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Shared Water Resources Overview Paper No. NPS-04

Study Areas: Rio Grande - Elephant Butte to Rio Conchos Subarea

Bureau: National Park Service (NPS)

I) Rio Grande - Elephant Butte to Rio Conchos Subarea

The NPS administers three units of the National Park System located entirely or partially within the Rio Grande - Elephant Butte to Rio Conchos subarea. **White Sands National Monument and Chamizal National Memorial** are located entirely within the subarea. A small portion of the western side of **Guadalupe Mountains National Park** is also located within the subarea drainage. However, since the surface water resources within this portion of the Park are ephemeral in nature, and empty into a closed basin they are not addressed further in this overview

Chamizal National Memorial (Texas)

Introduction

Established in 1974, the 55-acre Chamizal National Memorial (CHAM) is located approximately 150 yards north of a channelized segment of the Rio Grande within the City of El Paso, Texas. The Memorial commemorates the peaceful settlement of a 99-year boundary dispute between the United States and Mexico. The Chamizal Treaty, ending the dispute, was signed in 1963.

Water Resources

Potable water is supplied to the Memorial from the City of El Paso. The Park contains one additional irrigation well and a stormwater runoff ditch.

Water Issues

There are no identified water issues at Chamizal National Memorial.

Bibliography

Lucero, Robert. 1995. Personal Communication. Maintenance Staff, Chamizal National Memorial.

White Sands National Monument (New Mexico)

Introduction

White Sands National Monument was established in 1933 in order to preserve a representative area of the world's largest gypsum dune system. Four distinctive types of dunes, as well as alkali flats and Lake Lucero, a playa lake, are found within the National Monument. The National Monument is located in southern New Mexico approximately 50 miles north of the international boundary.

Water Resources

Saline groundwater of the Tularosa Basin is the predominant water resource at White Sands National Monument. The total dissolved solids (TDS) content of this water ranges from 3000 mg/l in areas of freshwater recharge to more than 65,000 mg/l in the eolian deposits of the south-central basin, the near surface evaporite deposits, and the deeply buried sand deposits. This shallow saline groundwater is the source of the gypsum sands and also functions to dune stability and serves as the source of water for vegetation found in the dunefield.

Fresh ground water, with a TDS of less than 1000 mg/l can be found only in the alluvial fans along the National Monument's western boundary and makes up less than 4% of the groundwater of the Tularosa Basin.

Surface waters within White Sands National Monument are extremely limited. Lake Lucero, a large playa lake located on the western boundary of the National Monument, may cover up to 10 square miles of lake bed and alkali flats during exceptionally wet periods. The water that fills the lake is a mixture of precipitation and saline groundwater seepage that enters the lake as the water table rises. Lake Lucero, and many smaller playa lakes remain dry during most of the year.

Lost River is an ephemeral stream that runs into the National Monument from Holloman Air Force Base. Flow into the Lost River is partially controlled by releases from the Holloman Air Force Base Sewage lagoons. The White Sands pupfish, a category 2 species inhabits the Lost River.

Garton Pond is a man-made artesian spring flowing from an improperly capped well. It is the only perennial surface water source within the National Monument. Flow into Garton Pond which has exceeded 125 gallons per minute has dropped to almost 0, and no action to restore this unnatural flow is anticipated.

Water Resource Issues

Impacts of Groundwater Levels on Dune Field

Little research has been conducted on the near surface sediments that underlie the dune field. The composition of these sediments, their geometry, and the presence of structural faulting could all be important in groundwater dynamics, which at least partially determine the dune field morphology.

In addition well pumping adjacent to the National Monument appears to be lowering the water table and may be affecting the dune field dynamics. Little baseline information is currently available to address these issues. The need for baseline monitoring and research have been identified in the National Monument's Resource Management Plan (WHSAN-400.000 & WHSAN-701.000).

Groundwater Contamination

Groundwater flowing into the National Monument carries the minerals that crystalize and form the sands of White Sands National Monument. Hazardous waste sites and military activities on the White Sands Missile Range and Holloman Air Force Base may be contaminating the shallow groundwaters with a range of hazardous substances including fuel products, heavy metals, partially treated sewage, and organic compounds. A reconnaissance level study to assess the contaminants issue is currently being undertaken by the New Mexico Institute of Mining and Technology.

Point of Contact:

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Bibliography

National Park Service. 1994. White Sands National Monument Resource Management Plan. White Sands National Monument, NM.