

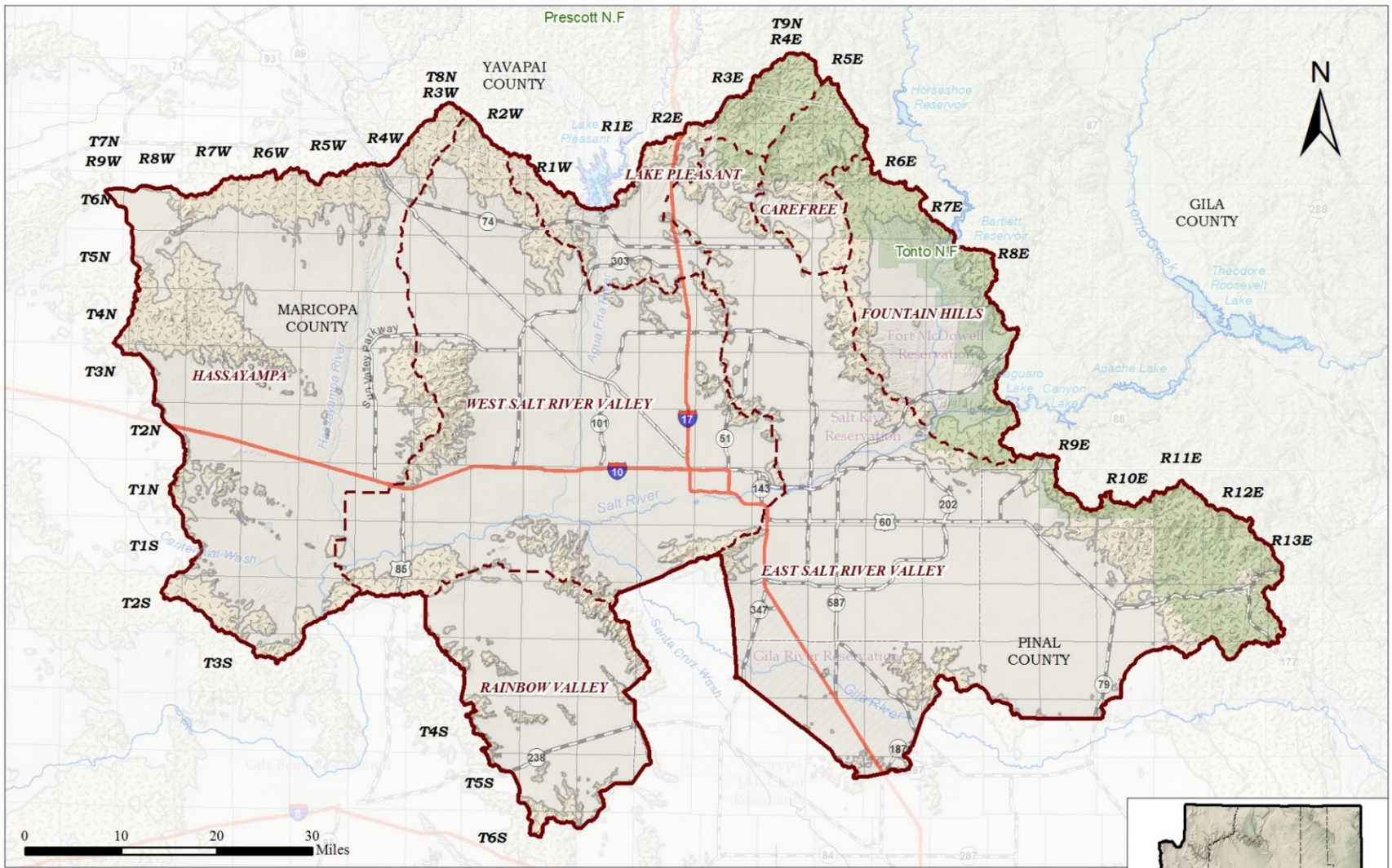
# Phoenix AMA Fourth Management Plan

## Status Update

Jeff Tannler

Pam Muse

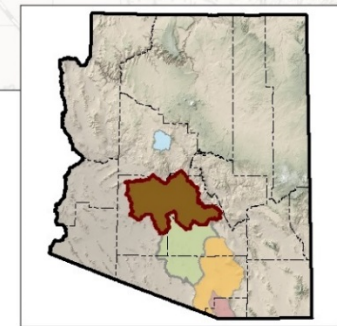




# Phoenix Active Management Area

