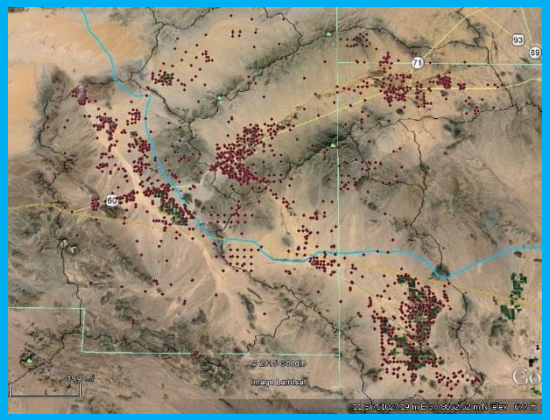
Hydrologic and Water Use Data For West Basins Strategic Planning Area

01/30/2016

Presented by

Frank Corkhill
Arizona Department of Water Resources
Hydrology Division

La Paz County Centennial Park Community Center
Wenden, Arizona

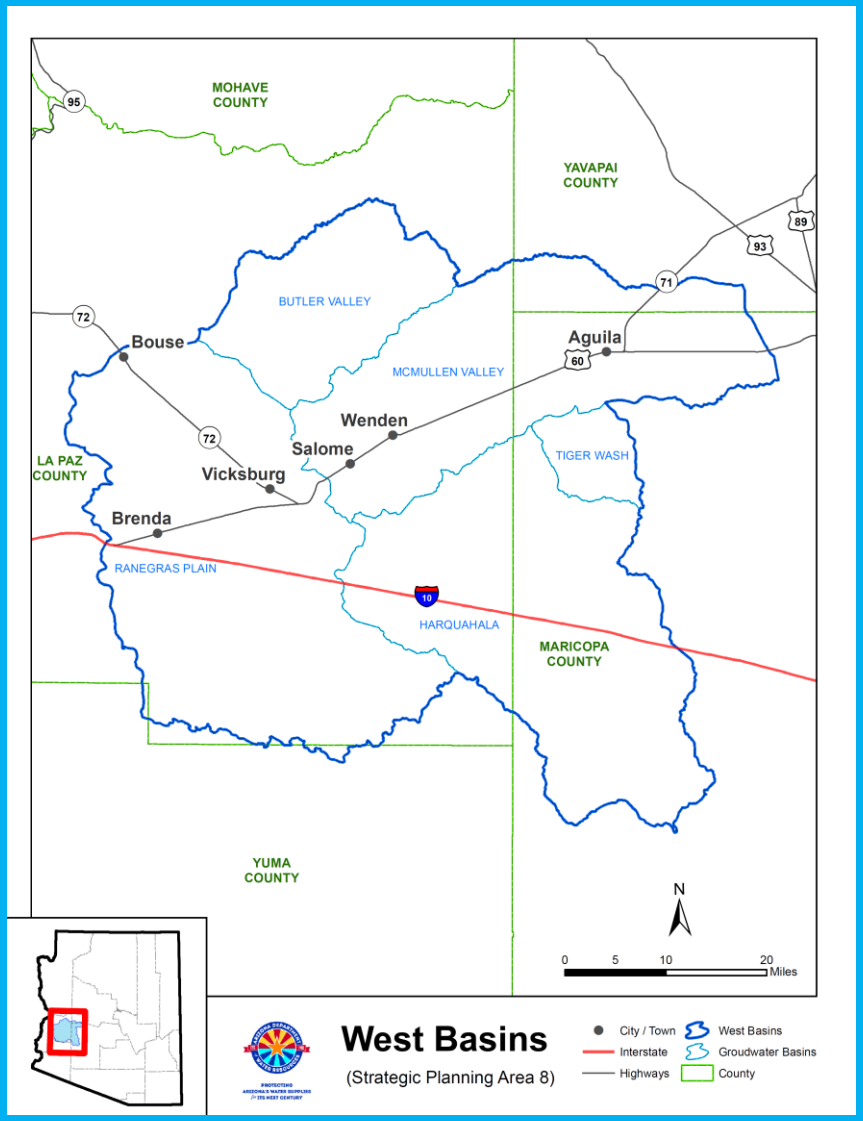


Arizona's Next Century:

A Strategic Vision for Water Supply Sustainability

ARIZONA DEPARTMENT OF WATER RESOURCES EST. 1980

January 2014



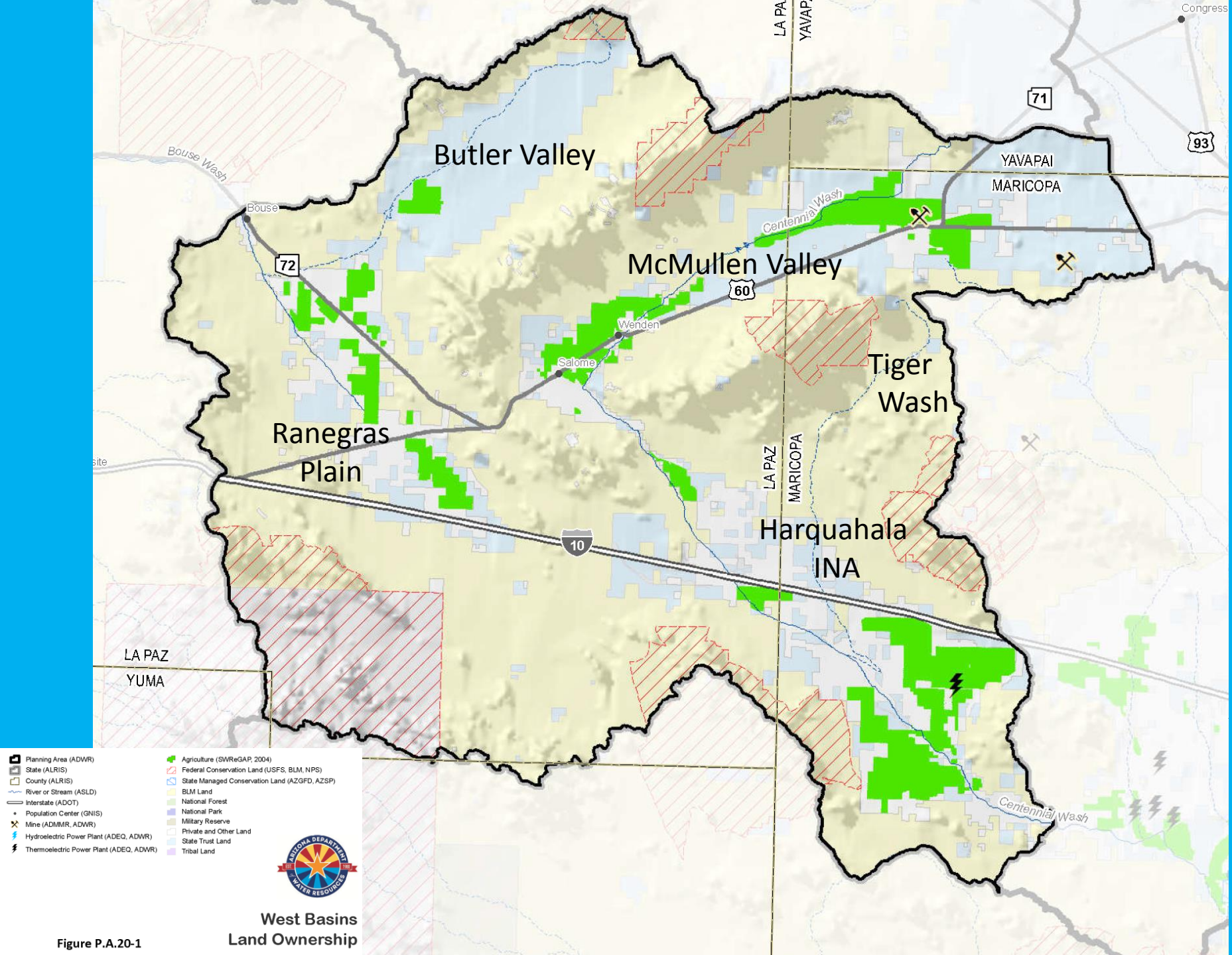


Figure P.A.20-1

Physical and Hydrologic Characteristics of Groundwater Basins in the West Basins Planning Area

Basin Characteristic	Unit	Butler Valley	Harquahala INA	McMullen Valley	Ranegras Plain	Tiger Wash
Basin Area	Square Miles	288	766	649	912	74
Estimated GW Storage*	Million Acre-Feet	6.4	15.5	15	9	0.7
Estimated Natural Recharge**	Acre-Feet/Year	<1,000	1,000	1,000	<1,000	<1,000
Estimated 2014 Irrigation Pumping ***	Acre-Feet	11,500	93,500	47,500	23,500	0
Estimated 2014 CAP Surface Water for Irrigation***	Acre-Feet	0	35,000	0	0	0

