Appendix D: Contractors Water Needs Assessments

Division:	Delta/Cross Val	ley
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Water Needs Assessment District: 202235 Date: 12/27/2017 Agricultural Water Supply **ALPAUGH ID** Contractor's Water Supply Sources and Quantities (acre-feet) **Surface Water Supply Groundwater Supply USBR** Total Trsfr/Rtrn Trsfr/ Reference Safe SWP Yield Timeframe Delivery Deliv/Max Local Local Source /Recycle In District Private Recharge | Total Supply Out 5 1 2 3 4 8 9 10 11 12 13 7 0 06 2016 0 0 9,555 0 0 9,555 0 100 0 0 0 2050 100 0 0 0 0 100 100 Contractor's Agricultural Water Demands Maximum ProductiveAcres= 5,160 District Calculated **USBR Net** Average Reference Reference **Crop Water** Irrig. Effective Effective Net Crop Crop Irridated Irriaated Calculated Conveyance Total Ag **Requirement** Efficiency Precip Precip Water Rea Acres Acres FDR Water Red **USBR FDR** Loss Demand Timeframe (acre-feet) (acre-feet) (AF/acre) (AF/acre) (acre-feet) (acre-feet) [%] (acre-ft) (acres) (acres) (acre-feet) (acre-feet) 1 20 24 25 15 16 17 18 19 21 22 23 26 2016 7,514 78 416 9,100 3,781 2.41 3.37 455 9,555 13,073 3.781 1,458 2050 18,810 85 2,009 19,766 5,160 5,160 3.83 1,139 20,905 2.009 18.810 3.43 Contractor's M&I Water Demands **Residential Water Demand Nonresidential Water Demand** Loss Total Total Ref Urban Calc Urban **Total M&I** Per Capita Comm/ Unacc Total Unmet /Distr Demand Per Capita Per Capita Demand Demand Industrial Instit Demand Aq+ M&I Dmd Demand Timeframe (acre-feet) (acre-feet) (acre-feet) (acre-feet) **Population** (gpcd) Dmd (qpcd) Dmd (gpcd) (acre-feet) (acre-feet) (acre-feet) 28 30 32 33 34 37 38 39 1 29 31 35 36 9,555 0 2016 0 0 0 2050 0 0 0 20,905 20,805 * Represents Maximum Contract Amount

Notes:

Water Needs Assessment

202245

ATWELL ISLAND WD

District:

Date: 1/3/2018

Agricultural Water Supply

Contractor's Water Supply Sources and Quantities (acre-feet)

				Surface W	ater Supply		Groundwater Supply					
	Timeframe 1	Reference Delivery 2	USBR Total Deliv/Max 3	SWP 4	Local Local Source 5	<u> </u>	Trsfr/ Out 8	District 9	Private 10	Safe Yield Recl 11	harge 12	Total Supply 13
-	2015 - 2016	50	0	0	⁰ 6	0	0	214	6,809		0	7,023
	2050	50	50	0	0	0	0	0	0		0	50

Contractor's Agricultural Water Demands

Maximum ProductiveAcres= 7,059

Timeframe 1	Crop Water Requirement (acre-feet) 15	District Irrig. Efficiency (%) 16	Effective Precip (acre-feet) 17	Reference Effective Precip (acre-ft) 18	-	USBR Net Crop Water Req (acre-feet) 20	Average Irrigated Acres (acres) 21	Reference Irrigated Acres (acres) 22	Calculated FDR (AF/acre) 23	USBR FDR (AF/acre) 24	Conveyance Loss (acre-feet) 25	Total Ag Demand (acre-feet) 26
2015 - 2016	6,004	75	495	468	7,345	5,103	7,023	7,023	1.05	5.3	146	7,491
2050	6,130	80	3,284	3,284	3,558	3,558	7,059	7,059	0.50	0.50	754	4,312

Contractor's M&I Water Demands

	Residential Water Demand			Nonresidential Water Demand			Loss					
		Per Capita	Total		Comm/	Total	Unacc	Ref Urban	Calc Urban	Total M&I	Total	Unmet
		Demand	Demand	Industrial	Instit	Demand	/Distr	Per Capita	Per Capita	Demand	Ag+ M&I Dmd	Demand
Timeframe	Population	(gpcd)	(acre-feet)	(acre-feet)	(acre-feet)	(acre-feet)	(acre-feet)	Dmd (gpcd)	Dmd (gpcd)	(acre-feet)	(acre-feet)	(acre-feet)
1	28	29	30	31	32	33	34	35	36	37	38	39
						0	0			0	7,491	468
						0	0			0	4,312	4,262

Represents Maximum Contract Amount

Notes: As a result of limited data, water usage was supplied by the District in 2016 and crop data from SCCAO for 2015 was used.

Water Needs Assessment

District: 202325

FRESNO, COUNTY OF

M&I Water Supply

Contractor's Water Supply Sources and Quantities (acre-feet)

			Surface W	ater Supply		Groundwater Supply				
Timeframe 1	Reference Delivery 2	USBR Total Deliv/Max 3	SWP 4	Local Local Source 5	Trsfr/Rtrn /Recycle in 7	Trsfr/ Out 8	District 9	Private 10	Safe Yield Recharge 11 12	Total Supply 13
2016	3,000	* 3,000	0	⁰ 6	0	0	0	0	0	3,000
2050	3,000	* 3,000	0	0	0	0	0	0	0	3,000

