CONDUCT AIRBORNE ELECTROMAGNETIC SURVEYS

Airborne Electromagnetic (AEM) surveys will be conducted in California's High and Medium Priority Groundwater Basins, including areas with disadvantaged communities (DACs). The project will generate coarse-grid subsurface maps that will provide fundamental information about aquifer structures that supports the development and implementation of groundwater sustainability plans (GSPs). The coarse-grid AEM data may serve as the basis for the collection of fine-grid AEM data by local stakeholders in the future.

What is Proposition 68?

The California Drought, Water, Parks, Climate, Coastal Protection and Outdoor for all Fund (Senate Bill 5, Proposition 68) authorized $4 billion in general obligation bonds for state and local parks, environmental protection and restoration projects, water infrastructure projects, and flood protection projects. The AEM survey will utilize $12 million on data, tools, and analysis efforts for drought and groundwater investments to achieve regional sustainability in support of the Sustainable Groundwater Management Act (SGMA).

How Does This Project Support SGMA?

This project will provide state and federal agencies, groundwater sustainability agencies, related stakeholders, and the public with basin-specific and cross-basin geophysical data, tools, and analysis aligned to the technical requirements of the groundwater sustainability plan (GSP) regulations and SGMA. The resulting information will provide a standardized, statewide dataset that supports the implementation of SGMA by improving the understanding of large-scale aquifer structures, which aids in the development or refinement of a hydrogeologic conceptual model and identification of possible recharge areas.

This project builds on the knowledge and successful track record of DWR's Regional and Statewide Integrated Water Management technical assistance programs and aligns with the Governor's Water Resilience Portfolio (Executive Order N-10-19) and the Open and Transparent Data Act (AB 1755).

What is the Value of this Information?

The AEM data will provide supporting information about subsurface hydrogeologic characteristics of aquifer systems in groundwater basins. AEM data support the development and refinement of groundwater models, improve the potential for the successful development and implementation of GSPs, and reduce uncertainty in identifying locations for groundwater recharge projects. The collection of AEM data supports multi-benefit projects and has been successfully implemented in basins in California through a recent pilot project. The AEM surveys will benefit DACs by providing data to enhance understanding and management of their basins.

What is New?

In 2020, DWR plans to award a contract to collect AEM data throughout California's High and Medium Priority Groundwater Basins. The AEM data will be collected in a grid or set of parallel lines with the survey lines oriented to collect data in areas with known data gaps, adjacent to critical water delivery infrastructure, and where GSAs are considering implementation of SGMA related project, like aquifer recharge.

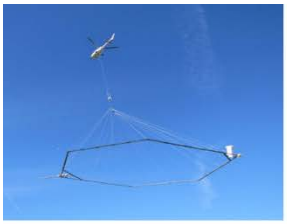
What are the Next Steps?

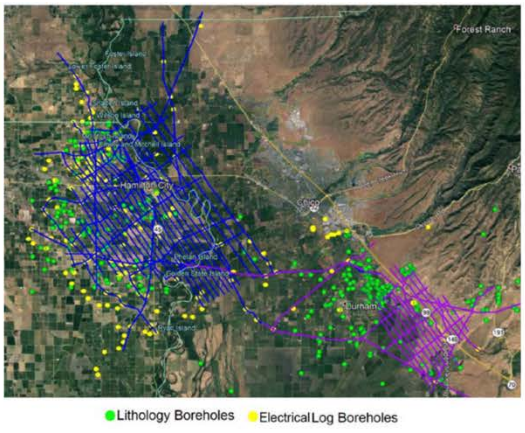
A technical advisory committee will be formed in early 2021 to provide input on project activities, such as survey design, data management, guidance documents, and AEM data use.

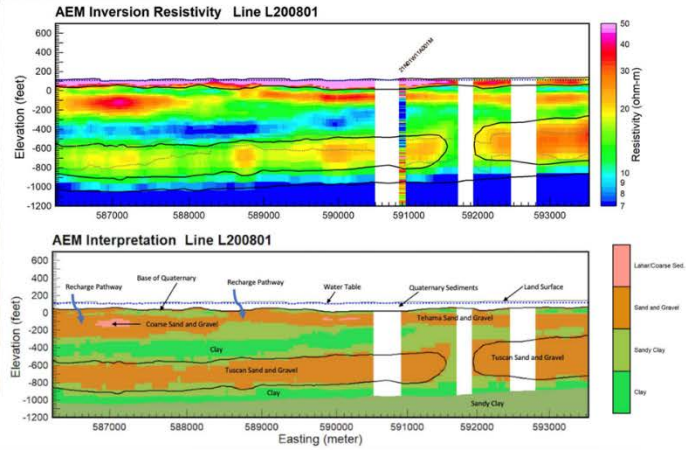
DWR will coordinate with local governments in the survey areas before surveys are conducted to inform the local community about the safety of the AEM method and why surveys are being conducted

