



Revised Lake Standards

November 16, 2012

Presented by:
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Outline

- ❑ Models and Database Tools
- ❑ Scenarios
- ❑ Lake Lanier Revised Standards
- ❑ West Point Lake Revised Standards
- ❑ Carters Lake Revised Standards
- ❑ Questions

Modeling and Database Tools

❑ Database Management

- Water Resources Database (WRDB)

❑ Watershed Model

- Loading Simulation Program C++ (LSPC)

❑ Hydrodynamic and Water Quality Lake Model

- Environmental Fluid Dynamics Code (EFDC)

Scenarios

❑ Calibration Baseline

❑ Full Permit

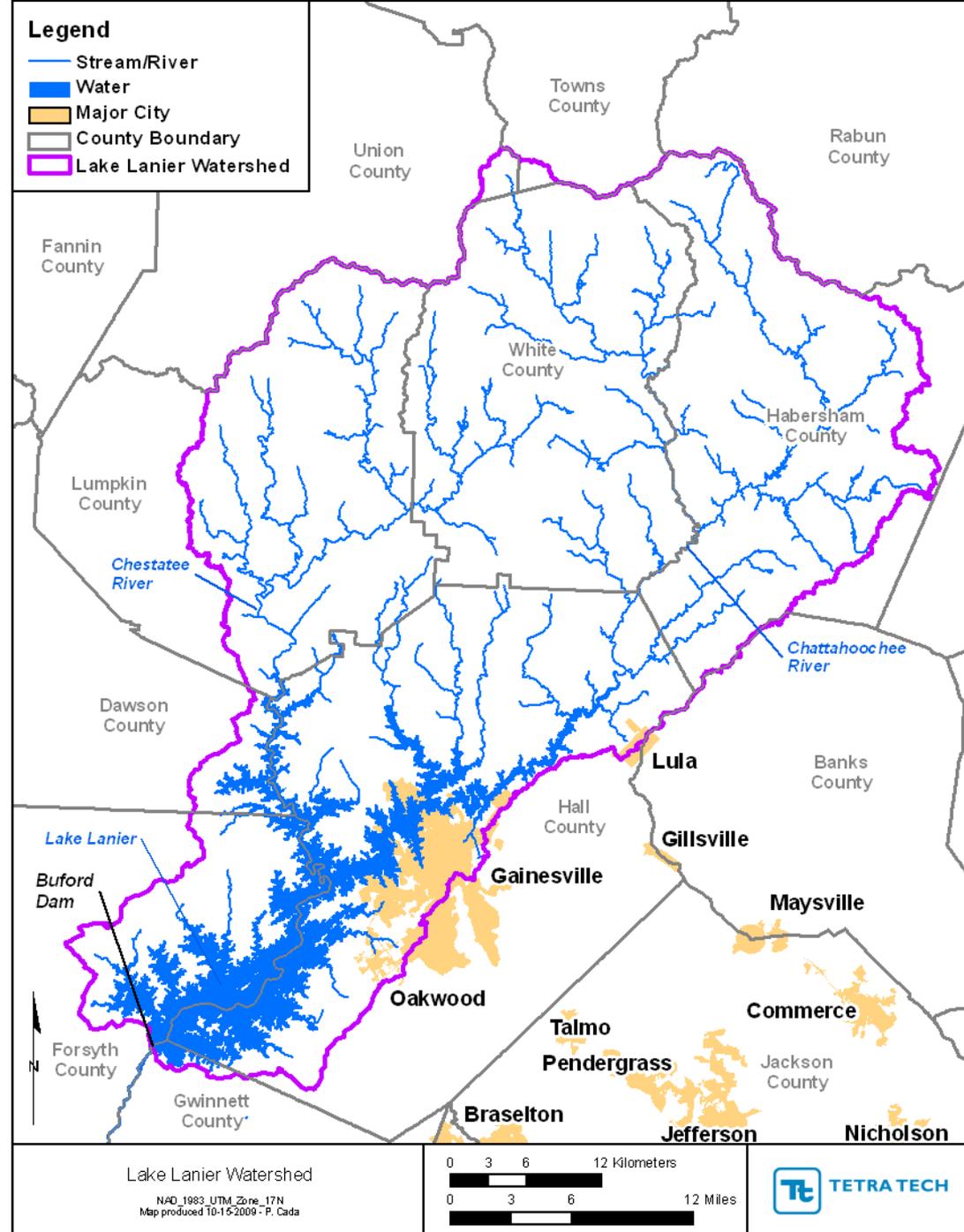
- All Point Sources input at Current Permitted Flows & Concentrations
- Land Use Unchanged
- Septics Unchanged

❑ All Forest

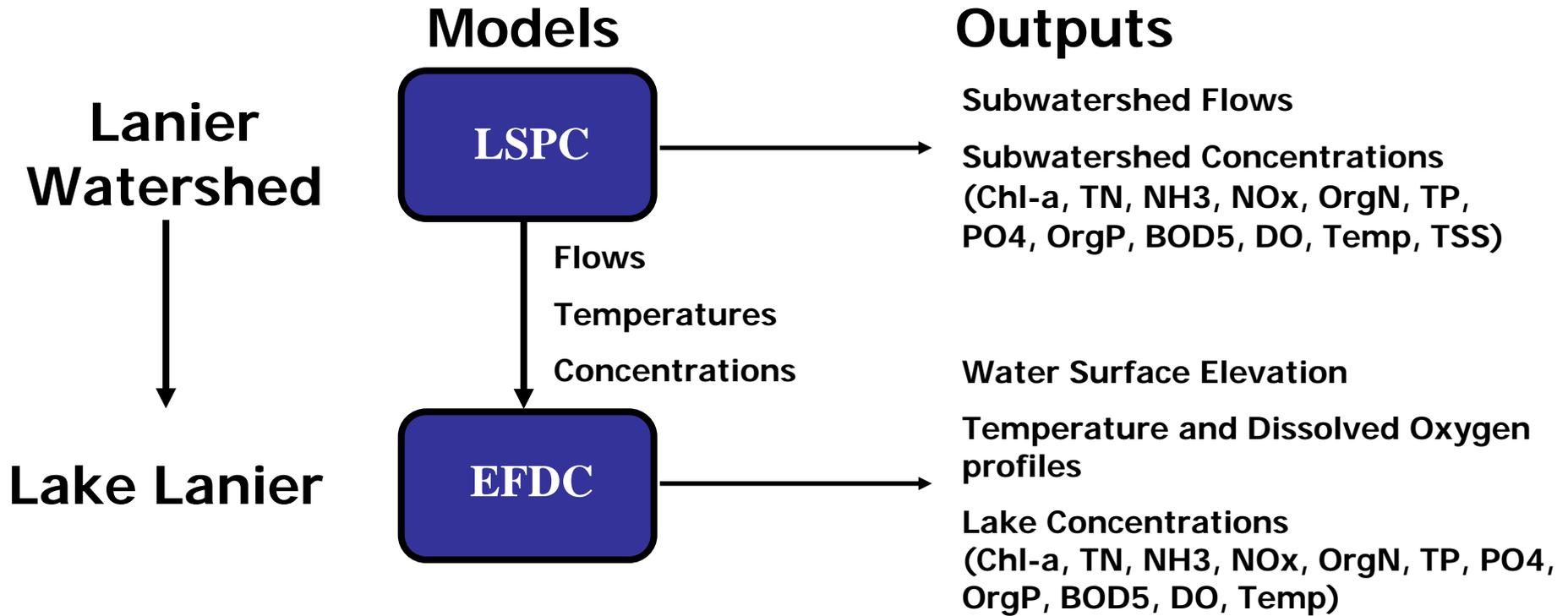
- Point Source and Water Withdrawals Removed
- Septics Removed
- All Land Use converted to forest

