

**Long-term Outcomes of Natural-process Riparian Restoration on a Regulated River Site: the Rio Grande Albuquerque Overbank Project after 16 Years.**

**Supplemental Material**

Supplementary Table 1. Pre-treatment species absolute canopy cover plus number of individuals and basal area for trees based on 40 quadrats from 1998. Life form codes are 1 = trees, 2 = shrub, 3 = graminoid, and 4 = forb. Origin codes are I = introduced and N = native.

<b>Life Form</b>	<b>Origin</b>	<b>Species name</b>	<b>Canopy cover</b>	<b>Individuals. /m<sup>2</sup></b>	<b>Basal area m<sup>2</sup>/ha</b>
1	I	Elaeagnus angustifolia	61.4	1.2875	12875
1	I	Ulmus pumila	5.1	0.0750	750
<b>1</b>	I	Morus alba	0.6	0.0500	500
1	N	Populus deltoides ssp. wislizeni	4.6	0.1250	1250
2	N	Salix exigua	0.3		
3	N	Sorghastrum nutans	0.4		
3	-	Other grasses	38.9		
3	N	Sedges	29.8		
4	N	Ambrosia psilostachya	0.5		
4	N	Apocynum cannabinum	0.1		
4	I	Convolvulus arvensis	2.7		
4	N	Conyza canadensis	0.1		
4	N	Equisetum laevigatum	1.4		

Supplementary Table 2. Absolute percent canopy cover by species for two control plots adjacent to the treatment site. Plot 98RB008 (A) was a Russian olive-dominated and established in 1998 to northeast of treatment site. Plot 98RB008 (B), was a mature cottonwood gallery forest plot to the north established in 1999 and sampled beginning in 1999. Life form codes are 1 = trees, 2 = shrub, 3 = graminoid, and 4 = forb. Origin is I = introduced and N = native.

<b>A. Plot 98RB008</b>							
Life Form	Origin	Species name	Year				
			1998	1999	2000	2001	2002
1	I	<i>Elaeagnus angustifolia</i>	53.48	47.93	44.10	66.00	54.50
1	I	<i>Morus alba</i>	1.80	2.00	2.50	6.13	3.00
1	I	<i>Ulmus pumila</i>				0.40	0.23
1	N	<i>Populus deltoides</i> ssp. <i>wislizeni</i>		0.00	0.03	0.20	0.08
2	N	<i>Baccharis salicifolia</i>	2.00				
2	N	<i>Salix exigua</i>	2.10	2.20	0.15	2.14	1.15
3	I	<i>Agrostis gigantea</i>			0.50		
3	I	<i>Cynodon dactylon</i>	21.13	10.85	24.98	73.48	33.60
3	N	<i>Distichlis spicata</i>	0.53	1.50	1.88	6.38	2.50
3	N	<i>Elymus canadensis</i>			0.20	0.96	0.29
3	N	<i>Muhlenbergia asperifolia</i>	3.05	14.03	0.63	4.40	1.48
3	N	<i>Sorghastrum nutans</i>		1.88		0.10	0.10
3	N	<i>Sporobolus airoides</i>	5.25	3.15	0.15	5.30	2.40
3	N	<i>Sporobolus compositus</i> var. <i>compositus</i>	7.30	5.59	11.18	23.50	7.63
4	I	<i>Convolvulus arvensis</i>		0.05	0.13	0.53	0.20
4	I	<i>Melilotus officinalis</i>	0.44	1.06			
4	N	<i>Ambrosia psilostachya</i>	12.58	7.04	2.08	6.74	3.26
4	N	<i>Apocynum cannabinum</i>	1.63	0.80	0.33	0.25	0.18
4	N	<i>Asclepias subverticillata</i>	0.05	0.13	0.05	0.43	0.05
4	N	<i>Equisetum laevigatum</i>	0.08	0.03	0.02	0.23	0.17
4	N	<i>Euthamia occidentalis</i>		0.33			
4	N	<i>Gaura mollis</i>			0.03		
4	N	<i>Helianthus annuus</i>	0.14	0.08	0.03	0.13	
4	N	<i>Lactuca tatarica</i> var. <i>pulchella</i>				0.08	0.08
4	N	<i>Symphotrichum ericoides</i>	4.68	5.36	6.30	18.25	8.65

<b>B. Plot 99RB017</b>							
Life Form	Origin	Species name	Year				
			1999	2000	2001	2002.00	
1	I	<i>Ailanthus altissima</i>	7.78	10.78	11.80	10.95	
1	I	<i>Elaeagnus angustifolia</i>	19.93	24.75	23.78	21.03	
1	I	<i>Morus alba</i>	2.38	0.03	2.63	2.50	
1	I	<i>Tamarix chinensis</i>	2.30	4.88	2.58	2.58	
1	I	<i>Ulmus pumila</i>	2.88	8.25	6.51	6.35	
1	N	<i>Populus deltoides</i> ssp. <i>wislizeni</i>	51.88	59.13	62.13	62.25	
1	N	<i>Salix gooddingii</i>		1.50	1.50	1.50	
2	N	<i>Amorpha fruticosa</i>		0.38			
2	N	<i>Parthenocissus vitacea</i>		8.25	8.75	9.18	7.80
4	I	<i>Convolvulus arvensis</i>		0.10	0.05	0.35	0.25

Supplementary Table 3. Absolute percent canopy cover for all species found during for the course of the Albuquerque Overbank Project (AOP) study ordered by life form, origin and site zone (see text) with common names and symbol codes from the USDA Plants database. Origin cods are I = introduced and N = native.

