

The Pueblo of Sandia Wetlands Program

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The Pueblo of Sandia Environment Department

- Goal: To protect and manage the reservation environment through the application of sound scientific methods and cultural needs and to involve the members of Sandia Pueblo in this mission.
- Sixteen (16) people work in the Pueblo of Sandia Environment Department.
- Environmental programs include: air quality, water resources, water quality, GPS/GIS, solid waste, and Sandia Bosque restoration.

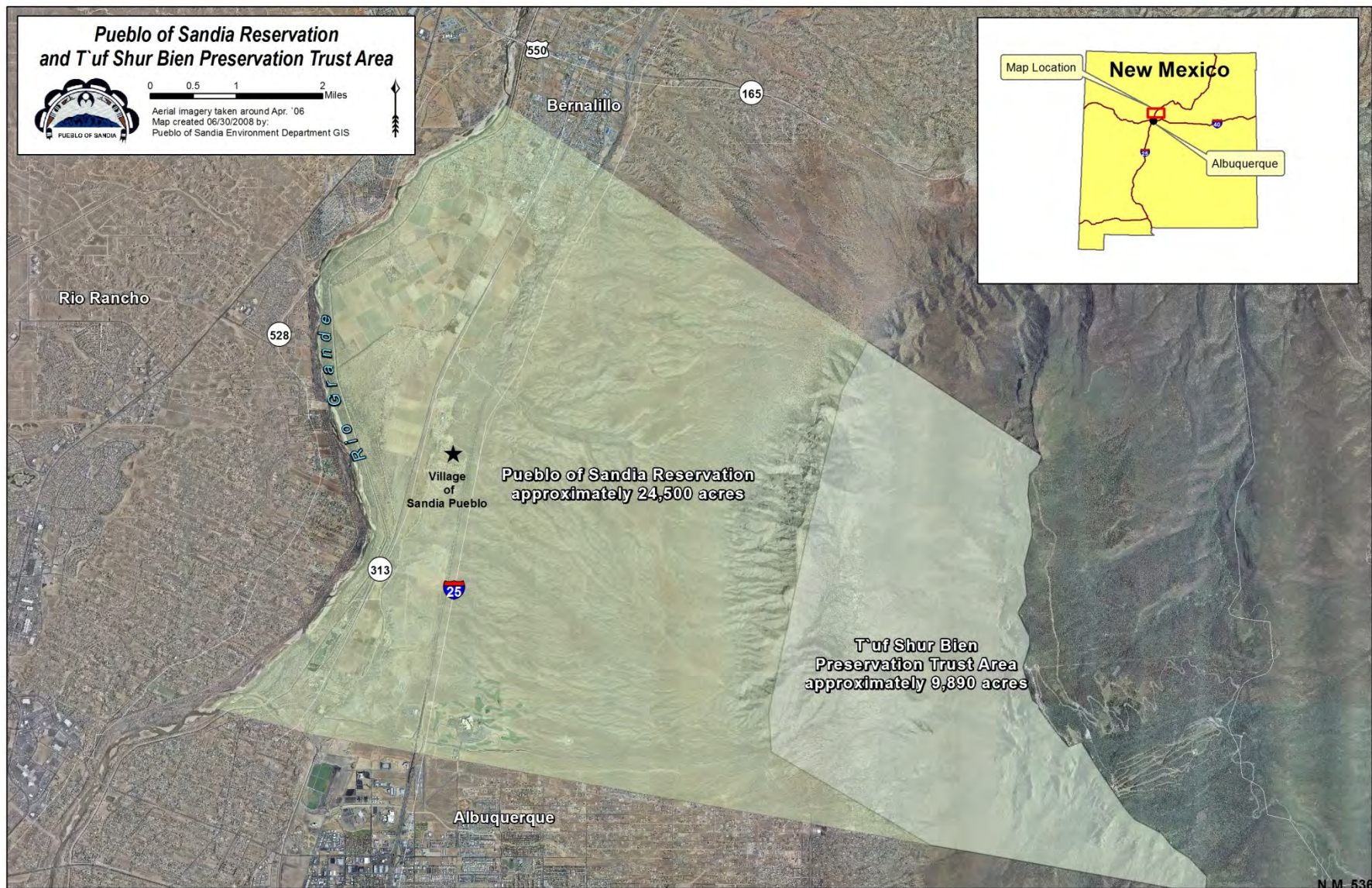


Pueblo of Sandia Reservation and T'uf Shur Bien Preservation Trust Area



0 0.5 1 2 Miles

Aerial imagery taken around Apr. '06
Map created 06/30/2008 by:
Pueblo of Sandia Environment Department GIS



