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# **DRAFT GAM RUN 09-008: GROUNDWATER MANAGEMENT AREA 16 MODEL RUNS TO ESTIMATE DRAWDOWNS UNDER ASSUMED FUTURE PUMPING FOR THE GULF COAST AQUIFER**

by William R. Hutchison, Ph.D., P.E., P.G.  
Texas Water Development Board  
Groundwater Resources Division  
(512) 463-5067  
June 7, 2011

*This document is released for the purpose of draft review under the authority of William R. Hutchison, P.E. 96287, P.G. 286, on June 7, 2011.*

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## **EXECUTIVE SUMMARY:**

Ten simulations of groundwater pumping were run using the Groundwater Management Area 16 model. Scenario 1 represented pumping that was requested by groundwater conservation district representatives of Groundwater Management Area 16. Scenarios 2 and 3 represented increases in pumping within the boundaries of Brush Country Groundwater Conservation District above the Scenario 1 values. Scenario 4 represented changes in Bee and McMullen counties from the Scenario 1 values. Scenarios 5 through 9 represented across-the-board decreases in pumping from Scenario 1. Scenario 10 represented individual county-by-county changes in pumping from Scenario 1. Scenarios 1 to 4 were completed by TWDB staff prior to the August 19, 2010 meeting of Groundwater Management 16. Scenarios 5 through 10 were completed during the August 19, 2010 meeting of Groundwater Management 16 during discussion of Scenarios 1 through 4.

Pumping and drawdown summaries of all ten scenarios are provided, as well as detailed sub-regional groundwater budgets of Scenario 10, which was used as the basis of establishing a desired future condition for Groundwater Management Area 16.

## **REQUESTOR:**

Mr. Scott Bledsoe from the Live Oak Underground Water Conservation District acting on behalf of Groundwater Management Area 16.

## **DESCRIPTION OF REQUEST:**

Ten simulations of groundwater pumping were run using the Groundwater Management Area 16 model. Scenario 1 represented pumping that was requested by groundwater conservation district representatives of Groundwater Management Area 16. Scenarios 2 and 3 represented increases in pumping within the boundaries of Brush Country Groundwater Conservation District above the Scenario 1 values. Scenario 4 represented changes in Bee and McMullen counties from the Scenario 1 values. Scenarios 5 through 9 represented across-the-board decreases in pumping from Scenario 1. Scenario 10 represented individual county-by-county changes in pumping from Scenario 1. Scenarios 1 to 4 were completed by TWDB staff prior to the August 19, 2010 meeting of Groundwater Management 16. Scenarios 5 through 10 were completed during the August 19, 2010 meeting of Groundwater Management 16 during discussion of Scenarios 1 through 4.

## **PARAMETERS AND ASSUMPTIONS:**

- The Groundwater Management Area 16 groundwater flow model was used for these predictive simulations (Hutchison and others, 2011).
- The groundwater flow model encompasses the boundaries of Groundwater Management Area 16 and its underlying aquifer systems. The Groundwater Management Area 16 model includes portions of the underlying Gulf Coast, Yegua-Jackson, and Queen City-Sparta Carrizo-Wilcox aquifer systems. Layers 1 through 4 represent the Gulf Coast Aquifer System which is comprised of the Chicot Aquifer, Evangeline Aquifer, Burkeville Confining System, and Jasper Aquifer in descending order. Layer 5 is a bulk representation of the Yegua-Jackson Aquifer System including parts of the Catahoula Formation and layer 6 is a bulk representation of the Queen-City, Sparta, Carrizo-Wilcox aquifers (Hutchison and others, 2011).
- The transient groundwater flow model and the predictive simulations were run using MODFLOW 2000 (Harbaugh and others, 2000) with the Geometric Multigrid Solver (Wilson and Naff, 2004).
- The River Package was used to simulate the effects of flow between rivers, reservoirs, streams, creeks and the underlying aquifer systems in the Groundwater Management Area 16 model (Hutchison and others, 2011).

- The Drain Package was used to simulate point (spring) and diffuse (wetland) discharges in the Groundwater Management Area 16 model (Hutchison and others, 2011).
- The General-Head Package was used to simulate lateral groundwater flow in the Groundwater Management Area 16 model along model boundaries (Hutchison and others, 2011).
- The average residual for the transient Groundwater Management Area 16 model is 14.66 feet. The standard deviation divided by the range of measured groundwater elevations is 0.039 and the absolute residual mean divided by the range is 3 percent.

## **METHODS AND RESULTS:**

The groundwater flow model for Groundwater Management Area 16 was calibrated from 1963 to 1999. These predictive simulations used average recharge conditions that were based on 1963 through 1999 recharge values from the Groundwater Management Area 16 transient groundwater flow model, general-head boundary values for 1999, and the river stage values for 1987. The river stage values for 1987 were used because annual precipitation factors drove the river stage estimates, and 1987 was an “average” precipitation year.

The simulations were run for 61 stress periods, covering the years 2000 to 2060. Pumping from 2000 to 2006 (stress periods 1 to 7) for all scenarios were set equal to pumping in the year 1999 from the calibrated model. Pumping for stress periods 8 to 60 were specified based on the scenario. The 1999 pumping was used for the first seven years of the predictive scenarios in order to allow the groundwater levels to adjust to average recharge conditions. Recharge for the last stress period in the transient model (1999) was relatively low compared to recharge averaged for 1963 through 1999. Groundwater level changes (drawdown) were calculated as the change in water levels from the end of 2010 to the end of 2060.

The pumping request by county and model layer made by the representatives of Groundwater Management Area 16 that was used in stress periods 8 to 60 of Scenario 1 is presented in Table 1. Pumping in Scenario 2 was a duplicate of the Scenario 1 with the exception that groundwater pumping in Brush Country Groundwater Conservation District was increased by a factor of 3 for stress periods 8 through 61. These pumping amounts are summarized in Table 2 by model layer and county.

Pumping in Scenario 3 was also a duplicate of Scenario 1 with the exception that groundwater pumping in Brush Country Groundwater Conservation District was increased by a factor of 5 for stress periods 8 through 61. These pumping amounts are summarized in Table 3 by model layer and county.

Drawdown estimates for Scenarios 1, 2 and 3 by county and for Gulf Coast Aquifer model layers are summarized in Tables 4, 5 and 6, respectively.

**TABLE 1. REQUESTED GROUNDWATER PUMPING FOR SCENARIO 1 IN GROUNDWATER MANAGEMENT 16 BY COUNTY AND MODEL LAYER. ALL VALUES IN ACRE-FEET PER YEAR.**

County	Layer 1	Layer 2	Layer 3	Layer 4	Layer 5	Layer 6	All Layers	Gulf Coast Layers
Bee	9,680	11,868	76	601	0	76	22,301	22,225
Brooks	222	3,859	0	0	0	0	4,081	4,081
Cameron	49,980	547	0	0	0	0	50,529	50,529
Duval	755	7,949	76	5,281	1	0	14,064	14,062
Hidalgo	10,208	39,791	0	0	0	0	49,999	49,999
JimHogg	0	878	0	4,001	0	0	4,880	4,879
JimWells	1,557	4,344	6	7	0	0	5,913	5,913
Kenedy	5,000	46,744	0	0	0	0	51,745	51,745
Kleberg	5,081	44,918	0	0	0	0	50,000	50,000
LiveOak	100	3,935	1,417	5,982	9	85	11,527	11,433
McMullen	0	0	0	1,054	0	4	1,058	1,054
Nueces	2,431	6,569	0	0	0	0	9,000	9,000
SanPatricio	10,003	8,997	0	0	0	0	19,000	19,000
Starr	0	7,521	0	0	79	0	7,600	7,521
Webb	0	2,854	0	146	0	0	3,000	3,000
Willacy	7,000	25,000	0	0	0	0	32,000	32,000

Pumping in each county distributed evenly across entire county

Note that pumping in Bee, McMullen and Webb counties represent the entire county

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**TABLE 2. REQUESTED GROUNDWATER PUMPING FOR SCENARIO 2 IN GROUNDWATER MANAGEMENT 16 BY COUNTY AND MODEL LAYER. ALL VALUES IN ACRE-FEET PER YEAR.**

County	Layer 1	Layer 2	Layer 3	Layer 4	Layer 5	Layer 6	All Layers	Gulf Coast Layers
Bee	9,680	11,868	76	601	0	76	22,301	22,225
Brooks	422	9,411	0	0	0	0	9,833	9,833
Cameron	49,980	547	0	0	0	0	50,529	50,529
Duval	755	7,949	76	5,281	1	0	14,064	14,062
Hidalgo	10,588	40,597	0	0	0	0	51,185	51,185
JimHogg	0	2,634	0	12,004	1	0	14,640	14,639
JimWells	4,386	12,469	16	20	0	0	16,891	16,891
Kenedy	5,000	46,744	0	0	0	0	51,745	51,745
Kleberg	5,115	45,218	0	0	0	0	50,333	50,333
LiveOak	100	3,935	1,417	5,982	9	85	11,527	11,433
McMullen	0	0	0	1,054	0	4	1,058	1,054
Nueces	2,431	6,569	0	0	0	0	9,000	9,000
SanPatricio	10,003	8,997	0	0	0	0	19,000	19,000
Starr	0	7,521	0	0	79	0	7,600	7,521
Webb	0	2,854	0	146	0	0	3,000	3,000
Willacy	7,000	25,000	0	0	0	0	32,000	32,000

Pumping in each county distributed evenly across entire county

Note that pumping in Bee, McMullen and Webb counties represent the entire county

**TABLE 3. REQUESTED GROUNDWATER PUMPING FOR SCENARIO 3 IN GROUNDWATER MANAGEMENT 16 BY COUNTY AND MODEL LAYER. ALL VALUES IN ACRE-FEET PER YEAR.**

County	Layer 1	Layer 2	Layer 3	Layer 4	Layer 5	Layer 6	All Layers	Gulf Coast Layers
Bee	9,680	11,868	76	601	0	76	22,301	22,225
Brooks	623	14,962	0	0	0	0	15,585	15,585
Cameron	49,980	547	0	0	0	0	50,529	50,529
Duval	755	7,949	76	5,281	1	0	14,064	14,062
Hidalgo	10,969	41,402	0	0	0	0	52,370	52,370
JimHogg	0	4,391	0	20,007	2	0	24,400	24,398
JimWells	7,215	20,594	27	34	0	0	27,869	27,869
Kenedy	5,000	46,744	0	0	0	0	51,745	51,745
Kleberg	5,149	45,518	0	0	0	0	50,667	50,667
LiveOak	100	3,935	1,417	5,982	9	85	11,527	11,433
McMullen	0	0	0	1,054	0	4	1,058	1,054
Nueces	2,431	6,569	0	0	0	0	9,000	9,000
SanPatricio	10,003	8,997	0	0	0	0	19,000	19,000
Starr	0	7,521	0	0	79	0	7,600	7,521
Webb	0	2,854	0	146	0	0	3,000	3,000
Willacy	7,000	25,000	0	0	0	0	32,000	32,000

Pumping in each county distributed evenly across entire county

Note that pumping in Bee, McMullen and Webb counties represent the entire county

**TABLE 4. ESTIMATED GROUNDWATER MANAGEMENT AREA 16 DRAWDOWN IN 2060 BASED ON SCENARIO 1 PUMPING BY COUNTY AND MODEL LAYER CALCULATED FROM END OF 2010 CONDITIONS. ALL VALUES IN FEET.**

County	Layer 1	Layer 2	Layer 3	Layer 4	Gulf Coast Aquifer Average
Bee	67	83	68	57	69
Brooks	48	88	63	63	68
Cameron	50	86	37	37	52
Duval	79	108	85	81	91
Hidalgo	59	101	59	58	71
JimWells	48	58	54	54	54
JimHogg		98	96	92	95
Kenedy	29	260	56	56	100
Kleburg	19	266	67	66	105
LiveOak	61	65	57	18	33
McMullen				11	11
Nueces	18	114	32	32	49
SanPatricio	31	90	24	24	42
Starr		108	93	68	88
Webb		232		78	158
Willacy	46	245	54	54	100
GMA 16 Average	38	137	57	55	76

**TABLE 5. ESTIMATED GROUNDWATER MANAGEMENT AREA 16 DRAWDOWN IN 2060 BASED ON SCENARIO 2 PUMPING BY COUNTY AND MODEL LAYER CALCULATED FROM END OF 2010 CONDITIONS. ALL VALUES IN FEET.**

County	Layer 1	Layer 2	Layer 3	Layer 4	Gulf Coast Aquifer Average
Bee	70	85	69	58	70
Brooks	68	125	99	98	102
Cameron	50	86	37	37	52
Duval	112	139	121	106	121
Hidalgo	64	106	64	63	76
JimWells	73	86	80	79	80
JimHogg		153	153	144	150
Kenedy	32	263	56	56	102
Kleburg	27	273	70	70	110
LiveOak	73	74	65	21	38
McMullen				11	11
Nueces	25	120	35	35	54
SanPatricio	34	93	26	26	45
Starr		132	119	88	111
Webb		248		101	178
Willacy	47	246	54	54	100
GMA 16 Average	44	153	69	68	88

**TABLE 6. ESTIMATED GROUNDWATER MANAGEMENT AREA 16 DRAWDOWN IN 2060 BASED ON SCENARIO 3 PUMPING BY COUNTY AND MODEL LAYER CALCULATED FROM END OF 2010 CONDITIONS. ALL VALUES IN FEET.**

County	Layer 1	Layer 2	Layer 3	Layer 4	Gulf Coast Aquifer Average
Bee	72	86	71	59	71
Brooks	89	162	134	134	136
Cameron	50	86	37	37	52
Duval	146	171	158	131	150
Hidalgo	68	112	69	68	81
JimWells	98	115	107	105	107
JimHogg		208	211	196	204
Kenedy	36	267	57	57	104
Kleburg	35	280	73	73	115
LiveOak	84	83	74	23	43
McMullen				12	12
Nueces	33	126	38	38	59
SanPatricio	36	96	28	28	47
Starr		157	146	107	134
Webb		265		124	197
Willacy	47	246	54	54	101
GMA 16 Average	51	169	82	81	101

Based on a subsequent request prior to the August 19, 2010 meeting of Groundwater Management Area 16, Scenario 4 was run that included pumping reductions in Bee and Mc Mullen counties. A summary of the pumping for all four initial scenarios with only the county pumping totals is presented in Table 7, and pumping and drawdown comparison of Scenarios 1 and 4 by county is summarized in Table 8.



TABLE 7. SUMMARY OF PUMPING TOTALS FOR THE FIRST FOUR SCENARIOS. ALL VALUES IN ACRE-FEET PER YEAR.

County	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Bee	22,301	22,301	22,301	18,000
Brooks	4,081	9,833	15,585	4,081
Cameron	50,529	50,529	50,529	50,529
Duval	14,064	14,064	14,064	14,064
Hidalgo	49,999	51,185	52,370	49,999
JimHogg	4,880	14,640	24,400	4,880
JimWells	5,913	16,891	27,869	5,913
Kenedy	51,745	51,745	51,745	51,745
Kleberg	50,000	50,333	50,667	50,000
LiveOak	11,527	11,527	11,527	11,527
McMullen	1,058	1,058	1,058	529
Nueces	9,000	9,000	9,000	9,000
SanPatricio	19,000	19,000	19,000	19,000
Starr	7,600	7,600	7,600	7,600
Webb	3,000	3,000	3,000	3,000
Willacy	32,000	32,000	32,000	32,000
GMA 16 Total	336,697	364,706	392,715	331,867

TABLE 8. COMPARISON OF PUMPING AND ESTIMATED DRAWDOWN FOR SCENARIOS 1 AND 4.

County	Scenario 1		Scenario 4	
	Pumping (AF/yr)	Drawdown (ft)	Pumping (AF/yr)	Drawdown (ft)
Bee	22,301	69	18,000	59
Brooks	4,081	68	4,081	68
Cameron	50,529	52	50,529	52
Duval	14,064	91	14,064	91
Hidalgo	49,999	71	49,999	71
JimHogg	4,880	54	4,880	53
JimWells	5,913	95	5,913	95
Kenedy	51,745	100	51,745	100
Kleberg	50,000	105	50,000	105
LiveOak	11,527	33	11,527	31
McMullen	1,058	11	529	10
Nueces	9,000	49	9,000	49
SanPatricio	19,000	42	19,000	40
Starr	7,600	88	7,600	88
Webb	3,000	158	3,000	158
Willacy	32,000	100	32,000	100
GMA 16	336,697	76	331,867	75

These four scenarios were discussed at the August 19, 2010 meeting of Groundwater Management Area 16. Based on the discussion, a series of runs were developed that were based on Scenario 1 that were designed to develop a better understanding of the relationship between future pumping and future drawdown:

- Scenario 5 represented 90 percent of the pumping of Scenario 1
- Scenario 6 represented 80 percent of the pumping of Scenario 1
- Scenario 7 represented 70 percent of the pumping of Scenario 1
- Scenario 8 represented 60 percent of the pumping of Scenario 1
- Scenario 9 represented 50 percent of the pumping of Scenario 1

Table 9 summarizes the pumping by county for Scenarios 5 to 9, and includes Scenario 1 for comparison. Table 10 summarizes the drawdown for Scenarios 5 to 9, and includes Scenario 1 for comparison. The pumping versus drawdown relationship of Scenario 1 and Scenarios 5 to 9 is summarized in Figure 1.

**TABLE 9. SUMMARY OF PUMPING FOR SCENARIOS 5 TO 9 BY COUNTY. ALL VALUES IN ACRE-FEET PER YEAR.**

County	Scenario 1	Scenario 5 (90% of Scenario 1)	Scenario 6 (80% of Scenario 1)	Scenario 7 (70% of Scenario 1)	Scenario 8 (60% of Scenario 1)	Scenario 9 (50% of Scenario 1)
Bee	22,301	16,200	14,400	12,599	10,800	9,000
Brooks	4,081	3,673	3,265	2,857	2,449	2,041
Cameron	50,529	45,477	40,422	35,369	30,317	25,265
Duval	14,064	12,657	11,249	9,843	8,437	7,032
Hidalgo	49,999	45,001	40,000	35,001	30,000	24,999
Jim Hogg	4,880	4,392	3,904	3,416	2,928	2,440
Jim Wells	5,913	5,322	4,730	4,139	3,548	2,957
Kennedy	51,745	46,569	41,396	36,221	31,046	25,872
Kleberg	50,000	45,000	40,000	35,000	30,000	25,000
Live Oak	11,527	10,375	9,222	8,069	6,916	5,764
McMullen	1,058	476	423	370	317	264
Nueces	9,000	8,100	7,200	6,300	5,400	4,500
San Patricio	19,000	17,100	15,200	13,300	11,400	9,500
Starr	7,600	6,840	6,080	5,320	4,560	3,800
Webb	3,000	2,700	2,400	2,100	1,800	1,500
Willacy	32,000	28,800	25,600	22,400	19,200	16,000
<b>GMA 16 Total</b>	<b>336,697</b>	<b>298,682</b>	<b>265,491</b>	<b>232,304</b>	<b>199,118</b>	<b>165,934</b>

TABLE 10. SUMMARY OF DRAWDOWN IN 2060 FOR SCENARIOS 5 TO 9 BY COUNTY. ALL VALUES IN FEET, AND ARE BASED ON A STARTING POINT OF 2010 CONDITIONS.

County	Scenario 1	Scenario 5 (90% of Scenario 1)	Scenario 6 (80% of Scenario 1)	Scenario 7 (70% of Scenario 1)	Scenario 8 (60% of Scenario 1)	Scenario 9 (50% of Scenario 1)
Bee16	69	52	46	39	33	27
Brooks	68	60	52	44	37	29
Cameron	52	46	40	34	27	22
Duval	91	82	74	65	57	49
Hidalgo	71	62	54	46	38	30
JimWells	54	47	41	35	29	23
JimHogg	95	87	79	70	62	54
Kenedy	100	90	79	69	58	48
Kleburg	105	92	79	67	54	42
LiveOak	33	27	23	19	16	13
McMullen16	11	9	9	9	8	8
Nueces	49	43	36	30	24	19
SanPatricio	42	35	29	24	19	15
Starr	88	80	71	63	55	46
Webb16	158	143	128	112	97	82
Willacy	100	89	79	68	57	47
GMA16	76	67	59	50	42	34

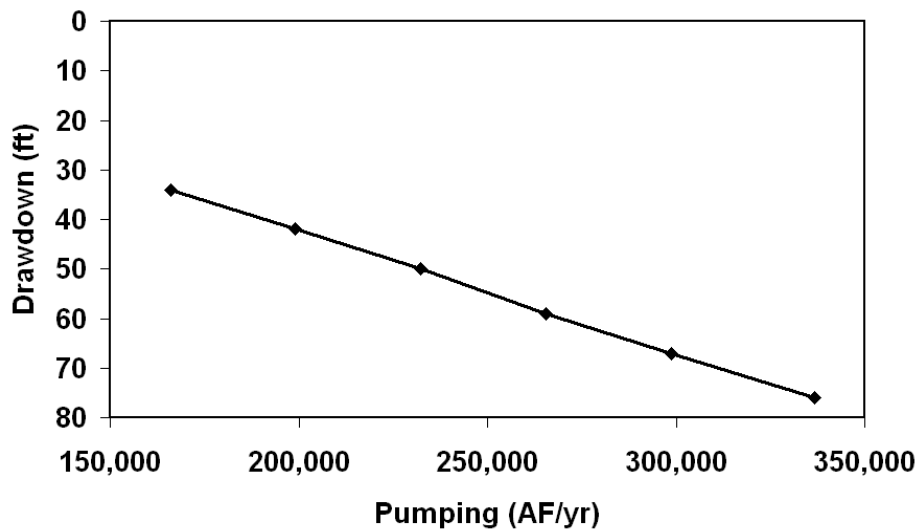


FIGURE 1. PUMPING VERSUS DRAWDOWN OF SCENARIO 1 AND SCENARIOS 5 TO 9 FOR GROUNDWATER MANAGEMENT AREA 16.

