

## Appendix I

### S & ME Corridor Surveys

I-1: Interceptor Survey

I-2: Forcemain Survey

## Appendix I

### S & ME Corridor Surveys

#### I-1: Interceptor Survey



October 4, 2013

Grey Engineering  
254 W Water St  
Mocksville, North Carolina 27028

Attention: Mr. John Grey, P.E.  
President and Owner

**Reference: Summary of Site Evaluation Services**

Approximately 4-mile Proposed Sewer Connector  
Eastern Davie Sewer Concept  
Davie County, North Carolina  
S&ME Project No. 1584-13-104

Dear Mr. Grey:

S&ME, Inc. (S&ME) has completed the above referenced site evaluation services. The scope of services was performed in general accordance with S&ME Proposal No. 1584-13-P249, dated September 18, 2013 and authorized on September 19, 2013. The pedestrian review was conducted by our Darrin Peine and Heath Caldwell on September 23<sup>rd</sup> & 26<sup>th</sup>, 2013.

In preparation for the pedestrian review of the project corridor, S&ME professionals reviewed the applicable United States Geological Survey's topographic maps, the Davie County Soil Survey, the U.S. Department of Agriculture publication Hydric Soils of the U.S., and representative aerial imagery. S&ME then visited the project corridor with Grey Engineering staff to determine the approximate extent and location of jurisdictional areas located within the corridor. S&ME's methodology for conducting the jurisdictional approximation was developed by following the general procedures set forth in the 1987 U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual and the Eastern Mountains and Piedmont Region Supplemental Guidance<sup>1</sup>. Our field review also included identification of tributaries (streams) within the project corridor. S&ME demarcated with a single flag-point, the origin of each jurisdictional channel, as applicable.

Results of our review are depicted on the attached Surface Water Assessment Figure Nos. 1-4; Site Photograph Pages 1-4; and Field Reports dated September 23 & 26, 2013. Please note that the jurisdictional boundaries depicted on the figures do not represent the results of a formal delineation. In the event of future installation of a new sewerline is confirmed, the corridor should be formally delineated and jurisdictional boundaries verified by the USACE prior to any land disturbing activities.



While in the field, S&ME personnel also assessed the project corridor for potential Michaux's sumac (*Rhus michauxii*) habitat. Please note that this assessment did not constitute a survey for Michaux's sumac, but served only to indicate whether or not potential habitat for this species exists within the project route.

Michaux's sumac is a federally protected species with documented populations in Davie County. Michaux's sumac grows in sandy or rocky open woods in association with basic soils, and survives best in areas where some form of disturbance has provided an open area, such as highway rights-of way, roadsides, or on the edges of artificially-maintained clearings. Accordingly, portions of the project corridor contain habitat potentially suitable for Michaux's sumac. In the event of future installation of a new sewerline is confirmed, the corridor should be formerly surveyed for the presence of this species.

## **REGULATORY CONSIDERATIONS**

Waters of the U.S. (jurisdictional waters), which include wetlands, are regulated by the USACE through Section 404 of the Clean Water Act (CWA). Throughout most the state of North Carolina, it is the Wilmington District of the USACE that handles Section 404 regulatory review.

Section 401 of the CWA grants corresponding regulatory authority to individual states. In North Carolina, the Section 401 regulatory agency is the Division of Water Resources (DWR) of the Department of Environment and Natural Resources.

Section 404 authorization for proposed sewer activity work in North Carolina can typically be authorized under Nationwide Permit (NWP) 12 (Utility Line Activities). North Carolina's Water Quality Certification No. 3884 certification correspondingly certifies NWP 12 within the state.

The notification thresholds for NWP 12 include impacts involving the following: 1) mechanized clearing in a forested wetland; 2) Section 10 permit; 3) the utility line in waters of the U.S. exceeds 500 linear feet; 4) the utility line is placed within a jurisdictional area and it runs parallel to a stream bed that is within that jurisdictional area; or 5) discharges that result in the loss of greater than 0.10-acre of waters of the U.S.

The notification thresholds for DWR Certification No. 3884 include the following: a) permanent impacts to any wetlands and/or waters, including streams; or b) any stream relocation; or c) impacts to any wetlands and/or waters if the maintenance corridor in a wetland or at a stream crossing is greater than 15 feet wide (except activities located in areas with Riparian Area Protection Rules when the maintenance corridor at stream crossing must be 10 feet wide or less); d) any impact associated with a Notice of Violation or an enforcement action for violation(s) of DWQ Wetland Rules, Isolated Wetland Rules, DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules; or e) any impacts to streams and/or buffers in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman, Jordan or Goose Creek Watersheds (or any other basin or watershed with Riparian Area Protection Rules in effect at the time of application) unless the activities are listed as "Exempt" from these rules or a Buffer Authorization Certificate is issued through the NC Division of Coastal Management delegation for "Allowable" activities.

