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Managing Tomorrow's Resources Today

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Mr. Mauricio Guardado
General Manager
United Water Conservation District
1701 Lombard
Oxnard, CA 93035

Subject: **FY 2021-22 Cost-of-Service Analysis Final Report**

Dear Mr. Guardado:

HF&H Consultants, LLC prepared a cost-of-service analysis for FY 2020-21 groundwater extraction (or deliveries in-lieu of pumping) charges for United Water Conservation District's Zone A (which covers the District's entire service area) and the additional charges for those customers in Zone B (coastal plain), which includes costs related to the District's Freeman Diversion facilities. The cost-of-service analysis estimates the differential between the unit costs of serving municipal and industrial (M&I) and agricultural (Ag) pumpers. The purpose of this report is to document our findings. Our report describes the background and overall methodology before presenting a step-by-step description of the cost-of-service analysis.

I. BACKGROUND AND METHODOLOGY

With the District's assistance, HF&H has conducted annual cost-of-service analyses beginning with FY 2011-12 to estimate the differential, in per acre foot costs, to provide services to Ag and M&I pumpers. In conducting the cost-of-service analyses for each of the years beginning with FY 2011-12, we developed a methodology that conforms to the rate-making standards and industry practices as promulgated in the American Water Works Association's *Principles and Practices of Water Rates, Fees, and Charges* (also known as the M1 Manual or Manual M1). The M1 Manual's "Overview of the Key Technical Analyses Associated With Cost-Based Rate Making" provides the following guidance:

> In establishing cost-based water rates, it is important to understand that a cost-of-service methodology does not prescribe a single approach. Rather, as the first edition of AWWA's Manual M1 noted, "the [M1 manual] is aimed at outlining the basic elements involved in water rates and suggesting alternative rules of procedure for formulating rates, thus permitting the exercise of judgment and

> preference to meet local conditions and requirements" (AWWA 1954).[1] This manual, like those before it, provides the reader with an understanding of the options that make up the generally accepted methodologies and principles used to establish cost-based rates. From the application of these options within the principles and methodologies, a utility may create cost-based rates that reflect the distinct and unique characteristics of that utility and the values of the community.[2]

From its earliest days, the AWWA has recognized the need to exercise judgment in deriving reasonable rates. Reasonable rates are not arbitrary, capricious, nor discriminatory. Arbitrary rates reflect choices in classifying and allocating costs for which there is no rationale. Capricious rates contain data and assumptions for which there is no factual basis. Discriminatory rates are disproportionate to the cost of providing service, favoring one class of customers to the detriment of another class. The analyst must exercise judgment to ensure that rates are not arbitrary, capricious, nor discriminatory.

The legal standard followed in this report complies with Proposition 26's requirements:

> The local government bears the burden of proving by a preponderance of the evidence that a levy, charge, or other exaction is not a tax, that the amount is no more than necessary to cover the reasonable costs of the governmental activity, and that the manner in which those costs are allocated to a payor bear a fair or reasonable relationship to the payor's burdens on, or benefits received from, the governmental activity.[3]

Our analysis is reasonable because it excludes costs that are not related to providing service to Ag and M&I pumpers. Our allocations of these costs are also reasonable because they are based on the best available data concerning the pumping burdens placed on the system and the benefits received by the pumpers who pay the District's groundwater extraction charges.

A review of the literature finds that there is no reference to agricultural rates in the classic rate-making texts.[4] There is no practice (e.g., formula, quantitative framework) that is considered the industry-standard economic analysis or the rate-making practice.

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[1] AWWA M1 Manual, *Water Rates Manual,* First Edition, 1954, p. 1.

[2] AWWA M1 Manual of Water Supply Practices, *Principles of Water Rates, Fees, and Charges,* Seventh Edition, 2017, page 5. The M1 Manual is a useful reference for retail and wholesale water suppliers, although as a water conservation district, United differs from a conventional water utility.

[3] California Constitution art. 13C, § 1.

[4] In this group we include the M1 Manual; *Principles of Public Utility Rates*, James C. Bonbright; *The Process of Rate Making,* Leonard S. Goodman; *The Regulation of Public Utilities*, Charles F. Phillips, Jr.; and *The Economics of Regulation,* Alfred E. Kahn. *Water and Wastewater Finance and Pricing,* by George A. Raftelis makes no reference to agricultural rates.

The closest to a practice for setting agricultural rates that could be considered an industry practice is the M1 Manual's principles to apply judgment appropriate to the District in conducting a cost-of-service analysis that establishes a reasonable rate differential.

This report describes our cost-of-service analysis, which is consistent with the steps prescribed by the AWWA. The methodology first requires the classification of costs by service or function provided. The units of service provided to customers, which are associated with each function, are then determined. Each class is then allocated its share of the services based on the number of units of service that it requires of each service. The total cost allocated to each class is used to determine the differential in the cost of service. Note that the cost-of-service analysis did not calculate separate Zone A and Zone B rates, which is how the District charges its pumpers. Instead, the analysis was applied to Zones A and B to determine the differential between the Ag and M&I cost of service, regardless of where they pump.

II. CLASSIFICATION OF COSTS

The process of classifying costs begins with the District's total budgeted operating and capital expenses for FY 2021-22. Certain expenses were deducted that are not related to the District's customers pumping groundwater (or receiving deliveries in-lieu of pumping), namely, the State Water Fund, other pipelines, and recreation-related costs, as shown in **Figure 1**. These items were excluded from the cost allocations which are used to evaluate the ratio between Ag and M&I. Additionally, an adjustment was made to remove the cost of debt-funded capital projects from the total District-wide budget figure of $40,459,290, and, instead, the associated debt service for these for these projects has been included. This adjustment is necessary to reflect the actual cash expenditures during FY 2021-22 for which rates will be set to cover. The remaining budget was classified among the three services required by Ag and M&I pumpers.