Origin	Species name	Common name	Code	Zone	Year							
					2000	2001	2002	2003	2004	2005	2007	2013
<u>Trees</u>												
N	<i>Populus deltoides ssp. wislizeni</i>	Rio Grande cottonwood	PODEW	Bar Fill Zone	0.06	0.62	0.43				0.48	0.17
				Bar Lowered	6.28	7.26	10.61				19.08	11.21
				High Bar	12.67	13.26	7.89				20.00	21.97
				New Bar				2.32	3.64	7.04		52.82
N	<i>Salix amygdaloides</i>	peachleaf willow	SAAM2	Bar Lowered							0.00	
				New Bar						2.88		0.44
N	<i>Salix gooddingii</i>	Goodding's willow	SAGO	Bar Lowered	0.34	0.48	0.66				0.07	0.01
				New Bar				0.68	0.83	2.96		5.38
I	<i>Ailanthus altissima</i>	tree of heaven	AIAL	New Bar					0.01			
I	<i>Elaeagnus angustifolia</i>	Russian olive	ELAN	Bar Fill Zone	0.62	2.57	4.93					1.29
				Bar Lowered	2.75	5.23	9.64				2.09	10.59
				High Bar	6.81	9.26	19.81				4.44	5.88
I	<i>Morus alba</i>	white mulberry	MOAL	High Bar							0.37	0.19
				New Bar								0.01
I	<i>Tamarix chinensis</i>	saltcedar	TACH2	Bar Fill Zone	0.57	1.57	2.31				0.00	
				Bar Lowered	0.56	0.27	0.34				0.12	0.07
				New Bar				0.00	0.38	0.05		0.01
I	<i>Ulmus pumila</i>	Siberian elm	ULPU	Bar Fill Zone	0.05	0.69	0.17				0.26	3.05
				Bar Lowered	0.02	0.06	0.22				1.83	0.98
				High Bar		0.26	0.37					1.50
				New Bar				0.01				0.32
<u>Shrubs</u>												
N	<i>Baccharis salicifolia</i>	seepwillow	BASA4	Bar Fill Zone							0.07	
				Bar Lowered	0.25	0.15	0.74				4.76	9.15
				New Bar								0.09
N	<i>Salix exigua</i>	coyote willow	SAEX	Bar Fill Zone	3.21	6.33	5.05				6.36	11.74
				Bar Lowered	2.66	6.59	11.56				20.97	8.76
				High Bar	7.74	7.70	13.26				21.15	11.48
				New Bar				0.12	1.98	14.65		28.53
<u>Graminoids</u>												

N/I	<i>Poa pratensis</i>	Kentucky bluegrass	POPR	Bar Lowered	0.16	0.33			0.25		
					0.07						
N	<i>Bolboschoenus maritimus</i> ssp. <i>paludosus</i>	saltmarsh bulrush	BOMAP	New Bar					0.69		
N	<i>Bouteloua barbata</i>	sixweeks grama	BOBA2	Bar Fill Zone						0.03	
N	<i>Carex emoryi</i>	Emory's sedge	CAEM2	Bar Fill Zone	0.12	0.85	0.24			0.12	0.05
				Bar Lowered	2.06	3.28	4.76			4.79	0.71
				High Bar	0.63	0.33	0.22			1.20	0.52
				New Bar				0.03	0.88		0.68
N	<i>Cenchrus spinifex</i>	sandbur	CESP4	Bar Fill Zone							0.05
				Bar Lowered		0.02	0.01				
N	<i>Cyperus niger</i>	black flatsedge	CYNI2	New Bar					0.00		
N	<i>Cyperus odoratus</i>	fragrant flatsedge	CYOD	Bar Fill Zone	0.11	0.35	0.13				0.12
				Bar Lowered	0.38	0.07	0.14				0.03
				High Bar		0.04					
				New Bar					3.38	0.03	
N	<i>Cyperus squarrosus</i>	bearded flatsedge	CYSQ	New Bar					0.05		
N	<i>Distichlis spicata</i>	inland saltgrass	DISP	Bar Fill Zone	1.02	3.43	2.06			12.71	5.54
				Bar Lowered	0.25	1.31	1.10			9.53	1.45
				High Bar	1.30	2.56	3.33			27.07	5.11
				New Bar							0.06
N	<i>Eleocharis palustris</i>	common spikerush	ELPA3	Bar Fill Zone	0.07						
				Bar Lowered	0.57	0.03	0.03				
				New Bar				11.47	4.28		
N	<i>Elymus canadensis</i>	Canada wildrye	ELCA4	Bar Fill Zone						0.05	
				Bar Lowered	0.03	0.24	0.94			0.87	0.46
				High Bar	0.22	0.37	0.26			0.19	0.11
				New Bar							0.00
N	<i>Elymus elymoides</i>	bottlebrush squirreltail	ELEL5	Bar Fill Zone						0.02	
				Bar Lowered	0.21		0.02				
N	<i>Elymus x pseudorepens</i>	false quackgrass	ELPS	Bar Lowered			0.12			0.10	0.02
				High Bar	0.22	0.30	1.96			2.19	0.07
N	<i>Eragrostis pectinacea</i>	tufted lovegrass	ERPE	Bar Fill Zone	0.07	1.65					
				Bar Lowered		0.05					

N	Hordeum jubatum	foxtail barley	HOJU	New Bar Bar Fill Zone				6.56	4.66			0.39	
				Bar Lowered	0.03	0.30	0.02					0.21	0.03
				High Bar	0.56							0.06	
N	Hordeum pusillum	little barley	HOPU	New Bar Bar Fill Zone				0.01				0.12	
N	Juncus arcticus var. balticus	Baltic rush	JUAR5	Bar Lowered			0.00					0.02	0.05
N	Juncus torreyi	Torrey's rush	JUTO	High Bar Bar Lowered	0.13	0.01						0.20	0.07
N	Leersia oryzoides	rice cutgrass	LEOR	New Bar Bar Lowered				0.39	0.00				
N	Leersia oryzoides	rice cutgrass	LEOR	New Bar		0.57	0.05						
N	Leptochloa fusca ssp. fascicularis	bearded sprangletop	LEFUF	Bar Fill Zone	0.05			11.26	37.21	4.72			0.11
N	Muhlenbergia asperifolia	alkali muhly	MUAS	New Bar Bar Fill Zone	2.03	3.95	2.64		1.83	0.06			0.07
				Bar Lowered	1.99	3.02	3.58					1.89	0.66
				High Bar	1.70	3.96	5.78					2.41	3.54
N	Muhlenbergia racemosa	marsh muhly	MURA	New Bar Bar Fill Zone	0.05	0.12		0.26	0.03				
N	Panicum capillare	witchgrass	PACA6	Bar Fill Zone	0.02		0.36					0.71	
				Bar Lowered	3.57	0.43	0.02					0.66	
				New Bar				4.03	0.90				
N	Panicum hallii	Hall's panicgrass	PAHA	Bar Lowered	0.02								
N	Panicum obtusum	vine mesquite	PAOB	Bar Fill Zone	0.05	0.48	0.17					1.74	6.69
				Bar Lowered	0.16	0.16	0.51					5.16	4.89
				High Bar	2.56	7.07	8.22					15.82	20.48
				New Bar				0.01	0.03				1.53
N	Pascopyrum smithii	western wheatgrass	PASM	Bar Lowered								0.74	
N	Paspalum distichum	knotgrass	PADI6	High Bar Bar Fill Zone	0.02	0.24	0.02					2.67	0.07
				Bar Lowered	2.90	3.54	2.74					0.34	
				High Bar	1.37	1.85	0.37						
N	Phalaris arundinacea	reed canarygrass	PHAR3	New Bar Bar Lowered				0.53	2.74	1.03		1.64	0.01

