
From: Kunysz,Kathy
Sent: Friday, July 10, 2015 11:33 AM
To: Ti, Mike N
Subject: FW: MWD IRP UPDATE: ORANGE CO BASIN GROUNDWATER HOMEWORK

From: Kunysz,Kathy
Sent: Tuesday, June 09, 2015 11:45 AM
To: AShaikh@anaheim.net; mrmoore@anaheim.net; David Schickling (davids@ci.fullerton.ca.us); Harvey De La Torre; rhunter@mwdoc.com; Karl Seckel (kseckel@mwdoc.com); khostert@mwdoc.com; nsaba@santa-ana.org; rbell@mwdoc.com; AFernandez@santa-ana.org; jkennedy@ocwd.com; Mike Markus (mmarkus@ocwd.com); jberg@mwdoc.com
Cc: Kunysz,Kathy; Hacker,Matthew D; Sumi,David H; Nevills,Jennifer C
Subject: FW: MWD IRP UPDATE: ORANGE CO BASIN GROUNDWATER HOMEWORK

Dear Member Agency and Groundwater Managers and Staff,

Attached are the excel spreadsheets for your agency and groundwater basin showing draft projections for groundwater production and projections of sources and amounts of groundwater recharge in normal and multiple-dry-year situations. This information is being used in Metropolitan's 2015 update of its Integrated Resources Plan. Also attached is a slide from the IRP Member Agency Workshop #1 for Groundwater held on May 27. The slide shows a draft projection of the total regional deficit of groundwater recharge under the multiple-dry-year scenario. As part of this IRP Update, it is our objective to finalize this deficit amount with your input, and to identify strategies and policies to address it. Metropolitan is seeking to ensure that groundwater production is sustainable—groundwater is a significant element of regional water supply reliability.

Where there are multiple member agencies overlying a groundwater basin, we have sent the spreadsheets to all overlying member agencies and to the groundwater basin manager. The intent is for a coordinated review. Please review your spreadsheet(s) carefully and **provide corrections to the production and recharge projections in RED.** Please also list the assumption/rationale for the correction in RED. When reviewing the groundwater production projections, please note that Metropolitan has assigned groundwater production within a Metropolitan member agency's service area to that member agency. Also, the data is shown by calendar year.

Please return the modified spreadsheets to David Sumi with copy to Kathy Kunysz and Matt Hacker by Monday, June 22. If you have questions, please call Kathy Kunysz (213-217-6272) or Matt Hacker (213-217-6756). We will report the adjusted projections at an IRP workshop later this summer.

Thank you,
Kathy Kunysz
Program Manager, Groundwater Issues
Metropolitan Water District of Southern California



Anaheim.xlsx

q/w workshop rechr
deficit slide...

