Wyoming Hydrology Database

Wyoming has offered to share our Hydrology Database Shell and associated Data Submittal Spreadsheets with other state and the federal programs. The Land Quality Division of the Wyoming Department of Environmental Quality makes no warranties as to the validity, and assumes no liability associated with the use or misuse of this information. This Shell has empty tables already set up where information on groundwater, surface water and precipitation monitoring sites, groundwater level elevation, stream flow, field water quality, lab water quality and precipitation data can be stored. We hope our work and experience in this area may help other programs.

A little description of the database is appropriate. There are tables in the database for storing the following data:

1. Field Water Quality Data
2. Lab Water Quality
3. Flow Data
4. Groundwater Level Data
5. Precipitation Data
6. Precipitation Stations
7. Well Stations
8. Surface Water Stations

A parallel set of tables are named SEQUESTERED. For example there is a table named SEQUESTERED Groundwater Level Data. In the sequestered tables, we store either data that is an error or data where we need another piece of data for it to be acceptable. For example, a company may submit water level elevations, but we haven't received the aquifer the well monitors. These sequestered tables allow us to hold data until the necessary complementary information is obtained. They also are a place to store what would commonly be termed flagged data. We have found that sorting out flagged data every time a staff member used the database was inefficient and that it also leaded to inconsistency between hydrologists in selecting which data to analyze.

Also included are some administrative tables that are useful in setting up a hydrology database. The Preferred Parameters Table lists the names of common constituents that we prefer a lab use when reporting results. We often provide the list to labs so that they know the appropriate naming convention for constituents. We store all value in mg/l (with some obvious exceptions, such as pH) for consistency and to avoid having to keep track of units. The Parameter Table lists of all the parameters that we have had submitted to us by mining operations over the years. The Load Reference Table helps us track the source of data. The Master Lists gives acceptable choices for various fields (for example: 'Steel' for the Casing Field in the Well Stations Table).

This database has evolved over time. We initially started out with an Oracle database and a very complex structure. The data were hand entered from paper submittals. Over time we have evolved into a simpler data structure in Access. We have also moved towards having companies submit their data electronically in spreadsheets that are formatted to allow easy importation of the data into the Hydrology Database. These changes have allowed us to have a database that more staff can use and we are able to keep it current with our resource constraints.

Contact Matt Kunze if you have additional questions.

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