Map Location

New Mexico

Albuquerque

Rio Rancho

528

Rio Grande

550

Bernalillo

165

★
Village
of
Sandia Pueblo

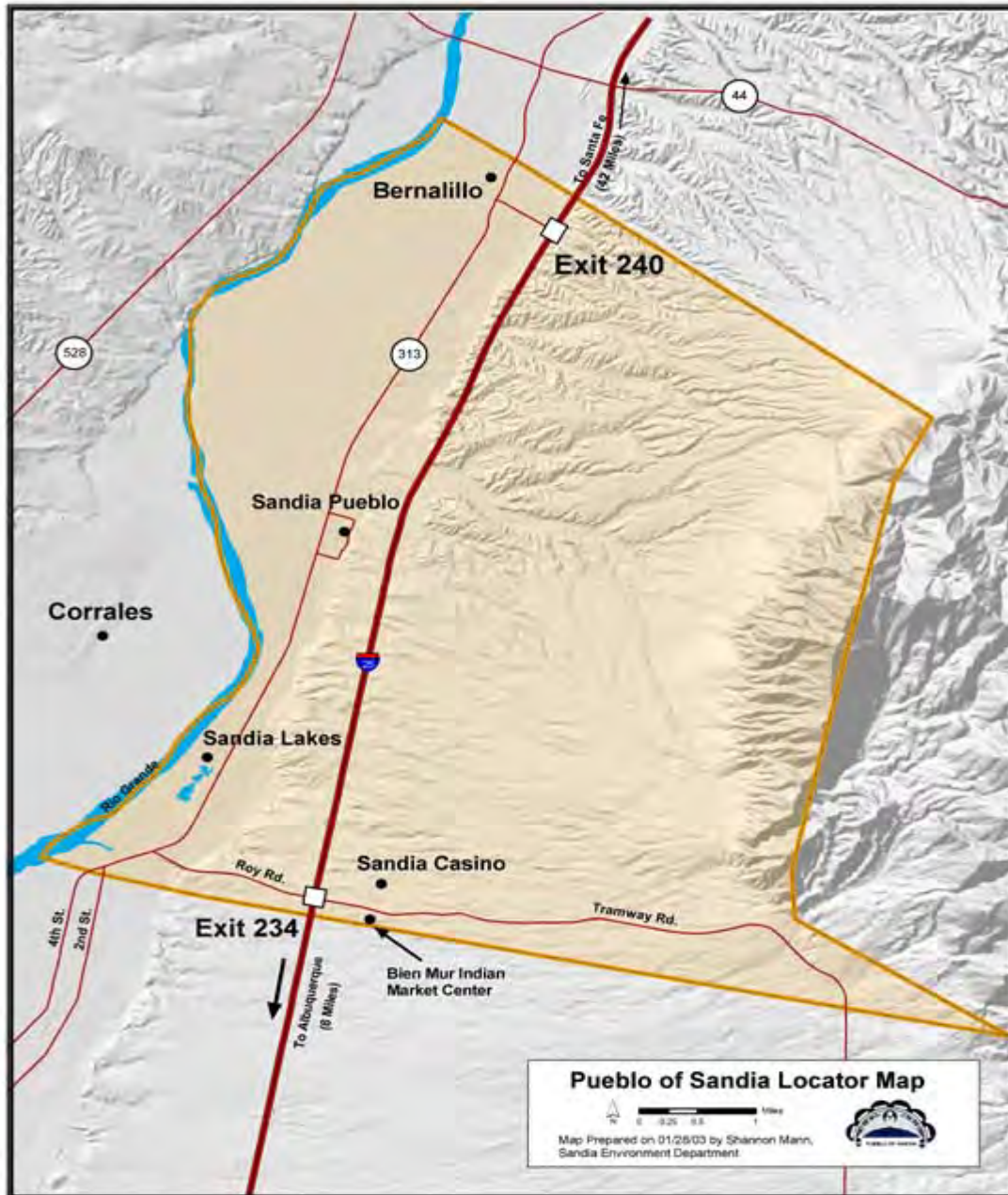
Pueblo of Sandia Reservation
approximately 24,500 acres

313

25

T'uf Shur Bien
Preservation Trust Area
approximately 9,890 acres

Albuquerque



Pueblo of Sandia Wetlands

- The Pueblo of Sandia has several different types of wetlands. These are:
- Wetland/Surface Water Riparian Ponds
- Sandia Mountain Foothill Springs
- Irrigation Wetland Drains
- Sandia Bosque Modifications
- The Pueblo of Sandia has conducted several projects on these wetlands.

Pueblo of Sandia Wetlands

- In the Pueblo of Sandia Bosque, along the levee road, are a series of wetlands/ponds.
- There are twenty six wetland/ponds.
- Wetlands/ponds in the Bosque are various sizes and most are covered by water for at least part of the year.
- These wetlands/ponds are very important to the Pueblo in respect to ecology, cultural, and recreation.

Improving Native Wildlife and Wetland/Bosque Pond Restoration

- Six (6) Bosque wetlands/surface water ponds were restored using both mechanical and chemical treatments to remove invasive exotic vegetation.
- Water quality testing was conducted twice on three of the wetlands/surface water ponds.
- Native wetland plants and native vegetation was replanted in the areas.