Figure 1. FY 2020-21 and FY 2021-22 Budget Variance Analysis

	FY 2020-21	FY 2021-22	Variance	
Total District-wide Budget	**$40,459,290**	**$44,629,024**	**$4,169,734**	**10.3%**
Less:				
State Water Fund Expenses	($1,875,635)	($2,118,838)	($243,203)	13.0%
O/H Pipeline Fund Expenses	($9,818,785)	($10,485,188)	($666,403)	6.8%
PV Pipeline Fund Expenses	($264,114)	($328,044)	($63,930)	24.2%
PT Pipeline Fund Expenses	($3,484,407)	($3,772,612)	($288,205)	8.3%
Recreation-related Costs	($1,875,097)	($2,606,178)	($731,081)	39.0%
Subtotal Non-Zone A/B Expenses	($17,318,038)	($19,310,859)	($1,992,821)	11.5%
Zone A/B Budgeted Expenses	**$23,141,252**	**$25,318,164**	**$2,176,913**	**9.4%**
Adjustments:				
Zone A/B Debt-funded Capital	($3,570,394)	($2,625,212)	$945,182	-26.5%
Adjusted Zone A/B Expenses	**$19,570,858**	**$22,692,953**	**$3,122,095**	**16.0%**

IIA. Cost Categories

The District performs three functions for Ag and M&I pumpers: replenishment, reliability, and regulatory compliance, which are summarized in **Figure 2**.

Figure 2. Functions and Costs Associated with Cost Categories

	Cost Categories		
	Replenishment	**Reliability**	**Regulatory Compliance**
Services	Zone A/B management and administration	Facilities constructed to improve groundwater reliability (Santa Felicia Dam and Freeman Diversion)	Regulatory compliance for facilities that improve groundwater reliability
Costs - O&M	Administration, management, and overhead	Operating personnel for storage and diversion facilities	Studies for ESA compliance, Dam Safety
- Capital	Equipment used for management and administration	Storage and diversion facilities	Facilities that are needed to comply with regulation of reliability facilities

Replenishment Cost Category. Replenishment costs are the costs associated with the District's core function, which is to manage and administer groundwater replenishment activities in the District. Most of this cost is personnel costs associated with managers, administrators, and planners who oversee the District's replenishment programs. A portion of overhead is allocated to the replenishment cost category based on its pro rata share of personnel costs.

Reliability Cost Category. Reliability costs are the costs associated with the District's storage and diversion facilities (i.e., Santa Felicia Dam and Freeman Diversion). The personnel and program costs of operations and maintenance staff associated with the District's storage and diversion facilities are included in the reliability cost category. The capital costs of these facilities (i.e., pay-as-you-go capital projects, debt service, and transfers to capital reserves) are also included in this category.

These facilities were constructed following the formation of the District to improve the reliability of groundwater supply for anticipated growth. The construction of these facilities in the 1950s increased the basin safe yield from 108,000 acre-feet per year (AFY) to 140,000 AFY, which was the pumpage at that time. Increasing the basin safe yield would enable the District to meet the higher reliability needs of M&I water users. Absent these facilities, M&I reliability would be subject to the same interruptions that agriculture is exposed to and which agriculture is in a far better position to tolerate through land fallowing.

Regulatory Compliance Cost Category. Regulatory compliance costs are a consequence of constructing facilities that were required to improve reliability for growth in the basin. The costs are related to complying with regulations such as the Endangered Species Act (ESA) and Dam Safety requirements. These costs have occurred since the construction of the facilities and are a condition of the continued operation of the facilities. Regulatory compliance costs do not provide additional safe yield.

IIB. Cost Classification

Figure 3 summarizes the costs related to providing service to Zones A and B. The costs are shown for each of the three cost categories. The categorization is conducted by the District with HF&H's assistance. Costs for the FY 2021-22 budget are compared with the FY 2020-21 budget. Overall, there is a $3,122,095 increase in budgeted Zone A/B expenditures. The significant variances are noted below. The most significant variance is the transfer to reserves for capital projects. Historically, the District primarily funded capital projects using rate revenue and reserves. For FY 2021-22, the District anticipates issuing debt to fund a majority of the capital projects, which results in a significant reduction in the transfers to capital reserves as the costs of capital projects will be paid through debt service spread over a 30-year period.

Replenishment Cost Category. Historically, of the three cost categories, replenishment cost is usually the smallest category; however, the District is budgeting an increased focus on replenishment projects in FY 2021-22, which is resulting in an increase in project, personnel, and administrative overhead costs. The classification of replenishment costs for FY 2021-22 is consistent with prior years. In other words, there were no existing costs that the District determined should be reclassified nor were there new costs for which there was no classification precedent. Overall, there is a $1,652,009 increase in costs in this category.

Reliability Cost Category. The classification of existing reliability costs for FY 2021-22 is consistent with prior years; no existing operations and maintenance costs were reclassified. Overall, there is a $53,001 increase in costs in this category.

Regulatory Compliance Cost Category. Regulatory compliance costs constitute the largest cost category and amount to nearly half the Zone A/B costs. The classification of regulatory compliance costs for FY 2021-22 is consistent with prior years. Costs are increasing by $1,417,085.