N	Poa arida	plains bluegrass	POAR3	High Bar			0.04					
N	Schoenoplectus pungens	common threesquare	SCPU10	Bar Fill Zone	0.02	0.03	0.06				0.05	
				Bar Lowered	0.73	3.40	1.19				0.39	0.00
				High Bar	0.26	0.19	0.15					0.02
				New Bar				0.34	2.59	0.58		
N	Schoenoplectus tabernaemontani	softstem bulrush	SCTA2	New Bar				0.18	0.44			
N	Sorghastrum nutans	Indiangrass	SONU2	Bar Fill Zone	0.07	0.48					0.05	0.36
				Bar Lowered	0.21	1.16	0.10				0.82	3.30
				High Bar	0.41	0.07	0.07					0.22
N	Sphenopholis obtusata	prairie wedgescale	SPOB	Bar Lowered							0.11	
N	Sporobolus airoides	alkali sacaton	SPAI	Bar Fill Zone		0.71	0.10					0.14
				Bar Lowered	0.05	0.13					0.33	0.20
				High Bar	0.00	0.19						
N	Sporobolus compositus	tall dropseed	SPCOC 2	Bar Fill Zone	0.07	0.19	0.95					0.36
				Bar Lowered	0.30	0.66	2.77				0.03	0.62
				High Bar	0.09	0.22	0.81					
N	Sporobolus cryptandrus	sand dropseed	SPCR	Bar Fill Zone	0.04	0.01	0.28				5.37	1.85
				Bar Lowered	0.05	0.21	0.36				0.83	0.02
				High Bar			0.30				0.11	
				New Bar				0.04	0.06			
I	Agrostis gigantea	redtop	AGGI2	Bar Fill Zone	0.40	0.71						0.00
				Bar Lowered	0.44	1.02	0.56				4.74	0.74
				New Bar				2.74	0.38			
I	Bromus catharticus	rescuegrass	BRCA6	Bar Fill Zone							0.74	
				Bar Lowered	0.02	0.11	0.10				0.16	
I	Bromus japonicus	Japanese brome	BRJA	Bar Fill Zone								0.02
				Bar Lowered							0.10	
I	Bromus tectorum	cheatgrass	BRTE	Bar Fill Zone							0.17	
I	Cynodon dactylon	bermudagrass	CYDA	Bar Fill Zone		0.14	0.02				0.05	1.68
				Bar Lowered							1.23	1.64
				High Bar			1.37				5.56	1.13
				New Bar						0.09		
I	Echinochloa crus-galli	barnyardgrass	ECCR	Bar Fill Zone	0.02	0.30	0.07				0.02	
				Bar Lowered	1.46	0.74	0.03					
				High Bar							0.59	

I	Festuca arundinacea	tall fescue	FEAR3	New Bar				0.35	17.88	1.61		
I	Hordeum murinum ssp. glaucum	smooth barley	HOMUG	Bar Lowered	0.08		0.16				0.77	3.07
I	Polypogon monspeliensis	annual rabbitsfoot grass	POMO5	New Bar				0.18	0.00			
				Bar Fill Zone	0.17	0.05					0.02	
				Bar Lowered	0.18	0.33					0.02	
				New Bar				1.37				
I	Saccharum ravennae	ravennagrass	SARA3	Bar Lowered								10.80
				New Bar								0.16
I	Sorghum halepense	johnsongrass	SOHA	Bar Fill Zone	0.38	0.69	1.38				1.30	2.81
				Bar Lowered	3.39	4.15	3.80				1.98	2.09
				High Bar	3.56	5.67	8.78				8.63	5.97
<u>Forbs</u>												
N	Ambrosia acanthicarpa	flatspine burr ragweed	AMAC2	Bar Lowered	0.16	0.08						
N	Ambrosia psilostachya	Cuman ragweed	AMPS	Bar Fill Zone	3.22	6.24	2.23				0.05	0.06
				Bar Lowered	8.68	5.62	4.80				0.41	0.85
				High Bar	33.37	24.09	1.93				2.50	1.56
				New Bar					0.03			0.01
N	Apocynum cannabinum	Indianhemp	APCA	Bar Fill Zone							0.08	1.73
				Bar Lowered	0.28	0.93	1.10				3.37	1.44
				High Bar	0.11	0.11	0.15				0.19	1.52
N	Asclepias speciosa	showy milkweed	ASSP	Bar Lowered		0.02	0.03				0.33	0.03
				High Bar			0.04					0.43
N	Asclepias subverticillata	whorled milkweed	ASSU2	Bar Fill Zone		0.05						0.01
				Bar Lowered			0.02	0.03			0.03	0.14
				High Bar								0.00
N	Bidens cernua	nodding beggarstick	BICE	New Bar				0.38	0.06	0.09		
N	Bidens frondosa	devil's beggartick	BIFR	Bar Lowered	0.49	0.63	0.11				0.00	
				High Bar		0.37						
				New Bar				12.56	2.31	0.51		
N	Calibrachoa parviflora	seaside petunia	CAPA47	Bar Fill Zone		0.00						
				New Bar				0.04				
N	Centaurium arizonicum	Arizona centaury	CEAR12	Bar Lowered	0.16							
N	Chamaesyce serpyllifolia	thymeleaf sandmat	CHSE6	Bar Fill Zone	0.17	0.08	0.24				0.29	7.62