In compliance with NWP 12, permanent losses of waters of the U.S. may not exceed 0.5 acre. It should be noted that permanent maintenance of proposed right-of-way in forested wetland areas is considered an impact which requires compensatory mitigation, but is not considered a permanent loss of waters of the U.S.

Field review determined that the currently proposed Eastern Davie Sewer Concept route would cross potentially twelve jurisdictional stream channels and approximately five acres of wetland (majority of which are forested).

## **CLOSING**

S&ME appreciates the opportunity to be of service to you. If you have questions regarding the information provided, or if we may be of further assistance, please contact us.

Sincerely,

**S&ME**



Darrin M. Peine, QEP  
[depeine@smeinc.com](mailto:depeine@smeinc.com)  
Natural Resources Department Manager



Joey Lawler, PWS  
[jlawler@smeinc.com](mailto:jlawler@smeinc.com)  
Natural Resources Project Professional

Senior Reviewed By: Ed Henriques, III L.G.  
Environmental Department Manager

Enclosures: Figure 1-4: Surface Water Assessment;  
Site Photographs Pages 1-4;  
Field Notes  
ArcGIS Shape Files: emailed

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<sup>1</sup> Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. NTIS No. AD A176 912 (Note: Appendix C information is outdated and must be obtained from regional Wetlands offices).  
Environmental Laboratory. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. ERDC/EL TR-12-9



Photo 1: View of Carter Creek Riparian Forest Habitat (Habitat Area 1, Figure No. 4).



Photo 2: View upstream of Carter Creek (Habitat Area 1, Figure No. 4).



Photo 3: View of Wetland A (Figure No. 4).



Photo 4: View of Wetland B (Figure No. 4).

Taken by: DMP & HAC

Checked by: JL

Date: 09.23 & 09.26, 2013



**SITE PHOTOGRAPHS**

Proposed Eastern Davie Sewer Concept  
 Davie County, North Carolina



Photo 5: View of Wetland C (Figure No. 4).



Photo 6: View of Wetland D (Figure No. 4).



Photo 7: View of Wetland E (Figure No. 4).

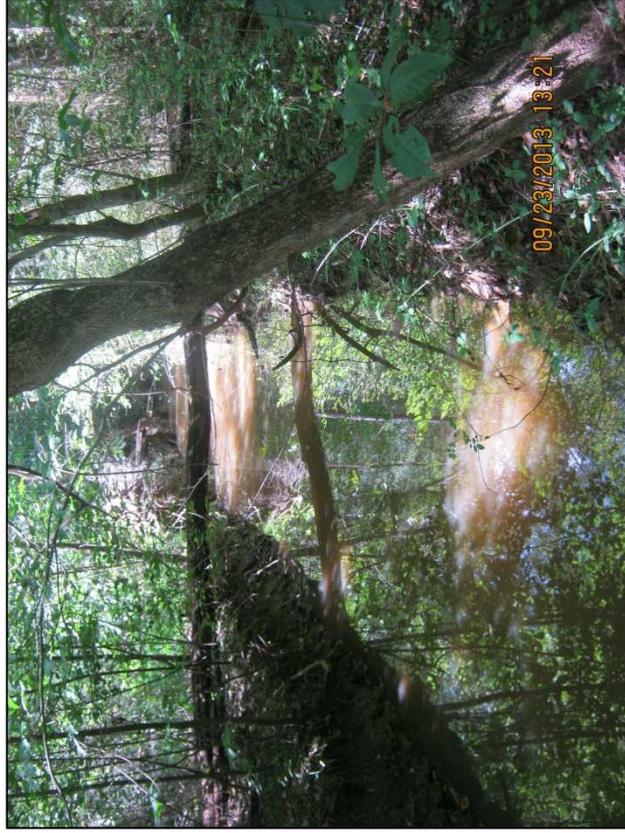


Photo 8: View of Unnamed Tributary (UT1) to Carter Creek (Figure No. 4).

Taken by: DMP & HAC

Checked by: JL

Date: 09.23 & 09.26, 2013



**SITE PHOTOGRAPHS**

Proposed Eastern Davie Sewer Concept  
Davie County, North Carolina



Photo 9: View of Bailey Creek crossing (Figure No. 2).