Figure 3. FY 2020-21 Zone A/B Budget Variance

Zone A/B Budget	FY 2020-21	FY 2021-22	Variance	
Replenishment Costs				
Personnel Costs	$2,039,974	$2,612,213	$572,238	28.1%
Program Costs	$2,188,221	$3,055,851	$867,630	39.7%
Overhead Allocation	$1,408,255	$1,638,668	$230,412	16.4%
Capital Equipment Costs	$77,024	$94,114	$17,090	22.2%
Debt Service	$33,098	$5,680	($27,418)	-82.8%
Transfer to Capital Reserves	$165,905	$157,960	($7,945)	-4.8%
Subtotal - Replenishment	**$5,912,477**	**$7,564,486**	$1,652,009	27.9%
Reliability Costs				
Personnel Costs	$1,175,321	$1,242,957	$67,637	5.8%
Program Costs	$731,231	$925,273	$194,042	26.5%
Overhead Allocation	$811,359	$779,720	($31,639)	-3.9%
Capital Equipment Costs	$25,739	$28,497	$2,758	10.7%
Debt Service	$1,656,959	$1,685,437	$28,478	1.7%
Transfer to Capital Reserves	$1,345,958	$1,137,684	($208,274)	-15.5%
Subtotal - Reliability	**$5,746,567**	**$5,799,568**	$53,001	0.9%
Regulatory Compliance Costs				
Personnel Costs	$1,763,821	$2,048,694	$284,873	16.2%
Program Costs	$3,700,020	$3,549,892	($150,129)	-4.1%
Overhead Allocation	$1,217,619	$1,285,167	$67,548	5.5%
Capital Equipment Costs	$130,238	$109,329	($20,908)	-16.1%
Debt Service	$122,149	$348,237	$226,088	185.1%
Transfer to Capital Reserves	$977,968	$1,987,581	$1,009,612	103.2%
Subtotal - Regulatory Compliance	**$7,911,814**	**$9,328,899**	$1,417,085	17.9%
Total	**$19,570,858**	**$22,692,953**	$3,122,095	16.0%

Figures 4a and **4b** list the budgeted pay-as-you-go (PAYGo) and debt-funded[5] capital improvement projects for Zones A and B, which were classified by District staff classified as Replenishment, Reliability and Regulatory Compliance costs. In some cases, the projects are classified into a single category corresponding their function. Some projects are related to more than one cost category. The basis for the allocations across categories was established by District staff when the projects were originally budgeted.

Figure 4a. Zone A/B FY 2021-22 Budgeted Capital Expenses (PAYGo)

Zone A/Zone B Capital Projects			Replenishment	Reliability	Regulatory Compliance	Total
8001	421	Freeman Diversion Rehab		$0	$0	$0
8002	051	SFD Outlet Works Rehab		$0	$0	$0
8003	051	SFD PMF Containment			$500,000	$500,000
8005	051	SFD Sediment Management		$96,371		$96,371
8006	052	Lower River Quagga Mussle Management Project			$2,154	$2,154
8018	051	Ferro-Rose Recharge		$256,354		$256,354
8019	051	Brackish Water Treatment Plant			$584,511	$584,511
8032	051	Grand Canal		$314		$314
8041	052	Asset Management/CMMS System	$92,284			$92,284
8042	421	Recycled Water Groundwater Replenishment and Reuse Progr.	$0			$0
8050	051	Security gate upgrade		$58,049		$58,049
8051	Multiple	SCADA server replacement			$222,648	$222,648
8052	Multiple	SCADA continues threat detection system.			$41,000	$41,000
8053	Multiple	Main Supp. Pipeline Sodium Hypochlorite Injection Fac.			$14,240	$14,240
		Total	$92,284	$411,087	$1,364,553	$1,867,925

Figure 4b. Zone A/B FY 2021-22 Budgeted Capital Expenses (Debt-Funded)

Zone A/Zone B Capital Projects			Replenishment	Reliability	Regulatory Compliance	Total
8001	421	Freeman Diversion Rehab		$80,515	$590,445	$670,960
8002	051	SFD Outlet Works Rehab		$112,766	$1,390,782	$1,503,548
8003	051	SFD PMF Containment			$394,207	$394,207
8018	051	Ferro-Rose Recharge		$0		$0
8019	051	Brackish Water Treatment Plant	$0			$0
8051	Multiple	SCADA Hardware Update	$38,747	$19,021		$57,769
		Total	$38,747	$212,303	$2,375,434	$2,626,484
		% of Total	*1.5%*	*8.1%*	*90.4%*	*100.0%*

III. COST ALLOCATION FACTORS

Costs could be allocated simply by dividing the total cost by the total Ag and M&I pumpage without regard to the nature of the costs and the impact of the pumping. However, as previously noted, the District's costs vary according to the associated service. For that reason, allocation factors are tailored to each service to determine the pumpers' proportionate shares of each service. The basis for allocating costs to the Ag

[5] As previously noted, our analysis includes the debt service for the debt-funded projects and not the construction costs shown in **Figure 4b.**

and M&I classes for each cost category is summarized in **Figure 5**.

Each of the cost allocation factors relies on average historic pumpage (both direct pumpage as well as in-lieu pumpage for pipeline deliveries). To help reduce fluctuations from year to year, we have used the running average pumpage for an eleven-year period. This long-term average adds stability to the calculation, which is commensurate with the District's programs that are not necessarily incurred in individual years but, rather, may span many years. An eleven-year period was used because it was the most number of years that were available for the first year we analyzed; a forward-rolling average has been used in subsequent years.

