Development of the West Point Lake Models

Presented by:
Elizabeth Booth, PhD, PE
Brian J. Watson, PE, PH

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Outline

- Tools and Models Used
- Discussion on inputs and calibration points for the Watershed Model
- Discussion on inputs and calibration points for the Lake Hydrodynamic and Water Quality Model
- Next Steps
- Questions

Database and Models Used

- **Database Management**
  - Water Resources Database (WRDB)
- **Watershed Model**
  - Loading Simulation Program C++ (LSPC)
- **Hydrodynamic Model**
  - Environmental Fluid Dynamics Code (EFDC)
- **Water Quality Model**
  - Environmental Fluid Dynamics Code (EFDC)

Model Linkage

Models

LSPC

Flows

Temperatures

Concentrations

EFDC

Outputs

Subwatershed Flows

Subwatershed Concentrations
(Chl-a, TN, NH3, NOx, OrgN, TP, PO4, OrgP, BOD, DO, Temp, TSS, Fecal)

Water Surface

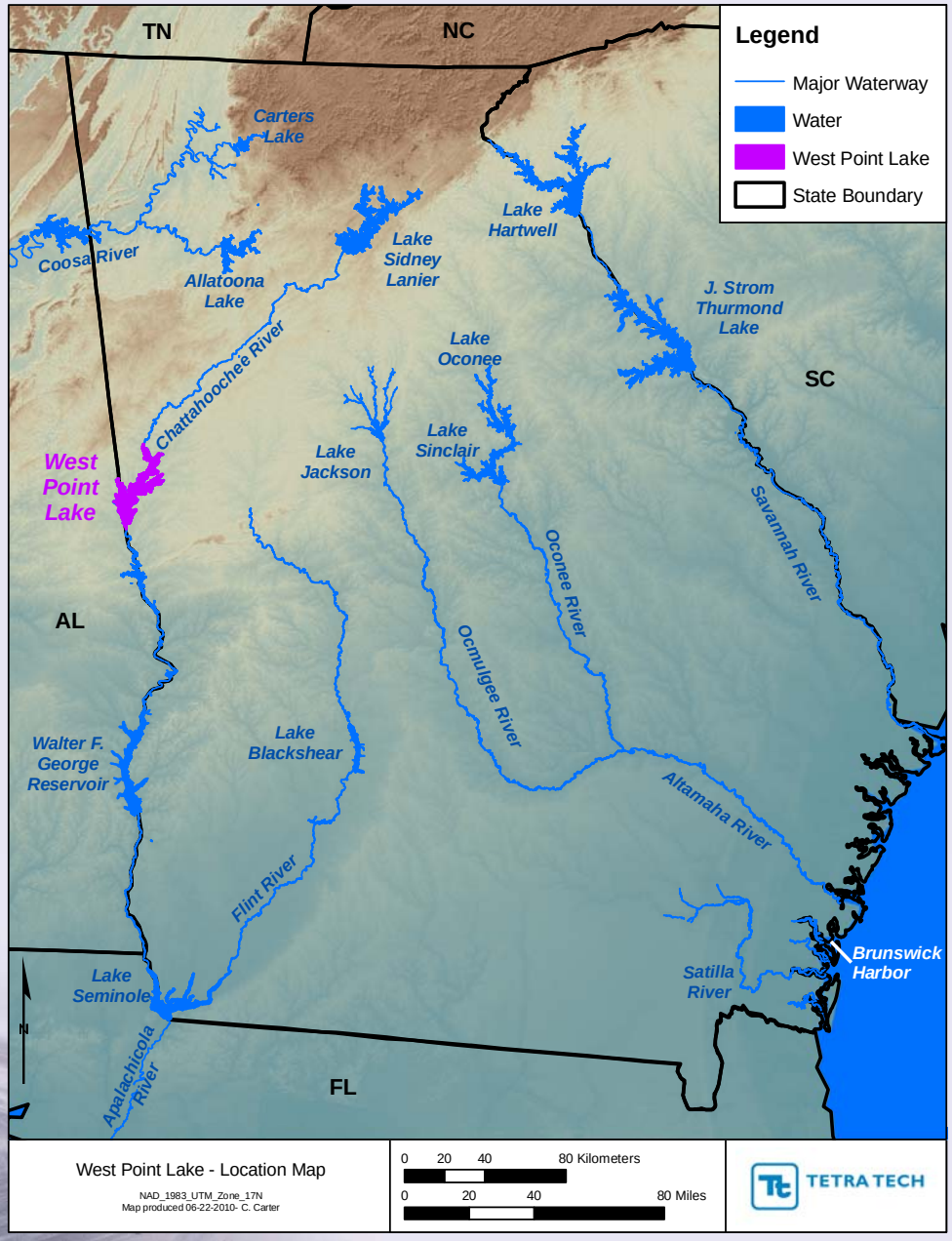
Temperatures

Lake Concentrations
(Chl-a, TN, NH3, NOx, OrgN, TP, PO4, OrgP, BOD, DO, Temp)