Pueblo of Sandia

Bosque Initiative Program Rehabilitation Ponds

200 0 200 Feet



Map prepared on 7/21/03 by Clint Garcia
Sandia Environmental Department
Data collected using a mapping-grade GPS

Rio Grande River

Pond 6
.238 Acres

Pond 5
.287 Acres

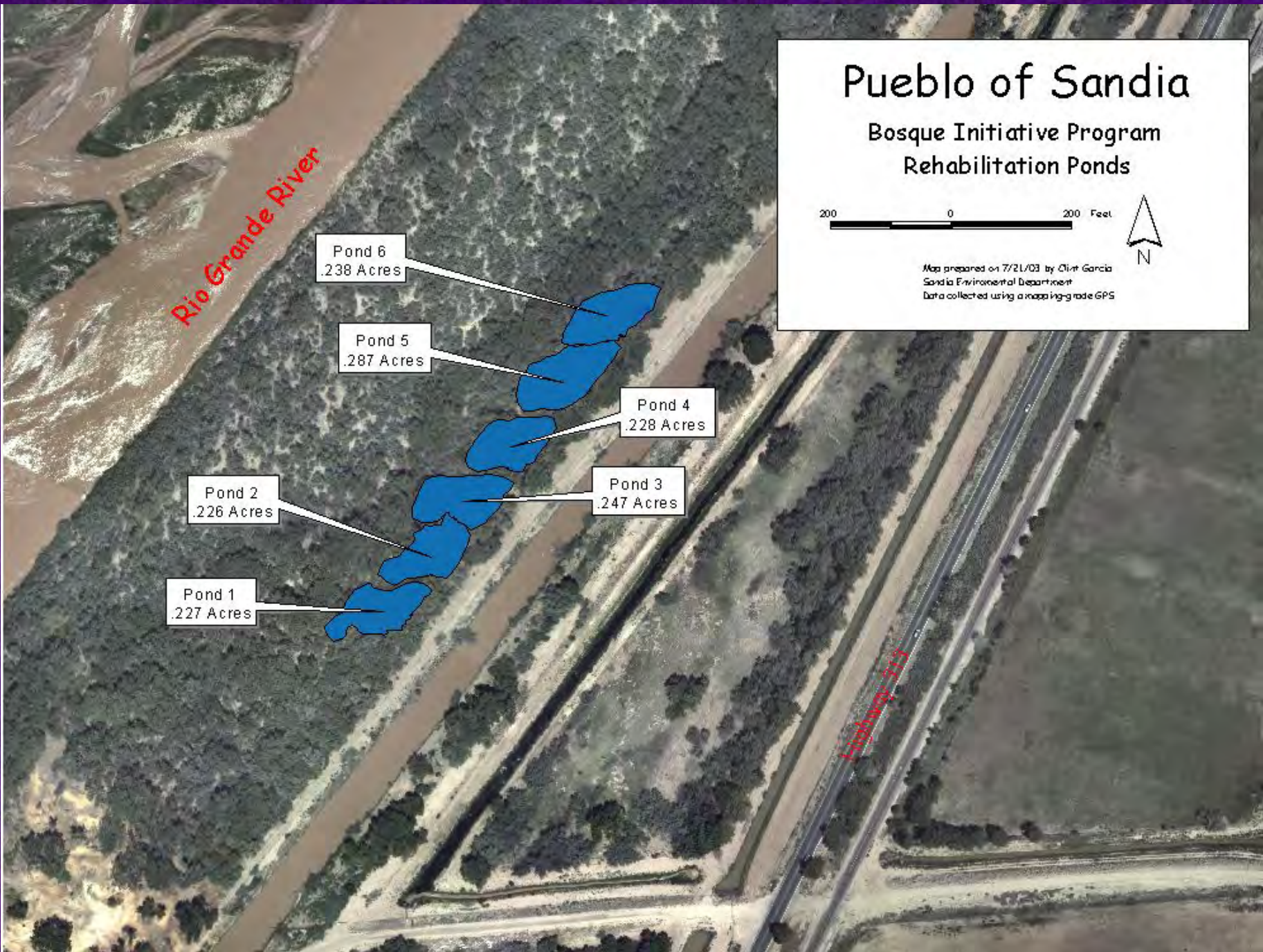
Pond 4
.228 Acres

Pond 2
.226 Acres

Pond 3
.247 Acres

Pond 1
.227 Acres

El Estero



*Pueblo of Sandia
Bosque Pond Restoration
Pond #4 Revegetation*

0 5 10 20 Feet



Map Prepared on 07/25/05 by Clint Garcia,
GIS Program, Sandia Environment Department
Map prepared for: Middle Rio Grande Bosque Initiative
Grant # 1448-20181-01-G927
File name: 2005_Pondsc.mxd