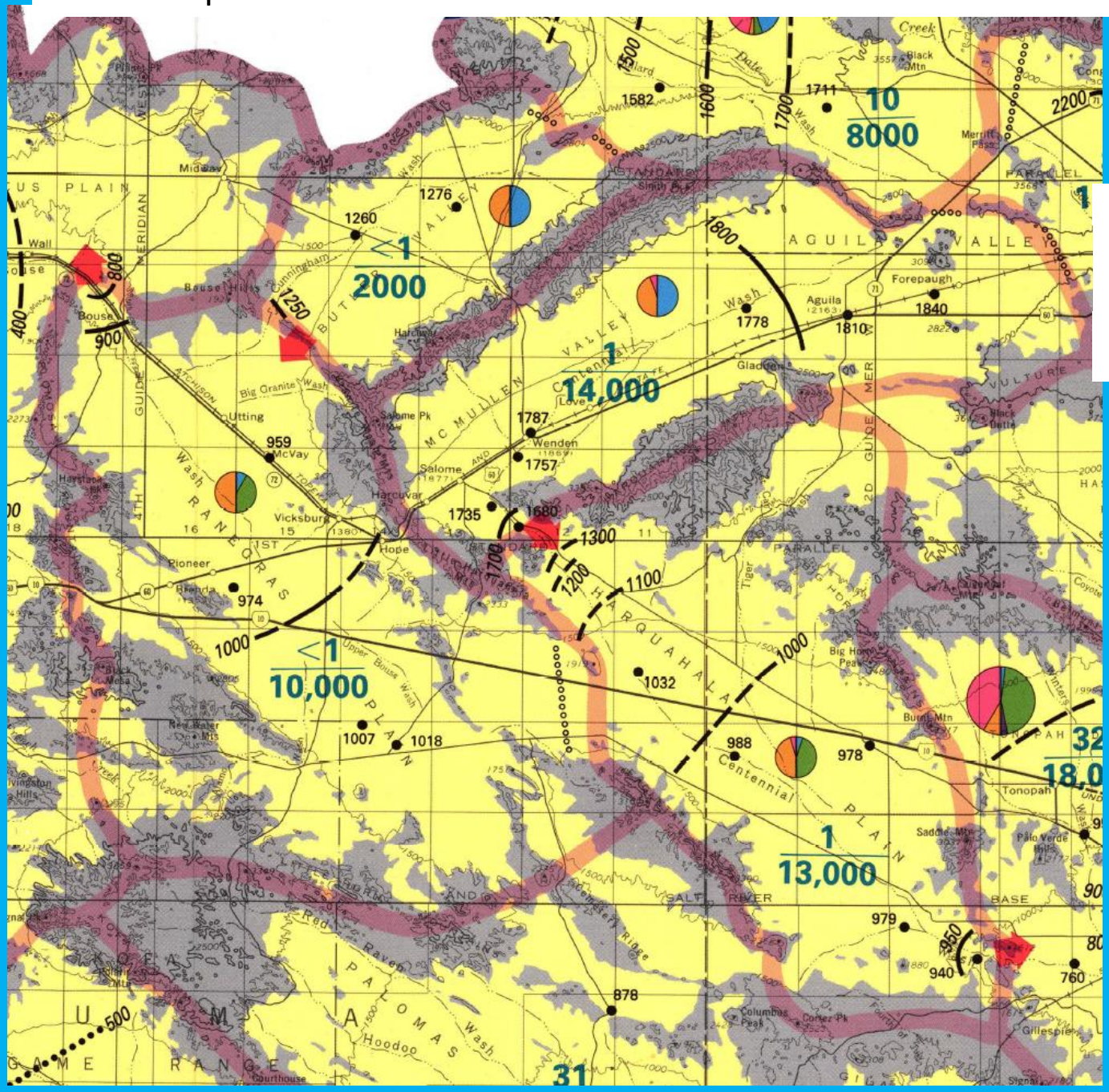
Sources of Data:

* Estimated Groundwater Storage: ADWR – Arizona's Next Century: A Strategic Vision for Water Supply Sustainability (2014)

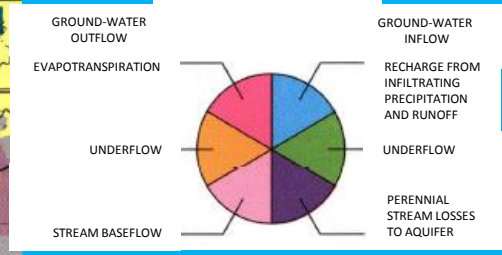
** Estimated Natural Recharge: USGS Hydrologic Investigations Atlas – 664 (1986)

*** Estimated 2014 Irrigation Pumping and CAP Water Use: USGS Arizona Basin Water Supply Spreadsheet (2015)

Predevelopment Groundwater Flow Patterns In the West Basins Strategic Planning Area