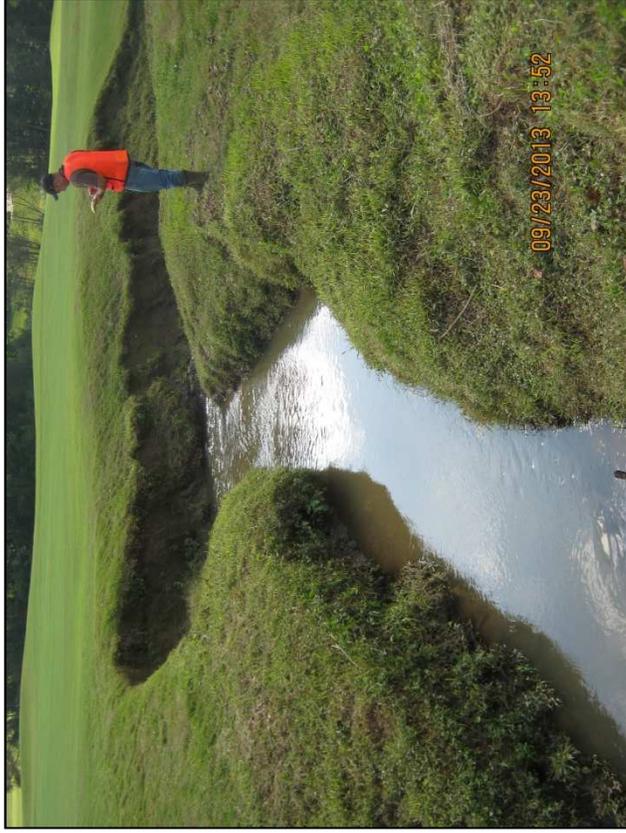


Photo 10: View of Smith Creek crossing (Figure No. 2).



Photo 11: View of Unnamed Tributary Smith Creek (Figure No. 1).



Photo 12: View of Wetland G (Figure No. 1).

Taken by: DMP & HAC

Checked by: JL

Date: 09.23 & 09.26, 2013



**SITE PHOTOGRAPHS**

Proposed Eastern Davie Sewer Concept  
 Davie County, North Carolina

Project No.: 1584-13-104

Photo Page 3 of 4



Photo 13: View of Smith Creek Riparian Forest Habitat (Habitat Area 2 Figure No. 1).



Photo 14: View of UT3 to Smith Creek crossing (Figure No. 1).

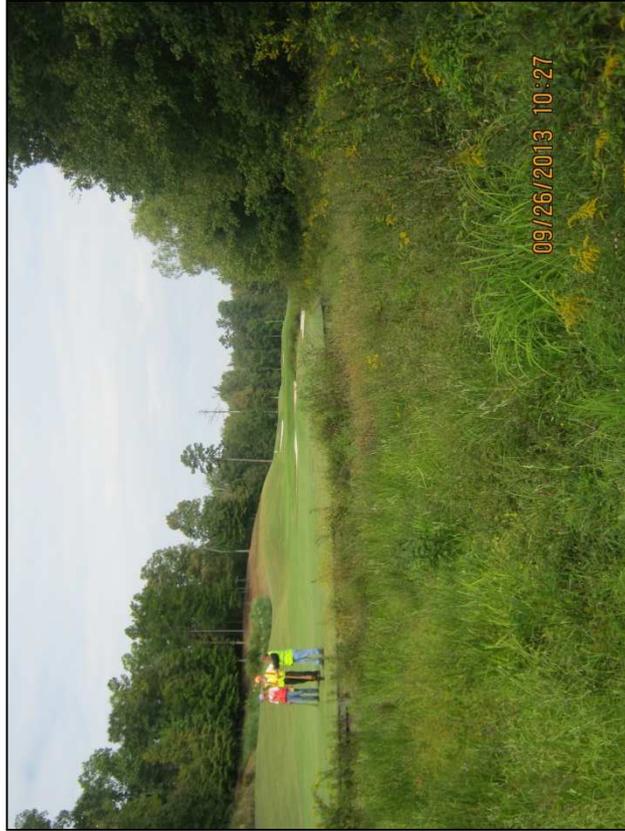


Photo 15: View of Wetland H, parallels existing golf course (Figure No. 1).



Photo 16: View of UT4 to Smith Creek crossing (Figure No. 1).

