

**AQUATIC EXPERIENCE  
AGRICULTURAL NPS EDUCATION  
PROJECT NO. 03-03**

**FINAL REPORT**

**PREPARED FOR:  
TSSWCB  
TEMPLE, TEXAS**

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## **ABSTRACT**

Water resources in West Texas are greatly impacted by non-point source pollution which also includes agricultural non-point source pollution. Problems identified include, but have not been limited to; the proliferation of brush species such as mesquite, juniper and salt cedar, nitrate contamination problems (originating within the Lipan Aquifer) that affect water quality within the Concho River and confined animal feeding operations (regulated and un-regulated). Other likely problem areas include improper manure storage, irrigation tail water problems, ag-chemical storage and disposition, ag-fuel handling, on-site waste water disposal and improper usage of chemicals and fertilizers.

These issues have created a continued need for intensive public education that will increase awareness of the existing challenges and solutions for abatement. The general public, landowners and governmental entities need fully appreciated that the future of West Texan area communities are at risk without a clear understanding of these issues.

To this end the Upper Colorado River Authority received and implemented an EPA 319(h) grant funded through the TSSWCB over a three year cycle beginning in 2003 and ending in 2005. The purpose of this project was to offer an opportunity to identify the hydrologic factors that contribute to AGNPS and to provide increased comprehension of how these factors effect our watershed. Through implementation of this project, UCRA enhanced its' already successful urban NPS program to include AGNPS education, with the appreciation that both rural and urban communities make up the watershed it serves.

Brush Site Tours, school sponsored camps, Teacher Workshops, classroom presentations and a partnership with the Texas County Extension Agency's "Kids, Kows and More" program have all provided opportunities for AGNPS education. Thousands of adults and students were provided with resources to understand and look for solutions for AGNPS.

Partnerships with the local State Board and Water Districts, Parks and Wildlife, City of San Angelo, County Extension Agencies and area schools have gone a long way in reinforcing the concept of organizations working together to bring about change. All the agencies mentioned participated in tours, teacher workshops and other educational opportunities through the life of this project to assist in the dissemination of AGNPS information and resources.

UCRA feels that big things were accomplished with this small grant and that because of the success of this project, the agency is now seeking additional funding resources to continue this program.

## PROJECT SUMMARY:

### Task I: Project Administration:

*This task includes all project administrative activities, coordination of all work efforts, preparation and maintenance of technical and financial files, preparation of monthly and quarterly status reports, bookkeeping and the preparation of financial statements for the TSSWCB.*

Over the (3) year project cycle UCRA conducted the day to day management of the project which included but was not limited to; coordination of all work effort, preparation and maintenance of technical and financial files, monthly and quarterly status reports, bookkeeping and preparation and submittal of all financial statements to the TSSWCB.

### Task II: Facilitation of Public Outreach and Education

*Instruct students in agricultural non-point source issues by showing the relationship between good conservation practice and water quality, identifying cause and effect relationships related to AGNPS and demonstrating the relationship between ground water and surface water and how area water quality is affected.*

Early in the life of the project, Education/Outreach Staff met with a local schools on regarding future planning for NPS/AGNPS secondary education projects and participated in the Grape Creek Middle School Science Fair.

On March 26, 2004 a tour was conducted at the Brush Control Sites. Representatives from the City of San Angelo, the Texas Water Development Board, TSSWCB and Texas State Representative Scott Campbell other local politicians were present for the tour. The Tour was conducted by UCRA staff, landowners and TSSWCB staff.



Presentations regarding agricultural NPS issues were made to Local Girl Scout troops on October 5, 2004, a local elementary school on October 14, 2004 and at HEB Camp (Leakey) for Grape Creek schools on October 19, 2004. Activities included the hands on presentation of the “Edible Aquifers”.



On March 10, 2005 staff assisted local public school in 5<sup>th</sup> and 6<sup>th</sup> grade watershed projects and presented a groundwater program to Jr. High School students at the same school.

