

Pecos River Riparian Monitoring Program

**Bureau of Land Management
Roswell Field Office**



Final Report 2001



New Mexico
Natural Heritage
Program



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**Pecos River Riparian Monitoring Program
Bureau of Land Management
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Final Report¹

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Introduction

The Roswell Field Office of the Bureau of Land Management (BLM) has initiated a riparian monitoring program for its grazing allotments within the floodplain corridor of the Pecos River in southeast New Mexico. The intent of this program is to detect long-term trends in riparian plant communities in relation to grazing management practices and vegetation manipulation projects. In addition, the monitoring program is intended to help managers and ranchers effectively implement adaptive management techniques in response to trends indicated by the monitoring data. Beginning in 1999 and continuing through 2000, the New Mexico Natural Heritage Program (NMNHP) established a set of high-resolution monitoring plots and reconnaissance surveys to collect the necessary baseline data for the 15 BLM allotments that are directly adjacent to the river. This baseline survey provides the foundation for future monitoring and also details current vegetation information for use in the development or revision of allotment management plans.

Methods and Materials

Two types of monitoring designs were implemented: high-resolution monitoring plots with permanent vegetation transects for evaluating year-to-year change in major riparian grazing allotments, and less intensive reconnaissance surveys to assess general conditions on smaller, more remote sites. Between September 1999 and August 2000, 31 monitoring plots with 62 transects were installed and read within nine major allotments, and 16 reconnaissance surveys were conducted on six minor and three major allotments. The distribution of sampled allotments along the Pecos River is shown in Figure 1 and the number of sites and stands within each allotment are given in Table 1.

Monitoring sites were selected based on vegetation type and logistical considerations following a methodology developed by NMNHP for Rio Grande basin riparian monitoring

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(Muldavin, Milford, and Chauvin 1999). Aerial photo evaluation and ground reconnaissance were used to determine monitoring sites located in large stands of homogeneous vegetation representative of the allotment. Only those grasslands and shrublands used consistently by livestock were considered (e.g., salt cedar stands were excluded). For efficiency and safety reasons, sites were selected within one km of vehicle access and avoided river crossing where possible.

At each monitoring site, two 30-meter-long transects were established parallel to the river, but separated from one another by at least 10 meters. We used 30 meters because experience has shown that longer lengths become unwieldy and difficult to replicate with the necessary level of precision to detect change on a seasonal to yearly basis. Where possible, transects were established parallel to one another to account for variation across the width of the stand, but where stands were too narrow, transects were placed end to end with at least two meters between them.

The start and end points of each transect were monumented with rebar with a white PVC pipe placed over the rebar to make them more visible (see Appendix A for exact coordinates of end points). Each rebar was tagged with metal tags indicating the site number, transect, and transect position. Each rebar was located with a GPS to within five-meter accuracy. The monitoring site layout was sketched and incorporated into allotment monitoring reports along with maps of plot locations and site descriptions (see Allotment Reports).

To measure vegetation, a cloth meter tape was stretched from the zero-end rebar to the 30 meter end and tied off tautly as close to the ground surface as possible. Beginning at the zero end, one-meter square PVC quadrat frames were positioned along the line at three-meter intervals (Figure 2). Quadrats occurred on either the right or left side of the line from the zero end depending on the plot; Which side the quadrat occurred on is indicated on the monitoring site reports sketch maps and is also included in the plot summary. There were ten quadrats per line for a total of 20 at each monitoring site.

In each quadrat, canopy cover of all species was evaluated to the nearest percent. For trees and shrubs, the number of stems were counted in each quadrat. In 1999 stems were not counted for Emory's baccharis, instead, only the number of individuals in a quadrat were counted. In 2000, the number of individuals within a quadrat were counted for all woody species. Stems less than 10 cm apart were considered the same individual or clone. In 2000, the five meters to the left and right of the lines was also searched for new species not found in the quadrat frames.

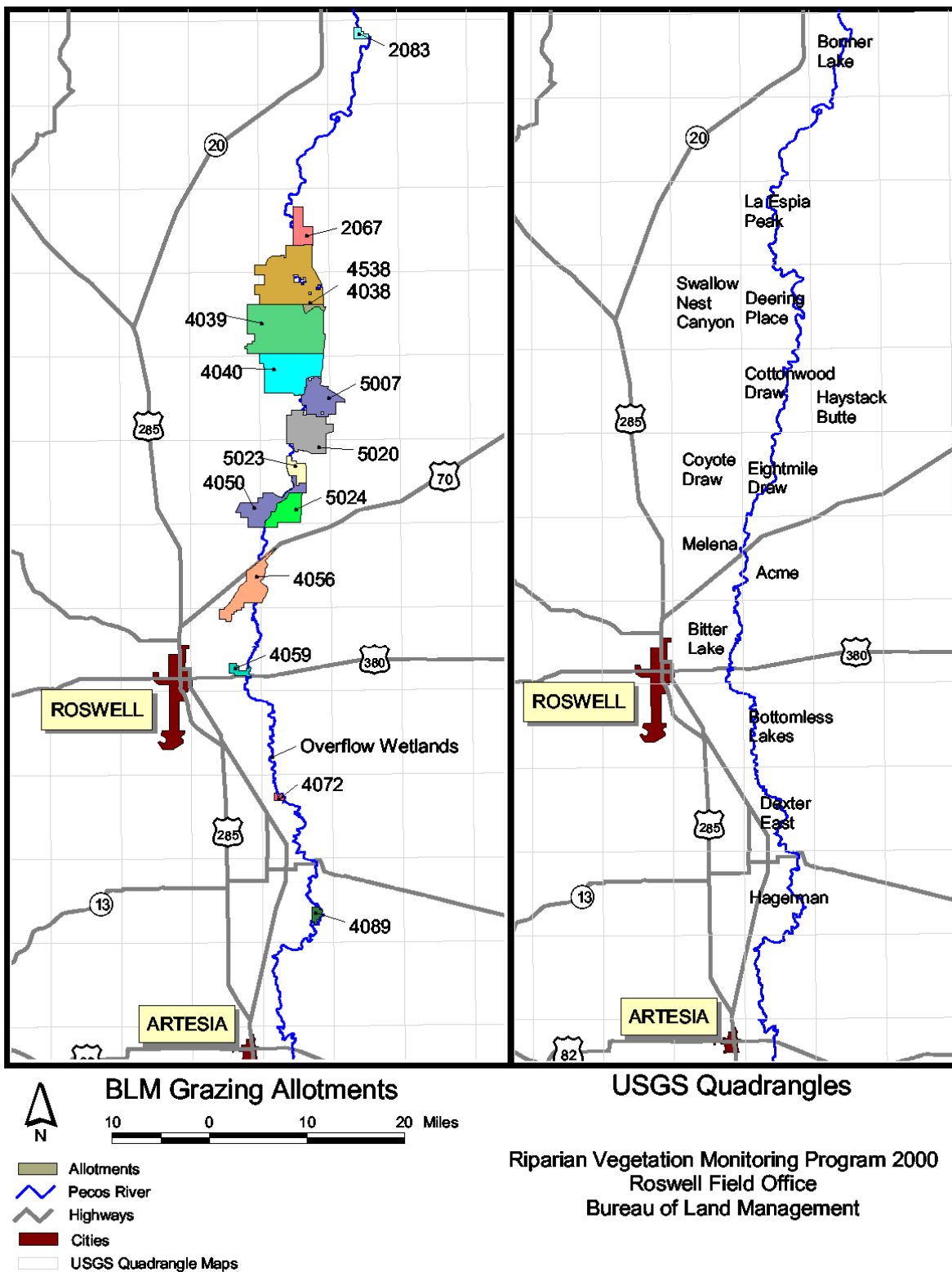


Figure 1. Allotments in the Roswell Pecos River Riparian Monitoring Program (left frame), and relevant USGS 7.5 minute quadrangles (right frame).

Table 1. List of allotments for Roswell Riparian Monitoring Program.

Allotment Number	Permittee	Survey Year	Monitoring Plots	Reconnaissance Survey Plots
2067	Van Eaton	2000		2
2083	Cortezi	2000		2
4038 & 4538	J.D. Terral	2000	3	1
4039	Roswell livestock	2000	1	1
4040	Larry Benedict	1999	4	
4050	Gary L. Lynch	2000	3	
4056	No Current Lessee	1999	6	
4059	Clint Lynch	2000		2
4072	Joe Durand	2000		1
4089	James Jenkins	2000		1
5007	Mark Cooper	2000	4	
5020	Tom Cooper	1999	4	
5023	White Ranch	2000		5
5024	Willard Moody	1999	5	
Overflow Wetlands		2000	1	1
		Total	31	16

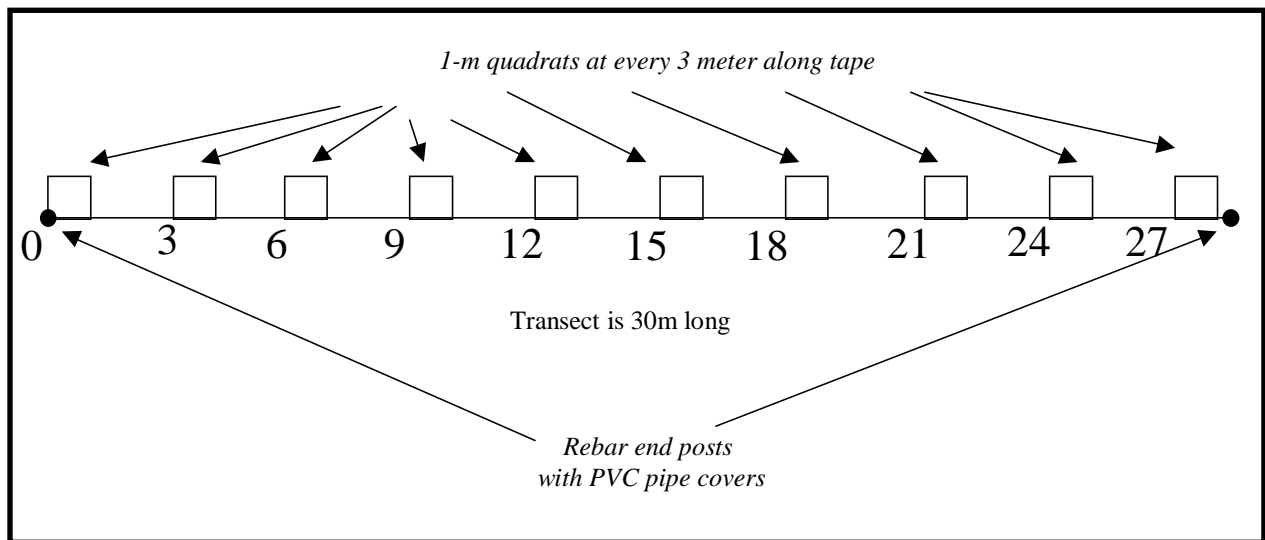


Figure 2. Monitoring plot transect layout.

In 1999 litter, rock, gravel, cryptogamic crust and bare soil cover percentages were visually estimated within each quadrat. In 2000 we replaced this visual method with a more precise line-point intercept method. This method involves dropping a pin flag perpendicular to the ground at 30 cm intervals along the line and evaluating whether the end of the pin struck bare ground, litter, or live basal area of a grass or forb. The first point is randomly established somewhere in the 0 to 30 cm interval then 50 points are taken down the line. This was repeated three times on each line, for a total of 150 points per line and 300 per plot.

Photo points were established at both ends of the line looking at the transect giving four shots per monitoring plot. Each photo was scanned into a digital file and archived to compact disk.

Data collected in the reconnaissance surveys was limited to a species list of common species in representative stands of vegetation, an evaluation of abundance of the dominant species, vegetation type identification, landscape features, plot conditions, GPS locations, and documentary photographs.

Vouchers of all plant species were taken and have been archived at the herbarium of the University of New Mexico Museum of Southwest Biology. Special attention was paid during the surveys to locate populations of the puzzle sunflower, *Helianthus paradoxus*, but none were found. A comprehensive species list for the project is given in Appendix B.

The vegetation data was entered into NMNHP's Microsoft Access® ecology database. Over the past decade this database has been developed and populated with over 5,000 plot records from around the state and the Southwest. Accordingly, there is a set of data entry protocols that have been implemented that ensure data quality including independently proofreading the data for accuracy. The initial data from each site has been summarized and incorporated into the allotment descriptions. The Access database containing the raw data has been made available on compact disk along with appropriate exported files, photo point files, and this report.

Results and Discussion

Overview of Vegetation Community Distribution

Monitoring and reconnaissance survey plots were established across a wide range of vegetation communities among allotments (Table 2). Overall, 24 different vegetation community types were sampled and we have arranged these according to the National Vegetation Classification System in Table 3. Muldavin et al. (2000) provide details of how this classification was developed. In addition, we have included on this table "Wetland Status", which indicates whether a given community type was dominated by wetland species as defined by Reed (1977) as follows:

Obligate wetland plants (OBL) - occur almost always (estimated probability of >99%) in wetlands

Facultative wetland plants (FACW) – usually occur in wetlands (estimated probability of 67 to 99%)

Facultative plants (FAC) - share an equal likelihood (estimated probability 33 to 67%) of occurring in either wetlands or non-wetlands

Facultative upland plants (FACU) – usually occur in non-wetlands (estimate probability 67 to 99%)

Obligate upland plants (UPL) – occur almost always (estimate probability >99%) in non-wetlands

Non-indicators (NI) – not indicative or not yet evaluated

The wetland status of all species observed can be found in Appendix B.

The majority of the plots (68%) were in either facultative wetlands or obligate wetlands (Table 4). In turn, most of these were either shrublands dominated by Emory's baccharis or graminoid (grass-like species) types dominated by inland saltgrass or threesquare bulrush. There were also a few facultative wetland plains cottonwood woodlands and salt cedar stands that were sampled. Alkali-sacaton-dominated grasslands were the other major communities sampled, but alkali sacaton is considered only facultative (although it occurs primarily in lowland areas, these are not necessarily flooded). Overall, the focus was on grassy types with at least moderate forage potential for livestock and with some degree of wetland character.

The wetland character of the baccharis stands was evident in their landscape position. They occurred almost exclusively on riverside terraces or within the active river channel, and they appeared to be dependent on a close connection to the groundwater. There were situations where stands were well-elevated above the active channel or they occurred as much as 200 meters away, but it is still likely that a connection has been maintained at least during some periods of the growing season. Whether flooding is required for the establishment and maintenance of these stands is not known. The effect of livestock use is also not clear. For the most part the baccharis was not browsed. Hence, livestock use of other shrubs such as willows may give baccharis an advantage and lead to an increase in cover and density.

Table 2. Table showing distribution of monitoring (M) and reconnaissance (R) plots among vegetation community types and across allotments.

Vegetation Community Type	Allotment																													
	2067		2083		4038		4039		4040		4050		4056		4059		4072		4089		5007		5020		5023		5024		OFW	
	Plot Type		M	R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M	R	M	R
Alkali Sacaton/Monotypic Stand									1		1		1																	
Alkali Sacaton/Southern Jimmyweed													2															1		
Coyote Willow/Sparse Undergrowth				1									1								1					1				
Coyote Willow/Threesquare																											1			
Emory's Baccharis/Alkali Muhly																					1						1			
Emory's Baccharis/Alkali Muhly, Common Threesquare Phase						1																								
Emory's Baccharis/Alkali Sacaton					1						1	1			1						1	2			1					
Emory's Baccharis/Common Threesquare																						1				1				
Emory's Baccharis/Inland Saltgrass			1			1					1																			
Emory's baccharis/Inland Saltgrass, Southern Jimmyweed Phase																	1													
Fallow Field																					1									
Honey Mesquite/Alkali Sacaton									1														1							
Honey Mesquite/Sparse Undergrowth						1																								
Inland Saltgrass-Alkali Sacaton									1																					
Inland Saltgrass/Monotype																1												1		
Rio Grande/Plains Cottonwood/Emory's Baccharis/Alkali Sacaton																										1				
Rio Grande/Plains Cottonwood/Sparse								1																						
Russian Olive/Bermudagrass						1																								
Salt cedar/Alkali Sacaton																							1				1			
Salt cedar/Southern Jimmyweed				1																										
Salt cedar/Spike Dropseed									1																					
Southern Jimmyweed/Giant Sacaton								1						1																
Threesquare Bulrush Monotype																												2		
Threesquare-Inland Saltgrass																											1			

Table 3. Provisional vegetation community classification for BLM Pecos River Riparian Monitoring Program. Origin refers to being dominated by native (N) or introduced (I) species. See text for definitions of wetland status. State/Global Rank refers to the NMNHP rarity rank as assigned by Muldavin et al. (2000).

Common name	Scientific name	Origin	Wetland Status	State/Global Rank
Forested Wetland				
Broad-leaved Deciduous Forested Wetland				
Broad-leaved Deciduous Forested Wetland, Temporarily Flooded				
Lowland Broad-leaved Deciduous Forested Wetland, Temporarily Flooded				
Rio Grande Cottonwood Alliance	<i>Populus deltoides</i> Alliance			
Rio Grande/Plains Cottonwood/Emory's Baccharis/Alkali	<i>Populus deltoides/Baccharis emoryi/Sporobolus airoides</i>	N	FACW	/
Rio Grande/Plains Cottonwood/Sparse	<i>Populus deltoides/Sparse</i>	N	FACW	S2?/G2?
Russian Olive Alliance	<i>Elaeagnus angustifolia</i> Alliance			
Russian Olive/Bermudagrass	<i>Elaeagnus angustifolia/Cynodon dactylon</i>	I	FAC	SM/GM
Scrub-Shrub Wetland				
Broad-Leaved Deciduous Scrub-Shrub Wetland				
Broad-leaved Deciduous Scrub-Shrub Wetland, Temporarily Flooded				
Lowland Broad-leaved Deciduous Scrub-Shrub Wetland, Temporarily Flooded				
Coyote Willow Alliance	<i>Salix exigua</i> Alliance			
Coyote Willow/Threesquare	<i>Salix exigua/Schoenoplectus pungens</i>	N	OBL	S4/G4
Coyote Willow/Sparse Undergrowth	<i>Salix exigua/Sparse</i>	N	OBL	/
Emory's Baccharis Alliance	<i>Baccharis emoryi</i> Alliance			
Emory's Baccharis/Inland Saltgrass	<i>Baccharis emoryi/Distichlis spicata</i>	N	FACW	S3?/G3?
Emory's baccharis/Inland Saltgrass, Southern Jimmyweed Phase	<i>Baccharis emoryi/Distichlis spicata, Isocoma pluriflora phase</i>	N	FACW	/
Emory's Baccharis/Alkali Muhly	<i>Baccharis emoryi/Muhlenbergia asperifolia</i>	N	FACW	/
Emory's Baccharis/Alkali Muhly, Common Threesquare Phase	<i>Baccharis emoryi/Muhlenbergia asperifolia, Schoenoplectus pungens</i>	N	OBL	/
Emory's Baccharis/Common Threesquare	<i>Baccharis emoryi/Schoenoplectus pungens</i>	N	OBL	/
Emory's Baccharis/Alkali Sacaton	<i>Baccharis emoryi/Sporobolus airoides</i>	N	FACW	S3?/G4?

Table 3. Provisional vegetation community classification for BLM Pecos River Riparian Monitoring Program (Continued).

Common name	Scientific name	Origin	State/ Wetland Status	Global Rank
Needle-leaved Deciduous Scrub-Shrub Wetland				
Needle-leaved Deciduous Scrub-Shrub Wetland, Temporarily Flooded				
Lowland Needle-leaved Deciduous Scrub-Shrub Wetland, Temporarily Flooded				
Saltcedar Alliance	<i>Tamarix ramosissima</i> Alliance			
Saltcedar/Southern Jimmyweed	<i>Tamarix ramosissima/Isocoma pluriflora</i>	I	FACW	SM/GM
Saltcedar/Alkali Sacaton	<i>Tamarix ramosissima/Sporobolus airoides</i>	I	FACW	SM/GM
Saltcedar/Spike Dropseed	<i>Tamarix ramosissima/Sporobolus contractus</i>	I	FAC	SM/GM
Shrubland				
Mesophytic Shrubland				
Plains-Mesa-Sand Scrub				
Plains-Mesa Boadleaf Sand-Scrub				
Southern Jimmyweed Alliance	<i>Isocoma pluriflora</i> Alliance			
Southern Jimmyweed/Giant Sacaton	<i>Isocoma pluriflora/Sporobolus wrightii</i>	N	FAC	/
Xerophytic Shrubland				
Chihuahuan Desert Scrub				
Chihuahuan Broadleaf Deciduous Desert Scrub				
Honey Mesquite Alliance	<i>Prosopis glandulosa</i> Alliance			
Honey Mesquite/Sparse Undergrowth	<i>Prosopis glandulosa/Sparse</i>	N	FACU	S5/G5
Honey Mesquite/Alkali Sacaton	<i>Prosopis glandulosa/Sporobolus airoides</i>	N	FAC	S5/G5
Grassland				
Xerophytic Grassland				
Great Basin Desert Grassland				
Great Basin Lowland/Swale Grassland				
Alkali Sacaton Alliance	<i>Sporobolus airoides</i> Alliance			
Alkali Sacaton/Southern Jimmyweed	<i>Sporobolus airoides/Isocoma pluriflora</i>	N	FAC	/
Alkali Sacaton/Monotypic Stand	<i>Sporobolus airoides/Monotypic</i>	N	FAC	S5/G5

Table 3. Provisional vegetation community classification for BLM Pecos River Riparian Monitoring Program (Continued).

Common name	Scientific name	Origin	Wetland Status	State/ Global Rank
Emergent Wetland				
Persistent Emergent Wetland				
Persistent Emergent Wetland, Semipermanently Flooded				
Lowland Persistent Emergent Wetland, Semipermanently Flooded				
Common Threesquare Alliance	<i>Schoenoplectus pungens</i>			
Threesquare Bulrush Monotype	<i>Schoenoplectus pungens Monotype</i>	N	OBL	S3~/G3?
Threesquare-Inland Saltgrass	<i>Schoenoplectus pungens-Distichlis spicata</i>	N	OBL	S3~/G4?
Persistent Emergent Wetland, Temporarily Flooded				
Lowland Persistent Emergent Wetland, Temporarily Flooded				
Inland Saltgrass Alliance	<i>Distichlis spicata</i>			
Inland Saltgrass-Alkali Sacaton	<i>Distichlis spicata-Sporobolus airoides</i>	N	FACW	S3~/G4?
Inland Saltgrass/Monotype	<i>Distichlis spicata/Monotype</i>	N	FACW	S5/G5
Miscellaneous				
Developed				
Agriculture				
Agriculture				
Field	<i>Field</i>			
Fallow Field	<i>Field/Fallow</i>	I		SM/GM

Table 4. Distribution of monitoring (M) and reconnaissance survey (R) plots by allotment and community wetland status (see text).

Allotment	Permitee	Facultative Upland		Facultative		Facultative Wetland		Obligate Wetland		Undefined	
		M	R	M	R	M	R	M	R	M	R
2067	Van Eaton						2				
2083	Cortezi				1				1		
4038	J.D. Terral		1			2		1			
4039	Roswell livestock			1			1				
4040	Larry Benedict			3		1					
4050	Gary L. Lynch			1		2					
4056	NA			4		1		1			
4059	Clint Lynch						2				
4072	Joe Durand						1				
4089	James Jenkins										1
5007	Mark Cooper					3		1			
5020	Tom Cooper			1		2		1			
5023	White Ranch						3		2		
5024	Willard Moody					1		4			
OFW	NA				1	1					
	Totals	0	1	10	2	13	9	5	3	0	1

Alkali sacaton communities often occurred near the river as grassy corridors within salt cedar or other shrub stands, or on higher old terraces towards the back of floodplain. The further back the sites, the less frequently flooded, and it is likely that higher, drier sites are maintained by runoff from adjacent uplands. Montypic stands of inland saltgrass or mixed stands of inland saltgrass and alkali sacaton also occur, particularly in old back channels and areas where flooding or standing water is present at least part of the year. These corridors and terraces, particularly those dominated by alkali sacaton, are some of the more productive areas and are sought out by livestock (Larry Benedict, 4040 permittee, personal communication). Further, alkali sacaton was preferentially cropped when young and green.

Few communities dominated by obligate wetland plants were sampled during the survey. Most consisted of small herbaceous emergent wetlands dominated by common threesquare bulrush and other wetland graminoids, or willow and baccharis stands with threesquare bulrush. They typically occurred along sandbars within the river channel, or along the riverbanks that were no more than two feet above the channel. In particular, coyote willow thickets were common on sandy soils along the river's edge or on terraces leading away from the river where they would be intermixed with a variety of grasses and forbs (often ruderal, weedy species). The back terrace willow sites showed evidence of heavy usage by cattle. Willows were generally browsed to within one or two feet in height. (River edge communities, particularly the one observed in the ungrazed allotment 4056, were less affected).

Dams and other hydrological modifications have likely reduced the coverage of these obligate wetland communities that are dependent on sustained flows and high water tables. Many of the stands were limited to very narrow strips along the river, which also made them poor candidates for monitoring. Salt cedar encroachment also has displaced wetland communities and armored the banks preventing the development of new native stands.

Cottonwoods were observed rarely during the survey, and occurred as either individuals or very open woodlands. They are threatened communities along the Pecos because hydrological modifications have reduced flooding, limiting regeneration and encouraging exotic encroachment by salt cedar. At this time, no monitoring plots were placed in cottonwood stands because they are a minor component of most allotments, and where they do occur they are highly disturbed, with sparse understories dominated by ruderal species (threeawn and snakeweed, etc). Monitoring of these cottonwood stands may be desirable in the future, for even though there is little usable forage in them they are being used for shade, and represent an endangered native community along the Pecos.

In general, exotic-dominated stands and uplands were avoided. In some allotments where there was little choice exotic stands were sampled, but only those having at least a grassy understory with potential forage were selected.

Riparian Allotment Status

There are two ways of assessing riparian allotment status, one is to look at the type and amount of wetland vegetation present, and the other is to look at the condition of that vegetation in terms of impacts and utilization. The type of wetland vegetation present is usually an indication of long-term hydrologic and management practices, while condition shows the effects

of more recent management decisions. This monitoring program is intended to give information on both short-term condition and, if it is continued over years, long-term vegetation changes. With the initial years' vegetation monitoring data only preliminary statements can be made on the condition and quality of the allotments in the monitoring program. With repeat data collected over several years, it will be possible to make more definitive statements about the vegetation condition and the impact of management decisions.

Community diversity and conditions varied among allotments (see Allotment Reports below for detailed descriptions and summary data from the monitoring plots). For example, Allotment 5024 (Willard Moody) supported the greatest number of wetland communities ranging from baccharis and willow shrublands to threesquare bulrush marshes. An oxbow in the river has helped create a variety of environments that has increased community diversity, but these stands were still only in moderate condition. There was evidence of heavy cattle trampling and browsing. To ensure long-term maintenance of these wetland communities, the allotment should be periodically rested long enough to allow recovery of these native communities and to avoid conversion to undesirable exotics such as salt cedar (many salt cedar seedlings were observed on the sandbars).

Allotment 5007 (Tom Cooper) had a mosaic of wetland communities including herbaceous-dominated threesquare riverbanks, willow or baccharis shrublands and old cottonwood woodlands. Stands were small and fragmented and overall conditions were poor. There was also significant exotic encroachment by salt cedar. Although stands are small, it may still be worthwhile to establish additional plots in cottonwood stands and elsewhere to monitor long-term cottonwood survivorship and recruitment.

Allotment 5020 (Tom Cooper) supported wetland communities dominated by baccharis. These occurred along low bars adjacent to the channel, but the majority of the terraces in the allotment were too dry to support baccharis. There were a few old, scattered cottonwoods in the allotment, and cottonwood reproduction was occurring on a small sandbar in the channel. There was a moderate amount of grazing and considerable salt cedar encroachment.

Allotment 4038 (J.D. Terral) had one sandbar that supported a good condition Emory's baccharis stand with an understory of inland saltgrass and the wetland obligate, common threesquare bulrush. (4038-3-1). It was imbedded in a mosaic of facultative wetland baccharis communities. Livestock use and impacts were moderate. This is a large allotment and there may be other obligate or facultative wetland stands that have not yet been surveyed, however the majority of the riparian stands visited in 2000 were fairly dry and dominated by Emory's baccharis, alkali sacaton or saltcedar.

Although in allotment 4050 (Gary L. Lynch) there were some scattered stands dominated by obligate wetland species, they were not large enough for monitoring plots. Instead, plots were established in facultative-wetland baccharis shrublands that had grassy understories of alkali sacaton and inland saltgrass. A plot was also established in an open alkali sacaton grassland. These sites ranged from fair to good condition.

Allotment 4056 was not being grazed in 1999 when monitoring plots were established on it. One of the monitoring plots was established in an obligate wetland community dominated by coyote willow; the other five were in facultative-wetland grassland types dominated by alkali

sacaton, or baccharis shrublands with alkali sacaton. In many places the riverbank was elevated several feet above the active channel creating high, dry sites too far away from the water table for many obligate wetland species. There was also evidence of heavy grazing on the allotment in the past as indicated by a high number of invasive species. With the exclusion of grazing, grasses have responded well and were tall and robust.

Allotment 4040 (Larry Benedict) was characterized by high quality alkali sacaton grasslands, but there was not much in the way of obligate wetland communities. The riverbank on most of this allotment was armored by salt cedar and there is little in the way of native riverbank communities. Most of the grasslands were on older terraces away from the river.

Allotment 4039 (Roswell Livestock) was also extremely limited in native wetland communities, with large portions of its riverbank dominated by dense salt cedar stands. The monitoring plot was placed on a high and dry old terrace that may have been an alkali sacaton flat, but is now dominated by southern jimmyweed and giant sacaton (this may indicate past over-grazing). Currently, the allotment is very dry, and there are indications of high grazing pressure. The reconnaissance plot on this allotment was a small sparse old cottonwood woodland with an exotic understory. These are the only cottonwoods in the allotment.

The Overflow Wetlands monitoring site below Bottomless Lakes consisted of an old back channel marsh that may have been a field in the past. Currently the low area is dominated by a monotypic stand of inland saltgrass, with scattered salt cedar clumps. The riverbank is lined with salt cedar, and the higher terraces are dominated by invasive weeds (kochia, southern jimmyweed) and very sparse sacaton grasses.

Among allotments with only reconnaissance surveys, the wetland communities on Allotment 5023 (White Ranch) were the largest and in the best condition. Reconnaissance plots were taken in herbaceous wetland bank communities dominated by threesquare bulrush, along with a coyote willow stand, several old stands of cottonwoods, and some high-cover alkali sacaton grasslands. Monitoring plots should be established in this allotment.

Allotment 2083 (Cortese) had obligate wetland communities dominated by coyote willow, but conditions were poor, with heavy browsing of shrubs and a large number of exotic and invasive species (Russian olive and Bermuda grass). Allotments 4059 (Clint Lynch) and 4072 (Joe Durand) also had potential for monitoring, although conditions were generally poor. Allotment 4059 supported baccharis/alkali sacaton and inland saltgrass stands, but salt cedar invasion was severe and being treated at the time of survey. Allotment 4072 was similar, but southern jimmyweed was also prevalent, indicating disturbed conditions. Allotments 2067 (Van Eaton) and 4089 (James Jenkins) were very heavily disturbed and dominated by exotic species.

Monitoring in the Future

The monitoring program is designed to gain both short-term and long-term data for management. The plots can be read on a seasonal or yearly basis to gain information solely on cover and height of target forage species. This will provide information for adaptive management of livestock numbers to enhance productivity and prevent resource degradation. For long-term trends, the plots can be fully inventoried at three-to five-year intervals looking for major changes

in species composition and abundance, particularly with respect to changes in basal cover in grasses.

To complete the monitoring network, we would recommend establishing monitoring plots in allotments 5023 (White Ranch), Allotments 4059 (Clint Lynch), and 4072 (Joe Durand). In addition, some currently monitored allotments have a wide diversity of habitats not fully covered in the network at present (allotments 5007, 4038, 4050 and possibly others.)

Conditions varied among allotments depending on the combination of livestock use and the effects of altered ecological dynamics caused by changes in the Pecos River hydrology. By definition riparian and wetland vegetation ecosystems are dependant on a functional hydrological regime for maintenance and sustainability over the long haul. The hydrological modifications along the Pecos River have reduced or eliminated seasonal overbank flooding, plus base flows are often marginal—both crucial elements in the reproduction and survival of many native herbaceous and woody wetland species. As a result, dense stands of salt cedar have come to line long stretches of the banks, often with little palatable herbaceous vegetation in the understory. In contrast, much of the native cottonwood woodlands have declined severely or have been lost. The effect of livestock grazing directly on salt cedar encroachment and cottonwood decline has not been fully worked out, but the reduction of native shrubland and grassland in the riparian zone is possibly creating sites for invasion by exotics. Meanwhile, the altered hydrology in combination with browsing may be preventing successful cottonwood regeneration. Future management will need to focus on how to overcome these problems to prevent further productivity losses in the riparian and wetland areas. We would recommend that serious consideration be given to the restoration of native plant communities within the riparian zone with a goal of increasing habitat diversity with its benefits for livestock and wildlife. This, in combination with creative and effective adaptive management, will help ensure the long-term productivity and sustainability of the riparian ecosystems of the Pecos River.

References

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**Pecos River Riparian Monitoring Program
Allotment Reports 2000**

Pecos River Riparian Monitoring Program Allotment Report 2000

Van Eaton 2067

Reconnaissance plots:

- 2067-OPP1 Salt Cedar/Southern Jimmyweed
- 2067-OPP2 Emory's Baccharis/Inland Saltgrass

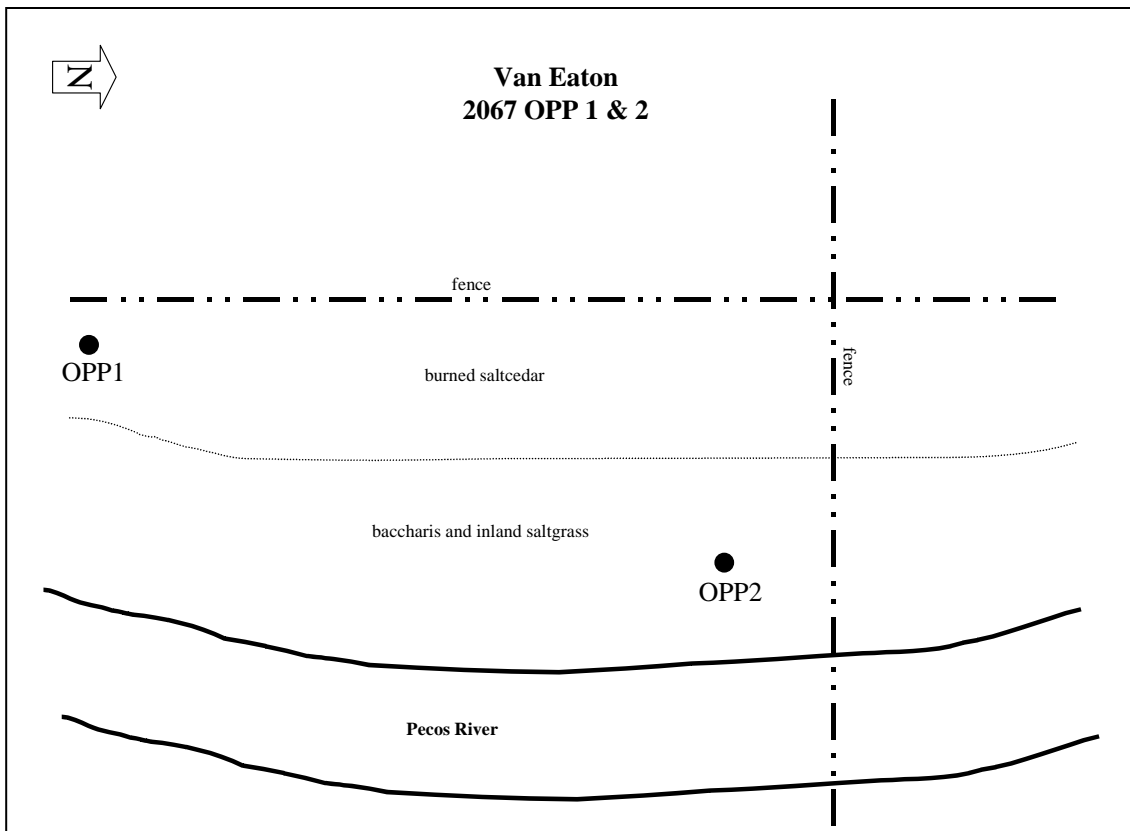


Figure 3. Diagram of reconnaissance plots 2067-OPP1 and 2067-OPP2

Van Eaton: 2067

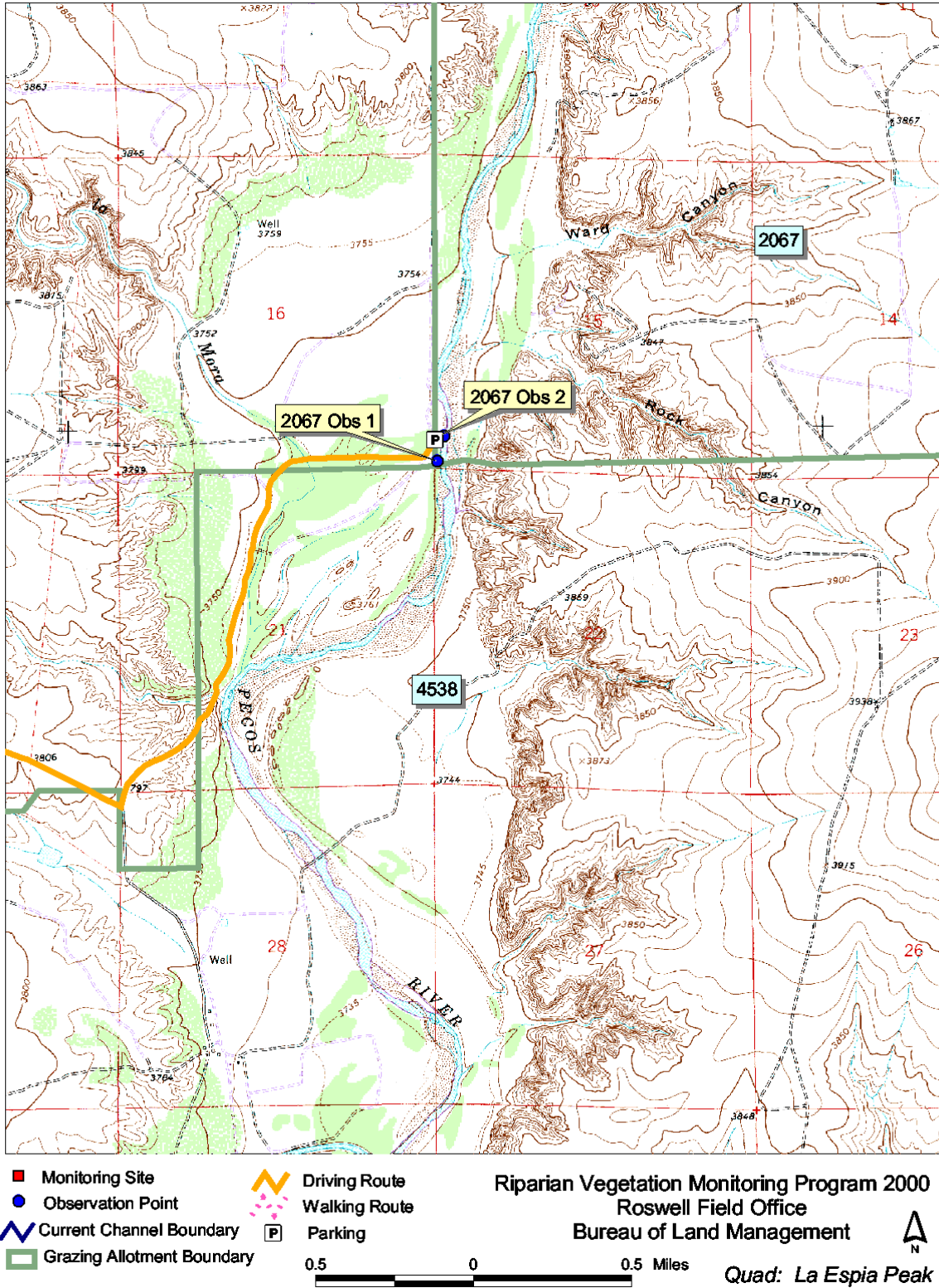


Figure 4. Map of reconnaissance plots on allotments 2067.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Van Eaton
Reconnaissance Plot: 2067-OPP1**

NMNHP Plot Number: 00RM004

Community Type: Salt Cedar/Southern Jimmyweed
Tamarix ramosissima/Isocoma pluriflora

Survey Date: 7/12/2000

UTM Location (NAD 27): Easting: 563420 Northing: 3766623

Directions to Plot: Take US 285 north from Roswell to the junction with SR 20. Go north on SR 20 approx. 12.2 miles to Dunlap road. East on Dunlap road; at approx. 5 miles road will bend to the south. Continue on Dunlap SE for approx. 2.5 miles. At fork where main road turns sharply to SW, take fork heading E. Continue E/SE for approx. 5 miles, then NE for approx. 0.5 miles to river and SW corner of allotment.

