3

VIII. HISTORICAL LAND USE3

IX. ECOLOGICAL SUITABILITY4

X. PROPOSED MITIGATION ACTIVITIES7

XI. TECHNICAL FEASIBILITY8

FIGURES

Figure 1 General Location Map

Figure 2 Quadrangle Map with Site Boundary

Figure 3 Mitigation Service Area Map

Figure 4 2011 Aerial Photograph with Stream Locations

Figure 5 1955 Historical Aerial

Figure 6 1974 Historical Aerial

Figure 7 1981 Historical Aerial

Figure 8 Streams 1 and 2 Existing

Figure 9 Stream 4 Existing

Figure 10 Streams 7, 8, 9, and 10 Existing

Figure 11 Streams 1 and 2 Proposed

Figure 12 Stream 4 Proposed

Figure 13 Streams 7, 8, 9, and 10 Proposed

I. BANK OBJECTIVES

The Alabama Department of Conservation and Natural Resources (ADCNR) State Lands Division and The Alabama Forever Wild Land Trust (Sponsors) with the assistance of Goodwyn, Mills, and Cawood (GMC) propose the establishment of a commercial stream mitigation bank. The proposed mitigation bank will be established to offset unavoidable impacts to waters of the United States authorized through the issuance of Department of the Army (DA) permits pursuant to section 404 of the Clean Water Act (33 U.S.C. 1344) and/or sections 9 or 10 of the Rivers and Harbors Act 1899 (33 U.S.C 401, 403).

The objectives of the proposed bank will be to produce diverse, highly functional free-flowing streams with natural forest buffers through stream restoration, stream preservation, riparian buffer restoration, and riparian buffer enhancement along approximately 24,367 linear feet of impaired streams. This will be accomplished through removal of man-made dams, Priority 1 and Priority 2 stream restoration, the planting of native riparian buffers, controlling privet and other non-native invasive species, and providing permanent protection and management to an area previously impacted by agricultural and aquaculture activities.

The proposed bank is located in the Lower Black Warrior watershed, within the Black Warrior River watershed. According to the Black Warrior River Watershed Management Plan, impairments from agricultural sources are the second most frequent cause of impairment within the Black Warrior River Basin. The proposed bank will address the need to restore and enhance stream channels within the Black Warrior River watershed that have been impaired by agricultural and aquaculture activities.

II. SITE LOCATION

The proposed mitigation bank is located on an approximately 4,500 acres tract. The property is located 13 miles northeast of the City of Demopolis (Figure 1). The property can further be described as being located west of Highway 69 and north of Hale County Road 16 in Hale County, Alabama. The center coordinates of the property are Latitude: 32.641786° and Longitude: -87.674667°. The property can be found on the Casemore and Melton, Alabama USGS quadrangle maps in Township-19-North, Range-4-East, Sections 3, 4, 5, 6, 9, and 10. The proposed mitigation bank consists of three (3) parcels totaling approximately 275 acres, within the 4,500 acre tract (Figure 2).

III. PROPOSED SERVICE AREA

The proposed mitigation bank is located in the Alabama River Subregion of the South Atlantic-Gulf Region, as described in the State of Alabama Hydrologic Unit Map (USDA 1995¹). The site lies within the Lower Black Warrior Watershed (Hydrologic Unit Code (HUC) 3160113) (Figure 3). The Lower Black Warrior Watershed is proposed as the primary (no penalty) Mitigation Service Area (MSA). The MSA watershed is located within Hale, Tuscaloosa, Bibb, Perry, Marengo, and Greene counties. The Lower Black Warrior watershed has a total drainage area of 1,458 square miles. The Mobile District 2009 approved proximity factor method will be used for impacts outside the MSA on a case by case basis.

¹ USDA Soil Conservation Service. 1995. State of Alabama Hydrologic Unit Map with Drainage Areas by Counties and Sub-watersheds.

IV. PURPOSE AND NEED

Current and future permit applications warrant the need for a mitigation bank in this service area. Data obtained from the USACE Mobile District indicates that 48 Nationwide Permits and 6 Individual Permits have been issued within the proposed MSA over the past ten (10) years. A comparison of National Land Cover Data (NLCD) shows that high intensity development, medium intensity development, and low intensity development increased by a total of 4.4% between 2001 and 2006 within the proposed MSA. This development trend is expected to continue due to growth from Tuscaloosa along Interstate 20 and the proposed extension of Interstate 85. Permits for natural resource extraction are also expected to increase within the MSA. Current mitigation options for these permits are to either mitigate on-site/offsite, purchase credits from the one (1) approved mitigation bank within the service area, or purchase credits through an approved mitigation bank outside of the service area. On-site and off-site permittee responsible mitigation of impacts to streams is challenging for many reasons including the lack of knowledge and expertise to implement the mitigation, disruption of onsite mitigation opportunity due to the disturbance of the geologic strata during the mining process, and the ability to ensure long-term management of the mitigation site. Currently there is only one mitigation bank within the proposed service area, resulting in limited options available for appropriate mitigation.

V. ESTABLISHMENT AND OPERATION

The Sponsor purchased the property in 2008, and plans to retain ownership, and record the proposed mitigation bank boundary in a Conservation Easement to be held by a third-party entity with enforcement rights. The Sponsor will be responsible for preparing a Mitigation Banking Instrument (MBI) to establish the management plan and guidelines for the proposed mitigation bank. The Mobile District Interagency Review Team (IRT) will act as the approval board for the proposed MBI and will provide oversight to ensure that the provisions of the MBI are appropriately carried out.

A total of ten (10) stream reaches were identified on the subject property (Figure 4). Specific stream reaches to be utilized in the proposed mitigation bank have been established throughout the site based on existing channel physical conditions and ecological variances. The streams to be used for proposed mitigation include: Streams 1, 2, 4, 7, 8, 9, and 10. The Sponsor will use the 2012 (Mobile District) Compensatory Stream Mitigation Standard Operating Procedures and Guidelines (SOP) to determine stream credits generated through in-stream restoration, stream preservation, riparian buffer restoration, and riparian buffer enhancement.

As credits are released to the Sponsor, they can be withdrawn from the mitigation bank to provide compensatory mitigation for impacts to waters of the United States authorized by the issuance of DA permits. The Sponsor will coordinate with applicants for stream impacts to provide information on the mitigation service area and available credits. The responsibility for demonstrating that the credits constitute adequate and appropriate compensation for proposed impacts lies with the impact applicant. The Sponsor assumes responsibility and liability for performing the required mitigation to generate necessary credits. The presence or proposed use of the mitigation bank will not affect the requirement that a project go through the process of avoidance and minimization.

VI. LONG-TERM MANGMENT

The property will be subject to a legally binding Conservation Easement and long-term-stewardship board for management and protection of the natural condition of the property in perpetuity. The long-term stewardship board will consist of a five-member board consisting of two (2) members from the holder of the conservation easement and three (3) members appointed by the Sponsor, all of which will be approved by the IRT.

The long-term stewardship board will perform all work necessary to maintain the proposed mitigation bank, in perpetuity, in an ecological condition consistent with the final ecological requirements/performance standards required by the MBI. A Non-Wasting Escrow Account for the long-term management of the property will be established and the long-term stewardship board will have full and sole responsibility in managing the interest generated from this fund for long-term management activities. Maintenance will include any and all activities necessary to improve and sustain the ecological stream functions within the site. Such may include, but are not limited to, in-stream maintenance to remove obstructions such as beaver dams, tree planting, and applications of mechanical and chemical means to control and eliminate exotic and non-native species within the riparian buffers. The board is also responsible for long-term monitoring requirements of the site and for providing access to the site for the IRT as required for inspections.

VII. SPONSOR QUALIFICATIONS

The Sponsor has purchased and/or leases more than 227,000 acres of land throughout Alabama for recreational use. These two divisions strive to provide all Alabamians with outdoor recreational activities while also improving ecosystem function. The Sponsor currently has one USACE Mobile District approved bank, Grand Bay Mitigation Bank, in the Escatawpa watershed (HUC 3170008). The Sponsor will be responsible for the implementation of the proposed management plan and will operate the stream bank following approval of the MBI. The Sponsor has retained GMC as a consultant to provide the necessary engineering and environmental services in the development of the MBI and assist in the implementation of the proposed management plan. GMC consists of a collection of qualified biologists, environmental engineers, professional wetland scientists, stream ecologists, and environmental scientists. GMC has received MBI approval for McLemore Mitigation Bank, Black Swamp Mitigation Bank, Broadview Mitigation Bank, Midcreeks Mitigation Bank, and Cahaba River Mitigation Bank, all within the Mobile District.

VIII. HISTORICAL LAND USE

According to the Alabama Department of Corrections (ADOC) website, the Farquhar Cattle Ranch was purchased in 1940 to supply ADOC with beef. The Ranch maintains minimum and trustee custody inmates, which when not working on the Ranch, provide free labor to community work projects for local county, city, and other government agencies. The Ranch's primary operations were cattle and catfish production. The ranch consisted of approximately 625 mature cattle which were allowed to graze 1,800 acres of pastureland. The Ranch kept about 300 acres for hay production, as well as having some timberland. In addition, the property was used for commercial catfish production with 35 ponds on 400 acres. Of the ponds, 15 were production ponds, 4 were used primarily for brood ponds, and 16 ponds for fingerlings.

During the ADOC's use of the property numerous streams were dammed in order to create ponds or channelized in order to use the surrounding area for agricultural use. Historical photographs from 1955 indicate there were no ponds located within the property boundary and all the streams onsite appeared to be free flowing and naturally functional (Figure 5). Aerial photographs from 1974 depict several areas throughout

the site had been dammed to create multiple ponds and other areas had been channelized to use the surrounding land for agricultural purposes (Figure 6). Aerial photographs from 1981 show additional ponded and channelized areas throughout the property (Figure 7).

Following the ADOC's use of the property, the sponsor purchased the property in 2008. The site has been used for recreational opportunities to include hunt trials, field trials, and handicap hunts.

IX. ECOLOGICAL SUITABILITY

Stream 1 and Stream 2 are located on the southeastern portion of the property (Figure 8). Stream 2 converges with Stream 1 just prior to its convergence with Big German Creek. Big German Creek then flows southwest to its convergence with Lake Demopolis and ultimately to the Black Warrior River.

Stream 4 is located in the central portion of the property (Figure 9). Stream 4 flows south to its convergence with Big German Creek. Big German Creek then flows southwest to its convergence with Lake Demopolis and ultimately to the Black Warrior River.

Stream 7, Stream 8, Stream 9, and Stream 10 are located on the northwest portion of the property (Figure 10). Stream 7, Stream 8, and Stream 9 generally flow west to their confluence with Stream 10. Stream 10 then flows southwest to its confluence with the Black Warrior River.

EXISTING ECOLOGICAL CONDITIONS

The streams onsite were evaluated to determine the ecological conditions throughout each reach. The reaches were evaluated for adequate riparian buffer, the presence of non-native species, and whether the reach was dammed/ponded or channelized. An adequate riparian buffer was considered to be at least 100 feet on each side of the stream for an intermittent stream. The presence of invasive species includes both Chinese Privet and Chinese Tallow trees. Whether the channel was dammed/ponded or channelized was determined by historical aeriels and current sinuosity.

