



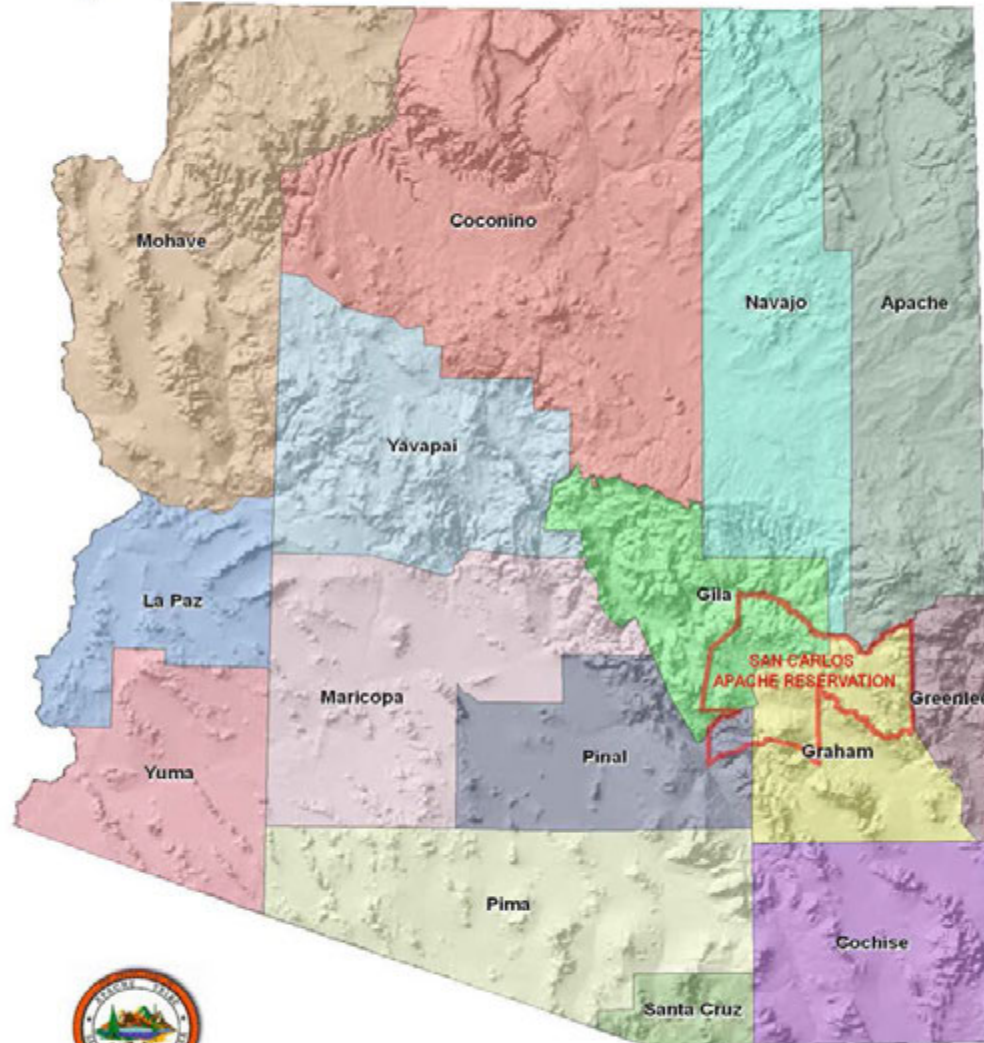
# Salt-Cedar Removal and Native Vegetation Replanting on the San Carlos Apache Reservation