After further discussion, the groundwater conservation district representatives requested an additional model run, designated Scenario 10. Pumping input for Scenario 10 was specified and represented changing the pumping in some counties

and not changing the pumping in other counties as compared to Scenario 1. Pumping for Scenario 10 by county and model layer is summarized in Table 11. Drawdown for Scenario 10 by county and model layer (Gulf Coast Aquifer only) and the average drawdown in the Gulf Coast Aquifer for each county are summarized in Table 12. Drawdown in each groundwater conservation district by model layer, the average drawdown in each groundwater conservation district and the total Gulf Coast Aquifer pumping in each groundwater conservation district is summarized in Table 13.

**TABLE 11. REQUESTED GROUNDWATER PUMPING FOR SCENARIO 10 IN GROUNDWATER MANAGEMENT 16 BY COUNTY AND MODEL LAYER. ALL VALUES IN ACRE-FEET PER YEAR.**

County	Layer 1	Layer 2	Layer 3	Layer 4	Layer 5	Layer 6	All Layers	Gulf Coast Layers
Bee	8,673	10,634	68	539	0	68	19,982	19,914
Brooks	623	14,962	0	0	0	0	15,585	15,585
Cameron	49,980	547	0	0	0	0	50,529	50,529
Duval	755	7,949	76	5,281	1	0	14,064	14,062
Hidalgo	8,775	33,122	0	0	0	0	41,898	41,898
JimHogg	0	4,391	0	20,007	2	0	24,400	24,398
JimWells	7,215	20,594	27	34	0	0	27,869	27,869
Kenedy	5,000	46,744	0	0	0	0	51,745	51,745
Kleberg	5,149	45,518	0	0	0	0	50,667	50,667
LiveOak	100	3,935	1,417	5,982	9	85	11,527	11,433
McMullen	0	0	0	527	0	2	529	527
Nueces	2,431	6,569	0	0	0	0	9,000	9,000
SanPatricio	10,003	8,997	0	0	0	0	19,000	19,000
Starr	0	7,521	0	0	79	0	7,600	7,521
Webb	0	2,854	0	146	0	0	3,000	3,000
Willacy	4,375	15,625	0	0	0	0	20,000	20,000

Pumping in each county distributed evenly across entire county

Note that pumping in Bee, McMullen and Webb counties represent the entire county

**TABLE 12. ESTIMATED GROUNDWATER MANAGEMENT AREA 16 DRAWDOWN IN 2060 BASED ON SCENARIO 10 PUMPING BY COUNTY AND MODEL LAYER CALCULATED FROM END OF 2010 CONDITIONS. ALL VALUES IN FEET.**

County	Layer 1	Layer 2	Layer 3	Layer 4	Gulf Coast Aquifer Average
Bee	67	79	65	55	66
Brooks	84	157	130	130	131
Cameron	46	63	27	27	41
Duval	146	171	157	131	150
Hidalgo	55	91	57	56	66
JimWells	98	115	107	105	107
JimHogg		206	207	194	202
Kenedy	32	254	55	54	99
Kleburg	35	280	73	73	115
LiveOak	82	80	71	23	41
McMullen				11	11
Nueces	32	126	38	38	59
SanPatricio	34	94	27	27	46
Starr		150	137	102	127
Webb		265		124	197
Willacy	37	178	39	39	73
GMA 16 Average	46	158	77	77	94

**TABLE 13. ESTIMATED GROUNDWATER MANAGEMENT AREA 16 DRAWDOWN IN 2060 BASED ON SCENARIO 10 PUMPING BY GROUNDWATER CONSERVATION DISTRICT AND MODEL LAYER CALCULATED FROM END OF 2010 CONDITIONS. GULF COAST AQUIFER AVERAGE DRAWDOWN AND PUMPING BY GROUNDWATER CONSERVATION DISTRICT ARE ALSO PRESENTED.**

Groundwater Conservation District	Drawdown (ft) in 2060 from Estimated 2010 Conditions					Total Gulf Coast Aquifer Pumping (AF/yr)
	Layer 1	Layer 2	Layer 3	Layer 4	Gulf Coast Aquifer Average	
Bee	59	72	54	49	58	10,653
Brush Country	97	164	151	154	150	68,595
Corpus Christi	12	69	25	25	33	1,794
Duval	146	171	157	131	150	14,055
Kenedy	41	241	62	61	101	94,804
LiveOak	82	80	71	23	41	11,433
McMullen				10	10	510
Red Sands		40	40	40	40	584
San Patricio	34	94	27	27	46	19,000
Starr		150	137	102	127	7,521

## LIMITATIONS:

The groundwater model used in completing this analysis is the best available scientific tool that can be used to meet the stated objective(s). To the extent that this analysis will be used for planning purposes and/or regulatory purposes related to pumping in the past and into the future, it is important to recognize the assumptions and limitations associated with the use of the results. In reviewing the use of models in environmental regulatory decision making, the National Research Council (2007) noted:

*“Models will always be constrained by computational limitations, assumptions, and knowledge gaps. They can best be viewed as tools to help inform decisions rather than as machines to generate truth or make decisions. Scientific advances will never make it possible to build a perfect model that accounts for every aspect of reality or to prove that a given model is correct in all respects for a particular regulatory application. These characteristics make evaluation of a regulatory model more complex than solely a comparison of measurement data with model results.”*

A key aspect of using the groundwater model to evaluate the impacts of future pumping is the need to make assumptions about the location in the aquifer where future pumping will occur. In this case, as noted, pumping in each county is evenly distributed. This assumption was necessary, in part, due to the generally large increases in pumping as compared to historic pumping. There is a fair degree of uncertainty in many of these estimates due to the large increases in pumping in areas that had not historically been stressed. As actual pumping changes in the future, it will be necessary to evaluate the amount of that pumping as well as its location in the context of the assumptions associated with this analysis. Evaluating the amount and location of future pumping is as important as evaluating the changes in groundwater levels, spring flows, and other metrics that describe the impacts of that pumping. This analysis does not assess the possible impacts of pumping such as reduced water quality or land surface subsidence.

In addition, certain assumptions have been made regarding future precipitation, recharge, and streamflow in evaluating the impacts of future pumping. Those assumptions also need to be considered and compared to actual future data.

Given these limitations, users of this information are cautioned that the results should not be considered a definitive, permanent prediction of the changes in groundwater

storage, streamflow and spring flow. Because the application of the groundwater model was designed to address regional scale questions, the results are most effective on a regional scale. The TWDB makes no warranties or representations relating to the actual conditions of any aquifer at a particular location or at a particular time.

It is important for groundwater conservation districts to monitor future groundwater pumping and overall conditions of the aquifer. Because of the limitations of the groundwater model and the assumptions in this analysis, it is important that the groundwater conservation districts work with the TWDB to refine this analysis in the future given the reality of how the aquifer responds to the actual amount and location of pumping now and in the future.

The groundwater conservation districts in Groundwater Management Area 16 adopted desired future conditions based on Scenario 10, and requested that TWDB develop sub-regional groundwater budgets for all county and district areas within Groundwater Management District 16. These sub-regional groundwater budgets are summarized in Appendix A.



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## Appendix A

### **Sub-Regional Groundwater Budgets for Groundwater Management Area 16 Counties and Groundwater Conservation Districts**



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**TABLE A-2. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, GROUNDWATER MANAGEMENT AREA 16 OF BEE COUNTY. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW							OUTFLOW				Inflow - Outflow	Storage Change	Model Error	Model Error (percent)	
	River Leakage	Recharge	Net Vertical Leakage Lower	Net Lateral Flow From Bee15	Net Lateral Flow From Karnes15	Net Lateral Flow From LiveOak	Total Inflow	Wells	Net Lateral Flow To Bee16 White	Net Lateral Flow To LiveOak	Net Lateral Flow To San Patricio					Total Outflow
2010	470	2,208	119	1,416	5	-	4,218	10,600	-	203	2,038	12,841	-8,623	-8,622	-1	0.01%
2011	470	2,208	213	1,556	5	-	4,452	10,600	2	144	1,852	12,598	-8,146	-8,147	1	0.01%
2012	470	2,208	303	1,684	5	-	4,670	10,600	4	96	1,687	12,387	-7,717	-7,715	-2	0.02%
2013	470	2,208	392	1,805	5	-	4,880	10,600	5	56	1,541	12,202	-7,322	-7,322	0	0.00%
2014	470	2,208	477	1,916	5	-	5,076	10,600	6	22	1,409	12,037	-6,961	-6,962	1	0.01%
2015	470	2,208	560	2,020	5	7	5,270	10,600	8	-	1,292	11,900	-6,630	-6,629	-1	0.01%
2016	470	2,208	640	2,118	5	31	5,472	10,600	9	-	1,185	11,794	-6,322	-6,321	-1	0.01%
2017	470	2,208	717	2,209	5	53	5,662	10,600	9	-	1,089	11,698	-6,036	-6,036	0	0.00%
2018	470	2,208	791	2,295	5	71	5,840	10,600	10	-	1,003	11,613	-5,773	-5,771	-2	0.02%
2019	470	2,208	865	2,378	5	86	6,010	10,600	11	-	926	11,537	-5,527	-5,526	-1	0.01%
2020	470	2,208	933	2,456	5	100	6,172	10,600	10	-	860	11,470	-5,298	-5,300	2	0.02%
2021	470	2,208	999	2,530	5	111	6,323	10,600	11	-	801	11,412	-5,089	-5,089	0	0.00%
2022	470	2,208	1,063	2,602	5	121	6,469	10,600	11	-	748	11,359	-4,890	-4,892	2	0.02%
2023	470	2,208	1,125	2,670	5	128	6,606	10,600	12	-	701	11,313	-4,707	-4,707	0	0.00%
2024	470	2,208	1,185	2,734	5	135	6,737	10,600	13	-	657	11,270	-4,533	-4,533	0	0.00%
2025	470	2,208	1,242	2,796	5	141	6,862	10,600	13	-	619	11,232	-4,370	-4,369	-1	0.01%
2026	470	2,208	1,297	2,856	5	144	6,980	10,600	13	-	584	11,197	-4,217	-4,216	-1	0.01%
2027	470	2,208	1,350	2,914	5	148	7,095	10,600	14	-	552	11,166	-4,071	-4,071	0	0.00%
2028	470	2,208	1,400	2,969	5	150	7,202	10,600	14	-	522	11,136	-3,934	-3,934	0	0.00%
2029	470	2,208	1,449	3,022	5	151	7,305	10,600	14	-	495	11,109	-3,804	-3,803	-1	0.01%
2030	470	2,208	1,495	3,073	5	153	7,404	10,600	14	-	470	11,084	-3,680	-3,680	0	0.00%
2031	470	2,208	1,541	3,122	5	153	7,499	10,600	14	-	448	11,062	-3,563	-3,562	-1	0.01%
2032	470	2,208	1,584	3,169	5	153	7,589	10,600	15	-	427	11,042	-3,453	-3,451	-2	0.02%
2033	470	2,208	1,627	3,215	5	153	7,678	10,600	15	-	408	11,023	-3,345	-3,345	0	0.00%
2034	470	2,208	1,666	3,258	5	152	7,759	10,600	15	-	390	11,005	-3,246	-3,245	-1	0.01%
2035	470	2,208	1,706	3,301	5	150	7,840	10,600	15	-	374	10,989	-3,149	-3,149	0	0.00%
2036	470	2,208	1,744	3,341	5	149	7,917	10,600	15	-	359	10,974	-3,057	-3,058	1	0.01%
2037	470	2,208	1,780	3,380	5	146	7,989	10,600	15	-	345	10,960	-2,971	-2,971	0	0.00%
2038	470	2,208	1,814	3,419	5	145	8,061	10,600	16	-	333	10,949	-2,888	-2,888	0	0.00%
2039	470	2,208	1,848	3,456	5	142	8,129	10,600	16	-	323	10,939	-2,810	-2,809	-1	0.01%
2040	470	2,208	1,881	3,492	5	140	8,196	10,600	16	-	313	10,929	-2,733	-2,733	0	0.00%
2041	470	2,208	1,912	3,526	5	137	8,258	10,600	16	-	305	10,921	-2,663	-2,661	-2	0.02%
2042	470	2,208	1,943	3,560	5	133	8,319	10,600	15	-	296	10,911	-2,592	-2,593	1	0.01%
2043	470	2,208	1,972	3,594	5	130	8,379	10,600	16	-	291	10,907	-2,528	-2,528	0	0.00%
2044	470	2,208	1,999	3,626	5	127	8,435	10,600	16	-	285	10,901	-2,466	-2,466	0	0.00%
2045	470	2,208	2,027	3,658	5	123	8,491	10,600	16	-	281	10,897	-2,406	-2,407	1	0.01%
2046	470	2,208	2,054	3,688	6	119	8,545	10,600	17	-	278	10,895	-2,350	-2,350	0	0.00%
2047	470	2,208	2,079	3,719	6	114	8,596	10,600	16	-	275	10,891	-2,295	-2,296	1	0.01%
2048	470	2,208	2,103	3,748	6	110	8,645	10,600	16	-	273	10,889	-2,244	-2,244	0	0.00%
2049	470	2,208	2,128	3,778	6	105	8,695	10,600	16	-	272	10,888	-2,193	-2,194	1	0.01%
2050	470	2,208	2,152	3,806	6	101	8,743	10,600	16	-	272	10,888	-2,145	-2,146	1	0.01%
2051	470	2,208	2,174	3,834	6	97	8,789	10,600	17	-	271	10,888	-2,099	-2,099	0	0.00%
2052	470	2,208	2,196	3,862	6	93	8,835	10,600	16	-	271	10,887	-2,052	-2,055	3	0.03%
2053	470	2,208	2,217	3,889	6	88	8,878	10,600	17	-	272	10,889	-2,011	-2,012	1	0.01%
2054	470	2,208	2,238	3,914	6	83	8,919	10,600	17	-	274	10,891	-1,972	-1,971	-1	0.01%
2055	470	2,208	2,258	3,940	6	79	8,961	10,600	16	-	275	10,891	-1,930	-1,931	1	0.01%
2056	470	2,208	2,278	3,966	6	74	9,002	10,600	17	-	277	10,894	-1,892	-1,893	1	0.01%
2057	470	2,208	2,296	3,991	6	69	9,040	10,600	16	-	280	10,896	-1,856	-1,856	0	0.00%
2058	470	2,208	2,315	4,016	6	65	9,080	10,600	17	-	282	10,899	-1,819	-1,820	1	0.01%
2059	470	2,208	2,333	4,040	6	60	9,117	10,600	17	-	285	10,902	-1,785	-1,786	1	0.01%
2060	470	2,208	2,350	4,064	6	56	9,154	10,600	16	-	289	10,905	-1,751	-1,752	1	0.01%

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**TABLE A-3. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, GROUNDWATER MANAGEMENT AREA 16 OF BEE COUNTY, NON-DISTRICT AREA. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW				OUTFLOW		Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Recharge	Vertical Leakage Lower	Net Lateral Flow From Bee16	Total Inflow	Wells	Total Outflow				
2010	21	11	-	32	60	60	-28	-28	0	0.00%
2011	21	11	2	34	60	60	-26	-26	0	0.00%
2012	21	12	4	37	60	60	-23	-24	1	1.65%
2013	21	12	5	38	60	60	-22	-22	0	0.00%
2014	21	12	6	39	60	60	-21	-20	-1	1.68%
2015	21	13	8	42	60	60	-18	-19	1	1.65%
2016	21	13	9	43	60	60	-17	-18	1	1.65%
2017	21	14	9	44	60	60	-16	-17	1	1.65%
2018	21	14	10	45	60	60	-15	-16	1	1.65%
2019	21	14	11	46	60	60	-14	-15	1	1.65%
2020	21	15	10	46	60	60	-14	-14	0	0.00%
2021	21	15	11	47	60	60	-13	-13	0	0.00%
2022	21	15	11	47	60	60	-13	-12	-1	1.68%
2023	21	15	12	48	60	60	-12	-12	0	0.00%
2024	21	16	13	50	60	60	-10	-11	1	1.65%
2025	21	16	13	50	60	60	-10	-11	1	1.65%
2026	21	16	13	50	60	60	-10	-10	0	0.00%
2027	21	16	14	51	60	60	-9	-10	1	1.65%
2028	21	16	14	51	60	60	-9	-9	0	0.00%
2029	21	17	14	52	60	60	-8	-9	1	1.65%
2030	21	17	14	52	60	60	-8	-9	1	1.65%
2031	21	17	14	52	60	60	-8	-8	0	0.00%
2032	21	17	15	53	60	60	-7	-8	1	1.65%
2033	21	17	15	53	60	60	-7	-8	1	1.65%
2034	21	17	15	53	60	60	-7	-7	0	0.00%
2035	21	17	15	53	60	60	-7	-7	0	0.00%
2036	21	17	15	53	60	60	-7	-7	0	0.00%
2037	21	17	15	53	60	60	-7	-7	0	0.00%
2038	21	18	16	55	60	60	-5	-6	1	1.65%
2039	21	18	16	55	60	60	-5	-6	1	1.65%
2040	21	18	16	55	60	60	-5	-6	1	1.65%
2041	21	18	16	55	60	60	-5	-6	1	1.65%
2042	21	18	15	54	60	60	-6	-6	0	0.00%
2043	21	18	16	55	60	60	-5	-6	1	1.65%
2044	21	18	16	55	60	60	-5	-5	0	0.00%
2045	21	18	16	55	60	60	-5	-5	0	0.00%
2046	21	18	17	56	60	60	-4	-5	1	1.65%
2047	21	18	16	55	60	60	-5	-5	0	0.00%
2048	21	18	16	55	60	60	-5	-5	0	0.00%
2049	21	18	16	55	60	60	-5	-5	0	0.00%
2050	21	18	16	55	60	60	-5	-5	0	0.00%
2051	21	18	17	56	60	60	-4	-5	1	1.65%
2052	21	18	16	55	60	60	-5	-4	-1	1.68%
2053	21	19	17	57	60	60	-3	-4	1	1.65%
2054	21	19	17	57	60	60	-3	-4	1	1.65%
2055	21	19	16	56	60	60	-4	-4	0	0.00%
2056	21	19	17	57	60	60	-3	-4	1	1.65%
2057	21	19	16	56	60	60	-4	-4	0	0.00%
2058	21	19	17	57	60	60	-3	-4	1	1.65%
2059	21	19	17	57	60	60	-3	-4	1	1.65%
2060	21	19	16	56	60	60	-4	-4	0	0.00%



