

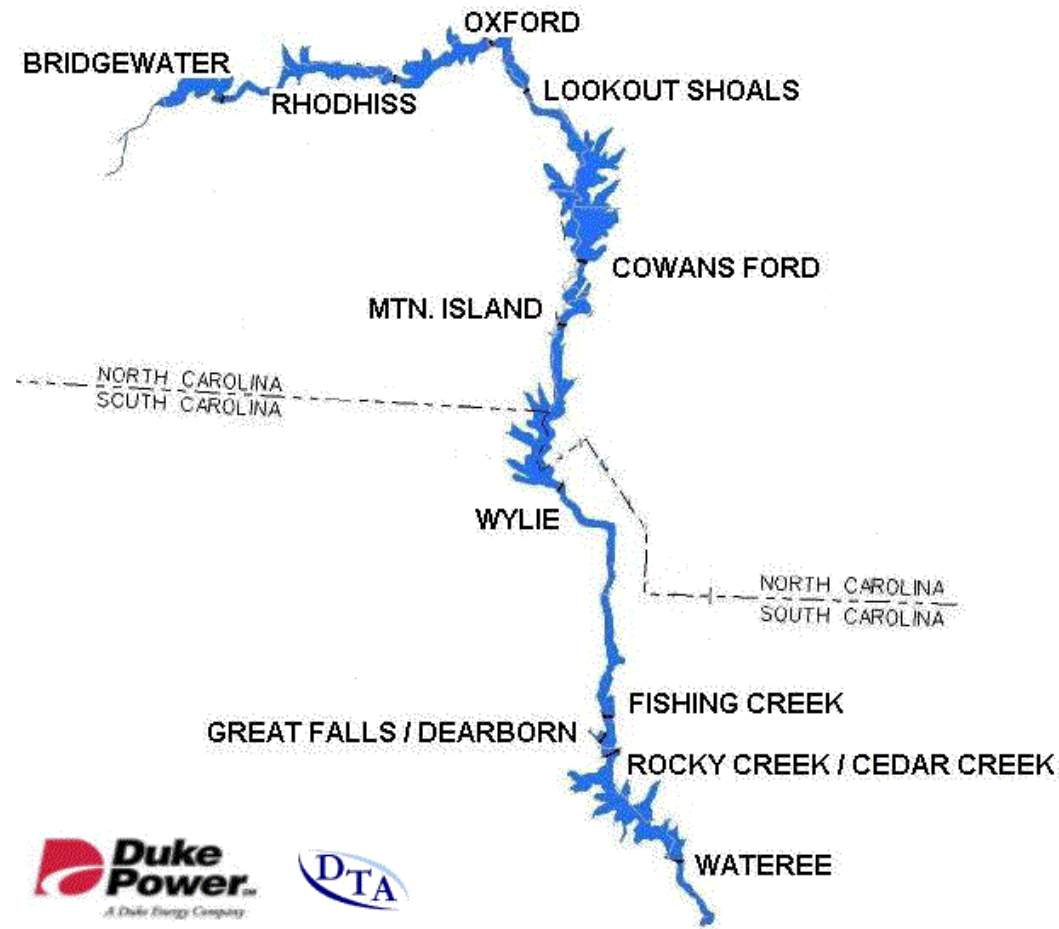
Lake Rhodhiss

Nutrient Loading – Measurement and Calculation



Carolina Land & Lakes RC&D Inc.

Catawba Wateree River System



Partnership

Carolina Land and Lakes RC&D
Western Piedmont Council of Governments
Soil and Water Districts
Local Governments
Co-operative Extension Services

Sampling and Analysis Provided by
Devine Tarbell and Assoc.
Prism Laboratories

Objectives

- Nutrient Loading Determination
- BMP's for Field Nursery Growers
- 9 Element Basin-wide Plan
- Public Education