Description: This reconnaissance plot was located on a large river terrace of burned-over salt cedar. It was a very hot fire, but salt cedar is regenerating. The fire occurred in 1999 or more recently, possibly the spring of 2000. Salt cedar was resprouting and already 1-2 m tall. There was abundant southern jimmyweed in the inter-tree spaces. Some alkali sacaton was regrowing and ragweed was common on the upper terrace.

Status: The area shows active, heavy utilization by cattle, along with the impact from the fire.

Adjacent Communities: To the immediate east of this plot was a baccharis and inland saltgrass community along the riverbank. Threesquare bullrush and spikerush also line the riverbank.

Species Name	Common Name	Source	Avg % Cover
Trees			
Elaeagnus angustifolia	Russian olive	P	
Shrubs			
Isocoma pluriflora	southern jimmyweed	P	20
Prosopis glandulosa	honey mesquite	P	
Tamarix ramosissima	salt cedar	P	15
Graminoids			
Sporobolus airoides	alkali sacaton	P	
Forbs			
Ambrosia spp.	ragweed	P	
Asparagus officinalis	garden asparagus	P	
Chamaesyce serpyllifolia	thymeleaf sandmat	P	
Chloracantha spinosa	spiny chloracantha	P	
Portulaca oleracea	common purslane	P	

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Van Eaton
Reconnaissance Plot: 2067-OPP2

NMNHP Plot Number: 00RM002

Community Type: Emory's Baccharis/Inland Saltgrass
Baccharis emoryi/Distichlis spicata

Survey Date: 7/12/2000

UTM Location (NAD 27): Easting: 563451 Northing: 3766750

Directions to Plot: Take US 285 north from Roswell to the junction with SR 20. Go north on SR 20 approx. 12.2 miles to Dunlap road. East on Dunlap road; at approx. 5 miles road will bend to the south. Continue on Dunlap SE for approx. 2.5 miles. At fork where main road turns sharply to SW, take fork heading E. Continue E/SE for approx. 5 miles, then NE for approx. 0.5 miles to river and SW corner of allotment.

Description: Narrow bar adjacent to river was dominated by baccharis (40% cover). The site was burned within last year. Burned salt cedar stumps were scattered about bar, and many were resprouting. The grassy understory was dominated by inland saltgrass (5%).

Status: The area shows heavy utilization by cattle

Adjacent Communities: To the west of the plot there was a large terrace with a burned but regenerating salt cedar community (see 2067-OPP1). The river channel on both sides was lined with a threesquare/spikerush community. There was no vegetation within the river channel, only exposed clay bars. Baccharis communities extended along lower terraces on both sides of the river. There are scattered Russian olives on the east bank of the river.

Species Name	Common Name	Source	Avg % Cover
Trees			
Elaeagnus angustifolia	Russian olive	P	
Populus deltoides	cottonwood	P	
Shrubs			
Baccharis emoryi	Emory's baccharis	P	40
Prosopis glandulosa	honey mesquite	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Aristida purpurea var. nealleyi	Nealley's threeawn	P	
Cynodon dactylon	bermudagrass	P	
Distichlis spicata	inland saltgrass	P	5
Eleocharis rostellata	beaked spikerush	P	
Juncus mexicanus	Mexican rush	P	
Panicum obtusum	vine mesquite	P	
Polypogon monspeliensis	annual rabbitsfoot grass	P	
Schoenoplectus pungens	common threesquare	P	
Sporobolus airoides	alkali sacaton	P	
Forbs			
Ambrosia spp.	ragweed	P	
Asparagus officinalis	garden asparagus	P	

Chamaesyce serpyllifolia	thymeleaf sandmat	P
Equisetum laevigatum	smooth horsetail	P
Heliotropium convolvulaceum	phlox heliotrope	P
Oenothera pallida	pale eveningprimrose	P
Portulaca oleracea	common purslane	P
Solanum elaeagnifolium	silverleaf nightshade	P

Pecos River Riparian Monitoring Program Allotment Report 2000

Cortese 2083

Reconnaissance plots:

2083-OPP1	Russian Olive/Bermudagrass
2083-OPP2	Coyote Willow/Sparse

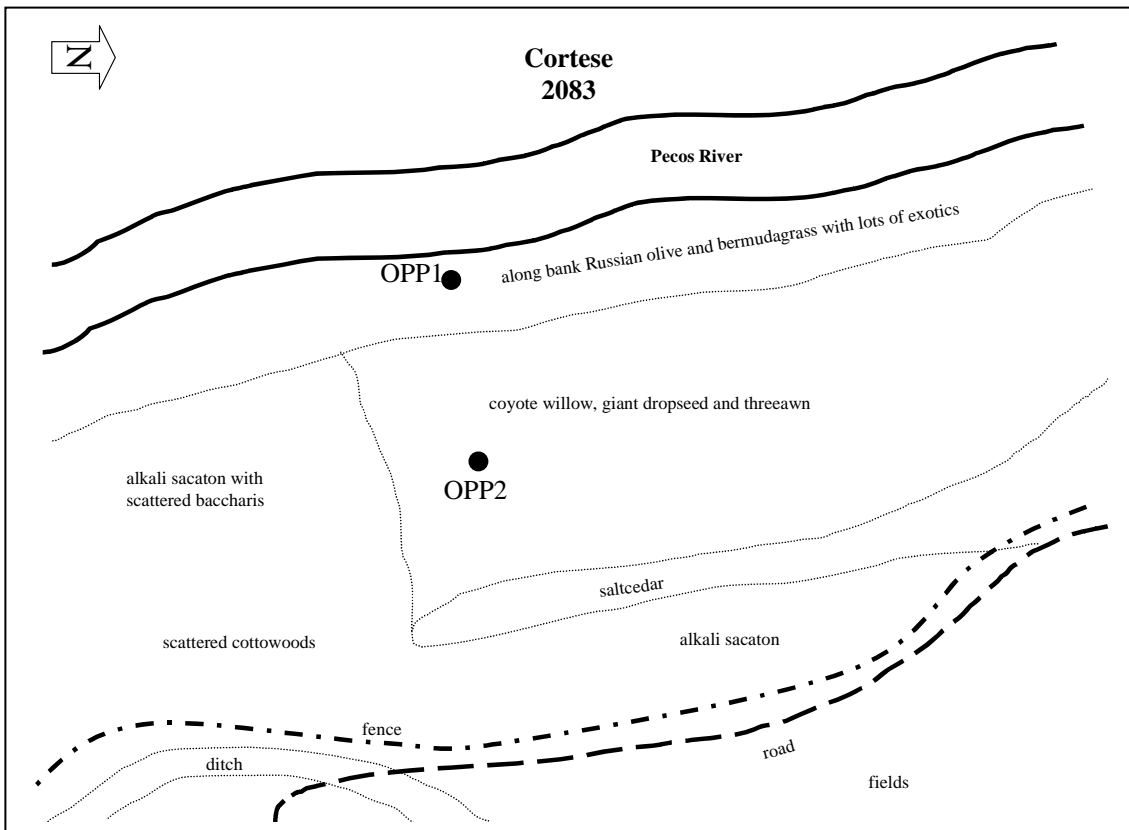


Figure 5. Diagram of reconnaissance plots 2083-OPP1 and 2083-OPP2.

Cortese: 2083

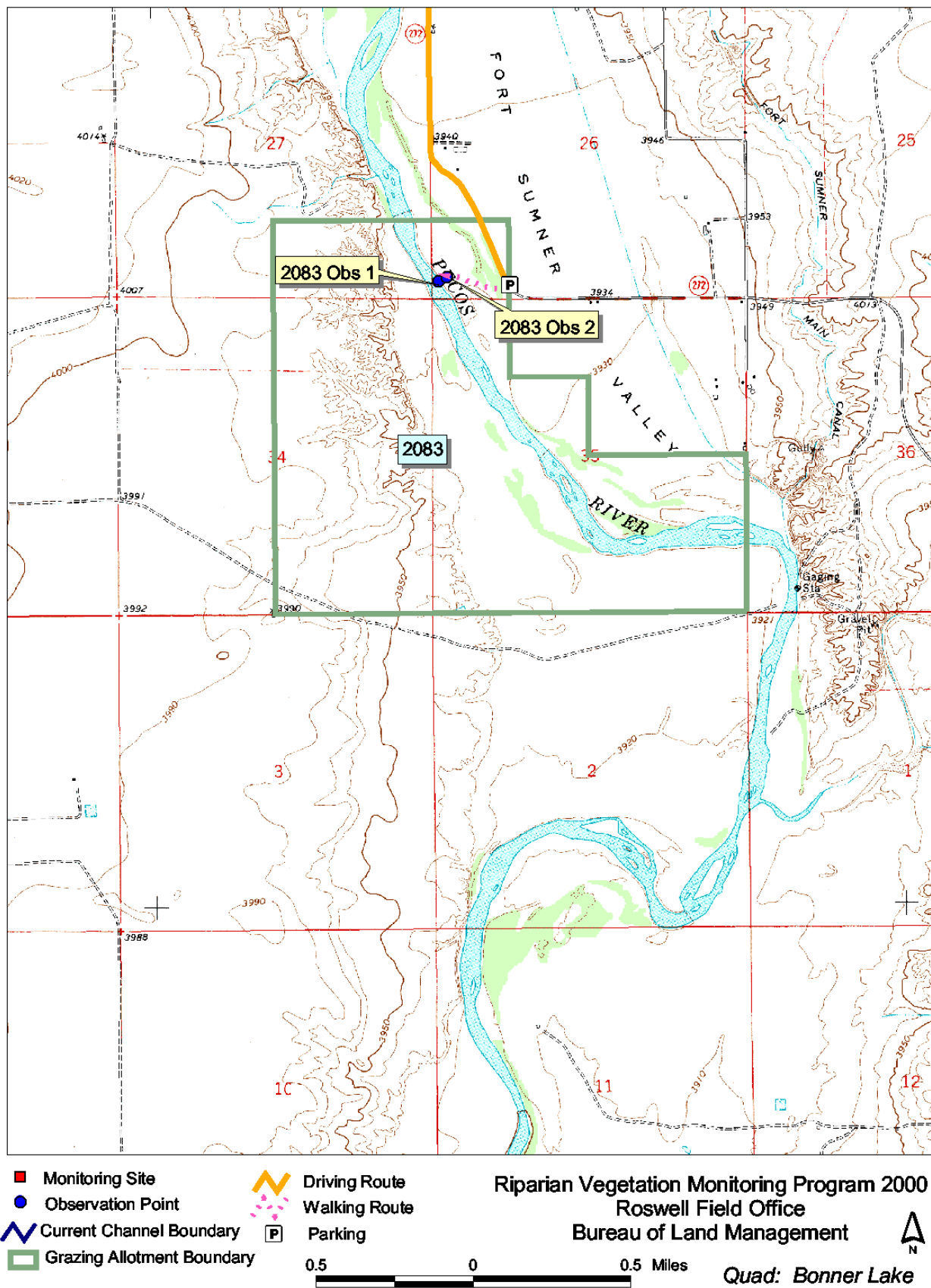


Figure 6. Map of reconnaissance plots on allotment 2083.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Cortese
Reconnaissance Plot: 2083-OPP1

NMNHP Plot Number: 00RM005

Community Type: Russian Olive/Bermudagrass
Elaeagnus angustifolia/Cynodon dactylon

Survey Date: 7/27/2000

UTM Location (NAD 27): Easting: 574267 Northing: 3802410

Directions to Plot: From the junction of US 84 and US 60 in Ft. Sumner, take US 60 east 3.2 miles. Turn S on Billy the Kid Road or SR 212 and go 1.4 miles to where it becomes SR 272, and go another 4.6 mi S. Park where road turns sharply to E. Walk west about 0.5 miles to river edge.

Description: This is a riverbank community was dominated by exotic Russian olive and Bermuda grass. Salt cedar and baccharis also occurred as scattered individuals along with a few young cottonwoods. The graminoid layer was diverse, but many of the species were invasive exotics such as bermuda grass, tall fescue and sandbur. There was a narrow zone along the bank edge (approx. 1-2 m) where the wetland obligates threesquare, horsetail and western sedge were dominant.

Status: Area currently grazed and moderately disturbed.

Adjacent Communities: The terrace to the east of the plot supported a sparse coyote willow/giant dropseed/threawn community on a sandy substrate. Mature cottonwoods occurred as scattered individuals on the upper terrace to the east.

Species Name	Common Name	Source	Avg % Cover
Trees			
Elaeagnus angustifolia	Russian olive	P	
Populus deltoides	cottonwood	P	
Shrubs			
Baccharis emoryi	Emory's baccharis	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Carex occidentalis	western sedge	P	
Cenchrus spinifex	sandbur	P	
Cynodon dactylon	bermudagrass	P	
Elymus canadensis	Canada wildrye	P	
Festuca arundinaceae	tall fescue or K-31	P	
Pascopyrum smithii	western wheatgrass	P	
Saccharum ravennae	ravennagrass	P	
Schoenoplectus pungens	common threesquare	P	
Sorghastrum nutans	Indiangrass	P	
Sporobolus airoides	alkali sacaton	P	
Forbs			
Ambrosia spp.	ragweed	P	
Asclepias subverticillata	whorled milkweed	P	
Equisetum laevigatum	smooth horsetail	P	
Helianthus petiolaris	prairie sunflower	P	

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Cortese
Reconnaissance Plot: 2083-OPP2

NMNHP Plot Number: 00RM006

Community Type: Coyote Willow/Sparse
Salix exigua/Sparse

Survey Date: 7/27/2000

UTM Location (NAD 27): Easting: 574308 Northing: 3802431

Directions to Plot : From the junction of US 84 and US 60 in Ft. Sumner, take US 60 east 3.2 miles. Turn S on Billy the Kid Road or SR 212 and go 1.4 miles to where it becomes SR 272, and go another 4.6 mi S. Park where road turns sharply to E. Walk west about 0.4 miles to river edge.

Description: The plot was located in an approximately 1-ha patch on the first terrace up from the channel. There were scattered mature cottonwoods, but the stand was dominated by low-statured coyote willow and giant dropseed. Purple threeawn was also well represented. Ragweed and phlox heliotrope were common. Overall vegetation cover on plot was less than 50%. Soils were sandy.

Status: Cattle were present during the reconnaissance, and both the coyote willow and the giant sacaton showed signs of having been grazed. All the willows had been grazed down to between two and three feet in height.

Adjacent Communities: A Russian olive/Bermudagrass community lined the riverbank to the west (2083-OPP1). There was a strip of mature salt cedars on the sandy hillock to the east. To the south the terrace became a mosaic of alkali sacaton flats with clumps of baccharis in depressions. Mature cottonwoods were sparsely scattered throughout upper terrace.

Species Name	Common Name	Source	Avg % Cover
Trees			
Elaeagnus angustifolia	Russian olive	P	
Shrubs			
Baccharis emoryi	Emory's baccharis	P	
Isocoma pluriflora	southern jimmyweed	P	
Salix exigua	coyote willow	P	
Tamarix ramosissima	salt cedar	P	
Yucca glauca	soapweed yucca	P	
Graminoids			
Aristida purpurea var. perplexa	purple threeawn	P	
Aristida purpurea var. purpurea	purple threeawn	P	
Bothriochloa laguroides ssp. torreyana	silver beardgrass	P	
Bouteloua curtipendula	sideoats grama	P	
Bouteloua hirsuta	hairy grama	P	
Cenchrus spinifex	sandbur	P	
Munroa squarrosa	false buffalograss	P	
Saccharum ravennae	ravennagrass	P	
Setaria leucopila	streambed bristlegrass	P	
Sporobolus airoides	alkali sacaton	P	
Sporobolus giganteus	giant dropseed	P	

Sporobolus wrightii	giant sacaton	P
Forbs		
Ambrosia spp.	ragweed	P
Apocynum cannabinum	Indianhemp	P
Asclepias subverticillata	whorled milkweed	P
Chloracantha spinosa	spiny chloracantha	P
Dalea lanata var. lanata	woolly prairieclover	P
Dimorphocarpa wislizeni	spectacle pod	P
Gaura villosa	wolly gaura	P
Glycyrrhiza lepidota	American licorice	P
Helianthus petiolaris	prairie sunflower	P
Heliotropium convolvulaceum	phlox heliotrope	P
Mentzelia multiflora	manyflowered mentzelia	P
Oenothera pallida	pale eveningprimrose	P
Palafoxia sphacelata	othake	P
Salsola tragus	prickly Russian thistle	P
Solanum elaeagnifolium	silverleaf nightshade	P
Thelesperma megapotamicum	Hopi tea greenthread	P

Pecos River Riparian Monitoring Program Allotment Report 2000

J.D. Terral
4038/4538

Monitoring Plots:

4038-1-1 Emory's Baccharis/Alkali Sacaton
4038-2-1 Emory's Baccharis/Inland Saltgrass
4038-3-1 Emory's Baccharis/Inland Saltgrass, Common Threesquare phase

Reconnaissance plots:

4038-OPP1 Honey Mesquite/Sparse



Figure 7. Overview of monitoring site 4038-3-1.

J. D. Terral: 4038

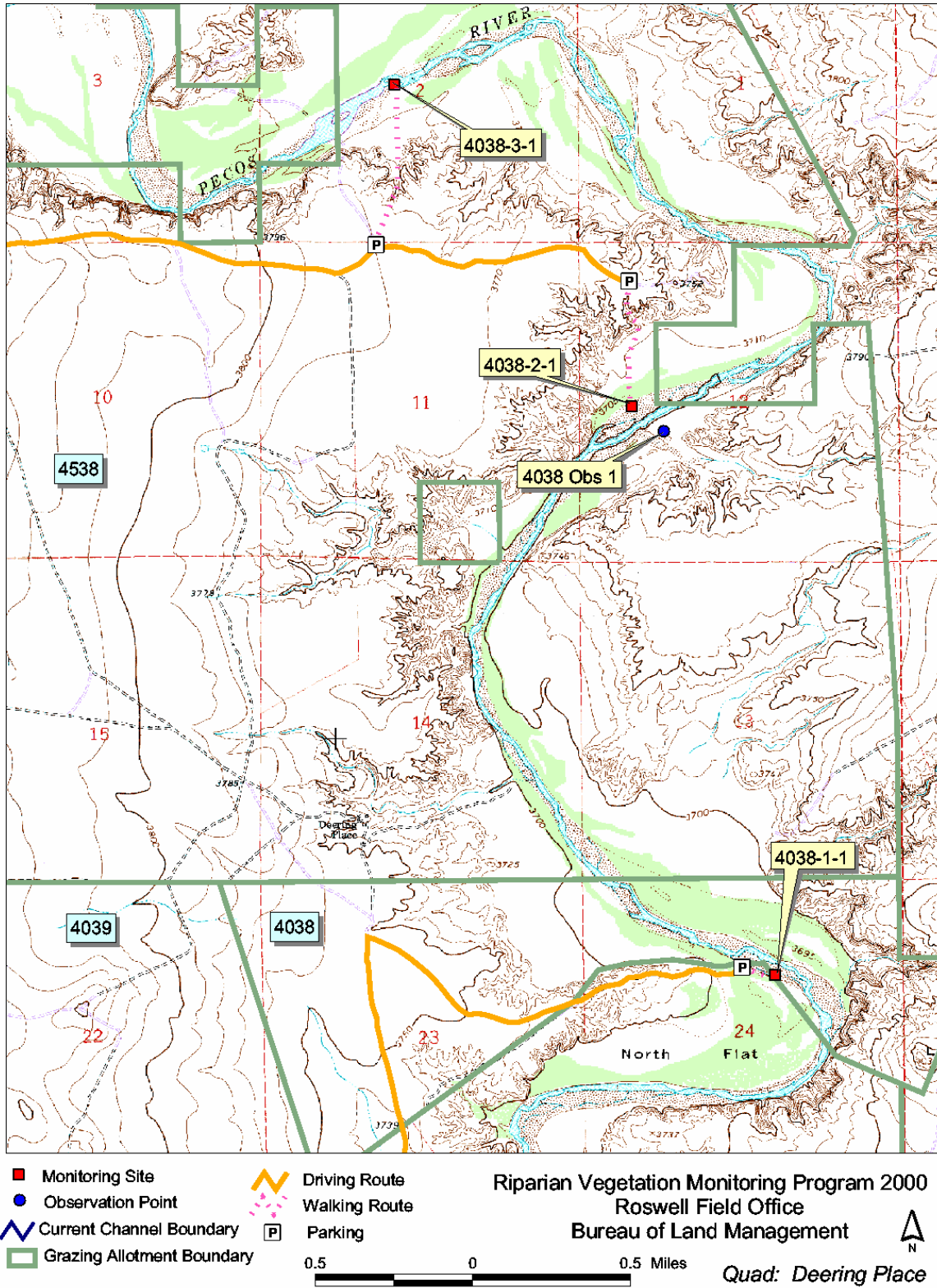


Figure 8. Map of allotment 4038/4538.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: J.D. Terral
Monitoring Plot: 4038-1-1

NMNHP Plot: 00RM019

Community Type: Emory's Baccharis/Alkali Sacaton
Baccharis emoryi/Sporobolus airoides

Survey Date: 7/16/2000

UTM Location (NAD 27): Easting: 567692 Northing: 3756352

Directions to Plot: Take US 285 approx. 28 mi. N of US 70 junction, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi., take NE road at fork. Continue for approx. 7.6 mi., and take road E at fork towards old Benedict Ranch. After approx. 4.7 mi., take road N and continue for approx. 2.9 mi. Take NE road approx. 1.5 to Pecos. Walk SE about 0.1 mi to plot. Plot is on second terrace up from the river.

Description: This was an Emory's baccharis and alkali sacaton dominated community on a sandy terrace 1-1.5 feet higher than lower terrace to NE which is immediately adjacent to the river. The terrace had abundant shrub cover (34%) composed of moderate height (1-1.5 m) baccharis and young salt cedars. There were a few Russian olives in the area, and no cottonwoods in this reach of the river. Grass cover was well represented (11%). Alkali sacaton was the dominant grass with inland saltgrass and Canadian wildrye as common associates.

Status: All grasses showed evidence of grazing with both alkali sacaton and saltgrass less than 10 cm in height. Grazing was also evident in the uplands to the west of the site, where honey mesquite was dominant and grasses were severely cropped.

Adjacent Communities: Terrace below the plot to the NE also had a grassy Emory's baccharis shrubland, but the grass cover was lower. The baccharis on the lower terrace were also taller than those on the monitoring plot. The two higher terraces to the SW support weedy salt cedar communities.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Trees							
Elaeagnus angustifolia	Russian olive	P	+0				
Shrubs							
Baccharis emoryi	Emory's baccharis	M	28		23	0	3.3
Salix exigua	coyote willow	M	0.1		0.2	0	0.05
Tamarix ramosissima	salt cedar	M	6.6		1.9	0.3	0.65
Opuntia phaeacantha	tulip pricklypear	P	+0				
Prosopis glandulosa	honey mesquite	P	+0				
Graminoids							
Distichlis spicata	inland saltgrass	M	1.9	8.5			
Elymus canadensis	Canada wildrye	M	1.5	21			
Schoenoplectus pungens	common threesquare	M	0.005				
Sporobolus airoides	alkali sacaton	M	7.6	8.1			
Bothriochloa laguroides ssp. torreyana	silver beardgrass	P	+0				
Cenchrus spinifex	sandbur	P	+0				
Juncus torreyi	Torrey's rush	P	+0				
Sporobolus wrightii	giant sacaton	P	+0				

Forbs

Equisetum laevigatum	smooth horsetail	M	0.01
Ambrosia spp.	ragweed	P	+0
Chamaesyce albomarginata	whitemargin sandmat	P	+0
Oenothera pallida	pale eveningprimrose	P	+0

Ground Cover: Soil: 47.0 Litter: 41.7 BA: 9.7 Dung: 1.7 Wood: 0

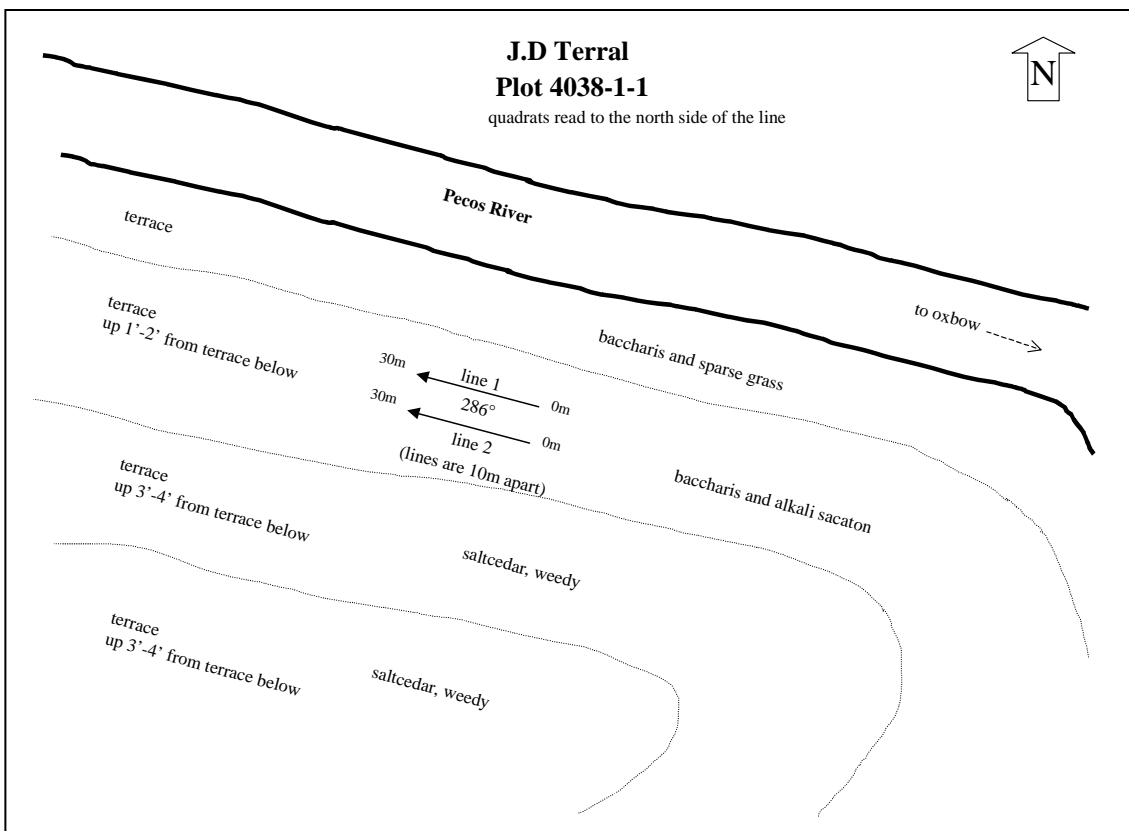


Figure 9. Plot diagram for 4038-1-1.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: J.D. Terral
Monitoring Plot: 4038-2-1

NMNHP Plot Number: 00RM020

Community Type: Emory's Baccharis/Inland Saltgrass
Baccharis emoryi/Distichlis spicata

Survey Date: 7/17/2000

UTM Location (NAD 27): Easting: 566965 Northing: 3759275

Directions to Plot: Take US 285 approx. 28 mi. N of US 70 junction, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi., take NE road at fork. Continue for approx. 7.6 mi., and take N road at fork. Continue on this road for 3.6 mi. Take E road at fork for 0.1 mi., and turn N again. Continue for 2.85 mi., and take road E (will curve to S). Continue for 1.15 mi. and take road E at fork. At about 1.35 mi., take NE road approx. 1.2 mi. Park and walk S approx. 0.5 mi. to plot, which is located on the first terrace above the river channel.

Description: The plot was established in an Emory's baccharis and inland saltgrass community with a strong component of alkali sacaton. Shrub cover was abundant (37%) and low to moderate in height (1-1.5 m). A few Russian olives were present around the edges of the stand and a number of young salt cedars are invading the stand. Over all grass cover was high (49%) and dominated by inland saltgrass, with alkali sacaton well represented.

Status: Although abundant, grasses showed evidence of moderate to heavy grazing, with both inland saltgrass and alkali sacaton under 13 cm in average height. Cattle tracks and trails were common throughout the terrace.

Adjacent Communities: The stand was just north of a salt-cedar-lined riverbank. Salt cedar was also on the terraces to the north and west. Beyond the salt cedar to the north and east there was a large alkali sacaton/giant dropseed flat which covered the entire upper flood plain.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Trees							
Elaeagnus angustifolia	Russian olive	P					
Shrubs							
Baccharis emoryi	Emory's baccharis	M	36.1		18.3	0	2.8
Tamarix ramosissima	salt cedar	M	1.0		0.7	0	0.4
Isocoma pluriflora	southern jimmyweed	P					
Graminoids							
Distichlis spicata	inland saltgrass	M	37.7	12.5			
Phragmites australis	common reed	M	0.05	20			
Schoenoplectus pungens	common threesquare	M	1.6	21.5			
Sporobolus airoides	alkali sacaton	M	10.4	10.5			
Sporobolus wrightii	giant sacaton	M	1.3	25			
Aristida purpurea	purple threeawn	P					
Forbs							
Ambrosia spp.	ragweed.	P					
Equisetum laevigatum	smooth horsetail	P					

Ground Cover: Soil: 9.3 Litter: 72.3 BA: 17.7 Dung: 0.7 Wood: 0

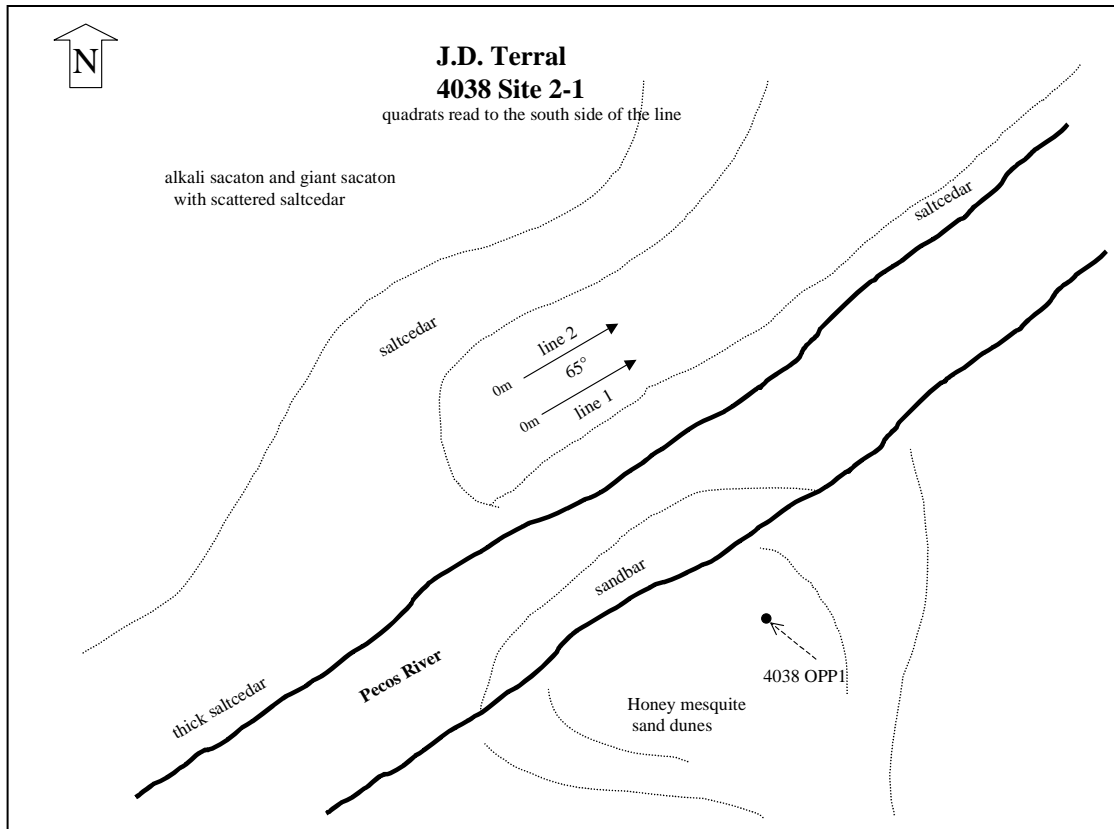


Figure 10. Plot diagram for 4038-2-1.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: J.D. Terral
Monitoring Plot: 4038-3-1

NMNHP Plot Number: 00RM021

Community Type: Emory's Baccharis/Alkali Muhly/Common Threesquare
Baccharis emoryi/Muhlenbergia asperifolia/Schoenoplectus pungens

Survey Date: 7/18/2000

UTM Location (NAD 27): Easting: 565746 Northing: 3760899

Directions to Plot: Take US 285 approx. 28 mi. N of US 70 junction, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi., take NE road at fork. Continue for approx. 7.6 mi., and take N road at fork. Continue on this road for 3.6 mi. Take E road at fork for 0.1 mi., and turn N again. Continue for 2.85 mi., and take road E (will curve to S). Continue for 1.15 mi. and take road E at fork. At about 1.35 mi., take NE road approx. 0.5 mi. Park and walk N approx. 0.5 mi. to plot.

Description: The plot was established in a river bank shrubland community dominated by Emory's baccharis with a luxuriant graminoid understory composed of alkali muhly, common threesquare and inland saltgrass. Rushes and sedges dominated the riverbank edge, while the top of the bank was composed mostly of grasses. Other shrubs were scattered, with some young salt cedars invading the stand. This community was limited to about 3 meters from the riverbank edge; beyond that the community grades into a more Emory's baccharis/Inland saltgrass type.

Status: There was abundant evidence of cattle use. Grasses are heavily cropped, with both alkali muhly and inland saltgrass averaging 10 cm in height. Cattle trails and tracks were common throughout the stand. Many tiger beetles were observed on adjacent sandbar, as well as a great blue heron.

Adjacent Communities: To the west, the bank was dominated by salt cedar and baccharis, along with a number of Russian olives. To the south and west, there was a dense stand of salt cedar. Directly south was a baccharis saltgrass community and then an open sandy area with sparse forbs and grass. Further south were stands of salt cedar interspersed with open sandy areas. Above the river floodplain to the south, at the arroyo mouth, there was a very dry and sparse alkali sacaton flat. The uplands beyond that were dominated by honey mesquite/black grama communities.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Trees							
Elaeagnus angustifolia	Russian olive	M	0.1				
Shrubs							
Baccharis emoryi	Emory's baccharis	M	14.5		5.3	0.2	1.2
Tamarix ramosissima	salt cedar	M	0.7		0.2	0	0.05
Salix exigua	coyote willow	P					
Graminoids							
Carex occidentalis	western sedge	M	1.2	27.3			
Distichlis spicata	inland saltgrass	M	9.4	9			
Echinochloa crus-galli	barnyardgrass	M	0.2	5			
Eleocharis rostellata	beaked spikerush	M	4.8	21			
Elymus canadensis	Canada wildrye	M	1.5	15			
Muhlenbergia asperifolia	alkali muhly	M	34.2	10.9			

Panicum obtusum	vine mesquite	M	0.1	26.7
Polypogon monspeliensis	annual rabbitsfoot grass	M	0.14	8.8
Schoenoplectus pungens	common threesquare	M	16.7	26
Paspalum distichum	knotgrass	P		
Forbs				
Asclepias spp.	milkweed	M	0.005	
Equisetum laevigatum	smooth horsetail	M	0.5	7.3
Unidentified	unidentified	M	0.03	

Ground Cover: Soil: 18.7 Litter: 66.3 BA: 12.0 Dung: 3.0 Wood: 0

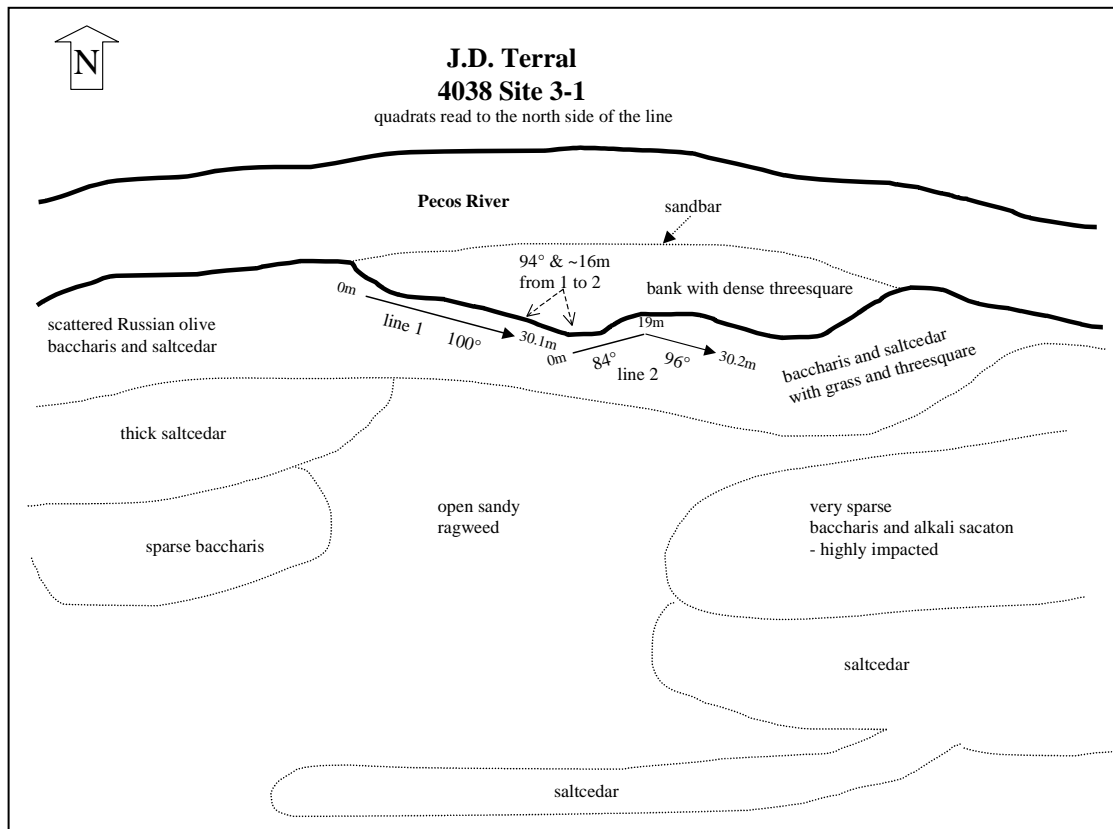


Figure 11. Plot diagram of 4038-3-1.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: J.D. Terral
Reconnaissance Plot: 4038-OPP1**

NMNHP Plot Number: 00RM025

Community Type: Honey Mesquite/Sparse
Prosopis glandulosa/Sparse

Survey Date: 7/17/2000

UTM Location (NAD 27): Easting: 567122 Northing: 3759135

Directions to Plot: Take US 285 approx. 28 mi. N of US 70 junction, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi., take NE road at fork. Continue for approx. 7.6 mi., and take N road at fork. Continue on this road for 3.6 mi. Take E road at fork for 0.1 mi., and turn N again. Continue for 2.85 mi., and take road E (will curve to S). Continue for 1.15 mi. and take road E at fork. At about 1.35 mi., take NE road approx. 1.2 mi. Park and walk S approx. 0.6 mi., then cross over river to plot location in draw above sandbar.

