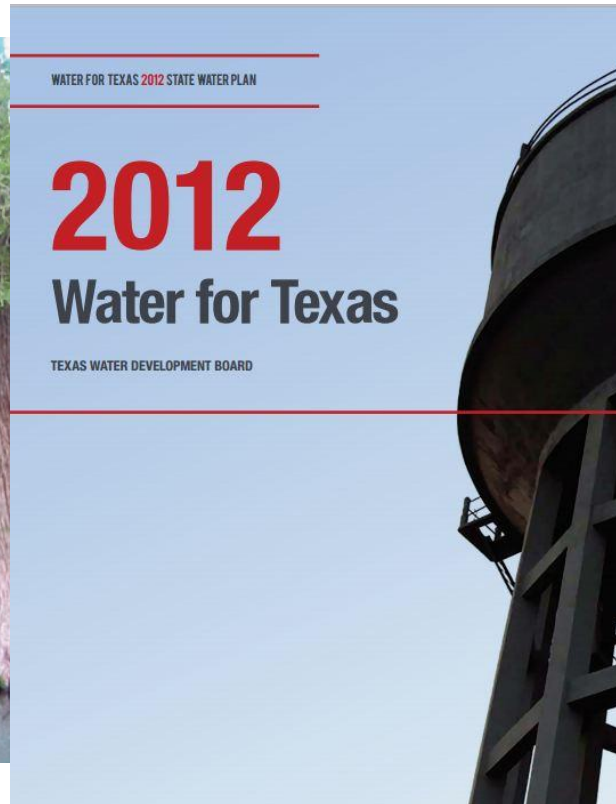
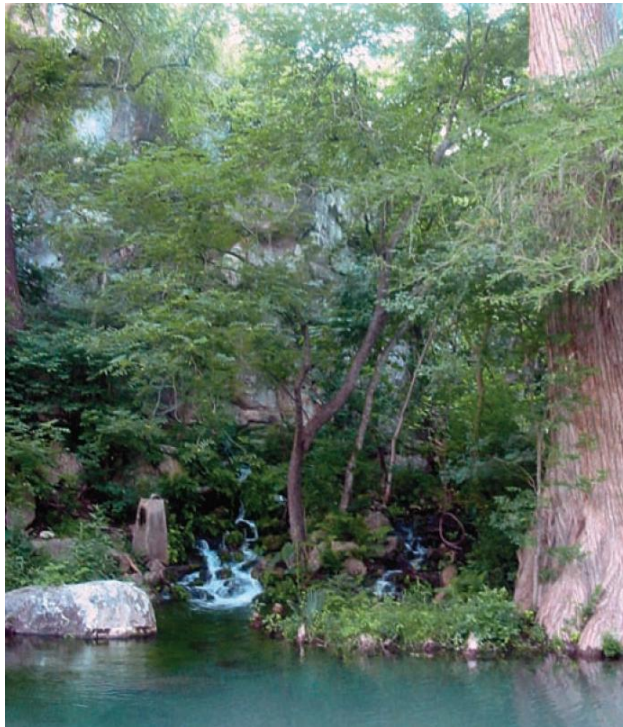


Current and future water demands and water needs during severe drought, Texas Hill Country

Raymond Slade, Jr.
Certified Professional Hydrologist



Introduction

Texas Water Development Board - Texas Water Plan 2012

Major Purpose of Plan

Estimate current and future water needs (shortages) and identify water management strategies and associated costs to meet future needs.

Based on

- Analyses of historic and current data for population and water use volumes
- Projections for water supply and water use based on population and growth projections
- 6 years – 2010, 2020, 2030, 2040, 2050, and 2060
- Severe drought conditions (when demand highest & supply lowest)
- Data values for water management categories (i.e., demand, supply, need)
- 6 water use types--municipal (**urban & rural**), irrigation, livestock, manufacturing, mining, & steam electric

Data available by individual water user groups (i.e., city water utilities, water districts) and stream basin within counties but aggregated in Plan by 16 Regional Water Management Groups

The Plan online at <http://www.twdb.state.tx.us/wrpi/swp/swp.asp>
Plans for each Region at <http://www.twdb.state.tx.us/wrpi/rwp/3rdround/2011RWP.asp>

Definitions for water management categories

- **Water demand:** amount of water needed for given year, considering all conservation and reuse measures are applied.
- **Existing water supply:** amount of water that can be produced during severe drought, based on current permits and contracts, and existing infrastructure.
- **Water need:** amount by which the water demand exceeds the existing supply.
- **Water management strategy supply:** amount of additional water that could be added to supply, if all feasible water management strategies are funded, built, and maintained.