Contractor's Agricultural Water Demands

Maximum ProductiveAcres=

	Crop Water Requirement	District Irrig.	Effective Precip	Reference Effective	Calculated Net Crop Water Req	USBR Net Crop	Average Irrigated	Reference Irrigated Acres	Calculated FDR	USBR FDR	Conveyance	Total Ag
Timeframe 1	(acre-feet) 15	(%) (%) 16	(acre-feet) 17	Precip (acre-ft) 18	-	Water Req (acre-feet) 20	Acres (acres) 21	(acres) 22	(AF/acre) 23	(AF/acre) 24	Loss (acre-feet) 25	Demand (acre-feet) <u>26</u>
2016												
2050												

Contractor's M&I Water Demands

	Residential Water Demand			Nonresidential Water Demand			Loss					
	Per Capita Total Demand Demand		Industrial	Comm/ Instit	Total Demand	Unacc /Distr	Ref Urban Per Capita	Calc Urban Per Capita	Total M&I Demand	Total Ag+ M&I Dmd	Unmet Demand	
Timeframe 1	Population 28	(gpcd) 29	(acre-feet) 30	(acre-feet) 31	(acre-feet) 32	(acre-feet) 33	(acre-feet) 34	Dmd (gpcd) 35	Dmd (gpcd) 36	(acre-feet) 37	(acre-feet) 38	(acre-feet) 39
2016	729	195.9	160	0	362	362	39	257.0	686.6	561	561	-2,439
2050	9,800	166.6	1,829	0	930	930	99	166.0	260.4	2,858	2,858	-142

* Represents Maximum Contract Amount

Notes:

Division: De	elta/Cross V	/alley			Water	Needs Ass	essment		District:	202350	Date:	1/17/2018
Agricultura	al Water Su	pply							HILLS VAI	LLEY ID		
-			Cor	ntractor's V	Vater Supp	ly Sources a	and Quantit	ties (acre-	feet)			
				Surface	Water Supply				Gi	roundwater Su	oply	
Timeframe 1		erence livery 2	USBR Total Deliv/Max 3	SWP 4	Local 5	Local Source	Trsfr/Rtrn /Recycle in 7		District P 9		Safe Yield Recharge 11 12	Total Supply 13
2016		3,346 *	814	0	0	6	3,720	0	0	4,590	0	9,124
2050		3,346 *	3,346	0	0		1,250	0	0	0	0	4,596
						gricultural			N	Aaximum Pro	oductiveAcres=	4,314
Timeframe 1	Crop Water Requirement (acre-feet) 15	District Irrig. Efficiency (%) 16	Effective Precip (acre-feet) 17	Reference Effective Precip (acre-ft) 18	Calculated Net Crop Water Req (acre-feet) 19	USBR Net Crop Water Req (acre-feet) 20	Average Irrigated Acres (acres) 21	Reference Irrigated Acres (acres) 22	Calculated FDR (AF/acre 23	USBR FDF		Total Ag Demand (acre-feet) 26
2016	9,396	85	1,800	1,704	8,936	10,316	3,407	3,407	2.62	3.20	470	9,406
2050	13,063	95	2,157	2,157	11,480	13,063	4,314	4,314	2.66	3.20	521	12,001
					Contractor	's M&I Wat	er Demand	s				
	Resi	idential Wate	r Demand	No	nresidential Wa	ter Demand	Loss		1			
Timeframe 1	Populatio 28	Per Caj Dema n (gpc) 29	nd Dem d) (acre-fi		et) (acre-fe	tit Demand et) (acre-feet		Ref Urbar Per Capita Dmd (gpcd 35	e Per Capita	Demand	Total Ag+ M&I Dmd) (acre-feet) 38	Unmet Demand (acre-feet) 39
	20	Zi	, U	ט ט	ں I	. 00	U4	UU	UU	U/	UU	UU
2016	-					0	0			0	9,406	282

* Represents Maximum Contract Amount

Notes: This contractor has two Friant Division CVP contracts (Contract No. 14-06-200-191E and I75r-4309E) with Class 1 allocations for up to 250 AF and 1,000, respectively. As Class 1 allocations are considered a dependable water supply as opposed to Class 2 allocations, they have been included as "transfers-in" in Column 7 for the benchmark year 2050. Also the contractor has a partial assignment (Contract No. 14-06-200-1911E) for 250 AF of Class 1 water.