Description: This reconnaissance survey plot was located in honey mesquite/western soapberry dunes found on an alluvial fan at the confluence of an arroyo and the Pecos river. Western soapberry was the dominant on some of the larger dunes near the river, while honey mesquite was dominant on the dunes further back from the river and up the arroyo. Sand sage was also present, but grass cover was very low. Prairieclover and phlox heliotrope were common forbs.

Status: Although there were several cattle trails and tracks throughout the dunes, there is little grazing evidence in the dunes themselves.

Adjacent Communities: To the east of the plot, honey mesquite was very dense and dominated the arroyo canyon. Alkali sacaton flats lay beyond the dunes to the NE and SW. Giant sacaton was also present in the alkali sacaton flats. Upland communities to the south and east were dominated by honey mesquite with a grass understory.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Artemisia filifolia	sand sagebrush	P	
Prosopis glandulosa	honey mesquite	P	
Sapindus saponaria var. drummondii	western soapberry	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Sporobolus airoides	alkali sacaton	P	
Sporobolus wrightii	giant sacaton	P	
Forbs			
Dalea lanata var. lanata	woolly prairieclover	P	
Heliotropium convolvulaceum	phlox heliotrope	P	

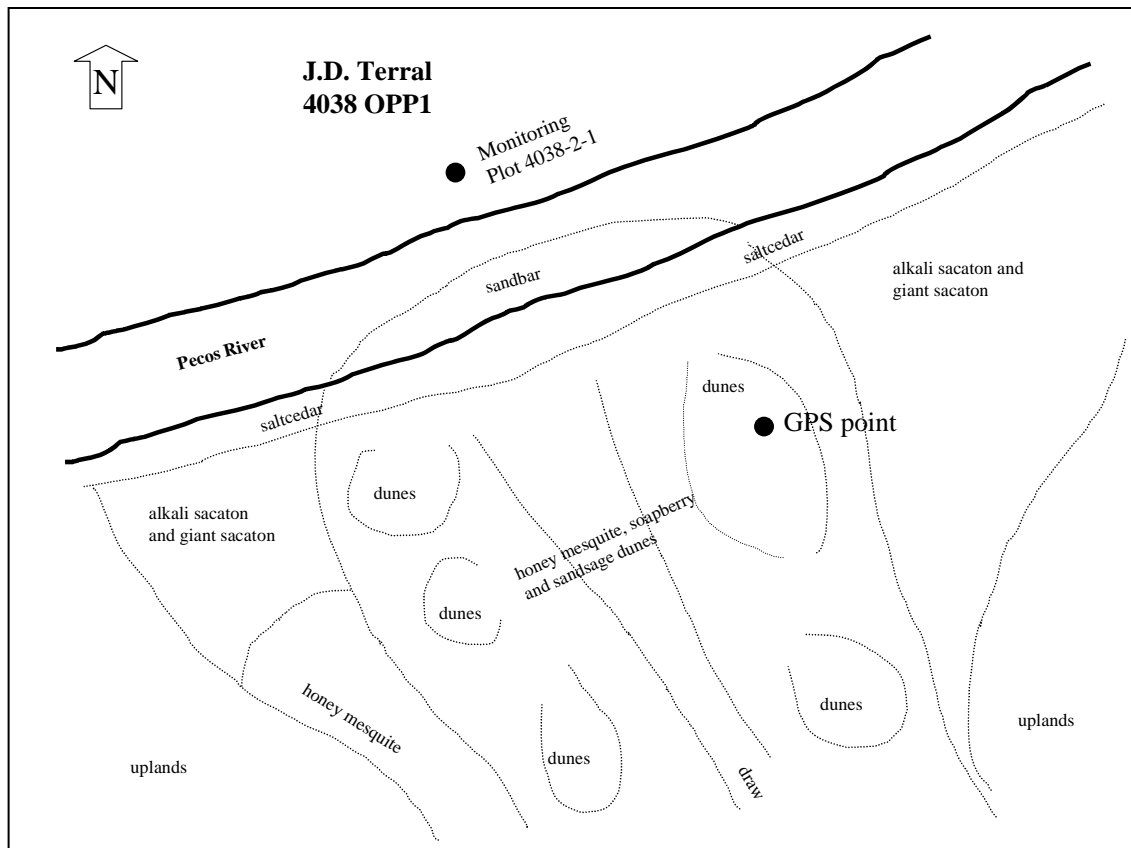


Figure 12. Diagram of Reconnaissance plot 4038-OPP1.

Pecos River Riparian Monitoring Program Allotment Report 2000

Roswell Livestock 4039

Monitoring Plots:

4039-1-1 Southern Jimmyweed/Giant Sacaton

Reconnaissance plots:

4039-OPP1 Cottonwood/Sparse



Figure 13. View south from reconnaissance plot 4039-OPP1.

Roswell Livestock: 4039

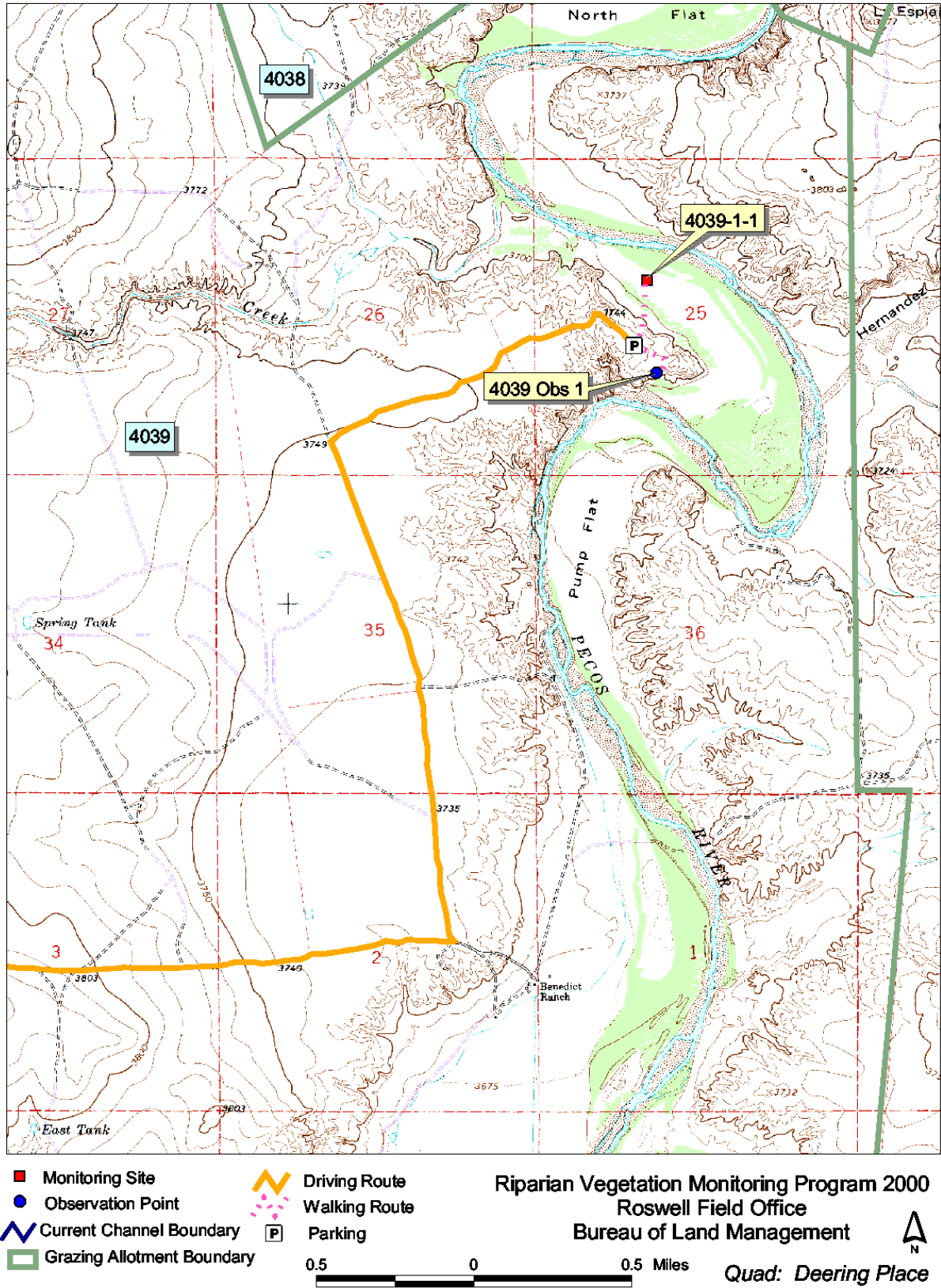


Figure 14. Map of monitoring and reconnaissance plots on allotment 4039.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Roswell Livestock
Monitoring Plot: 4039-1-1**

NMNHP Plot Number: 00RM018

Community Type: Southern Jimmyweed/Gaint Sacaton
Isocoma pluriflora/Sporobolus wrightii

Survey Date: 7/16/2000

UTM Location (NAD 27): Easting: 567305 Northing: 3754595

Directions to Plot: Take US 285 approx. 28 mi. N of jct with US 70, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi, take NE road at fork. Continue for approx. 7.6 mi., and take road E at fork towards old Benedict Ranch. After approx. 4.7 mi., take road N and continue for approx. 1.7 mi. Take road E towards Pecos and park. Walk NE over bluffs down to floodplain terrace for 4039-1-1.

Description: The monitoring plot was established on a riverside terrace just behind salt-cedar-lined banks of the river. This dry terrace was dominated by the sub-shrub southern jimmyweed. Grass cover was low (5%); giant sacaton occurred in patches throughout stand, while alkali sacaton and sand dropseed were common associates. Shrub cover was higher on small rises, while grass cover increased in depressions.

Status: Terrace was very dry, and the grasses show evidence of heavy grazing, especially the alkali sacaton, which averaged only 10 cm in height.

Adjacent Communities: To the north the river channel was lined with dense salt cedar. To the east there was an oxbow in the river that contained a large stand of salt cedar. To the south where the terrace graded into rocky uplands there was a honey mesquite/snakeweed/blue grama community.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Shrubs							
Isocoma pluriflora	southern jimmyweed	M	15.7				4.45
Gutierrezia sarothrae	broom snakeweed	P					
Opuntia phaeacantha	tulip pricklypear	P					
Prosopis glandulosa	honey mesquite	P					
Graminoids							
Bouteloua gracilis	blue grama	M	0.25	2			
Chloris cucullata	hooded windmill grass	M	0.5	5			
Distichlis spicata	inland saltgrass	M	0.125	5			
Muhlenbergia asperifolia	alkali muhly	M	0.05	20			
Sporobolus airoides	alkali sacaton	M	1.13	10			
Sporobolus cryptandrus	sand dropseed	M	1.38	9			
Sporobolus wrightii	giant sacaton	M	4.65	26			
Cenchrus spinifex	sandbur	P					
Forbs							
Chamaesyce albomarginata	whitemargin sandmat	M	0.015				
Chloracantha spinosa	spiny chloracantha	M	0.575				
Solanum elaeagnifolium	silverleaf nightshade	M	0.05				
Mentzelia spp.	mentzelia	P					

Ground Cover: Soil: 37.7 Litter: 47.3 BA: 13.0 Dung: 2.0 Wood: 0

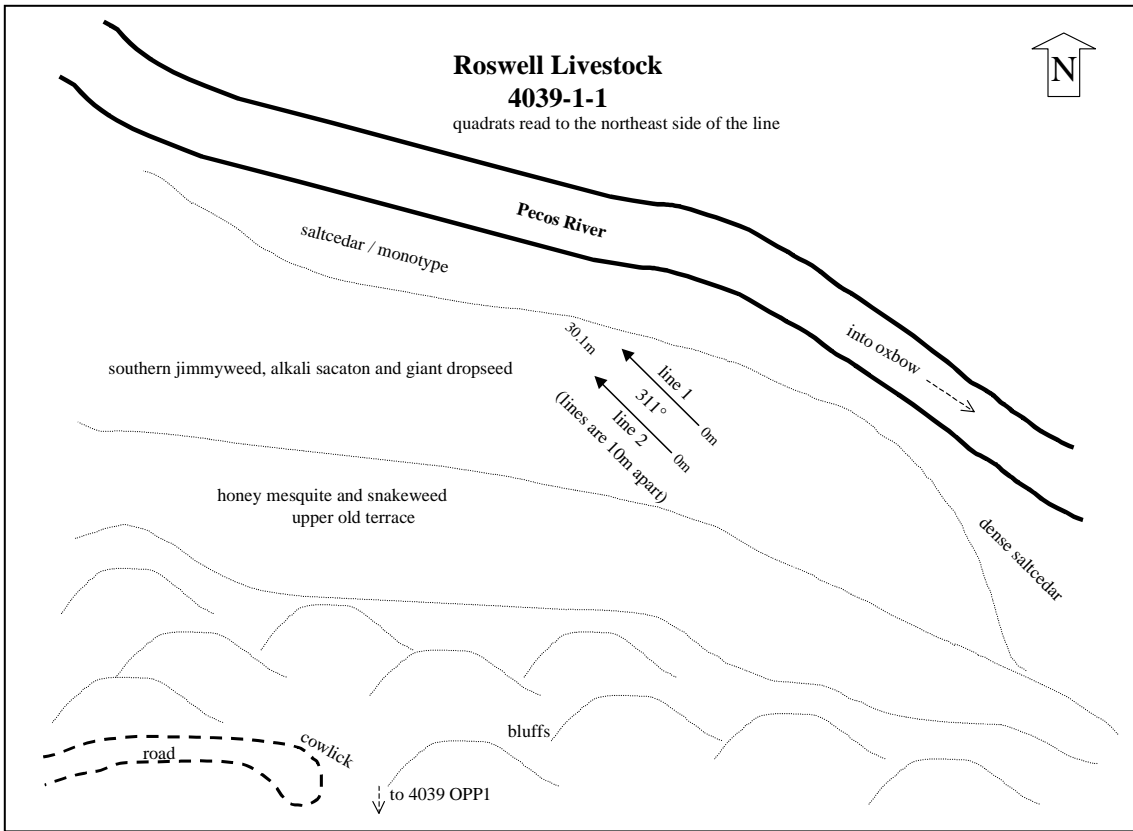


Figure 15. Diagram of plot 4039-1-1.

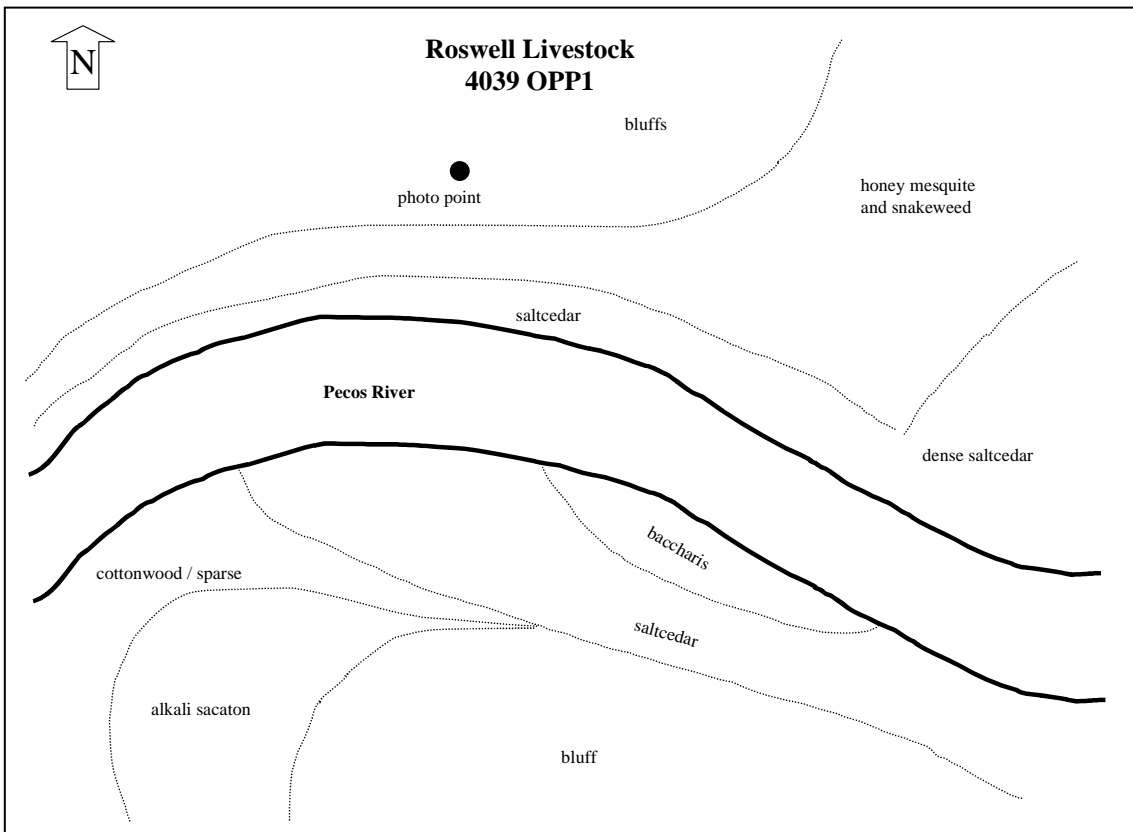


Figure 16. Diagram of reconnaissance plot 4039-OPP1.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Roswell Livestock
Reconnaissance Plot 4039-OPP1**

NMNHP Plot Number: 00RM026

Community Type: Cottonwood/Sparse
Populus deltoides/Sparse

Survey Date: 7/16/2000

UTM Location (NAD 27): Easting: 567356 Northing: 3754122

Directions to Plot: Take US 285 approx. 28 mi. N of junction with US 70, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi, take NE road at fork. Continue for approx. 7.6 mi., and take road E at fork towards old Benedict Ranch. After approx. 4.7 mi., take road. N and continue for approx. 1.7 mi. Take road E towards Pecos and park at cowlick. Walk SE over bluffs to 4039-OPP1.

Description: The reconnaissance plot was taken at the south side of oxbow on Roswell Livestock. This terrace had a few scattered adult cottonwoods, with a weedy sparse understory composed mostly of snakeweed and threeawn. Oxbow to the east was dominated by dense salt cedar

Status: Many invasive exotic species observed, suggesting significant livestock impacts.

Adjacent Communities: The north river bank was lined with salt cedar. The river bank to the south also had salt cedar directly across from the plot, but to the east there was a low terrace dominated by baccharis. To the west was a sparse cottonwood community on the terrace above the riverbank. Further south, on a higher terrace there was an alkali sacaton flat with scattered honey mesquite. Honey mesquite and snakeweed dominate uplands.

Species Name	Common Name	Source	Avg % Cover
Trees			
Populus deltoides	cottonwood	P	
Shrubs			
Baccharis emoryi	Emory's baccharis	P	
Gutierrezia sarothrae	broom snakeweed	P	
Prosopis glandulosa	honey mesquite	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Aristida purpurea	purple threeawn	P	
Sporobolus airoides	alkali sacaton	P	

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Larry Benedict
4040**

Monitoring Plots:

4040-1-1	Alkali Sacaton Monotype
4040-1-2	Inland Saltgrass-Alkali Sacaton
4040-2-1	Honey Mesquite/Alkali Sacaton
4040-2-2	Salt Cedar/Spike Dropseed



Figure 17. Monitoring plot 4040-1-2.

Larry Benedict: 4040 and Mark Cooper: 5007

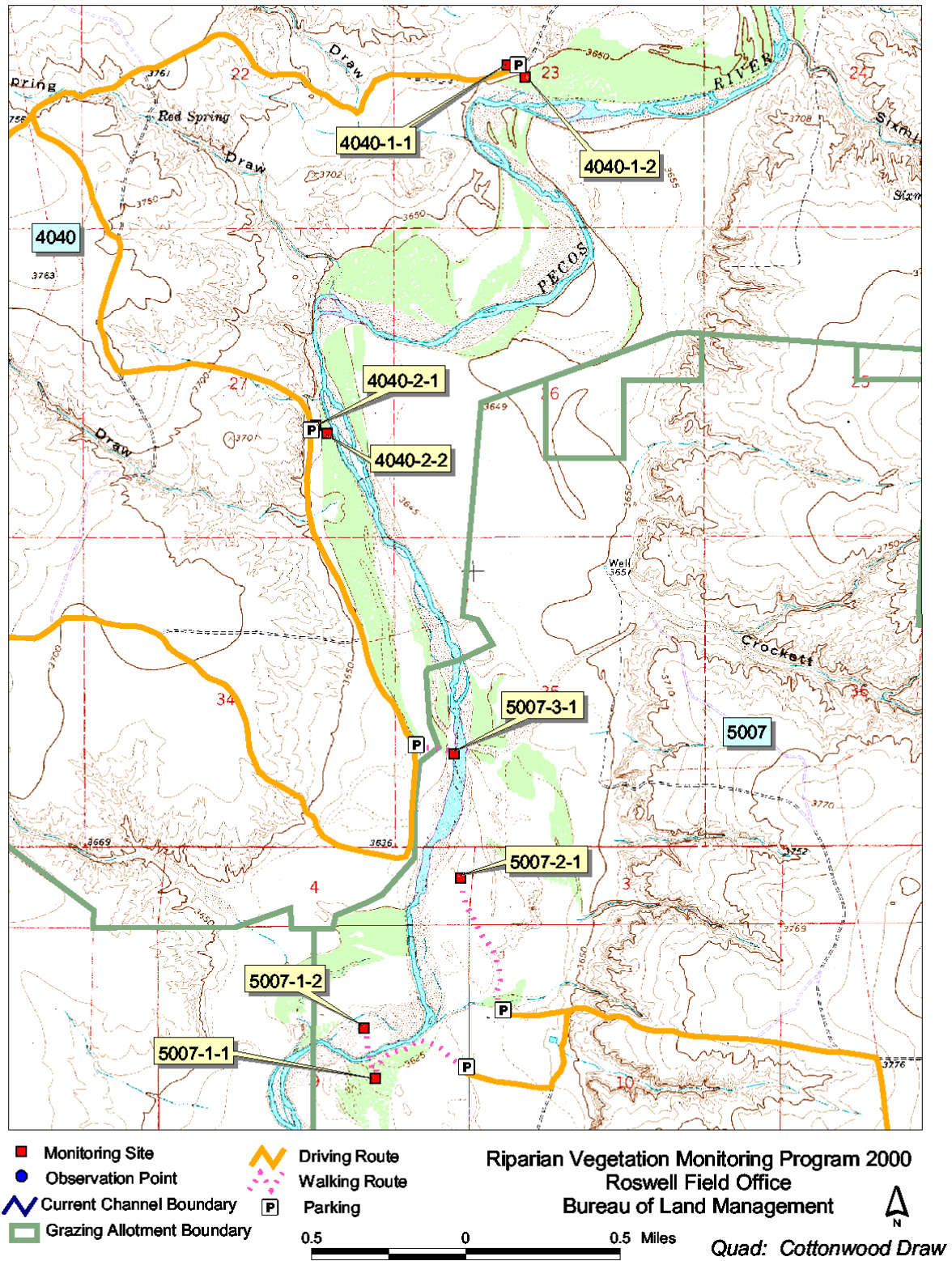


Figure 18. Map of monitoring plots on allotment 4040.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Larry Benedict
Monitoring Plot: 4040-1-1**

NMNHP Plot Number: 99RM001

Community Type: Alkali Sacaton Monotype
Sporobolus airoides Monotype

Survey Date: 9/27/1999

UTM Location (NAD 27): Easting: 565718 Northing: 3746344

Directions to Plot: Take US 285 approx. 28 mi. N of US 70 junction, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi., take NE road at fork. Continue for approx. 5 mi., and take SE road towards current Benedict ranch (approx. 1.2 mi.) take road S just before ranch and drive approx. 0.5 miles, then take road E for 2 mi. to junction with main N/S road, head N approx. 0.5 miles, then SE towards Red Spring. Continue S and E for 2 mi. to large alkali sacaton flat on terrace above river. The plot is in the alkali sacaton to the N of the road.

Description: The monitoring plot was established in a large alkali-sacaton-dominated community on a high terrace in the old river floodplain. Honey mesquite was present, but low-statured and very scattered. A few other grasses and some forbs were present, but all in low amounts.

Status: Alkali sacaton cover was high, and the pasture had not been grazed recently at the time of sampling.

Adjacent Communities: The terrace was surrounded by honey mesquite/grass uplands to the west and north. There were dense salt cedar stands in the active river floodplain to the south and east.

Species Name	Common Name	Source	Avg % Cover
Graminoids			
Bouteloua barbata	sixweeks grama	M	0.4
Bouteloua gracilis	blue grama	M	0.4
Hilaria mutica	tobosa	M	0.2
Munroa squarrosa	false buffalograss	M	0.075
Sporobolus airoides	alkali sacaton	M	65.6
Forbs			
Hoffmannseggia glauca	Indian rushpea	M	1.85

Ground Cover: Soil: 42.7 Litter&BA: 57.4 Wood: 0 Rock: 0

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Larry Benedict
Monitoring Plot: 4040-1-2**

NMNHP Plot Number: 99RM002

Community Type: Inland saltgrass-Alkali sacaton
Distichlis spicata-Sporobolus airoides

Survey Date: 9/27/1999

UTM Location (NAD 27): Easting: 565814 Northing: 3746279

Directions to Plot: Take US 285 approx. 28 mi. N of US 70 junction, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi., take NE road at fork. Continue for approx. 5 mi., and take SE road towards current Benedict ranch (approx. 1.2 mi.) take road S just before ranch and drive approx. 0.5 miles, then take road E for 2 mi. to junction with main N/S road, head N approx.0.5 miles, then SE towards Red Spring. Continue S and E for 2 mi. to large alkali sacaton flat on terrace above river. The plot is in dense salt cedar to S of pasture fence.

Description: The monitoring plot was established in one of many grass patches within the salt-cedar-dominated floodplain. Grass cover approached 75% with inland saltgrass as the dominant grass and alkali sacaton well represented. Ragweed, a weedy species, was also well represented.

Status: Many weedy forbs were present, suggesting high livestock use. The permittee says this pasture, despite the density of salt cedar and weedy species, was his most productive, and cattle were able to move through the salt cedar to the grass patches.

Adjacent Communities: The plot was surrounded by dense salt cedar stands that line the riverbank. On a terrace to the north there was an extensive alkali sacaton flat (Monitoring Plot 4040-1-1).

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Baccharis emoryi	Emory's baccharis	M	1.35
Tamarix ramosissima	salt cedar	M	16.25
Graminoids			
Distichlis spicata	inland saltgrass	M	46.2
Sporobolus airoides	alkali sacaton	M	23.85
Sporobolus contractus	spike dropseed	M	0.15
Forbs			
Ambrosia spp.	ragweed.	M	9.65
Conyza canadensis	Canadian horseweed	M	2.475
Laennecia coulteri	conyza	P	0
Solanum elaeagnifolium	silverleaf nightshade	M	0.1

Ground Cover: Soil: 30.1 Litter&BA: 69.5 Wood: 0.4 Rock: 0

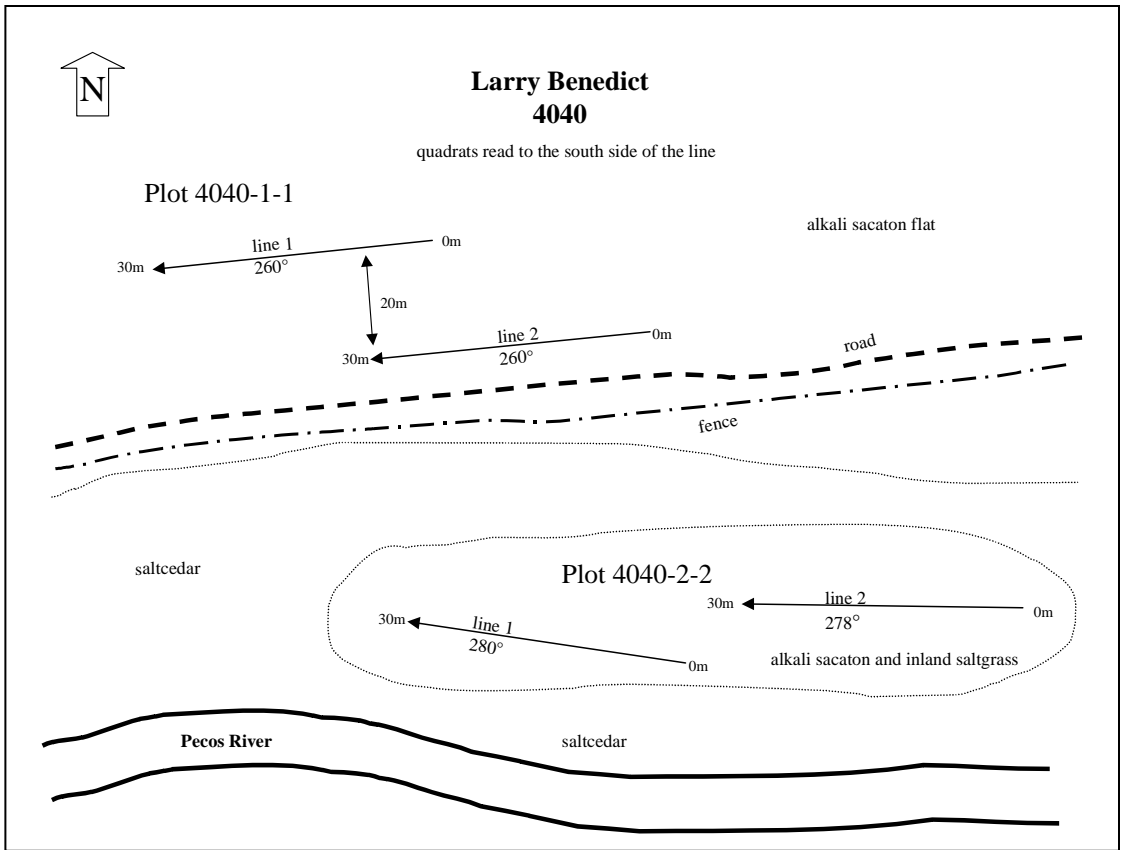


Figure 19. Diagram of monitoring plots 4040-1-1 and 4040-1-2.

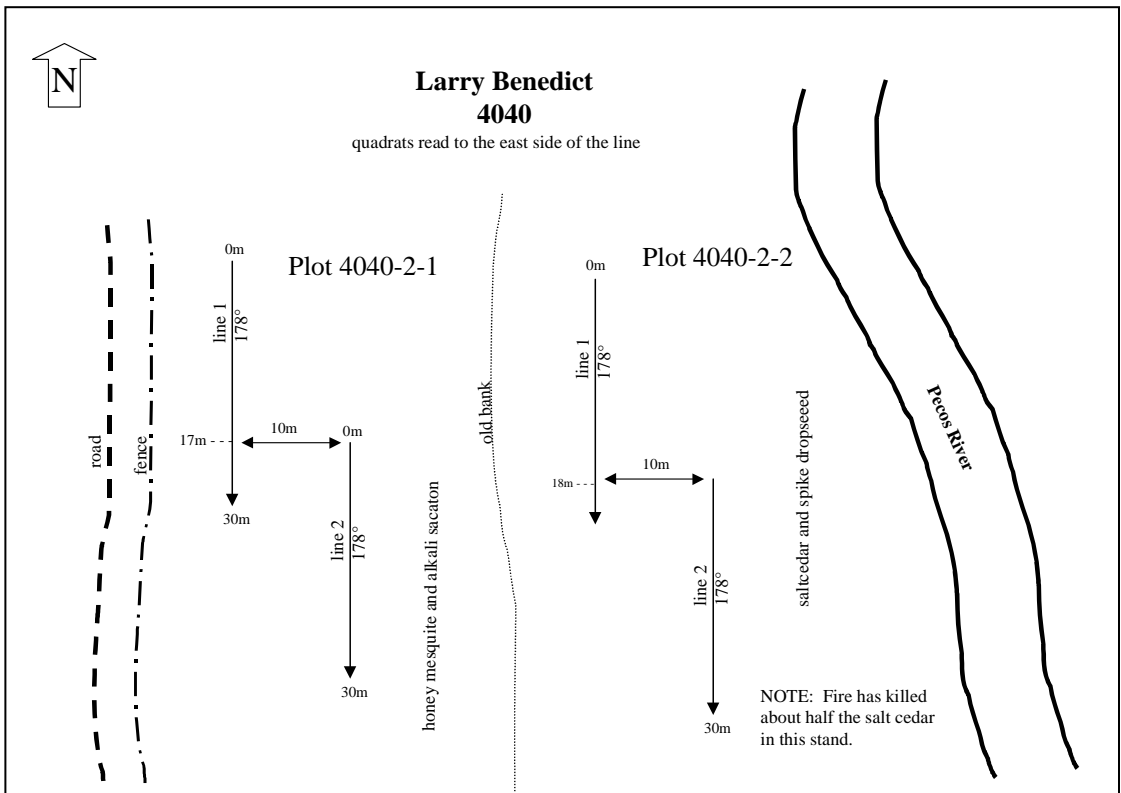


Figure 20. Diagram of monitoring plots 4040-2-1 and 4040-2-2.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Larry Benedict
Monitoring Plot: 4040-2-1**

NMNHP Plot Number: 99RM003

Community Type: Honey Mesquite/Alkali Sacaton
Prosopis glandulosa/Sporobolus airoides

Survey Date: 9/27/1999

UTM Location (NAD 27): Easting: 565814 Northing: 3746279

Directions to Plot: Take US 285 approx. 28 mi. N of US 70 junction, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi., take NE road at fork. Continue for approx. 5 mi., and take SE road towards current Benedict ranch (approx. 1.2 mi.) take road S just before ranch and drive approx. 0.5 miles, then take road E for 2 mi. to junction with main N/S road, head N approx.0.5 miles, then SE towards Red Spring. At fork in road (approximately 1.25 mi.) take S branch, follow this road across arroyo, up hill and then E down to river terrace. Plots are E of road just after it turns S on to the terrace.

Description: The monitoring plot was established on an upper terrace in old floodplain. It is a sparse shrubland of low-statured honey mesquite with a grassy understory dominated by alkali sacaton. Overall diversity is low.

Status: The low stature of the honey mesquite was probably due to a fire. The terrace was very dry at time of survey.

Adjacent Communities: To the west, there were dry honey mesquite uplands with sparse grass cover. To the east there was a lower, sandy terrace with salt cedar and spike dropseed (Plot 4040-2-2).

Species Name	Common Name	Source	Avg % Cover	Avg # sm stems	Avg # lg stems
Shurbs					
2 <i>Prosopis glandulosa</i>	honey mesquite	M	8.25	0.05	0
Graminoids					
3 <i>Sporobolus airoides</i>	alkali sacaton	M	20.5		
3 <i>Sporobolus contractus</i>	spike dropseed	M	3		
3 <i>Sporobolus cryptandrus</i>	sand dropseed	M	0.35		
Forbs					
4 <i>Chenopodium leptophyllum</i>	narrowleaf goosefoot	M	0.75		
4 <i>Solanum elaeagnifolium</i>	silverleaf nightshade	M	0.05		

Ground Cover: Soil: 63.2 Litter&BA: 36.5 Wood: 0.4 Rock: 0

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Larry Benedict
Monitoring Plot: 4040-2-2**

NMNHP Plot Number: 99RM004

Community Type: Salt Cedar/Spike Dropseed
Tamarix ramosissima/Sporobolus contractus

Survey Date: 9/27/1999

UTM Location (NAD 27): Easting: 564778 Northing: 3744420

Directions to Plot: Take US 285 approx. 28 mi. N of US 70 junction, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi., take NE road at fork. Continue for approx. 5 mi., and take SE road towards current Benedict ranch (approx. 1.2 mi.) take road S just before ranch and drive approx. 0.5 miles, then take road E for 2 mi. to junction with main N/S road, head N approx.0.5 miles, then SE towards Red Spring. At fork in road (approximately 1.25 mi.) take S branch, follow this road across arroyo, up hill and then E down to river terrace. Plots are E of road just after it turns S on to the terrace.

Description: Monitoring plot was established within a dry salt cedar/spike dropseed community on middle terrace in abandoned floodplain. Salt cedars were well represented, but scattered and mostly of low stature. There were old salt cedar stumps killed by a fire, but many of the stumps were re-sprouting. Spike dropseed was well represented and the most common species in a diverse but sparse graminoid layer. Forbs were mostly weedy and sparse. Soils were dry and sandy.

Status: Site was extremely dry and many ruderal species are present, suggesting moderate livestock impacts.

Adjacent Communities: To the west is an upper terrace with honey mesquite/alkali sacaton on it. Further west are honey mesquite uplands.

Species Name	Common Name	Source	Avg % Cover	Avg # sm stems	Avg # lg stems
Shrubs					
Gutierrezia sarothrae	broom snakeweed	M	1.95		
Tamarix ramosissima	salt cedar	M	5.9	0.15	0.45
Graminoids					
Bouteloua barbata	sixweeks grama	M	0.7		
Distichlis spicata	inland saltgrass	M	0.6		
Panicum obtusum	vine mesquite	M	0.1		
Setaria leucopila	streambed bristlegrass	M	0.6		
Sporobolus airoides	alkali sacaton	M	1.7		
Sporobolus contractus	spike dropseed	M	23.65		
Sporobolus wrightii	giant sacaton	M	0.3		
Forbs					
Chenopodium leptophyllum	narrowleaf goosefoot	M	0.1		
Conyza canadensis	Canadian horseweed	M	0.35		
Hoffmannseggia glauca	Indian rushpea	M	3.035		
Solanum elaeagnifolium	silverleaf nightshade	M	0.05		

Ground Cover: Soil: 71.8 Litter&BA: 27.8 Wood: 0 Rock: 0.4

Pecos River Riparian Monitoring Program Allotment Report 2000

Gary L. Lynch
4050

Monitoring Plots:

4050-1-1	Alkali Sacaton Monotype
4050-2-1	Emory's Baccharis/Alkali Sacaton
4050-2-2	Emory's Baccharis/Inland Saltgrass



Figure 21. Overview of Plot 4050-2-1.

