

Abstract:

Rainwater catchment and treatment has become a viable solution to potable water scarcity in dry, desert areas. Among many other arid environments, Cloudcroft, New Mexico has experienced times of severe drought. The drought conditions in the early 2000s inspired the idea of this project to harvest and treat rainwater for some facility in the town that has a high drinking water demand. During the crisis, the city hauled water from a nearby town, which cost in terms of water unit price, fuel, vehicle maintenance, distribution, etc. Harvesting and treating rainwater both conventionally and innovatively for Presbyterian Medical Services would save the community time and money in the event of another crisis. Alternatives to the catchment area, structure, and treatment system were considered. The process of selecting alternatives to investigate involved designing for multiple techniques used in conventional and advanced water treatment. The optimal solution was narrowed down using a Leopold Matrix.