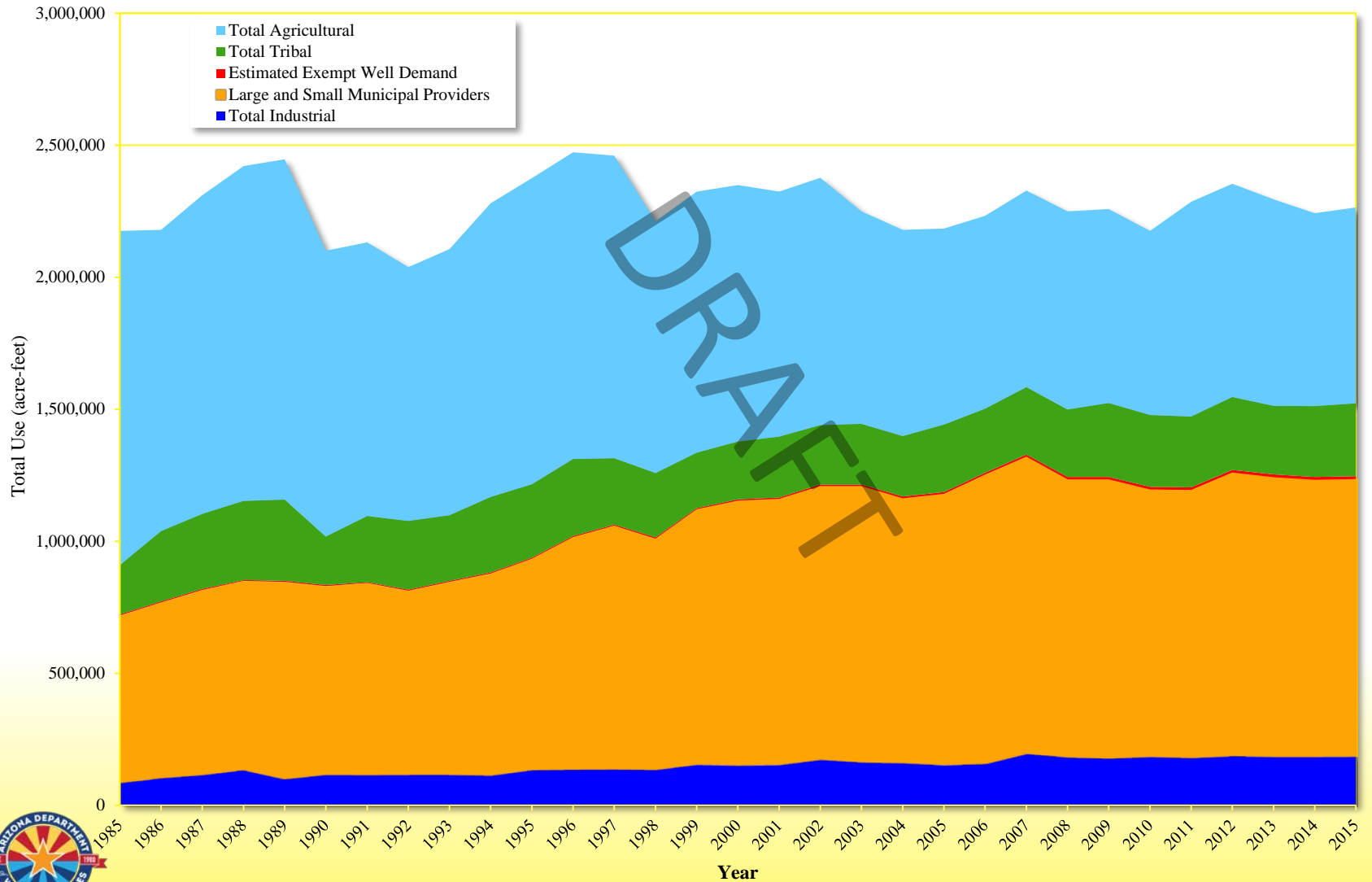


- Phoenix AMA
- Sub-basin
- State Boundary
- Township/Range
- County
- Hardrock
- National Forest
- Indian Reservation
- Lake
- Stream
- Major Road
- Interstate Highway



