Modesto Subbasin Groundwater Summary Data (2010-2024)

Annual Water Report Summary Information

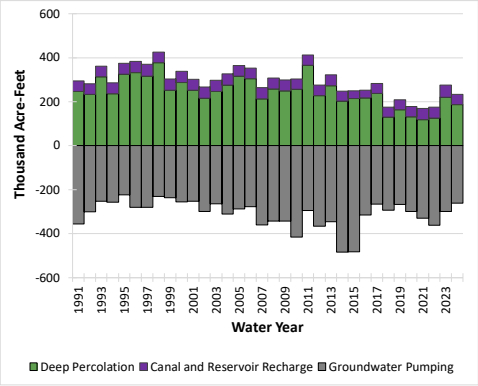
Operational Budget Summary Tables

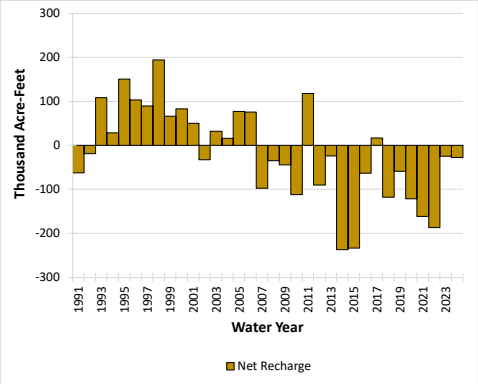
Modesto Subbasin

- Graphs shown during the 2024 Annual Water Analysis presented at STRGBA 03/12/2025 meeting

Key Takeaway

- Net recharge has been consistently negative in recent years
- Groundwater pumping occurs across the basin





Modesto Subbasin					
Water Year	Hydrologic Index	Deep Percolation	Canal and Reservoir Recharge	Groundwater Pumping	Net Recharge
1991	C	246,083	47,979	-356,479	-62,417
1992	C	234,041	47,850	-300,731	-18,839
1993	W	313,145	48,390	-253,192	108,343
1994	C	236,576	48,855	-257,233	28,197
1995	W	325,368	49,132	-223,601	150,900
1996	W	332,520	50,900	-280,085	103,335
1997	W	316,757	52,977	-280,161	89,573
1998	W	377,333	47,368	-230,613	194,087
1999	AN	252,554	50,020	-236,181	66,393
2000	AN	286,368	52,005	-255,375	82,999
2001	D	251,584	50,372	-251,692	50,265
2002	D	215,489	50,758	-299,317	-33,070
2003	BN	246,606	50,251	-264,659	32,199
2004	D	275,502	50,654	-310,382	15,775
2005	W	316,739	48,051	-287,430	77,360
2006	W	304,129	48,077	-276,816	75,391
2007	C	212,622	50,485	-360,492	-97,385
2008	C	257,916	50,097	-343,039	-35,027
2009	BN	249,458	48,940	-343,057	-44,660
2010	AN	256,734	47,127	-415,917	-112,056
2011	W	365,374	46,937	-293,996	118,315
2012	D	227,730	48,337	-366,543	-90,475
2013	C	272,402	49,280	-345,803	-24,121
2014	C	202,695	44,712	-484,377	-236,970
2015	C	213,481	36,289	-482,959	-233,190
2016	D	216,738	35,096	-314,768	-62,935
2017	W	237,735	44,457	-265,406	16,787
2018	BN	130,568	45,115	-293,690	-118,008
2019	W	163,075	45,299	-267,252	-58,878
2020	D	131,121	47,187	-299,568	-121,260
2021	C	119,141	49,760	-329,987	-161,086
2022	C	126,437	48,580	-361,978	-186,960
2023	W	219,685	55,240	-299,383	-24,459
2024	AN	186,705	46,629	-260,846	-27,512
Average		244,700	48,000	-308,600	-15,900

