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*FINAL*

2018 Interbasin Transfer Certificate

# Compliance and Monitoring Plan

Prepared for:  
**Pender County Utilities**

Submitted to:  
**North Carolina Division of Water Resources**

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Prepared by:



**HIGHFILL**  
INFRASTRUCTURE  
ENGINEERING, P.C.

3804 Park Avenue, Suite A  
Wilmington, NC 28403



CH2M HILL North Carolina, Inc.  
3120 Highwoods Boulevard  
Suite 214 - Magnolia Building  
Raleigh, NC 27604  
(919) 875-4311

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# Introduction

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On October 19, 2018, the North Carolina Environmental Management Commission (EMC) granted an interbasin transfer (IBT) certificate to Pender County Utilities (PCU) to transfer a maximum of 14.5 million gallons per day (MGD) from the Cape Fear River basin (Basin 2-3) to the South (Basin 2-4), Northeast (NE) Cape Fear (Basin 2-5) and New River (Basin 2-6) basins, calculated as a daily average of a calendar month (NC EMC, 2018).

In addition to the permitted transfer volume, the IBT certificate includes seven conditions:

1. **Water Conservation Plan** – Within 90 days of receipt of the IBT certificate, the Applicants are required to submit a water conservation plan subject to approval by the North Carolina Division of Water Resources (NCDWR) that specifies the water conservation measures, including a rate pricing structure, to be implemented by the Applicants in the receiving river basins to ensure the efficient use of the transferred water. The Applicants submitted a water conservation plan for review April 6, 2017, which was approved by NCDWR effective November 30, 2017.
2. **Drought Management Plan** – Within 90 days of receipt of the IBT certificate, the Applicants are required to submit a drought management plan subject to approval by the NCDWR that specifies how the transfer will be managed to protect the source river basin (Cape Fear River Basin 2-3) during drought conditions or other emergencies that occur within the source river basin. The Applicants submitted a drought management plan for review on April 6, 2017 which was approved by NCDWR effective November 30, 2017.
3. **Compliance and Monitoring Plan** – Within 90 days of receipt of the IBT certificate, the Applicants are required to submit a quarterly compliance and monitoring plan subject to approval by the NCDWR.
4. **EMC Consideration of Alternative Sources** – The EMC may reopen and amend the maximum amount of the IBT authorized if it appears that an alternative source of water is available to the Certificate Holder from within the receiving basins (South River, NE Cape Fear River, New River).
5. **EMC Consideration of Future Water Demands** – The EMC may reopen and amend the certificate if it is determined that the Applicants' actual future water needs are significantly less than the projected water needs at the time the certificate was granted.
6. **Resale of Transferred Water** – The Applicants shall not resell the water that would be transferred pursuant to the IBT certificate to another public water system.
7. **EMC Consideration of Impacts** – The EMC may reopen the certificate and amend existing or require new conditions to ensure detrimental impacts are mitigated if environmental impacts are found to be substantially different from those on which the EMC's Findings of Fact were based.

To meet Condition 3, the following sections of this Compliance and Monitoring Plan include a description of how PCU will monitor the amount of IBT along with methodologies and schedules for reporting the following information:

- Daily transfer amount calculated as the daily average over the maximum month
- Compliance with IBT certificate conditions
- Progress on mitigation measures (*Note: no mitigation measures are required by this IBT certificate*)
- Drought Management
- Reporting

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# Interbasin Transfer Calculation

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Pender County Utilities (PCU) is divided into six water and sewer districts (WSDs) including Scott's Hill (SHWSD), Rocky Point/Topsail (RPTWSD), Moore's Creek (MCWSD), Central Pender (CPWSD), Maple Hill (MHWSD), and Columbia/Union (CUWSD). Exhibit 1-2, included in Appendix A, is a map from the EA for this IBT depicting the existing districts and existing IBT basin boundaries within PCU's service area.

