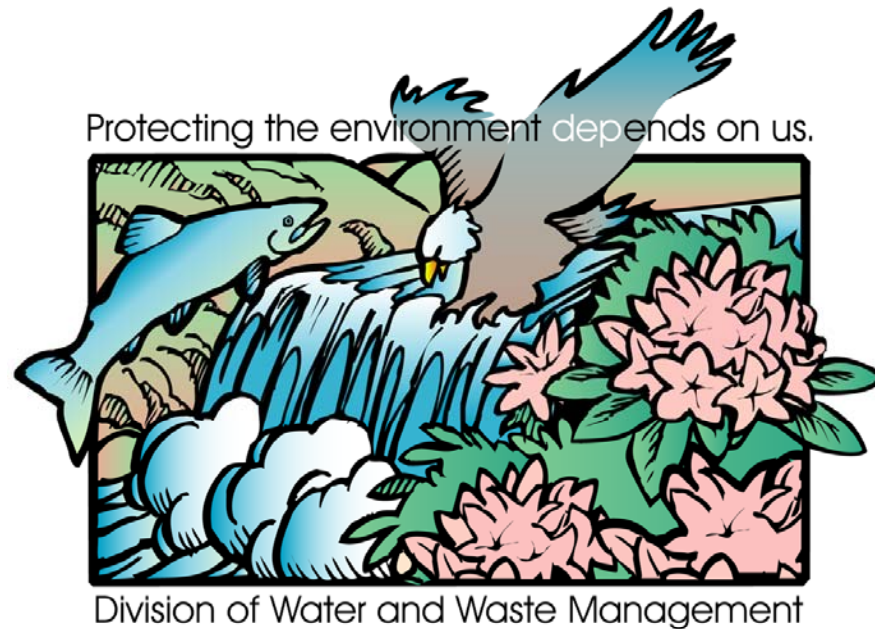


TDS – Total Dissolved Solids



Patrick Campbell, DEP-DWWM

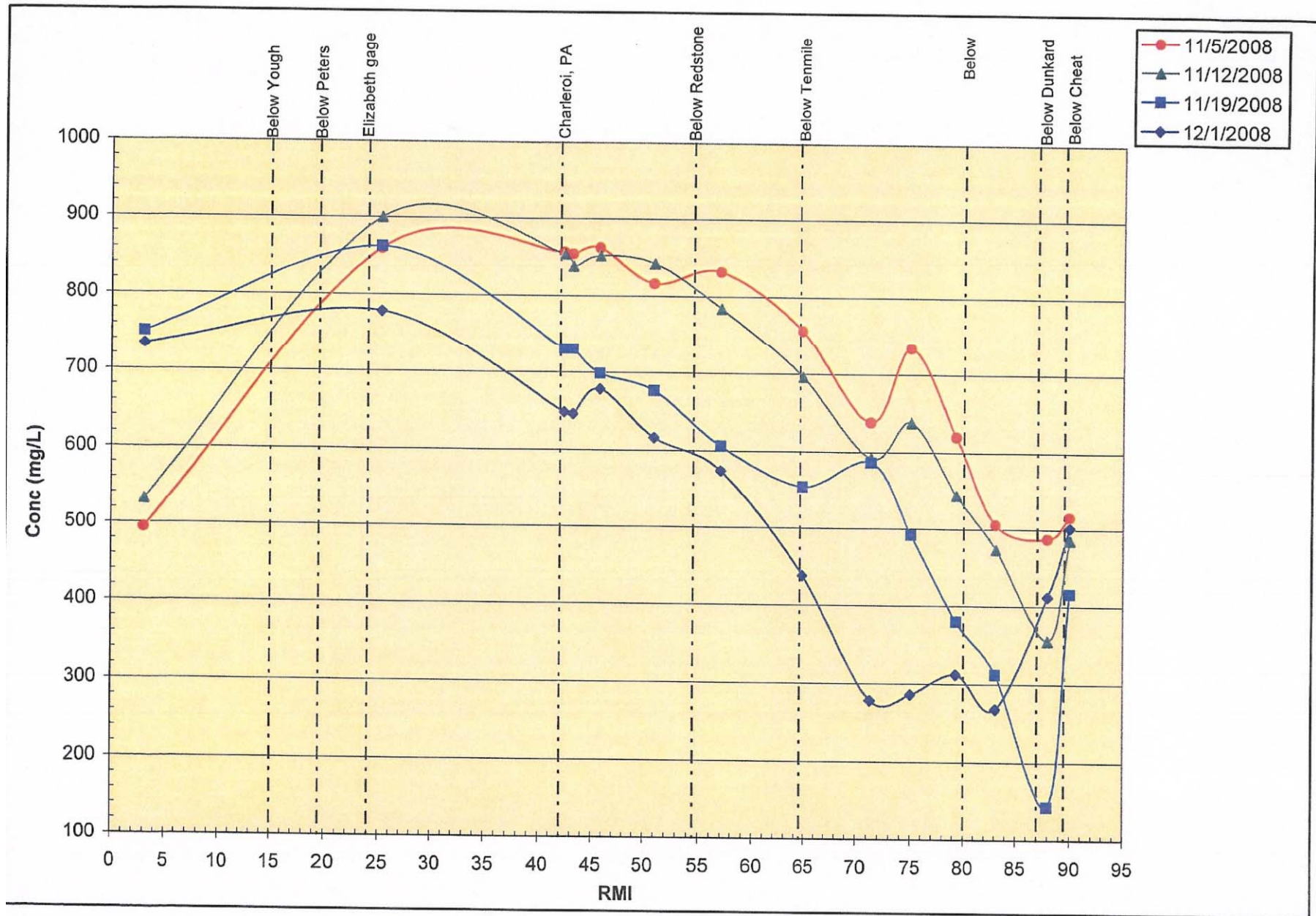
May 18, 2009

What is TDS?

- Total Dissolved Solids (milligrams per liter) (mg/l)
 - Amount of dissolved matter in water
 - Ocean water 35,000 mg/l
 - Fresh water normally less than 100 mg/l
 - Rain less than 10 mg/l
- Strongly correlated w/ conductivity
 - e.g. TDS 500 mg/l \approx Conductivity 750 $\mu\text{s}/\text{cm}$ (~66%)
- PA WQ Standard to protect drinking water use = 500 mg/l Monthly Avg. / 750 maximum



Mon River – Total Dissolved Solids (mg/l) Courtesy PADEP



Much Concern in Northern WV

- Upper Mon River Association - several meetings
- Resolution by Morgantown City Council
- HB 2960 (House Gov't Org.)
- Interest from Dischargers as well