Gary Lynch: 4050 and Willard Moody: 5024

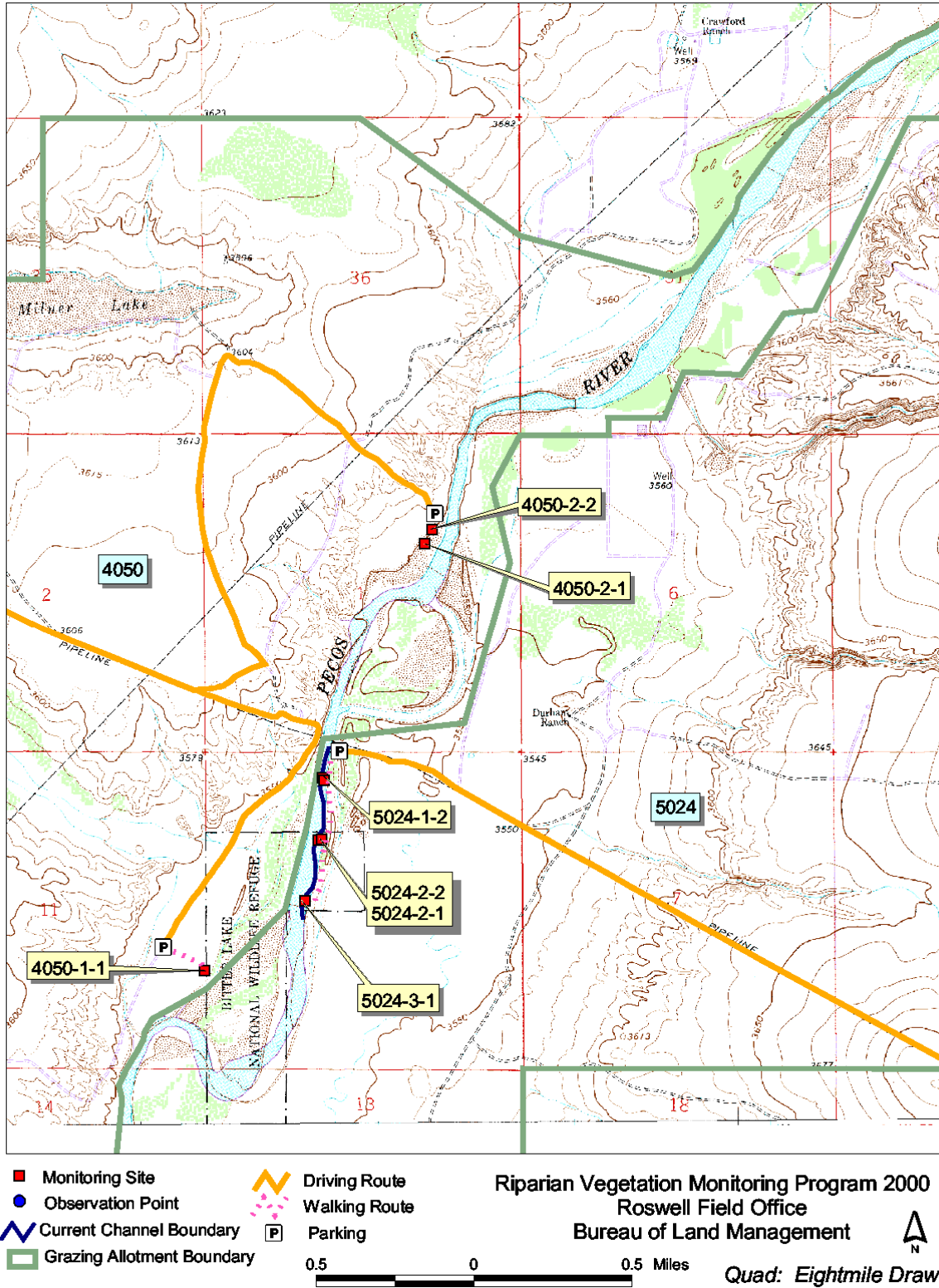


Figure 22. Map of monitoring plots on allotment 4050.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Gary L. Lynch
Monitoring Plot: 4050-1-1**

NMNHP Plot Number: 00RM012

Community Type: Alkali Sacaton Monotype
Sporobolus airoides Monotype

Survey Date: 7/11/2000

UTM Location (NAD 27): Easting: 559112 Northing: 3721348

Directions to Plot: From US 285, approx. 7 mi. N of US 70 intersection, turn E on Co Road 15 and go approx. 2.5 mi. Turn N on Co Road 26 (Cottonwood Rd.). Continue for approx. 6.75 mi, then turn E on pipeline road towards Pecos R. Go approx. 3.2 mi to road heading S along Pecos. Head S for approx. 0.5 mi. and walk E to plot.

Description: Monitoring plot was established on a terrace dominated by alkali sacaton (53.5%) with patches of salt cedar and a few scattered mesquite. There were large patches of bare ground within the terrace.

Status: There was evidence of cattle and horse use as well as rabbits, snakes, and lizards. One Texas horned lizard (*Phrynosoma cornutum*) was observed on plot during monitoring. There was evidence of a recent fire with fresh resprouting of burnt grass clumps approximately 1 year old. Livestock grazing was moderate.

Adjacent Communities: There was a small drainage just north of transects that drains from low hills in the west. The drainage was mostly bare ground with patches of alkali sacaton and tamarisk. There were a few small mesquite coppice hummocks on the terrace. Dense salt cedar lined the riverbank to the east.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Shrubs							
Gutierrezia sarothrae	broom snakeweed	P					
Opuntia imbricata	tree cholla	P					
Prosopis glandulosa	honey mesquite	P					
Tamarix ramosissima	salt cedar	P	0.5				
Graminoids							
Sporobolus airoides	alkali sacaton	M	53.5	20.85			
Bouteloua barbata	sixweeks grama	P	0.05				
Setaria leucopila	streambed bristlegrass	P					
Forbs							
Portulaca oleracea	common purslane	M	0.005		2		
Chamaesyce serpyllifolia	thymeleaf sandmat	P					
Chenopodium pratericola	desert goosefoot	P	0.05				
Kallstroemia parviflora	warty caltrop	P					
Portulaca pilosa	kiss me quick	P	0.005				
Solanum elaeagnifolium	silverleaf nightshade	P					
Suaeda suffrutescens var. detonsa	desert seepweed	P	0.05				

Ground Cover: Soil: 33.8 Litter: 35.0 BA: 30.6 Dung: 0.6 Wood: 0

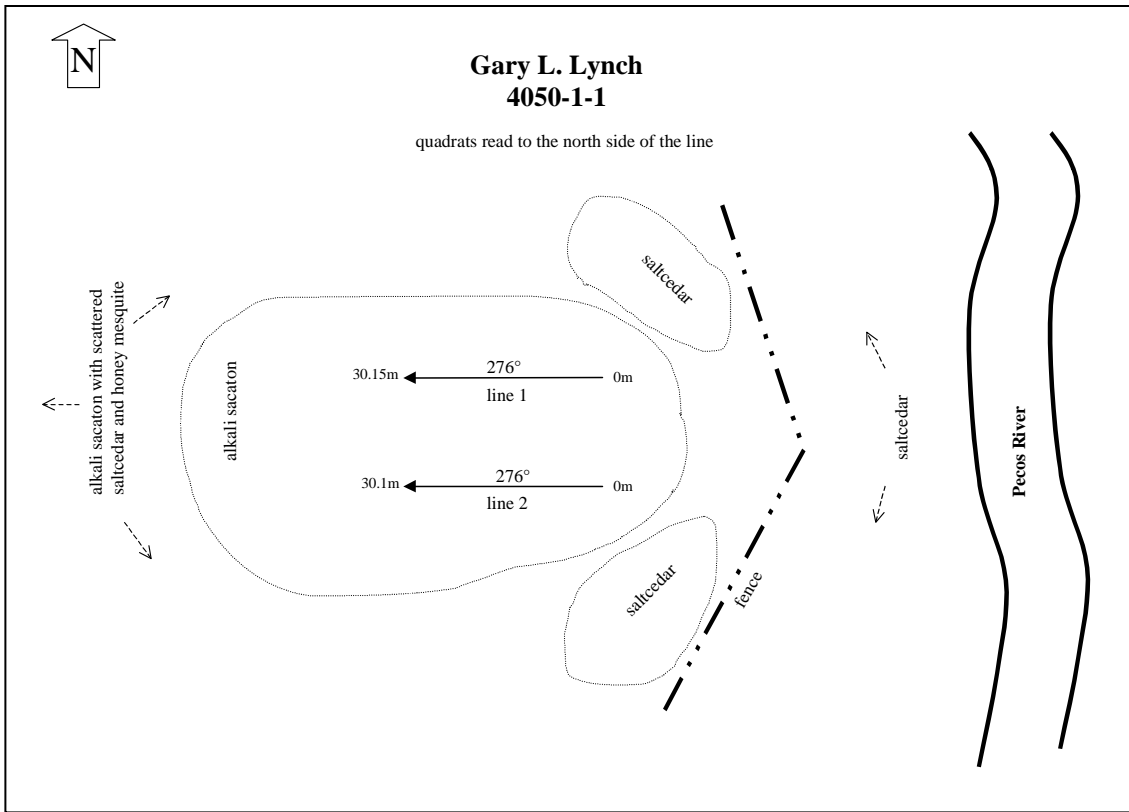


Figure 23. Diagram of plot 4050-1-1.

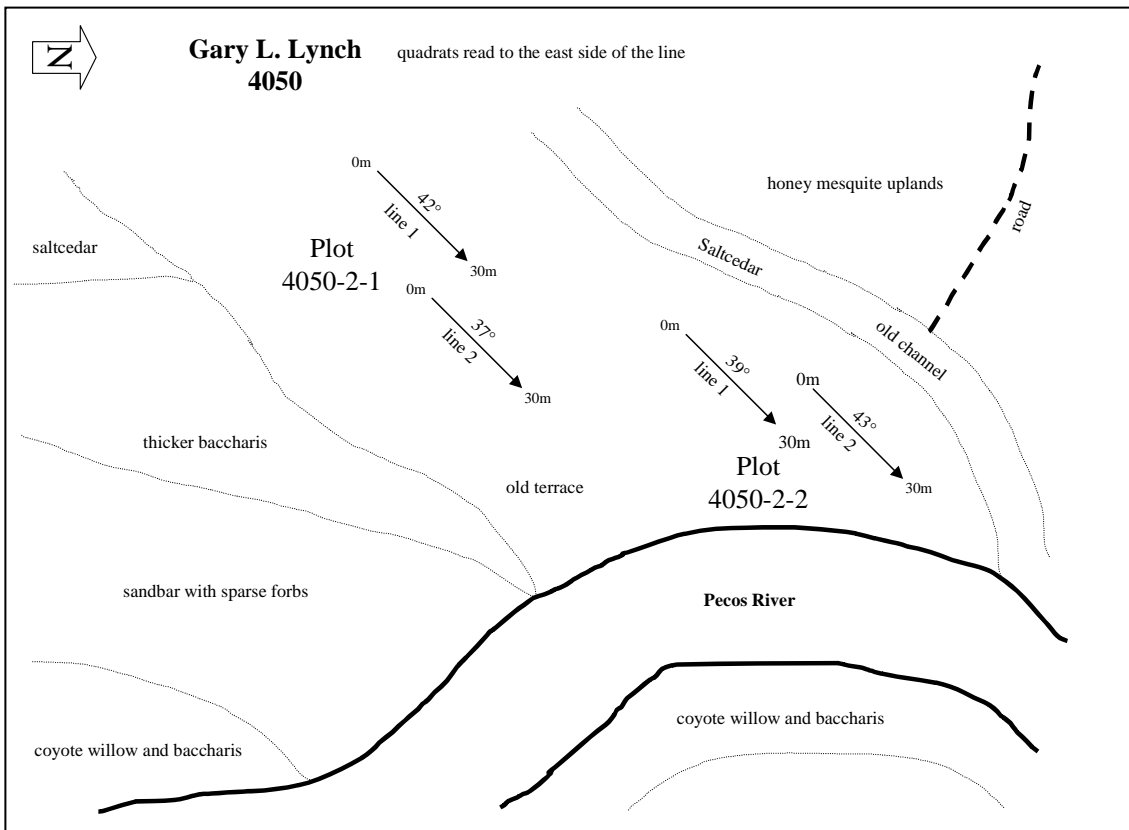


Figure 24. Diagram of plots 4050-2-1 and 4050-2-2.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Gary L. Lynch
Monitoring Plot: 4050-2-1**

NMNHP Plot Number: 00RM013

Community Type: Emory's Baccharis/Alkali Sacaton
Baccharis emoryi/Sporobolus airoides

Survey Date: 7/12/2000

UTM Location (NAD 27): Easting: 560235 Northing: 3723527

Directions to Plot: From US 285, approx. 8 mi N of US 70, turn E on CR 15 for approx. 2.5 mi. Then turn N on CR 26 for approx. 6.75 mi.; turn E on pipeline road for approx. 3 mi. Turn N on road just E of Gas Pumping Station (See Map). Continue for approx. 1.2 mi. Take road E towards Pecos R. for approx. 0.8 mi. and walk E to plot.

Description: The monitoring plot was established in a baccharis-dominated community on an old river terrace that is approx. 50 m wide and 150 m long. Coyote willow and salt cedar were also scattered throughout the plot. Grass cover was around 15% and was strongly dominated by alkali sacaton with scattered alkali muhly. Inland saltgrass is also scattered throughout, but less abundant than alkali muhly. American licorice is common to abundant

Status: The alkali sacaton showed moderate evidence of grazing, averaging 15cm in height.

Adjacent Communities: To the west there was an old channel filled with mature salt cedar. Alkali muhly and inland saltgrass became the dominant grasses along edge of the plot near the salt cedar. There was also a dense stand of salt cedar to the southeast. East of the plot there is a patch of denser baccharis with a more sparse understory. To the east, the terrace dropped down 2-3 feet to a sandbar with little vegetation on it.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Shrubs							
Baccharis emoryi	Emory's baccharis	M	16		4.05	12.05	1.55
Prosopis glandulosa	honey mesquite	M	1.85		0.15	0.4	0.45
Salix exigua	coyote willow	M	0.45		0.05	0.6	0.25
Tamarix ramosissima	salt cedar	P					
Graminoids							
Distichlis spicata	inland saltgrass	M	1.725	10			
Muhlenbergia asperifolia	alkali muhly	M	1.55	10.833			
Sporobolus airoides	alkali sacaton	M	14.25	15.1			
Bothriochloa laguroides ssp. torreyana	silver beardgrass	P					
Schoenoplectus maritimus	saltmarsh bulrush	P					
Forbs							
Glycyrrhiza lepidota	American licorice	M	5.025				
Chloracantha spinosa	spiny chloracantha	P					

Ground Cover: Soil: 43.3 Litter: 40.7 BA: 13.7 Dung: 2.3 Wood: 0

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Gary L. Lynch
Monitoring Plot: 4050-2-2

NMNHP Plot Number: 00RM014

Community Type: Emory's Baccharis/Inland Saltgrass
Baccharis emoryi/Distichlis spicata

Survey Date: 7/12/2000

UTM Location (NAD 27): Easting: 560271 Northing: 3723599

Directions to Plot: From US 285 approx. 7 mi. N of US 70 junction, turn E on CR 15. Take 15 for approx. 2.5 mi, then turn N on CR 26 (Cottonwood Rd.) for approx. 6.75 mi.; turn E on pipeline road for approx. 3 mi., then turn N on rd. just E of Gas Pumping Station (see map). Continue for approx. 1.2 mi. Take road E towards Pecos for approx. 0.8 mi. Walk E to plot.

Description: The monitoring plot was established in a grassy corridor between the baccharis/alkali sacaton community of monitoring plot 4050-2-1 and a salt cedar thicket in the old channel to the west. Baccharis was still the dominant shrub, but its cover is lower here than on 4050-2-1. In this grassy site inland saltgrass accounted for over half the grass cover and alkali sacaton and alkali muhly together constituted the rest.

Status: Plot was a very small edge community with the potential to be converted to one of the neighboring community types.

Adjacent Communities: There was a salt cedar stand to the west of the plot. The terrace to the east supported a baccharis/alkali sacaton community.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Shrubs							
Allenrolfea occidentalis	pickleweed	M	0.2		0.2	0	0.1
Baccharis emoryi	Emory's baccharis	M	11.85		2.1	0	0.3
Tamarix ramosissima	salt cedar	M	1.75		0	0	
Prosopis glandulosa	honey mesquite	P					
Graminoids							
Distichlis spicata	inland saltgrass	M	21.05	13.313			
Muhlenbergia asperifolia	alkali muhly	M	10.25	11.615			
Schoenoplectus pungens	common threesquare	M	0.44	15.385			
Sporobolus airoides	alkali sacaton	M	11.85	17.333			
Forbs							
Glycyrrhiza lepidota	American licorice	P					

Ground Cover: Soil: 34.3 Litter: 49.7 BA: 12.0 Dung: 4.0 Wood: 0

Pecos River Riparian Monitoring Program Allotment Report 2000

(no current lessee)
4056

Monitoring Plots:

4056-1-1	Coyote Willow/Sparse
4056-1-2	Emory's Baccharis/Alkali Sacaton
4056-2-1	Alkali Sacaton Monotype
4056-2-2	Alkali Sacaton/Southern Jimmyweed
4056-3-1	Southern Jimmyweed/Giant Sacaton
4056-3-2	Alkali Sacaton/Southern Jimmyweed



Figure 25. Emory's baccharis/alkali sacaton community of 4056-1-2.

4056

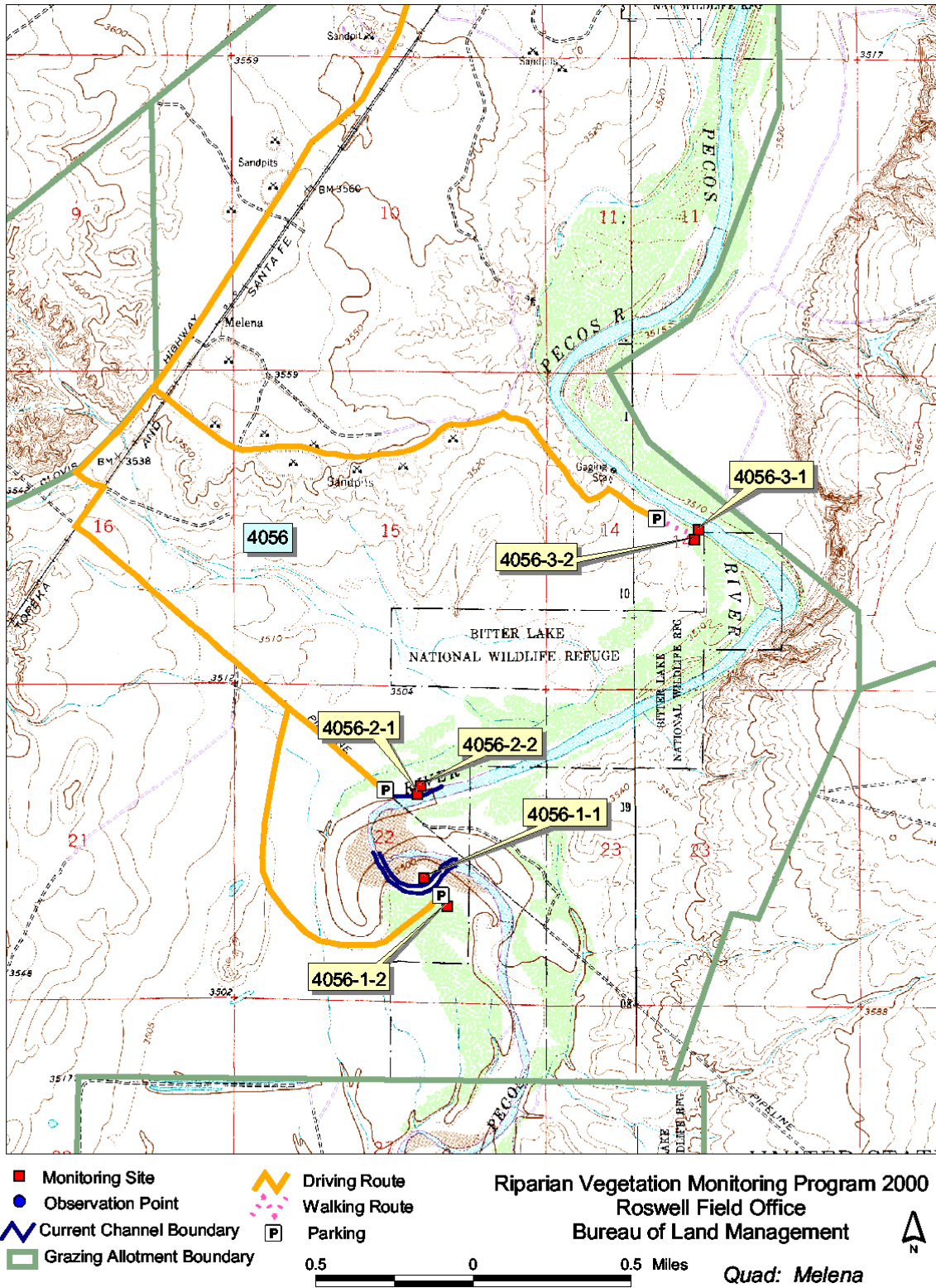


Figure 26. Map of monitoring plots on allotment 4056.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: No Current Lessee
Monitoring Plot: 4056-1-1**

NMNHP Plot Number: 99RM019

Community Type: Coyote Willow/Sparse
Salix exigua/Sparse

Survey Date: 9/24/1999

UTM Location (NAD 27): Easting: 556965 Northing: 3708583

Directions to Plot: Take US 70 NE from junction with US 285 about 8 mi. to just before the bridge across the Pecos. Take paved road SW past gravel pits approximately 2 mi., turn SE onto dirt road and cross railroad tracks. Turn SW onto road next to railroad tracks and follow about 0.25 miles to second road heading SE. Take this road out into salt-flats, approximately 1 mi. to a fork, take S branch and follow road around old oxbow to plot, about 1 mi.

Description: Monitoring plot was established on a sandy side bar inside the active river floodplain. Coyote willow was well represented and the dominant shrub. Salt cedar was common, with many young individuals scattered in clumps around the plot. The herbaceous understory was diverse, but sparse in cover. The site probably floods at least every other year.

Status: Both coyote willows and salt cedars were vigorous, further salt cedar encroachment is a hazard. The graminoid layer included a mixture of natives and exotics (particularly feather fingergrass, bermudagrass and sandbur).

Adjacent Communities: The terrace to the north of the plot supported a baccharis/coyote willow community. Across the river to the south the riverbank was lined with mature salt cedars. On the high terrace beyond the riverbank was an Emory's baccharis/alkali sacaton community (4056-1-2).

Species Name	Common Name	Source	Avg % Cover	Avg # sm stems	Avg # lg stems
Trees					
Ulmus pumila	Siberian elm	P			
Shrubs					
Baccharis emoryi	Emory's baccharis	M	0.1		
Salix exigua	coyote willow	M	30.45	2.85	4.25
Tamarix ramosissima	salt cedar	M	1.8	0.3	0.25
Graminoids					
Bouteloua barbata	sixweeks grama	M	0.05		
Cenchrus spinifex	sandbur	M	0.15		
Chloris virgata	feather fingergrass	M	0.05		
Cynodon dactylon	bermudagrass	M	0.05		
Cyperus esculentus	chufa flatsedge	M	0.33		
Muhlenbergia asperifolia	alkali muhly	M	0.005		
Schoenoplectus pungens	common threesquare	M	0.25		
Setaria leucopila	streambed bristlegrass	M	0.05		
Sporobolus compositus var. compositus	tall dropseed	M	0.005		
Sporobolus cryptandrus	sand dropseed	M	0.05		
Forbs					

Ambrosia acanthicarpa
Salsola tragus

flatspine burr ragweed
prickly Russian thistle

M 0.25
M 0.8

Ground Cover: Soil: 81.5 Litter&BA: 17.8 Wood: 0.6 Rock: 0

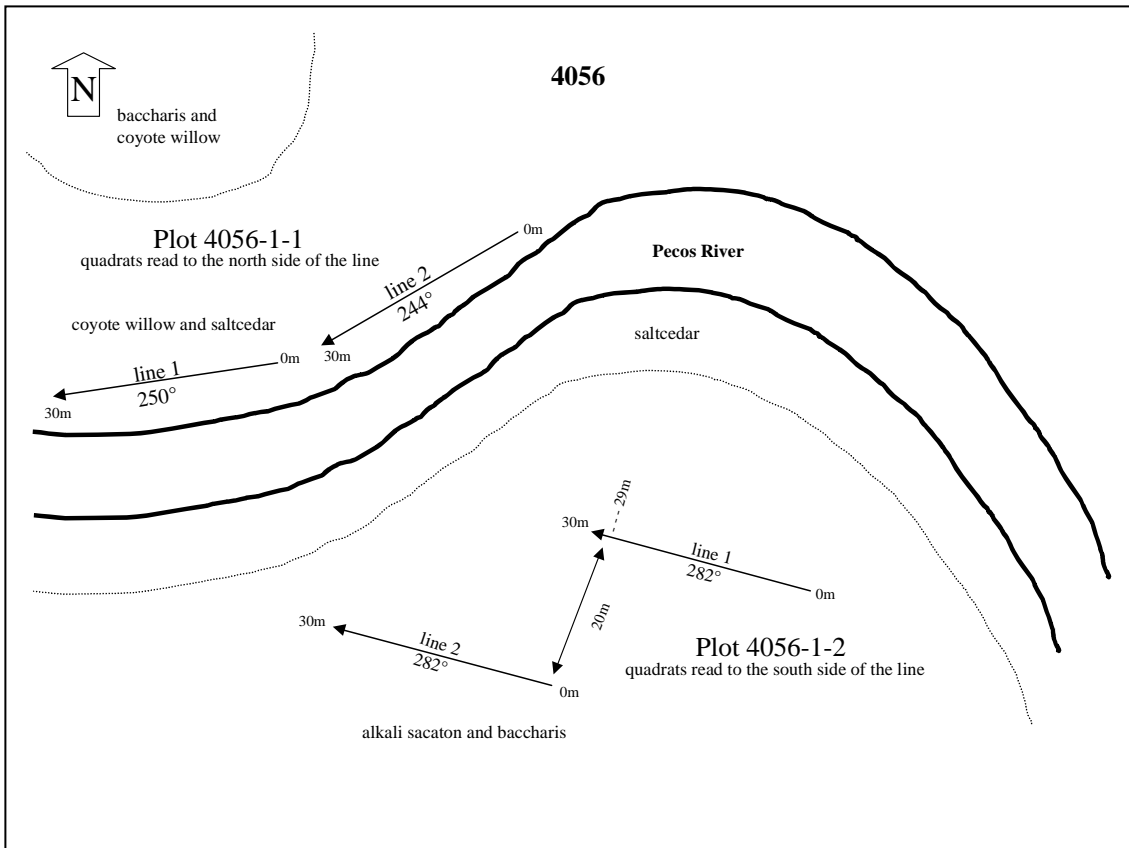


Figure 27. Diagram of monitoring plots 4056-1-1 and 4056-1-2.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: No Current Lessee
Monitoring Plot: 4056-1-2

NMNHP Plot Number: 99RM020

Community Type: Emory's Baccharis/Alkali Sacaton
Baccharis emoryi/Sporobolus airoides

Survey Date: 9/24/1999

UTM Location (NAD 27): Easting: 557080 Northing: 3708441

Directions to Plot: Take US 70 NE from junction with US 285 about 8 mi. to just before the bridge across the Pecos. Take paved road SW past gravel pits approximately 2 mi., turn SE onto dirt road and cross railroad tracks. Turn SW onto road next to railroad tracks and follow about 0.25 mi. to second road heading SE. Take this road out into salt-flats, approximately 1 mi. to a fork, take S branch and follow road around old oxbow to plot, about 1 mi.

Description: Monitoring plot was established on a high riverside terrace inside an oxbow dominated by Emory's baccharis/alkali sacaton grassland. Although Emory's baccharis was the dominant shrub, it was poorly represented, and other shrubs were scattered and sparse. Grass cover was luxurious and strongly dominated by alkali sacaton, to the exclusion other species.

Status: Alkali sacaton is vigorous and dense.

Adjacent Communities: To the north was a salt-cedar-lined river bank. Across the river to the north was a coyote willow/salt cedar community (monitoring plot 4056-1-1). To the northwest was an old oxbow with salt-cedar-lined banks and inland saltgrass in the old dried channel.

Species Name	Common Name	Source	Avg % Cover	Avg # sm stems	Avg # lg stems
Shrubs					
Allenrolfea occidentalis	pickleweed	M	0.4		
Baccharis emoryi	Emory's baccharis	M	3.85	0.55	0.1
Solidago sp.	goldenrod	M	0.425		
Prosopis glandulosa	honey mesquite	P	0.01		
Graminoids					
Distichlis spicata	inland saltgrass	M	0.5		
Sporobolus airoides	alkali sacaton	M	54		
Forbs					
Conyza canadensis	Canadian horseweed	M	0.025		
Hackelia spp.	stickseed	M	0.025		

Ground Cover: Soil: 27.0 Litter&BA: 73.0 Wood: 0 Rock: 0

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: No Current Lessee
Monitoring Plot: 4056-2-1

NMNHP Plot Number: 99RM017

Community Type: Alkali Sacaton Monotype
Sporobolus airoides Monotype

Survey Date: 9/24/1999

UTM Location (NAD 27): Easting: 556929 Northing: 3709013

Directions to Plot: Take US 70 NE from junction with US 285 about 8 mi. to just before the bridge across the Pecos. Take paved road SW past gravel pits approximately 2 mi., turn SE onto dirt road and cross railroad tracks. Turn SW onto road next to railroad tracks and follow about 0.25 mi. to second road heading SE. Take this road out into salt-flats, approximately 1.5 miles straight out to rivers edge. Park and walk N to plot along riverbank.

Description: Plot was established on the second terrace up from riverbank in a luxuriant alkali sacaton/inland saltgrass corridor between dense strips of salt cedar. Pickleweed was well represented in the shrub layer. Grass cover approaches 75% with alkali sacaton the strong dominant, and inland saltgrass well represented.

Status: Grass is tall and vigorous.

Adjacent Communities: To the north there was a dense band of salt cedar along an old levee. Beyond the levee, to the north, there was an old high terrace with a southern jimmyweed/alkali sacaton community (4056-2-2). To the south there was a thinner band of salt cedar beyond which is an Emory's baccharis/grass community lining the steep river bank.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Allenrolfea occidentalis	pickleweed	M	7.7
Tamarix ramosissima	salt cedar	P	0.01
Graminoids			
Distichlis spicata	inland saltgrass	M	13.45
Muhlenbergia asperifolia	alkali muhly	M	2.65
Setaria leucopila	streambed bristlegrass	M	0.005
Sporobolus airoides	alkali sacaton	M	60.65

Ground Cover: Soil: 39.8 Litter&BA: 60.2 Wood: 0 Rock: 0

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: No Current Lessee
Monitoring Plot: 4056-2-2

NMNHP Plot Number: 99RM018

Community Type: Alkali Sacaton/Southern Jimmyweed
Sporobolus airoides/Isocoma pluriflora

Survey Date: 9/24/1999

UTM Location (NAD 27): Easting: 556946 Northing: 3709056

Directions to Plot: Take US 70 NE from junction with US 285 about 8 mi. to just before the bridge across the Pecos. Take paved road SW past gravel pits approximately 2 mi., turn SE onto dirt road and cross railroad tracks. Turn SW onto road next to railroad tracks and follow about 0.25 mi. to second road heading SE. Take this road out into salt-flats, approximately 1.5 mi. straight out to rivers edge. Park and walk N to plot along terrace next to salt-cedar-lined levee.

Description: The monitoring plot was established on a dry upper terrace inside the old floodplain just north of old a levee lined with salt cedar. Shrubs cover was just over 10% with southern jimmyweed common along with snakeweed and honey mesquite. Grass cover was moderate (25%) and dominated by alkali sacaton. The remainder of the herbaceous layer was diverse, but sparse.

Status: The high number of invasive weed shrubs and forbs suggests that the site is recovering from heavy grazing.

Adjacent Communities: A dense salt cedar thicket lines the old levee to the south. Beyond the levee was an alkali sacaton/inland saltgrass corridor (4056-2-1). There was a more open dry upper terrace to the north and west.

Species Name	Common Name	Source	Avg % Cover
Shurbs			
Gutierrezia microcephala	threadleaf snakeweed	M	3.6
Isocoma pluriflora	southern jimmyweed	M	4.6
Prosopis glandulosa	honey mesquite	M	3.35
Gutierrezia sarothrae	broom snakeweed	P	0.01
Graminoids			
Cenchrus spinifex	sandbur	M	0.005
Panicum obtusum	vine mesquite	M	0.25
Sporobolus airoides	alkali sacaton	M	21.55
Sporobolus contractus	spike dropseed	M	2.8
Forbs			
Chamaesyce spp.	sandmat	M	0.01
Dimorphocarpa wislizeni	spectacle pod	M	0.015
Gaillardia pinnatifida	red dome blanketflower	M	0.025
Heterotheca subaxillaris	camphorweed	M	0.25
Oenothera pallida	pale eveningprimrose	M	2.05
Pectis angustifolia	narrowleaf pectis	M	0.025
Senecio riddellii	Riddell's ragwort	M	0.1

Ground Cover: Soil: 61.2 Litter&BA: 38.5 Wood: 0.4 Rock: 0

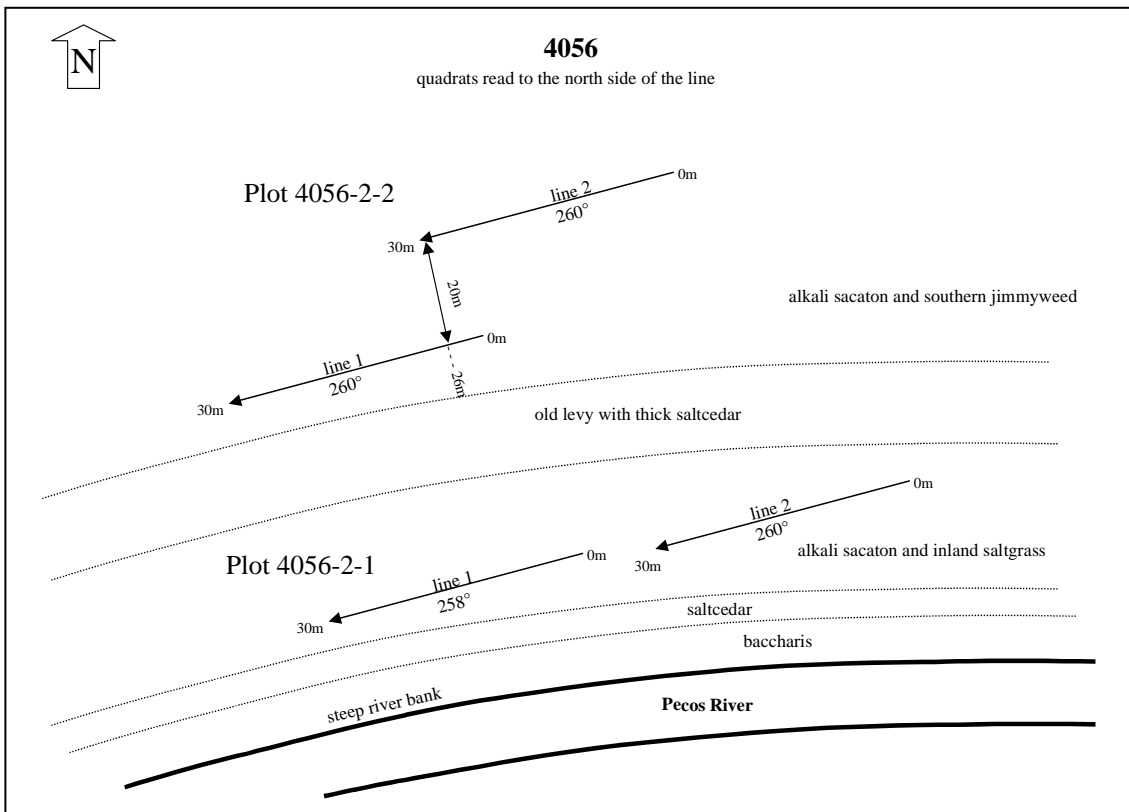


Figure 28. Diagram of monitoring plots 4056-2-1 and 4056-2-2.

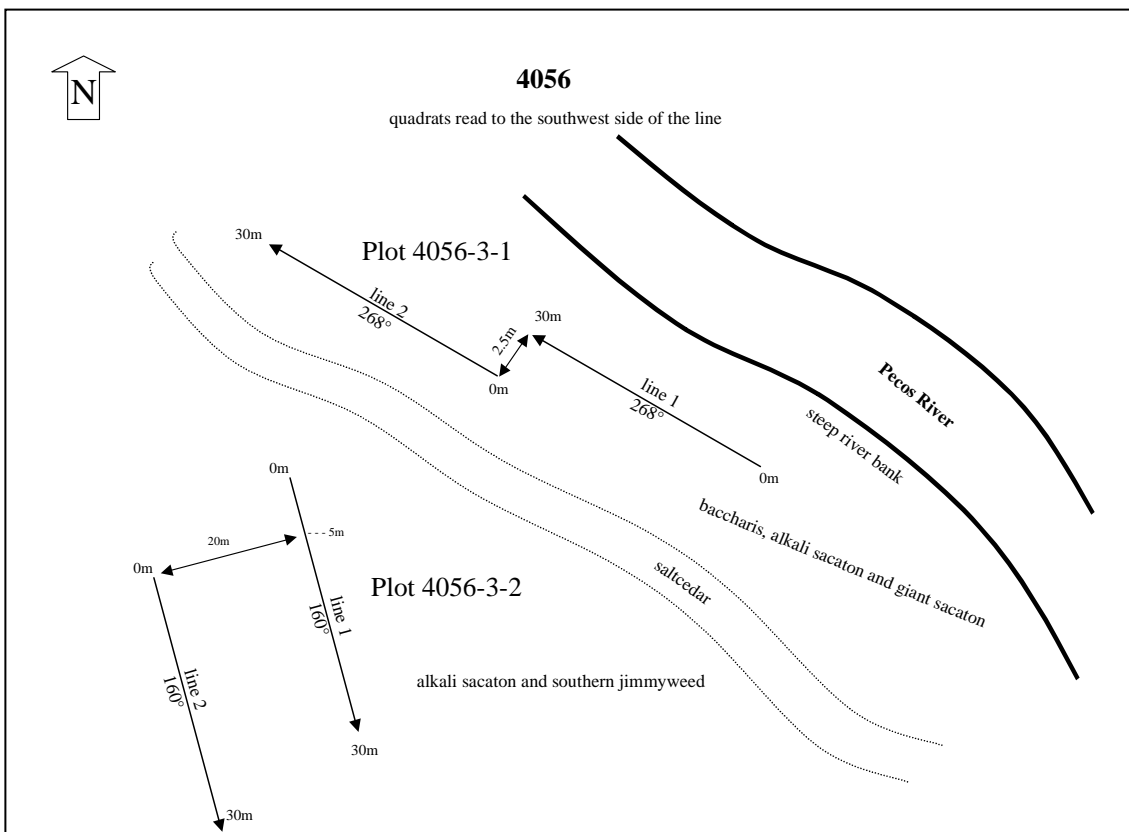


Figure 29. Diagram of monitoring plots 4056-3-1 and 4056-3-2.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: No Current Lessee
Monitoring Plot: 4056-3-1**

NMNHP Plot Number: 99RM015

Community Type: Southern Jimmyweed/Giant Sacaton
Isocoma pluriflora/Sporobolus wrightii

Survey Date: 9/25/1999

UTM Location (NAD 27): Easting: 558364 Northing: 3710366

Directions to Plot: Take US 70 NE from junction with US 285 about 8 mi. to just before the bridge across the Pecos. Take paved road SW past gravel pits approximately 1.5 mi., turn SE onto dirt road and cross railroad tracks. Continue SE on this road past gravel pits, E and then SE to the river – approximately 1.5 mi. Park and walk to riverbank plot.