Exhibit 1-2 shows that the source basin (Cape Fear River IBT Basin 2-3) makes up only a minute portion of PCU's service area. All current PCU water customers are located outside of Basin 2-3, so all water that enters PCU's distribution system is currently transferred out of the source basin.

PCU utilizes metered and calculated data detailed in Section 2.1 to document compliance with the IBT certificate, which is a maximum IBT of 14.5 MGD from the source basin calculated as a daily average of a calendar month.

## 2.1 Data Definitions

The following definitions detail the water system data and calculations utilized for IBT compliance and monitoring, as shown by the columns in Table 1.

- **Raw Water Withdrawal** (Table 1, Column 1) is the water withdrawal from Cape Fear River source basin (Basin 2-3) through contract with the Lower Cape Fear Water and Sewer Authority (LCFWASA). This water volume is metered by LCFWASA where PCU's raw water main taps LCFWASA's raw water main. It is also metered by PCU with a raw water meter at the Water Treatment Plant (WTP).
- **Process Water** (Table 1, Column 2) is the water that is utilized in treatment processes at the WTP and returned to Basin 2-3 under an NPDES permit. In Table 1, this number is calculated by subtracting Column 3 from Column 1.
- **Finished Water** (Table 1, Column 3) is the treated water that is pumped from the WTP into the distribution system, which is measured by PCU's finished water meter at the WTP.
- **Finished Water Consumed in Source Basin 2-3** (Table 1, Column 4) is the water distributed to customers within Basin 2-3 for consumptive use, with onsite wastewater treatment (septic tank and leach field) within the source basin. This volume will be determined from individual meter readings collected for billing. *Note that PCU currently has no such customers or supporting infrastructure, either existing or in identified future developments. If such customers are established in the future, each account will be flagged to indicate that the usage associated with their respective meter is within the source basin. This column was included to allow for this future possibility.*
- **Transfer Water (Gross)** (Table 1, Column 5) is equal to the total finished water pumped minus water that is consumed in Basin 2-3. This number is calculated by subtracting Column 4 from Column 3. *As previously noted, all users are currently outside of Basin 2-3, so Column 5 will equal Column 3 until and unless users are established in the source basin.*
- **Total Returned** (Table 1, Columns 6 & 7) is the water returned to the source basin by WWTPs that discharge effluent to the Cape Fear River within Basin 2-3. Column 6 shows the metered effluent from PCU's US 421 WWTP (measured by the WWTP effluent meter). Column 7 shows the metered wastewater that is collected from approximately 20 commercial and institutional customers in RPTWSD and conveyed to CFPUA's collection system for treatment at CFPUA's Northside WWTP (measured by CFPUA's sewer meter on Orange Street in Castle Hayne, NC).
- **Net Transferred Water** (Table 1, Column 8) is defined as the net volume of water transferred from the source basin, which equals the volume entering PCU's distribution system (Column 3) minus the volume utilized in the source basin (Column 4) minus the volume returned to the source basin (Columns 6 and 7).

## 2.2 Interbasin Transfer Calculation

The IBT is calculated directly from metered data and will be reported in the format of Table 1, as follows (all values are daily average of a calendar month unless specifically identified otherwise):