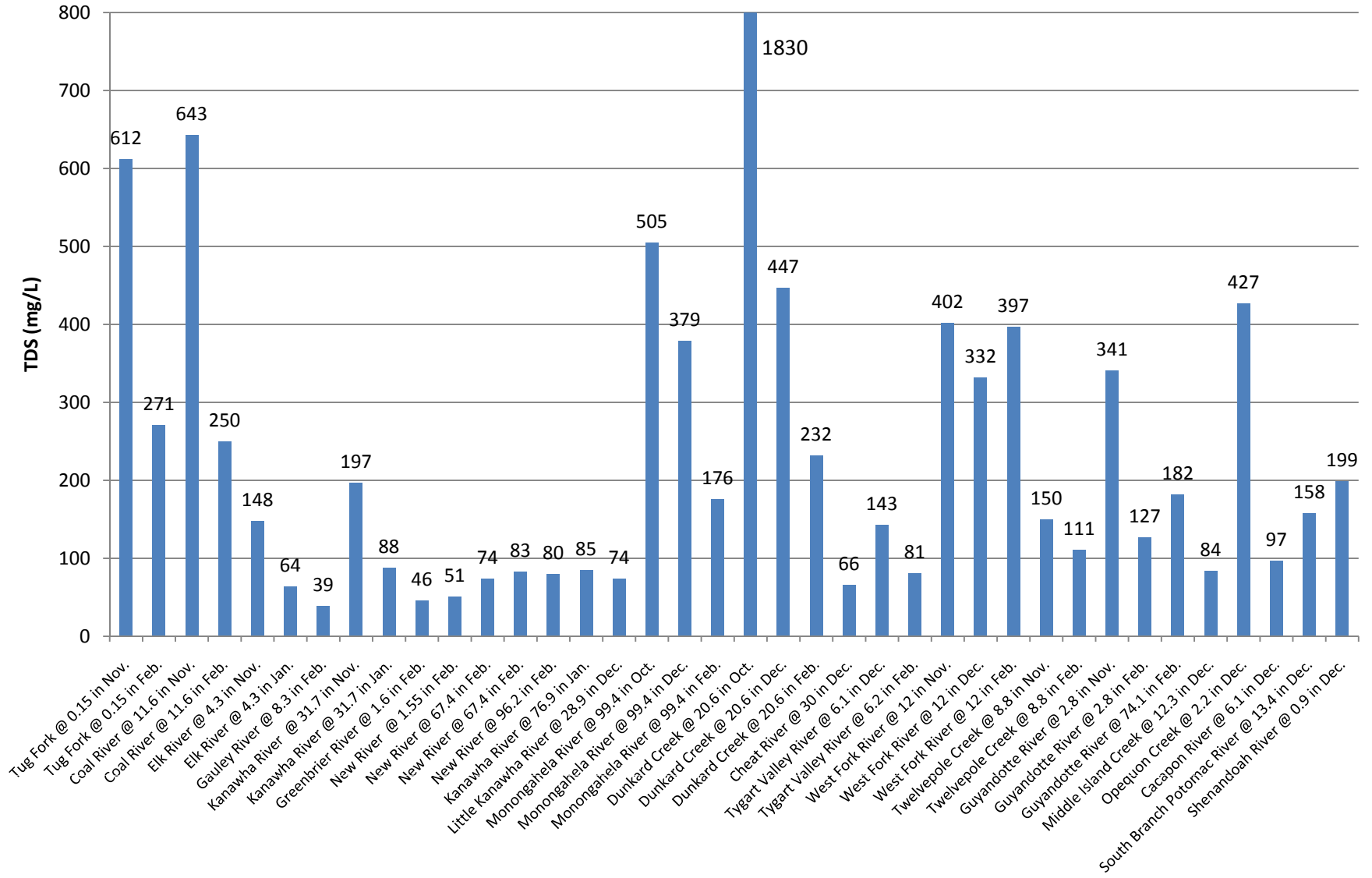


Information Gathering

- TDS monitoring added to Large River Network
- Continuous Conductivity Monitors online
- WWTP Surveys
- Extensive Pre-TMDL Monitoring in Monongahela watershed beginning July '09