Taken by: DMP & HAC

Checked by: JL

Date: 09.23 & 09.26, 2013



**SITE PHOTOGRAPHS**

Proposed Eastern Davie Sewer Concept  
 Davie County, North Carolina



9751 Southern Pine Blvd.  
 Charlotte, NC 28273  
 (704) 523-4726  
 (704) 525-3953 fax

FIELD REPORT	
<b>Date:</b> September 23, 2013	<b>Job No.:</b> 1584-13-104
<b>Project/Location:</b> Davie County Sewer Concept Bermuda Run NC	
<b>Contractor:</b>	<b>Weather/Temperature:</b> Sunny 80 degrees F
<b>Present at Site:</b> Darrin Peine & Heath Caldwell (S&ME) Gary Bullard (Grey Engineering) Grady Tutterow (Tutterow Surveying)	
<b>Time:</b> 07:00 – 17:00	<b>Mileage:</b> 165 mi

Services Performed
Pedestrian review of proposed corridor for jurisdictional wetlands and stream; preliminary assessment of potential habitat for Michaux's sumac.

To: file \_\_\_\_\_  
 Ed Henriques \_\_\_\_\_  
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Tasks or Task Sequence	Potential Hazards	How to Protect From Hazard
1. pedestrian field review	Heat and sun, vegetation	Proper PPE and hydration
2.		
3.		

**Observations/Remarks:**

09:00 – meet with John Grey, his staff and Ed Henriques at McDonald’s restaurant at Hwy 158 and 801 in Bermuda Run. Discussed project and reviewed field maps.

10:00 – 15:45: Field review with Gary and Grady. Observed the following features:

Observed habitat area adjacent to Carter Creek (potential Natural Heritage Area), (Habitat Assessment 1 & Photo Nos. 1 and 2) located southwest of Underpass Rd. Mature tree species noted: Sycamore, Green Ash, Willow Oak, River Birch, Box Elder. Open understory.

Wetlands A, B, C, D, E and F located west of Underpass Rd, field review to Springfield Drive (Field Maps No. 4 & 3).

Stream observations at: UT 1 (S1) to Carter Creek (near Wetland F, Figure No. 3, Photo No. 8); Bailey Creek crossing near NC Hwy 801 (Figure No. 2, Photo 9); Smith Creek Golf Course crossing near Isleworth Dr. (Figure No. 2, Photo 10); Smith Creek Unnamed Tributary near S. Hidden Brooke Dr. (Figure No. 1, Photo 11).

A review of potential habitat for the federally protected plant Michaux’s Sumac was performed. The species is typically found growing on sandy soils in openings or rocky, thin/open woods. Although potential habitat for the plant is within the project corridor, no specimens of the Michaux’s sumac were observed.

Darrin Peine

On-Site Representative/Company

S&ME Personnel

**Disclaimer:** The presence of S&ME at the project site shall not be construed as an acceptance or approval of activities at the site. S&ME is at the project site to perform specific services and has certain responsibilities which are limited to those specifically authorized in our agreement with our client. In no event shall S&ME be responsible for the safety or the means and methods of other parties at the project site. **The information presented in this field report should be considered preliminary until it is reviewed by an engineer.**



9751 Southern Pine Blvd.  
 Charlotte, NC 28273  
 (704) 523-4726  
 (704) 525-3953 fax

FIELD REPORT	
<b>Date:</b> September 26, 2013	<b>Job No.:</b> 1584-13-104
<b>Project/Location:</b> Davie County Sewer Concept Bermuda Run NC	
<b>Contractor:</b>	<b>Weather/Temperature:</b> Sunny 80 degrees F
<b>Present at Site:</b> Darrin Peine & Heath Caldwell (S&ME) Gary Bullard (Grey Engineering) Grady Tutterow (Tutterow Surveying)	
<b>Time:</b> 07:00 – 17:00	<b>Mileage:</b> 165 mi

Services Performed
Pedestrian review of proposed corridor for jurisdictional wetlands and stream; preliminary assessment of potential habitat for Michaux's sumac.

To: file \_\_\_\_\_  
 Ed Henriques \_\_\_\_\_  
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Tasks or Task Sequence	Potential Hazards	How to Protect From Hazard
1. pedestrian field review	Heat and sun, vegetation	Proper PPE and hydration
2.		
3.		

**Observations/Remarks:**

09:00 – meet with Gary Bullard and Grady Tutterow (Grey Engineering) at McDonald’s restaurant at Hwy 158 and 801 in Bermuda Run. Reviewed field maps.

10:00 – 16:15: Field review with Gary and Grady (Grady departed at 15:00). Observed the following features:  
 Observed habitat area in proximity to Smith Creek, south of US Hwy 158 (Habitat Assessment 2 on Figure 1 & Photo 13). Mature tree species noted: American Elm, Sweet Gum, Tulip Popular, Red Maple. Open understory.