The table below summarizes the existing ecological conditions at each stream reach.

EXISTING ECOLOGICAL CONDITIONS					
Stream	Reach	Inadequate Buffer	Non-Native Species Present	Dammed/Ponded	Channelized
1	1	✓	✓		✓
	2	✓		✓	
2	-	✓	✓		✓
4	1	✓	✓		✓
	2	✓	✓		✓
7	1	✓	✓		✓
	2	✓		✓	
8	1	✓	✓		
	2	✓		✓	
9	1	✓	✓		✓
	2	✓		✓	
10	1	✓	✓		
	2	✓		✓	
	3		✓		

Additional impediments not listed in the table include a road crossing near the central portion of Stream 4. Stream 4 Reach 1 flows south to the crossing, then is channelized into Big German Creek, located to the east. Reach 2 starts at the crossing and flows south to its confluence with Big German Creek (Figure 9). The road crossing is impeding connectivity that is present in free-flowing stream systems.

PHYSICAL CONDITIONS

Physical conditions were collected using the Rosgen Stream Classification System based on the five delineative criteria: entrenchment ratio, width to depth ratio, water surface slope, sinuosity, and channel bed materials. A cross section was taken at a representative riffle on each stream reach to determine the width to depth ratio. Preliminary topographical information was used to determine the entrenchment ratio, sinuosity, and water surface slope.

The table below summarizes the existing physical conditions collected at each stream reach.

EXISTING PHYSICAL CONDITIONS										
Stream	Reach	Length	Order	Drainage Area	ER⁺	W/D⁺ Ratio	K⁺	Slope	Substrate	Rosgen Class
1	1	1,515	1 st	0.24	*	*	*	*	*	*
	2	2,515	2 nd	0.45	>2.2	19.13	1.10	<1.5%	silt/clay	C6 w/o K
2	-	1,180	1 st	0.15	4.17	16.09	1.10	<1.0%	silt/clay	C6 w/o K
4	1	3,214	1 st	0.10	20.29	24.43	1.01	<0.5%	silt/clay	C6 w/o K
	2	3,074	1 st	0.02	1.41	36.96	1.01	<0.5%	silt/clay	B6 w/o K
7	1	1,397	1 st	0.10	2.51	33.08	1.10	<1.0%	silt/clay	C6 w/o K
	2	286	1 st	0.13	*	*	*	*	*	*
8	1	1,706	1 st	0.17	2.57	6.46	1.10	<1.0%	silt/clay	E6 w/o K
	2	788	1 st	0.22	*	*	*	*	*	*
9	1	939	1 st	0.08	9.74	7.09	1.10	<1.0%	silt/clay	E6 w/o K
	2	729	1 st	0.10	*	*	*	*	*	*
10	1	1,572	1 st	0.06	24.02	8.26	1.10	<1.0%	silt/clay	E6 w/o K
	2	1,973	2 nd	0.52	*	*	*	*	*	*
	3	3,479	2 nd	0.91	>2.2	14.00	1.04	<1.0%	silt/clay	C6 w/o K

+ Abbreviations:

ER – Entrenchment Ratio

W/D Ratio – Width to Depth Ratio

K – Sinuosity

* Reach is currently located within a pond and no baseline data was collected

Reference reaches have been identified in the same physiographic region for this project. Additional reference information will continue to be collected as the project progresses. The table below summarizes the reference conditions obtained.

REFERENCE PHYSICAL CONDITIONS						
Drainage Area	ER⁺	W/D⁺ Ratio	K⁺	Slope	Substrate	Rosgen Class
0.12-0.45	2.9-11.7	5.0-14.5	1.2-1.6	0.1-0.7%	silt/clay	E6/C6

Given the existing physical conditions compared to the reference physical conditions, the streams onsite are suitable for restoration.

EXISTING HABITAT CONDITIONS

A habitat assessment was performed using the "Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers" produced by the United States Environmental Protection Agency. The table below summarizes the existing and reference habitat conditions.

<u>HABITAT CONDITIONS</u>																
	<u>EXISTING</u>														<u>REFERENCE</u>	
<u>Stream</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>4</u>	<u>4</u>	<u>7</u>	<u>7</u>	<u>8</u>	<u>8</u>	<u>9</u>	<u>9</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>RANGE</u>	<u>AVERAGE</u>
<u>Reach</u>	<u>1</u>	<u>2</u>	<u>-</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>-</u>	<u>-</u>
Epifaunal Substrate/ Available Cover	19	*	18	7	7	15	*	15	*	10	*	18	*	19	14-17	15.3
Substrate Characteristics	14	*	13	10	7	13	*	13	*	7	*	13	*	14	10-16	12
Pool Variability	8	*	10	1	0	8	*	8	*	5	*	10	*	8	13-18	16
Sediment Deposition	18	*	12	20	19	8	*	8	*	6	*	12	*	18	17-20	18.7
Channel Flow Status	18	*	18	12	19	17	*	17	*	14	*	18	*	18	17-19	18
Channel Alteration	18	*	18	1	1	14	*	14	*	16	*	18	*	18	16-20	18
Channel Sinuosity	5	*	7	0	0	10	*	10	*	11	*	7	*	5	15-19	17.3
Bank Stability (Left Bank)	9	*	7	10	10	8	*	8	*	8	*	7	*	9	9-10	9.3
Bank Stability (Right Bank)	9	*	7	10	10	8	*	8	*	8	*	7	*	9	8-9	8.3
Vegetative Protection (Left Bank)	9	*	6	7	8	6	*	6	*	6	*	6	*	9	8-10	9
Vegetative Protection (Right Bank)	9	*	6	7	8	6	*	6	*	6	*	6	*	9	8-10	8.7
Riparian Vegetative Zone Width (Left Bank)	8	*	5	3	3	6	*	6	*	7	*	5	*	8	8-10	9
Riparian Vegetative Zone Width (Right Bank)	8	*	8	3	3	6	*	6	*	7	*	5	*	8	7-10	8.3
TOTAL	152	-	135	91	95	125	-	125	-	111	-	132	-	152	-	168

* Reach is currently located within a pond and no baseline data was collected

Given the existing habitat conditions compared to the reference habitat conditions, the streams onsite are suitable for restoration.

X. PROPOSED MITIGATION ACTIVITIES

The proposed restoration activities for the mitigation site include Priority 1 Stream Restoration, Priority 2 Stream Restoration, Stream Preservation, Riparian Buffer Restoration, and Riparian Buffer Enhancement. These methods will either be solely utilized or utilized in combinations to complete the various mitigation objectives onsite. The table below summarizes the restoration techniques to be utilized on each stream reach.

PROPOSED MITIGATION ACTIVITIES						
Stream	Reach	Priority 1 Restoration	Priority 2 Restoration	Stream Preservation	Riparian Buffer Restoration	Riparian Buffer Enhancement
1	1	✓	✓		✓	
	2	✓			✓	
2	-			✓	✓	
4	1	✓			✓	
	2	✓			✓	
7	1	✓	✓		✓	
	2	✓			✓	
8	1	✓	✓		✓	
	2	✓			✓	
9	1	✓	✓		✓	
	2	✓			✓	
10	1			✓	✓	
	2	✓			✓	
	3			✓		✓

IN-STREAM RESTORATION

Stream 1 Reach 2, Stream 4 Reaches 1 and 2, Stream 7 Reach 2, Stream 8 Reach 2, Stream 9 Reach 2, and Stream 10 Reach 2 will require Priority 1 Restoration. These streams are either located within a pond or located in an area where the topography permits Priority 1 Restoration (Figures 11-13).

Stream 1 Reach 1, Stream 7 Reach 1, Stream 8 Reach 1, and Stream 9 reach 1 will require a blend of Priority 1 Restoration and Priority 2 Restoration. The majority of these reaches will require Priority 1 Restoration; however, the downstream portions will require Priority 2 Restoration. In order to effectively connect these reaches to the downstream portions and utilize the existing topography, small sections of these reaches will require floodplain excavation (Figures 11-13).

The newly restored streams will meet hydrologic objectives by restoring flood flows to the correct bankfull stage, dissipating energy by creating a meandering channel, and through restoring channel-forming flows to the appropriately sized channel. Fluvial geomorphological objectives will be achieved by creating the correct pattern, profile, and dimension for the stream and restoring the correct riffle-pool bedform sequences. Biological objectives will be achieved through the installation of in-stream features and habitat structures including but not limited to cross-vanes, log vanes, constructed riffles and step pools, and root wads.

Stream preservation will be included in the mitigation bank on Stream 2, Stream 10 Reach 1, and Stream 10 Reach 3. These reaches were identified as stable during the assessment of the mitigation bank.

RIPARIAN BUFFER RESTORATION

All the stream reaches, with the exception of Stream 10 Reach 3, will require riparian buffer restoration. The riparian buffers will be planted with target forest types based on reference vegetation identified within the watershed. Restoration of the riparian zone will meet hydrologic objectives by reducing flood velocities on the floodplain and encouraging infiltration and sediment deposition. Biological objectives will be met through adding native plants along the stream to improve channel shade, decrease water temperature, provide organic input, and improve terrestrial habitat.

Stream 10 Reach 3 will require riparian buffer enhancement. The removal of non-native and/or invasive species will be performed by means of herbicides.

XI. TECHNICAL FEASIBILITY

The proposed mitigation bank is a viable mitigation site that provides a landscape for technically feasible restoration activities. Although anthropogenic and natural causes have severely altered the aquatic features of the property, the proposed mitigation activities will restore ecological functions and enhance water quality within the watershed.