GROUND-WATER BUDGET

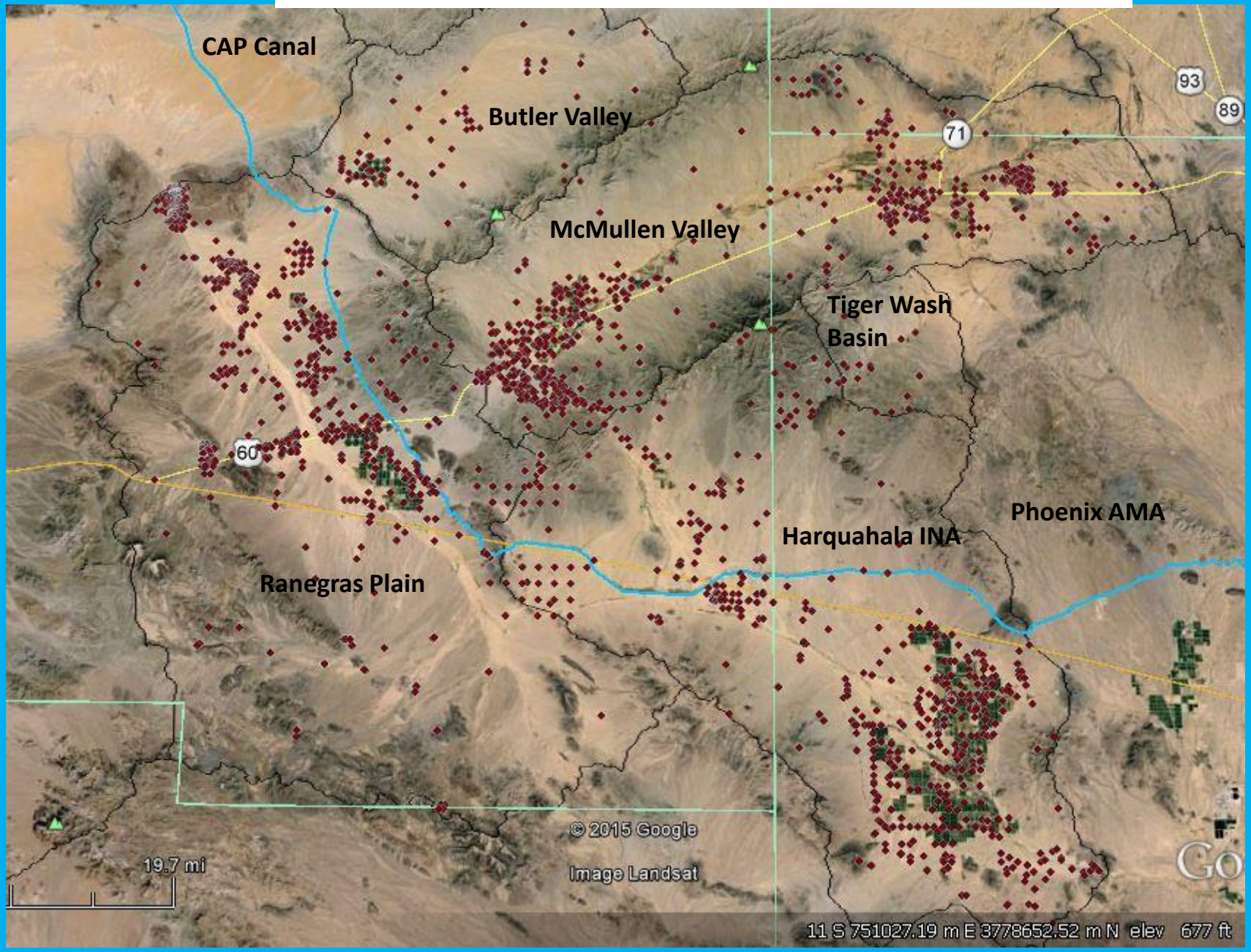


4
11,000

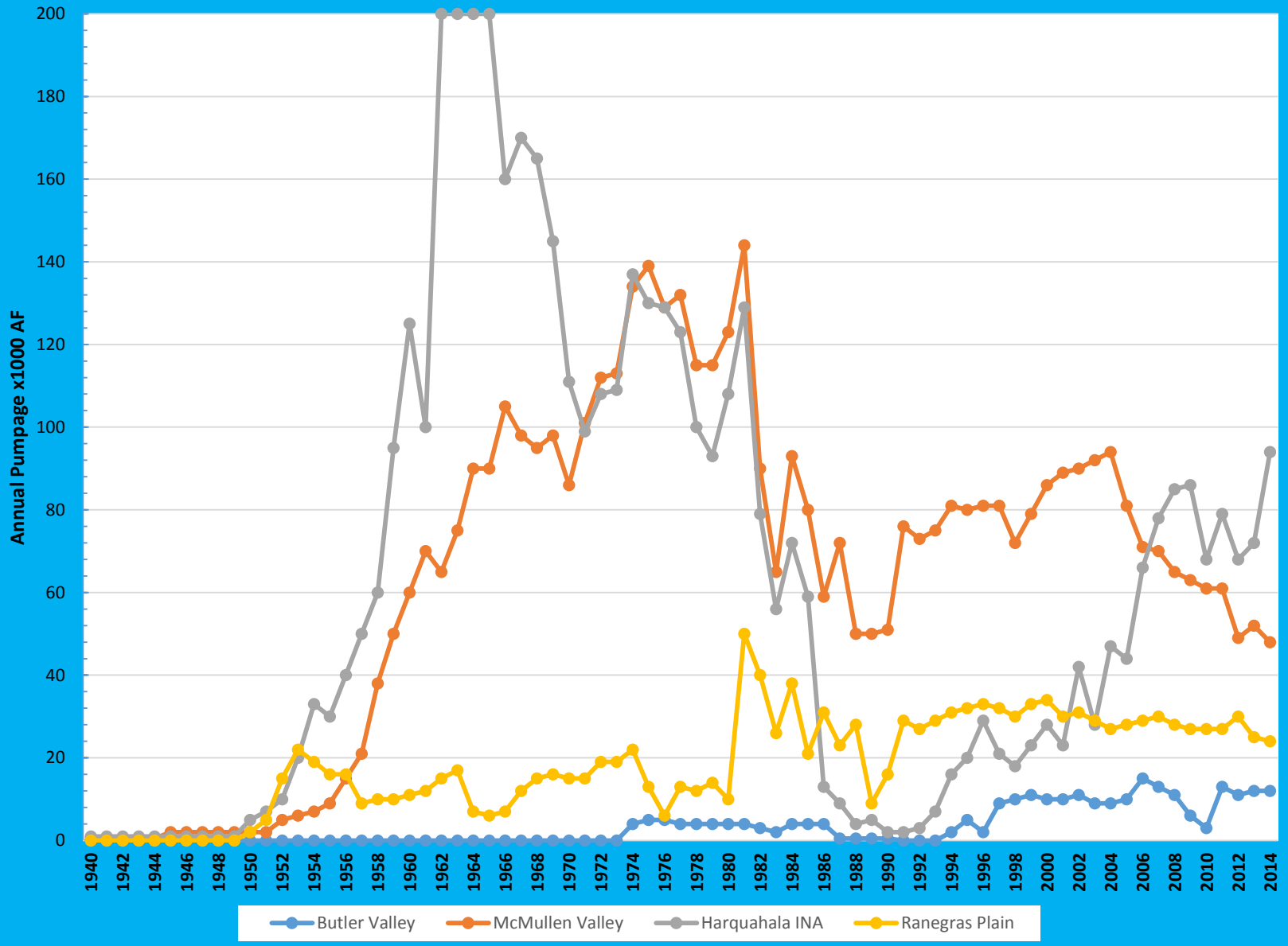
Ratio of Basin Inflow (AF/Yr) To Total Groundwater Storage (To 1,200 FT BLS)

Source: USGS Hydrologic Investigations Atlas HA-664 (1986)

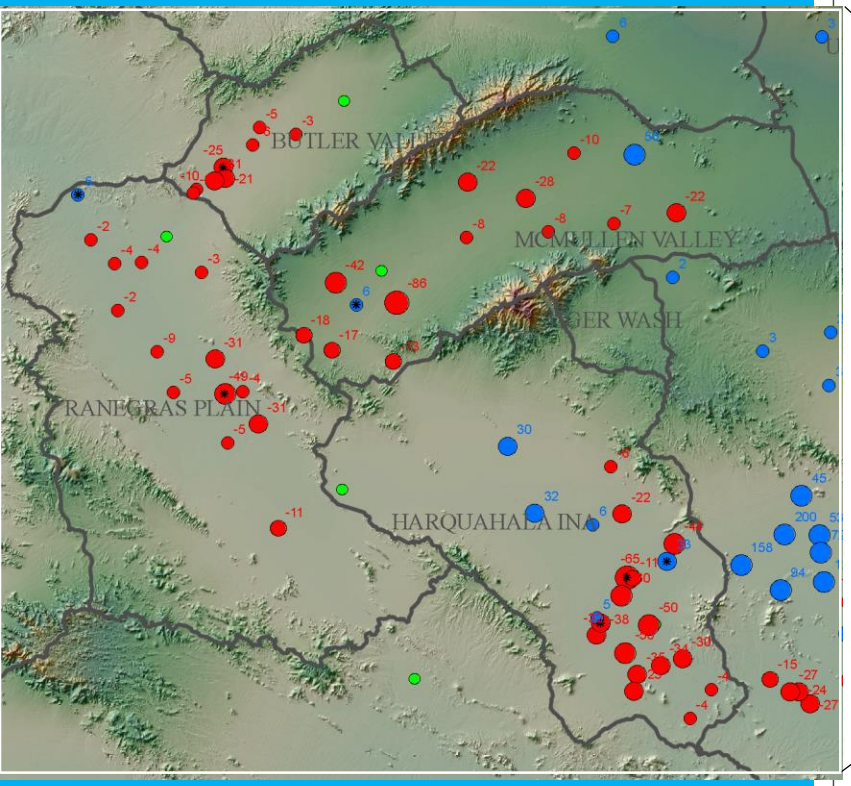
Registered Wells In West Basins Strategic Planning Area

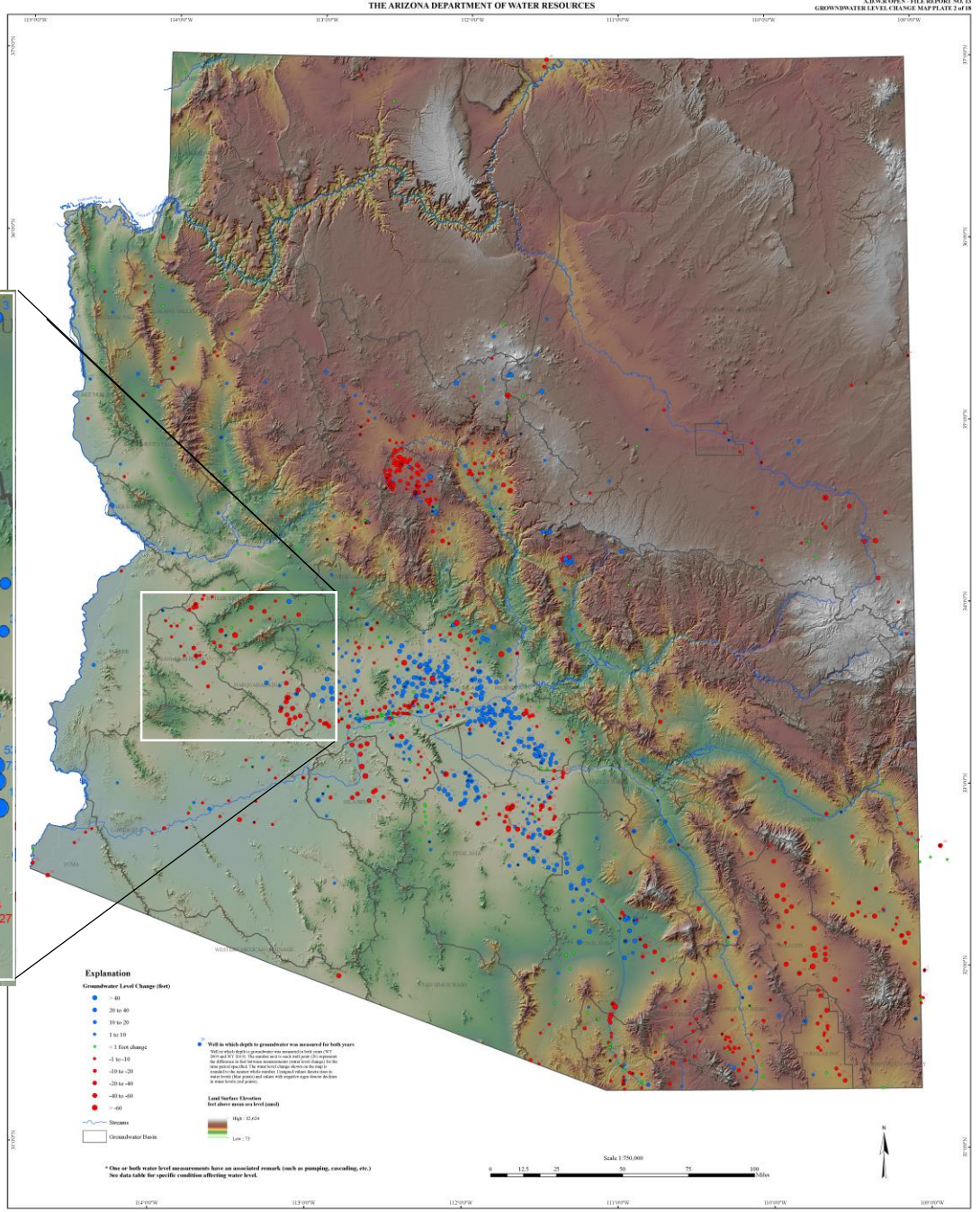


USGS Estimated Groundwater Withdrawals For Agricultural Irrigation In The West Basins Strategic Planning Area 1940 – 2014

