



SUSTAINABLE GROUNDWATER  
MANAGEMENT (SGM)  
**GRANT PROGRAM**



*The following is an excerpt from the Data Management and Monitoring Method [MM-12]*

## SGM Grant Program Requirements for Post-Performance Monitoring and Reporting

# Data Management and Monitoring Method

<b>Project / Action Type</b>	Management and reporting of monitoring data is a key component of groundwater implementation projects, as they relate to all relevant sustainability indicators.
<b>Similar / Related Project Types</b>	All project types
<b>Metric</b>	Relevant metrics from project or action
<b>Measurement Unit</b>	Relevant units from project or action
<b>Beneficial User</b>	All beneficial users

## Data Management and Monitoring

The management and reporting of monitoring data are requirements for DWR grant-funded projects involving any sustainability indicators. While a general set of data management and reporting standards can be applied to all projects regardless of which sustainability indicators they address, specific data management and reporting standards based on the type of project should be used to evaluate a project.

### Background and Context

The hallmark of successful projects, studies, and investigations is a planned data collection, management, and reporting process that meets standards established by DWR. Since successful data management increases the likelihood that a project will be successful, it therefore promotes groundwater basin sustainability.

With the passage of the SGMA, there is an increased need for local and state agencies and the public to easily access water data in order to make informed management decisions. The DWR provides data, tools, monitoring portals, and guidance to help GSAs and other grantees to develop projects for addressing sustainability and implement the requirements of SGMA. DWR has a long history of data collection, monitoring and reporting, and has developed the following data management platforms:

- **SGMA Portal:** Allows local agencies, GSAs, and watermasters to submit, modify, and view the information required by SGMA. It also enables you to view submitted information and provide comments, where applicable.
  - <https://sgma.water.ca.gov/portal/#intro>
- **Data & Tools:** Consists of a curated set of data, interactive mapping tools, and reports as resources to inform sustainable groundwater management decision-making.
  - <https://water.ca.gov/Programs/Groundwater-Management/Data-and-Tools>

As part of the funding requirements for DWR grant-funded projects, water resource managers and GSAs are required to develop and maintain a DMS capable of storing and reporting information relevant to the development and implementation of a monitoring plan. The requirement of a DMS is to support DWR role of regulatory oversight through the evaluation and assessment of grant-funded projects.

## A Step-by-Step Guide to Applying the Data Management and Monitoring Method

Implementation of appropriate and effective data management and monitoring method for a project includes the following strategies and steps:

1. Develop DMS or adapt existing DMS developed for the GSP, considering information inputs needed to monitor sustainability indicators, data fields, and data format required for upload to SGMA portal.
2. Populate DMS with QA/QC'd data in a timely fashion.
3. Report monitoring data to DWR through SGMA Portal as part of initial submittal, annual reporting, or 5-year update, and submit project construction reports developed as part of the grant process.
4. Update DMS with QA/QC'd data based on established monitoring protocol.

## Data and Protocols - Fundamentals

### Information / Data Requirements

The data required for a project depends on which sustainability indicators the project addresses. In general, data requirements for a project should be sufficient to demonstrate the technical and economic feasibility of meeting project goals. The monitoring methods established for a project should provide the data needed to demonstrate project performance in terms of groundwater storage rates and volumes, groundwater levels, streamflow responses, sustainability criteria metrics, and avoidance of unintentional adverse impacts.

For long-term assessment of a project's capability to address sustainability indicators, the Monitoring Methods should link to the reporting on monitoring and evaluation of the sustainable management criteria, and project milestones reached. Annual reporting requires documentation and submittal of information to DWR regarding the project's benefits.

## Data Standards

The data standards should be based on the sustainability indicators addressed by the project and are addressed in related project and sustainability indicator Monitoring Methods. The project-specific monitoring tracks specific impacts from the project. For compliance with the SGMA, the project should not allow impacts to groundwater levels or water quality that could cause undesirable results as defined by the basin's GSP.

Any recipient of state funds through a grant or contract for projects or research relating to the improvement of water or ecological resources must adhere to the protocols developed under AB 1755, the Open and Transparent Water Data Act.

## Key Protocols

Data collection and management protocols should be specific to the sustainability indicators addressed by the project. In general, data should be collected, stored, and reported in a way that is operationally sound and compliant with grant requirements. Below are key protocols that should be followed:

