

# ***PATTON CREEK TMDL REVIEW***

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CE 590: Storm Water Management

Fall 2011





Palton

BVI 400  
Gaging Sta

Bains Bridge

Cahaba River Estates

OLD RR GRADE

230

500

500

X437

26

The ADEM Spreadsheet Water Quality Model (SWQM) was used to simulate the DO scenarios for the critical conditions of Patton Creek, in order to determine the TMDL concentrations.

Constituent	Existing Load (lb/day)	TMDL (lb/day)	Load Reduction	
	WLA <sub>MS4</sub> + LA	WLA <sub>MS4</sub> + LA	WLA <sub>MS4</sub>	LA
NBOD <sub>U</sub>	76.8	26.4	66%	66%
CBOD <sub>U</sub>	25.5	19.5	24%	24%

NOTE: The load reductions are expressed as both WLA<sub>MS4</sub> and LA percent reductions because the entire Patton Creek watershed is contained within the boundaries of the Jefferson County MS4 Phase I Permit (ALS000001).

### Maximum Allowable NBOD and CBOD Loads for Patton Creek

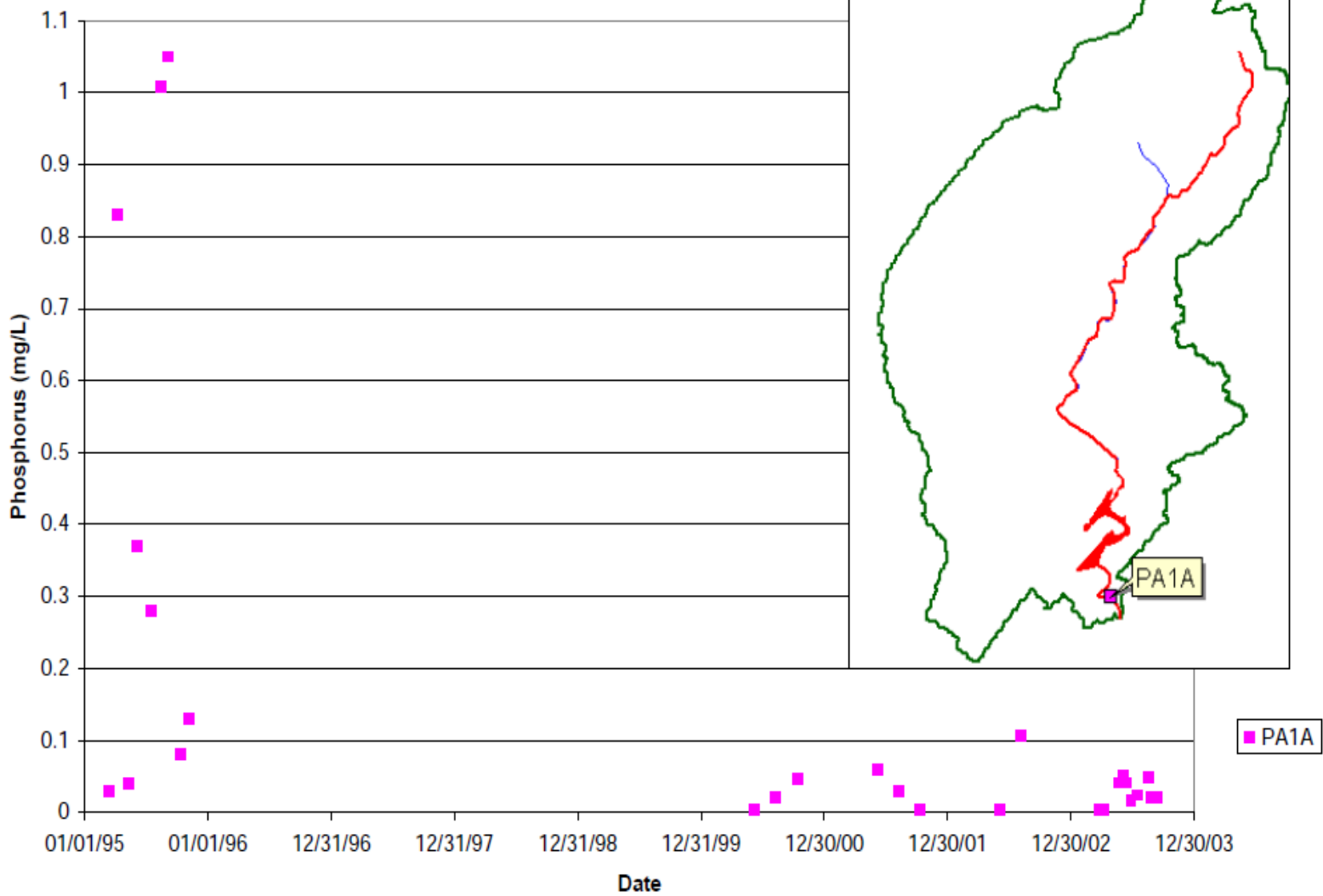
- The CBOD and NBOD measures the oxygen required for the total degradation of organic material (ultimate carbonaceous demand) and/or the oxygen to oxidize reduced nitrogen compounds (ultimate nitrogenous demand)
- The TMDL for Patton Creek includes reductions necessary to reduce long-term sediment oxygen demand (SOD) within the system to meet water quality standards for DO.
- The TMDL used data from the summer month of August because using critical flow conditions assures that standards are met throughout the entire year.