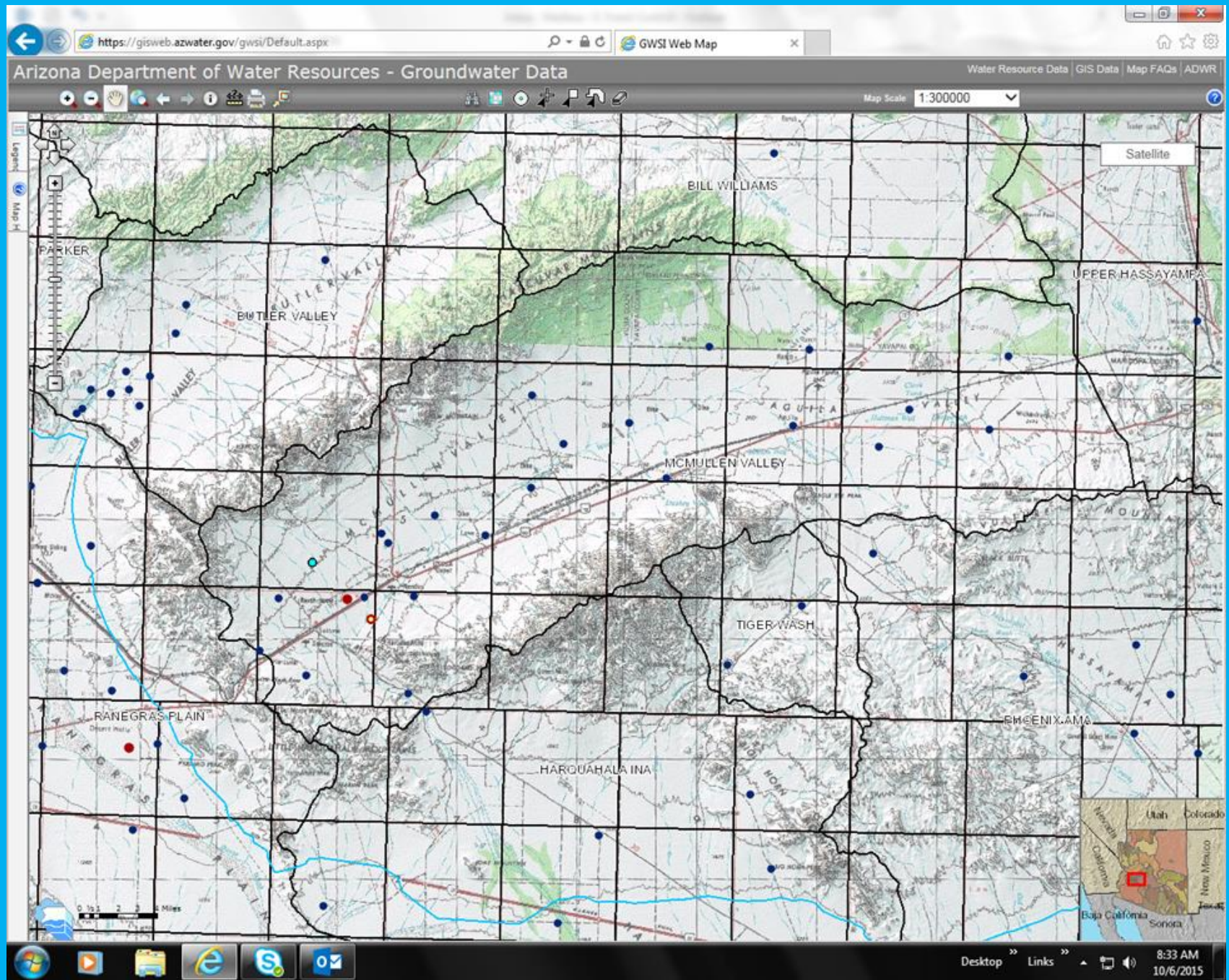


Water Level Changes In Arizona 2003 - 2013



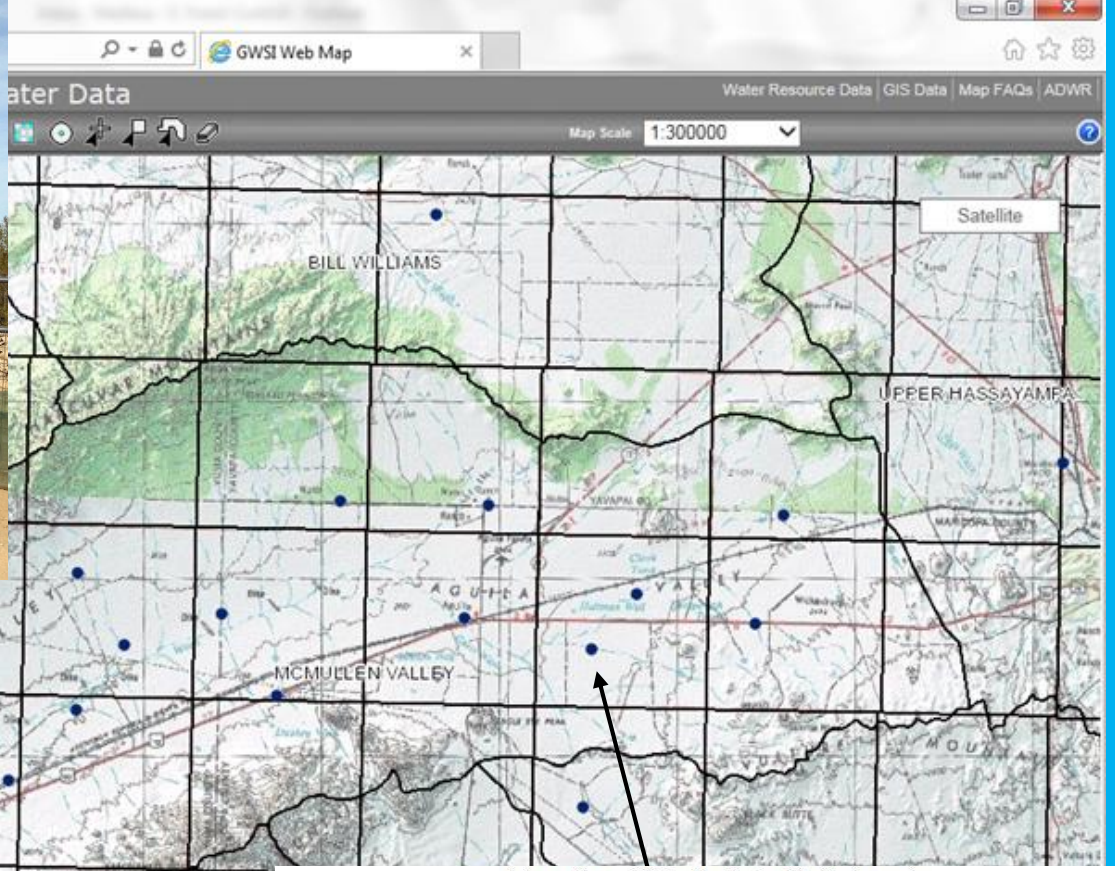


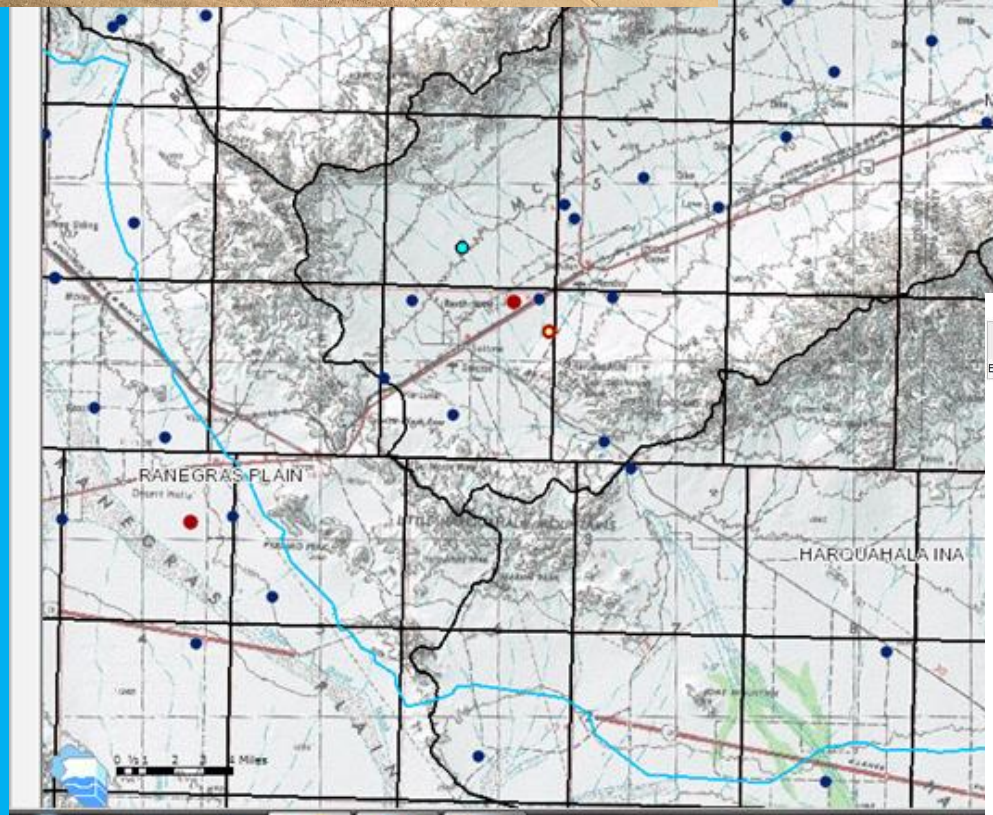
Locations of Groundwater Site Inventory (GWSI) Index wells in the McMullen Valley Basin



Water Level Change Statistics For GWSI Wells In McMullen Valley Basin

GWSI Water Level Change Data For The McMullen Valley Basin (1958 - 2015) (Units of WL Change = Feet)									
	1958 - 1989 WL Change	1958-1989 Positive WL Change	1958-1989 Negative WL Change	1989 - 2004 WL Change	1989-2004 Positive WL Change	1989-2004 Negative WL Change	2004 - 2015 WL Change	2004-2015 Positive WL Change	2004-2015 Negative WL Change
Well Count	33	0	33	84	4	80	15	4	11
Average	-166.2		-166.2	-34.2	5.4	-36.2	-12.4	19.4	-23.9
Median	-184.0		-184.0	-32.6	5.1	-33.3	-11.9	3.3	-16.7
Min	-284.4		-284.4	-141.0	2.2	-141.0	-81.9	1.1	-81.9
Max	-2.3		-2.3	9.2	9.2	-0.2	69.8	69.8	-9.1





Arizona GroundWater Monitoring Site Hydrograph

Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia. (in)	Drill Date	Latest WL Date	DTW (ft)	WL Elv. (ft)
B-07-08 20DDD	335545113062501		33° 55' 43.1"	113° 6' 23.9"	2224	UNUSED	1000	20	8/1/1958	12/3/2015	684.3	1539.7