Description: The monitoring plot was established on a high riverside terrace dominated by southern jimmyweed and giant sacaton. The shrubs were large and robust, with southern jimmyweed abundant and Emory’s baccharis well represented. The grass layer was very diverse, but low cover, with only gaint dropseed and alkali sacaton well represented and giant sacaton common.

Status: Overall, the community had many ruderal (weedy) species in the shrub and herbaceous layers, indicating past heavy grazing pressure. Site was also moderately dry and about five feet above the current river floodplain, suggesting that it is seldom flooded and that the water table may be out of the rooting zone for most obligate wetland species.

Adjacent Communities: To the southwest was a band of mature salt cedars, beyond which there was a high, dry terrace with a southern jimmyweed/alkali sacaton community (4056-3-2).

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Baccharis emoryi	Emory’s baccharis	M	8.2
Isocoma pluriflora	southern jimmyweed	M	38.1
Graminoids			
Chloris virgata	feather fingergrass	M	0.3
Distichlis spicata	inland saltgrass	M	0.25
Muhlenbergia asperifolia	alkali muhly	M	0.5
Panicum obtusum	vine mesquite	M	0.955
Schoenoplectus pungens	common threesquare	M	0.075
Setaria leucopila	streambed bristlegrass	M	0.7
Sporobolus airoides	alkali sacaton	M	5.95
Sporobolus contractus	spike dropseed	M	0.5
Sporobolus giganteus	giant dropseed	M	16.4
Sporobolus wrightii	giant sacaton	M	3.85
Forbs			
Ambrosia spp.	ragweed	M	0.1
Heterotheca subaxillaris	camphorweed	M	0.15
Solanum elaeagnifolium	silverleaf nightshade	M	0.885

Ground Cover: Soil: 12.6 Litter&BA: 87.1 Wood: 0.3 Rock: 0

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: No Current Lessee
Monitoring Plot: 4056-3-2

NMNHP Plot Number: 99RM016

Community Type: Alkali Sacaton/Southern Jimmyweed
Sporobolus airoides/Isocoma pluriflora

Survey Date: 9/25/1999

UTM Location (NAD 27): Easting: 558343 Northing: 3710316

Directions to Plot: Take US 70 NE from junction with US 285 about 8 mi. to just before the bridge across the Pecos. Take paved road SW past gravel pits approximately 1.5 mi., turn SE onto dirt road and cross railroad tracks. Continue SE on this road past gravel pits, E and then SE to the river – approximately 1.5 mi. Park and walk to riverbank plot.

Description: The monitoring plot was established on a dry, high terrace in the old floodplain, just up from the riverside bar. Southern jimmyweed was very abundant. Grass cover was moderate at over 35% cover. Alkali sacaton, spike dropseed and giant sacaton were all well represented and robust. Overall herbaceous diversity was low.

Status: Southern jimmyweed and grasses were vigorous. The high density of jimmyweed may indicate past heavy grazing pressure.

Adjacent Communities: Dense salt-cedar-lined edges of riverbank to north, east and far south. Beyond salt cedar, the riverbank was lined with Emory's baccharis/grass community.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Gutierrezia microcephala	threadleaf snakeweed	M	0.95
Isocoma pluriflora	southern jimmyweed	M	25.75
Graminoids			
Setaria leucopila	streambed bristlegrass	M	0.105
Sporobolus airoides	alkali sacaton	M	9.85
Sporobolus contractus	spike dropseed	M	14.25
Sporobolus wrightii	giant sacaton	M	12.5
Forbs			
Heterotheca subaxillaris	camphorweed	M	1.75
Salsola tragus	prickly Russian thistle	M	1.25
Solanum elaeagnifolium	silverleaf nightshade	M	0.05

Ground Cover: Soil: 22.3 Litter&BA: 77.8 Wood: 0 Rock: 0

Pecos River Riparian Monitoring Program Allotment Report 2000

Clint Lynch 4059

Reconnaissance plots:

- 4059-OPP1 Emory's Baccharis/Alkali Sacaton
- 4050-OPP2 Inland Saltgrass Monotype

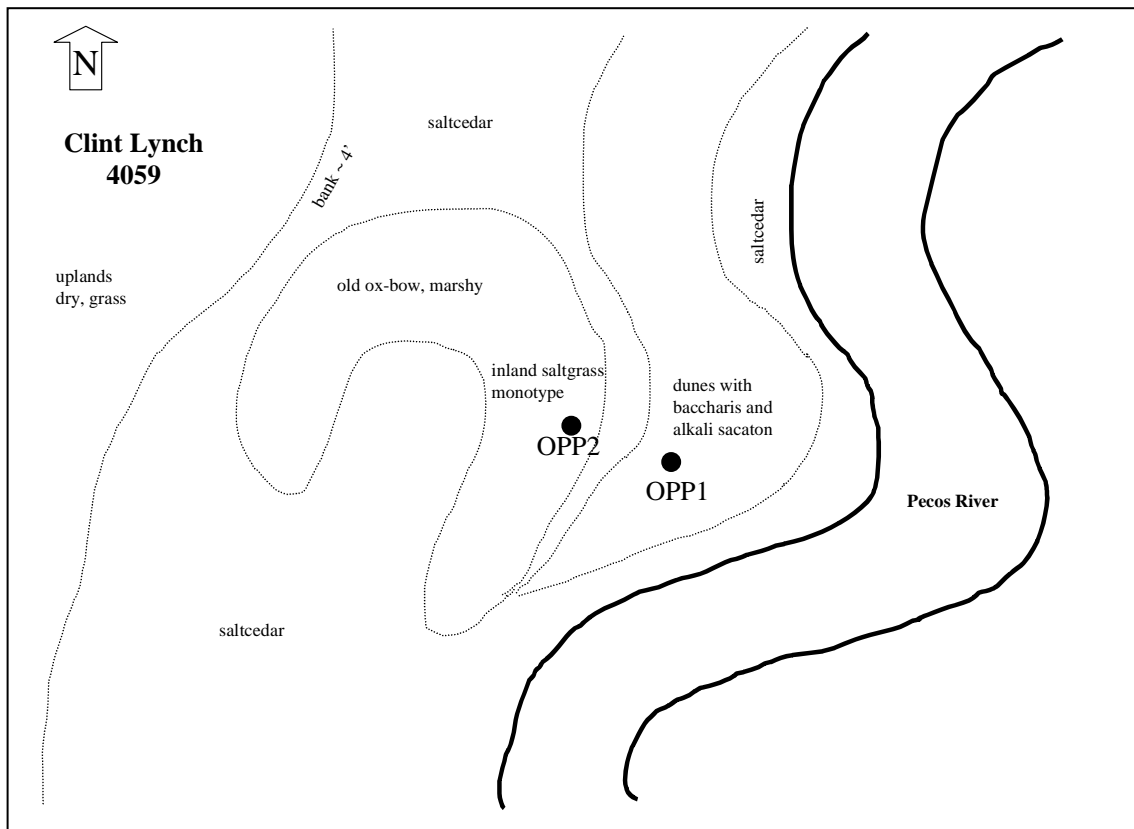


Figure 30. Diagram of reconnaissance plots 4059-OPP1 and 4059-OPP2.

Clint Lynch: 4059

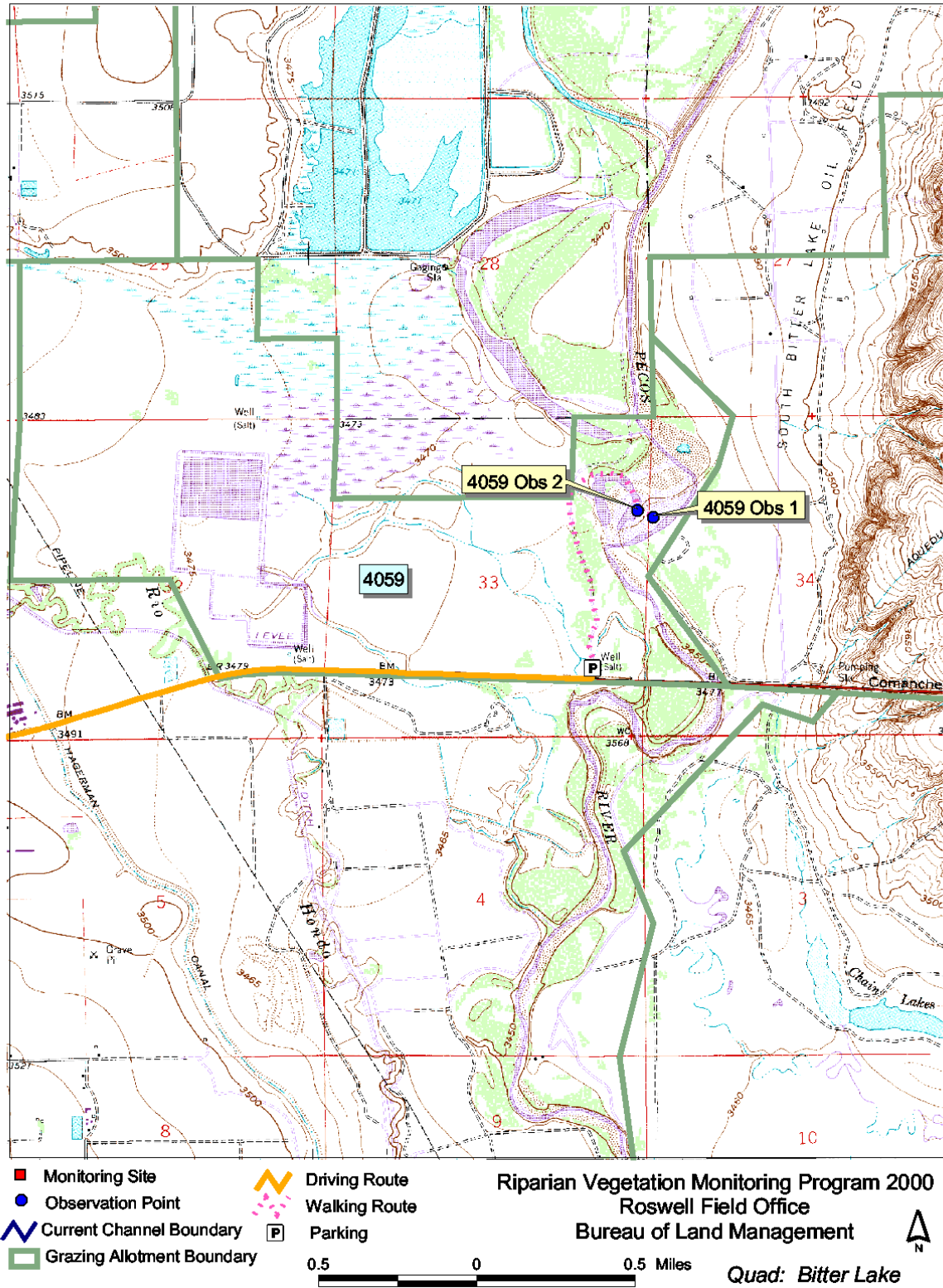


Figure 31. Map of reconnaissance plots on allotment 4059.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Clint Lynch
Reconnaissance Plot: 4059-OPP1

NMNHP Plot Number: 00RM003

Community Type: Emory's Baccharis/Alkali Sacaton
Baccharis emoryi/Sporobolus airoides

Survey Date: 7/10/2000

UTM Location (NAD 27): Easting: 555994 Northing: 3696093

Directions to Plot: From Roswell travel E on US 380 to approximately 0.5 mi. W of the Pecos River and turn N on dirt road. At approx. 0.75 mi. N turn E and walk approx. 0.25 mi. to reconnaissance plot location.

Description: This was a baccharis-dominated community in an old, dry back channel surrounded by high bars. Alkali sacaton was the dominant in the understory; silver beardgrass was scattered throughout.

Status: Salt cedar invasion in this area was significant and being treated by bulldozer to the north of plot. Even though the riparian area is fenced to keep cattle out, there was evidence of light use by cattle.

Adjacent Communities: To the east, west and south were dense salt cedar stands. Salt cedars were being removed by bulldozers in the area to the north. Beyond the salt cedar to the west there was an old channel dominated by inland saltgrass (Plot 4059-OPP2).

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Baccharis emoryi	Emory's baccharis	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Bothriochloa laguroides ssp. torreyana	silver beardgrass	P	
Sporobolus airoides	alkali sacaton	P	

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Clint Lynch
Reconnaissance Plot: 4059-OPP2

NMNHP Plot Number: 00RM001

Community Type: Inland Saltgrass Monotype
Distichlis spicata Monotype

Survey Date: 7/10/2000

UTM Location (NAD 27): Easting: 555913 Northing: 3696130

Directions to Plot: From Roswell travel E on US 380 to approximately 0.5 mi. W of the Pecos River and turn N on dirt road. At approx. 0.75 mi. N turn E and walk approx. 0.25 mi. to reconnaissance plot location.

Description: The reconnaissance plot was established in an old oxbow dominated by inland saltgrass (90%). Inland saltgrass was lush, and species diversity was low. Saltmarsh bulrush was scattered within the plot.

Status: There was significant salt cedar invasion in areas surrounding plot. Salt cedar was being removed with bulldozers to the east and north of the plot.

Adjacent Communities: Baccharis and alkali sacaton occurred along the edge of the oxbow channel to the east, and salt cedar was found to the north, south and west. Within the old oxbow to the north there was more inland saltgrass, and a pool edged by threesquare bullrush. This allotment is adjacent to FWS Bitter Lake Refuge.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Allenrolfea occidentalis	pickleweed	P	
Baccharis emoryi	Emory's baccharis	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Distichlis spicata	inland saltgrass	P	90
Schoenoplectus maritimus	saltmarsh bulrush	P	1
Forbs			
Limonium limbatum	transpecos sealavender	P	

Pecos River Riparian Monitoring Program Allotment Report 2000

**Joe Durand
4072**

Reconnaissance plots:

4072-OPP1 Emory's Baccharis/Inland Saltgrass, Southern Jimmyweed phase

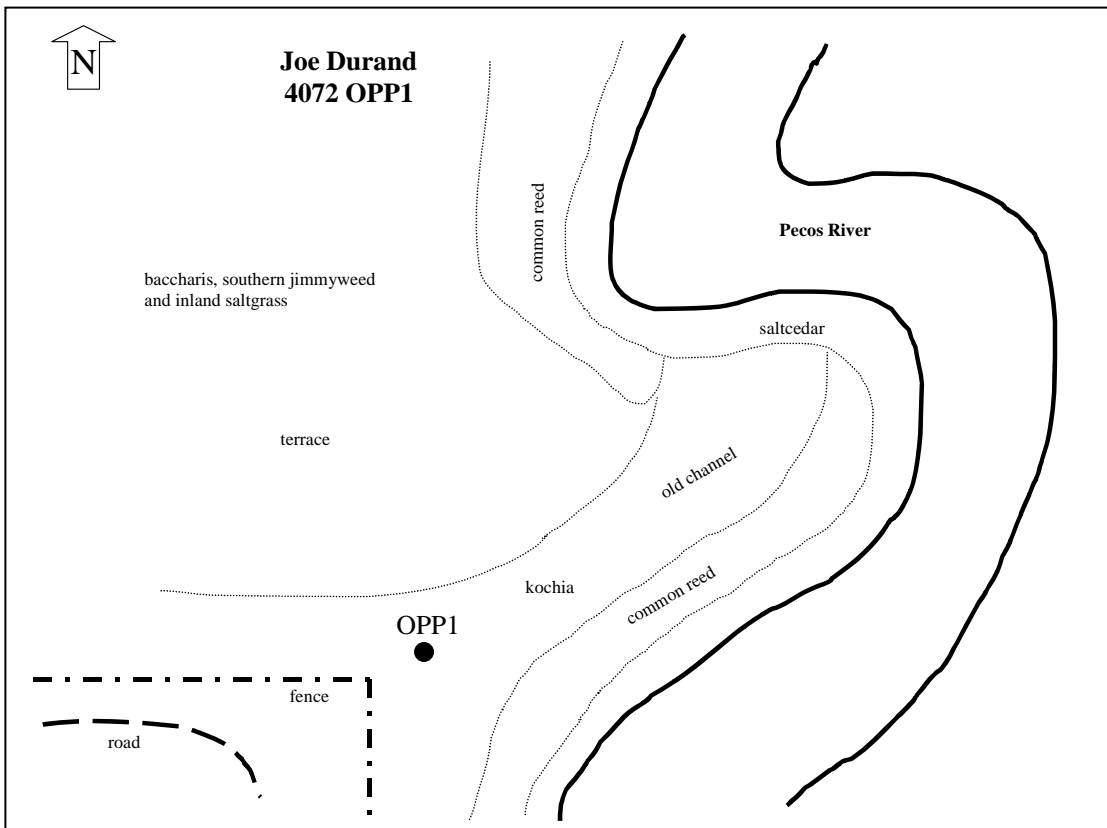


Figure 32. Diagram of reconnaissance plot 4072-OPP1.

Joe Durand: 4072

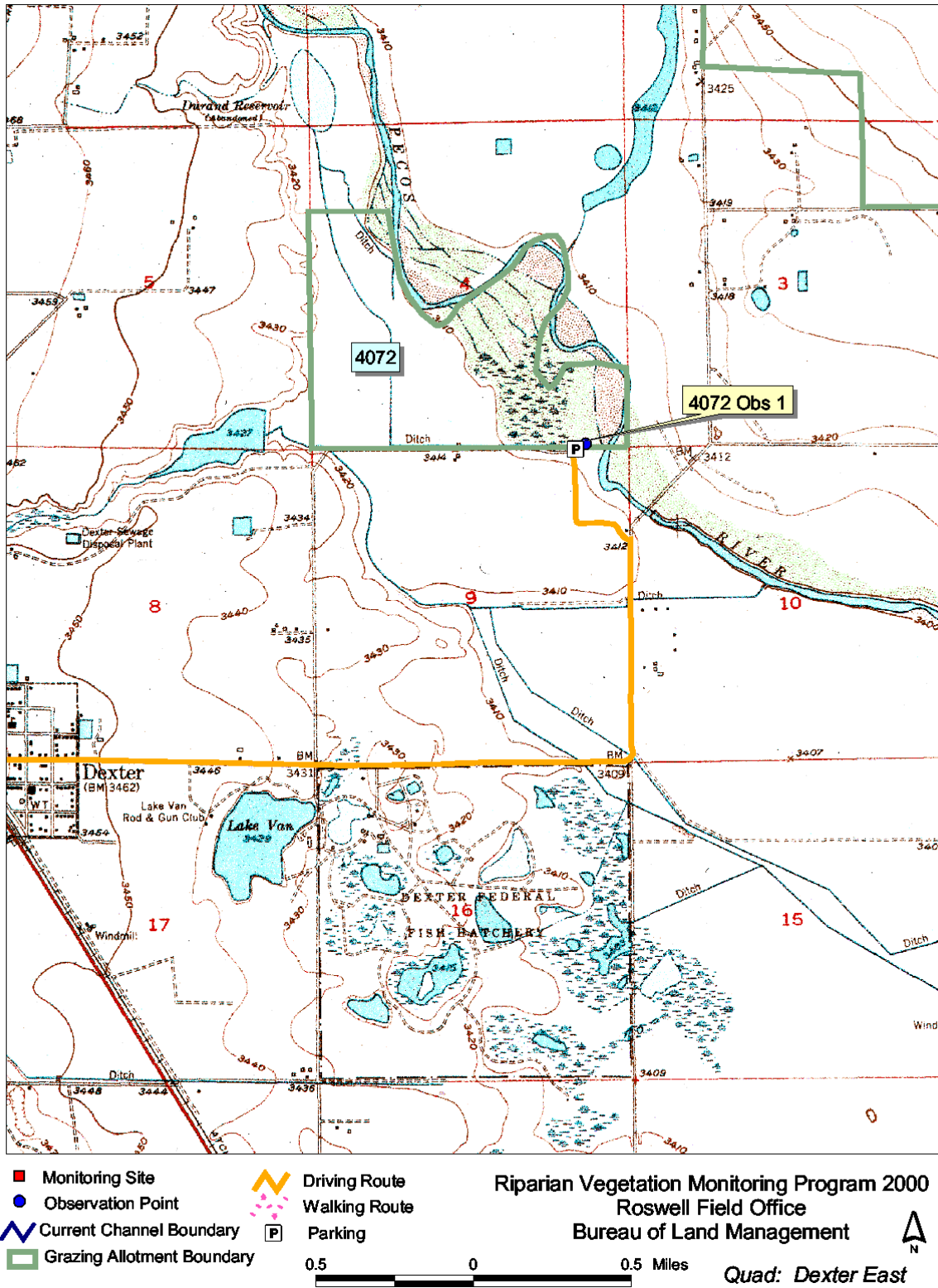


Figure 33. Map of reconnaissance plot on allotment 4072.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Joe Durand
Reconnaissance Plot: 4072-OPP1

NMNHP Plot Number: 00RM008

Community Type: Emory's Baccharis/Inland Saltgrass, Southern Jimmyweed phase
Baccharis emoryi/Distichlis spicata, Isocoma pluriflora phase

Survey Date: 7/30/2000

UTM Location (NAD 27): Easting: 561662 Northing: 3674803

Directions to Plot: Take SR 190 E 1.75 mi. from Dexter to junction with paved road, take N fork 0.75 mi. Just before the bridge across Pecos turn W onto private road. Take private road W, then N for a total of 0.5 mi. Park where road makes 90 degree turn to the W and walk E and N to plot

Description: The reconnaissance plot was established on an old terrace dominated by southern jimmyweed and inland saltgrass. Baccharis and honey mesquite were scattered throughout the terrace, and edges of the terrace were lined with kochia.

Status: Terrace may have been a field in the past, it is currently fenced and unused.

Adjacent Communities: Dense stand of salt cedar along riverbank, some lower areas along bank have baccharis, alkali sacaton, inland saltgrass and common reed. On old sandbar to the inland edge of the salt cedar was a common reed monotype. This graded into a more open stand of common reed with a dense understory of inland saltgrass and scattered baccharis.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Baccharis emoryi	Emory's baccharis	P	
Isocoma pluriflora	southern jimmyweed	P	
Prosopis glandulosa	honey mesquite	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Bouteloua barbata	sixweeks grama	P	
Distichlis spicata	inland saltgrass	P	
Panicum virgatum	switchgrass	P	
Phragmites australis	common reed	P	
Setaria leucopila	streambed bristlegrass	P	
Sporobolus airoides	alkali sacaton	P	
Forbs			
Helianthus annuus	common sunflower	P	
Heliotropium curassavicum	salt heliotrope	P	
Kochia scoparia	common kochia	P	
Malva neglecta	common mallow	P	
Salsola tragus	prickly Russian thistle	P	
Solanum elaeagnifolium	silverleaf nightshade	P	
Solanum rostratum	buffalobur nightshade	P	
Sphaeralcea spp.	globemallow	P	

Pecos River Riparian Monitoring Program Allotment Report 2000

**James Jenkins
4089**

Reconnaissance plots:

4072-OPP1 Fallow Field

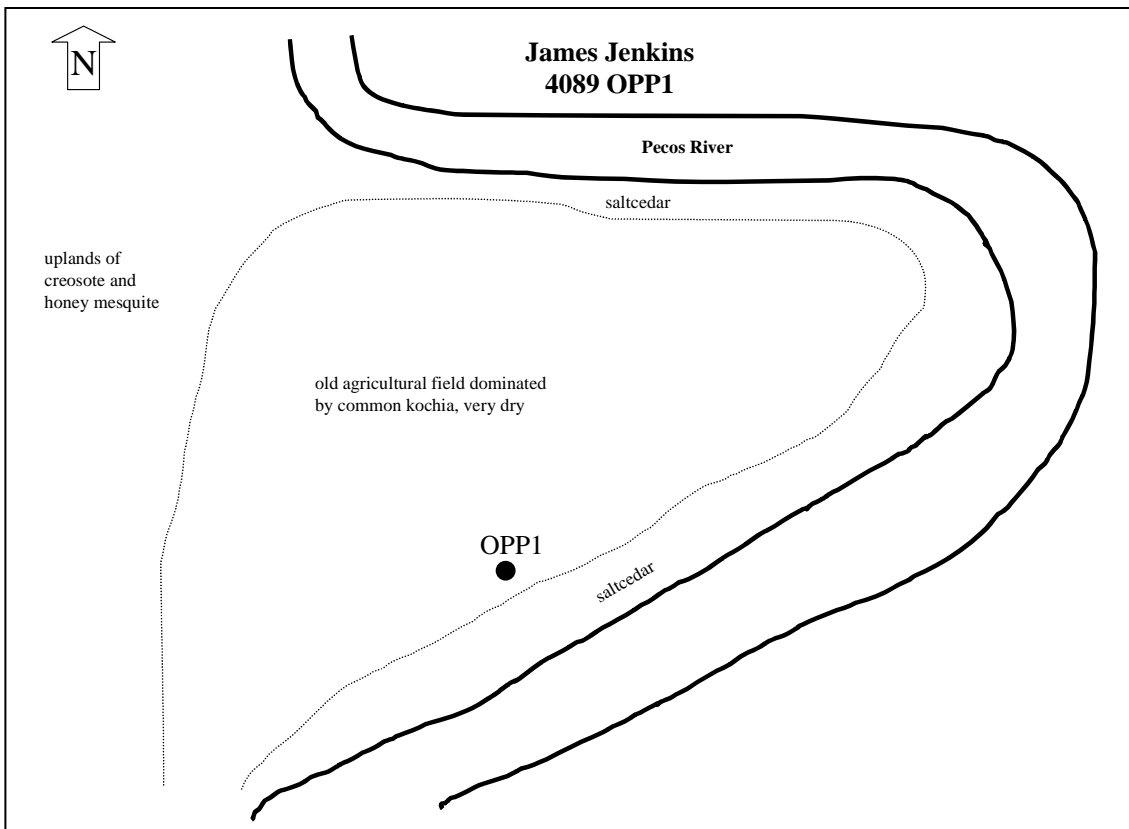


Figure 34. Diagram of reconnaissance plot 4089-OPP1.

James Jenkins: 4089

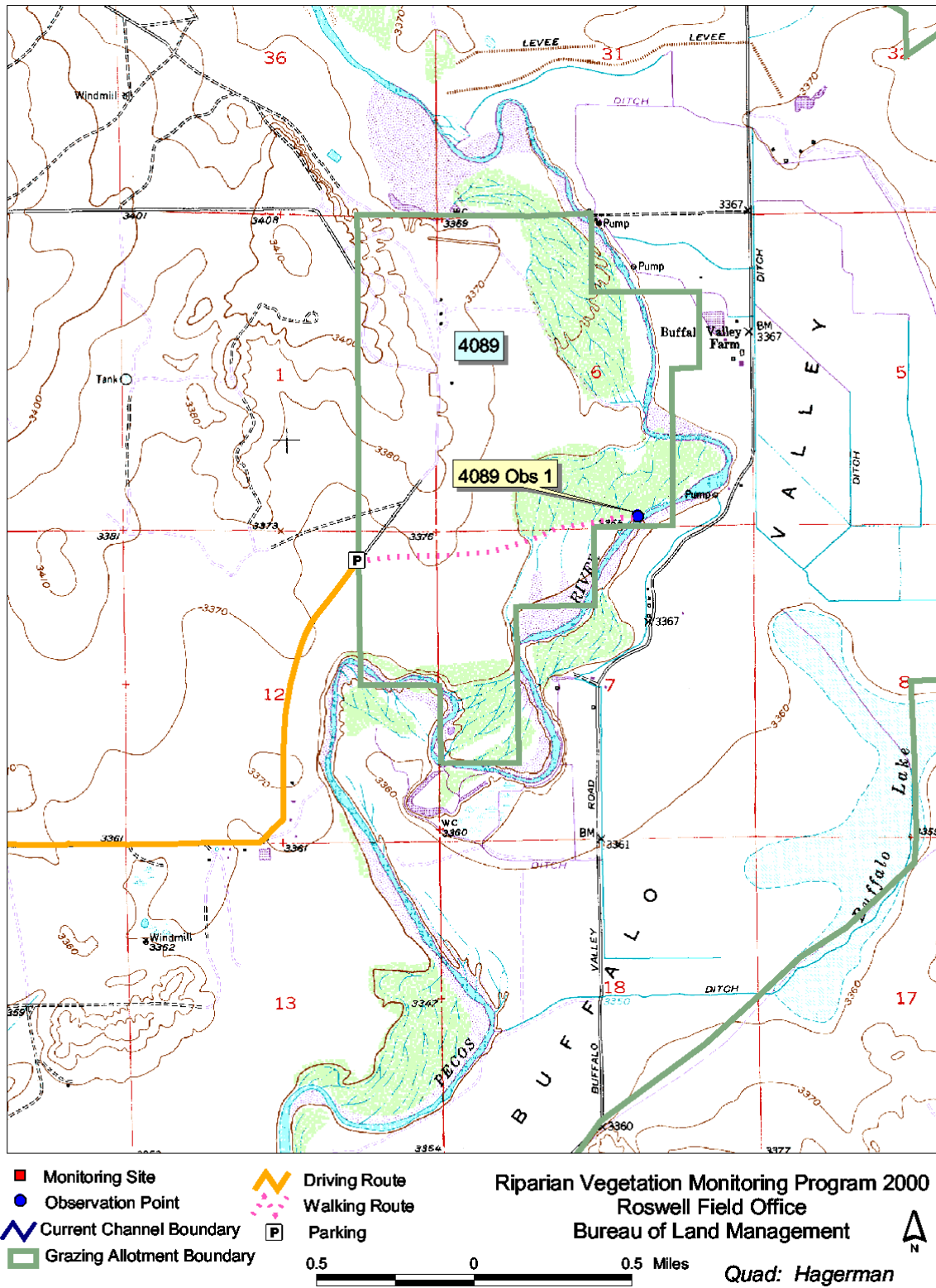


Figure 35. Map of reconnaissance plot on allotment 4089.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: James Jenkins
Reconnaissance Plot: 4089-OPP1**

NMNHP Plot Number: 00RM007

Community Type: Fallow Field

Survey Date: 7/30/2000

UTM Location (NAD 27): Easting: 567934

Northing: 3655544

Directions to Plot: 1/2 mi N of Lake Arthur, take dirt county road E to Jenkins ranch, approx. 4 mi. On ranch behind barn is old very overgrown road heading N. After approx.1 mi., the road dead ends at a fence. Park and walk ENE approx.1 mi. to plot.

Description: The reconnaissance plot was located on the boundary between fallow field and the riverbank. The fallow field was very dry and cover is sparse. Kochia was the dominant along with Russian thistle. Alkali sacaton and sixweeks grama were scattered about the terrace. The riverbank is dominated by salt cedar with dense kochia debris in the understory.

Status: Cattle were currently on the allotment, but there was little forage in the old field, and they are grazing mostly in the surrounding uplands.

Adjacent Communities: Uplands to the west of the site were dominated by creosotebush (*Larrea tridentata*) and honey mesquite, with and understory of scattered grasses.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Prosopis glandulosa	honey mesquite	P	
Tamarix ramosissima	Salt cedar	P	
Graminoids			
Bouteloua barbata	sixweeks grama	P	
Setaria leucopila	streambed bristlegrass	P	
Sporobolus airoides	alkali sacaton	P	
Sporobolus cryptandrus	sand dropseed	P	
Sporobolus wrightii	giant sacaton	P	
Forbs			
Amaranthus spp.	amaranth	P	
Kochia scoparia	common kochia	P	
Lepidium alyssoides	mesa pepperwort	P	
Nyctaginaceae		P	
Proboscidea spp.	devilsclaw	P	
Salsola tragus	prickly Russian thistle	P	
Solanum elaeagnifolium	silverleaf nightshade	P	
Solanum rostratum	buffalobur nightshade	P	
Verbesina encelioides	golden crownbeard	P	

Pecos River Riparian Monitoring Program Allotment Report 2000

Mark Cooper
5007

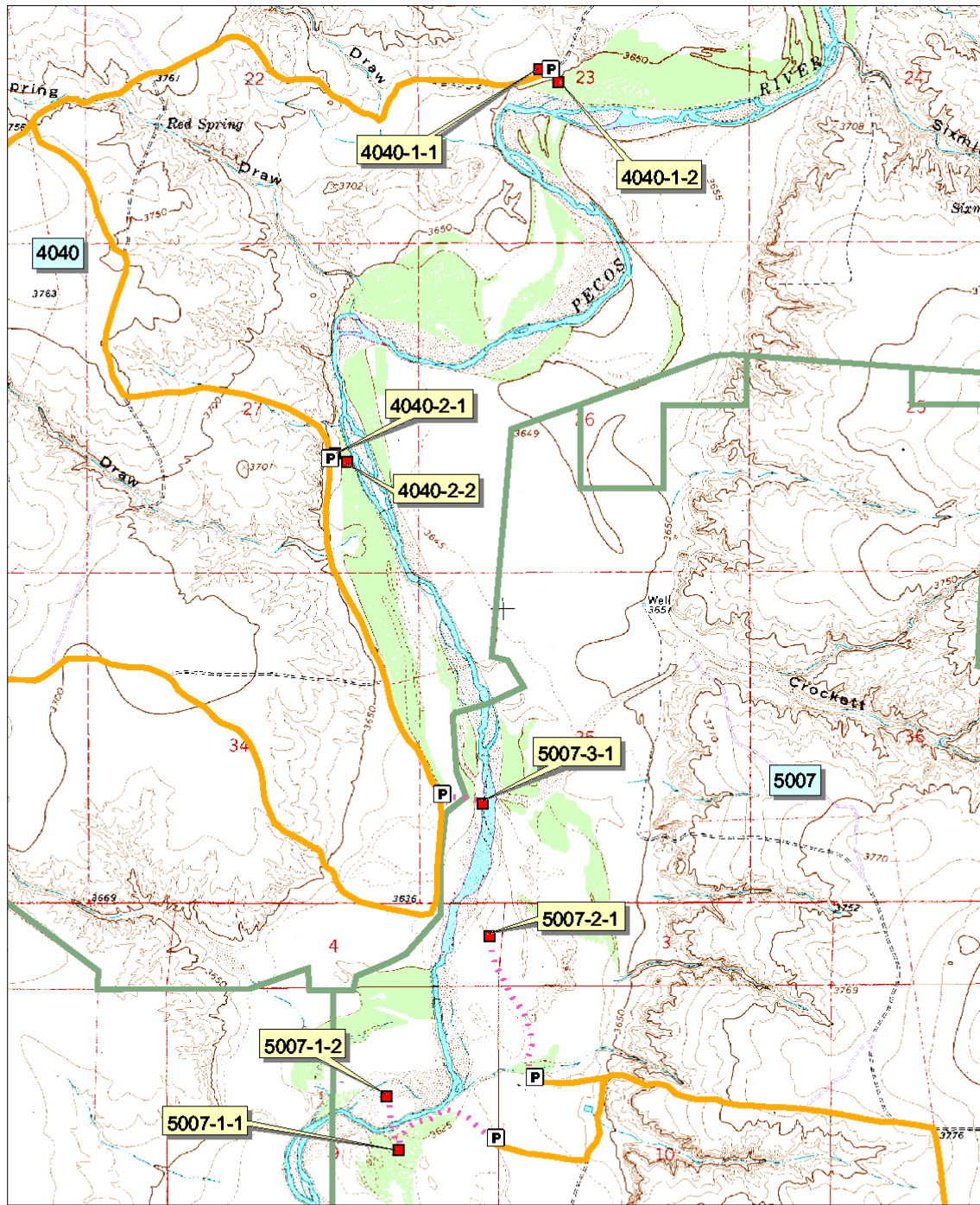
Monitoring Plots:

5007-1-1	Emory's Baccharis/Alkali Sacaton
5007-1-2	Coyote Willow/Sparse
5007-2-1	Salt Cedar/Alkali Sacaton
5007-3-1	Emory's Baccharis/Alkali Muhly



Figure 36. View north from monitoring plot 5007-2-1.

Larry Benedict: 4040 and Mark Cooper: 5007



Monitoring Site	Driving Route	Riparian Vegetation Monitoring Program 2000 Roswell Field Office Bureau of Land Management	 N
Observation Point	Walking Route		
Current Channel Boundary	Parking		
Grazing Allotment Boundary		<i>Quad: Cottonwood Draw</i>	

Figure 37. Map of monitoring plots on allotment 5007.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Mark Cooper
Monitoring Plot: 5007-1-1

NMNHP Plot Number: 00RM015

Community Type: Emory's Baccharis/Alkali Sacaton
Baccharis emoryi/Sporobolus airoides

Survey Date: 7/14/2000

UTM Location (NAD 27): Easting: 565031 Northing: 3741049

Directions to Plot: From US 285 take US 70 E for approx. 14.5 mi; turn N on road with old schoolhouse at NW corner of intersection (approx. 3.25 mi. W of bridge over Pecos). At approx. 10 mi., road bends to W. After approx. 1 mi. take road N at fork; after 1 mile take NE road at fork, road will bend N again after approx. 1 mi. Road continues N for 4 mi. Take road E at fork down to river floodplain and park at oil pad. Walk W about 0.5 mi. to plot on riverside terrace.

Description: Monitoring plot was on a baccharis- and alkali-sacaton-dominated riverside terrace which drops steeply down to the river channel about 30 meters from the plot. Emory's baccharis was well represented, while snakeweed, salt cedar and honey mesquite were all common associates. Alkali sacaton was the dominant graminoid, inland saltgrass was well represented, and sand dropseed and sideoats grama were common associates. Overall the graminoid layer was abundant and diverse. Old logs were scattered about the site, indicating it may have been open woodland in the past.

Status: Cattle were present on the site, and dung and trails were common. Grasses were moderately cropped. Significant invasion by exotic salt cedar was occurring along with shrub encroachment by honey mesquite and snakeweed. Although there were mature cottonwoods in the area, there was no evidence of cottonwood reproduction on the site.

