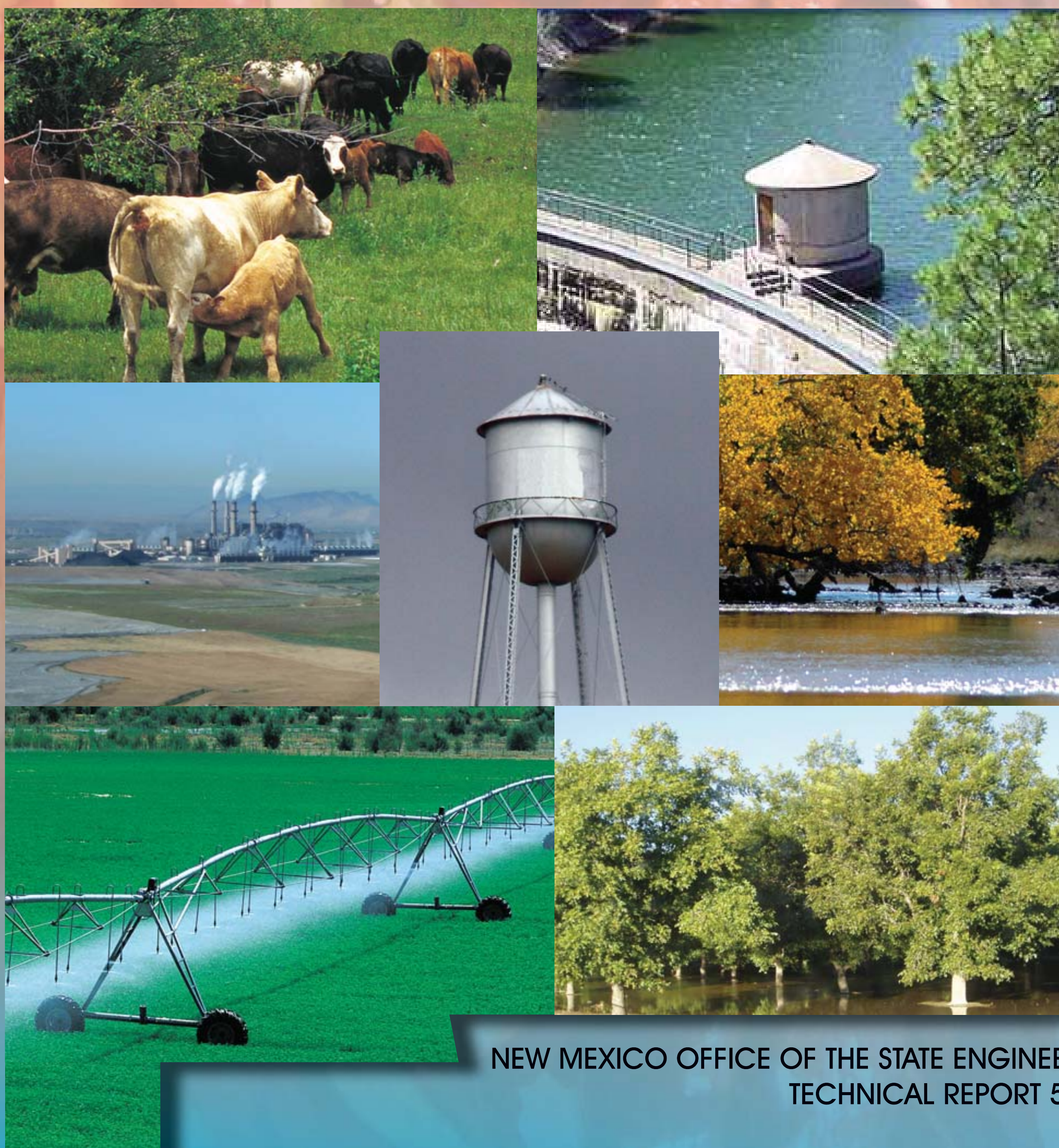
NEW MEXICO WATER USE BY CATEGORIES 2005



NEW MEXICO OFFICE OF THE STATE ENGINEER
TECHNICAL REPORT 52

Office of the State Engineer
Interstate Stream Commission

NEW MEXICO
WATER USE BY CATEGORIES
2005

PREPARED BY

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EXECUTIVE SUMMARY

The Water Use by Categories Report is prepared once every five years by the Water Use and Conservation Bureau of the New Mexico Office of the State Engineer. The purpose of this Report is to make available the most comprehensive, current, and useful water use data to the public.

The Report contains statewide water use data for the 2005 calendar year. Water withdrawals in New Mexico counties and river basins were tabulated for nine water use categories:

1. Public Water Supply
2. Self-Supplied Domestic
3. Irrigated Agriculture
4. Self-Supplied Livestock
5. Self-Supplied Commercial
6. Industrial
7. Mining
8. Power
9. Reservoir Evaporation

Each water use category is defined in the chapters of this report. The procedures used to quantify withdrawals are presented in a step-by-step format. Water use tables, located in Appendix B and organized by county and river basin, provide details on the state's water use.

STATE SUMMARY

The population of New Mexico increased from 1,819,046 in 2000 to 1,968,353 in 2005, an increase of 149,307, or 8%.

In 2005, withdrawals for all categories combined totaled 3,950,398 acre-feet. Surface water accounted for 2,112,138 acre-feet (53.47%) of the total withdrawals; groundwater accounted for 1,838,260 acre-feet (46.53%) of the total withdrawals.

Public Water Supply accounted for 320,126 acre-feet (8.10%) of the total withdrawals.
Surface water accounted for 42,092 acre-feet (13.15%) of the public water supply withdrawal.
Groundwater accounted for 278,034 acre-feet (86.85%).

Self-Supplied Domestic accounted for 35,796 acre-feet (0.91%) of the total withdrawals.
In this category, 100% of the withdrawals for domestic purposes were from groundwater sources.

Irrigated Agriculture accounted for 3,075,514 acre-feet (77.86%) of the total withdrawals.
Surface water accounted for 1,730,927 acre-feet (56.30%) of irrigation withdrawals.
Groundwater withdrawals totaled 1,344,587 acre-feet (43.70%).

Surface water diverted for irrigation resulted in off-farm conveyance losses in canals and laterals, which amounted to 608,901 acre-feet (35.12%).

The total acreage irrigated (TAI) on farms in 2005 was 875,415.
Approximately 279,665 acres (31.95%) were irrigated with surface water; 464,177 acres (53.02%) were irrigated with groundwater; and 131,573 acres (15.03%) were irrigated with a combination of ground and surface water. Drip irrigation (TDA) accounted for 18,875 acres (2.16%); flood (TFA) for 448,599 acres (51.24%); and sprinkler (TSA) for 407,941 acres (46.60%).

In some areas of the state, surface water was not sufficient to meet the irrigation demand.

Livestock accounted for 57,009 acre-feet (1.44%) of total withdrawals.
Surface water accounted for 3,279 acre-feet (5.75%) of withdrawals and groundwater for 53,730 acre-feet (94.25%).

Commercial uses accounted for 40,578 acre-feet (1.03%) of total withdrawals.
Surface water accounted for 1,496 acre-feet (3.69%) of the withdrawals, and groundwater for 39,082 acre-feet (96.31%).

Industrial uses accounted for 18,251 acre-feet (0.46%) of total withdrawals.
Surface water accounted for 1,967 acre-feet (10.78%) of the withdrawals and groundwater for 16,284 acre-feet (89.22%).

Mining accounted for 60,189 acre-feet (1.52%) of total withdrawals.
Surface water accounted for 1,438 acre-feet (2.40%) of the withdrawals and groundwater for 58,751 acre-feet (97.61%).

Power accounted for 63,642 acre-feet (1.61%) of total withdrawals.
Surface water accounted for 51,646 acre-feet (81.15%) of withdrawals and groundwater for 11,996 acre-feet (18.85%).

Evaporation from reservoirs with a storage capacity of 5,000 acre-feet or more amounted to 279,293 acre-feet (7.07%) of total withdrawals.

BASIN SUMMARY

The State of New Mexico is comprised of six river basins:

1. Arkansas-White-Red
2. Lower Colorado
3. Pecos
4. Rio Grande
5. Texas Gulf
6. Upper Colorado

The **Arkansas-White-Red River Basin** (AWR) includes all or parts of Colfax, Curry, Harding, Mora, Quay, San Miguel, and Union counties. The population in the basin in 2005 was 37,726 (2% of the state total).

The **Lower Colorado River Basin** (LC) includes all or parts of Catron, Grant, Hidalgo, and McKinley counties. The population in 2005 was 72,659 (4% of the state total).

The **Pecos River Basin** (P) includes all or parts of Chaves, De Baca, Eddy, Guadalupe, Lea, Lincoln, Otero, Quay, Roosevelt, San Miguel, Santa Fe, and Torrance counties. The population in 2005 was 184,374 (9% of the state total).

The **Rio Grande Basin** (RG) is the largest and most populated river basin in the state and includes all or parts of Bernalillo, Catron, Cibola, Doña Ana, Grant, Hidalgo, Lincoln, Los Alamos, Luna, McKinley, Otero, Rio Arriba, Sandoval, Santa Fe, Sierra, Socorro, Taos, Torrance, and Valencia counties. The population in 2005 was 1,412,323 (72% of the state total).

The **Texas Gulf River Basin** (TG) includes all or parts of Curry, Lea, and Roosevelt counties. The population in 2005 was 114,674 (6% of the state total).

The **Upper Colorado River Basin** (UC) includes all or parts of McKinley, Rio Arriba, Sandoval, and San Juan counties. The population in 2005 was 146,597 (7% of the state total). Of all these river basins, the Upper Colorado experienced the most growth in population (9.9% since 2000).

A summary of the total surface and groundwater withdrawals by river basin is presented below in Table ES.1.

Table ES.1 Summary of withdrawals in acre-feet and as a percent of the basin totals for New Mexico's six river basins.

River Basin	Withdrawals Surface Water (WSW)		Withdrawals Groundwater (WGW)		Total Withdrawals (TW)	
	acre-feet	% of basin total	acre-feet	% of basin total	acre-feet	% of state total
Arkansas-White-Red	189,739	74	65,679	26	255,418	6.5
Lower Colorado	50,624	33	103,815	67	154,439	3.9
Pecos	257,942	37	445,245	63	703,187	17.8
Rio Grande	1,211,259	64	694,706	36	1,905,965	48.2
Texas Gulf	243	0	525,058	100	525,301	13.3
Upper Colorado	402,331	99	3,757	1	406,088	10.3
State Totals	2,112,138		1,838,260		3,950,398	100.0

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1 INTRODUCTION

Inventorying water use in the State of New Mexico has long been a necessary activity, with formal investigations dating back to at least 1896 (Follett). These inventories provide a unique picture of the activities involving water use for the period of analysis. The New Mexico Office of the State Engineer (NMOSE) began its regular quantitative estimates of water use for the state in 1975 and has since prepared reports every five years. These reports are recognized as a valuable document to the NMOSE, the U.S. Geological Survey (USGS), the New Mexico Legislature, municipalities, consultants, and the like. This Water Use By Categories Report (Report) presents water use as withdrawals for the 2005 calendar year. The purpose of this Report is to make available the most comprehensive, current, and useful water use withdrawal data to the public.

Data from this report can be used for many analyses, most notably including regional planning and to track changes in water use in various categories over time. For example, as communities in the Rio Grande Basin continue to experience rapid population growth, a correlated increase in public water supply use will also increase. Over time, other communities in the state may notice marked increases or decreases in the amount of irrigated acreage in production or the growth or reduction in livestock. Legislators may find it helpful to take into account trends in water use when establishing which projects should be funded or discontinued. Making this type of data available to citizens throughout the state will help insure that informed decisions can be made with regard to our limited water resources.

The results of the 2005 water use inventory are presented in this Report. Categories inventoried include:

- Public Water Supply and Self-Supplied Domestic (Chapter 2)
- Irrigated Agriculture (Chapter 3)
- Self-Supplied Livestock (Chapter 4)
- Self-Supplied Commercial, Industrial, Mining, and Power (Chapter 5), and
- Reservoir Evaporation (Chapter 6).

1.1 HISTORY OF WATER USE INVENTORIES

In 1950, the U.S. Bureau of Reclamation published water withdrawals and depletions in drainage basins and the state for the period of 1945 to 1949. Reynolds (1959) reported similar data for 1955 to the U.S. Senate Select Committee on National Water Resources. The New Mexico State Engineer's Office compiled withdrawals and depletions for 1965. The New Mexico State Planning Office published those data in 1967. Data for 1970 were compiled by the NMOSE and published by the U.S. Bureau of Reclamation (USBR) and the New Mexico Interstate Stream Commission (NMISC) (1976). Data for 1975, 1980, 1985, 1990, 1995, and 2000 were compiled and published by the NMOSE (Sorensen, 1977 and 1982; Wilson, 1986 and 1992; Wilson and Lucero, 1997; Wilson, Lucero, Romero and Romero, 2003).

1.2 THE 2005 WATER USE REPORT

The 2005 Report has undergone major revisions to the text, format, and content. Perhaps the most significant of these changes is the exclusion of the depletions calculations. Therefore the statistics presented here are principally withdrawals. Notably, significant work has been completed by the NMISC to calculate depletions in some of the state's interstate river basins (e.g., Pecos River, Colorado River, and Rio Grande River Basins). To incorporate the depletion methodologies developed by the NMISC into the depletion calculation methods used in previous water use reports was beyond the scope of resources allocated for this report.

Previous water use reports included a definition for each water use category and a series of category classification numbers established by the Standard Industrial Classification (SIC) Manual (1987) to facilitate the assimilation of data into the USGS National Water Use Information Program. In 2002, the SIC Manual was significantly modified to comply with the North American Free Trade Agreement. While the definition of each water use category is still included in this report, the convention of identifying the category reporting code has been discontinued. Previous water use reports also contained lengthy discussions on topics such as water requirements for various types of turfgrass, benchmark studies of indoor water use, factors that affect water use in communities, causes of poor irrigation efficiency, and factors that affect livestock water use, etc. That type of information has been removed from the 2005 report. However, the information is still valuable and 1) can be reviewed in Technical Report 51 (Wilson, et al., 2003) and 2) will be published as a companion document to this report (Technical Report 52 S).

Chapters 2 through 6 contain information pertinent to the nine water use categories. The Public Water Supply and Self-Supplied Domestic categories are combined in Chapter 3. This chapter has a description of the procedures used to calculate residential water use in gallons per capita per day (GPCD) and total withdrawals for residential purposes. Additionally, it identifies some of the unique water circumstances experienced by communities across the state and how those conditions were accounted for in this report. Chapter 3, Irrigated Agriculture, describes the procedures used to determine irrigation withdrawals and provides information on two significant New Mexican crops, alfalfa and pecans. The Blaney-Criddle and Modified Blaney-Criddle methods for calculating consumptive irrigation requirements for a cropping pattern are described. In Self-Supplied Livestock (Chapter 4) we present trends in livestock populations throughout the state with an emphasis on the dairy industry. The procedure for calculating livestock withdrawals is explained. Self-Supplied Commercial, Industrial, Mining, and Power (Chapter 5) are grouped together because of their similarities in calculating and reporting withdrawals. We present the method used to calculate the withdrawals for each of these categories. Golf courses are included. In Chapter 6 we present two methods for calculating reservoir evaporation as a function of data availability.

Appendix A is a glossary of terms used in this report.

Appendix B contains a series of tables that report population and water use data for New Mexico counties and river basins in 2005. Withdrawals are calculated for each of the nine water use categories.

- Table 1 contains population data for the Self-supplied Domestic and Public Water Supply categories, by river basin.
- Table 2 is a summary of withdrawals by category, in acre-feet (AF).

- Table 3 is a summary of withdrawals expressed as a percent of the total withdrawals in the state, by category.
- Table 4 includes a summary of the percent of measured withdrawals for each category.
- A summary of water use by county and category is provided in Table 5.
- Similar data is presented in Table 6, organized by river basin.
- Table 7 is dedicated to the Public Water Supply and Self-Supplied Domestic categories. It lists individual water systems by county and river basin and includes information on population, per capita water use, and withdrawals by source.
- Tables 8-12 focus on Irrigated Agriculture. Table 8 is organized by county, river basin, and location and presents information on irrigated acreage, consumptive irrigation requirements (CIRs), irrigation efficiencies, and withdrawals.
- Table 9 includes information on irrigated acreage, type of irrigation system, irrigation water source, and withdrawals organized by river basin.
- Tables 10 and 11, both organized by county, present data on irrigated acreage by water source type and type of irrigation system, respectively.
- Finally, Table 12 includes information on the number of acres irrigated by each system type, organized by river basin.

Appendix C contains two maps that illustrate the state's counties, river basins, and declared groundwater basins and a table of counties and their associated river basins.

Authors' Note: There are three terms frequently used when discussing water that open the door to confusion and misunderstanding. They are (1) consumed, (2) consumption, and (3) consumptive use.

Water consumed and water consumption are terms often thought of as water delivered to a water user, whether the user is a water utility, individual household, or commercial or industrial enterprise. Water consumption in this context **is not** synonymous with consumptive use as it is defined in this report.

When water consumed and water consumption are used in reference to a human or an animal taking a drink of water, or water that is evaporated from a water body or land surface, these terms become synonymous with consumptive use.

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2 PUBLIC WATER SUPPLY AND SELF-SUPPLIED DOMESTIC

In this chapter you will find:

- Summaries of state and county populations for 2005.
- An explanation of gallons per capita per day (GPCD) used for calculating withdrawals for self-supplied domestic uses.
- A description of the procedure used to quantify those withdrawals.
- Water exchange codes.
- Information about individual water systems.

We have used a separate step-by-step procedure to quantify public water supply withdrawals and GPCD. Many public water suppliers import or export water to other public suppliers. A description of these transactions, referred to in this report as a water exchange, is included along with a summary of unique circumstances these suppliers have experienced.

A summary of 2005 Public Water Supply and Self-Supplied Domestic withdrawals can be found in Appendix B, Table 7. Total withdrawals are tallied by county and river basin. Please note each table has a key to abbreviations at the bottom of the page.

2.1 DEFINITION OF CATEGORIES

2.1.1 Public Water Supply (PS)

The Public Water Supply category includes community water systems that rely on surface and groundwater diversions **other than** wells permitted by the NMOSE under 72-12-1 NMSA 1978, and that consist of common collection, treatment, storage, and distribution facilities operated for the delivery of water to multiple service connections. Examples of multiple service connection systems include:

- municipalities that serve residential, commercial, and industrial water users,
- prisons,
- residential and mixed-use subdivisions, and
- mobile home parks.

Water used for the irrigation of self-supplied golf courses, athletic fields, and parks, or to maintain the water level in ponds and lakes owned and operated by a municipality or water utility, is also included in this category. The purpose of these criteria is to capture all water uses that are debited against the water rights of public water suppliers where such rights have been defined.

2.1.2 Self-Supplied Domestic (DO)

The Self-Supplied Domestic category includes self-supplied residences that may be single family or multi-family dwellings with well permits issued by the NMOSE under 72-12-1 NMSA 1978. Uses in this category include water used for normal household purposes such as drinking, cooking, bathing, washing clothes and dishes, flushing toilets, evaporative cooling, water softener regeneration, watering lawns and gardens, and livestock watering (provided livestock watering is not the sole purpose of use).

2.2 POPULATION

2.2.1 State Population

New Mexico is one of the fastest growing states in the nation, ranked 9th in 2005 by the U.S. Census Bureau. The total population that year was estimated at 1,968,353 based on data compiled from the University of New Mexico Bureau of Business and Economic Research (UNM-BBER). (See Table 2.1 below.) This total represents an increase of 8.2% over the 2000 population figure of 1,819,046, an average annual statewide increase of approximately 1.6%. Growth in New Mexico from 2000-2005 was above the national growth rate of 5.3%. The western portion of the U.S. continues to experience the most growth in the country. All of New Mexico's neighboring states rank in the top ten for growth.

Table 2.1 Annual population estimates for select western states.

Geographic Area	Population estimates		Percent Growth 2000-2005	Rank
	July 1, 2005[1]	2000 Census		
United States	**296,410,404**	**281,421,906**	**5.3**	
Nevada	2,414,807	1,998,257	20.8	1
Arizona	5,939,292	5,130,632	15.8	2
Utah	2,469,585	2,233,169	10.6	5
Idaho	1,429,096	1,293,953	10.4	6
Texas	22,859,968	20,851,820	9.6	7
Colorado	4,665,177	4,301,261	8.5	8
New Mexico[2]	1,968,353	1,819,046	8.2	9

[1] U.S. Census Bureau, 2005.
[2]New Mexico population is from December 2005 (from UNM-BBER).

2.2.2 County Populations

County populations are listed below in Table 2.2. Ranked from high to low, the five fastest growing counties in New Mexico from 2000 to 2005 were Sandoval (18.1%), Lincoln (12.8%), Cibola (11.4%), Santa Fe (10.8%), and San Juan (10.7%). Two counties, Quay (-0.5%) and Harding (-4.0%), experienced a decrease in population during the five-year period. Eight of the 33 counties in the state are growing faster than the 8.2% state growth rate.

Table 2.2 County population data.

County	2000 Census[1]	2005[2]	Percent Change
New Mexico	**1,819,046**	**1,968,353**	**8.2**
Sandoval	89,908	106,165	18.1
Lincoln	19,411	21,898	12.8
Cibola	25,595	28,506	11.4
Santa Fe	129,292	143,306	10.8
San Juan	113,801	126,008	10.7
Bernalillo	556,678	614,508	10.4
Doña Ana	174,682	192,474	10.2
Los Alamos	18,343	19,864	8.3
Torrance	16,911	18,282	8.1
Valencia	66,152	71,459	8.0
Taos	29,979	31,931	6.5
Luna	25,016	26,394	5.5
Mora	5,180	5,440	5.0
Catron	3,543	3,712	4.8
Rio Arriba	41,190	43,024	4.5
McKinley	74,798	78,013	4.3
Roosevelt	18,018	18,771	4.2
Union	4,174	4,315	3.4
Sierra	13,270	13,657	2.9
Curry	45,044	46,289	2.8
Otero	62,298	63,994	2.7
Lea	55,511	57,006	2.7
Socorro	18,078	18,513	2.4
San Miguel	30,126	30,719	2.0
Grant	31,002	31,511	1.6
Guadalupe	4,680	4,743	1.3
Chaves	61,382	62,203	1.3
Colfax	14,189	14,375	1.3
Eddy	51,658	52,167	1.0
De Baca	2,240	2,256	0.7
Hidalgo	5,932	5,966	0.6
Quay	10,155	10,106	-0.5
Harding	810	778	-4.0

Source: [1]Census 2000 data from U.S. Census Bureau, Census 2000; [2]UNM-Bureau of Business and Economic Research.

The distribution of the population by river basin located in Appendix B, Table 1 was determined by tabulating the total population served for the Public Water Supply and Self-Supplied Domestic categories for each of the six river basins. The populations for each basin are Rio Grande (1,412,323), Pecos (184,374), Upper Colorado (146,597), Texas Gulf (114,674), Lower Colorado (72,659), and Arkansas-White (37,726).

2.3 PER CAPITA WATER USE FOR SELF-SUPPLIED DOMESTIC

For the purpose of estimating withdrawals for the self-supplied domestic population, in most counties an area wide average of 80 GPCD was used based upon research completed by Brown and Caldwell (1984) and summarized below in Table 2.3. In counties where, due to climatic conditions, additional water requirements for landscape irrigation and evaporative cooling are required, an area wide average of 100 GPCD was used. In Catron, Cibola, McKinley, and San Juan counties, where a segment of the population does not have indoor running water, an area wide average of 70 GPCD was used.

Table 2.3. Indoor water use in single and multi-family dwelling units **without** water conserving plumbing fixtures and appliances, in Gallons per Capita per Day (GPCD) (Brown and Caldwell, 1984).

Items and Assumptions	**GPCD**
Toilets (5.5 gal/flush x 4 flush/capita day)	22
Toilet leakage (0.17 x 24 capita/gal day)	4.1
Showers (3.4 gpm x 4.8 minute)	16.3
Baths (50 gal/bath x .14 bath/capita day)	7
Faucets (Estimated)	9
Dishwasher (14 gal/load x .17 load/capita day)	2.4
Washing machine (55 gal/load x .30 load/capita day)	16.5
Total	77.3
Note: Evaporative cooling and water softener regeneration may increase the water requirements by up to 25 GPCD.	

2.4 PROCEDURE FOR QUANTIFYING SELF-SUPPLIED DOMESTIC WITHDRAWALS

Step 1. Determine Self-Supplied Domestic Population

The self-supplied domestic population in each county is obtained by subtracting the population served by public water suppliers from the total population in that county. When a county has two or more river basins, the total county population must be calculated by its basin components. The distribution of the population in each county by river basin is based upon ratios derived from the 1990 census block and tract data that was overlaid with hydrologic cataloging units. The population served by public water suppliers in each basin is then subtracted from the total population of the respective basins to yield the self-supplied domestic population.

Step 2. Determine Total Withdrawals
Self-Supplied Domestic withdrawals are computed using the following equation:

$$W = (POP)(GPCD)/892.74 \qquad (2.1)$$

where W is the annual withdrawal in acre-feet, POP is the population, and GPCD is gallons per capita per day.

2.5 PROCEDURE FOR QUANTIFYING PUBLIC WATER SUPPLY WITHDRAWALS AND GPCD

Step 1. Identify All Public Water Suppliers
The first step is to identify all public water suppliers in the state. Regulatory agencies responsible for monitoring the quality of drinking water usually maintain a directory of community water supply systems. Municipal leagues or associations may also publish a directory of municipal offices including name and phone numbers of city managers, clerks, and water and sewer superintendents. The NMOSE coordinates with these and other state agencies and associations to obtain a comprehensive list of all public water suppliers.

Step 2. Distribute Questionnaires to Public Water Suppliers
Many water suppliers are required to report their annual diversion to State Engineer District offices as part of their water rights permit. Others are not required to do so because they have pre-basin rights. The Water Use and Conservation Bureau (WUCB) of the NMOSE solicits additional information by sending a survey (Figure 2.1) to all public water suppliers. Water purveyors who do not respond to the questionnaires are contacted directly by phone, which often yields additional and valuable information.

Step 3. Determine Total Withdrawals for Each Public Supplier
Withdrawal data for the majority of public suppliers were obtained directly (through survey or phone call), or indirectly from NMOSE records. For entities that did not provide data, information was taken from the previous Water Use By Categories Report.

Some water suppliers may report the quantity of water sold rather than the total withdrawal from the source. The difference between a water utility's production (also known as the system input volume) and its water sales to consumers (billed authorized consumption) is referred to as non-revenue water (American Water Works Association, 2007). In past water use reports, non-revenue water was generally referred to as unaccounted-for water.

Figure 2.1 Sample of 2005 public water supplier questionnaire.

NEW MEXICO OFFICE OF THE STATE ENGINEER
2005 PUBLIC WATER SUPPLY SURVEY

Please read this entire form before filling it out so that you understand the questions. Even if you report metered withdrawals to the State Engineer at regular intervals it is important that you complete this form because we need to know the number of connections, population served, and whether or not you are reporting water production or water sold. Please send your completed form by September 30, 2006, to Julie M. Valdez, Office of the State Engineer, Water Use and Conservation Bureau, P.O. Box 25102, Santa Fe, NM 87504-5102. If you have any questions, please call (505) 827-6790.

(1) Please enter the date this form was completed, and the first and last name, job title, mailing address, email address, and phone number of the individual reporting this data.

Date: ________________________________

Name: ________________________________

Job Title: ______________________________

Mailing Address: ________________________

E-Mail Address: _________________________

Phone: _________________________________

(2) Name of Water System ___________________________________

(3) County(s) Water System is located in __________________________

(4) Water System's ownership (private or government)_____________

(5) Is this Water System located within the established boundaries of a municipality? (Yes/No) ________

If yes, name of municipality _______________________________

(6) Total amount of water produced in gallons or acre-feet, during the 2005 calendar year. Note water production should reflect meter diversions from ground and surface water.

	Gallons	Acre-Feet
Surface water	_______	________
Groundwater	_______	________

(7) Total amount of water delivered to customers including water exported to other Water Systems in gallons or acre-feet, during the 2005 calendar year.

	Gallons	Acre-Feet
Surface water	_______	________
Groundwater	_______	________

(8) If all or part of the water distributed in your Water System was imported from another Community Water System, complete (a) and (b).

(a) Water System, from which water was imported ___________________________

(b) Amount of water imported _______________ gallons/acre-feet (please circle one)

(9) If other Water Systems purchased water from this System's, complete (a) and (b).

(a) Water System, to which water was exported ___________________________

(b) Amount of water exported _______________ gallons/acre-feet (please circle one)

(10) Number of residential customers served by your Water System

___________ (total)

(11) Number of service connections for your Water System

__________________ (total)

(12) Number of service connections in each of the following categories

Single-family Home______ Commercial Operations _____

Multi-family Home _____ Military Bases _____

Schools _____ Dairy Operations _______

Industrial Operations_____ Institutional _______

Other_____________

(13) Metering (check appropriate boxes)

[ ] All wells and surface diversions are metered

[ ] All customer service connections are metered

[ ] Wells and surface diversions are not metered

[ ] Other, please explain.

(14) Does Water System provide customer and diversion meter maintenance (testing/repairs)? (Yes/No) _______

If yes, please describe method.

(15) If any part of your water supply records for the 2005 calendar year are incomplete due to a disruption in the water supply system, such as meter failure, please advise in the space below.

(16) Does Water System have a wastewater treatment plant? (Yes/No) ___________

(17) Are the customers of your Water System connected to a sewer system or septic tanks? ______________ Please, list type of system _________________________________

(18) Number of customers served by the following system.

(a) Sewer system ___________ (total)

(b) Septic tanks _____________(total)

(19) Is effluent water measured? (Yes/No) ________

If yes, please describe method.

(20) Is effluent water re-used? (Yes/No) ________

Amount of water re-used________________ gallons/acre-feet (please circle one)

If yes, please describe where.

(21) Is effluent water sold? (Yes/No) ________

Amount of water sold________________ gallons/acre-feet (please circle one)

Water System/Water user, who purchased the effluent water ___________________

(22) Does your Water System have a return flow plan or return flow credit accepted by the Office of the State Engineer? (Yes/No)___________

(23) Has your community adopted any water conservation/drought ordinances? (Yes/No)

If yes, please describe below or attach a copy to this survey.

Step 4. Determine Public Water Utility Population Served
In census years, population figures for many of the communities served by water utilities can be extracted from statistics published by the U.S. Census Bureau. It is important that these figures be compared with the data reported by water suppliers. Any discrepancies between census data and public supplier data are investigated and resolved prior to calculating public supplier withdrawals. **An important step in determining the utility's population served is to separate the population of self-supplied residents from the total population of the larger community served by the public water supplier.**

Populations of communities not identified in the census must be obtained from the water system manager, city clerk, regulatory agency, or estimated by some other means. Many water utilities estimate, with reasonable accuracy, the population they serve based on the total number of connections and the average number of residents per connection. They are able do this using national census data. Nationally, 2000 Census Bureau data indicate that the average household size of owner-occupied units is 2.72 persons; renter occupied units have 2.41 people per household.

In noncensus years, the population must be estimated. Methodologies may range from a simple linear extrapolation to complex correlations based on the demographic characteristics of individual communities. Additional population data is obtained from the New Mexico Environment Department, UNM-BBER, and military bases.

Step 5. Determine GPCD
Equation 2.1 is rearranged to solve for GPCD:

$$\text{GPCD} = (\text{W})(892.74)/\text{POP} \qquad \textit{(2.2)}$$

where W is the sum of the annual surface water and groundwater withdrawals in acre-feet, and POP is the population. The GPCD may be used to check the water use figures reported by the water supplier. An unusually high or low GPCD indicates a possible error in either the population data or the water withdrawals. When data appear to be erroneous, the water supplier is contacted by phone to discuss the discrepancies.

The state's most popular resort areas have a number of communities with a very small permanent residential population. In the summertime, these communities experience a large influx of seasonal residents. Other communities may experience the inverse of this, i.e., a large influx of seasonal visitors during the winter months.