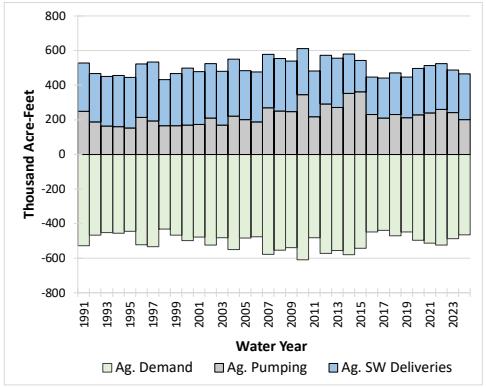
Water Use Budget Summary Tables

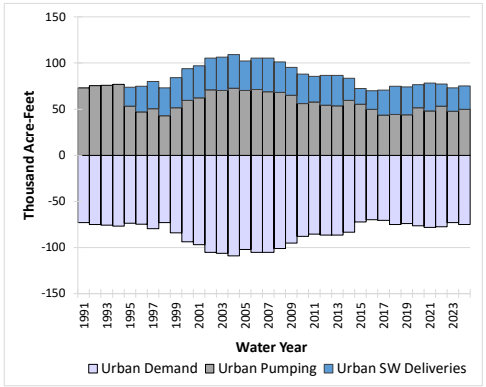
Modesto Subbasin

- Graphs shown during the 2024 Annual Water Analysis presented at STRGBA 03/12/2025 meeting

Clarifications

- "Demand" numbers are the gross amount of pumping. This is the sum of the "Pumping" numbers and "SW Deliveries" numbers (Surface Water Deliveries)
  - The "Pumping" numbers are shown in terms of positive numbers; however, these are figures that should be negative because these are amounts withdrawn from the aquifer.
- Keep in mind that bar graphs have different scales in terms of acre-feet





Modesto Subbasin							
Water Year	Hydrologic Index	Ag. Demand	Ag. Pumping	Ag. SW Deliveries	Urban Demand	Urban Pumping	Urban SW Deliveries
1991	C	-528,886	249,407	279,479	-73,172	73,172	0
1992	C	-468,111	187,668	280,444	-75,377	75,377	0
1993	W	-451,684	162,983	288,701	-75,923	75,923	0
1994	C	-456,912	161,304	295,608	-76,748	76,748	0
1995	W	-445,776	153,360	292,416	-73,687	53,229	20,458
1996	W	-523,035	213,521	309,514	-74,860	47,240	27,620
1997	W	-534,179	192,363	341,816	-79,851	50,488	29,364
1998	W	-431,982	165,356	266,626	-73,198	42,754	30,444
1999	AN	-467,662	165,126	302,536	-84,185	51,366	32,819
2000	AN	-499,681	170,377	329,304	-93,905	59,503	34,402
2001	D	-478,311	172,762	305,549	-97,097	62,241	34,856
2002	D	-525,148	210,255	314,893	-105,375	70,929	34,446
2003	BN	-481,131	169,609	311,521	-106,284	70,059	36,225
2004	D	-550,455	220,767	329,688	-109,221	72,558	36,663
2005	W	-484,924	200,992	283,932	-102,203	70,230	31,973
2006	W	-476,254	188,222	288,032	-105,432	71,312	34,120
2007	C	-578,333	268,463	309,870	-105,421	68,780	36,641
2008	C	-554,942	250,106	304,836	-101,157	68,244	32,913
2009	BN	-540,009	247,123	292,887	-95,302	65,261	30,041
2010	AN	-611,244	346,253	264,991	-87,994	56,037	31,957
2011	W	-481,629	217,044	264,585	-85,434	57,815	27,619
2012	D	-573,549	291,510	282,040	-86,504	54,495	32,009
2013	C	-556,818	271,519	285,300	-86,508	53,591	32,917
2014	C	-581,043	353,343	227,700	-83,644	59,503	24,141
2015	C	-542,689	361,286	181,403	-72,518	55,329	17,189
2016	D	-447,996	229,553	218,444	-69,901	49,920	19,981
2017	W	-440,783	209,864	230,919	-70,581	43,553	27,028
2018	BN	-470,730	229,866	240,865	-74,993	44,233	30,760
2019	W	-447,857	211,540	236,318	-74,166	43,964	30,202
2020	D	-497,113	229,083	268,029	-76,665	51,686	24,979
2021	C	-514,291	240,308	273,983	-78,304	47,933	30,371
2022	C	-525,492	260,820	264,671	-77,457	53,330	24,127
2023	W	-487,019	240,768	246,251	-72,945	47,789	25,156
2024	AN	-465,115	200,947	264,168	-75,142	49,816	25,326
Average		-503,600	224,800	278,700	-84,700	58,700	26,100