				Bar Lowered	0.93	0.13	0.53				0.01	0.01
				High Bar	0.11	0.33	0.15					
				New Bar				0.62	0.24			
N	Chenopodium incanum	mealy goosefoot	CHIN2	Bar Fill Zone							0.00	
N	Chloracantha spinosa	spiny chloracantha	CHSP11	High Bar	0.52	0.74	0.52				0.70	0.24
N	Conyza canadensis	Canadian horseweed	COCA5	Bar Fill Zone	0.96	3.61	0.10				1.38	
				Bar Lowered	0.63	5.50	0.31				0.22	
				High Bar	0.19	18.44	0.93				0.00	
				New Bar				0.12	0.01			
N	Descurainia pinnata	western tanseymustard	DEPI	Bar Fill Zone							1.64	
N	Dieteria canescens	hoary aster	MACA2	Bar Fill Zone		1.07	0.01				0.05	
				High Bar		1.70	0.48					
N	Dimorphocarpa wislizeni	spectacle pod	DIWI2	Bar Lowered	0.02							
N	Epilobium ciliatum	hairy willowherb	EPCI	New Bar				0.00				
N	Equisetum laevigatum	smooth horsetail	EQLA	Bar Lowered	0.38	0.29	0.59				1.96	0.19
				High Bar	0.10	0.12	0.12				0.41	0.24
				New Bar								0.00
N	Erigeron divergens	spreading fleabane	ERDI4	High Bar	0.04							
N	Erigeron philadelphicus	Philadelphia fleabane	ERPH	Bar Lowered	0.05							
N	Euthamia occidentalis	western goldenrod	EUOC4	Bar Fill Zone	5.37	7.21	0.22					0.12
				Bar Lowered	17.79	23.03	16.57				2.58	1.13
				High Bar	5.37	12.33	7.44				0.82	0.44
				New Bar				2.38	10.71	1.05		0.31
N	Gaura mollis	velvetweed	GAMO5	Bar Fill Zone			0.05				0.01	
				Bar Lowered	0.05		0.05				0.19	
				High Bar	0.15	2.48	0.04				0.06	
N	Glycyrrhiza lepidota	American licorice	GLLE3	High Bar								0.04
N	Grindelia squarrosa	curlycup gumweed	GRSQ	Bar Fill Zone		0.02						
				Bar Lowered	0.10	0.05	0.51				0.09	
N	Helianthus annuus	common sunflower	HEAN3	Bar Fill Zone							8.00	0.28
				Bar Lowered							1.11	
				High Bar							1.39	
N	Helianthus petiolaris	prairie sunflower	HEPE	Bar Fill Zone	23.61	8.90	0.02				0.12	



				Bar Lowered	5.32	0.63	0.03				0.15	0.00
				High Bar	9.54	8.44					0.71	0.00
N	Lactuca tatarica var. pulchella	blue lettuce	LATAP	Bar Fill Zone	0.10							0.07
				Bar Lowered	0.05	0.05	0.48				1.06	0.05
				High Bar			0.07				0.26	0.44
				New Bar				0.01				
N	Lycopus americanus	American bugleweed	LYAM	Bar Lowered		0.02	0.02					
				New Bar				0.00	0.02			
N	Mentha arvensis	wild mint	MEAR4	New Bar						0.01		
N	Mentzelia albicaulis	whitestem blazingstar	MEAL6	Bar Fill Zone							2.04	
				Bar Lowered							1.15	
N	Oenothera elata ssp. hirsutissima	Hooker's eveningprimrose	OEELH	Bar Fill Zone	0.71	1.19	0.02				0.07	
				Bar Lowered	0.00		0.94				0.58	
				High Bar	0.74						0.15	
N	Persicaria lapathifolia	curlytop knotweed	PELA22	Bar Lowered	0.38							
N	Physalis longifolia var. longifolia	longleaf groundcherry	PHLOL3	High Bar	0.02						0.11	
N	Portulaca oleracea	common purslane	POOL	Bar Fill Zone				0.01				0.14
N	Pseudognaphalium stramineum	cottonbatting cudweed	PSST7	Bar Fill Zone							0.00	
				Bar Lowered	0.16	0.03	0.17					
				New Bar					0.01	0.07		
N	Pyrrhopappus pauciflorus	smallflower desert-chicory	PYPA4	Bar Lowered			0.03				0.01	0.02
N	Ranunculus cymbalaria	alkali buttercup	RACY	New Bar				0.12				
N	Ratibida tagetes	green prairie coneflower	RATA	Bar Lowered			0.00					
N	Solanum elaeagnifolium	silverleaf nightshade	SOEL	Bar Fill Zone				0.01			0.43	0.10
				Bar Lowered							0.01	0.00
N	Solidago canadensis	Canada goldenrod	SOCA6	Bar Lowered	0.18	0.08	0.36					
N	Sphaeralcea incana	gray globemallow	SPIN2	High Bar								0.07
N	Symphotrichum ericoides	heath aster	SYER	Bar Fill Zone	0.05	0.17	1.67					0.05
				Bar Lowered	1.79	2.13	1.97				0.12	0.52