Purpose of presentation

Present, for 17 county Hill Country area, water management data and identify **counties, **water-use types**, and **years** for which the water demand exceeds the supply. Such areas and years would experience needs (shortages) during severe drought.**

Note: The values for water needs and existing supplies herein are calculated based on data for individual water user groups, some of which provide water to users in more than one county. To simplify this presentation, the data values are aggregated and presented by county. However, some of the need and supply water volumes appropriated to a county will also be applicable to another (usually adjacent) county.

Included in the Water Plan but not in this presentation

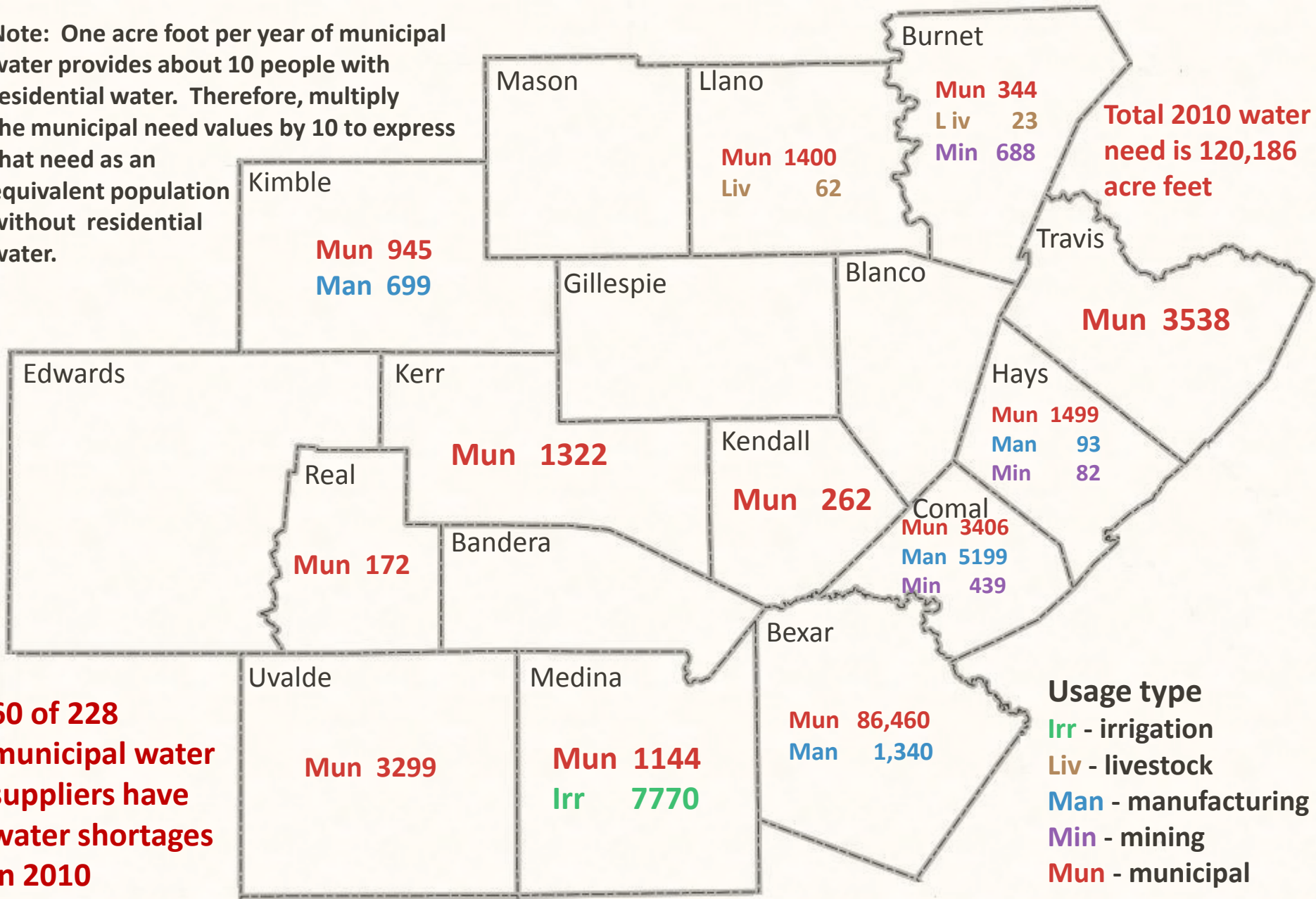
- **impacts of Water Management Strategies on water quality, agriculture, and natural resources**
- **summary of the economic impacts of not developing water management strategies— (i.e., increased unemployment & lost revenue resulting from decreased tourism)**

