

ADWR's Current Water Supply and Demand Data for the West Basins

West Basins Planning Area
Stakeholder Meeting
March 28, 2016

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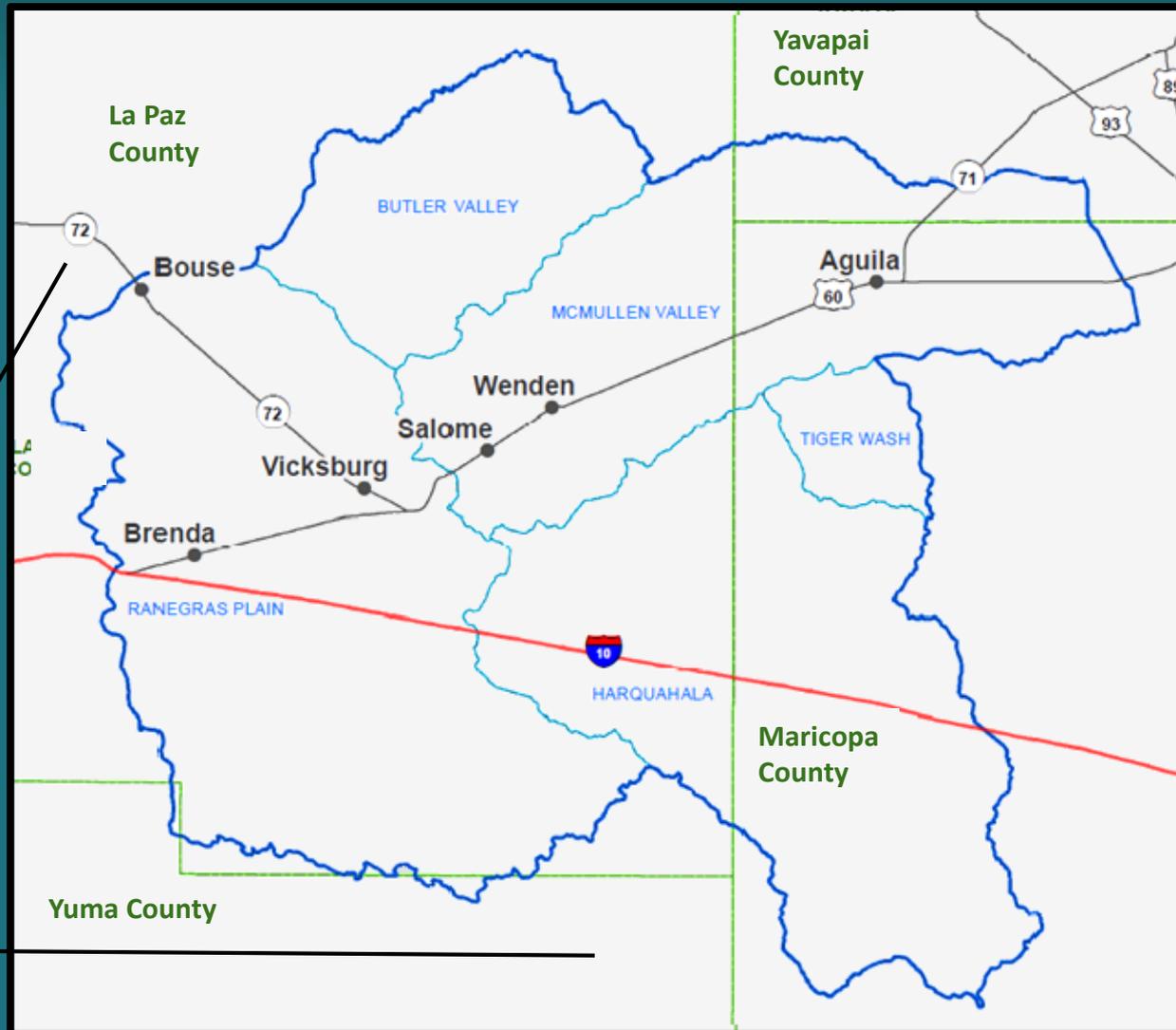