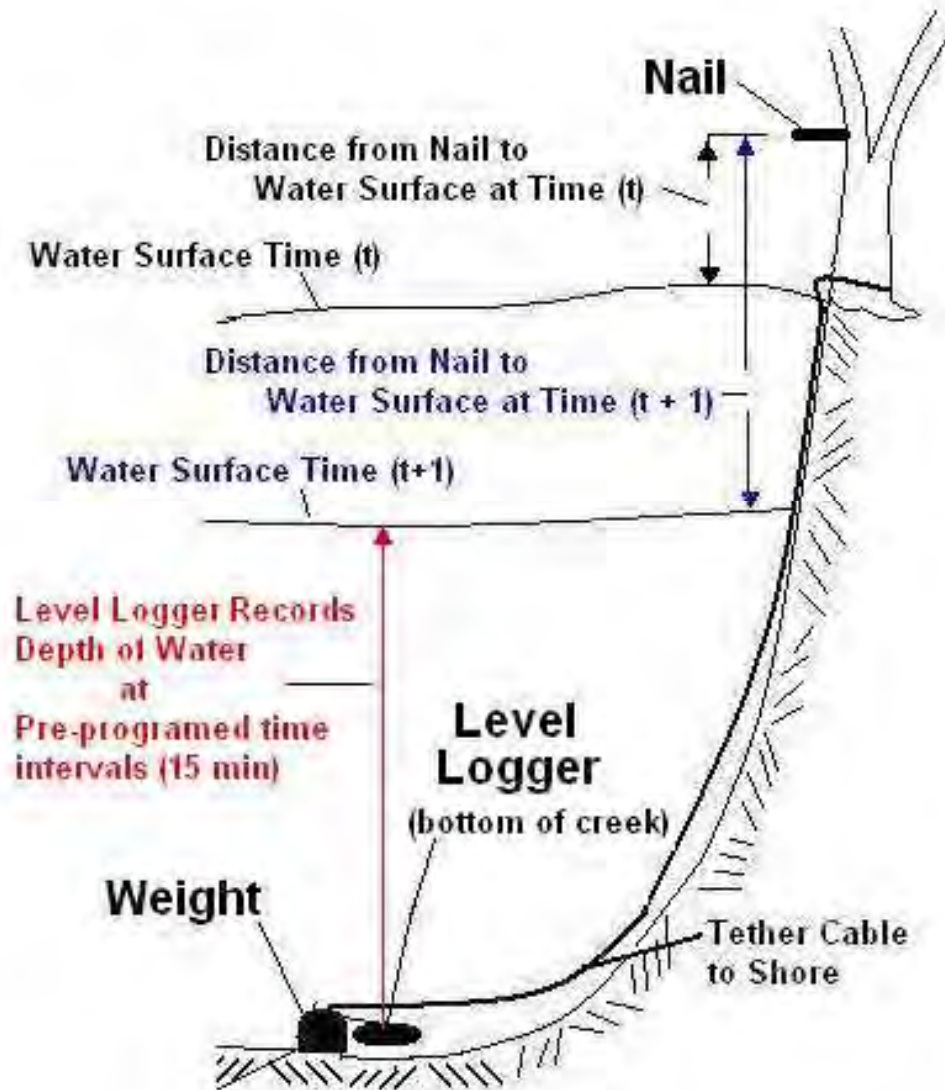
River Nutrient Loading Calculations

- Flow Determination
- Phosphorus and Nitrogen Lab Analysis
 - Monthly sampling
 - Storm sampling
- Load Calculations
 - Median Concentration
 - Quartile Concentration

Flow Determination

- Placement of Level Loggers to measure stage
- Measurement of Stream Discharge at various river stages
- Conversion of Stream Stage to Stream Discharge (flow)