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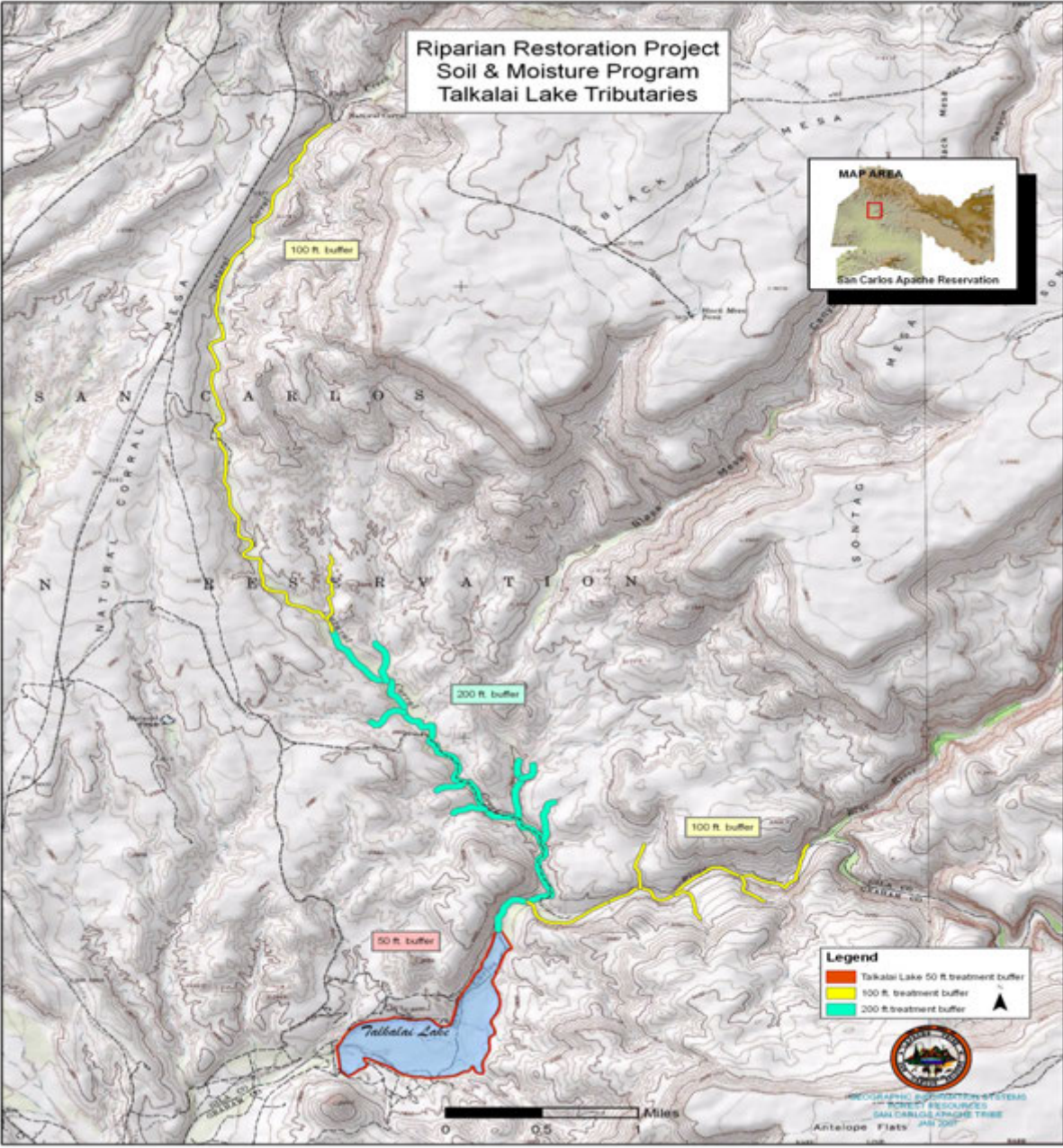
# ARIZONA COUNTIES



GEOGRAPHIC INFORMATION SYSTEM  
San Carlos Apache Tribe  
Aug 2006



# Riparian Restoration Project Soil & Moisture Program Talkalai Lake Tributaries



# Natural Corral Creek 2006





# Funding and Backing for Salt-Cedar Removal

- Funding for this project in 2007 was through the BIA's WRO's Forestry Department Woodland Management Grant (\$65,000)
- The San Carlos Apache Tribal Council has backed this project and subsequent projects to reduce noxious weeds and revitalize the native ecosystem to help maintain biodiversity in a culturally significant biome
- All projects of this magnitude have been scoped and reviewed in an IDT setting following NEPA guidelines

# Methods of Salt-Cedar Removal

- Cut-Stump Method
  - Cut trees close to ground-level with hand tools or chainsaws
  - Cleared debris from the cutting along with dirt and detritus built up near the ground
  - Applied Pathfinder II (triclopyr) herbicide directly to stump within 30 seconds of cutting



# Treatments not Utilized

- No vehicle mechanical treatment was used
  - Very little access to the project sites
  - Project sites located in sensitive ecosystems
- No biological methods used
  - We didn't want to own a heard of goats
  - No Tamarisk leaf beetle present
- No fire was used for initial removal
  - Due to salt cedar's regenerative properties
  - Cost and complexity levels were too high
- No cultural uses of salt-cedar found



# Issues Facing Tamarisk Removal

- The removal projects became hard to estimate costs
  - The Park Creek project from 2006 averaged \$120/acre
  - The Natural Corral Creek project from 2007 averaged nearly \$545/acre
- Differences were caused by location of the project in relation to the office, personnel used, fuel costs and time consumed to treat each acre based on tree density
- Successive treatments are necessary

