Developing a Map Catalog to Display Water Right Information from Washington State Department of Ecology Database

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Summary

The procedure for developing an ArcGIS Map catalog is described using Data Driven Pages ArcGIS extension for depicting wells and associated water rights by township and range in eastern Washington intersecting Franklin, Adams, Benton, Walla Walla, Yakima, and Klickitat counties. A series of queries against a geodatabase were written to distill the most relevant information by each well for mapping purposes. A labeling system was designed using the advanced Maplex Label Engine to account for the dense spatial distribution of wells in certain areas, and to ensure this information was legible at mapped extents and zoom level. A total of 110 maps were generated.

Procedure

Well maps depicting pumping rates and water rights for 110 areas in eastern Washington State were generated throughout Franklin, Adams, Benton, Walla Walla, Yakima, and Klickitat counties. The geodatabase was obtained from the Washington State Department of Ecology water rights geodatabase (GWIS_SDEexport.zip) at https://fortress.wa.gov/ecy/gispublic/DataDownload/wr/GWIS_Data/.

The associated data dictionary for the is available at

https://fortress.wa.gov/ecy/gispublic/DataDownload/wr/GWIS_Data/GWIS_Data_Dictionary/.

The geodatabase consists of both tabular and spatial data describing well locations, pumping rates, and water rights. Well attribute data was joined to well location by a unique well identification field, which persists in all data within the database. More specifically, within the Geodatabase, the spatial feature class *D_Point* was joined to tabular tables *D_Point_WR_Doc and Person_Plus_EXTRACT_*from *WRTSnotGWIS* by fields *D_Point_ID* and *WR_Doc_ID*. Well location and relevant information was mapped for an area in eastern Washington that intersects portions of Franklin Benton, Walla Walla, Yakima, and Klickitat counties (Figure 1). Figure 2 depicts an example map with well labels and associated well data as an inset. To account for duplicate records and sources, geospatial queries were written to simplify well depiction and map labels in the map catalog. Queries applied the following logic:

- Only groundwater wells were mapped. This was accomplished by filtering the field *WaRecRCWClassTypeCode* for "groundwater."

- Only wells with a status as "active" were mapped. This was accomplished by filtering the field *WaRecProcessStatusTypeCode* for "Active."

- For wells with multiple entries with different dates and associated data, the most recent entry was mapped.

- For wells with multiple entries with the same date, wells were grouped by common attributes and the maximum instantaneous pumping for each group was mapped. This corresponds to the field *IntantaneousQuantity.*

ArcGIS Data Driven Pages extension was used to automate map generation. Data Driven Pages uses a series of spatial extents and zooms and exports map contents at each extent. Data Driven Pages provides a mechanism for mapping a large number of pages by index, eliminating the repetitive nature of doing this manually. Township and range extents were used to define the extent of each map. A total of 110 township range extents translated to 110 map pages in the map catalog (attached, Appendix A)