Placement of Level Loggers to Measure Stage

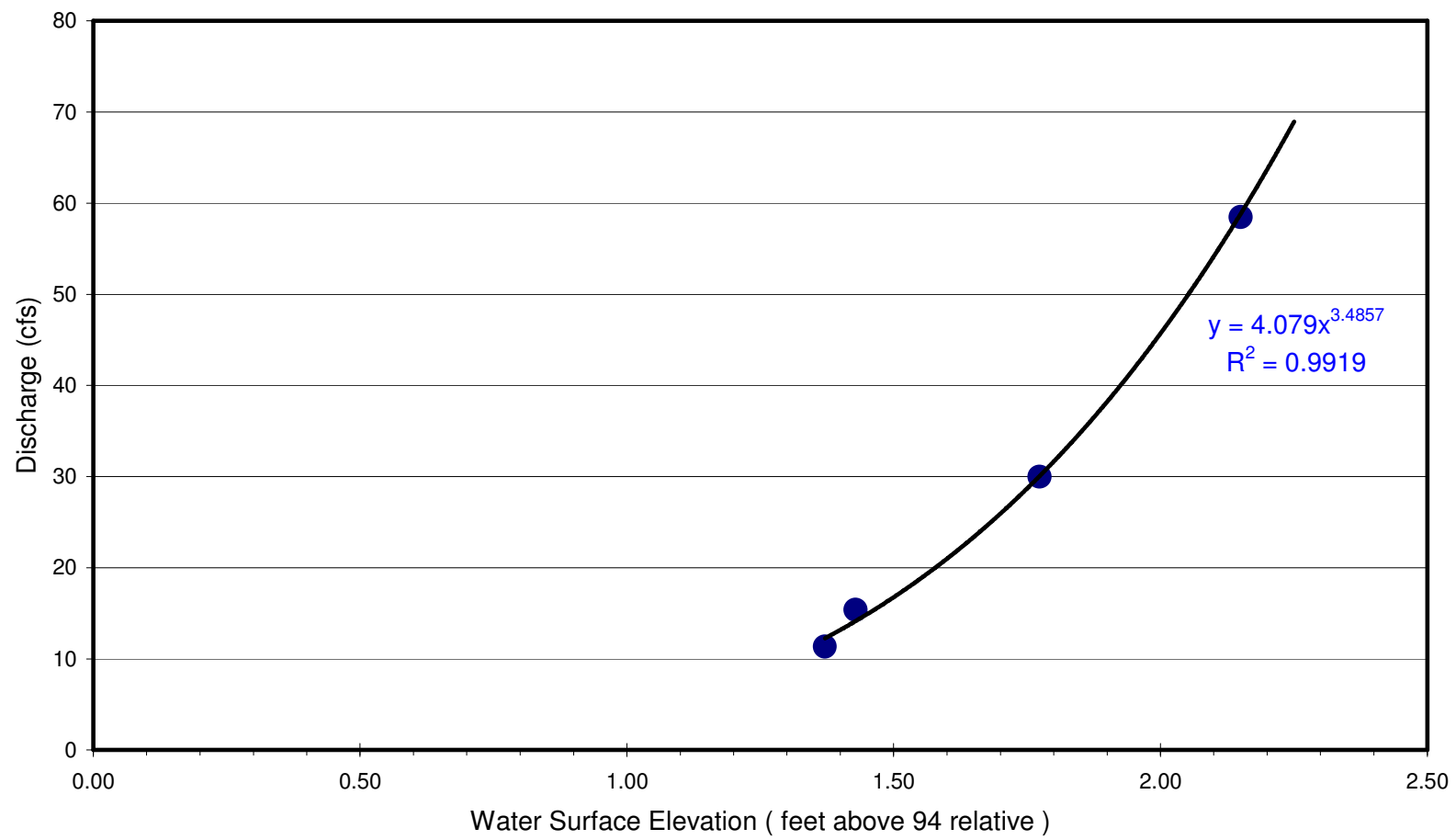


Depth and Velocity Measurements to Calculate Stream Discharge



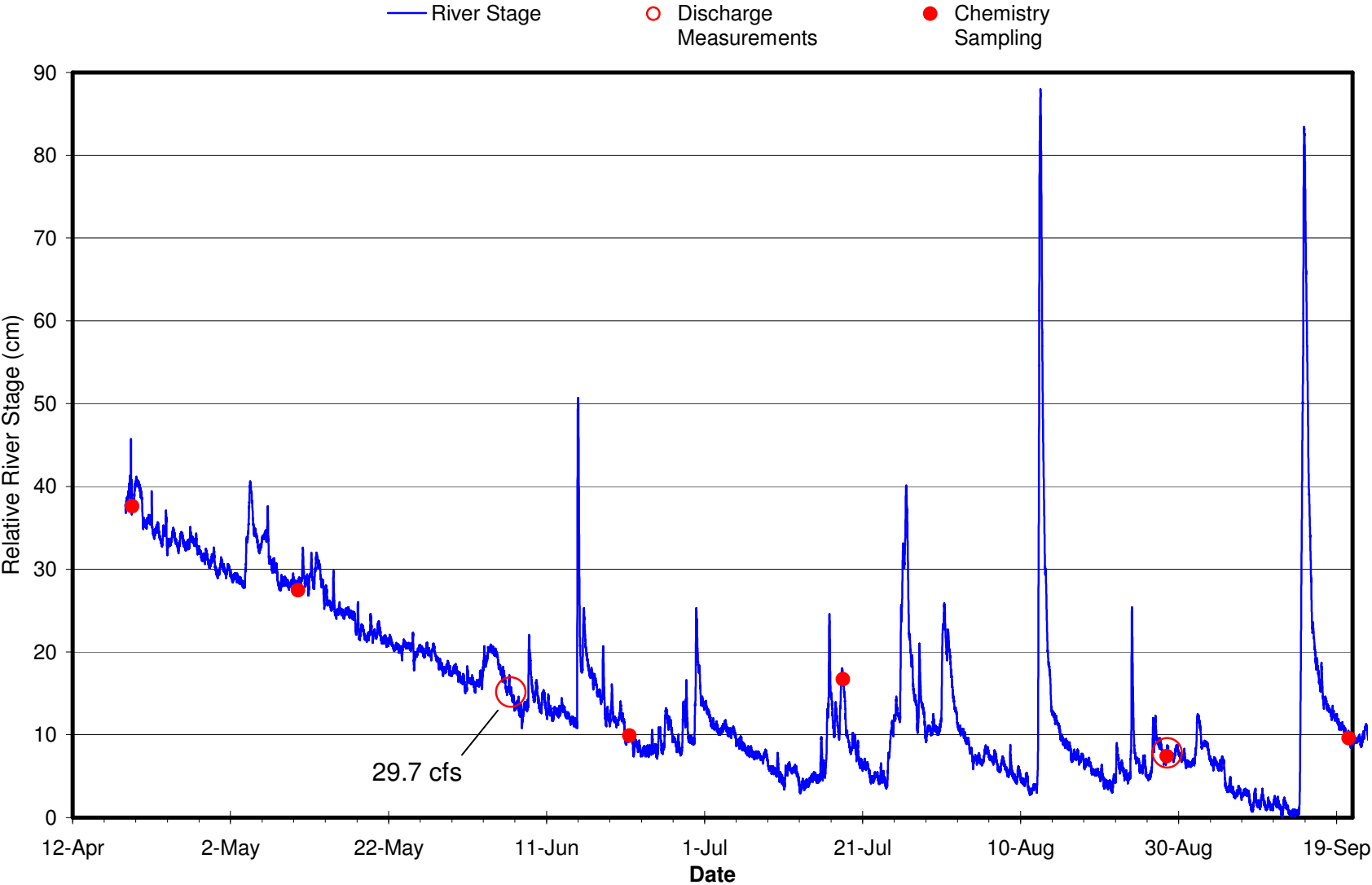
Conversion of Stream Stage to Stream Discharge (flow)

Hunting Creek - Rating Curve
(100 feet Relative Elevation = Bench Mark Nail in Tree)