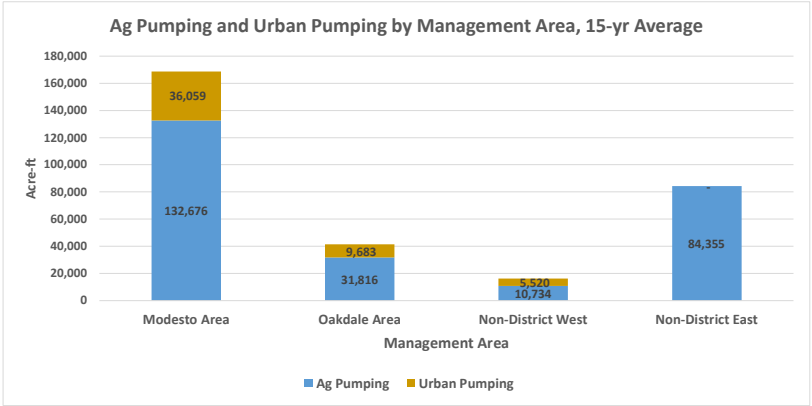
Management Area and Groundwater Pumping (2010-2024)

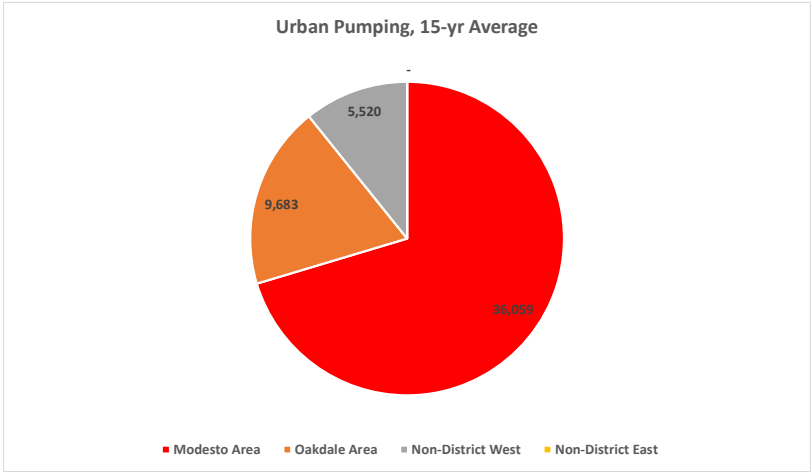
Urban Pumping and Ag Pumping

- Annual Water Summary Data, Summarized by Averages over Time

Key Takeaway

- Pumping remains high within areas that include Irrigation Districts. This includes both Ag and Urban Pumping





Water Use Budgets, Ag and Urban Pumping, 2010 - 2024, 15-yr Average				
Area	Ag Pumping	Urban Pumping	Total Pumping	Percentage of Total
Modesto Subbasin	259,580	51,266	310,846	100.0%
Modesto Area	132,676	36,059	168,734	54.3%
Oakdale Area	31,816	9,683	41,499	13.4%
Non-District West	10,734	5,520	16,253	5.2%
Non-District East	84,355	-	84,355	27.1%

Management Area and Groundwater Pumping (2010-2024)

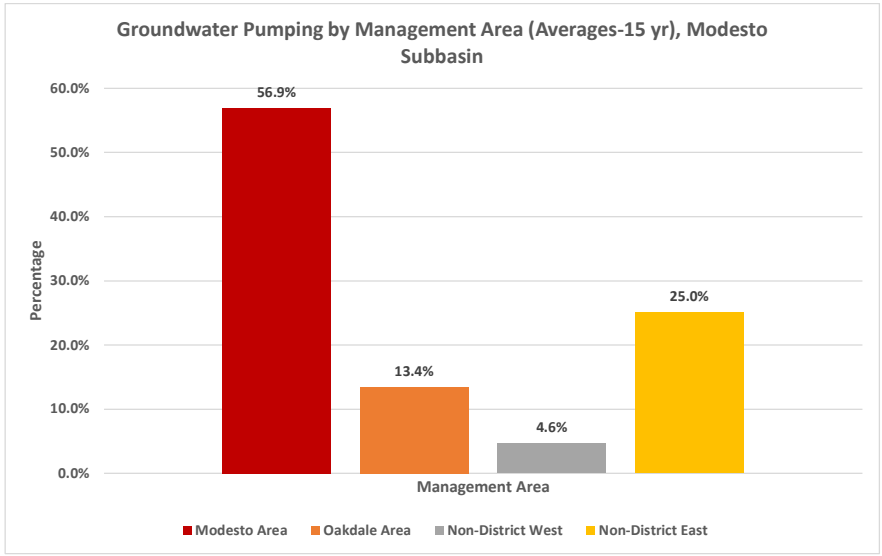
A Comparative Analysis

- Annual Water Summary Data, Summarized by Averages over Time

Key Takeaway

- Over the last 15 years, Modesto Management Area has the highest amount of pumping across all management areas (56.5%). Non-District East has the second highest level of pumping across management areas (25%).