N	Symphytotrichum lanceolatum ssp. hesperium	white panicle aster	SYLAH	High Bar Bar Fill Zone	0.81 0.10	0.96 0.10	1.22													0.26						
				Bar Lowered	1.00	0.51	1.15													0.18	0.06					
				High Bar	0.30	0.74	1.74													0.59	0.21					
				New Bar					0.38	0.03																
N	Teucrium canadense var. occidentale	western germander	TECAO	Bar Fill Zone																	0.03					
				Bar Lowered	1.07	1.00	0.67															0.90	1.04			
				High Bar	0.04		0.15															0.04				
N	Typha domingensis	southern cattail	TYDO	Bar Lowered			0.08																			
N				New Bar					1.21	4.06	3.81															
N	Verbena bracteata	bigbract verbena	VEBR	Bar Lowered	0.02	0.02																	0.00			
				High Bar																			0.04			
N	Veronica anagallis-aquatica	water speedwell	VEAN2	New Bar					0.91																	
N	Xanthium strumarium	rough cocklebur	XAST	Bar Fill Zone	0.86	1.36	0.00																	0.00		
				Bar Lowered	3.72	7.93	0.19																	0.02		
				High Bar		0.04																				
				New Bar					0.65	4.85	11.03													0.37		
I	Asparagus officinalis	garden asparagus	ASOF	Bar Lowered																				0.03	0.00	
I	Convolvulus arvensis	field bindweed	COAR4	Bar Fill Zone		0.05	0.36																	4.49	1.77	
				Bar Lowered	0.07	0.35	3.23																	0.70	0.50	
				High Bar	8.96	10.70	24.83																	2.74	11.13	
				New Bar						0.03																
I	Kochia scoparia	common kochia	BASC5	Bar Fill Zone																					0.05	
				Bar Lowered	0.02																					
				High Bar	2.59	11.19	0.39																			
				New Bar																						
I	Lactuca serriola	prickly lettuce	LASE	Bar Fill Zone																					0.36	
				Bar Lowered		0.11	0.04																		0.16	
				High Bar		0.04																				
I	Medicago sativa	alfalfa	MESA	New Bar						0.06																
I	Melilotus officinalis	yellow sweetclover	MEOF	Bar Fill Zone	14.72	10.49	0.74																		6.50	0.67
				Bar Lowered	27.54	15.61	0.07																		15.10	6.59
				High Bar	41.39	5.89	0.03																		4.56	4.62
				New Bar					1.63	0.06																

I	Plantago major	common plantain	PLMA2	Bar Lowered New Bar	0.33	0.13	0.28			0.00	0.02
I	Polygonum persicaria	Lady's thumb	POPE3	New Bar				0.04			
I	Rumex stenophyllus	narrowleaf dock	RUST4	Bar Lowered	0.02	0.02	0.03	0.43	0.06	0.09	
I	Salsola tragus	prickly Russian thistle	SATR12	Bar Fill Zone	0.79	3.03	0.55			20.44	0.49
				Bar Lowered High Bar	0.00 0.78		11.52			0.93	
I	Scorzonera laciniata	cutleaf vipergrass	SCLA6	Bar Fill Zone						0.02	
I	Sisymbrium altissimum	tall tumbledustard	SIAL2	Bar Fill Zone						11.00	
I	Sonchus asper	spiny sowthistle	SOAS	Bar Lowered High Bar New Bar	0.02	0.05 0.00	0.00			0.05	
									0.01		
I	Taraxacum officinale	common dandelion	TAOF	Bar Lowered	0.05	0.05	0.10				
I	Tribulus terrestris	puncturevine	TRTE	Bar Lowered Bar Fill Zone High Bar		0.01	0.01 0.04				0.70

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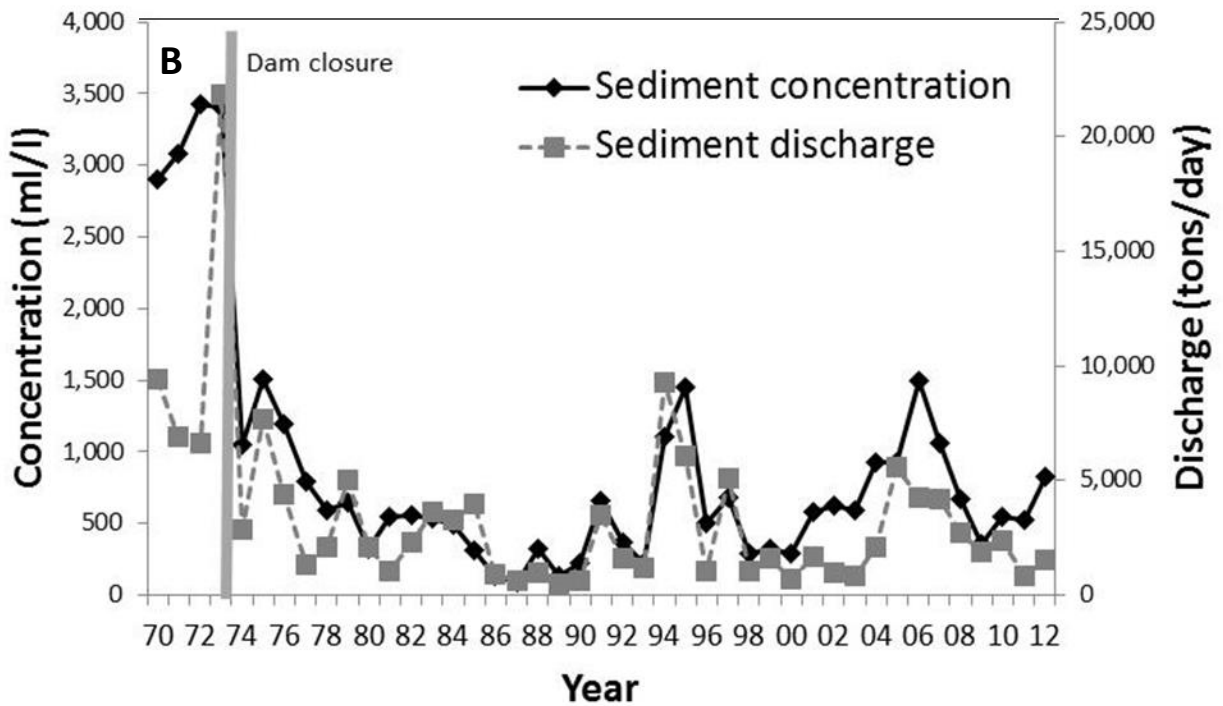
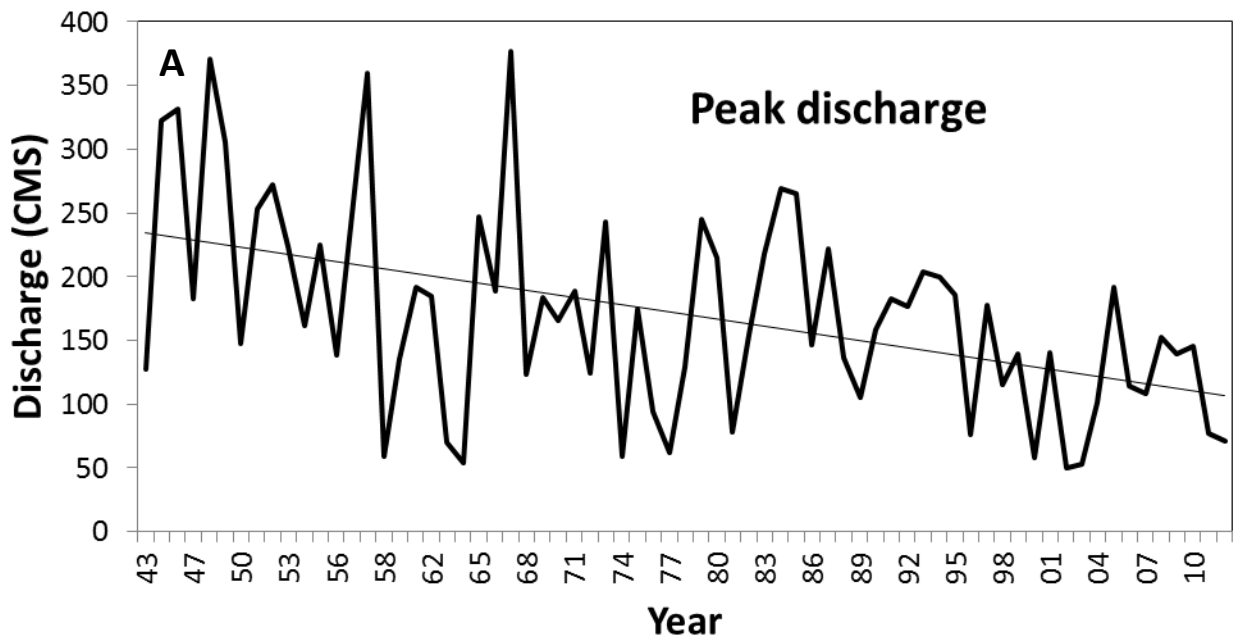
## **Herbicide Treatment Details**

