

Monitoring Council's Performance Measures and Rating Benchmarks

From *2008 Initial Recommendations Report* and *2010 Comprehensive Monitoring Program Strategy*

The Monitoring Council's vision is that each theme or sub-theme would have its own web-based portal providing a single, coordinated access point for data, assessment results, and supporting information. In order for such theme-based web portals to provide simple and straightforward access to water quality monitoring and assessment information, both the portals and the coordinated monitoring programs on which they are based require certain attributes which can be defined with performance measures. The Monitoring Council adopted a set of monitoring program performance measures and benchmarks based on USEPA's 2003 report *Elements of a State Water Monitoring and Assessment Program* ([USEPA 2003](#)), but condensed USEPA's list of ten elements to six. Each theme-based workgroup will use these performance measures to evaluate existing water quality monitoring, assessment, and reporting efforts and to develop specific actions and funding needs necessary to coordinate and enhance those efforts. The Monitoring Council used these performance measures for a preliminary assessment of existing web portals (Appendix 3) and will use them in future to gauge the success of these workgroup efforts. As a key part of such evaluations, workgroups must ensure that monitoring designs and assessment approaches target core management questions.

- **Program strategy, objectives, and designs**

The portal must describe monitoring strategies, objectives, and designs in enough detail that users can make informed decisions about how and for what purposes the data can be used. Assessment questions must reflect the concerns of key audiences and the way data will be used to make decisions. Objectives must be specific enough to connect assessment questions to the operational details of monitoring designs. Program objectives and designs must be evaluated to ensure that monitoring data effectively answer the underlying strategic questions.

Low: No core questions; no, or many undifferentiated, target audiences; poorly articulated or conflicting objectives; uncoordinated monitoring efforts not focused on questions or objectives

Medium: Core questions and target audiences implicit in program design; objectives implicit but only partly coordinated and not directly used to structure design effort

High: Core questions coordinated, clearly stated, and focused on specific audience(s); clearly stated and common objectives address coordinated core questions and inform all aspects of design

- **Indicators and methods**

The portal must describe indicators and methods in detail sufficient to inform users about the extent of standardization and any constraints on combining data from different programs. Indicators, sampling and analysis methods, and quality assurance benchmarks must be standardized and maintained at a scale (at least regional and preferably statewide) that is extensive enough to allow data from multiple studies to be combined to produce meaningful broader-based assessments.

Low: Indicators and methods uncoordinated, not validated; no QA procedures or plan

Medium: Indicators and methods validated but not coordinated statewide; QA procedures exist but are poorly matched to objectives and not coordinated statewide

High: Coordinated, scientifically validated, and clearly documented indicators, methods, and QA procedures that match monitoring objectives

- **Data management**

The portal must be based on distributed database systems that support extensive data integration and access, and all data must be processed according to clearly specified and broadly applied data management procedures. National and/or statewide data formatting standards should take clear precedence over new/developing, regional or local standards. Coordination with water supply and use information, as envisioned in the Water Data Institute, should occur as practical.

Low: No data management procedures or documentation

Medium: Data management procedures exist but are not coordinated statewide and only poorly support access to data

High: Coordinated and clearly documented data management procedures are coordinated statewide and fully support access to data at multiple levels

- **Consistency of assessment endpoints**

The portal must describe the assessment methods used to convert raw monitoring data into information on the condition of California's water resources and their beneficial uses. Assessment methods must be standardized to the greatest extent possible in order to support consistent statewide assessments. Where multiple assessment approaches are called for, the portal should explain the need for multiple methods and provide a means of integrating the separate results to create broader assessments.

Low: No data analysis or assessment procedures used or documented

Medium: Data analyzed but methods not coordinated; assessment tools exist but not fully validated or coordinated

High: Data analysis methods and assessment tools fully validated, clearly documented, and coordinated statewide, while providing a variety of valid perspectives on the data

- **Reporting**

The portal must support timely and consistent reporting of monitoring data and assessment results, along with the metadata needed to demonstrate adherence to standards and to ensure data are used wisely. Reports must be produced at a range of time scales appropriate to the concerns of managers, the public, and other audiences. In addition to formal reports prepared by monitoring and assessment programs, users have also come to expect the ability to prepare customized, or ad hoc, reports using interactive tools to query online databases.

Low: No reporting process or products

Medium: Intermittent static reports, available with some effort

High: Readily available regular static and dynamic reports focused on core questions and objectives; ability to create user-defined reports at multiple scales and from multiple perspectives

- **Program sustainability**

Portals, and the programs they serve, must have the resources to actively participate in efforts such as methods development workgroups, laboratory intercalibration studies, and research and development into improved assessment methods. In addition, effective portals require investment in information technology infrastructure that improves users' capabilities to access, obtain, subset and/or combine, and work with a variety of monitoring data. This in turn depends on the allocation of staff and funding on a more permanent basis than is typical for many monitoring and assessment programs and the agencies and organizations that manage them.

Low: No systematic program evaluation, planning, or long-term funding devoted to infrastructure needs related to coordination and data integration

Medium: Intermittent internal program review and planning that may or may not include infrastructure needs; limited funding for infrastructure

High: Regular external program evaluations and planning for all program needs and for statewide integration