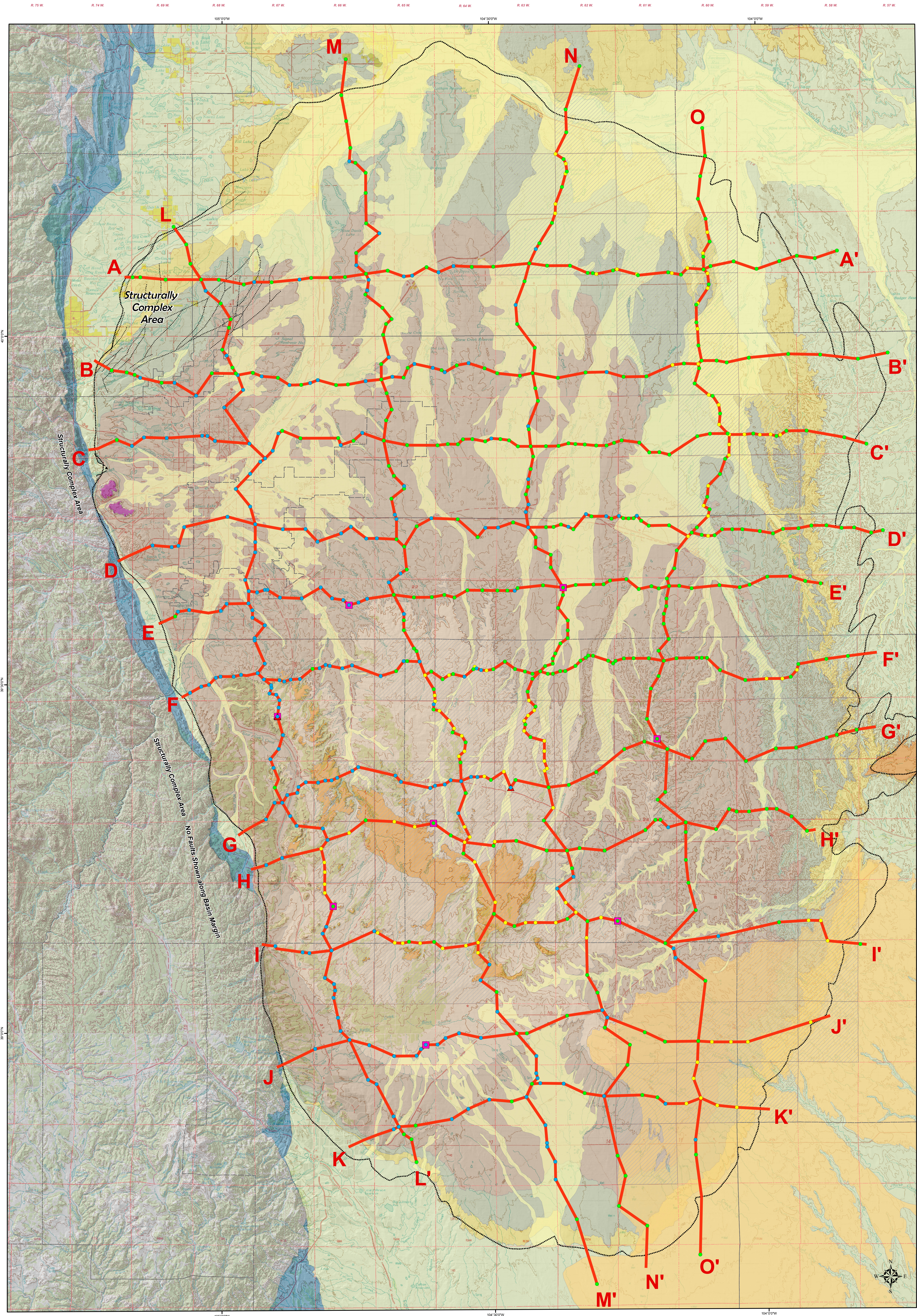


CROSS-SECTION BASEMAP



Map Legend

- Line of Cross-Section
- Bijou Creek Mineral Exploration Townships
- County Boundaries
- Denver Basin SB5 Administrative Boundary
- Townships

Borehole Symbols

- Mineral Borehole
- Oil & Gas Well
- Water Well
- Core Location
- Type Log Location