A table documenting current (2010) municipal (urban and rural) water demand, supply, and need values for individual water user groups with water shortages provided at the end of the presentation.

Amount of water needs during severe drought conditions, 2010

Data values represent acre feet per year.

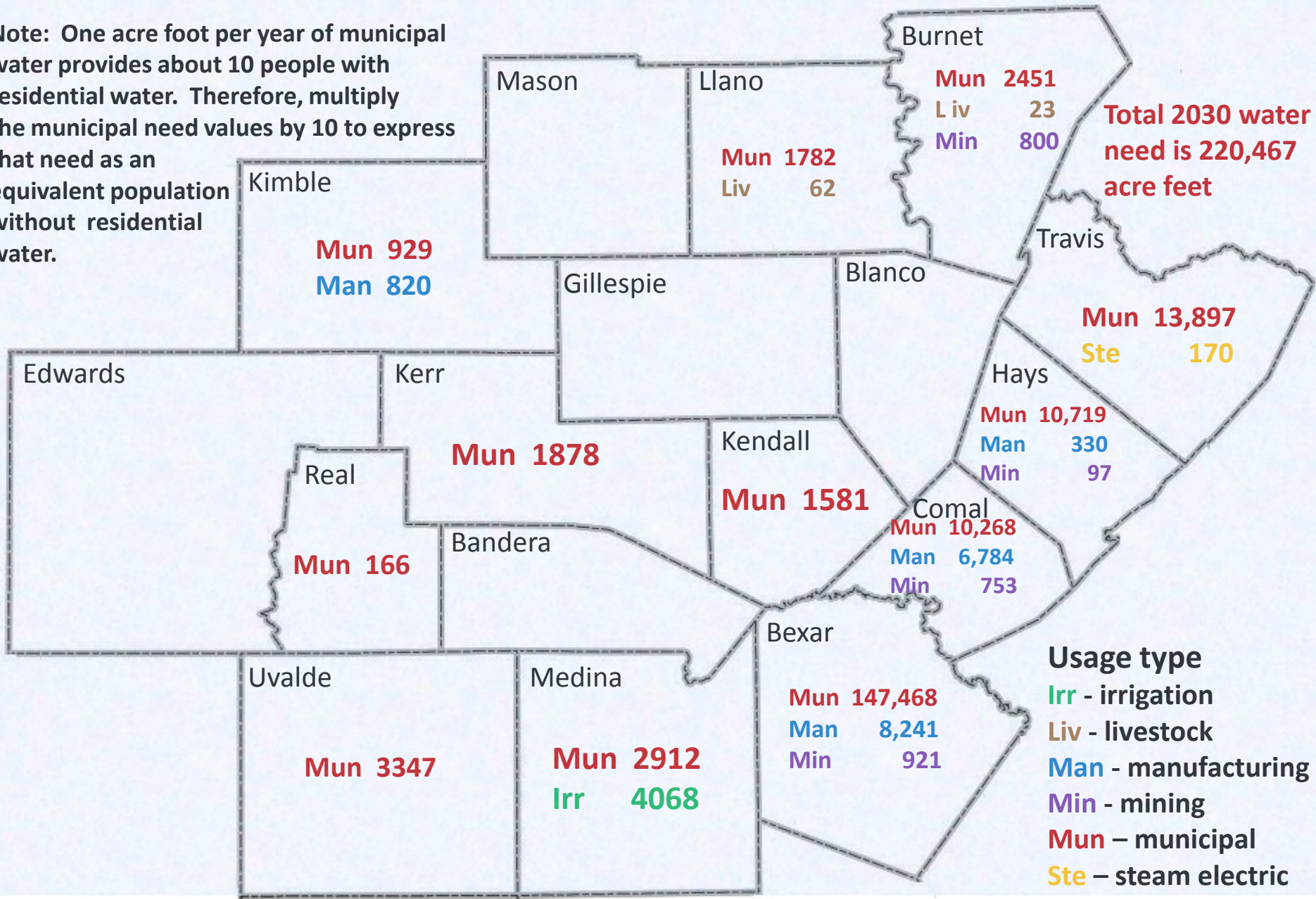
Note: One acre foot per year of municipal water provides about 10 people with residential water. Therefore, multiply the municipal need values by 10 to express that need as an equivalent population without residential water.