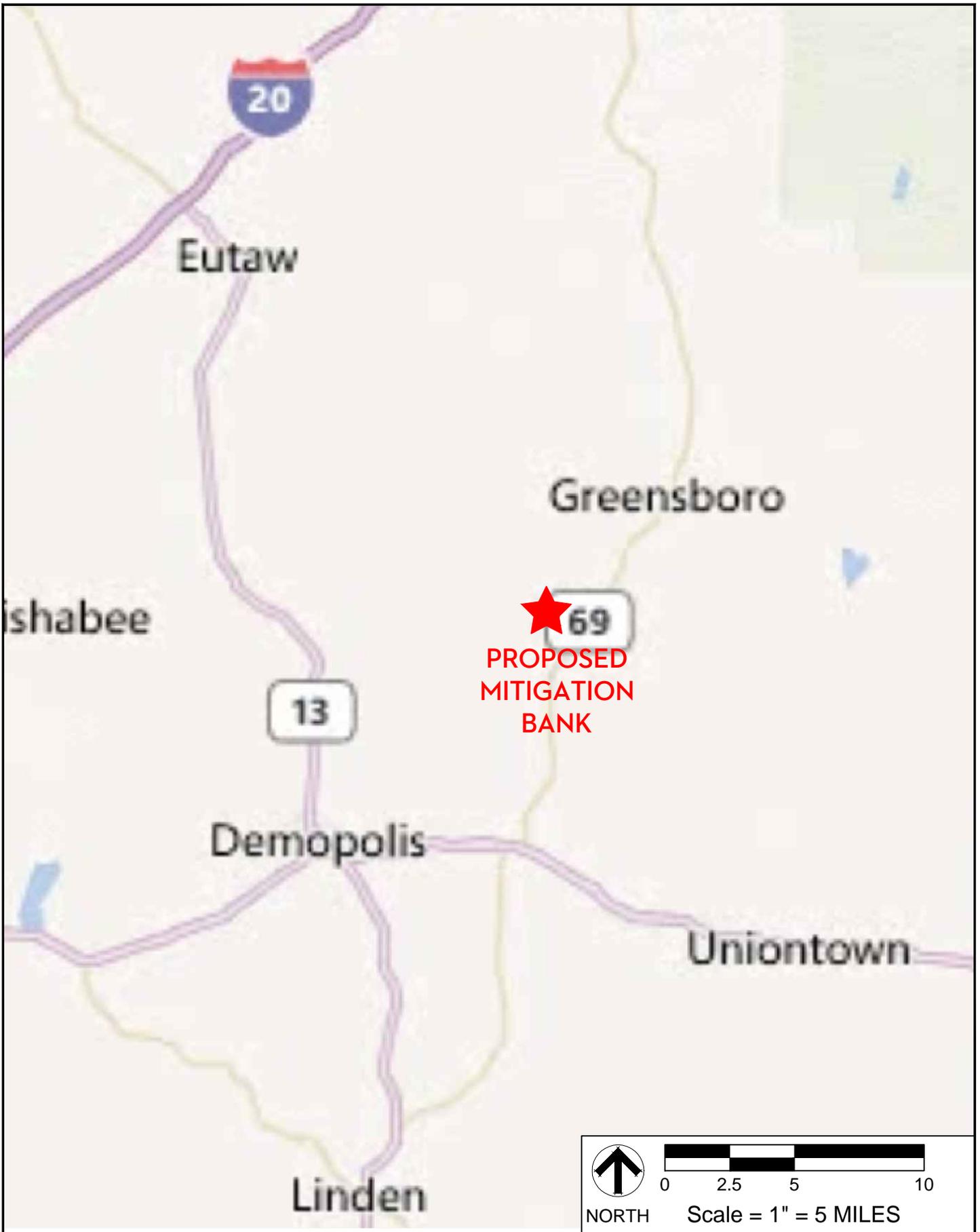
Priority 1 restoration is feasible for the restoration of streams onsite because the property contains an adequate floodplain width to accommodate a more natural sinuosity than what currently exists. The floodplain width is also conducive to a desirable entrenchment ratio that will allow adequate flooding at the bankfull stage.

Priority 2 restoration is feasible for the restoration of several small reaches onsite because a bankfull bench can be established along the reach while still allowing for the channel to tie into other confluences at a lower elevation. This option would require additional structures such as log weirs and cross veins to help control the grade. Both options are technically feasible, and the option that provides the most stable and ecologically beneficial restoration will be determined, in conjunction with the IRT while drafting the MBI.

In order for any in-stream restoration project to be successful, adequate data must be collected to determine the correct parameters for engineering and ecological design. Alabama and more particular, the Black Prairie District is limited in Regional Curve and reference reach data. In order to design a stable and ecologically healthy stream system, the Sponsor will identify and collect an adequate amount of reference reach data, within the Black Prairie District to facilitate well defined engineering parameters. Upon approval of the prospectus, the Sponsor will begin relevant hydrologic assessments using accepted methodology for parameters such as channel-forming discharge, precipitation/runoff relationships, flood frequency, and flow duration.

The restoration of riparian buffers along the streams onsite is also a technically feasible option. The proposed vegetation will be selected through the identification of target forest types identified within the watershed. The implementation of target forest type buffers will reduce flood velocities, while also allowing for sediment deposition in the floodplain and pollutant uptake by the vegetation: both of which will improve water quality in the watershed.

Unforeseen technical issues that arise will be addressed on a case by case basis in conjunction with the IRT and throughout the formulation of the MBI. At this time, all proposed mitigation activities are technically sound and are in conjunction with restoration methods and objectives as outlined in the 2012 Mobile District SOP.



REF. SHEET: SITE LOCATION MAP
 DESCRIPTION: 2009 MICROSOFT VIRTUAL EARTH ROADS

**PROPOSED STREAM
 MITIGATION BANK**
 HALE COUNTY, ALABAMA

FIGURE 1

SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB



NORTH

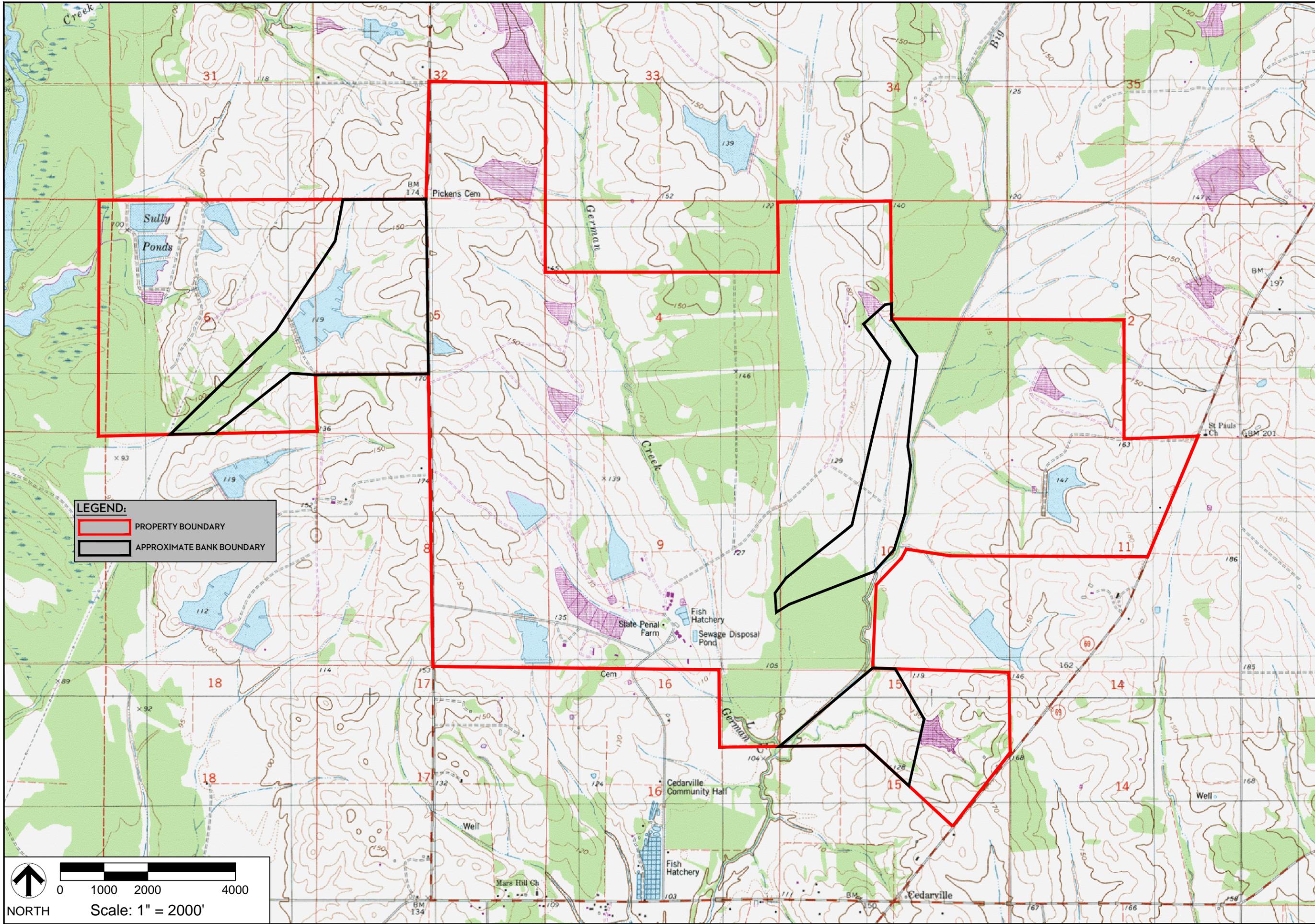


Scale = 1" = 5 MILES



GOODWYN | MILLS | CAWOOD

2660 EastChase Lane, Suite 200 | Montgomery, AL 36117
 Tel 334.271.3200 | GMCNETWORK.COM



LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE BANK BOUNDARY

 NORTH



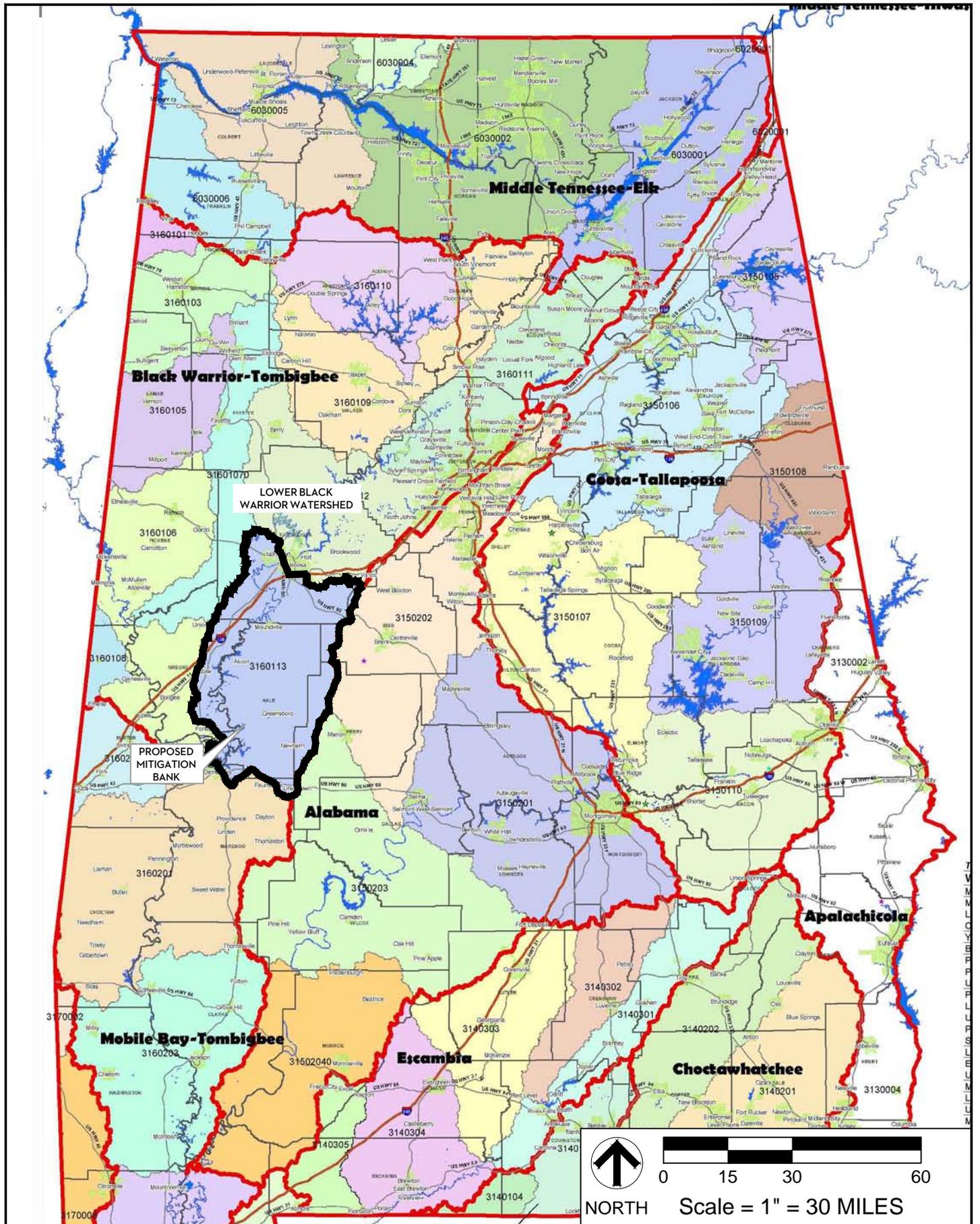
Scale: 1" = 2000'