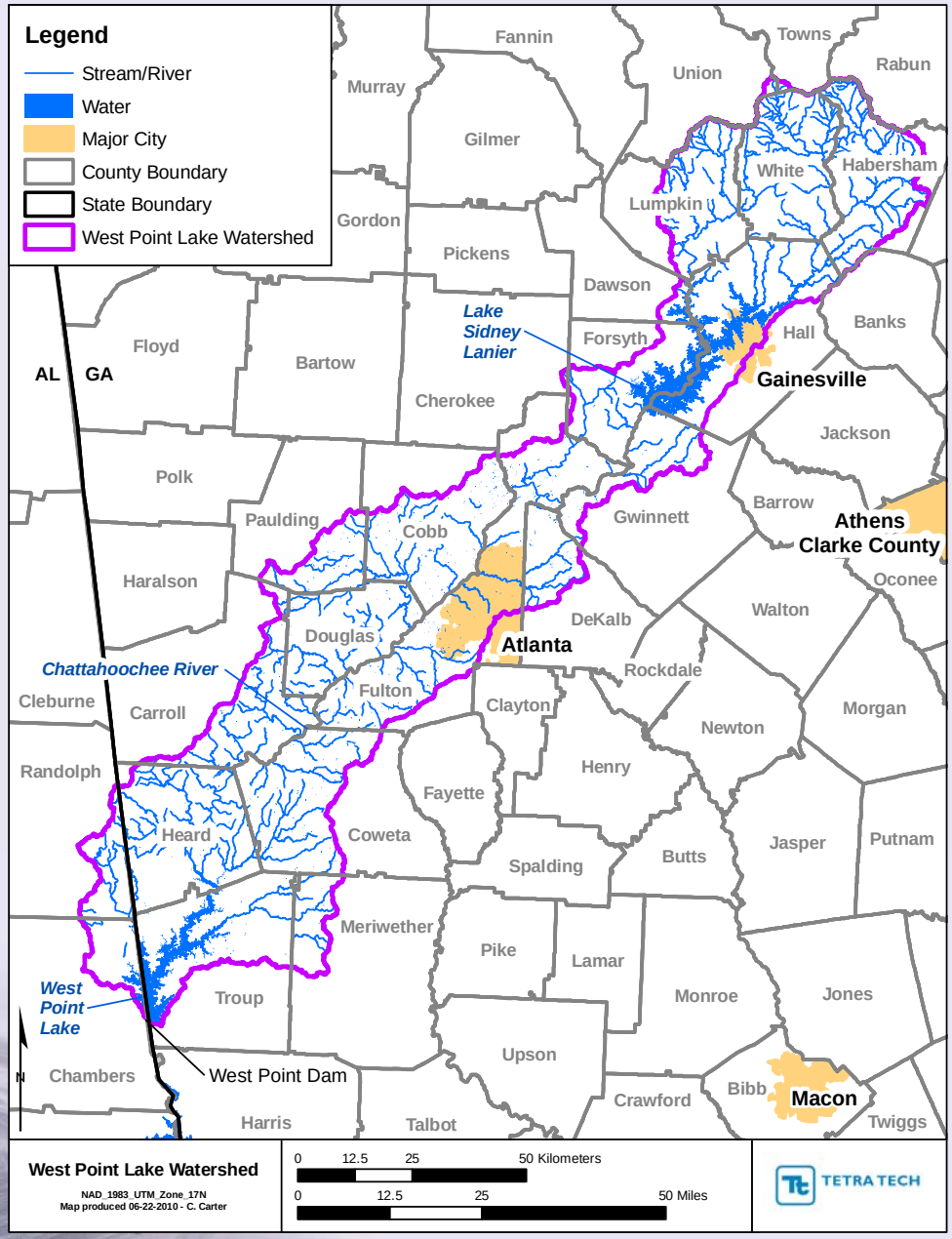
Data Sources

Data Source	Data Type
U.S. Army Corps of Engineers – Mobile District (Corps)	Water Surface Elevation West Point Dam Flows
Environmental Protection Division (EPD)	Point Source Discharges Water Withdrawals Temperature Profiles Dissolved Oxygen Profiles River and Lake Water Quality Algal Growth Potential Tests
United States Environmental Protection Division – Region 4 (USEPA4)	Nutrient Fluxes Sediment Oxygen Demand
Kingfisher Maps, Inc.	Lake Bathymetry
Georgia Automated Environmental Monitoring Network (GAEMN)	Meteorological
National Climatic Data Center (NCDC)	Meteorological
City of Lagrange	Lake Water Quality