PROTECTING
ARIZONA'S WATER SUPPLIES
for ITS NEXT CENTURY

Background Information



West Basins Location



West Basins Land Ownership

- Majority of lands are federally owned and managed
 - US Bureau of Land Management
 - Owns largest amount for resources conservation, recreation, and livestock grazing
 - US Fish and Wildlife Service
 - US Bureau of Reclamation
 - Owns the CAP canal right of way
- AZ State Land Dept.
 - Predominantly in Butler Valley and McMullen Valley
- 10% of land is privately owned
 - Majority in Harquahala Valley for irrigated agriculture

West Basins Water Supply



Water Supplies Based on the Strategic Vision

- Groundwater (main source of water)
- Surface Water
- Reclaimed Water



Groundwater Supplies

Basin	Groundwater Supplies	
	Estimated Storage (MAF)	Annual WL Change (feet)
Butler Valley	6.4	-1.0
Harquahala INA	15.5	1.4
McMullen Valley	15.0	-0.3
Ranegras Plain	9.0	-0.9
Tiger Wash	7.0	0.3

Source: A Strategic Vision for Water Supply Sustainability



Other Sources

- Surface Water
 - In-State
 - No perennial streams
 - Colorado River
 - CAP water
 - Currently in use in Harquahala Valley INA for Agricultural and Industrial purposes
- Reclaimed Water
 - Not currently in use

West Basins Water Demands



Water Demands Based on the WRDC Report

Table P.A. 20-1. Projected Demands (in acre feet) – West Basins Planning Area

Sector	2010	2035	2060
Agriculture	250,000	250,000	250,000
Dairy	0	0	0
Feedlot	0	0	0
Municipal	1,016	1,607	2,009
Other Industrial	0	0	0
Mining	0		
High		0	0
Low		0	0
Power Plants	1,107		
High		1,147	2,065
Low		918	1,652
Rock Production	0		
High		124	154
Low		51	65
Turf	0		
High		0	0
Low		0	0
Total (High)	252,123	252,878	254,228
Total (Low)	252,123	252,576	253,726