FIGURE 2

SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB

REF. SHEET: USGS QUADRANGLE MAP WITH SITE BOUNDARY
 DESCRIPTION: CASEMORE AND MELTON, ALABAMA USGS QUADRANGLE MAP

PROPOSED STREAM MITIGATION BANK
 HALE COUNTY, ALABAMA

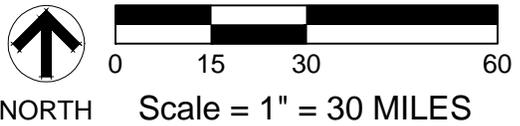


REF. SHEET: WATERSHED LOCATION MAP
 DESCRIPTION: HYDROLOGIC BASINS AND WATERSHEDS OF ALABAMA

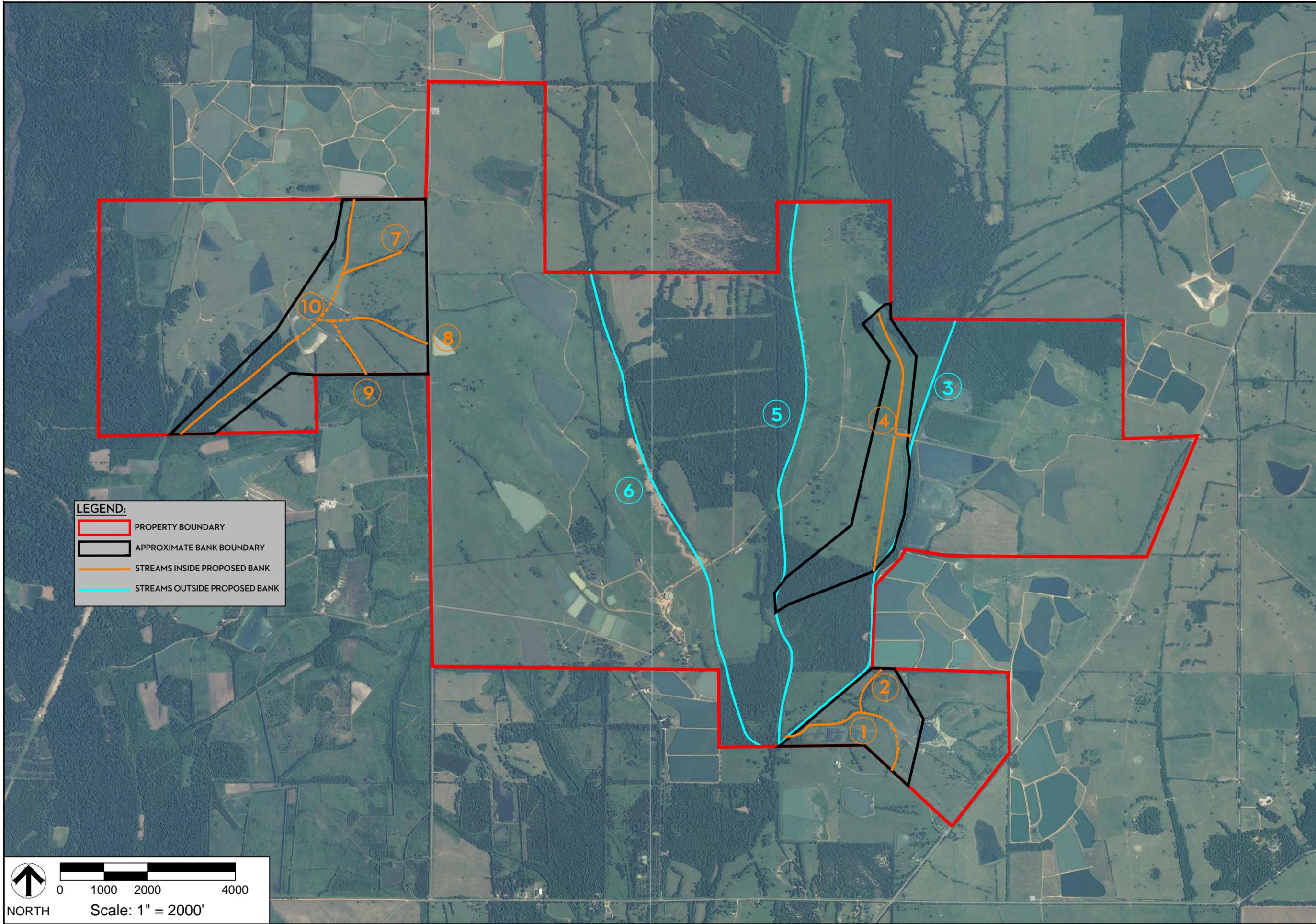
PROPOSED STREAM MITIGATION BANK
 HALE COUNTY, ALABAMA

FIGURE 3

SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB



GOODWYN | MILLS | CAWOOD
 2660 EastChase Lane, Suite 200 | Montgomery, AL 36117
 Tel 334.271.3200 | GMCNETWORK.COM



LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE BANK BOUNDARY
- STREAMS INSIDE PROPOSED BANK
- STREAMS OUTSIDE PROPOSED BANK

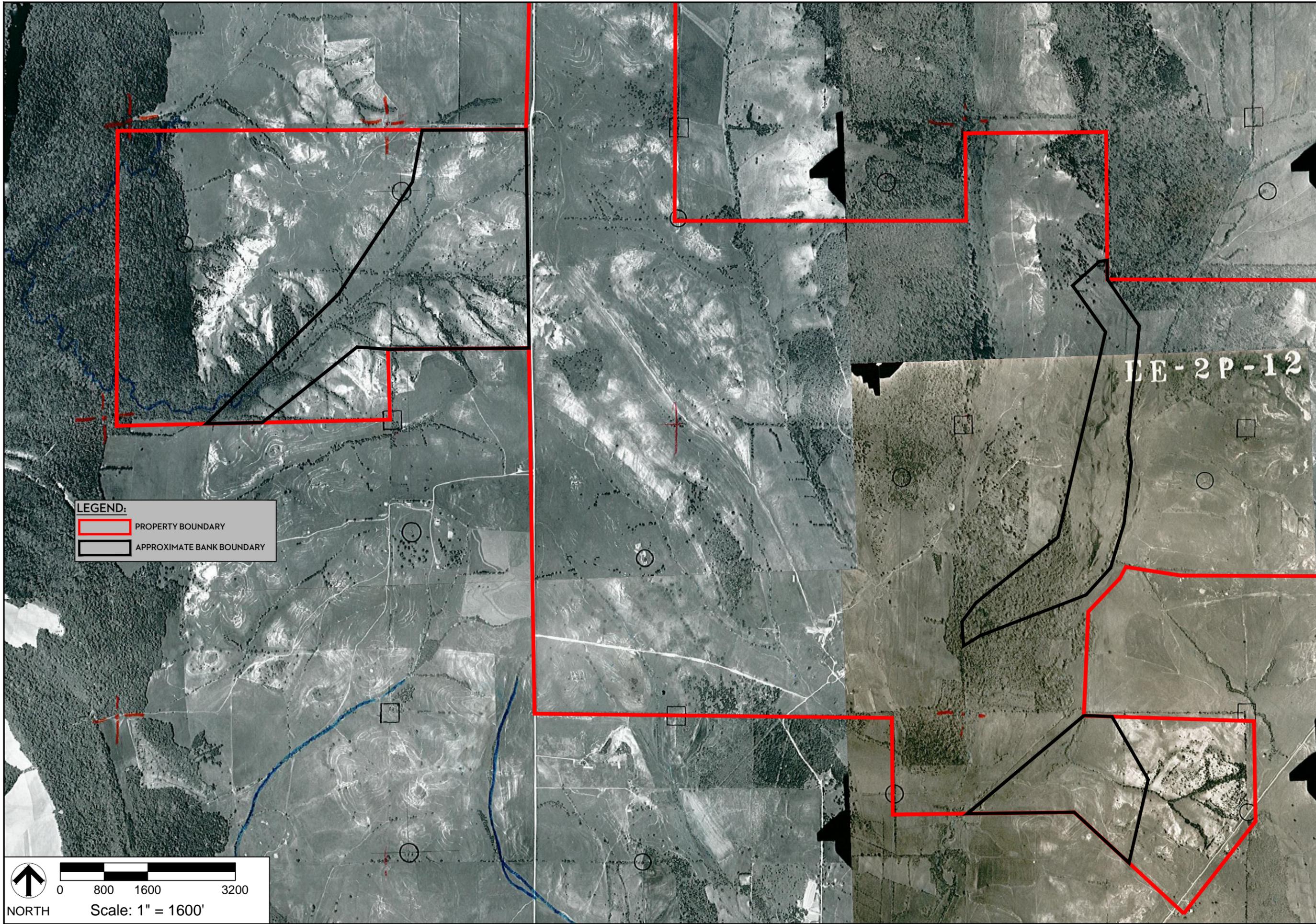
NORTH Scale: 1" = 2000'

REF. SHEET: 2011 AERIAL PHOTOGRAPH WITH STREAM LOCATIONS
 DESCRIPTION: 2011 AERIAL PHOTOGRAPH

PROPOSED STREAM MITIGATION BANK
 HALE COUNTY, ALABAMA

FIGURE 4

SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB



LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE BANK BOUNDARY

NORTH Scale: 1" = 1600'