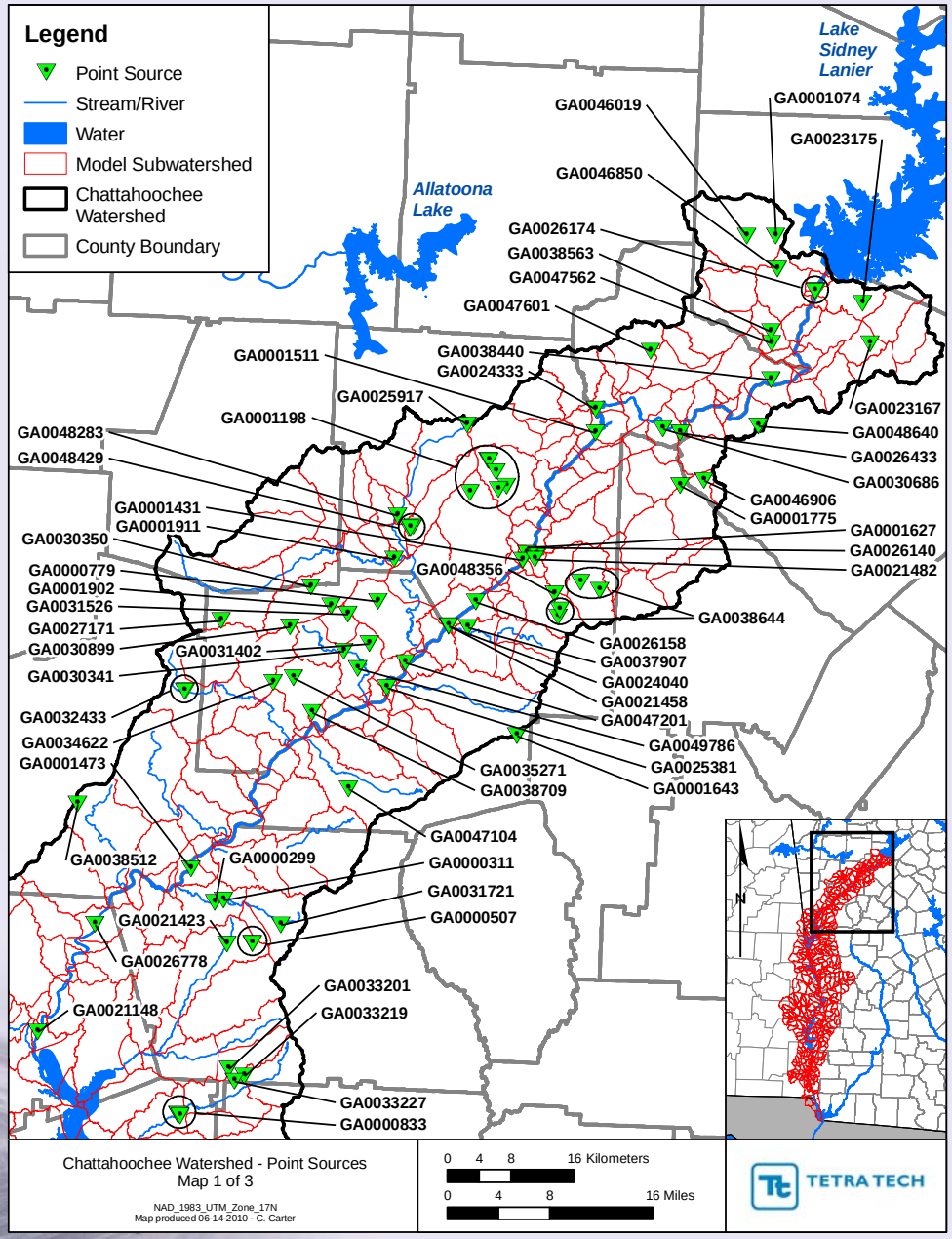
Location of West Point Lake



West Point Lake Watershed



Point Source Locations