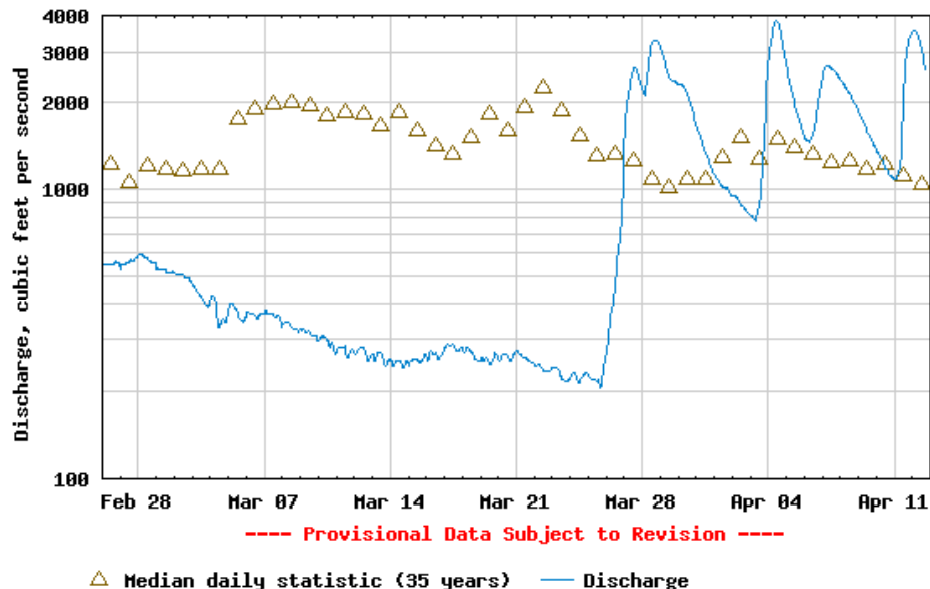


WVDEP - Large River Monitoring TDS Results

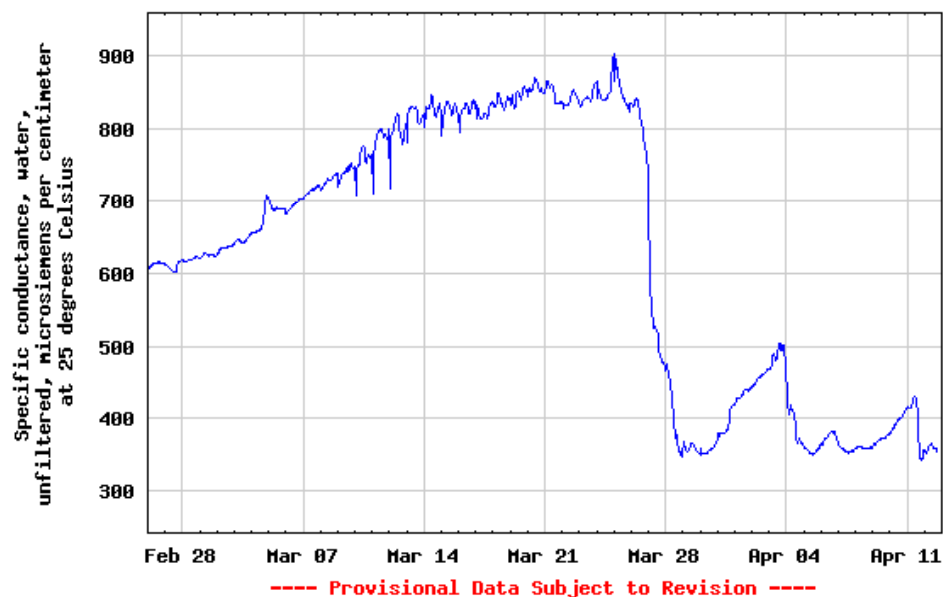




USGS 03061000 WEST FORK RIVER AT ENTERPRISE, WV



USGS 03061000 WEST FORK RIVER AT ENTERPRISE, WV

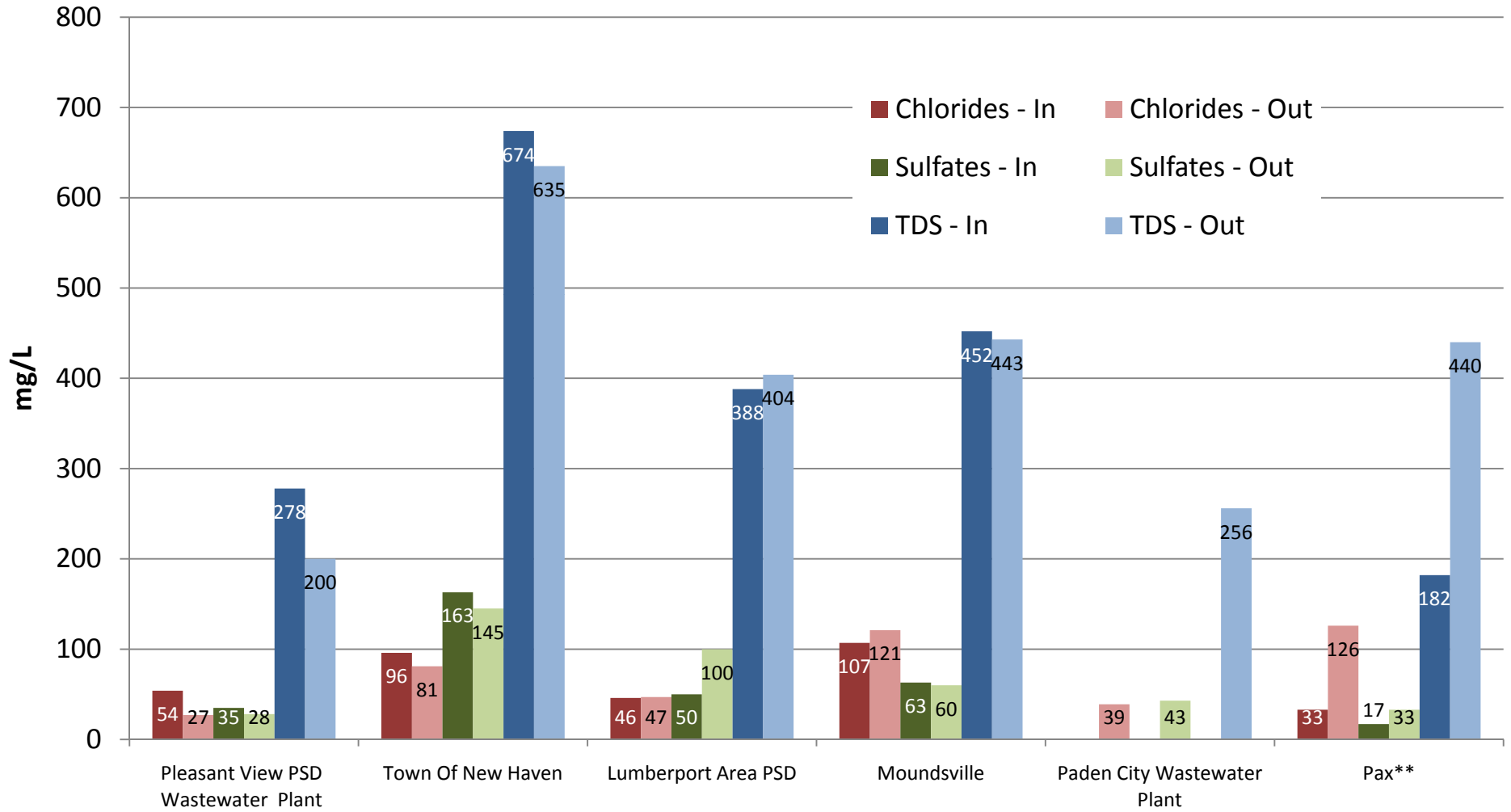


Continuous Monitors Online

- West Fork River
- Mon River @ Pt. Marion
- Dunkard Ck
- Tygart River

<http://ww.usgs.gov/>

PSD Data



WVDEP Chemical Monitoring

- 6 Long Term Sites, increased to monthly
- 200+ DMR Trend Stations
- Upcoming TMDL Monitoring at (7/09-6/10)
 - ~139 sites, monthly



Sources of TDS

- Mines
- Landfills
- Road salt
- Brine
- WWTPs
- Scrubbers
- Water softeners
- Many others



EPA Recommended TDS Criteria

Human Health

- Non-Priority Pollutant
 - 1986 Gold Book Value
 - 250 mg/l
 - Taste and laxative effects
- Secondary Drinking Water Std.
 - Non-enforceable
 - 500 mg/l

Aquatic Life

- None
 - Discussion of individual ion criteria (e.g. chloride, sulfate) v. TDS
 - Increasing effects observed at increasing levels



Neighboring States' TDS Criteria

- Kentucky – 750 mg/l HH @ POI (going to 250?)
- Ohio – 1,500 mg/l AQL; HH 500 mg/l avg/750 max @POI
- Maryland
- Pennsylvania - 500 mg/l monthly average @ POI
– 750 daily maximum (HH and cold water)
- Virginia – 500 mg/l HH @ POI
- ORSANCO - none



Next Steps

- Information gathering continues
- Dialogue w/ EPA
- Solicitation of input by 7/2/09
- More updates as triennial review continues



Thanks for your interest!