Salix gooddingii

Juncus torregi

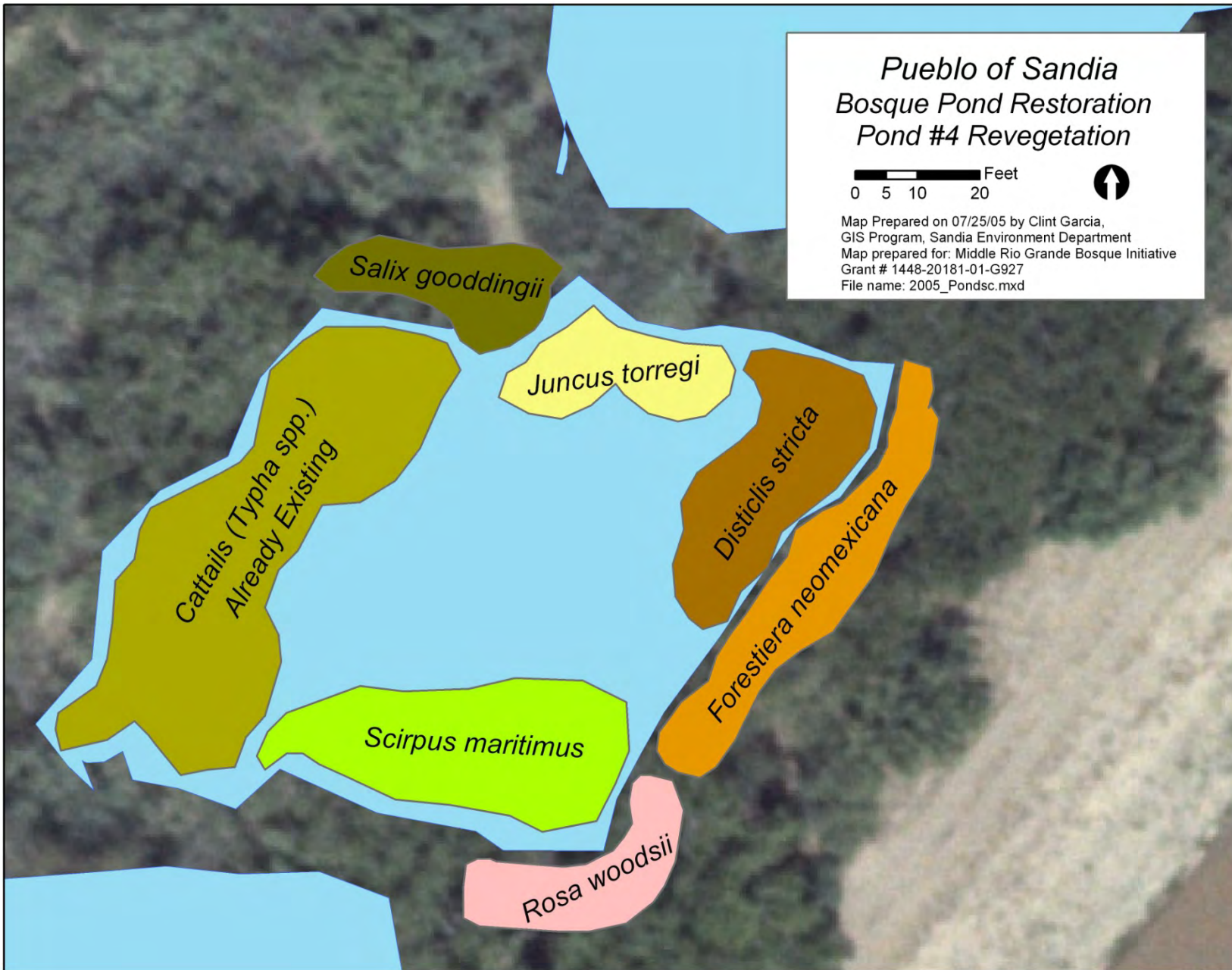
*Cattails (Typha spp.)
Already Existing*

Distichlis stricta

Forestiera neomexicana

Scirpus maritimus

Rosa woodsii



Wetland/Bosque Pond Water Quality Results

- Wetland/Bosque Pond Surface water monitoring locations and water quality data was entered into the environment department's GIS system and Microsoft Excel.
- Spreadsheets were made for water quality data.
- Maps with results were made for reports and use by other tribal departments.



Bosque Pond #2 WQ Results

09/30/03

pH (SU) 7.91

**Dissolved Oxygen (mg/L) 4.21 @
20.6°C**

Total Phosphorous, as P (mg/L) 1.08

Ammonia (mg/L) 5.6

USFWS Tribal Landowner Incentive Program (TLIP)

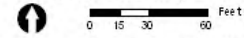
- The Pueblo of Sandia undertook full-scale enhancement of two wetlands/surface water ponds (approx. 0.76 acres) located in the Pueblo of Sandia Bosque. These wetlands/ponds had extensive overgrowth of exotic vegetation. These wetlands/ponds had been historically a part of the Pueblo of Sandia Bosque and were once a healthy wetland with wetland type habitat for flora and fauna.





Pueblo of Sandia

USFWS Tribal Landowner
Incentive Grant
Program
#1-8-NA
Revised Bosque Restoration Ponds
After Clearing



Map prepared on 06/29/06 by Shannon Mann,
GIS Program, Sandia Environment Department
Map file: lw_ponds_2006.mxd



Tribal Landowner Incentive
Program #1-8-NA
All Plantings 2006 and 2007

0 12.5 25 50 Feet

Map prepared on 10/29/07 by Jessica Sebring,
GIS Program, Sandia Environment Department
Map file: Q: TLIP_plants_2006_and_2007