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**TABLE A-5. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, BROOKS COUNTY, KENEDY COUNTY GROUNDWATER CONSERVATION DISTRICT. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW				OUTFLOW						Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Net River Leakage	Recharge	Net Lateral Flow From Brooks Brush Country	Total Inflow	Wells	Net Lateral Flow To Hidalgo Brush Country	Net Lateral Flow To Hidalgo Kenedy	Net Lateral Flow To Kenedy	Net Lateral Flow To Kleburg Kenedy	Total Outflow				
2010	73	619	5,727	6,419	1,201	140	2,216	9,509	1,609	14,675	-8,256	-8,255	-1	0.01%
2011	157	619	5,582	6,358	1,201	145	2,231	9,707	1,595	14,879	-8,521	-8,519	-2	0.01%
2012	157	619	5,438	6,214	1,201	148	2,181	9,785	1,570	14,885	-8,671	-8,671	0	0.00%
2013	157	619	5,290	6,066	1,201	150	2,113	9,784	1,538	14,786	-8,720	-8,721	1	0.01%
2014	157	619	5,138	5,914	1,201	150	2,036	9,732	1,503	14,622	-8,708	-8,710	2	0.01%
2015	157	619	4,985	5,761	1,201	151	1,954	9,647	1,468	14,421	-8,660	-8,660	0	0.00%
2016	157	619	4,844	5,620	1,201	151	1,869	9,551	1,445	14,217	-8,597	-8,598	1	0.01%
2017	157	619	4,703	5,479	1,201	151	1,782	9,442	1,422	13,998	-8,519	-8,519	0	0.00%
2018	157	619	4,562	5,338	1,201	150	1,694	9,322	1,396	13,763	-8,425	-8,428	3	0.02%
2019	157	619	4,423	5,199	1,201	150	1,649	9,193	1,372	13,565	-8,366	-8,367	1	0.01%
2020	157	619	4,285	5,061	1,201	149	1,583	9,058	1,348	13,339	-8,278	-8,280	2	0.01%
2021	157	619	4,148	4,924	1,201	149	1,515	8,923	1,324	13,112	-8,188	-8,188	0	0.00%
2022	157	619	4,011	4,787	1,201	148	1,448	8,784	1,299	12,880	-8,093	-8,095	2	0.02%
2023	157	619	3,876	4,652	1,201	147	1,381	8,647	1,276	12,652	-8,000	-8,001	1	0.01%
2024	157	619	3,740	4,516	1,201	147	1,315	8,509	1,251	12,423	-7,907	-7,907	0	0.00%
2025	157	619	3,608	4,384	1,201	146	1,249	8,372	1,228	12,196	-7,812	-7,813	1	0.01%
2026	157	619	3,481	4,257	1,201	145	1,256	8,226	1,204	12,032	-7,775	-7,777	2	0.02%
2027	157	619	3,356	4,132	1,201	145	1,241	8,079	1,181	11,847	-7,715	-7,715	0	0.00%
2028	157	619	3,235	4,011	1,201	144	1,224	7,933	1,157	11,659	-7,648	-7,649	1	0.01%
2029	157	619	3,117	3,893	1,201	143	1,207	7,789	1,134	11,474	-7,581	-7,583	2	0.02%
2030	157	619	3,001	3,777	1,201	142	1,191	7,647	1,112	11,293	-7,516	-7,517	1	0.01%
2031	157	619	2,889	3,665	1,201	142	1,176	7,506	1,091	11,116	-7,451	-7,452	1	0.01%
2032	157	619	2,780	3,556	1,201	141	1,161	7,370	1,069	10,942	-7,386	-7,387	1	0.01%
2033	157	619	2,673	3,449	1,201	141	1,147	7,235	1,049	10,773	-7,324	-7,323	-1	0.01%
2034	157	619	2,571	3,347	1,201	140	1,133	7,103	1,029	10,606	-7,259	-7,260	1	0.01%
2035	157	619	2,473	3,249	1,201	139	1,120	6,977	1,012	10,449	-7,200	-7,202	2	0.02%
2036	157	619	2,380	3,156	1,201	139	1,108	6,856	997	10,301	-7,145	-7,146	1	0.01%
2037	157	619	2,290	3,066	1,201	138	1,095	6,738	982	10,154	-7,088	-7,090	2	0.02%
2038	157	619	2,203	2,979	1,201	138	1,084	6,623	967	10,013	-7,034	-7,035	1	0.01%
2039	157	619	2,118	2,894	1,201	138	1,073	6,511	952	9,875	-6,981	-6,982	1	0.01%
2040	157	619	2,036	2,812	1,201	137	1,062	6,401	939	9,740	-6,928	-6,929	1	0.01%
2041	157	619	1,956	2,732	1,201	137	1,052	6,293	925	9,608	-6,876	-6,877	1	0.01%
2042	157	619	1,878	2,654	1,201	136	1,041	6,189	911	9,478	-6,824	-6,826	2	0.02%
2043	157	619	1,803	2,579	1,201	136	1,032	6,085	898	9,352	-6,773	-6,775	2	0.02%
2044	157	619	1,730	2,506	1,201	136	1,022	5,985	885	9,229	-6,723	-6,726	3	0.03%
2045	157	619	1,658	2,434	1,201	135	1,014	5,888	873	9,111	-6,677	-6,678	1	0.01%
2046	157	619	1,588	2,364	1,201	135	1,005	5,792	862	8,995	-6,631	-6,631	0	0.00%
2047	157	619	1,521	2,297	1,201	135	997	5,698	850	8,881	-6,584	-6,586	2	0.02%
2048	157	619	1,456	2,232	1,201	135	988	5,609	839	8,772	-6,540	-6,541	1	0.01%
2049	157	619	1,392	2,168	1,201	134	981	5,520	829	8,665	-6,497	-6,498	1	0.01%
2050	157	619	1,331	2,107	1,201	134	973	5,434	819	8,561	-6,454	-6,455	1	0.01%
2051	157	619	1,272	2,048	1,201	134	966	5,350	809	8,460	-6,412	-6,414	2	0.02%
2052	157	619	1,214	1,990	1,201	134	959	5,269	799	8,362	-6,372	-6,373	1	0.01%
2053	157	619	1,157	1,933	1,201	133	952	5,189	790	8,265	-6,332	-6,333	1	0.01%
2054	157	619	1,103	1,879	1,201	133	945	5,110	781	8,170	-6,291	-6,295	4	0.05%
2055	157	619	1,050	1,826	1,201	133	939	5,035	773	8,081	-6,255	-6,256	1	0.01%
2056	157	619	998	1,774	1,201	133	933	4,960	765	7,992	-6,218	-6,219	1	0.01%
2057	157	619	948	1,724	1,201	133	926	4,888	757	7,905	-6,181	-6,183	2	0.03%
2058	157	619	899	1,675	1,201	133	921	4,817	748	7,820	-6,145	-6,147	2	0.03%
2059	157	619	851	1,627	1,201	132	915	4,748	741	7,737	-6,110	-6,111	1	0.01%
2060	157	619	805	1,581	1,201	132	909	4,680	733	7,655	-6,074	-6,077	3	0.04%

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**TABLE A-6. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, CAMERON COUNTY. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW						OUTFLOW				Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Net River Leakage	Recharge	Net Lateral Flow From Gulf	Net Lateral Flow From HidalgoWh ite	Net Lateral Flow From Mexico	Total Inflow	Wells	Net Lateral Flow To WillacyWh ite	Total Outflow					
2010	4,505	2,500	2,455	4,562	8,725	22,747	50,561	681	51,242	-28,495	-28,497	2	0.00%	
2011	4,727	2,500	2,876	4,719	9,044	23,866	50,561	648	51,209	-27,343	-27,341	-2	0.00%	
2012	4,795	2,500	3,231	4,835	9,326	24,687	50,561	618	51,179	-26,492	-26,491	-1	0.00%	
2013	4,861	2,500	3,340	4,924	9,579	25,404	50,561	590	51,151	-25,747	-25,746	-1	0.00%	
2014	4,924	2,500	3,815	4,994	9,804	26,037	50,561	564	51,125	-25,088	-25,086	-2	0.00%	
2015	4,978	2,500	4,063	5,052	9,992	26,585	50,561	537	51,098	-24,513	-24,515	2	0.00%	
2016	5,003	2,500	4,290	5,098	10,165	27,056	50,561	511	51,072	-24,016	-23,996	-20	0.04%	
2017	5,018	2,500	4,499	5,138	10,326	27,481	50,561	486	51,047	-23,566	-23,567	1	0.00%	
2018	5,029	2,500	4,696	5,171	10,478	27,874	50,561	465	51,026	-23,152	-23,149	-3	0.01%	
2019	5,029	2,500	4,880	5,199	10,624	28,232	50,561	447	51,008	-22,776	-22,775	-1	0.00%	
2020	5,029	2,500	5,054	5,224	10,755	28,562	50,561	431	50,992	-22,430	-22,431	1	0.00%	
2021	5,029	2,500	5,218	5,246	10,882	28,875	50,561	419	50,980	-22,105	-22,105	0	0.00%	
2022	5,029	2,500	5,375	5,265	11,006	29,175	50,561	407	50,968	-21,793	-21,795	2	0.00%	
2023	5,029	2,500	5,525	5,281	11,126	29,461	50,561	399	50,960	-21,499	-21,499	0	0.00%	
2024	5,029	2,500	5,669	5,296	11,242	29,736	50,561	391	50,952	-21,216	-21,216	0	0.00%	
2025	5,029	2,500	5,807	5,311	11,354	30,001	50,561	385	50,946	-20,945	-20,945	0	0.00%	
2026	5,029	2,500	5,940	5,323	11,464	30,256	50,561	380	50,941	-20,685	-20,685	0	0.00%	
2027	5,029	2,500	6,068	5,335	11,571	30,503	50,561	375	50,936	-20,433	-20,434	1	0.00%	
2028	5,029	2,500	6,192	5,345	11,675	30,741	50,561	373	50,934	-20,193	-20,192	-1	0.00%	
2029	5,029	2,500	6,312	5,355	11,777	30,973	50,561	371	50,932	-19,959	-19,958	-1	0.00%	
2030	5,029	2,500	6,430	5,364	11,876	31,199	50,561	369	50,930	-19,731	-19,732	1	0.00%	
2031	5,029	2,500	6,543	5,373	11,973	31,418	50,561	368	50,929	-19,511	-19,512	1	0.00%	
2032	5,029	2,500	6,654	5,380	12,068	31,631	50,561	367	50,928	-19,297	-19,299	2	0.00%	
2033	5,029	2,500	6,761	5,387	12,160	31,837	50,561	367	50,928	-19,091	-19,092	1	0.00%	
2034	5,029	2,500	6,866	5,394	12,250	32,039	50,561	368	50,929	-18,890	-18,891	1	0.00%	
2035	5,029	2,500	6,969	5,401	12,339	32,238	50,561	370	50,931	-18,693	-18,695	2	0.00%	
2036	5,029	2,500	7,068	5,407	12,425	32,429	50,561	372	50,933	-18,504	-18,503	-1	0.00%	
2037	5,029	2,500	7,168	5,412	12,510	32,619	50,561	375	50,936	-18,317	-18,317	0	0.00%	
2038	5,029	2,500	7,263	5,417	12,593	32,802	50,561	376	50,937	-18,135	-18,135	0	0.00%	
2039	5,029	2,500	7,358	5,422	12,675	32,984	50,561	380	50,941	-17,957	-17,957	0	0.00%	
2040	5,029	2,500	7,450	5,427	12,755	33,161	50,561	384	50,945	-17,784	-17,783	-1	0.00%	
2041	5,029	2,500	7,541	5,432	12,834	33,336	50,561	388	50,949	-17,613	-17,613	0	0.00%	
2042	5,029	2,500	7,630	5,436	12,911	33,506	50,561	392	50,953	-17,447	-17,447	0	0.00%	
2043	5,029	2,500	7,718	5,440	12,988	33,675	50,561	397	50,958	-17,283	-17,283	0	0.00%	
2044	5,029	2,500	7,804	5,443	13,063	33,839	50,561	402	50,963	-17,124	-17,123	-1	0.00%	
2045	5,029	2,500	7,889	5,447	13,136	34,001	50,561	407	50,968	-16,967	-16,967	0	0.00%	
2046	5,029	2,500	7,972	5,451	13,209	34,161	50,561	412	50,973	-16,812	-16,813	1	0.00%	
2047	5,029	2,500	8,055	5,454	13,280	34,318	50,561	419	50,980	-16,662	-16,662	0	0.00%	
2048	5,029	2,500	8,136	5,457	13,350	34,472	50,561	425	50,986	-16,514	-16,513	-1	0.00%	
2049	5,029	2,500	8,216	5,460	13,420	34,625	50,561	431	50,992	-16,367	-16,368	1	0.00%	
2050	5,029	2,500	8,295	5,463	13,488	34,775	50,561	439	51,000	-16,225	-16,225	0	0.00%	
2051	5,029	2,500	8,372	5,466	13,555	34,922	50,561	445	51,006	-16,084	-16,084	0	0.00%	
2052	5,029	2,500	8,449	5,469	13,620	35,067	50,561	453	51,014	-15,947	-15,947	0	0.00%	
2053	5,029	2,500	8,524	5,471	13,685	35,209	50,561	460	51,021	-15,812	-15,812	0	0.00%	
2054	5,029	2,500	8,599	5,473	13,749	35,350	50,561	468	51,029	-15,679	-15,679	0	0.00%	
2055	5,029	2,500	8,673	5,476	13,811	35,489	50,561	477	51,038	-15,549	-15,548	-1	0.00%	
2056	5,029	2,500	8,746	5,478	13,873	35,626	50,561	485	51,046	-15,420	-15,420	0	0.00%	
2057	5,029	2,500	8,818	5,480	13,933	35,760	50,561	494	51,055	-15,295	-15,294	-1	0.00%	
2058	5,029	2,500	8,889	5,482	13,992	35,892	50,561	502	51,063	-15,171	-15,170	-1	0.00%	
2059	5,029	2,500	8,959	5,484	14,051	36,023	50,561	511	51,072	-15,049	-15,048	-1	0.00%	
2060	5,029	2,500	9,029	5,485	14,109	36,152	50,561	520	51,081	-14,929	-14,928	-1	0.00%	





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**TABLE A-8. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, HIDALGO COUNTY, BRUSH COUNTRY GROUNDWATER CONSERVATION DISTRICT. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW								OUTFLOW			Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	River Leakage	Recharge	Net Lateral Flow From Brooks Brush Country	Net Lateral Flow From Brooks Kenedy	Net Lateral Flow From Hidalgo Kenedy	Net Lateral Flow From Hidalgo White	Net Lateral Flow From Starr	Total Inflow	Wells	Net Lateral Flow To Hidalgo Kenedy	Total Outflow				
2010	1	53	621	140	-	883	703	2,401	2,575	247	2,822	-421	-419	-2	0.07%
2011	1	53	604	145	-	897	682	2,382	2,575	165	2,740	-358	-357	-1	0.04%
2012	1	53	586	148	-	906	662	2,356	2,575	97	2,672	-316	-316	0	0.00%
2013	1	53	567	150	-	913	644	2,328	2,575	40	2,615	-287	-287	0	0.00%
2014	1	53	548	150	11	919	626	2,308	2,575	-	2,575	-267	-266	-1	0.04%
2015	1	53	530	151	56	923	611	2,325	2,575	-	2,575	-250	-249	-1	0.04%
2016	1	53	512	151	99	927	596	2,339	2,575	-	2,575	-236	-237	1	0.04%
2017	1	53	494	151	138	930	582	2,349	2,575	-	2,575	-226	-226	0	0.00%
2018	1	53	477	150	173	933	570	2,357	2,575	-	2,575	-218	-217	-1	0.04%
2019	1	53	461	150	206	935	558	2,364	2,575	-	2,575	-211	-210	-1	0.04%
2020	1	53	446	149	236	937	547	2,369	2,575	-	2,575	-206	-205	-1	0.04%
2021	1	53	431	149	264	939	537	2,374	2,575	-	2,575	-201	-200	-1	0.04%
2022	1	53	417	148	291	941	528	2,379	2,575	-	2,575	-196	-196	0	0.00%
2023	1	53	404	147	316	943	519	2,383	2,575	-	2,575	-192	-191	-1	0.04%
2024	1	53	391	147	340	945	511	2,388	2,575	-	2,575	-187	-187	0	0.00%
2025	1	53	379	146	362	947	504	2,392	2,575	-	2,575	-183	-183	0	0.00%
2026	1	53	366	145	382	948	497	2,392	2,575	-	2,575	-183	-181	-2	0.08%
2027	1	53	356	145	399	950	490	2,394	2,575	-	2,575	-181	-180	-1	0.04%
2028	1	53	345	144	415	952	484	2,394	2,575	-	2,575	-181	-179	-2	0.08%
2029	1	53	335	143	430	954	479	2,395	2,575	-	2,575	-180	-178	-2	0.08%
2030	1	53	326	142	444	957	474	2,397	2,575	-	2,575	-178	-177	-1	0.04%
2031	1	53	317	142	457	959	469	2,398	2,575	-	2,575	-177	-176	-1	0.04%
2032	1	53	309	141	470	961	465	2,400	2,575	-	2,575	-175	-174	-1	0.04%
2033	1	53	301	141	481	964	461	2,402	2,575	-	2,575	-173	-173	0	0.00%
2034	1	53	294	140	493	966	457	2,404	2,575	-	2,575	-171	-171	0	0.00%
2035	1	53	286	139	502	968	454	2,403	2,575	-	2,575	-172	-170	-2	0.08%
2036	1	53	280	139	513	971	450	2,407	2,575	-	2,575	-168	-168	0	0.00%
2037	1	53	273	138	522	973	447	2,407	2,575	-	2,575	-168	-167	-1	0.04%
2038	1	53	267	138	530	975	445	2,409	2,575	-	2,575	-166	-165	-1	0.04%
2039	1	53	260	138	539	978	442	2,411	2,575	-	2,575	-164	-163	-1	0.04%
2040	1	53	255	137	547	980	440	2,413	2,575	-	2,575	-162	-161	-1	0.04%
2041	1	53	249	137	555	982	437	2,414	2,575	-	2,575	-161	-160	-1	0.04%
2042	1	53	244	136	562	984	435	2,415	2,575	-	2,575	-160	-158	-2	0.08%
2043	1	53	239	136	569	986	433	2,417	2,575	-	2,575	-158	-156	-2	0.08%
2044	1	53	234	136	576	988	432	2,420	2,575	-	2,575	-155	-155	0	0.00%
2045	1	53	230	135	582	990	430	2,421	2,575	-	2,575	-154	-153	-1	0.04%
2046	1	53	225	135	589	992	428	2,423	2,575	-	2,575	-152	-151	-1	0.04%
2047	1	53	221	135	593	994	427	2,424	2,575	-	2,575	-151	-150	-1	0.04%
2048	1	53	217	135	599	996	425	2,426	2,575	-	2,575	-149	-148	-1	0.04%
2049	1	53	212	134	605	998	424	2,427	2,575	-	2,575	-148	-147	-1	0.04%
2050	1	53	209	134	610	1,000	423	2,430	2,575	-	2,575	-145	-145	0	0.00%
2051	1	53	205	134	615	1,002	422	2,432	2,575	-	2,575	-143	-144	1	0.04%
2052	1	53	201	134	619	1,003	421	2,432	2,575	-	2,575	-143	-142	-1	0.04%
2053	1	53	197	133	624	1,005	420	2,433	2,575	-	2,575	-142	-141	-1	0.04%
2054	1	53	194	133	627	1,007	419	2,434	2,575	-	2,575	-141	-140	-1	0.04%
2055	1	53	191	133	631	1,008	418	2,435	2,575	-	2,575	-140	-138	-2	0.08%
2056	1	53	187	133	635	1,010	417	2,436	2,575	-	2,575	-139	-137	-2	0.08%
2057	1	53	185	133	639	1,012	417	2,440	2,575	-	2,575	-135	-136	1	0.04%
2058	1	53	181	133	642	1,013	416	2,439	2,575	-	2,575	-136	-134	-2	0.08%
2059	1	53	179	132	646	1,015	415	2,441	2,575	-	2,575	-134	-133	-1	0.04%
2060	1	53	176	132	649	1,016	415	2,442	2,575	-	2,575	-133	-132	-1	0.04%