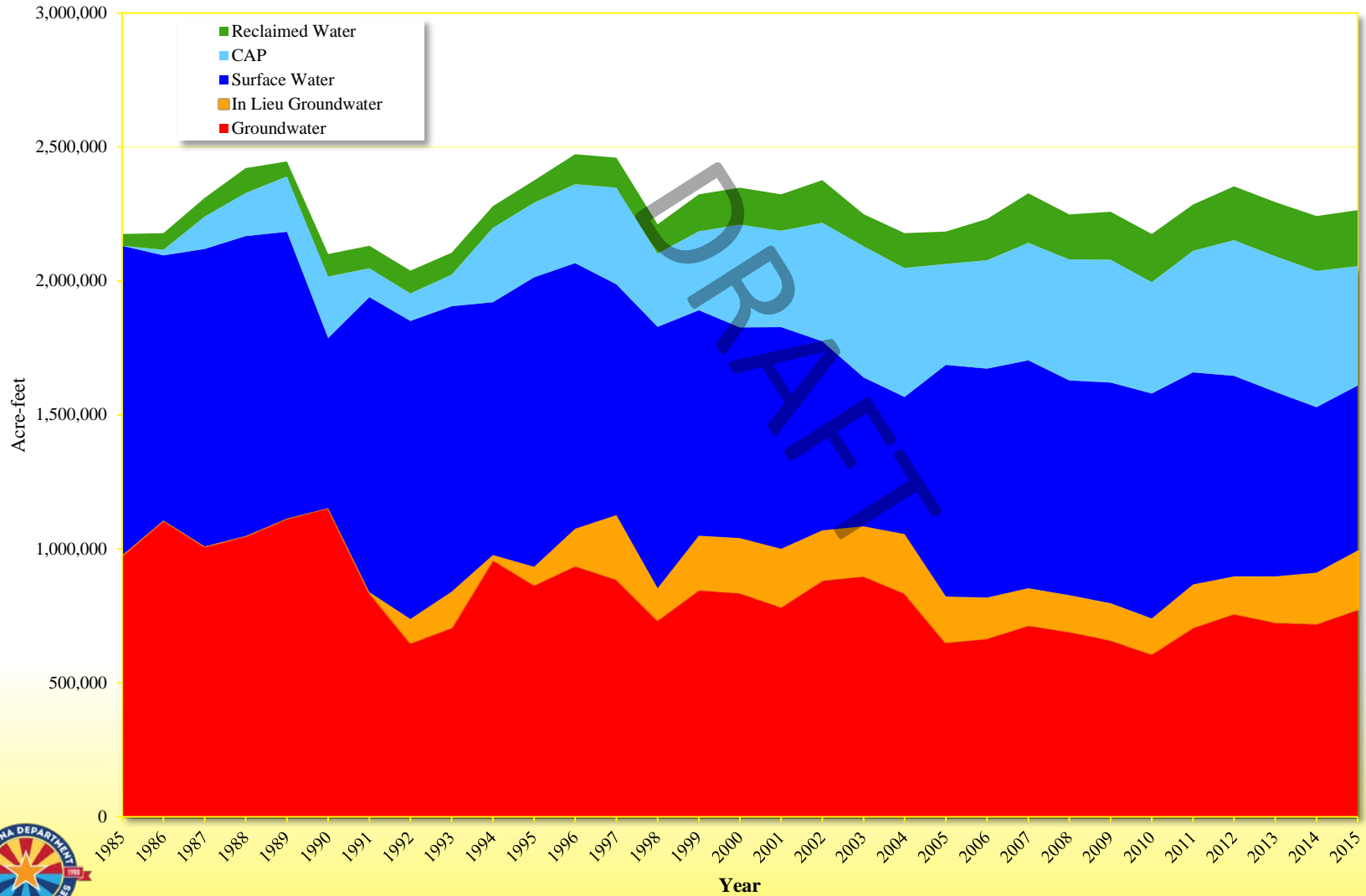
# HISTORICAL WATER DEMAND BY SECTOR

FIGURE 3-1  
PHOENIX AMA WATER DEMAND BY SECTOR, 1985 - 2015



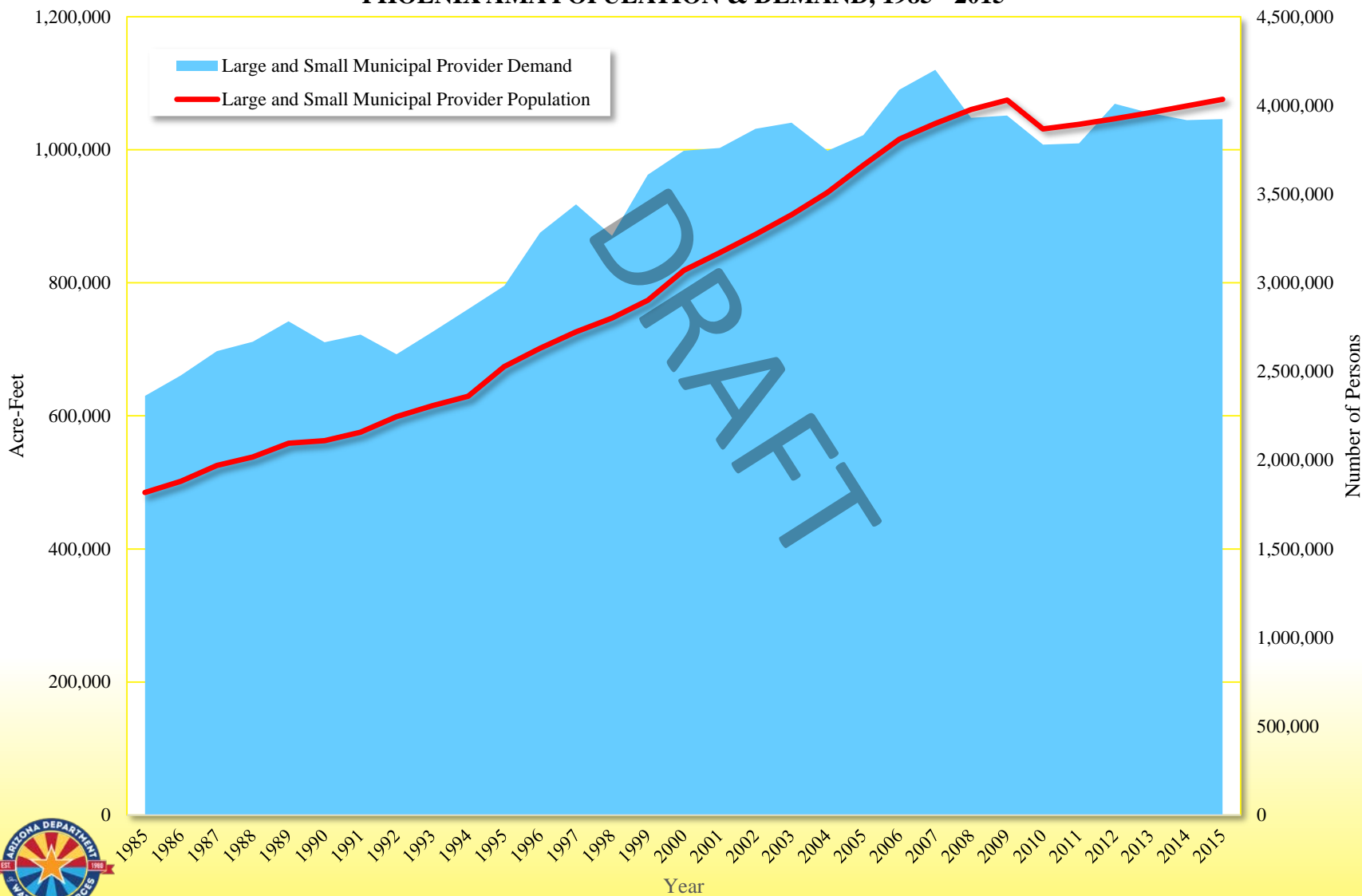