A similar phenomenon occurs on the state's military bases, but on a daily basis. While the residential population of enlisted personnel and their families may be relatively small, a large influx of civilians works on the base during the day. In addition, many military installations have a golf course resulting in an unusually high GPCD relative to the residential population. (Military golf courses are discussed in more detail in Chapter 5.)

The withdrawals reported in this inventory for communities that experience a seasonal influx of temporary residents, and military bases that experience a daily influx of civilian workers, are reflected in the total water use. However, because the population and per capita water requirements reported are based on the number of New Mexico residents who live in the community year-round, these influx communities will generally exhibit a higher GPCD.

2.6 WATER EXCHANGE CODES

We use water exchange codes (WEC) in this report to note water transactions that occur among public water suppliers. These exchanges occur outside of the NMOSE water rights transfer permit process. A WEC identifies:

- Water imports and exports across a state line, county line, or river basin boundary.
- The exchange of water from one public water supplier to another.
- The exchange of water from a public water supplier to a facility that is also self-supplied.
- Other aspects of a water system that may be of interest.

The codes were developed using information provided by public water suppliers, military bases, or internal knowledge of a particular water system. Explanations of the WECs are listed below in Table 2.4 and are used in Appendix B, Table 7.

Table 2.4 Water exchange codes.

Water Exchange Code (WEC)	**Explanation**
0	No water exchanges occurred.
1	Water is **imported** across a state or county line, or river basin boundary.
2	Water is **exported** across a state or county line, or river basin boundary.
3	Water delivered to customers (e.g., a water utility, commercial and industrial enterprises or individual residences) outside of the city or village in which the water supplier is based **is not** included in the withdrawal shown.
4	Water delivered to customers outside of the city or village in which the water supplier is based **is** included in the withdrawal shown, and the population reported also reflects the additional population served.
5	Water delivered to customers outside of the city or village in which the water supplier is based is included in the withdrawal shown, but a reasonable estimate of the additional population served is unavailable; or customers served are commercial and industrial enterprises for which population figures are not relevant.
6	All water distributed in this community is received from another water utility.
7	Part of the water distributed in this community is received from another water utility and is included in the withdrawal shown.
8	Part of the water used at this self-supplied facility is received from a water utility or another organization. The water transferred to this facility is not included in the withdrawal shown.

9	Water is provided to seasonal visitors in addition to the established residential population. The withdrawal shown reflects the total water use. However, the population and per capita use reported are based on the number of residents who live in the community year-round.
10	This military installation experiences a daily influx of civilian workers. The withdrawal shown reflects the total water use. However, the population and per capita use reported are based on the number of residents who live on the installation year-round.
11	This water utility provides water to a facility that experiences a daily influx of population. The withdrawal shown reflects the total water use. However, the population and per capita water use reported are based on the potential number of people who visit the center on a daily basis.
12	This water utility provides water to a training facility that houses a constant population year-round. The withdrawal shown reflects the total water use. However, the reported population and per capita use are based upon the facility's residential population.

2.7 NOTES ON INDIVIDUAL WATER SYSTEMS

Notes on individual water systems are listed by county in the text that follows. County numbers are identified in parentheses (00). Counties that are not listed do not have unique circumstances relating to their water systems. Except where noted otherwise, water exchanged from one water utility to another is added to the withdrawal of the receiving organization and is subtracted from the withdrawal of the utility from which the water was purchased.

Bernalillo County (01): (a) The population reported by the University of New Mexico-Bureau of Business and Economic Research (UNM-BBER) for the City of Albuquerque was estimated at 494,236. The Albuquerque water system serves the City of Albuquerque as well as a population of 11,764 outside the city limits, for a total population of 506,000. This total does not include the residential population at Kirtland Air Force Base, which has its own water system and is recorded separately in Appendix B, Table 7. **(b)** The Entranosa Water Co-Op delivers water to a population of about 7,202 in Bernalillo County and 3,878 in Santa Fe County.

Chaves County (05): In addition to producing municipal drinking water, the Village of Dexter also pumps groundwater to maintain the water level in Lake Van, which is outside the village limits, and to irrigate park areas around the lake; therefore Dexter's GPCD appears elevated relative to the population.

Cibola County (06): (a) Grants reuses treated sewage effluent to irrigate the Coyote del Malpais Golf Course; therefore the water used for irrigation purposes at the golf course was not reported separately as part of the public or commercial categories. **(b)** The Milan Community Water System exports approximately 304 acre-feet of water to Homestake and Golden Acres water systems. Therefore these water systems were excluded from Appendix B, Table 7.

Doña Ana County (13): (a) The population served by the Hatch water system as reflected in Appendix B, Table 7, includes residents in Placitas and Rodey, which are outside the Hatch city limits. **(b)** The population served by the Las Cruces water system excludes residents served by private water systems within the city. **(c)** Picacho Hills Water System owns and operates a self-supplied golf course and delivers water to various satellite subdivisions. The population of Picacho Hills in Appendix B, Table 7 includes these satellite subdivisions. (**d**) Jornada Water Company purchased the following water companies between 2000 and 2005: Hacienda Acres, Las Alturas Estates, Mesilla Park Manor, Raasf Hills, and San Andres. All withdrawals and population data are reported under Jornada in Appendix B, Table 7.

Eddy County (15): (a) The population served by the City of Carlsbad includes residents in La Huerta, which is outside of the city limits and it is reported as such in Appendix B, Table 7. (**b**) 2005 irrigation withdrawals for the Lake Carlsbad Golf Course, which is a self-supplied municipal facility, are included in the withdrawal reported for the City of Carlsbad; therefore the city's GPCD appears elevated relative to the population. **(d)** While Loving supplies all of the water distributed in Malaga, withdrawals for both cities are recorded separately in the withdrawal column in Appendix B, Table 7.

Grant County (17): (a) Silver City delivers water to Arenas Valley, Pinos Altos, Tyrone, and Rosedale. These withdrawals are recorded separately in Appendix B, Table 7. **(b)** Silver City's treated sewage effluent is reused to irrigate the Silver City Golf Course; therefore, the golf course was not included in the Commercial category. **(c)** Hurley Water System imports approximately 185 AF from Phelps Dodge Mine Corporation. **(d)** The Hurley Water System also exports approximately 31 AF to North Hurley MDWCA; these withdrawals are recorded separately in Appendix B, Table 7.

Guadalupe County (19): Vaughn exports water to Duran and Encino in Torrance County; these withdrawals are recorded separately in Appendix B, Table 7.

Lea County (25): (a) Eunice provides part of the water used at Warren Petroleum's gas processing plant located outside of the city limits. This withdrawal was included in the city's withdrawal and was not included in the industrial category of this report. **(b)** Jal's treated sewage effluent is reused to irrigate the Jal Country Club Golf Course; therefore the water used for irrigation purposes at the golf course was not reported separately.

Los Alamos County (28): (a) Withdrawals from the Los Alamos National Lab and the City of White Rock were included as part of the City of Los Alamos withdrawals in the Public category. **(b)** Los Alamos and White Rock's treated sewage effluent is reused to irrigate the Los Alamos golf course, numerous athletic fields, and for cooling tower makeup water at electric power generating stations. It was not accounted for in any other category within this report.

McKinley County (31): The City of Gallup delivers water to Fort Wingate and Gamerco; these withdrawals are recorded separately in Appendix B, Table 7.

Otero County (35): (a) Alamogordo's treated sewage effluent is reused to irrigate the Desert Lakes Golf Course; therefore the water used for irrigation purposes at the golf course will not be listed under the public or commercial categories. **(c)** Orogrande delivers water to the Bureau of Land Management, the U.S. Forest Service, and two private ranches. Since the withdrawal reported for Orogrande reflects these deliveries, the GPCD appears elevated relative to population.

Quay County (37): (a) The population reported by UNM-BBER for the City of Tucumcari was estimated to be 5,335. The Tucumcari water system serves the City of Tucumcari as well as a population of 1,520 outside of the city limits (residents in Liberty, RAD, Tuc-Cam and Hill Village), for a total population of 6,855. **(b)** Irrigation water for the Tucumcari Golf Course was supplied by the City of Tucumcari and is included in the city's withdrawals; therefore the City of Tucumcari's GPCD appears elevated relative to the population.

Roosevelt County (41): The City of Portales supplied all of the water distributed by the Roosevelt County Water Co-Op. Since the amount of water distributed by Roosevelt was not obtained, all withdrawals and population data are reported under Portales in Appendix B, Table 7.

Sandoval County (43): Rio Rancho's treated sewage effluent is reused to irrigate the Rio Rancho Country Club Golf Course; therefore, the water used for irrigation purposes at the golf course was not reported separately as part of the public or commercial categories.

San Juan County (45): (a) The City of Aztec supplied water to the Southside Water Users Association (WUA) and the East Aztec Water Users Association. All withdrawals and population data were reported under Aztec in Appendix B, Table 7. **(b)** Bloomfield supplied water to the Southside WUA and the Aztec and Blanco Mutual Domestic Water Consumers Associations; these withdrawals are recorded separately in Appendix B, Table 7. **(c)** The City of Farmington supplied water to the Cedar Ridge WUA, the Flora Vista WUA, the Lower Valley WUA (Kirtland), NTUA Shiprock, and the Upper La Plata WUA; these withdrawals are recorded separately in Appendix B, Table 7. **(d)** 2005 irrigation withdrawals for the Pinon Hills Golf Course, which is a self-supplied municipal facility, were included in the withdrawals reported for the City of Farmington; therefore the city's GPCD appears elevated relative to the population.

Santa Fe County (49): (a) The City of Santa Fe (also known as the Sangre de Cristo Water Company) served a 2005 population of approximately 66,457 inside the city limits and 10,818 outside the city limits, for a total of 77,275. Las Campanas, which is reported as a separate entity in Appendix B, Table 7, accounts for approximately 825 of the 10,818 people who live outside of the city limits. **(b)** The City of Santa Fe supplied 462 acre-feet of groundwater to Las Campanas and 365 acre-feet of surface water to Santa Fe County Utilities. These withdrawals are recorded separately in Appendix B, Table 7. **(c)** In 2005, the City of Santa Fe supplied treated effluent water to the following entities: Santa Fe River, 4,481 acre-feet (AF); Marty Sanchez Golf Course (multi-use recreation), 456 AF; Las Campanas, 369 AF; Santa Fe Country Club Golf Course, 300 AF; Santa Fe Downs, 157 AF; Horse Park, 80 AF; and the Staud Pipe, 65 AF. The water provided to these entities is recorded as part of the city's withdrawals.

Sierra County (51): Water supplied to the Truth or Consequences (T or C) golf course by the City of T or C is treated effluent water and therefore is not accounted for separately in this report.

Taos County (55): (a) Treated sewage effluent is reused to irrigate the Taos Country Club Golf Course and therefore is not accounted for separately in this report. **(b)** The Twining Water and Sanitation District (also known as the Taos Ski Valley) supplies all of the potable water for the condominiums, hotels, restaurants, and shops in Taos Ski Valley. The water used for snowmaking at Taos Ski Valley is reported in the Commercial category rather than Public Water Supply since it is permitted separately.

Torrance County (57): Duran and Encino both import water from the City of Vaughn, in Guadalupe County; these withdrawals are recorded separately in Appendix B, Table 7.

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3 IRRIGATED AGRICULTURE

The irrigated agriculture category topped the list of water withdrawals in 2005, which accounted for 3,075,514 AF, or 77.86% of total withdrawal.

This chapter presents an overview of the Original and Modified Blaney-Criddle methods for computing the consumptive irrigation requirement (CIR) of crops and a description of how the CIR is used to determine irrigation withdrawals. CIRs in this report are primarily calculated using the Original Blaney-Criddle (OBC) method. However, the Modified Blaney-Criddle (MBC) method is used to compute consumptive use in the Upper Colorado River Basin so it is consistent with the New Mexico Interstate Stream Commission (NMISC) compact accounting. Additionally, this report uses Colorado River Basin withdrawal data identical to those reported by the NMISC.

The procedure used to quantify irrigation withdrawals is described. Irrigation water requirements are separated by irrigation system type and water source. We have included factors that influence the CIR, along with a discussion of how it is computed using the Blaney-Criddle Computer Program (BCCP) developed by NMOSE staff (Wilson, 1990). The BCCP uses three electronic data files that include 1) crop acreages, 2) temperature and precipitation data, and 3) growing season data.

Finally, we have included a discussion of the methods used to calibrate the consumptive use for two important New Mexican crops: alfalfa and pecans.

Summaries of irrigation withdrawals can be found in Appendix B, Tables 8-12.

3.1 DEFINITION OF CATEGORY

Irrigated agriculture includes all withdrawals of water for the irrigation of crops grown on farms, ranches, and wildlife refuges.

3.2 THE ORIGINAL BLANEY-CRIDDLE METHOD

3.2.1 Consumptive Use (U)

The Original Blaney-Criddle method (Blaney and Criddle, 1950, 1962) was born out of studies conducted in New Mexico during 1939 and 1940 in the Pecos River Joint Investigation initiated by the National Resources Planning Board.

The OBC method uses mean monthly air temperatures (T) expressed in degrees Fahrenheit; monthly percentage of annual daylight hours (P) based on latitude of the area under study; seasonal consumptive use coefficients (K); and length of growing season. These are used to estimate the total consumptive use (U), or evapotranspiration (ET), of water during the growing season for a crop that is well watered and free of disease. The consumptive use in inches for each month is expressed in equation 3.1 as:

$$U=ET=[(T)(P)/100](K) \tag{3.1}$$

Adding the consumptive use computed for each month yields the total consumptive use for a specific crop during the growing season.

The distinctive feature of this method is that the consumptive use coefficient (K) remains constant throughout the frost-free period. A different consumptive use coefficient is used for that part of a crop's growing season that occurs before the last spring frost ($T<32°F$) or past the first fall frost ($T<32°F$). The consumptive use coefficient during the frost period is lower than the consumptive use during the frost-free period of the growing season. For crops that have a growing season that begins before or extends beyond a frost date—in a month in which a frost occurs—the days inside and outside the frost-free period must be counted separately so that the appropriate consumptive use coefficients can be applied. In a month during which the growing season begins or ends, the consumptive use coefficient is multiplied by the ratio of the number of days in the month the crop is "growing" to the total number of days in that month.

3.2.2 USBR Effective Rainfall (R_e)

The amount of rainfall available to crops is influenced by the following factors:

- Duration and intensity of rainfall
- Antecedent moisture condition of soil
- Infiltration capacity of the soil
- Presence of surface seals and crusts
- Slope of fields
- Root development of the crop
- Interception by the plant canopy

The Original Blaney Criddle method did not have a procedure for estimating effective rainfall. In 1962, Blaney and Criddle adopted a U.S. Bureau of Reclamation (USBR) method. The USBR method expresses effective rainfall (R_e) as a percentage of the total monthly rainfall. For each one-inch increment in rainfall, there is a corresponding decrease in the percentage of effective rainfall. This method was originally published as a table of values that has since been changed to a set of equations (Table 3.1). **Note: Effective rainfall (R_e) cannot exceed the consumptive use (U).** Adding the effective rainfall computed for each month yields the total effective rainfall for a specific crop during the growing season.

Table 3.1. USBR effective rainfall.

Monthly Rainfall (R) (inches)	Effective Rainfall (R_e) (inches)
$1 \le R$	$R_e=0.95R$
$1 < R \le 2$	$R_e=0.95+0.90(R-1)$
$2 < R \le 3$	$R_e=1.85+0.82(R-2)$
$3 < R \le 4$	$R_e=2.67+0.65(R-3)$
$4 < R \le 5$	$R_e=3.32+0.45(R-4)$
$5 < R \le 6$	$R_e=3.77+0.25(R-5)$
$R > 6$	$R_e=4.02+0.05(R-6)$
Key to symbols: (<) means less than; (≤) means less than or equal to; and (>) means greater than.	

3.3 THE MODIFIED BLANEY-CRIDDLE METHOD

3.3.1 Consumptive Use (u_m)

The U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS) introduced the Modified Blaney-Criddle method (MBC) in 1967. In 1970 it was revised and published (USDA, 1970).

The MBC method uses mean monthly air temperatures (t) expressed in degrees Fahrenheit; monthly percentage of annual daylight hours (p) based on the latitude of the area under study; **monthly** consumptive use coefficients (k); and length of growing season to estimate the total monthly consumptive use (u_m) of water for a crop that is well watered and free of disease. The consumptive use in inches for each month is expressed as:

$$u_m=[(t)(p)/100](k) \qquad (3.2)$$

where $k=(k_t)(k_c)$. The climatic coefficient (k_t) equals 0.0173t-0.314 and k_c is the crop growth stage coefficient.

The procedure used to calculate the final consumptive use coefficient (k) distinguishes the MBC method from the OBC method.

- First, the climatic coefficient (k_t), expressed as a function of the mean monthly temperature, is computed.
- Next, the value of the crop growth stage coefficient (k_c) is obtained from a curve plotted on a graph. Because the growth characteristics of each crop are different, a separate curve is generally required for each crop. Curves for a limited number of crops were published in SCS Technical Release 21 (USDA, 1970).
- Finally, multiplying k_c by k_t yields the final consumptive use coefficient (k) for a specific crop and month.
- In a month in which the growing season begins or ends, the consumptive use coefficient is multiplied by the ratio of the number of days in the month the crop is "growing" to the total number of days in that month.
- Adding the consumptive use computed for each month yields the total consumptive use for a specific crop during the growing season.

3.3.2 SCS Effective Rainfall (r_e)

The SCS developed a method for estimating effective rainfall as a function of consumptive use and rainfall. This method was established as the result of research that analyzed the soil-moisture balance from 50 years of precipitation records at each of 22 Weather Bureau stations in the United States (now part of the National Weather Service). The effective rainfall (r_e) in inches is expressed as:

$$r_e = (0.70917r^{0.82416} - 0.11556)(10^{0.02426u_m})(f) \qquad (3.3)$$

where r is the rainfall in inches; u_m is the monthly consumptive use in inches; and

$$f=0.531747+0.295164D-0.057697D^2+0.003804D^3 \qquad (3.4)$$

where D is the net depth of irrigation water in inches normally applied to the field.

In New Mexico, the default depth of irrigation is three inches. If other depth information is available, it is used in equation 3.4. **Note: The effective rainfall (r_e) cannot exceed the consumptive use (u_m).** The monthly consumptive irrigation requirement for each crop in the cropping pattern is computed by subtracting the effective rainfall (r_e) from the consumptive use (u_m). Adding the computed effective rainfall for each month yields the total effective rainfall for a specific crop during the growing season.

3.4 PROCEDURE FOR QUANTIFYING IRRIGATION WITHDRAWALS

The step-by-step procedure used for quantifying irrigation withdrawals is described below. Calculations are made using the Blaney-Criddle Computer Program (BCCP). **Note: Multiple steps are necessary to calculate the final consumptive irrigation requirement (CIR).** The steps used to calculate the final CIR vary as a function of the crop species and cropping pattern. Interim CIRs, represented by CIR_w, CIR_a, and CIR_m, are used in this procedure as a placeholder for entry into Step 8 as CIR. A final CIR is calculated in Step 11.

Step 1. Calculate Gross Irrigated Acreage by Type of Irrigation System
Cropping patterns and irrigated acreage data were compiled from data obtained from the USBR, USDA Farm Service Agency, National Agricultural Statistics Service, irrigation districts, conservancy districts, and county extension agents. Data was also obtained from hydrographic surveys, adjudications and court decrees, licenses and permits for water rights, 2005 aerial photography, and the NMISC.

The irrigated acreage in each cropping pattern was compiled by crop type and irrigation method, since on-farm irrigation efficiencies are used to determine farm delivery requirements (which vary by irrigation method). The types of irrigation systems used to irrigate cropland are classified as drip, flood, and sprinkler.

Once irrigated acreages and cropping patterns are identified, the gross irrigated acreage for each individual crop was tabulated by irrigation system type. The gross irrigated acreage is the sum of the irrigated acreage and the multiple-cropped acreage.

Step 2. Obtain Temperature and Precipitation Data
Calculations in this report used 2005 weather data. In a few instances where records were missing or stations were discontinued, long-term averages or similar station substitutions were used. The average temperature and total recorded rainfall for each month was obtained from the weather station most representative of a specific crop area. Where irrigated acreage was located between two or more weather stations, the influence of each station was weighted according to its distance from the center of the area. The sum of the weighted values from each station was used in subsequent calculations.

Step 3. Determine Irrigation Season
The irrigation season for each crop is defined by the earliest and latest moisture use dates. For annual crops such as corn and spring small grains, the earliest moisture use date is assumed to be the planting date, and the latest moisture use date is assumed to be the day before harvest begins. Additionally, for some annual crops such as corn, spring small grains, and cotton, farmers may apply a pre-plant irrigation. In a case where a 15-day pre-plant irrigation is applied, seed is

planted on April 1, and the crop reaches maturity in 140 days, the beginning of the growing season would be established as March 17; consumptive use would be computed for a 155-day irrigation season.

For perennial crops such as alfalfa and permanent pasture grasses, the earliest moisture use date correlates with the mean daily air temperature that activates the transpiration process. This date is extrapolated from mean monthly temperature values. The latest moisture use date correlates with the mean daily air temperature that signals the cessation of transpiration on the next day. The earliest and latest moisture use dates may also be established by observing when growth begins and ends.

Step 4. Calculate Weighted Consumptive Irrigation Requirement (CIR_w)

The CIR for each crop in the cropping pattern was computed using the BCCP. The BCCP uses three electronic data files that include 1) crop acreages, 2) temperature and precipitation data, and 3) irrigation season data as determined above in Step 3. For accurate computer processing, all electronic files must conform to the format described in pages 9-13 of the NMOSE Interoffice Training Manual (Wilson, 1992b). Separate CIRs are computed for each type of irrigation system (drip, flood, and sprinkler). The BCCP calculates additional information such as the crop distribution ratio, effective rainfall, and theoretical consumptive use for individual crops by irrigation system. Wilson (1992) describes the calculation procedures and resulting outputs in detail.

The CIR was multiplied by the crop distribution ratio to obtain the weighted CIR for a crop. The weighted CIRs for each crop were added to obtain the weighted CIR (CIR_w) for the cropping pattern.

Step 5. Alfalfa Adjustment of CIR_w

If a cropping pattern contains alfalfa, refer to Section 3.5.1. to determine if an alfalfa yield adjustment to the CIR_w is necessary.

- If an alfalfa adjustment is made, the CIR_w is recomputed using the consumptive use predicted by the crop production function for alfalfa. The adjusted CIR_w is renamed CIR_a and is used in the remaining steps outlined below.
- If no alfalfa yield adjustment is made, the CIR_w value and nomenclature remain unchanged.

Step 6. Calculate the Multi-Crop Adjusted CIR (CIR_m)

If the cropping pattern includes multiple-cropped acreage, that is, acreage on which two or more crops are produced in the same year, the appropriate CIR (CIR_w or CIR_a) must be adjusted. It is important to establish whether the cropping pattern in question includes multiple-cropped acreage. If multi-crop acreage exists, the CIR must be adjusted upward to account for the increase in water requirements necessary to produce more than one crop on the same land. This multi-crop adjustment is made by multiplying the CIR_w or CIR_a, as appropriate (see Steps 4 and 5 above), by the ratio of the gross irrigated acreage (A_g) to the net irrigated acreage (A_n):

$$CIR_m = CIR_{(w,a)}[A_g/A_n] \qquad (3.5)$$

The net irrigated acreage is the difference between the gross irrigated acreage and the multiple-cropped acreage ($A_n = A_g - A_m$).

If no multi-crop adjustment is made, the CIR_w or CIR_a value and nomenclature, as appropriate, remain unchanged.

> **Note:** There are two potential adjustments that could be made to the weighted CIR established in Step 4:
> 1. Alfalfa adjustment (Step 5), which results in CIR_a and/or
> 2. Multi-crop adjustment (Step 6), which results in CIR_m
>
> As a result there are three possible CIRs that may be entered into the remaining steps used to calculate the irrigation withdrawals: CIR_w, CIR_a, or CIR_m. For convenience, the appropriate consumptive irrigation requirement value will be referred to simply as CIR in the remaining steps.

Step 7. Identify Irrigation Water Source

The irrigated acreage tabulated for each type of irrigation system is further identified by irrigation water source. Sources of water include surface water, groundwater, and combined water. Combined water exists when a field is irrigated with both groundwater and surface water. Combined water typically has surface water as the primary source of water, supplemented by groundwater pumped from a well.

Step 8. Calculate Farm Delivery Requirement (FDR)

The farm delivery requirement (FDR) is computed by dividing the appropriate CIR (see summary of steps 4-7 above) expressed as a depth or volume by the **on-farm** irrigation efficiency (E_f):

$$FDR = CIR/E_f \tag{3.6}$$

For example, if the CIR is 2.0 acre-feet per acre and E_f=60 percent, FDR=CIR/E_f=2.0/0.60=3.33 acre-feet per acre.

The on-farm irrigation efficiency is affected by farm and field conditions, such as:

- Soil type
- Slope, length, and width of field
- Land surface preparation (leveling and tillage)
- Root depth of crop at the time of each irrigation event (the root depth of annual crops changes throughout the growing season)
- Antecedent soil moisture conditions
- Quality of irrigation water
- Type of irrigation system
- Available head at the farm headgate
- Frequency and amount of water applications
- Farm water management practices

An efficient irrigation system may result in higher plant transpiration rates than an inefficient system because there will be fewer dry spots on the field (causing better uniform water distribution). The crop yield per unit of water transpired will be higher under good management than under poor management (Burt, 1995).

Step 9. Calculate Project Diversion Requirement (PDR)
The project diversion requirement (PDR), or off-farm diversion requirement, is computed by dividing the farm delivery requirement (FDR) by the **off-farm** conveyance efficiency (E_c).

$$PDR=FDR/\ E_c \tag{3.7}$$

For example, if the FDR=3.33 acre-feet per acre and E_c=70 percent, PDR= 3.33/0.70=4.76 acre-feet per acre. If the water source is located on the farm, there is no E_c.

Step 10. Determine Amounts of Groundwater and Surface Water Used
Acreage irrigated by combined water must be separated into its ground and surface water components. The components are calculated after the withdrawal has been computed. In 2005, 46% of the total withdrawals for irrigation purposes were measured (Appendix B, Table 4). When measured withdrawals are not available, the ground and surface water components must be estimated. Estimates are made by 1) examining historical water right diversion records, 2) comparing recorded stream flows with the estimated demand, 3) by contacting personnel in the Cooperative Extension Service and the Natural Resources Conservation Service, or individual farmers who know the area well, or 4) by using component estimates from the previous Water Use by Categories report.

If records of measured withdrawals are available, the ground and surface water components for combined water can be determined by comparing the total withdrawal (PDR) with the measured withdrawal. If a shortage occurs, that is, the measured surface water withdrawal is less than the computed withdrawal, it is assumed that the difference is made up with groundwater. The acreage irrigated by surface water is then calculated as the product of the surface water withdrawal and irrigation efficiency divided by the CIR. The acreage irrigated by groundwater is the difference between the total acreage irrigated and the estimated acreage irrigated by surface water.

It is important when separating combined water into its ground and surface water components, that the appropriate irrigation efficiencies are used. Irrigation efficiencies differ between surface water (off-farm source) and groundwater (on-farm source).

Step 11. Adjust CIR
Any event or condition imposed by man or nature that affects the health of irrigated crops during the growing season will generally reduce the amount of water consumptively used by plants to a level below that predicted by the Blaney-Criddle method for a well-watered crop that is free of disease. Thus, it may be necessary to adjust the CIR and estimated diversion requirements to reflect these conditions. Conditions that should be taken into consideration when estimating crop water requirements are weather, soil, biological, and economic conditions, as well as farm operations.

When measured withdrawals are available, they are compared with computed withdrawals. CIRs are adjusted downward where measured withdrawals are less than the computed withdrawals. An asterisk (*) in Appendix B, Table 8 indicates the locations where the CIR was adjusted. When measured withdrawals are not available, water shortages and necessary adjustments to CIRs may be estimated on the basis of field observations made during the irrigation season and comparison of recorded stream flows with irrigation demand.

3.5 CALIBRATION OF CONSUMPTIVE USE FOR ALFALFA AND PECANS

In New Mexico, the primary use of irrigation water is for the production of alfalfa. New Mexico State University (NMSU) has conducted extensive research on alfalfa water use. This research has been incorporated into the water use estimates in this report, as described in Section 3.5.1. In 2005, the second most valuable crop in terms of cash receipts was pecans (NMDA, 2006). Pecan water use has been the subject of much research, and for this report, water use was estimated as described in Section 3.5.2.

3.5.1 Alfalfa

In the late 1970s, researchers at NMSU developed a crop production function for alfalfa that correlates annual evapotranspiration (consumptive use) with annual crop yield (Sammis et al., 1979; 1982). This crop production function is a linear relationship expressed in the following equation:

$$Y=0.1572ET-0.5904 \tag{3.8}$$

where Y is the annual yield in tons per acre at 15% moisture content (normal field-dried condition), and ET is the annual evapotranspiration in inches. Rearranging equation 3.8 to solve for ET results in the following expression:

$$ET=(Y+0.5904)/0.1572 \tag{3.9}$$

Because consumptive use (U) equals ET, substituting the annual yield reported for a specific calendar year into equation 3.9 results in consumptive use. The weighted consumptive irrigation requirement for the cropping pattern is adjusted if the conditions described below are met.

For the purpose of this water use inventory, alfalfa yields reported by the New Mexico Agricultural Statistics Service for 2005 were used in equation 3.8 to calibrate ET for alfalfa in several counties. If the ET predicted by equation 3.8 was higher than the value obtained using the OBC method, then the predicted ET was used in determining the consumptive irrigation requirement for alfalfa. Using this method results in a higher estimate of water use and was only done in cases where sufficient water was available to meet irrigation demand. This alfalfa adjustment was made in Bernalillo, Chaves, Curry, Doña Ana, Eddy, Harding, Luna, Roosevelt, San Miguel, Santa Fe, Sierra, Socorro, Torrance, and Union counties.

3.5.2 Pecan Orchards

It is generally accepted among pecan producers and agricultural researchers that the water requirements for pecan orchards are much higher than those for other deciduous orchards. Studies conducted in the Rio Grande Valley near Las Cruces, NM and El Paso, TX, by the USBR in 1972-73 and Seiichi Miyamoto in 1981 (Miyamoto, 1983), indicate that the growing season consumptive water use of mature pecan trees ranges from 39.36 to 51.24 acre-inches per acre, depending on the tree size and planting density.

Historically, the NMOSE has estimated the water requirement for pecan orchards using the OBC method and a seasonal consumptive use coefficient (K) of 0.65. The research conducted by the USBR and Miyamoto indicates that a K of 0.65 is much too low and needs to be revised. Evidence also suggests that threshold temperatures normally used to define the growing season for deciduous orchards are inappropriate for pecan orchards. Transpiration in these orchards generally begins when the mean daily air temperature reaches 60°F in the spring, and it ends in the fall after a reasonably hard freeze (Miyamoto, 1983). Because the first fall frost of 28°F or below is a readily available date, it is considered the end of the growing season.

By using the above temperature criteria to define the growing season—and assuming the growing season consumptive use of water is at least 39.36 inches and the consumptive use coefficient outside the frost-free period is 0.40—the NMOSE has calibrated the seasonal consumptive use coefficient for the frost-free period. This calibration results in a **seasonal** consumptive use coefficient (K) of 0.90 inside the frost-free period. This value was used to calculate the consumptive irrigation requirements of pecan orchards included in 2005 cropping patterns. Various researchers are currently investigating pecan water use; consumptive use coefficients may be revised in the future.

3.6 IRRIGATED ACREAGE

This report uses irrigated crop acreage and weather data for the 2005 calendar year; WUCB staff compiled the data. The NMISC conducted irrigated acreage inventories for the Upper Colorado River Basin in 2003-2005, and this report uses their data for portions of McKinley and Rio Arriba counties and all of San Juan County. Also used were NMISC's irrigated acreage and diversion data for the Gila River Basin and most of the Little Colorado River Basin.

The total acreage irrigated (Appendix B, Table 8) on farms in 2005 was 875,415 acres. 279,665 acres, or 31.95%, were irrigated with surface water; 464,177 acres, or 53.02%, were irrigated with groundwater (Appendix B, Table 9). The remaining 131,573 acres (15.03%) were irrigated with a combination of surface and groundwater.