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**TABLE A-9. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, HIDALGO COUNTY, KENEDY COUNTY GROUNDWATER CONSERVATION DISTRICT. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW						OUTFLOW					Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Net River Leakage	Recharge	Net Lateral Flow From Brooks Kenedy	Net Lateral Flow From Hidalgo Brush Country	Net Lateral Flow From Hidalgo White	Total Inflow	Wells	Net River Leakage	Net Lateral Flow To Hidalgo Brush Country	Net Lateral Flow To Kenedy	Total Outflow				
2010	-	261	2,216	247	1,259	3,983	3,515	2,200	-	1,462	7,177	-3,194	-3,194	0	0.00%
2011	-	261	2,231	165	1,264	3,921	3,515	2,001	-	1,502	7,018	-3,097	-3,095	-2	0.03%
2012	-	261	2,181	97	1,268	3,807	3,515	1,790	-	1,526	6,831	-3,024	-3,024	0	0.00%
2013	-	261	2,113	40	1,268	3,682	3,515	1,582	-	1,541	6,638	-2,956	-2,955	-1	0.02%
2014	-	261	2,036	-	1,265	3,562	3,515	1,379	11	1,551	6,456	-2,894	-2,892	-2	0.03%
2015	-	261	1,954	-	1,259	3,474	3,515	1,181	56	1,558	6,310	-2,836	-2,835	-1	0.02%
2016	-	261	1,869	-	1,249	3,379	3,515	989	99	1,563	6,166	-2,787	-2,785	-2	0.03%
2017	-	261	1,782	-	1,237	3,280	3,515	801	138	1,567	6,021	-2,741	-2,740	-1	0.02%
2018	-	261	1,694	-	1,223	3,178	3,515	703	173	1,571	5,962	-2,784	-2,699	-85	1.44%
2019	-	261	1,649	-	1,219	3,129	3,515	553	206	1,568	5,842	-2,713	-2,713	0	0.00%
2020	-	261	1,583	-	1,213	3,057	3,515	426	236	1,565	5,742	-2,685	-2,684	-1	0.02%
2021	-	261	1,515	-	1,204	2,980	3,515	301	264	1,562	5,642	-2,662	-2,660	-2	0.04%
2022	-	261	1,448	-	1,194	2,903	3,515	177	291	1,559	5,542	-2,639	-2,637	-2	0.04%
2023	-	261	1,381	-	1,182	2,824	3,515	55	316	1,556	5,442	-2,618	-2,616	-2	0.04%
2024	66	261	1,315	-	1,170	2,812	3,515	-	340	1,553	5,408	-2,596	-2,595	-1	0.02%
2025	91	261	1,249	-	1,156	2,757	3,515	-	362	1,551	5,428	-2,671	-2,575	-96	1.78%
2026	91	261	1,256	-	1,163	2,771	3,515	-	382	1,526	5,423	-2,652	-2,650	-2	0.04%
2027	91	261	1,241	-	1,171	2,764	3,515	-	399	1,501	5,415	-2,651	-2,651	0	0.00%
2028	91	261	1,224	-	1,176	2,752	3,515	-	415	1,476	5,406	-2,654	-2,653	-1	0.02%
2029	91	261	1,207	-	1,181	2,740	3,515	-	430	1,449	5,394	-2,654	-2,654	0	0.00%
2030	91	261	1,191	-	1,186	2,729	3,515	-	444	1,424	5,383	-2,654	-2,653	-1	0.02%
2031	91	261	1,176	-	1,190	2,718	3,515	-	457	1,398	5,370	-2,652	-2,651	-1	0.02%
2032	91	261	1,161	-	1,194	2,707	3,515	-	470	1,371	5,356	-2,649	-2,648	-1	0.02%
2033	91	261	1,147	-	1,197	2,696	3,515	-	481	1,345	5,341	-2,645	-2,645	0	0.00%
2034	91	261	1,133	-	1,200	2,685	3,515	-	493	1,319	5,327	-2,642	-2,640	-2	0.04%
2035	91	261	1,120	-	1,202	2,674	3,515	-	502	1,293	5,310	-2,636	-2,635	-1	0.02%
2036	91	261	1,108	-	1,204	2,664	3,515	-	513	1,267	5,295	-2,631	-2,630	-1	0.02%
2037	91	261	1,095	-	1,207	2,654	3,515	-	522	1,242	5,279	-2,625	-2,624	-1	0.02%
2038	91	261	1,084	-	1,208	2,644	3,515	-	530	1,217	5,262	-2,618	-2,618	0	0.00%
2039	91	261	1,073	-	1,210	2,635	3,515	-	539	1,192	5,246	-2,611	-2,611	0	0.00%
2040	91	261	1,062	-	1,211	2,625	3,515	-	547	1,167	5,229	-2,604	-2,604	0	0.00%
2041	91	261	1,052	-	1,212	2,616	3,515	-	555	1,143	5,213	-2,597	-2,597	0	0.00%
2042	91	261	1,041	-	1,212	2,605	3,515	-	562	1,118	5,195	-2,590	-2,589	-1	0.02%
2043	91	261	1,032	-	1,212	2,596	3,515	-	569	1,094	5,178	-2,582	-2,582	0	0.00%
2044	91	261	1,022	-	1,213	2,587	3,515	-	576	1,071	5,162	-2,575	-2,574	-1	0.02%
2045	91	261	1,014	-	1,212	2,578	3,515	-	582	1,047	5,144	-2,566	-2,566	0	0.00%
2046	91	261	1,005	-	1,213	2,570	3,515	-	589	1,024	5,128	-2,558	-2,557	-1	0.02%
2047	91	261	997	-	1,212	2,561	3,515	-	593	1,002	5,110	-2,549	-2,549	0	0.00%
2048	91	261	988	-	1,211	2,551	3,515	-	599	980	5,094	-2,543	-2,541	-2	0.04%
2049	91	261	981	-	1,211	2,544	3,515	-	605	957	5,077	-2,533	-2,532	-1	0.02%
2050	91	261	973	-	1,210	2,535	3,515	-	610	935	5,060	-2,525	-2,523	-2	0.04%
2051	91	261	966	-	1,209	2,527	3,515	-	615	914	5,044	-2,517	-2,515	-2	0.04%
2052	91	261	959	-	1,208	2,519	3,515	-	619	892	5,026	-2,507	-2,506	-1	0.02%
2053	91	261	952	-	1,207	2,511	3,515	-	624	871	5,010	-2,499	-2,497	-2	0.04%
2054	91	261	945	-	1,206	2,503	3,515	-	627	851	4,993	-2,490	-2,488	-2	0.04%
2055	91	261	939	-	1,205	2,496	3,515	-	631	830	4,976	-2,480	-2,479	-1	0.02%
2056	91	261	933	-	1,204	2,489	3,515	-	635	810	4,960	-2,471	-2,470	-1	0.02%
2057	91	261	926	-	1,202	2,480	3,515	-	639	789	4,943	-2,463	-2,461	-2	0.04%
2058	91	261	921	-	1,201	2,474	3,515	-	642	770	4,927	-2,453	-2,452	-1	0.02%
2059	91	261	915	-	1,199	2,466	3,515	-	646	750	4,911	-2,445	-2,443	-2	0.04%
2060	91	261	909	-	1,197	2,458	3,515	-	649	731	4,895	-2,437	-2,434	-3	0.06%

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**TABLE A-10. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, HIDALGO COUNTY, RED SANDS GROUNDWATER CONSERVATION DISTRICT. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW			OUTFLOW			Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Recharge	Net Lateral Flow From Hidalgo White	Total Inflow	Wells	Net Lateral Flow To Hidalgo White	Total Outflow				
2010	113	134	247	584	-	584	-337	-337	0	0.00%
2011	113	101	214	584	-	584	-370	-370	0	0.00%
2012	113	71	184	584	-	584	-400	-400	0	0.00%
2013	113	42	155	584	-	584	-429	-429	0	0.00%
2014	113	15	128	584	-	584	-456	-456	0	0.00%
2015	113	-	113	584	12	596	-483	-483	0	0.00%
2016	113	-	113	584	38	622	-509	-508	-1	0.16%
2017	113	-	113	584	62	646	-533	-533	0	0.00%
2018	113	-	113	584	87	671	-558	-557	-1	0.15%
2019	113	-	113	584	110	694	-581	-581	0	0.00%
2020	113	-	113	584	134	718	-605	-604	-1	0.14%
2021	113	-	113	584	156	740	-627	-627	0	0.00%
2022	113	-	113	584	178	762	-649	-649	0	0.00%
2023	113	-	113	584	200	784	-671	-671	0	0.00%
2024	113	-	113	584	222	806	-693	-692	-1	0.12%
2025	113	-	113	584	242	826	-713	-713	0	0.00%
2026	113	-	113	584	263	847	-734	-733	-1	0.12%
2027	113	-	113	584	282	866	-753	-753	0	0.00%
2028	113	-	113	584	301	885	-772	-772	0	0.00%
2029	113	-	113	584	320	904	-791	-791	0	0.00%
2030	113	-	113	584	338	922	-809	-810	1	0.11%
2031	113	-	113	584	356	940	-827	-827	0	0.00%
2032	113	-	113	584	374	958	-845	-845	0	0.00%
2033	113	-	113	584	391	975	-862	-861	-1	0.10%
2034	113	-	113	584	406	990	-877	-878	1	0.10%
2035	113	-	113	584	423	1,007	-894	-893	-1	0.10%
2036	113	-	113	584	438	1,022	-909	-908	-1	0.10%
2037	113	-	113	584	453	1,037	-924	-923	-1	0.10%
2038	113	-	113	584	466	1,050	-937	-937	0	0.00%
2039	113	-	113	584	480	1,064	-951	-951	0	0.00%
2040	113	-	113	584	493	1,077	-964	-964	0	0.00%
2041	113	-	113	584	506	1,090	-977	-977	0	0.00%
2042	113	-	113	584	518	1,102	-989	-989	0	0.00%
2043	113	-	113	584	530	1,114	-1,001	-1,001	0	0.00%
2044	113	-	113	584	541	1,125	-1,012	-1,012	0	0.00%
2045	113	-	113	584	552	1,136	-1,023	-1,023	0	0.00%
2046	113	-	113	584	562	1,146	-1,033	-1,033	0	0.00%
2047	113	-	113	584	572	1,156	-1,043	-1,043	0	0.00%
2048	113	-	113	584	582	1,166	-1,053	-1,052	-1	0.09%
2049	113	-	113	584	590	1,174	-1,061	-1,061	0	0.00%
2050	113	-	113	584	599	1,183	-1,070	-1,070	0	0.00%
2051	113	-	113	584	607	1,191	-1,078	-1,078	0	0.00%
2052	113	-	113	584	615	1,199	-1,086	-1,086	0	0.00%
2053	113	-	113	584	623	1,207	-1,094	-1,093	-1	0.08%
2054	113	-	113	584	630	1,214	-1,101	-1,100	-1	0.08%
2055	113	-	113	584	636	1,220	-1,107	-1,107	0	0.00%
2056	113	-	113	584	643	1,227	-1,114	-1,113	-1	0.08%
2057	113	-	113	584	649	1,233	-1,120	-1,120	0	0.00%
2058	113	-	113	584	655	1,239	-1,126	-1,125	-1	0.08%
2059	113	-	113	584	659	1,243	-1,130	-1,131	1	0.08%
2060	113	-	113	584	665	1,249	-1,136	-1,136	0	0.00%





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TABLE A-13. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, JIM HOGG COUNTY. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.

Year	INFLOW									OUTFLOW					Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	River Leakage	Recharge	Net Vertical Leakage Lower	Net Lateral Flow From Duval	Net Lateral Flow From Starr	Net Lateral Flow From Webb16	Net Lateral Flow From Zapata	Total Inflow	Wells	Net Lateral Flow To Brooks Brush Country	Net Lateral Flow To Duval	Net Lateral Flow To Starr	Total Outflow					
2010	891	3,817	12,242	-	-	285	14	17,249	24,414	5,657	203	1,081	31,355	-14,106	-14,107	1	0.00%	
2011	891	3,817	12,620	-	-	277	14	17,619	24,414	5,503	145	991	31,053	-13,434	-13,434	0	0.00%	
2012	891	3,817	12,963	-	-	272	15	17,938	24,414	5,364	99	911	30,788	-12,830	-12,830	0	0.00%	
2013	891	3,817	13,278	-	-	266	15	18,267	24,414	5,238	61	839	30,552	-12,285	-12,285	0	0.00%	
2014	891	3,817	13,567	-	-	262	16	18,553	24,414	5,127	31	774	30,346	-11,793	-11,792	-1	0.00%	
2015	891	3,817	13,835	-	-	259	16	18,818	24,414	5,027	7	713	30,161	-11,343	-11,342	-1	0.00%	
2016	891	3,817	14,084	14	-	256	17	19,079	24,414	4,938	-	659	30,011	-10,932	-10,930	-2	0.01%	
2017	891	3,817	14,317	32	-	253	17	19,327	24,414	4,858	-	608	29,880	-10,553	-10,552	-1	0.00%	
2018	891	3,817	14,535	47	-	250	17	19,557	24,414	4,788	-	562	29,764	-10,207	-10,204	-3	0.01%	
2019	891	3,817	14,741	58	-	248	18	19,773	24,414	4,724	-	518	29,656	-9,883	-9,881	-2	0.01%	
2020	891	3,817	14,934	69	-	246	18	19,975	24,414	4,666	-	478	29,558	-9,583	-9,582	-1	0.00%	
2021	891	3,817	15,116	77	-	244	18	20,163	24,414	4,614	-	441	29,469	-9,306	-9,303	-3	0.01%	
2022	891	3,817	15,290	85	-	242	18	20,343	24,414	4,567	-	405	29,386	-9,043	-9,042	-1	0.00%	
2023	891	3,817	15,453	91	-	239	19	20,510	24,414	4,524	-	372	29,310	-8,800	-8,798	-2	0.01%	
2024	891	3,817	15,610	96	-	237	19	20,670	24,414	4,485	-	341	29,240	-8,570	-8,568	-2	0.01%	
2025	891	3,817	15,759	100	-	235	19	20,821	24,414	4,449	-	310	29,173	-8,352	-8,352	0	0.00%	
2026	891	3,817	15,901	103	-	233	19	20,964	24,414	4,416	-	283	29,113	-8,149	-8,147	-2	0.01%	
2027	891	3,817	16,037	105	-	230	20	21,100	24,414	4,387	-	255	29,056	-7,956	-7,954	-2	0.01%	
2028	891	3,817	16,167	107	-	228	20	21,230	24,414	4,359	-	230	29,003	-7,773	-7,771	-2	0.01%	
2029	891	3,817	16,292	108	-	226	20	21,354	24,414	4,333	-	206	28,953	-7,599	-7,597	-2	0.01%	
2030	891	3,817	16,412	108	-	224	20	21,472	24,414	4,310	-	181	28,905	-7,433	-7,431	-2	0.01%	
2031	891	3,817	16,528	109	-	221	20	21,586	24,414	4,288	-	158	28,860	-7,274	-7,273	-1	0.00%	
2032	891	3,817	16,639	108	-	218	20	21,693	24,414	4,268	-	137	28,819	-7,126	-7,122	-4	0.01%	
2033	891	3,817	16,747	107	-	216	20	21,798	24,414	4,250	-	116	28,780	-6,982	-6,978	-4	0.01%	
2034	891	3,817	16,852	106	-	213	21	21,900	24,414	4,232	-	95	28,741	-6,841	-6,841	0	0.00%	
2035	891	3,817	16,951	104	-	211	21	21,995	24,414	4,216	-	76	28,706	-6,711	-6,708	-3	0.01%	
2036	891	3,817	17,049	103	-	208	21	22,089	24,414	4,201	-	57	28,672	-6,583	-6,582	-1	0.00%	
2037	891	3,817	17,144	101	-	205	21	22,179	24,414	4,188	-	39	28,641	-6,462	-6,460	-2	0.01%	
2038	891	3,817	17,235	99	-	202	21	22,265	24,414	4,175	-	21	28,610	-6,345	-6,342	-3	0.01%	
2039	891	3,817	17,323	97	-	199	21	22,348	24,414	4,162	-	3	28,579	-6,231	-6,230	-1	0.00%	
2040	891	3,817	17,410	94	13	196	21	22,442	24,414	4,152	-	-	28,566	-6,124	-6,121	-3	0.01%	
2041	891	3,817	17,494	92	30	193	21	22,538	24,414	4,142	-	-	28,556	-6,018	-6,016	-2	0.01%	
2042	891	3,817	17,575	89	46	190	21	22,629	24,414	4,132	-	-	28,546	-5,917	-5,915	-2	0.01%	
2043	891	3,817	17,655	86	62	187	21	22,719	24,414	4,123	-	-	28,537	-5,818	-5,817	-1	0.00%	
2044	891	3,817	17,732	84	77	183	21	22,805	24,414	4,114	-	-	28,528	-5,723	-5,723	0	0.00%	
2045	891	3,817	17,807	80	92	181	21	22,889	24,414	4,107	-	-	28,521	-5,632	-5,631	-1	0.00%	
2046	891	3,817	17,880	77	107	177	21	22,970	24,414	4,099	-	-	28,513	-5,543	-5,543	0	0.00%	
2047	891	3,817	17,951	74	121	173	21	23,048	24,414	4,093	-	-	28,507	-5,459	-5,457	-2	0.01%	
2048	891	3,817	18,021	70	135	170	21	23,125	24,414	4,087	-	-	28,501	-5,376	-5,375	-1	0.00%	
2049	891	3,817	18,089	67	148	166	21	23,199	24,414	4,081	-	-	28,495	-5,296	-5,294	-2	0.01%	
2050	891	3,817	18,155	64	162	163	21	23,273	24,414	4,075	-	-	28,489	-5,216	-5,216	0	0.00%	
2051	891	3,817	18,220	60	175	159	21	23,343	24,414	4,070	-	-	28,484	-5,141	-5,140	-1	0.00%	
2052	891	3,817	18,283	57	188	155	21	23,412	24,414	4,066	-	-	28,480	-5,068	-5,067	-1	0.00%	
2053	891	3,817	18,345	52	200	152	21	23,478	24,414	4,061	-	-	28,475	-4,997	-4,996	-1	0.00%	
2054	891	3,817	18,406	49	213	148	21	23,545	24,414	4,057	-	-	28,471	-4,926	-4,926	0	0.00%	
2055	891	3,817	18,465	45	225	144	21	23,608	24,414	4,054	-	-	28,468	-4,860	-4,858	-2	0.01%	
2056	891	3,817	18,523	41	237	139	21	23,669	24,414	4,050	-	-	28,464	-4,795	-4,793	-2	0.01%	
2057	891	3,817	18,580	38	249	136	21	23,732	24,414	4,046	-	-	28,460	-4,728	-4,729	1	0.00%	
2058	891	3,817	18,636	34	261	132	20	23,791	24,414	4,044	-	-	28,458	-4,667	-4,666	-1	0.00%	
2059	891	3,817	18,690	30	272	128	20	23,848	24,414	4,041	-	-	28,455	-4,607	-4,606	-1	0.00%	
2060	891	3,817	18,744	26	283	123	20	23,904	24,414	4,039	-	-	28,453	-4,549	-4,546	-3	0.01%	





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**TABLE A-15. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, JIM WELLS COUNTY, KENEDY COUNTY GROUNDWATER CONSERVATION DISTRICT. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW				OUTFLOW				Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	River Leakage	Recharge	Net Lateral Flow From Jim Wells Brush Country	Total Inflow	Wells	Net Lateral Flow To Kleburg Kenedy	Net Lateral Flow To Nueces White	Total Outflow				
2010	168	115	7,254	7,537	356	7,741	1,771	9,868	-2,331	-2,331	0	0.00%
2011	168	115	7,055	7,338	356	7,643	1,736	9,735	-2,397	-2,397	0	0.00%
2012	168	115	6,879	7,162	356	7,548	1,700	9,604	-2,442	-2,442	0	0.00%
2013	168	115	6,718	7,001	356	7,454	1,662	9,472	-2,471	-2,472	1	0.01%
2014	168	115	6,567	6,850	356	7,360	1,623	9,339	-2,489	-2,490	1	0.01%
2015	168	115	6,422	6,705	356	7,266	1,582	9,204	-2,499	-2,498	-1	0.01%
2016	168	115	6,285	6,568	356	7,173	1,539	9,068	-2,500	-2,500	0	0.00%
2017	168	115	6,153	6,436	356	7,079	1,497	8,932	-2,496	-2,496	0	0.00%
2018	168	115	6,023	6,306	356	6,984	1,454	8,794	-2,488	-2,488	0	0.00%
2019	168	115	5,897	6,180	356	6,890	1,412	8,658	-2,478	-2,477	-1	0.01%
2020	168	115	5,777	6,060	356	6,796	1,370	8,522	-2,462	-2,463	1	0.01%
2021	168	115	5,658	5,941	356	6,703	1,330	8,389	-2,448	-2,446	-2	0.02%
2022	168	115	5,543	5,826	356	6,608	1,289	8,253	-2,427	-2,428	1	0.01%
2023	168	115	5,429	5,712	356	6,514	1,250	8,120	-2,408	-2,407	-1	0.01%
2024	168	115	5,318	5,601	356	6,419	1,211	7,986	-2,385	-2,385	0	0.00%
2025	168	115	5,209	5,492	356	6,324	1,173	7,853	-2,361	-2,362	1	0.01%
2026	168	115	5,102	5,385	356	6,229	1,136	7,721	-2,336	-2,337	1	0.01%
2027	168	115	4,996	5,279	356	6,136	1,101	7,593	-2,314	-2,313	-1	0.01%
2028	168	115	4,895	5,178	356	6,043	1,066	7,465	-2,287	-2,288	1	0.01%
2029	168	115	4,795	5,078	356	5,952	1,033	7,341	-2,263	-2,263	0	0.00%
2030	168	115	4,699	4,982	356	5,863	1,000	7,219	-2,237	-2,238	1	0.01%
2031	168	115	4,606	4,889	356	5,776	969	7,101	-2,212	-2,213	1	0.01%
2032	168	115	4,514	4,797	356	5,690	939	6,985	-2,188	-2,188	0	0.00%
2033	168	115	4,426	4,709	356	5,607	909	6,872	-2,163	-2,163	0	0.00%
2034	168	115	4,340	4,623	356	5,525	881	6,762	-2,139	-2,138	-1	0.01%
2035	168	115	4,257	4,540	356	5,445	853	6,654	-2,114	-2,114	0	0.00%
2036	168	115	4,176	4,459	356	5,368	826	6,550	-2,091	-2,090	-1	0.02%
2037	168	115	4,099	4,382	356	5,293	800	6,449	-2,067	-2,067	0	0.00%
2038	168	115	4,024	4,307	356	5,221	774	6,351	-2,044	-2,045	1	0.02%
2039	168	115	3,952	4,235	356	5,151	750	6,257	-2,022	-2,023	1	0.02%
2040	168	115	3,882	4,165	356	5,085	726	6,167	-2,002	-2,002	0	0.00%
2041	168	115	3,815	4,098	356	5,020	704	6,080	-1,982	-1,982	0	0.00%
2042	168	115	3,751	4,034	356	4,956	683	5,995	-1,961	-1,962	1	0.02%
2043	168	115	3,689	3,972	356	4,895	662	5,913	-1,941	-1,942	1	0.02%
2044	168	115	3,629	3,912	356	4,836	643	5,835	-1,923	-1,923	0	0.00%
2045	168	115	3,571	3,854	356	4,778	624	5,758	-1,904	-1,905	1	0.02%
2046	168	115	3,515	3,798	356	4,723	606	5,685	-1,887	-1,886	-1	0.02%
2047	168	115	3,461	3,744	356	4,669	588	5,613	-1,869	-1,869	0	0.00%
2048	168	115	3,409	3,692	356	4,617	571	5,544	-1,852	-1,852	0	0.00%
2049	168	115	3,358	3,641	356	4,567	554	5,477	-1,836	-1,835	-1	0.02%
2050	168	115	3,310	3,593	356	4,519	537	5,412	-1,819	-1,818	-1	0.02%
2051	168	115	3,263	3,546	356	4,471	521	5,348	-1,802	-1,802	0	0.00%
2052	168	115	3,218	3,501	356	4,425	506	5,287	-1,786	-1,787	1	0.02%
2053	168	115	3,173	3,456	356	4,381	491	5,228	-1,772	-1,772	0	0.00%
2054	168	115	3,131	3,414	356	4,338	477	5,171	-1,757	-1,757	0	0.00%
2055	168	115	3,090	3,373	356	4,296	463	5,115	-1,742	-1,742	0	0.00%
2056	168	115	3,049	3,332	356	4,255	449	5,060	-1,728	-1,727	-1	0.02%
2057	168	115	3,010	3,293	356	4,215	436	5,007	-1,714	-1,713	-1	0.02%
2058	168	115	2,973	3,256	356	4,177	422	4,955	-1,699	-1,699	0	0.00%
2059	168	115	2,935	3,218	356	4,139	409	4,904	-1,686	-1,686	0	0.00%
2060	168	115	2,899	3,182	356	4,102	397	4,855	-1,673	-1,673	0	0.00%