Division: De	elta/Cross V	alley			Water	Needs Ass	essment		District:	202385	Date: 1	1/13/2017
Agricultura	al Water Su	pply							KERN-TUL	ARE WD		
	· · · · · · · · · · · · · · · · · · ·		Cor	tractor's V	Nater Supp	ply Sources a	and Quanti	ties (acre-	feet)			
				Surface	Water Supply	r			Gr	undwater Supp	ly	
Timeframe 1		erence livery 2	USBR Total Deliv/Max 3	SWP 4	Local 5	Local Source	Trsfr/Rtrn /Recycle in 7	Trsfr/ Out 8	District Pr 9	ivate Yi	afe eld Recharge 11 12	Total Supply 13
2014 Mgmt. Plan	53	3,300 *	15,320	0	6,685	6	0	0	0 2	24,667	0	46,672
2050	53	3,300 *	53,300	0	0		0	0	0	0	0	53,300
				C						:' D i	luctiveAcres= 2	0.250
						Agricultural `			IVI		uctiveAcres- 2	.0,239
Timeframe 1	Crop Water Requirement (acre-feet) 15	District Irrig. Efficiency (%) 16	Effective Precip (acre-feet) 17	Reference Effective Precip (acre-ft) 18	Calculated Net Crop Water Req (acre-feet) 19	Crop Water Req	Average Irrigated Acres (acres) 21	Reference Irrigated Acres (acres) 22	Calculated FDR (AF/acre) 23	USBR FDR (AF/acre) 24	Conveyance Loss (acre-feet) 25	Total Ag Demand (acre-feet) 26
2014	46,672	95	15	5,222	49,113	56,997	17,406	20,259	2.82	3.73	0	49,113
2050	65,745	95	6,078		05 7 15	<u> </u>						
		35	0,078	6,078	65,745	65,745	20,259	20,259	3.10	3.73	0	62,807
	·	90	0,070	,		65,745 r's M&I Wat		,	3.10	3.73	0	62,807
	Resi	dential Water				r's M&I Wat		,	3.10	3.73	0	62,807
Timeframe 1	Resi Population 28	dential Water Per Cap Dema	r Demand pita To nd Dema d) (acre-fu	tal and Industr	Contractor nresidential Wa Com rial Insi wet) (acre-fe	r's M&I Wat ter Demand m/ Total tit Demand et) (acre-feet	ter Demand	,	Calc Urban Per Capita	3.73 Total M&I Demand (acre-feet) 37	O Total Ag+ M&I Dmd (acre-feet) 38	62,807 Unmet Demand (acre-feet) 39
Timeframe 1 2014	Population	dential Water Per Cap Dema n (gpci	r Demand pita To nd Dema d) (acre-fu	Nor tal and Industr eet) (acre-fe	Contractor nresidential Wa Com rial Insi cet) (acre-fe	r's M&I Wat ter Demand m/ Total tit Demand et) (acre-feet	ter Demand Loss Unacc /Distr i) (acre-feet)	s Ref Urban Per Capita Dmd (gpcd)	Calc Urban Per Capita Dmd (gpcd)	Total M&I Demand (acre-feet)	Total Ag+ M&I Dmd (acre-feet)	Unmet Demand (acre-feet)

* Represents Maximum Contract Amount

Notes: 14-06-200-8601A water service contract for 40,000 AF 14-06-200-8367A assignment contract for 13,300 AF

This contractor has a Friant Division CVP contract (Contract No. I1r-1460A) with a Class 2 allocation for up to 5,000 AF. As Class 2 water supplies are considered undependable and furnished only they can be made available by Reclamation after all Class 1 allocations have been met, this amount is not included as a source of water supply for the benchmark year 2050. Maximum productive acres includes contracts 14-06-200-8601A and 14-06-20-8367A combined acreage.

M&I Wate	er Supply								LINDSAY,	CITY OF		
			Co	ntractor's V	Vater Supp	ly Sources a	nd Quantit	ies (acre-	feet)			_
				Surface	Water Supply				G	roundwater Sup	ply	
Timeframe 1	_	erence elivery 2	USBR Total Deliv/Max 3	SWP 4	Local 5	Local Source	Trsfr/Rtrn /Recycle In 7	Trsfr/ Out 8	District P 9	rivate Y	afe ield Recharge 11 12	Total Supply 13
2016		50 *	1,324	0	0	6	0	0	1,110	0	0	2,434
2050		50 *	50	0	0		2,500	0	0	0	0	2,550
]		Cor	ntractor's A	gricultural V	Water Dem	ands	I	Maximum Pro	ductiveAcres=	0
Timeframe 1	Crop Water Requirement (acre-feet) 15	District Irrig. Efficiency (%) 16	Effective Precip (acre-feet) 17	Reference Effective Precip (acre-ft) 18	Calculated Net Crop Water Req (acre-feet) 19	USBR Net Crop Water Req (acre-feet) 20	Average Irrigated Acres (acres) 21	Reference Irrigated Acres (acres) 22	Calculated FDR (AF/acre 23	USBR FDR	Conveyance Loss (acre-feet) 25	Total Ag Demand (acre-feet) 26
2016												
2050												
					Contractor	's M&I Wat	er Demand	s				
	Res	idential Wate	r Demand	No	nresidential Wa	ter Demand	Loss	l .	1			
		Per Caj Dema	nd Dem		Com rial Inst ret) (acre-fed	tit Demand	Unacc /Distr) (acre-feet)	Ref Urba Per Capit Dmd (gpc)	a Per Capita	Demand	Total Ag+ M&I Dmd (acre-feet)	Unmet Demand (acre-feet)
Timeframe	Ponulatio	n (ane	d) (acre-f	KKI IMIXI:1.K-1K								
Timeframe 1	Populatio 28	n (gpc) 2{		BO 3			34	35	36	37	38	39
Timeframe 1 2016	-		9 1		1 32				36	37		

* Represents Maximum Contract Amount

Notes: This contractor has a Friant Division CVP contract (Contract No. 5-07-20-W0428) with a Class 1 allocation for up to 2,500 AF. As Class 1 allocations are considered a dependable water supply as opposed to Class 2 allocations, they have been included as "transfers-in" in Column 7 for the benchmark year 2050.