Sectors That We Need to Explore



MUNICIPAL



AGRICULTURAL



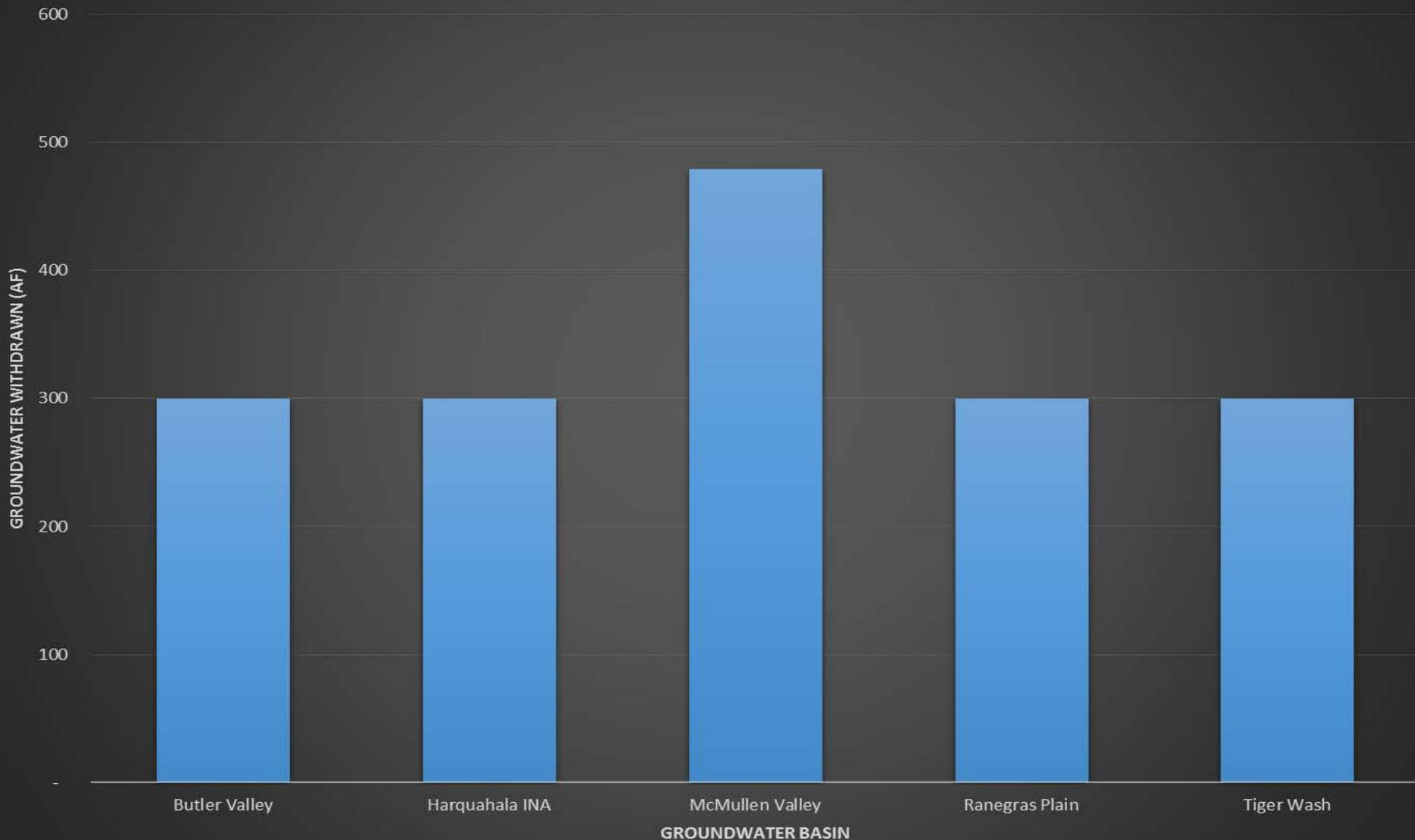
INDUSTRIAL

Municipal



Image courtesy of www.city-data.com

USGS Estimated Average Annual Groundwater Withdrawals for Municipal Use (1991-2014)



Data Source: USGS

Note: all values indicating 300 AF are actually less than 300 AF



WRDC Municipal Demand Study

- Study performed in 2010, results published in 2011
- Methods for Calculating Baseline Data
 - Gross gallons per capita per day (GPCD) were calculated using total municipal demand and total population
 - Baseline data to calculate GPCD was obtained from the 2005 Arizona Water Atlas

WRDC Municipal Demand Study

Basin	Baseline Demand, Population, and GPCD Data		
	2005 Demand (AF)	2005 Population	2005 GPCD
Butler Valley	3	15	179
Harquahala INA	128	780	147
McMullen Valley	500	3,991	112
Ranegras Plain	350	978	319
Tiger Wash	2	5	357
Phoenix AMA	1,025,478	3,701,697	247
Pinal AMA	32,110	142,354	201
Prescott AMA	17,358	110,689	140
Santa Cruz AMA	8,502	45,792	166
Tucson AMA	187,351	961,900	174

Data Source: WRDC Final Report



WRDC Municipal Demand Study

- Methods for Projecting Future Municipal Demand
 - All basins were treated equally with respect to assumptions used to project future demand due to time constraints
 - 2005 GPCDs were applied against the mid-range population projection into the future with no modifications



WRDC Municipal Demand Study

Basin	Projected Municipal Demand by Basin through 2110		
	2035 Demand (AF)	2060 Demand (AF)	2110 Demand (AF)
Butler Valley	0	0	0
Harquahala INA	245	354	652
McMullen Valley	970	1,173	1,588
Ranegras Plain	392	482	595
Tiger Wash	0	0	0
Total	1,607	2,009	2,835