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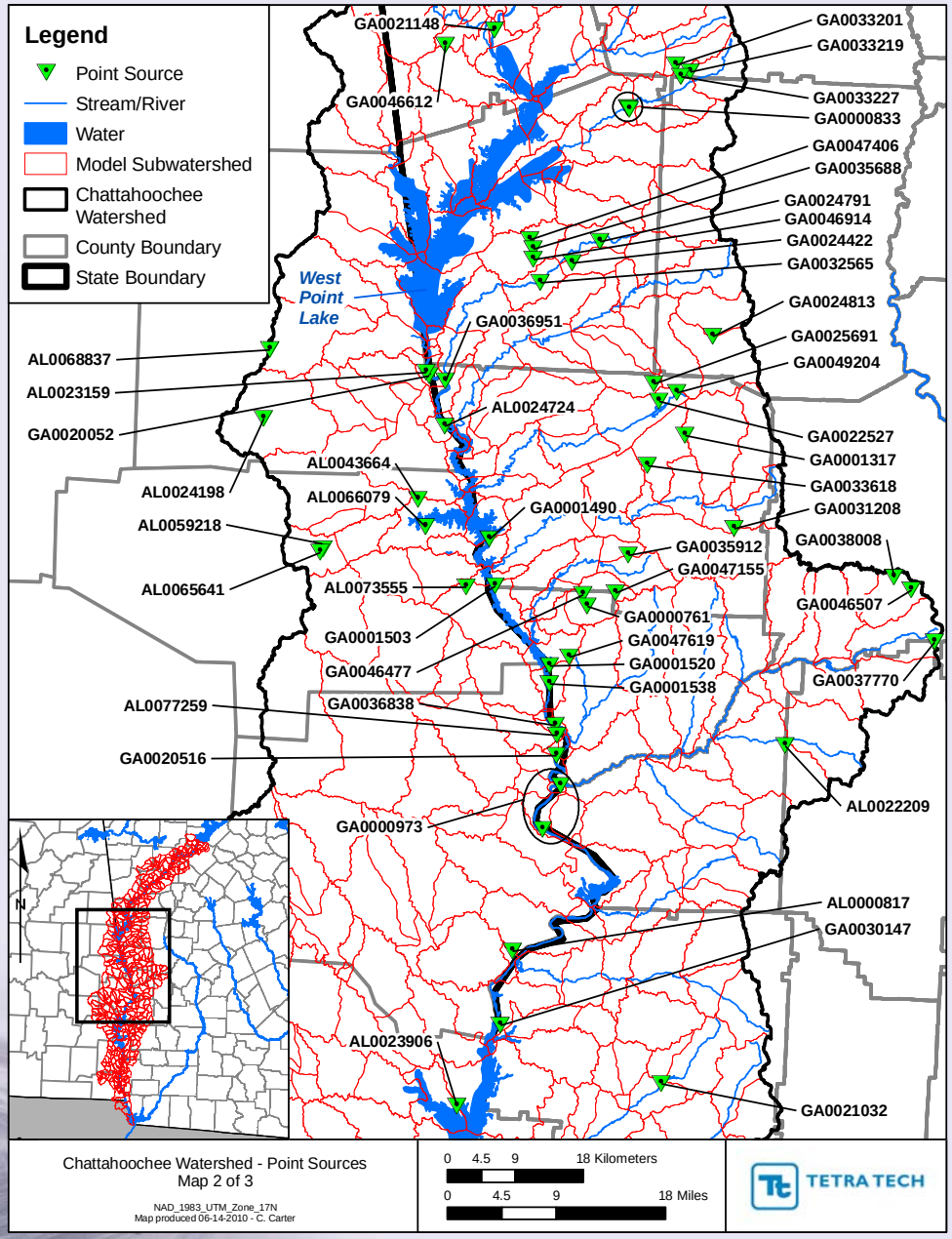
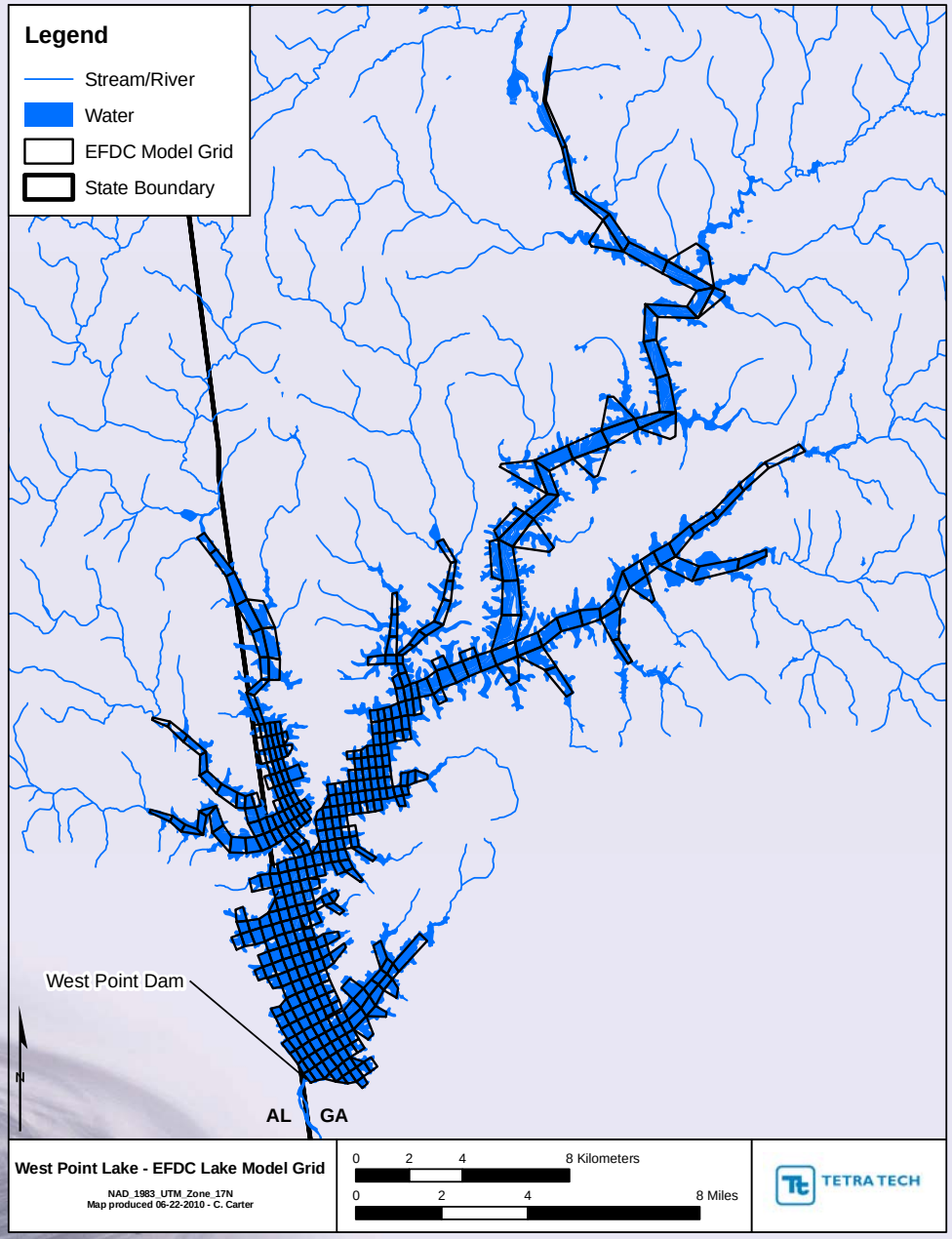
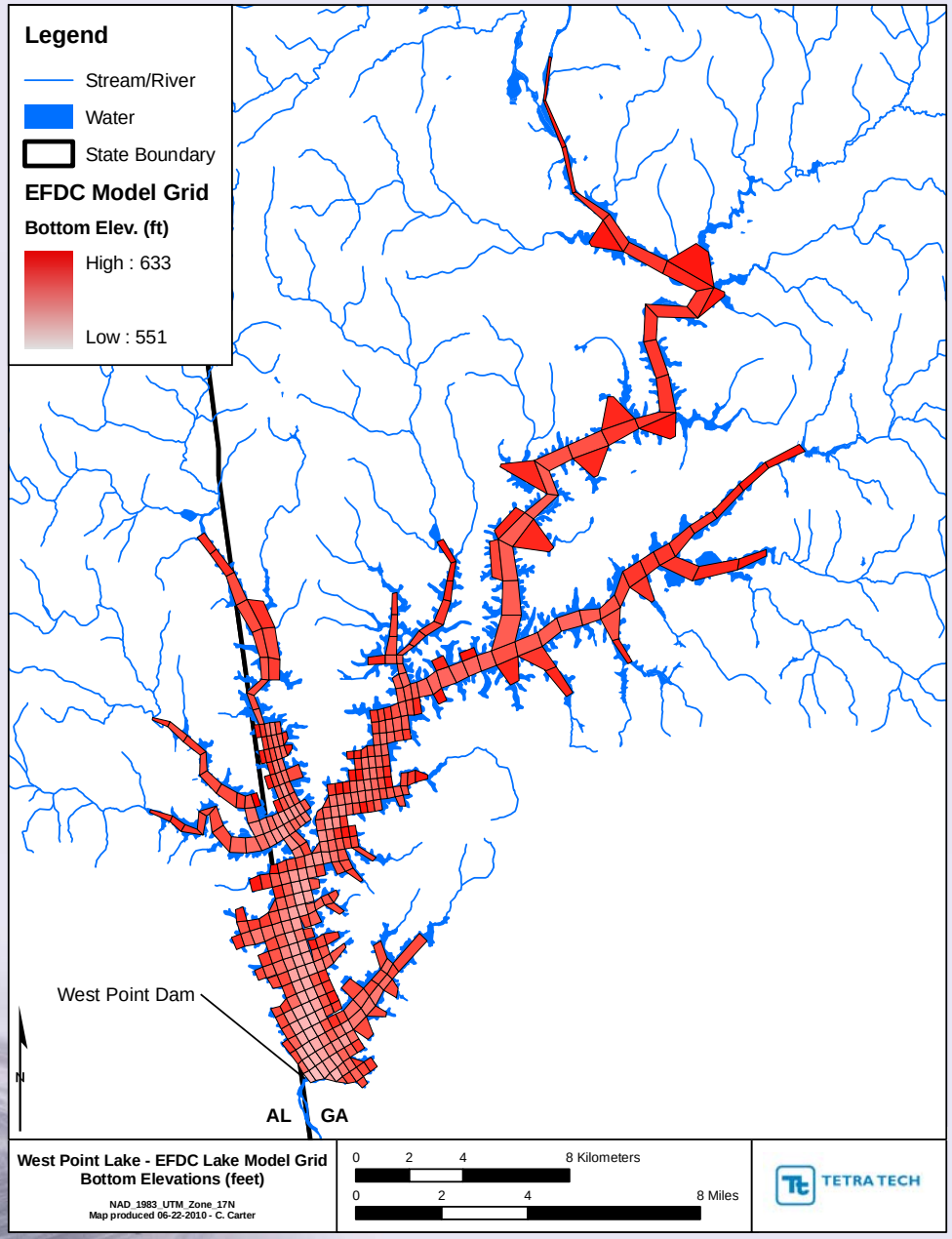