# HISTORICAL WATER SUPPLIES USED

FIGURE 3-2  
PHOENIX AMA WATER SUPPLY SOURCES, 1985 - 2015



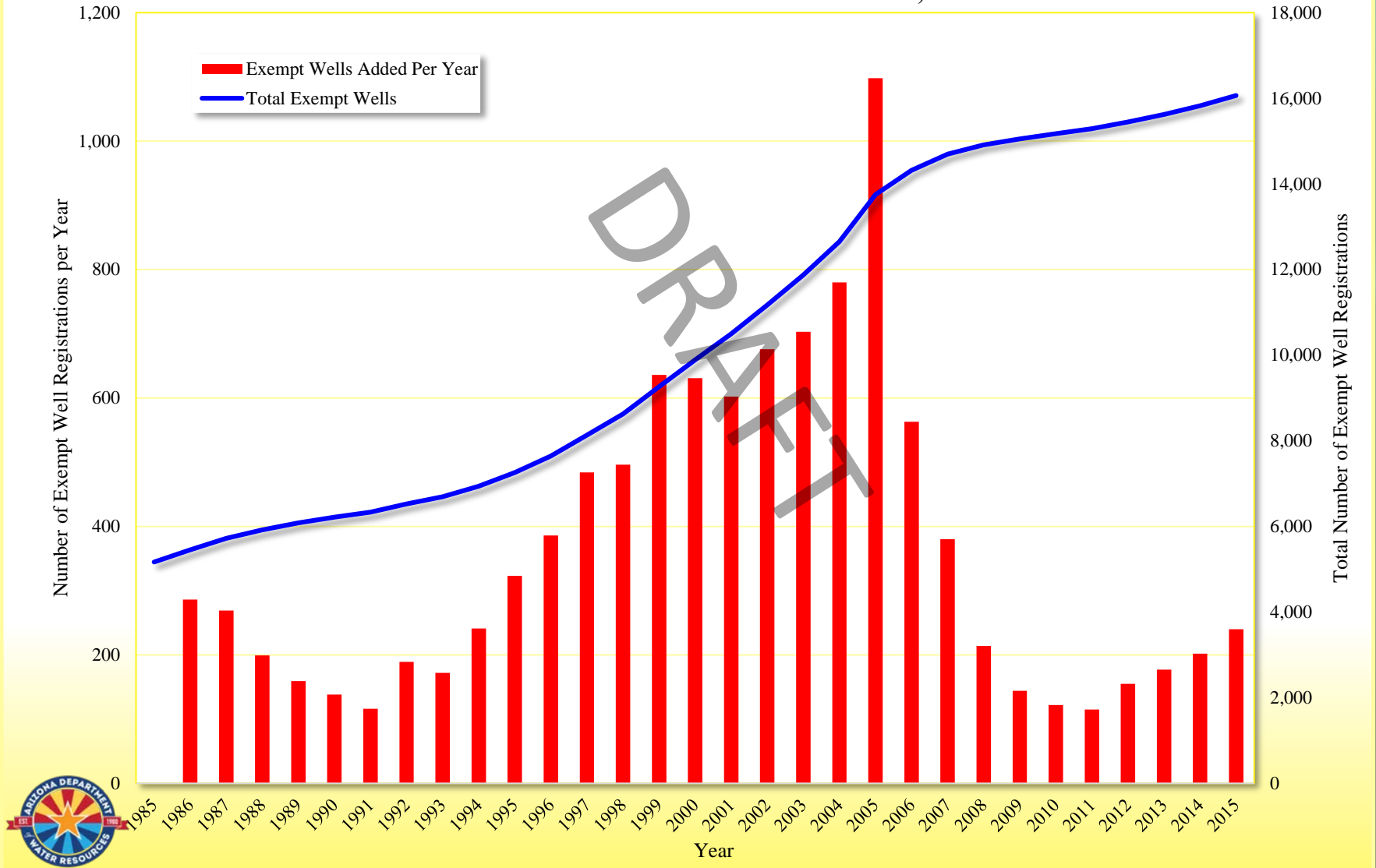
# HISTORICAL MUNICIPAL DEMAND AND PROVIDER POPULATION