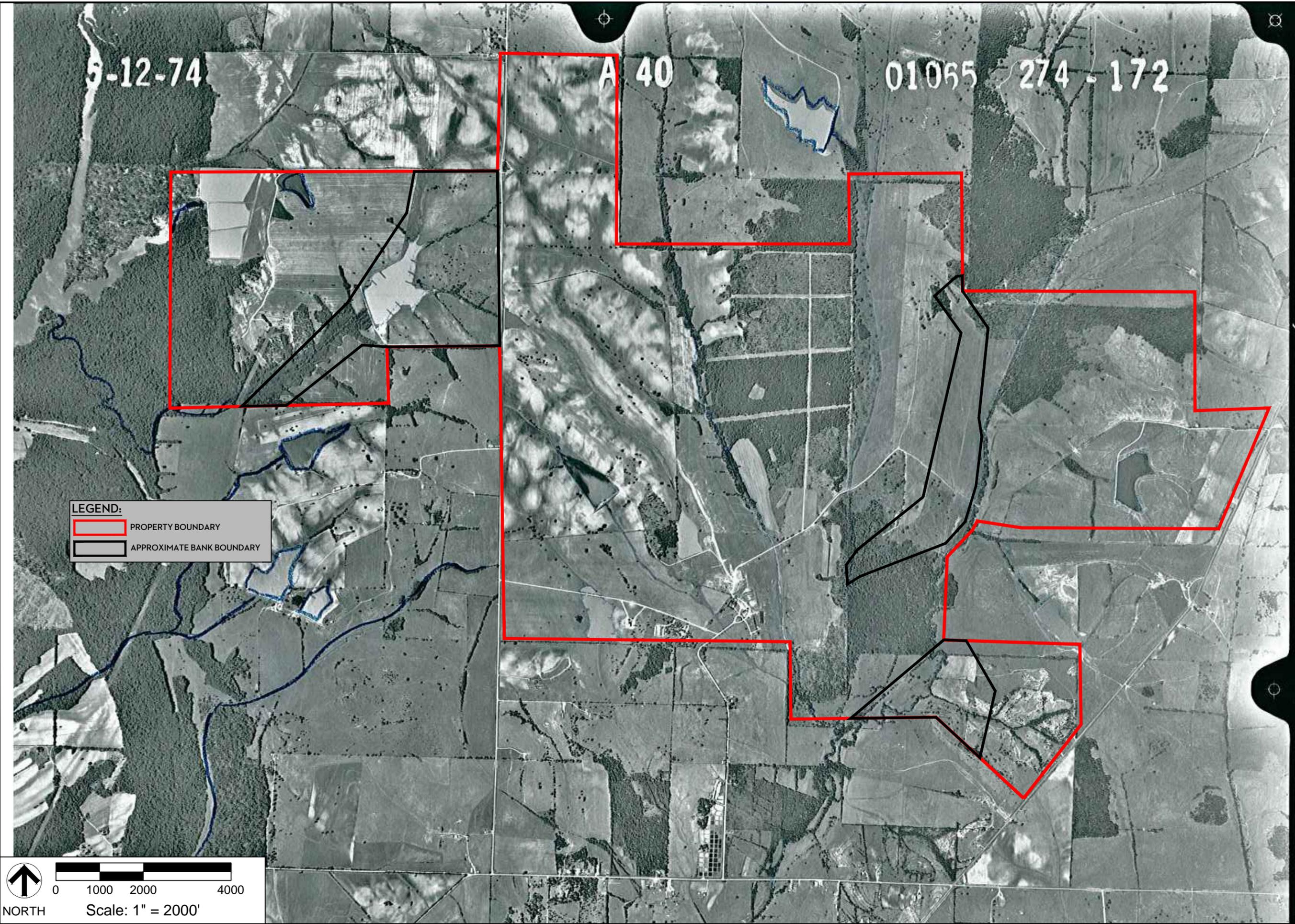
LE-2P-12

REF. SHEET: PROPERTY BOUNDARY
 DESCRIPTION: 1955 AERIAL PHOTOGRAPH

PROPOSED STREAM MITIGATION BANK
 HALE COUNTY, ALABAMA

FIGURE 5

SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB



LEGEND:
 PROPERTY BOUNDARY
 APPROXIMATE BANK BOUNDARY



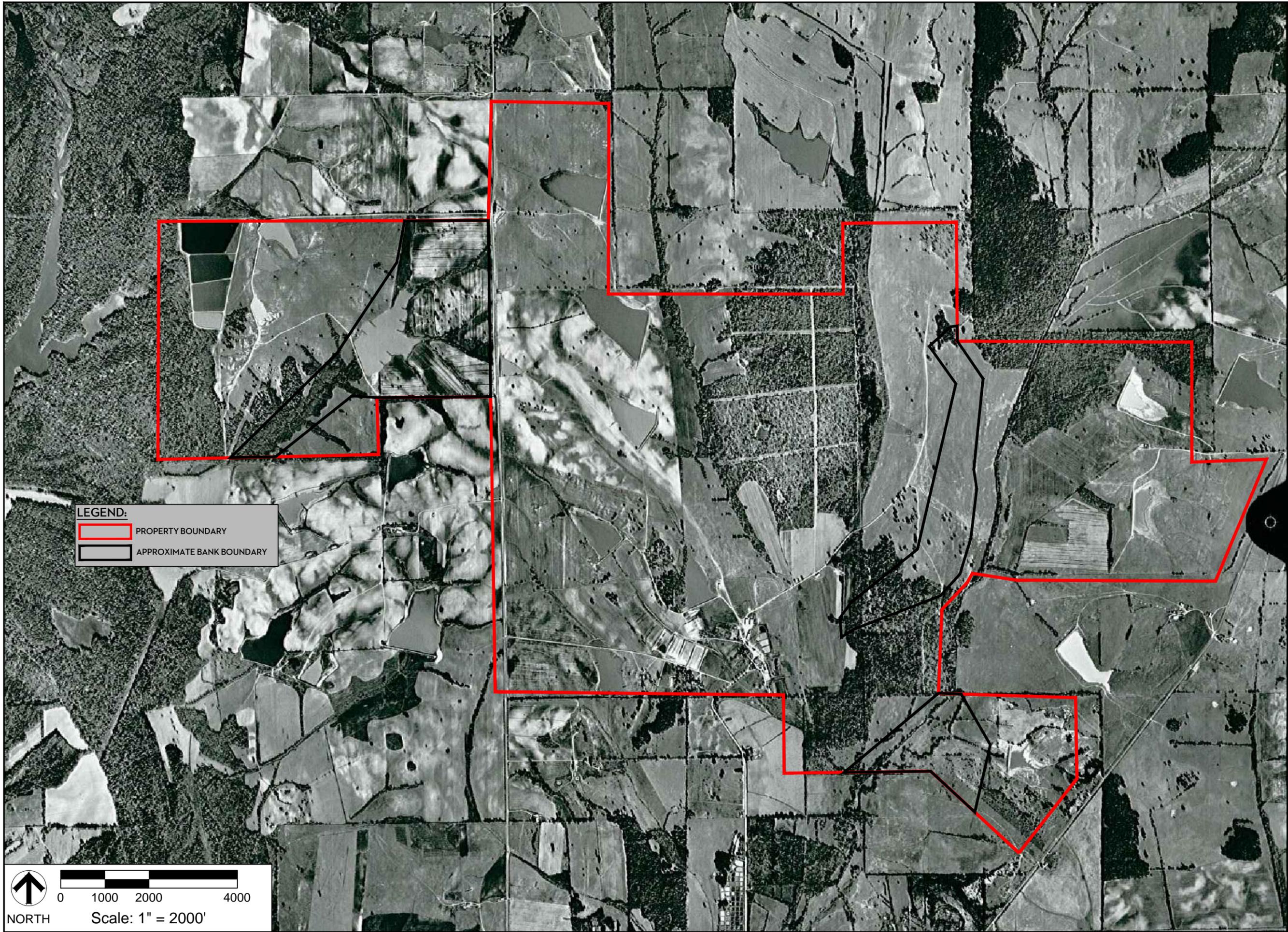
 NORTH Scale: 1" = 2000'

REF. SHEET: PROPERTY BOUNDARY
 DESCRIPTION: 1974 AERIAL PHOTOGRAPH

PROPOSED STREAM MITIGATION BANK
 HALE COUNTY, ALABAMA

FIGURE 6

SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB



LEGEND:
 PROPERTY BOUNDARY
 APPROXIMATE BANK BOUNDARY

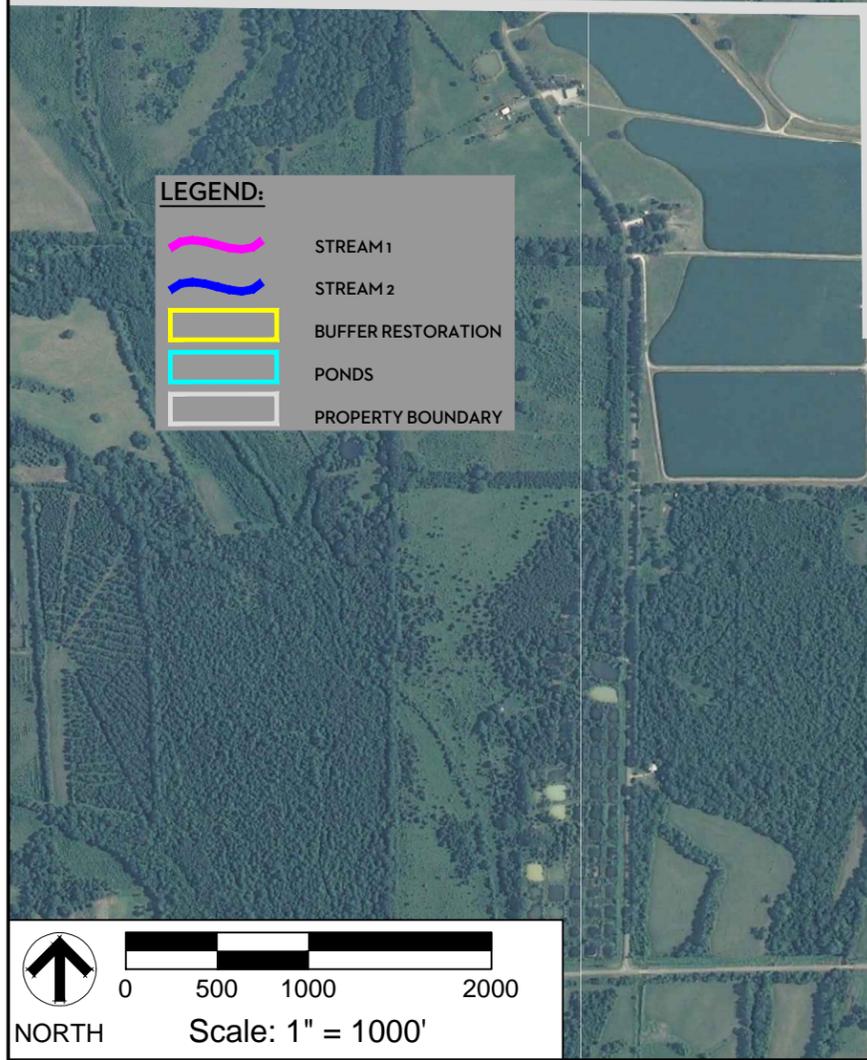
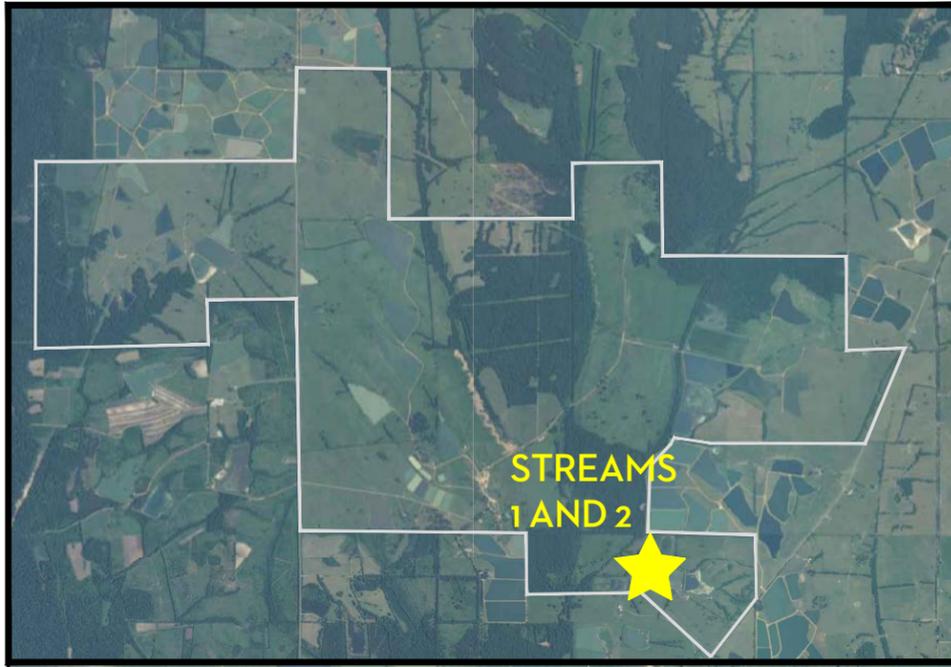
 NORTH