LOWER TULE RIVER ID Agricultural Water Supply Contractor's Water Supply Sources and Quantities (acre-feet) **Surface Water Supply Groundwater Supply** Trsfr/Rtrn Reference **USBR** Total Trsfr/ Safe Timeframe Deliv/Max SWP Local Local Source /Recycle In District Private Yield Recharge **Total Supply** Delivery Out 5 1 2 3 4 9 10 11 12 13 7 8 89,215 **f** 192,184 2010 171,428 0 0 8,111 0 23,044 421,672 31,102 Mgmt. Plan 0 0 2050 31.102 31.102 0 70.000 Pre-1914 61.200 0 0 162.302 Maximum ProductiveAcres= 103.086 Contractor's Agricultural Water Demands District **USBR Net** Reference Reference Calculated Average Irria. Irriaated Irriaated **Crop Water** Net Crop Effective Effective Crop Calculated Conveyance Total Au FDR Requirement Efficiency Precip Precip Water Red Water Red Acres Acres **USBR FDR** Loss Demand Timeframe (acre-feet) (acre-feet) [%] (acre-feet) (acre-ft) (acre-feet) (acres) (acres) (AF/acre) (AF/acre) (acre-feet) (acre-feet) 1 15 16 17 18 19 20 21 22 23 24 25 26 2010 367,038 95 386.355 111,938 3.45 105,259 491,614 1 5.12 36,602 440,362 103.086 2050 414,443 95 32,761 401,771 103,086 3.90 7,542 409,313 32.761 414.443 103,086 5.12 Contractor's M&I Water Demands **Residential Water Demand** Nonresidential Water Demand Loss Ref Urban **Total M&I** Per Capita Total Comm/ Total Unacc Calc Urban Total Unmet Per Capita Demand Demand Demand Industrial Instit Demand /Distr Per Capita Aq+ M&I Dmd Demand Timeframe Population (gpcd) (acre-feet) (acre-feet) (acre-feet) (acre-feet) Dmd (gpcd) Dmd (qpcd) (acre-feet) (acre-feet) (acre-feet) 30 31 37 39 1 28 29 32 33 34 35 36 38 491,614 2010 0 0 0 69,942 2050 0 0 0 409,313 247,011

Water Needs Assessment

202460

1/8/2018

Date:

District:

* Represents Maximum Contract Amount

Notes: This contractor has a Friant Division CVP contract (Contract No. 175r-2771D) with Class 1 and Class 2 allocations for up to 61,200 AF and 238,000 AF, respectively. As Class 1 allocations are considered a dependable water supply as opposed to Class 2 allocations, they have been included as "transfers-in" in Column 7 for the benchmark year 2050.

Water Needs Assessment

District: 202500

PIXLEY ID

Agricultural Water Supply

Contractor's Water Supply Sources and Quantities (acre-feet)

			Surface W	ater Supply						
Timeframe 1	Reference Delivery 2	USBR Total Deliv/Max 3	SWP 4	Local Local Source 5		irsfr/ Out 8	District 9	Private 10	Safe Yield Recharge 11 12	Total Supply 13
2008 Mgmt. Plan	31,102 *	0	0	1,000 6	30,296	0	0	117,333	0	148,629
2050	31,102 *	31,102	0	0	0	0	0	0	0	31,102

Contractor's Agricultural Water Demands

Maximum ProductiveAcres= 69,571

		District		Reference	Calculated	USBR Net	-	Reference			-	
	Crop Water Requirement	Irrig. Efficiency	Effective Precip	Effective	Net Crop Water Reg	Crop Water Par	Irrigated Acres	Irrigated Acres	Calculated FDR	USBR FDR	Conveyance	Total Ag
Timeframe	(acre-feet)	[%]	(acre-feet)	Precip (acre-ft)	-	Water Req (acre-feet)	(acres)	(acres)		(AF/acre)	Loss (acre-feet)	Demand (acre-feet)
1	15	16	17	18	19	20	21	22	23	24	25	26
2008	158,160	95	16,962	16,962	148,629	158,160	53,274	69,571	2.79	3.5	0	148,629
2050	262,411	95	21,104	21,104	254,007	262,411	69,571	69,571	3.65	4.12	0	254,007

Contractor's M&I Water Demands

	Reside	ntial Water Dem	and	Nonres	idential Water I	Demand	Loss					
		Per Capita	Total		Comm/	Total	Unacc	Ref Urban		Total M&I	Total	Unmet
		Demand	Demand		Instit	Demand	/Distr	Per Capita	Per Capita	Demand	Ag+ M&I Dmd	Demand
Timeframe	Population	(gpcd)					(acre-feet)	Dmd (gpcd)		(acre-feet)	(acre-feet)	(acre-feet)
1	28	29	30	31	32	33	34	35	36	37	38	39
2008						0	0			0	148,629	0
2050						0	0			0	254,007	222,905

* Represents Maximum Contract Amount

Notes:

Division: Delta Agricultural V	/ Cross Valley Water Supply			Water	Needs Ass	essment		District:	202540 LITO ID		Date:
C	11.2	Cont	ractor's Wa	ater Sup	ply Sources a	und Quantiti	es (acre	-feet)			
			Surface W	ater Supply					Groundwater	Supply	
Timeframe 1	Reference Delivery 2	USBR Total Deliv/Max 3	SWP 4	Local 5	Local Source	Trsfr/Rtrn /Recycle In 7	Trsfr/ Out 8	District 9	Private 10	Safe Yield 11	Recharge 12
2016	100 *	19,219	0	2,623	³ fi	5,210	0	0	40,413		0

0

100

0

Contractor's Agricultural Water Demands

21,500

n

0

1/4/2018

Total Supply 13 67,465

21,600

0

Maximum ProductiveAcres= 19,737

0

		District		Reference	Calculated	USBR Net	Average	Reference				
Timeframe 1	Crop Water Requirement (acre-feet) 15	Irrig. Efficiency (%) 16	Effective Precip (acre-feet) 17	Effective Precip (acre-ft) 18	Net Crop Water Req (acre-feet) 19	Crop Water Req (acre-feet) 20	Irrigated Acres (acres) 21	Irrigated Acres (acres) 22	Calculated FDR (AF/acre) 23	USBR FDR (AF/acre) 24	Conveyance Loss (acre-feet) 25	Total Ag Demand (acre-feet) 26
2016	59,850	85	2,965	6,969	66,924	25,465	18,425	18,425	3.63	3.07	541	67,465
2050	57,076	90	7,494	7,494	55,091	57,076	19,737	19,737	2.79	3.05	802	55,893