FIGURE 3-4  
PHOENIX AMA POPULATION & DEMAND, 1985 - 2015



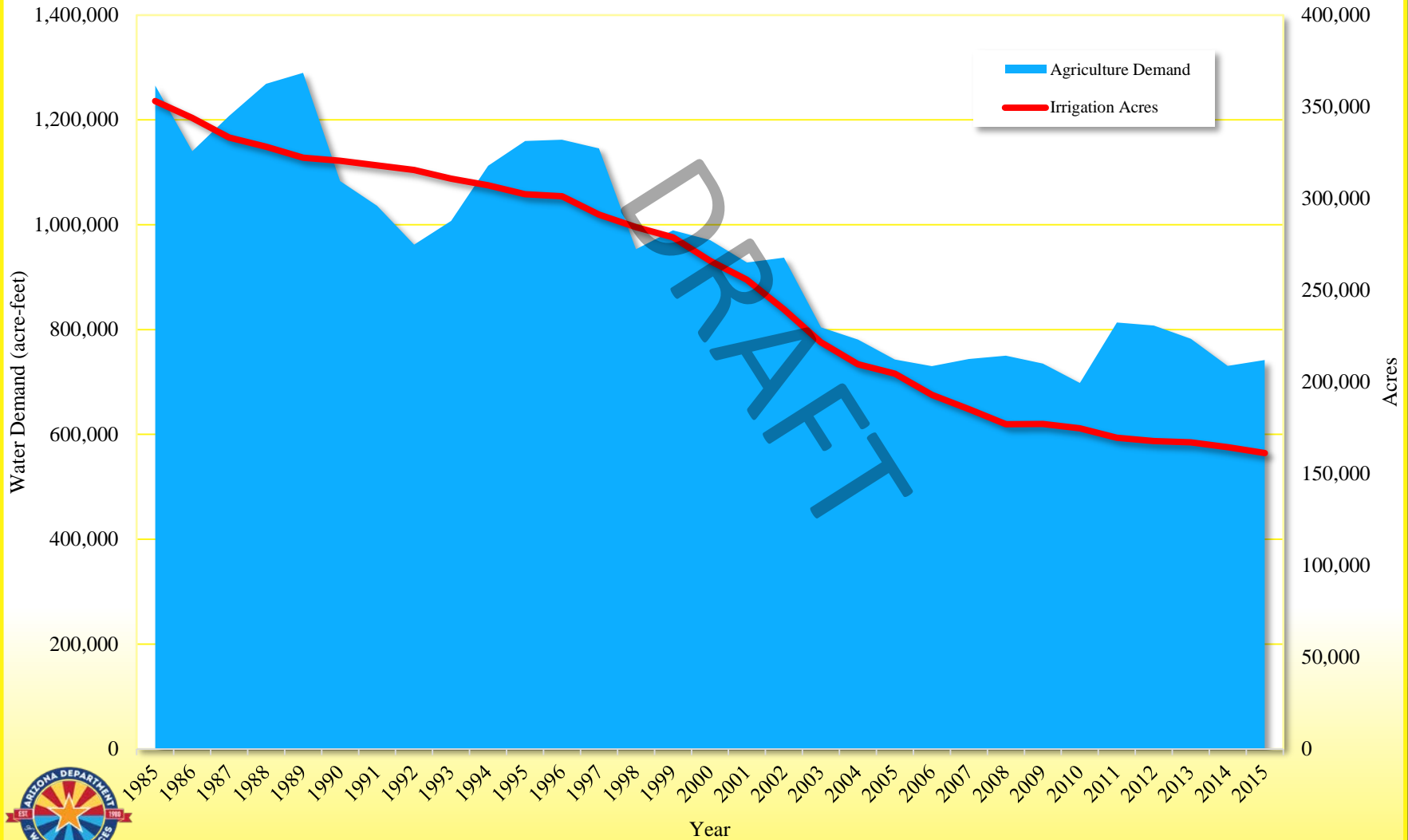
# HISTORICAL EXEMPT WELL REGISTRATIONS

FIGURE 3-3  
PHOENIX AMA EXEMPT WELL REGISTRATIONS, 1985 - 2015



# HISTORICAL IRRIGATION DEMAND & IGFR ACRES

**FIGURE 3-5**  
**PHOENIX AMA AGRICULTURAL WATER DEMAND**  
**& IRRIGATION ACRES, 1985 - 2015**



# HISTORICAL OVERDRAFT – PHOENIX AMA

Year	Municipal Provider Demand	Exempt Well Demand	Industrial Demand	Agricultural Demand	Indian Demand	TOTAL AMA DEMAND	Renewable Supplies to Meet Demand <sup>1</sup>	Ground-water to Meet Demand	Offsets to GW Pumping <sup>2</sup>	OVERDRAFT
1985	630,153	3,349	88,667	1,265,633	187,698	2,175,500	1,198,639	<b>976,861</b>	1,227,382	250,521
1986	660,766	3,414	107,483	1,140,492	266,605	2,178,760	1,071,965	<b>1,106,795</b>	1,004,448	(102,347)
1987	697,192	3,481	118,616	1,207,431	283,866	2,310,586	1,301,680	<b>1,008,906</b>	1,001,315	(7,590)
1988	711,651	3,549	137,761	1,269,055	299,193	2,421,208	1,373,265	<b>1,047,943</b>	1,019,881	(28,061)
1989	742,363	3,618	103,625	1,289,718	307,520	2,446,844	1,333,654	<b>1,113,190</b>	958,974	(154,216)
1990	710,527	3,688	119,927	1,083,348	183,131	2,100,621	948,341	<b>1,152,280</b>	966,502	(185,778)
1991	722,178	3,760	119,414	1,036,114	250,355	2,131,821	1,292,913	<b>838,908</b>	1,033,044	194,136
1992	692,765	3,833	119,810	962,171	259,952	2,038,532	1,300,035	<b>738,496</b>	1,323,322	584,826
1993	726,007	3,908	120,346	1,007,248	248,430	2,105,940	1,265,451	<b>840,488</b>	2,062,714	1,222,226
1994	760,590	3,984	116,963	1,112,732	285,365	2,279,634	1,302,237	<b>977,397</b>	908,887	(68,510)
1995	795,601	4,062	138,007	1,159,919	278,307	2,375,896	1,442,458	<b>933,438</b>	1,211,965	278,527
1996	875,404	4,141	140,034	1,162,408	291,373	2,473,360	1,397,536	<b>1,075,823</b>	909,756	(166,067)