❑ Preliminary TMDLs

Lake Lanier Watershed

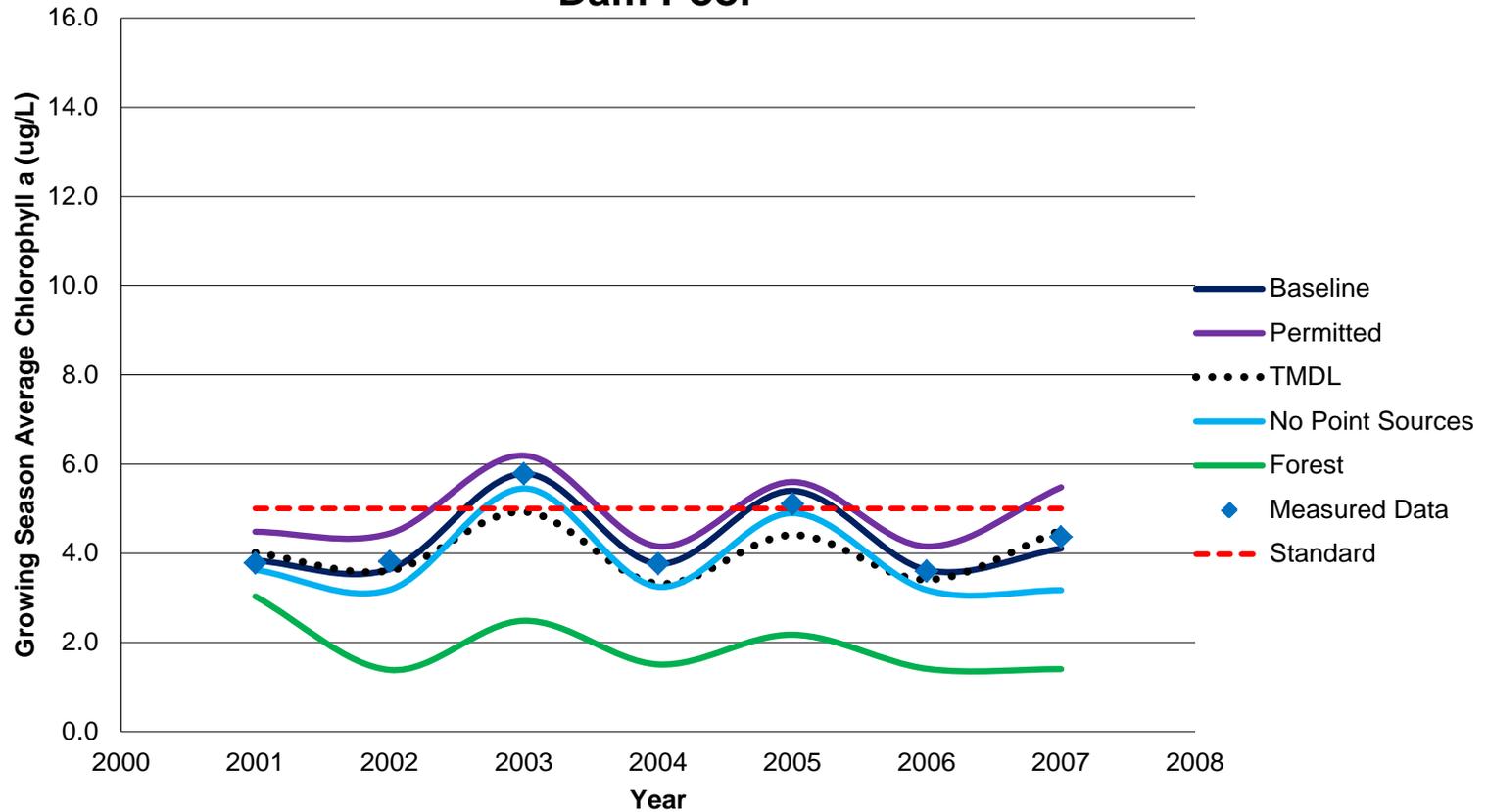


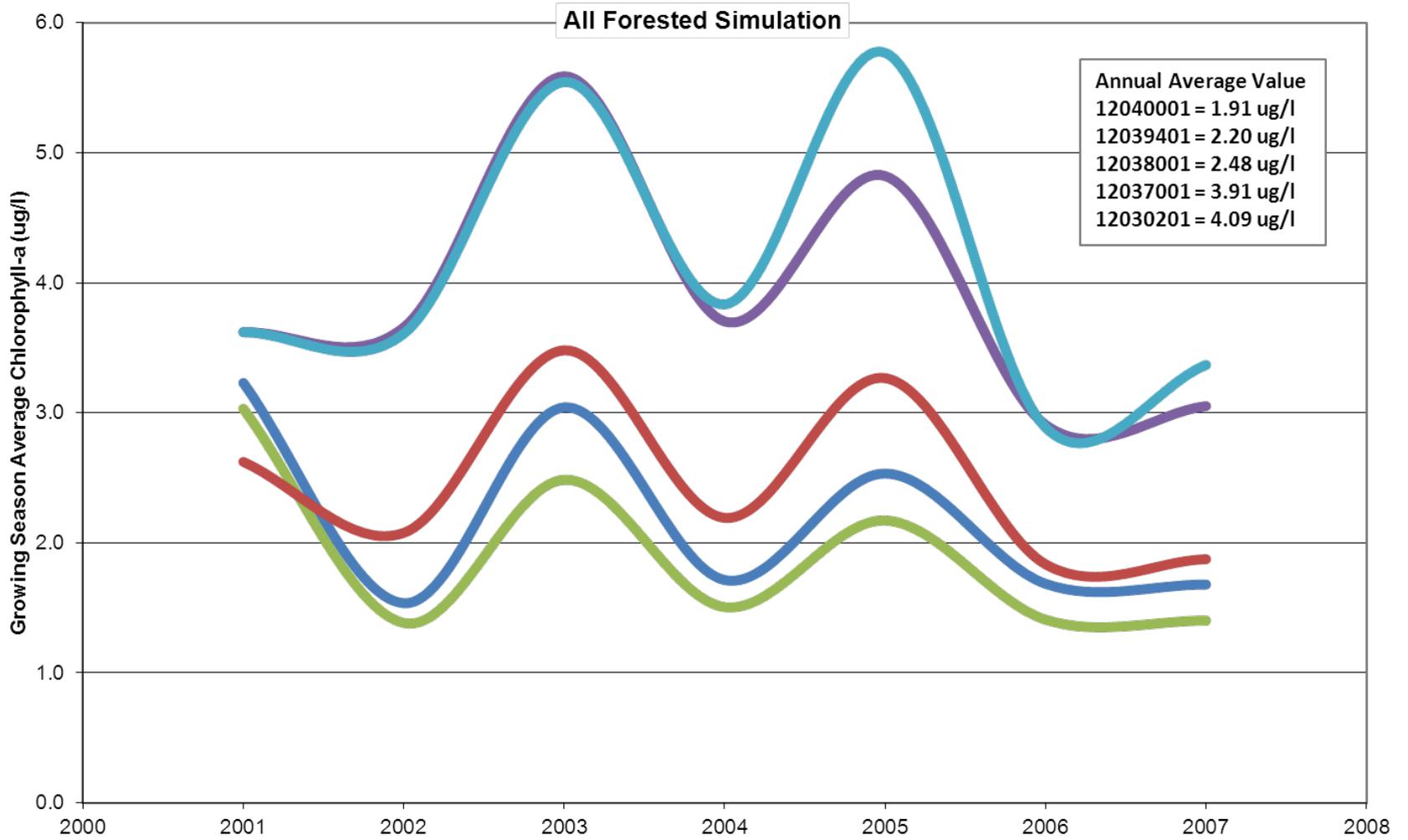
Lake Lanier Models



Lake Lanier

Dam Pool





Chlorophyll a Criteria Evaluation

Station	Current Chl-a Criteria (ug/L)	All Forested Avg. of Growing Season Chl-a for all years (ug/L)	Normalized Chlorophyll Factor	Proposed Chlorophyll Criteria (ug/L)
Dam Pool	5	1.91	1.0	5
Flowery Branch	5	2.20	1.2	6
Browns Bridge	5	2.48	1.3	7
Boling Bridge	10	3.91	2.0	10
Lanier Bridge	10	4.09	2.1	10