 Scale: 1" = 2000'

REF. SHEET: PROPERTY BOUNDARY
 DESCRIPTION: 1981 AERIAL PHOTOGRAPH
PROPOSED STREAM MITIGATION BANK
 HALE COUNTY, ALABAMA

FIGURE 7
 SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB


GOODWYN MILLS CAWOOD
 2660 EastChase Lane, Suite 200 | Montgomery, AL 36117
 Tel 334.271.3200 | GMCNETWORK.COM



LEGEND:

	STREAM 1
	STREAM 2
	BUFFER RESTORATION
	PONDS
	PROPERTY BOUNDARY

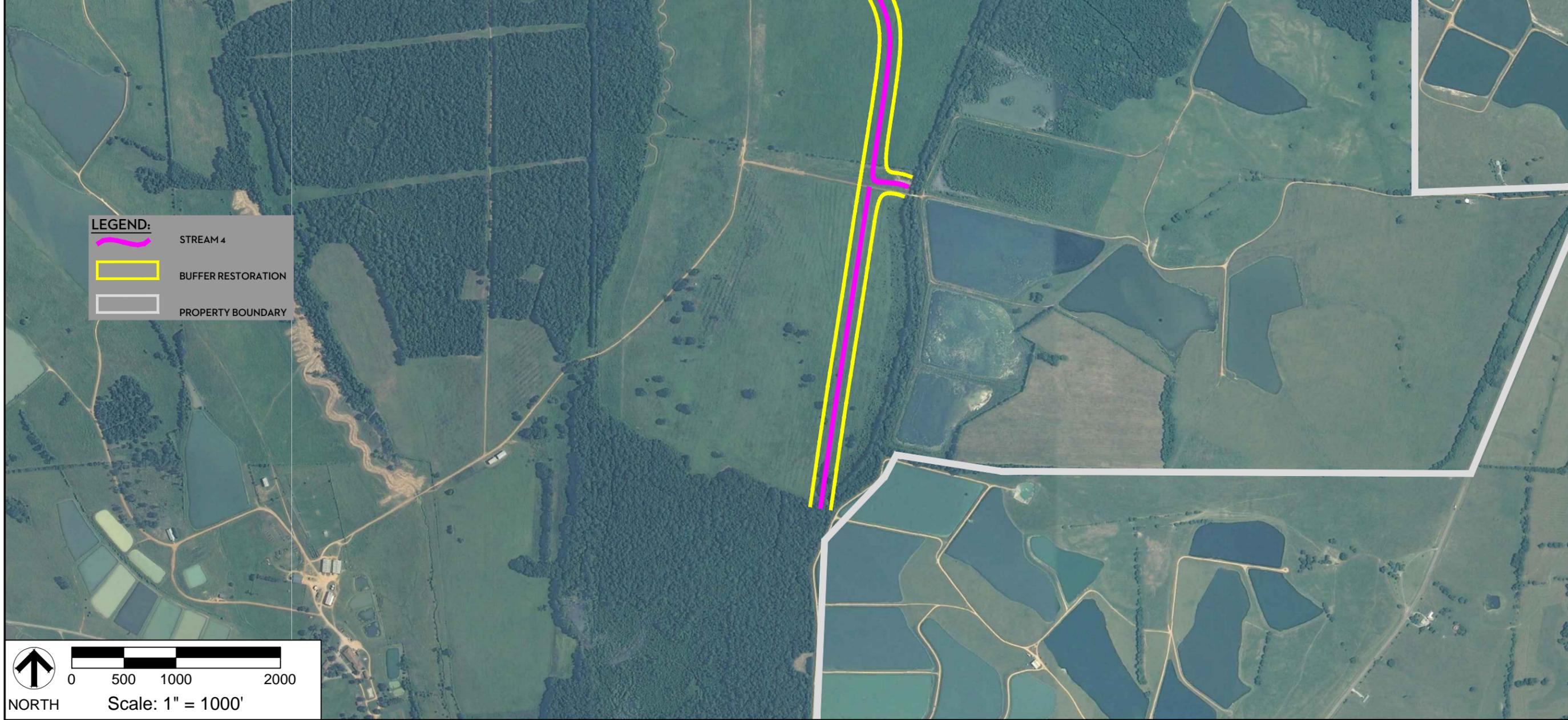
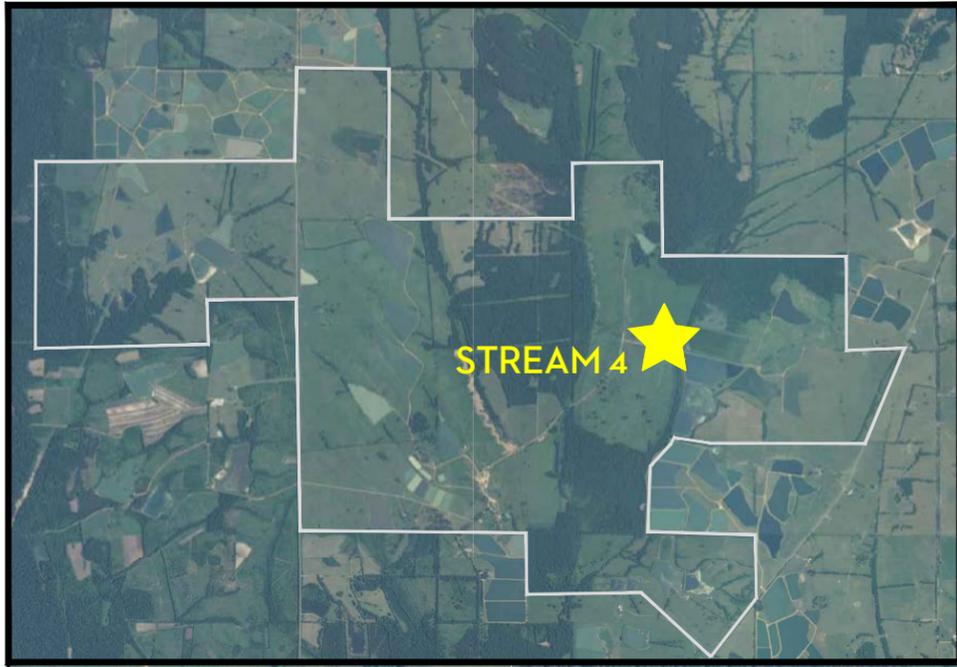
NORTH
 Scale: 1" = 1000'

REF. SHEET: STREAM 1 AND 2 EXISTING LOCATION
 DESCRIPTION: 2011 AERIAL PHOTOGRAPH

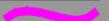
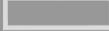
PROPOSED STREAM MITIGATION BANK
 HALE COUNTY, ALABAMA

FIGURE 8

SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB



LEGEND:

-  STREAM 4
-  BUFFER RESTORATION
-  PROPERTY BOUNDARY

 NORTH

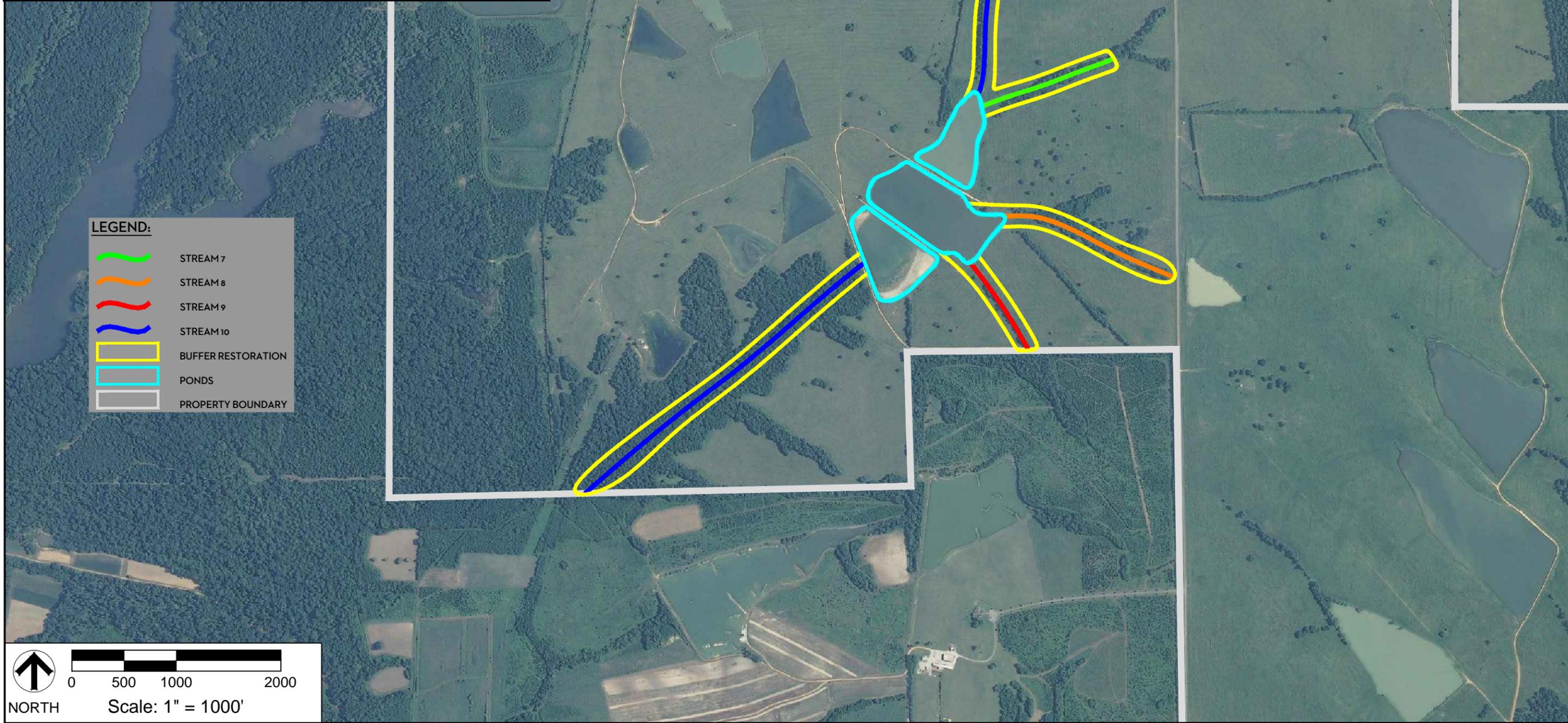
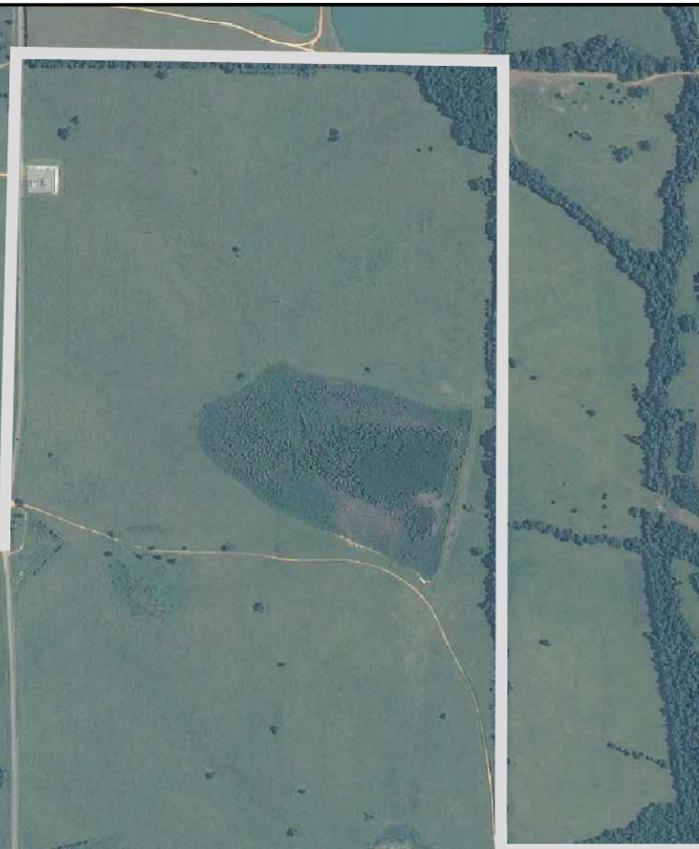
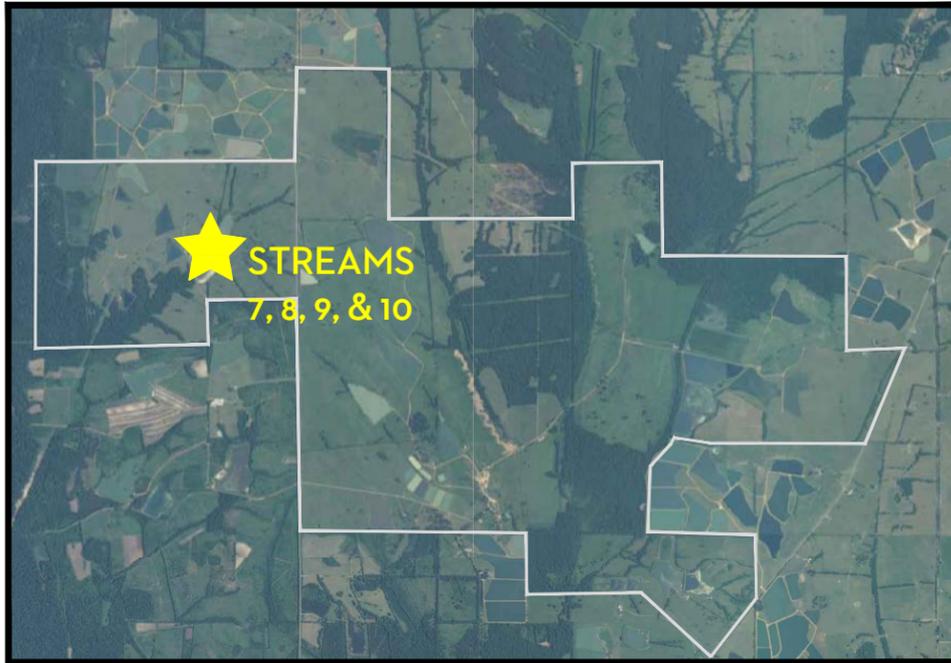
 Scale: 1" = 1000'

REF. SHEET: STREAM 4 EXISTING LOCATION
 DESCRIPTION: 2011 AERIAL PHOTOGRAPH

PROPOSED STREAM MITIGATION BANK
 HALE COUNTY, ALABAMA

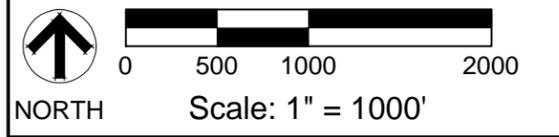
FIGURE 9

SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB



LEGEND:

	STREAM 7
	STREAM 8
	STREAM 9
	STREAM 10
	BUFFER RESTORATION
	PONDS
	PROPERTY BOUNDARY

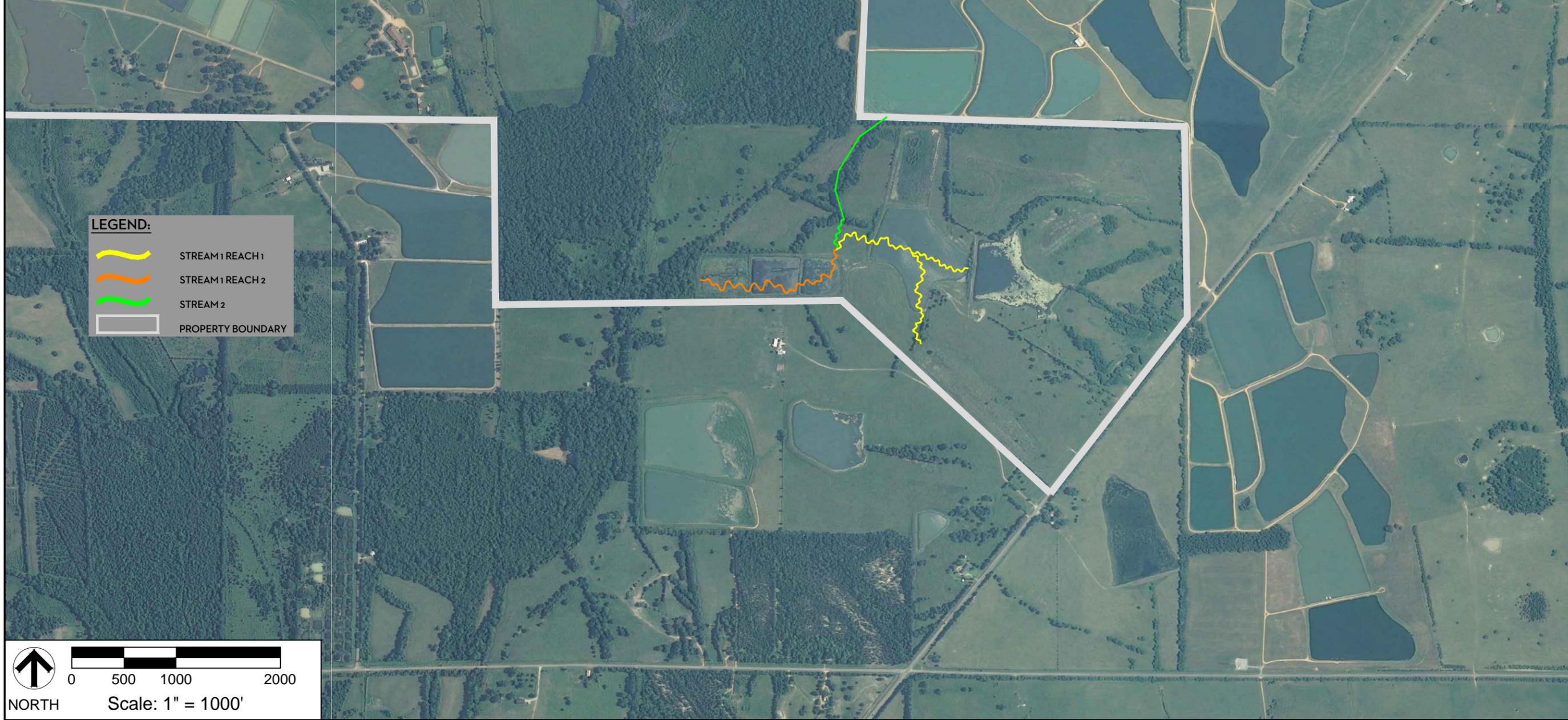
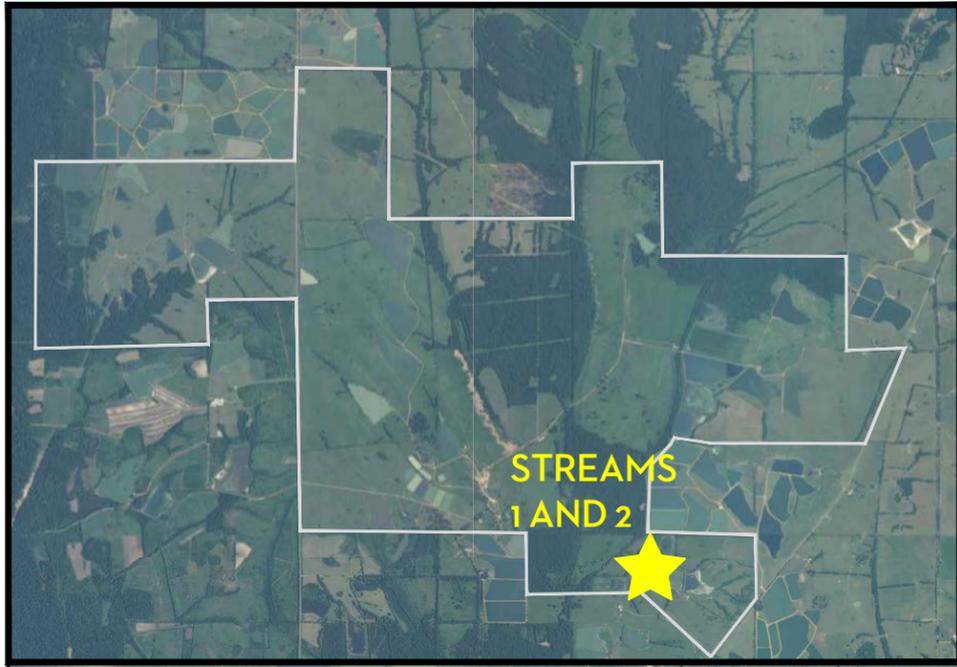