1997	918,111	4,222	140,989	1,145,712	251,507	2,460,541	1,333,805	<b>1,126,736</b>	881,897	(244,839)
1998	870,878	4,304	138,939	953,229	243,968	2,211,318	1,357,717	<b>853,601</b>	904,054	50,453
1999	962,556	4,388	158,356	989,261	209,302	2,323,863	1,274,971	<b>1,048,892</b>	824,078	(224,814)
2000	998,537	4,473	155,452	970,735	219,459	2,348,656	1,308,508	<b>1,040,148</b>	842,063	(198,085)
2001	1,002,783	5,016	157,782	927,890	230,521	2,323,992	1,323,512	<b>1,000,480</b>	791,713	(208,768)
2002	1,031,597	5,558	177,676	937,007	224,845	2,376,682	1,307,011	<b>1,069,672</b>	786,655	(283,017)
2003	1,040,945	6,100	167,841	804,504	230,017	2,249,406	1,164,617	<b>1,084,790</b>	778,134	(306,656)
2004	998,555	6,643	164,069	780,687	228,902	2,178,856	1,123,822	<b>1,055,034</b>	791,507	(263,528)
2005	1,022,142	7,185	156,870	743,012	254,919	2,184,128	1,361,597	<b>822,530</b>	908,455	85,925
2006	1,090,357	7,727	161,380	730,025	242,509	2,231,997	1,413,548	<b>818,449</b>	764,676	(53,774)
2007	1,120,253	8,270	199,769	744,043	255,612	2,327,946	1,474,095	<b>853,851</b>	854,661	810
2008	1,048,126	8,812	186,167	750,194	255,538	2,248,837	1,421,674	<b>827,163</b>	897,820	70,658
2009	1,051,615	9,354	182,651	735,086	279,754	2,258,460	1,460,976	<b>797,483</b>	845,017	47,534
2010	1,007,705	9,947	188,545	697,965	271,355	2,175,516	1,435,228	<b>740,288</b>	954,872	214,584
2011	1,009,490	10,004	184,321	813,467	268,495	2,285,778	1,418,075	<b>867,703</b>	733,438	(134,265)
2012	1,069,108	10,061	191,004	807,753	275,824	2,353,751	1,456,459	<b>897,293</b>	720,886	(176,406)
2013	1,054,809	10,118	187,852	782,154	259,613	2,294,546	1,397,233	<b>897,314</b>	722,452	(174,861)
2014	1,044,603	10,174	188,120	730,768	268,831	2,242,496	1,331,274	<b>911,223</b>	715,311	(195,911)
2015	1,046,266	10,231	189,547	741,687	276,416	2,264,148	1,269,660	<b>994,488</b>	698,868	(295,620)