## Percent Landuse for the Patton Creek Watershed

Cataloging Unit	Forest	Residential	Urban	Open Water	Other
Patton Creek (AL/03150202-030_03)	55.3%	32%	3.4%	0.5%	8.8%

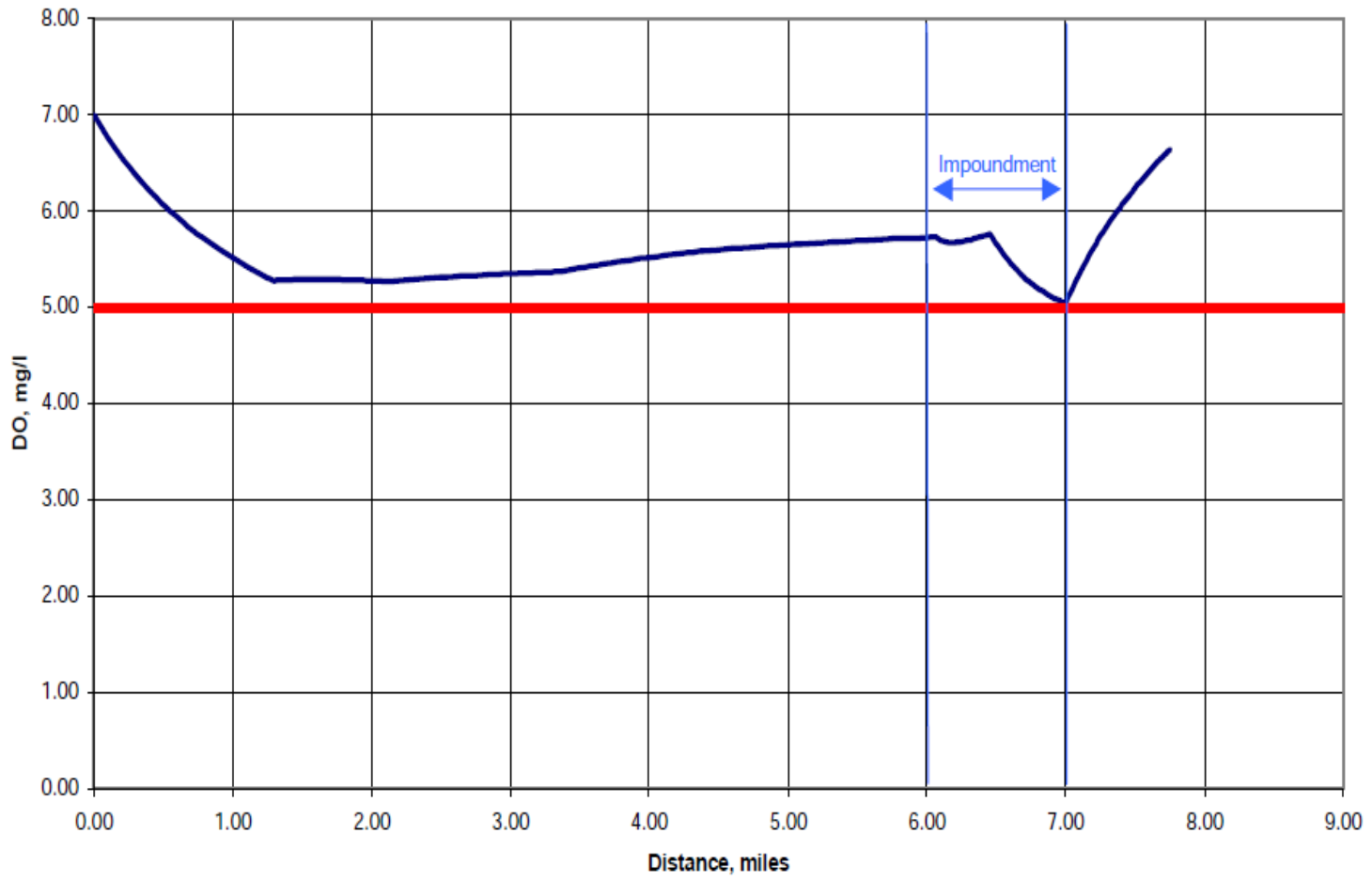
- A source assessment was used as the basis of development of the SWQM model using land use practices and septic tank density distributions.
- Land use Practices were found using Digital elevation maps in conjunction with the national hydrography database reach network which was used to establish watershed boundaries and flow paths. Then MRLC maps are made using remote sensing software with Normalized Difference Vegetation Index (NDVI), indicator that identifies and quantifies whether a target area being observed contains live green vegetation or not.

### Patton Creek Total Phosphorus



Dissolved Oxygen vs. Distance

Modeled Results  
DO Standard





Questions?