REF. SHEET: STREAMS 7, 8, 9, AND 10 EXISTING LOCATION
DESCRIPTION: 2011 AERIAL PHOTOGRAPH

PROPOSED STREAM MITIGATION BANK
HALE COUNTY, ALABAMA

FIG. 10

SUPPLEMENTAL MAP
GMC # E11502
DATE: 08/09/2012
DRAWN BY: JNB



LEGEND:

-  STREAM 1 REACH 1
-  STREAM 1 REACH 2
-  STREAM 2
-  PROPERTY BOUNDARY



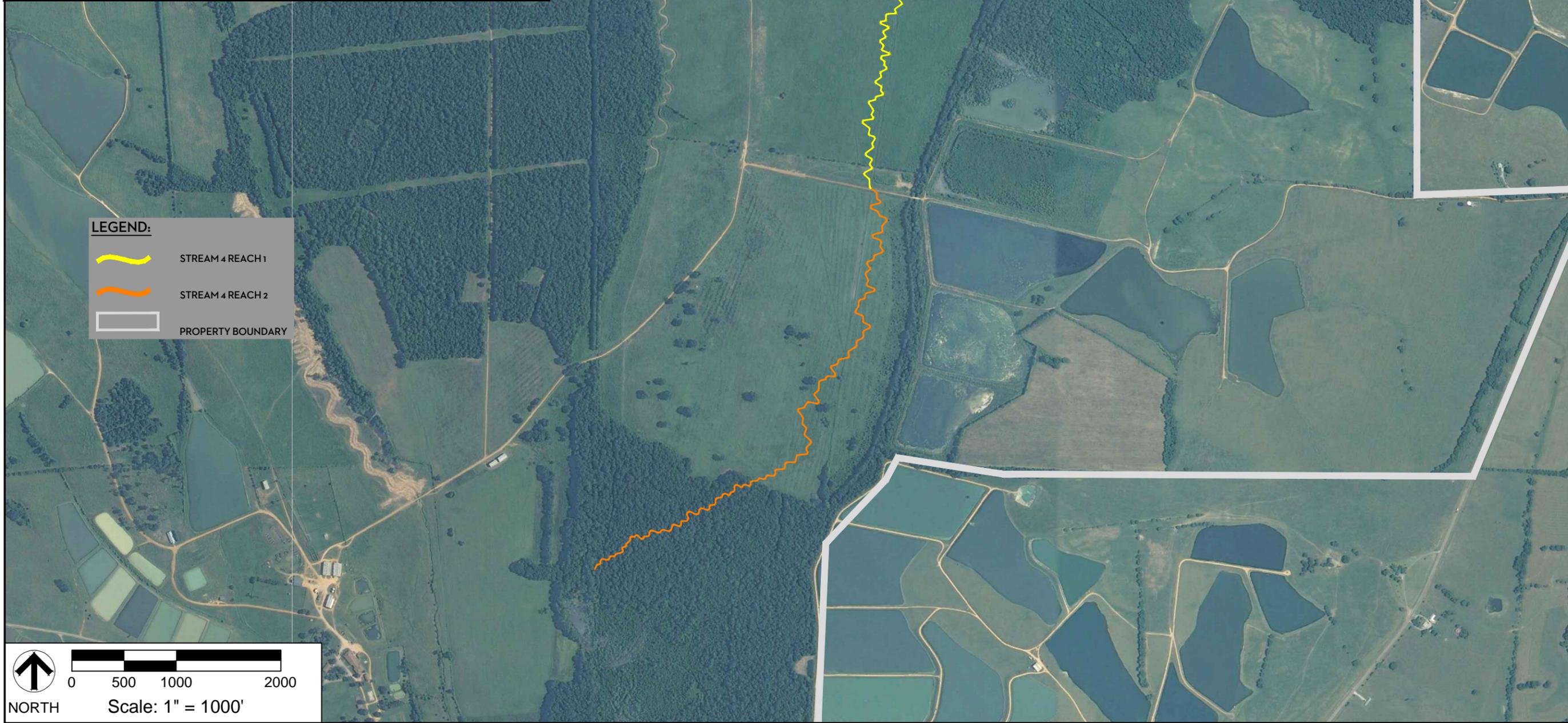
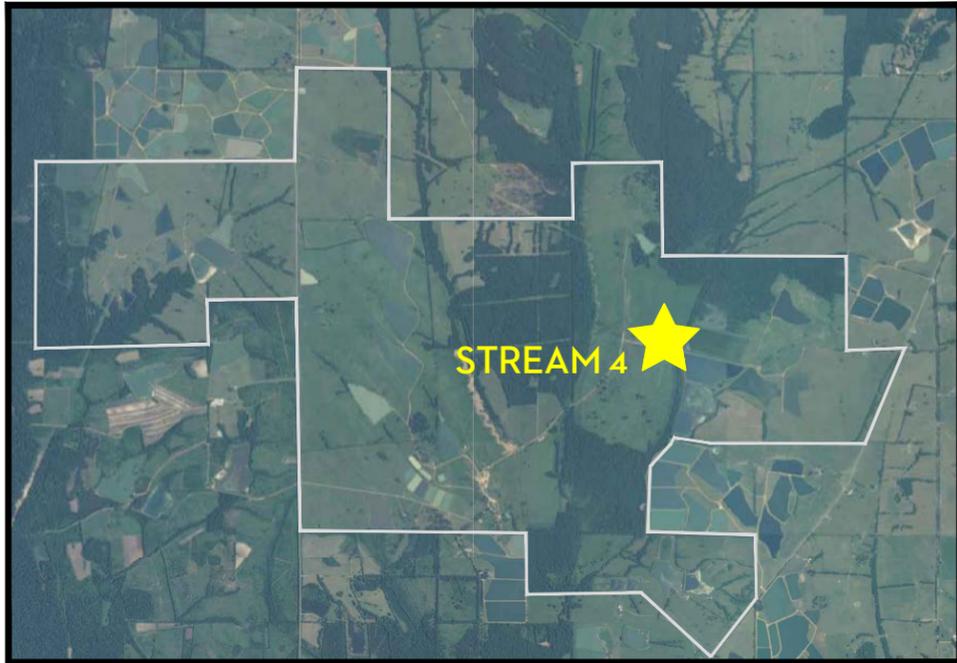

 NORTH Scale: 1" = 1000'

REF. SHEET: STREAMS 1 AND 2 PROPOSED
 DESCRIPTION: 2011 AERIAL PHOTOGRAPH

PROPOSED STREAM MITIGATION BANK
 HALE COUNTY, ALABAMA

FIGURE 11

SUPPLEMENTAL MAP
 GMC # E11502
 DATE: 08/09/2012
 DRAWN BY: JNB



LEGEND:

-  STREAM 4 REACH 1
-  STREAM 4 REACH 2
-  PROPERTY BOUNDARY

 NORTH



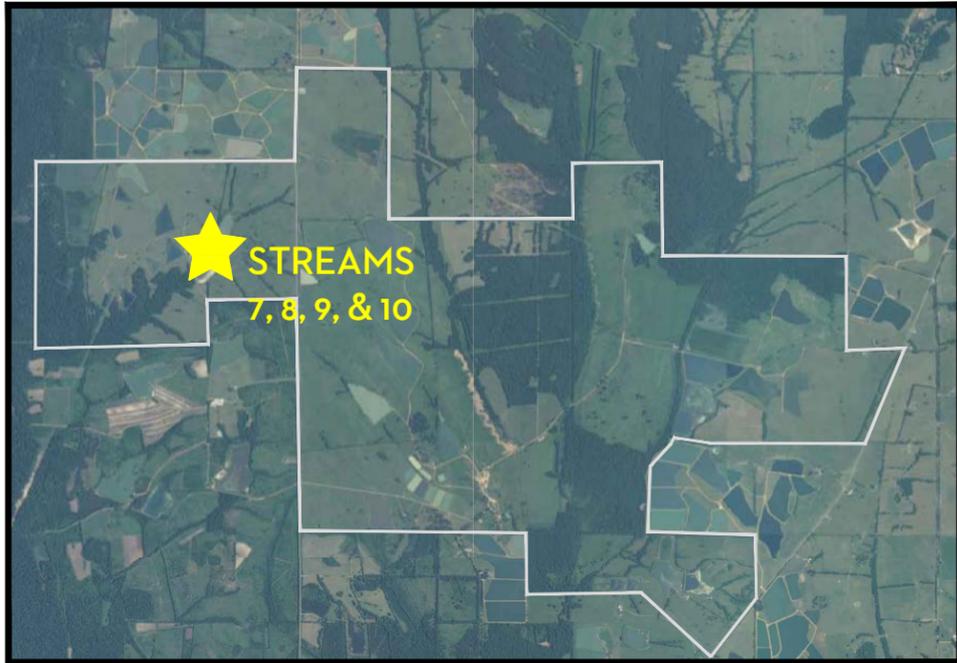
Scale: 1" = 1000'

REF. SHEET: STREAM 4 PROPOSED
DESCRIPTION: 2011 AERIAL PHOTOGRAPH

PROPOSED STREAM MITIGATION BANK
HALE COUNTY, ALABAMA

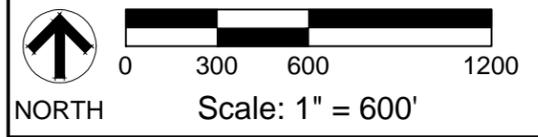
FIGURE 12

SUPPLEMENTAL MAP
GMC # E11502
DATE: 08/09/2012
DRAWN BY: JNB



LEGEND:

	STREAM 7 REACH 1
	STREAM 7 REACH 2
	STREAM 8 REACH 1
	STREAM 8 REACH 2
	STREAM 9 REACH 1
	STREAM 9 REACH 2
	STREAM 10 REACH 1
	STREAM 10 REACH 2
	STREAM 10 REACH 3
	PROPERTY BOUNDARY



REF. SHEET: STREAMS 7, 8, 9, AND 10 PROPOSED
DESCRIPTION: 2011 AERIAL PHOTOGRAPH

PROPOSED STREAM MITIGATION BANK
HALE COUNTY, ALABAMA

FIG. 13

SUPPLEMENTAL MAP
GMC # E11502
DATE: 08/09/2012
DRAWN BY: JNB