

Appendix G
Surface Water
Budgets

Table G-1. Water Budget for the Pecos River with Detail for the Gallinas River

Location	Median (ac-ft/yr)					Drought (ac-ft/yr)				
	Measured Median Flow	Increase	Withdrawal Surface Water	Groundwater Depletion	Calculated Flow in River	Measured 10th Percentile Flow	Increase	Withdrawal Surface Water	Groundwater Depletion	Calculated Flow in River
PECOS RIVER										
Pecos River near Pecos	72,672					32,461				
Irrigation along Pecos in San Miguel Co			3,943	0	68,729			3,943	0	28,518
Irrigation Return Flow along Pecos in SM Co.		2,535			71,264		2,535			31,053
Irrigation along Pecos in Guadalupe Co above Anton Chico			3,003		68,261			3,003		28,050
Irrigation Return Flow along Pecos in Guadalupe Co. Above Anton Chico		1,816			70,077		1,816			29,866
Public Supply for Pecos and other				181	69,896				181	29,685
Livestock Withdrawals and Depletions			144		69,752			144		29,541
Riparian ET (acres * 2.94 ft)			3,690		66,062			3,690		25,851
Calculated stream gain		10,038			76,100		87			25,938
Pecos River Near Anton Chico	76,100					25,938				
Irrigation near Anton Chico			7,007	0	69,093			7,007	0	18,931
Irrigation Return flow from Anton Chico		4,236			73,329		4,236			23,167
Gallinas near Colonias		10,100			83,429		3,365			26,532
Irrigation near Colonias				574	82,855				574	25,958
Irrigation Return Flow from Colonias		243			83,098		243			26,201
Public Supply for Anton Chico				10	83,089				10	26,192
Riparian ET			1,751		81,338			1,751		24,441
Calculated stream losses			15,382		65,956		153			24,594
Pecos above Santa Rosa Lake	65,956					24,594				
Irrigation near Puerta de Luna			2,675	0	63,281			2,675	0	21,919
Irrigation Return flow from Puerta de Luna		1,617			64,898		1,617			23,536
Public Supply for Santa Rosa and Puerta de Luna				326	64,572				326	23,210
Riparian ET			3,158		61,413			3,158		20,051
Reservoir Evaporation			16,751		44,662			12,888		7,163
Calculated stream gain		90,938			135,600		80,725			87,888
Pecos River near Puerto de Luna	135,600					87,888				

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GALLINAS RIVER										
Gallinas near Montezuma	10,500					4,403				
Public Supply for Las Vegas			2,387		8,113			2,387		2,016
Release from Storrie Lake		0			8,113		0			2,016
Irrigation by Storrie Lake Project			7,500		613			1,500		516
Return Flow from Storrie Lake Project		3,750			4,363		750			1,266
Other Irrigation on 2463 acres (32% of Wilson's "scattered")			3,236		1,127			1,266		0
Return flow from other acreage		2,080			3,208		810			810
Return Flow from Las Vegas		1,576			4,784		1,576			2,386
Riparian ET			1,599		3,185			1,599		788
Reservoir Evap Storrie Lake and other (1990)			2,740		445			2,740		-1,952
Calculated Stream gain		9,655			10,100		5,317			3,365
Gallinas near Colonias	10,100					3,365				

Storrie Lake capacity 27,580 ac-ft

Santa Rosa capacity 696,000 ac-ft

Demand values from Wilson et al., 2003

Gage values from USGS

Riparian ET calculated by DBS&A using URGWOM reach 1 average for cottonwood, cottonwood bosque, willows and salt cedar ET (2.94 ft/yr)

Release from Storrie Lake included in irrigation by Storrie Lake Project

Reservoir evaporation for Santa Rosa is median 1983-2000 for average and 2000 for drought

Irrigation by Storrie Project based on available supply

bold = gaged median or 10th percentile for 1950-2002

Irrigation in San Miguel County based on Wilson et al., 2003 for 1999 and distribution in OSE GIS

Table G-2. Surface Water Budget for the Canadian River with Detail for the Mora River