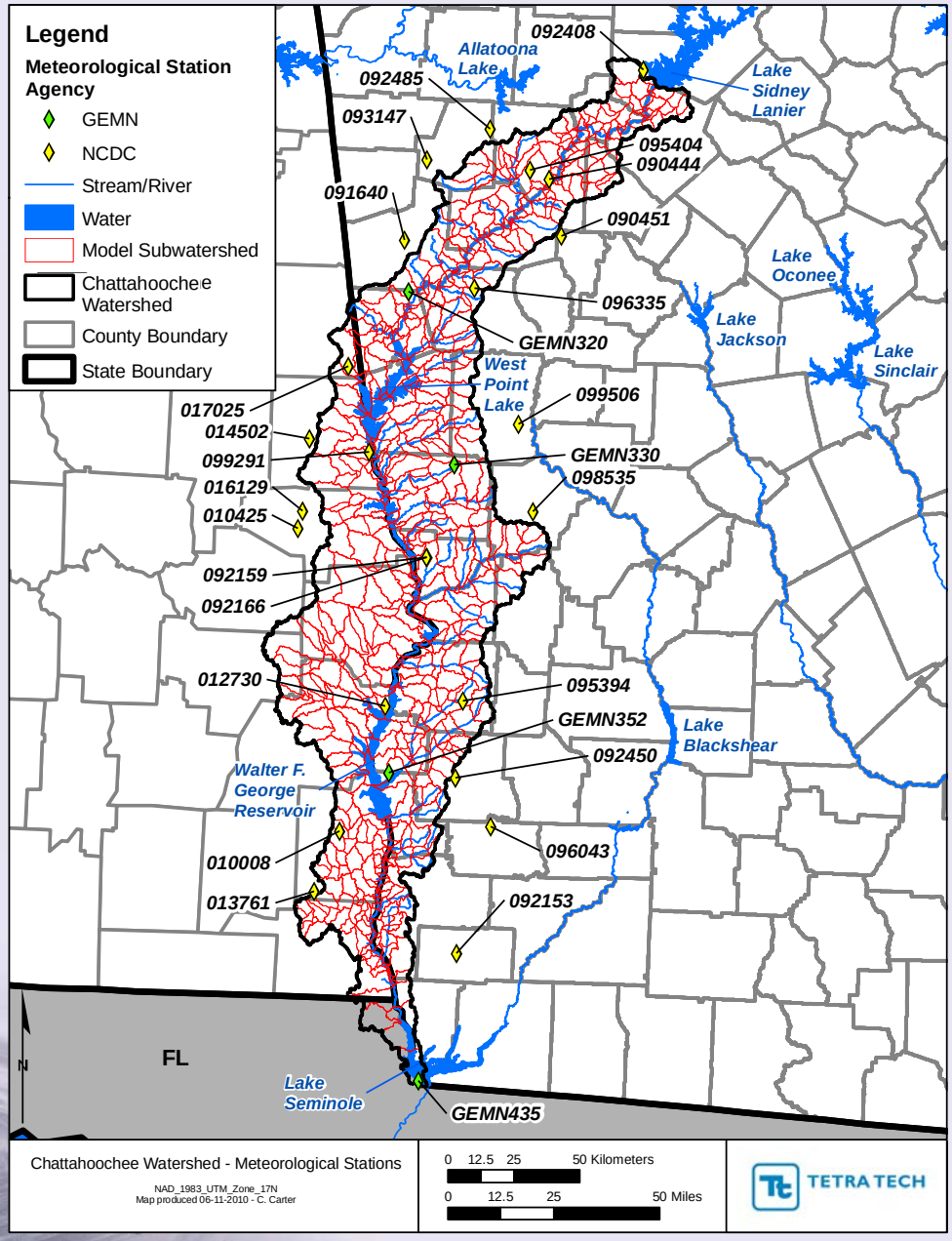
West Point Lake Hydrodynamic and Water Quality Model Grid