Total acres irrigated (TAI) in New Mexico for the time period 1980-2005 are summarized below in Table 3.2. The number of irrigated acres in production has varied substantially over the past 25 years. The 875,415 acres in production in 2005 represent a 12% decrease from the 998,793 acres in production in 1999.

Table 3.2. Irrigated acreage in New Mexico, 1980-2005 and percent change in irrigated acreage.

Year	Acres	Percent Change from Previous Inventory
1980	1,087,120	
1985	941,245	-13.42
1990	984,285	4.57
1995	963,050	-2.16
1999	998,793	3.71
2005	875,415	-12.35

Acreage irrigated by drip (TDA), flood (TFA), and sprinkler (TSA) methods, as well as sources of irrigation water in New Mexico counties in 2005, are presented in Appendix B, Table 11. Similar data, organized by river basin, are presented in Appendix B, Table 12. Drip irrigation accounted for 18,875 acres (2.16%); flood for 448,599 acres (51.24%); and sprinkler for 407,941 acres (46.60%). Drip irrigation, by far, experienced the most growth over the last five years, increasing from 0.74% to 2.16% of the total acreage irrigated. Flood irrigation decreased the most, while sprinkler irrigation remained largely unchanged.

3.7 SURFACE WATER SHORTAGES

Because New Mexico has long periods of drought and inconsistent precipitation, irrigators who rely on surface water often experience shortages. In most cases, shortage adjustments were made to the CIR as reflected in Appendix B, Table 8 (see asterisk next to the locale). However, where NMISC data were used, the on-farm efficiency was adjusted to reflect the shortage.

Table 3.3 summarizes the percentage of surface water shortages, by river basin, for 2005. The Texas Gulf basin did not experience surface water shortages.

Table 3.3. 2005 Surface water shortages.

River Basin	Shortage Location	Surface Water Shortage (%)
Arkansas-White-Red		
	Colfax County (Cimmaron River)	60
	Mora County (Mora River)	53
	Quay County (Arch Hurley Conservancy District)	78
	Vermejo Conservancy District	48
Lower Colorado		
	Catron, Grant and Hidalgo Counties (Gila and San Francisco Rivers)	up to 40
Pecos		
	Eddy County (Carlsbad Irrigation District)	0, offset by supplemental well pumping
	San Miguel County (Gallinas River)	21
Rio Grande		
	Cibola County	75
	Doña Ana County	0, offset by supplemental well pumping
	Grant County (along the Mimbres Valley)	17

	McKinley County	98
	Pojoaque Valley Irrigation District	60
	Taos County (Rio Costilla)	40
	Santa Fe County and part of Rio Arriba County (Santa Cruz Irrigation District)	56
Upper Colorado		
	San Juan County (Chaco River)	50
	San Juan County (La Plata River)	38

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4 SELF-SUPPLIED LIVESTOCK

Out of the nine water use categories, self-supplied livestock ranked 6th for total water withdrawals in 2005. Withdrawals accounted for just over 57,000 acre-feet (AF), or 1.4%, of total withdrawals (Appendix B, Tables 2 and 3).

We have summarized below the population changes from 2000 to 2005 for non-dairy cattle, dairy cattle, sheep, hogs, chickens, and horses. In addition, we have provided details regarding the changes in dairy cattle populations in several counties over the 20-year history for which this report has been produced. Per capita water use assumptions for livestock are included, as well as details about the procedure used to quantify self-supplied livestock withdrawals.

4.1 DEFINITION OF CATEGORY

Livestock (LS) includes water used to raise livestock, maintain self-supplied livestock facilities, and provide for on-farm processing of poultry and dairy products.

4.2 LIVESTOCK POPULATION

All livestock totals are reported in Table 4.1 below. 2005 year-end totals for non-dairy cattle in New Mexico were estimated at 1,307,703 head, a 6.86% decrease from 2000. The dairy cattle population continues to grow at a rapid rate. The number of dairy cattle in 2005 was estimated at 379,472, an increase of nearly 61% over 2000. The sheep and lamb population decreased by 45%, from 290,000 in 2000 to 160,555 in 2005 (NMDA, 2006). The New Mexico Agricultural Statistics Service no longer reports the number of hogs, pigs, and chickens. Data for hogs and horses was obtained from the county assessor's office. The hog and pig population was estimated to be 2,551, and the horse population 31,799. The number of chickens was estimated to be 1,400,852 based upon 1995 and 2005 data.

Table 4.1. New Mexico livestock population in 2000 and 2005 (Compiled from New Mexico Department of Agriculture and County Assessor's offices).

Species	2000	2005	Percent Change
All Cattle (Non-dairy)	1,404,000	1,307,703	-6.86
Dairy Cattle	236,000	379,472	60.79
Sheep/Lambs	290,000	160,555	-44.64
Hogs/Pigs	5,000	2,551	-48.98
Chickens	1,400,000	1,400,852	0.06
Horses	24,870	31,799	27.86

Dairies continue to be a dominant component of the livestock category in the eastern and southeastern portions of the state and in Doña Ana County located in the Lower Rio Grande Basin (Table 4.2). In Curry County, the population of dairy cattle more than doubled between 2000 and 2005.

Table 4.2. Number of milk cows in Chaves, Doña Ana, Roosevelt and Curry counties as of January 1, 1976-2005. (Sources: New Mexico Department of Agriculture-Agricultural Statistics Service and county assessors).

Year	Chaves		Doña Ana		Roosevelt		Curry	
	No. Head	Percent Change	No. Head	Percent Change	No. Head	Percent Change	No. Head	Percent Change
1976	2,700		5,500		5,000		400	
1977	3,000	11.1	6,500	18.2	5,000	0.0	900	125.0
1978	3,500	16.7	7,000	7.7	4,800	-4.0	800	-11.1
1979	4,000	14.3	8,500	21.4	5,000	4.2	1,100	37.5
1980	4,000	0.0	9,200	8.2	5,100	2.0	1,200	9.1
1981	5,000	25.0	13,100	42.4	6,700	31.4	1,200	0.0
1982	7,200	44.0	16,000	22.1	6,800	1.5	1,500	25.0
1983	9,700	34.7	19,300	20.6	6,800	0.0	1,700	13.3
1984	10,800	11.3	21,000	8.8	7,500	10.3	1,600	-5.9
1985	12,000	11.1	23,800	13.3	7,600	1.3	1,600	0.0
1986	13,200	10.0	26,000	9.2	7,500	-1.3	1,600	0.0
1987	10,500	-20.5	24,400	-6.2	6,800	-9.3	1,000	-37.5
1988	10,500	0.0	23,400	-4.1	6,700	-1.5	1,000	0.0
1989	12,000	14.3	24,000	2.6	7,200	7.5	1,500	50.0
1990	19,000	58.3	24,000	0.0	9,000	25.0	1,100	-26.7
1991	34,000	78.9	24,500	2.1	9,000	0.0	2,000	81.8
1992	39,500	16.2	24,500	0.0	11,000	22.2	4,500	125.0
1993	49,000	24.1	26,000	6.1	16,000	45.5	7,000	55.6
1994	56,400	15.1	31,000	19.2	18,000	12.5	10,000	42.9
1995	70,000	24.1	31,000	0.0	20,400	13.3	13,000	30.0
1996	69,000	-1.4	35,000	12.9	25,000	22.5	16,000	23.1
1997	70,000	1.4	39,000	11.4	27,000	8.0	16,000	0.0
1998	67,000	-4.3	38,000	-2.6	32,000	18.5	24,000	50.0
1999	76,000	13.4	35,000	-7.9	33,000	3.1	21,000	-12.5
2000	80,000	5.3	36,000	2.9	35,000	6.1	30,000	42.9
2005	99,797	24.7	58,227	61.7	65,000	85.7	76,820	156.1

4.3 PER CAPITA WATER USE FOR LIVESTOCK

Like human consumption of water, livestock water used for drinking and other uses, such as dairy sanitation, are estimated on a per capita basis (stockpond evaporation not included). Daily requirements in gallons per capita for all livestock species analyzed in this report are presented in Table 4.3. Dairy cattle consume the most water (primarily drinking and facility sanitation).

Table 4.3. Drinking and miscellaneous water requirements for livestock in gallons per capita (animal) per day (GPCD). (Sources: Beef cattle—Sweeten et al., 1990; Horses—Van der Leeden et al., 1990; Dairy cattle—Wiersma, 1988; all others—Soil Conservation Service, 1975; and Sykes, 1955.)

Species	Drinking Water (GPCD)	Miscellaneous Water (GPCD)	Total (GPCD)
Non-dairy Cattle	9	1	10
Chickens	0.06	0.02	0.08
Hogs	2	1	3
Horses and Mules	12	1	13
Dairy Cattle	36.5	63.5	100
Sheep	2	0.2	2.2

4.4 PROCEDURE FOR QUANTIFYING LIVESTOCK WITHDRAWALS

Step 1. Determine Number of Livestock (by Species) per County

The New Mexico Department of Agriculture, Agricultural Statistics Service reports livestock population data annually, by species and county, in a report titled *New Mexico Agricultural Statistics* (NMDA, 2006). Livestock population data for this report (the 2005 Water Use by Categories) was culled not only from the Agricultural Statistics report but also from county assessors offices. Where discrepancies existed between the two sources, the larger number was used. When a county is comprised of two or more river basins, the number of livestock in each basin was estimated based on information such as location of ranches, feedlots, and dairies.

Step 2. Determine Withdrawals

Withdrawals were calculated and reported for each species by county and river basin. **Measured** withdrawals, when available, were used in this report. Most notably, all dairies in Chaves County are metered. Non-metered withdrawals were computed using the following equation:

$$W=(GPCD)(POP)/892.74 \tag{4.1}$$

where W is the annual withdrawal in acre-feet; POP is the population of each species; and GPCD is gallons per capita per day (taken from Table 4.3 above). Only 17.6% of withdrawals for livestock were measured in 2005 (Appendix B, Table 4). The remaining 82.4% of withdrawals were calculated using equation 4.1. It is assumed in this report that water for chickens, hogs, horses, mules, and dairy cows come from groundwater sources. It is also assumed that drinking water for non-dairy cattle and sheep comes from a combination of ground and surface water sources. (Groundwater sources are used where surface water supplies are either unreliable as a year-round source, or offer unsatisfactory quality for livestock consumption.)

5 SELF-SUPPLIED COMMERCIAL, INDUSTRIAL, MINING, AND POWER

Withdrawals for Self-supplied Commercial, Industrial, Mining, and Power accounted for 182,660 acre-feet (AF), or 4.62%, of total withdrawals in 2005 (Appendix B, Tables 2 and 3).

We have included the procedures used to calculate withdrawals for these categories, as well as those for non-metered schools, which fall under the self-supplied commercial category. In addition to discussing the water use reporting categories, we have described the types of golf courses and their associated water supplies.

New Mexico continues to be one of the leading mineral resource producing states in the nation. This chapter describes some of those mining activities, their associated water use, and the water use for Power production.

5.1 DEFINITION OF CATEGORIES

5.1.1 Commercial (CO)

The Commercial category includes self-supplied businesses (e.g., motels, restaurants, recreational resorts and campgrounds) and institutions (e.g., public and private schools and hospitals) involved in the trade of goods or provision of services, public and private; self-supplied golf courses that do not otherwise fall under the Public Water Supply category; greenhouses and nurseries that produce and sell products, on the same premises, to the general public; and off-stream fish hatcheries that produce fish for release.

5.1.2 Industrial (IN)

The Industrial category includes self-supplied enterprises that process raw materials or manufacture durable or nondurable goods. This category also includes water used for the construction of highways, subdivisions and other construction projects.

5.1.3 Mining (MI)

The Mining category includes self-supplied enterprises that extract minerals occurring naturally in the earth’s crust: solids, such as potash, coal and smelting ores; liquids, such as crude petroleum; and gases, such as natural gas. This category includes water used for oil and gas well drilling, secondary recovery of oil, quarrying, milling (crushing, screening, washing, flotation, etc.) and other processing done at the mine site, or as part of a mining activity; and water removed from underground excavations and stored in—and evaporated from—tailings ponds. Mining also includes water used to irrigate new vegetative covers at former mine sites that have been reclaimed. It does not include the processing of raw materials, such as smelting ores, unless this activity occurs as an integral part of, and is physically contiguous with, a mining operation and included in a NMOSE permit.

5.1.4 Power (PO)

The Power category includes all self-supplied power generating facilities and water used in conjunction with coal mining operations that are contiguous with a power generating facility that owns and/or operates the mines.

5.2 GENERAL PROCEDURE FOR QUANTIFYING WITHDRAWALS

The procedure for quantifying withdrawals for self-supplied commercial, industrial, mining, and power generating facilities is generally the same for each of these individual categories. The following outlines this procedure in detail.

Step 1. Compile Metered Withdrawals
Some self-supplied commercial, industrial, mining, and power generating facilities report their metered diversions to NMOSE, and those reports are culled.

Step 2. Estimate Non-reported Metered Withdrawals
While most self-supplied facilities are required to report their annual water use, many do not. When metered records for the water use inventory year are incomplete, we either estimate water use based on earlier records, or prorate the water right.

Step 3. Compile Non-metered Withdrawals
Some facilities are unmetered, and these can be difficult to identify if a declaration has never been required or has never been filed with the NMOSE. Consequently, many of these facilities are not captured in the water use inventory. When possible, we identify these entities through directories maintained by various business associations and regulatory agencies. The executive director or operator is then contacted by phone or mail to obtain an estimate of water use.

5.3 SELF-SUPPLIED COMMERCIAL

5.3.1 Schools

Water withdrawals for K-12 schools, which are not metered, are computed by multiplying the student population by a per capita water requirement. For this report, we used the requirements listed below in Table 5.1 to quantify water use in non-metered schools.

Table 5.1. Water requirements in gallons per capita per day (GPCD) for schools without water conserving plumbing fixtures (Vickers, 2001).

Type of Facility	Water Requirement (GPCD)
Day school with cafeteria, gymnasiums, and showers	25
Day school with cafeteria, but no gymnasiums or showers	20
Day school without cafeteria, gymnasiums or showers	15

5.3.2 Golf Courses

In many communities, self-supplied golf courses are the largest water users in the Commercial category. There are approximately 87 golf courses in New Mexico (Golf New Mexico Magazine, 2006a, 2006b, 2006c), and they range from 9-hole par-three courses that cover as little as 40 acres to sprawling 18-hole courses that cover 200 acres or more. The amount of water used at golf courses is as varied as the golf courses themselves. Annual water requirements range from less than 100 acre-feet to more than 600 acre-feet, depending upon climate, species of turfgrass, irrigation management practices, number of ponds, and clubhouse facilities.

The major urban areas of the state usually have a mix of public, private, university, and military golf courses. Many well-established 18-hole private courses have clubhouse facilities that include a snack bar and restaurant, locker rooms with showers, and swimming pools, all of which require additional water resources.

There are four types of water that golf courses can use: groundwater, surface water, municipal freshwater, and municipal treated effluent. Accounting for how these facilities obtain their water is a challenge. They might use one of these sources or several combined. The type of course, and the manner in which its water use was categorized for this report, are detailed below in Table 5.2. Regardless of the type of water used at military and university courses, they are always categorized as either Public (military) or Commercial (university). Golf courses, whose water use is categorized as Public, are included in Chapter 2 discussions.

Table 5.2 Golf course types, water types used, and associated water use categories.

Golf Course Type	Water Source	Water Use Category
Public/Private		
	Groundwater	Commercial
	Surface Water	Commercial
	Municipal (freshwater)	Commercial[1]
	Municipal (effluent)	Public
Military	--	Public
University	--	Commercial

[1]Municipal freshwater is reported as Commercial unless the exact diversion amount is unknown; then it is reported as Public.

Many golf course water supply systems in the state are metered and report their annual diversions to NMOSE. For those self-supplied courses that are not metered, withdrawals are estimated using the procedure outlined in Chapter 3, Irrigated Agriculture. This procedure requires the golf course superintendent to report the acreage irrigated and the species of fairway turfgrass that is used. It is important that the species of turfgrass be identified because the irrigation water requirements (CIR) will vary depending on the type of grass that is grown and local climactic conditions. For golf courses where turfgrass species are unknown, water use was estimated using the number of holes and known water use at nearby courses.

5.4 SELF-SUPPLIED INDUSTRIAL

Water is used in the manufacturing industry for heating, cooling, conveying materials, washing, pollution control, and as part of product sales (AWWA, 1985). Water used for restrooms, showers, cafeterias, air conditioning, landscaping, fire protection, and other minor uses normally accounts for less than 5% of industrial intake water. Manufacturing-plant water intake depends on the type of raw material involved, the product produced, the design of the plant, and the efficiency of the industrial process (California Department of Water Resources, 1982). In many industrial plants, water is recirculated, particularly water used for cooling. The quantity of intake water recirculated is affected by:

- availability and cost of water delivered to the plant,
- quality of raw water,
- plant processes and technology,
- recovery of materials, by-products, and energy,
- consumptive loss,
- air and water pollution control regulations,
- cost avoidance, and
- age of plant (Kollar and Brewer, 1980).

In 2005, self-supplied natural gas processing plants and oil refineries accounted for about 53% of withdrawals for this category. Water introduced into these facilities for cooling is generally recirculated. However, water used for other purposes, and water separated from petroleum during processing, is usually either discharged into lagoons where it is evaporated or injected into deep aquifers.

5.5 SELF-SUPPLIED MINING

New Mexico continues to be one of the leading mineral resource producing states in the nation, ranking 16th in the production of non-energy minerals. During 2005, New Mexico ranked 11th in the production of coal, the state's most significant mineral commodity. Additionally, New Mexico ranked 3rd in production of copper, 10th in the production of gold and silver (as a by-product of copper mining), 6th in the production of molybdenum, and 1st in the production of potash. New Mexico is also a leading producer of industrial minerals including being the top producer of perlite and zeolite in the nation, and a major producer of pumice (used to lighten construction products such as concrete blocks, and as an abrasive) (New Mexico Energy, Minerals and Natural Resources Department, 2006).

Of the energy minerals, New Mexico ranks 3rd nationally in the production of natural gas, 1st in coalbed methane production, and 5th in crude oil production (New Mexico Energy, Minerals and Natural Resources Department, 2006).

Before the start of any mining operations, the operator must register the mine, mill, smelter, or pit with the Mining and Minerals Division of the New Mexico Energy, Minerals, and Natural Resources Department (NMEMNRD). A directory of all the mines and mills registered in the state is updated annually. This directory is used to identify the mines and mills that are not required to report their annual water withdrawals directly to the NMOSE. Those operations are then contacted by mail or phone to obtain withdrawal data.

Measured withdrawals for water used in the secondary recovery of oil may be obtained from the NMEMNRD, Oil Conservation Division, and NMOSE District Offices. Brine water pumped from a depth of 4,000 to 5,000 feet, which is returned by injection into deep brine aquifers, is not included in this inventory since its impact on the net supply of fresh water is zero. However, water pumped from freshwater aquifers for the secondary recovery of oil, and later disposed of by injection into deep brine aquifers or spread on the land surface where it evaporates, is treated as a withdrawal.

The mining industry accounted for 60,189 acre-feet, or 1.52%, of the total withdrawals in the state (Appendix B, Tables 2 and 3). A breakdown of the major industries in the mining category and their associated percentage of water withdrawals are identified in Table 5.3. The production of metals, including copper, molybdenum, gold, silver, and manganese, accounted for just over half of the water withdrawals in the mining category. Oil and gas production and potash mining also used significant quantities of water (24% and 18.6%, respectively). The remaining portion of water use, about 6%, is used to produce aggregate (i.e., sand, gravel, crushed rock, base course, and caliche), industrial materials and minerals (i.e., calcite, silica, flux, pumice, mica, humate, gypsum, zeolites, perlite, limestone, and travertine), coal and coalbed methane, and geothermal energy (0.003%).

Table 5.3 Percent water use by mining industry, 2005.

Mining Industry	Percent Water Use
Metals	51.5
Oil & Gas	24.0
Potash	18.6
Aggregate	2.6
Industrial	1.7
Coal	1.6
Geothermal	trace
Total	100.0

5.6 SELF-SUPPLIED POWER

The New Mexico Public Regulation Commission (NMPRC) maintains a directory of all power generating facilities in the state. This directory is used to identify electric utility companies that are not required to report their annual withdrawals directly to NMOSE. As with other non-reporting entities, these facilities are contacted by mail and/or phone to obtain withdrawal data.

BHP-Utah International in San Juan County has a complex water budget. For this report, water used at BHP’s Navajo coal mine, and water that evaporates from Morgan Lake—which is filled by water pumped from the San Juan River to supply the Four Corners Generating Station—is included in the Self-supplied Power category rather than the Self-supplied Mining category. For similar reasons, the Public Service Company of New Mexico (PNM) San Juan Generating Station in San Juan County, and the La Plata and the San Juan coal mines, are also accounted for in the Self-supplied Power category.

Self-supplied Power withdrawals increased approximately 8% between 2000 and 2005 (from 1.49% to 1.61%). Of these withdrawals, 51,646 acre-feet (81.10%) were from surface water and 11,996 acre-feet (18.90%) were from groundwater sources.

6 RESERVOIR EVAPORATION

Reservoirs provide many benefits to New Mexicans, but due to evaporation of their exposed water surfaces, they consume a significant part of available surface water supplies. In 2005, average annual gross evaporation from reservoirs ranged from around 40 inches in the mountains of Northern New Mexico to about 75 inches in the valleys near the southern border of the state. This amounted to just over 279,293 acre-feet, or 7%, of total withdrawals in 2005.

Reservoir evaporation was primarily calculated using Class A land pan data. The pan approach is discussed in detail in this chapter, along with an empirical method that is applied when there is a lack of data. Where no data was available, evaporation quantities from the 2000 water use report were used.

Please see Appendix B, Table 6 for a summary of evaporation withdrawals by river basin.

6.1 DEFINITION OF CATEGORY

For the purpose of this water use inventory, reservoir evaporation is defined as net evaporation from man-made reservoirs with a storage capacity of approximately 5,000 acre-feet or more.

As a matter of convenience, net evaporation from the Bosque del Apache Wildlife Refuge is also included in this category due to the large volume of water that is diverted from the Rio Grande and ultimately evaporated from the wetlands.

6.2 THE NATIONAL WEATHER SERVICE CLASS A LAND PAN

It is generally accepted that the most practical method for estimating reservoir evaporation is the pan approach because the hydrologic and meteorological data required is readily available. A description of the National Weather Service Class A Land Pan, and a procedure for application of the pan approach, is outlined below.

The National Weather Service Class A Land Pan is four feet in diameter and ten inches deep (Figure 6.1). It is made of unpainted 22-gage galvanized iron and sits on a wooden pallet so that the bottom of the pan is raised six inches above the ground, allowing air to circulate. Site requirements specify that the pan be located on level ground, unobstructed by trees or buildings, so maximum exposure to sunlight is possible. The pan is filled with water within two inches of the top and is refilled as soon as the water level drops one inch. The depth of water is measured with a micrometer hook gage located in a stilling well that supports the gage. An anemometer to measure wind movement is mounted on the pallet, with the cups 24 inches above the base of the pan. Maximum/minimum thermometers that are kept in an instrument shelter, and a rain gage, are also installed at the site. A five-foot high wire-mesh fence encloses the entire installation. A pan reading is taken every morning.

Figure 6.1. Class A Land Pan (Photo: Courtesy of Wikipedia™)

Unlike a lake, the Class A pan permits considerable transfer of heat to and from its sides and bottom due to radiation exchange and transfer of sensible heat caused by a difference in water and air temperature. The effects of pan color and water depth on emission and absorption of radiant energy, the effects of pan rims on air turbulence, and the convection of heat within the water in the pan, produce an evaporation rate that is greater than that from a lake or reservoir surface. The ratio of lake evaporation to pan evaporation is referred to as "the pan coefficient."

Studies conducted by the U.S. Department of Agriculture indicate that coefficients for Class A land pans range from 0.60 to 0.82; however, a coefficient of 0.70 is recommended for most applications (Subcommittee on Evaporation, 1934). A coefficient of 0.77 is used in the Pecos River Basin, consistent with the Pecos River Master's Manual (NMISC, 2003) used to calculate annual Pecos River Compact delivery obligations to Texas.

While the pan approach has a wide application, consideration should be given to the fact that in winter months in cold climates, the pan may be frozen while the reservoir remains open.

6.3 PROCEDURE FOR ESTIMATING RESERVOIR EVAPORATION USING THE PAN APPROACH

Step 1. **Determine Average Monthly Reservoir Gage Height (Content)**
Compute the average gage height of the water surface level, or the average reservoir content for each month, from daily measurements reported by the agency responsible for managing the reservoir. Sources of data include the New Mexico Interstate Stream Commission, U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, U.S. Geological Survey, National Oceanic and Atmospheric Administration (NOAA), irrigation districts and dam tenders.

Step 2. Determine Reservoir Surface Area
Determine the average water surface area in acres for each month from a curve or equation that correlates gage height or content with surface area. Area-gage height or area-capacity data can be obtained from the agencies mentioned in Step 1.

Step 3. Account for Winter Ice Surface Area
Winter evaporation estimates must take into account the possible effects of ice cover. Partial ice cover will inhibit evaporation; complete ice cover will reduce water surface evaporation to zero. Thus, the average surface area computed in Step 2 must be adjusted to reflect the surface area covered by ice. For large reservoirs, daily measurements of ice cover may be available. Some agencies have developed tables showing the percentage of ice cover by month, based on historical records, and may be used when no other data is available.

Step 4. Obtain Class A Land Pan Evaporation Data
Obtain Class A land pan evaporation data recorded for each month from the weather station that best represents climate conditions in the study area. Measurements of monthly and annual evaporation from U.S. Weather Bureau Class A land pans are generally available from NOAA.

Step 5. Calculate Monthly Gross Evaporation Rate
The gross evaporation rate for each month is computed by multiplying the pan evaporation, which is expressed as a depth of water in feet, by the pan coefficient. If in winter, the evaporation pan is iced over but the water surface of a nearby reservoir remains open, agencies such as the USBR have empirical equations based on temperature that can be used to estimate gross evaporation.

Step 6. Obtain Rainfall Data
Obtain the total rainfall recorded for each month. This data is published monthly for most weather stations operated by NOAA. When a reservoir is completely covered with ice for part of a month, recorded precipitation should include only those days when the water surface was exposed.

Step 7. Calculate Monthly Net Evaporation Rates
The net evaporation rate for each month, expressed as a depth of water in feet, is calculated by subtracting the measured rainfall, in feet, from the gross evaporation rate obtained in Step 5.

Step 8. Calculate Monthly Evaporation (acre-feet)
The net volume of water evaporated in each month, expressed in acre-feet, is calculated by multiplying the exposed surface area, expressed in acres, by the net evaporation rate, expressed in feet.

Step 9. Calculate Annual Evaporation (acre-feet)
Add the net evaporation for each month to get the net evaporation for the calendar year.

6.4 PROCEDURE FOR ESTIMATING EVAPORATION FROM SMALL RESERVOIRS USING EMPIRICAL DATA

In some areas there are small reservoirs that are not monitored on a regular basis. Many of these are not equipped with a gage to measure the water level, and area capacity curves are not available. Because these reservoirs are small, and hydrologic and meteorologic data is typically unavailable, spending extensive time and effort to estimate annual evaporation is not recommended. Two such reservoirs, Costilla Reservoir and Storrie Lake, were included in this water use inventory, and the following procedure was used to estimate their evaporation.

Step 1. Obtain Reservoir Surface Area
Refer to the original design specifications to obtain the reservoir surface area at spillway elevation; obtain the normal surface area from historical records, if available.

Step 2. Calculate Lake Content
Multiply the maximum surface area (if known) by the known fullness factor for that reservoir. If the fullness factor is unknown, choose one that best reflects the runoff conditions for the time period under study. Water supply forecasts published by the U.S. Natural Resources Conservation Service may be helpful in choosing a fullness factor. If the average or normal water surface area of the reservoir is known, use this value in years when precipitation and runoff are considered normal. In drought years, it may be necessary to multiply the normal water surface area by a fullness factor to account for low runoff.

Step 3. Estimate Annual Gross Evaporation
The annual gross evaporation is estimated by reading values from isopleths drawn on maps prepared by the U.S. Natural Resources Conservation Service and other agencies. The isopleths should represent the annual evaporation from a lake or reservoir. If they only reflect pan evaporation, multiply the value read from the isopleths by an appropriate pan coefficient, usually 0.70 for large water bodies and 0.80 for small water bodies, such as ponds.

Step 4. Estimate Annual Rainfall
The normal annual rainfall is estimated by reading values from isopleths on maps that are similar to those described in Step 3. Rainfall read from the isopleths may be reduced by some percentage to reflect drought conditions. Alternatively, rainfall can be estimated using a precipitation database.

Step 5. Calculate Net Evaporation Rate
Subtract the rainfall from the gross evaporation rate to get the net evaporation rate.

Step 6. Calculate Annual Net Evaporation (acre-feet)
Multiply the exposed water surface area, expressed in acres, by the net evaporation rate, expressed in feet, to get the net evaporation for the calendar year, in acre-feet.

APPENDIX A. GLOSSARY

Acre-foot (AF)

The quantity of water required to cover one acre (43,560 square feet) of land with one foot of water. There are 325,851 gallons in one acre-foot of water.

Aquifer

A saturated underground formation of permeable rock or unconsolidated materials, such as gravel, silt, or clay, capable of storing water and transmitting it to wells, springs, or streams.

Combined water

When both ground and surface water are used on-site for the same purpose, such as crop irrigation.

Consumptive irrigation requirement (CIR)

The quantity of irrigation water expressed as a depth or volume, exclusive of effective rainfall, that is consumptively used by plants or is evaporated from the soil surface in a specific period of time. It does not include water requirements for leaching, frost protection, wind erosion protection or plant cooling. Such requirements are accounted for in on-farm efficiency values. The consumptive irrigation requirement may be numerically determined by subtracting effective rainfall from the consumptive use.

Consumptive use (U, u_m) or evapotranspiration (ET)

The unit amount of water consumed on a given area in transpiration, building of plant tissue, and evaporated from adjacent soil, water surface, snow, or intercepted rainfall in a specific period of time. The term includes effective rainfall. Consumptive use may be expressed either in volume per unit area, such as area-inches or acre-feet per acre, or depth, such as in inches or feet.

Crop distribution ratio (CDR)

The crop distribution ratio is computed by dividing the acreage planted in a specific crop by the total acreage for all crops included in the cropping pattern.

Cropping pattern

Distribution of the total irrigated acreage in a specific area according to the acreage planted in each individual crop.

Diversion

The quantity of metered water taken from a surface or groundwater source.

Drip irrigation

Drip, or trickle, irrigation is defined as the precise application of water on, above, or beneath the soil by surface drip, subsurface drip, bubbler, spray, mechanical move, and pulse systems. Water is applied as discrete or continuous drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line near the plant(s).

Effective rainfall (R_e, r_e)

Rainfall that occurs during the growing period of a crop that becomes available to meet its consumptive irrigation requirements. It does not include rain that is intercepted by the plant canopy, surface runoff, or deep percolation below the root zone.

Evapotranspiration (ET)

See consumptive use.

Farm delivery requirement (FDR)

The quantity of water exclusive of effective rainfall, that is delivered to the farm headgate or is diverted from a source of water that originates on the farm itself, such as a well or spring, to satisfy the consumptive irrigation requirements of crops grown on a farm in a specific period of time. The farm delivery requirement is computed by dividing the consumptive irrigation requirement, expressed as depth or volume, by the on-farm irrigation efficiency, expressed as a decimal.

Field application efficiency

The ratio of the volume of irrigation water added to the root zone to the depth or volume of water applied to the soil. The application efficiency does not account for conveyance losses that may occur between the farm headgate and the fields that are irrigated. (See on-farm irrigation efficiency.)

Flood irrigation

Flood irrigation includes furrow, border-strip, level-basin, and wild flooding. It is often referred to as "surface irrigation," because the water applied flows over the surface of the irrigated field, or "gravity irrigation," because free water runs downhill.

Gallons per capita per day (GPCD)

The average quantity (gallons) of water used per person or per head of livestock, per day.

Groundwater

Water stored in the zone of saturation of an aquifer.

Idle and fallow

Acreage plowed and cultivated during the current year but left unseeded or acreage that is left unused one or more years.