Wetland G (Figure 1, Photo 12); Wetland H, parallels existing golf course (Figure 1, Photo 15); Wetland I (Figure 3, no photo available)

Stream observations at: UT3 to Smith Creek (Figure 1, Photo 14); UT4 to Smith Creek (Figure 1, Photo 16); Carter Creek (Figure 3, no photo available).

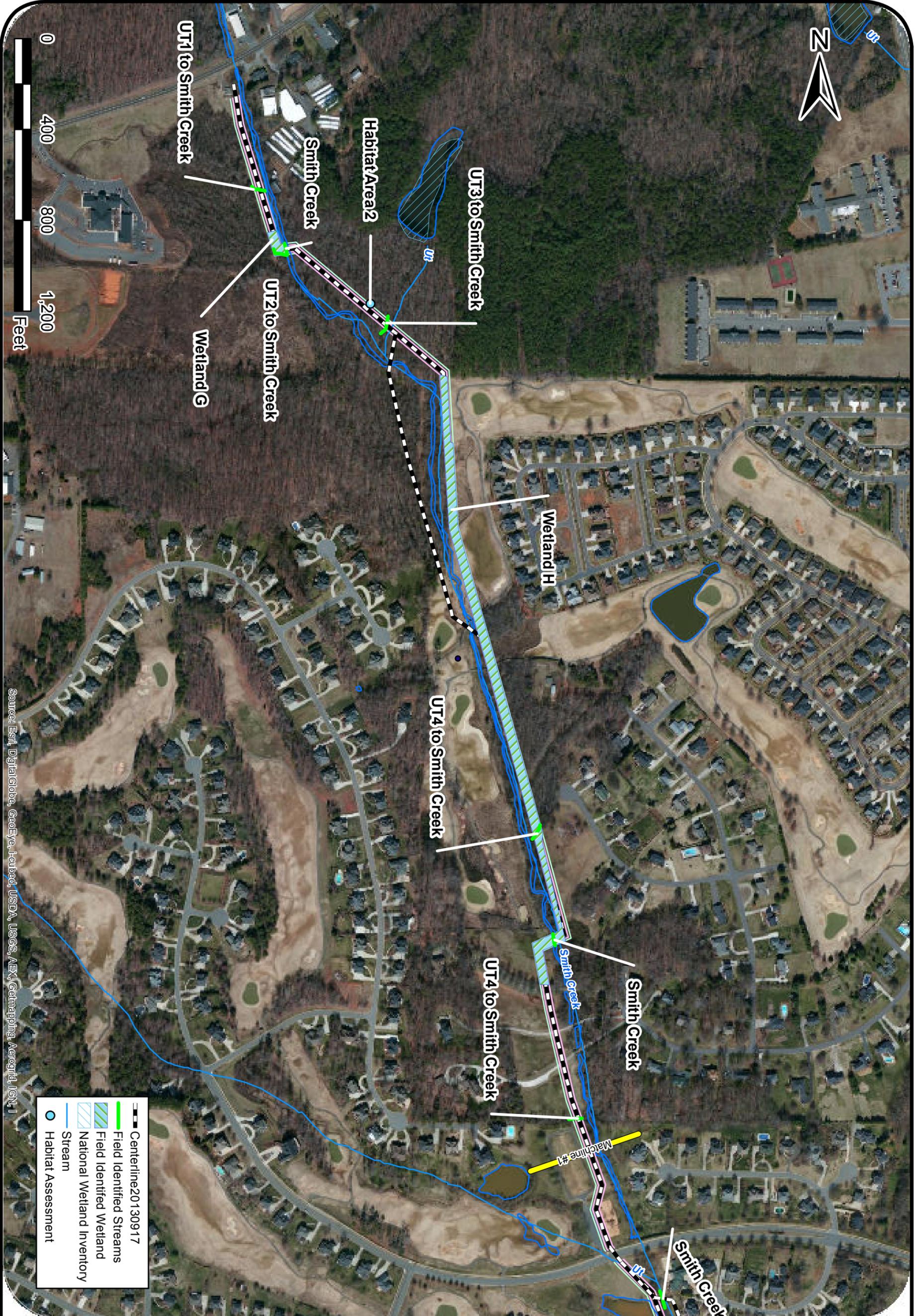
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Darrin Peine