Total N Lake Criteria Evaluation

Maximum Value during Growing Season

Calculated using data at all Compliance Stations for all years

Scenario	5 th %ile	25 th %ile	Mean	75 th %ile	95 th %ile
Measured	0.392	0.500	0.532	0.600	0.796
Calibration	0.484	0.538	0.589	0.657	0.764
Permit	1.261	1.337	1.394	1.456	1.540
Forest	0.226	0.238	0.283	0.312	0.337

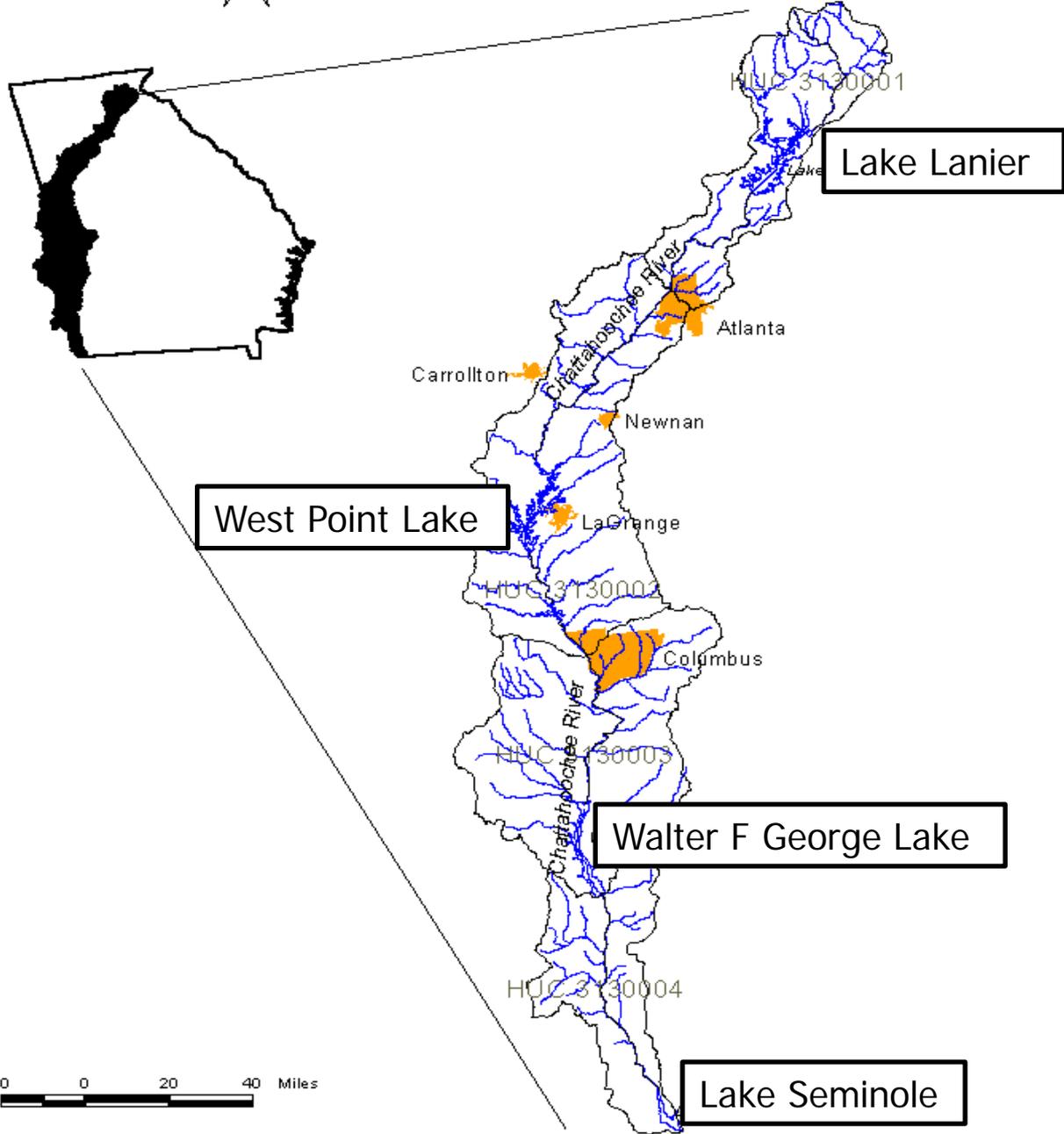


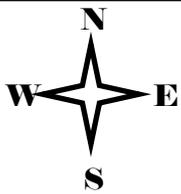
Total N Criteria Evaluation

Difference in Chlorophyll a (ug/L)

TMDL Run and TMDL w/ Total N at 4 mg/L

Station	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Dam Pool	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0
Flowery Branch	-0.1	0.0	-0.2	0.0	0.0	0.0	-0.1
Browns Bridge	-0.1	0.0	-0.1	0.0	0.0	0.0	-0.1
Boling Bridge	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.1
Lanier Bridge	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.1





**Nitrogen Standard
Not to exceed 4 mg/L**

**At Boling Bridge (SR 53) on
Chestatee River 10 ug/L**

**At Lanier Bridge (SR 53) on
Chattahoochee River 10 ug/L**

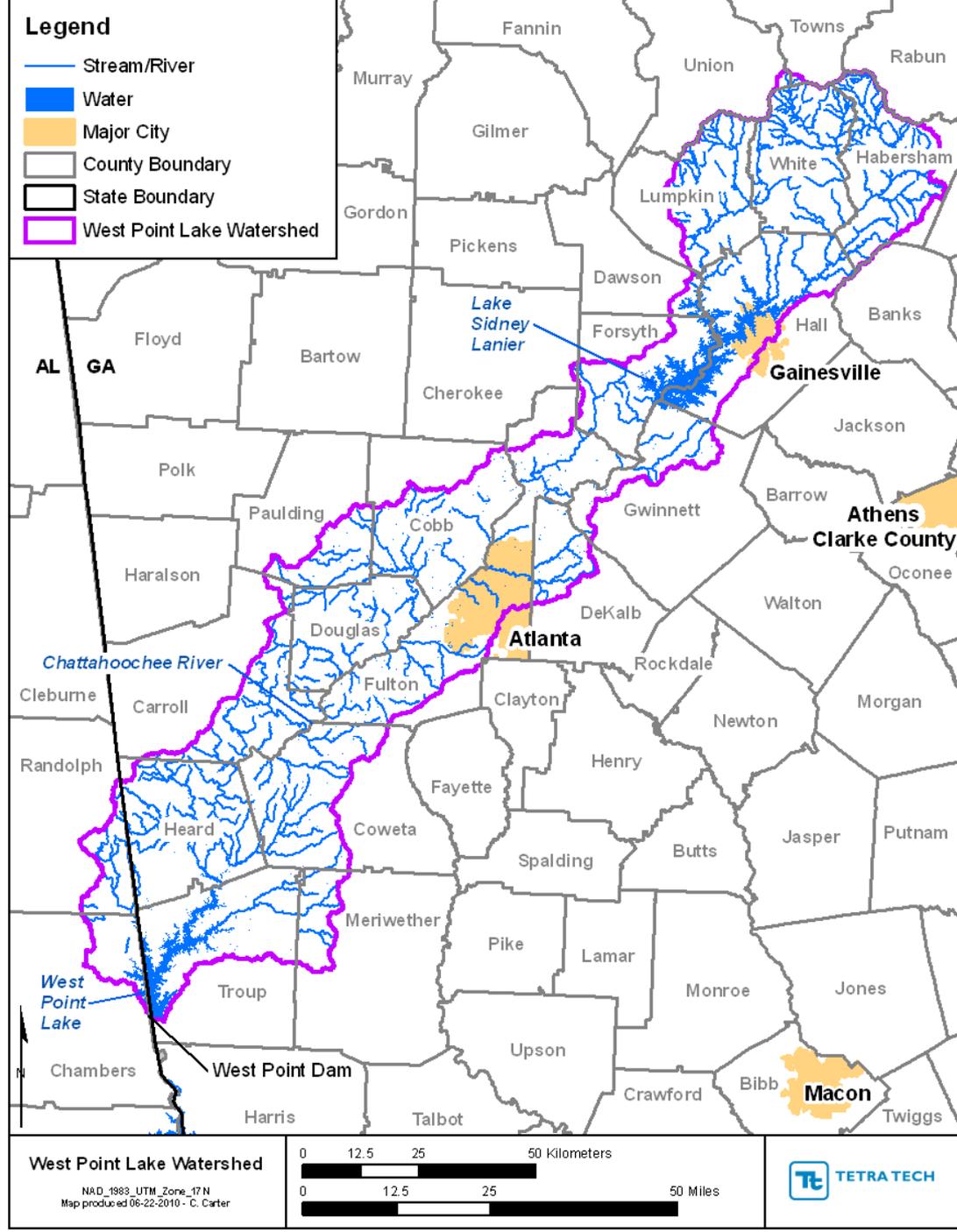
**At Browns Bridge Road (SR 369) 5 ug/L
7 ug/L**