GWSI Web Map

esources - Groundwater Data

Water Resource Data | GIS Data | Map FAQs | ADWR

Map Scale 1:300000

Satellite

BILL WILLIAMS

UPPER HASSAYAMPA

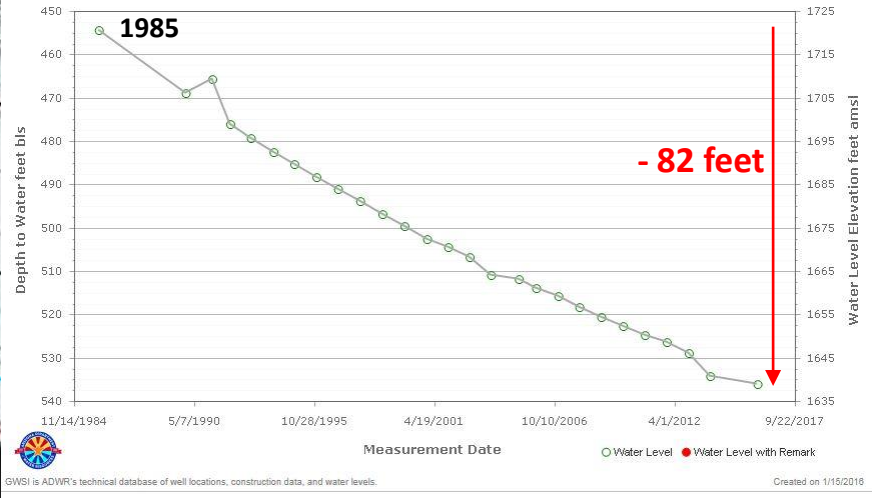
MCMULLEN VALLEY

RANEGRAS PLAIN

HARQUAHALA INA

Arizona GroundWater Monitoring Site Hydrograph

Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia. (in)	Drill Date	Latest WL Date	DTW (ft)	WL Elv. (ft)
B-07-11 08DAD2	335741113251401	506602	33° 57' 41.0"	113° 25' 13.7"	2175	STOCK	560	6	11/5/1983	12/21/2015	535.9	1639.1



GWSI is ADWR's technical database of well locations, construction data, and water levels.

Created on 1/16/2016

https://gisweb.azwater.gov/gwsi/Default.aspx

GWSI Web Map

Arizona Department of Water Resources - Groundwater Data

Water Resource Data | GIS Data | Map FAQs | ADWR

Map Scale 1:300000

Satellite

BILL WILLIAMS

PARKER

BUTLER VALLEY

UPPER HASSAYAMPA

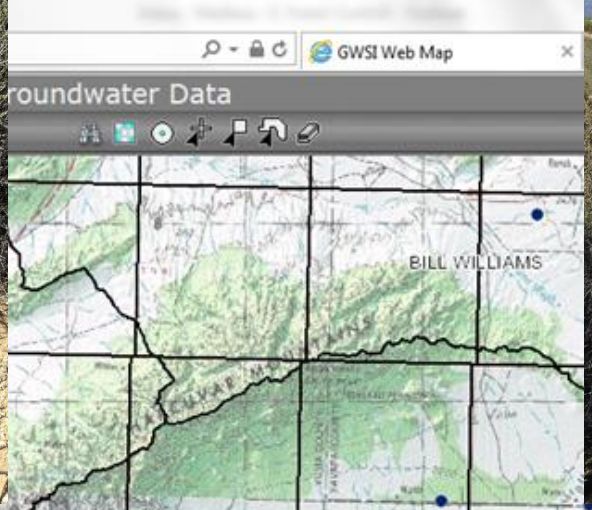
MCMULLEN VALLEY

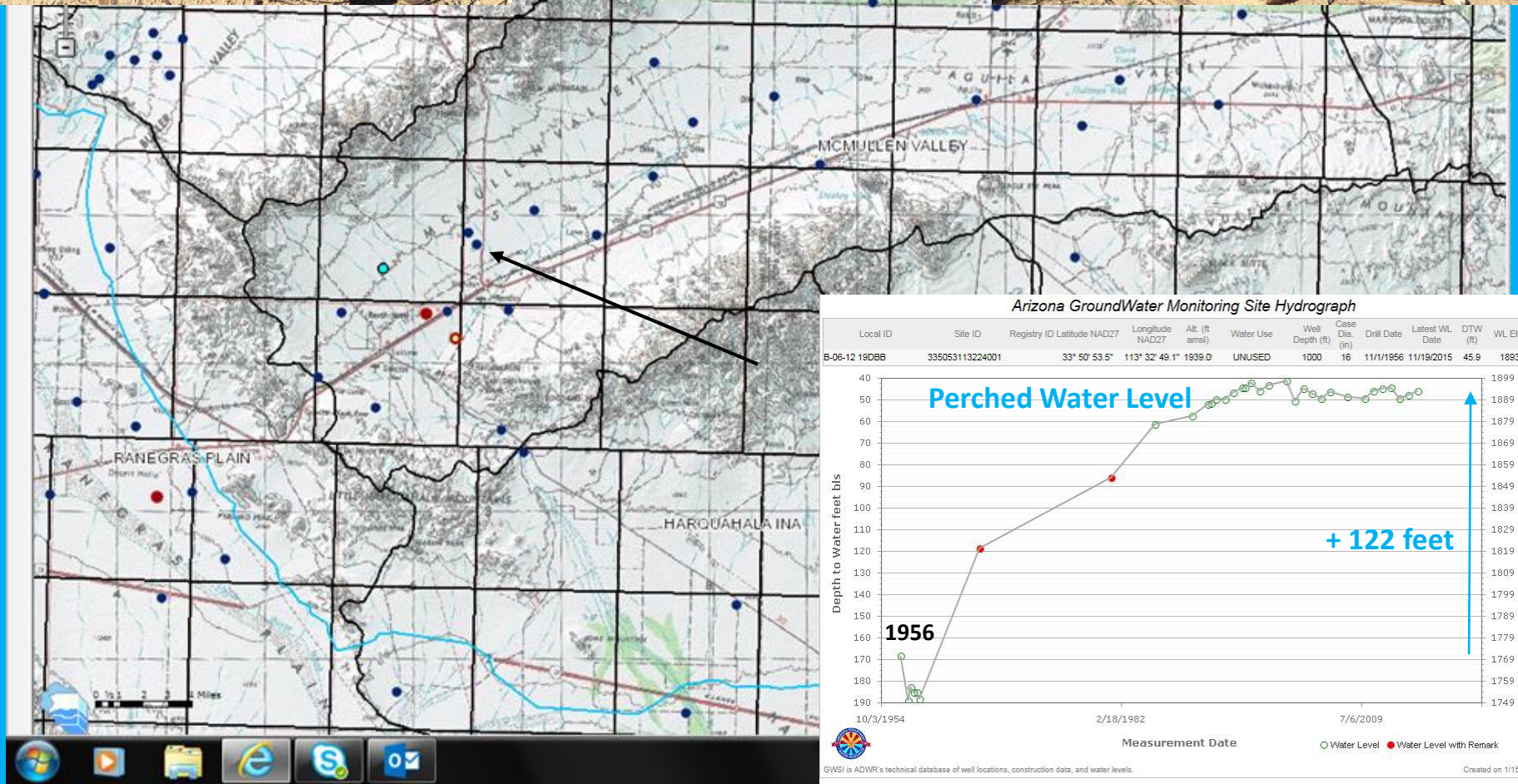
RANEGRAS PLAIN

HARQUAHALA INA

Arizona GroundWater Monitoring Site Hydrograph

Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia. (in)	Drill Date	Latest WL Date	DTW (ft)	WL Elv. (ft)
B-06-12 19BBA	335119113331201		33° 51' 20.1"	113° 33' 11.0"	1967	UNUSED	970	16	6/27/1954	10/21/2013	485.7	1481.3


GWSI Web Map
roundwater Data
BILL WILLIAMS


MCMULLEN VALLEY
RANEGRAS PLAIN
HARQUAHALA INA

Arizona GroundWater Monitoring Site Hydrograph
Local ID | Site ID | Registry ID | Latitude NAD27 | Longitude NAD27 | Alt. (ft amsl) | Water Use | Well Depth (ft) | Case Dia. (in) | Drill Date | Latest WL Date | DTW (ft) | WL Elv. (ft)
B-06-12 19DBB | 335053113224001 | | 33° 50' 53.5" | 113° 32' 49.1" | 1939.0 | UNUSED | 1000 | 16 | 11/1/1956 | 11/19/2015 | 45.9 | 1893.19
Perched Water Level
+ 122 feet
1956
Depth to Water feet bls
Water Level Elevation feet amsl
10/3/1954
2/18/1982
7/6/2009
Measurement Date
Water Level
Water Level with Remark
GWSI is ADWR's technical database of well locations, construction data, and water levels.
Created on 1/15/2016