Resultant Level Logger Data

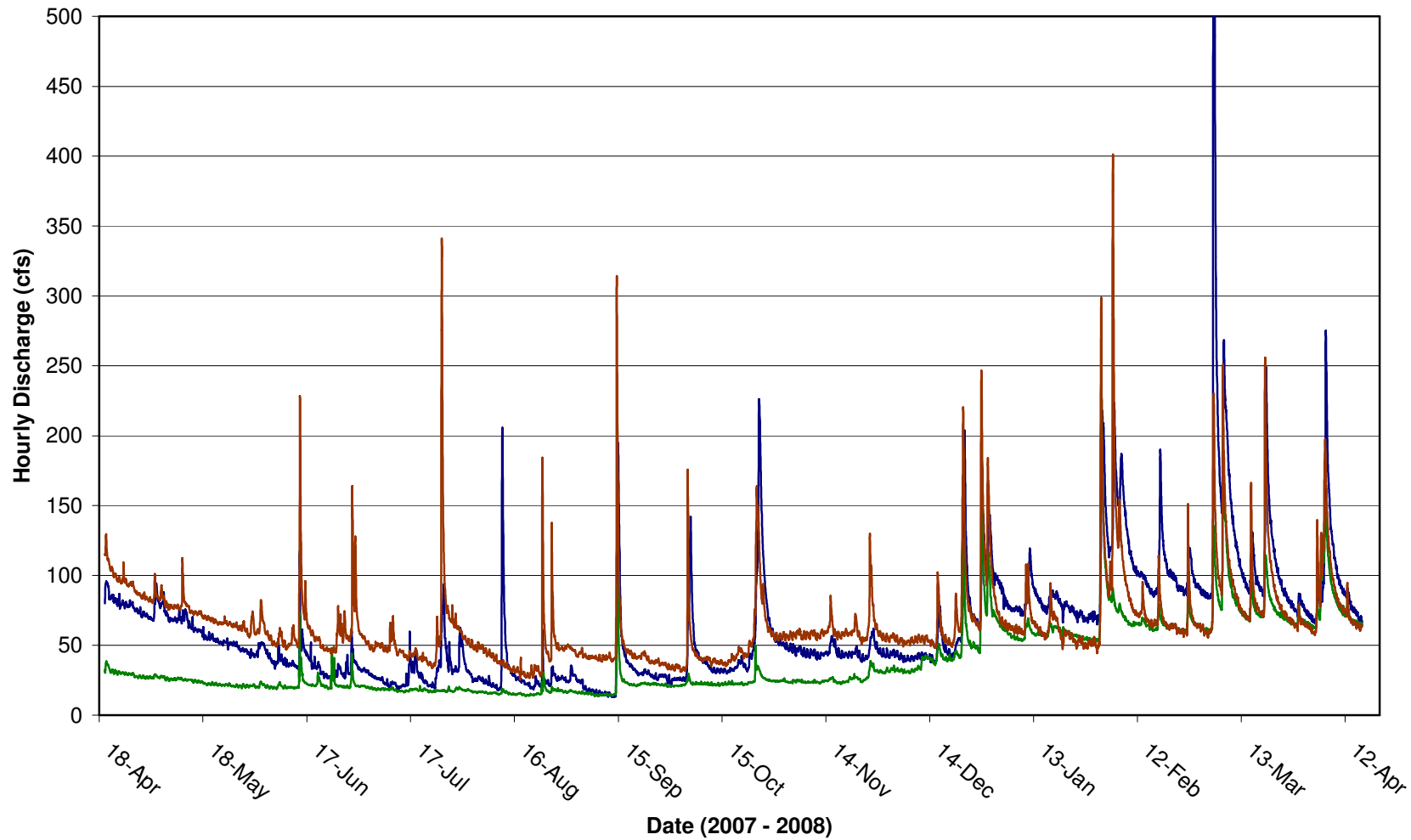
Warrior Fork



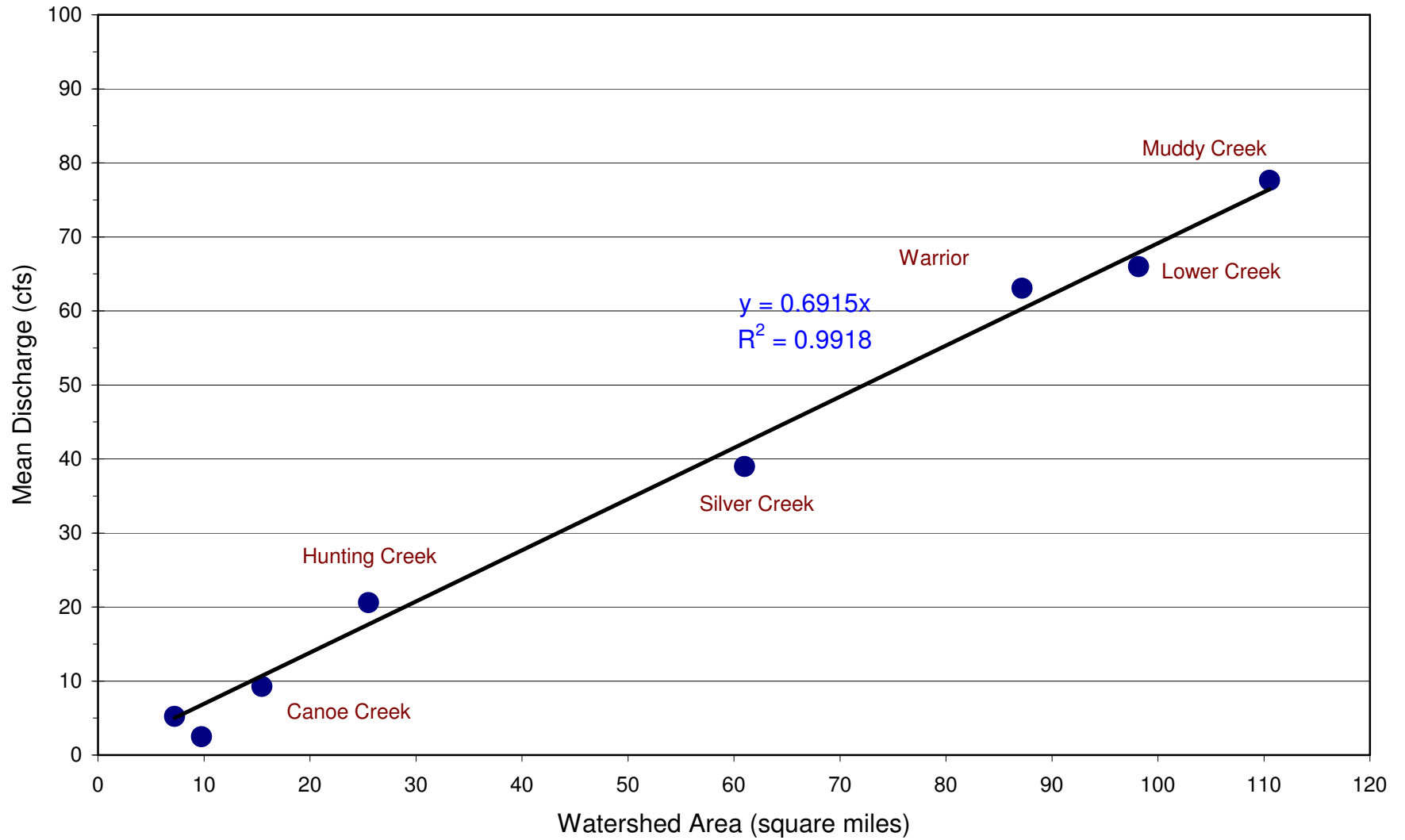
Conversion of Stream Stage to Stream Discharge (flow)

