
From: Kunysz,Kathy
Sent: Tuesday, July 14, 2015 4:24 PM
To: Ti, Mike N
Cc: Hacker, Matthew D
Subject: FW: MWD IRP UPDATE: ORANGE CO BASIN GROUNDWATER HOMEWORK
Attachments: MWDOC GW Production.xlsx

Mike,
Discussion/assumptions regarding the attached spreadsheet for MWDOC and Orange Co Basin.
Kathy Kunysz

1. We received feedback from MWDOC only. We did not get any response from Anaheim, Santa Ana or Fullerton. As a result, there is no change to the 3 cities information.
2. I spoke with both Kevin Hostert at MWDOC and John Kennedy at OCWD regarding the attached sheet with changes for MWDOC.
3. Spreadsheet line 5: San Gabriel Basin. The change is due to an adjusted average and results in about 300afy more imported gw from Main San Gabriel Basin. OUTCOME: Make no change to Met's original projection.
4. Spreadsheet line 8: La Habra Basin. No clear justification was provided for the change in annual gw production. OUTCOME: Make no change to Met's original projection.
5. Spreadsheet line 9: Orange Co Basin. Projection provided by John Kennedy. Per discussion with John, the projection values were estimated by taking the projected groundwater production from the basin, subtracting off estimated production for Santa Ana, Anaheim and Fullerton. Balance assigned to MWDOC. OCWD board policy is to move to a consistent 75 percent BPP in future years. In near term years, OCWD expects a 70 percent BPP until basin is recovered from the drought. John indicated that the difference between Met's original projection values and the values the attached revised spreadsheet are within the 'noise'. Based on discussion with Mike Ti regarding Met's process of dividing up the total retail demand for MWDOC (in and outside the basin) and the 3 cities, it makes most sense to: OUTCOME maintain Met's projection methodology for Orange Co. Reflect John Kennedy's lower MWDOC OC basin production in near term years by using a 70 percent BPP in CY2015 –CY 2018. Use 75 percent BPP beginning in CY 2019 through 2050.
6. Spreadsheet line 13: GWR in OC Basin. Kevin Hostert indicated that MWDOC's subagencies participating in gw recovery indicated that the AFY would not grow. OUTCOME: Use Kevin's projection of 22,000 AFY through 2050.
7. Spreadsheet line 21: Surface water—Irvine Lake/Santiago Reservoir. Kevin indicated that Met's initial projection included only water used for M&I. He has revised the data and the projections to also include water used for agriculture. OUTCOME: Use Kevin's projection of 7835 AFY through 2050.
8. Spreadsheet line 28: Imported recharge. OCWD signed a contract with MWDOC to take 650,000 AF over the next 10 years 2016-2025. MWDOC/OCWD have extended the 65,000 AFY average imported recharge water through 2050. OUTCOME: Change the Met projection to 65,000AFY for 2025-2050.
9. Spreadsheet lines 34 and 35. Line 34 Dry-Year Stormwater Recharge. Per Kevin Hostert, leave Met projection as is. Changes shown on sheet line 34 should be entered on line 35 for recycled replenishment and seawater barrier. The MWDOC/OCWD changes show recycled recharge jumping to 130,000AFY in 2022—this is a POTENTIAL expansion of GWRS that is proposed, but not existing or under construction. OUTCOME: No change to Met's projections on Lines 34 and 35.

From: Kevin Hostert [mailto:KHostert@mwdoc.com]
Sent: Thursday, June 18, 2015 3:54 PM
To: Sumi, David H

Cc: Kunysz,Kathy; Hacker,Matthew D; Keith Lyon; Harvey De La Torre
Subject: RE: MWD IRP UPDATE: ORANGE CO BASIN GROUNDWATER HOMEWORK

All,

Please see the attached file regarding groundwater projections for the MWDOC service area. Please let me know if you have any questions.

Kevin Hostert
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From: Kunysz,Kathy [<mailto:kkunysz@mwdh2o.com>]
Sent: Tuesday, June 09, 2015 11:45 AM
To: AShaikh@anaheim.net; mrmooore@anaheim.net; David Schickling (davids@ci.fullerton.ca.us); Harvey De La Torre; Robert Hunter; Karl Seckel; Kevin Hostert; nsaba@santa-ana.org; Richard Bell; AFernandez@santa-ana.org; jkennedy@ocwd.com; Mike Markus (mmarkus@ocwd.com); Joe Berg
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

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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	14,162	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801	12,801				
MWDOC	GW	OWN	Aliso Creek Basin	97	-	57	436	118	299	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	0	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	2,136	1,935	2,350	3,987	2,551	4,061	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	
MWDOC	GW	OWN	Orange County Basin	200,104	157,724	143,162	172,615	188,371	172,395	196,767	204,198	198,100	200,900	203,700	206,500	212,100	214,900	217,700	220,500	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	223,300	
MWDOC	GW	OWN	San Juan Basin	133	69	76	51	44	75	7	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	4	160	192	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	399	44	293	0	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	11,458	15,577	12,450	11,844	23,756	15,813	23,799	21,956	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	22,000	
MWDOC	GWR	OWN	San Juan Basin	2,907	2,521	3,774	4,121	4,534	3,571	4,093	4,877	5,179	5,482	5,785	6,087	6,390	6,692	6,995	7,306	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320	7,320		
MWDOC	GWR	OWN	Arlington	5,709	175	-	-	-	1,177	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Total GW				16,051	16,100	220,209	221,640	223,071	226,501	225,912	227,363	227,671	227,979	228,287	228,596	228,904	229,212	229,521	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830	229,830		
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	266,956	266,723	266,487	266,248	265,839	266,524	267,204	267,845	268,486	269,126	269,338	269,550	269,762	269,974	270,186	270,395	270,604	270,812	271,021	271,229									

Changes
Same

Surface Water

MWDOC	SUR	OWN	Irvine Lake (Santiago Res)	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	SUR	OWN	Irvine Lake (Santiago Res)	10,276	7,661	5,295	8,759	7,186	7,835	11,740	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835	7,835

Projection based on BPP model for Orange County Basin

Recharge

MWDOC	IMPORT	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	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	
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	
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	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	IMPORT	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		
MWDOC	STORM	OWN	Orange County Basin	Average 2012-2014 (only active recharge)	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	109,612	
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