Contractor's M&I Water Demands

	Reside	ntial Water Den	nand	Nonres	idential Water I	Demand	Loss					
Timeframe	Population	Per Capita Demand (qpcd)	Total Demand Cacro-foot)		Comm/ Instit (acre-feet)	Total Demand (acro-foot)	Unacc /Distr (acro_foot)	Ref Urban Per Capita Dmd (gned)	Calc Urban Per Capita Dmd (qpcd)	Total M&I Demand (acro-foot)	Total Ag+ M&I Dmd (acre-feet)	Unmet Demand (acre-feet)
1	28	29	30	31	32	33	34	35	36	37	38	39
2016						0	0			0	67,465	0
2050						0	0			0	55,893	34,293

* Represents Maximum Contract Amount

100

2050

Notes: This contractor has a Friant Division CVP contract (Contract No. 175r-2771D) with Class 1 and Class 2 allocations for up to 21,200 AF and 32,800 AF, respectively also a partial assignment for 300 AF (Contract No. 14-06-200-7430E). As Class 1 allocations are considered a dependable water supply as opposed to Class 2 allocations, they have been included as "transfers-in" in Column 7 for the benchmark year 2050.

1 2 3 4 5 7 8 9 10 11 12 11 2016 950 6,171 0 0 6 1,120 424 0 8,651 0 18 2050 950 950 0 0 10,000 0 0 0 0 14 2050 950 950 0 0 0 10,000 0 0 0 16 User contractor's Agricultural Water Demands Maximum ProductiveAcres 5,904 Imeframe Effective feet Reference ffective Calculated lacre-feet USBR Net lacre-feet Average lacre-feet Reference lacre-feet Calculated lacre-feet USBR FDR lacre Earefeet Earefeet<	A	al Watan Ca										Date	
Imeframe Surface Water Supply Instrict Baference USBR Total SWP Local Local Source Ifrsfr/Rtrn Tirsfr/ District Safe Safe 2016 950 6,171 0 0 6 1,120 424 0 8,651 0 1 2016 950 6,171 0 0 6 1,120 424 0 8,651 0 1 2050 950 950 0 0 10,000 0 0 0 1 2050 950 950 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1	Agricultur	al water Su	ірріу	C		W / O	1 0	10					
Imeframe 1 Reference Delivery 2 USBR Total Deliv/Max 3 SWP 4 Local Source 5 Trefr/Rtm Regulared 7 Trefr/Rtm 8 Trefr/Rtm 8 Trefr/Rtm 8 District 8 Private 10 Safe Yield Recharge 10 Total S 11 District 10 Private 8 Safe 10 Total S 10				Coi			ply Sources a	ind Quanti	ties (acre-1		nounduraton Our		
Timeframe 1 Deliv=ry 2 Deliv/Max 3 SWP 4 Local 5 Local Source 7 Recycle In 7 Dut 8 District 8 Private 10 Private 10 </th <th></th> <th>Dof</th> <th>opopoo</th> <th>liedd Tatal</th> <th>201.1906</th> <th>, marei, 2nhhià</th> <th></th> <th>Tnofn /Dtnn</th> <th>Tnofn /</th> <th> ti</th> <th></th> <th></th> <th></th>		Dof	opopoo	liedd Tatal	201.1906	, marei, 2nhhià		Tnofn /Dtnn	Tnofn /	ti			
1 2 3 4 5 7 8 9 10 11 12 11 2016 950 6,171 0 0 6 1,120 424 0 8,651 0 18 2050 950 950 0 0 10,000 0 0 0 0 16 2050 950 950 0 0 0 10,000 0 0 0 16 Contractor's Agricultural Water Demands Maximum ProductiveAcres 5,904 1 15 16 17 16 17 16 17 16 10 11 15 16 17 15 16 17 15 16 17 15 16 17 15 16 5,160 5,160 3.03 2.6 300 15 2016 14.046 85 750 1,107 15,642 16,450 5,160 5,160 3.03	Timeframe	_			SWD	local	l ocal Source			Nistrict P			Total Supply
2050 950 950 0 0 10,000 0 0 0 0 10 Contractor's Agricultural Water Demands Maximum ProductiveAcres= 5,904 Contractor's Agricultural Water Demands Maximum ProductiveAcres= 5,904 Contractor's Agricultural Water Demands Maximum ProductiveAcres= 5,904 Timeframe Corop Water Efficiency Precip Cacre-feet) Mater Requirement Efficiency Precip Cacre-feet) Calculated Cacres Caculated Cacres	1		-		_			7	044				13
Contractor's Agricultural Water DemandsMaximum ProductiveAcres= 5,904Contractor's Agricultural Water DemandsMaximum ProductiveAcres= 5,904Crop Water Requirement 1Effective Efficiency (3)Reference Effective (acre-feet)Calculated (acre-feet)USBR Net (acre-feet)Average (acres)Reference (acres)Conveyance (acres)Total (acres)Conveyance (acres)Total (acres)Conveyance (acres)Total (acres)Total (acres)SBR Net (acres)Average (acres)Reference (acres)Conveyance (acres)Total (acres)Total (acres)SBR Net (acres)Average (acres)Reference (acres)Conveyance (acres)Total (acres)SBR Net (acres)Average (acres)Reference (acres)Conveyance (acres)Total (acres)SBR Net (acres)Average (acres)Reference (acres)Conveyance (acres)Total (acres)SBR Net (acres)Average (acres)Reference (acres)Conveyance (acres)Total (acres)SBR Net (acres)Average (acres)Reference (acres)Conveyance (acres)Total (acres)SBR Net (acres)Average (acres)Reference (acres)Conveyance (acres)Total (acres)SBR Net (acres)Average (acres)Reference (acres)Conveyance (acres)Total (acres)SBR Net (acres)Average (acres)Reference (acres)Conveyance (acres)Total (acres)SBR Net (acres)Average (acres)<	2016		950	6,171	0	C	⁾ 6	1,120	424	0	8,651	0	15,518