MWDCC.xlsx

Orange County
Basin.xlsx

Holliston.xlsx

SanitaAna.xlsx

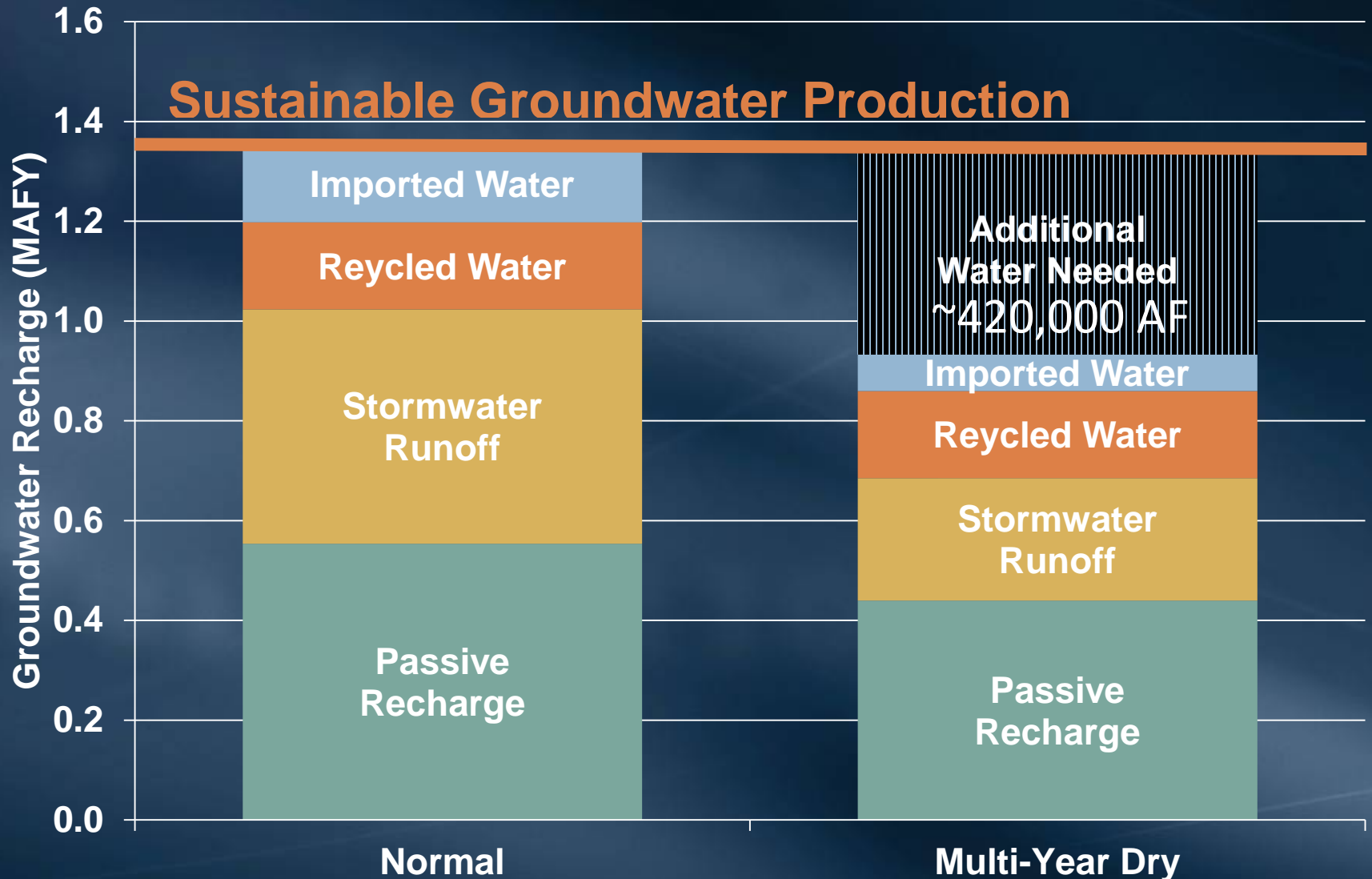
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City of Anaheim

Groundwater					Average																																								
Agency	Type	IMP/EXP	Basin/Reservoir	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Anaheim	GWR	OWN	Orange County Basin	50,448	42,654	34,140	44,983	47,876	44,020	49,011	49,273	49,222	49,375	49,533	49,705	50,142	50,585	51,030	51,476	51,922	52,114	52,308	52,502	52,695	52,888	52,984	53,079	53,176	53,272	53,369	53,641	53,911	54,182	54,452	54,723	54,789	54,854	54,920	54,986	55,051	55,113	55,174	55,235	55,296	55,358
Anaheim	GWR	OWN	Orange County Basin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Groundwater				50,448	42,654	34,140	44,983	47,876	44,020	49,011	49,273	49,222	49,375	49,533	49,705	50,142	50,585	51,030	51,476	51,922	52,114	52,308	52,502	52,695	52,888	52,984	53,079	53,176	53,272	53,369	53,641	53,911	54,182	54,452	54,723	54,789	54,854	54,920	54,986	55,051	55,113	55,174	55,235	55,296	55,358

Recharge
 Recharge for Anaheim is included in MWDOC projection.

