



DOUGLAS A. DUCEY
Governor

THOMAS BUSCHATZKE
Director

ARIZONA DEPARTMENT of WATER RESOURCES
1110 West Washington Street, Suite 310
Phoenix, Arizona 85007
602.771.8500
azwater.gov

October 21, 2019

Representative David L. Cook
Arizona House of Representatives
1700 West Washington Street, Suite H
Phoenix, Arizona 85007-2844

Re: October 16, 2019 Letter Requesting Information Regarding Pumping in the Pinal Active Management Area

Dear Representative Cook:

Thank you for your request that Arizona Department of Water Resources (ADWR) modeling staff be available to answer questions at the committee hearing on October 21, 2019. ADWR will have a hydrologist available to answer questions from the committee.

Following are responses to your requests for information in your October 16, 2019 letter. However, the 20-year timeframe for the data you requested is not consistent with the 100-year time period used for the 2019 Pinal Groundwater Model as required by statute. Comparing the projected pumping for a 20-year time period against a 20-year historical time period is not an accurate assessment of the 100-year model projections. In particular, the agricultural pumping in the Pinal AMA declines more significantly in the last 80 years of the model timeframe than in the first 20 years.

- 1. Request for maximum allowed pumping for agriculture over the last 20 years, including actual pumping numbers and projections for the next 20 years**

Maximum Allowed Pumping

ADWR cannot accurately determine a maximum pumping allotment for the last 20 years. Agricultural lands enrolled in the Best Management Practices (BMP) Program, established by statute in 2002, are not subject to maximum allotments.

The total maximum allowed agricultural pumping for the years 1999 through 2018 in the Pinal AMA, not including lands enrolled in the BMP Program, is 16,117,385.8 acre-feet. Based on the allotment in the year prior to BMP Program enrollment, the total maximum allowed agricultural pumping for the years 1999 through 2018 for lands enrolled in the BMP Program in the Pinal AMA is 2,755,542.5 acre-feet. The sum of those totals is 18,872,928.3 acre-feet. The annual allotment information used to calculate these totals is provided in Table 1, attached.

The volumes described above and included in Table 1 do not include pumping on Gila River Indian Community lands, because that pumping is not subject to state groundwater laws. Pursuant to the Gila River Indian Community Water Rights Settlement Agreement, the Gila River Indian Community can pump up to 156,700 acre-feet per year.

Actual Historic Pumping

As reflected in Table 2, attached, the total historic agricultural pumping in the Pinal AMA for the years 1999 through 2015 was 7,104,757 acre-feet. From annual reports submitted to ADWR, the total agricultural pumping in the Pinal AMA for the years 2016 and 2017 combined was 855,787 acre-feet. The total historic agricultural pumping in the Pinal AMA from 1999 through 2017 is 7,960,544. Agricultural pumping data for 2018 is not yet available. ADWR does not have estimates of agricultural pumping on Gila River Indian Community lands for 2016 through 2018 at this time.

Projected Pumping

As shown in Table 2, the 2019 Pinal Groundwater Model projects 9,640,524 acre-feet of agricultural pumping in the Pinal AMA from 2016 through 2037.

The projected future pumping for the requested 20-year period deviates from the requested 20-year historical data described above as follows:

- a. As required by the AWS rules, ADWR assumed discontinuation of agricultural pumping (and associated incidental agricultural recharge) for all agricultural lands that are also included in an analysis of assured water supply (analysis) or a certificate of assured water supply (certificate). The discontinued agricultural pumping was replaced with the groundwater pumping associated with the respective analysis or certificate.
- b. ADWR incorporated projected changes in future groundwater pumping to account for the reduction in CAP water deliveries to the agricultural/excess pool beginning in 2024 and the elimination of the agricultural/excess pool beginning in 2031.

ADWR's long-term projections in the 2019 Pinal Groundwater Model incorporated additional reductions in agricultural pumping based on projections from CAIDD and MSIDD in combination with planning and other projection data. These longer-term reductions are not represented in the 20-year projections you requested.

ADWR did not incorporate assumptions regarding additional agricultural production wells or pumping related to the Arizona Drought Contingency Implementation Plan, which was still under negotiation during the development of the 2019 AWS Run assumptions.

2. Request for actual pumping allowances for the City of Maricopa for the last 20 years and projections for the next 20 years.

The City of Maricopa does not hold any groundwater withdrawal authority. Maricopa is served by two municipal providers: Maricopa Domestic Water Improvement District (MDW) and Global-Santa Cruz Water Company (Global-Santa Cruz). Global-Santa Cruz has two service areas, which are separated by the Ak-Chin Indian Community Reservation. The North service area serves most of the City of Maricopa. The Southwest service area serves a smaller area southwest of the Ak-Chin Indian Community Reservation outside the City of Maricopa.

Both Global-Santa Cruz and MWD are legally authorized to pump groundwater according to their respective service area rights. Service area rights do not limit the volume of groundwater that the service area right holder may pump.

