

IMMEDIATE AND LONG TERM THREATS TO WATER RESOURCE AVAILABILITY AT FELSENTHAL NATIONAL WILDLIFE REFUGE

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The alteration of hydrologic conditions due to human and natural causes affect water availability to U.S. Fish and Wildlife Service (USFWS) facilities, and may also lead to adverse environmental impacts at National Wildlife Refuges (NWR). The management and protection of NWRs requires an accurate reconnaissance-level Water Resources Inventory and Assessment (WRIA) on NWR lands to identify threats and needs and provide a foundation for planning and prioritization of needed management actions. A WRIA requires local and regional inventories and assessments for the biological, physical, chemical, and hydrologic resources of each refuge to study and ensure the quality and the availability of useable water resources at a specific site. We are currently conducting WRIs for the Southeast region based on inventory data and identifying and providing recommendations to address perceived threats, needs, or concerns (immediate and long-term) on the refuge related to water resources for a subset of refuges. Information is being compiled from publicly available reports (e.g., published research), databases (e.g., governmental websites), and geospatial datasets from federal, state, and local sources. Here we present the assessment of Felsenthal NWR, one of the refuge sites in the southeastern region of the USFWS. This site is located in southern Arkansas and is a part of the Lower Ouachita-Bayou De Loutre watershed. Recently, over-pumping in the area has caused widespread groundwater level declines. Global climate change also poses a threat to the water resources at Felsenthal NWR. There is also an increased statistical likelihood of extreme precipitation events in the area. We examined the change in current and projected water resources using an integrated approach involving field data, satellite remote sensing, existing inventories, and statistical analyses. Results highlight the impact of diminishing water resources as current climate projections project wetter, milder winters and hotter, dryer summers.

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