Instream use

Water use that occurs within a stream channel. Instream use is not dependent on withdrawal or diversion from ground or surface water sources; it is usually classified as a flow use. Examples of flow uses that depend on water running freely in a channel are hydroelectric power generation, recreation, fish propagation, and water quality improvement.

Irrigable acreage

The sum of irrigated crop acreage and idle and fallow acreage. Such acreage is developed for farming and irrigation works to apply water to the land. It does not include farmstead, feedlots, road areas, ditches and the like.

Irrigated acreage (net)

Includes agricultural land to which water was artificially applied by controlled means during the calendar year. It includes pre-plant, partial, supplemental, and semi-irrigation applications. Land flooded during high water periods is included as irrigation only if the water was diverted to agricultural land by dams, canals, or other works. It is equal to the sum of all irrigated crop acreage minus the multiple-cropped acreage.

Multiple-cropped acreage

The same acreage used to produce two or more crops in the same year. When conducting inventories of irrigated acreage, each irrigated crop is included as part of the planted acreage, but the multiple-cropped acreage is subtracted from the sum of all crop acreage to obtain the net acreage irrigated.

NMSA

New Mexico Statutes Annotated (1978).

Off-farm conveyance efficiency (E_c)

The ratio, expressed as a percentage of the quantity of water delivered to the farm headgate by an open or closed conveyance system, to the quantity of water introduced into the conveyance system at the source or sources of supply.

On-farm distribution system

A system that conveys diverted water to the appropriate field on the farm. On-farm distribution systems may consist of a series of ditches or pipes.

On-farm irrigation efficiency (E_f)

The ratio, expressed as a percentage, of the volume of irrigation water infiltrated and stored in the root zone to the depth or volume of water diverted from the farm headgate or a source of water originating on the farm itself, such as a well or spring. The on-farm irrigation efficiency reflects the efficiency of the on-farm distribution and application system, and includes deep percolation losses necessary as a beneficial use for leaching excess salts from the root zone. The on-farm irrigation efficiency is used to calculate the farm delivery requirement.

Pre-plant irrigation

Water applied to fields before seed is sown to provide optimum soil moisture conditions for germination and for storage in the soil profile for later consumptive use by plants during the growing season.

Project diversion requirement or off-farm diversion requirement (PDR)

When the source of irrigation water does not originate on the farm, the project diversion requirement, or off-farm diversion requirement, is defined as the quantity of water, exclusive of effective rainfall, that is diverted from an off-farm source to satisfy the farm delivery requirement in a specific period of time. An additional quantity of water must be diverted from the ultimate source of supply to make up for conveyance losses between the farm headgate and the source of water. Estimated conveyance losses are added to the farm delivery requirement to arrive at the project diversion requirement. The off-farm diversion requirement may also be calculated by dividing the farm delivery requirement by the off-farm conveyance efficiency, expressed as a decimal.

Project or system irrigation efficiency (E_i)

The combined efficiency of the entire irrigation system, from the original diversion point to the crop root zone. It is the product of the on-farm efficiency (E_f) and the off-farm conveyance efficiency (E_c) and is expressed as a percentage. When the irrigation source originates on-farm, such as from a well or spring, the off-farm conveyance efficiency does not apply; therefore, the project or system efficiency is the same as the on-farm irrigation efficiency.

River basin (RVB)

The entire area drained by a stream (or river) or system of connecting streams so that all the streamflow originating in the area is discharged through a single outlet.

Self-supplied

Water users who withdraw water directly from a ground or surface water source.

Sprinkler irrigation

A method of applying irrigation water (similar to rainfall) to farm crops, golf courses, and residential yards and gardens. On a farm, the water is distributed through a system of pipes, by a pump, and is sprayed through the air. Sprinkler irrigation systems can be divided into periodic move systems that remain at a fixed position while irrigating, and continuous move systems that move in either a circular or straight path while irrigating.

Surface water

Water stored in ponds, lakes, rivers, and streams.

Transpiration

The process by which water in plants is transferred into water vapor in the atmosphere.

Weighted consumptive irrigation requirement (WCIR)

A weighted consumptive irrigation requirement is the CIR for a crop, multiplied by the crop distribution ratio for that crop. Summing the WCIR for all the crops in a cropping pattern equals a WCIR for that cropping pattern.

Withdrawal

The quantity of calculated, metered or estimated water taken from a surface or groundwater source.

APPENDIX B. 2005 POPULATION AND WATER USE TABLES

For many readers, the water use tables represent the heart of the Report. Appendix B of this report contains 12 water use tables as follows:

Table 1. Populations in New Mexico River Basins, 2005.
Table 2. Summary of withdrawals (acre-feet) in New Mexico, 2005.
Table 3. Water Use by category expressed as a percentage of state totals in New Mexico, 2005.
Table 4. Percent of withdrawals measured in each water use category in New Mexico, 2005.
Table 5. Summary of water use in acre-feet in New Mexico counties, 2005.
Table 6. Summary of withdrawals in acre-feet in New Mexico River Basins, 2005.
Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005.
Table 8. Irrigated Agriculture. Withdrawals in acre-feet in New Mexico counties, 2005.
Table 9. Irrigated Agriculture. Summary of acreage irrigated, withdrawals, and conveyance losses (acre-feet) in New Mexico River Basins, 2005.
Table 10. Irrigated acreage and sources of irrigation in New Mexico counties, 2005.
Table 11. Acreage irrigated by drip, flood, and sprinkler application methods and sources of irrigation water in New Mexico, 2005.
Table 12. Acreage irrigated by drip, flood, and sprinkler application methods and sources of irrigation water in New Mexico river basins, 2005.

The equations listed below were used to compute the irrigation withdrawals shown in this appendix:

- $TFWSW=CIRSW(ASWO+ASWC)/E_f$
- $TFWGW=CIRGW(AGWO+AGWC)/E_f$
- $TPWSW=TFWSW/Ec$ where $Ec > 0$
- TPWGW=TFWGW (assuming the source of water is on-farm)
- CLSW=TPWSW-TFWSW

Results from these calculations are presented in Tables 8 and 9. Listed below are descriptions of the acronyms used in these equations. These acronyms appear as column headings in Tables 8 and 9.

AGWC	Groundwater component of acreage irrigated with both surface and groundwater (combined water)

AGWO	Acreage irrigated with groundwater only
ASWC	Surface water component of acreage irrigated with both surface and groundwater (combined water)
ASWO	Acreage irrigated with surface water only
CIRGW	Consumptive irrigation requirement for acreage irrigated with groundwater
CIRSW	Consumptive irrigation requirement for acreage irrigated with surface water
CLSW	Surface water conveyance losses in canals and laterals from stream or reservoir to farm headgate
$\mathbf{E_f}$	On-farm irrigation efficiency
$\mathbf{E_c}$	Off-farm conveyance efficiency
TFWGW	Total farm withdrawal, groundwater
TFWSW	Total farm withdrawal, surface water
TPWGW	Total project withdrawal, groundwater
TPWSW	Total project withdrawal, surface water

Table 1. Populations in New Mexico River Basins, 2005.

River Basin	Category	Population	% of State Population
Arkansas-White-Red	Domestic (self-supplied)	8,859	0.45
Arkansas-White-Red	Public Water Supply	28,867	1.47
	River Basin Totals	37,726	2
Lower Colorado	Domestic (self-supplied)	36,716	1.87
Lower Colorado	Public Water Supply	35,943	1.83
	River Basin Totals	72,659	4
Pecos	Domestic (self-supplied)	26,766	1.36
Pecos	Public Water Supply	157,608	8.01
	River Basin Totals	184,374	9
Rio Grande	Domestic (self-supplied)	241,802	12.28
Rio Grande	Public Water Supply	1,170,521	59.47
	River Basin Totals	1,412,323	72
Texas Gulf	Domestic (self-supplied)	18,218	0.93
Texas Gulf	Public Water Supply	96,456	4.9
	River Basin Totals	114,674	6
Upper Colorado	Domestic (self-supplied)	33,361	1.69
Upper Colorado	Public Water Supply	113,236	5.76
	River Basin Totals	146,597	7
	State Totals	**1,968,353**	**100**

Table 2. Summary of withdrawals (acre-feet) in New Mexico, 2005

Category	WSW	WGW	TW
Public Water Supply	42,092	278,034	320,126
Domestic (self-supplied)	0	35,796	35,796
Irrigated Agriculture	1,730,927	1,344,587	3,075,514
Livestock (self-supplied)	3,279	53,730	57,009
Commercial (self-supplied)	1,496	39,082	40,578
Industrial (self-supplied)	1,967	16,284	18,251
Mining (self-supplied)	1,438	58,751	60,189
Power (self-supplied)	51,646	11,996	63,642
Reservoir Evaporation	279,293	0	279,293
State Totals	**2,112,138**	**1,838,260**	**3,950,398**

Key: WSW= withdrawal surface water; WGW=withdrawal groundwater; TW=total withdrawal

Table 3. Water use by category expressed as a percent of state totals in New Mexico, 2005. Surface water and groundwater component of each category is identified.

Category	% of Total Withdrawals	% Withdrawal Surface Water	% Withdrawal Groundwater
Public Water Supply	8.10	13.15	86.85
Domestic (self-supplied)	0.91	0.00	100.00
Irrigated Agriculture	77.86	56.30	43.70
Livestock (self-supplied)	1.44	5.75	94.25
Commercial (self-supplied)	1.03	3.69	96.31
Industrial (self-supplied)	0.46	10.78	89.22
Mining (self-supplied)	1.52	2.39	97.61
Power (self-supplied)	1.61	81.15	18.85
Reservoir Evaporation	7.07	100.00	0.00
State Totals	**100.00**		

Table 4. Percent of withdrawals measured in each water use category in New Mexico, 2005.

Category	MSW	MGW	MTW
Public Water Supply	97.3	95.5	95.7
Domestic (self-supplied)	0	0	0
Irrigated Agriculture	64	22.7	46
Livestock (self-supplied)	0	19	17.6
Commercial (self-supplied)	28	74.5	73
Industrial (self-supplied)	82	70	79
Mining (self-supplied)	0	61	62
Power (self-supplied)	100	97.7	99.6
Reservoir Evaporation	92.7	0	92.7

Key: MSW=measured surface water withdrawals (percent); MGW=measured groundwater withdrawals (percent); MTW=measured total withdrawals (percent)

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.
Please note: Table 5 runs from pages 53 to 63.

CN	COUNTY	CATEGORY	WSW	WGW	TW
1	Bernalillo	Commercial (self-supplied)	0	6,555	6,555
1	Bernalillo	Domestic (self-supplied)	0	6,037	6,037
1	Bernalillo	Industrial (self-supplied)	0	1,130	1,130
1	Bernalillo	Irrigated Agriculture	41,549	2,371	43,920
1	Bernalillo	Livestock (self-supplied)	16	362	378
1	Bernalillo	Mining (self-supplied)	0	917	917
1	Bernalillo	Power (self-supplied)	0	363	363
1	Bernalillo	Public Water Supply	46	114,611	114,657
1	Bernalillo	Reservoir Evaporation	0	0	0
		County Totals	**41,611**	**132,346**	**173,957**
3	Catron	Commercial (self-supplied)	8	54	62
3	Catron	Domestic (self-supplied)	0	193	193
3	Catron	Industrial (self-supplied)	0	0	0
3	Catron	Irrigated Agriculture	18,600	287	18,887
3	Catron	Livestock (self-supplied)	152	172	324
3	Catron	Mining (self-supplied)	0	0	0
3	Catron	Power (self-supplied)	0	0	0
3	Catron	Public Water Supply	44	156	200
3	Catron	Reservoir Evaporation	0	0	0
		County Totals	**18,804**	**862**	**19,666**
5	Chaves	Commercial (self-supplied)	0	2,426	2,426
5	Chaves	Domestic (self-supplied)	0	1,143	1,143
5	Chaves	Industrial (self-supplied)	0	634	634
5	Chaves	Irrigated Agriculture	18,388	218,837	237,225
5	Chaves	Livestock (self-supplied)	220	10,936	11,156
5	Chaves	Mining (self-supplied)	0	117	117
5	Chaves	Power (self-supplied)	0	0	0
5	Chaves	Public Water Supply	0	16,231	16,231
5	Chaves	Reservoir Evaporation	0	0	0
		County Totals	**18,608**	**250,324**	**268,932**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
6	Cibola	Commercial (self-supplied)	0	69	69
6	Cibola	Domestic (self-supplied)	0	1,169	1,169
6	Cibola	Industrial (self-supplied)	0	1,172	1,172
6	Cibola	Irrigated Agriculture	1,681	4,012	5,693
6	Cibola	Livestock (self-supplied)	42	175	217
6	Cibola	Mining (self-supplied)	0	0	0
6	Cibola	Power (self-supplied)	0	0	0
6	Cibola	Public Water Supply	0	3,484	3,484
6	Cibola	Reservoir Evaporation	1,080	0	1,080
		County Totals	**2,803**	**10,081**	**12,884**
7	Colfax	Commercial (self-supplied)	76	22	98
7	Colfax	Domestic (self-supplied)	0	102	102
7	Colfax	Industrial (self-supplied)	0	0	0
7	Colfax	Irrigated Agriculture	52,505	1,921	54,426
7	Colfax	Livestock (self-supplied)	282	308	590
7	Colfax	Mining (self-supplied)	308	0	308
7	Colfax	Power (self-supplied)	13	0	13
7	Colfax	Public Water Supply	1,993	645	2,638
7	Colfax	Reservoir Evaporation	6,827	0	6,827
		County Totals	**62,004**	**2,998**	**65,002**
9	Curry	Commercial (self-supplied)	0	646	646
9	Curry	Domestic (self-supplied)	0	791	791
9	Curry	Industrial (self-supplied)	0	0	0
9	Curry	Irrigated Agriculture	0	127,946	127,946
9	Curry	Livestock (self-supplied)	171	10,151	10,322
9	Curry	Mining (self-supplied)	0	4	4
9	Curry	Power (self-supplied)	0	0	0
9	Curry	Public Water Supply	0	8,000	8,000
9	Curry	Reservoir Evaporation	0	0	0
		County Totals	**171**	**147,538**	**147,709**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
11	De Baca	Commercial (self-supplied)	0	4	4
11	De Baca	Domestic (self-supplied)	0	49	49
11	De Baca	Industrial (self-supplied)	0	0	0
11	De Baca	Irrigated Agriculture	35,206	14,144	49,350
11	De Baca	Livestock (self-supplied)	77	315	392
11	De Baca	Mining (self-supplied)	0	0	0
11	De Baca	Power (self-supplied)	0	0	0
11	De Baca	Public Water Supply	0	397	397
11	De Baca	Reservoir Evaporation	12,538	0	12,538
		County Totals	**47,821**	**14,909**	**62,730**
13	Dona Ana	Commercial (self-supplied)	0	11,266	11,266
13	Dona Ana	Domestic (self-supplied)	0	772	772
13	Dona Ana	Industrial (self-supplied)	0	82	82
13	Dona Ana	Irrigated Agriculture	319,988	149,842	469,830
13	Dona Ana	Livestock (self-supplied)	72	6,909	6,981
13	Dona Ana	Mining (self-supplied)	0	37	37
13	Dona Ana	Power (self-supplied)	0	2,152	2,152
13	Dona Ana	Public Water Supply	0	40,031	40,031
13	Dona Ana	Reservoir Evaporation	0	0	0
		County Totals	**320,060**	**211,091**	**531,151**
15	Eddy	Commercial (self-supplied)	69	2,161	2,230
15	Eddy	Domestic (self-supplied)	0	160	160
15	Eddy	Industrial (self-supplied)	0	1,256	1,256
15	Eddy	Irrigated Agriculture	84,003	124,665	208,668
15	Eddy	Livestock (self-supplied)	86	3,024	3,110
15	Eddy	Mining (self-supplied)	0	6,343	6,343
15	Eddy	Power (self-supplied)	0	0	0
15	Eddy	Public Water Supply	0	14,398	14,398
15	Eddy	Reservoir Evaporation	20,326	0	20,326
		County Totals	**104,484**	**152,007**	**256,491**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
17	Grant	Commercial (self-supplied)	0	247	247
17	Grant	Domestic (self-supplied)	0	803	803
17	Grant	Industrial (self-supplied)	0	11	11
17	Grant	Irrigated Agriculture	26,401	3,907	30,308
17	Grant	Livestock (self-supplied)	185	215	400
17	Grant	Mining (self-supplied)	0	21,844	21,844
17	Grant	Power (self-supplied)	0	280	280
17	Grant	Public Water Supply	44	4,025	4,069
17	Grant	Reservoir Evaporation	0	0	0
		County Totals	**26,630**	**31,332**	**57,962**
19	Guadalupe	Commercial (self-supplied)	0	86	86
19	Guadalupe	Domestic (self-supplied)	0	14	14
19	Guadalupe	Industrial (self-supplied)	0	0	0
19	Guadalupe	Irrigated Agriculture	19,359	1,450	20,809
19	Guadalupe	Livestock (self-supplied)	92	368	460
19	Guadalupe	Mining (self-supplied)	0	0	0
19	Guadalupe	Power (self-supplied)	0	0	0
19	Guadalupe	Public Water Supply	0	851	851
19	Guadalupe	Reservoir Evaporation	15,241	0	15,241
		County Totals	**34,692**	**2,769**	**37,461**
21	Harding	Commercial (self-supplied)	0	0	0
21	Harding	Domestic (self-supplied)	0	32	32
21	Harding	Industrial (self-supplied)	0	0	0
21	Harding	Irrigated Agriculture	0	3,577	3,577
21	Harding	Livestock (self-supplied)	45	188	233
21	Harding	Mining (self-supplied)	0	0	0
21	Harding	Power (self-supplied)	0	0	0
21	Harding	Public Water Supply	0	83	83
21	Harding	Reservoir Evaporation	0	0	0
		County Totals	**45**	**3,880**	**3,925**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
23	Hidalgo	Commercial (self-supplied)	0	569	569
23	Hidalgo	Domestic (self-supplied)	0	200	200
23	Hidalgo	Industrial (self-supplied)	0	195	195
23	Hidalgo	Irrigated Agriculture	8,054	87,587	95,641
23	Hidalgo	Livestock (self-supplied)	56	233	289
23	Hidalgo	Mining (self-supplied)	0	3,699	3,699
23	Hidalgo	Power (self-supplied)	0	774	774
23	Hidalgo	Public Water Supply	0	1,067	1,067
23	Hidalgo	Reservoir Evaporation	0	0	0
		County Totals	**8,110**	**94,324**	**102,434**
25	Lea	Commercial (self-supplied)	0	3,264	3,264
25	Lea	Domestic (self-supplied)	0	1,419	1,419
25	Lea	Industrial (self-supplied)	0	6,088	6,088
25	Lea	Irrigated Agriculture	0	135,371	135,371
25	Lea	Livestock (self-supplied)	67	3,670	3,737
25	Lea	Mining (self-supplied)	0	18,365	18,365
25	Lea	Power (self-supplied)	0	4,415	4,415
25	Lea	Public Water Supply	0	13,360	13,360
25	Lea	Reservoir Evaporation	0	0	0
		County Totals	**67**	**185,952**	**186,019**
27	Lincoln	Commercial (self-supplied)	0	1,603	1,603
27	Lincoln	Domestic (self-supplied)	0	303	303
27	Lincoln	Industrial (self-supplied)	0	2	2
27	Lincoln	Irrigated Agriculture	15,532	5,397	20,929
27	Lincoln	Livestock (self-supplied)	194	228	422
27	Lincoln	Mining (self-supplied)	0	0	0
27	Lincoln	Power (self-supplied)	0	0	0
27	Lincoln	Public Water Supply	2,383	1,895	4,278
27	Lincoln	Reservoir Evaporation	0	0	0
		County Totals	**18,109**	**9,428**	**27,537**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
28	Los Alamos	Commercial (self-supplied)	0	2	2
28	Los Alamos	Domestic (self-supplied)	0	0	0
28	Los Alamos	Industrial (self-supplied)	0	0	0
28	Los Alamos	Irrigated Agriculture	0	0	0
28	Los Alamos	Livestock (self-supplied)	0	0	0
28	Los Alamos	Mining (self-supplied)	0	0	0
28	Los Alamos	Power (self-supplied)	0	0	0
28	Los Alamos	Public Water Supply	0	4,276	4,276
28	Los Alamos	Reservoir Evaporation	0	0	0
		County Totals	**0**	**4,278**	**4,278**
29	Luna	Commercial (self-supplied)	0	309	309
29	Luna	Domestic (self-supplied)	0	868	868
29	Luna	Industrial (self-supplied)	0	55	55
29	Luna	Irrigated Agriculture	68,077	67,139	135,216
29	Luna	Livestock (self-supplied)	65	824	889
29	Luna	Mining (self-supplied)	0	46	46
29	Luna	Power (self-supplied)	0	0	0
29	Luna	Public Water Supply	0	4,370	4,370
29	Luna	Reservoir Evaporation	0	0	0
		County Totals	**68,142**	**73,611**	**141,753**
31	McKinley	Commercial (self-supplied)	0	184	184
31	McKinley	Domestic (self-supplied)	0	3,623	3,623
31	McKinley	Industrial (self-supplied)	0	1,056	1,056
31	McKinley	Irrigated Agriculture	1,183	0	1,183
31	McKinley	Livestock (self-supplied)	51	209	260
31	McKinley	Mining (self-supplied)	0	2,725	2,725
31	McKinley	Power (self-supplied)	0	3,998	3,998
31	McKinley	Public Water Supply	0	4,713	4,713
31	McKinley	Reservoir Evaporation	0	0	0
		County Totals	**1,234**	**16,508**	**17,742**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
33	Mora	Commercial (self-supplied)	0	6	6
33	Mora	Domestic (self-supplied)	0	258	258
33	Mora	Industrial (self-supplied)	0	0	0
33	Mora	Irrigated Agriculture	21,947	52	21,999
33	Mora	Livestock (self-supplied)	113	130	243
33	Mora	Mining (self-supplied)	0	0	0
33	Mora	Power (self-supplied)	0	0	0
33	Mora	Public Water Supply	0	410	410
33	Mora	Reservoir Evaporation	0	0	0
		County Totals	**22,060**	**856**	**22,916**
35	Otero	Commercial (self-supplied)	735	506	1,241
35	Otero	Domestic (self-supplied)	0	674	674
35	Otero	Industrial (self-supplied)	0	158	158
35	Otero	Irrigated Agriculture	10,642	26,072	36,714
35	Otero	Livestock (self-supplied)	82	105	187
35	Otero	Mining (self-supplied)	0	0	0
35	Otero	Power (self-supplied)	0	0	0
35	Otero	Public Water Supply	6,308	2,443	8,751
35	Otero	Reservoir Evaporation	0	0	0
		County Totals	**17,767**	**29,958**	**47,725**
37	Quay	Commercial (self-supplied)	0	31	31
37	Quay	Domestic (self-supplied)	0	135	135
37	Quay	Industrial (self-supplied)	0	0	0
37	Quay	Irrigated Agriculture	37,632	5,989	43,621
37	Quay	Livestock (self-supplied)	65	601	666
37	Quay	Mining (self-supplied)	0	0	0
37	Quay	Power (self-supplied)	0	0	0
37	Quay	Public Water Supply	0	1,621	1,621
37	Quay	Reservoir Evaporation	26,181	0	26,181
		County Totals	**63,878**	**8,377**	**72,255**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
39	Rio Arriba	Commercial (self-supplied)	56	990	1,046
39	Rio Arriba	Domestic (self-supplied)	0	1,976	1,976
39	Rio Arriba	Industrial (self-supplied)	0	137	137
39	Rio Arriba	Irrigated Agriculture	111,391	1,325	112,716
39	Rio Arriba	Livestock (self-supplied)	163	179	342
39	Rio Arriba	Mining (self-supplied)	0	97	97
39	Rio Arriba	Power (self-supplied)	0	0	0
39	Rio Arriba	Public Water Supply	719	1,541	2,260
39	Rio Arriba	Reservoir Evaporation	27,215	0	27,215
		County Totals	**139,544**	**6,245**	**145,789**
41	Roosevelt	Commercial (self-supplied)	0	143	143
41	Roosevelt	Domestic (self-supplied)	0	105	105
41	Roosevelt	Industrial (self-supplied)	0	0	0
41	Roosevelt	Irrigated Agriculture	0	190,898	190,898
41	Roosevelt	Livestock (self-supplied)	96	8,153	8,249
41	Roosevelt	Mining (self-supplied)	0	139	139
41	Roosevelt	Power (self-supplied)	0	14	14
41	Roosevelt	Public Water Supply	0	2,268	2,268
41	Roosevelt	Reservoir Evaporation	0	0	0
		County Totals	**96**	**201,720**	**201,816**
43	Sandoval	Commercial (self-supplied)	10	2,632	2,642
43	Sandoval	Domestic (self-supplied)	0	2,754	2,754
43	Sandoval	Industrial (self-supplied)	0	3,880	3,880
43	Sandoval	Irrigated Agriculture	53,719	663	54,382
43	Sandoval	Livestock (self-supplied)	57	72	129
43	Sandoval	Mining (self-supplied)	0	688	688
43	Sandoval	Power (self-supplied)	0	0	0
43	Sandoval	Public Water Supply	145	13,716	13,861
43	Sandoval	Reservoir Evaporation	5,215	0	5,215
		County Totals	**59,146**	**24,405**	**83,551**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
45	San Juan	Commercial (self-supplied)	153	125	278
45	San Juan	Domestic (self-supplied)	0	1,276	1,276
45	San Juan	Industrial (self-supplied)	1,967	320	2,287
45	San Juan	Irrigated Agriculture	294,268	0	294,268
45	San Juan	Livestock (self-supplied)	59	261	320
45	San Juan	Mining (self-supplied)	154	0	154
45	San Juan	Power (self-supplied)	51,633	0	51,633
45	San Juan	Public Water Supply	23,427	261	23,688
45	San Juan	Reservoir Evaporation	29,812	0	29,812
		County Totals	**401,473**	**2,243**	**403,716**
47	San Miguel	Commercial (self-supplied)	164	227	391
47	San Miguel	Domestic (self-supplied)	0	957	957
47	San Miguel	Industrial (self-supplied)	0	0	0
47	San Miguel	Irrigated Agriculture	36,105	0	36,105
47	San Miguel	Livestock (self-supplied)	277	329	606
47	San Miguel	Mining (self-supplied)	0	0	0
47	San Miguel	Power (self-supplied)	0	0	0
47	San Miguel	Public Water Supply	2,314	482	2,796
47	San Miguel	Reservoir Evaporation	32,292	0	32,292
		County Totals	**71,152**	**1,995**	**73,147**
49	Santa Fe	Commercial (self-supplied)	19	1,258	1,277
49	Santa Fe	Domestic (self-supplied)	0	2,872	2,872
49	Santa Fe	Industrial (self-supplied)	0	22	22
49	Santa Fe	Irrigated Agriculture	17,253	19,193	36,446
49	Santa Fe	Livestock (self-supplied)	58	73	131
49	Santa Fe	Mining (self-supplied)	0	22	22
49	Santa Fe	Power (self-supplied)	0	0	0
49	Santa Fe	Public Water Supply	4,597	8,370	12,967
49	Santa Fe	Reservoir Evaporation	0	0	0
		County Totals	**21,927**	**31,810**	**53,737**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
51	Sierra	Commercial (self-supplied)	0	446	446
51	Sierra	Domestic (self-supplied)	0	174	174
51	Sierra	Industrial (self-supplied)	0	0	0
51	Sierra	Irrigated Agriculture	29,351	13,005	42,356
51	Sierra	Livestock (self-supplied)	38	826	864
51	Sierra	Mining (self-supplied)	0	74	74
51	Sierra	Power (self-supplied)	0	0	0
51	Sierra	Public Water Supply	0	1,996	1,996
51	Sierra	Reservoir Evaporation	94,181	0	94,181
		County Totals	**123,570**	**16,521**	**140,091**
53	Socorro	Commercial (self-supplied)	0	1,049	1,049
53	Socorro	Domestic (self-supplied)	0	467	467
53	Socorro	Industrial (self-supplied)	0	2	2
53	Socorro	Irrigated Agriculture	126,425	33,792	160,217
53	Socorro	Livestock (self-supplied)	58	1,192	1,250
53	Socorro	Mining (self-supplied)	0	2	2
53	Socorro	Power (self-supplied)	0	0	0
53	Socorro	Public Water Supply	0	2,544	2,544
53	Socorro	Reservoir Evaporation	7,570	0	7,570
		County Totals	**134,053**	**39,048**	**173,101**
55	Taos	Commercial (self-supplied)	206	218	424
55	Taos	Domestic (self-supplied)	0	1,398	1,398
55	Taos	Industrial (self-supplied)	0	4	4
55	Taos	Irrigated Agriculture	103,464	2,395	105,859
55	Taos	Livestock (self-supplied)	36	54	90
55	Taos	Mining (self-supplied)	976	3,555	4,531
55	Taos	Power (self-supplied)	0	0	0
55	Taos	Public Water Supply	72	2,217	2,289
55	Taos	Reservoir Evaporation	337	0	337
		County Totals	**105,091**	**9,841**	**114,932**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 5. Summary of withdrawals in acre-feet, in New Mexico counties, 2005.

CN	COUNTY	CATEGORY	WSW	WGW	TW
57	Torrance	Commercial (self-supplied)	0	384	384
57	Torrance	Domestic (self-supplied)	0	1,007	1,007
57	Torrance	Industrial (self-supplied)	0	17	17
57	Torrance	Irrigated Agriculture	0	42,879	42,879
57	Torrance	Livestock (self-supplied)	49	587	636
57	Torrance	Mining (self-supplied)	0	74	74
57	Torrance	Power (self-supplied)	0	0	0
57	Torrance	Public Water Supply	0	1,221	1,221
57	Torrance	Reservoir Evaporation	0	0	0
		County Totals	**49**	**46,169**	**46,218**
59	Union	Commercial (self-supplied)	0	8	8
59	Union	Domestic (self-supplied)	0	140	140
59	Union	Industrial (self-supplied)	0	0	0
59	Union	Irrigated Agriculture	1,122	50,736	51,858
59	Union	Livestock (self-supplied)	221	2,004	2,225
59	Union	Mining (self-supplied)	0	0	0
59	Union	Power (self-supplied)	0	0	0
59	Union	Public Water Supply	0	727	727
59	Union	Reservoir Evaporation	478	0	478
		County Totals	**1,821**	**53,615**	**55,436**
61	Valencia	Commercial (self-supplied)	0	1,592	1,592
61	Valencia	Domestic (self-supplied)	0	3,926	3,926
61	Valencia	Industrial (self-supplied)	0	63	63
61	Valencia	Irrigated Agriculture	177,082	9,134	186,216
61	Valencia	Livestock (self-supplied)	34	877	911
61	Valencia	Mining (self-supplied)	0	3	3
61	Valencia	Power (self-supplied)	0	0	0
61	Valencia	Public Water Supply	0	5,624	5,624
61	Valencia	Reservoir Evaporation	0	0	0
		County Totals	**177,116**	**21,219**	**198,335**
		State Totals	**2,112,138**	**1,838,260**	**3,950,398**

Key: CN=county number; WSW=withdrawal, surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 6. Summary of withdrawals in acre-feet, in New Mexico river basins, 2005.
Please note: Table 6 runs from pages 64 to 65

RVB	CATEGORY	WSW	WGW	TW
AWR	Commercial (self-supplied)	240	142	382
AWR	Domestic (self-supplied)	0	818	818
AWR	Industrial (self-supplied)	0	113	113
AWR	Irrigated Agriculture	122,796	57,291	180,087
AWR	Livestock (self-supplied)	928	3,833	4,761
AWR	Mining (self-supplied)	308	5	313
AWR	Power (self-supplied)	13	0	13
AWR	Public Water Supply	2,148	3,477	5,625
AWR	Reservoir Evaporation	63,306	0	63,306
	River Basin Totals	**189,739**	**65,679**	**255,418**
LC	Commercial (self-supplied)	8	1,026	1,034
LC	Domestic (self-supplied)	0	2,916	2,916
LC	Industrial (self-supplied)	0	1,260	1,260
LC	Irrigated Agriculture	50,303	88,392	138,695
LC	Livestock (self-supplied)	268	582	850
LC	Mining (self-supplied)	0	3,975	3,975
LC	Power (self-supplied)	0	0	0
LC	Public Water Supply	45	5,664	5,709
LC	Reservoir Evaporation	0	0	0
	River Basin Totals	**50,624**	**103,815**	**154,439**
P	Commercial (self-supplied)	553	6,747	7,300
P	Domestic (self-supplied)	0	2,822	2,822
P	Industrial (self-supplied)	0	1,785	1,785
P	Irrigated Agriculture	201,373	370,242	571,615
P	Livestock (self-supplied)	804	15,517	16,321
P	Mining (self-supplied)	0	11,351	11,351
P	Power (self-supplied)	0	0	0
P	Public Water Supply	4,635	36,781	41,416
P	Reservoir Evaporation	50,577	0	50,577
	River Basin Totals	**257,942**	**445,245**	**703,187**

Key: CN=county number; WSW=withdrawal surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 6. Summary of withdrawals in acre-feet, in New Mexico river basins, 2005.