**Upstream from the Flowery Branch confluence 5 ug/L
6 ug/L**

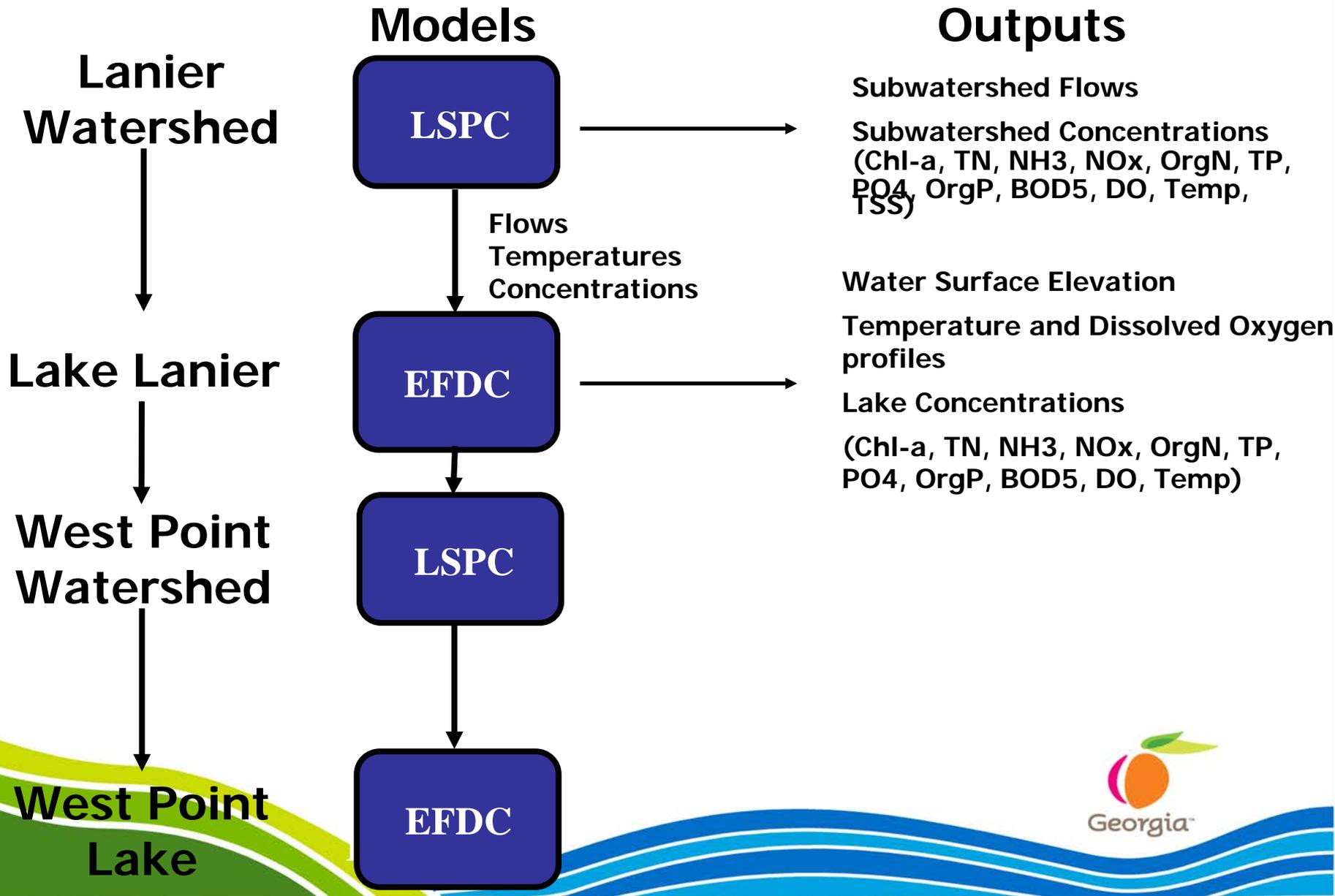
**Upstream from the Buford Dam
forebay 5 ug/L**

