



Surface and Ground Water Quality Monitoring Workshop

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4 Points About Monitoring

- **1st Point** – Know the reason why you are monitoring.
 - Anticipate how you will use your results.
 - Have an objective!



Why Do We Monitor?

- Because everyone is doing it!
(and EPA told us to)
- Characterize the watershed
- Analyze trends
- Define water quality problem



Why Do We Monitor (cont'd)

- Determine pollutant fate & transport
- Define critical areas
- Measure effectiveness of BMPs
- Evaluate program effectiveness



Why Do We Monitor (cont'd)

- Make wasteload allocations / TMDLs
- Model validation & calibration
- Assess compliance



4 Points About Monitoring

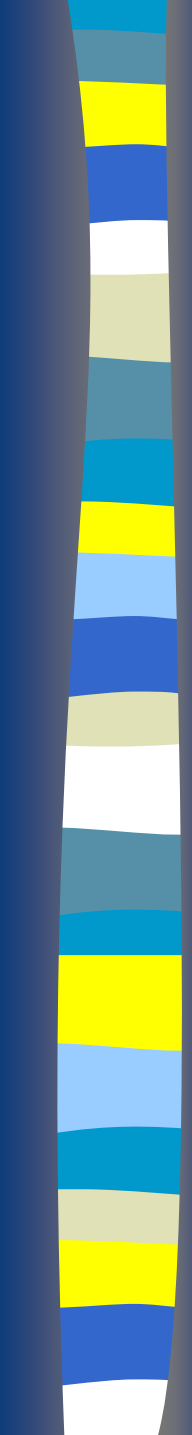
■ 2nd Point – Monitoring is expensive!

- Imperative to have an appropriate monitoring design to meet your specific objective.
- Prevent “data rich, but information poor” syndrome (Ward et al., 1986, Environ. Manag. 10(3):291-297).



4 Points About Monitoring

- **3rd Point** – Data can be biased by climate conditions.
- **4th Point** – Data analysis & evaluation is tricky business.



USDA-NRCS National Handbook of Water Quality Monitoring: **12-Step Program**

1. Identify problems
2. Form objectives
3. Design experiment
4. Select scale
5. Select variables
6. Choose sample type
7. Locate sample stations
8. Determine frequency & duration
9. Design sampling stations
10. Define collection / analysis methods
11. Define land use monitoring
12. Design data management