Location	Median Year (based on 1950-2002 except where noted) (ac-ft/yr)					Drought Year (based on year 2000) (ac-ft/yr)				
	Measured Median Flow	Increase	Withdrawal Surface Water	Groundwater Depletion	Calculated Flow in River	Measured 10th Percentile Flow	Increase	Withdrawal Surface Water	Groundwater Depletion	Calculated Flow in River
CANADIAN RIVER										
Canadian River near Taylor Springs	29,558					8,894				
Irrigation direct from Canadian			0	0	29,558			0	0	8,894
Livestock Withdrawals and Depletions (Mora Co.)			135		29,423			135		8,759
Riparian ET on Canadian (Taylor to Sanchez)			2,755		26,668			2,755		6,004
Mora River nr Shoemaker (1950-95)		28,315					5,992			
Irrigation from Shoemaker to County line			1,601					1,601		
Return flow from Shoemaker to County line		856					856			
Riparian ET on Mora between Shoemaker Gage and Canadian River			1,492					1,492		
Inflow from Mora River		26,077			52,745		3,755			9,759
Irrigation San Miguel County on Canadian			3,414		49,331			3,414		6,345
Irr. Return Flow from San Miguel Co		1,845			51,176		1,845			8,190
Calculated stream gain (Taylor Springs to Sanchez) from ungedged tributaries (i.e. Ocate Creek)		32,769			83,945		16,851			25,041
Canadian near Sanchez	83,945					25,041				
Livestock Withdrawals and Depletions (San Miguel Co.)			153		83,792			153		24,888
Riparian ET			1,697		82,095			1,697		23,191
Conchas River at Variadero		4,509			86,604		1,499			24,690
Public Supply for Big Mesa Water Co-op			42		86,562			42		24,648
Public Supply for Conchas Dam			46		86,516			46		24,602
Commercial Supply (Golf Course)			164		86,351			164		24,438
Public Supply for Pendaries Water System			17		86,334			17		24,421
Riparian ET on Conchas below Variadero			388		85,946			388		24,032
Reservoir Evaporation			44,021		41,925			28,550		-4,518
Arch Hurley Diversions			95,955		-54,030			92,519		-97,037
Change in Conchas Storage of Conchas			14,929		-68,959		85,024			-12,013
Calc. stream gain Sanchez to Conchas		74,343			5,384		13,613			1,600
Canadian River Below Conchas Dam (1937-71)	5,384					1,600				

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	Measured Median Flow	Increase	Withdrawal Surface Water	Groundwater Depletion	Calculated Flow in River	Measured 10th Percentile Flow	Increase	Withdrawal Surface Water	Groundwater Depletion	Calculated Flow in River
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
MORA RIVER										
Irrigation above Golondrinas			18896					18896		
Return flow above Golondrinas		10095					10095			
Public Supply above Golondrinas				139					139	
Mora River near Golondrinas	19593				19593	4306				4306
Coyote Creek near Golondrinas		6664					2408			
Irrigation on Coyote Creek			4814					3300		
Return Flow Coyote Creek		2572					1749			
Riparian ET along Coyote Creek			849					849		
Inflow from Coyote Creek to Mora River		3573			23166		8			4306
Irr. btwn Golondrinas and Shoemaker (2/3 of Golondrinas to County line)			3203		19963			3203		1103
Return Flow from irrigation		1711			21674		1711			2814
Riparian ET on Mora between gages			2461		19213			2461		353
Reservoir Evap			0		19213			0		353
Irrigation above Sapello (Mora Co.)			(7810)					(7810)		
Return flow above Sapello (Mora Co.)		(2927)					(2927)			
Sapello River at Sapello (1957-73)		11586					1593			
Riparian ET Sapello gage to Mora River			280					226		
Lake Isabel Evaporation			1367					1367		
Calculated inflow from Sapella River		9939			29153		0			353
Calculated Mora River loss/gain from groundwater between Golondrinas and Shoemaker			838		28315		5639			5992
Mora River near Shoemaker (1950-95)	28315					5992				

bold = gaged median or 10th percentile for 1950-2002

blue = estimated gain or loss based on difference between gaged flows and depletions

Irrigation in Mora County based on total withdrawals and depletions reported by Wilson et al., 2003 for 1999 and distributed based on Martinez 1989

Irrigation in San Miguel County based on Wilson et al., 2003 for 1999 which shows diversions for Sapello River of 7810 ac-ft and Canadian River of 3414 ac-ft, unspecified location. Canadian River diversions applied to water budget for the Canadian River (rather than tributary, assuming Wilson would have identified a tributary or labeled as "scattered").

Martinez shows all Sapello River irrigation above Sapello gage, thus Wilson's diversions for Sapello are applied to above the Sapello gage.

Conchas Reservoir values and Arch Hurley Diversions based on 1999 for Average and 2000 for Drought year (Quay Co 40-yr Water Plan)