In addition to the map book, a separate map for Township/Range R13/T24 included a unique well ID and all available tabular data as an inset map. Similar to the map catalog, this data was filtered to only include active groundwater wells, but provides all records for each well in the map page area.
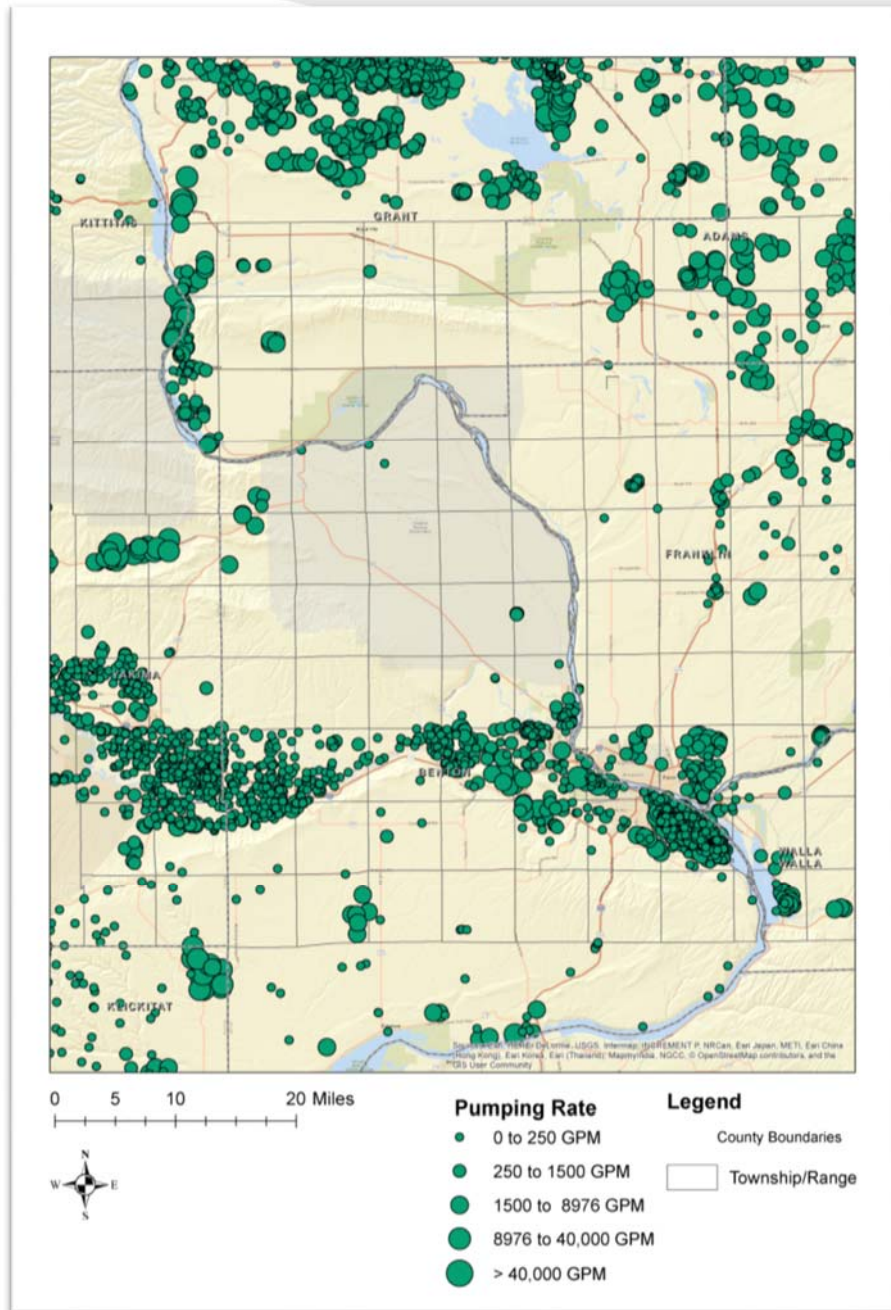
Figure 1. Mapped area of interest. Wells symbolized by size instantaneous rate of pumping. Township and range boundaries are represented by light gray grid.
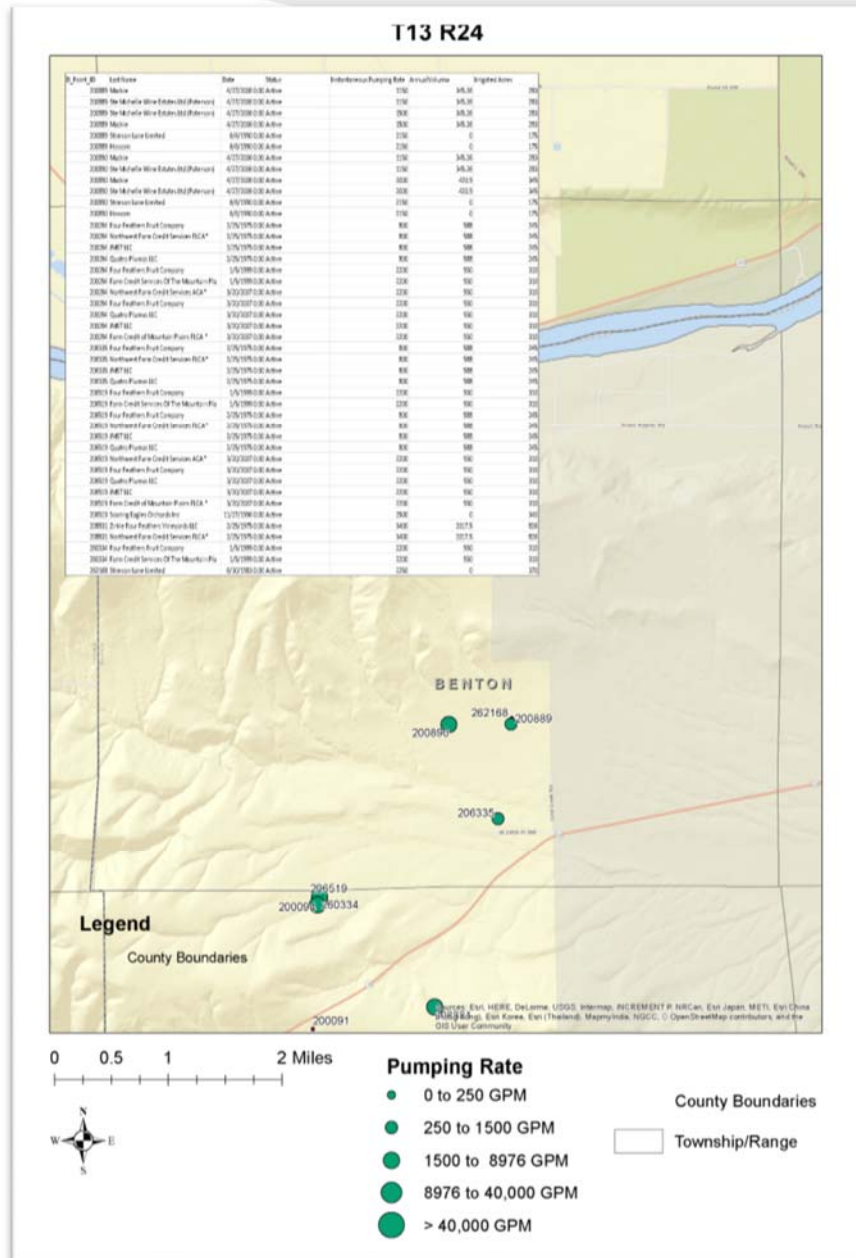
Figure 2. Mapped area for Township/Range R13/T24. Wells labeled with unique identifier, and well attribute data for all associated records inset (upper left).

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