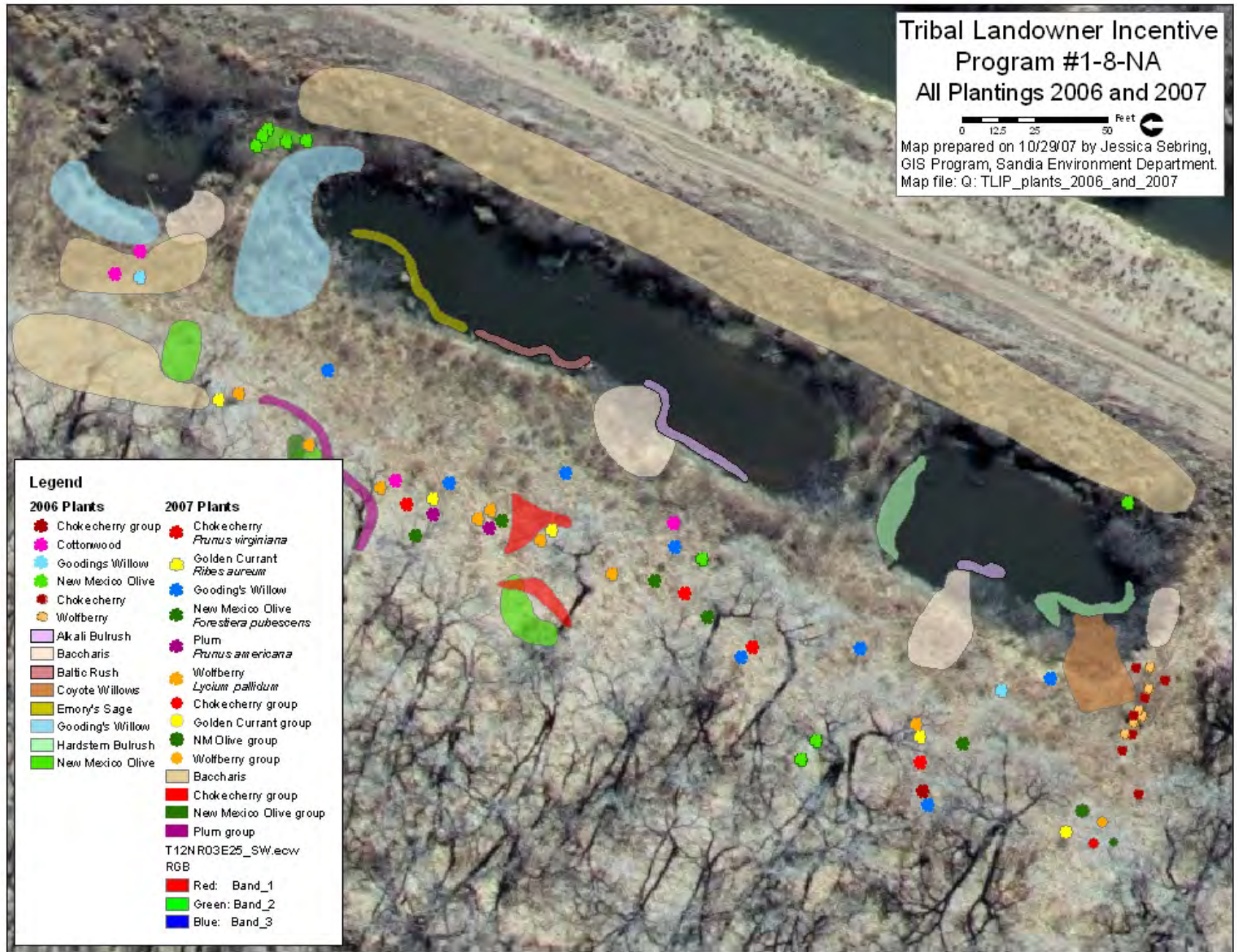
Legend

2006 Plants

- Chokecherry group
- Cottonwood
- Goodings Willow
- New Mexico Olive
- Chokecherry
- Wolfberry
- Akali Bulrush
- Baccharis
- Baltic Rush
- Coyote Willows
- Emory's Sage
- Gooding's Willow
- Hardstem Bulrush
- New Mexico Olive