https://gisweb.azwater.gov/gwsi/Default.aspx

GWSI Web Map

Arizona Department of Water Resources - Groundwater Data

PARKER

BUTLER VALLEY

BILL WILLIAMS

MCMULLEN VALLEY

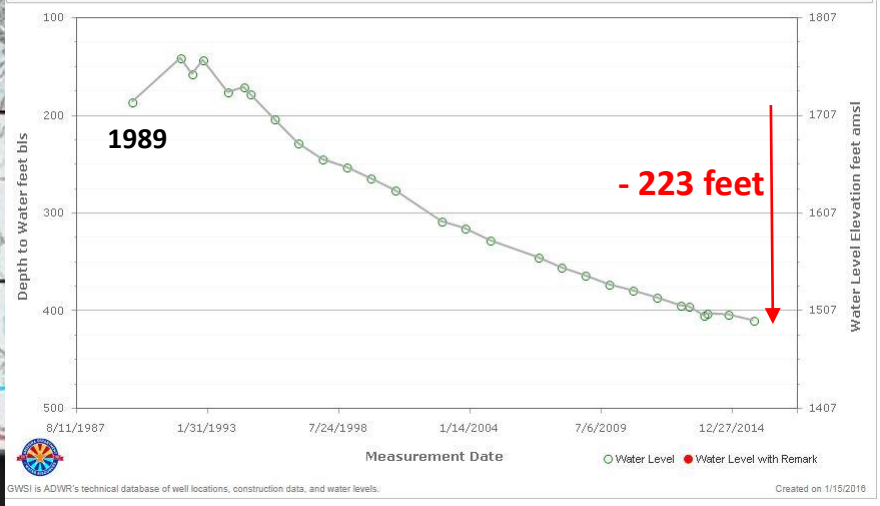
AGUILA VALLEY

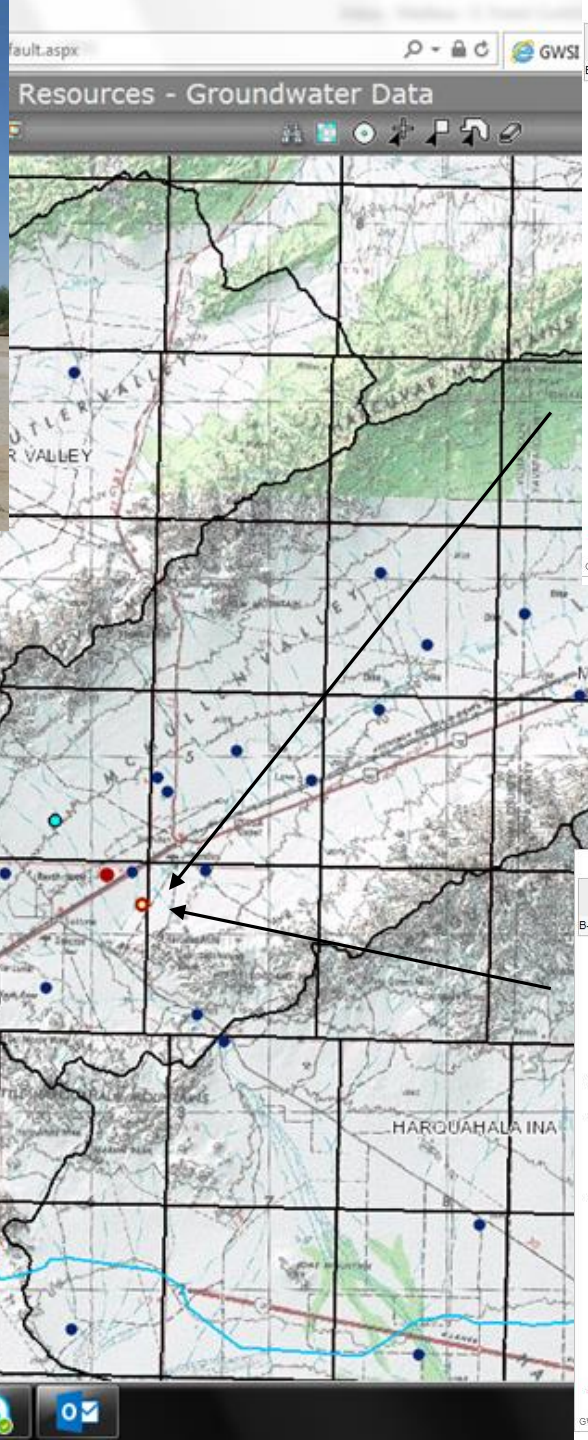
RANEGRAS PLAIN

HARQUAHALA INA

Arizona GroundWater Monitoring Site Hydrograph

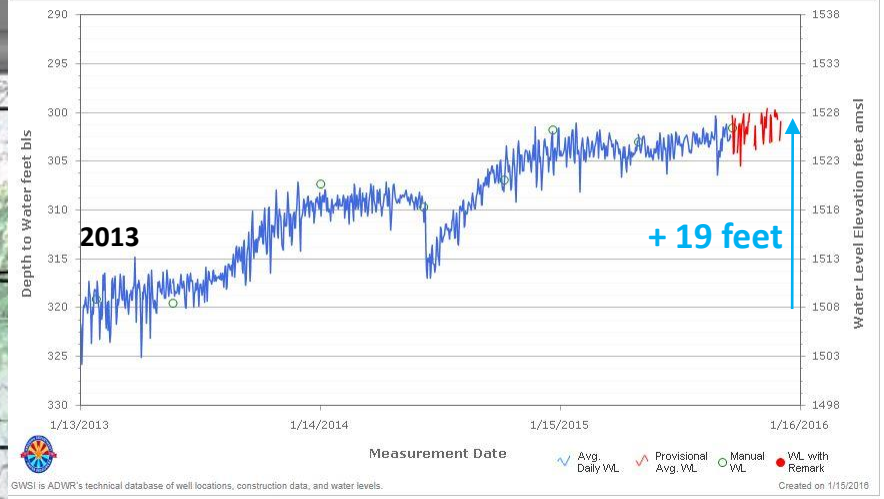
Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia. (in)	Drill Date	Latest WL Date	DTW (ft)	WL Elv. (ft)
B-05-12 05AAD1	334845113312201	614500	33° 48' 31.4"	113° 31' 22.1"	1907	UNUSED	511	16	1/1/1976	11/19/2015	409.5	1497.5

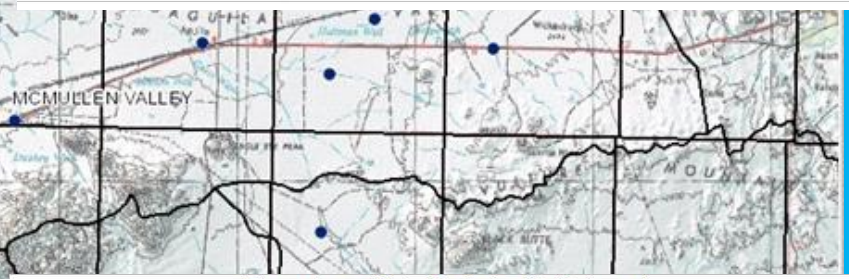




Arizona Automated GroundWater Monitoring Site Hydrograph

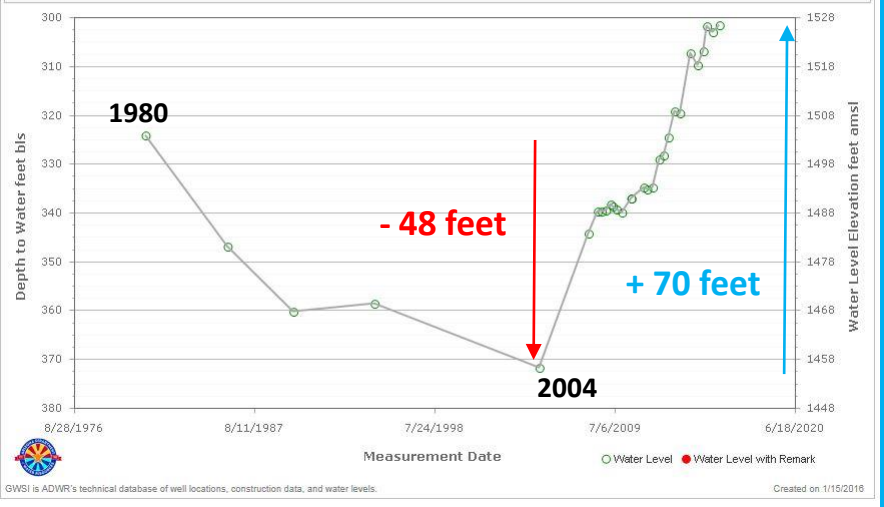
Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia. (in)	Drill Date	Latest WL Date	DTW (ft)	WL Elv. (ft)
B-05-13 12DAB1	334729113334201		33° 47' 25.0"	113° 33' 39.3"	1827.7	UNUSED	400	8	6/1/1973	10/28/2015	301.45	1526.3





