NEW MEXICO WATER RESOURCES RESEARCH INSTITUTE

Assessment of water quality in the irrigation drainage canals as a source of reusable irrigation water

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Purpose of Study

The objectives of this project are to: 1) assess water quality in the irrigation drainage canals specifically in southern Mesilla Valley, and 2) identify the pollutants and their point and non-point sources. The long-term goal is to use the information from the proposed work to engineer riparian zones using natural systems to treat water that can be reused for irrigation.

Study Underway

The proposed work will focus on the southern Mesilla Valley's major drains namely the Nemexas Drain (~16 mi) and the West Drain (25 mi). Several locations (at a minimum seven) in the drains will be selected. Further field investigation will be conducted to determine the exact locations. Water samples at the selected locations will be collected and flow measured on a bi-weekly basis for testing. Water samples will be tested at the Civil Engineering Department, NMSU for anions (e.g., fluoride, chloride, nitrite, phosphate, etc.), metals (e.g., Pb, Ag, Zn, Fe, Se, etc.), chemical oxygen demand (COD), total nitrogen/total organic carbon (TN/TOC), salinity, pH, temperature, and *Escherichia coli* bacterium.

Benefits

The results of this work will include, but will not be limited to: 1) identification of pollutants in the irrigation return flows, and 2) determination of the source of pollutants (point and non-point). The findings will provide a better understanding of the quality of irrigation return flows for southern Mesilla Valley in order to develop guidelines for designing riparian zones and their locations that would act as pollutant buffers and/or filtration systems. The ultimate goal is to provide a natural method of reclaiming irrigation drainage water for irrigation purposes. The data obtained from this study will also complement the on-going riparian rehabilitation study at Sunland Park, New Mexico; a project sponsored by Stanford Engineering Research Center for Re-inventing National Urban Water Infrastructure (ReNUWIt).

Kai Williams, New Mexico State University environmental engineering graduate student is shown in the laboratory conducting Total Nitrogen (TN) water analysis. Kai received a B.S. in enivironmental engineering from Texas A&M University, Kingsville.