1. Determine the Raw Water Withdrawal volume from the Source Basin 2-3 to PCU's WTP using the raw water meter at the WTP. Enter this volume in Column 1.
2. Determine the Finished Water volume entering PCU's distribution system from the finished water meter at the WTP. Enter this volume in Column 3.
3. Calculate the process water utilized at the WTP by subtracting the Finished Water volume (Column 3) from the Raw Water volume (Column 1). Enter this volume in Column 2. *(Note that this column is informational only and is not utilized in the IBT calculation.)*
4. *(If and when customers are established within the Source Basin 2-3)* Enter metered usage data for those flagged accounts in Column 4. This column (Finished Water Consumed in Basin 2-3) represents finished water that enters the distribution system but is consumed within the source basin or returned to the source basin through an onsite septic system.
5. Calculate the gross volume of water transferred out of the source basin by subtracting the Finish Water Consumed in Basin 2-3 volume in Column 4 from the Finished Water volume in Column 3. Enter this volume, Transferred Water (Gross), in Column 5.
6. Determine the volume of water returned to the Source Basin 2-3 via treated effluent from WWTPs that discharge into Basin 2-3. In Column 6, enter the volume of effluent discharge recorded from the effluent flow meter of the US 421 WWTP. In Column 7, enter the volume of wastewater collected by CFPUA from PCU customers, which is metered by the Orange Street Meter and billed to PCU. This wastewater volume is treated in CFPUA's Northside WWTP, with the effluent returned to Basin 2-3.
7. Calculate the total IBT from the Source Basin 2-3 by subtracting the Total Return (combined volumes from Columns 6 and 7) from the Transferred Water (Gross) in Column 5. Enter this volume, Net Transferred Water, in Column 8.

Table 1 provides a summary example of the table used to document the IBT compliance metric: IBT calculated as a daily average of a calendar month.

TABLE 1  
 SAMPLE SUMMARY OF DAILY AVERAGE OF THE CALENDAR MONTH INTERBASIN  
 TRANSFER FROM THE CAPE FEAR RIVER BASIN

Column Number:	(1)	(2) = (1)-(3)	(3)	(4)	(5) = (3)-(4)	(6)	(7)	(8) = (5)-(6)-(7)
	Withdrawal (MGD)	Process Water (MGD)	Finished Water (MGD)	Finished Water Consumed in Basin 2-3 (MGD)	Transferred Water (Gross) (MGD)	Total Return (MGD)		Net Transferred Water (MGD)
						Wastewater Discharged		
Date	From Cape Fear River (2-3)	To Cape Fear River (2-3)	Pumped from WTP	MCWSD (Future Expansion in 2-3)	New River (2-6), NE Caper Fear River (2-5) and South River (2-4) Basins	US 421 WWTP	RPTWSD FM & PS	From the Cape Fear River (2-3)
January	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
Maximum Month								

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# Reporting Methodologies and Schedules

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Compliance with the permitted IBT limit from the Cape Fear River basin to the New River basin, NE Cape Fear River basin and South River Basin is required in the IBT certificate to be reported quarterly. The status of the additional seven conditions that the Towns must meet in order to maintain compliance with the IBT certificate will be reported annually.

## 3.1 Compliance Reporting

### 3.1.1 Quarterly Reporting

At the end of each quarter, PCU will calculate the daily average IBT amount for each calendar month in the quarter and post this information on the PCU website within 30 days after the end of the quarter. The IBT Coordinator at NCDWR will be provided with calculated daily average IBT amounts at the end of each quarter for review and comment. The public will be able to review and download the information from this website, as will the public. The web address where the quarterly report will be posted is as follows:

<http://www.pendercountync.gov/ut/>. The point of contact for Pender County is Michael G. Mack (mmack@pendercountync.gov).

The schedule for quarterly reporting is as follows:

- Quarter 1 (Q1) – report due by April 30 (Q1 includes January, February, and March)
- Quarter 2 (Q2) – report due by July 30 (Q2 includes April, May, and June)
- Quarter 3 (Q3) – report due by October 30 (Q3 includes July, August, and September)
- Quarter 4 (Q4) – report due by January 30 (Q4 includes October, November, and December)

### 3.1.2 Annual Reporting

At the end of each calendar year, by April 1 of the following year, PCU will submit an Annual IBT Report to the IBT Coordinator at NCDWR with the following information:

1. System-wide water balance table presenting a summary of historical water withdrawals, water use, wastewater discharges, and IBT, beginning with the 2018 award date of this IBT certificate for the 2018 Annual Report and reported for the January to December calendar year thereafter.
2. Table of calculated daily average of calendar month IBT amounts for January 1 to December 31 of the reporting year.
3. The Drought Management Plan was approved by the NCDWR effective November 30, 2017. The status of the Drought Management Plan and efforts (if any) that were implemented in the calendar year will be detailed for the reporting year. If applicable, all occurrences of water reduction stages described in the Drought Management Plan that were implemented during the reporting year will be listed. Furthermore, the estimated water use reduction observed from implementation of the various stages will be included.
4. The Water Conservation Plan was approved by the NCDWR effective November 30, 2017. The status of the Water Management Plan and efforts (if any) that were implemented in the calendar year will be detailed for the reporting year. If applicable, all water conservation and efficiency measures, initiatives, programs and ordinances conducted or approved in the reporting year will be included.
5. Annual summary of compliance with IBT certificate limits and conditions for the entire previous reporting year.

## 3.2 Compliance Schedule Summary

A summary of the schedule for monitoring and reporting on IBT certificate compliance is provided in Table 2.

TABLE 2  
Interbasin Transfer Compliance Monitoring and Reporting

Description <sup>a</sup>		Comments
IBT Limits	Daily average of calendar month: - 14.5 MGD Cape Fear to New, NE Cape Fear and South	Daily average IBT is calculated for each calendar month and reported in the Quarterly IBT Report. IBT calculated as the daily average of calendar month reported on the PCU website quarterly and in the Annual IBT Report.
Condition 1	Water Conservation Plan	NCDWR approved plan on November 30, 2017. Water Conservation Plan will be available on the PCU website. Summary of measures implemented will be included in the Annual IBT Report.
Condition 2	Drought Management Plan	NCDWR approved plan on November 30, 2017. Drought Management Plan will be available on the PCU website. Summary of measures implemented will be included in the Annual IBT Report.
Condition 3	IBT Compliance and Monitoring Plan	Submitted to NCDWR on December 1, 2018. Revised per DWR comments and returned in January 2019 to obtain NCDWR approval. IBT Compliance and Monitoring Plan will be available on the PCU website. Quarterly and annual reporting will be as detailed herein.
Condition 4	EMC Consideration of Alternative Sources	No reporting necessary.
Condition 5	EMC Consideration of Future Water Demand	No reporting necessary.
Condition 6	Resale of Transferred Water	Included in the Annual IBT Report.
Condition 7	EMC Consideration of Impacts	No reporting necessary.

<sup>a</sup> Certificate conditions are described in Section 1.