MDW is not designated as having an assured water supply. According to annual reports from 2003 to 2017, MDW's groundwater withdrawals ranged from 145 to 262 acre-feet per year. In the 2019 Pinal Groundwater Model, ADWR used MDW's 2015 reported groundwater pumping volume of 218 acre-feet and assumed the same volume of groundwater pumping for each year of the 100-year projection. The total projected pumping for 20 years is 4,360 acre-feet.

Global-Santa Cruz is designated as having an assured water supply for both its North and Southwest service areas for a total volume of 22,914.12 acre-feet per year of groundwater and effluent. ADWR inadvertently included this full volume in the 2019 Pinal Groundwater Model for each year of the 100-year projection period. However, only 17,782.25 acre-feet per year of groundwater pumping should have been included for Global-Santa Cruz. The total projected pumping for 20 years (of the 100 years included in the model) is 458,282.4 acre-feet. The corrected total projected pumping for 20 years would be 355,645 acre-feet.

In 2017, the total groundwater pumping for both the North and Southwest service areas was 7,512.86 acre-feet. In 2018, the total groundwater pumping for both service areas was 7,401.70 acre-feet.

Sincerely,

A handwritten signature in black ink, appearing to read 'Thomas Buschatzke', with a long horizontal flourish extending to the right.

Thomas Buschatzke
Director

ATTACHMENT 1

Table 1: Maximum Pumping Allotments for the Pinal AMA 1998-2018

Year	BMP Allotments (AF)¹	Base Program (non-BMP) Allotments (AF)	Sum of Allotments (AF)
1999	0.0	1,075,793.0	1,075,793.0
2000	0.0	949,156.7	949,156.7
2001	0.0	948,332.9	948,332.9
2002	0.0	983,584.3	983,584.3
2003	0.0	982,657.6	982,657.6
2004	63,006.5	916,914.9	979,921.3
2005	94,249.5	874,283.3	968,532.7
2006	102,410.0	843,373.7	945,783.7
2007	105,511.8	809,953.7	915,465.5
2008	114,094.4	801,305.6	915,400.0
2009	113,525.9	802,247.9	915,773.8
2010	150,782.0	767,332.5	918,114.5
2011	184,795.9	746,669.0	931,464.9
2012	196,716.4	724,246.7	920,963.1
2013	224,549.4	693,806.0	918,355.4
2014	266,815.9	659,141.1	925,957.0
2015	280,218.4	639,990.4	920,208.9
2016	281,817.7	638,327.5	920,145.1
2017	286,075.4	634,044.1	920,119.5
2018	290,973.3	626,224.9	917,198.2
Grand Total	2,755,542.5	16,117,385.8	18,872,928.3

¹ The BMP allotments are assumed based on the allotment for the year prior to enrollment in the BMP Program.