RVB	CATEGORY	WSW	WGW	TW
RG	Commercial (self-supplied)	541	27,463	28,004
RG	Domestic (self-supplied)	0	24,556	24,556
RG	Industrial (self-supplied)	0	6,690	6,690
RG	Irrigated Agriculture	1,061,896	375,887	1,437,783
RG	Livestock (self-supplied)	910	12,260	13,170
RG	Mining (self-supplied)	976	29,806	30,782
RG	Power (self-supplied)	0	7,567	7,567
RG	Public Water Supply	11,338	210,477	221,815
RG	Reservoir Evaporation	135,598	0	135,598
	River Basin Totals	**1,211,259**	**694,706**	**1,905,965**
TG	Commercial (self-supplied)	0	3,620	3,620
TG	Domestic (self-supplied)	0	2,041	2,041
TG	Industrial (self-supplied)	0	6,082	6,082
TG	Irrigated Agriculture	0	452,775	452,775
TG	Livestock (self-supplied)	243	21,153	21,396
TG	Mining (self-supplied)	0	13,613	13,613
TG	Power (self-supplied)	0	4,429	4,429
TG	Public Water Supply	0	21,345	21,345
TG	Reservoir Evaporation	0	0	0
	River Basin Totals	**243**	**525,058**	**525,301**
UC	Commercial (self-supplied)	153	83	236
UC	Domestic (self-supplied)	0	2,643	2,643
UC	Industrial (self-supplied)	1,967	353	2,320
UC	Irrigated Agriculture	294,559	0	294,559
UC	Livestock (self-supplied)	128	385	513
UC	Mining (self-supplied)	154	1	155
UC	Power (self-supplied)	51,633	0	51,633
UC	Public Water Supply	23,925	292	24,217
UC	Reservoir Evaporation	29,812	0	29,812
	River Basin Totals	**402,331**	**3,757**	**406,088**
	State Totals	**2,112,138**	**1,838,260**	**3,950,398**

Key: CN=county number; WSW=withdrawal surface water; WGW=withdrawal groundwater; TW=total withdrawal.

Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

Please note: Table 7 runs from pages 66 to 84.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
1	RG	Alamo Acres MHP	10	116	0		Y		1.30
1	RG	Albuquerque Water System	506,000	176	4		Y		99,923.24
1	RG	American R.V. Park of Albuquerque	651	23	0		Y		16.74
1	RG	American Water Hauling	140	92	0	Y	Y	2.62	11.75
1	RG	Baker's/ Hamilton MHP	200	80	0		Y		17.84
1	RG	Barcelona MHP	350	64	0		Y		25.05
1	RG	Bearcat Homeowners Association	96	71	0		Y		7.67
1	RG	Carnual/Monticello/Juan Rd Water (2000)	35	99	0		Y		3.88
1	RG	Chamisa Mobile Home Park	50	131	0		Y		7.33
1	RG	Chilili WUA (1995)	90	70	0		Y		7.05
1	RG	Coronado Village MHP	900	97	0		Y		98.20
1	RG	Corrales --Self supplied homes (part)	764	150	0		Y		128.36
1	RG	Desert Palms MHP	245	104	0		Y		28.47
1	RG	Entranosa Wtr Co-Op (part)-Edgewood	7,202	94	1		Y		757.25
1	RG	Forest Park Property Owners Co-Op	220	47	0		Y		11.49
1	RG	Fox Hills WUA (2000)	76	51	0		Y		4.30
1	RG	Green Acres MHP	150	112	0		Y		18.90
1	RG	Homestead Mobile Home Community	189	59	0		Y		12.47
1	RG	Independent Utility Co.	1,260	53	0		Y		75.45
1	RG	Juan Road Water System	34	102	0		Y		3.87
1	RG	Kirtland Air Force Base	3,560	873	10,7		Y		3,481.93
1	RG	La Mesa MHP	85	95	0		N		9.00
1	RG	Lisa Property Water System	50	54	0		Y		3.00
1	RG	Lost Horizon Coop Association	80	77	0		Y		6.90
1	RG	Mountain View MHP (2000)	90	116	0		Y		11.68
1	RG	North Court Mobile Home Park	100	96	0		Y		10.76
1	RG	Oakland Heights Homeowners Association	31	84	0		Y		2.91
1	RG	Paakweree Village Water Co-Op Assoc, Inc	110	206	0		Y		25.39
1	RG	Paradise Hills--NM Utilities	26,160	286	0		Y		8,366.42
1	RG	Rural Self-Supplied Homes	52,745	100	0		N		5,908.22
1	RG	Safariland Mobile Home Park	40	95	0		Y		4.25
1	RG	Sandia Peak Utility Company	7,500	133	0		Y		1,119.06
1	RG	Sierra Vista Mutual Domestic Association	375	113	0		Y		47.61
1	RG	Sierra Vista South Water Co-Op	178	77	0		Y		15.37
1	RG	South Hills Water Company	560	107	0		Y		67.27
1	RG	Sunset Hills Estates Homeowners Association	99	252	0		Y		27.91

Key: CN=county number; RVB=river basin; GWB=groundwater basin; WEC=water exchange code; MSW=measured surface water (Y/N); MGW=measured groundwater (Y/N); WSW=withdrawal surface water; WGW=withdrawal groundwater

Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
1	RG	Tierra Monte WUA	85	99	0		Y		9.45
1	RG	Tierra West Estates--MHP	2,000	106	0		Y		236.99
1	RG	Tijeras Land Estates Water System	180	74	0		Y		14.98
1	RG	Tijeras Village	499	47	0		Y		26.44
1	RG	Tom's Mobile Home Park (2000)	49	56	0		Y		3.07
1	RG	Tranquillo Pines Water System	800	49	0	Y		43.69	
1	RG	Valle Grande MHP	137	91	0		Y		13.97
1	RG	Van Gelder Water System	20	25	0		Y		0.57
1	RG	Ventura Estates	100	197	0		Y		22.08
1	RG	Vista Bonita Water Co-op	45	39	0		Y		1.98
1	RG	Western Heights MHP	168	267	0		Y		50.19
		River Basin Subtotals	**614,508**					**46.31**	**120,648.00**
		County Totals	**614,508**					**46.31**	**120,648.00**
3	LC	Aragon	45	73	0		Y		3.69
3	LC	Homestead Land Owners Association	100	35	0		Y		3.90
3	LC	Mojave Academy	80	23	0		Y		2.10
3	LC	Pie Town MDWCA	100	134	0		Y		15.00
3	LC	Quemado Lake Water Association	76	42	0		Y		3.57
3	LC	Quemado Water Works	300	52	0		Y		17.47
3	LC	Rancho Grande Water Association	172	298	0	Y	Y	44.46	13.00
3	LC	Reserve Water Works	381	230	0		Y		97.97
3	LC	Rural Self-Supplied Homes	2,040	70	0		N		159.95
		River Basin Subtotals	**3,294**					**44.46**	**316.64**
3	RG	Rural Self-Supplied Homes	418	70	0		N		32.77
		River Basin Subtotals	**418**						**32.77**
		County Totals	**3,712**					**44.46**	**349.41**
5	P	Berrendo WUA	3,220	403	0		Y		1,452.31
5	P	Cumberland WUA	500	216	0		Y		120.79
5	P	Dexter Municipal Water System	1,500	257	0		Y		431.68
5	P	Fambrough Water Co-Op	525	160	0		Y		93.90
5	P	Greenfield MDWCA	303	175	6		Y		59.28
5	P	Hagerman Water System	1,168	508	3		Y		664.73
5	P	Lake Arthur Water Co-Op	432	235	0		Y		113.50
5	P	Roswell --domestic irrigation wells	0	0	0		N		165.00
5	P	Roswell Municipal Water System	45,745	256	0		Y		13,112.35
5	P	Rural Self-Supplied Homes	8,730	100	0		N		977.86

Key: CN=county number; RVB=river basin; GWB=groundwater basin; WEC=water exchange code; MSW=measured surface water (Y/N); MGW=measured groundwater (Y/N); WSW=withdrawal surface water; WGW=withdrawal groundwater

Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
5	P	South Springs Acres	80	2035	0		Y		182.36
		River Basin Subtotals	**62,203**						**17,373.76**
		County Totals	**62,203**						**17,373.76**
6	LC	Plano Colorado Estates	43	70	0		Y		3.37
6	LC	Rural Self-supplied Homes	3,880	70	0		N		304.23
		River Basin Subtotals	**3,923**						**307.60**
6	RG	Bluewater Acres Domestic WUA	322	45	0		Y		16.28
6	RG	Candy Kitchen Water Coop	50	83	0		Y		4.64
6	RG	Grants Domestic Water System	9,043	236	0		Y		2,395.04
6	RG	Milan Community Water System	2,524	292	4		Y		826.10
6	RG	Moquino Water System	50	54	0		Y		3.00
6	RG	Rural Self-Supplied Homes	11,030	70	0		N		864.87
6	RG	San Mateo MDWCA	191	26	0		Y		5.60
6	RG	San Rafael Water & Sanitation Dist.	1,110	161	0		Y		199.88
6	RG	Seboyeta Water System	263	103	0		Y		30.35
		River Basin Subtotals	**24,583**						**4,345.75**
		County Totals	**28,506**						**4,653.35**
7	AWR	Angel Fire MHE (2000)	45	52	0		Y		2.62
7	AWR	Angel Fire Services Corp.	2,200	224	9		Y		552.00
7	AWR	Cimarron Water System (2000)	920	158	0	Y		162.36	
7	AWR	Eagle Nest Water & Sanitation Dist.	292	155	0		Y		50.84
7	AWR	Maxwell Cooperative Water	330	103	0		Y		37.91
7	AWR	Maxwell Water System (2000)	274	91	0	Y		27.92	
7	AWR	Miami WUA (2000)	150	123	0	Y		20.73	
7	AWR	Raton Domestic Water System	6,944	203	4	Y		1,581.36	
7	AWR	Rural Self-Supplied Homes	1,143	80	0		N		102.43
7	AWR	Springer Water System	2,000	90	4		Y	200.61	
7	AWR	Valverde Water Association (2000)	77	24	0		Y		2.03
		River Basin Subtotals	**14,375**					**1,992.98**	**747.83**
		County Totals	**14,375**					**1,992.98**	**747.83**
9	AWR	Grady Water System (2000)	100	101	0		Y		11.30
9	AWR	Rural Self-supplied Homes	1,060	100	0		N		118.74
		River Basin Subtotals	**1,160**						**130.04**
9	TG	Cannon Air Force Base	1,956	543	10		Y		1,189.18
9	TG	Desert Ranch Water System	78	139	0		Y		12.11
9	TG	Melrose Water System	700	183	0		Y		143.19

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Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
9	TG	NM American Water Co.--Clovis	35,020	165	0		Y		6,453.30
9	TG	Rural Self-Supplied Homes	6,005	100	0		N		672.65
9	TG	Sams Mobile Home Park	100	80	0		Y		9.00
9	TG	Texico Water System	1,060	137	0		Y		162.29
9	TG	Turquoise Estates Wtr Co-Op--Clovis	210	84	0		Y		19.75
		River Basin Subtotals	**45,129**						**8,661.46**
		County Totals	**46,289**						**8,791.50**
11	P	Fort Sumner Municipal Water System (2000)	1,249	214	3		Y		298.98
11	P	Rural Self-Supplied Homes	542	80	0		N		48.57
11	P	Valley WUA (2000)	465	188	6		Y		98.13
		River Basin Subtotals	**2,256**						**445.68**
		County Totals	**2,256**						**445.68**
13	RG	Alameda MHP	285	88	0		Y		28.10
13	RG	Alto de Las Flores MDWCA	772	94	0		Y		81.38
13	RG	Anthony Water Works	8,250	107	0		Y		991.84
13	RG	Berino WUA	1,668	106	0		Y		198.19
13	RG	Billy Moreno Water System	59	96	0		Y		6.37
13	RG	Brazito MDWCA	485	102	0		Y		55.31
13	RG	Butterfield Park MDWCA	1,158	323	0		Y		419.52
13	RG	CBG Water Company	1,050	179	0		Y		210.54
13	RG	CDS Rainmakers Utilities L.C	1,000	59	0		Y		65.96
13	RG	Chamberino MDW & SA	455	97	0		Y		49.54
13	RG	Chaparral Water System (2000)	8,000	172	0		Y		1,544.00
13	RG	Charles Madrid MHP	83	154	0		Y		14.36
13	RG	Country Mobile Manor	260	83	0		Y		24.10
13	RG	Covered Wagon MHP (1995)	120	121	0		N		16.20
13	RG	Delara Estates MDWCA	1,320	152	0		Y		224.96
13	RG	Desert Aire	535	111	0		Y		66.66
13	RG	Desert Sands MDWCA	1,535	101	0		Y		174.30
13	RG	Dona Ana MDWCA	10,780	132	0		Y		1,596.79
13	RG	Fairview Estates Water System (2000)	125	148	0		N		20.69
13	RG	Ft Seldon Subdivision (2000)	1,000	129	0		Y		145.00
13	RG	Garfield MDWCA	2,394	90	0		Y		241.21
13	RG	Hatch Water Supply	2,140	177	4		Y		424.30
13	RG	High Valley Water Users	60	341	0		Y		22.94
13	RG	Holly Gardens MHP	311	183	0		Y		63.77

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Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
13	RG	Johnson, Floyd--MHP (2000)	250	113	0		Y		31.68
13	RG	Jornada Water Co	5,434	383	0		Y		2,331.99
13	RG	La Mesa MDWCA	858	100	0		Y		96.58
13	RG	La Quinta Water Company	235	197	0		Y		51.86
13	RG	La Union MDWCA	568	130	0		Y		82.75
13	RG	Lake Section Water Company	7,980	198	0		Y		1,768.38
13	RG	Las Cruces Municipal Water System	74,300	229	3		Y		19,036.03
13	RG	Leasburg MDWCA	1,139	80	0		Y		101.59
13	RG	Mesa Development Center	840	108	0		Y		101.94
13	RG	Mesilla Water System	2,500	103	6		Y		287.43
13	RG	Mesquite MDWCA	3,648	182	0		Y		742.65
13	RG	Miller's Mobile Manor	116	158	0		Y		20.49
13	RG	Moongate Water System	9,989	129	0		Y		1,438.86
13	RG	Organ Water & Sewer Assn./Mountain View MDWCA	1,265	266	0		Y		377.29
13	RG	Picacho Hills Water System	1,074	208	4		Y		250.35
13	RG	Picacho MDWCA	843	115	0		Y		108.57
13	RG	Rancho Vista MHP (2000)	100	107	0		Y		12.00
13	RG	Rincon Water Consumers Co-Op	570	115	4		Y		73.13
13	RG	Rural Self-Supplied Homes	6,889	100	0		N		771.68
13	RG	Santa Teresa Water System	5,100	276	6		Y		1,578.09
13	RG	Silver Spur MHP	143	55	0		Y		8.80
13	RG	Skoshi Mobile Home Park	171	82	0		Y		15.80
13	RG	St John's MHP	395	138	0		Y		60.88
13	RG	Summar Winds MHP	551	88	0		Y		54.57
13	RG	Sunland Park Water System	13,592	123	6		Y		1,870.63
13	RG	Talavera Water Co-Op	211	84	0		Y		19.82
13	RG	Terrace MHP	10	82	0		Y		0.92
13	RG	University Estates/San Pablo MDWCA (2000)	3,906	210	7		Y		918.72
13	RG	Vado MDWCA	482	108	0		Y		58.33
13	RG	Val Verde MHP (2000)	170	193	0		Y		36.80
13	RG	Valle de Rio Water System	265	156	0		Y		46.20
13	RG	Villa Del Sol	516	78	0		Y		45.05
13	RG	Vista Real MHP	69	235	0		Y		18.17
13	RG	West Mesa System (2000)	2,000	240	0		Y		537.00
13	RG	White Sands Missile Range	2,450	423	10		Y		1,161.39
		River Basin Subtotals	**192,474**						**40,802.44**

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CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
		County Totals	**192,474**						**40,802.44**
15	P	Artesia Domestic Water System	10,481	344	3		Y		4,036.18
15	P	Artesia Rural Water Co-Op	2,695	134	0		Y		405.42
15	P	Carlsbad Municipal Water System	27,000	271	4		Y		8,207.81
15	P	Cottonwood Water Cooperative	1,245	150	0		Y		209.40
15	P	Happy Valley Water Co-Op	810	129	0		Y		117.30
15	P	Hope Water System	110	373	0		Y		45.91
15	P	Jewel St. Water Co-op	22	134	0		Y		3.31
15	P	Loving Water System	1,700	75	3		Y		142.19
15	P	Malaga Water Users Co-Op	702	242	6		Y		190.69
15	P	Morningside Water Cooperative (2000)	370	189	6		Y		78.35
15	P	Otis Water Co-Op	5,000	154	7		Y		860.62
15	P	Riverside WUA	400	86	0		Y		38.54
15	P	Rural Self-Supplied Homes	1,427	100	0		N		159.84
15	P	Westwind Mobile Home Park	165	131	0		Y		24.27
15	P	White's City	40	841	0		Y		37.70
		River Basin Subtotals	**52,167**						**14,557.52**
		County Totals	**52,167**						**14,557.52**
17	LC	Pinos Altos MDWCA	350	80	6		Y		31.56
17	LC	Rural Self-supplied Homes	2,203	80	0		N		197.40
17	LC	Tyrone Water Townsite	795	132	6, 1		Y		117.43
		River Basin Subtotals	**3,348**						**346.39**
17	RG	Arenas Valley MDWCA	1,197	90	6		Y		121.31
17	RG	Bayard Municipal Water System	2,591	107	0		Y		311.20
17	RG	Casas Adobes Water Company	400	74	0		Y		32.99
17	RG	Central Water System (2000)	2,074	117	0		Y		271.49
17	RG	Ft Bayard Medical Center (2000)	310	50	0		Y	17.48	
17	RG	Gila Mesa Association	5	89	0		Y		0.50
17	RG	Hachita Water System (2000)	90	89	0		Y		8.94
17	RG	Hanover MDWCA	136	97	0		Y		14.76
17	RG	Heights Water Users Association	25	173	0		Y		4.83
17	RG	Hurley Water Supply System	1,535	90	6		Y		155.52
17	RG	Lake Roberts Subdivision	66	28	0		Y		2.09
17	RG	North Hurley MDWCA	365	74	6		Y		30.18
17	RG	Rosedale WUA	324	58	0		Y		21.20
17	RG	Rural Self-Supplied homes	6,758	80	0		N		605.59

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CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
17	RG	Santa Clara Village (2000)	2,000	121	0	Y	Y	26.33	245.00
17	RG	Silver City Water System	9,999	235	3		Y		2,632.29
17	RG	Trout Valley Property Association	50	67	0		Y		3.76
17	RG	Tyrone Water System MDWCA	100	115	0		Y		12.91
17	RG	Whiskey Creek Mobile Ranch	138	45	0		Y		6.92
		River Basin Subtotals	**28,163**					**43.81**	**4,481.48**
		County Totals	**31,511**					**43.81**	**4,827.87**
19	AWR	Rural Self-Supplied Homes	102	80	0		N		9.14
		River Basin Subtotals	**102**						**9.14**
19	P	Anton Chico MDWCA (2000)	300	58	0		Y		19.40
19	P	Los Sisneros MDWCA (2000)	35	50	0		Y		1.96
19	P	Puerto de Luna MDWCA	250	45	0		Y		12.67
19	P	Rio Pecos Villa WUA (2000)	30	91	6		Y		3.07
19	P	Rural Self-Supplied Homes	51	80	0		N		4.57
19	P	Sangre de Cristo MDWCA	175	92	0		Y		18.00
19	P	Santa Rosa Water Supply	2,500	222	3		Y		622.42
19	P	Vaughn Water System	1,300	119	2,3		Y		174.00
		River Basin Subtotals	**4,346**						**856.09**
		County Totals	**4,743**						**865.23**
21	AWR	Mosquero Water System (2000)	120	164	0		Y		22.03
21	AWR	Roy Water Works (2000)	304	181	0		Y		61.56
21	AWR	Rural Self-Supplied Homes	354	80	0		N		31.72
		River Basin Subtotals	778						115.31
		County Totals	778						115.31
23	LC	Glen Acres Community Water System	237	212	0		Y		56.32
23	LC	Lordsburg Water Supply System	3,100	204	0		Y		708.16
23	LC	Rodeo WUA	123	145	0		Y		20.00
23	LC	Rural Self-Supplied Homes	1,138	80	0		N		101.98
23	LC	Virden Water System	146	93	0		Y		15.23
		River Basin Subtotals	**4,744**						**901.69**
23	RG	NMTech Playas Training Center	129	1852	12		Y		267.66
23	RG	Rural Self-Supplied Homes	1,093	80	0		N		97.95
		River Basin Subtotals	**1,222**						**365.61**
		County Totals	**5,996**						**1,267.30**
25	P	Eunice Water Supply System (2000)	2,562	538	5		Y		1,544.99
25	P	Jal Water Supply System	2,021	306	0		Y		692.34

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CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
25	P	Maljamar Water (2000)	61	101	0		Y		6.87
25	P	Monument WUA	200	126	0		Y		28.27
25	P	Rural Self-Supplied Homes	1,266	100	0		N		141.81
		River Basin Subtotals	**6,110**						**2,414.28**
25	TG	Caprock Water Company	50	365	0		Y		20.46
25	TG	Hobbs Municipal Water Supply	29,006	257	0		Y		8,353.00
25	TG	Lovington Municipal Water Supply	9,603	235	0		Y		2,533.18
25	TG	Rural Self-Supplied Homes	11,398	100	0		N		1,276.74
25	TG	Tatum Water System	693	207	0		Y		160.73
25	TG	Triple J Trailer Park--Hobbs	146	126	0		Y		20.65
		River Basin Subtotals	**50,896**						**12,364.76**
		County Totals	**57,006**						**14,779.04**
27	P	Agua Fria Water Company (2000)	200	105	0	Y		23.50	
27	P	Alpine Village Sanitation District	195	48	9		Y		10.42
27	P	Alto Lakes Water Co-op	2,300	78	0		Y		201.19
27	P	Alto North Water Co-Op	90	121	0		Y		12.17
27	P	Apple Blossom & White Angel Mesa (2000)	25	135	0		Y		3.78
27	P	Bonita Park Nazarene Conference Center	300	47	0		Y		15.86
27	P	Capitan Water System	1,500	129	7		Y		217.06
27	P	Cedar Creek Cabin Owners	450	36	0		Y		17.90
27	P	Corona Water System	190	194	0		Y		41.28
27	P	Fawn Ridge Homeowners Association	150	41	0		Y		6.81
27	P	Ft Stanton Medical Center (2000)	250	317	6		Y		88.83
27	P	High Sierra Estates	55	67	0		Y		4.11
27	P	Lincoln MDWCA	75	187	0		Y		15.75
27	P	Loma Grande Estates	76	74	0		Y		6.33
27	P	R & R RV Park	10	30	0		Y		0.34
27	P	Rancho Ruidoso Village (2000)	200	247	0		Y		55.36
27	P	Rocky Mountain Mobile Home & RV Pk (2000)	90	30	0		Y		3.00
27	P	Ruidoso Downs Water System	1,972	184	9	Y	Y	360.23	46.31
27	P	Ruidoso Water System	8,812	292	9	Y	Y	1,998.77	887.45
27	P	Rural Self-Supplied Homes	2,026	80	0		N		181.55
27	P	Sun Valley Sanitation Dist.	380	50	9		Y		21.26
		River Basin Subtotals	**19,346**					**2,382.50**	**1,836.75**
27	RG	Carrizozo Water System	1,142	186	7		Y		237.30
27	RG	Nogal WUA	60	46	6		Y		3.10

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Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
27	RG	Rural Self-Supplied Homes	1,350	80	0		N		120.98
		River Basin Subtotals	**2,552**						**361.38**
		County Totals	**21,898**					**2,382.50**	**2,198.13**
28	RG	Los Alamos County	19,864	192	4		Y		4,276.00
29	RG	Columbus Water System (2000)	2,100	106	0		Y		249.38
29	RG	Deming Municipal Water System (2000)	16,401	223	0		Y		4,101.97
29	RG	Gunter's Mobile Home Rentals	63	18	0		Y		1.24
29	RG	Pecan Park MDWCA	80	189	0		Y		16.91
29	RG	Rural Self-Supplied Homes	7,750	100	0		N		868.11
		River Basin Subtotals	**26,394**						**5,237.61**
		County Totals	**26,394**						**5,237.61**
31	LC	Coal Basin Water Association (2000)	96	70	0		Y		7.53
31	LC	Ft Wingate Army Depot (2000)	66	70	7		Y		5.18
31	LC	Gallup Water System	19,378	163	3, 5		Y		3,531.00
31	LC	Gamerco Water & Sanitation District	1,540	63	6		Y		108.70
31	LC	Ramah Water & Sanitation Dist.	450	485	0		N		244.44
31	LC	Rural Self-Supplied Homes	27,455	70	0		N		2,152.75
31	LC	Whispering Cedars Water Association. (2000)	288	70	0		Y		22.58
31	LC	Williams Acres/ Mentmore	66	102	0		Y		7.53
31	LC	Zuni Pueblo Water Works (1995)	8,011	70	0		N		628.14
		River Basin Subtotals	**57,350**						**6,707.85**
31	RG	Bluewater Lake MDWCA	357	25	0		Y		10.00
31	RG	Cedar Ridge Trailer Park	70	89	0		Y		7.00
31	RG	Rob Roy Trailer Park	90	137	0		Y		13.77
31	RG	Rural Self-Supplied Homes	4,115	70	0		N		322.65
31	RG	Thoreau Water & Sanitation District	1,400	81	0		Y		127.24
		River Basin Subtotals	**6,032**						**480.66**
31	UC	Rural Self-Supplied Homes	14,631	70	0		N		1,147.22
		River Basin Subtotals	**14,631**						**1,147.22**
		County Totals	**78,013**						**8,335.73**
33	AWR	Augua Negra MDWCA	104	123	0		Y		14.38
33	AWR	Buena Vista MDWCA	220	48	0		Y		11.77
33	AWR	El Alto MDWCA (2000)	85	233	0		Y		22.21
33	AWR	Guadalupita MDWCA	130	89	0		Y		13.00
33	AWR	Holman (2000)	110	59	0		Y		7.32
33	AWR	La Cordillera (2000)	50	74	0		Y		4.17

Key: CN=county number; RVB=river basin; GWB=groundwater basin; WEC=water exchange code; MSW=measured surface water (Y/N); MGW=measured groundwater (Y/N); WSW=withdrawal surface water; WGW=withdrawal groundwater

Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
33	AWR	Ledoux MDWCA	120	89	0		Y		12.00
33	AWR	Mora MDWCA (2000)	680	286	0		Y		217.67
33	AWR	North Cleveland MDWCA	220	122	0		Y		30.00
33	AWR	Rainsville Water & Sanitation District	240	36	0		Y		9.68
33	AWR	Rancho Valmora	100	65	0		Y		7.23
33	AWR	Rural Self-supplied homes	2,880	80	0		N		258.08
33	AWR	South Holman MDWCA	39	32	0		Y		1.41
33	AWR	Upper Holman (2000)	110	34	0		Y		4.20
33	AWR	Wagon Mound MDWCA	352	139	0		Y		54.65
		River Basin Subtotals	**5,440**						**667.76**
		County Totals	**5,440**						**667.76**
35	P	Cloud Country Estates WUA	310	196	0	Y	Y	26.14	41.79
35	P	Cloud Country West Water System	232	69	0		Y		17.85
35	P	Mayhill Water Supply Company	139	40	0		Y		6.19
35	P	Pinon WUA (2000)	140	213	0		Y		33.38
35	P	Ponderosa Pines	128	58	0		Y		8.27
35	P	Robinhood Park WUA	299	60	0	Y		19.96	
35	P	Rural Self-Supplied Homes	1,651	80	0		N		147.94
35	P	Silver Cloud WUA	183	119	0		Y		24.43
35	P	Twin Forks MDWCA	1,110	64	0	Y	Y	48.16	31.88
35	P	Weed WUA	33	63	0		Y		2.35
		River Basin Subtotals	**4,225**					**94.26**	**314.08**
35	RG	Alamo Heights Water Users Association	51	132	0		Y		7.54
35	RG	Alamogordo Domestic Water System	36,542	121	3	Y	Y	3,952.10	1,010.20
35	RG	Boles Acres Water System	1,010	98	0		Y		110.49
35	RG	Canyon Hills WUA	51	246	0		Y		14.04
35	RG	Cider Mill Farms WUA (2000)	40	120	0		Y		5.36
35	RG	Cloudcroft Water System	764	224	9	Y	Y	1.22	190.87
35	RG	Dungan MDWCA	88	65	0		Y		6.37
35	RG	Enchanted Valley Water Users	45	293	0		Y		14.79
35	RG	Freeman's / Crossroads MHP	47	120	0		Y		6.33
35	RG	High Rolls	387	127	0		Y		54.87
35	RG	Holloman Air Force Base	8,600	184	10	Y	Y	1,268.00	509.27
35	RG	Karr Canyon Estates	81	95	0		Y	8.65	0.00
35	RG	La Luz MDWCA/Lakeside de la Luz	2,112	68	0	Y	Y	54.00	106.00
35	RG	Laborcita Water Users Association	50	1140	0		Y		63.85

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CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
35	RG	Mountain Orchard WUA	80	96	0		Y		8.57
35	RG	Orogrande MDWCA	75	375	5		Y		31.51
35	RG	Piney Woods WUA	227	142	0	Y	Y	23.44	12.57
35	RG	Rolling Hills Community Water Users Association	34	150	0		Y		5.73
35	RG	Rural Self-Supplied Homes	4,698	100	0		N		526.24
35	RG	Timberon Water & Sanitation District	1,729	152	0	Y	Y	185.25	109.48
35	RG	Tularosa Water System	2,950	218	0	Y		720.69	
35	RG	Waterfall Community Water Users Association	108	77	0		Y		9.27
		River Basin Subtotals	**59,769**					**6,213.35**	**2,803.34**
		County Totals	**63,994**					**6,307.61**	**3,117.42**
37	AWR	Liberty MDWUA (2000)	182	115	0		Y		23.50
37	AWR	Logan Water System	1,083	252	8		Y		306.26
37	AWR	Nara Visa Water Co-Op (2000)	75	97	0		N		8.15
37	AWR	Rural Self-Supplied Homes	1,340	80	0		Y		120.08
37	AWR	San Jon Water Supply (2000)	306	162	0		Y		55.49
37	AWR	Tucumcari Water System	6,855	157	4		Y		1,207.67
		River Basin Subtotals	**9,841**						**1,721.15**
37	P	House Water System	99	177	0		Y		19.66
37	P	Rural Self-Supplied Homes	166	80	0		N		14.88
		River Basin Subtotals	**265**						**34.54**
		County Totals	**10,106**						**1,755.69**
39	RG	Agua Sana WUA	660	54	0		Y		40.10
39	RG	Alcalde MDWCA	377	64	0		Y		27.06
39	RG	Barranco MDWCA	51	56	0		Y		3.19
39	RG	Brazos MDWCA	160	72	0		Y		12.95
39	RG	Canjilon MDWCA	380	42	0		Y		17.67
39	RG	Cebola MDWCA	300	34	0		Y		11.57
39	RG	Chama Water System (2000)	1,199	161	0	Y		216.40	
39	RG	Chamita MDWCA	700	56	0		Y		43.65
39	RG	Chili (2000)	51	133	0		Y		7.62
39	RG	Cordova MDWCA (2000)	240	66	0		Y		17.82
39	RG	Dixon MDWCA	400	52	0		Y		23.48
39	RG	Duranes Y Galvilan MSWA	109	93	0		Y		11.34
39	RG	El Llano MDWCA	132	65	0		Y		9.58
39	RG	El Rito MDWCA (2000)	220	44	0		Y		10.94
39	RG	Enchanted Mesa MHP	180	80	0		Y		16.16