How to Address Multiple-Year Dry Cycle



Municipal Water District of Orange County

Groundwater

Agency	Type	IMP/EXP	Basin/Resource	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050				
MWDOC	GW	IMP	San Gabriel Basin	12,028	11,808	12,278	12,779	13,763	12,529	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500			
MWDOC	GW	OWN	Aliso Creek Basin	97	-	-	57	436	118	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
MWDOC	GW	OWN	Harding Canyon	110	130	140	17	7	81	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
MWDOC	GW	OWN	La Habra Basin	2,325	2,156	1,935	2,350	3,987	2,551	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	
MWDOC	GW	OWN	Orange County Basin	190,709	158,249	142,810	172,937	188,061	170,553	204,109	205,540	206,971	208,401	209,832	211,263	211,571	211,879	212,187	212,496	212,804	212,817	212,831	212,844	212,857	212,871	212,885	212,899	210,309	209,669	210,125	210,582	211,039	211,496	211,952	211,980	212,008	212,036	212,064	212,092	212,117	212,142	212,166	212,191	212,216	212,241	212,266	212,291		
MWDOC	GW	OWN	San Juan Basin	354	69	76	51	44	119	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
MWDOC	GW	OWN	San Mateo Basin	490	636	622	49	-	359	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	
MWDOC	GW	OWN	Upper San Juan Basin	264	318	642	359	44	293	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	
MWDOC	GWR	OWN	Orange County Basin	15,959	18,254	19,100	11,588	11,686	15,338	21,956	21,748	21,470	21,149	20,800	20,418	20,040	19,668	19,296	18,924	18,552	18,180	17,808	17,436	17,064	16,692	16,320	15,948	15,576	15,204	14,832	14,458	14,084	13,710	13,336	12,962	12,588	12,214	11,840	11,466	11,092	10,718	10,344	9,970	9,596	9,222	8,848	8,474	8,100	7,726
MWDOC	GWR	OWN	San Juan Basin	1,676	2,691	2,462	3,774	4,121	2,945	4,877	5,179	5,482	5,785	6,087	6,390	6,692	6,995	7,298	7,601	7,904	8,207	8,510	8,813	9,116	9,419	9,722	10,025	10,328	10,631	10,934	11,237	11,540	11,843	12,146	12,449	12,752	13,055	13,358	13,661	13,964	14,267	14,570	14,873	15,176	15,479	15,782	16,085		
MWDOC	GWR	OWN	Arlington	5,709	175	-	-	-	1,177	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Total GW				16,051	16,100	228,209	221,640	223,071	226,501	225,912	227,363	227,671	227,979	228,287	228,596	228,904	229,212	229,520	229,828	229,841	229,854	229,867	229,880	229,893	229,906	229,919	228,330	227,690	227,050	226,410	225,770	225,130	224,490	223,850	223,210	222,570	221,930	221,290	220,650	220,010	219,370	218,730	218,090	217,450	216,810	216,170	215,530		
Total Groundwater				16,100	247,042	249,567	252,023	254,435	256,819	259,181	260,403	261,612	262,819	263,561	264,495	265,127	265,753	266,322	266,759	267,187	267,595	267,986	268,322	268,604	268,830	269,006	268,130	267,187	266,175	265,104	264,000	262,872	261,728	260,568	259,392	258,200	256,992	255,768	254,528	253,272	252,000	250,712	249,408	248,088	246,744	245,376	243,984		

Surface Water

MWDOC	SUR	OWN	Irvine Lake (Santiago Res)	3,244	2,969	5,156	8,741	7,542	5,930	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500
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Projection based on BPP model for Orange County Basin

Recharge

Normal Year	IMP/ORT	OWN	Orange County Basin	65,000 AFY + barrier for period of 10 years.	40,000 AFY + barrier thereafter.	68,750	72,000	74,250	69,750	68,250	68,250	67,500	67,500	67,500	66,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750	41,750		
MWDOC	STORM	OWN	Orange County Basin	Average 1986-2005 (only active recharge)		185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	185,278	
MWDOC	REC	OWN	Orange County Basin	Replenishment + Seawater barrier		70,000	73,625	87,125	96,125	99,125	99,125	100,625	100,625	100,625	100,625	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125

Multiple Dry Year (actual 2012-2014)

MWDOC	IMP/ORT	OWN	Orange County Basin	Average 2012-2014		33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430	33,430		
MWDOC	STORM	OWN	Orange County Basin	Average 2012-2014 (only active recharge)		109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661	109,661
MWDOC	REC	OWN	Orange County Basin	Replenishment + Seawater barrier		70,000	73,625	87,125	96,125	99,125	99,125	100,625	100,625	100,625	100,625	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125	102,125

City of Fullerton

				Average																																									
Agency	Type	IMP/EXP	Basin/Resr	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Fullerton	GW	OWN	Orange Co	18,302	16,814	16,274	18,209	20,418	18,003	20,556	20,667	20,777	20,888	20,998	21,110	21,294	21,479	21,664	21,850	22,035	22,468	22,901	23,334	23,768	24,200	24,142	24,085	24,026	23,968	23,911	23,870	23,829	23,788	23,747	23,706	23,716	23,727	23,738	23,748	23,758	23,766	23,774	23,782	23,790	23,798

Projection based on BPP model for Orange County Basin (75% BPP)

Recharge

Recharge for Fullerton is included in MWDOC projection.

City of Santa Ana

Groundwater				2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	
Agency	Type	IMP/EXP	Basin/Res	30,733	30,733	26,415	24,826	21,352	26,804	27,917	28,031	28,145	28,259	28,373	28,487	28,436	28,385	28,334	28,283	28,232	28,181	28,071	27,990	27,909	27,828	27,655	27,482	27,308	27,135	26,962	27,004	27,047	27,090	27,133	27,176	27,136	27,095	27,056	27,016	26,976	26,928	26,880	26,833	26,785	26,737	
Santa Ana	GW	OWN	Orange Co																																											

Projection based on BPP model for Orange County Basin

Recharge

Recharge data for Santa Ana included in MWDOC.