Regulatory Compliance Allocation Factors. Regulatory compliance costs are associated with the facilities that were constructed to provide basin safe yield equal to the pumping at the time the District was formed in the 1950s. They consist of programmatic and capital improvements required to comply with regulations. By complying, the District is able to continue to operate the facilities. The costs of compliance do not provide additional safe yield and, indeed, do not ensure that the current safe yield can be maintained.

Since the construction of the Santa Felicia Dam and Freeman Diversion, regulatory compliance costs have become the largest of the three cost categories. Allocating these post-construction costs has been aligned with growth since the 1950s.

Figure 5. Allocation Basis for Determining Units of Service

	Cost Categories		
	Replenishment	**Reliability**	**Regulatory Compliance**
Ag	Total Ag pumpage minus return flow and natural recharge	Ag is interruptible. Pumpage is reduced so that sum of Ag and M&I does not exceed basin safe yield	Only pumpage in excess of 140,000 AF basin safe yield
M&I	Total M&I pumpage minus return flow and natural recharge	All pumpage	All pumpage
Pumpage Period	Most recent eleven years of historic pumpage	Same as Replenishment period	Same as Replenishment period

Figure 6 summarizes the historic Ag and M&I pumpage for Zones A and B and for the pipeline service areas.

Figure 6. Historic Ag and M&I Pumpage

M&I Pumping (AF)						
Fiscal Year	**Zone A**	**Zone B**	**PVP***	**PTP***	**OHP**	**Total**
2010	11,192	16,504	-	-	15,524	43,220
2011	10,600	18,384	-	-	10,982	39,966
2012	11,285	15,301	-	-	11,424	38,011
2013	12,550	16,230	-	-	11,329	40,108
2014	13,133	17,316	-	-	10,967	41,416
2015	11,905	14,714	-	-	10,130	36,749
2016	11,796	13,101	-	-	9,255	34,152
2017	11,784	13,575	-	-	9,079	34,438
2018	11,990	13,254	-	-	9,876	35,120
2019	13,193	13,813	-	-	8,950	35,956
2020	12,585	13,728	-	-	10,793	37,106
Subtotal M&I	132,014	165,921	-	-	118,309	416,244
Average*	*12,001*	*15,084*	*-*	*-*	*10,755*	***37,840***
Ag Pumping (AF)						
Fiscal Year	**Zone A**	**Zone B**	**PVP***	**PTP***	**OHP**	**Total**
2010	75,446	50,809	13,077	9,174	1,282	149,788
2011	71,122	48,461	10,482	7,847	1,109	139,022
2012	73,719	51,054	12,858	8,762	1,182	147,574
2013	78,053	63,554	7,088	8,447	1,244	158,386
2014	84,971	74,214	339	8,400	1,327	169,251
2015	76,531	62,974	5	5,140	836	145,485
2016	77,988	70,428	-	5,032	1,295	154,743
2017	71,824	56,557	-	5,357	1,340	135,078
2018	80,160	65,728	-	6,148	1,526	153,562
2019	57,991	52,315	87	4,655	1,243	116,291
2020	67,909	59,173	1,031	5,403	1,057	134,573
Subtotal Ag	815,714	655,266	44,967	74,366	13,441	1,603,753
Average*	*74,156*	*59,570*	*4,088*	*6,761*	*1,222*	***145,796***
Total Pumping (AF)						
Fiscal Year	**Zone A**	**Zone B**	**PVP***	**PTP***	**OHP**	**Total**
2010	86,638	67,313	13,077	9,174	16,806	193,008
2011	81,722	66,846	10,482	7,847	12,091	178,988
2012	85,004	66,355	12,858	8,762	12,606	185,585
2013	90,603	79,784	7,088	8,447	12,573	198,495
2014	98,104	91,530	339	8,400	12,294	210,667
2015	88,436	77,688	5	5,140	10,966	182,234
2016	89,784	83,529	-	5,032	10,550	188,895
2017	83,608	70,132	-	5,357	10,419	169,517
2018	92,150	78,982	-	6,148	11,402	188,683
2019	71,184	66,128	87	4,655	10,193	152,247
2020	80,494	72,901	1,031	5,403	11,850	171,679
District Total	947,728	821,187	44,967	74,366	131,750	2,019,997
Average*	*86,157*	*74,653*	*4,088*	*6,761*	*11,977*	***183,636***

* Includes direct pumping and surface water deliveries in lieu of pumping (all subject to 3:1 ratio)
** To Figures 7, 9, 11 & 15

IIIA. Replenishment Cost Allocation Factors

Replenishment costs are allocated between Ag and M&I based on the amount of replenishment that their respective groundwater pumpage causes. The amount of replenishment is the amount of pumpage net of return flows and natural recharge from precipitation. Return flows and precipitation reduce the impact of pumpage because they reduce the amount of replenishment that is needed to offset pumpage. **Figure 7** shows how return flows and precipitation are netted out of gross pumpage to yield "adjusted consumptive use," which is a more accurate representation of the amount of replenishment that is needed to offset Ag and M&I pumpage. The pumpage represents the eleven-year running average of actual pumpage for the period from FY 2009-10 to FY 2019-20 calculated in **Figure 6**.