**Lake Lanier
Water Quality Standards**

West Point Lake Watershed

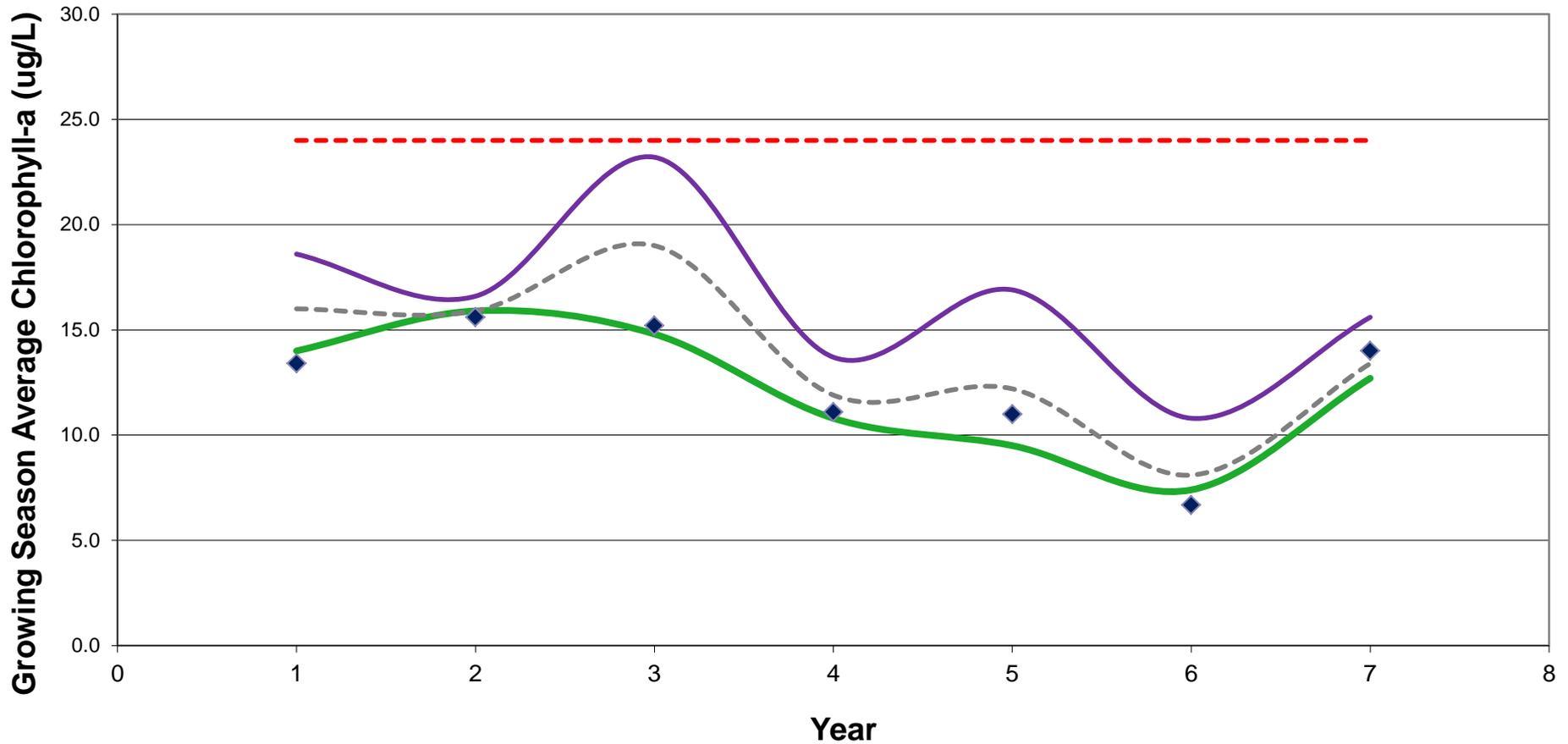


West Point Lake Models



West Point Lake

LaGrange Intake - Passdown



— Calibration

◆ Measured Data

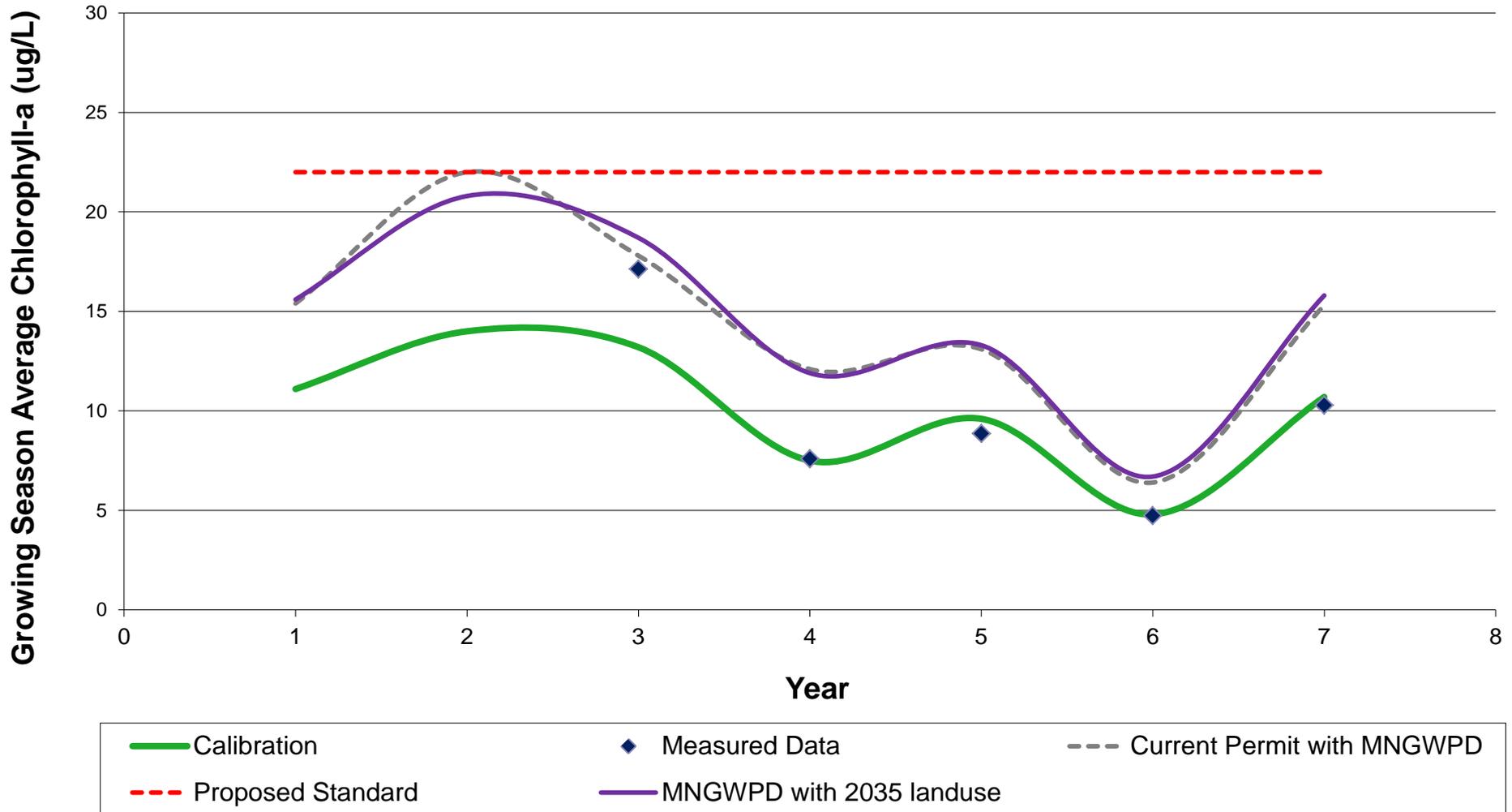
- - - Current Permit with MNGWPD

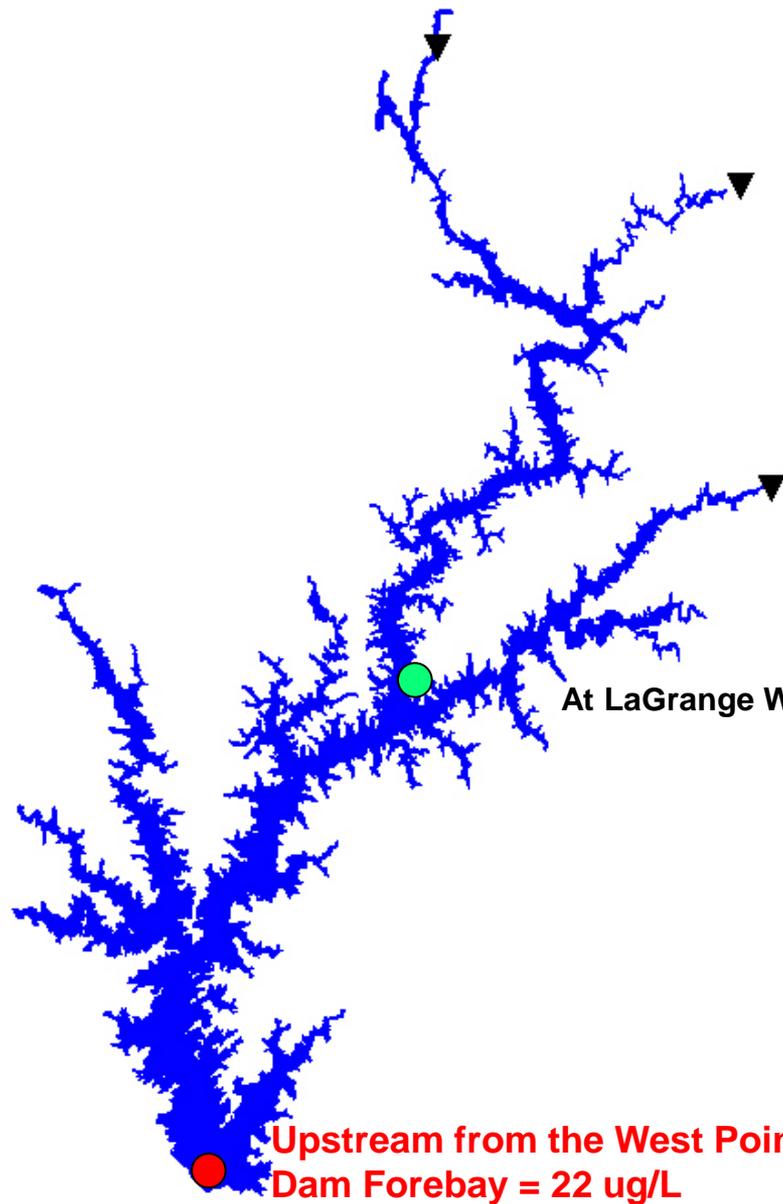