For the sprouts (an inch or two in diameter or smaller at ground level) of saltcedar, Russian olive, Siberian elm, we used a low-volume, oil basal method applied with a backpack sprayer. The formulation contains a 25 percent mixture of Remedy\* or Garlon 4\* (Triclopyr). How to obtain a 25 percent mixture for the oil basal method: Add one part of Remedy or Garlon 4 formulation to three parts vegetable oil.

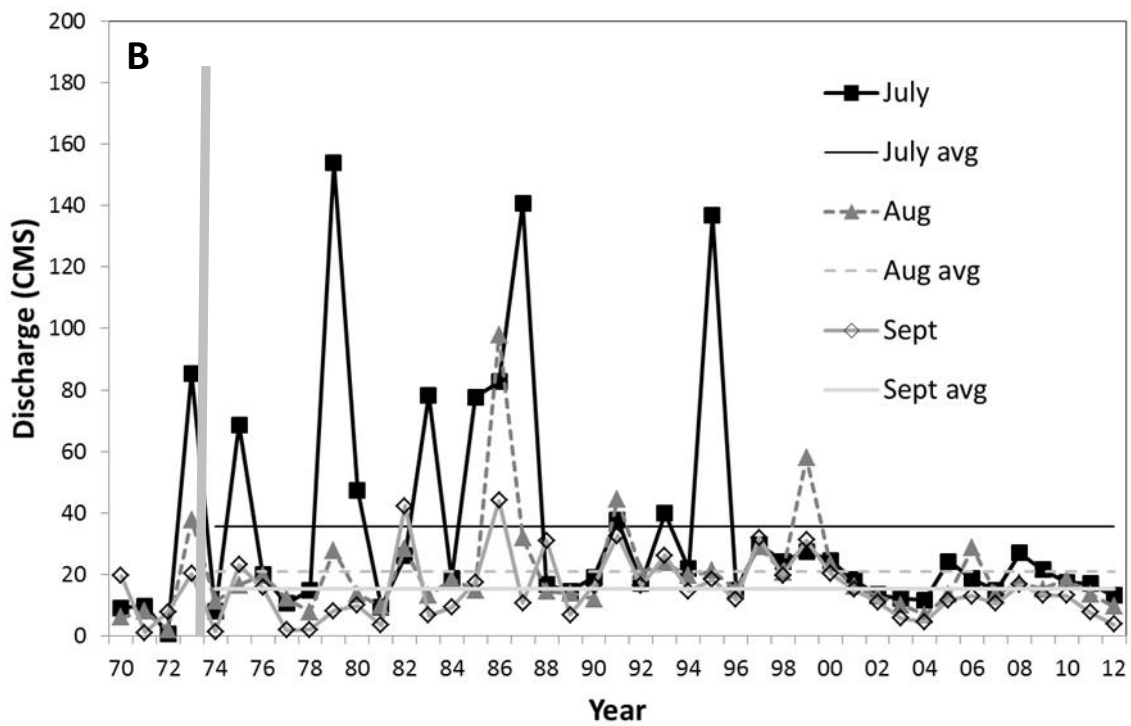
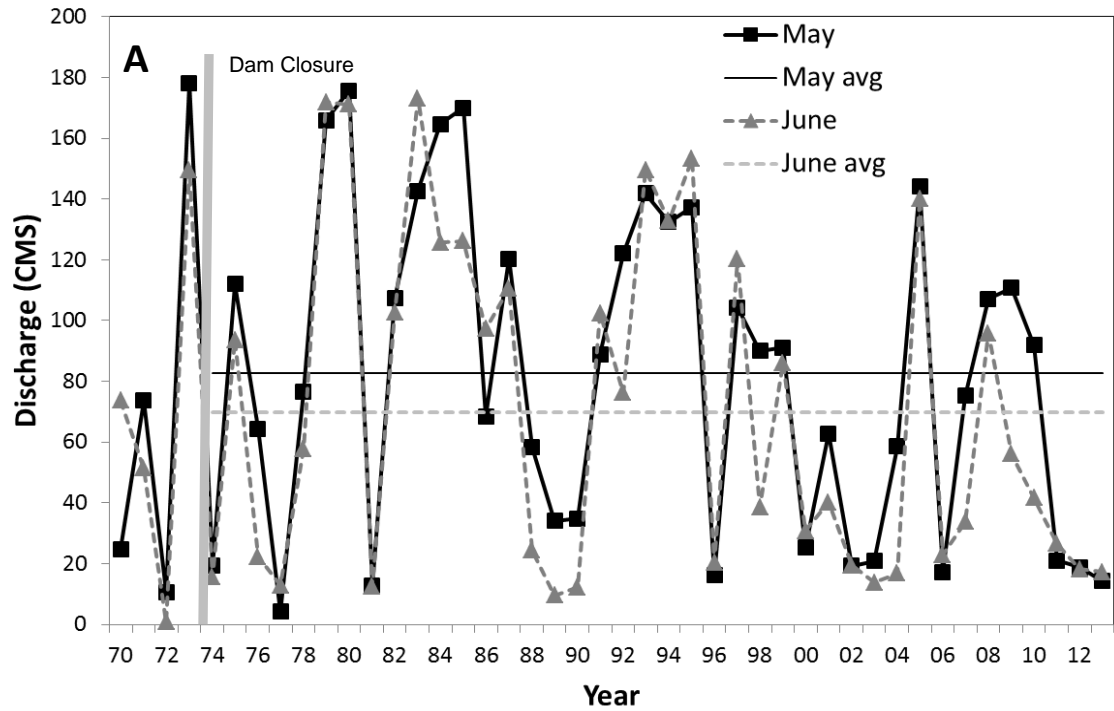
For the larger trunks we used a low-volume cut stump method to achieve "root kill." To obtain a 50 percent mixture for the cut stump method: add one part of Garlon 3A\* to an equal part of water (you use a spray bottle to apply the herbicide directly onto the recently cut trunk (within a few minutes).