Figure 7. Cost Allocation Factors – Replenishment Cost Category

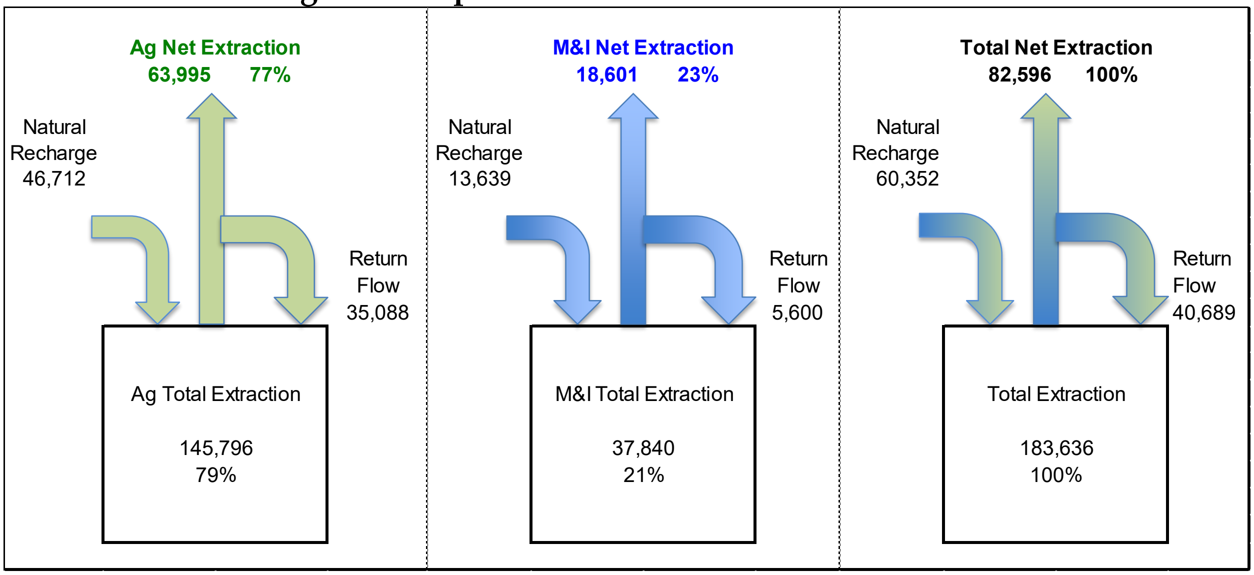
		Total	Ag	M&I	Source Notes
a	**I. Consumptive Use**				
b	Pumpage (AF)	183,636	145,796	37,840	FY2010 - FY2020 Average AF per Year (Fig. 6)
c	Consumptive use factor		75.9%	85.2%	UWCD Sept 2013 report, Table B-5
d	Consumptive use (AF)	142,948	110,708	32,240	b * c
e	Return flow (AF)	40,689	35,088	5,600	b - d
f	**II. Precipitation Contribution to Overlying Land**				
g	District-Wide (Acres)	120,996	80,078	40,918	UWCD Sept 2013 report, Table A-11
h	Average infiltration of precipitation (Inches)		7	4	UWCD Sept 2013 report, Table A-11
i	Precipitation contribution (AF)	60,352	46,712	13,639	g * (h/12)
j	**III. Consumptive Use**				
k	Consumptive use (AF)	142,948	110,708	32,240	d
l	Precipitation contribution (AF)	60,352	46,712	13,639	i
m	Adjusted consumptive use (AF)	82,596	63,995	18,601	k - l
n	Share of replenishment costs	100%	77%	23%	m

Different consumptive use factors were developed by District staff to adjust the gross pumpage to consumptive use, which is the amount of pumpage that does not return to the basin after it is applied to crops or used in urban areas. Ag's 75.9% consumptive use is lower than M&I's 85.2%, because more of Ag's pumpage returns to the basin.

Natural recharge was also accounted for because precipitation that recharges a basin reduces the need for replenishment water that would otherwise be required. With Ag's larger surface area and greater permeability, Ag receives more precipitation recharge than M&I.

When return flows and natural recharge are accounted for, the resulting adjusted consumptive uses indicate the net impact of Ag and M&I pumpage on the basin. For purposes of allocating the Zone A and B replenishment costs, adjusted consumptive use is used because it reflects that actual burden that Ag and M&I pumpage places on the basin. **Figure 8** is a graphical depiction of the derivation of the replenishment allocation factors.

Figure 8. Replenishment Cost Allocation Factors



IIIB. Reliability Cost Allocation Factors

Reliability costs are allocated between Ag and M&I to reflect the fact that M&I requires higher reliability than Ag. M&I is a higher beneficial use than Ag use.[6] By definition, reliability is threatened when basin pumpage exceeds the safe yield because overdrafting is unsustainable. Pumpage in excess of the safe yield is therefore at risk of being interrupted. Because of M&I's higher beneficial use, M&I pumpage is given first priority to the basin safe yield. Ag receives the remaining basin safe yield. Any Ag pumpage that exceeds the basin safe yield is considered interruptible and is not included in calculating the allocation factors.[7]

Figure 9 shows the cost allocation factors that result when Ag pumpage is reduced so that the combined pumpage of Ag and M&I pumpers does not exceed 140,000 AF, which is the District-wide safe yield.[8] The Ag interruption amounts to 43,636 AF. As with the derivation of the replenishment cost allocation factors, the calculation was stabilized by using an eleven-year running average of actual pumpage.

