



## GEOTECHNICAL AND WATER RESOURCES ENGINEERING



The study was completed in four basic steps:

- Initial identification of possible reservoir sites
- Air photo interpretation of identified dam sites
- Evaluation of property ownership
- A site visit to the preferred sites to evaluate site constraints and fatal flaws, additional developments since the date of the air photos, and assessment of possible additional evaluations

Two sites were identified as potential reservoir sites and additional analyses were recommended to evaluate the technical and cost feasibility of developing these sites into water supply reservoirs.

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## RESERVOIR SITING STUDY, ADAMS COUNTY, CO CITY OF THORNTON

RJH Consultants, Inc. (RJH) was engaged by the City of Thornton (City) to perform a preliminary siting study to identify potential above-ground reservoir sites near the South Platte River in Adams and Weld Counties, Colorado. In recent years the City has made substantial increases to their raw water storage facilities, primarily in the development of below-ground storage facilities, through the conversion of existing and future gravel pits into raw water storage reservoirs. However, these storage facilities have become increasingly expensive and difficult to purchase and are typically located within the 100-year floodplain of the South Platte River. This study was initiated to identify potential above-ground storage sites suitable for development into exchange reservoirs that have lower overall project costs.

RJH identified 11 potential reservoir sites and feasible locations for dams where it may be possible to construct a dam and create a reservoir. This evaluation was completed without consideration of existing facilities, geology, or land ownership. RJH identified ten sites with a storage capacity of at least 3,000 acre-feet (ac-ft) and one site with an expected storage capacity of about 1,800 ac-ft.

Using USGS topography, RJH identified the maximum practical dam height and storage volume and the corresponding surface area of the reservoir at these sites. The identified dam sites were superimposed onto air photos to evaluate more recent site conditions in the reservoir basin and at the dam sites. Based on the air photos, RJH evaluated the extent of development at each identified dam site. RJH determined that significant development consisting of major roads (E-470), minor paved county roads, residential development, major power lines, and gas and oil wells were present at some sites, therefore making them impractical.

RJH performed site visits to the remaining three areas to evaluate if additional development had occurred since the date of the air photos and to gain a general opinion of the benefit in performing additional evaluations at a particular site. RJH prepared tables that identified significant issues that could impact dam and reservoir development at each site to assist with developing recommendations on which sites should be carried forward into future phases of study.