— MNGWPD with 2035 landuse

- - - Proposed Standard

West Point Lake

Forebay - Passdown





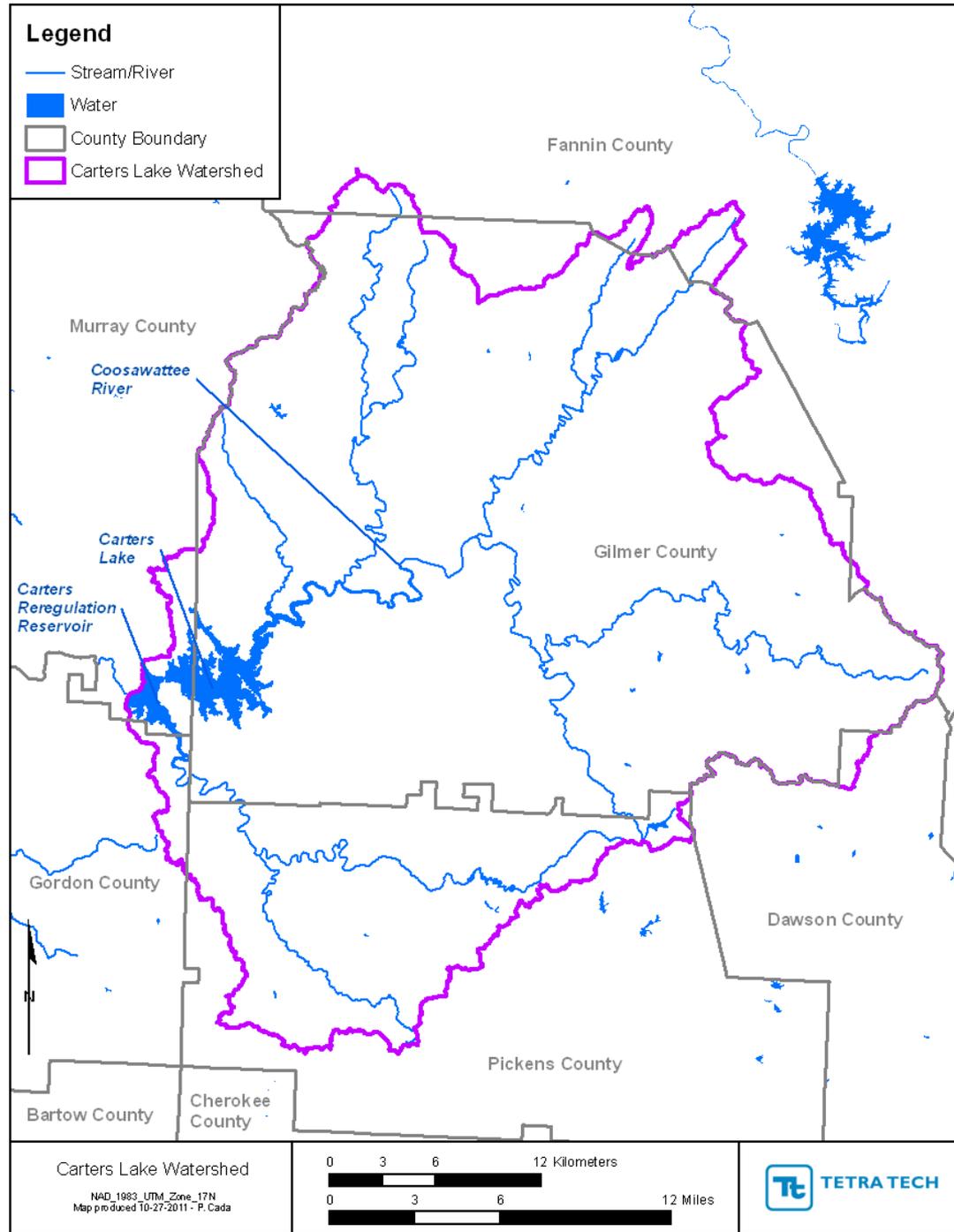
Nitrogen Standard = 4.0 mg/L

At LaGrange Water Intake 27 ug/L
24 ug/L

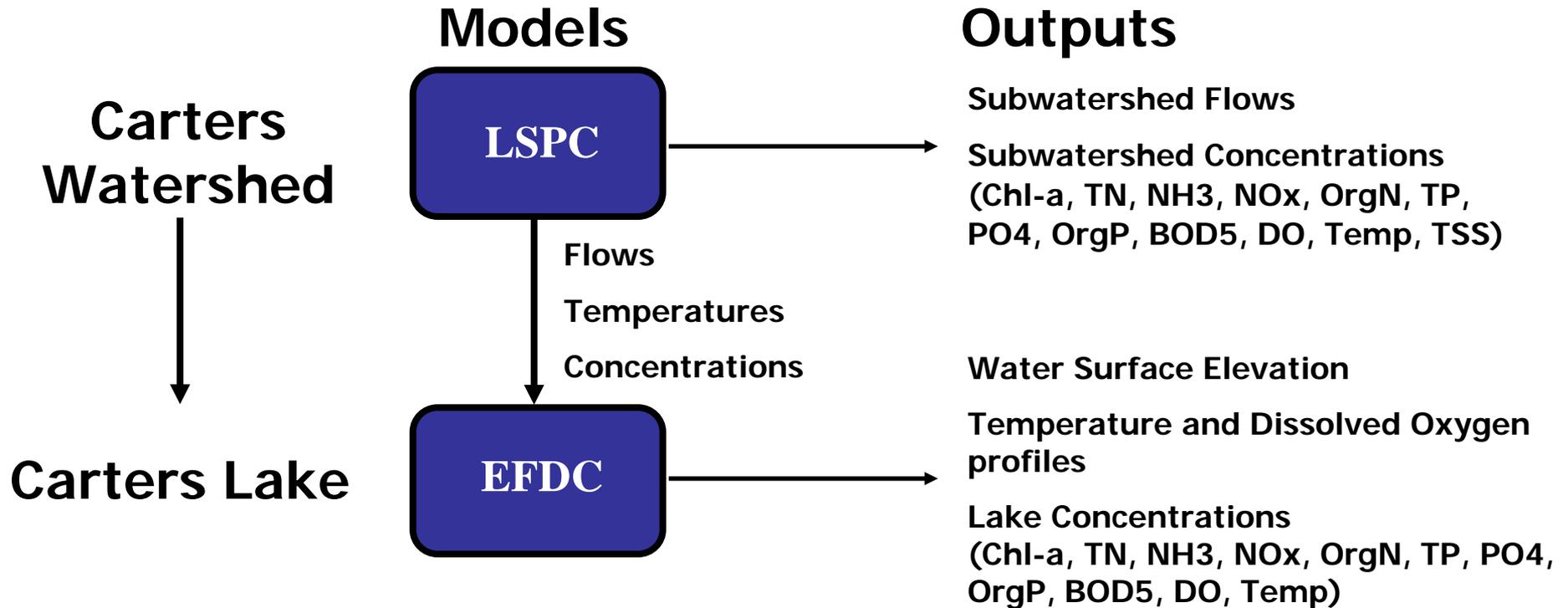
Upstream from the West Point
Dam Forebay = 22 ug/L