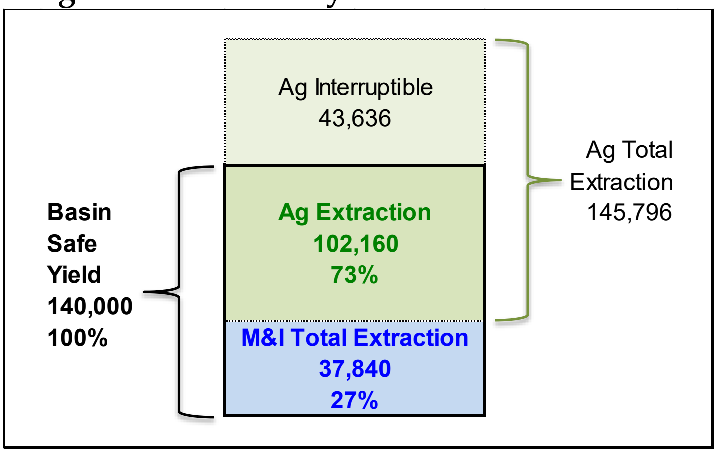
[6] Water Code Section 106.
[7] Evidence of the lower reliability of Ag supplies is shown in **Figure 6** for PVP Ag deliveries. After peaking in FYE 2009, the District completely reduced PVP pipeline deliveries from FYE 2016 to FYE 2018.
[8] United Water Conservation District Resolution #2020-11, Item #21

Figure 9. Cost Allocation Factors – Reliability Cost Category

		Total	Ag	M&I	Source Notes
a	Pumpage (AF)	183,636	145,796	37,840	FY2010 - FY2020 Average AF per Year (Fig. 6)
b	Pumpage reduction to basin safe yield	(43,636)	(43,636)	0	Excess interruptible pumpage
c	Pumpage within basin safe yield	140,000	102,160	37,840	a - b
d	Share of reliability costs	100%	73%	27%	c

It can be seen that the allocation of reliability costs to M&I (27% in **Figure 9**) is greater than the allocation of replenishment costs (23% in **Figure 7**), which is the premium that M&I is allocated in return for a higher level of reliability. **Figure 10** is a graphical depiction of the derivation of the reliability allocation factors.

Figure 10. Reliability Cost Allocation Factors



M&I is allocated a higher percentage of reliability costs than replenishment costs in return for greater reliability. Although Ag's percentage share of reliability costs is lower than its share of replenishment costs, Ag is still allocated the majority of reliability costs. However, Ag's allocation of reliability costs does not include the interruptible portion of Ag's demand. In this way, Ag is not allocated costs of reliability that it does not receive.

IIIC. Regulatory Compliance Cost Allocation Factors

Regulatory compliance costs are associated with the facilities that were constructed to provide basin safe yield equal to the pumping at the time the District was formed in the 1950s. They consist of programmatic and capital improvements required to comply with regulations. By complying, the District is able to continue to operate the facilities. The costs of compliance do not provide additional safe yield and, indeed, do not ensure that the current safe yield can be maintained.

Regulatory compliance costs in effect represent additional costs of reliability for which there is no corresponding improvement in basin safe yield. Existing regulatory compliance costs, which are related to ESA and Dam Safety regulation, are projected by the District to continue to increase. Future regulatory compliance costs, as yet unknown, pose considerable uncertainty to the District.

Because current and future regulatory compliance costs are not providing additional basin safe yield (and may even result in reduced basin safe yield), they should not be allocated based on basin safe yield as are reliability costs. The reliability facilities (which have led to regulatory compliance costs) improved reliability but did not eliminate overdraft. Because overdraft is attributable to growth since the facilities were constructed, the allocation of regulatory compliance costs should reflect Ag's and M&I's contributions to overdraft.

The District's regulatory compliance costs are allocated based on the portion of pumpage that is attributable to overdraft. Overdraft represents the impact that development has on the basin. Hence, the post-construction costs of regulatory compliance have been allocated based on growth since the 1950s.

In our analyses for prior years, it was assumed that M&I pumpage was negligible at the time the facilities were constructed. It was assumed that virtually all M&I pumpage occurred after the construction of the facilities, which meant that all of the safe yield was by Ag when the facilities were constructed. As a result, all M&I pumpage counted toward its allocation of regulatory costs and only the portion of Ag pumpage exceeding the safe yield counted toward Ag's allocation.

In this year's analysis, a refinement has been introduced in which the scant historical record was reviewed to apportion a share of the safe yield to M&I rather than assuming M&I pumpage was negligible when the facilities were constructed. The apportionment is based on the pumpage at the time the natural safe yield was pumped. Pumpage at that time was used as the baseline for apportioning the 140,000 AF safe yield provided by the facilities.

The facilities added 32,000 AF of safe yield[9] for a total of 140,000 AF. In other words, the natural safe yield prior to construction of the facilities was 108,000 AF. The USGS estimated that total Ag and M&I pumpage reached the natural safe yield in approximately 1930.[10] At that time, because no metered pumpage data were maintained, estimates are required. M&I pumpage in 1930 was estimated based on per capita water use from available data.[11] Per capita water use was derived by dividing population in 1950 (124,916 in Hydrographic Unit 2) by the estimated urban and

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9 *Report of Investigation and Recommendations for Acquisition and Construction of a Water Conservation System.* United Water Conservation District. September 1953. Page 10.

10 *Simulation of Ground-water/Surface Water Flow in the Santa Clara-Calleguas Ground-water Basin, Ventura County, California.* U.S. Geological Survey Water-Resources Investigations Report 02-4136. Hanson, R.T., Martin, P., Koczot, K.M., 2003.

11 *Bulletin 122. Ventura County and Upper Santa Clara River Drainage Area Land and Water Use Survey.* Department of Water Resources. 1961.

suburban area pumpage (16,700 AF), which equals 0.134 AF/capita. Using 1930 Census data for the cities in the District (i.e., Santa Paula, Fillmore, and Oxnard), the population in the District was 16,630. Multiplying this population by 0.134 AF/capita equals 2,228.42 AF. Hence, Ag is apportioned 105,771.58 AF (97.9%) of the natural safe yield and M&I is apportioned 2,228.42 AF (2.1%).