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**TABLE A-16. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, JIM WELLS COUNTY, NON-DISTRICT AREA. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW			OUTFLOW			Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	River Leakage	Recharge	Total Inflow	Wells	Net Lateral Flow To Jim Wells Brush Country	Total Outflow				
2010	46	23	69	68	289	357	-288	-288	0	0.00%
2011	46	23	69	68	279	347	-278	-279	1	0.29%
2012	46	23	69	68	268	336	-267	-268	1	0.30%
2013	46	23	69	68	259	327	-258	-258	0	0.00%
2014	46	23	69	68	249	317	-248	-249	1	0.31%
2015	46	23	69	68	240	308	-239	-240	1	0.32%
2016	46	23	69	68	231	299	-230	-231	1	0.33%
2017	46	23	69	68	224	292	-223	-224	1	0.34%
2018	46	23	69	68	216	284	-215	-217	2	0.70%
2019	46	23	69	68	211	279	-210	-210	0	0.00%
2020	46	23	69	68	204	272	-203	-204	1	0.37%
2021	46	23	69	68	198	266	-197	-198	1	0.38%
2022	46	23	69	68	192	260	-191	-192	1	0.38%
2023	46	23	69	68	187	255	-186	-187	1	0.39%
2024	46	23	69	68	182	250	-181	-183	2	0.80%
2025	46	23	69	68	178	246	-177	-178	1	0.41%
2026	46	23	69	68	174	242	-173	-174	1	0.41%
2027	46	23	69	68	170	238	-169	-170	1	0.42%
2028	46	23	69	68	166	234	-165	-166	1	0.43%
2029	46	23	69	68	162	230	-161	-162	1	0.43%
2030	46	23	69	68	159	227	-158	-158	0	0.00%
2031	46	23	69	68	156	224	-155	-155	0	0.00%
2032	46	23	69	68	152	220	-151	-152	1	0.45%
2033	46	23	69	68	150	218	-149	-149	0	0.00%
2034	46	23	69	68	147	215	-146	-146	0	0.00%
2035	46	23	69	68	144	212	-143	-143	0	0.00%
2036	46	23	69	68	141	209	-140	-141	1	0.48%
2037	46	23	69	68	138	206	-137	-138	1	0.48%
2038	46	23	69	68	136	204	-135	-136	1	0.49%
2039	46	23	69	68	134	202	-133	-134	1	0.49%
2040	46	23	69	68	132	200	-131	-132	1	0.50%
2041	46	23	69	68	130	198	-129	-130	1	0.50%
2042	46	23	69	68	128	196	-127	-128	1	0.51%
2043	46	23	69	68	126	194	-125	-126	1	0.51%
2044	46	23	69	68	125	193	-124	-124	0	0.00%
2045	46	23	69	68	123	191	-122	-123	1	0.52%
2046	46	23	69	68	121	189	-120	-121	1	0.53%
2047	46	23	69	68	120	188	-119	-120	1	0.53%
2048	46	23	69	68	118	186	-117	-118	1	0.54%
2049	46	23	69	68	117	185	-116	-117	1	0.54%
2050	46	23	69	68	116	184	-115	-116	1	0.54%
2051	46	23	69	68	114	182	-113	-115	2	1.09%
2052	46	23	69	68	114	182	-113	-113	0	0.00%
2053	46	23	69	68	112	180	-111	-112	1	0.55%
2054	46	23	69	68	112	180	-111	-111	0	0.00%
2055	46	23	69	68	110	178	-109	-110	1	0.56%
2056	46	23	69	68	109	177	-108	-109	1	0.56%
2057	46	23	69	68	109	177	-108	-108	0	0.00%
2058	46	23	69	68	108	176	-107	-107	0	0.00%
2059	46	23	69	68	107	175	-106	-106	0	0.00%
2060	46	23	69	68	106	174	-105	-105	0	0.00%





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**TABLE A-19. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, KLEBERG COUNTY, NON-DISTRICT AREA. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW									OUTFLOW					Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Net River Leakage	Recharge	Net Lateral Flow From Brooks Brush Country	Net Lateral Flow From Gulf	Net Lateral Flow From Jim Wells Brush Country	Net Lateral Flow From Kenedy	Net Lateral Flow From Kleburg Kenedy	Net Lateral Flow From Nueces White	Total Inflow	Wells	Drains	Net River Leakage	Total Outflow					
2010	-	528	206	3,320	1,261	1,022	6,648	298	13,283	12,689	405	3,965	17,059	-3,776	-3,777	1	0.01%	
2011	-	528	216	3,460	1,271	1,005	6,464	307	13,251	12,689	379	3,649	16,717	-3,466	-3,464	-2	0.01%	
2012	-	528	224	3,558	1,278	989	6,268	315	13,160	12,689	358	3,370	16,417	-3,257	-3,257	0	0.00%	
2013	-	528	230	3,631	1,282	974	6,063	321	13,029	12,689	339	3,107	16,135	-3,106	-3,107	1	0.01%	
2014	-	528	236	3,687	1,283	958	5,854	326	12,872	12,689	322	2,854	15,865	-2,993	-2,993	0	0.00%	
2015	-	528	240	3,733	1,281	944	5,645	329	12,700	12,689	305	2,610	15,604	-2,904	-2,904	0	0.00%	
2016	-	528	244	3,769	1,279	931	5,434	332	12,517	12,689	289	2,374	15,352	-2,835	-2,835	0	0.00%	
2017	-	528	247	3,802	1,275	918	5,226	334	12,330	12,689	274	2,144	15,107	-2,777	-2,778	1	0.01%	
2018	-	528	249	3,830	1,270	905	5,023	335	12,140	12,689	262	1,937	14,888	-2,748	-2,729	-19	0.13%	
2019	-	528	251	3,856	1,262	893	4,859	337	11,986	12,689	251	1,788	14,728	-2,742	-2,718	-24	0.16%	
2020	-	528	252	3,878	1,254	881	4,698	339	11,830	12,689	239	1,639	14,567	-2,737	-2,736	-1	0.01%	
2021	-	528	253	3,899	1,244	870	4,542	342	11,678	12,689	226	1,488	14,403	-2,725	-2,726	1	0.01%	
2022	-	528	254	3,920	1,233	858	4,390	344	11,527	12,689	214	1,336	14,239	-2,712	-2,714	2	0.01%	
2023	-	528	254	3,937	1,220	847	4,242	346	11,374	12,689	201	1,197	14,087	-2,713	-2,701	-12	0.09%	
2024	-	528	255	3,955	1,207	835	4,101	349	11,230	12,689	187	1,048	13,924	-2,694	-2,696	2	0.01%	
2025	-	528	255	3,971	1,192	825	3,962	351	11,084	12,689	174	924	13,787	-2,703	-2,684	-19	0.14%	
2026	-	528	255	3,987	1,177	813	3,833	353	10,966	12,689	159	832	13,680	-2,714	-2,681	-33	0.24%	
2027	-	528	254	4,002	1,161	801	3,739	356	10,841	12,689	143	734	13,566	-2,725	-2,703	-22	0.16%	
2028	-	528	254	4,016	1,145	789	3,654	360	10,746	12,689	125	636	13,450	-2,704	-2,705	1	0.01%	
2029	-	528	254	4,030	1,129	776	3,561	363	10,641	12,689	107	544	13,340	-2,699	-2,696	-3	0.02%	
2030	-	528	253	4,043	1,112	762	3,453	367	10,518	12,689	86	467	13,242	-2,724	-2,723	-1	0.01%	
2031	-	528	253	4,056	1,095	747	3,357	372	10,408	12,689	62	386	13,137	-2,729	-2,729	0	0.00%	
2032	-	528	252	4,069	1,079	730	3,264	376	10,298	12,689	38	302	13,029	-2,731	-2,730	-1	0.01%	
2033	-	528	252	4,081	1,063	715	3,173	380	10,192	12,689	14	221	12,924	-2,732	-2,730	-2	0.02%	
2034	-	528	251	4,093	1,047	698	3,061	385	10,063	12,689	0	123	12,812	-2,749	-2,739	-10	0.08%	
2035	-	528	250	4,106	1,031	680	2,949	389	9,933	12,689	0	18	12,707	-2,774	-2,775	1	0.01%	
2036	91	528	250	4,117	1,017	661	2,836	393	9,893	12,689	0	-	12,689	-2,796	-2,796	0	0.00%	
2037	197	528	249	4,128	1,004	641	2,694	398	9,839	12,689	0	-	12,689	-2,850	-2,826	-24	0.19%	
2038	269	528	248	4,140	990	621	2,602	403	9,801	12,689	0	-	12,689	-2,888	-2,889	1	0.01%	
2039	344	528	247	4,151	977	600	2,509	409	9,765	12,689	0	-	12,689	-2,924	-2,925	1	0.01%	
2040	409	528	247	4,161	963	578	2,420	414	9,720	12,689	0	-	12,689	-2,969	-2,969	0	0.00%	
2041	475	528	246	4,173	951	556	2,334	420	9,683	12,689	0	-	12,689	-3,006	-3,008	2	0.02%	
2042	527	528	245	4,183	938	533	2,251	425	9,630	12,689	0	-	12,689	-3,059	-3,043	-16	0.13%	
2043	576	528	245	4,194	926	516	2,178	431	9,594	12,689	0	-	12,689	-3,095	-3,096	1	0.01%	
2044	625	528	244	4,205	914	496	2,108	436	9,556	12,689	0	-	12,689	-3,133	-3,133	0	0.00%	
2045	655	528	243	4,216	902	476	2,039	442	9,501	12,689	0	-	12,689	-3,188	-3,167	-21	0.17%	
2046	655	528	243	4,227	890	488	1,989	447	9,467	12,689	0	-	12,689	-3,222	-3,222	0	0.00%	
2047	655	528	242	4,237	879	494	1,937	453	9,425	12,689	0	-	12,689	-3,264	-3,263	-1	0.01%	
2048	655	528	241	4,248	869	500	1,889	458	9,388	12,689	0	-	12,689	-3,301	-3,302	1	0.01%	
2049	655	528	241	4,258	858	505	1,842	464	9,351	12,689	0	-	12,689	-3,338	-3,339	1	0.01%	
2050	655	528	240	4,269	848	509	1,797	469	9,315	12,689	0	-	12,689	-3,374	-3,374	0	0.00%	
2051	655	528	240	4,279	838	513	1,754	475	9,282	12,689	0	-	12,689	-3,407	-3,406	-1	0.01%	
2052	655	528	239	4,290	829	518	1,713	480	9,252	12,689	0	-	12,689	-3,437	-3,437	0	0.00%	
2053	655	528	239	4,300	819	522	1,675	485	9,223	12,689	0	-	12,689	-3,466	-3,465	-1	0.01%	
2054	655	528	238	4,312	810	526	1,638	491	9,198	12,689	0	-	12,689	-3,491	-3,492	1	0.01%	
2055	655	528	238	4,322	801	529	1,602	496	9,171	12,689	0	-	12,689	-3,518	-3,517	-1	0.01%	
2056	655	528	237	4,333	793	533	1,567	502	9,148	12,689	0	-	12,689	-3,541	-3,541	0	0.00%	
2057	655	528	237	4,344	784	537	1,534	507	9,126	12,689	0	-	12,689	-3,563	-3,563	0	0.00%	
2058	655	528	236	4,355	776	540	1,503	513	9,106	12,689	0	-	12,689	-3,583	-3,584	1	0.01%	
2059	655	528	236	4,365	768	543	1,472	518	9,085	12,689	0	-	12,689	-3,604	-3,604	0	0.00%	
2060	655	528	235	4,376	759	546	1,443	523	9,065	12,689	0	-	12,689	-3,624	-3,622	-2	0.02%	

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**TABLE A-20. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, LIVE OAK COUNTY. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW							OUTFLOW										Storage Change	Model Error	Model Error (percent)
	Recharge	Net Vertical Leakage Lower	Net Lateral Flow From Bee 16	Net Lateral Flow From Duval	Net Lateral Flow From Karnes 15	Net Lateral Flow From McMullen 16	Total Inflow	Wells	Drains	Net River Leakage	Net Lateral Flow To Bee 16	Net Lateral Flow To Duval	Net Lateral Flow To Jim Wells Brush Country	Net Lateral Flow To San Patricio	Total Outflow	Inflow - Outflow				
2010	7,107	6,844	203	37	5	230	14,426	11,441	355	8,611	-	-	732	1,163	22,302	-7,876	-7,874	-2	0.01%	
2011	7,107	6,712	144	34	5	228	14,230	11,441	352	8,517	-	-	770	1,151	22,231	-8,001	-8,000	-1	0.00%	
2012	7,107	6,588	96	32	6	227	14,056	11,441	349	8,418	-	-	802	1,142	22,152	-8,096	-8,095	-1	0.00%	
2013	7,107	6,470	56	28	6	225	13,892	11,441	346	8,321	-	-	827	1,136	22,071	-8,179	-8,178	-1	0.00%	
2014	7,107	6,359	22	26	6	223	13,743	11,441	344	8,223	-	-	851	1,131	21,990	-8,247	-8,245	-2	0.01%	
2015	7,107	6,254	-	23	5	221	13,610	11,441	341	8,126	7	-	871	1,128	21,914	-8,304	-8,301	-3	0.01%	
2016	7,107	6,154	-	21	5	220	13,507	11,441	339	8,026	31	-	890	1,125	21,852	-8,345	-8,344	-1	0.00%	
2017	7,107	6,059	-	19	5	218	13,408	11,441	336	7,928	53	-	906	1,123	21,787	-8,379	-8,377	-2	0.01%	
2018	7,107	5,969	-	16	5	217	13,314	11,441	334	7,829	71	-	921	1,121	21,717	-8,403	-8,401	-2	0.01%	
2019	7,107	5,883	-	15	5	216	13,226	11,441	332	7,739	86	-	935	1,119	21,652	-8,426	-8,417	-9	0.04%	
2020	7,107	5,804	-	12	5	215	13,143	11,441	330	7,642	100	-	946	1,117	21,576	-8,433	-8,435	2	0.01%	
2021	7,107	5,728	-	10	5	214	13,064	11,441	328	7,550	111	-	958	1,117	21,505	-8,441	-8,440	-1	0.00%	
2022	7,107	5,655	-	8	5	213	12,988	11,441	326	7,458	121	-	969	1,115	21,430	-8,442	-8,440	-2	0.01%	
2023	7,107	5,586	-	6	5	212	12,916	11,441	324	7,365	128	-	980	1,114	21,352	-8,436	-8,435	-1	0.00%	
2024	7,107	5,520	-	4	5	211	12,847	11,441	322	7,276	135	-	988	1,113	21,275	-8,428	-8,424	-4	0.02%	
2025	7,107	5,459	-	3	5	210	12,784	11,441	320	7,200	141	-	997	1,112	21,211	-8,427	-8,415	-12	0.06%	
2026	7,107	5,403	-	1	5	209	12,725	11,441	318	7,124	144	-	1,005	1,110	21,142	-8,417	-8,418	1	0.00%	
2027	7,107	5,348	-	-	5	209	12,669	11,441	316	7,050	148	1	1,013	1,108	21,077	-8,408	-8,408	0	0.00%	
2028	7,107	5,295	-	-	5	208	12,615	11,441	315	6,975	150	2	1,019	1,107	21,009	-8,394	-8,393	-1	0.00%	
2029	7,107	5,246	-	-	5	208	12,566	11,441	313	6,901	151	4	1,026	1,105	20,941	-8,375	-8,376	1	0.00%	
2030	7,107	5,199	-	-	5	207	12,518	11,441	312	6,835	153	5	1,033	1,104	20,883	-8,365	-8,354	-11	0.05%	
2031	7,107	5,155	-	-	5	207	12,474	11,441	310	6,775	153	7	1,038	1,101	20,825	-8,351	-8,352	1	0.00%	
2032	7,107	5,114	-	-	5	206	12,432	11,441	308	6,717	153	8	1,044	1,099	20,770	-8,338	-8,337	-1	0.00%	
2033	7,107	5,075	-	-	5	206	12,393	11,441	307	6,657	153	10	1,048	1,097	20,713	-8,320	-8,319	-1	0.00%	
2034	7,107	5,039	-	-	5	205	12,356	11,441	305	6,598	152	11	1,054	1,094	20,655	-8,299	-8,298	-1	0.00%	
2035	7,107	5,004	-	-	5	205	12,321	11,441	304	6,539	150	12	1,059	1,092	20,597	-8,276	-8,275	-1	0.00%	
2036	7,107	4,972	-	-	5	205	12,289	11,441	303	6,480	149	13	1,063	1,089	20,538	-8,249	-8,251	2	0.01%	
2037	7,107	4,941	-	-	5	204	12,257	11,441	301	6,422	146	14	1,068	1,087	20,479	-8,222	-8,223	1	0.00%	
2038	7,107	4,911	-	-	5	204	12,227	11,441	300	6,364	145	16	1,072	1,084	20,422	-8,195	-8,195	0	0.00%	
2039	7,107	4,883	-	-	5	204	12,199	11,441	299	6,306	142	17	1,076	1,082	20,363	-8,164	-8,164	0	0.00%	
2040	7,107	4,856	-	-	5	204	12,172	11,441	297	6,251	140	18	1,080	1,079	20,306	-8,134	-8,133	-1	0.00%	
2041	7,107	4,832	-	-	5	204	12,148	11,441	296	6,197	137	19	1,085	1,077	20,252	-8,104	-8,103	-1	0.00%	
2042	7,107	4,808	-	-	5	204	12,124	11,441	295	6,150	133	19	1,088	1,073	20,199	-8,075	-8,072	-3	0.01%	
2043	7,107	4,785	-	-	5	203	12,100	11,441	293	6,100	130	21	1,093	1,070	20,148	-8,048	-8,047	-1	0.00%	
2044	7,107	4,764	-	-	5	203	12,079	11,441	292	6,052	127	22	1,096	1,068	20,098	-8,019	-8,018	-1	0.00%	
2045	7,107	4,744	-	-	5	203	12,059	11,441	291	6,007	123	22	1,101	1,064	20,049	-7,990	-7,992	2	0.01%	
2046	7,107	4,724	-	-	5	203	12,039	11,441	290	5,963	119	24	1,104	1,062	20,003	-7,964	-7,964	0	0.00%	
2047	7,107	4,705	-	-	5	203	12,020	11,441	289	5,919	114	25	1,109	1,059	19,956	-7,936	-7,935	-1	0.00%	
2048	7,107	4,686	-	-	5	203	12,001	11,441	288	5,874	110	25	1,112	1,056	19,906	-7,905	-7,905	0	0.00%	
2049	7,107	4,670	-	-	5	203	11,985	11,441	287	5,830	105	26	1,117	1,054	19,860	-7,875	-7,875	0	0.00%	
2050	7,107	4,653	-	-	5	203	11,968	11,441	286	5,786	101	28	1,120	1,051	19,813	-7,845	-7,845	0	0.00%	
2051	7,107	4,637	-	-	5	203	11,952	11,441	285	5,745	97	28	1,125	1,048	19,769	-7,817	-7,814	-3	0.02%	
2052	7,107	4,621	-	-	5	203	11,936	11,441	284	5,705	93	29	1,129	1,046	19,727	-7,791	-7,788	-3	0.02%	
2053	7,107	4,606	-	-	5	203	11,921	11,441	283	5,665	88	29	1,133	1,043	19,682	-7,761	-7,760	-1	0.01%	
2054	7,107	4,592	-	-	5	203	11,907	11,441	282	5,626	83	30	1,137	1,040	19,639	-7,732	-7,731	-1	0.01%	
2055	7,107	4,579	-	-	5	203	11,894	11,441	281	5,589	79	31	1,142	1,037	19,600	-7,706	-7,706	0	0.00%	
2056	7,107	4,565	-	-	5	204	11,881	11,441	280	5,553	74	32	1,146	1,035	19,561	-7,680	-7,680	0	0.00%	
2057	7,107	4,553	-	-	5	204	11,869	11,441	279	5,517	69	32	1,150	1,032	19,520	-7,651	-7,652	1	0.01%	
2058	7,107	4,540	-	-	5	204	11,856	11,441	278	5,479	65	33	1,154	1,029	19,479	-7,623	-7,624	1	0.01%	
2059	7,107	4,528	-	-	5	204	11,844	11,441	277	5,443	60	34	1,159	1,027	19,441	-7,597	-7,597	0	0.00%	
2060	7,107	4,516	-	-	4	204	11,831	11,441	276	5,407	56	34	1,163	1,024	19,401	-7,570	-7,569	-1	0.01%	