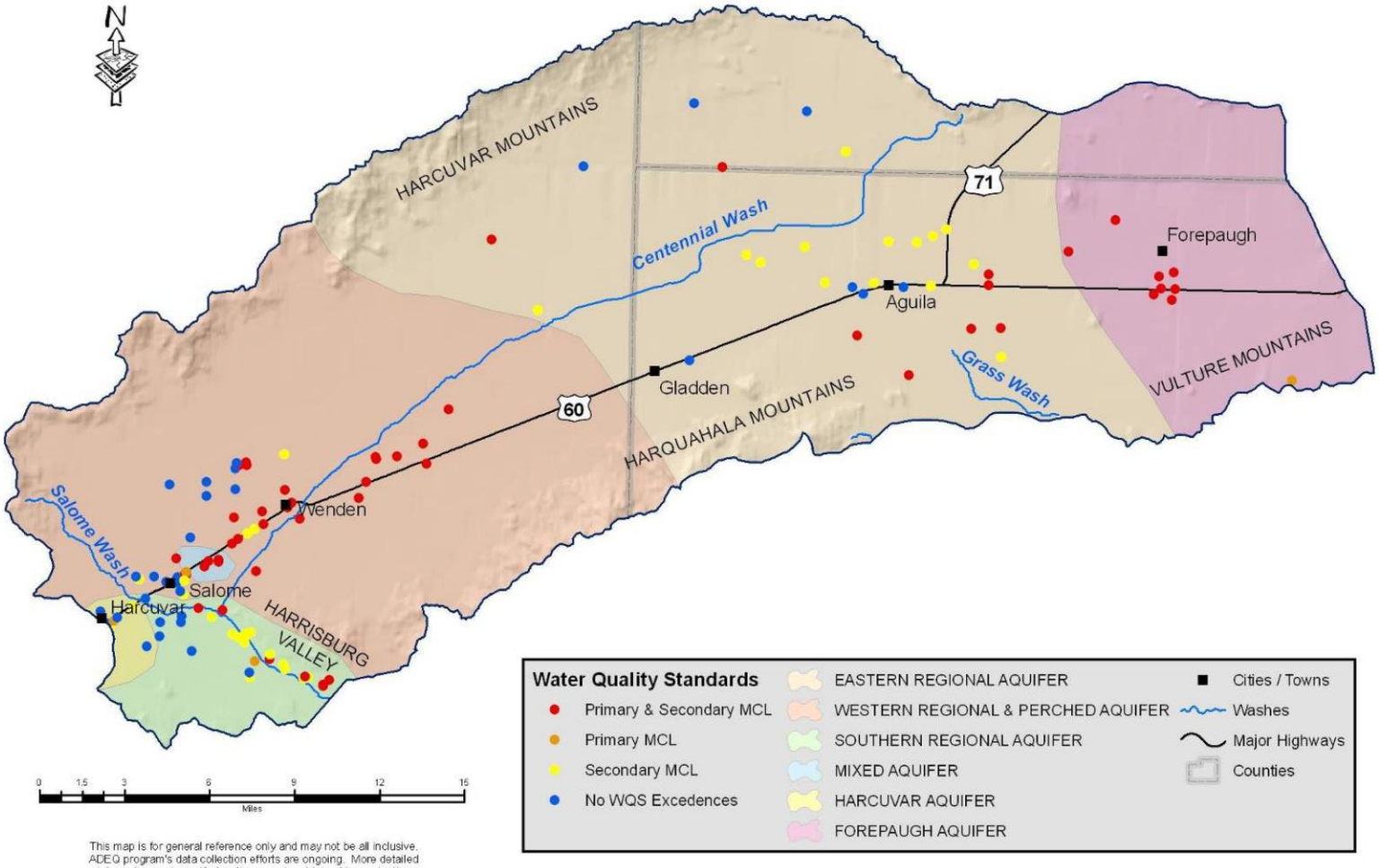
Arizona GroundWater Monitoring Site Hydrograph

Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia. (in)	Drill Date	Latest WL Date	DTW (ft)	WL Elv. (ft)
B-05-13 12DAB1	334729113334201		33° 47' 25.0"	113° 33' 39.3"	1827.7	UNUSED	400	8	6/1/1973	10/28/2015	301.45	1526.3

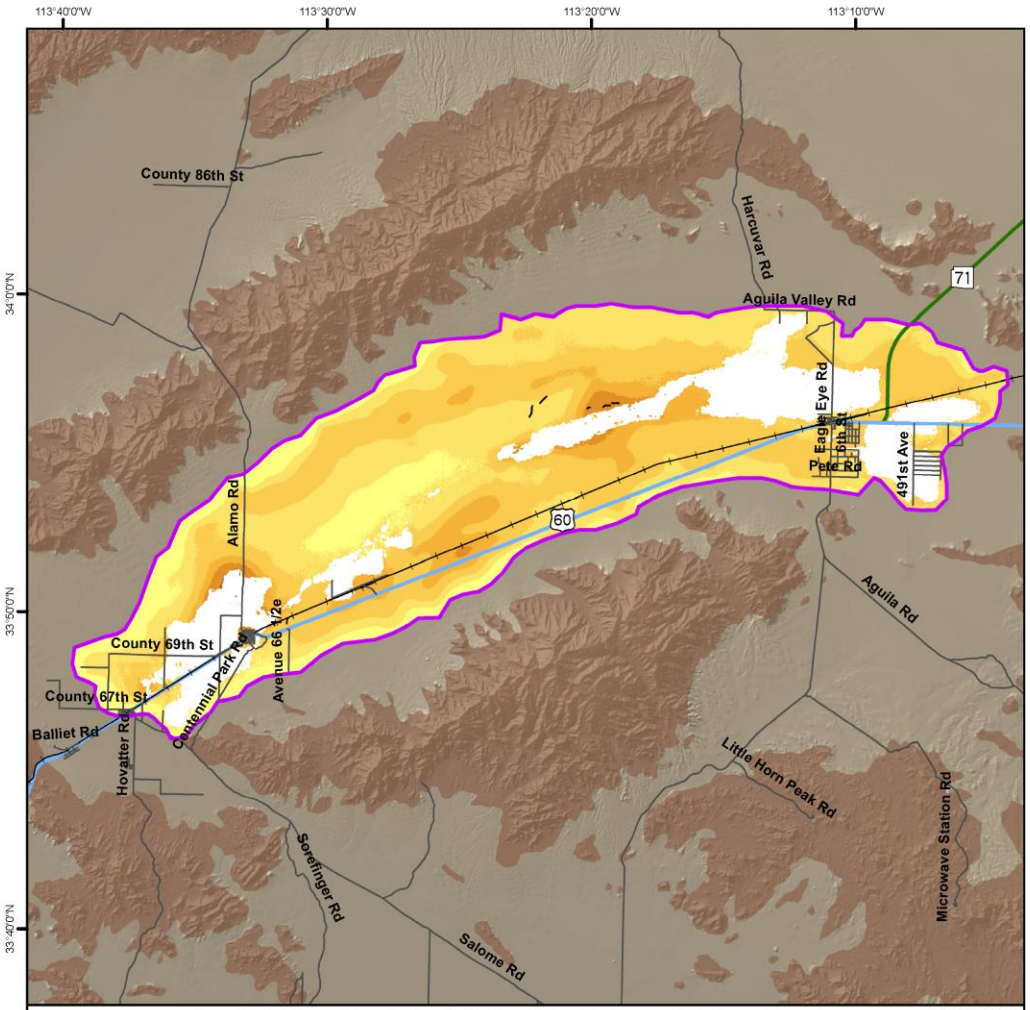


ADEQ Arizona Department of Environmental Quality

Map 3: Water Quality Standards



This map is for general reference only and may not be all inclusive. ADEQ program's data collection efforts are ongoing. More detailed information and specific locations can be obtained by contacting the Arizona Department of Environmental Quality.



Land Subsidence Rate in the McMullen Valley, La Paz and Maricopa Counties
Based on Radarsat-2 Satellite Interferometric Synthetic Aperture Radar (InSAR) Data
Time Period of Analysis: 1.0 Years 03/17/2014 To 04/05/2015

© MDA 2014 - 2015

Explanation

03/17/2014 To 04/05/2015

Land Subsidence Rate

- Decorrelation/No Data
- Greater 7 cm/yr (2.8 in/yr)
- 5 - 7 cm/yr (2.0 - 2.8 in/yr)
- 3 - 5 cm/yr (1.2 - 2.0 in/yr)
- 2 - 3 cm/yr (0.8 - 1.2 in/yr)
- 1 - 2 cm/yr (0.4 - 0.8 in/yr)
- 0.5 - 1 cm/yr (0.2 - 0.4 in/yr)
- 0 - 0.5 cm/yr (0 - 0.2 in/yr)