Amount of water needs during severe drought conditions, 2030

Data values represent acre feet per year.

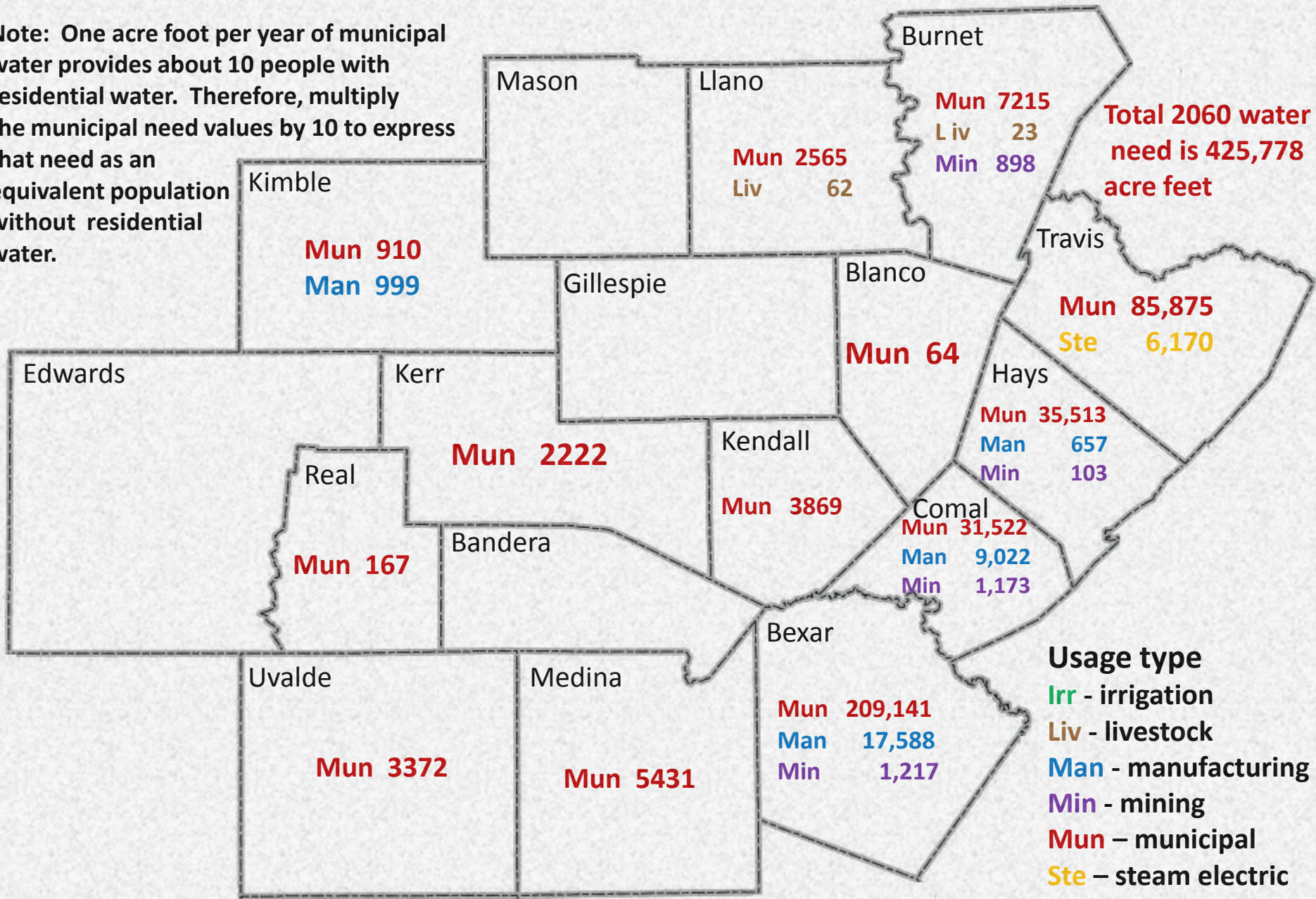
Note: One acre foot per year of municipal water provides about 10 people with residential water. Therefore, multiply the municipal need values by 10 to express that need as an equivalent population without residential water.