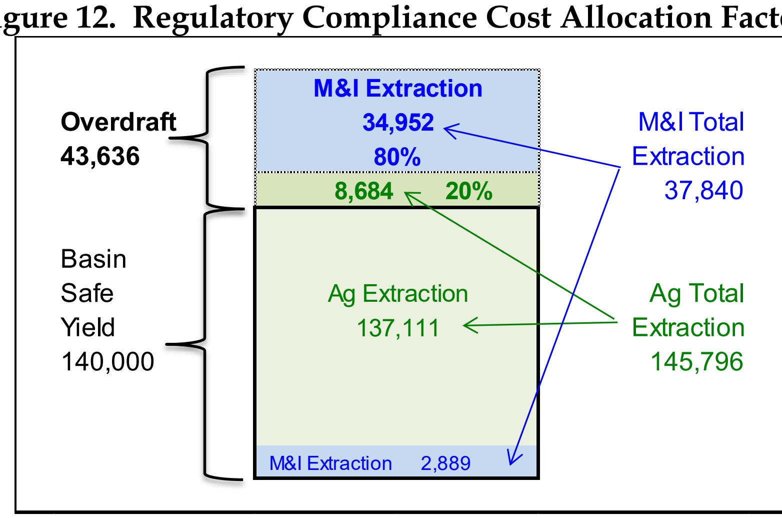
These proportions of the natural safe yield were used to apportion the 140,000 AF safe yield among Ag and M&I, resulting in 137,111 AF (97.9%) for Ag and 2,889 AF (2.1%) for M&I (rather than 140,000 AF for Ag and 0 AF for M&I using the previous methodology). **Figure 11** shows the apportionment of the safe yield between Ag and M&I, the respective overdraft contributions, and the resulting regulatory compliance allocation.

Figure 11. Cost Allocation Factors – Regulatory Compliance Cost Category

		Total	Ag	M&I	Source Notes
a	Pumpage (AF)	183,636	145,796	37,840	FY2010 - FY2020 Average AF per Year (Fig. 6)
b	Basin safe yield (AF)	140,000	137,111	2,889	Apportioned based on Historical Pumping prior to SFD construction
c	Overdraft contribution (AF)	43,636	8,684	34,952	a - b
d	Share of regulatory compliance costs	100%	20%	80%	c

Figure 12 is a graphical depiction of the derivation of the regulatory compliance allocation factors. The differences in the growth in pumpage by Ag and M&I is noteworthy. Since the facilities were constructed, Ag pumpage has increased 8,684 AF from 137,111 AF (6%) while M&I's pumpage has increased 34,952 AF from 2,889 AF (1,210% or twelve times). This allocation aligns these rates of growth with the regulatory costs that have occurred during the period of growth.

Figure 12. Regulatory Compliance Cost Allocation Factors



IIID. Summary of Cost Allocation Factors

The cost allocation factors for replenishment, reliability, and regulatory compliance are summarized in **Figure 13.**

Figure 13. Summary of Cost Allocation Factors

	Cost Categories		
	Replenishment	**Reliability**	**Regulatory Compliance**
	(from Figure 7)	*(from Figure 9)*	*(from Figure 11)*
Allocation Factors			
- Ag	77%	73%	20%
- M&I	23%	27%	80%
	100%	100%	100%

IV. UNIT COSTS OF SERVICE

The units of service from **Figure 7** (Total Adjusted Consumptive Use), **Figure 9** (Total Pumpage within Basin Safe Yield), and **Figure 11** (Total Overdraft Contribution) are combined with the costs in **Figure 2** to yield the unit costs of service shown in **Figure 14**. Each unit cost has its respective costs and units of service.

Figure 14. Unit Costs of Service

		Total	Source Notes
a	**I. Replenishment Unit Costs**		
b	Replenishment costs	$7,564,486	Fig. 2 line o
c	Adjusted consumptive use (AF)	82,596	Fig. 7 line m
d	Unit cost of service ($/AF)	$91.58	b / c
e	**II. Reliability Unit Costs**		
f	Reliability Costs	$5,799,568	Fig. 2 line v
g	Pumpage within basin safe yield	140,000	Fig. 9 line c
h	Unit cost of service ($/AF)	$41.43	f / g
i	**III. Regulatory Compliance Unit Costs**		
j	Regulatory Compliance costs	$9,328,899	Fig. 2 line ac
k	Overdraft contribution (AF)	43,636	Fig. 11 line c
l	Unit cost of service ($/AF)	$213.79	j / k

V. COST-OF-SERVICE ALLOCATIONS

The unit costs in **Figure 14** are applied to the Ag and M&I units of service in **Figure 15** to yield the following cost-of-service allocations. Ag and M&I are both subject to the same unit costs for each service.

Figure 15. Cost-of-Service Allocations

		Total	Ag	M&I	Source Notes
a	**I. Replenishment Cost of Service**				
b	Unit cost of service ($/AF)	$91.58	$91.58	$91.58	Fig. 14 line d
c	Adjusted consumptive use (AF)	82,596	63,995	18,601	Fig. 7 line m
d	Cost-of-service allocation	$7,564,486	$5,860,963	$1,703,523	b * c
e	**II. Reliability Cost of Service**				
f	Unit cost of service ($/AF)	$41.43	$41.43	$41.43	Fig. 14 line h
g	Pumpage within basin safe yield	140,000	102,160	37,840	Fig. 9 line c
h	Cost-of-service allocation	$5,799,568	$4,232,014	$1,567,554	f * g
i	**III. Regulatory Compliance Cost of Service**				
j	Unit cost of service ($/AF)	$213.79	$213.79	$213.79	Fig. 14 line l
k	Overdraft contribution (AF)	43,636	8,684	34,952	Fig. 11 line c
l	Cost-of-service allocation	$9,328,899	$1,856,631	$7,472,268	j * k
m	**IV. Total Cost of Service**	$22,692,953	$11,949,608	$10,743,345	d + h + l

VI. COMPOSITE UNIT COST RATIOS

The total costs of service for Ag and M&I shown in **Figure 15** are then used to calculate their respective composite unit costs in **Figure 16**. As previously mentioned, these amounts are not the same as the District's extraction charges, which are calculated separately for Zones A and B. These composite unit costs of $283.91 for M&I and $81.96 for Ag are a blend of the Zone charges and stand in a ratio of 3.46 to 1.00.