Contractor's Agricultural Water DemandsMaximum ProductiveAcres= 5,904ImeframeDistrict irrig. EfficiencyReference EfficiencyCalculated Precip (acre-feet)USBR Net Crop (acre-feet)Average irrigated (acre-feet)Reference irrigated (acre-feet)Conveyance (acres)Tot loss (acres)Conveyance (acres)Tot (acres)201614,046857501,10715,64216,4505,1605,1603.032.630015205018,832901,25619,52919,5295,9045,9043.312.9634319Contractor's M&I Water DemandImeframe 1Per CapitaTotal (acre-feet)Industrial (acre-feet)Instit (acre-feet)Contractor's M&I Water DemandImeframe 2282930313233343435363738201600000015,942	2050		950	950	0	C)	10,000	0	0	0	0	10,950
Contractor of regression of re								,					,
Imeframe 1Crop Water Requirement (acre-feet)Irrig. (acre-feet)Effective (acre-feet)Effective (acre-feet)Net Crop (acre-feet)Irrigated (acre-feet)Irrigated (acres)Calculated (acres)USBR FDR (AF/acre)Conveyance (asre-feet)Total (acre-feet)201614.04685750 1.2561.107 1.25615.642 1.952916.450 1.95295.160 1.95295.160 5.9043.03 5.9042.6 3.0313.00 2.962.6 3.0313.00 2.961.5 3.0311.5 2.96Contractor's M&I Water DemandIonesidential Water DemandIonesidential Water DemandIonesidential Water DemandIonesidential Water DemandIone 3.031Ref Urban 2.96Calc Urban 3.31Total M&I 2.96Total M&I Ag+ M&I DmMet Ione ageTimeframe 119101.1071.5.42 1.25616.450 1.95295.9045.160 5.9043.03 5.9042.6 3.0313.03 2.962.6 3.0313.00 2.961.5 3.0311.9 2.96Contractor's M&I Water DemandIonesidential Water DemandIones Ionesidential Water DemandIones Ione Ione feet)Ref Urban 3.90Calc Urban 3.90Total M&I Ag+ M&I Dm 4.94Met Ione 4.94Timeframe 1Per Capita 2.931.021.021.021.021.021.021.021.0210101.021.021.021.021.021.021.021.021.02<					Co	ntractor's A	Agricultural V	Water Dem	ands	Ν	Maximum Pro	ductiveAcres=	5,904
2016 14,046 85 750 1,107 15,642 16,450 5,160 5,160 3.03 2.6 300 15 2050 18,832 90 1,256 19,529 19,529 5,904 5,904 3.31 2.96 343 19 Contractor's M&I Water Demand Loss Residential Water Demand Loss Per Capita Total Demand Demand Comm/ Total Unacc Ref Urban Calc Urban Total M&I MeI MeI Mei Demand Demand Demand Demand Demand Demand Care-feet Demand Mit Mei Total Unacc Per Capita Demand Ag+ M&I Dmd Demand Demand Demand Joint	Timeframe 1	Requirement (acre-feet)	Irrig. Efficiency (%)	Precip (acre-feet)	Effective Precip (acre-ft)	Net Crop Water Req (acre-feet)	Crop Water Req (acre-feet)	Irrigated Acres (acres)	Irrigated Acres (acres)	FDR (AF/acre	USBR FDR (AF/acre)	Loss (acre-feet)	Total Ag Demand (acre-feet) 26
2050 18,832 90 1,256 19,529 19,529 5,904 5,904 3.31 2.96 343 19 Contractor's M&I Water Demand Loss Residential Water Demand Nonresidential Water Demand Loss Per Capita Total Nonresidential Water Demand Loss Immeframe Per Capita Total Industrial Instit Demand Junacc Ref Urban Calc Urban Total M&I Ag+ M&I Dmd Demand Dem Immeframe Population (gpcd) (acre-feet) (acre-feet) (acre-feet) (acre-feet) (acre-feet) 33 34 35 36 37 38 2016 0 0 0 0 0 0 15,942	2016	14,046	85	750	1 107	15,642	16,450	5,160	5.160	3.03	3 2.6	300	15,942
Residential Water DemandLossPer CapitaTotalComm/TotalUnacc Unacc /DistrRef UrbanCalc UrbanTotal M&ITotalUnacl Ag+ M&I DmdDemandTimeframe 1Population 28(gpcd)(acre-feet)(acre-feet)(acre-feet)(acre-feet)(acre-feet)(acre-feet)(acre-feet)Dmd (gpcd)(acre-feet)(acre-feet)(acre-feet)201600000000000	2050	18,832	90	1,256	, -	19,529		5,904		3.32	1 2.96	343	19,872
Timeframe 1Per Capita Demand (gpcd) 28Total Demand (gpcd) 29Total Industrial 30Comm/ Instit (acre-feet) 31Total Demand (acre-feet) 33Unacc Demand (acre-feet) (acre-feet) 33Ref Urban Demand Per Capita 34Total M&I Demand Dmd (gpcd) 35Total M&I Demand Dmd (gpcd) 36Total M&I Ag+ M&I Dmd Dem Ag+ M&I Dmd (acre-feet) (acre-feet) (acre-feet)201600015,942						Contracto	r's M&I Wat	er Demand	ls				
Timeframe 1Demand (gpcd) 28Demand (gpcd) 29Industrial (acre-feet) 30Instit (acre-feet) (acre-feet) 31Demand (acre-feet) (acre-feet) 33/Distr (acre-feet) (acre-feet) 33Per Capita (acre-feet) (acre-feet) 35Demand (acre-feet) (acre-feet) 36Ag+ MEI Dmd (acre-feet) (acre-feet) (acre-feet) (acre-feet)2016		Res	idential Water	r Demand	No	nresidential W	ater Demand	Loss					
1 28 29 30 31 32 33 34 35 36 37 38 2016 0 0 0 0 15,942	T		Dema	nd Dem	and Indust	rial In:	stit Demand	/Distr	Per Capita	Per Capita	Demand	Ag+ M&I Dmd	Unmet Demand
2016 0 0 15,942	i imetrame 1	-											(acre-feet) 39
	2016												424
							0	0		1	0	19,872	8,922