Data Source: WRDC Final Report



WRDC Municipal Demand Study

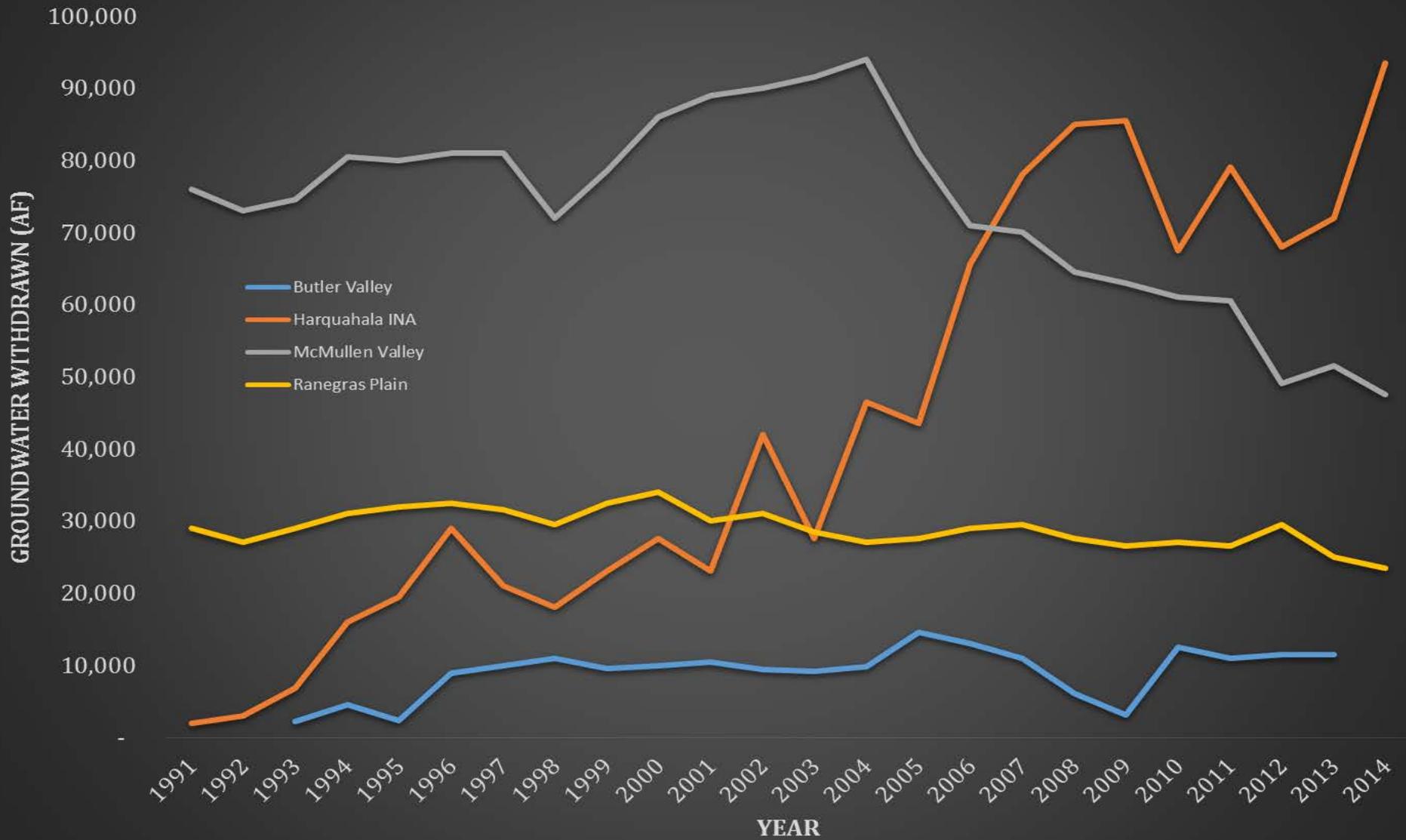
- Items that may have provided more refined results:
 - ~~1. Additional information regarding tribal populations and tribal demands~~
 - ~~2. Effluent use, variability, increasing use in certain areas~~
 3. Need to obtain more accurate, reliable, real-time data from non-AMA areas
 4. Development of a database to input new data
 5. Effects of conservation on both existing and new populations
 6. Analysis of Community Water System data and annual reports