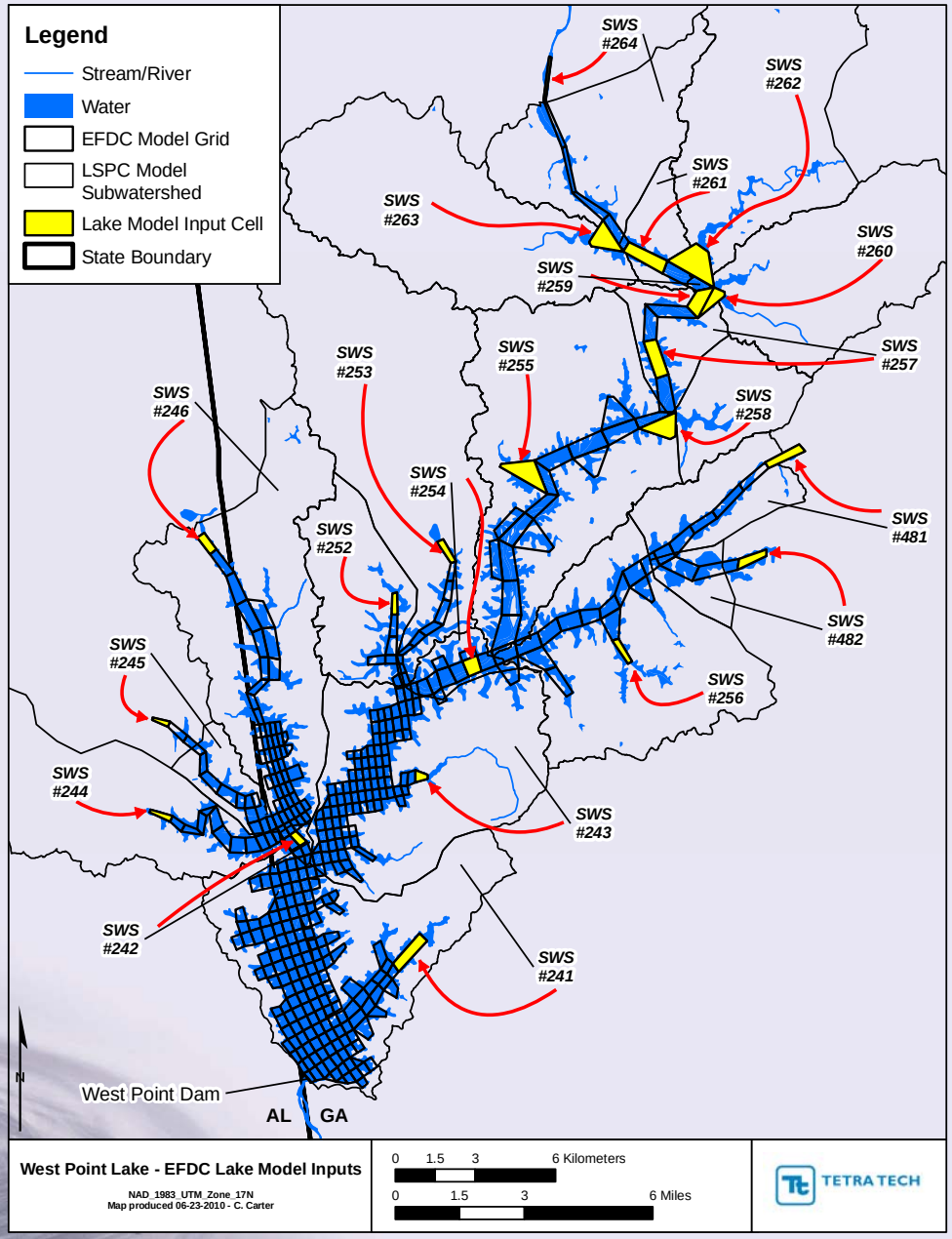
West Point Lake Grid Bottom Elevation



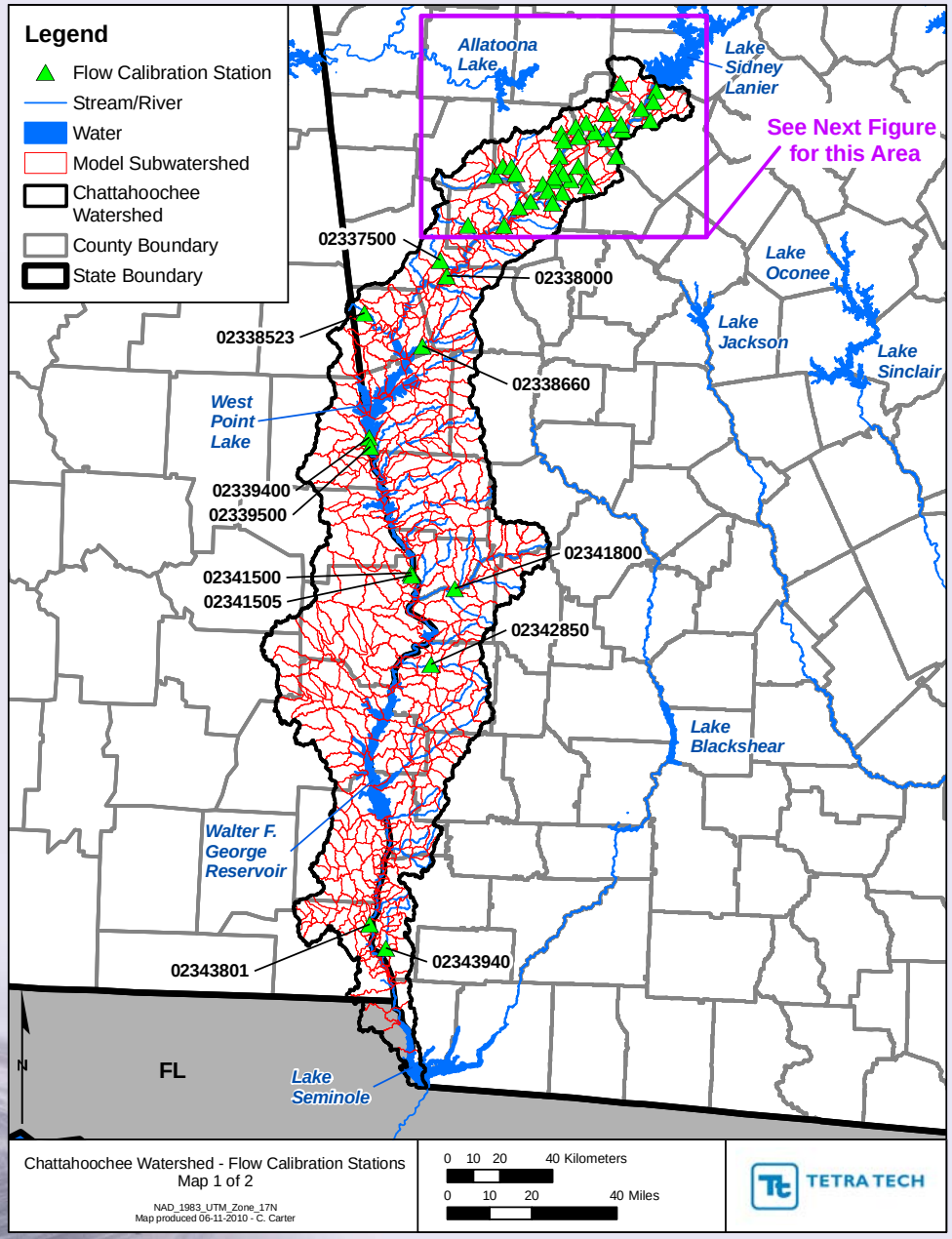
Meteorological Station Location



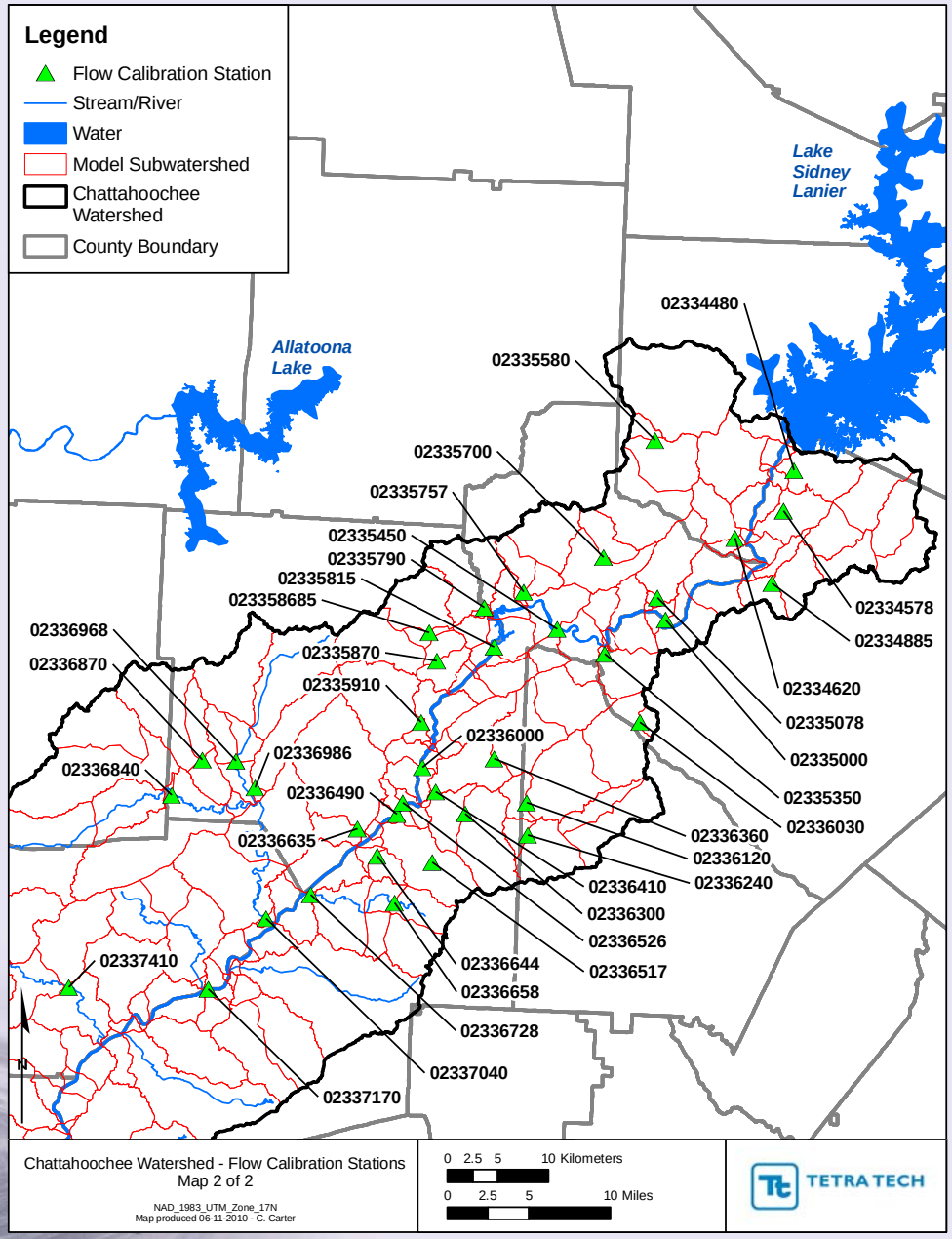
LSPC Watershed Inputs to West Point Lake



