

## Introduction

Playas are small depressional landforms where water accumulates to form ephemeral wetlands. The source of water for playas is linked to its environment and drainage basin, whereby water and the waste (e.g., fertilizer, chemicals, manure, oil, salt) coming from the basin move into the playa.

## Objective

Determine and compare the geochemical composition of urban and rural playas on the Southern High Plains in Texas.

#### Hypothesis

Wastewater supplying urban and rural playas will differentially impact playa geochemistry.

#### Methods

•220 samples of different 11 different playas from Lubbock, TX.

•Analytical parameters included: pH, salinity/electric conductivity (EC), particle size analysis, organic matter, total elemental characterization via portable X-ray fluorescence (PXRF) spectrometry.

#### •Statistical analysis: Mean separation.



**1.** Playa selection.

2. Collect samples.

**3. Sample preparation.** 





7. Particle size analysis.



5. Elemental characterization via PXRF.



4. Soil pH and EC determination (1:1 v/v soil:water).

Particle Size Analysis Formulas: Sand= [100-((corrected Reading [Initial] / soil weight))\*100 Clay= [(corrected reading [24 Hr.]/ soil weight)\*100] Silt = [100-(Sand + Clay)]

# **Comparative Geochemistry of Urban and Rural Playas in** the Southern High Plains of Texas

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Figure 5. Elemental characterization - Low concentrations.



Figure 6. Elemental characterization - High concentrations.



## Conclusions

Identification of regional soil quality factors and indicators I. Central and