Quaternary Deposits

- Quaternary Alluvium
- Nussbaum Alluvium

Bedrock Units

- Younger Tertiary Rocks
- Denver Basin Group D2 Sequence
- Shoshonite Flows
- Denver Basin Group D1 Sequence
- Laramie Formation
- Fox Hills Sandstone
- Pierre Shale
- Undifferentiated Mesozoic and Paleozoic Rocks
- Precambrian Crystalline Basement

CROSS-SECTION ALIGNMENT AND GEOPHYSICAL LOG SOURCES

Cross-section alignments parallel those of cross-sections prepared by DWR in the 1980s (DWR, 1985) in developing the Denver Basin Rules. These original cross-sections provided well-to-well correlations of the aquifers across the basin used in preparation of maps incorporated into the rules. At the time of preparation, geophysical logs from 298 wells were used to construct fifteen cross-sections; eleven oriented west-east and four north-south across the basin. These logs were culled from a database of approximately 3,000 logs available at that time.

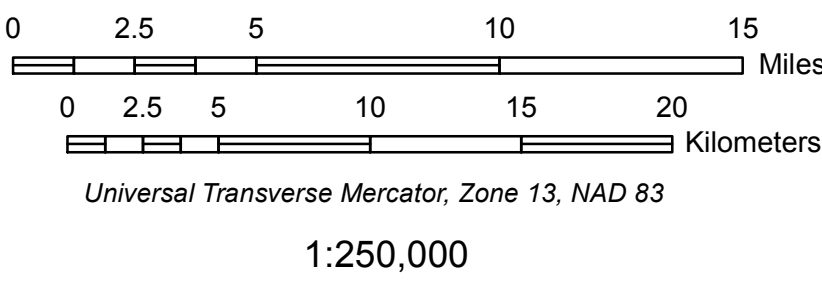
As of 2002 the database has grown to over 4,200 available geophysical logs from multiple sources that include water wells, oil and gas wells, and mineral boreholes. For this effort, geophysical logs have been entered into a Petra® project as calibrated and rectified raster image files for viewing and annotation in a common vertical scale. The Denver Basin project now contains over 3,020 calibrated geophysical logs. Of these, 963 logs have accompanying digitized resistivity or resistance logs used to facilitate differentiation of different lithologic layers and formation boundaries in the logs. The fifteen cross-sections in this publication include 737 of these geophysical logs.

Sources of the geophysical logs are listed below. With a diversity of sources covering a wide time span, the available logs vary considerably in type, scale, logging date and quality.

- Water well logs obtained from the geophysical log library maintained by DWR in Denver. This library contains geophysical logs from permitted non-exempt water wells, exploratory wells, and various oil and gas wells throughout the Denver Basin. Logs from 728 wells were selected from this library for scanning and inclusion in the Petra® data base. Of these, 233 have been included in the cross-sections.
- Oil and gas geophysical logs were obtained as digital image files from two sources: 1) the Colorado Oil and Gas Conservation Commission (COGCC) on-line data base, and 2) MJ Systems, a commercial vendor for geologic data serving the petroleum industry. The Petra® database now includes logs from 1,982 oil and gas wells of which 401 have been included in the cross-sections.
- Mineral borehole logs obtained from a set of data generated by PowerCo during the Bijou Creek uranium exploration project in 1979 and 1980 that had been donated to CGS. These data include geophysical logs and written geologic descriptions of uranium exploration boreholes drilled in four large blocks of land within the Denver Basin shown in Plate 3. Three blocks follow the eastern perimeter of the basin where boreholes targeted the Fox Hills Sandstone. The fourth block falls in the basin interior where boreholes targeted Eocene Denver Basin Group sediments. The database includes 321 Bijou Creek exploration boreholes of which 103 have been included in the cross-sections.
- Core holes provide detailed stratigraphic and petrographic data from different settings within the basin. One core from a location near Castle Rock (Robson and Banta, 1993) sampled strata deposited close to its active mountain source. The other core from a location at Kiowa (Raynolds and others, 2001) sampled strata deposited further away from its source.

CROSS-SECTIONS OF THE
FRESH-WATER BEARING STRATA
OF THE DENVER BASIN BETWEEN GREELEY AND COLORADO SPRINGS, COLORADO

By Peter E. Barkmann, Marieke Dechesne, Mary Ellen Wickham, Jill Carlson, and Scott Formolo
2011



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