- If the project is located in a basin with a GSP, the project should utilize the existing DMS developed as part of the GSP. The DMS can be adapted to include project information, and in general, should be capable of storing and reporting information relevant to the implementation of the project and monitoring of the sustainability indicators addressed by the project.
- Recommended types of databases for the DMS include a custom relational database, such as a Structured Query Language (SQL) database or Microsoft Access database. Two database examples are shown in Figures 1 and 2. The database may include data tables for basic information about groundwater, surface water, and subsidence monitoring sites, as well as related time-series data tables for groundwater levels, groundwater extraction, groundwater quality, subsidence, and surface water data collected during project implementation and monitoring.
- To develop a DMS for a project or a GSP, the following approach is typically used. These components can be adapted for project-specific data. DWR's SGMA GSP data upload templates, which are accessible through the GSP Reporting System at <https://sgma.water.ca.gov/portal/> can be consulted for required data fields. In general, the monitoring site table should include site name, location data (coordinates and elevation), and construction data, including depth and screening intervals if appropriate. These tables may utilize the coded values from the SGMA templates for coordinate and elevation source and accuracy fields. Time-series data tables should include site names that can be related to the site tables, measurement date/time, and groundwater level, constituent, or flow data. Tables may utilize the code values from the SGMA templates for no measurement, questionable measurement, and measurement method fields.
- All data should be evaluated for validity and acceptable use prior to entry into the DMS. The data should comply with QA/QC protocols established for the project. Projects should incorporate the Data Quality Objective process following the United States Environmental Protection Agency Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA, 2006). Although strict adherence to this approach is not required, it does provide a robust method to consider for achieving the objectives of the project.
- Monitoring data should be uploaded to the DMS in timely fashion to address quality concerns and reduce data gaps.
- [Optional] If applicable, project should include coordination with adjacent projects on data structures to facilitate data sharing and transparency.

### KEY TERMS

**Database platform** allows the user to access and manipulate database, such as insert, update, delete, create, and create records and run queries against a dataset also able to generate figures and tables from the results of the query.

Microsoft has created the **Microsoft Access** database platform and there is also the **SQL** database, which stands for Structured Query Language.

- Monitoring data should be reported using the DWR SGMA portal at required frequency. Any annual project construction reports related to the grant process should also be submitted through the SGMA portal.

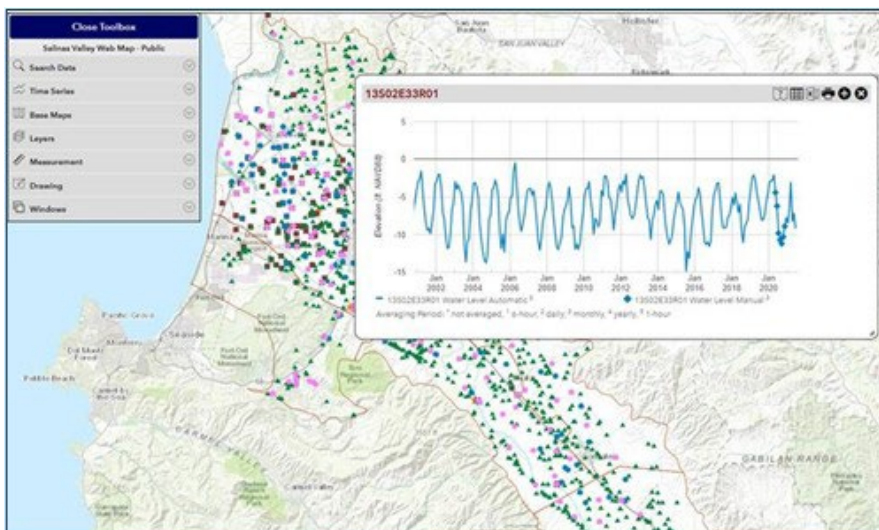


Figure 1. Example DMS with Web Portal, developed for Salinas Valley Basin GSPs

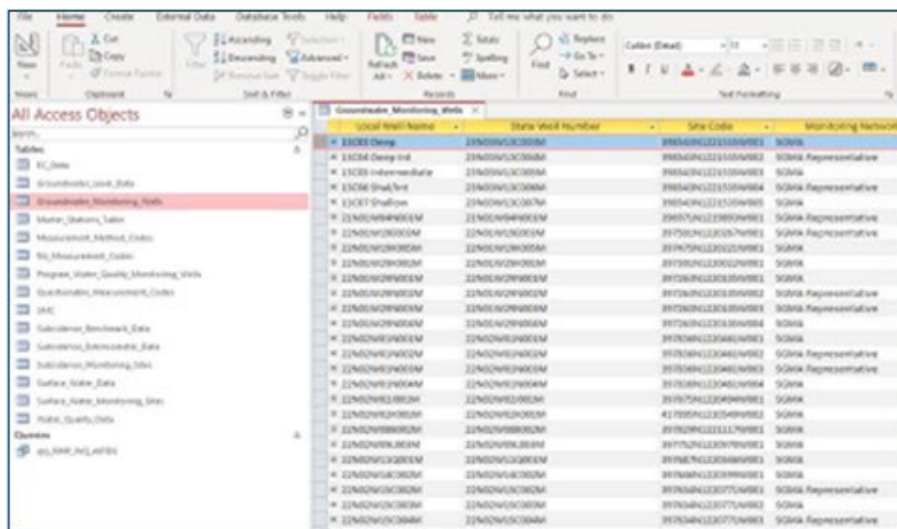


Figure 2. Example Access Database, developed for Corning GSP DMS