# 4MP Chapters

- Chapter 1 – INTRODUCTION
- Chapter 2 – HYDROLOGY
- Chapter 3 – WATER DEMANDS & SUPPLY
- Chapter 4 – AGRICULTURAL
- Chapter 5 – MUNICIPAL
- Chapter 6 – INDUSTRIAL
- Chapter 7 – WATER QUALITY
- Chapter 8 – UNDERGROUND STORAGE, SAVINGS AND REPLENISHMENT
- Chapter 9 – WATER MANAGEMENT ASSISTANCE
- Chapter 10 – IMPLEMENTATION
- Chapter 11 – PROJECTED BUDGETS
- Chapter 12 – WATER MANAGEMENT STRATEGY



# Proposed Changes in the 4MP from the 3MP:

- Irrigation district lost and unaccounted for water
- Municipal Total Gallons Per Capita Per Day (GPCD) Program
  - GPCD target = 2000-2009 median GPCD – One Standard Deviation
- Large-scale electric power plant program
- New AMA population; municipal, agricultural, industrial, and tribal demand; water supply projections prepared
- Water management strategy chapter



# Preliminary Projection Assumptions:

## ● Municipal

- Population projections at TAZ level (released 2013)
- Individual analysis of each large provider water supply portfolio and historical preference of supply priority (reviewed DAWS as well)
- Small provider demand = trendline
- Exempt wells using “WaterSense” and updated exterior model for SF



# Preliminary Projection Assumptions:

## ● Industrial

- Trendline analysis for most (mining exception)
- Supplies consistent with historical proportions

## ● Tribal

- Increased Tribal agricultural demand
- Supply based on Settlement Agreements and historical supplies utilized and estimated demand



# Preliminary Projection Assumptions

- Agricultural
  - Small exempt rights continue
  - District supplies based on historical patterns other than CAP Agricultural pool and GSF
  - GSF based on available storage, GSF permit limits
  - Demand forecasted based on historical use



# Preliminary Projection Assumptions

- Two Scenarios
  - Normal CAP Delivery Scenario
  - Tier 1 Shortage Scenario
- Non-CAP Surface Water Same in Both Scenarios



# 4MP Water Management Strategy:

- Challenges and Opportunities:
  - Allowable Groundwater Pumping
  - Location of Underground Storage vs. Location of Recovery
  - Reduction of Groundwater Savings Facility Capacity Due to Urbanization
  - Limited Availability of New Large Underground Storage Projects
  - Water Quality
  - Conservation Alone Insufficient to Maintain Safe-yield



# 4MP Water Management Strategy:

- Challenges and Opportunities:
  - Reclaimed Water Re-Use
  - Susceptibility of CAP Supplies to Reduction
  - Water Distribution and Wheeling Agreements
  - Public and Private Support for Water Management Approaches
  - Factors Affecting Achievement of Safe-Yield Outside Influence of Water Management Programs