Adjacent Communities: Sandy soils to the south and west supported sparse cottonwood woodlands. These stands had very low tree cover, a few baccharis, salt cedar and honey mesquite shrubs, and very low graminoid cover made up of purple threeawn and alkali sacaton. There were some dense bands of salt cedar to the east and west of the site. Further to the east were honey mesquite/alkali sacaton uplands.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Shrubs							
Baccharis emoryi	Emory's baccharis	M	6		8.15	0	1.05
Gutierrezia sarothrae	broom snakeweed	M	2.95		0	0	0.95
Isocoma pluriflora	southern jimmyweed	M	0.55		0	0	0.05
Prosopis glandulosa	honey mesquite	M	1.6		0.25	0	0.1
Tamarix ramosissima	salt cedar	M	1.975		0.55	0.05	0.35
Graminoids							
Bouteloua curtipendula	sideoats grama	M	1.325	21			
Buchloe dactyloides	buffalograss	M	0.5	5			
Distichlis spicata	inland saltgrass	M	0.46	12.5			
Sporobolus airoides	alkali sacaton	M	21.45	21.111			
Sporobolus cryptandrus	sand dropseed	M	2.575	17			
Sporobolus wrightii	giant sacaton	M	0.25				

Forbs

Ambrosia spp.	ragweed	M	3.125
Gaura coccinea	scarlet beeblossom	M	0.3
Senecio riddellii	Riddell's ragwort	M	0.175
Solanum elaeagnifolium	silverleaf nightshade	M	0.6

Ground Cover: Soil: 29.3 Litter: 46.3 BA: 20.0 Dung: 0.7 Wood: 3.7

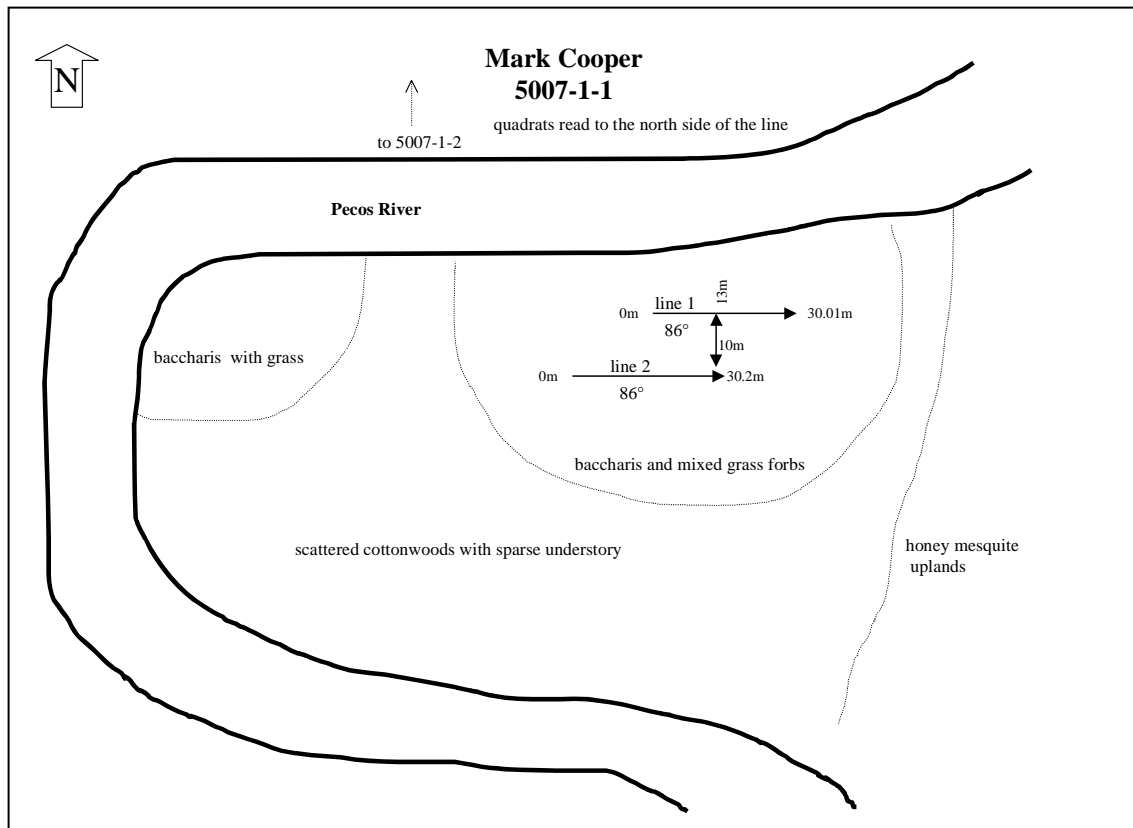


Figure 38. Diagram of monitoring plot 5007-1-1.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Mark Cooper
Monitoring Plot: 5007-1-2

NMNHP Plot Number: 00RM016

Community Type: Coyote Willow/Sparse
Salix exigua /Sparse

Survey Date: 7/14/2000

UTM Location (NAD 27): Easting: 564971 Northing: 3741313

Directions to Plot: From US 285 take US 70 E for approx. 14.5 mi.; turn N on road with old schoolhouse at NW corner of intersection (approx. 3.25 mi. W of bridge over Pecos). At approx. 10 mi., road bends to W. After approx. 1 mi. take road N at fork; after 1 mile take NE road at fork, road will bend N again after approx. 1 mi. Road continues N for 4 mi. Take road E at fork down to river floodplain and park at oil pad. Walk W about 0.5 mi. and cross the river to plot.

Description: The monitoring plot was located on sandy soil in an old back channel. An open stand coyote willow with and understory of scattered vegetation characterized the site. Alkali sacaton and purple threeawn were present but poorly represented with all other grasses scarce. Ragweed was well represented, while other forbs were scarce but diverse.

Status: Willow community was a small patch surrounded by other communities. Coyote willow has been heavily browsed and averaged less than one meter in height. Ragweed abundance indicated significant disturbance has occurred at the site.

Adjacent Communities: To the southwest, the willow community graded into a baccharis grass community. To the east and south were sandy hillocks with a sparse cottonwood woodlands. The understory on these hillocks was dominated by exotics (salt cedar, Russian olive, and honey mesquite). To the northwest was a cottonwood/baccharis community, and to the west was a salt cedar thicket. To the south beyond the cottonwood woodlands was a dense, monotypic coyote willow community along the riverbank.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Shrubs							
Baccharis emoryi	Emory's baccharis	M	0.35		1.05	0	0.1
Gutierrezia sarothrae	broom snakeweed	M	0.05		0	0	
Prosopis glandulosa	honey mesquite	M	0.925		0.15	0	0.1
Salix exigua	coyote willow	M	3.5		1.8	0	0.7
Tamarix ramosissima	salt cedar	P					
Graminoids							
Aristida purpurea	purple threeawn	M	2.125	15.556			
Bothriochloa laguroides ssp. torreyana	silver beardgrass	M	0.85	20			
Bouteloua curtipendula	sideoats grama	M	0.1	1			
Cenchrus spinifex	sandbur	M	0.35	12.5			
Sporobolus airoides	alkali sacaton	M	4.925	16			
Sporobolus cryptandrus	sand dropseed	M	0.625	13			
Sporobolus giganteus	giant dropseed	M	0.2	35			

Buchloe dactyloides	buffalograss	P	
Muhlenbergia asperifolia	alkali muhly	P	
Forbs			
Ambrosia spp.	ragweed	M	5.65
Asclepias spp.	milkweed	M	0.1
Dalea lanata var. lanata	woolly prairieclover	M	0.2
Gaura coccinea	scarlet beeblossom	M	0.05
Melilotus officinalis	yellow sweetclover	M	0.175
Oenothera pallida	pale eveningprimrose	M	0.925
Thelesperma megapotamicum	Hopi tea greenthread	M	0.375
Chamaesyce albomarginata	whitemargin sandmat	P	
Heliotropium convolvulaceum	phlox heliotrope	P	

Ground Cover: Soil: 58.0 Litter: 34.7 BA: 6.7 Dung: 0 Wood: 0.7

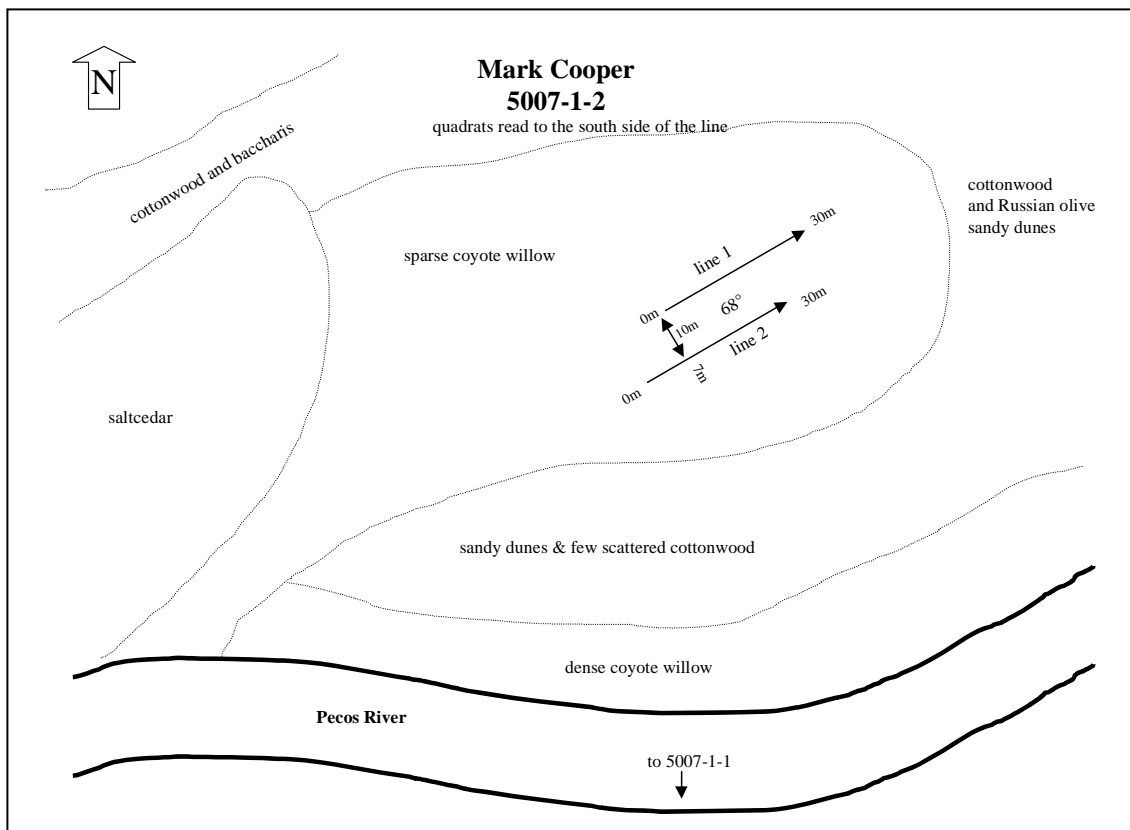


Figure 39. Diagram of monitoring plot 5007-1-2.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Mark Cooper
Monitoring Plot: 5007-2-1

NMNHP Number: 00RM017

Community Type: Salt Cedar/Alkali Sacaton
Tamarix ramosissima/ Sporobolus airoides

Survey Date: 7/15/2000

UTM Location (NAD 27): Easting: 565472 Northing: 3742095

Directions to Plot: From US 285 take US 70 E for approx. 14.5 mi.; turn N on road with old schoolhouse at NW corner of intersection (approx. 3.25 mi. W of bridge over Pecos). At approx. 10 mi, road bends to W. After approx. 1 mi. take road N at fork; after 1 mile take NE road at fork, road will bend N again after approx. 1 mi. Road continues N for 4 mi. Take road E at fork down to river floodplain and park at oil pad. Walk approximately 1 mi. N to plot.

Description: Salt cedar and alkali sacaton dominated this sandy riverside terrace. Mature cottonwoods were scattered about the edges of the terrace. Salt cedars were well represented and of small stature, averaging four feet in height. There were many dead stems, and the site may have burned in the past. Honey mesquite was well represented. Alkali sacaton was the dominant grass, with other grasses scarce.

Status: Grass showed evidence of grazing, alkali sacaton was only 14 cm tall on average. Many cattle were present on the site during survey, and dung and trails were common.

Adjacent Communities: Mature cottonwoods approximately 40 feet in height were scattered throughout the terrace with denser bands to the north and south of plot. To the east on the other side of an old channel was a cottonwood/sparse community with a weedy understory dominated by purple threeawn. To the north was a salt cedar/Emory's baccharis community. Honey mesquite was the major shrub in the uplands to the east and was common on the upper terraces of the river floodplain.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Shrubs							
Prosopis glandulosa	honey mesquite	M	5.3		0.6	0	0.35
Tamarix ramosissima	salt cedar	M	8.375		4.85	0.25	1.05
Allenrolfea occidentalis	pickleweed	P					
Opuntia phaeacantha	tulip pricklypear	P					
Graminoids							
Panicum obtusum	vine mesquite	M	0.025	10			
Schismus arabicus	Mediterranean grass	M	0.53	1			
Sporobolus airoides	alkali sacaton	M	36.2	14.95			
Buchloe dactyloides	buffalograss	P					
Forbs							
Ambrosia spp.	ragweed	M	0.55				
Chamaesyce albomarginata	whitemargin sandmat	M	0.085				
Portulaca oleracea	common purslane	M	0.525				
Solanum elaeagnifolium	silverleaf nightshade	M	0.125				
Palafoxia sphacelata	othake	P					

Ground Cover: Soil: 32.0 Litter: 46.7 BA: 20.7 Dung: 0.7 Wood: 0

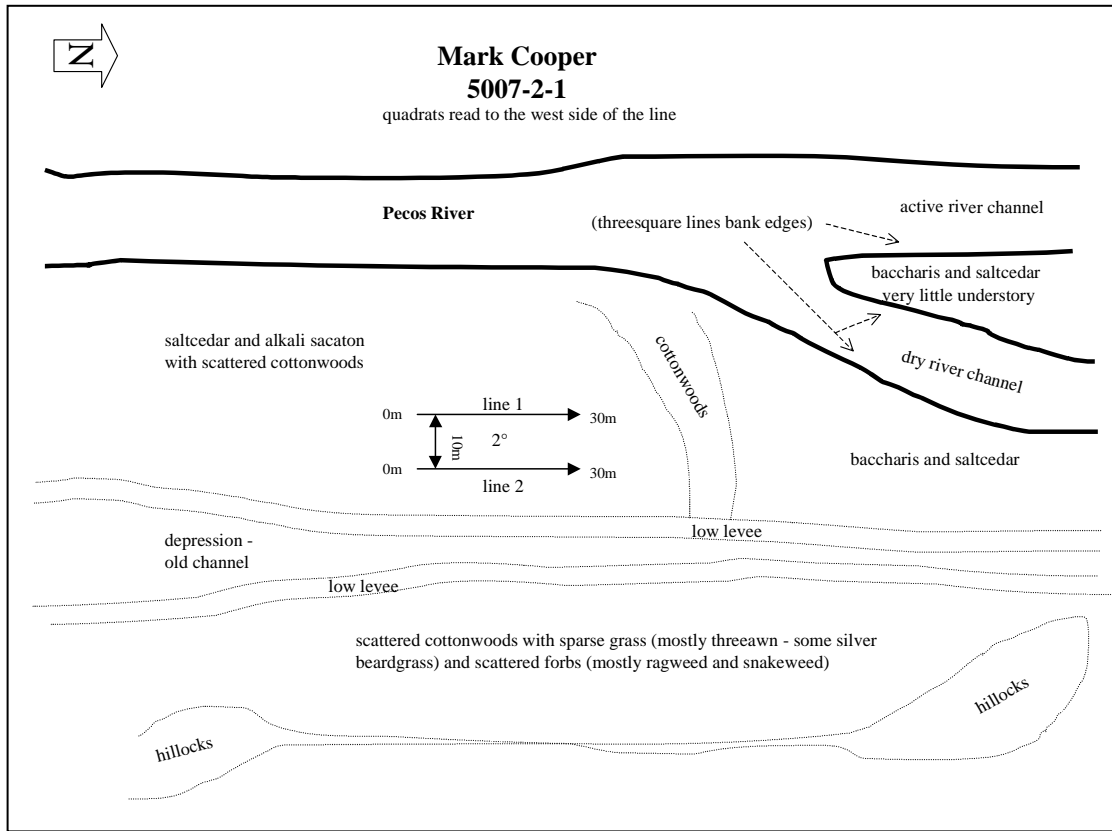


Figure 40. Diagram of monitoring plot 5007-2-1.

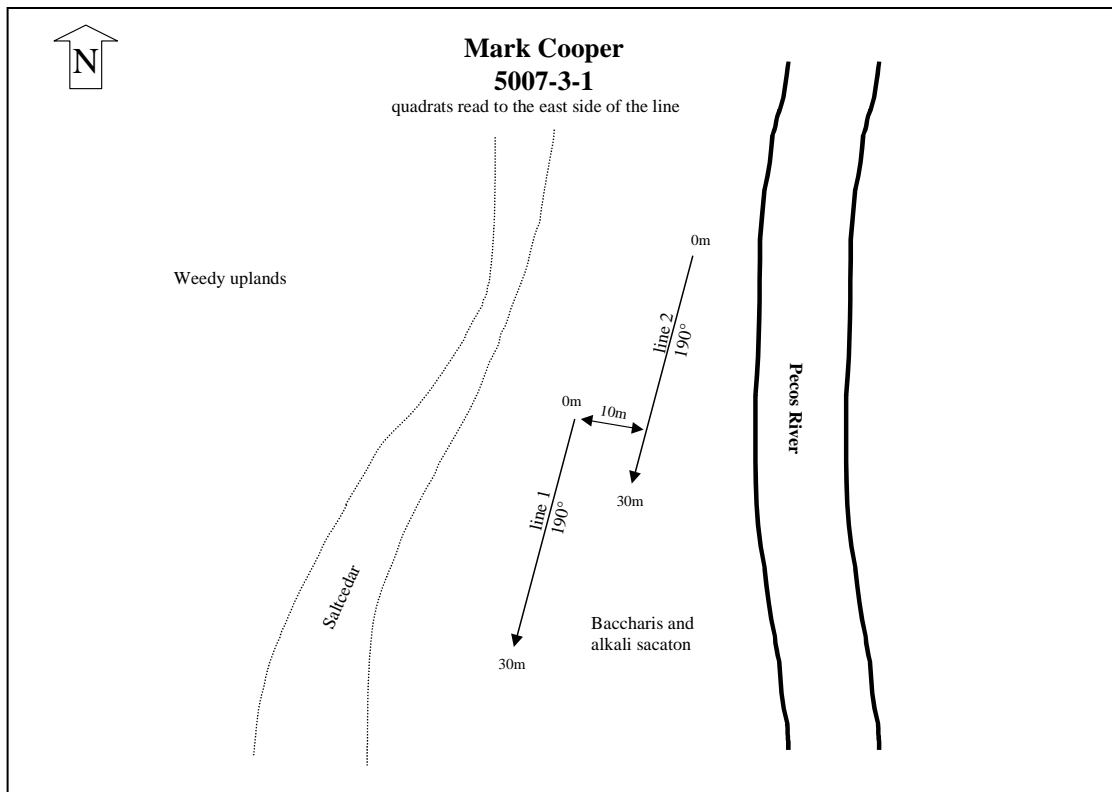


Figure 41. Diagram of monitoring plot 5007-3-1.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Mark Cooper
Monitoring Plot: 5007-3-1

NMNHP Plot Number: 99RM005

Community Type: Emory's Baccharis/Alkali Muhly
Baccharis emoryi/Muhlenbergia asperifolia

Survey Date: 9/27/1999

UTM Location (NAD 27): Easting: 565440 Northing: 3742746

Directions to Plot: Take US 285 approx. 28 mi. N of US 70 junction, and turn E on CR 44 (Dona Ana Rd.) At approx. 7.8 mi., take NE road at fork. Continue for approx. 5 mi., and take SE road towards current Benedict ranch (approx. 1.2 mi.) take road S just before ranch and drive approx. 0.5 mi. then take road E for 2 mi. to junction with main N/S road. Drive approximately 2 mi. S, then take road E, at approx. 2.2 mi. road will fork, take SE fork down to river floodplain and park at oil pad. Walk 0.5 mi. NE to plot.

Description: Dense baccharis (43.2%) dominated this riverside terrace within the active floodplain. Alkali muhly was the dominant grass, with alkali sacaton well represented in the diverse graminoid layer. Soil was sandy.

Status: Cattle were present on site and grasses and coyote willow show evidence of grazing.

Adjacent Communities: The upper terrace to the west was dominated by a weedy and sparse community, with scattered salt cedars.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Baccharis emoryi	Emory's baccharis	M	43.2
Salix exigua	coyote willow	M	0.7
Tamarix ramosissima	salt cedar	M	0.2
Graminoids			
Bothriochloa laguroides ssp. torreyana	silver beardgrass	M	1.8
Distichlis spicata	inland saltgrass	M	0.2
Eleocharis rostellata	beaked spikerush	M	0.05
Elymus canadensis	Canada wildrye	M	0.6
Muhlenbergia asperifolia	alkali muhly	M	13.2
Schoenoplectus pungens	common threesquare	M	0.005
Setaria leucopila	streambed bristlegrass	M	0.05
Sporobolus airoides	alkali sacaton	M	8.2
Forbs			
Ambrosia spp.	ragweed	M	0.2
Melilotus officinalis	yellow sweetclover	M	2.05

Ground Cover: Soil: 39.7 Litter&BA: 56.7 Wood: 3.6 Rock: 0

Pecos River Riparian Monitoring Program Allotment Report 2000

**Tom Cooper
5020**

Monitoring Plots:

5020-1-1	Emory's Baccharis/Common Threesquare
5020-1-2	Emory's Baccharis/Alkali Sacaton
5020-2-1	Honey Mesquite/Alkali Sacaton
5020-3-1	Emory's Baccharis/Alkali Sacaton



Figure 42. Emory's baccharis/Common threesquare riverbank community of 5020-1-1.

Tom Cooper: 5020

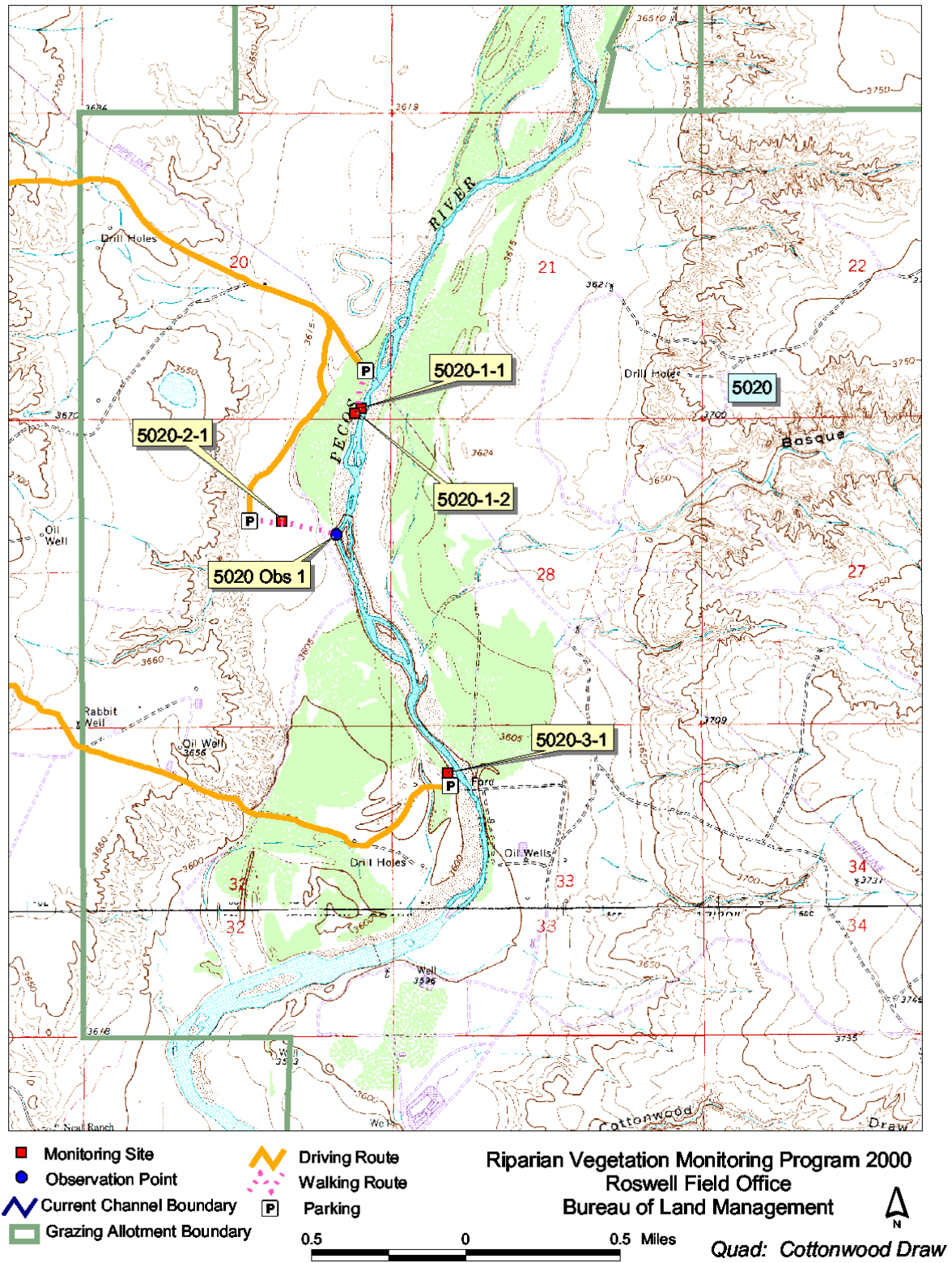


Figure 43. Map of allotment 5020.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Tom Cooper
Monitoring Plot: 5020-1-1**

NMNHP Plot Number: 99RM006

Community Type: Emory's Baccharis/Common Threesquare
Baccharis emoryi/Schoenoplectus pungens

Survey Date: 9/27/1999

UTM Location (NAD 27): Easting: 563742 Northing: 3737071

Directions to Plot: Take US 285 approx. 25.5 mi. N of US 70 junction, and turn E onto Cottonwood Road (CR 26). CR 26 will go straight E for approx. 6.5 mi., then follow main road as it heads N for 0.5 mi., then E for 2 mi. then SE for approx. 2.25 mi., and then due E again for 2.75 mi. When main road veers SE, take smaller side road off to the NE, follow this road as it heads due N 1.5 mi., then NE for 0.5 mi. At fork, take road to the SE approx. 2 mi. to the rivers edge. Park and walk south approximately 200 meters along riverbank to plot.

Description: The monitoring plot was established on riverbank terrace dominated by Emory's baccharis and common threesquare. Emory's baccharis was well represented, while other shrubs were scarce. Graminoid cover exceeded 40% and was dominated by common threesquare bullrush and alkali muhly. Soil was sandy.

Status: Some evidence of grazing, but overall stand condition was good..

Adjacent Communities: On the terrace directly west of the plot was an Emory's baccharis/alkali sacaton community (5020-1-2), and a few scattered mature cottonwoods on a high older terrace beyond that.

Species Name	Common Name	\Source	Avg % Cover
Shrubs			
Baccharis emoryi	Emory's baccharis	M	27.75
Salix exigua	coyote willow	M	0.025
Tamarix ramosissima	salt cedar	M	
Graminoids			
Echinochloa crus-galli	barnyardgrass	M	0.45
Eleocharis rostellata	beaked spikerush	M	2.375
Leptochloa dubia	green sprangletop	M	0.05
Muhlenbergia asperifolia	alkali muhly	M	10.15
Schoenoplectus pungens	common threesquare	M	23.775
Sporobolus airoides	alkali sacaton	M	0.6
Forbs			
Equisetum laevigatum	smooth horsetail	M	0.04
Typha latifolia	broadleaf cattail	M	0.525

Ground Cover: Soil: 71.3 Litter&BA: 28.7 Wood: 0 Rock: 0

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Tom Cooper
Monitoring Plot: 5020-1-2

NMNHP Plot Number: 99RM007

Community Type: Emory's Baccharis/Alkali Sacaton
Baccharis emoryi/Sporobolus airoides

Survey Date: 9/27/1999

UTM Location (NAD 27): Easting: 563709 Northing: 3737046

Directions to Plot: Take US 285 approx. 25.5 mi. N of US 70 junction, and turn E onto Cottonwood Road (CR 26). CR 26 will go straight E for approximately 6.5 mi., then follow main road as it heads N for 0.5 mi., then E for 2 mi. then SE for approx. 2.25 mi., and then due E again for 2.75 mi. When main road veers SE, take smaller side road off to the NE, follow this road as it heads due N 1.5 mi., then NE for 0.5 mi. At fork take road to the SE approx. 2 mi. to the rivers edge. Park and walk S approx. 200 m along riverbank to plot.

Description: The monitoring plot was established on the relatively dry second terrace up from the river channel. In this shrubland, Emory's baccharis was well represented and broom snakeweed was common. Salt cedar and honey mesquite were scattered and sparse. In the diverse but sparse graminoid layer, alkali sacaton was well represented and the dominant. Forbs were weedy and dominated by ragweed. Soils were sandy and dry.

Status: This terrace was dryer and weedier than the one next to the river (5020-1-1). Several invasive species were present.

Adjacent Communities: To the west was a higher, dry old terrace with very scattered mature cottonwoods. To the east was a riverside terrace dominated by a more mesic Emory's baccharis/common threesquare community (5020-1-1).

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Baccharis emoryi	Emory's baccharis	M	16.75
Gutierrezia sarothrae	broom snakeweed	M	2.25
Tamarix ramosissima	salt cedar	M	0.25
Prosopis glandulosa	honey mesquite	P	0.01
Graminoids			
Aristida divaricata	poverty threeawn	M	0.025
Aristida purpurea	purple threeawn	M	0.15
Bothriochloa laguroides ssp. torreyana	silver beardgrass	M	1.05
Cenchrus spinifex	sandbur	M	0.4
Cyperus esculentus	chufa flatsedge	M	0.01
Panicum obtusum	vine mesquite	M	1.2
Schoenoplectus pungens	common threesquare	M	0.05
Setaria leucopila	streambed bristlegrass	M	0.025
Sporobolus airoides	alkali sacaton	M	15.6
Sporobolus contractus	spike dropseed	M	1.425
Forbs			

Ambrosia spp.	ragweed	M	6.75
Chamaesyce revoluta	threadstem sandmat	M	0.1
Chenopodium leptophyllum	narrowleaf goosefoot	M	0.15
Heterotheca subaxillaris	camphorweed	M	0.4
Oenothera pallida	pale eveningprimrose	M	0.15

Ground Cover: Soil: 58.6 Litter&BA: 39.0 Wood: 2.5 Rock: 0

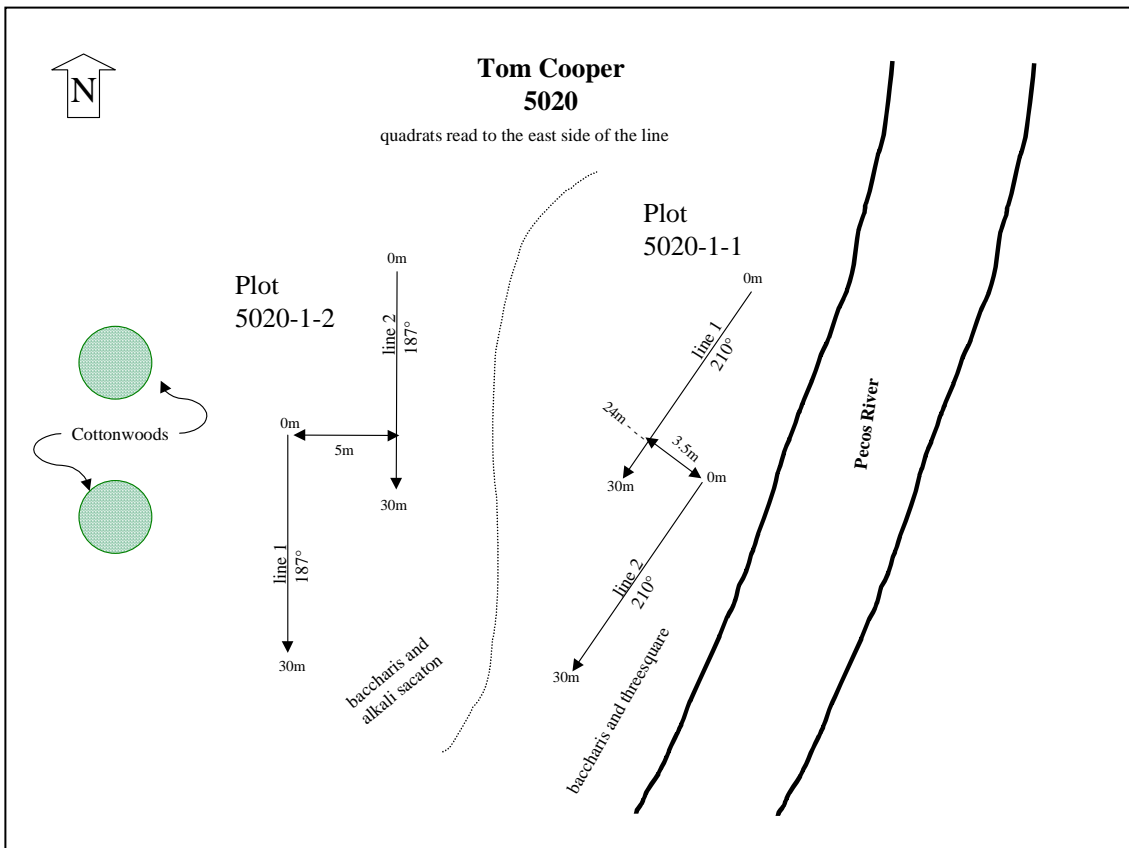


Figure 44. Diagram of monitoring plots 5020-1-1 and 5020-1-2.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Tom Cooper
Monitoring Plot: 5020-2-1

NMNHP Plot Number: 99RM008

Community Type: Honey Mesquite/Alkali Sacaton
Prosopis glandulosa/Sporobolus airoides

Survey Date: 9/27/1999

UTM Location (NAD 27): Easting: 563329 Northing: 3736484

Directions to Plot: Take US 285 approx. 25.5 mi. N of US 70 junction, and turn E onto Cottonwood Road (CR 26). CR 26 will go straight E for approx. 6.5 mi., then follow main road as it heads N for 0.5 mi., then E for 2 mi. then SE for approx. 2.25 mi., and then due E again for 2.75 mi. When main road veers SE, take smaller side road off to the NE, follow this road as it heads due N 1.5 mi., then NE for 0.5 mi. At fork take road to the SE approx. 1.75 mi. towards the river, at second fork take road to SW approx. 0.75 mi. to well pad. Park and walk E approx. 150 meters to plot.

Description: The monitoring plot was established on a high terrace inside the old floodplain. Honey mesquite was well represented but low-statured, averaging half a meter or less in height. The herbaceous layer was very grassy but low in diversity. Alkali sacaton was abundant and dominant, and vine mesquite was common. Soils were a dry sandy-clay.

Status: A recent burn was indicated by the low height of the honey mesquite. Terrace was dry. Livestock use was moderate.

Adjacent Communities: Very large terrace was bordered to the west by honey mesquite uplands and to the east by salt-cedar-lined riverbanks.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Prosopis glandulosa	honey mesquite	M	13.2
Graminoids			
Buchloe dactyloides	buffalograss	M	0.25
Panicum obtusum	vine mesquite	M	4.55
Sporobolus airoides	alkali sacaton	M	37.1
Forbs			
Chenopodium leptophyllum	narrowleaf goosefoot	M	0.105
Solanum elaeagnifolium	silverleaf nightshade	M	0.03

Ground Cover: Soil: 47.7 Litter&BA: 52.3 Wood: 0 Rock: 0

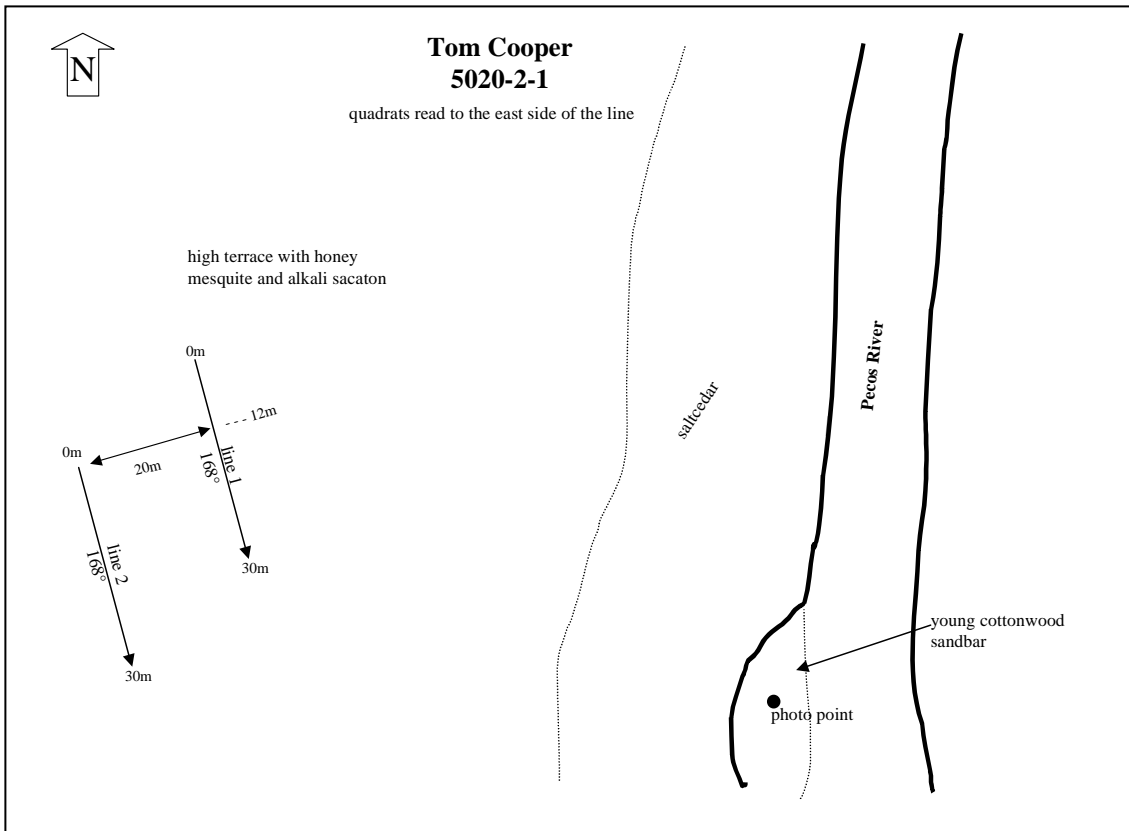


Figure 45. Diagram of monitoring plot 5020-2-1.