West Point Lake
Water Quality Standards

Carters Lake Watershed

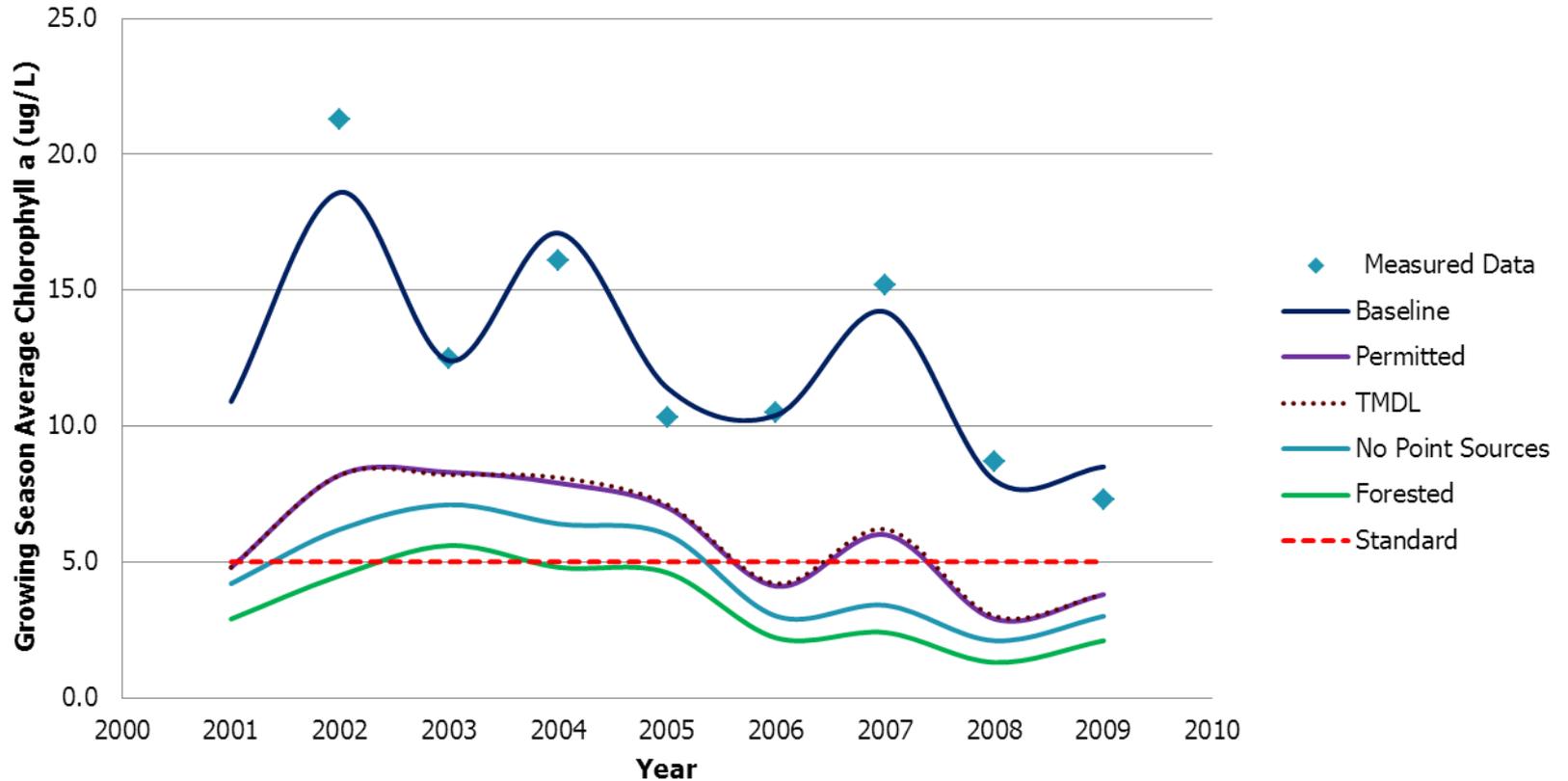


Carters Lake Models



Carters Lake

Woodring Branch



Carters Lake

Summary of Annual Total Phosphorus Loads for All Forested Scenario

Station	Current Standard	2001	2002	2003	2004	2005	2006	2007	2008	2009
Coosawattee River @ Old Hwy 5	151,500	15,500	12,600	36,000	31,700	24,000	8,200	3,800	7,300	40,400
Mountaintown Creek @ US Hwy 76	8,000	3,700	4,100	9,800	8,700	6,300	2,200	1,100	1,800	12,100

Summary of Chlorophyll a Data ($\mu\text{g/L}$) as a result of Increasing Total P Load at Mountaintown Creek

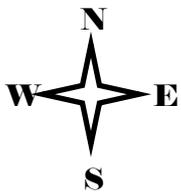
Station	Current Standard	2001	2002	2003	2004	2005	2006	2007	2008	2009
Coosawattee River embayment	10 (Current)	7.38	7.86	8.25	5.12	6.32	3.68	8.32	4.58	3.88
Upstream from Woodring Branch	10 (Proposed)	4.81	8.28	7.98	7.91	6.89	4.11	6.09	2.99	3.79

Total N Criteria Evaluation

Difference in Chlorophyll a (ug/L)

TMDL Run and TMDL w/ Total N at 4 mg/L

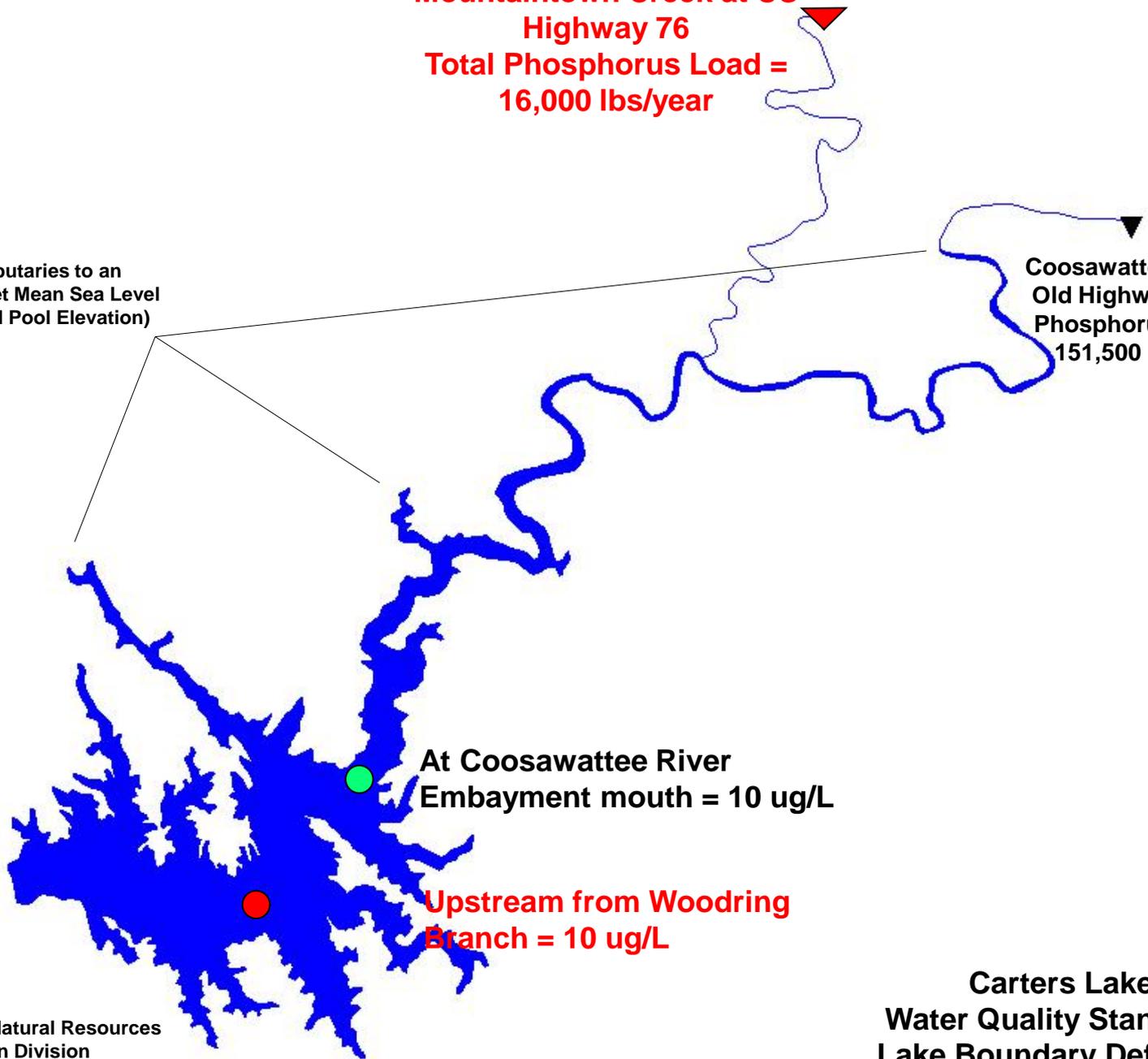
Station	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Dam Pool	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flowery Branch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Browns Bridge	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boling Bridge	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lanier Bridge	0.0	0.0	0.0	0.0	0.0	0.0	0.0



**Mountaintown Creek at US
Highway 76
Total Phosphorus Load =
16,000 lbs/year**

Other impounded tributaries to an
elevation of 1072 Feet Mean Sea Level
(Carters Lake Normal Pool Elevation)