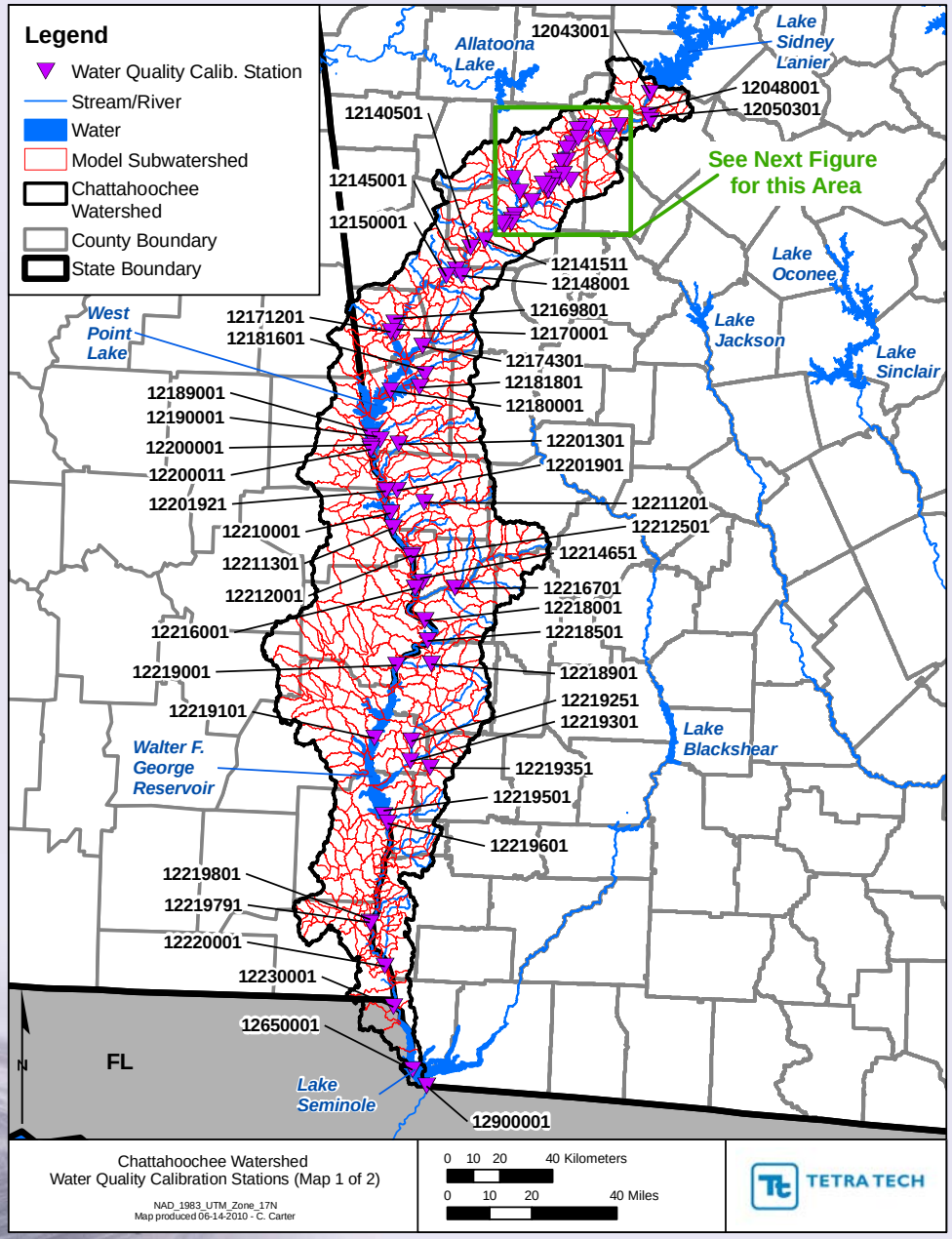
Hydrology Calibration Locations for LSPC Model