Amount of water needs during severe drought conditions, 2060

Data values represent acre feet per year.

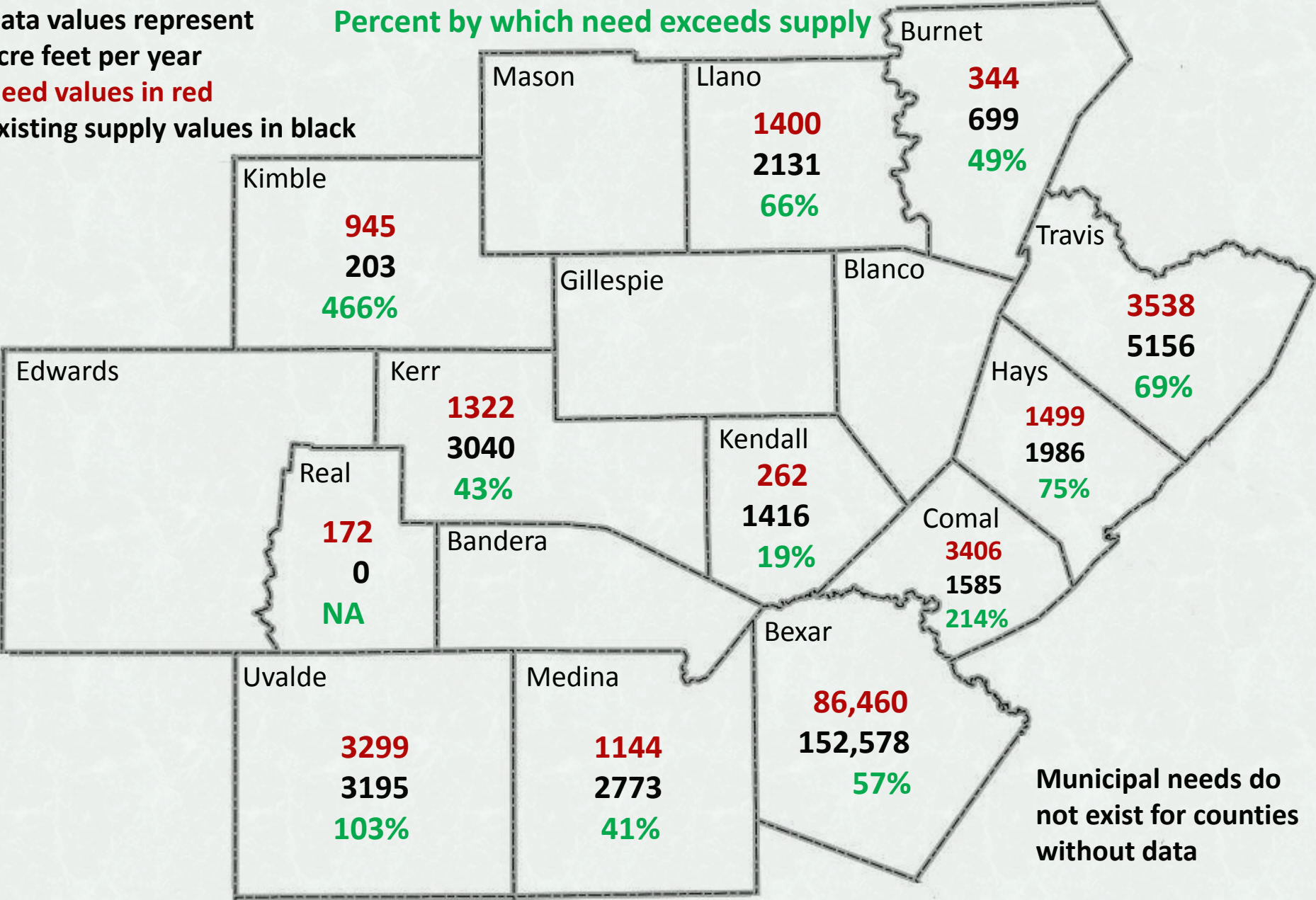
Note: One acre foot per year of municipal water provides about 10 people with residential water. Therefore, multiply the municipal need values by 10 to express that need as an equivalent population without residential water.