On-Site Representative/Company

S&ME Personnel

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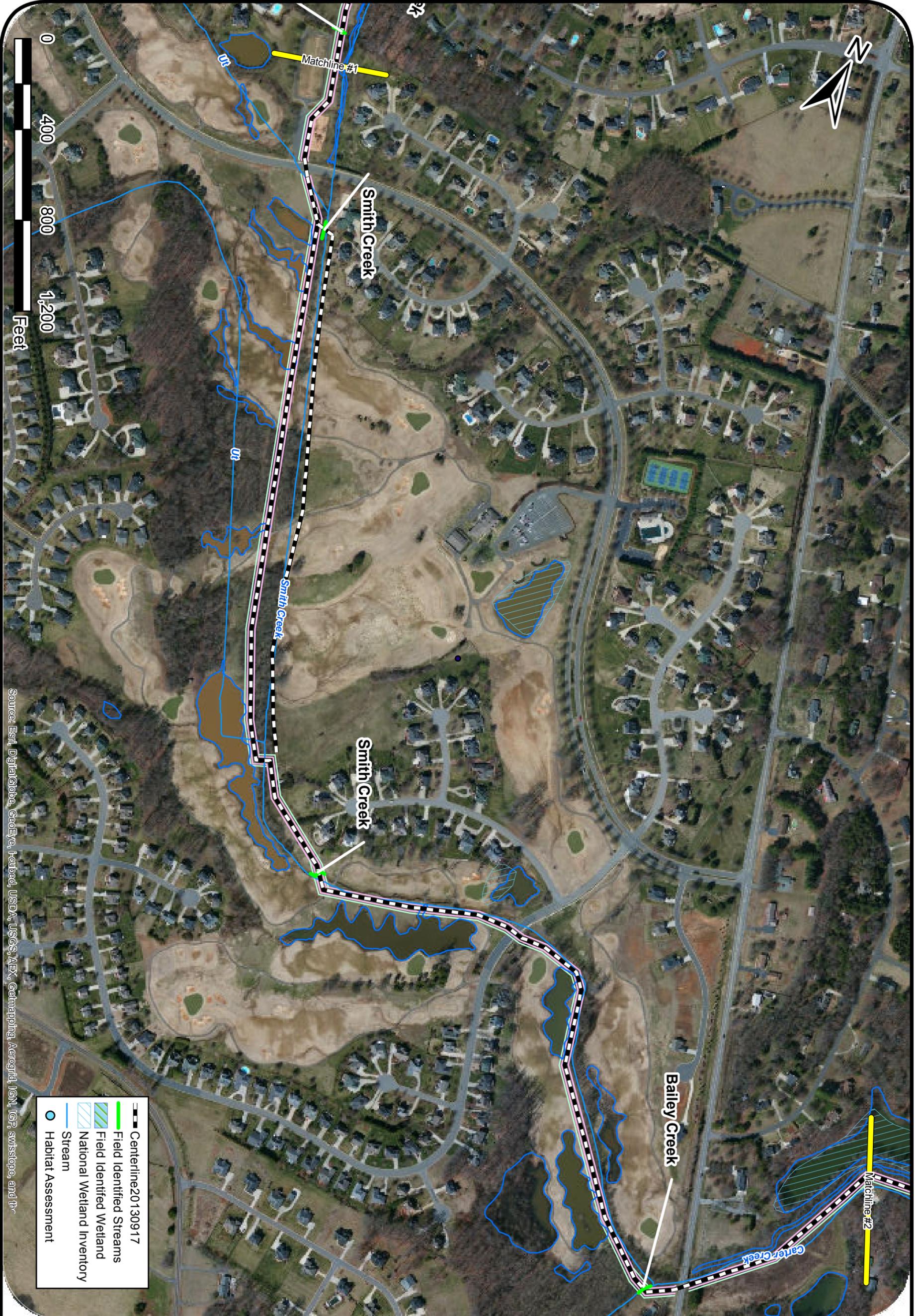
- Centerline 20130917
- Field Identified Streams
- Field Identified Wetland
- National Wetland Inventory
- Stream
- Habitat Assessment

Source: Esri, DigitalGlobe, GeoEye, iSat, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, I

<b>1</b>	<b>Surface Water Assessment</b>	 <b>S&amp;ME</b> <a href="http://www.smeinc.com">www.smeinc.com</a>	SCALE: AS SHOWN	DATE: 09-27-13
			PROJECT NO: 1584-13-104	DRAWN BY: JMD
				CHECKED BY: JoL

FIGURE NO.