ATTACHMENT 2

Table 2 Model Assigned Agricultural Pumping 1996 - 2037

Model Assigned Pumping For the Agricultural Sector For Wells Within the Pinal Model Domain													
Stress Period	SUBBASIN	ELOY				Maricopa-Stanfield			East Salt River Valley (Part Within Pinal AMA Model)			Total Eloy + Maricopa Stanfield Only (Pinal)	Total Inside Model Domain
	DATA SOURCE	RoGR	GRIC	SCIP	Total Eloy	RoGR	GRIC	Total M-S	GRIC	SCIP	Total ESRV		
HISTORIC (1996 - 2015)													
75	1996	280,152	6,689	39,200	326,040	154,962	11,810	166,772	34,963	16,437	51,400	492,812	544,212
76	1997	247,123	5,047	53,306	305,476	95,403	9,245	104,649	27,013	27,491	54,504	410,125	464,629
77	1998	221,351	6,689	36,520	264,559	90,982	11,810	102,792	34,963	17,118	52,081	367,351	419,432
78	1999	228,234	4,906	49,586	282,727	93,376	8,646	102,022	25,615	26,393	52,007	384,749	436,756
79	2000	254,684	2,307	48,284	305,275	89,091	0	89,091	4,359	22,919	27,278	394,366	421,644
80	2001	209,465	6,689	41,305	257,458	81,491	11,810	93,302	34,963	23,438	58,401	350,760	409,161
81	2002	244,726	0	48,591	293,317	104,239	0	104,239	0	23,969	23,969	397,556	421,525
82	2003	289,945	0	42,977	332,922	139,451	0	139,451	0	26,041	26,041	472,374	498,414
83	2004	267,224	2,292	33,109	302,624	143,831	0	143,831	4,331	23,263	27,594	446,456	474,049
84	2005	200,343	6,689	31,429	238,461	93,019	11,810	104,829	34,963	14,497	49,460	343,290	392,750
85	2006	219,631	4,267	30,016	253,914	96,704	8,059	104,763	24,810	18,637	43,447	358,677	402,123
86	2007	249,207	4,129	35,399	288,735	107,294	7,558	114,852	23,759	19,754	43,513	403,588	447,101
87	2008	270,332	4,849	35,271	310,453	162,016	8,646	170,662	9,570	22,858	32,428	481,115	513,543
88	2009	237,291	6,689	38,198	282,178	139,184	11,810	150,994	6,360	24,833	31,193	433,172	464,365
89	2010	219,164	6,937	32,045	258,146	93,044	12,248	105,291	6,595	14,262	20,857	363,437	384,294
90	2011	267,388	11,531	33,160	312,079	136,643	20,361	157,004	10,964	16,521	27,485	469,082	496,568
91	2012	250,597	10,658	39,501	300,755	133,484	18,819	152,303	10,134	27,418	37,552	453,059	490,610
92	2013	269,460	10,022	37,504	316,986	127,544	17,695	145,240	9,529	23,374	32,902	462,226	495,128
93	2014	259,872	8,645	33,946	302,464	132,590	15,265	147,855	8,220	23,397	31,617	450,318	481,935
94	2015	247,622	11,332	26,579	285,532	134,993	20,009	155,001	10,774	28,363	39,137	440,534	479,671
	TOTAL	4,933,811	120,364	765,927	5,820,102	2,349,342	205,601	2,554,943	321,884	440,981	762,866	8,375,045	9,137,911
	MIN	200,343	0	26,579	238,461	81,491	0	89,091	0	14,262	20,857	343,290	384,294
	MAX	289,945	11,531	53,306	332,922	162,016	20,361	170,662	34,963	28,363	58,401	492,812	544,212
	AVE	246,691	6,018	38,296	291,005	117,467	10,280	127,747	16,094	22,049	38,143	418,752	456,896
PROJECTED (2016 - 2037)													
		Existing Registered Well Locations	GRIC Well Locations	SCIP Well Locations	Total Eloy	Existing Registered Well Locations	GRIC Well Locations	Total M-S	GRIC Well Locations	SCIP Well Locations	Total ESRV	Total Eloy + Maricopa Stanfield Only (Pinal AMA)	Total Inside Model Domain
95	2016	159,105	14,033	16,811	189,949	131,436	24,779	156,214	13,343	35,124	48,467	346,163	394,630
96	2017	163,594	13,753	14,501	191,848	131,436	24,284	155,719	13,076	34,422	47,498	347,567	395,066
97	2018	179,394	13,472	25,829	218,696	131,436	23,789	155,224	12,810	33,721	46,530	373,920	420,450
98	2019	189,213	13,192	32,923	235,329	131,332	23,294	154,626	12,543	33,019	45,562	389,955	435,517
99	2020	168,379	12,912	17,513	198,804	131,212	22,799	154,010	12,277	32,317	44,594	352,814	397,408
100	2021	181,835	12,631	27,561	222,027	130,892	22,304	153,195	12,010	31,616	43,626	375,222	418,848
101	2022	188,282	12,351	32,469	233,103	130,564	21,809	152,373	11,743	30,914	42,657	385,475	428,133
102	2023	185,798	12,071	30,821	228,690	130,231	21,314	151,544	11,477	30,212	41,689	380,234	421,923
103	2024	199,216	11,790	15,256	226,263	155,762	20,819	176,580	11,210	29,511	40,721	402,843	443,564
104	2025	206,803	11,510	16,949	235,262	158,363	20,324	178,687	10,944	28,809	39,753	413,949	453,702
105	2026	213,998	11,230	17,608	242,836	161,020	19,829	180,849	10,677	28,107	38,785	423,685	462,470
106	2027	215,396	10,949	14,489	240,835	162,854	19,334	182,188	10,411	27,406	37,816	423,023	460,839
107	2028	229,849	10,669	16,780	257,298	167,691	18,839	186,529	10,144	26,704	36,848	443,828	480,676
108	2029	226,191	10,389	13,948	250,528	166,653	18,344	184,997	9,878	26,002	35,880	435,524	471,404
109	2030	209,539	10,108	10,415	230,062	147,054	17,849	164,902	9,611	25,301	34,912	394,964	429,876
110	2031	303,750	9,828	18,425	332,003	175,215	17,354	192,568	9,345	24,599	33,944	524,571	558,515
111	2032	312,837	9,548	23,298	345,682	175,215	16,859	192,073	9,078	23,897	32,975	537,755	570,731
112	2033	306,217	9,267	18,340	333,825	175,215	16,364	191,578	8,811	23,196	32,007	525,403	557,410
113	2034	321,753	8,987	29,668	360,408	175,215	15,869	191,083	8,545	22,494	31,039	551,492	582,531
114	2035	331,527	8,707	36,763	376,997	175,215	15,374	190,588	8,278	21,792	30,071	567,585	597,655
115	2036	299,981	8,426	21,352	329,759	171,521	14,879	186,399	8,012	21,091	29,102	516,158	545,261
116	2037	303,571	8,146	31,400	343,117	170,893	14,384	185,276	7,745	20,389	28,134	528,393	556,528
	TOTAL	5,096,229	243,972	483,119	5,823,319	3,386,422	430,783	3,817,205	231,968	610,642	842,611	9,640,524	10,483,135
	MIN	159,105	8,146	10,415	189,949	130,231	14,384	151,544	7,745	20,389	28,134	346,163	394,630
	MAX	331,527	14,033	36,763	376,997	175,215	24,779	192,568	13,343	35,124	48,467	567,585	597,655
	AVE	231,647	11,090	21,960	264,696	153,928	19,581	173,509	10,544	27,756	38,300	438,206	476,506