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**TABLE A-21. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, GROUNDWATER MANAGEMENT AREA 16 PORTION OF MCMULLEN COUNTY. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW				OUTFLOW					Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Net River Leakage	Recharge	Net Lateral Flow From Duval	Total Inflow	Wells	Net Vertical Leakage Lower	Net Lateral Flow To Live Oak	Net Lateral Flow To McMullen 13	Total Outflow				
2010	1,902	2,195	62	4,159	510	6,192	230	9	6,941	-2,782	-2,782	0	0.00%
2011	1,907	2,195	61	4,163	510	6,127	228	9	6,874	-2,711	-2,711	0	0.00%
2012	1,910	2,195	59	4,164	510	6,069	227	9	6,815	-2,651	-2,650	-1	0.01%
2013	1,912	2,195	58	4,165	510	6,018	225	9	6,762	-2,597	-2,596	-1	0.01%
2014	1,913	2,195	57	4,165	510	5,972	223	9	6,714	-2,549	-2,549	0	0.00%
2015	1,915	2,195	55	4,165	510	5,932	221	9	6,672	-2,507	-2,507	0	0.00%
2016	1,916	2,195	54	4,165	510	5,897	220	9	6,636	-2,471	-2,470	-1	0.01%
2017	1,918	2,195	52	4,165	510	5,866	218	9	6,603	-2,438	-2,438	0	0.00%
2018	1,919	2,195	51	4,165	510	5,838	217	9	6,574	-2,409	-2,409	0	0.00%
2019	1,920	2,195	50	4,165	510	5,814	216	9	6,549	-2,384	-2,384	0	0.00%
2020	1,921	2,195	48	4,164	510	5,792	215	9	6,526	-2,362	-2,362	0	0.00%
2021	1,922	2,195	47	4,164	510	5,774	214	9	6,507	-2,343	-2,343	0	0.00%
2022	1,923	2,195	45	4,163	510	5,758	213	9	6,490	-2,327	-2,325	-2	0.03%
2023	1,924	2,195	44	4,163	510	5,744	212	9	6,475	-2,312	-2,311	-1	0.02%
2024	1,925	2,195	43	4,163	510	5,731	211	9	6,461	-2,298	-2,299	1	0.02%
2025	1,926	2,195	41	4,162	510	5,721	210	9	6,450	-2,288	-2,288	0	0.00%
2026	1,927	2,195	40	4,162	510	5,712	209	9	6,440	-2,278	-2,278	0	0.00%
2027	1,928	2,195	39	4,162	510	5,704	209	9	6,432	-2,270	-2,271	1	0.02%
2028	1,929	2,195	36	4,160	510	5,698	208	8	6,424	-2,264	-2,264	0	0.00%
2029	1,930	2,195	35	4,160	510	5,692	208	8	6,418	-2,258	-2,258	0	0.00%
2030	1,930	2,195	34	4,159	510	5,687	207	8	6,412	-2,253	-2,254	1	0.02%
2031	1,931	2,195	33	4,159	510	5,684	207	8	6,409	-2,250	-2,250	0	0.00%
2032	1,932	2,195	31	4,158	510	5,680	206	8	6,404	-2,246	-2,247	1	0.02%
2033	1,932	2,195	30	4,157	510	5,678	206	8	6,402	-2,245	-2,245	0	0.00%
2034	1,933	2,195	29	4,157	510	5,676	205	8	6,399	-2,242	-2,243	1	0.02%
2035	1,933	2,195	28	4,156	510	5,674	205	8	6,397	-2,241	-2,242	1	0.02%
2036	1,934	2,195	26	4,155	510	5,674	205	8	6,397	-2,242	-2,242	0	0.00%
2037	1,934	2,195	25	4,154	510	5,673	204	8	6,395	-2,241	-2,242	1	0.02%
2038	1,935	2,195	24	4,154	510	5,673	204	8	6,395	-2,241	-2,242	1	0.02%
2039	1,935	2,195	22	4,152	510	5,673	204	8	6,395	-2,243	-2,243	0	0.00%
2040	1,936	2,195	21	4,152	510	5,674	204	8	6,396	-2,244	-2,244	0	0.00%
2041	1,936	2,195	20	4,151	510	5,674	204	8	6,396	-2,245	-2,245	0	0.00%
2042	1,937	2,195	19	4,151	510	5,675	204	8	6,397	-2,246	-2,247	1	0.02%
2043	1,937	2,195	18	4,150	510	5,677	203	8	6,398	-2,248	-2,249	1	0.02%
2044	1,938	2,195	16	4,149	510	5,678	203	8	6,399	-2,250	-2,251	1	0.02%
2045	1,938	2,195	15	4,148	510	5,680	203	8	6,401	-2,253	-2,253	0	0.00%
2046	1,938	2,195	14	4,147	510	5,682	203	8	6,403	-2,256	-2,255	-1	0.02%
2047	1,939	2,195	13	4,147	510	5,683	203	8	6,404	-2,257	-2,258	1	0.02%
2048	1,939	2,195	12	4,146	510	5,685	203	8	6,406	-2,260	-2,260	0	0.00%
2049	1,940	2,195	11	4,146	510	5,687	203	8	6,408	-2,262	-2,263	1	0.02%
2050	1,940	2,195	10	4,145	510	5,689	203	8	6,410	-2,265	-2,265	0	0.00%
2051	1,940	2,195	10	4,145	510	5,691	203	8	6,412	-2,267	-2,268	1	0.02%
2052	1,941	2,195	9	4,145	510	5,692	203	8	6,413	-2,268	-2,270	2	0.03%
2053	1,941	2,195	7	4,143	510	5,695	203	8	6,416	-2,273	-2,273	0	0.00%
2054	1,941	2,195	6	4,142	510	5,696	203	8	6,417	-2,275	-2,276	1	0.02%
2055	1,942	2,195	5	4,142	510	5,698	203	8	6,419	-2,277	-2,278	1	0.02%
2056	1,942	2,195	4	4,141	510	5,701	204	8	6,423	-2,282	-2,281	-1	0.02%
2057	1,942	2,195	3	4,140	510	5,702	204	8	6,424	-2,284	-2,284	0	0.00%
2058	1,943	2,195	3	4,141	510	5,704	204	8	6,426	-2,285	-2,286	1	0.02%
2059	1,943	2,195	2	4,140	510	5,705	204	8	6,427	-2,287	-2,289	2	0.03%
2060	1,943	2,195	-	4,138	510	5,707	204	8	6,429	-2,291	-2,291	0	0.00%

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**TABLE A-22. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, NUECES COUNTY, CORPUS CHRISTI AQUIFER STORAGE AND RECOVERY CONSERVATION DISTRICT. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW						OUTFLOW										Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Net River Leakage	Recharge	Net Lateral Flow From Gulf	Net Lateral Flow From Nueces Kennedy	Net Lateral Flow From Nueces White	Net Lateral Flow From San Patricio	Total Inflow	Wells	Drains	Net River Leakage	Net Lateral Flow To Gulf	Net Lateral Flow To Nueces Kennedy	Net Lateral Flow To Nueces White	Net Lateral Flow To San Patricio	Total Outflow					
2010	-	464	-	49	2,133	-	2,646	1,795	224	1,256	205	-	-	402	3,882	-1,236	-1,236	0	0.00%	
2011	-	464	-	28	1,979	-	2,471	1,795	202	1,181	80	-	-	380	3,638	-1,167	-1,166	-1	0.03%	
2012	-	464	30	8	1,838	-	2,340	1,795	181	1,104	-	-	-	359	3,439	-1,099	-1,098	-1	0.03%	
2013	-	464	130	-	1,706	-	2,300	1,795	161	1,028	-	9	-	341	3,334	-1,034	-1,034	0	0.00%	
2014	-	464	217	-	1,583	-	2,264	1,795	141	956	-	25	-	325	3,242	-978	-977	-1	0.03%	
2015	-	464	296	-	1,466	-	2,226	1,795	122	893	-	39	-	310	3,159	-933	-933	0	0.00%	
2016	-	464	368	-	1,353	-	2,185	1,795	103	832	-	51	-	297	3,078	-893	-892	-1	0.03%	
2017	-	464	434	-	1,245	-	2,143	1,795	85	773	-	63	-	284	3,000	-857	-854	-3	0.10%	
2018	-	464	495	-	1,143	-	2,102	1,795	74	721	-	73	-	272	2,935	-833	-825	-8	0.27%	
2019	-	464	552	-	1,046	-	2,062	1,795	66	670	-	82	-	260	2,873	-811	-810	-1	0.03%	
2020	-	464	606	-	950	-	2,020	1,795	57	619	-	90	-	249	2,810	-790	-791	1	0.04%	
2021	-	464	657	-	830	-	1,971	1,795	49	569	-	99	-	239	2,751	-780	-780	0	0.00%	
2022	-	464	707	-	751	-	1,922	1,795	42	520	-	107	-	229	2,693	-771	-769	-2	0.07%	
2023	-	464	755	-	654	-	1,873	1,795	34	471	-	114	-	219	2,633	-760	-759	-1	0.04%	
2024	-	464	801	-	558	-	1,823	1,795	26	422	-	122	-	209	2,574	-751	-749	-2	0.08%	
2025	-	464	846	-	464	-	1,774	1,795	18	373	-	129	-	199	2,514	-740	-740	0	0.00%	
2026	-	464	889	-	372	-	1,725	1,795	11	325	-	136	-	189	2,456	-731	-730	-1	0.04%	
2027	-	464	931	-	281	-	1,676	1,795	3	279	-	142	-	181	2,400	-724	-721	-3	0.13%	
2028	-	464	973	-	192	-	1,629	1,795	0	234	-	149	-	171	2,349	-720	-714	-6	0.26%	
2029	-	464	1,017	-	103	-	1,584	1,795	0	189	-	155	-	162	2,301	-717	-716	-1	0.04%	
2030	-	464	1,059	-	15	-	1,538	1,795	0	144	-	161	-	152	2,252	-714	-712	-2	0.09%	
2031	-	464	1,101	-	-	-	1,565	1,795	0	98	-	167	71	143	2,274	-709	-709	0	0.00%	
2032	-	464	1,143	-	-	-	1,607	1,795	0	54	-	173	159	132	2,313	-706	-705	-1	0.04%	
2033	-	464	1,183	-	-	-	1,647	1,795	0	15	-	178	244	124	2,356	-709	-702	-7	0.30%	
2034	21	464	1,224	-	-	-	1,709	1,795	0	-	-	182	328	116	2,421	-712	-711	-1	0.04%	
2035	58	464	1,265	-	-	-	1,787	1,795	0	-	-	186	411	107	2,499	-712	-713	-1	0.04%	
2036	93	464	1,304	-	-	-	1,861	1,795	0	-	-	189	492	101	2,577	-716	-714	-2	0.08%	
2037	128	464	1,345	-	-	-	1,937	1,795	0	-	-	192	571	97	2,655	-718	-716	-2	0.08%	
2038	146	464	1,384	-	-	-	1,994	1,795	0	-	-	196	645	91	2,727	-733	-732	-1	0.04%	
2039	151	464	1,422	-	-	-	2,037	1,795	0	-	-	198	714	86	2,793	-756	-741	-15	0.54%	
2040	152	464	1,463	-	-	-	2,079	1,795	0	-	-	201	778	82	2,856	-777	-770	-7	0.25%	
2041	152	464	1,505	-	-	-	2,121	1,795	0	-	-	203	839	76	2,913	-792	-792	0	0.00%	
2042	152	464	1,545	-	-	-	2,161	1,795	0	-	-	207	900	69	2,971	-810	-807	-3	0.10%	
2043	152	464	1,587	-	-	-	2,203	1,795	0	-	-	209	960	62	3,026	-823	-821	-2	0.07%	
2044	152	464	1,629	-	-	-	2,245	1,795	0	-	-	211	1,019	56	3,081	-836	-834	-2	0.06%	
2045	152	464	1,671	-	-	-	2,287	1,795	0	-	-	213	1,077	50	3,135	-848	-846	-2	0.06%	
2046	152	464	1,713	-	-	-	2,329	1,795	0	-	-	215	1,134	44	3,188	-859	-857	-2	0.06%	
2047	152	464	1,757	-	-	-	2,373	1,795	0	-	-	217	1,191	38	3,241	-868	-867	-1	0.03%	
2048	152	464	1,800	-	-	-	2,416	1,795	0	-	-	219	1,247	32	3,293	-877	-877	0	0.00%	
2049	152	464	1,843	-	-	-	2,459	1,795	0	-	-	221	1,303	26	3,345	-886	-886	0	0.00%	
2050	152	464	1,886	-	-	-	2,502	1,795	0	-	-	223	1,358	21	3,397	-895	-894	-1	0.03%	
2051	152	464	1,931	-	-	-	2,547	1,795	0	-	-	225	1,412	16	3,448	-901	-901	0	0.00%	
2052	152	464	1,974	-	-	-	2,590	1,795	0	-	-	227	1,466	11	3,499	-909	-908	-1	0.03%	
2053	152	464	2,019	-	-	-	2,633	1,795	0	-	-	229	1,520	6	3,550	-915	-915	0	0.00%	
2054	152	464	2,063	-	-	-	2,679	1,795	0	-	-	230	1,573	2	3,600	-921	-921	0	0.00%	
2055	152	464	2,108	-	-	3	2,727	1,795	0	-	-	232	1,627	-	3,654	-927	-927	0	0.00%	
2056	152	464	2,153	-	-	7	2,776	1,795	0	-	-	234	1,679	-	3,708	-932	-932	0	0.00%	
2057	152	464	2,198	-	-	11	2,825	1,795	0	-	-	235	1,731	-	3,761	-936	-936	0	0.00%	
2058	152	464	2,242	-	-	16	2,874	1,795	0	-	-	238	1,783	-	3,816	-942	-941	-1	0.03%	
2059	152	464	2,287	-	-	19	2,922	1,795	0	-	-	240	1,834	-	3,869	-947	-945	-2	0.05%	
2060	152	464	2,233	-	-	23	2,972	1,795	0	-	-	241	1,885	-	3,921	-949	-948	-1	0.03%	



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**TABLE A-23. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, NUECES COUNTY, KENEDY COUNTY GROUNDWATER CONSERVATION DISTRICT. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW						OUTFLOW					Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Net River Leakage	Recharge	Net Lateral Flow From Gulf	Net Lateral Flow From Nueces CC	Net Lateral Flow From Nueces White	Total Inflow	Wells	Net Lateral Flow To Kleburg Kennedy	Net Lateral Flow To Nueces CC	Net Lateral Flow To Nueces White	Total Outflow				
2010	47	91	40	-	164	342	346	798	49	-	1,193	-851	-852	1	0.08%
2011	56	91	75	-	129	351	346	811	28	-	1,185	-834	-835	1	0.08%
2012	64	91	109	-	100	364	346	817	8	-	1,171	-807	-807	0	0.00%
2013	73	91	140	9	78	391	346	820	-	-	1,166	-775	-775	0	0.00%
2014	76	91	167	25	59	418	346	819	-	-	1,165	-747	-746	-1	0.09%
2015	76	91	192	39	44	442	346	816	-	-	1,162	-720	-720	0	0.00%
2016	76	91	215	51	31	464	346	813	-	-	1,159	-695	-695	0	0.00%
2017	76	91	235	63	19	484	346	808	-	-	1,154	-670	-670	0	0.00%
2018	76	91	254	73	8	502	346	802	-	-	1,148	-646	-647	1	0.09%
2019	76	91	271	82	-	520	346	797	-	3	1,146	-626	-625	-1	0.09%
2020	76	91	286	90	-	543	346	790	-	12	1,148	-605	-605	0	0.00%
2021	76	91	301	99	-	567	346	784	-	22	1,152	-585	-585	0	0.00%
2022	76	91	314	107	-	588	346	777	-	32	1,155	-567	-567	0	0.00%
2023	76	91	327	114	-	608	346	770	-	41	1,157	-549	-549	0	0.00%
2024	76	91	338	122	-	627	346	763	-	51	1,160	-533	-533	0	0.00%
2025	76	91	349	129	-	645	346	756	-	60	1,162	-517	-517	0	0.00%
2026	76	91	360	136	-	663	346	750	-	68	1,164	-501	-502	1	0.09%
2027	76	91	369	142	-	678	346	743	-	78	1,167	-489	-488	-1	0.09%
2028	76	91	379	149	-	695	346	737	-	86	1,169	-474	-475	1	0.09%
2029	76	91	388	155	-	710	346	732	-	96	1,174	-464	-463	-1	0.09%
2030	76	91	396	161	-	724	346	726	-	104	1,176	-452	-451	-1	0.09%
2031	76	91	405	167	-	739	346	720	-	113	1,179	-440	-441	1	0.08%
2032	76	91	413	173	-	753	346	715	-	122	1,183	-430	-430	0	0.00%
2033	76	91	420	178	-	765	346	709	-	131	1,186	-421	-420	-1	0.08%
2034	76	91	428	182	-	777	346	704	-	140	1,190	-413	-412	-1	0.08%
2035	76	91	435	186	-	788	346	698	-	148	1,192	-404	-405	1	0.08%
2036	76	91	442	189	-	798	346	694	-	156	1,196	-398	-398	0	0.00%
2037	76	91	449	192	-	808	346	689	-	164	1,199	-391	-392	1	0.08%
2038	76	91	455	196	-	818	346	684	-	173	1,203	-385	-386	1	0.08%
2039	76	91	462	198	-	827	346	680	-	182	1,208	-381	-381	0	0.00%
2040	76	91	468	201	-	836	346	675	-	189	1,210	-374	-376	2	0.17%
2041	76	91	474	203	-	844	346	671	-	198	1,215	-371	-371	0	0.00%
2042	76	91	480	207	-	854	346	667	-	207	1,220	-366	-367	1	0.08%
2043	76	91	486	209	-	862	346	663	-	215	1,224	-362	-363	1	0.08%
2044	76	91	492	211	-	870	346	658	-	224	1,228	-358	-359	1	0.08%
2045	76	91	498	213	-	878	346	654	-	232	1,232	-354	-356	2	0.16%
2046	76	91	503	215	-	885	346	650	-	242	1,238	-353	-353	0	0.00%
2047	76	91	508	217	-	892	346	646	-	250	1,242	-350	-350	0	0.00%
2048	76	91	514	219	-	900	346	642	-	259	1,247	-347	-348	1	0.08%
2049	76	91	519	221	-	907	346	639	-	268	1,253	-346	-346	0	0.00%
2050	76	91	524	223	-	914	346	635	-	277	1,258	-344	-344	0	0.00%
2051	76	91	530	225	-	922	346	631	-	286	1,263	-341	-342	1	0.08%
2052	76	91	535	227	-	929	346	627	-	295	1,268	-339	-340	1	0.08%
2053	76	91	540	229	-	936	346	624	-	304	1,274	-338	-339	1	0.08%
2054	76	91	545	230	-	942	346	621	-	313	1,280	-338	-337	-1	0.08%
2055	76	91	550	232	-	949	346	618	-	322	1,286	-337	-336	-1	0.08%
2056	76	91	555	234	-	956	346	614	-	331	1,291	-335	-335	0	0.00%
2057	76	91	560	235	-	962	346	610	-	340	1,296	-334	-334	0	0.00%
2058	76	91	565	238	-	970	346	608	-	349	1,303	-333	-333	0	0.00%
2059	76	91	569	240	-	976	346	604	-	358	1,308	-332	-333	1	0.08%
2060	76	91	574	241	-	982	346	601	-	367	1,314	-332	-332	0	0.00%

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TABLE A-24. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, NUECES COUNTY, NON-DISTRICT AREA. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.