- Subsidence Feature
- Hardrock
- Earth Fissures

Highways and Interstates

- Interstate
- US
- State
- Roads
- Railway

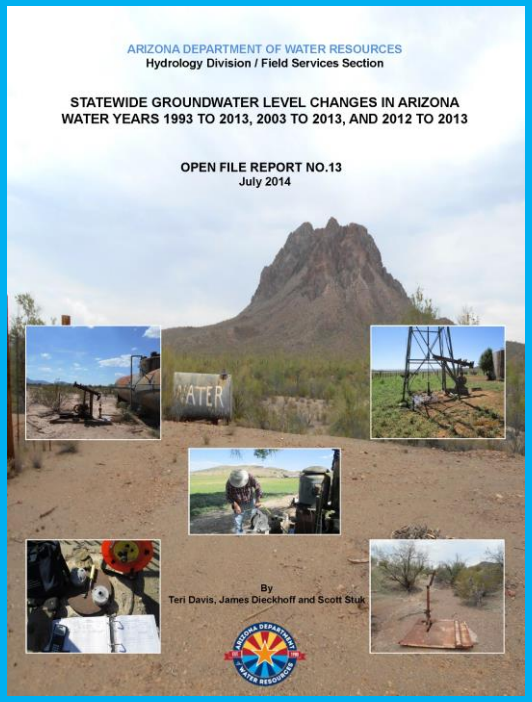
1:299,524

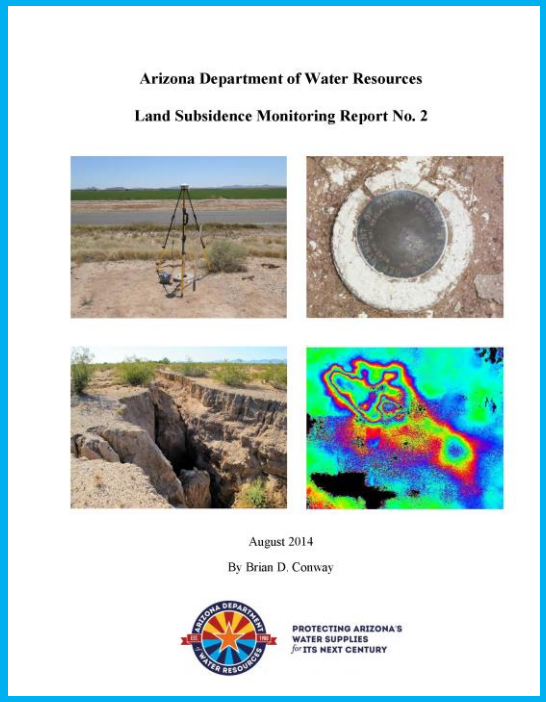
0 1.5 3 6 9 12 Miles

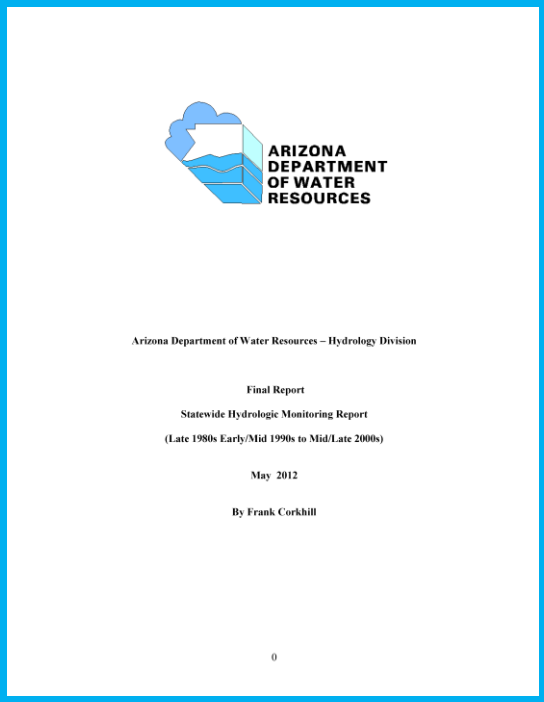
Decorrelation (white areas) are areas where the phase of the received satellite signal changed between satellite passes, causing the data to be unusable. This occurs in areas where the land surface has been disturbed (i.e. bodies of water, snow, agriculture areas, areas of development, etc).

Earth fissures were mapped by the Arizona Geological Survey. For information on earth fissures visit: www.azgs.az.gov/EFC

Coordinate System: NAD 1983 UTM Zone 12N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter
Created: 4/8/2015

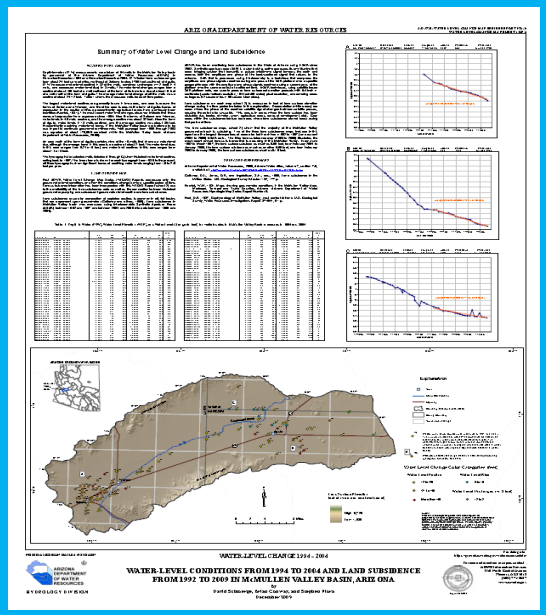






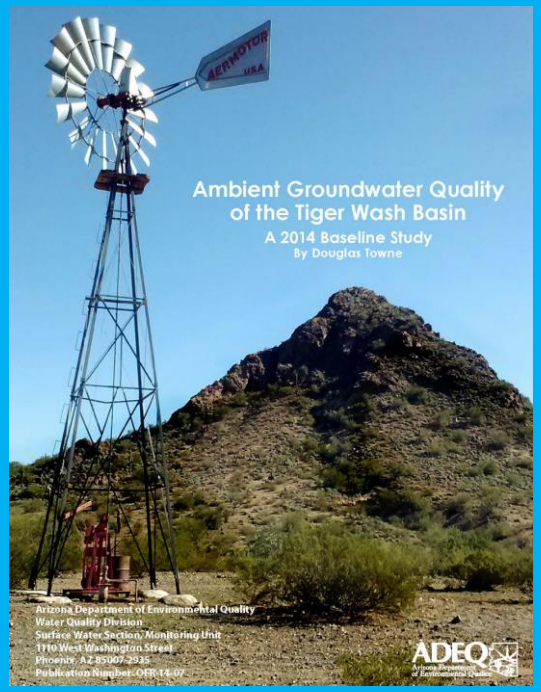
ADWR Hydrologic Map Series Reports

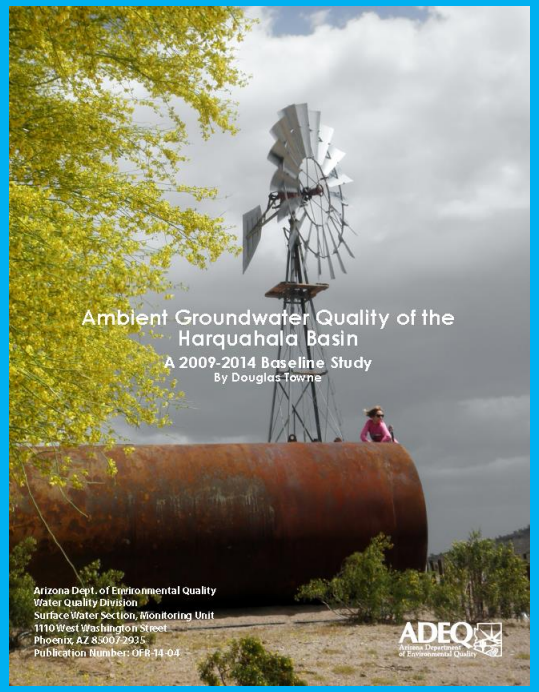
#1
#6
#13
#17
#18

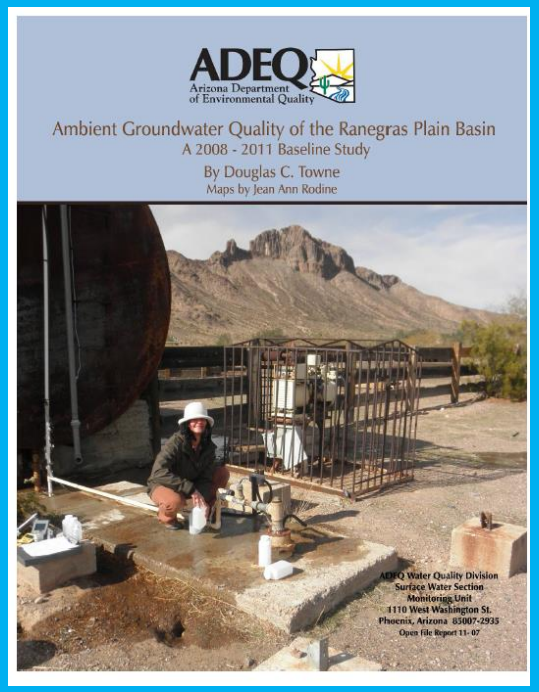


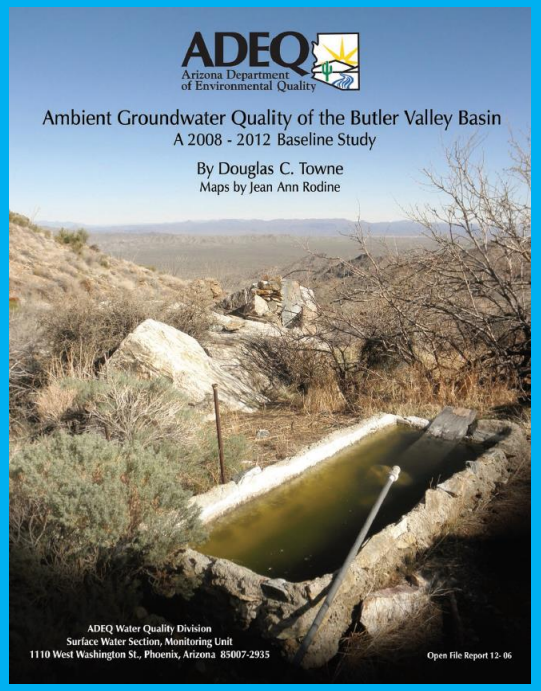
For More Information and Hydrologic Data for the West Basin Aquifers, Please Visit:

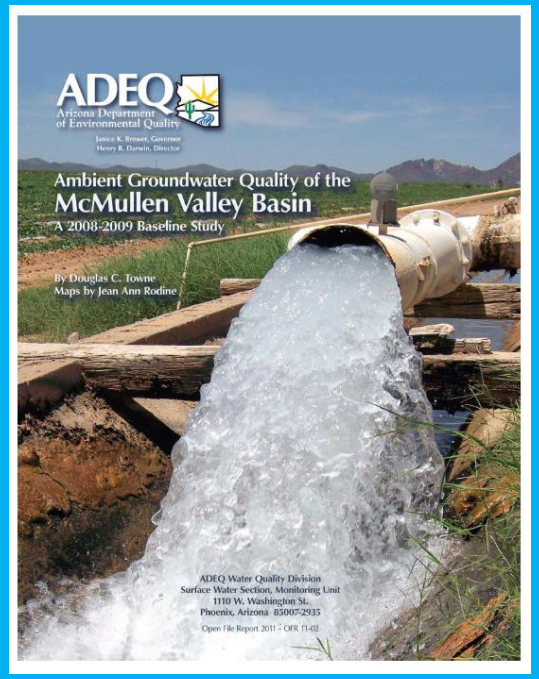
http://www.azwater.gov/AzDWR/Hydrology/Library/Library.htm











For More Information on the Water Quality of West Basin Aquifers, Please Visit:

http://www.azdeq.gov/environ/water/assessment/ambient.html

QUESTIONS?

For Further Information Please Visit The ADWR Website at: www.azwater.gov

Or Contact:

Frank Corkhill (Hydrology Division) efcorkhill@azwater.gov

or

Michelle Moreno (Public Information Office) mamoreno@azwater.gov