More information on these techniques can be found within the USDA Forest Service, SW Region, preliminary field guide, "Low-Impact, Selective Herbicide Application for Control of Exotic Trees in Riparian Areas: Saltcedar, Russian-Olive, and Siberian Elm" by Doug Parker and Max Williamson, May 2003.

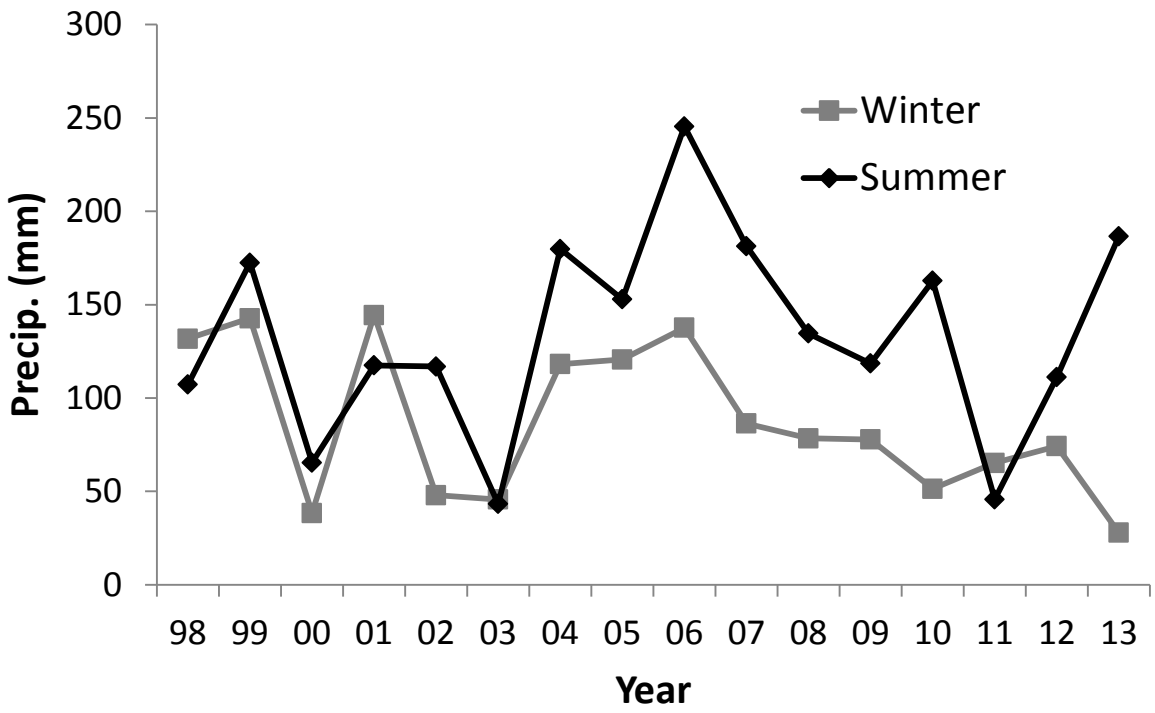
\*Trademark of Dow AgroSciences



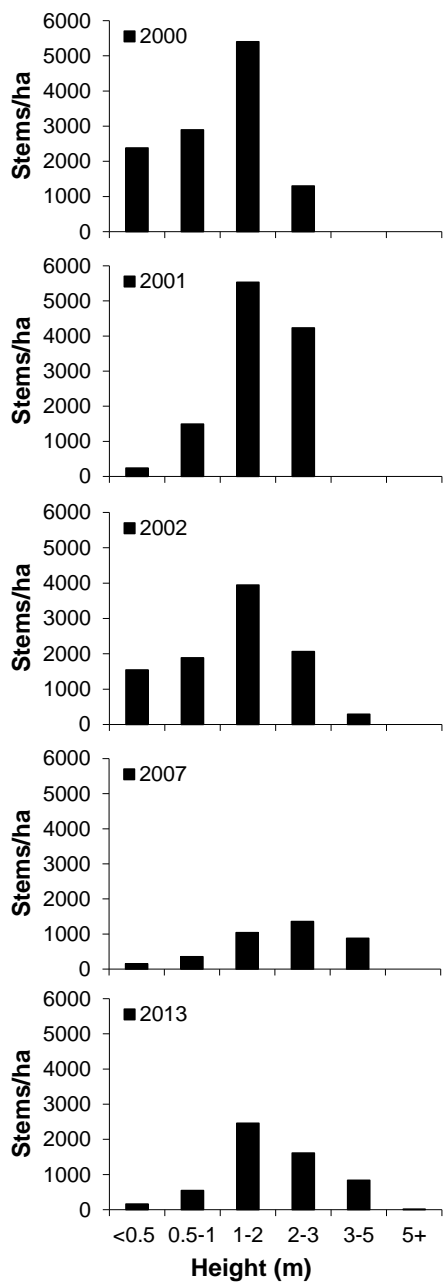
Supplementary Figure 1. A) Annual peak discharges from 1943 to present at the Albuquerque gauge station (8330000), approximately 5 km (2 mi) upstream from the AOP site. Cochiti Dam was completed and closed in 1973 and peak discharges have declined since ( $Y = -66.375x + 8363.1$ ,  $R^2 = 0.2195$ ); B) sediment concentration and discharge since 1970 show steep declines since dam closure.



