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Water System Modeling Assisted in Design of New Water System

Water system modeling was used to assess feasibility of design

Rock Cut State Park, located within the Rockford metropolitan area, is a popular recreation area for residents of Northern Illinois. When the park was initially established, potable water was supplied through a network of nineteen ground water wells. Residential and commercial sprawl over the years encroached on the park land impacting ground water reserves and increasing contamination from septic fields. This ground water contamination forced closure of piped water supplies to all the park's public areas and the campground.

RJN was selected to perform a study and provide engineering design services to improve the water and sewer systems. Project tasks included field survey, design, and construction engineering services needed to develop 30,000 linear feet of new water main and 7,000 linear feet of force main.

The design of the new water system entailed using existing water pipes, where feasible; abandoning and removing the nineteen existing wells; and connecting to the City of Loves Park water supply system. Intensive water system modeling was performed to ensure that the water design was feasible and would handle the flow required to provide adequate service to public areas of the park, including fire protection. The new water system requirements included:

- Providing potable piped water to all picnic areas.
- Removing and replacing all drinking fountains with IDNR approved fountains
- Providing potable piped water to the equestrian center and site residences
- Providing potable piped water to the campground
- Providing fire hydrants as directed by the Fire Marshall and Code

The topography of the area presented challenges for the design of the water system. Modeling was used successfully to validate design decisions to ensure that the new water system would provide the service level needed to support park usage.