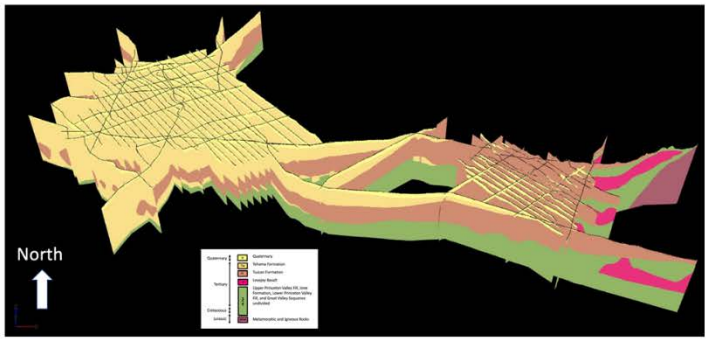
What is AEM and How is a Survey Conducted?

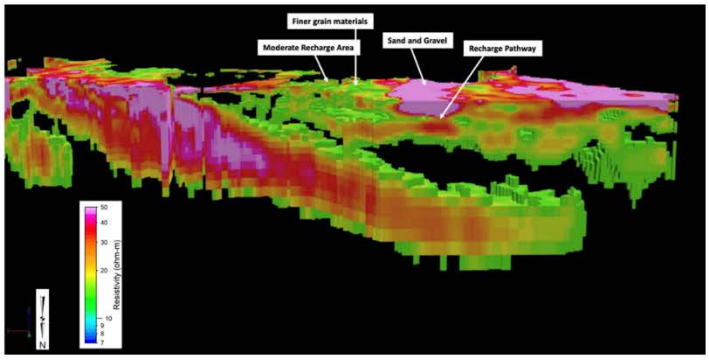
AEM is a geophysical method that measures the electrical properties of subsurface materials from helicopter mounted equipment. The AEM equipment is housed in a large hoop frame that is securely hung from the helicopter. The helicopter carries the equipment approximately 100 feet above the ground surface and collects data along a defined flight path. Flight paths are designed to collect data over open spaces and avoid residential areas and structures containing people or confined livestock. The helicopter is flown by experienced pilots who follow all Federal Aviation Administration (FAA) regulations. The collected AEM data is interpreted to show the distribution of coarse-grained and fine-grained materials in the subsurface, which improves the understanding of aquifer structures. Below, is an example of the helicopter and AEM equipment (hoop), flight paths, and AEM data that have been interpreted to characterize subsurface hydrogeology.











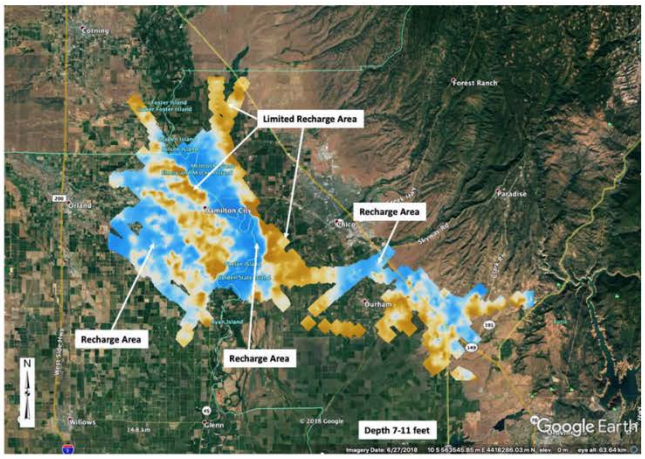


Figure 1: Airborne Electromagnetic Survey and Resulting Data

Contact and Additional Information

For more information or questions, contact Katherine.Dlubac@water.ca.gov

DWR SGMA Data and Tools webpage

https://water.ca.gov/Programs/Groundwater-Management/Data-and-Tools

DWR Statewide AEM Survey webpage

Coming soon