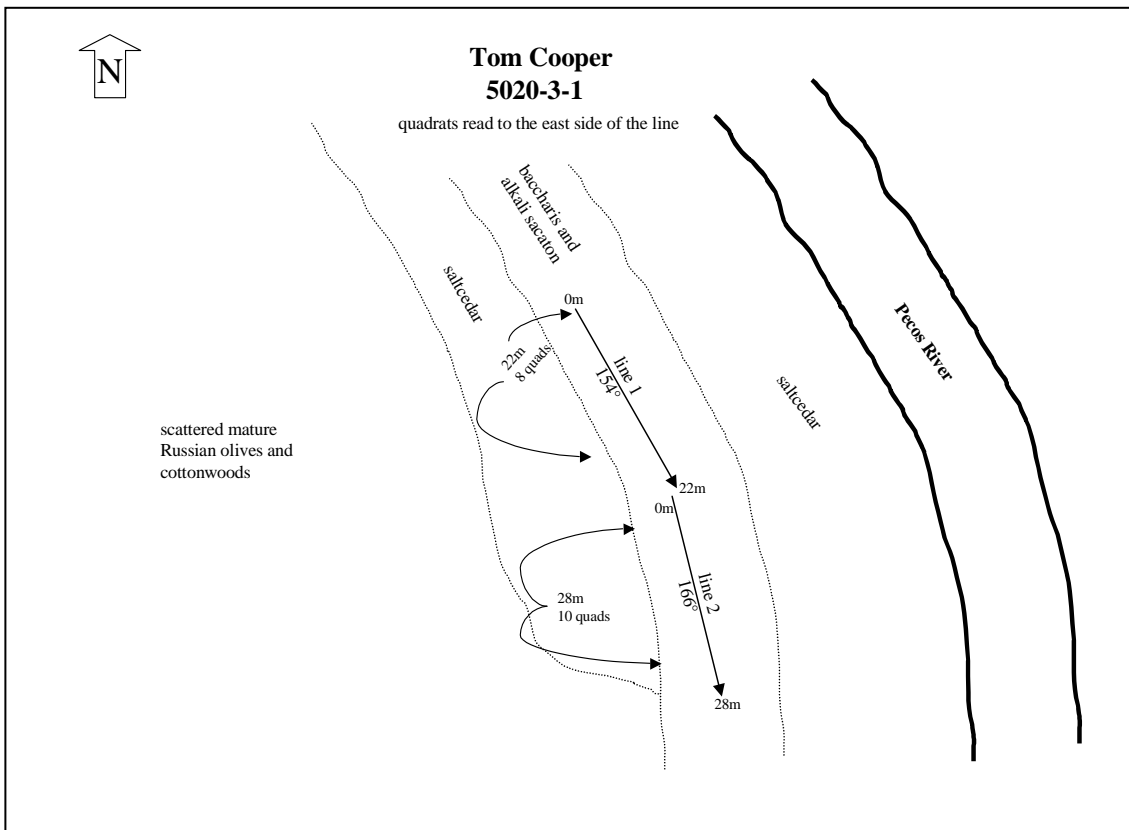


Figure 46: Diagram of monitoring plot 5020-3-1.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Tom Cooper
Monitoring Plot: 5020-3-1

NMNHP Plot Number: 99RM009

Community Type: Emory's Baccharis/Alkali Sacaton
Baccharis emoryi/ Sporobolus airoides

Survey Date: 9/28/1999

UTM Location (NAD 27): Easting: 564190 Northing: 3735167

Directions to Plot: Take US 285 approx. 25.5 mi. N of US 70 junction, and turn E onto Cottonwood Road (CR 26). CR 26 will go straight E for approx. 6.5 mi., then follow main road as it heads N for 0.5 mi., then E for 2 mi. then SE for approx. 2.25 mi., and then due E again for 2.75 mi. When main road veers SE, take smaller side road off to the NE, follow this road as it winds eastward for approx. 2.25 mi. to the rivers edge. Park and walk N approx. 30 m to plot.

Description: The monitoring plot was established in a narrow corridor of Emory's baccharis/alkali sacaton through a salt-cedar-dominated riverside terrace. Russian olives and salt cedars surrounded the corridor and overhung it in places. There were a few young salt cedars within the plot. Emory's baccharis was well represented. The understory was grassy, but low in diversity. Alkali sacaton was very abundant and the overwhelming dominant.

Status: Although surrounded by dense stands of salt cedar, this stand was minimally impacted by encroachment and livestock use.

Adjacent Communities: Riverbank to the east was armored with dense salt cedar. To the west the terrace was open and dry with scattered mature cottonwoods and Russian olives.

Species Name	Common Name	Source	Avg % Cover	Avg # sm stems	Avg # lg stems
Trees					
Elaeagnus angustifolia	Russian olive	M	1.75	0	0
Shrubs					
Baccharis emoryi	Emory's baccharis	M	18.1	0.2	0.15
Tamarix ramosissima	salt cedar	M	5.95	0.9	1.25
Prosopis glandulosa	honey mesquite	P	0.01		
Graminoids					
Elymus canadensis	Canada wildrye	M	0.155		
Muhlenbergia asperifolia	alkali muhly	M	4.5		
Setaria leucopila	streambed bristlegrass	M	0.165		
Sporobolus airoides	alkali sacaton	M	55.45		
Forbs					
Ambrosia spp.	ragweed	M	0.6		
Conyza canadensis	Canadian horseweed	M	0.1		
Gaura villosa	wolly gaura	M	0.1		

Ground Cover: Soil: 34.6 Litter&BA: 64.7 Wood: 0.7 Rock: 0

Pecos River Riparian Monitoring Program Allotment Report 2000

White Ranch 5023

Reconnaissance plots:

- | | |
|-----------|---|
| 5023-OPP1 | Common Threesquare-Inland Saltgrass |
| 5023-OPP2 | Coyote Willow/Sparse |
| 5023-OPP3 | Cottonwood/Emory's Baccharis/Alkali Sacaton |
| 5023-OPP4 | Emory's Baccharis/Alkali Sacaton |
| 5023-OPP5 | Salt Cedar/Alkali Sacaton |

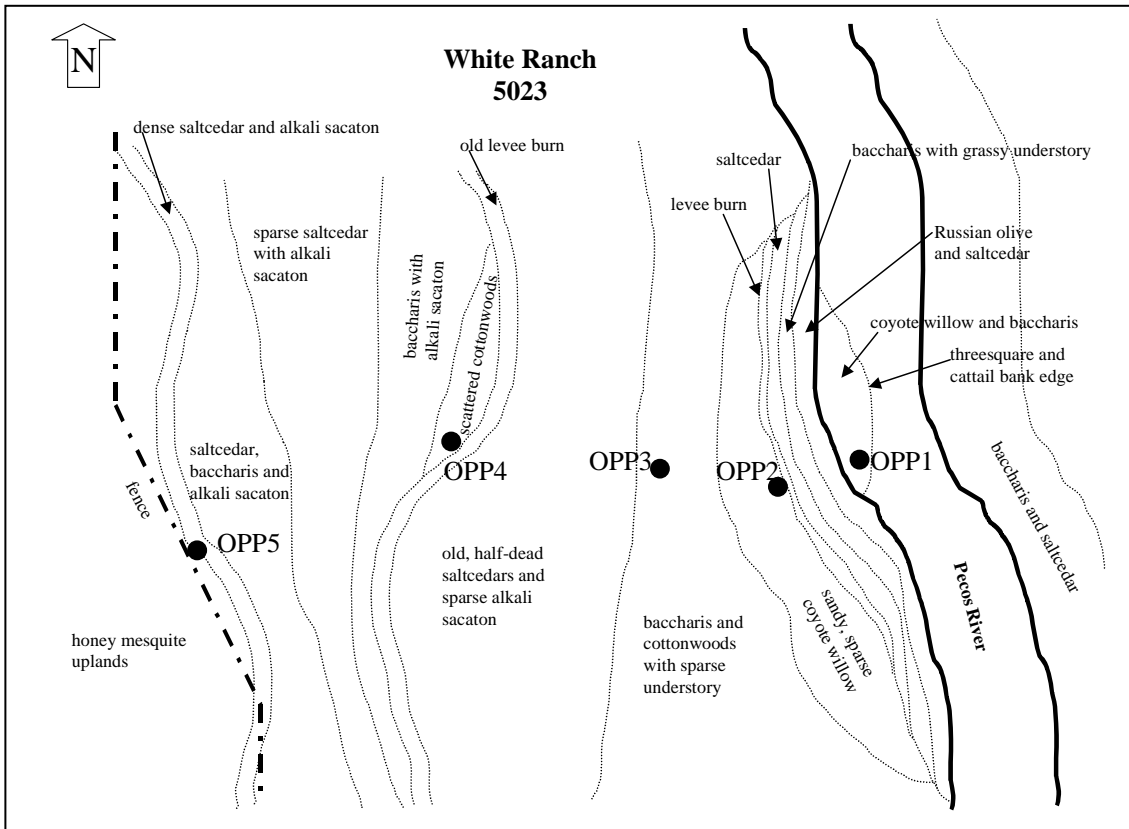


Figure 47. Diagram of 5023 reconnaissance plots 1-5.

White Ranch: 5023

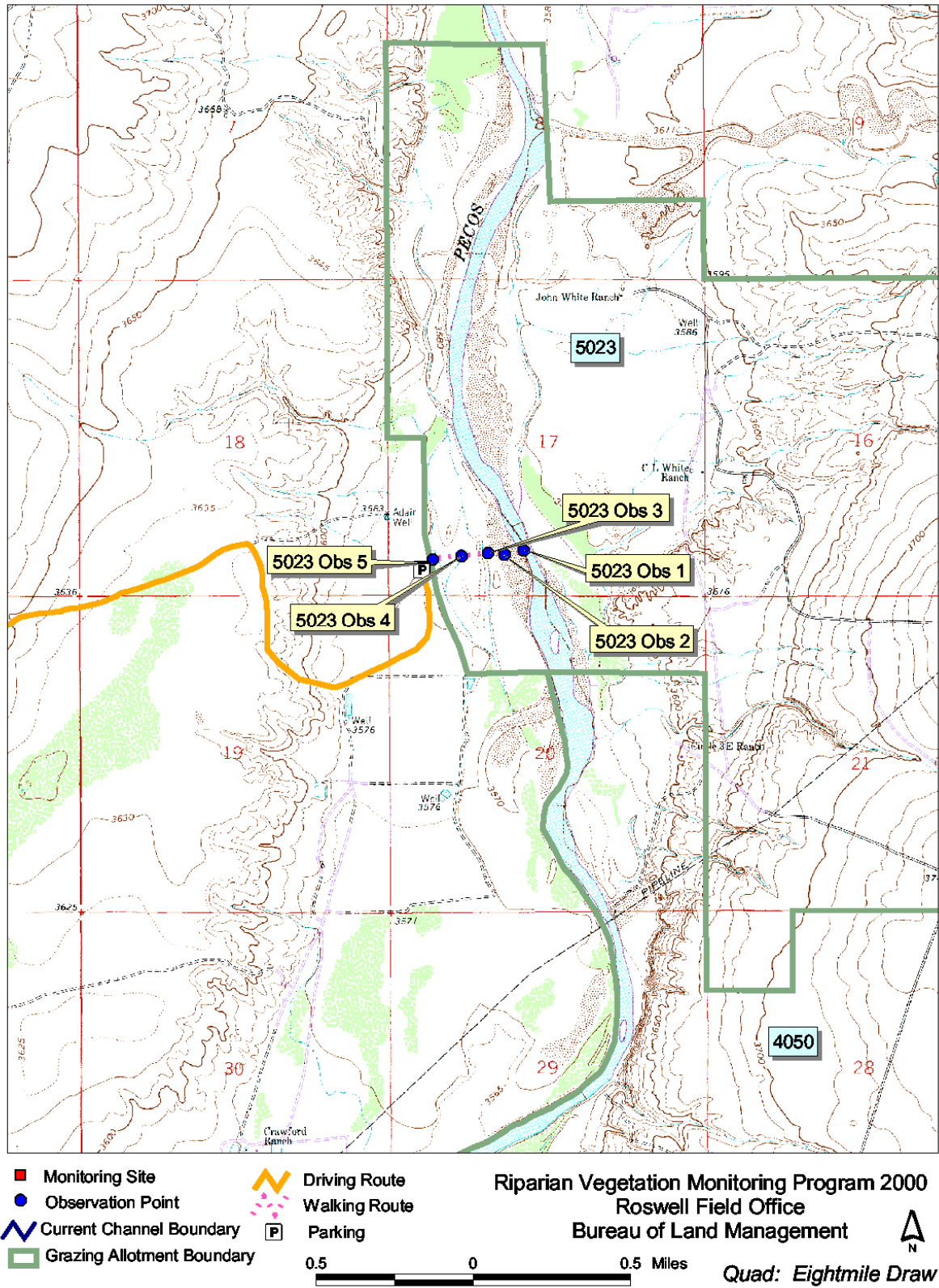


Figure 48. Map of reconnaissance plots on allotment 5023.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: White Ranch
Reconnaissance Plot: 5023-OPP1**

NMNHP Plot Number: 00RM009

Community Type: Common Threesquare-Inland Saltgrass
Schoenoplectus pungens-Distichlis spicata

Survey Date: 8/3/2000

UTM Location (NAD 27): Easting: 562979 Northing: 3729166

Directions to Plot: From US 285, take One Horse Road approx. 2.5 mi E, then NE approx. 8 mi. Take Adir Well Rd. E approx. 2.7 mi, turn S at fork before the road descends to the floodplain (Adir Well Road becomes pure sand in floodplain.). Go approx. 0.5 mi., then take E fork approx. 0.5 mi. out to floodplain, then N approx. 0.1 mi. to oil pad. Park and walk E to river's edge.

Description: This was a bank community on edge of riverside bar dominated by common threesquare. Cottonwood seedlings were scattered throughout, along with a few young Russian olives and Goodding's willows. Coyote willow, Emory's baccharis and salt cedar were also present, becoming more common further from the bank edge. The graminoid layer was high in cover and diverse. Narrowleaf cattail was also common among the forbs. Many tiger beetles were observed at plot.

Status: The community had a mixture reproducing native and exotic species.

Adjacent Communities: To the west , the bank edge community grades into coyote willow and Emory's baccharis which extends about 10-20 meters westward. Beyond that to the west there was an old channel with mature Russian olives and salt cedars. The riverbank on the east side of the river had an Emory's baccharis and salt cedar community on it.

Species Name	Common Name	Source	Avg % Cover
Trees			
Elaeagnus angustifolia	Russian olive	P	
Populus deltoides	cottonwood	P	
Salix gooddingii	Goodding's willow	P	
Shrubs			
Baccharis emoryi	Emory's baccharis	P	
Salix exigua	coyote willow	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Bothriochloa laguroides ssp. torreyana	silver beardgrass	P	
Cenchrus spinifex	sandbur	P	
Distichlis spicata	inland saltgrass	P	
Muhlenbergia asperifolia	alkali muhly	P	
Panicum capillare	witchgrass	P	
Polypogon monspeliensis	annual rabbitsfoot grass	P	
Saccharum ravennae	ravennagrass	P	
Schoenoplectus pungens	common threesquare	P	
Sporobolus airoides	alkali sacaton	P	
Sporobolus wrightii	giant sacaton	P	

Forbs

Ambrosia psilostachya	Cuman ragweed	P
Asclepias subverticillata	whorled milkweed	P
Aster spp.	aster	P
Chloracantha spinosa	spiny chloracantha	P
Equisetum laevigatum	smooth horsetail	P
Oenothera pallida	pale eveningprimrose	P
Typha angustifolia	narrowleaf cattail	P

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: White Ranch
Reconnaissance Plot: 5023-OPP2**

NMNHP Plot Number: 00RM010

Community Type: Coyote Willow/Sparse
Salix exigua/Sparse

Survey Date: 8/3/2000

UTM Location (NAD 27): Easting: 562883 Northing: 3729144

Directions to Plot: From US 285, take One Horse Road approx. 2.5 mi. E, then NE approx. 8 mi. Take Adir Well Rd. E approx. 2.7 mi., turn S at fork before the road descends to the floodplain (Adir Well Road becomes pure sand in floodplain.). Go approx. 0.5 mi., then take E fork approx. 0.5 mi. out to floodplain, then N approx. 0.1 mi. to oil pad. Park and walk E to terrace just W of river's edge.

Description: The plot was on a sandy terrace in old river floodplain that supported a sparse coyote willow stand with a mixed weedy understory. Coyote willow, although the dominant shrub, was scattered and low-statured. Alkali sacaton and purple threeawn were the most common grasses in a diverse herbaceous understory. Seventeen forb species were observed on the plot, along with eight grasses. The community extends approximately 30 meters both east and west, and 100 meters north and south.

Status: The coyote willow was heavily browsed; the majority of individuals were cropped to a meter or less in height.

Adjacent Communities: To the east there was an old channel dominated by mature salt cedar with a grassy understory. To the west there was an old river edge bar with a stand of mature cottonwoods and an understory of baccharis with a few scattered Russian olives and salt cedars.

Species Name	Common Name	Source	Avg % Cover
Trees			
Salix gooddingii	Goodding's willow	P	
Shrubs			
Isocoma pluriflora	southern jimmyweed	P	
Prosopis glandulosa	honey mesquite	P	
Salix exigua	coyote willow	P	
Graminoids			
Aristida purpurea var. purpurea	purple threeawn	P	
Bouteloua barbata	sixweeks grama	P	
Cenchrus spinifex	sandbur	P	
Distichlis spicata	inland saltgrass	P	
Munroa squarrosa	false buffalograss	P	
Setaria leucopila	streambed bristlegrass	P	
Sporobolus airoides	alkali sacaton	P	
Sporobolus wrightii	giant sacaton	P	
Forbs			
Ambrosia spp.	ragweed	P	
Asclepias subverticillata	whorled milkweed	P	
Aster spp.	aster	P	

<i>Chamaesyce albomarginata</i>	whitemargin sandmat	P
<i>Chamaesyce missurica</i>	prairie sandmat	P
<i>Chloracantha spinosa</i>	spiny chloracantha	P
<i>Dalea lanata</i> var. <i>lanata</i>	woolly prairieclover	P
<i>Dimorphocarpa wislizeni</i>	spectacle pod	P
<i>Gaura villosa</i>	wolly gaura	P
<i>Glycyrrhiza lepidota</i>	American licorice	P
<i>Helianthus ciliaris</i>	Texas blueweed	P
<i>Heliotropium convolvulaceum</i>	phlox heliotrope	P
<i>Heterotheca subaxillaris</i>	camphorweed	P
<i>Lepidium alyssoides</i>	mesa pepperwort	P
<i>Oenothera pallida</i>	pale eveningprimrose	P
<i>Solanum elaeagnifolium</i>	silverleaf nightshade	P
<i>Thelesperma megapotamicum</i>	Hopi tea greenthread	P

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: White Ranch
Reconnaissance Plot: 5023-OPP3**

NMNHP Plot Number: 00RM011

Community Type: Cottonwood/Emory's Baccharis/Alkali Sacaton
Populus deltoides/Baccharis emoryi/Sporobolus airoides

Survey Date: 8/3/2000

UTM Location (NAD 27): Easting: 562799 Northing: 3729152

Directions to Plot: From US 285, take One Horse Road approx. 2.5 mi. E, then NE approx. 8 mi. Take Adir Well Rd. E approx. 2.7 mi., turn S at fork before the road descends to the floodplain (Adir Well Road becomes pure sand in floodplain.). Go approx. 0.5 mi., then take E fork approx. 0.5 mi. out to floodplain, then N approx. 0.1 mi. to oil pad. Park and walk E to middle of old floodplain.

Description: This stand was composed of mature cottonwoods along an old back channel. The understory was dominated by Emory's baccharis with scattered salt cedar. The grass layer was luxuriant, with alkali sacaton as the dominant. The stand was approximately 30 meters wide.

Status: Many trees have been cut down by beaver.

Adjacent Communities: To the east there was a coyote willow sparse community (plot 5023-OPP2). To the west there was an open terrace supporting a sparse salt cedar/alkali sacaton community.

Species Name	Common Name	Source	Avg % Cover
Trees			
Populus deltoides	cottonwood	P	
Shrubs			
Baccharis emoryi	Emory's baccharis	P	
Gutierrezia sarothrae	broom snakeweed	P	
Isocoma pluriflora	southern jimmyweed	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Aristida purpurea var. purpurea	purple threeawn	P	
Distichlis spicata	inland saltgrass	P	
Muhlenbergia asperifolia	alkali muhly	P	
Sporobolus airoides	alkali sacaton	P	

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: White Ranch
Reconnaissance Plot: 5023-OPP4**

NMNHP Plot Number: 00RM027

Community Type: Emory's Baccharis/Alkali Sacaton
Baccharis emoryi/Sporobolus airoides

Survey Date: 8/3/2000

UTM Location (NAD 27): Easting: 562664 Northing: 3729138

Directions to Plot: From US 285, take One Horse Road approx. 2.5 mi E, then NE approx. 8 mi. Take Adir Well Rd. E approx. 2.7 mi, turn S at fork before the road descends to the floodplain (Adir Well Road becomes pure sand in floodplain.). Go approx. 0.5 mi., then take E fork approx. 0.5 mi. out to floodplain, then N approx. 0.1 mi. to oil pad. Park and walk E onto floodplain.

Description: The plot was located in an Emory's baccharis/Alkali sacaton community within a large channel just west of an old bank. Mature cottonwoods were scattered along the edge of the old bank. The baccharis was tall, but sparse, and there were many small salt cedars scattered throughout. Alkali sacaton was well represented and in good condition. The stand was approximately 30 m wide.

Status: The salt cedar was low statured and may have been burned recently. Exotic invasion is considered a threat to the community.

Adjacent Communities: To the west, the stand graded to sparse salt cedar/alkali sacaton. In addition, there is a sparse salt cedar/alkali sacaton community to the east and beyond the old bank.

Species Name	Common Name	Source	Avg % Cover
Trees			
Populus deltoides	cottonwood	P	
Shrubs			
Atriplex canescens	fourwing saltbush	P	
Baccharis emoryi	Emory's baccharis	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Sporobolus airoides	alkali sacaton	P	

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: White Ranch
Reconnaissance Plot: 5023-OPP5**

NMNHP Plot Number: 00RM028

Community Type: Salt Cedar/Alkali Sacaton
Tamarix ramosissima/Sporobolus airoides

Survey Date: 8/3/2000

UTM Location (NAD 27): Easting: 562514 Northing: 3729117

Directions to Plot: From US 285, take One Horse Road approx. 2.5 mi. E, then NE approx. 8 mi. Take Adir Well Rd. E approx. 2.7 mi., turn S at fork before the road descends to the floodplain (Adir Well Road becomes pure sand in floodplain.). Go approx. 0.5 mi., then take E fork approx. 0.5 mi. out to floodplain, then N approx. 0.1 mi. to oil pad. Park and walk E to edge of floodplain.

Description: This was a dense salt cedar stand inside an old back channel at the edge of the riverside terraces and adjacent to mesquite uplands. Alkali sacaton was well represented in the understory. The stand was approximately 30 m wide.

Status: The stand was dominated by exotic shrubs but with a native grass understory.

Adjacent Communities: To the east there were salt cedar/alkali sacaton and Emory's baccharis/alkali sacaton communities. In the adjacent uplands to the west there were honey mesquite communities.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Tamarix ramosissima	salt cedar	P	
Graminoids			
Sporobolus airoides	alkali sacaton	P	

Pecos River Riparian Monitoring Program Allotment Report 2000

Willard Moody 5024

Monitoring Plots:

5024-1-1	Emory's Baccharis/Alkali Muhly
5024-1-2	Common Threesquare Monotype
5024-2-1	Emory's Baccharis/Common Threesquare
5024-2-2	Common Threesquare Monotype
4056-3-1	Coyote Willow/Common Threesquare



Figure 49. Common threesquare bank edge community at 5024-1-2.

Gary Lynch: 4050 and Willard Moody: 5024

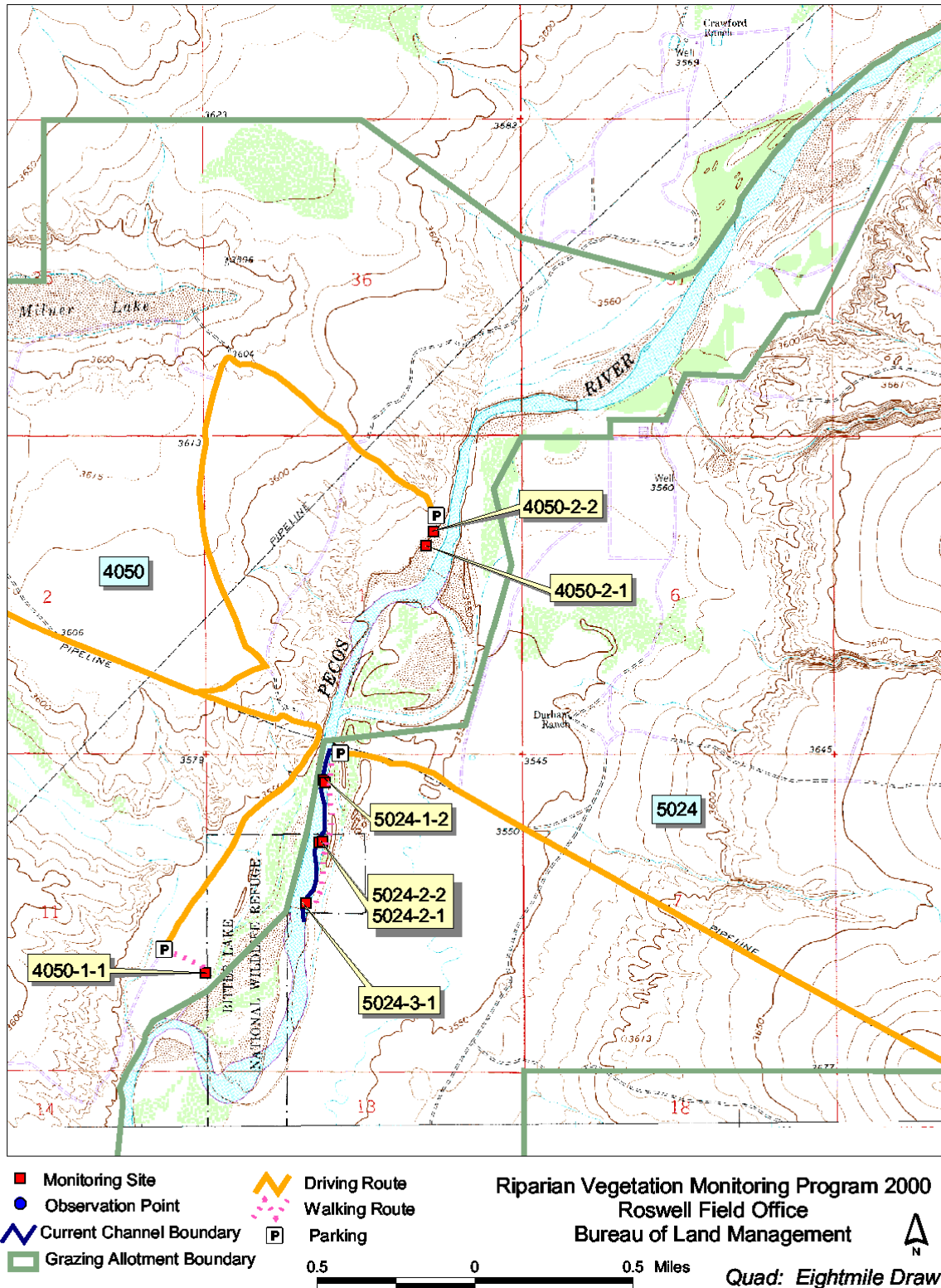


Figure 50. Map of monitoring sites on allotment 5024.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Willard Moody
Monitoring Plot: 5024-1-1

NMNHP Plot Number: 99RM011

Community Type: Emory's Baccharis/Alkali Muhly
Baccharis emoryi/Muhlenbergia asperifolia

Survey Date: 9/26/1999

UTM Location (NAD 27): Easting: 559720 Northing: 3722317

Directions to Plot: From US 285 take US 70 E for approx. 14.5 mi.; turn N on road with old schoolhouse at NW corner of intersection (approx. 3.25 mi. W of bridge over Pecos). Approximately 2 mi. N is junction with oil pipeline road; take pipeline road NE approx. 2.25 mi. to river edge. Park and walk S along riverbank to plot.

Description: The monitoring plot was established on a high riverbank terrace in an Emory's baccharis/alkali muhly community. Emory's baccharis was abundant and dense, but there were a few scattered young salt cedars. Grasses were abundant, with alkali muhly and inland saltgrass very well represented and dominant; alkali sacaton was also well represented. The soil was a sandy clay.

Status: Grazing pressure on the plot was moderate; there were many livestock trails. Alkali sacaton had been severely cropped, but alkali muhly and inland saltgrass were uncropped. Exotic encroachment was low.

Adjacent Communities: To the west was a common threesquare and graminoid wetland. To the east was a dense stand of salt cedar, and beyond that a large alkali sacaton flat on a high terrace.

Species Name	Common Name	Source	Avg % Cover	Avg # sm stems	Avg # lg stems
Shrubs					
Baccharis emoryi	Emory's baccharis	M	31.35		
Tamarix ramosissima	salt cedar	M	0.1	0.05	0.05
Graminoids					
Cenchrus spinifex	sandbur	M	0.135		
Distichlis spicata	inland saltgrass	M	19.85		
Muhlenbergia asperifolia	alkali muhly	M	22.55		
Schoenoplectus pungens	common threesquare	M	2.625		
Sporobolus airoides	alkali sacaton	M	8.6		
Forbs					
Ambrosia acanthicarpa	flatspine burr ragweed	M	0.105		

Ground Cover: Soil: 58.4 Litter&BA: 41.6 Wood: 0 Rock: 0

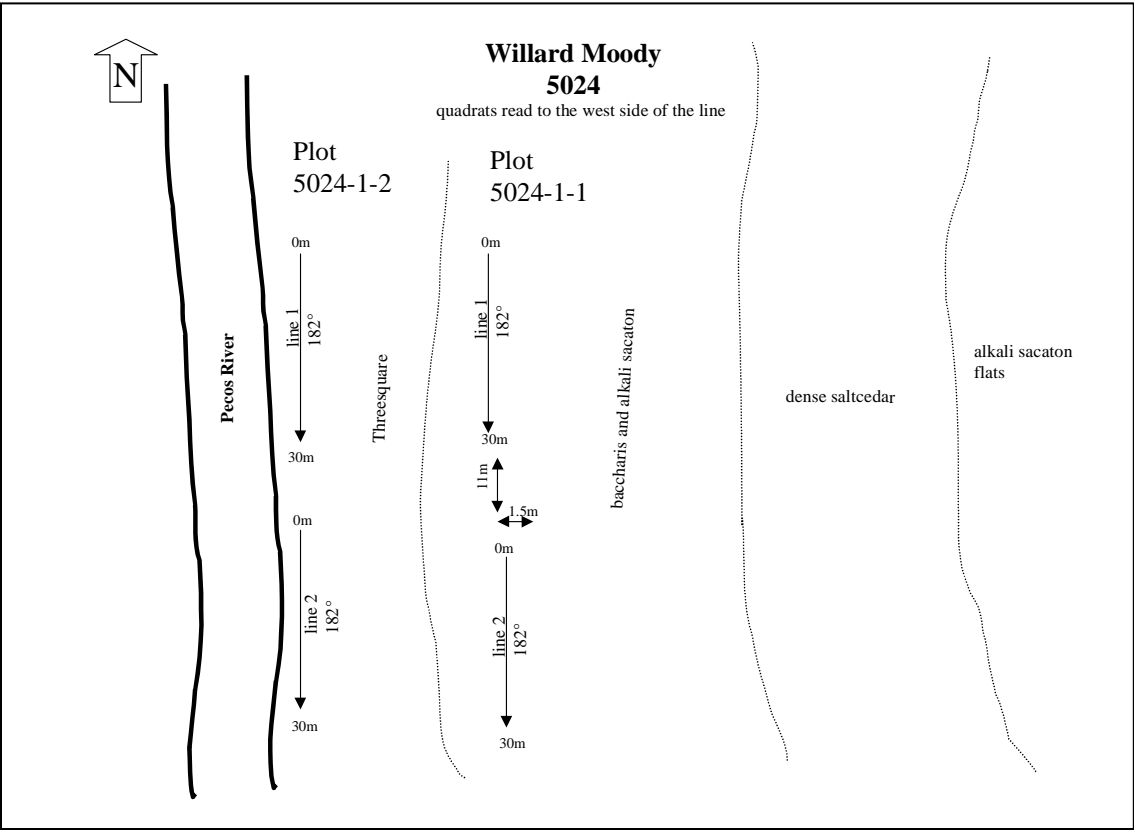


Figure 51. Diagram of monitoring plots 5024-1-1 and 5024-1-2.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Willard Moody
Monitoring Plot: 5024-1-2

NMNHP Plot Number: 99RM012

Community Type: Common Threesquare Monotype
Schoenoplectus pungens Monotype

Survey Date: 9/26/1999

UTM Location (NAD 27): Easting: 559715 Northing: 3722327

Directions to Plot: From US 285 take US 70 E for approx. 14.5 mi.; turn N on road with old schoolhouse at NW corner of intersection (approx. 3.25 mi. W of bridge over Pecos). Approx. 2 mi. N is junction with oil pipeline road, take pipeline road NE for approx. 2.25 mi. to river edge. Park and walk S along riverbank to plot.

Description: The monitoring plot was established on a riverbank about 1.5 feet above the active channel. Common threesquare is very abundant and the overwhelming dominant. Other species were scarce (barnyardgrass was present but poorly represented). Soils were sandy.

Status: Community had been impacted some by cattle use, mostly through trampling along trails. There was some cropping of graminoids. Exotic species were scarce.

Adjacent Communities: To the east was an Emory's baccharis/alkali muhly community (5024-1-1) that dominated the terrace. Further east was a dense stand of salt cedar beyond which there was a large alkali sacaton flat.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Baccharis emoryi	Emory's baccharis	M	0.4
Tamarix ramosissima	salt cedar	P	0.01
Graminoids			
Echinochloa crus-galli	barnyardgrass	M	4.87
Muhlenbergia asperifolia	alkali muhly	M	0.55
Schoenoplectus pungens	common threesquare	M	56.1
Forbs			
Equisetum laevigatum	smooth horsetail	M	0.01
Salsola tragus	prickly Russian thistle	M	0.025
Xanthium strumarium	rough cocklebur	M	0.15

Ground Cover: Soil: 87.2 Litter&BA: 12.0 Wood: 0.8 Rock: 0

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Willard Moody
Monitoring Plot: 5024-2-1

NMNHP Plot Number: 99RM013

Community Type: Emory's Baccharis/Common Threesquare
Baccharis emoryi/Schoenoplectus pungens

Survey Date: 9/26/1999

UTM Location (NAD 27): Easting: 559708 Northing: 3722013

Directions to Plot: From US 285 take US 70 E for approx. 14.5 mi.; turn N on road with old schoolhouse at NW corner of intersection (approx. 3.25 mi. W of bridge over Pecos). Approximately 2 mi. N is junction with oil pipeline road; take pipeline road NE for approx. 2.25 mi. to river's edge. Park and walk S along riverbank to plot.

Description: The monitoring plot was established on a low sand bar in the active channel with young shrubs and wetland graminoids. Emory's baccharis was well represented, but coyote willow and salt cedar were poorly represented. All shrubs were low statured. The graminoid layer was extremely diverse, but low in cover, with only common threesquare well represented and alkali muhly common.

Status: The majority of the livestock impact was from trampling. Coyote willow and graminoids were moderately browsed. Exotics, especially salt cedar, pose a threat to the community in the future.

Adjacent Communities: To west sand bar bank was lined with common threesquare. To the east active channel terrace was lined with salt cedar, beyond which was a large alkali sacaton flat.

Species Name	Common Name	Source	Avg % Cover	Avg # sm stems	Avg # lg stems
Trees					
Ulmus pumila	Siberian elm	M	0.01	0	0
Shrubs					
Baccharis emoryi	Emory's baccharis	M	12.125		
Salix exigua	coyote willow	M	3.55	2.55	0
Tamarix ramosissima	salt cedar	M	4.95	2.15	0.25
Graminoids					
Aristida purpurea	purple threeawn	M	0.05		
Bothriochloa laguroides ssp. torreyana	silver beardgrass	M	0.0005		
Cenchrus spinifex	sandbur	M	0.3005		
Cyperus esculentus	chufa flatsedge	M	0.11		
Echinochloa crus-galli	barnyardgrass	M	0.675		
Muhlenbergia asperifolia	alkali muhly	M	1.3		
Panicum capillare	witchgrass	M	0.45		
Panicum obtusum	vine mesquite	M	0.05		
Schoenoplectus pungens	common threesquare	M	5.05		
Sporobolus cryptandrus	sand dropseed	M	0.15		
Sporobolus spp.	dropseed	M	0.2		
Forbs					
Equisetum laevigatum	smooth horsetail	M	0.1005		
Xanthium strumarium	rough cocklebur	M	0.7		

Ground Cover: Soil: 89.7 Litter&BA: 10.0 Wood: 0.4 Rock: 0

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Willard Moody
Monitoring Plot: 5024-2-2

NMNHP Plot Number: 99RM014

Community Type: Common Threesquare Monotype
Schoenoplectus pungens Monotype

Survey Date: 9/26/1999

UTM Location (NAD 27): Easting: 559693 Northing: 3722010

Directions to Plot: From US 285 take US 70 E for approx. 14.5 mi.; turn N on road with old schoolhouse at NW corner of intersection. Approximately 2 mi. N is junction with oil pipeline road; take pipeline road NE for approx. 2.25 mi. to river's edge. Park and walk S along riverbank to plot.

Description: The monitoring plot was established in the active channel on the edge of a low sand bar. Very few scattered young shrubs were present, with coyote willow the most common. Overall, the herbaceous layer was diverse and abundant. Common threesquare was very abundant and the dominant species, with alkali muhly and barnyardgrass common. Broadleaf cattail was also common in the herbaceous layer.

Status: The majority of the livestock impact was from trampling. Graminoids were moderately browsed. Exotics, especially salt cedar, pose a threat to the community in the future.

Adjacent Communities: To the east the sand bar the community graded into Emory's baccharis/common threesquare (5024-2-1). To the east active channel terrace was lined with salt cedar, beyond which was a large alkali sacaton flat.