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CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
39	RG	Ensenada WUA--Los Ojos (2000)	151	57	0		Y		9.59
39	RG	Espanola Water System (part)	8,426	97	0		Y		916.78
39	RG	Gallina Water System	100	79	0		Y		8.85
39	RG	La Puebla MDWCA	272	42	0		Y		12.77
39	RG	Las Trampas MDWCA	65	73	0		Y		5.30
39	RG	Los Brazos MDWCA (2000)	30	49	0		Y		1.65
39	RG	Los Ojos	192	90	0		Y		19.40
39	RG	Ojo Caliente (2000)	110	104	0		Y		12.80
39	RG	Ojo Sarco MDWCA	140	133	0		Y		20.93
39	RG	Placitas MDWCA (2000)	220	54	0		Y		13.20
39	RG	Rural Self-Supplied Homes	21,398	80	0		N		1,917.51
39	RG	Rutheron (2000)	230	56	0	Y		4.50	9.98
39	RG	South Ojo Caliente MDWCA	250	152	0		Y		42.58
39	RG	Tierra Amarilla MDWCA	500	106	0		Y		59.52
39	RG	Truchas MDWCA	650	39	0		Y		28.36
39	RG	Upper Canoncito MDWCA	80	59	0		Y		5.26
39	RG	Valley Estates MDWCA	200	138	0		Y		31.03
39	RG	Velarde MDWCA	600	60	0		Y		40.32
39	RG	Youngsville MDWCA	89	191	0		Y		19.01
		River Basin Subtotals	**38,862**					**220.90**	**3,427.97**
39	UC	Dulce--BIA, Jicarilla Agency (2000)	3,280	136	0	Y		498.30	0.00
39	UC	Lindrith Community Water Co-Op	70	64	0		Y		5.00
39	UC	Lybrook WUA (2000)	155	147	0		Y		25.59
39	UC	Rural Self-Supplied Homes	657	80	0		N		58.87
		River Basin Subtotals	**4,162**					**498.30**	**89.46**
		County Totals	**43,024**					**719.20**	**3,517.43**
41	P	Rural Self-Supplied Homes	122	100	0		N		13.67
		River Basin Subtotals	**122**						**13.67**
41	TG	Causey Water Association (2000)	45	99	0		N		5.00
41	TG	Dora Water Association	150	179	0		Y		30.01
41	TG	Elida Water System	189	230	0		Y		48.61
41	TG	Floyd Water Co-Op	350	90	0		Y		35.41
41	TG	Portales Water System/Roosevelt County Water Co-Op	17,100	112	3		Y		2,149.06
41	TG	Rural Self-Supplied Homes	815	100	6		Y		91.29
		River Basin Subtotals	**18,649**						**2,359.38**
		County Totals	**18,771**						**2,373.05**

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CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
43	RG	Algodones WUA (2000)	675	72	0		Y		54.24
43	RG	Anasazi	51	206	0		Y		11.75
43	RG	Bernalillo Water System	6,938	186	0		Y		1,442.92
43	RG	Canyon MDWUA (2000)	250	129	0		Y		36.14
43	RG	Cedar Creek Water Cooperative INC	120	50	0		Y		6.72
43	RG	Cochiti Lake Water System	450	41	0		Y		20.88
43	RG	Corrales Self-Supplied	6,816	150	0		N		1,145.23
43	RG	Corrales Village	58	63	0		Y		4.07
43	RG	Cuba Water System (2000)	765	127	0		Y		108.78
43	RG	Desert Sky Mountain Water Cooperative	25	396	0		Y		11.08
43	RG	Hidden Valley Water System	30	160	0		Y		5.38
43	RG	Homestead Village Water Coop	50	52	0		Y		2.90
43	RG	Jemez Springs Water Co-Op	1,000	71	0	Y		79.21	
43	RG	La Jara	406	53	0	Y		23.89	
43	RG	La Mesa Water Co-Op	500	147	0		Y		82.39
43	RG	La Puerta	36	172	0	Y	Y	6.44	0.48
43	RG	North Ranchos de Placitas	377	105	0		Y		44.45
43	RG	Orchard Estates	49	112	0		Y		6.15
43	RG	Overlook Water Cooperative	122	100	0		Y		13.71
43	RG	Pena Blanca MDWCA	465	83	0		Y		43.30
43	RG	Placitas Trails Ltd Partnership	375	128	0		Y		53.69
43	RG	Placitas West Water Co-Op	116	126	0		Y		16.36
43	RG	Ponderosa MDWCA	406	79	0	Y		35.77	
43	RG	Pueblo Los Cerros Browood	200	84	0		Y		18.76
43	RG	Ranchos de Placitas Sanitation Dist	300	110	0		Y		36.98
43	RG	Regina MDWCA	550	39	0		Y		23.82
43	RG	Rio Rancho--Albuquerque Utilities	66,599	155	1, 7		Y		11,586.50
43	RG	Rural Self-Supplied Homes	16,160	80	0		N		1,448.12
43	RG	San Ysidro (2000)	240	149	0		Y		40.07
43	RG	Sile MDWCA	168	173	0		Y		32.58
43	RG	Vista del Oro de Placitas	72	138	0		Y		11.14
		River Basin Subtotals	**104,369**					**145.31**	**16,308.58**
43	UC	Rural Self-supplied homes	1,796	80	0		N		160.94
		River Basin Subtotals	**1,796**						**160.94**
		County Totals	**106,165**					**145.31**	**16,469.52**
45	UC	Aztec Domestic Water System	7,084	162	3	Y		1,282.35	

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CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
45	UC	Blanco Water Association	1,260	72	0	Y	Y	101.59	
45	UC	Bloomfield Water Supply System	7,500	161	0	Y		1,354.45	
45	UC	Dutchmans Hill Water Co	403	91	0	Y		41.06	
45	UC	East Aztec Water Users Association	301	59	6	Y		20.02	
45	UC	Farmington Water System	41,001	336	3	Y		15,415.00	
45	UC	Flora Vista WUA	3,360	87	7	Y	Y	80.12	249.00
45	UC	Harvest Gold Subdivision (2000)	350	105	6	Y		41.26	
45	UC	Kirtland	9,533	117	0	Y		1,250.19	
45	UC	La Plata	2,079	70	6	Y		163.61	
45	UC	Lee Acres WUA	4,300	101	0	Y		487.79	
45	UC	Lower Valley WUA	9,548	117	7	Y		1,253.13	
45	UC	Morningstar WUA	4,651	108	3	Y		562.63	
45	UC	Navajo Dam MDWCA	592	64	0	Y		42.27	
45	UC	North Star WUA	2,737	69	0	Y		210.08	
45	UC	Rosa Joint Venture	200	230	0	Y		51.60	
45	UC	Rural Self-Supplied Homes	16,277	70	0		N		1,276.28
45	UC	Shiprock--NTUA	8,156	60	6	Y		552.00	
45	UC	Southside WUA	1,428	67	6	Y	Y	95.00	12.00
45	UC	Upper La Plata WUA (2000)	1,710	76	6	Y		145.76	
45	UC	West Hammond MDWCA	3,538	70	6	Y		276.66	
		River Basin Subtotals	**126,008**					**23,426.57**	**1537.28**
		County Totals	**126,008**					**23,426.57**	**1537.28**
47	AWR	Big Mesa Water Co-Op	598	82	0	Y		55.13	
47	AWR	Conchas Dam	400	146	0	Y		65.48	
47	AWR	Pendaries Water System (2000)	300	103	0		Y	34.73	
47	AWR	Rural Self-Supplied Homes	417	80	0		N		37.37
		River Basin Subtotals	**1,715**					**155.34**	**37.37**
47	P	Benedictine Monastery	41	143	9		Y		6.59
47	P	East Pecos MDWCA	650	42	0		N		30.35
47	P	El Coruco Domestic (2000)	100	80	0		N		9.00
47	P	Gabaldon MDWCA	56	45	0		Y		2.79
47	P	Ilfield MDWCA	160	66	0		Y		11.91
47	P	La Pasada MDWCA	210	40	0		Y		9.34
47	P	Las Tusas MDWCA	80	103	0		Y		9.20
47	P	Las Vegas Water Supply System	14,857	131	0		Y	2,149.45	38.74
47	P	Pecos Water System	1,470	169	0		Y		279.10

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CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
47	P	Ribera MDWCA (2000)	140	75	0		N		11.79
47	P	Rowe MDWCA	108	81	0		Y		9.74
47	P	Rural Self-Supplied Homes	10,264	80	0		N		919.76
47	P	San Jose MDWCA (2000)	160	51	0		Y	9.14	
47	P	San Miguel	60	26	0		Y		1.75
47	P	Sena Water System	55	140	0		Y		8.61
47	P	South San Ysidro MDWCA	55	80	0		Y		4.92
47	P	Tecolote Domestic Water Users Association	185	77	0		Y		15.89
47	P	Tecolotito MDWCA	280	74	0		Y		23.20
47	P	Tres Lagunas Home Owners Association	73	114	0		Y		9.30
		River Basin Subtotals	**29,004**					**2,158.59**	**1,401.98**
		County Totals	**30,719**					**2,313.93**	**1,439.35**
49	P	Glorieta Baptist Conference Center	330	375	9		Y		138.51
49	P	Glorieta Estates Water Co-Op	74	70	0		Y		5.81
49	P	Lifeway Glorieta Conference Center	3,000	41	11		Y		138.51
49	P	Rural Self-Supplied Homes	296	80	0		N		26.53
		River Basin Subtotals	**3,700**						**309.37**
49	RG	Agua Fria Community	875	41	0		Y		39.73
49	RG	Agua Fria MHP	110	61	0		Y		7.52
49	RG	Canoncito MDWCA	165	67	0		Y		12.41
49	RG	Casitas de Santa Fe (2000)	800	73	0		Y		65.06
49	RG	Cerillos MDWCA (2000)	300	57	0		Y		19.30
49	RG	Chimayo MDWCA (2003)	150	65	0		Y		10.93
49	RG	Chupadero MDWCA	236	90	0		Y		23.88
49	RG	Cielo Lindo MHP (2000)	34	52	0		Y		1.99
49	RG	City of Santa Fe/Sangre de Cristo Water Company	77,275	106	4	Y	Y	4,232.00	4,982.00
49	RG	Country Club Estates	94	91	0		Y		9.63
49	RG	Country Club Gardens MHP (2000)	800	88	0		Y		78.53
49	RG	East Glorieta MDWCA (2000)	50	83	0		Y		4.63
49	RG	Edgewood Water Inc (2000)	1,893	233	2		Y		494.93
49	RG	El Rancho MHP	72	70	0		Y		5.68
49	RG	El Vadito De Los Cerrillos Water Association	310	75	0		Y		25.95
49	RG	Eldorado de Santa Fe	7,088	72	0		Y		570.80
49	RG	Entranosa Wtr Co-Op (part)-Edgewood	3,878	94	2		Y		407.75
49	RG	Espanola Water System (part)	1,688	97	0		Y		183.80
49	RG	Galisteo Mutual Domestic Water Consumers	150	195	0		Y		32.70

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CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
49	RG	Galisteo WUA	220	132	0		Y		32.50
49	RG	Glorieta MDWCA (2000)	92	120	0		Y		12.32
49	RG	Hyde Park Estates	165	28	0		Y		5.25
49	RG	Juniper Hills Mobile Home Park	60	61	0		Y		4.11
49	RG	Juniper Hills PT Ranch (2000)	60	25	0		N		1.70
49	RG	La Cienega Lakeside MHP	60	37	0		Y		2.46
49	RG	La Cienega MDWCA	275	78	0		Y		24.07
49	RG	La Vista Homeowners Association	50	112	0		Y		6.30
49	RG	Las Campanas	825	500	6		Y		462.00
49	RG	Lone Star Mobile Home Park	100	27	0		Y		3.07
49	RG	Madrid Water Co-Op	250	47	0		Y		13.09
49	RG	Penitentiary of New Mexico	2,200	64	0		Y		158.78
49	RG	Pojoaque Terraces MHP	200	85	0		Y		19.01
49	RG	Ranchitos de Galisteo WUA	66	127	0		Y		9.42
49	RG	Rio Chiquito MDWCA (2000)	120	25	0		N		3.31
49	RG	Rio En Medio MDWCA (1995)	120	45	0		Y		6.03
49	RG	Rufina Apartments	50	54	0		Y		3.02
49	RG	Rural Self-Supplied Homes	29,806	80	0		N		2,670.97
49	RG	Santa Cruz MDWCA (2000)	280	47	0		N		14.84
49	RG	Santa Fe Country Club Apartments (2000)	120	114	0		Y		15.35
49	RG	Santa Fe County Utilities	4,000	85	6	Y	Y	365.00	15.50
49	RG	Santa Fe Mobile Home Hacienda	450	43	0		Y		21.44
49	RG	Santa Fe --Urban self-supplied homes	1,200	130	0		N		174.74
49	RG	Santa Fe West MHP	200	41	0		Y		9.25
49	RG	Shalom MHP	50	72	0		Y		4.06
49	RG	Solacito Homeowners Association (2000)	27	153	0		Y		4.62
49	RG	Sunlit Hills of Santa Fe	990	102	0		Y		112.69
49	RG	Sunset Mobile Home Park (2003)	180	183	0		Y		36.95
49	RG	Tesuque MDWCA	407	57	0		N		26.14
49	RG	Trailer Ranch MHP	175	77	0		Y		15.06
49	RG	Valle Vista Subdivision	455	30	0		Y		15.51
49	RG	Valley Cove MHP (2000)	75	135	0		N		11.34
49	RG	Village MHP (2000)	120	97	0		Y		13.01
49	RG	Vista Redonda MDWCA	170	133	0		Y		25.33
49	RG	West Alameda	20	88	0		Y		1.96
		River Basin Subtotals	**139,606**					**4,597.00**	**10,932.39**

Key: CN=county number; RVB=river basin; GWB=groundwater basin; WEC=water exchange code; MSW=measured surface water (Y/N); MGW=measured groundwater (Y/N); WSW=withdrawal surface water; WGW=withdrawal groundwater

Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
		County Totals	**143,306**					**4,597.00**	**11,241.76**
51	RG	Desertaire Water Company	79	55	0		Y		4.86
51	RG	Hillsboro	180	98	0		Y		19.85
51	RG	Lakeshore Sanitation District	927	98	9		Y		101.81
51	RG	National Utilities--Elephant Butte	1,545	106	9		Y		183.21
51	RG	National Utilities--Meadow Lake	1,787	110	0		Y		220.65
51	RG	Rural Self-Supplied Homes	1,939	80	0		N		173.76
51	RG	Truth or Consequences	7,200	182	4		Y		1,466.00
		River Basin Subtotals	**13,657**						**2,170.13**
		County Totals	**13,657**						**2,170.13**
53	RG	La Joya MDWCA (2000)	132	69	0		Y		10.17
53	RG	Magdalena Water Supply System (2000)	913	169	0		Y		172.43
53	RG	New Mexico Boys Ranch (2000)	82	298	0		N		27.35
53	RG	Polvadera MDWCA	1,400	122	0		N		191.11
53	RG	Rural Self-Supplied Homes	5,212	80	0		N		467.06
53	RG	San Acacia MDWCA	130	94	0		Y		13.74
53	RG	San Antonio MDWCA	1,500	54	0		Y		90.31
53	RG	Socorro	9,144	199	0		Y		2,039.00
		River Basin Subtotals	**18,513**						**3,011.17**
		County Totals	**18,513**						**3,011.17**
55	RG	Canon MDWCA (2000)	360	131	0		Y		52.86
55	RG	Costilla MDWCA	510	58	0		Y		33.30
55	RG	El Prado Water & Sanitation Dist.	1,000	104	0		Y		116.13
55	RG	El Salto MDWCA	232	56	0		Y		14.61
55	RG	Enchanted Mobile Home Park	96	99	0		Y		10.70
55	RG	La Lomita Mobile Home Park	100	64	0		Y		7.21
55	RG	Las Colonias Mobile Home Park	50	86	0		Y		4.83
55	RG	Llano Quemado MDWCA	800	52	0		Y		46.47
55	RG	Lower Arroyo Hondo MDWCA (2000)	210	60	0		Y		14.22
55	RG	Lower Des Montes MDWCA	270	54	0		Y		16.30
55	RG	Ojo Caliente MDWCA	277	75	0		Y		23.37
55	RG	Penasco MDWCA	600	39	0		Y		26.35
55	RG	Questa Water System	1,913	123	0		Y		263.31
55	RG	Ranchos de Taos MDWCA	750	53	0		Y		44.64
55	RG	Red River Water System	495	754	9	Y	Y	67.35	350.90
55	RG	Rio Lucio MDWCA (2000)	360	44	0		Y		17.62

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Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
55	RG	Rodarte MDWCA	140	168	0		Y		26.27
55	RG	Rural Self-Supplied Homes	15,605	80	0		Y		1,398.39
55	RG	San Cristobal MDWCA (2000)	110	36	0	Y		4.41	
55	RG	Sanchez Mobile Home Park	54	60	0		Y		3.65
55	RG	Talpa	893	72	0		Y		72.00
55	RG	Taos Municipal Water System	5,126	163	0		Y		937.10
55	RG	Taos Ski Valley/Twining Water	500	77	9		Y		43.31
55	RG	Trampas MDWCA	146	32	0		Y		5.30
55	RG	Tres Piedras MDWCA	218	51	0		Y		12.54
55	RG	Upper Arroyo Hondo MDWCA	176	57	0		Y		11.24
55	RG	Upper Des Montes MDWCA	280	38	0		Y		11.92
55	RG	Upper Ranchitos MDWCA (2000)	190	87	0		Y		18.57
55	RG	Valdez MDWCA	70	56	0		Y		4.39
55	RG	Valle Escondido Water System	300	67	0		Y		22.40
55	RG	Vigils Trailer Park	100	49	0		Y		5.50
		River Basin Subtotals	**31,931**					**71.76**	**3,615.38**
		County Totals	**31,931**					**71.76**	**3,615.38**
57	P	Clines Corners Water Co	40	427	0		Y		19.15
57	P	Duran Water System (1995)	70	76	39453		Y		5.96
57	P	Rural Self-supplied homes	225	80	0		N		20.16
		River Basin Subtotals	**335**						**45.27**
57	RG	Echo Valley Water Co.	384	113	0		Y		48.61
57	RG	Encino Water System	100	90	39453		Y		10.09
57	RG	Estancia Water System	2,000	166	0		Y		371.47
57	RG	Homestead Estates	154	185	0		Y		31.91
57	RG	Manzano Mutual Domestic Water Consumers	95	43	0		Y		4.60
57	RG	Melody Ranch Water Co	188	140	0		Y		29.55
57	RG	Moriarty Water System	1,808	229	0		Y		463.26
57	RG	Mountainair	1,200	125	0		Y		168.07
57	RG	Rural Self-Supplied Homes	11,009	80	0		N		986.53
57	RG	Sunset Acres Subdivision	288	66	0		Y		21.28
57	RG	Tajique MDWCA	181	69	0		Y		14.01
57	RG	Torreon MDWCA	300	23	0		Y		7.62
57	RG	Willard Water Supply System	240	95	0		Y		25.47
		River Basin Subtotals	**17,947**						**2,182.47**
		County Totals	**18,282**						**2,227.74**

Key: CN=county number; RVB=river basin; GWB=groundwater basin; WEC=water exchange code; MSW=measured surface water (Y/N); MGW=measured groundwater (Y/N); WSW=withdrawal surface water; WGW=withdrawal groundwater

Table 7. Public Water Supply and Self-Supplied Domestic. Withdrawals in acre-feet, in New Mexico counties, 2005. Compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	USER	POP	GPCD	WEC	MSW	MGW	WSW	WGW
59	AWR	Clayton Municipal Supply	2,554	243	0		Y		696.55
59	AWR	Des Moines Water System(1995)	168	150	0		Y		28.16
59	AWR	Grenville Water System (2000)	30	58	0		Y		1.94
59	AWR	Rural Self-Supplied Homes	1,563	80	0		N		140.06
		River Basin Subtotals	**4,315**						**866.71**
		County Totals	**4,315**						**866.71**
61	RG	Belen Water System	7,121	148	0		Y		1,178.46
61	RG	Bosque Farms Water Supply System	3,969	86	0		Y		381.07
61	RG	Cyprus Gardens Water System	1,208	99	0		Y		133.45
61	RG	El Shaddai Mobile Home Park	75	130	0		Y		10.90
61	RG	Highland Meadows (2000)	250	112	0		Y		31.28
61	RG	Hi-Mesa Estates MHP	200	74	0		Y		16.57
61	RG	JC Mobile Home Park	34	92	0		Y		3.49
61	RG	Los Lunas Correctional Center	1,151	235	0		Y		302.38
61	RG	Los Lunas Water System	11,338	158	0		Y		2,002.56
61	RG	Meadow Lake	2,399	82	0		Y		220.65
61	RG	Monterey Mobile Home Estates	1,050	94	0		Y		111.14
61	RG	Rio Grande Utilities/ NM Water Service Company	7,560	145	0		Y		1,228.80
61	RG	Rural Self-Supplied Homes	35,047	100	0		N		3,925.76
61	RG	Trinity MHP--Bosque Farms (2000)	57	58	0		Y		3.70
		River Basin Subtotals	**71,459**						**9550.20**
		County Totals	**71,459**						**9550.20**
		State Totals	**1,968,353**					**42,091**	**313,832.29**

Key: CN=county number; RVB=river basin; GWB=groundwater basin; WEC=water exchange code; MSW=measured surface water (Y/N); MGW=measured groundwater (Y/N); WSW=withdrawal surface water; WGW=withdrawal groundwater

Table 8. Irrigated Agriculture. Withdrawals in acre-feet, in New Mexico counties, 2005. Data compiled by Julie Valdez and Molly Magnuson, NMOSE. Please note: Table 8 runs from pages 85 to 96.

CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
1	RG	Estancia GW Basin	F	0	0.84	0	20	0	0	20	0.6	0	0	0	0	0	28
1	RG	MRGCD & Vicinity	F	2.27	2.27	3,576	0	1,549	516	5,641	0.5	0.56	0.28	23,268	18,282	41,549	2,343
					River Basin Subtotals	**3,576**	**20**	**1,549**	**516**	**5,661**				**23,268**	**18,282**	**41,549**	**2,371**
					County Totals	**3,576**	**20**	**1,549**	**516**	**5,661**				**23,268**	**18,282**	**41,549**	**2,371**
3	LC	Quemado	F	1.73	0	4	0	0	0	4	0.55	0.7	0.39	13	5	18	0
3	LC	*Apache/Aragon-SFR	F	1.11	0	217	0	0	0	217	0.5	0.67	0.34	482	237	719	0
3	LC	*Glenwood-SFR	F	1.96	0	689	0	0	0	689	0.59	0.22	0.13	2,289	8,115	10,404	0
3	LC	*Luna-SFR	F	1.18	0	106	0	0	0	106	0.69	0.09	0.06	181	1,833	2,014	0
3	LC	*Reserve-SFR	F	1.64	0	245	0	0	0	245	0.82	0.09	0.08	490	4,954	5,444	0
					River Basin Subtotals	**1,261**	**0**	**0**	**0**	**1,261**				**3,454**	**15,145**	**18,600**	**0**
3	RG	*San Augustin	F	1.58	0	0	100	0	0	100	0.55	0	0	0	0	0	287
					River Basin Subtotals	**0**	**100**	**0**	**0**	**100**				**0**	**0**	**0**	**287**
					County Totals	**1,261**	**100**	**0**	**0**	**1,361**				**3,454**	**15,145**	**18,600**	**287**
5	P	*RAB & Pecos Pumpers	D	0	1.36	0	340	0	0	340	0.85	0	0	0	0	0	544
5	P	Scattered	F	2.56	2.56	0	50	250	500	800	0.6	0.9	0.54	1,067	119	1,185	2,347
5	P	Rio Penasco	F	2.52	2.52	38	56	901	225	1,220	0.55	0.7	0.39	4,302	1,844	6,146	1,287
5	P	Rio Hondo	F	2.64	0	345	0	0	0	345	0.55	0.7	0.39	1,656	710	2,366	0
5	P	*RAB & Pecos Pumpers	F	1.71	1.71	133	48,109	2,154	0	50,396	0.6	0.75	0.45	6,518	2,173	8,691	137,111
5	P	Rio Hondo	S	0	1.14	0	1,035	0	0	1,035	0.65	0	0	0	0	0	1,815
5	P	*RAB & Pecos Pumpers	S	0	1.93	0	27,468	0	0	27,468	0.7	0	0	0	0	0	75,733
					River Basin Subtotals	**516**	**77,058**	**3,305**	**725**	**81,604**				**13,543**	**4,845**	**18,388**	**218,837**
					County Totals	**516**	**77,058**	**3,305**	**725**	**81,604**				**13,543**	**4,845**	**18,388**	**218,837**
6	LC	Lower Colorado Scattered	F	0	0	0	0	0	0	0	0	0	0	0	0	0	0
					River Basin Subtotals	**0**	**0**	**0**	**0**	**0**				**0**	**0**	**0**	**0**

Key: CN=county number; RVB=river basin; T=type of irrigation system (i.e., drip (D), flood (F), or sprinkler (S)); CIRSW=consumptive irrigation requirement for acreage irrigated with surface water; CIRGW=consumptive irrigation requirement for acreage irrigated with groundwater; ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with groundwater only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated; EF=on-farm irrigation efficiency; EC=off-farm conveyance efficiency; EJ=project efficiency; TFSW=total farm withdrawal, surface water; CLSW=surface water conveyance losses from stream or reservoir to farm headgate; TPWSW=total project withdrawals, surface water; TPWGW=total project withdrawals, groundwater; * Adjusted CIR or efficiency for water shortages in the area please see Chapter 3 for a description; # water applied (not CIR), ## Due to report format and water shortages this Ef is not a true measure of efficiency, **NIIP numbers are as reported by NMISC.

Table 8. Irrigated Agriculture. Withdrawals in acre-feet, in New Mexico counties, 2005. Data compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
6	RG	Rio Grande Basin Scattered	D	0	1.23	0	20	0	0	20	0.85	0	0	0	0	0	29
6	RG	*Rio Grande Basin Scattered	F	0.46	0.46	1,055	230	352	151	1,788	0.55	0.7	0.39	1,177	504	1,681	319
6	RG	Rio Grande Basin Scattered	S	0	1.98	0	1,200	0	0	1,200	0.65	0.65	0.42	0	0	0	3,665
					River Basin Subtotals	**1,055**	**1,450**	**352**	**151**	**3,008**				**1,177**	**504**	**1,681**	**4,012**
					County Totals	**1,055**	**1,450**	**352**	**151**	**3,008**				**1,177**	**504**	**1,681**	**4,012**
7	AWR	*Cimarron River	F	0.57	0	8,110	0	0	0	8,110	0.55	0.6	0.33	8,405	5,603	14,008	0
7	AWR	Dry Cimarron	F	1.21	0	505	0	0	0	505	0.55	0.7	0.39	1,111	476	1,587	0
7	AWR	Canadian River	F	1.56	0	4,960	0	0	0	4,960	0.55	0.6	0.33	14,068	9,379	23,447	0
7	AWR	*Vermejo Cons. Dist.	F	0.82	0	4,469	0	0	0	4,469	0.55	0.82	0.45	6,663	1,463	8,125	0
7	AWR	Purgatoire	F	1.4	0	160	0	0	0	160	0.55	0.7	0.39	407	175	582	0
7	AWR	Near Capulin	F	1.24	0	380	0	0	0	380	0.55	0.7	0.39	857	367	1,224	0
7	AWR	Canadian River	S	1.62	0	850	0	0	0	850	0.65	0.6	0.39	2,118	1,412	3,531	0
7	AWR	Cimarron River	S	0	1.35	0	925	0	0	925	0.65	0	0	0	0	0	1,921
					River Basin Subtotals	**19,434**	**925**	**0**	**0**	**20,359**				**33,630**	**18,875**	**52,505**	**1,921**
					County Totals	**19,434**	**925**	**0**	**0**	**20,359**				**33,630**	**18,875**	**52,505**	**1,921**
9	AWR	Scattered	F	0	0	0	0	0	0	0	0.55	0	0	0	0	0	0
					River Basin Subtotals	**0**	**0**	**0**	**0**	**0**				**0**	**0**	**0**	**0**
9	P	Pecos River Basin Scattered	F	0	0	0	0	0	0	0	0.55	0	0	0	0	0	0
					River Basin Subtotals	**0**	**0**	**0**	**0**	**0**				**0**	**0**	**0**	**0**
9	TG	Texas Gulf Basin	S	0	1.18	0	86,743	0	0	86,743	0.8	0	0	0	0	0	127,946
					River Basin Subtotals	**0**	**86,743**	**0**	**0**	**86,743**				**0**	**0**	**0**	**127,946**
					County Totals	**0**	**86,743**	**0**	**0**	**86,743**				**0**	**0**	**0**	**127,946**
11	P	Ft. Sumner ID	F	2.12	0	5,510	0	0	0	5,510	0.42	0.79	0.33	27,812	7,393	35,206	0
11	P	Scattered	S	0	1.83	0	5,024	0	0	5,024	0.65	0	0	0	0	0	14,144

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CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
					River Basin Subtotals	**5,510**	**5,024**	**0**	**0**	**10,534**				**27,812**	**7,393**	**35,206**	**14,144**
					County Totals	**5,510**	**5,024**	**0**	**0**	**10,534**				**27,812**	**7,393**	**35,206**	**14,144**
13	RG	Hueco GW Basin	D	0	3.13	0	150	0	0	150	0.85	0	0	0	0	0	552
13	RG	Outside EBID	F	0	2.28	0	1,841	0	0	1,841	0.6	0	0	0	0	0	6,996
13	RG	Inside EBID	F	2.53	2.53	0	0	39,461	32,934	72,395	0.6	0.52	0.31	166,394	153,594	319,988	138,872
13	RG	Nutt-Hockett	F	0	1.51	0	10	0	0	10	0.6	0	0	0	0	0	25
13	RG	Nutt-Hockett	S	0	1.32	0	170	0	0	170	0.65	0	0	0	0	0	345
13	RG	Outside EBID-Santa Teresa Sod Farm	S	0	2.95	0	600	0	0	600	0.58	0	0	0	0	0	3,052
					River Basin Subtotals	**0**	**2,771**	**39,461**	**32,934**	**75,166**				**166,394**	**153,594**	**319,988**	**149,842**
					County Totals	**0**	**2,771**	**39,461**	**32,934**	**75,166**				**166,394**	**153,594**	**319,988**	**149,842**
15	P	*Roswell Artesian Basin	F	0	2.07	0	19,813	0	0	19,813	0.6	0	0	0	0	0	68,355
15	P	Black River	F	3	3	271	3,744	0	0	4,015	0.55	0.8	0.44	1,478	370	1,848	20,422
15	P	Carlsbad Basin	F	2.83	2.83	271	2,356	0	0	2,627	0.55	0.8	0.44	1,394	349	1,743	12,123
15	P	Carlsbad ID	F	2.53	2.53	2,503	0	10,274	4,841	17,618	0.6	0.67	0.4	53,876	26,536	80,412	20,413
15	P	Rio Penasco	F	0	1.76	0	412	0	0	412	0.55	0.7	0.39	0	0	0	1,318
15	P	Rio Penasco	S	0	3.01	0	75	0	0	75	0.65	0	0	0	0	0	347
15	P	*Roswell Artesian Basin	S	0	2.46	0	480	0	0	480	0.7	0	0	0	0	0	1,687
					River Basin Subtotals	**3,045**	**26,880**	**10,274**	**4,841**	**45,040**				**56,749**	**27,254**	**84,003**	**124,665**
					County Totals	**3,045**	**26,880**	**10,274**	**4,841**	**45,040**				**56,749**	**27,254**	**84,003**	**124,665**
17	LC	*Gila River-Cliff Gila	F	2.14	2.14	1,152	0	20	20	1,192	0.56	0.22	0.13	4,479	15,879	20,358	76
17	LC	*Gila River-Red Rock	F	2.6	2.6	0	0	207	8	215	0.6	0.47	0.28	897	1,012	1,909	35
17	LC	*Gila River-Upper Gila	F	1.33	0	41	0	0	0	41	0.45	0.11	0.05	121	980	1,102	0
17	LC	Lordsburg Valley	F	0	2.02	0	189	0	0	189	0.55	0	0	0	0	0	694
					River Basin Subtotals	**1,193**	**189**	**227**	**28**	**1,637**				**5,497**	**17,871**	**23,368**	**805**