Water Needs Assessment

District:

202570

Date: 12/21/2017

* Represents Maximum Contract Amount

Notes:

This contractor has a Friant Division CVP contract (Contract No. 175r-2555D) with a Class 1 allocation for up to 10,000 AF. As Class 1 allocations are considered a dependable water supply as opposed to Class 2 allocations, they have been included as "transfers-in" in Column 7 for the benchmark year 2050.

					Water Supply	ly Sources a				roundwater Sup	ply	
Timeframe 1		erence elivery 2	USBR Total Deliv/Max 3	SWP 4	Local 5	Local Source	Trsfr/Rtrn /Recycle In 7		District P 9	rivate Y	afe ield Recharge 11 12	Total Supply 13
2016	2	100	0	0	0	6	275	0	0	0	0	275
2050	2	400	400	0	0		0	0	0	0	0	400
				Co	ntractor's A	gricultural	Water Dem	ands	Ν	Aaximum Pro	ductiveAcres=)
Timeframe 1	Crop Water Requirement (acre-feet) 15	District Irrig. Efficiency (%) 16	Effective Precip (acre-feet) 17	Reference Effective Precip (acre-ft) 18	Calculated Net Crop Water Req (acre-feet) 19	USBR Net Crop Water Req (acre-feet) 20	Average Irrigated Acres (acres) 21	Reference Irrigated Acres (acres) 22	Calculated FDR (AF/acre 23	USBR FDR	Conveyance Loss (acre-feet) 25	Total Ag Demand Cacre-feet 26
2016 2050												
	Roe	idential Wate	r Nomand	No	Contractor nresidential Wa	's M&I Wat tor Nomand	er Demand	ls				
Timeframe	Populatio	Per Caj Dema n (gpc	pita To nd Dem d) (acre-fi	tal and Indust eet) (acre-fe	Com rial Inst eet) (acre-fei	m/ Total tit Demand et) (acre-feet	Unacc /Distr 1) (acre-feet)		Per Capita Dmd (gpcd)	Demand (acre-feet)		Unmet Demand Cacre-feet
2016	28 2,68	2 8 4 109		80 3 330 7		28 98	34	35 257.0	36 143.0	37 430	38 430	39 155
2050	3,76			700 9		39 137	3	166.0			840	440
* Represent Votes:	s Maximum C	ontract An	nount									

	er Supply		Co	ntractor's V	Vater Supp	ly Sources ar	nd Quantiti		TYRO-TE	-		
					Water Supply	. <u>, sources</u> a	ia Qualiti		,	roundwater Supp	lv	
Timeframe 1		erence livery 2	USBR Total Deliv/Max 3	SWP 4	Local 5	Local Source	Trsfr/Rtrn /Recycle In 7	Trsfr/ Out 8		s rivate Y	afe	Total Supply 13
2016		45	0	0	0	6	45	0	0	0	0 0	4
2050		45	45	0	0			0	0	0	0 0	45
				Cor	ntractor's A	gricultural V	Water Dem	ands	Ν	Aaximum Proo	luctiveAcres=	0
Timeframe 1	Crop Water Requirement (acre-feet) 15	District Irrig. Efficiency (%) 16	Effective Precip (acre-feet) 17	Reference Effective Precip (acre-ft) 18	Calculated Net Crop Water Req (acre-feet) 19	USBR Net Crop Water Req (acre-feet) 20	Average Irrigated Acres (acres) 21	Reference Irrigated Acres (acres) 22	Calculated FDR (AF/acre 23	USBR FDR	Conveyance Loss (acre-feet) 25	Total Ag Demand (acre-feet) 26
2016												
2050												
	-					r's M&I Wat	1	S				
	Resi	dential Water		~	nresidential Wa		Loss	 				
Timeframe 1	Populatio 28	Per Cap Demai n (gpcc 29	nd Dema 1) (acre-fi	and Indust	et) (acre-fe	tit Demand et) (acre-feet	Unacc /Distr) (acre-feet) 34	Ref Urban Per Capita Dmd (gpcd 35	Per Capita	Demand	Total Ag+ M&I Dmd (acre-feet) 38	Unmet Demand (acre-feet 39
2016			.0	0 4		0 45	0	0.0			45	UU 0
	· ·		.0	0 4		0 45	0	0.0	_		45	0

In 2016 CVC supply was unavailable to the Contractor. Water was purchased for use from Friant Division CVP contractor as a transfer in. This does not apply to 2050.