# Problems Cutting Tamarisk

- Equipment malfunction and wear became prevalent in Natural Corral Creek
  - Gloves wearing thin, chainsaw bars splitting, chains stretching, wood burning from chains and high saw maintenance needs



# Salt-Cedar Removal Timing

- Due to the presence of Southwestern Willow Flycatcher downstream, we timed the beginning of the project for the end of the local nesting season, ~September 15, and continued until the salt-cedar went into dormancy



# Before and After Cutting















# Cost Overview for Removal

- **Supplies and Equipment-**

This is to include: Personal Protective equipment for all personnel, chainsaws (to include files, oil, and replacement parts), and other protective/work gear (figures extrapolated from previous work). **\$8,028.82**

Pathfinder® II herbicide usage

Consumption: approximately **108 acres**

$$(354 \text{ Liters}) \times (108 \text{ acres}) = 15.6 \text{ gal/mi.} \quad [1 \text{ gallon} = 128 \text{ oz}]$$

$$(15.6 \text{ gal/mi.}) / (128 \text{ oz/g}) = 1,996 \text{ oz/mi.} \quad [1 \text{ gallon} = \sim\$40.00]$$

- **Vehicles Expenses/ Lease-**

This is to include leasing a fire fighting crew carrier to transport employees to and from the job site, plus fuel. Since the road would be hard on passenger vans or vehicles of that nature, it was more suitable to lease a vehicle that was better suited to handle rugged terrain. **\$2,458.07**

- **Labor-**

Total project time = 52 days of work [(10 hrs/day) x (4 days/wk) x (13weeks)] = 520 hours which is to include one week of preparation and training.

$$(520 \text{ hrs}) + (40 \text{ hrs}) = 560 \text{ hrs/person}$$

Crew: 1 sawyer, 1 swamper/debris removal, 1 herbicide applicator, 1 person with hand-tools

$$(4 \text{ persons/crew}) \times (3 \text{ crews}) = 12 \text{ persons}$$

Pay: (\$7.00/hr) x (12 persons) x (560 hours) = **\$45,693.36\***

**\*Pay reflects the actual payment to employees as compared to the total project time, 560 hrs/ person.**

Supplies and Equipment:	\$8,028.82
Vehicles Expenses/ Lease:	\$2,458.07
Labor	\$45,693.36
<b>Total =</b>	<b>\$58,905.14</b>

# Disposal of Cut Trees



- Winter rains proceeded to carry all of the woody debris down stream and built a series of dams
- Fire was brought in to reduce the fuel/ debris loading and to add nutrients back to the sand-based soils







# Replanting Native Vegetation

- Funding
  - The replanting effort of this project was a 50/50 joint effort between the San Carlos Apache Tribe and the US Fish and Wildlife Services Partners for Wildlife grant focusing on habitat restoration of the Southwestern Willow Flycatcher and overall biodiversity
  - The total project cost reached \$52,000 with a \$25,000 match from the Partners grant

# Re-Vegetation Timing

- Poles were gathered during the months of December and January during the cottonwood and willow winter dormancy
- Planting occurred in February and March and was completed prior to the annual estimated return of Southwestern Willow Flycatcher



# Gathered Specimens for Replanting

- Natural Corral Creek had only remnants of cottonwood and willow stands
- We wanted to keep genetics as close to local as possible
- Cottonwood and Willow poles were cut from stands within 5 miles of the worksite on the San Carlos River



# Pole Storage

- The pole gathering process took two months and moved down the San Carlos River to avoid over-harvesting any one area
- While still cutting, poles were left half submerged in the river to keep them fresh and begin root growth
- Over 3,000 poles were cut for this rehabilitation project





# Pole Planting

- Holes were drilled for the poles, each pole averaging 2” in diameter, using gas powered augers
- Poles were only planted where groundwater was reached with the augers













# Cost Analysis for Replanting

- Project Total = \$52,000.00

- Labor = 

Salaries and Wages	\$29,401.50
FICA Taxes	\$1,822.89
Medicare Taxes	\$426.37
Worker's Compensation	\$777.16
SUTA-State Unemployment	\$896.76
Total of All Accounts:	\$33,324.68

- Supplies/Vehicles/Fuel/Rental Equip. = \$18,675.32

# The Results...



- Many poles died within the next several months due to water table fluxuations, flooding and cattle damage
- A few places where groundwater was present year-round supported the new growth very well

# Natural Corral Creek 2010







# Fauna Return









# Time for a Re-Treatment





# Natural Corral Creek, July 2014

















Questions?