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17	RG	*Mimbres River	F	1.39	1.39	380	856	400	266	1,902	0.55	0.65	0	1,971	1,061	3,033	2,836
17	RG	Mimbres River	S	0	1.57	0	110	0	0	110	0.65	0	0	0	0	0	266
					River Basin Subtotals	**380**	**966**	**400**	**266**	**2,012**				**1,971**	**1,061**	**3,033**	**3,101**
					County Totals	**1,573**	**1,155**	**627**	**294**	**3,649**				**7,468**	**18,932**	**26,401**	**3,907**
19	P	Colonias	F	0	2.01	0	225	0	0	225	0.55	0	0	0	0	0	822
19	P	Puerto de Luna	F	2.04	0	600	0	0	0	600	0.55	0.6	0.33	2,225	1,484	3,709	0
19	P	Anton Chico	F	2.03	0	2,544	0	0	0	2,544	0.55	0.6	0.33	9,390	6,260	15,649	0
19	P	Scattered	F	0	1.1	0	292	0	0	292	0.55	0	0	0	0	0	584
19	P	Scattered	S	0	1.6	0	15	0	0	15	0.55	0	0	0	0	0	44
					River Basin Subtotals	**3,144**	**532**	**0**	**0**	**3,676**				**11,615**	**7,743**	**19,359**	**1,450**
					County Totals	**3,144**	**532**	**0**	**0**	**3,676**				**11,615**	**7,743**	**19,359**	**1,450**
21	AWR	Scattered	F	0	0.93	0	20	0	0	20	0.55	0	0	0	0	0	34
21	AWR	Scattered	S	0	1.51	0	1,525	0	0	1,525	0.65	0	0	0	0	0	3,543
					River Basin Subtotals	**0**	**1,545**	**0**	**0**	**1,545**				**0**	**0**	**0**	**3,577**
					County Totals	**0**	**1,545**	**0**	**0**	**1,545**				**0**	**0**	**0**	**3,577**
23	LC	Playas	D	0	2.18	0	2,250	0	0	2,250	0.55	0	0	0	0	0	8,918
23	LC	*San Simon	F	0	1.71	0	293	0	0	293	0.84	0	0	0	0	0	596
23	LC	Animas Valley	F	0	1.93	0	7,470	0	0	7,470	0.55	0	0	0	0	0	26,213
23	LC	*San Simon CRP	F	0	# 0.51	0	633	0	0	633	0	0	0	0	0	0	323
23	LC	*Gila River-Virden Valley	F	2.43	2.43	0	0	1,276	850	2,126	0.55	0.7	0.39	5,638	2,416	8,054	3,755
23	LC	*Playas	S	0	2.6	0	4,500	0	0	4,500	0.65	0	0	0	0	0	18,000
23	LC	*Gila River-Virden Valley	S	0	2.43	0	240	0	0	240	0.65	0	0	0	0	0	897
23	LC	Animas Valley	S	0	2.23	0	5,250	0	0	5,250	0.65	0	0	0	0	0	18,012
23	LC	Lordsburg Valley	S	0	2.99	0	2,000	0	0	2,000	0.55	0	0	0	0	0	10,873

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					River Basin Subtotals	**0**	**22,636**	**1,276**	**850**	**24,762**				**5,638**	**2,416**	**8,054**	**87,587**
					County Totals	**0**	**22,636**	**1,276**	**850**	**24,762**				**5,638**	**2,416**	**8,054**	**87,587**
25	P	Pecos River Basin Scattered	D	0	2.11	0	220	0	0	220	0.85	0	0	0	0	0	546
					River Basin Subtotals	**0**	**220**	**0**	**0**	**220**				**0**	**0**	**0**	**546**
25	TG	Texas Gulf Basin Scattered	S	0	1.88	0	46,615	0	0	46,615	0.65	0	0	0	0	0	134,825
					River Basin Subtotals	**0**	**46,615**	**0**	**0**	**46,615**				**0**	**0**	**0**	**134,825**
					County Totals	**0**	**46,835**	**0**	**0**	**46,835**				**0**	**0**	**0**	**135,371**
27	P	Rio Hondo & Tributaries	D	0	1.29	0	5	0	0	5	0.85	0	0	0	0	0	8
27	P	Rio Hondo & Tributaries	F	2.06	2.06	1,456	377	1,183	507	3,523	0.5	0.7	0.35	10,873	4,660	15,532	3,642
27	P	Scattered	F	0	1.31	0	2	0	0	2	0.45	0	0	0	0	0	6
27	P	Rio Hondo & Tributaries	S	0	2.1	0	330	0	0	330	0.65	0	0	0	0	0	1,066
					River Basin Subtotals	**1,456**	**714**	**1,183**	**507**	**3,860**				**10,873**	**4,660**	**15,532**	**4,722**
27	RG	Carrizozo & Vicinity	D	0	1.37	0	30	0	0	30	0.85	0	0	0	0	0	48
27	RG	Carrizozo & Vicinity	F	0	1.78	0	130	0	0	130	0.55	0	0	0	0	0	421
27	RG	Carrizozo & Vicinity	S	0	1.92	0	70	0	0	70	0.65	0	0	0	0	0	207
					River Basin Subtotals	**0**	**230**	**0**	**0**	**230**				**0**	**0**	**0**	**676**
					County Totals	**1,456**	**944**	**1,183**	**507**	**4,090**				**10,873**	**4,660**	**15,532**	**5,397**
29	RG	Nutt-Hockett	D	0	1.61	0	2,816	0	0	2,816	0.85	0	0	0	0	0	5,334
29	RG	Mimbres Basin	D	0	1.98	0	10,341	0	0	10,341	0.85	0	0	0	0	0	24,088
29	RG	Mimbres--Wild Flooding	F	2.74	0	10,350	0	0	0	10,350	0.45	1	0.45	63,020	0	63,020	0
29	RG	Nutt-Hockett	F	0	2.05	0	214	0	0	214	0.6	0	0	0	0	0	731
29	RG	Mimbres River	F	2.26	2.26	200	5,613	600	600	7,013	0.55	0.65	0.36	3,287	1,770	5,057	25,530

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29	RG	Mimbres River	S	0	3.6	0	552	0	0	552	0.65	0	0	0	0	0	3,057
29	RG	Nutt-Hockett	S	0	2.91	0	1,876	0	0	1,876	0.65	0	0	0	0	0	8,399
					River Basin Subtotals	**10,550**	**21,412**	**600**	**600**	**33,162**				**66,307**	**1,770**	**68,077**	**67,139**
					County Totals	**10,550**	**21,412**	**600**	**600**	**33,162**				**66,307**	**1,770**	**68,077**	**67,139**
31	LC	*Zuni & Ramah	F	1.73	0	628	0	0	0	628	##5.48	0.7	0.39	198	84	282	0
					River Basin Subtotals	**628**	**0**	**0**	**0**	**628**				**198**	**84**	**282**	**0**
31	RG	Scattered--RG	F	1.79	0	150	0	0	0	150	0.55	0.8	0.44	488	122	610	0
					River Basin Subtotals	**150**	**0**	**0**	**0**	**150**				**488**	**122**	**610**	**0**
31	UC	*Scattered--UC	F	2.24	0	100	0	0	0	100	## 1.1	0.7	0.39	204	87	291	0
					River Basin Subtotals	**100**	**0**	**0**	**0**	**100**				**204**	**87**	**291**	**0**
					County Totals	**878**	**0**	**0**	**0**	**878**				**890**	**293**	**1,183**	**0**
33	AWR	Scattered	D	0	0.89	0	50	0	0	50	0.85	0	0	0	0	0	52
33	AWR	*Scattered	F	0.57	0	13,730	0	0	0	13,730	0.55	0.7	0.39	14,229	6,098	20,328	0
33	AWR	*Scattered	S	0.67	0	1,100	0	0	0	1,100	0.65	0.7	0.46	1,134	486	1,620	0
					River Basin Subtotals	**14,830**	**50**	**0**	**0**	**14,880**				**15,363**	**6,584**	**21,947**	**52**
					County Totals	**14,830**	**50**	**0**	**0**	**14,880**				**15,363**	**6,584**	**21,947**	**52**
35	P	Rio Penasco	F	1.46	0	625	0	0	0	625	0.55	0.7	0.39	1,659	711	2,370	0
					River Basin Subtotals	**625**	**0**	**0**	**0**	**625**				**1,659**	**711**	**2,370**	**0**
35	RG	Salt Basin	D	0	2.04	0	40	0	0	40	0.85	0	0	0	0	0	96
35	RG	Tularosa GW Basin	D	0	2.8	0	1,905	0	0	1,905	0.85	0	0	0	0	0	6,275
35	RG	Salt Basin	F	0	2.42	0	397	0	0	397	0.6	0	0	0	0	0	1,601
35	RG	Tularosa GW Basin	F	2.63	2.63	250	0	1,071	357	1,678	0.6	0.7	0.42	5,790	2,482	8,272	1,565

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35	RG	Salt Basin	S	0	2.41	0	1,730	0	0	1,730	0.65	0	0	0	0	0	6,414
35	RG	Tularosa GW Basin	S	0	2.95	0	2,230	0	0	2,230	0.65	0	0	0	0	0	10,121
					River Basin Subtotals	**250**	**6,302**	**1,071**	**357**	**7,980**				**5,790**	**2,482**	**8,272**	**26,072**
					County Totals	**875**	**6,302**	**1,071**	**357**	**8,605**				**7,449**	**3,193**	**10,642**	**26,072**
37	AWR	Outside Arch Hurley CD	D	0	0.91	0	30	0	0	30	0.85	0	0	0	0	0	32
37	AWR	Outside Arch Hurley CD	F	0	0.89	0	143	0	0	143	0.6	0	0	0	0	0	212
37	AWR	*Inside Arch Hurley CD	F	0.35	0	27,095	0	0	0	27,095	0.6	0.42	0.25	15,805	21,827	37,632	0
37	AWR	Outside Arch Hurley CD	S	0	1.35	0	366	0	0	366	0.65	0	0	0	0	0	760
					River Basin Subtotals	**27,095**	**539**	**0**	**0**	**27,634**				**15,805**	**21,827**	**37,632**	**1,004**
37	P	House & Vicinity-Pecos	F	0	1.15	0	166	0	0	166	0.55	0	0	0	0	0	347
37	P	House & Vicinity-Pecos	S	0	1.2	0	2,512	0	0	2,512	0.65	0	0	0	0	0	4,638
					River Basin Subtotals	**0**	**2,678**	**0**	**0**	**2,678**				**0**	**0**	**0**	**4,985**
					County Totals	**27,095**	**3,217**	**0**	**0**	**30,312**				**15,805**	**21,827**	**37,632**	**5,989**
39	RG	Velarde & Vicinity	D	0	1.16	0	35	0	0	35	0.85	0	0	0	0	0	48
39	RG	Rio Chama	F	1.12	1.12	21,031	500	210	70	21,811	0.5	0.6	0.3	47,580	31,720	79,300	1,277
39	RG	*Santa Cruz & Vicinity	F	0.8	0	4,222	0	0	0	4,222	0.55	0.7	0.39	6,141	2,632	8,773	0
39	RG	Truchas & Vicinity	F	1.16	0	2,888	0	0	0	2,888	0.4	0.7	0.28	8,375	3,589	11,965	0
39	RG	Velarde & Vicinity	F	1.62	0	2,453	0	0	0	2,453	0.5	0.7	0.35	7,948	3,406	11,354	0
					River Basin Subtotals	**30,594**	**535**	**210**	**70**	**31,409**				**70,044**	**41,347**	**111,391**	**1,325**
					County Totals	**30,594**	**535**	**210**	**70**	**31,409**				**70,044**	**41,347**	**111,391**	**1,325**
41	P	Scattered-Pecos R. Basin	S	0	1.39	0	450	0	0	450	0.7	0	0	0	0	0	894
					River Basin Subtotals	**0**	**450**	**0**	**0**	**450**				**0**	**0**	**0**	**894**

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41	TG	Portales Basin	D	0	1.73	0	43	0	0	43	0.85	0	0	0	0	0	88
41	TG	Portales Basin	S	0	1.56	0	80,860	0	0	80,860	0.7	0	0	0	0	0	180,202
41	TG	Causey-Lingo-Texas Gulf	S	0	1.36	0	5,000	0	0	5,000	0.7	0	0	0	0	0	9,714
					River Basin Subtotals	**0**	**85,903**	**0**	**0**	**85,903**				**0**	**0**	**0**	**190,004**
					County Totals	**0**	**86,353**	**0**	**0**	**86,353**				**0**	**0**	**0**	**190,898**
43	RG	Outside MRGCD	D	0	1.39	25	0	0	25	0.85	0	0	0	0	0	41	
43	RG	Jemez River Basin	F	1.71	0	1,480	0	0	0	1,480	0.5	0.7	0.35	5,062	2,169	7,231	0
43	RG	MRGCD	F	2.02	2.02	5,004	0	462	154	5,620	0.5	0.56	0.28	22,083	17,351	39,433	622
43	RG	Cuba & Vicinity	F	1.34	0	1,665	0	0	0	1,665	0.5	0.7	0.35	4,462	1,912	6,375	0
43	RG	Outside MRGCD	S	2.04	0	200	0	0	0	200	0.6	1	0	680	0	680	0
					River Basin Subtotals	**8,349**	**25**	**462**	**154**	**8,990**				**32,286**	**21,432**	**53,719**	**663**
					County Totals	**8,349**	**25**	**462**	**154**	**8,990**				**32,286**	**21,432**	**53,719**	**663**
45	UC	*La Plata River	F	2.21	0	2,342	0	0	0	2,342	0.89	0.7	0.39	5,816	2,492	8,308	0
45	UC	Animas River	F	2.23	0	3,573	0	0	0	3,573	0.55	0.7	0.39	14,487	6,209	20,696	0
45	UC	*Chaco River (2003 data)	F	2.24	0	356	0	0	0	356	0.9	0.7	0.32	886	380	1,266	0
45	UC	Hammond ID	F	2.68	0	259	0	0	0	259	0.55	0.72	0.4	1,262	491	1,753	0
45	UC	San Juan River	F	2.61	0	9,307	0	0	0	9,307	0.55	0.7	0.39	44,166	18,928	63,094	0
45	UC	Pine River ID	F	2.02	0	326	0	0	0	326	0.5	0.75	0.38	1,317	439	1,756	0
45	UC	San Juan River	S	2.61	0	1,747	0	0	0	1,747	0.65	0.7	0.46	7,015	3,006	10,021	0
45	UC	Pine River ID	S	2.02	0	80	0	0	0	80	0.5	0.75	0.38	323	108	431	0
45	UC	**Navajo Indian Irrigation Prj.	S	0	0	57,313	0	0	0	57,313	0	0	0	0	0	162,797	0
45	UC	Hammond ID	S	2.68	0	2,974	0	0	0	2,974	0.65	0.72	0.47	12,262	4,769	17,031	0

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Table 8. Irrigated Agriculture. Withdrawals in acre-feet, in New Mexico counties, 2005. Data compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
45	UC	Animas River	S	2.23	0	1,191	0	0	0	1,191	0.65	0.7	0.46	4,086	1,751	5,837	0
45	UC	La Plata River	S	2.21	0	425	0	0	0	425	## 1.05	0.7	0.46	895	382	1,278	0
					River Basin Subtotals	**79,893**	**0**	**0**	**0**	**79,893**				**92,515**	**38,955**	**294,268**	**0**
					County Totals	**79,893**	**0**	**0**	**0**	**79,893**				**92,515**	**38,955**	**294,268**	**0**
47	AWR	Canadian River	F	1.4	0	990	0	0	0	990	0.55	0.7	0.39	2,520	1,080	3,600	0
47	AWR	Sapallo Creek	F	1.14	0	1,655	0	0	0	1,655	0.45	0.7	0.32	4,193	1,797	5,990	0
					River Basin Subtotals	**2,645**	**0**	**0**	**0**	**2,645**				**6,713**	**2,877**	**9,590**	**0**
47	P	*Storrie Irrigation Project	F	0.85	0	4,348	0	0	0	4,348	0.5	0.6	0.3	7,392	4,928	12,319	0
47	P	Scattered-Pecos River	F	1.19	0	3,333	0	0	0	3,333	0.5	0.6	0.3	7,933	5,288	13,221	0
47	P	*Storrie Irrigation Project	S	0.96	0	660	0	0	0	660	0.65	1	0.65	975	0	975	0
					River Basin Subtotals	**8,341**	**0**	**0**	**0**	**8,341**				**16,299**	**10,216**	**26,515**	**0**
					County Totals	**10,986**	**0**	**0**	**0**	**10,986**				**23,012**	**13,093**	**36,105**	**0**
49	RG	Estancia Basin	D	0	1.17	0	40	0	0	40	0.85	0	0	0	0	0	55
49	RG	Pojoaque Valley ID	D	0	1.08	0	25	0	0	25	0.85	0	0	0	0	0	32
49	RG	Santa Cruz & Vicinity	D	0	1.47	0	5	0	0	5	0.85	0	0	0	0	0	9
49	RG	Santa Fe & Vicinity	D	0	0.97	0	20	0	0	20	0.85	0	0	0	0	0	23
49	RG	Estancia Basin	F	0	1.41	0	3,550	0	0	3,550	0.6	0	0	0	0	0	8,343
49	RG	*Pojoaque Valley ID	F	0.82	0.82	280	25	1,480	95	1,880	0.55	0.75	0.41	2,624	875	3,499	179
49	RG	*Santa Cruz & Vicinity	F	0.94	0	4,425	0	0	0	4,425	0.55	0.7	0.39	7,563	3,241	10,804	0
49	RG	Santa Fe & Vicinity	F	1.75	1.75	480	0	110	110	700	0.5	0.7	0.35	2,065	885	2,950	385

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Table 8. Irrigated Agriculture. Withdrawals in acre-feet, in New Mexico counties, 2005. Data compiled by Julie Valdez and Molly Magnuson, NMOSE.

CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
49	RG	Estancia Basin	S	0	1.49	0	4,436	0	0	4,436	0.65	0	0	0	0	0	10,169
					River Basin Subtotals	**5,185**	**8,101**	**1,590**	**205**	**15,081**				**12,252**	**5,001**	**17,253**	**19,193**
					County Totals	**5,185**	**8,101**	**1,590**	**205**	**15,081**				**12,252**	**5,001**	**17,253**	**19,193**
51	RG	Above Elephant Butte	D	0	2.27	0	20	0	0	20	0.85	0	0	0	0	0	53
51	RG	EBID	D	0	2.26	0	200	0	0	200	0.85	0	0	0	0	0	532
51	RG	Above Elephant Butte--Engle	D	0	1.72	0	100	0	0	100	0.85	0	0	0	0	0	202
51	RG	EBID	F	2.5	2.5	0	0	3,315	631	3,946	0.6	0.65	0.39	13,813	7,438	21,250	2,629
51	RG	Lake Valley & Vicinity	F	0	2.99	0	50	0	0	50	0.55	0	0	0	0	0	272
51	RG	Nutt-Hockett	F	0	3.07	0	50	0	0	50	0.6	0	0	0	0	0	256
51	RG	Los Animas Creek and others	F	2.5	2.5	200	556	230	80	1,066	0.55	0.7	0.39	1,955	838	2,792	2,891
51	RG	Truth or Consequences	F	0	2.5	0	842	0	0	842	0.6	0	0	0	0	0	3,508
51	RG	Above Elephant Butte	F	3.42	3.42	300	350	352	117	1,119	0.6	0.7	0.42	3,716	1,593	5,309	2,662
					River Basin Subtotals	**500**	**2,168**	**3,897**	**828**	**7,393**				**19,483**	**9,868**	**29,351**	**13,005**
					County Totals	**500**	**2,168**	**3,897**	**828**	**7,393**				**19,483**	**9,868**	**29,351**	**13,005**
53	RG	La Jolla Area	D	0	1.4	0	15	0	0	15	0.85	0	0	0	0	0	25
53	RG	MRGCD Only	D	0	1.4	0	60	0	0	60	0.85	0	0	0	0	0	99
53	RG	Bosque del Apache	F	2.43	0	2,455	0	0	0	2,455	0.55	0.7	0.39	10,847	4,649	15,495	0
53	RG	MRGCD Only	F	2.47	2.47	3,526	0	8,901	5,934	18,361	0.5	0.56	0.28	61,389	48,235	109,624	29,314
53	RG	La Jolla Area	F	2.54	2.54	30	40	168	112	350	0.55	0.7	0.39	914	392	1,306	702
53	RG	San Augustin Plains	S	0	2.12	0	1,120	0	0	1,120	0.65	0	0	0	0	0	3,653
					River Basin Subtotals	**6,011**	**1,235**	**9,069**	**6,046**	**22,361**				**73,150**	**53,275**	**126,425**	**33,792**
					County Totals	**6,011**	**1,235**	**9,069**	**6,046**	**22,361**				**73,150**	**53,275**	**126,425**	**33,792**

Key: CN=county number; RVB=river basin; T=type of irrigation system (i.e., drip (D), flood (F), or sprinkler (S)); CIRSW=consumptive irrigation requirement for acreage irrigated with surface water; CIRGW=consumptive irrigation requirement for acreage irrigated with groundwater; ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with groundwater only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated; EF=on-farm irrigation efficiency; EC=off-farm conveyance efficiency; EJ=project efficiency; TFSW=total farm withdrawal, surface water; CLSW=surface water conveyance losses from stream or reservoir to farm headgate; TPWSW=total project withdrawals, surface water; TPWGW=total project withdrawals, groundwater; * Adjusted CIR or efficiency for water shortages in the area please see Chapter 3 for a description; # water applied (not CIR), ## Due to report format and water shortages this Ef is not a true measure of efficiency, **NIIP numbers are as reported by NMISC.

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CN	RVB	LOCALE	T	CIRSW	CIRGW	ASWO	AGWO	ASWC	AGWC	TAI	EF	EC	EJ	TFWSW	CLSW	TPWSW	TPWGW
55	RG	Taos & Vicinity	F	1.28	0	13,090	0	0	0	13,090	0.5	0.7	0.35	33,510	14,362	47,872	0
55	RG	Cerro & Questa	F	1.03	0	4,245	0	0	0	4,245	0.5	0.6	0.3	8,745	5,830	14,575	0
55	RG	Costilla	F	1.06	0	5,390	0	0	0	5,390	0.5	0.6	0.3	11,427	7,618	19,045	0
55	RG	Embudo & Vicinity	F	1.52	0	5,020	0	0	0	5,020	0.5	0.7	0.35	15,261	6,540	21,801	0
55	RG	Pilar & Ojo Caliente	F	0.91	0	85	0	0	0	85	0.5	0.9	0.45	155	17	172	0
55	RG	Taos & Vicinity	S	0	1.4	0	50	0	0	50	0.65	0	0	0	0	0	108
55	RG	Embudo & Vicinity	S	0	1.56	0	250	0	0	250	0.65	0	0	0	0	0	600
55	RG	Costilla	S	0	0.91	0	460	0	0	460	0.65	0	0	0	0	0	644
55	RG	Cerro & Questa	S	0	1.13	0	600	0	0	600	0.65	0	0	0	0	0	1,043
					River Basin Subtotals	**27,830**	**1,360**	**0**	**0**	**29,190**				**69,097**	**34,367**	**103,464**	**2,395**
					County Totals	**27,830**	**1,360**	**0**	**0**	**29,190**				**69,097**	**34,367**	**103,464**	**2,395**
57	RG	Estancia Basin	D	0	0.89	0	30	0	0	30	0.85	0	0	0	0	0	31
57	RG	Estancia Basin	F	0	1.75	0	3,877	0	0	3,877	0.6	0	0	0	0	0	11,308
57	RG	Estancia Basin	S	0	1.53	0	13,399	0	0	13,399	0.65	0	0	0	0	0	31,539
					River Basin Subtotals	**0**	**17,306**	**0**	**0**	**17,306**				**0**	**0**	**0**	**42,879**
					County Totals	**0**	**17,306**	**0**	**0**	**17,306**				**0**	**0**	**0**	**42,879**
59	AWR	Clayton & Vicinity	D	0	2.2	0	15	0	0	15	0.85	0	0	0	0	0	39
59	AWR	Clayton & Vicinity	F	0	2.2	0	100	0	0	100	0.6	0	0	0	0	0	367
59	AWR	Dry Cimarron	F	0.96	0	450	0	0	0	450	0.55	0.7	0.39	785	337	1,122	0
59	AWR	Tramperos Creek	F	0	1.02	0	200	0	0	200	0.55	0	0	0	0	0	371

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59	AWR	Clayton & Vicinity	S	0	0.77	0	39,135	0	0	39,135	0.65	0	0	0	0	0	46,360
59	AWR	Dry Cimarron	S	0	1.17	0	2,000	0	0	2,000	0.65	0	0	0	0	0	3,600
					River Basin Subtotals	**450**	**41,450**	**0**	**0**	**41,900**				**785**	**337**	**1,122**	**50,736**
					County Totals	**450**	**41,450**	**0**	**0**	**41,900**				**785**	**337**	**1,122**	**50,736**
61	RG	MRGCD Only	D	0	1.7	0	45	0	0	45	0.85	0	0	0	0	0	90
61	RG	MRGCD Only	F	2.39	2.39	15,069	0	5,677	1,892	22,638	0.5	0.56	0.28	99,166	77,916	177,082	9,044
					River Basin Subtotals	**15,069**	**45**	**5,677**	**1,892**	**22,683**				**99,166**	**77,916**	**177,082**	**9,134**
					County Totals	**15,069**	**45**	**5,677**	**1,892**	**22,683**				**99,166**	**77,916**	**177,082**	**9,134**
					State Totals	**279,665**	**464,177**	**80,603**	**50,970**	**875,415**				**959,227**	**608,901**	**1,730,927**	**1,344,587**

Key: CN=county number; RVB=river basin; T=type of irrigation system (i.e., drip (D), flood (F), or sprinkler (S)); CIRSW=consumptive irrigation requirement for acreage irrigated with surface water; CIRGW=consumptive irrigation requirement for acreage irrigated with groundwater; ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with groundwater only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated; EF=on-farm irrigation efficiency; EC=off-farm conveyance efficiency; EJ=project efficiency; TFSW=total farm withdrawal, surface water; CLSW=surface water conveyance losses from stream or reservoir to farm headgate; TPWSW=total project withdrawals, surface water; TPWGW=total project withdrawals, groundwater; * Adjusted CIR or efficiency for water shortages in the area please see Chapter 3 for a description; # water applied (not CIR), ## Due to report format and water shortages this Ef is not a true measure of efficiency, **NIIP numbers are as reported by NMISC.

Table 9. Irrigated Agriculture. Summary of acreage irrigated, withdrawals and conveyance losses (acre-feet) in New Mexico river basins, 2005.

River Basin	T	ASWO	AGWO	ASWC	AGWC	TAI	TFWSW	CLSW	TPWSW	TPWGW
Arkansas-White-Red	D	0	95	0	0	95	0	0	0	123
Arkansas-White-Red	F	62,504	463	0	0	62,967	69,044	48,601	117,645	984
Arkansas-White-Red	S	1,950	43,951	0	0	45,901	3,252	1,898	5,151	56,184
River Basin Subtotals		**64,454**	**44,509**	**0**	**0**	**108,963**	**72,296**	**50,499**	**122,796**	**57,291**
Lower Colorado	D	2,250	0	0	2,250	0	0	0	8,918	
Lower Colorado	F	3,082	8,585	1,503	878	14,048	14,787	35,516	50,303	31,693
Lower Colorado	S	0	11,990	0	0	11,990	0	0	0	47,781
River Basin Subtotals		**3,082**	**22,825**	**1503**	**878**	**28,288**	**14,787**	**35,516**	**50,303**	**88,392**
Pecos	D	0	565	0	0	565	0	0	0	1,098
Pecos	F	21,977	75,602	14,762	6,073	118,414	137,576	62,822	200,398	268,776
Pecos	S	660	37,389	0	0	38,049	975	0	975	100,368
River Basin Subtotals		**22,637**	**113,556**	**14762**	**6073**	**157,028**	**138,551**	**62,822**	**201,373**	**370,242**
Rio Grande	D	0	15,922	0	0	15,922	0	0	0	37,663
Rio Grande	F	109,299	19,251	64,338	44,019	236,907	640,194	421,022	1,061,216	254,943
Rio Grande	S	200	28,853	0	0	29,053	680	0	680	83,281
River Basin Subtotals		**109,499**	**64,026**	**64338**	**44019**	**281,882**	**640,874**	**421,022**	**1,061,896**	**375,887**
Texas Gulf	D	0	43	0	0	43	0	0	0	88
Texas Gulf	F	0	0	0	0	0	0	0	0	0
Texas Gulf	S	219,218	219,218	452,687						
River Basin Subtotals		**0**	**219,261**	**0**	**0**	**219,261**	**0**	**0**	**0**	**452,775**
Upper Colorado	D	0	0	0	0	0	0	0	0	0
Upper Colorado	F	16,263	0	0	0	16,263	68,138	29,026	97,164	0
Upper Colorado	S	63,730	0	0	0	63,730	24,581	10,016	197,395	0
River Basin Subtotals		**79,993**	**0**	**0**	**0**	**79,993**	**92,719**	**39,042**	**294,559**	**0**
	State Totals	**279,665**	**464,177**	**80603**	**50970**	**875,415**	**959,227**	**608,901**	**1,730,927**	**1,344,587**

Key: RVB=river basin; T=type of irrigation system, i.e., drip (D), flood (F), or sprinkler (S); ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with ground water only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated; TFSW=total farm withdrawal, surface water; CLSW=surface water conveyance losses from stream or reservoir to farm headgate; TPWSW=total project withdrawals, surface water; TPWGW=total project withdrawals, groundwater.

Table 10. Irrigated acreage and sources of irrigation in New Mexico counties, 2005.

County	ASWO	AGWO	ASWC	AGWC	TAI
Bernalillo	3,576	20	1,549	516	5,661
Catron	1,261	100	0	0	1,361
Chaves	516	77,058	3,305	725	81,604
Cibola	1,055	1,450	352	151	3,008
Colfax	19,434	925	0	0	20,359
Curry	0	86,743	0	0	86,743
De Baca	5,510	5,024	0	0	10,534
Dona Ana	0	2,771	39,461	32,934	75,166
Eddy	3,045	26,880	10,274	4,841	45,040
Grant	1,573	1,155	627	294	3,649
Guadalupe	3,144	532	0	0	3,676
Harding	0	1,545	0	0	1,545
Hidalgo	0	22,636	1,276	850	24,762
Lea	0	46,835	0	0	46,835
Lincoln	1,456	944	1,183	507	4,090
Los Alamos	0	0	0	0	0
Luna	10,550	21,412	600	600	33,162
McKinley	878	0	0	0	878
Mora	14,830	50	0	0	14,880
Otero	875	6,302	1,071	357	8,605
Quay	27,095	3,217	0	0	30,312
Rio Arriba	30,594	535	210	70	31,409
Roosevelt	0	86,353	0	0	86,353
San Juan	79,893	0	0	0	79,893
San Miguel	10,986	0	0	0	10,986
Sandoval	8,349	25	462	154	8,990
Santa Fe	5,185	8,101	1,590	205	15,081
Sierra	500	2,168	3,897	828	7,393
Socorro	6,011	1,235	9,069	6,046	22,361
Taos	27,830	1,360	0	0	29,190
Torrance	0	17,306	0	0	17,306
Union	450	41,450	0	0	41,900
Valencia	15,069	45	5,677	1,892	22,683
State Totals	**279,665**	**464,177**	**80,603**	**50,970**	**875,415**

Key: ASWO=acreage irrigated with surface water only; AGWO=acreage irrigated with groundwater only; ASWC=surface water component of acreage irrigated with combined water, i.e., both surface and groundwater; AGWC=groundwater component of acreage irrigated with combined water; TAI=total acreage irrigated.