Eastern Davie Sewer Concept  
Davie County, North Carolina



	Centerline 20130917
	Field Identified Streams
	Field Identified Wetland
	National Wetland Inventory
	Stream
	Habitat Assessment

Source: Esri, DigitalGlobe, GeoEye, iSat, USDA, USGS, AEX, Geomatics, Aerogrid, IGN, IGP, swisstopo, and the

**Surface Water Assessment**

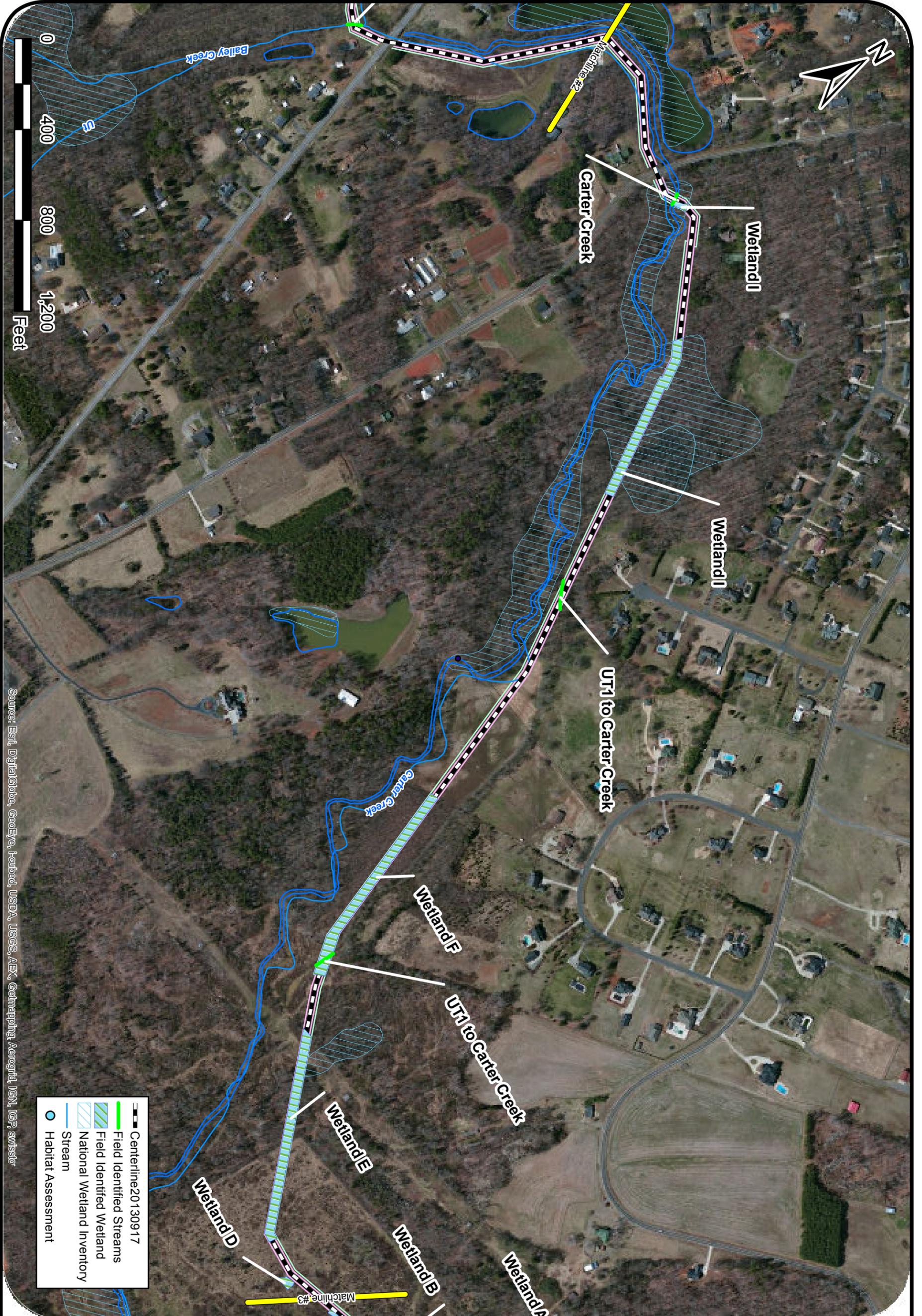
Eastern Davie Sewer Concept  
Davie County, North Carolina

**S&ME**  
WWW.SMEINC.COM

SCALE: AS SHOWN	DATE: 09-27-13
PROJECT NO: 1584-13-104	DRAWN BY: JMD
	CHECKED BY: JoL

**2**

FIGURE NO.



Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo

- Centerline 20130917
- Field Identified Streams
- Field Identified Wetland
- National Wetland Inventory
- Stream
- Habitat Assessment

**Surface Water Assessment**

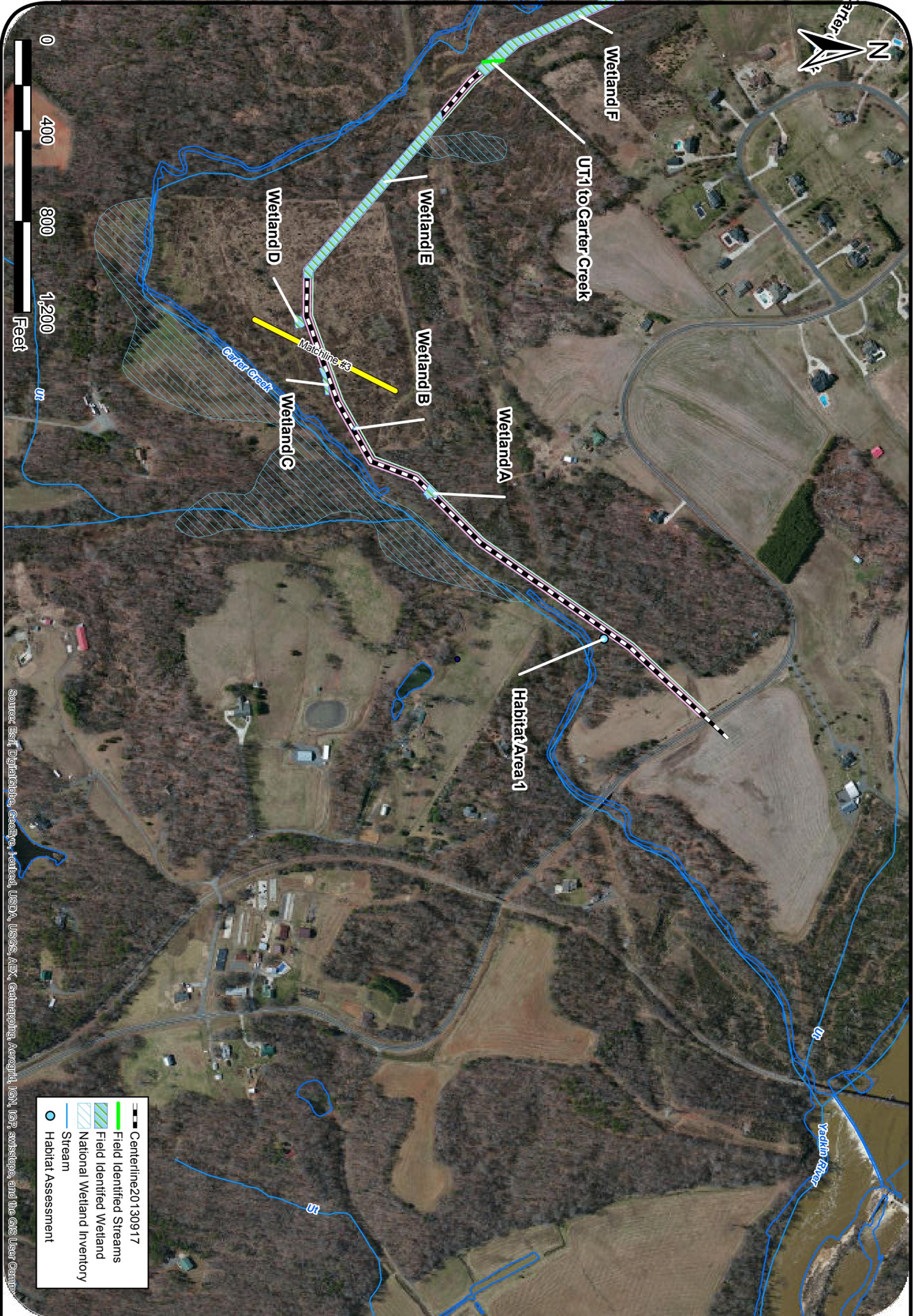
Eastern Davie Sewer Concept  
Davie County, North Carolina



SCALE: AS SHOWN	DATE: 09-27-13
PROJECT NO: 1584-13-104	DRAWN BY: JMD
	CHECKED BY: JoL

**3**

FIGURE NO.



Source: Esri, DigitalGlobe, GeoEye, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

	Centerline 20130917
	Field Identified Streams
	Field Identified Wetland
	National Wetland Inventory
	Stream
	Habitat Assessment

**Surface Water Assessment**

Eastern Davie Sewer Concept  
Davie County, North Carolina



SCALE: AS SHOWN	DATE: 09-27-13
PROJECT NO: 1584-13-104	DRAWN BY: JMD
	CHECKED BY: JoL

**4**

FIGURE NO.