Species Name	Common Name	Source	Avg % Cover	Avg # sm stems	Avg # lg stems
Shrubs					
Baccharis emoryi	Emory's baccharis	M	0.025		
Salix exigua	coyote willow	M	0.4	0.2	0
Tamarix ramosissima	salt cedar	P	0		
Graminoids					
Echinochloa crus-galli	barnyardgrass	M	1.75		
Elymus canadensis	Canada wildrye	M	0.15		
Juncus torreyi	Torrey's rush	M	0.0005		
Muhlenbergia asperifolia	alkali muhly	M	2.29		
Panicum capillare	witchgrass	M	0.1		
Schoenoplectus pungens	common threesquare	M	55.35		
Forbs					
Aster subulatus var. ligulatus	southern annual saltmarsh aster	M	0.025		
Equisetum laevigatum	smooth horsetail	M	0.1155		
Polygonum pensylvanicum	pink smartweed	M	0.105		
Typha latifolia	broadleaf cattail	M	3.33		
Unidentified	unidentified	M	0.0005		
Xanthium strumarium	rough cocklebur	M	0.475		

Ground Cover: Soil: 67.5 Litter&BA: 32.6 Wood: 0 Rock: 0

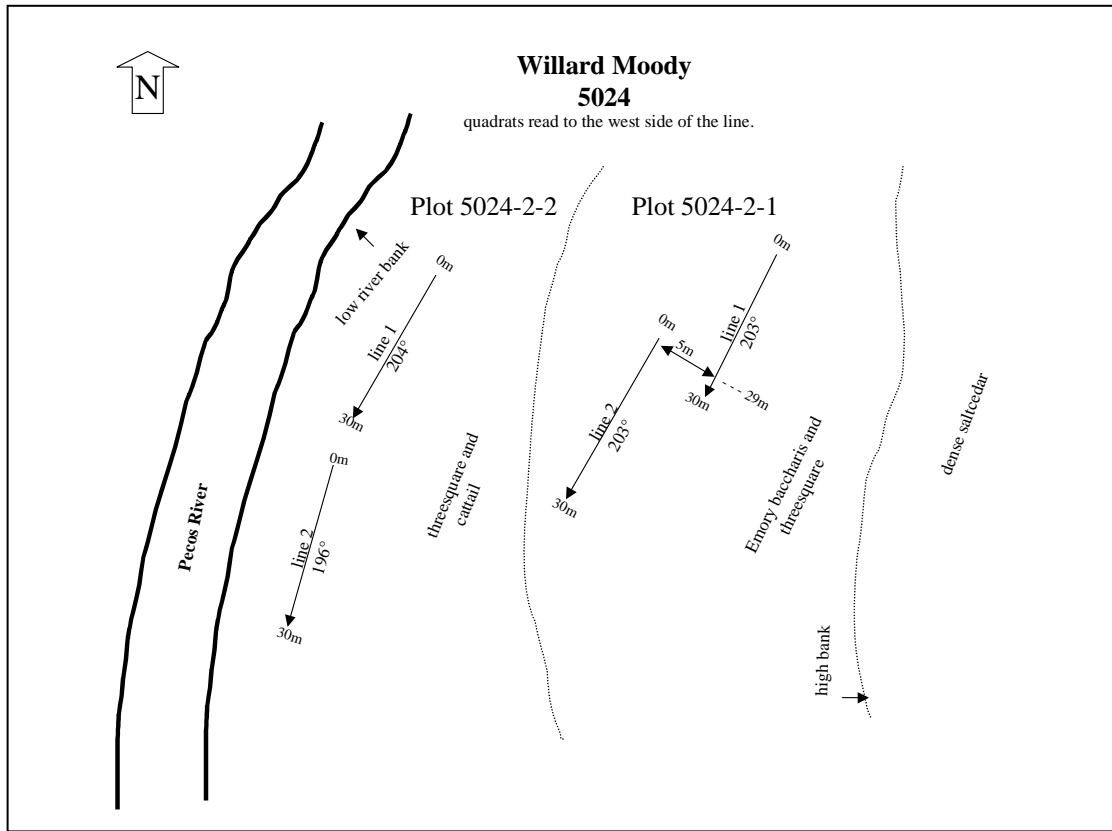


Figure 52. Diagram of monitoring plots 5024-2-1 and 5024-2-2.

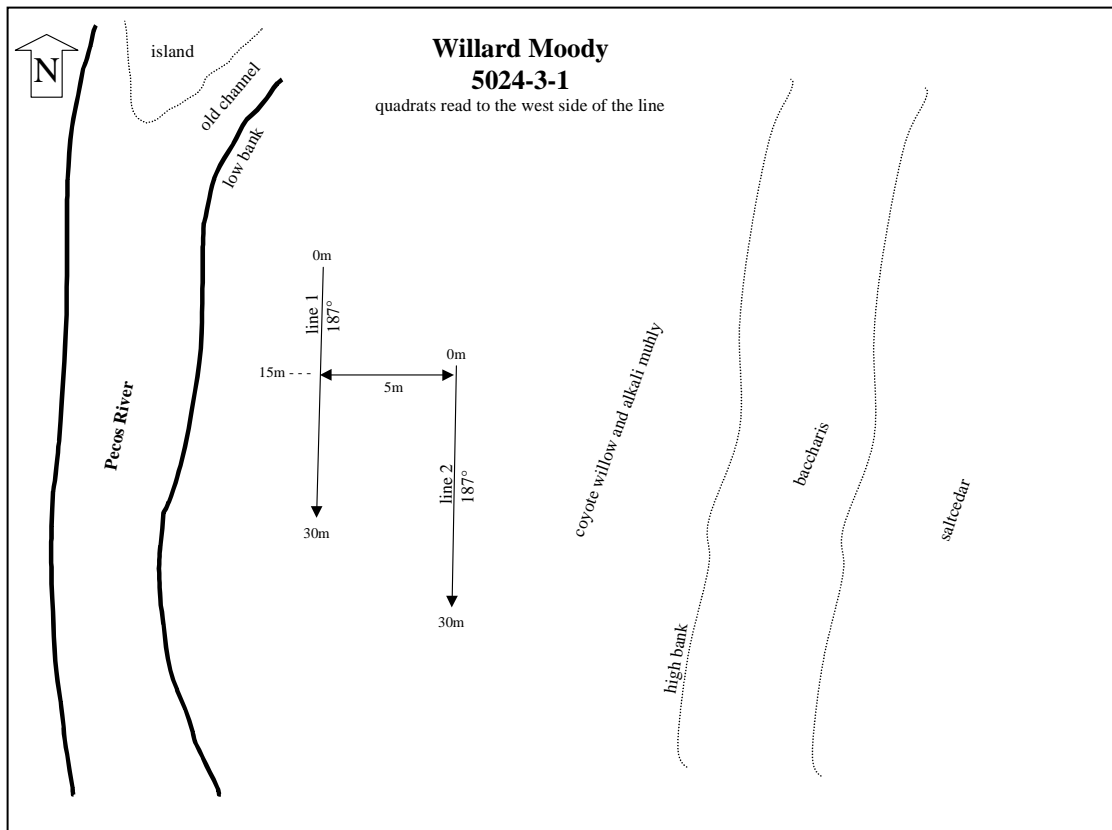


Figure 53. Diagram of monitoring plot 5024-3-1.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Willard Moody
Monitoring Plot: 5024-3-1

NMNHP Plot Number: 99RM010

Community Type: Coyote Willow/Common Threesquare
Salix exigua/Schoenoplectus pungens

Survey Date: 9/26/1999

UTM Location (NAD 27): Easting: 559623 Northing: 3721700

Directions to Plot: From US 285 take US 70 E for approx. 14.5 mi.; turn N on road with old schoolhouse at NW corner of intersection (approx. 3.25 mi. W of bridge over Pecos). Approx. 2 mi. N is junction with oil pipeline road, take pipeline road NE for approx. 2.25 mi. to river edge. Park and walk S along riverbank to plot

Description: The monitoring plot was established on a low terrace inside the active channel. The shrub layer was co-dominated by coyote willow and Emory's baccharis, with salt cedar also common. All shrubs were young and low statured. Among the graminoids, common threesquare and alkali muhly were co-dominants and well represented. Overall diversity was moderate, with barnyardgrass, beaked spikerush, Torrey's rush, broadleaf cattail and annual saltmarsh aster common.

Status: Many of the herbaceous species are wetland indicators. The majority of the livestock impact was from trampling. Graminoids were moderately browsed. Exotics, particularly salt cedar, may pose a threat to the community in the future.

Adjacent Communities: To the east was a higher terrace lined with salt cedar, beyond which was a large alkali sacaton flat.

Species Name	Common Name	Source	Avg % Cover	Avg # sm stems	Avg # lg stems
Shrubs					
Baccharis emoryi	Emory's baccharis	M	3.2		
Salix exigua	coyote willow	M	3.9	4.75	0.05
Tamarix ramosissima	salt cedar	M	1.4	2.15	0
Graminoids					
Echinochloa crus-galli	barnyardgrass	M	3.6		
Eleocharis rostellata	beaked spikerush	M	1.9		
Juncus torreyi	Torrey's rush	M	1		
Muhlenbergia asperifolia	alkali muhly	M	6.5		
Polypogon monspeliensis	annual rabbitsfoot grass	M	0.4		
Schoenoplectus pungens	common threesquare	M	7.3		
Forbs					
Aster subulatus var. ligulatus	southern annual saltmarsh aster	M	1.4		
Equisetum laevigatum	smooth horsetail	M	0.2		
Typha latifolia	broadleaf cattail	M	2.2		
Xanthium strumarium	rough cocklebur	M	0.2		

Ground Cover: Soil: 78.4 Litter&BA: 21.7 Wood: 0 Rock: 0

Pecos River Riparian Monitoring Program Allotment Report 2000

Overflow Wetland

Monitoring Plots:

OverflowWetland-1-1

Inland Saltgrass Monotype

Reconnaissance plots:

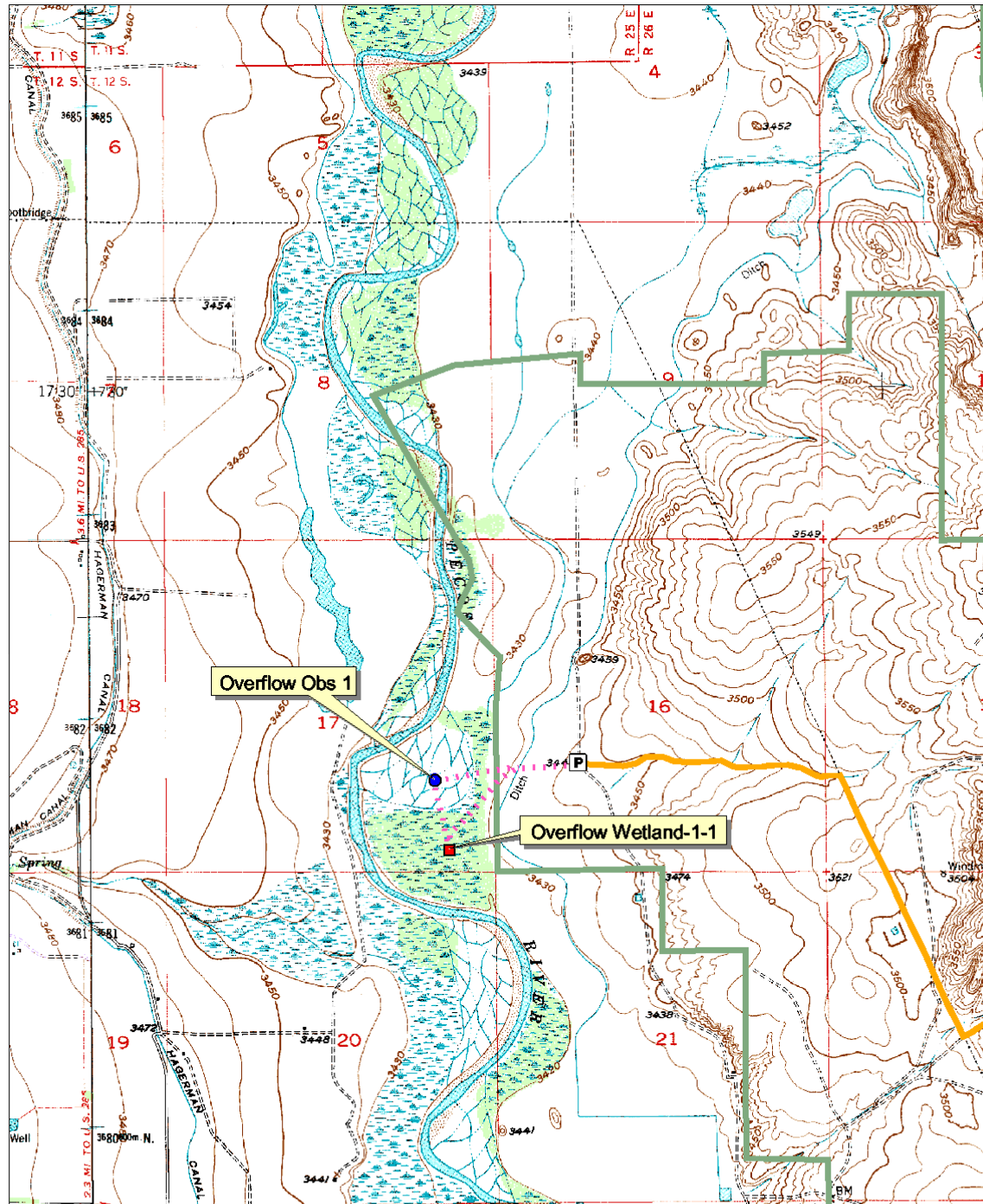
OverflowWetland-OPP1

Alkali Sacaton/Southern Jimmyweed



Figure 54. Overflow wetlands looking NE from monitoring plot 1-1.

Overflow Wetland



Monitoring Site	Driving Route	Riparian Vegetation Monitoring Program 2000 Roswell Field Office Bureau of Land Management	 N
Observation Point	Walking Route		
Current Channel Boundary	Parking		
Grazing Allotment Boundary			

Quad: *Bottomless Lakes*

Figure 55. Map of overflow wetlands monitoring sites.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

Allotment Name: Overflow Wetland
Monitoring Plot: OverflowWetland-1-1

NMNHP Plot Number: 00RM022

Community Type: Inland Saltgrass Monotype
Distichlis spicata Monotype

Survey Date: 8/2/2000

UTM Location (NAD 27): Easting: 559958 Northing: 3681354

Directions to Plot: From Roswell, take US 380 approx. 10.5 mi. E from the junction with US 285, and then turn S on NM 409. At approx. 7 mi., the road will curve sharply to NE toward bottomless lakes. Take the S road at this intersection which is still NM 409. After approx. 3.3 mi., take road to SW toward Pecos R. After approx. 1.1 mi. there will be an intersection with a road under a power line. Take this road NE for approx. 0.9 mi. and then take road W down wash. (There is a road heading W at 0.6 mi. DO NOT take this road.) At intersection with old N/S road, park and walk approximately 0.5 mi. to plot.

Description: The monitoring plot was located in an old back channel dominated by inland saltgrass with scattered salt cedar clumps. Scattered clumps of alkali sacaton, transpecos sealavender and seepweed occurred around the plot. Seepweed was more common at the edges of the salt cedar clumps. Throughout the stand there were dried up pools with exposed, bare soil.

Status: Though there was some evidence of livestock, deer, and rabbits, graminoid cover was high and in good condition, with inland saltgrass averaging 27 cm in height.

Adjacent Communities: Uplands to the east were dominated by honey mesquite and burrograss (*Scleropogon brevifolius*) with patches of tobosa (*Hilaria mutica*). To the west was a higher floodplain terrace dominated by kochia. To the northwest was another terrace dominated by southern jimmyweed and alkali sacaton (OverflowWetlands-OPP1). Both terraces were quite dry and cover was sparse and weedy. Dense salt cedar lines the riverbanks to the north, west and south.

Species Name	Common Name	Source	Avg % Cover	Avg grass Ht. Cm	Avg # sm stems	Avg # lg stems	Avg # Inds
Shrubs							
Tamarix ramosissima	salt cedar	P					
Graminoids							
Distichlis spicata	inland saltgrass	M	93.1	27			
Sporobolus airoides	alkali sacaton	P					
Forbs							
Kochia scoparia	common kochia	M	0.05				
Suaeda spp.	seepweed	M	0.175	35			
Limonium limbatum	transpecos sealavender	P					

Ground Cover: Soil: 1.7 Litter: 61.3 BA: 35.7 Dung: 1 Wood: 0.3

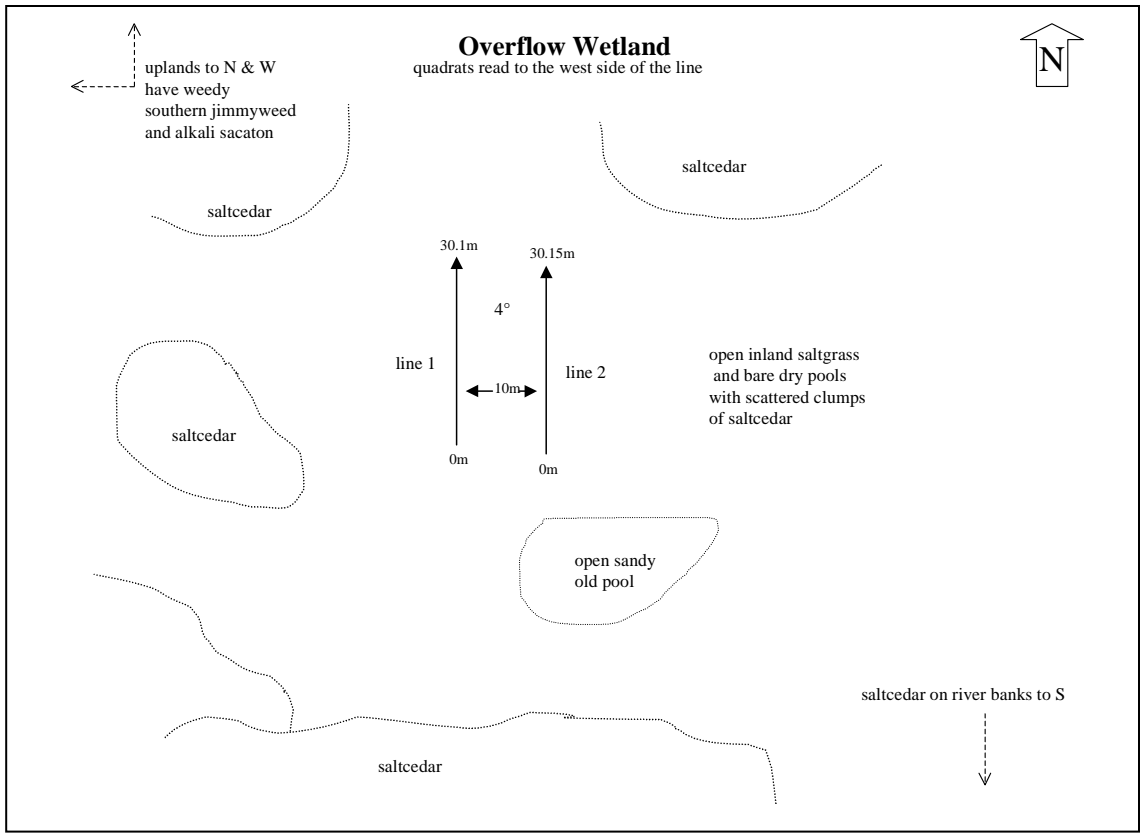


Figure 56. Diagram of overflow wetlands monitoring plot 1-1.

**Pecos River Riparian Monitoring Program
Allotment Report 2000**

**Allotment Name: Overflow Wetland
Reconnaissance Plot: OverflowWetland-OPP1**

NMNHP Plot Number: 00RM024

Community Type: Alkali Sacaton/Southern Jimmyweed
Sporobolus airoides/Isocoma pluriflora

Survey Date: 8/2/2000

UTM Location (NAD 27): Easting: 559890 Northing: 3681693

Directions to Plot: Take US 380 E approx. 10.5 mi. from junction with US 285, then turn S on NM 409. After approx. 7 mi., road will curve sharply to NE toward bottomless lakes; Take the S road at this intersection which is still NM 409. After approx. 3.3 mi., take road to SW toward Pecos R. After approx. 1.1 mi. there will be an intersection with a road under a power line. Take this road NE for approx. 0.9 mi. and then take road W down wash. (There is a road heading W at 0.6 mi. DO NOT take this road.) At intersection with old N/S road park and walk approx. 0.5 mi. to plot.

Description: The plot was located on a dry terrace of the old river floodplain that may have been an agricultural field in the past. Terrace was diverse but weedy, and overall cover low. The dominant species were southern jimmyweed and alkali sacaton, with salt cedar, giant sacaton and kochia also common.

Status: Site was very dry and had many invasive ruderal species.

Adjacent Communities: Uplands to the east were dominated by honey mesquite and burrograss (*Scleropogon brevifolius*) with patches of tobosa (*Hilaria mutica*). To the south was a terrace dominated by kochia. To the southeast was a monotypic stand of inland saltgrass in an old back channel (OverflowWetlands-1-1). Dense salt cedar stands lined the riverbanks to the north, west and south.

Species Name	Common Name	Source	Avg % Cover
Shrubs			
Atriplex canescens	fourwing saltbush	P	
Isocoma pluriflora	southern jimmyweed	P	
Tamarix ramosissima	salt cedar	P	
Graminoids			
Eragrostis cilianensis	stinkgrass	P	
Setaria leucopila	streambed bristlegrass	P	
Sporobolus airoides	alkali sacaton	P	
Sporobolus wrightii	giant sacaton	P	
Forbs			
Amaranthus spp.	amaranth	P	
Kochia scoparia	common kochia	P	

Appendix A: Location of monitoring plot line transect endpoints and reconnaissance survey plots, grouped by allotment. Coordinates are in UTM (Universal Transverse Mercator) NAD-27.

Allotment	SurveyType	Year	Line/Location	Easting	Northing
2067	Reconnaissance	2000	2067OPP1	563420	3766623
2067	Reconnaissance	2000	2067OPP2	563452	3766750
2083	Reconnaissance	2000	2083 OPP1	574267	3802410
2083	Reconnaissance	2000	2083 OPP2	574308	3802431
4038	Monitoring	2000	4038-1-1-1A	567692	3756352
4038	Monitoring	2000	4038-1-1-1B	567662	3756357
4038	Monitoring	2000	4038-1-1-2A	567688	3756350
4038	Monitoring	2000	4038-1-1-2B	567661	3756351
4038	Monitoring	2000	4038-2-1-1A	566958	3759262
4038	Monitoring	2000	4038-2-1-1B	566984	3759279
4038	Monitoring	2000	4038-2-1-2A	566945	3759275
4038	Monitoring	2000	4038-2-1-2B	566975	3759287
4038	Monitoring	2000	4038-3-1-1A	565746	3760900
4038	Monitoring	2000	4038-3-1-1B	565776	3760898
4038	Monitoring	2000	4038-3-1-2A	565793	3760898
4038	Monitoring	2000	4038-3-1-2B	565821	3760907
4038	Monitoring	2000	4038-3-1-2mid	565813	3760904
4038	Reconnaissance	2000	4038 OPP1	567122	3759135
4039	Monitoring	2000	4039-1-1-1A	567305	3754595
4039	Monitoring	2000	4039-1-1-1B	567282	3754612
4039	Monitoring	2000	4039-1-1-2A	567299	3754585
4039	Monitoring	2000	4039-1-1-2B	567277	3754596
4039	Reconnaissance	2000	4039 OPP1	567356	3754122
4040	Monitoring	1999	4040-1-1-1A	565718	3746344
4040	Monitoring	1999	4040-1-1-2A	565697	3746357
4040	Monitoring	1999	4040-1-2-1A	565814	3746279
4040	Monitoring	1999	4040-1-2-2A	565855	3746277
4040	Monitoring	1999	4040-2-1-1A	564721	3744464
4040	Monitoring	1999	4040-2-1-2A	564732	3744448
4040	Monitoring	1999	4040-2-2-1A	564778	3744421
4040	Monitoring	1999	4040-2-2-2A	564784	3744442
4050	Monitoring	2000	4050-1-1-1A	559112	3721348
4050	Monitoring	2000	4050-1-1-1B	559094	3721354
4050	Monitoring	2000	4050-1-1-2A	559108	3721338
4050	Monitoring	2000	4050-1-1-2B	559080	3721345
4050	Monitoring	2000	4050-2-1-1A	560235	3723527
4050	Monitoring	2000	4050-2-1-1B	560251	3723552
4050	Monitoring	2000	4050-2-1-2A	560266	3723557
4050	Monitoring	2000	4050-2-1-2B	560282	3723582
4050	Monitoring	2000	4050-2-2-1A	560271	3723599
4050	Monitoring	2000	4050-2-2-1B	560292	3723625
4050	Monitoring	2000	4050-2-2-2A	560293	3723634
4050	Monitoring	2000	4050-2-2-2B	560308	3723654

Allotment	SurveyType	Year	Line/Location	Easting	Northing
4056	Monitoring	1999	4056-1-1-1A	556966	3708584
4056	Monitoring	1999	4056-1-1-2A	556995	3708601
4056	Monitoring	1999	4056-1-2-1A	557081	3708441
4056	Monitoring	1999	4056-1-2-2A	557050	3708426
4056	Monitoring	1999	4056-2-1-1A	556930	3709014
4056	Monitoring	1999	4056-2-1-2A	556963	3709022
4056	Monitoring	1999	4056-2-2-1A	556946	3709056
4056	Monitoring	1999	4056-2-2-2A	556965	3709082
4056	Monitoring	1999	4056-3-1-1A	558365	3710367
4056	Monitoring	1999	4056-3-1-2A	558393	3710353
4056	Monitoring	1999	4056-3-2-1A	558343	3710316
4056	Monitoring	1999	4056-3-2-2A	558327	3710306
4059	Reconnaissance	2000	4059 OPP1	555994	3696093
4059	Reconnaissance	2000	4059 OPP2	555913	3696130
4072	Reconnaissance	2000	4072 OPP1	561662	3674803
4089	Reconnaissance	2000	4089 OPP1	567934	3655544
5007	Monitoring	2000	5007-1-1-1A	565031	3741049
5007	Monitoring	2000	5007-1-1-1B	565051	3741056
5007	Monitoring	2000	5007-1-1-2A	565015	3741025
5007	Monitoring	2000	5007-1-1-2B	565029	3741029
5007	Monitoring	2000	5007-1-2-1B	564971	3741314
5007	Monitoring	2000	5007-1-2-2B	564972	3741324
5007	Monitoring	2000	5007-2-1-1A	565473	3742096
5007	Monitoring	2000	5007-2-1-1B	565473	3742126
5007	Monitoring	2000	5007-2-1-2A	565486	3742097
5007	Monitoring	2000	5007-2-1-2B	565486	3742128
5007	Monitoring	1999	5007-3-1-1A	565441	3742746
5007	Monitoring	1999	5007-3-1-2A	565449	3742756
5020	Monitoring	1999	5020-1-1-1A	563742	3737072
5020	Monitoring	1999	5020-1-1-2A	563736	3737049
5020	Monitoring	1999	5020-1-2-1A	563710	3737046
5020	Monitoring	1999	5020-1-2-2A	563717	3737075
5020	Monitoring	1999	5020-2-1-1A	563329	3736484
5020	Monitoring	1999	5020-2-1-2A	563313	3736463
5020	Monitoring	1999	5020-3-1-1A	564191	3735167
5020	Monitoring	1999	5020-3-1-2A	564202	3735145
5020	Reconnaissance	1999	5020 OPP1	563614	3736416
5023	Reconnaissance	2000	5023 OPP1	562979	3729166
5023	Reconnaissance	2000	5023 OPP2	562883	3729144
5023	Reconnaissance	2000	5023 OPP3	562799	3729152
5023	Reconnaissance	2000	5023 OPP4	562664	3729138
5023	Reconnaissance	2000	5023 OPP5	562514	3729117
5024	Monitoring	1999	5024-1-1-1A	559721	3722318
5024	Monitoring	1999	5024-1-1-2A	559721	3722276

Allotment	SurveyType	Year	Line/Location	Easting	Northing
5024	Monitoring	1999	5024-1-2-1A	559715	3722327
5024	Monitoring	1999	5024-1-2-2A	559714	3722297
5024	Monitoring	1999	5024-2-1-1A	559708	3722013
5024	Monitoring	1999	5024-2-1-2A	559696	3721987
5024	Monitoring	1999	5024-2-2-1A	559694	3722010
5024	Monitoring	1999	5024-2-2-2A	559684	3721982
5024	Monitoring	1999	5024-3-1-1A	559623	3721701
5024	Monitoring	1999	5024-3-1-2A	559627	3721685
Overflow Wetlands	Monitoring	2000	OFW1-1-1A	559958	3681354
Overflow Wetlands	Monitoring	2000	OFW1-1-1B	559959	3681383
Overflow Wetlands	Monitoring	2000	OFW1-1-2A	559968	3681351
Overflow Wetlands	Monitoring	2000	OFW1-1-2B	559969	3681383
Overflow Wetlands	Reconnaissance	2000	OFW OPP1	559890	3681694

Appendix B. Plant species list for Pecos River Riparian Monitoring Program. Origin refers to native (N) or introduced (I) species. See text for definition of wetland status codes. Acronyms are the NM Natural Heritage program codes used in the associated database.

Species Name	Common Name	NMNHP Acronym	Origin	Wetland Status
Trees				
<i>Elaeagnus angustifolia</i>	Russian olive	ELAANG	I	FACW-
<i>Populus deltoides</i>	eastern cottonwood	POPDEL	N	
<i>Salix gooddingii</i>	Goodding's willow	SALGOO	N	OBL
<i>Ulmus pumila</i>	Siberian elm	ULMPUM	I	NI
Shrubs				
<i>Allenrolfea occidentalis</i>	pickleweed	ALLOCC		
<i>Artemisia filifolia</i>	sand sagebrush	ARTFIL	N	NI
<i>Atriplex canescens</i>	fourwing saltbush	ATRCAN	N	UPL
<i>Baccharis emoryi</i>	Emory's baccharis	BACEMO	N	FACW
<i>Gutierrezia microcephala</i>	threadleaf snakeweed	GUTMIC	N	NI
<i>Gutierrezia sarothrae</i>	broom snakeweed	GUTSAR	N	NI
<i>Isocoma pluriflora</i>	southern jimmyweed	ISOPLU	N	NI
<i>Opuntia imbricata</i>	tree cholla	OPUIMB	N	NI
<i>Opuntia phaeacantha</i>	tulip pricklypear	OPUPHA	N	NI
<i>Prosopis glandulosa</i>	honey mesquite	PROGLA	N	FACU
<i>Salix exigua</i>	coyote willow	SALEXI	N	OBL
<i>Sapindus saponaria</i> var. <i>drummondii</i>	western soapberry	SAPSAPD	N	
<i>Solidago</i> sp.	goldenrod	SOLIDA	N	
<i>Tamarix ramosissima</i>	Salt cedar	TAMRAM	I	FACW
<i>Yucca glauca</i>	soapweed yucca	YUCGLA	N	
Graminoids				
<i>Aristida divaricata</i>	poverty threeawn	ARIDIV	N	NI
<i>Aristida purpurea</i>	purple threeawn	ARIPUR	N	NI
<i>Aristida purpurea</i> var. <i>nealleyi</i>	Nealley's threeawn	ARIPURN	N	
<i>Aristida purpurea</i> var. <i>perplexa</i>	purple threeawn	ARIPER	N	
<i>Aristida purpurea</i> var. <i>purpurea</i>	purple threeawn	ARIPURP	N	
<i>Bothriochloa laguroides</i> ssp. <i>torreyana</i>	silver beardgrass	BOTLAGT	N	NI
<i>Bouteloua barbata</i>	sixweeks grama	BOUBAR	N	NI
<i>Bouteloua curtipendula</i>	sideoats grama	BOUCUR	N	NI
<i>Bouteloua gracilis</i>	blue grama	BOUGRA	N	NI
<i>Bouteloua hirsuta</i>	hairy grama	BOUHIR	N	NI
<i>Buchloe dactyloides</i>	buffalograss	BUCDAC	N	FACU
<i>Carex occidentalis</i>	western sedge	CAROCC	N	NI
<i>Cenchrus spinifex</i>	sandbur	CENSPI	N	NI
<i>Chloris cucullata</i>	hooded windmill grass	CHLCUC	N	NI
<i>Chloris virgata</i>	feather fingergrass	CHLVIR	I	NI
<i>Cynodon dactylon</i>	bermudagrass	CYNDAC	I	FACU
<i>Cyperus esculentus</i>	chufa flatsedge	CYPESC	N	FACW
<i>Distichlis spicata</i>	inland saltgrass	DISSPI	N	FACW
<i>Echinochloa crus-galli</i>	barnyardgrass	ECHCRU	I	FACW-
<i>Eleocharis rostellata</i>	beaked spikerush	ELEROS	N	
<i>Elymus canadensis</i>	Canada wildrye	ELYCAN	N	FAC
<i>Eragrostis cilianensis</i>	stinkgrass	ERACIL	I	FACU+
<i>Festuca arundinaceae</i>	tall fescue or K-31	FESARU	I	NA
<i>Hilaria mutica</i>	tobosa	HILMUT	N	
<i>Juncus mexicanus</i>	Mexican rush	JUNMEX	N	

Species Name	Common Name	NMNHP Acronym	Origin	Wetland Status
<i>Juncus torreyi</i>	Torrey's rush	JUNTOR	N	FACW
<i>Leptochloa dubia</i>	green sprangletop	LEPDUB	N	NI
<i>Muhlenbergia asperifolia</i>	alkali muhly	MUHASP	N	FACW
<i>Munroa squarrosa</i>	false buffalograss	MUNSQU	N	
<i>Panicum capillare</i>	witchgrass	PANCAP	N	FAC
<i>Panicum obtusum</i>	vine mesquite	PANOBT	N	FAC
<i>Panicum virgatum</i>	switchgrass	PANVIR	N	FAC+
<i>Pascopyrum smithii</i>	western wheatgrass	PASSMI	N	FAC-
<i>Paspalum distichum</i>	knotgrass	PASDIS	N	OBL
<i>Phragmites australis</i>	common reed	PHRAUS	N	FACW+
<i>Polypogon monspeliensis</i>	annual rabbitsfoot grass	POLMON	I	FACW+
<i>Saccharum ravennae</i>	ravennagrass	SACRAV	I	
<i>Schismus arabicus</i>	Mediterranean grass	SCHARA	I	
<i>Schoenoplectus maritimus</i>	saltmarsh bulrush	SCHMAR	N	
<i>Schoenoplectus pungens</i>	common threesquare	SCHPUN	N	OBL
<i>Setaria leucopila</i>	streambed bristlegrass	SETLEU	N	NI
<i>Sorghastrum nutans</i>	Indiangrass	SORNUT	N	UPL
<i>Sporobolus airoides</i>	alkali sacaton	SPOAIR	N	FAC
<i>Sporobolus compositus</i> var. <i>compositus</i>	tall dropseed	SPOCOMC	N	UPL
<i>Sporobolus contractus</i>	spike dropseed	SPOCON	N	NI
<i>Sporobolus cryptandrus</i>	sand dropseed	SPOCRY	N	FACU-
<i>Sporobolus giganteus</i>	giant dropseed	SPOGIG	N	UPL
<i>Sporobolus</i> spp.	dropseed	SPOROB		
<i>Sporobolus wrightii</i>	giant sacaton	SPOWRI	N	NI
Forbs				
<i>Amaranthus</i> spp.	amaranth	AMARAN		
<i>Ambrosia acanthicarpa</i>	flatspine burr ragweed	AMBACA	N	
<i>Ambrosia psilostachya</i>	Cuman ragweed	AMBPSI	N	FAC
<i>Ambrosia</i> spp.	ragweed	AMBROS		
<i>Apocynum cannabinum</i>	Indianhemp	APOCAN	N	FAC+
<i>Asclepias</i> spp.	milkweed	ASCLEP	N	
<i>Asclepias subverticillata</i>	whorled milkweed	ASCSUB	N	FACU
<i>Asparagus officinalis</i>	garden asparagus	ASPOFF	I	FACU
<i>Aster</i> spp.	aster	ASTER		
<i>Aster subulatus</i> var. <i>ligulatus</i>	southern annual saltmarsh aster	ASTSUBL	N	
<i>Chamaesyce albomarginata</i>	whitemargin sandmat	CHAALB	N	
<i>Chamaesyce missurica</i>	prairie sandmat	CHAMIS	N	
<i>Chamaesyce revoluta</i>	threadstem sandmat	CHAREV	N	
<i>Chamaesyce serpyllifolia</i>	thymeleaf sandmat	CHASER2	N	NI
<i>Chamaesyce</i> spp.	sandmat	CHAMAE2		
<i>Chenopodium leptophyllum</i>	narrowleaf goosefoot	CHELEP	N	FACU
<i>Chenopodium pratericola</i>	desert goosefoot	CHEPRA	N	
<i>Chloracantha spinosa</i>	spiny chloracantha	CHLSPI	N	FACW
<i>Conyza canadensis</i>	Canadian horseweed	CONCAN	N	FACU
<i>Dalea lanata</i> var. <i>lanata</i>	woolly prairieclover	DALLANL		
<i>Dimorphocarpa wislizeni</i>	spectacle pod	DIMWIS	N	NI
<i>Equisetum laevigatum</i>	smooth horsetail	EQULAE	N	FACW
<i>Gaillardia pinnatifida</i>	red dome blanketflower	GAIPIN	N	
<i>Gaura coccinea</i>	scarlet beeblossom	GAUCOC	N	NI
<i>Gaura villosa</i>	wolly gaura	GAUVIL	N	
<i>Glycyrrhiza lepidota</i>	American licorice	GLYLEP	N	FAC+

Species Name	Common Name	NMNHP Acronym	Origin	Wetland Status
Hackelia spp.	stickseed	HACKEL		
Helianthus annuus	common sunflower	HELANN	N	FAC-
Helianthus ciliaris	Texas blueweed	HELCIL	N	FAC
Helianthus petiolaris	prairie sunflower	HELPET	N	NI
Heliotropium convolvulaceum	phlox heliotrope	HELCON	N	
Heliotropium curassavicum	salt heliotrope	HELCUR	N	
Heterotheca subaxillaris	camphorweed	HETSUB	N	UPL
Hoffmannseggia glauca	Indian rushpea	HOFGLA	N	FACU
Kallstroemia parviflora	warty caltrop	KALPAR	N	
Kochia scoparia	common kochia	KOCSCO	I	FAC
Laennecia coulteri	conyza	LAECOU	N	
Lepidium alyssoides	mesa pepperwort	LEPALY	N	NI
Limonium limbatum	Transpecos sealavender	LIMLIM	N	FACW
Malva neglecta	common mallow	MALNEG	N	
Melilotus officinalis	yellow sweetclover	MELOFF	I	FACU+
Mentzelia multiflora	manyflowered mentzelia	MENMUL	N	
Mentzelia spp.	mentzelia	MENTZE		
Nyctaginaceae	four-o'clock	NYCTAG		
Oenothera pallida	pale eveningprimrose	OENPAL	N	NI
Palafoxia sphacelata	othake	PALSPH	N	
Pectis angustifolia	narrowleaf pectis	PECANG	N	NI
Polygonum pensylvanicum	pink smartweed	POLPEN	N	OBL
Portulaca oleracea	common purslane	POROLE	N	FAC
Portulaca pilosa	kiss me quick	PORPIL		
Proboscidea spp.	devilsclaw	PROBOS		
Salsola tragus	prickly Russian thistle	SALTRA	I	
Senecio riddellii	Riddell's ragwort	SENRID	N	
Solanum elaeagnifolium	silverleaf nightshade	SOLELA	N	NI
Solanum rostratum	buffalobur nightshade	SOLROS	N	NI
Sphaeralcea spp.	globemallow	SPHAER	N	
Suaeda spp.	seepweed	SUAEDA		
Suaeda suffrutescens var. detonsa	desert seepweed	SUASUFD	N	
Thelesperma megapotamicum	Hopi tea greenthread	THEMEG	N	NI
Typha angustifolia	narrowleaf cattail	TYPANG	N	
Typha latifolia	broadleaf cattail	TYPLAT	N	OBL
Unidentified	unidentified	UNID		
Verbesina encelioides	golden crownbeard	VERENC	N	FAC
Xanthium strumarium	rough cocklebur	XANSTR	N	FAC