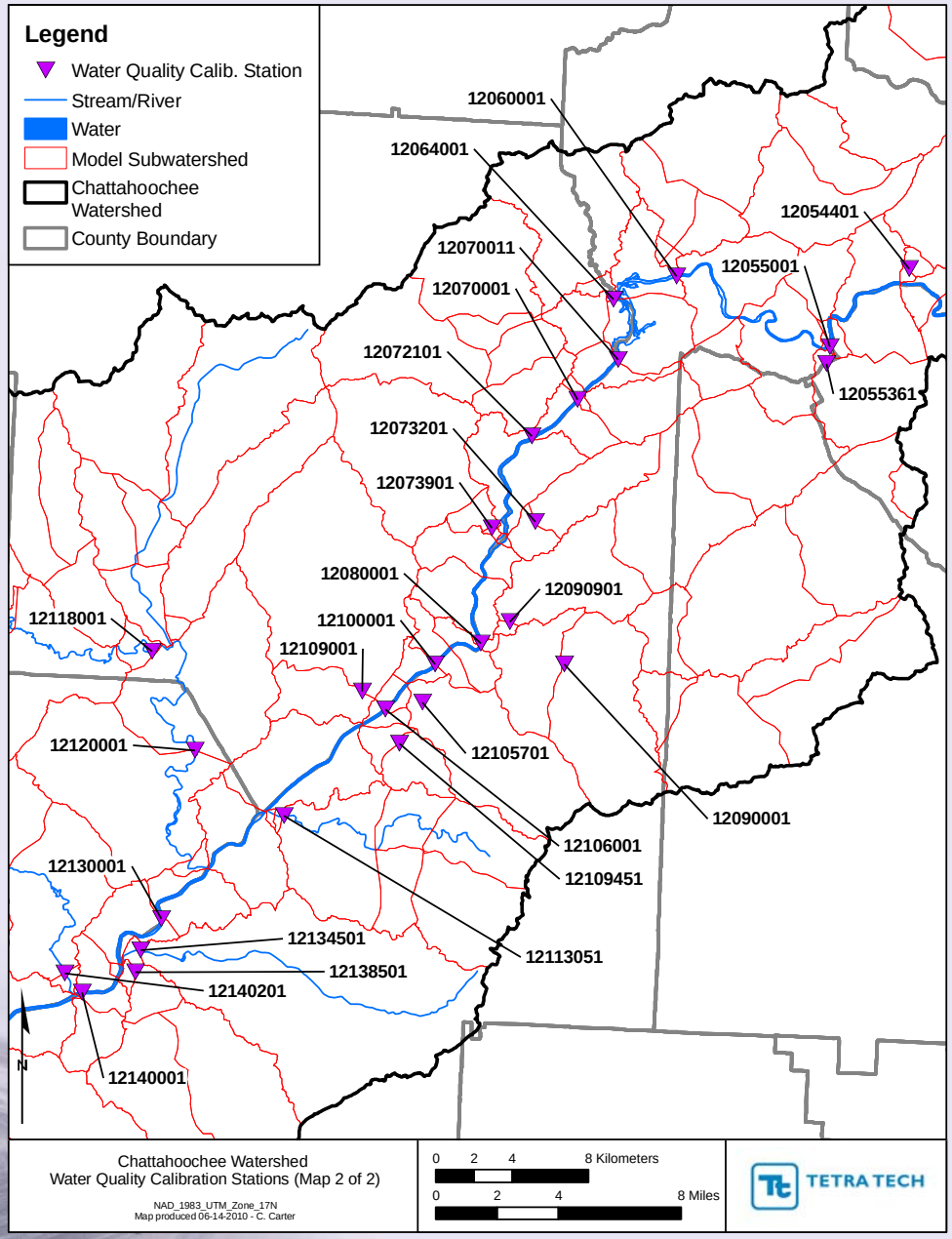
Hydrology Calibration Locations for LSPC Model



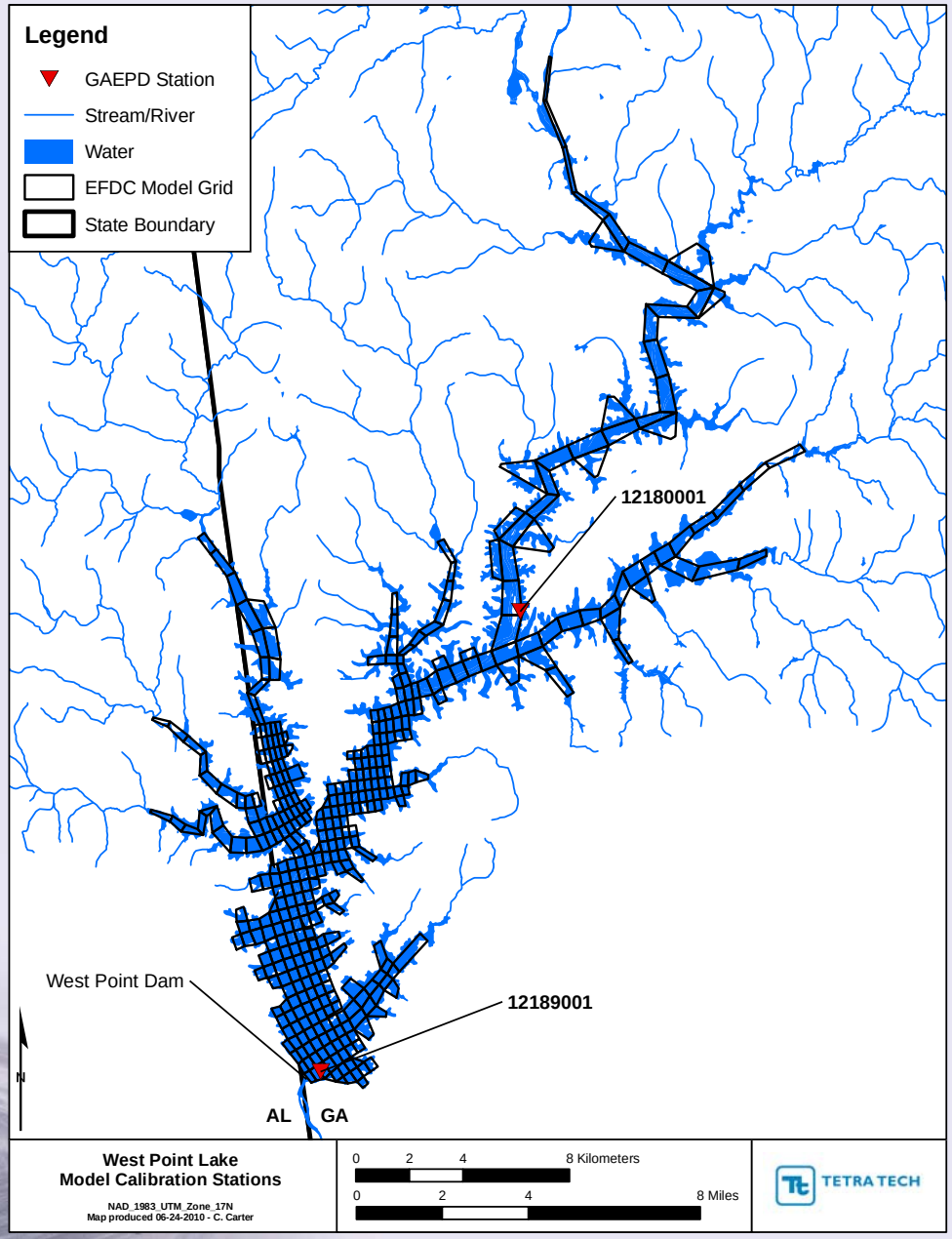
Water Quality Calibration Locations for LSPC Model



Water Quality Calibration Locations for LSPC Model



Hydrology and Water Quality Calibration Locations for EFDC Model



Next Steps

- Calibrate LSPC Hydrology and Water Quality model
- Calibrate EFDC Hydrodynamics and Water Quality model
- Begin Scenario Runs

Questions?