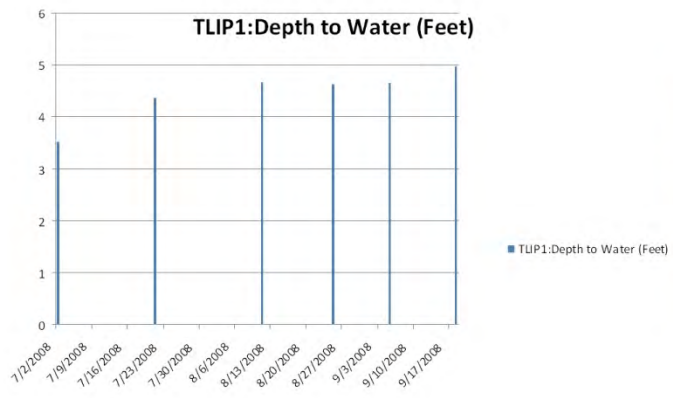
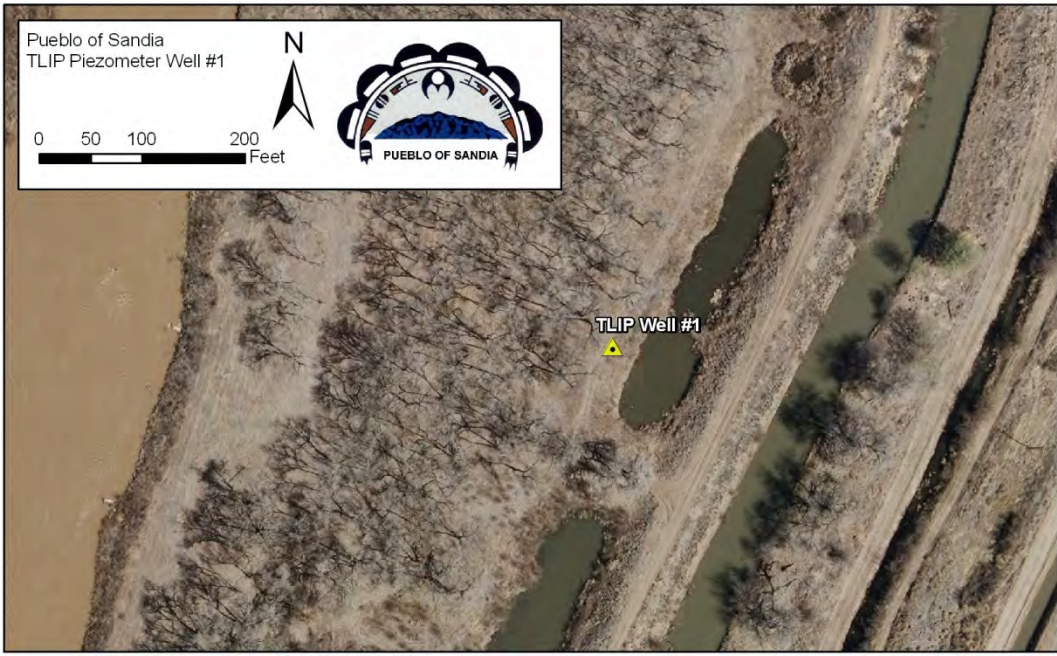
2007 Plants

- Chokecherry
 - Prunus virginiana*
 - Golden Currant
 - Ribes aureum*
 - Gooding's Willow
 - New Mexico Olive
 - Forestiera pubescens*
 - Plum
 - Prunus americana*
 - Wolfberry
 - Lycium pallidum*
 - Chokecherry group
 - Golden Currant group
 - NM Olive group
 - Wolfberry group
 - Baccharis
 - Chokecherry group
 - New Mexico Olive group
 - Plum group
- T12NR03E25_SW.ecw
RGB
- Red: Band_1
 - Green: Band_2
 - Blue: Band_3





Pueblo of Sandia
TLIP Piezometer Well #1



TLIP1 Piezometer Data

<u>Collection Date</u>	<u>Result</u>	<u>Corrected Result</u>	<u>Units</u>	<u>Comments</u>
7/2/2008	4.51	3.51	Feet	Well from ground to top of casing = 1.0 ft
7/9/2008	5.35	4.35	Feet	Well from ground to top of casing = 1.0 ft
7/16/2008	5.67	4.67	Feet	Well from ground to top of casing = 1.0 ft
7/23/2008	5.63	4.63	Feet	Well from ground to top of casing = 1.0 ft
7/30/2008	5.65	4.65	Feet	Well from ground to top of casing = 1.0 ft
8/6/2008	5.96	4.96	Feet	Well from ground to top of casing = 1.0 ft
8/13/2008	5.65	4.65	Feet	Well from ground to top of casing = 1.0 ft
8/20/2008	5.65	4.65	Feet	Well from ground to top of casing = 1.0 ft
8/27/2008	5.65	4.65	Feet	Well from ground to top of casing = 1.0 ft
9/3/2008	5.65	4.65	Feet	Well from ground to top of casing = 1.0 ft
9/10/2008	5.65	4.65	Feet	Well from ground to top of casing = 1.0 ft
9/17/2008	5.65	4.65	Feet	Well from ground to top of casing = 1.0 ft

*North American Wetlands
Conservation Act (NAWCA)
Restoration Project
North*

- Restoration/enhancement of 100 acres located in the Pueblo of Sandia Bosque (a.k.a. NAWCA Area). This area has extensive overgrowth of exotic vegetation. A part of the Pueblo of Sandia Bosque this area was once a healthy riparian and wetlands ecosystem for flora and fauna.



**NAWCA Area 2008 Invasive Exotic Vegetation
Before Clearing**



**NAWCA Area 2008:
Mechanical Jetty Jack
Removal**



**NAWCA Area – Masticated and
Chipped July 2010**





**NAWCA Area –
Wetlands/Surface Water Ponds
Rehabilitation**



**NAWCA Area –
Wetlands/Surface Water Ponds
New Wetland #2**





Fathead Minnow
(*Pimepales promelas*)



Photo by Mickey Porter

Flathead Chub
(*Platygobio gracilis*)