Rhodhiss Tributary Flow

Warrior Fork Silver Creek Lower Creek



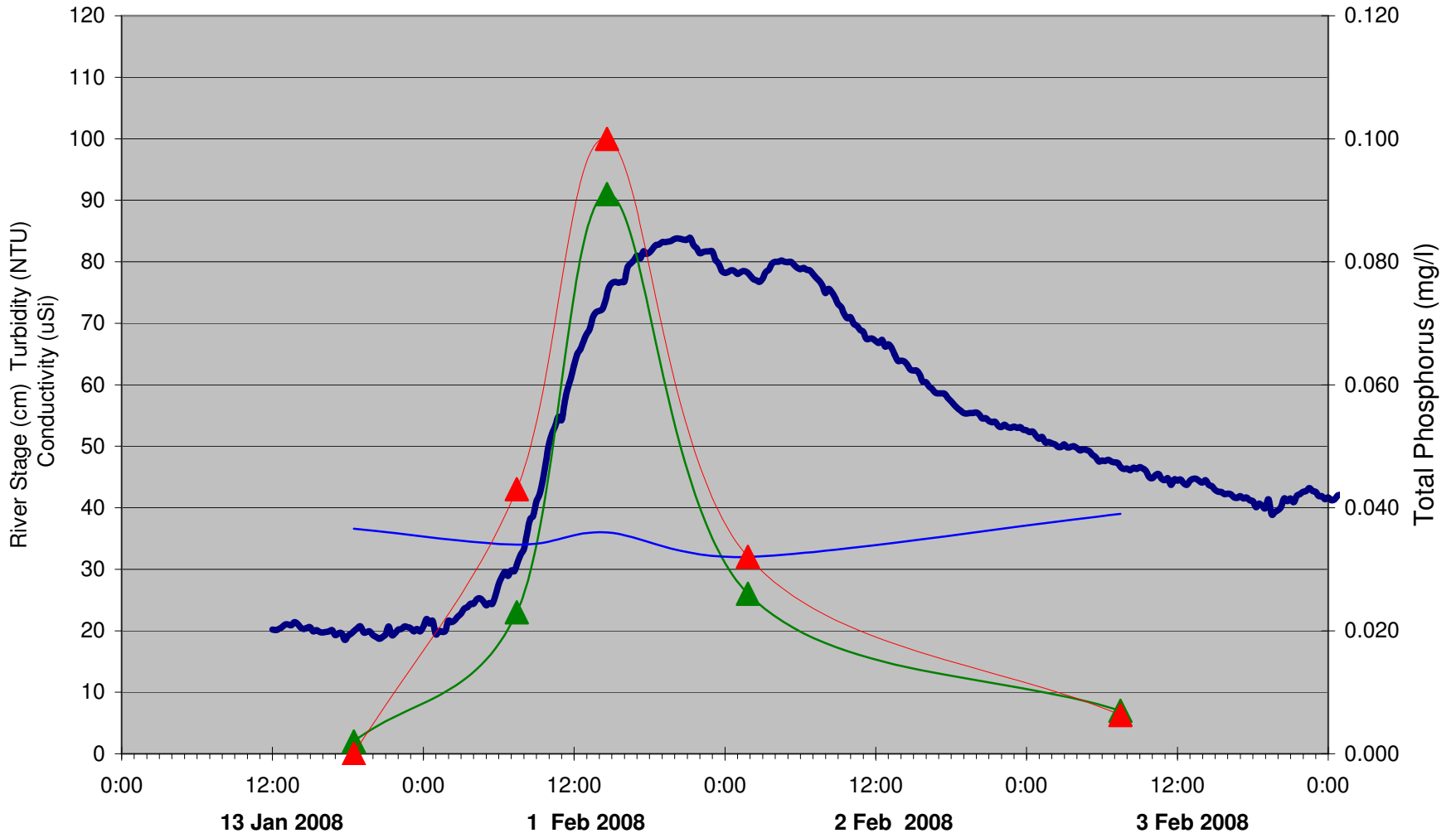
Relationship between Mean Stream Flow and Watershed Drainage Area



- Phosphorus and Nitrogen Lab Analysis
 - Monthly sampling
 - Storm sampling
- Load Calculations
 - Median Concentration
 - Quartile Concentration