Agricultural



Image courtesy of Natalie Mast

USGS Estimated Annual Groundwater Withdrawals for Irrigation



WRDC Agricultural Demand Study

- Study performed in 2010, results published in 2011
- Methods:
 - **Assumption:** Non-AMA portions of Arizona, outside of Yuma County, will remain constant for the next 25, 50, and 100 years
 - Projections were developed using 2006 agricultural water demands as a baseline year

WRDC Agricultural Demand Study

Basin	2006 Agricultural Water Demands (acre-feet)		
	Groundwater	Surface Water	Total
Butler Valley	14,500	0	14,500
Harquahala INA	65,500	70,000	135,500
McMullen Valley	71,000	0	71,000
Ranegras Plain	29,000	0	29,000
Tiger Wash	0	0	0

Data Source: WRDC Final Report



WRDC Agricultural Demand Study

Basin	Projected Agricultural Water Demand by Basin through Year 2110 (AF)			
	2035	2060	2110	2014 USGS Withdrawal Estimate
Butler Valley	14,500	14,500	14,500	11,500
Harquahala INA	135,500	135,500	135,500	93500
McMullen Valley	71,000	71,000	71,000	47500
Ranegras Plain	29,000	29,000	29,000	23500
Tiger Wash	0	0	0	0
Total	250,000	250,000	250,000	176,000

Data Source: WRDC Final Report



Industrial



Image courtesy of Google Earth

WRDC Industrial Demand Study

- Study performed in 2010, results published in 2011
- Methods
 - The industrial sector was broken into subsectors
 - Mining
 - Power
 - Turf
 - Sand and Gravel
 - Dairies and Feedlots
 - Baseline data from areas outside of the AMAs came from the USGS¹

Source: WRDC Final Report

¹Water users outside AMAs are not required to report water usage, so some amounts are estimates



WRDC Industrial Demand Study

Basin	2006 Baseline Industrial Demands (acre-feet)							
	Mining	Rock Products	Dairy	Feedlots	Power Plants	Turf	Other	Total
Butler Valley	0	0	0	0	0	0	0	0
Harquahala INA	0	0	0	0	1,107	0	0	1,107
McMullen Valley	0	0	0	0	0	0	0	0
Ranegras Plain	0	0	0	0	0	0	0	0
Tiger Wash	0	0	0	0	0	0	0	0

Data Source: WRDC Final Report



WRDC Industrial Demand Study

- Methods (cont.)
 - Each subsector used its own methodology (outlined in WRDC final report) to determine its demand projections
 - Total projected industrial demand is presented with a low range and high range for 2035, 2060, and 2110

WRDC Industrial Demand Study

Basin	Projected Industrial Low Range Water Demand through 2110 (acre-feet)		
	2035	2060	2110
Butler Valley	0	0	0
Harquahala INA	925	1,663	2,222
McMullen Valley	39	47	63
Ranegras Plain	5	7	8
Tiger Wash	0	0	0
Total	969	1,717	2,293

Basin	Projected Industrial High Range Water Demand through 2110 (acre-feet)		
	2035	2060	2110
Butler Valley	0	0	0
Harquahala INA	1,165	2,091	2,801
McMullen Valley	93	112	152
Ranegras Plain	13	16	20
Tiger Wash	0	0	0
Total	1,271	2,219	2,973

Current Industrial Demand

Basin	Current Industrial Demands (acre-feet)							
	Mining	Rock Products	Dairy	Feedlots	Power Plants	Turf	Other	Total
Butler Valley	?	?	?	?	?	?	?	?
Harquahala INA	?	?	?	?	?	?	?	?
McMullen Valley	?	?	?	?	?	?	?	?
Ranegras Plain	?	?	?	?	?	?	?	?
Tiger Wash	?	?	?	?	?	?	?	?

Questions?

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