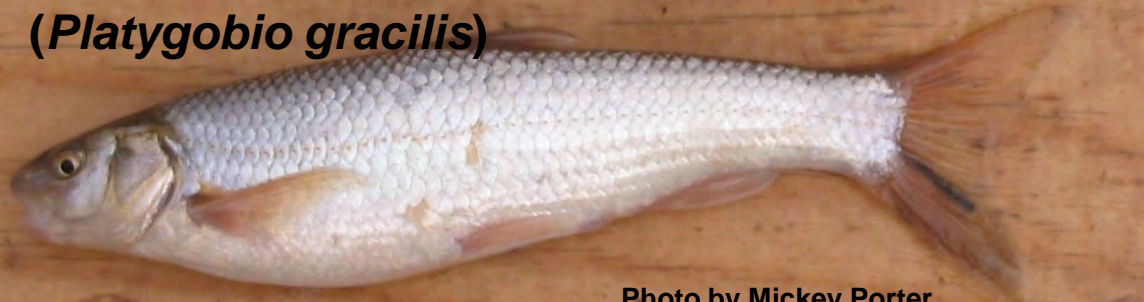


Photo by Mickey Porter

Red Shiner
(*Cyprinella lutrensis*)



Photo by Jason Remshardt



Northern Leopard Frog
(*Rana pipiens*)



Photo by Mark Morales



Tiger Salamander
(*Ambystoma tigrinum*)

Photo by Ted Brown

American Bullfrog
(*Rana catesbiana*)



Photo by Scott Bulgrin



Woodhouse Toad
(*Bufo woodhousii*)



Spiny Softshell
(Apalone spinifer)

Photo by Scott Bulgrin



Common Snapping Turtle
(Chelydra serpentina)

Photo by Mark Morales



Red-eared Slider
(Trachemys scripta)

Photo by Josh Emms



Western Painted Turtle
(Chrysemys picta belli)

Photo by Scott Bulgrin





Incidental Wetland/Pond Trappings

- Small mammals were incidentally trapped during the surveys. These include: White-footed Mice (*Peromyscus leucopus*), Deer Mice (*Peromyscus maniculatus*), Silky Pocket Mice (*Perognathus flavus*), and Desert Shrew (*Notiosorex crawfordi*).
- Various insects, arachnids and spiders were also incidentally trapped. These included: Darkling Beetles (*Eleodes sp.*), Velvet Ants (*Dasymutilla sp.*), Jerusalem Crickets (*Stenopelmatus sp.*), Pill Bug (*Armadillidium vulgare*) and Funnel-web Spider (*Agelenopsis longistylus*).

Wetland Monitoring Observations

- Other animals observed in the Pueblo of Sandia Bosque Wetland/Ponds include mammals (14 species), birds (88 species), fish (5 species), insects (50 species) and arachnids (11 species).

Permitting and Regulatory Process for the Wetland Projects

- $\acute{a} \equiv \cup \sim \setminus \text{œ} \sim \cdot \cup \text{''} \acute{X} \downarrow \cdot \acute{F} \acute{a} \text{œ} \acute{X} \acute{f} \text{ §} \acute{P} \acute{I} \acute{P} \grave{a} \text{''} \cup \hat{\cup} \circ \cup \sim \setminus \hat{\cup} \acute{I} \times \equiv \equiv$
 $\grave{a} \cup \text{''} \neq \times \cdot \times \setminus \downarrow \equiv \ast \ast \hat{\cup} \times \setminus \circ \sim \text{œ} \cup \cdot \equiv \sim \setminus \hat{\cup}$
 $\grave{a} \cup \equiv \times \setminus \cup \sim \cdot \times \nearrow \setminus \delta \cdot \ast \ast \hat{\cup} \times \text{-----} \ast \ast \cup \hat{\cup} \dots \hat{\cup} \cdot \text{œ} \cup \text{æ} \acute{h} \acute{o} \acute{h}$
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- $\acute{a} \equiv \cup \sim \setminus \text{œ} \sim \cdot \cup \text{''} \acute{X} \downarrow \cdot \acute{F} \acute{a} \text{œ} \acute{X} \acute{f} \text{ §} \acute{P} \acute{I} \acute{M} \text{œ} \sim \cdot \cup \text{''} \acute{o} \ast \ast \sim \equiv \times \cdot \hat{\cup}$
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 $\delta \sim \setminus \hat{\cup} \times \sim \acute{h}$
- $\acute{a} \setminus \hat{\cup} \sim \setminus \circ \cup \text{''} \cup \hat{\cup} \delta \checkmark \cup \downarrow \times \cup \text{-----} \acute{X} \downarrow \cdot \acute{F} \acute{a} \text{œ} \acute{X} \acute{f} \text{ } \acute{y} \times \nearrow \equiv \nearrow \circ \times \downarrow \sim \equiv$
 $\acute{a} \checkmark \times \setminus \times \nearrow \setminus \acute{F} \acute{y} \acute{a} \acute{f} \times \text{-----} \ast \ast \cup \hat{\cup} \dots \hat{\cup} \cdot \text{œ} \cup \text{æ} \acute{h} \acute{o} \acute{h} \acute{I} \times \text{-----} \text{œ} \sim \setminus \hat{\cup}$
 $\text{œ} \times \equiv \hat{\cup} \equiv \times \text{q} \cup \delta \cup \text{''} \ast \ast \times \downarrow \cup \acute{h}$
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 $\grave{a} \cup \text{''} \neq \times \cdot \acute{F} \acute{I} \acute{a} \acute{a} \acute{f} \times \text{-----} \ast \ast \cup \hat{\cup} \dots \hat{\cup} \cdot \text{œ} \cup \text{æ} \acute{h} \acute{o} \acute{h} \acute{a} \acute{a} \acute{X} \sim \setminus \hat{\cup} \cdot \text{œ} \cup$
 $\grave{a} \ast \ast \cup \dots \equiv \nearrow \nearrow \text{q} \delta \sim \setminus \hat{\cup} \times \sim \acute{h}$