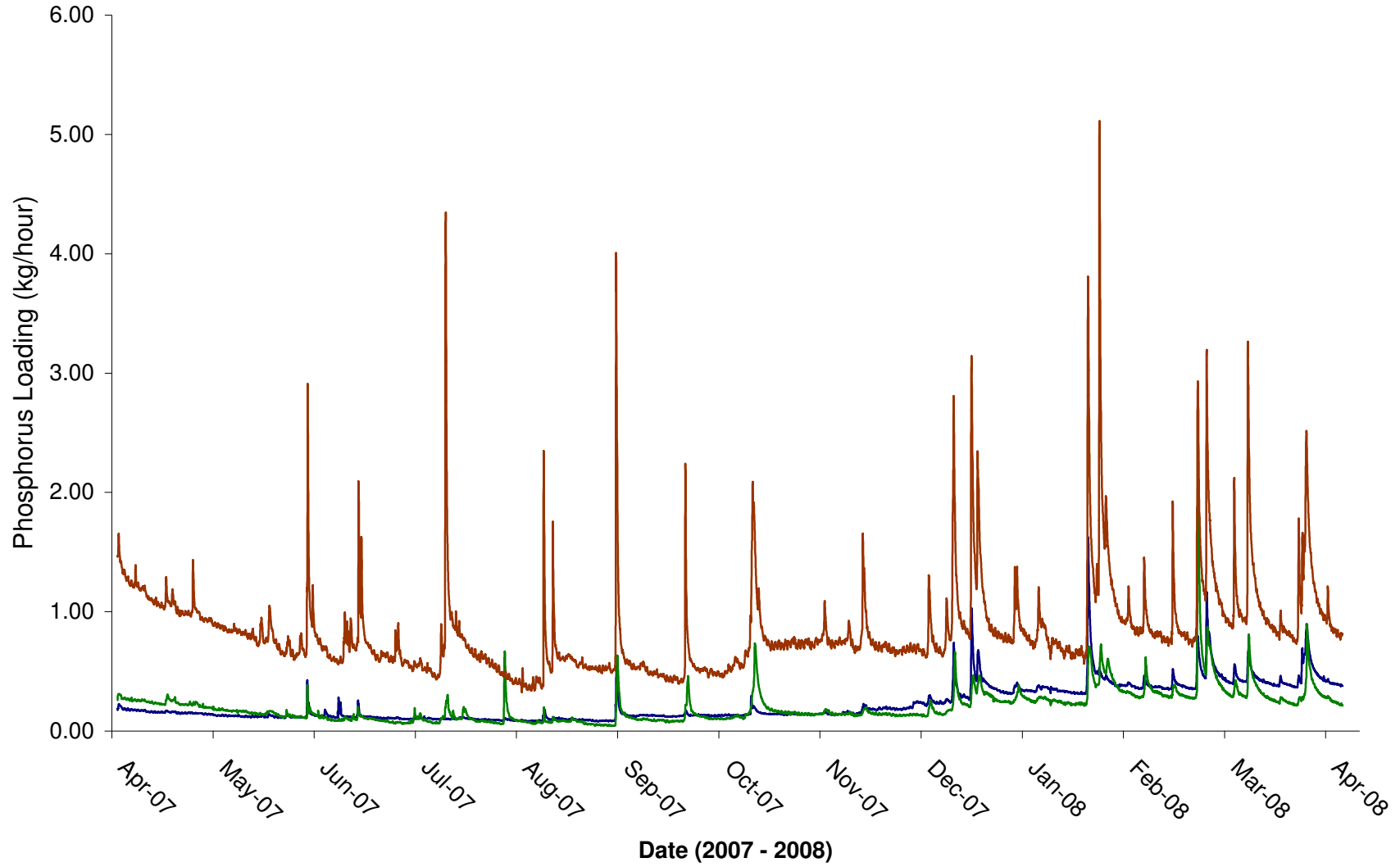
Warrior Fork - Storm Event

River Stage Turbidity Conductivity Total Phosphorus



Rhodhiss Phosphorus Tributary Loading

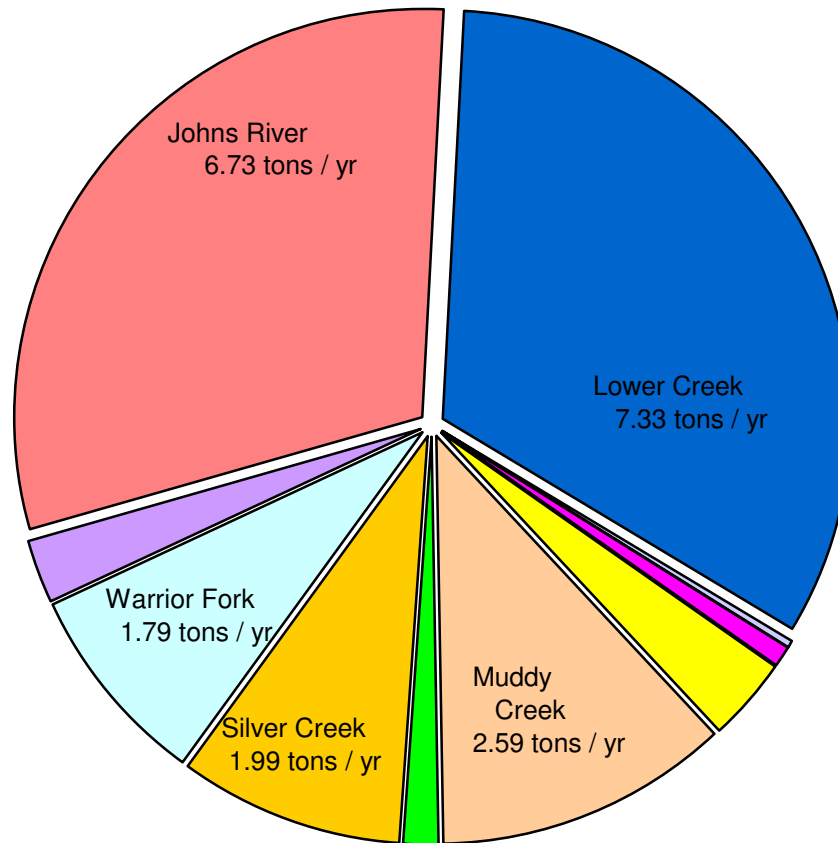
Silver Creek Warrior Fork Lower Creek



Rhodiss Tributary Phosphorus Loading

(including WWTP Loads on Lower Creek and Muddy Creek)