## References

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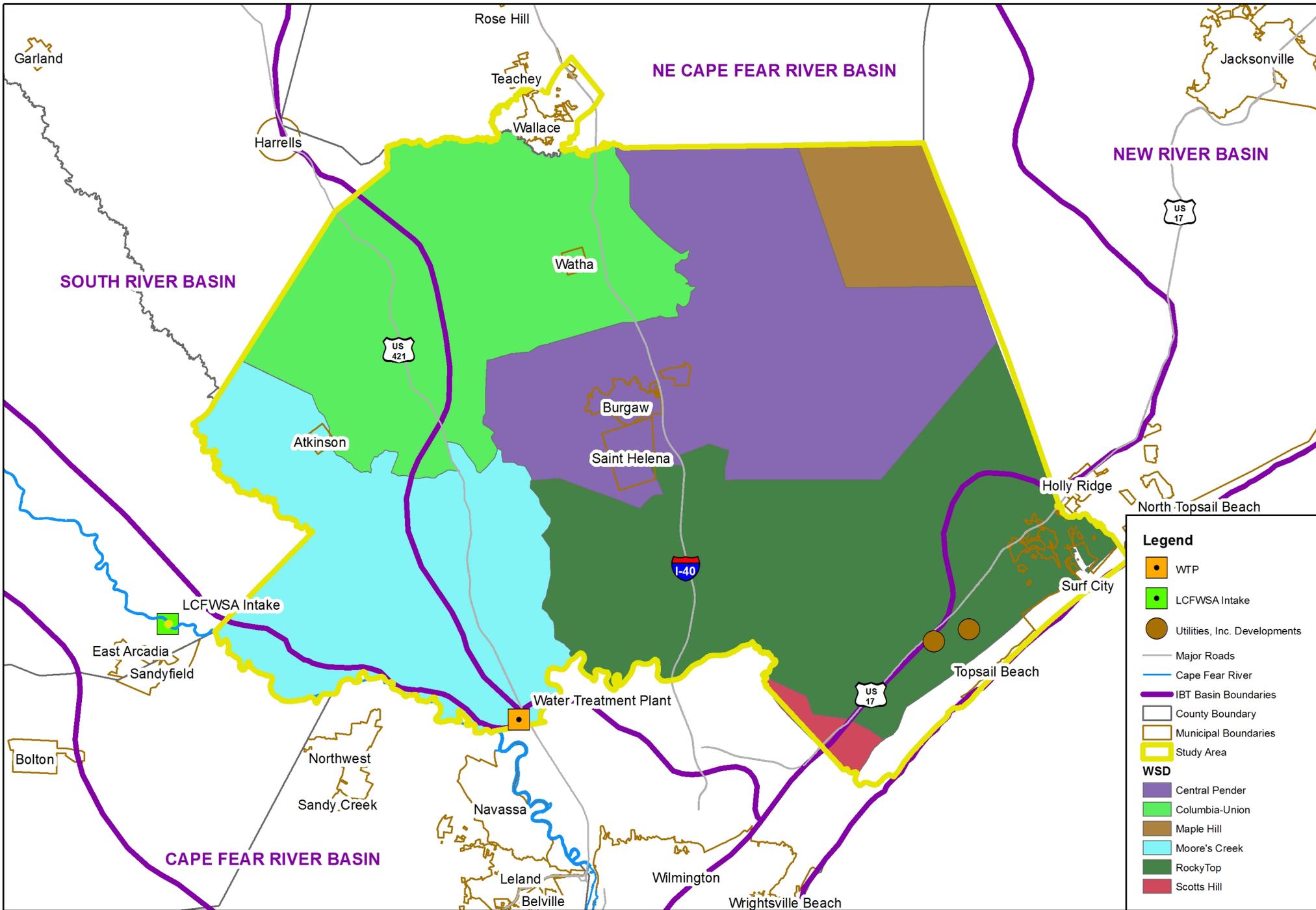
North Carolina Division of Water Resources (NCDWR). 2009. *Regulation of Surface Water Transfers Statutory Guidance*. [http://www.ncwater.org/files/IBT\\_guidance\\_v1.pdf](http://www.ncwater.org/files/IBT_guidance_v1.pdf). Accessed October 11, 2018.

North Carolina Environmental Management Commission (EMC). 2018. Certificate Authorizing Pender County Utilities and the Towns of Burgaw, Topsail Beach, Surf City and Wallace and Utilities, Inc. to transfer water from the Cape Fear River IBT Basin to the South River, Northeast Cape Fear River, and New River IBT Basins. <https://files.nc.gov/ncdeq/Water%20Resources/IBT/2018-10-19-Pender-County-IBT-Certificate-signed.pdf>

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## **APPENDIX A**

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**Legend**

- WTP
- LCFWSA Intake
- Utilities, Inc. Developments
- Major Roads
- Cape Fear River
- IBT Basin Boundaries
- County Boundary
- Municipal Boundaries
- Study Area

**WSD**

- Central Pender
- Columbia-Union
- Maple Hill
- Moore's Creek
- Rocky Top
- Scotts Hill

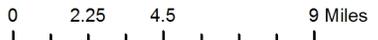


Exhibit 1-2  
**Study Area Overview Map**  
 Environmental Assessment  
 Pender County Utilities  
 Interbasin Transfer from the Cape Fear River