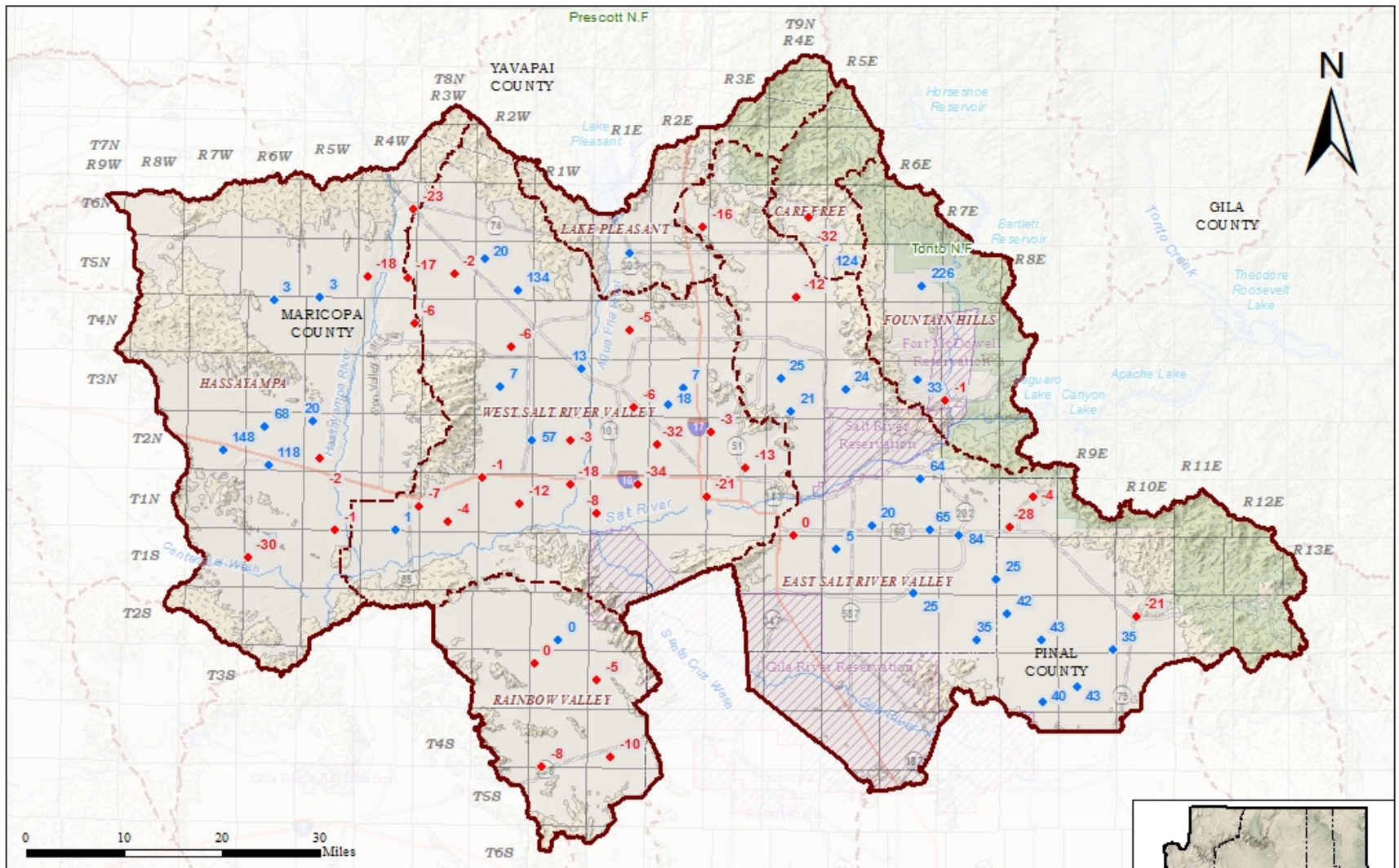




# 4MP Water Management Strategy:

- Possible Solutions:
  - Look for opportunities to increase use of reclaimed water and CAP water
  - Provide technical assistance and encourage additional demand reductions through conservation / increased water use efficiency in all three sectors
  - Work with local water users to research and evaluate augmentation opportunities to help water users transition from groundwater to renewable supply use

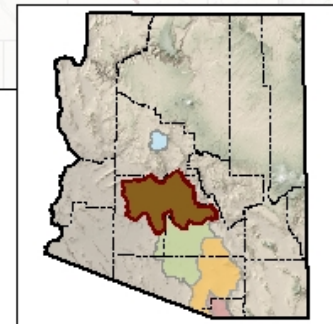




**Water Level Change  
2000-2014  
Phoenix AMA**



- Phoenix AMA
- Sub-basin
- County
- Hardrock
- Major Road
- Interstate Highway
- Lake
- Stream
- Positive WL Change
- Negative WL Change



# 4MP PROCESS – NEXT STEPS

- ADWR currently drafting initial 4MP chapters
  - Internal review and editing
- Overview of draft chapters will be presented to GUAC after directorate review
- Informal public comment period
- ADWR will review and summarize public comments received
- ADWR will present any proposed changes and request GUAC recommendation
- Promulgation will occur after ADWR receives GUAC recommendation and makes changes to the proposed Plan



# Questions?

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