Comparison of data values for water needs and existing supplies for municipal (urban & rural) water use, 2010

Data values represent
acre feet per year
Need values in red
Existing supply values in black

Percent by which need exceeds supply

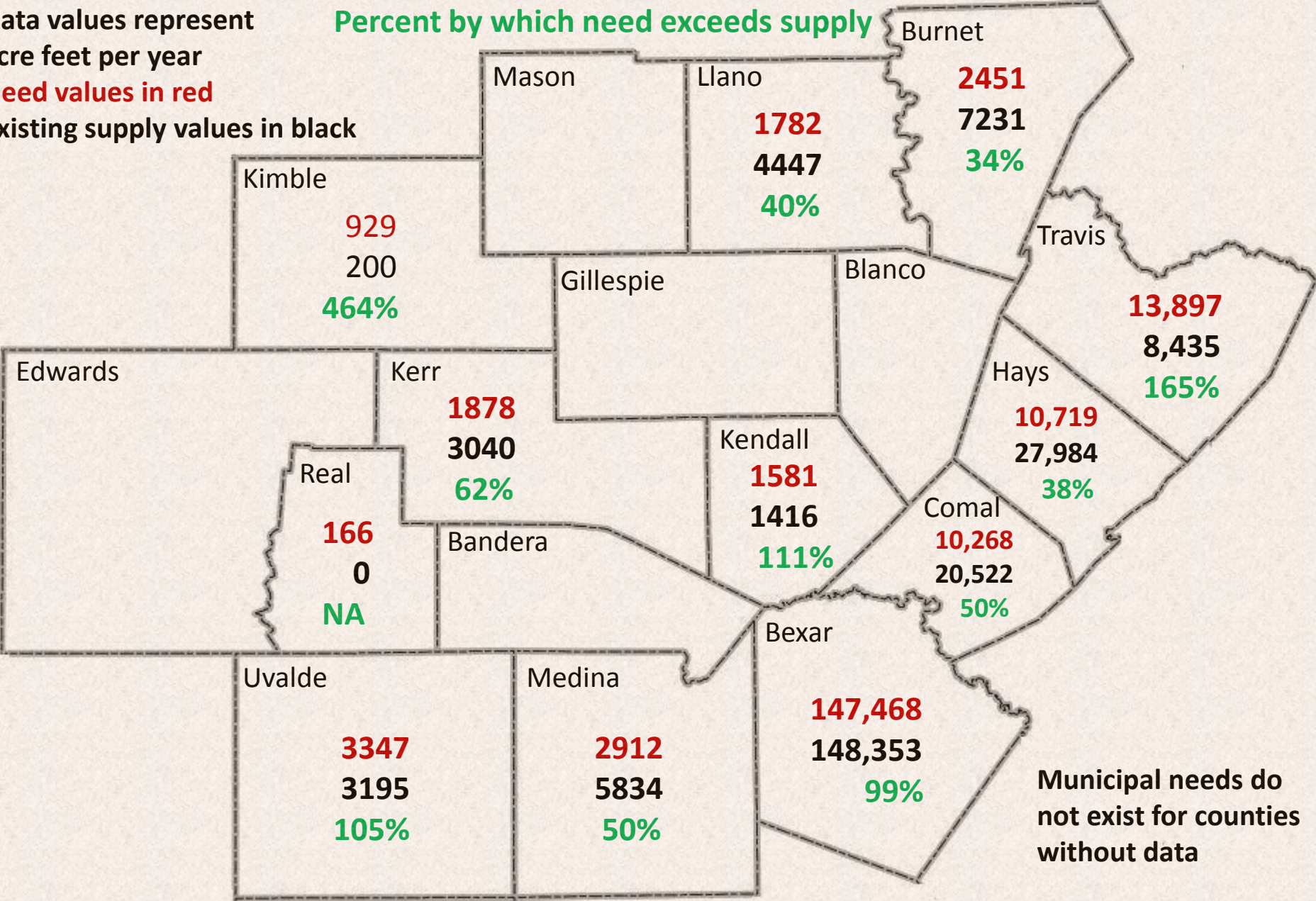


Municipal needs do
not exist for counties
without data

Comparison of data values for water needs and existing supplies for municipal (urban & rural) water use, 2030