Agricultur	al Water Su	pply							TRI-VALLE	EY WD		
e			Cor	ntractor's V	Vater Supp	oly Sources a	ind Quanti	ties (acre-:	feet)			_
				Surface	Water Supply				Gr	oundwater Supp	ly	
Timeframe 1		erence livery 2	USBR Total Deliv/Max 3	SWP 4	Local 5	Local Source	Trsfr/Rtrn /Recycle In 7		District Pı 9	rivate Y	afe ield Recharge 11 12	Total Supply 13
2014-2016		1,142	215	0	0	6	730	0	0	1,551	0	2,496
2050		1,142 *	1,142	0	0	1	400	0	0	0	0	1,542
				Cor	ntractor's A	Agricultural V	Water Dem	ands	N	laximum Proc	luctiveAcres=	2,284
Timeframe 1	Crop Water Requirement (acre-feet) 15	District Irrig. Efficiency (%) 16	Effective Precip (acre-feet) 17	Reference Effective Precip (acre-ft) 18	Calculated Net Crop Water Req (acre-feet) 19	Crop Water Req	Average Irrigated Acres (acres) 21	Reference Irrigated Acres (acres) 22	Calculated FDR (AF/acre) 23	USBR FDR	Conveyance Loss (acre-feet) 25	Total Ag Demand (acre-feet) 26
2014-2016	2,607	85	515	368	2,461	6,502	973	1,840	2.53	3.53	35	2,496
2050	7,317	90	457	457	7,622	7,622	2,284	2,284	3.34	3.34	732	8,354
					Contracto	r's M&I Wat	er Demand	ls				
	Resi	dential Water	[•] Demand	No	nresidential Wa	ater Demand	Loss					
Timeframe	Populatio	Per Cap Demai n (gpco	nd Dema	tal and Industr eet) (acre-fe		stit Demand	Unacc /Distr 1) (acre-feet	Ref Urbar Per Capita) Dmd (gpcd	Per Capita	Total M&I Demand (acre-feet)	Total Ag+ M&I Dmd (acre-feet)	Unmet Demand (acre-feet)
1	- 28			0 3			34	35	36	37	38	39
2014-2016						0	0			0	2,496	0
2050						0	0			0	8,354	6,812

Water Needs Assessment

District:

202600

1/4/2018

Date:

* Represents Maximum Contract Amount

Notes: As a result of limited data, water usage was supplied by the Contractor in 2016 and crop data from SCCAO for 2014 was used.

This contractor has a Friant Division CVP contract (Contract No. 175r-2508e) with Class 1 allocation for up to 400 AF. As Class 1 allocations are considered a dependable water supply as opposed to Class 2 allocations, they have been included as "transfers-in" in Column 7 for the benchmark year 2050.

					Vater Supply Water Supply	,	Lu Yuunuu			roundwater Sup	ply	
Timeframe 1		rence ivery 2	USBR Total Deliv/Max 3	SWP 4		ocal Source	Trsfr/Rtrn /Recycle In 7	Trsfr/ Out 8			Safe /ield Recharge 11 12	Total Supply 13
2016		300	0	0	0	6	0	0	24,853	0	0	24,853
2050		300	300	0	0		0	0	0	0	0	300
				Cor	ntractor's Ag	gricultural V	Vater Dema	ands	Ν	Aaximum Pro	ductiveAcres= ()
Timeframe 1	Crop Water Requirement (acre-feet) 15	District Irrig. Efficiency (%) 16	Effective Precip (acre-feet) 17	Reference Effective Precip (acre-ft) 18	Calculated Net Crop Water Req (acre-feet) 19	USBR Net Crop Water Req (acre-feet) 20	Average f Irrigated Acres (acres) 21	Reference Irrigated Acres (acres) 22	Calculated FDR (AF/acre 23	USBR FDR		Total Ag Demand (acre-feet) 26
2016 2050											-	
					Contractor's	s M&I Wate	er Demands	S				
	Resid	lential Wate	r Demand		Contractor's residential Wate		er Demands	S				
Timeframe 1	Resid Population 28	Per Caj Dema	bita To nd Dema 1) (acre-fi	tal and Industr eet) (acre-fe	residential Wate Comm rial Insti ret) (acre-feel	er Demand 1/ Total t Demand	Loss Unacc /Distr	s Ref Urban Per Capita Dmd (gpcd) 35	Per Capita	Demand	Total Ag+ M&I Dmd) (acre-feet) 38	Demand
1	Population 28 130,231	Per Caj Dema I (gpc) 28 115	nita To nd Dema d) (acre-fi) 3 .3 16,8	Nontal andIndustr net)(acre-fe 0031172,365	residential Wate Comm rial Insti let) (acre-feet l 32 7 4,52	er Demand / Total t Demand t) (acre-feet 33	Loss Unacc /Distr (acre-feet)	Ref Urban Per Capita Dmd (gpcd) 35 257.0	Per Capita Dmd (gpcd) 36 170.4	Demand (acre-feet) 37 24,854	Ag+ M&I Dmd (acre-feet)	Demand (acre-feet 39
Timeframe 1 2016 2050	Population 28	Per Caj Dema I (gpci 29 115 166	ita To nd Dema d) (acre-fit) .3 16,8 .0 38,8	Nontal andIndustr net)(acre-fe 0031172,365	residential Wate Comm rial Insti let) (acre-feet l 32 7 4,52	r Demand I/ Total t Demand t) (acre-feet 33 6 6,893	Loss Unacc /Distr) (acre-feet) 34	Ref Urban Per Capita Dmd (gpcd) 35	Per Capita Dmd (gpcd) 36 170.4	Demand I (acre-feet) 37	Ag+ M&I Dmd) (acre-feet) 38	(acre-feet