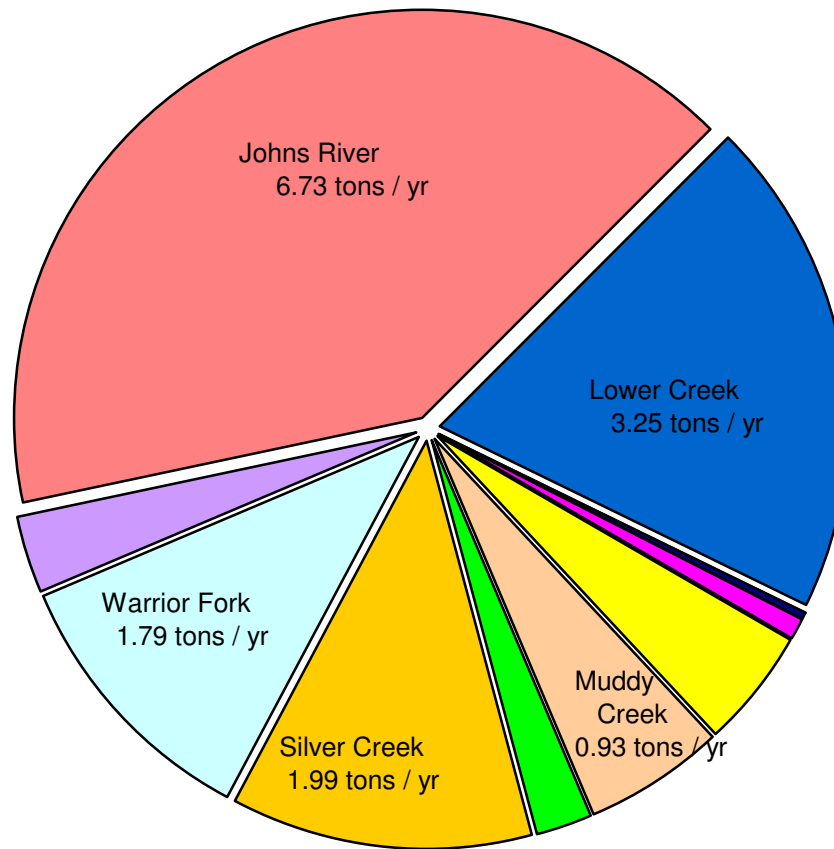
- Muddy Creek
- Lower Creek
- Canoe Creek
- Smoky Creek
- Silver Creek
- McGalliard Creek
- Warrior Fork
- Hunting Creek
- Freemason Creek
- Direct
- Johns River



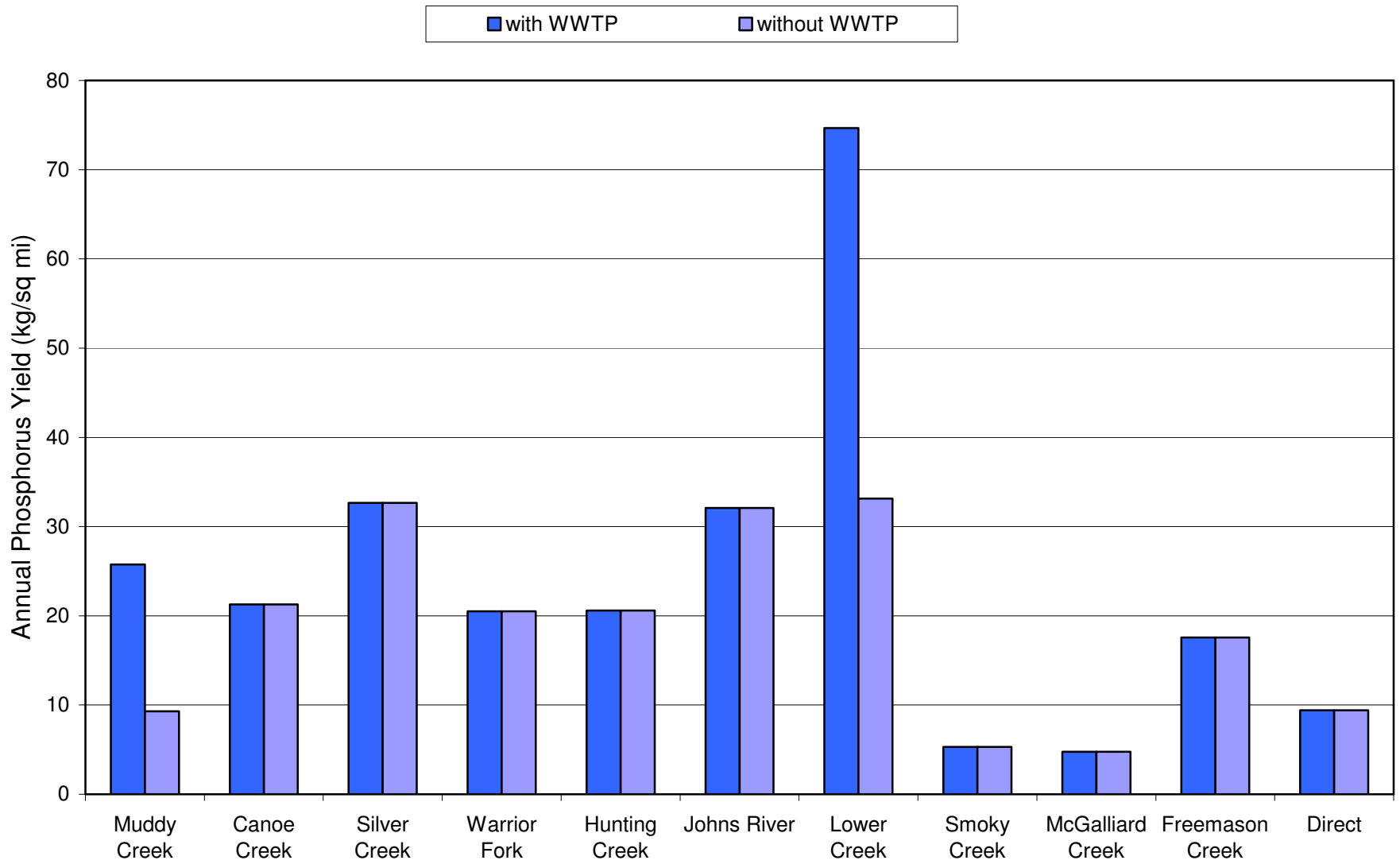
Rhodhiss Tributary Phosphorus Loading

(subtracting WWTP loads on Lower Creek and Muddy Creek)