Operational Budgets - Groundwater Pumping, 2010 - 2024					
Length of Time, Average	Modesto Subbasin	Modesto Area	Oakdale Area	Non-District West	Non-District East
Average-15, Numeric	-338,832	-192,747	-45,561	-15,716	-84,808
Average-15, Percentage	100.0%	56.9%	13.4%	4.6%	25.0%



Land Distribution by Management Area and Groundwater Pumping (2010-2024)

A Comparative Analysis

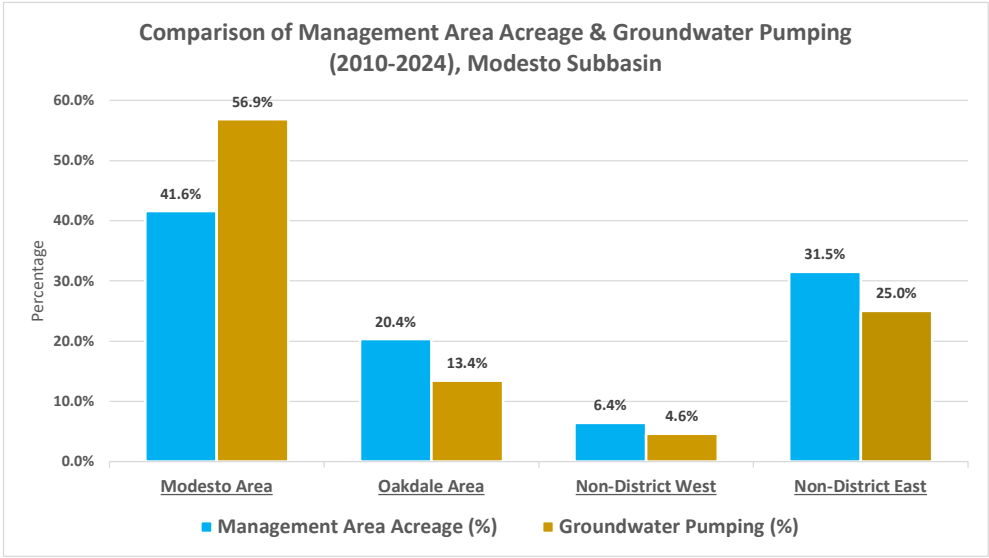
Key Takeaway

- Over the last 15 years, 2010-2024, The Modesto Management Area accounts for the largest share of groundwater pumping at 56.9%, followed by Non-District East at 25%. Non-District East has the second-largest land area (32%) but only accounts for 25% of groundwater pumping, whereas the Modesto Area has the highest water usage (56.9%) but covers 42% of the land. The Modesto Area is the largest consumer of groundwater
- Non-District East has a large land area (32%) but uses significantly less groundwater (25%). Non-District West has both the lowest acreage (6.4%) and the lowest groundwater usage (4.6%)

- Data was provided by Modesto Subbasin GSA -> 2024 annual water summary data

Acreage per Area		
Area	Acreage, Numeric	Acreage, Percentage
Modesto Subbasin	244,802	100.0%
Modesto Area	101,914	41.6%
Oakdale Area	49,893	20.4%
Non-District West	15,777	6.4%
Non-District East	77,218	31.5%

Operational Budgets - Average Groundwater Pumping, 2010 -2024, 15-yr Average		
Area	Acre-ft, Numeric	Acre-ft, Percentage
Modesto Subbasin	-338,832	100.0%
Modesto Area	-192,747	56.9%
Oakdale Area	-45,561	13.4%
Non-District West	-15,716	4.6%
Non-District East	-84,808	25.0%



Summary and Conclusion

- There is significant pumping that occurs throughout the subbasin in each management area. This includes both Urban and Ag pumping. Modesto Management Area Represents 56.9% of the groundwater pumping on average over the last 15 years (2010-2024), per STRGBA's operational budget data.
- Projects need to be included during demand management evaluations
  - City of Modesto Water Treatment Facility, Over Capacity and Under Utilized
  - In-district Pumpers
  - OID 10-Year Program
  - Modesto GRP

Questions?