Year	INFLOW										OUTFLOW										Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Net River Leakage	Recharge	Net Lateral Flow From Aransas	Net Lateral Flow From Gulf	Net Lateral Flow From Jim Wells Brush Country	Net Lateral Flow From Jim Wells Kenedy	Net Lateral Flow From Nueces CC	Net Lateral Flow From Nueces Kenedy	Total Inflow	Wells	Drains	Net River Leakage	Net Lateral Flow To Jim Wells Brush Country	Net Lateral Flow To Kleburg Kenedy	Net Lateral Flow To Kleburg White	Net Lateral Flow To Nueces CC	Net Lateral Flow To Nueces Kenedy	Net Lateral Flow To San Patricio	Total Outflow					
2010	-	1,791	69	52	5,550	1,771	-	-	9,233	6,865	168	1,378	-	5,628	298	2,133	164	910	17,544	-8,311	-8,311	0	0.00%	
2011	-	1,791	75	60	5,263	1,736	-	-	8,925	6,865	160	1,213	-	5,665	307	1,979	129	932	17,250	-8,325	-8,322	-3	0.02%	
2012	-	1,791	79	68	4,993	1,700	-	-	8,631	6,865	152	1,068	-	5,671	315	1,838	100	930	16,939	-8,308	-8,307	-1	0.01%	
2013	-	1,791	82	75	4,739	1,662	-	-	8,349	6,865	143	933	-	5,639	321	1,706	78	917	16,622	-8,273	-8,272	-1	0.01%	
2014	-	1,791	84	81	4,498	1,623	-	-	8,077	6,865	134	798	-	5,629	326	1,583	59	899	16,293	-8,216	-8,218	-2	0.01%	
2015	-	1,791	86	85	4,267	1,582	-	-	7,811	6,865	125	665	-	5,589	329	1,466	44	879	15,962	-8,151	-8,151	0	0.00%	
2016	-	1,791	88	90	4,048	1,539	-	-	7,536	6,865	116	534	-	5,541	332	1,353	31	860	15,632	-8,076	-8,077	1	0.01%	
2017	-	1,791	89	93	3,837	1,497	-	-	7,307	6,865	107	405	-	5,490	334	1,245	19	839	15,304	-7,997	-7,997	0	0.00%	
2018	-	1,791	90	96	3,635	1,454	-	-	7,066	6,865	98	280	-	5,434	335	1,143	8	818	14,981	-7,915	-7,916	1	0.01%	
2019	-	1,791	92	98	3,441	1,412	-	-	6,837	6,865	89	156	-	5,391	337	1,046	-	808	14,692	-7,855	-7,857	2	0.01%	
2020	-	1,791	93	101	3,257	1,370	-	-	6,624	6,865	80	38	-	5,345	339	950	-	835	14,452	-7,828	-7,825	-3	0.02%	
2021	70	1,791	93	101	3,080	1,330	-	-	6,487	6,865	70	-	-	5,299	342	850	-	852	14,278	-7,791	-7,789	-2	0.01%	
2022	177	1,791	94	102	2,911	1,289	-	-	6,396	6,865	60	-	-	5,251	344	751	-	868	14,139	-7,745	-7,741	-2	0.01%	
2023	282	1,791	95	104	2,749	1,250	-	-	6,312	6,865	50	-	-	5,203	346	654	-	885	14,003	-7,691	-7,690	-1	0.01%	
2024	384	1,791	96	105	2,593	1,211	-	-	6,231	6,865	41	-	-	5,169	349	558	-	901	13,883	-7,632	-7,631	-1	0.01%	
2025	484	1,791	97	105	2,442	1,173	-	-	6,152	6,865	31	-	-	5,136	351	464	-	916	13,763	-7,611	-7,610	-1	0.01%	
2026	582	1,791	98	106	2,296	1,136	-	-	6,077	6,865	21	-	-	5,107	353	372	-	931	13,649	-7,572	-7,572	0	0.00%	
2027	678	1,791	99	106	2,156	1,101	-	-	6,009	6,865	11	-	-	5,090	356	281	-	946	13,549	-7,540	-7,542	2	0.01%	
2028	767	1,791	99	105	2,020	1,066	-	-	5,934	6,865	1	-	-	5,077	360	192	-	960	13,455	-7,521	-7,513	-8	0.06%	
2029	832	1,791	100	106	1,894	1,033	-	-	5,852	6,865	0	-	-	5,063	363	103	-	973	13,367	-7,515	-7,508	-7	0.05%	
2030	899	1,791	101	106	1,774	1,000	-	-	5,775	6,865	0	-	-	5,061	367	15	-	981	13,289	-7,514	-7,513	-1	0.01%	
2031	965	1,791	102	106	1,659	969	71	113	5,776	6,865	0	-	-	5,058	372	-	-	989	13,284	-7,508	-7,505	-3	0.02%	
2032	1,031	1,791	102	105	1,550	939	139	122	5,799	6,865	0	-	-	5,055	376	-	-	996	13,287	-7,493	-7,492	-1	0.01%	
2033	1,096	1,791	103	105	1,443	909	244	131	5,822	6,865	0	-	-	5,053	380	-	-	1,003	13,301	-7,479	-7,476	-3	0.02%	
2034	1,160	1,791	104	106	1,340	881	328	140	5,850	6,865	0	-	-	5,051	385	-	-	1,008	13,309	-7,459	-7,458	-1	0.01%	
2035	1,224	1,791	104	105	1,241	853	411	148	5,877	6,865	0	-	-	5,049	389	-	-	1,013	13,316	-7,439	-7,439	0	0.00%	
2036	1,287	1,791	105	105	1,143	826	492	156	5,885	6,865	0	-	-	5,048	393	-	-	1,018	13,324	-7,439	-7,420	-19	0.14%	
2037	1,307	1,791	106	105	1,053	800	571	164	5,897	6,865	0	-	-	5,052	398	-	-	1,012	13,327	-7,430	-7,430	0	0.00%	
2038	1,347	1,791	107	105	966	774	645	173	5,908	6,865	0	-	-	5,063	403	-	-	1,006	13,337	-7,429	-7,431	2	0.01%	
2039	1,387	1,791	107	104	883	750	714	182	5,918	6,865	0	-	-	5,076	409	-	-	1,002	13,352	-7,434	-7,434	0	0.00%	
2040	1,387	1,791	108	104	802	726	778	189	5,885	6,865	0	-	-	5,092	414	-	-	997	13,368	-7,483	-7,441	-42	0.31%	
2041	1,387	1,791	109	103	729	704	839	198	5,860	6,865	0	-	-	5,107	420	-	-	985	13,377	-7,517	-7,515	-2	0.01%	
2042	1,387	1,791	109	103	662	683	900	207	5,842	6,865	0	-	-	5,123	425	-	-	971	13,384	-7,542	-7,542	0	0.00%	
2043	1,387	1,791	110	103	598	662	960	215	5,826	6,865	0	-	-	5,139	431	-	-	957	13,392	-7,566	-7,565	-1	0.01%	
2044	1,387	1,791	110	102	538	643	1,019	224	5,814	6,865	0	-	-	5,155	436	-	-	943	13,399	-7,585	-7,584	-1	0.01%	
2045	1,387	1,791	111	102	480	624	1,077	232	5,804	6,865	0	-	-	5,170	442	-	-	929	13,406	-7,602	-7,601	-1	0.01%	
2046	1,387	1,791	112	102	425	606	1,134	242	5,799	6,865	0	-	-	5,185	447	-	-	916	13,413	-7,614	-7,615	1	0.01%	
2047	1,387	1,791	112	101	371	588	1,191	250	5,791	6,865	0	-	-	5,200	453	-	-	901	13,419	-7,628	-7,626	-2	0.01%	
2048	1,387	1,791	113	101	319	571	1,247	259	5,788	6,865	0	-	-	5,215	458	-	-	886	13,424	-7,636	-7,636	0	0.00%	
2049	1,387	1,791	113	100	269	554	1,303	268	5,785	6,865	0	-	-	5,231	464	-	-	871	13,431	-7,646	-7,644	-2	0.01%	
2050	1,387	1,791	114	100	221	537	1,358	277	5,785	6,865	0	-	-	5,245	469	-	-	856	13,435	-7,650	-7,650	0	0.00%	
2051	1,387	1,791	115	100	174	521	1,412	286	5,786	6,865	0	-	-	5,261	475	-	-	841	13,442	-7,656	-7,654	-2	0.01%	
2052	1,387	1,791	115	99	129	506	1,466	295	5,788	6,865	0	-	-	5,276	480	-	-	827	13,448	-7,660	-7,658	-2	0.01%	
2053	1,387	1,791	116	99	85	491	1,520	304	5,793	6,865	0	-	-	5,292	485	-	-	811	13,453	-7,660	-7,660	0	0.00%	
2054	1,387	1,791	116	99	42	477	1,573	313	5,798	6,865	0	-	-	5,308	491	-	-	796	13,460	-7,662	-7,660	-2	0.01%	
2055	1,387	1,791	117	98	1	463	1,627	322	5,806	6,865	0	-	-	5,323	496	-	-	780	13,464	-7,658	-7,660	2	0.01%	
2056	1,387	1,791	117	98	-	449	1,679	331	5,832	6,865	0	-	40	5,340	502	-	-	765	13,512	-7,660	-7,659	-1	0.01%	
2057	1,387	1,791	118	97	-	436	1,731	340	5,900	6,865	0	-	79	5,355	507	-	-	749	13,555	-7,655	-7,656	1	0.01%	
2058	1,387	1,791	119	97	-	422	1,783	349	5,948	6,865	0	-	117	5,371	513	-	-	733	13,599	-7,651	-7,653	2	0.01%	
2059	1,387	1,791	119	96	-	409	1,834	358	5,994	6,865	0	-	155	5,388	518	-	-	718	13,644	-7,650	-7,648	-2	0.01%	
2060	1,387	1,791	120	96	-	397	1,885	367	6,043	6,865	0	-	191	5,404	523	-	-	702	13,683	-7,642	-7,643	1	0.01%	

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TABLE A-25. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, SAN PATRICIO COUNTY. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.

Year	INFLOW											OUTFLOW					Inflow - Outflow	Storage Change	Model Error	Model Error (percent)	
	Net River Leakage	Recharge	Vertical Leakage Lower	Net Lateral Flow From Aransas	Net Lateral Flow From Bee16	Net Lateral Flow From Gulf	Net Lateral Flow From Jim Wells Brush Country	Net Lateral Flow From Live Oak	Net Lateral Flow From Nueces CC	Net Lateral Flow From Nueces White	Net Lateral Flow From Refugio	Total Inflow	Wells	Drains	Net River Leakage	Net Lateral Flow To Nueces CC					Total Outflow
2010	-	2,203	80	395	2,038	657	696	1,163	402	910	2,309	10,853	19,012	451	897	-	20,360	-9,507	-9,507	0	0.00%
2011	-	2,203	80	429	1,852	722	693	1,151	380	932	2,338	10,780	19,012	284	603	-	19,899	-9,119	-9,118	-1	0.01%
2012	-	2,203	80	456	1,687	797	684	1,142	359	930	2,321	10,659	19,012	224	369	-	19,605	-8,946	-8,945	-1	0.01%
2013	-	2,203	80	477	1,541	867	672	1,136	341	917	2,311	10,545	19,012	167	140	-	19,319	-8,774	-8,775	1	0.01%
2014	81	2,203	81	498	1,409	935	656	1,131	325	899	2,304	10,522	19,012	112	-	-	19,124	-8,602	-8,603	1	0.01%
2015	299	2,203	81	515	1,292	998	638	1,128	310	879	2,299	10,642	19,012	59	-	-	19,071	-8,429	-8,429	0	0.00%
2016	510	2,203	82	531	1,185	1,063	621	1,125	297	860	2,294	10,771	19,012	8	-	-	19,020	-8,249	-8,254	3	0.02%
2017	709	2,203	82	547	1,089	1,122	603	1,123	284	839	2,282	10,883	19,012	0	-	-	19,012	-8,129	-8,117	-12	0.06%
2018	817	2,203	83	562	1,003	1,182	584	1,121	272	818	2,274	10,919	19,012	0	-	-	19,012	-8,093	-8,038	-55	0.29%
2019	891	2,203	84	576	926	1,242	567	1,119	260	808	2,271	10,947	19,012	0	-	-	19,012	-8,065	-8,037	-28	0.15%
2020	943	2,203	84	591	860	1,303	551	1,117	249	835	2,270	11,006	19,012	0	-	-	19,012	-8,006	-8,006	0	0.00%
2021	990	2,203	85	605	801	1,362	536	1,117	239	832	2,273	11,063	19,012	0	-	-	19,012	-7,949	-7,946	-3	0.02%
2022	1,037	2,203	85	618	748	1,420	522	1,115	229	868	2,280	11,125	19,012	0	-	-	19,012	-7,887	-7,886	-1	0.01%
2023	1,074	2,203	86	632	701	1,479	507	1,114	219	885	2,289	11,189	19,012	0	-	-	19,012	-7,823	-7,814	-9	0.03%
2024	1,112	2,203	87	645	657	1,536	494	1,113	209	901	2,303	11,260	19,012	0	-	-	19,012	-7,752	-7,753	1	0.01%
2025	1,151	2,203	87	658	619	1,593	482	1,112	199	916	2,318	11,338	19,012	0	-	-	19,012	-7,674	-7,676	2	0.01%
2026	1,177	2,203	88	671	584	1,647	470	1,110	189	931	2,336	11,406	19,012	0	-	-	19,012	-7,606	-7,594	-12	0.06%
2027	1,200	2,203	88	684	552	1,702	457	1,108	181	946	2,363	11,484	19,012	0	-	-	19,012	-7,528	-7,529	1	0.01%
2028	1,222	2,203	89	697	522	1,755	446	1,107	171	960	2,389	11,561	19,012	0	-	-	19,012	-7,451	-7,451	0	0.00%
2029	1,246	2,203	89	709	495	1,806	436	1,105	162	973	2,417	11,641	19,012	0	-	-	19,012	-7,371	-7,373	2	0.01%
2030	1,269	2,203	90	722	470	1,857	425	1,104	152	989	2,446	11,719	19,012	0	-	-	19,012	-7,293	-7,295	2	0.01%
2031	1,292	2,203	90	734	448	1,907	413	1,101	143	989	2,475	11,795	19,012	0	-	-	19,012	-7,217	-7,218	1	0.01%
2032	1,311	2,203	91	746	427	1,957	402	1,099	132	996	2,494	11,838	19,012	0	-	-	19,012	-7,154	-7,149	-5	0.03%
2033	1,328	2,203	91	758	408	2,006	392	1,097	124	1,003	2,516	11,926	19,012	0	-	-	19,012	-7,086	-7,087	1	0.01%
2034	1,341	2,203	92	770	390	2,055	381	1,094	116	1,008	2,539	11,989	19,012	0	-	-	19,012	-7,023	-7,021	-2	0.01%
2035	1,352	2,203	92	782	374	2,103	371	1,092	107	1,013	2,560	12,049	19,012	0	-	-	19,012	-6,963	-6,960	-3	0.02%
2036	1,360	2,203	92	793	359	2,150	360	1,089	101	1,018	2,583	12,108	19,012	0	-	-	19,012	-6,904	-6,902	-2	0.01%
2037	1,365	2,203	93	804	345	2,196	350	1,087	97	1,012	2,605	12,157	19,012	0	-	-	19,012	-6,855	-6,855	0	0.00%
2038	1,371	2,203	93	815	333	2,243	341	1,084	91	1,006	2,627	12,207	19,012	0	-	-	19,012	-6,805	-6,805	0	0.00%
2039	1,371	2,203	93	826	323	2,287	331	1,082	86	1,002	2,649	12,253	19,012	0	-	-	19,012	-6,759	-6,755	-4	0.02%
2040	1,371	2,203	94	837	313	2,332	321	1,079	82	997	2,670	12,299	19,012	0	-	-	19,012	-6,713	-6,715	2	0.01%
2041	1,371	2,203	94	848	305	2,374	311	1,077	76	985	2,691	12,355	19,012	0	-	-	19,012	-6,677	-6,680	3	0.02%
2042	1,371	2,203	94	859	296	2,418	301	1,073	69	971	2,712	12,367	19,012	0	-	-	19,012	-6,645	-6,645	0	0.00%
2043	1,371	2,203	94	869	291	2,460	291	1,070	62	957	2,733	12,401	19,012	0	-	-	19,012	-6,611	-6,611	0	0.00%
2044	1,371	2,203	95	879	285	2,502	280	1,068	56	943	2,755	12,437	19,012	0	-	-	19,012	-6,575	-6,576	1	0.01%
2045	1,371	2,203	95	888	281	2,542	270	1,064	50	929	2,775	12,468	19,012	0	-	-	19,012	-6,544	-6,542	-2	0.01%
2046	1,371	2,203	95	899	278	2,584	259	1,062	44	916	2,796	12,507	19,012	0	-	-	19,012	-6,505	-6,508	3	0.02%
2047	1,371	2,203	95	908	275	2,624	249	1,059	38	901	2,816	12,539	19,012	0	-	-	19,012	-6,473	-6,473	0	0.00%
2048	1,371	2,203	95	918	273	2,663	238	1,056	32	886	2,837	12,572	19,012	0	-	-	19,012	-6,440	-6,439	-1	0.01%
2049	1,371	2,203	96	927	272	2,703	227	1,054	26	871	2,857	12,607	19,012	0	-	-	19,012	-6,405	-6,405	0	0.00%
2050	1,371	2,203	96	936	272	2,742	216	1,051	21	856	2,877	12,641	19,012	0	-	-	19,012	-6,371	-6,371	0	0.00%
2051	1,371	2,203	96	945	271	2,780	205	1,048	16	841	2,898	12,674	19,012	0	-	-	19,012	-6,338	-6,337	-1	0.01%
2052	1,371	2,203	96	955	271	2,819	194	1,046	11	827	2,917	12,710	19,012	0	-	-	19,012	-6,302	-6,304	2	0.01%
2053	1,371	2,203	96	964	272	2,856	183	1,043	6	811	2,936	12,741	19,012	0	-	-	19,012	-6,271	-6,270	-1	0.01%
2054	1,371	2,203	96	972	274	2,894	173	1,040	2	796	2,955	12,776	19,012	0	-	-	19,012	-6,236	-6,237	1	0.01%
2055	1,371	2,203	96	981	275	2,930	162	1,037	-	780	2,973	12,810	19,012	0	-	3	19,015	-6,205	-6,204	-1	0.01%
2056	1,371	2,203	97	989	277	2,967	151	1,035	-	765	2,994	12,849	19,012	0	-	7	19,019	-6,170	-6,171	1	0.01%
2057	1,371	2,203	97	998	280	3,003	141	1,032	-	749	3,013	12,887	19,012	0	-	11	19,023	-6,136	-6,138	2	0.01%
2058	1,371	2,203	97	1,006	282	3,040	130	1,029	-	733	3,032	12,923	19,012	0	-	16	19,028	-6,105	-6,106	1	0.01%
2059	1,371	2,203	97	1,014	285	3,074	118	1,027	-	718	3,050	12,957	19,012	0	-	19	19,031	-6,074	-6,073	-1	0.01%
2060	1,371	2,203	97	1,022	289	3,109	108	1,024	-	702	3,069	12,994	19,012	0	-	23	19,035	-6,041	-6,041	0	0.00%

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**TABLE A-26. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, STARR COUNTY. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW						OUTFLOW						Inflow - Outflow	Storage Change	Model Error (percent)	
	Net River Leakage	Net Vertical Leakage Lower	Net Lateral Flow From Brooks Brush Country	Net Lateral Flow From Jim Hogg	Net Lateral Flow From Mexico	Total Inflow	Wells	Net Vertical Leakage Lower	Net Lateral Flow To Brooks Brush Country	Net Lateral Flow To Hidalgo Brush Country	Net Lateral Flow To Hidalgo White	Net Lateral Flow To Jim Hogg				Total
2010	1,585	-	374	1,081	34	6,213	7,526	3,399	-	703	4,552	-	16,180	-9,967	-9,964	0.02%
2011	1,616	-	332	991	35	6,113	7,526	3,331	-	682	4,418	-	15,957	-9,844	-9,842	0.01%
2012	1,646	-	292	911	35	6,023	7,526	3,255	-	662	4,290	-	15,733	-9,710	-9,708	0.01%
2013	1,676	-	255	839	36	5,945	7,526	3,175	-	644	4,171	-	15,516	-9,571	-9,568	0.02%
2014	1,705	-	221	774	37	5,876	7,526	3,090	-	626	4,059	-	15,301	-9,425	-9,427	0.01%
2015	1,733	-	187	713	37	5,809	7,526	3,004	-	611	3,957	-	15,098	-9,289	-9,286	0.02%
2016	1,761	-	157	659	38	5,754	7,526	2,917	-	596	3,862	-	14,901	-9,147	-9,146	0.01%
2017	1,788	-	127	608	38	5,700	7,526	2,829	-	582	3,774	-	14,711	-9,011	-9,008	0.02%
2018	1,813	-	99	562	39	5,652	7,526	2,739	-	570	3,693	-	14,528	-8,876	-8,874	0.01%
2019	1,837	-	73	518	40	5,607	7,526	2,649	-	558	3,618	-	14,351	-8,744	-8,743	0.01%
2020	1,861	-	48	478	40	5,566	7,526	2,561	-	547	3,548	-	14,182	-8,616	-8,614	0.01%
2021	1,884	-	25	441	41	5,530	7,526	2,471	-	537	3,482	-	14,016	-8,486	-8,488	0.01%
2022	1,899	-	2	405	41	5,486	7,526	2,383	-	528	3,423	-	13,860	-8,374	-8,364	0.07%
2023	1,912	-	-	372	42	5,465	7,526	2,293	19	519	3,366	-	13,723	-8,258	-8,258	0.00%
2024	1,926	-	-	341	43	5,449	7,526	2,202	41	511	3,313	-	13,593	-8,144	-8,145	0.01%
2025	1,938	-	-	310	43	5,430	7,526	2,112	59	504	3,265	-	13,466	-8,036	-8,035	0.01%
2026	1,950	-	-	283	44	5,416	7,526	2,023	78	497	3,219	-	13,343	-7,927	-7,926	0.01%
2027	1,963	-	-	255	44	5,401	7,526	1,934	96	490	3,176	-	13,222	-7,821	-7,820	0.01%
2028	1,975	-	-	230	45	5,389	7,526	1,845	113	484	3,136	-	13,104	-7,715	-7,716	0.01%
2029	1,986	-	-	206	45	5,376	7,526	1,758	129	479	3,099	-	12,991	-7,615	-7,614	0.01%
2030	1,998	-	-	181	46	5,364	7,526	1,671	145	474	3,063	-	12,879	-7,515	-7,514	0.01%
2031	2,009	-	-	158	47	5,353	7,526	1,586	160	469	3,030	-	12,771	-7,418	-7,416	0.02%
2032	2,021	-	-	137	48	5,345	7,526	1,502	174	465	2,999	-	12,666	-7,321	-7,321	0.00%
2033	2,031	-	-	116	48	5,334	7,526	1,419	188	461	2,970	-	12,564	-7,230	-7,228	0.02%
2034	2,042	-	-	95	49	5,325	7,526	1,336	200	457	2,942	-	12,461	-7,136	-7,137	0.01%
2035	2,053	-	-	76	49	5,317	7,526	1,255	213	454	2,916	-	12,364	-7,047	-7,047	0.00%
2036	2,063	-	-	57	49	5,308	7,526	1,175	226	450	2,892	-	12,269	-6,961	-6,960	0.01%
2037	2,074	-	-	39	50	5,302	7,526	1,095	237	447	2,868	-	12,173	-6,871	-6,874	0.02%
2038	2,082	-	-	21	50	5,292	7,526	1,017	249	445	2,847	-	12,084	-6,792	-6,790	0.02%
2039	2,093	-	-	3	51	5,286	7,526	940	260	442	2,827	-	11,995	-6,709	-6,709	0.00%
2040	2,102	-	-	-	51	5,292	7,526	864	270	440	2,807	13	11,920	-6,628	-6,630	0.02%
2041	2,111	-	-	-	52	5,302	7,526	789	281	437	2,789	30	11,852	-6,550	-6,551	0.01%
2042	2,120	-	-	-	52	5,311	7,526	716	291	435	2,772	46	11,786	-6,475	-6,475	0.00%
2043	2,129	-	-	-	52	5,320	7,526	643	300	433	2,755	62	11,719	-6,399	-6,399	0.00%
2044	2,138	-	-	-	53	5,330	7,526	572	309	432	2,740	77	11,656	-6,326	-6,327	0.01%
2045	2,147	-	-	-	53	5,339	7,526	502	318	430	2,727	92	11,595	-6,256	-6,255	0.01%
2046	2,156	-	-	-	54	5,349	7,526	433	326	428	2,713	107	11,533	-6,184	-6,185	0.01%
2047	2,165	-	-	-	54	5,358	7,526	364	335	427	2,700	121	11,473	-6,115	-6,116	0.01%
2048	2,172	-	-	-	54	5,365	7,526	297	343	425	2,688	135	11,414	-6,049	-6,048	0.01%
2049	2,181	-	-	-	55	5,375	7,526	231	352	424	2,677	148	11,358	-5,983	-5,982	0.01%
2050	2,190	-	-	-	55	5,384	7,526	166	359	423	2,666	162	11,302	-5,918	-5,917	0.01%
2051	2,198	-	-	-	55	5,392	7,526	101	367	422	2,656	175	11,247	-5,855	-5,853	0.02%
2052	2,206	-	-	-	56	5,401	7,526	40	373	421	2,647	188	11,195	-5,794	-5,794	0.00%
2053	2,214	21	-	-	57	5,431	7,526	-	381	420	2,638	200	11,165	-5,734	-5,734	0.00%
2054	2,219	81	-	-	57	5,496	7,526	-	387	419	2,630	213	11,175	-5,679	-5,676	0.03%
2055	2,224	140	-	-	58	5,561	7,526	-	395	418	2,622	225	11,186	-5,625	-5,624	0.01%
2056	2,228	199	-	-	58	5,624	7,526	-	401	417	2,615	237	11,196	-5,572	-5,572	0.00%
2057	2,232	256	-	-	58	5,685	7,526	-	407	417	2,608	249	11,207	-5,522	-5,520	0.02%
2058	2,236	313	-	-	58	5,746	7,526	-	414	416	2,601	261	11,218	-5,472	-5,470	0.02%
2059	2,241	370	-	-	58	5,808	7,526	-	419	415	2,595	272	11,227	-5,419	-5,420	0.01%
2060	2,246	426	-	-	58	5,869	7,526	-	425	415	2,590	283	11,239	-5,370	-5,370	0.00%