- Muddy Creek
- Lower Creek
- Canoe Creek
- Smoky Creek
- Silver Creek
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- Johns River



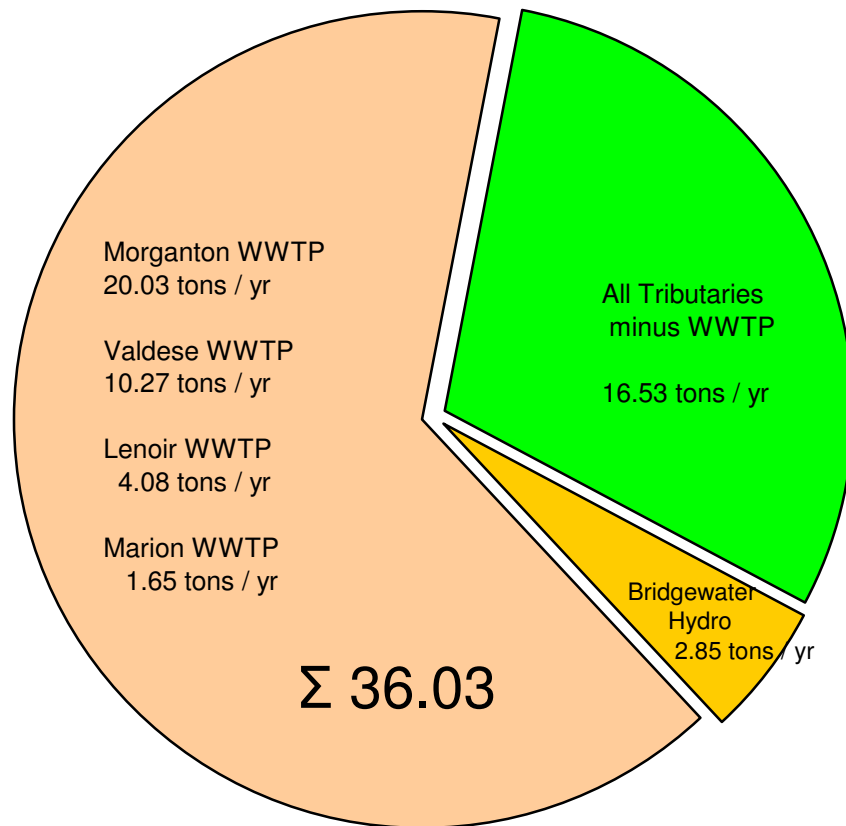
Rhodhiss Watersheds - Phosphorus Yield



Rhodhiss Phosphorus Loading

(subtracting WWTP loads on Lower Creek and Muddy Creek)

■ All WWTP ■ Tribs minus WWTP ■ Bridgewater



Lake Rhodhiss Net Nutrient Budget

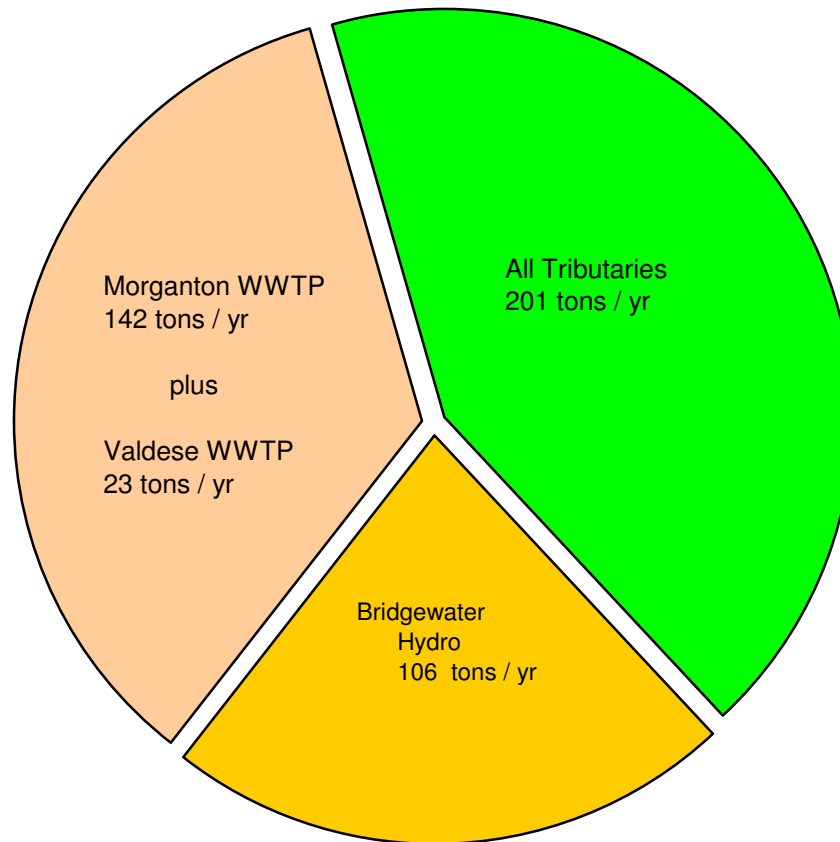
| Inflows | metric tons Phosphorus per year |
|---------------------|------------------------------------|
| Bridgewater Hydro | 2.85 |
| All Tributaries | 19.79 |
| Point Sources | 30.31 |
| Total Inflow | 52.96 |

| Outflows | |
|----------------------|--------------|
| Rhodhiss Hydro | 31.58 |
| Total Outflow | 31.58 |

Rhodhiss Nitrogen Loading

(including WWTP loads on Lower Creek and Muddy Creek)

■ Bridgewater ■ Point Sources ■ All Tributaries



Rhodhiss Nitrogen Loading

(subtracting WWTP loads on Lower Creek and Muddy Creek)

■ All WWTP ■ Tribs minus WWTP ■ Bridgewater

