

Challenges Remain in Combining Data from Multiple Organizations



Since 1899, nutrient records collected by

488
agencies /
organizations

at

321,927
stream sites

for a total of

25 million nutrient records

14.5 million of these nutrient records had missing or ambiguous information that limited their use for regional or national assessments



A U.S. Geological Survey study reports that almost 60 percent of previously collected nutrient water-quality records for U.S. rivers and streams have missing or ambiguous reference information. This inconsistency limits the use of these data for assessing water quality across large river basins.

The study found that nearly 14.5 million of the 25 million records collected since 1899 by 488 public and private organizations at 321,927 sites across the country had missing or ambiguous metadata—the standard descriptive information needed to determine the amount of a chemical present in the sample. At current costs, the nutrient records with missing or ambiguous reference information represent an estimated \$12 billion worth of data that are unavailable for regional or national analyses by secondary data users.

Because individual monitoring organizations understand their own data well, they are able to use the data locally to meet the original goals of data collection. The problem arises when trying to combine data from multiple sources to assess water-quality conditions in large watersheds, such as the Potomac or Mississippi River Basins. Monitoring organizations often report the same metadata elements differently.

Inconsistent information prevents water resources agencies from using massive amounts of data on a broader scale to assess the status and trends of our nation's rivers. The adoption of standard metadata practices across all monitoring organizations in the United States could increase the amount of water data that can be used to assess water management actions in large watersheds, potentially leading to important water-quality insights that would not otherwise be possible.