Permitting and Regulatory Process for the Wetland Projects

- Clean Water Act (CWA) §404 Dredge and Fill Permit including a Wetland Delineation Study issued by the U.S. Army Corps of Engineers.
- Clean Water Act (CWA) §401 Water Quality Certification issued by the Pueblo of Sandia.
- Endangered Species Act (ESA) Biological Opinion (BO) issued by the U.S. Fish and Wildlife Service.
- Clean Water Act (CWA) §402 National Pollutant Discharge Elimination System (NPDES) General Construction Permit (GCP) issued by the U.S. EPA and the Pueblo of Sandia.

CWA § 404 Dredge and Fill Activities

- Under the Clean Water Act (CWA) - Section 404 whenever a project (usually construction) occurs that would affect waters of the United States a Dredge or Fill Permit is required and applied for through the U.S. Army Corps of Engineers.
- Through agreement with the U.S. Army Corps of Engineers, the Pueblo of Sandia is notified on all projects that may influence arroyos and water ways within and outside of the Pueblo.
- The Pueblo of Sandia works with U.S. Army Corps of Engineers and submits comments on the project.

CWA §401 Water Quality Certification

- Under provisions of the CWA, tribes with WQS have the authority to protect their waters through a §401 Water Quality Certification.
- This §401 Water Quality Certification is required from the Pueblo of Sandia Environment Department on all projects that may influence waters within and outside of the Pueblo.
- The Pueblo of Sandia certifies the project with individual conditions and keeps records throughout the duration of the project.

Willow Swale



10.22.2013 09:16

Backwater



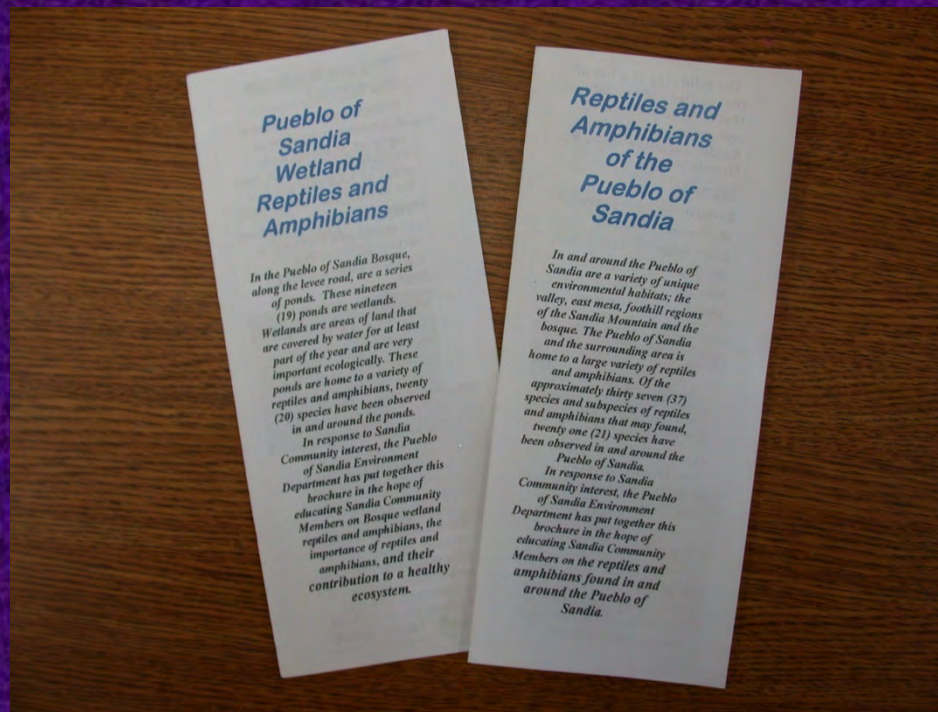
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Wetland Monitoring Observations

- Other animals observed in the Pueblo of Sandia Bosque Wetland/Ponds include mammals (14 species), birds (88 species), fish (5 species), insects (50 species) and arachnids (11 species).

Education and Outreach

- Through these surveys and monitoring activities the Pueblo of Sandia Environment Department is able to educate tribal members and children on the importance of wetlands and their contribution to a healthy ecosystem.



Pueblo of Sandia Wetlands



You never know what you might see!



Wetland Plants



Pickerelweed



Giant Bulrush



Carex Sedge



**For Further Information
Please Contact:**



**Pueblo of Sandia Environment Department
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Bernalillo, NM 87004
(505) 867- 4533
sbulgrin@sandiapueblo.nsn.us**



Photo by Steve Wentworth