On April 22, 2005 staff participated in an Earth Day Event with (3) local schools and other environmental agencies at the San Angelo Nature



KIDS, KOWS & MORE 2004

Center. On April 25 UCRA staff made presentations to area students regarding NPS issues utilizing a hydrologic model and “edible aquifer” demonstration as learning tools. In May 2004 and May 2005 UCRA staff participated in an area public school educational outreach event organized by the Agricultural Extension Service entitled “Kids, Kows and More”. At these two events alone, UCRA staff made presentations to roughly 1800 elementary students regarding groundwater occurrence, availability, quality and pollution.



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Staff participated in HEB Camps (Leaky, TX) on May 4, 11 & 18 2005 with rural schools from Water Valley, Sterling City, Robert Lee and Bronte. Hands on experience

at HEB camp included Benthic macrorinvertebrate identification and discussion regarding non-point source pollution both rural and urban.

UCRA staff continued planning activities including contact with various agencies and groups regarding public outreach opportunities. Presentation was made to an area public school (3<sup>rd</sup> graders) utilizing the edible aquifer concept on November 2, 2005. UCRA staff continued planning activities including contact with various agencies and groups regarding public outreach opportunities. Presentation was made to the Robert Lee ISD 4<sup>th</sup> & 5<sup>th</sup>. Grade students utilizing the edible aquifer concept on December 8, 2005.

### Task III:

*Host and present workshops for teachers within the region.*

Three separate Teacher Workshops were conducted throughout the project period.

The first workshop was held on June 4 & 5, 2003. Though the original deliverable was met, but the contract was not



executed until September 1, 2003 this workshop was not charged to this project. UCRA felt it was important to conduct the workshop as scheduled using alternate funding sources. Participants were given an understanding of Brush

Control methods as a means of ecosystem restoration and AGNPS pollution control. The first day incorporated curriculum ideas for the classroom and a knowledge of the role various local agencies play in the watershed. Participants were taken on a

watershed tour the second day and given a visual presentation of the effects of brush on a community.

The second workshop was held July 6-7, 2004 at the UCRA facilities in cooperation with the Texas Parks and Wildlife Commission. NPS issues related to agricultural practices (AGNPS) were incorporated into the workshop. Teachers from all over the region participated in this workshop which gave educators a clear understanding of the effects of groundwater pollutants in relationship to both AGNPS and Urban NPS.

A final one-day teacher workshop was conducted on December 1, 2005 and was entitled, "Working Through Your Watershed". Nine teachers from five area counties were represented at the workshop which included topics of watershed management and assessment and a working tour.

### **FINAL CONCLUSIONS:**

The incorporation of Agricultural Non-Point source education into an already successful Urban NPS program was a natural fit. Events such as "Kids, Kows & More" and HEB Camps offered hands on opportunities to rural and urban school children alike to increase their understanding of how AGNPS affects their community; students who would not normally have exposure to these topics in the normal classroom settings participated in these events.

One of our project goals was to increase numbers of students reached by 10% (we served approximately 1000 students in 2002) Through the life of this project (2003-2005) roughly 3000 students were reached through AGNPS educational programs hosted by the UCRA. We feel the numbers speak for themselves and that they are high indicators of the overall success of this project. UCRA returns to these programs year after year and students remember the information provided at previous presentations, indicating to us that our outreach is making an impact.

Our highly successful Teacher Workshops offered an opportunity to reach both adult educators and students by empowering teachers with the knowledge to incorporate AGNPS awareness into area classrooms. It was determined early in the project that number of participants should be limited to smaller group sizes, for the purpose of touring, and working one on one with teachers. Many participants in our workshops are returning because the previous year was so beneficial to enhancing their classroom experience. We have also established a rapport with our local Education Service Center and have been provided with educational opportunities beyond the workshop arena.

It is the opinion of this agency that this project has been highly successful in implementation and dollars well spent. So successful was this endeavor that UCRA has applied for additional, larger funding dollars to create the "Aquatic Academy" in pursuit of some of the original goals of this grant. It is our hope that the groundwork laid in this original grant will continue on for many years to come.