

## Casper Alcova Irrigation District GIS Level II

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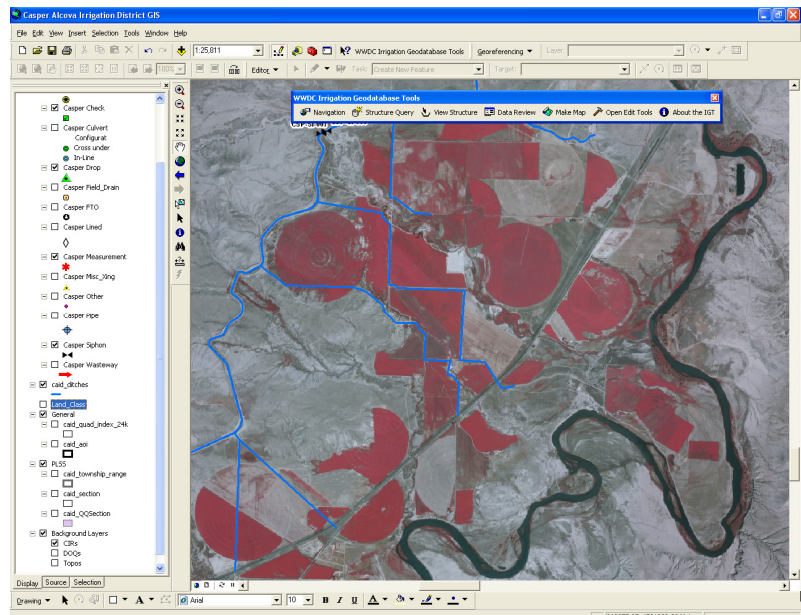
In May 2006, Anderson Consulting Engineers, Inc. (ACE) entered a contract with the Wyoming Water Development Commission (WWDC) to provide professional services to the Casper Alcova Irrigation District in the vicinity of Casper, Wyoming for the Casper Alcova Irrigation District (CAID) GIS Level II project. The CAID encompasses approximately 23,500 acres of irrigated and land and over 300 miles of canal and lateral infrastructure. The objective of the project is to prepare a Geographic Information System (GIS) that facilitates the planning process, documents the inventory of structures and provides valuable data to the CAID to promote operation and management of water deliveries as well as implementation of planned improvements.

Specific tasks incorporated in the project include:

- Conducting an inventory of all structures along the Casper Canal and lateral system, condition assessment, GPS location, and identification of potential rehabilitation needs. This effort included documentation of all individual farm turnouts.
- Conducting seepage investigations within the study area and evaluate alternative measures to reduce potential seepage losses.
- Evaluate opportunities for system automation, and
- Evaluate alternative sources to fund the proposed rehabilitation plan.

ACE mapped the CAID infrastructure using handheld GPS units loaded with pre-programmed digital data dictionaries, which enabled accurate and consistent data collection. The dictionary is essentially an electronic field form that queries the irrigation specialist for information pertinent to specific structure types. ACE is currently completing the field inventory of all irrigation-related infrastructure, including: bridges, check structures, culverts, drop structures, farm turnouts, headgates, lined reaches, measurement devices, pipelines, siphons, and wasteways. The estimated number of total feature exceeds 3,000. Information collected at each structure includes condition, functionality, existing problems, rehabilitation needs, and general dimensions. In addition, digital photographs documenting the collected data were taken.

The CAID GIS incorporates ACE's Irrigation Geodatabase Tool (IGT) which enables the novice user to navigate, to utilize the extensive databases, and to generate maps. The IGT consists of a suite of tools developed using Visual Basic and packaged into a user-friendly graphic user's interface (GUI). The IGT allows the user to easily query the extensive geodatabase to extract information such as structure condition, functionality, and rehabilitation needs. The IGT facilitates data editing in an easy to read data form, bypassing cumbersome editing routines otherwise required by the GIS software. Using the IGT, ACE staff are preparing a prioritized list of rehabilitation needs for the CAID.



**CAID Geographic Information System**