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**TABLE A-27. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, GROUNDWATER MANAGEMENT AREA 16 PORTION OF WEBB COUNTY. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW				OUTFLOW					Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	River Leakage	Net Vertical Leakage Lower	Net Lateral Flow From Zapata	Total Inflow	Wells	Net Vertical Leakage Lower	Net Lateral Flow To Duval	Net Lateral Flow To Jim Hogg	Total Outflow				
2010	192	-	14	1,169	3,002	53	331	285	3,671	-2,502	-2,505	3	0.08%
2011	192	-	15	1,170	3,002	33	327	277	3,639	-2,469	-2,469	0	0.00%
2012	192	-	16	1,171	3,002	16	324	272	3,614	-2,443	-2,442	-1	0.03%
2013	192	-	17	1,172	3,002	2	320	266	3,590	-2,418	-2,420	2	0.06%
2014	192	9	18	1,182	3,002	-	318	262	3,582	-2,400	-2,401	1	0.03%
2015	192	19	18	1,192	3,002	-	317	259	3,578	-2,386	-2,385	-1	0.03%
2016	192	28	19	1,202	3,002	-	315	256	3,573	-2,371	-2,371	0	0.00%
2017	192	36	20	1,211	3,002	-	314	253	3,569	-2,358	-2,359	1	0.03%
2018	192	43	20	1,218	3,002	-	313	250	3,565	-2,347	-2,347	0	0.00%
2019	192	50	21	1,226	3,002	-	312	248	3,562	-2,336	-2,336	0	0.00%
2020	192	57	21	1,233	3,002	-	312	246	3,560	-2,327	-2,327	0	0.00%
2021	192	63	22	1,240	3,002	-	311	244	3,557	-2,317	-2,317	0	0.00%
2022	192	69	22	1,246	3,002	-	310	242	3,554	-2,308	-2,308	0	0.00%
2023	192	75	23	1,253	3,002	-	309	239	3,550	-2,297	-2,299	2	0.06%
2024	192	79	23	1,257	3,002	-	309	237	3,548	-2,291	-2,291	0	0.00%
2025	192	85	23	1,263	3,002	-	308	235	3,545	-2,282	-2,283	1	0.03%
2026	192	89	23	1,267	3,002	-	308	233	3,543	-2,276	-2,275	-1	0.03%
2027	192	94	24	1,273	3,002	-	306	230	3,538	-2,265	-2,267	2	0.06%
2028	192	98	24	1,277	3,002	-	305	228	3,535	-2,258	-2,259	1	0.03%
2029	192	103	24	1,282	3,002	-	304	226	3,532	-2,250	-2,251	1	0.03%
2030	192	107	24	1,286	3,002	-	303	224	3,529	-2,243	-2,243	0	0.00%
2031	192	111	25	1,291	3,002	-	302	221	3,525	-2,234	-2,235	1	0.03%
2032	192	115	25	1,295	3,002	-	301	218	3,521	-2,226	-2,227	1	0.03%
2033	192	119	25	1,299	3,002	-	300	216	3,518	-2,219	-2,220	1	0.03%
2034	192	122	25	1,302	3,002	-	299	213	3,514	-2,212	-2,212	0	0.00%
2035	192	126	25	1,306	3,002	-	297	211	3,510	-2,204	-2,204	0	0.00%
2036	192	129	25	1,309	3,002	-	296	208	3,506	-2,197	-2,196	-1	0.03%
2037	192	133	25	1,313	3,002	-	294	205	3,501	-2,188	-2,188	0	0.00%
2038	192	136	26	1,317	3,002	-	292	202	3,496	-2,179	-2,180	1	0.03%
2039	192	139	26	1,320	3,002	-	290	199	3,491	-2,171	-2,172	1	0.03%
2040	192	142	26	1,323	3,002	-	289	196	3,487	-2,164	-2,164	0	0.00%
2041	192	145	26	1,326	3,002	-	287	193	3,482	-2,156	-2,156	0	0.00%
2042	192	149	26	1,330	3,002	-	284	190	3,476	-2,146	-2,147	1	0.03%
2043	192	151	26	1,332	3,002	-	282	187	3,471	-2,139	-2,139	0	0.00%
2044	192	154	26	1,335	3,002	-	280	183	3,465	-2,130	-2,131	1	0.03%
2045	192	157	26	1,338	3,002	-	277	181	3,460	-2,122	-2,122	0	0.00%
2046	192	159	26	1,340	3,002	-	275	177	3,454	-2,114	-2,114	0	0.00%
2047	192	161	26	1,342	3,002	-	272	173	3,447	-2,105	-2,105	0	0.00%
2048	192	165	26	1,346	3,002	-	271	170	3,443	-2,097	-2,097	0	0.00%
2049	192	167	26	1,348	3,002	-	268	166	3,436	-2,088	-2,088	0	0.00%
2050	192	169	26	1,350	3,002	-	265	163	3,430	-2,080	-2,080	0	0.00%
2051	192	171	26	1,352	3,002	-	262	159	3,423	-2,071	-2,071	0	0.00%
2052	192	174	26	1,355	3,002	-	259	155	3,416	-2,061	-2,062	1	0.03%
2053	192	176	26	1,357	3,002	-	257	152	3,411	-2,054	-2,053	-1	0.03%
2054	192	178	26	1,359	3,002	-	254	148	3,404	-2,045	-2,044	-1	0.03%
2055	192	180	26	1,361	3,002	-	250	144	3,396	-2,035	-2,035	0	0.00%
2056	192	182	26	1,363	3,002	-	247	139	3,388	-2,025	-2,026	1	0.03%
2057	192	184	26	1,365	3,002	-	244	136	3,382	-2,017	-2,017	0	0.00%
2058	192	186	26	1,367	3,002	-	241	132	3,375	-2,008	-2,008	0	0.00%
2059	192	188	26	1,369	3,002	-	238	128	3,368	-1,999	-1,999	0	0.00%
2060	192	190	26	1,371	3,002	-	235	123	3,360	-1,989	-1,989	0	0.00%

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**TABLE A-28. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, WILLACY COUNTY, KENEDY COUNTY GROUNDWATER CONSERVATION DISTRICT. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW			OUTFLOW			Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Recharge	Net Lateral Flow From Willacy White	Total Inflow	Wells	Net Lateral Flow To Kenedy	Total Outflow				
2010	173	1,442	1,916	2,127	1,620	3,747	-1,831	-1,830	-1	0.03%
2011	173	1,622	2,111	2,127	1,727	3,854	-1,743	-1,743	0	0.00%
2012	173	1,746	2,246	2,127	1,783	3,910	-1,664	-1,664	0	0.00%
2013	173	1,826	2,336	2,127	1,806	3,933	-1,597	-1,598	1	0.03%
2014	173	1,874	2,391	2,127	1,808	3,935	-1,544	-1,544	0	0.00%
2015	173	1,901	2,424	2,127	1,795	3,922	-1,498	-1,497	-1	0.03%
2016	173	1,914	2,442	2,127	1,771	3,898	-1,456	-1,456	0	0.00%
2017	173	1,918	2,451	2,127	1,742	3,869	-1,418	-1,419	1	0.03%
2018	173	1,915	2,452	2,127	1,710	3,837	-1,385	-1,386	1	0.03%
2019	173	1,908	2,447	2,127	1,677	3,804	-1,357	-1,357	0	0.00%
2020	173	1,897	2,439	2,127	1,643	3,770	-1,331	-1,330	-1	0.03%
2021	173	1,884	2,429	2,127	1,608	3,735	-1,306	-1,306	0	0.00%
2022	173	1,870	2,416	2,127	1,574	3,701	-1,285	-1,285	0	0.00%
2023	173	1,852	2,399	2,127	1,539	3,666	-1,267	-1,266	-1	0.03%
2024	173	1,834	2,382	2,127	1,506	3,633	-1,251	-1,249	-2	0.06%
2025	173	1,817	2,366	2,127	1,473	3,600	-1,234	-1,233	-1	0.03%
2026	173	1,798	2,347	2,127	1,441	3,568	-1,221	-1,219	-2	0.06%
2027	173	1,782	2,332	2,127	1,411	3,538	-1,206	-1,207	1	0.03%
2028	173	1,765	2,314	2,127	1,383	3,510	-1,196	-1,196	0	0.00%
2029	173	1,749	2,297	2,127	1,357	3,484	-1,187	-1,186	-1	0.03%
2030	173	1,734	2,281	2,127	1,331	3,458	-1,177	-1,177	0	0.00%
2031	173	1,721	2,266	2,127	1,308	3,435	-1,169	-1,169	0	0.00%
2032	173	1,707	2,251	2,127	1,286	3,413	-1,162	-1,162	0	0.00%
2033	173	1,696	2,238	2,127	1,265	3,392	-1,154	-1,155	1	0.03%
2034	173	1,684	2,223	2,127	1,245	3,372	-1,149	-1,149	0	0.00%
2035	173	1,673	2,210	2,127	1,227	3,354	-1,144	-1,143	-1	0.03%
2036	173	1,663	2,198	2,127	1,209	3,336	-1,138	-1,138	0	0.00%
2037	173	1,653	2,185	2,127	1,192	3,319	-1,134	-1,133	-1	0.03%
2038	173	1,645	2,174	2,127	1,176	3,303	-1,129	-1,129	0	0.00%
2039	173	1,637	2,164	2,127	1,162	3,289	-1,125	-1,124	-1	0.03%
2040	173	1,630	2,154	2,127	1,148	3,275	-1,121	-1,120	-1	0.03%
2041	173	1,624	2,145	2,127	1,134	3,261	-1,116	-1,117	1	0.03%
2042	173	1,617	2,135	2,127	1,121	3,248	-1,113	-1,113	0	0.00%
2043	173	1,611	2,127	2,127	1,109	3,236	-1,109	-1,110	1	0.03%
2044	173	1,606	2,118	2,127	1,098	3,225	-1,107	-1,107	0	0.00%
2045	173	1,601	2,110	2,127	1,087	3,214	-1,104	-1,104	0	0.00%
2046	173	1,597	2,103	2,127	1,078	3,205	-1,102	-1,102	0	0.00%
2047	173	1,593	2,096	2,127	1,069	3,196	-1,100	-1,099	-1	0.03%
2048	173	1,589	2,089	2,127	1,059	3,186	-1,097	-1,097	0	0.00%
2049	173	1,586	2,083	2,127	1,050	3,177	-1,094	-1,094	0	0.00%
2050	173	1,583	2,076	2,127	1,042	3,169	-1,093	-1,092	-1	0.03%
2051	173	1,580	2,071	2,127	1,035	3,162	-1,091	-1,090	-1	0.03%
2052	173	1,578	2,066	2,127	1,027	3,154	-1,088	-1,088	0	0.00%
2053	173	1,577	2,062	2,127	1,020	3,147	-1,085	-1,086	1	0.03%
2054	173	1,575	2,056	2,127	1,014	3,141	-1,085	-1,085	0	0.00%
2055	173	1,573	2,051	2,127	1,007	3,134	-1,083	-1,083	0	0.00%
2056	173	1,572	2,047	2,127	1,001	3,128	-1,081	-1,081	0	0.00%
2057	173	1,571	2,043	2,127	996	3,123	-1,080	-1,080	0	0.00%
2058	173	1,570	2,039	2,127	989	3,116	-1,077	-1,078	1	0.03%
2059	173	1,569	2,035	2,127	984	3,111	-1,076	-1,077	1	0.03%
2060	173	1,568	2,031	2,127	980	3,107	-1,076	-1,075	-1	0.03%

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**TABLE A-29. ANNUAL GROUNDWATER BUDGET FOR THE GULF COAST AQUIFER, WILLACY COUNTY, NON-DISTRICT AREA. ALL VALUES IN ACRE-FEET PER YEAR, EXCEPT AS NOTED.**

Year	INFLOW						OUTFLOW				Inflow - Outflow	Storage Change	Model Error	Model Error (percent)
	Net River Leakage	Net Lateral Flow From Cameron	Net Lateral Flow From Gulf	Net Lateral Flow From Hidalgo White	Net Lateral Flow From Kenedy	Total Inflow	Wells	Net River Leakage	Net Lateral Flow To Willacy Kenedy	Total Outflow				
2010	-	681	2,026	1,058	364	5,581	17,886	473	1,442	19,801	-14,220	-14,220	0	0.00%
2011	-	648	2,243	1,160	364	5,867	17,886	242	1,622	19,750	-13,883	-13,884	1	0.01%
2012	-	618	2,420	1,256	363	6,109	17,886	32	1,746	19,664	-13,555	-13,555	0	0.00%
2013	136	590	2,571	1,347	361	6,457	17,886	-	1,826	19,712	-13,255	-13,256	1	0.01%
2014	270	564	2,701	1,433	358	6,778	17,886	-	1,874	19,760	-12,982	-12,983	1	0.01%
2015	399	537	2,816	1,512	356	7,072	17,886	-	1,901	19,787	-12,715	-12,715	0	0.00%
2016	527	511	2,918	1,587	353	7,348	17,886	-	1,914	19,800	-12,452	-12,450	-2	0.01%
2017	611	486	3,011	1,655	350	7,565	17,886	-	1,918	19,804	-12,239	-12,201	-38	0.19%
2018	666	465	3,095	1,718	347	7,743	17,886	-	1,915	19,801	-12,058	-12,059	1	0.01%
2019	721	447	3,172	1,776	343	7,911	17,886	-	1,908	19,794	-11,883	-11,882	-1	0.01%
2020	751	431	3,242	1,829	340	8,045	17,886	-	1,897	19,783	-11,738	-11,711	-27	0.14%
2021	769	419	3,307	1,879	338	8,164	17,886	-	1,884	19,770	-11,606	-11,609	3	0.02%
2022	788	407	3,367	1,923	334	8,271	17,886	-	1,870	19,756	-11,485	-11,484	-1	0.01%
2023	807	399	3,423	1,963	331	8,375	17,886	-	1,852	19,738	-11,363	-11,363	0	0.00%
2024	828	391	3,474	2,001	327	8,473	17,886	-	1,834	19,720	-11,247	-11,247	0	0.00%
2025	849	385	3,523	2,035	325	8,569	17,886	-	1,817	19,703	-11,134	-11,135	1	0.01%
2026	861	380	3,568	2,066	322	8,649	17,886	-	1,798	19,684	-11,035	-11,028	-7	0.04%
2027	872	375	3,610	2,094	320	8,723	17,886	-	1,782	19,668	-10,945	-10,946	1	0.01%
2028	884	373	3,650	2,118	317	8,794	17,886	-	1,765	19,651	-10,857	-10,858	1	0.01%
2029	896	371	3,688	2,141	315	8,863	17,886	-	1,749	19,635	-10,772	-10,775	3	0.02%
2030	909	369	3,723	2,162	311	8,926	17,886	-	1,734	19,620	-10,694	-10,696	2	0.01%
2031	922	368	3,756	2,180	309	8,987	17,886	-	1,721	19,607	-10,620	-10,620	0	0.00%
2032	931	367	3,788	2,196	307	9,041	17,886	-	1,707	19,593	-10,552	-10,548	-4	0.02%
2033	936	367	3,818	2,211	305	9,089	17,886	-	1,696	19,582	-10,493	-10,493	0	0.00%
2034	941	368	3,847	2,224	303	9,135	17,886	-	1,684	19,570	-10,435	-10,436	1	0.01%
2035	946	370	3,873	2,236	301	9,178	17,886	-	1,673	19,559	-10,381	-10,381	0	0.00%
2036	952	372	3,900	2,246	299	9,221	17,886	-	1,663	19,549	-10,328	-10,329	1	0.01%
2037	957	375	3,925	2,255	297	9,261	17,886	-	1,653	19,539	-10,278	-10,279	1	0.01%
2038	963	376	3,949	2,263	296	9,299	17,886	-	1,645	19,531	-10,232	-10,232	0	0.00%
2039	969	380	3,972	2,270	294	9,337	17,886	-	1,637	19,523	-10,186	-10,186	0	0.00%
2040	975	384	3,995	2,276	292	9,374	17,886	-	1,630	19,516	-10,142	-10,143	1	0.01%
2041	978	388	4,017	2,281	291	9,407	17,886	-	1,624	19,510	-10,103	-10,101	-2	0.01%
2042	978	392	4,038	2,286	289	9,435	17,886	-	1,617	19,503	-10,068	-10,069	1	0.01%
2043	978	397	4,058	2,289	288	9,462	17,886	-	1,611	19,497	-10,035	-10,036	1	0.01%
2044	978	402	4,077	2,292	287	9,488	17,886	-	1,606	19,492	-10,004	-10,004	0	0.00%
2045	978	407	4,097	2,294	286	9,514	17,886	-	1,601	19,487	-9,973	-9,973	0	0.00%
2046	978	412	4,116	2,296	285	9,539	17,886	-	1,597	19,483	-9,944	-9,944	0	0.00%
2047	978	419	4,134	2,297	284	9,564	17,886	-	1,593	19,479	-9,915	-9,915	0	0.00%
2048	978	425	4,152	2,298	283	9,588	17,886	-	1,589	19,475	-9,887	-9,887	0	0.00%
2049	978	431	4,170	2,298	282	9,611	17,886	-	1,586	19,472	-9,861	-9,860	-1	0.01%
2050	978	439	4,188	2,297	282	9,636	17,886	-	1,583	19,469	-9,833	-9,834	1	0.01%
2051	978	445	4,204	2,297	281	9,657	17,886	-	1,580	19,466	-9,809	-9,808	-1	0.01%
2052	978	453	4,222	2,296	281	9,682	17,886	-	1,578	19,464	-9,782	-9,782	0	0.00%
2053	978	460	4,239	2,295	281	9,705	17,886	-	1,577	19,463	-9,758	-9,758	0	0.00%
2054	978	468	4,255	2,293	280	9,726	17,886	-	1,575	19,461	-9,735	-9,733	-2	0.01%
2055	978	477	4,271	2,292	280	9,750	17,886	-	1,573	19,459	-9,709	-9,709	0	0.00%
2056	978	485	4,287	2,290	280	9,772	17,886	-	1,572	19,458	-9,686	-9,686	0	0.00%
2057	978	494	4,304	2,287	280	9,795	17,886	-	1,571	19,457	-9,662	-9,662	0	0.00%
2058	978	502	4,319	2,285	280	9,816	17,886	-	1,570	19,456	-9,640	-9,639	-1	0.01%
2059	978	511	4,335	2,282	280	9,838	17,886	-	1,569	19,455	-9,617	-9,616	-1	0.01%
2060	978	520	4,351	2,280	280	9,861	17,886	-	1,568	19,454	-9,593	-9,594	1	0.01%