Supplementary Figure 2. A) Average monthly spring-snowmelt period discharges in the months of May and June from 1970 to present; B) Average monthly discharges for the summer months of July, August and September from 1970 to present where flows are augmented by local monsoon thunderstorms that can generate peak flows similar to that of the spring runoff period (Albuquerque gauge station (8330000)). Cochiti Dam was closed in 1973.

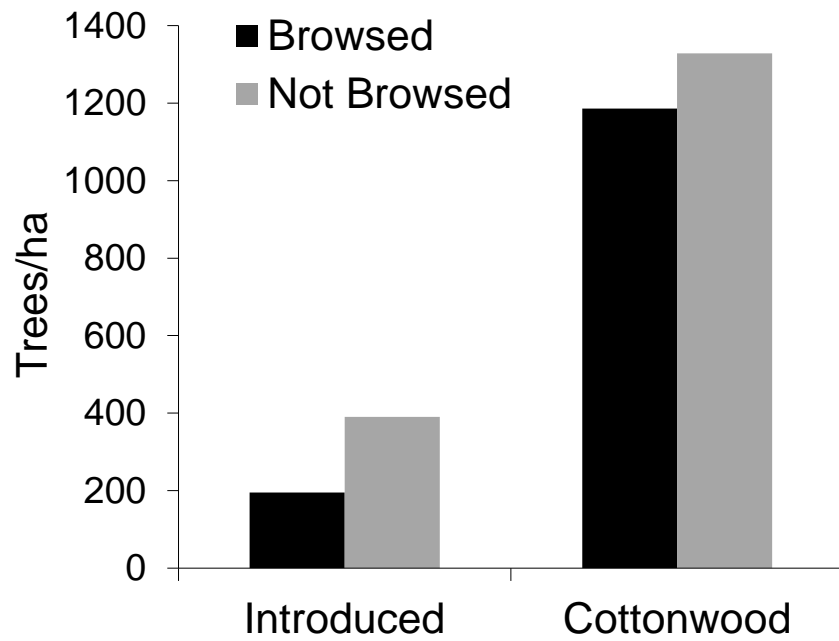


Supplementary Figure 3. Mean summer (April-September) and winter (October-March) water-year precipitation as measured at the Albuquerque International Airport during the project period.

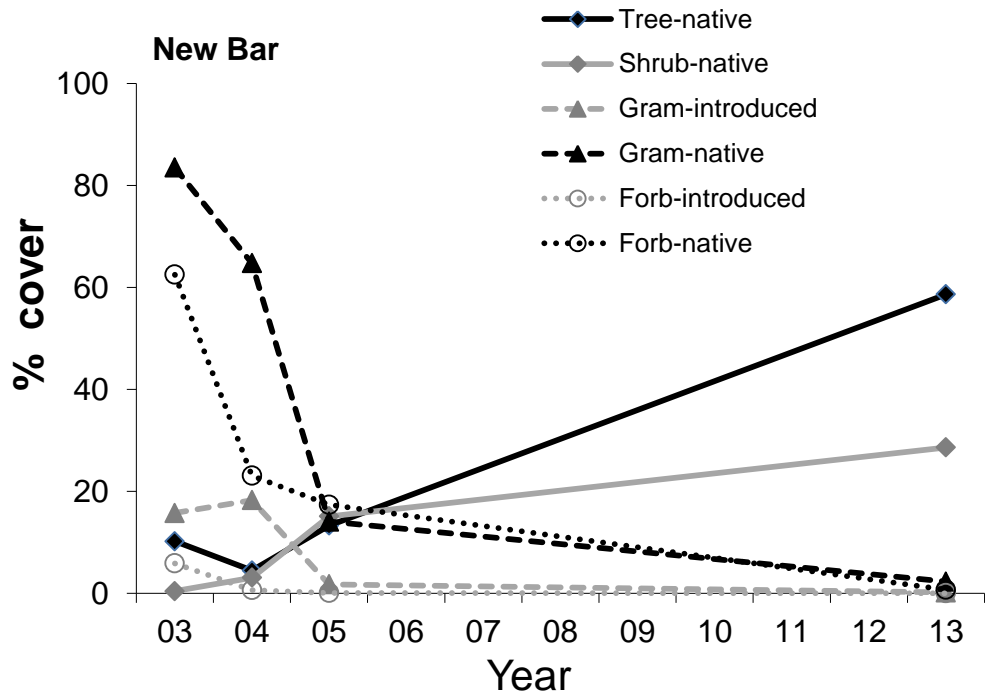


Supplementary Figure 4. Cottonwood-stand structure based on a tree-height census that began in 2000, the fourth year of the Albuquerque Overbank Project. The number of trees making it to the tallest class in 2013 is less than expected and is primarily a function of beaver browsing returning many trees to the 1-2 m height class.





Supplementary Figure 5. Beaver herbivory was clearly impacting Rio Grande cottonwood and introduced species (Russian olive, saltcedar, and Siberian elm) as of 2013. While a species preference was not detected and plants tend to resprout, beavers are clearly impacting stand development.



Supplementary Figure 6. In the New Bar zone, herbaceous cover declined as the canopy cover for trees and shrubs increased, but introduced woody species such as Russian olive and saltcedar have not become established on the site over the first 10 years.