Data values represent
acre feet per year
Need values in red
Existing supply values in black

Percent by which need exceeds supply



Hill Country Water Management Strategies

- Supply from strategies would **negate all water needs through 2060**
- Capital cost - **\$7.6 billion**
- Average annual cost - **\$500 million**

Statewide Water Management Strategies

- Supply from strategies do not negate all needs
- Capital cost **\$53 billion**
- Water providers need about **\$26.9 billion** in state financial assistance to implement the recommended strategies for municipal water user groups.

State Legislature funding for strategies

- 2007, 2009, and 2011: appropriated **\$1.47** billion in bonds
- 2011: \$100 million (**less than 0.2 % of capital cost**) appropriated

If strategies not funded, Hill Country water needs (shortages) would exist

Water need (shortages) Summary

2010

Note: 1 acre foot of water per year provides about 10 people with residential needs

- Total need 120, 186 acre feet
- 12 counties with municipal needs--**103,791 acre feet**
- Population of municipal suppliers with water shortages: **1.67 million people**

2030

- Total need 220, 467 acre feet
- 12 counties with municipal needs—**197,398 acre feet**
- Population of municipal suppliers with shortages: about **3 million people**

2060

- Total need 425,778 acre feet
- 13 counties have municipal needs – **387,866 acre feet**
- Population of municipal suppliers with shortages: about **6 million people**

The current (2010) municipal (urban and rural) water needs (shortages) greatly exceed existing supplies for 60 water suppliers in 12 of the 17 Hill Country counties. The amount by which the need exceeds the supply substantially increases in the future.

The following table presents current (2010) municipal (urban and rural) water demand, supply, and need values for individual water user groups with water shortages.

Tables presenting water management data by water user groups

Sorted by water user group name within counties

Hill County Municipal water demand, supply, and need,					
Bexar and Burnet Counties, 2010					
Only users with needs (shortages) presented. Values represent acre feet per year.					
Water User Group (WUG) Name	County	WUG Basin	Demand	Supply	Need
ALAMO HEIGHTS	BEXAR	SAN ANTONIO	2,071	1,479	(592)
ATASCOSA RURAL WSC	BEXAR	NUECES	38	16	(22)
ATASCOSA RURAL WSC	BEXAR	SAN ANTONIO	903	379	(524)
BEXAR MET WATER DISTRICT	BEXAR	NUECES	161	76	(85)
BEXAR MET WATER DISTRICT	BEXAR	SAN ANTONIO	8,736	5,630	(3,106)
CASTLE HILLS	BEXAR	SAN ANTONIO	820	724	(96)
HILL COUNTRY VILLAGE	BEXAR	SAN ANTONIO	838	108	(730)
HOLLYWOOD PARK	BEXAR	SAN ANTONIO	2,314	345	(1,969)
KIRBY	BEXAR	SAN ANTONIO	1,005	670	(335)
LYTLE	BEXAR	NUECES	5	2	(3)
SAN ANTONIO	BEXAR	SAN ANTONIO	192,008	123,531	(68,477)
SAN ANTONIO	BEXAR	SAN ANTONIO	24,654	15,631	(9,023)
SAN ANTONIO	BEXAR	SAN ANTONIO	284	-	(284)
SHAVANO PARK	BEXAR	SAN ANTONIO	819	499	(320)
UNIVERSAL CITY	BEXAR	SAN ANTONIO	2,608	2,495	(113)
WATER SERVICES INC	BEXAR	SAN ANTONIO	570	24	(546)
WINDCREST	BEXAR	SAN ANTONIO	1,204	969	(235)
		Totals	239,038	152,578	(86,460)
COTTONWOOD SHORES	BURNET	COLORADO	164	138	(26)
MEADOWLAKES	BURNET	COLORADO	879	561	(318)
		Totals	1,043	699	(344)

Hill County Municipal water demand, supply, and need,

Comal, Hays, Kendall, Kerr, and Kimble Counties, 2010

Only users with needs (shortages) presented. Values represent acre feet per year.