Table 11. Acreage irrigated by drip, flood, and sprinkler application methods and sources of irrigation water in New Mexico counties, 2005. Data reported in acres.

County	DASW	DAGW	TDA	FASW	FAGW	TFA	SASW	SAGW	TSA	TAI
Bernalillo	0	0	0	5,125	536	5,661	0	0	0	5,661
Catron	0	0	0	1,261	100	1,361	0	0	0	1,361
Chaves	0	340	340	3,821	48,940	52,761	0	28,503	28,503	81,604
Cibola	0	20	20	1,407	381	1,788	0	1,200	1,200	3,008
Colfax	0	0	0	18,584	0	18,584	850	925	1,775	20,359
Curry	0	0	0	0	0	0	0	86,743	86,743	86,743
De Baca	0	0	0	5,510	0	5,510	0	5,024	5,024	10,534
Dona Ana	0	150	150	39,461	34,785	74,246	0	770	770	75,166
Eddy	0	0	0	13,319	31,166	44,485	0	555	555	45,040
Grant	0	0	0	2,200	1,339	3,539	0	110	110	3,649
Guadalupe	0	0	0	3,144	517	3,661	0	15	15	3,676
Harding	0	0	0	0	20	20	0	1,525	1,525	1,545
Hidalgo	0	2,250	2,250	1,276	9,246	10,522	0	11,990	11,990	24,762
Lea	0	220	220	0	0	0	0	46,615	46,615	46,835
Lincoln	0	35	35	2,639	1,016	3,655	0	400	400	4,090
Los Alamos	0	0	0	0	0	0	0	0	0	0
Luna	0	13,157	13,157	11,150	6,427	17,577	0	2,428	2,428	33,162
McKinley	0	0	0	878	0	878	0	0	0	878
Mora	0	50	50	13,730	0	13,730	1,100	0	1,100	14,880
Otero	0	1,945	1,945	1,946	754	2,700	0	3,960	3,960	8,605
Quay	0	30	30	27,095	309	27,404	0	2,878	2,878	30,312
Rio Arriba	0	35	35	30,804	570	31,374	0	0	0	31,409
Roosevelt	0	43	43	0	0	0	0	86,310	86,310	86,353
San Juan	0	0	0	16,163	0	16,163	63,730	0	63,730	79,893
San Miguel	0	0	0	10,326	0	`	660	0	660	10,986
Sandoval	0	25	25	8,611	154	8,765	200	0	200	8,990
Santa Fe	0	90	90	6,775	3,780	10,555	0	4,436	4,436	15,081
Sierra	0	320	320	4,397	2,676	7,073	0	0	0	7,393
Socorro	0	75	75	15,080	6,086	21,166	0	1,120	1,120	22,361
Taos	0	0	0	27,830	0	27,830	0	1,360	1,360	29,190
Torrance	0	30	30	0	3,877	3,877	0	13,399	13,399	17,306
Union	0	15	15	450	300	750	0	41,135	41,135	41,900
Valencia	0	45	45	20,746	1,892	22,638	0	0	0	22,683
State Totals	**0**	**18,875**	**18,875**	**293,728**	**154,871**	**448,599**	**66,540**	**341,401**	**407,941**	**875,415**

Key: DASW=drip irrigated acreage supplied by surface water; DAGW=drip irrigated acreage supplied by groundwater; TDA=total drip irrigated acreage; FASW=flood irrigated acreage supplied by surface water; FAGW=flood irrigated acreage supplied by groundwater; TFA=total flood irrigated acreage; SASW=sprinkler irrigated acreage supplied by surface water; SAGW=sprinkler irrigated acreage supplied by groundwater; TSA=total sprinkler irrigated acreage; TAI=total acres irrigated.

Table 12. Acreage irrigated by drip, flood, and sprinkler application methods and sources of irrigation water in New Mexico river basins, 2005. Data reported in acres.

River Basin	DASW	DAGW	TDA	FASW	FAGW	TFA	SASW	SAGW	TSA	TAI
Arkansas-White-Red	0	95	95	62,504	463	62,967	1,950	43,951	45,901	108,963
Lower Colorado	0	2,250	2,250	4,585	9,463	14,048	0	11,990	11,990	28,288
Pecos	0	565	565	36,739	81,675	118,414	660	37,389	38,049	157,028
Rio Grande	0	15,922	15,922	173,637	63,270	236,907	200	28,853	29,053	281,882
Texas Gulf	0	43	43	0	0	0	0	219,218	219,218	219,261
Upper Colorado	0	0	0	16,263	0	16,263	63,730	0	63,730	79,993
State Totals	**0**	**18,875**	**18,875**	**293,728**	**154,871**	**448,599**	**66,540**	**341,401**	**407,941**	**875,415**

Key: DASW=drip irrigated acreage supplied by surface water; DAGW=drip irrigated acreage supplied by groundwater; TDA=total drip irrigated acreage; FASW=flood irrigated acreage supplied by surface water; FAGW=flood irrigated acreage supplied by groundwater; TFA=total flood irrigated acreage; SASW=sprinkler irrigated acreage supplied by surface water; SAGW=sprinkler irrigated acreage supplied by groundwater; TSA=total sprinkler irrigated acreage; TAI=total acres irrigated.

APPENDIX C. COUNTIES AND RIVER BASINS, AND MAPS

Table C-1. County code numbers (CN) established by the National Bureau of Standards and whole or part counties included in each river basin.

		River Basin					
County Number (CN)	County Name	Arkansas-White-Red (AWR)	Lower Colorado (LC)	Pecos (P)	Rio Grande (RG)	Texas Gulf (TG)	Upper Colorado (UC)
1	Bernalillo				X		
3	Catron		X		X		
5	Chaves			X			
6	Cibola		X		X		
7	Colfax	X					
9	Curry	X				X	
11	DeBaca			X			
13	Dona Ana				X		
15	Eddy			X			
17	Grant		X		X		
19	Guadalupe	X		X			
21	Harding	X					
23	Hidalgo		X		X		
25	Lea			X		X	
27	Lincoln			X	X		
28	Los Alamos				X		
29	Luna		X		X		
31	McKinley		X		X		X
33	Mora	X					
35	Otero			X	X		
37	Quay	X		X			
39	Rio Arriba				X		X
41	Roosevelt					X	
43	Sandoval				X		X
45	San Juan						X
47	San Miguel	X		X	X		
49	Santa Fe			X	X		
51	Sierra				X		
53	Socorro				X		
55	Taos				X		
57	Torrance			X	X		
59	Union	X					
61	Valencia				X		

Figure C-1. River basins in New Mexico

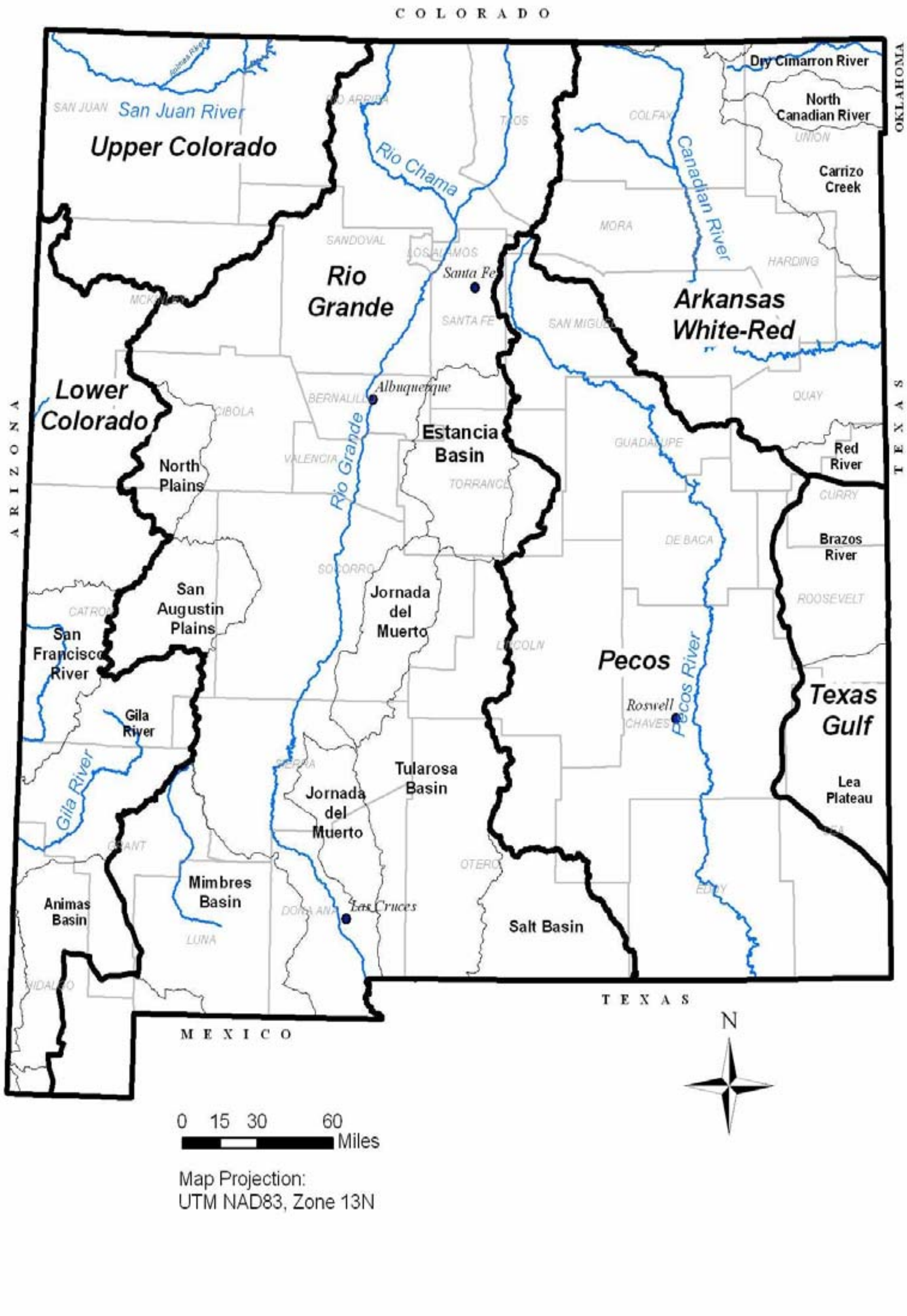
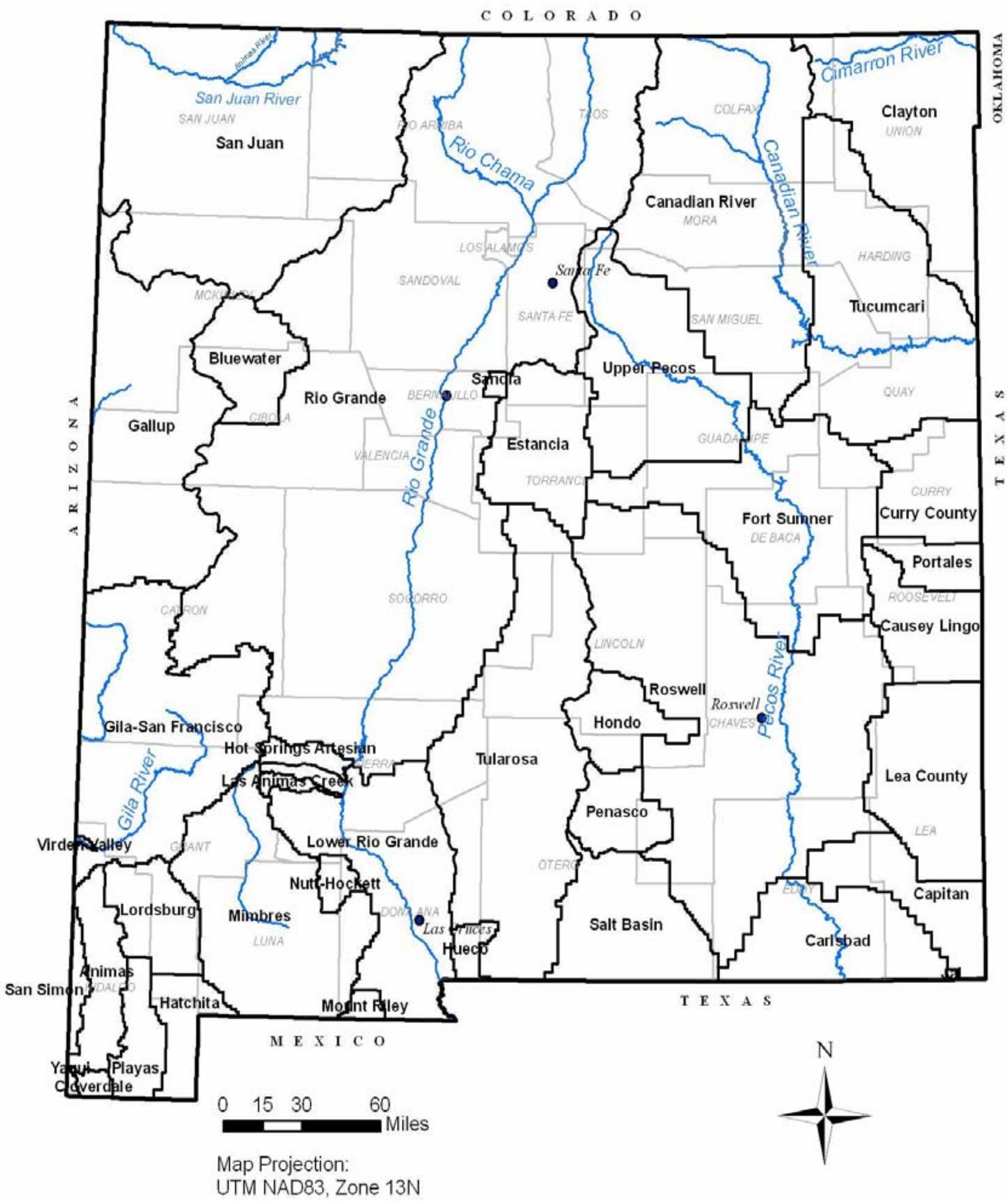


Figure C-2. Groundwater basins in New Mexico



BIBLIOGRAPHY

American Society of Civil Engineers (1969). Design and construction of sanitary and storm sewers. American Society of Civil Engineers, New York, NY.

American Water Works Association (1985). Water sources and transmission. American Water Works Association, Denver, CO.

American Water Works Association (1986). Introduction to water sources and transmission. American Water Works Association, Denver, CO.

American Water Works Association (2006). Water Conservation Programs—A Planning Manual (Manual 52), Denver, CO.

American Water Works Association (2007). http://www.awwa.org/Resources/Content.cfm?ItemNumber=588. December 11, 2007.

Anderson, Damann L and Siegrist, Robert L (1986). Performance of ultra-low flush toilets in Phoenix, Arizona. Ayers Associates, Madison, WI.

Anonymous (1980). Holding the line on city water investments. In *The Cross-Section*, 26(5), pp. 1-3. High Plains Underground Water Conservation District No. 1, Lubbock, TX.

Anonymous (1980). Don't waste water: know system, plant and soil. In *Irrigation Age*, April, 1980, pp. 92-93. Webb Publishing, St. Paul, MN.

Anonymous (1989). You've come a long way baby. In *The Cross-Section*, 35(11), pp. 1-3. High Plains Underground Water Conservation District No. 1, Lubbock, TX.

Anonymous (1990). How to save water. In "Consumer Reports," 55(7), pp. 465-469. Consumers Union, Boulder, CO.

Anonymous (1996). Washing machines. In "Consumer Reports," 61(7), July 1996, pp. 36-39. Consumers Union, Mount Vernon, NY.

Anonymous (1997). Washing machines. In "Consumer Reports," 62(7), July 1997, pp. 48-51. Consumers Union, Mount Vernon, NY.

Anonymous (1997). Dishwashers. In "Consumer Reports," 62(1), January 1997, pp. 42-45. Consumers Union, Mount Vernon, NY.

Bailey, James R (1984). A study of flow reduction and treatment of wastewater from households. General Dynamics, Electric Boat Division, Groton, CT.

Bennett, Edwin R and Linstedt, K Daniel (1975). Individual home wastewater characterization and treatment. Completion Report No. 66. Colorado Water Resources Research Institute, Colorado State University, Fort Collins, CO.

Blair, Jess (1981). Tailwater pits may not be practical. In *Irrigation Age*, January, 1981, p. 12. Webb Publishing Company, St. Paul, MN.

Blaney, Harry F and Criddle, Wayne D (1950). Determining water requirements in irrigated areas from climatological and irrigation data. SCS-TP-96. U.S. Department of Agriculture, Soil Conservation Research Service, Washington, DC.

Blaney, Harry F and Criddle, Wayne D (1962). Determining consumptive use and irrigation water requirements. Technical Bulletin 1275. U.S. Department of Agriculture, Soil Conservation Research Service, Washington, DC.

Blaney, Harry F, Ewing, PA, Morin, KV, and Criddle, WD (1942). Consumptive water use requirements. In “Report of Participating Agencies, Pecos River Joint Investigation,” pp. 170-231. National Resources Planning Board, Washington, DC.

Blaney, Harry F and Hanson, Eldon G (1965). Consumptive use and water requirements in New Mexico. Technical Report 32. New Mexico State Engineer Office, Santa Fe, NM.

Borrelli, John, Pochop, Larry O, Kneebone, William R, et al. (1981). Blaney-Criddle coefficients for western turf grasses. In *Journal of the Irrigation and Drainage Division*, 107(IR4), pp. 333-341. American Society of Civil Engineers, New York, NY.

Brown and Caldwell (1984). Residential water conservation projects—summary report. U.S. Department of Housing and Urban Development, Office of Policy Development and Research, Washington, DC.

Burt, Charles M (1995). The surface irrigation manual: a comprehensive guide to design and operation of surface irrigation systems. Waterman Industries, Exeter, CA.

California Department of Water Resources (1982). Water use by manufacturing industries in California. Bulletin, 124-3. California Department of Water Resources, Sacramento, CA.

California Department of Water Resources (1984). Water conservation in California. Bulletin 198-84. California Department of Water Resources, Sacramento, CA.

Center for the Study of Law and Politics (1990). Water: conservation and reclamation. Center for the Study of Law and Politics, San Francisco, CA.

Cohen, Sheldon and Wallman, Harold (1974). Demonstration of waste flow reduction from households. EPA-670/-2-74-071. General Dynamics Electric Boat Division, Groton, CT.

Cotter, DJ and Croft, DB (1974). Water application practices and landscape attributes associated with residential water consumption. WRRI Report No. 49. New Mexico Water Resources Research Institute, Las Cruces, NM.

Derecki, Jan A (1975). Evaporation from Lake Erie. Technical Report ERL 342-GLERL 3. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Boulder, CO.

Fetter, CW (2001). Applied Hydrogeology, 4th Edition. Prentice Hall, Upper Saddle River, New Jersey.

Flack, J Ernest, Weakley, Wade P and Hill, Duane W (1977). Achieving urban water conservation: a handbook. Colorado Water Resources Institute, Colorado State University, Fort Collins, CO.

Follansbee, Robert (1934). Evaporation from reservoir surfaces. In *Transactions*, Vol. 99, pp. 704-715. American Society of Civil Engineers, New York, NY.

Follett, W.W. (1896). A Study of the Use of Water for Irrigation on the Rio Grande del Norte above Ft. Quitman, Texas. Proceedings of the International Boundary Commission.

Fryer, James (1990). Ultra-low flush toilet pilot program. Marin Municipal Water District Environmental Resources Division, Corte Medera, CA.

Golf New Mexico Magazine (2006a). http://www.golfnewmexico.com/Pages/albuquerque.htm. July, 18, 2006.

Golf New Mexico Magazine (2006b). http://www.golfnewmexico.com/Pages/northern.htm. July, 18, 2006.

Golf New Mexico Magazine (2006c). http://www.golfnewmexico.com/Pages/southern.htm. July, 18, 2006.

Grisham, Alice and Fleming, William M (1989). Long-term options for municipal water conservation. In *Journal of the American Water Works Association*, 81(3), pp. 34-42. American Water Works Association, Denver, CO.

Harbeck, GH, Kohler, MA, Koberg, GE, et al (1958). Water-loss investigations: Lake Mead studies. Geological Survey Professional Paper 298. U.S. Government Printing Office, Washington, DC.

Jensen, Marvin E, ed. (1974). Consumptive use of water and irrigation water requirements. American Society of Civil Engineers, New York, NY.

Kohler, MA, Nordenson, TJ and Fox, WE (1955). Evaporation from pans and lakes. U.S. Department of Commerce, Weather Bureau, Washington, DC.

Kollar, KL and Brewer, R (1980). Industrial development through water resources planning. In Energy and Water Use Forecasting, pp. 43-47. American Water Works Association, Denver, Co.

Lansford, Robert R, et al (1982-90). Sources of irrigation water and irrigated and dry cropland acreages in New Mexico, by county. Research Reports 495, 514, 554, 571, 596, 620, 630, 638, and 650. New Mexico State University, Agricultural Experiment Station, Las Cruces, NM.

Lansford, Robert R, et al (1991-96). Sources of irrigation water and irrigated and dry cropland acreages in New Mexico, by county. Technical Report 4, 21, 22, 27. New Mexico State University, Agricultural Experiment Station, Las Cruces, NM.

Linaweaver, FP, Geyer, John C and Wolf, Jerome B (1967). A study of residential water use. John Hopkins University, Department of Environmental Engineering Science, Baltimore, MD.

Linsley, RK, Kohler, MA and Paulhus, Joseph, LH (1949). Applied hydrology. McGraw-Hill Book Company, New York, NY.

McCutcheon, Chuck (1991). Cheers, fears greet cash cows. In *Albuquerque Journal*, Sunday, January 20, 1991.

Mead, Daniel W (1950). Hydrology. McGraw-Hill Book Company, New York, NY.

Meyers, J Stuart (1962). Evaporation from the 17 western states. Geological Survey Professional Paper 272-D. U.S. Government Printing Office, Washington, DC.

Miyamoto, Seiichi (1983). Consumptive water use of irrigated pecans. In *Journal of American Horticulture Society*, 108(5), pp. 676-681. American Horticultural Society, Alexandria, VA.

Moyer, EE (1985). Economics of leak detection: a case study approach. American Water Works Association, Denver, CO.

Nakayama, FS and Bucks, DA, eds. (1986). Trickle irrigation for crop production. Elsevier Science Publishers, Amsterdam, Netherlands.

Natural Resources Conservation Service (1999). New Mexico basin outlook report, May 1, 1999. U.S. Department of Agriculture, Natural Resources Conservation Service, Washington, DC.

Navajo Agricultural Products Industry (1999). Navajo Indian irrigation project: water delivery system and operation and maintenance status report, 1999. Navajo Agricultural Products Industry, Farmington, NM.

New Mexico Agricultural Statistical Service (1985-2000). New Mexico agricultural statistics. New Mexico Department of Agriculture, Las Cruces, NM.

New Mexico Agricultural Statistics Service (1999). New Mexico agricultural statistics. New Mexico Department of Agriculture, Las Cruces, NM.

New Mexico Department of Agriculture (2006). 2005 New Mexico Agricultural Statistics. U.S. Department of Agriculture/New Mexico Department of Agriculture, Las Cruces, 72 pp.

New Mexico Interstate Stream Commission (2003). The Pecos River Master's Manual, pp. 27.

New Mexico State Engineer Office (1967). Water resources of New Mexico: occurrence, development, and use. New Mexico State Planning Office, Santa Fe, NM.

Pacific Southwest Inter-Agency Committee (1963). Recommended design criteria for water works in recreational areas. Pacific Southwest Inter-Agency Committee, Recreation Subcommittee Task Force, San Francisco, CA.

Prasifka, David W (1988). Current trends in water-supply planning. Van Nostrand Reinhold, New York, NY.

Reid, George W (1976). An exploratory study of possible energy savings as a result of water conservation practices. OWRT Project A-061-OKLA. University of Oklahoma, Bureau of Environmental Resources Research, Norman, OK.

Renfro, George M (1955). Applying water under the surface of the ground. In Water: The Yearbook of Agriculture 1955, pp. 273-278. U.S. Department of Agriculture, Washington, DC.

Reynolds, SE (1959). New Mexico statement to United States Senate Committee on national water resources. New Mexico State Engineer Office, Santa Fe, NM.

Richardson, Gail (1992). New technology cuts farm water waste from the ground up. In *U.S. Water News*, 8(10), p. 7. U.S. Water News, Halstead, KS.

Rocky Mountain Institute (1991). Water efficiency: a resource for utility managers, community planners, and other decisionmakers. Rocky Mountain Institute, Snowmass, CO.

Rohwer, Carl (1934). Evaporation from different types of pans. In *Transactions*, Vol. 99, pp. 673-703. American Society of Civil Engineers, New York, NY.

Ruen, Jim (1977). Monitoring saves money and water. In *Irrigation Age*, September, 1977, pp. 16, 19. Webb Publishing Company, St. Paul, MN.

Sammis, TW et al (1979). Consumptive use and yields of crops in New Mexico. WRRI Report No. 115. New Mexico Water Research Institute, Las Cruces, NM.

Sammis, TW, Gregory, EJ and Kallsen, CE (1982). Estimating evapotranspiration with water-production functions or the Blaney-Criddle method. In *Transactions*, 25(6), pp. 1656-61. American Society of Agricultural Engineers, St. Joseph, MI.

Siegrist, Robert, Witt, Michael, Boyle, William C (1976). Characteristics of rural household wastewater. In *Journal of the Environmental Engineering Division*, 102(EE3), pp. 533-548. American Society of Civil Engineers, New York, NY.

Soil Conservation Service (1975). Livestock water use. U.S. Department of Agriculture, Washington, DC.

Sorensen, Earl F (1977). Water use by categories in New Mexico counties and river basins, and irrigated and dryland cropland acreage in 1975. Technical Report 41. New Mexico State Engineer Office, Santa Fe, NM.

Sorensen, Earl F (1982). Water use by categories in New Mexico counties and river basins, and irrigated acreage in 1980. Technical Report 44. New Mexico State Engineer Office, Santa Fe, NM.

Sternberg, Yaron M (1967). Analysis of sprinkler irrigation losses. In *Journal of the Irrigation and Drainage Division*, 93(IR4), pp. 111-124. American Society of Civil Engineers, New York, NY.

Subcommittee on Evaporation of the Special Committee on Irrigation Hydraulics (1934). In *Transactions*, Vol. 99, pp. 716-18. American Society of Civil Engineers, New York, NY.

Sweeten, John M, O'Neal, Henry P and Withers, Richard F (1990). Feedyard energy guidelines. Texas A & M University, Agricultural Extension Service, College Station, TX.

Sweeten, JM and Wolfe, ML (1990). Runoff and wastewater management systems for open lot dairies. In *Agricultural and Food Processing Wastes*, pp. 361-375. American Society of Agricultural Engineers, St. Joseph, MI.

Sykes, Joseph F (1955). Animals and fowl and water. In Water: The Yearbook of Agriculture 1955, pp. 14-18. U.S. Department of Agriculture.

Tchobanoglous, George, ed. (1979). Wastewater engineering: treatment, disposal, reuse. McGraw-Hill Book Company, New York, NY.

Texas Agricultural Experiment Station (1986). Water conservation in urban landscapes. Texas A&M University, Agricultural Experiment Station, College Station, TX.

University of New Mexico, Bureau of Business and Economic Research (1990). http://www.unm.edu/~bber/demo/cpr-hhs.htm from Census in New Mexico, Volume 1: Population and Housing Characteristics for the State and Counties from the 1980 and 1990 Censuses. University of New Mexico, Albuquerque, New Mexico.

U.S. Bureau of Reclamation (1950). A basis for formulating a water resources program for New Mexico. U.S. Bureau of Reclamation open-file report.

U.S. Bureau of Reclamation and New Mexico Interstate Stream Commission (1976). New Mexico water resources assessment for planning purposes. U.S. Bureau of Reclamation, Amarillo, TX.

U.S. Census Bureau (2000). Census 2000 Profiles of General Demographic Characteristics, Table DP-1.

U.S. Census Bureau (2005). Annual Estimates of the Population for the United States and States, and for Puerto Rico: April 1, 2000 to July 1, 2005 (NST-EST2005-01).

U.S. Congress (1992). National Energy Policy and Conservation Act, 1992. http://thomas.loc.gov/cgi-bin/query/z?c102:H.R.776.ENR. (October 4, 2007).

U.S. Department of Agriculture (1987). Fact book of U.S. Agriculture. Miscellaneous Publication 1063. U.S. Government Printing Office, Washington, DC.

U.S. Department of Agriculture, U.S. Department of the Interior, and U.S. Environmental Protection Agency (1979). Irrigation water use and management. Interagency Task Force Report. U.S. Government Printing Office, Washington, DC.

U.S. Department of Agriculture, Soil and Conservation Service (1970). Irrigation Water Requirements: Technical Release No. 21., pp. 88.

U.S. Environmental Protection Agency (1980). Design manual: onsite wastewater treatment and disposal systems. U.S. Environmental Protection Agency, Office of Research and Development. Cincinnati, OH.

U.S. Environmental Protection Agency (1982). Manual of individual water systems. U.S. Environmental Protection Agency, Office of Drinking Water, Washington, DC.

U.S. Geological Survey (1954). Water-loss investigations; Lake Hefner studies, technical report. Geological Survey Professional Paper 269. U.S. Government Printing Office, Washington, DC.

U.S. Geological Survey (1954). Water-loss investigations; Lake Hefner studies, base data report. Geological Survey Professional Paper 270. U.S. Government Printing Office, Washington, DC.

U.S. Office of Management and Budget (1987). Standard industrial classification manual. U.S. Government Printing Office, Washington, D.C.

U.S. Office of Management and Budget (1987). Standard industrial classification manual. U.S. Government Printing Office, Washington, DC.

U.S. Public Health Service (1962). Individual water supply systems. Publication No. 24. U.S. Public Health Service, Bureau of Water Hygiene, Washington, DC.

Vickers, Amy (2001). Handbook of Water Use and Conservation. WaterPlow Press, Amherst, MA.

Vickers, Amy (1989). New Massachusetts toilet standard sets water conservation precedent. In *Journal of the American Water Works Association*, 81(3), pp. 48-51. American Water Works Association, Denver, CO.

Vickers, Amy (1990). Water-use efficiency standards for plumbing fixtures; benefits of national legislation. In *Journal of the American Water Works Association*, 82(5), pp. 51-54. American Water Works Association, Denver, CO.

Van der Leeden, Frits, Troise, Fred L, and Todd, David Keith (1990). The water encyclopedia. Lewis Publishers, Chelsea, MI.

Wiersma, Frank (1988). Personal letter from the Department of Agricultural Engineering, University of Arizona, Tucson.

Williams, Robert B and Culp, Gordon L, eds. (1986). Handbook of public water systems. Van Nostrand Reinhold, New York, NY.

Wilson, Brian C (1986). Water use in New Mexico in 1985. Technical Report 46. New Mexico State Engineer Office, Santa Fe, NM.

Wilson, Brian C (1990). The original and SCS modified Blaney-Criddle method. Microsoft FORTRAN program. New Mexico State Engineer Office, Santa Fe, NM.

Wilson, Brian C (1992a). Water use by categories in New Mexico counties and river basins, and irrigated acreage in 1990. Technical Report 47. New Mexico State Engineer Office, Santa Fe, NM.

Wilson, Brian C (1992b). The Original and SCS Modified Blaney-Criddle Method: Computer Software for the PC Age. OSE Interoffice Training Manual. New Mexico State Engineer Office, Santa Fe, NM.

Wilson, Brian C and Lucero, Anthony A (1997). Water use by categories in New Mexico counties and river basins, and irrigated acreage in 1995. Technical Report 49. New Mexico State Engineer Office, Santa Fe, NM.

Wilson, Brian C, Lucero, Anthony A, Romero, John T and Romero, P (2003). Water use by categories in New Mexico counties and river basins, and irrigated acreage in 2000. Technical Report 51. New Mexico State Engineer Office, Santa Fe, NM.