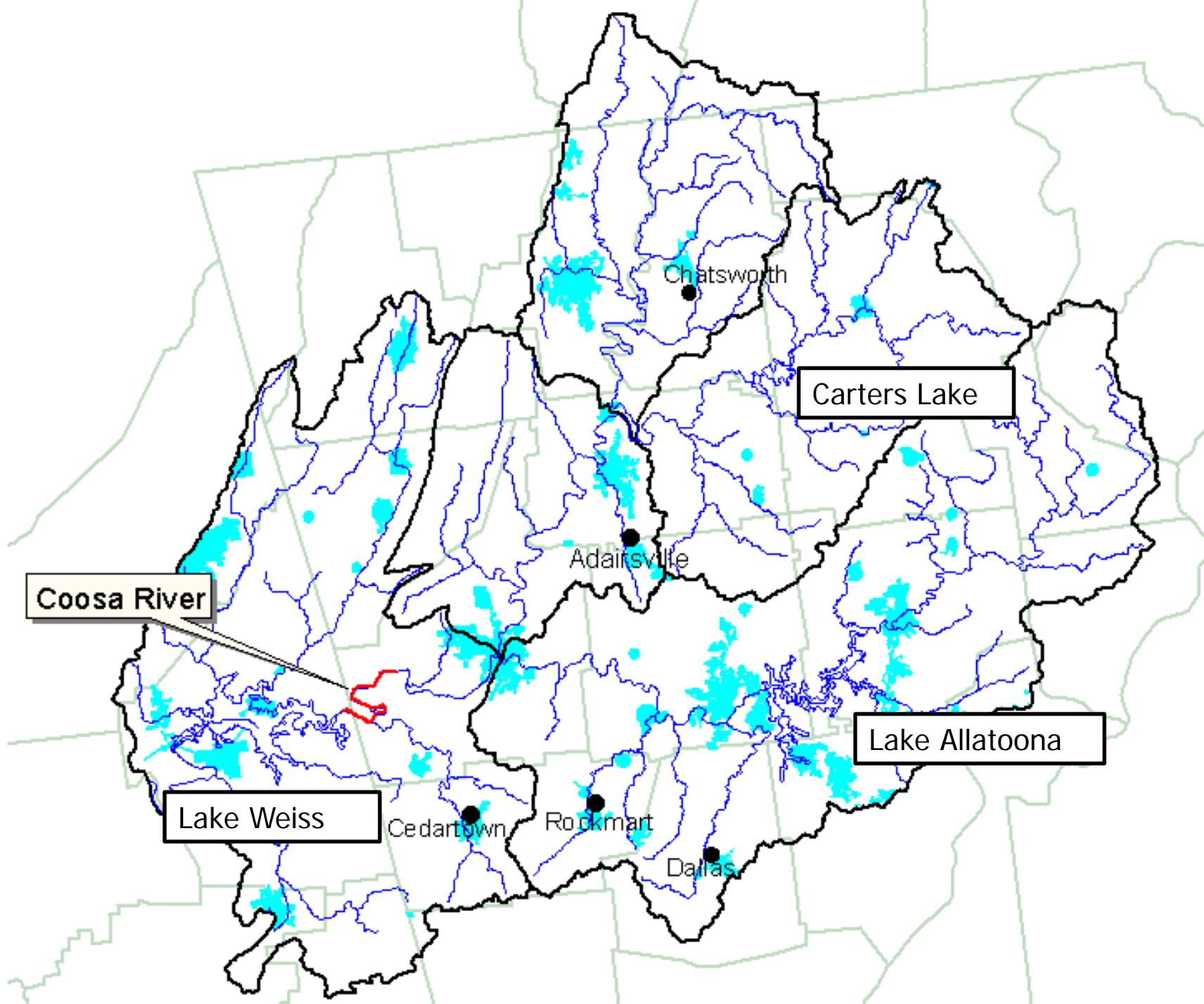
**Coosawattee River at
Old Highway 5 Total
Phosphorus Load =
151,500 lbs/year**



**At Coosawattee River
Embayment mouth = 10 ug/L**

**Upstream from Woodring
Branch = 10 ug/L**

**Carters Lake
Water Quality Standards
Lake Boundary Definition**



Coosa River

Chatsworth

Carters Lake

Adairsville

Lake Weiss

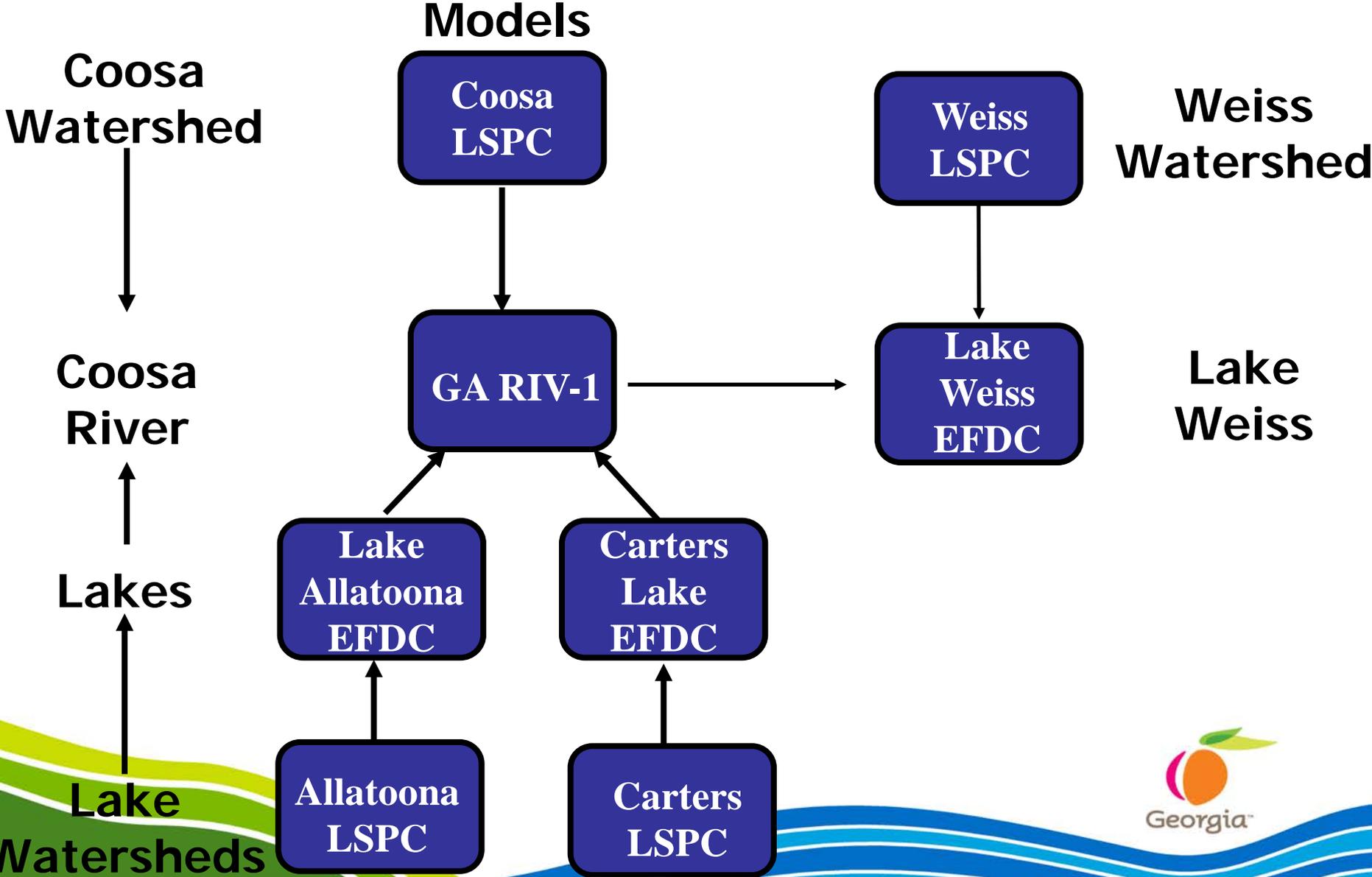
Cedartown

Rockmart

Dallas

Lake Allatoona

Coosa River Models





Questions?

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