Water User Group (WUG) Name	County	WUG Basin	Demand	Supply	Need
BEXAR MET WATER DISTRICT	COMAL	GUADALUPE	33	-	(33)
BEXAR MET WATER DISTRICT	COMAL	SAN ANTONIO	429	43	(386)
BULVERDE CITY	COMAL	GUADALUPE	9	4	(5)
BULVERDE CITY	COMAL	SAN ANTONIO	1,044	396	(648)
COUNTY-OTHER	COMAL	GUADALUPE	2,603	821	(1,782)
GARDEN RIDGE	COMAL	GUADALUPE	337	202	(135)
GARDEN RIDGE	COMAL	SAN ANTONIO	228	106	(122)
WATER SERVICES INC	COMAL	SAN ANTONIO	308	13	(295)
		Totals	4,991	1,585	(3,406)
CIMARRON PARK WATER COMPANY	HAYS	COLORADO	403	253	(150)
CREEDMOOR-MAHA WSC	HAYS	GUADALUPE	10	7	(3)
DRIPPING SPRINGS	HAYS	COLORADO	1,080	506	(574)
MOUNTAIN CITY	HAYS	COLORADO	118	93	(25)
NIEDERWALD	HAYS	GUADALUPE	104	54	(50)
WIMBERLEY WSC	HAYS	GUADALUPE	776	557	(219)
WOODCREEK	HAYS	GUADALUPE	246	223	(23)
WOODCREEK UTILITIES INC	HAYS	GUADALUPE	748	293	(455)
		Totals	3,485	1,986	(1,499)
COUNTY-OTHER	KENDALL	GUADALUPE	1,635	1,414	(221)
WATER SERVICES INC	KENDALL	SAN ANTONIO	43	2	(41)
		Totals	1,678	1,416	(262)
KERRVILLE	KERR	GUADALUPE	4,362	3,040	(1,322)
COUNTY-OTHER	KIMBLE	COLORADO	212	203	(9)
JUNCTION	KIMBLE	COLORADO	936	-	(936)
		Totals	1,148	203	(945)

**Hill County Municipal water demand, supply, and need,
Llano, Medina, Real, Travis, and Uvalde Counties, 2010**

Only users with needs (shortages) presented. Values represent acre feet per year.

Water User Group (WUG) Name	County	WUG Basin	Demand	Supply	Need
KINGSLAND WSC	LLANO	COLORADO	689	514	(175)
LAKE LBJ MUD	LLANO	COLORADO	1,665	1,530	(135)
LLANO	LLANO	COLORADO	1,177	87	(1,090)
		Totals	3,531	2,131	(1,400)
BEXAR MET WATER DISTRICT	MEDINA	SAN ANTONIO	24	9	(15)
CASTROVILLE	MEDINA	SAN ANTONIO	680	386	(294)
HONDO	MEDINA	NUECES	1,784	1,465	(319)
LACOSTE	MEDINA	SAN ANTONIO	205	113	(92)
LYTLE	MEDINA	NUECES	62	46	(16)
NATALIA	MEDINA	NUECES	330	136	(194)
YANCEY WSC	MEDINA	SAN ANTONIO	832	618	(214)
		Totals	3,917	2,773	(1,144)
CAMP WOOD	REAL	NUECES	172	-	(172)
BARTON CREEK WEST WSC	TRAVIS	COLORADO	401	348	(53)
BEE CAVE VILLAGE	TRAVIS	COLORADO	1,177	241	(936)
GOFORTH WSC	TRAVIS	COLORADO	30	19	(11)
JONESTOWN	TRAVIS	COLORADO	467	338	(129)
LAKEWAY	TRAVIS	COLORADO	4,750	3,069	(1,681)
RIVER PLACE ON LAKE AUSTIN	TRAVIS	COLORADO	1,470	900	(570)
ROUND ROCK	TRAVIS	COLORADO	399	241	(158)
		Totals	8,694	5,156	(3,538)
SABINAL	UVALDE	NUECES	407	280	(127)
UVALDE	UVALDE	NUECES	6,087	2,915	(3,172)
		Totals	6,494	3,195	(3,299)