Figure 16. Composite Unit Cost Ratio

		Total	Ag	M&I	Source Notes
a	**I. Composite Unit Costs**				
b	Cost of service	$22,692,953	$11,949,608	$10,743,345	Fig. 15 line m
c	Pumpage (AF)	183,636	145,796	37,840	Fig. 7 line b
d	Composite unit cost ($/AF)		$81.96	$283.91	b / c
e	**II. Ratio of Composite Unit Costs**		**1.00**	**3.46**	d /$81.96

VII. SUMMARY AND CONCLUSION

VIIA. Compliance With Rate-Making Standards and Industry Practices

The foregoing cost-of-service analysis fully complies with relevant rate-making standards and industry practices as defined by the City of San Buenaventura's rate consultant: "Cost of Service involves identifying and apportioning annual revenue requirements to the different cost centers and defining unit costs so that costs can be allocated to the different user classes proportionate to their demand on the water system …"[12] This is a conventional definition of cost-of-service analysis. The City's consultant lists three steps in cost-of-service analysis:

1. Allocate revenue requirements to functional cost components.
2. Determine unit costs of components.
3. Determine user class costs.

Figures 1 and 3 of our report correspond to Step 1. **Figure 3** shows the allocation of United's revenue requirement to its three cost centers: for replenishment, for reliability, and for regulatory compliance. These are appropriate cost centers for a water conservation district. These allocations are a matter of cost accounting performed by the District.

Figure 14 of our report corresponds to Step 2. **Figure 14** shows unit costs per acre-foot of $91.58 for replenishment, $41.43 for reliability, and $213.79 for regulatory compliance. These amounts were derived by dividing the functionalized revenue requirements in Step 1 by the units of service. The units of service for replenishment are shown in **Figure 7**, which are the adjusted consumptive uses. The units of service for reliability are shown in **Figure 9**. The units of service for overdraft are shown in **Figure 11**. The resulting unit costs are directly proportionate to the units of service for replenishment, reliability, and regulatory compliance.

Figure 15 of our report corresponds to Step 3. **Figure 15** shows the proportionate results of multiplying unit costs times units of service for Ag and M&I, respectively. Ag is allocated $11,949,608 of the total revenue requirement and M&I is allocated $10,743,345. Our report follows the standard steps commonly accepted in the industry for cost-of-service analysis. The allocations are proportionate to the costs of providing service.

VIIB. Conclusion

The analysis indicates the proportional cost of service between Ag and M&I pumpers. The analysis does so by first differentiating between replenishment, reliability, and regulatory compliance costs. Replenishment costs are then allocated in proportion to the impacts of pumping when consumptive use and natural recharge are factored in, resulting in an allocation that reflects the net impact of basin pumpage. The reliability costs represent the O&M and capital costs of the storage and diversion facilities needed to provide the safe yield. Reliability costs are allocated in recognition of M&I's greater

[12] *Cost of Service and Rate Design Study Report*. Prepared by RFC for Ventura Water. March 2012. Page 15 *et seq.*. See also *Cost of Service and Rate Design Study Report*. Prepared by RFC for Ventura Water. January 2014. Page 32 *et seq.*.

need for reliability and the fact that Ag pumping is interruptible. The regulatory compliance costs are allocated in proportion to contributions to overdraft, which aligns the allocation factors with the occurrence of the costs.

Our analysis of the projected FY 2021-22 costs to provide service to M&I and Ag customers results in a ratio of 3.46:1 (M&I:Ag). As shown in **Figure 17**, over the past 11 years that we have analyzed the costs, the M&I:Ag ratio has ranged from 3.15 to 4.38, with an average of 3.67.

Figure 17. Ratio Summary (FY 2011-12 through FY 2021-22)

Composite Unit Costs ($/AF)	Ag	M&I	Ratio M&I:Ag
FY 2011-12	$39.27	$171.97	**4.38**
FY 2012-13	$40.44	$177.27	**4.38**
FY 2013-14	$56.51	$178.43	**3.16**
FY 2014-15	$50.94	$165.32	**3.25**
FY 2015-16	$54.44	$171.74	**3.15**
FY 2016-17	$49.64	$169.80	**3.42**
FY 2017-18	$55.38	$227.80	**4.11**
FY 2018-19	$54.38	$215.47	**3.96**
FY 2019-20	$76.60	$300.41	**3.92**
FY 2020-21	$68.35	$245.13	**3.59**
FY 2021-22	$81.96	$283.91	**3.46**
Average	$57.08	$209.75	**3.67**

We believe this methodology complies with industry rate-making standards because it yields cost-based rates that reflect the distinct and unique characteristics of the District that are proportionate to the cost of providing service.

Very truly yours,

John W. Farnkopf, P.E.
Senior Vice President

Richard J. Simonson
Senior Vice President