

TO: Robert Nilles
Deputy City Manager/Finance Director

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CC: Nick Russo, Public Works Director

DATE: February 18, 2021

SUBJECT: Recharge Rate Analysis Summary - Final

The City of El Mirage (El Mirage) retained Willdan Financial Services and Pat Walker Consulting LLC, collectively the “Willdan Team” to calculate recharge fees that could be assessed to El Mirage water only customers as well as City of Surprise (Surprise) customers who are provided water service by El Mirage.

Background

The State of Arizona (State) requires El Mirage to recharge water into the State system based upon the amount of water drawn annually. While El Mirage offsets its recharge requirement through its sewer treatment plant in the form of reclaimed water, water only customers (as the name implies) are not connected to the sewer system and therefore the ability to reclaim the water as recharge is “lost”. El Mirage currently has a little under 250 water only customers. Similarly, approximately 1,200 customers on the El Mirage water system reside in Surprise but receive sewer service from Surprise not El Mirage. As such the water use of these customers must be recharged by El Mirage while Surprise receives the benefit of the reclaimed water through their sewer system. The quantification of the cost or value of the “lost” recharge water is the basis of the analysis conducted by the Willdan Team.

Approach

The Willdan Team undertook three steps to develop a recharge fee for El Mirage and Surprise customers (the rate is the same regardless of jurisdiction). The steps were:

1. Identify annual flows for El Mirage and Surprise customers based on winter water use (January through March). The customer classes included:
 - a. El Mirage
 - i. Residential
 - ii. Commercial
 - iii. Landscape
 - b. Surprise
 - i. Residential
 - ii. Commercial
2. Identify the acre foot (AF) value of recharge water that is lost to El Mirage.
3. Calculate a flow-based rate in dollars per 1,000 gallons (\$/kgals) that could be assessed to El Mirage water only customers and Surprise water customers reflecting the recharge water cost.

City of El Mirage Water Flows

A review of the City’s billing data indicated that the City provides water only service to just below 250 City of El Mirage customers. The City provided billing data was annualized water use based on winter quarter (January, February and

March) use to estimate the amount of water that would be recovered through the City’s sewer system if the City provided sewer service to those customers. As use during those three months represent the estimated sewer flows for billing purposes, this was the water use selected to form the basis of amount of lost recharge water for the City. The City’s annualized estimate of residential and commercial water (which would otherwise enter the sewer system) is 31,538,000 gallons. We also examined the amount of landscape water used by City customers which does not enter the sewer system but contributes to the City’s annual recharge requirement. Landscape customers’ annual flows are 26,400,000, for total City flows of 57,938,000. A summary of flows can be found in the appendix.

City of Surprise Water Flows

A similar analysis of Surprise water customers and flows was undertaken. Landscape service is not provided to any Surprise customers. The review of Surprise’s billing data indicated that the City provides water only service to just below 1,200 Surprise customers. The City provided billing data was annualized using the same winter quarter (January, February and March) as was used to estimate sewer flows for City of El Mirage customers. Surprise’s annualized estimate of residential and commercial water (which would otherwise enter the sewer system) is 187,184,000 gallons. A summary of flows can be found in the appendix.

Acre Feet (AF) of Recharge Water

An AF of water is equivalent to 325,900 gallons of water. The 245,122,000 gallons of water (57,938,000 from El Mirage and 187,184,000 from Surprise) gallons of discharged water (sewer flows) equates to approximately 752.14 AF of recharge water. It was necessary to convert the lost sewer flows or potential recharge water to AF, because water is sold on the open market in AF and is assigned a dollar value in that measurement. The open market AF rate of water was taken from the Central Arizona Groundwater Replenishment District (CAGRD) Final 2020/21 – 2025/26 Rate Schedule for the Phoenix Active Management Area. The rates are summarized in Table 1 below.

**Table 1
Projected Open Market Rate for Recharge water
(CAGRD – Phoenix Active Management Area Assessment rates)**

<u>Fiscal Year</u>	<u>Projected Value of One Acre Foot of Water</u>
2021-22	\$739
2022-23	773
2023-24	791
2024-25	795
2025-26	796

As noted in Table 1, the projected range for an AF of water is between \$739 and \$796.

Recharge Water Flow Based Rate

The final step in the analysis was to determine what a flow-based rate would be for the sewer flows from both entities that is not recovered through the City sewer system and therefore needs to be recovered from another source. The annual flows as previously identified are estimated (based on AWC) at 245,122,000 gallons. It is assumed that these flows will remain constant throughout the study period and that there will not be any additional water only customers. The estimated water recharge cost by year using annual flows and AF water cost by year is summarized in Table 2. Additional detail can be found in the attached appendix.

**Table 2
Projected Recharge Water Cost**

<u>Fiscal Year</u>	<u>Projected Annual Cost of Recharge Water</u>
2021-22	\$555,830
2022-23	581,403
2023-24	594,942
2024-25	597,950
2025-26	598,702

The values in Table 2 which range from a low of \$555,830 per year (FY 2021-22) to a high of \$598,702 per year (FY 2025-26) were converted to a rate per 1,000 gallons to be assessed to water only customers, in addition to the rates currently being assessed for water service. In addition to the value of recharge water identified in Table 2, the cost to the City to complete the recharge study analysis (a cost of \$7,000) was added to the FY 2021-22 costs to be recovered. The cost for FY 2021-22 including the cost of the recharge study was \$562,830. The calculated fees per 1,000 gallons are summarized in Table 3 below.

**Table 3
Projected Recharge Water Rates**

<u>Fiscal Year</u>	<u>Projected Recharge Water Rate (\$/kgals)</u>
2021-22	\$2.30
2022-23	2.37
2023-24	2.43
2024-25	2.44
2025-26	2.44

The rates identified in Table 3, represent the projected cost to the City per 1,000 gallons of water that is provided to water only customers that is not recaptured through the City’s sewer system, which would be used to ultimately offset the annual recharge requirements the City must meet. The rate would be assessed as a uniform rate per 1,000 gallons of average winter quarter average water use non water only customers and should be updated annually in much the same manner that the City currently uses to determine sewer use for their customers. Using the average use per account per month (calculation shown in the appendix) the average monthly cost (FY 2021-22) for customers are summarized in Table 4.

**Table 4
Projected Average Monthly Recharge Water Bill**

<u>Customer</u>	<u>FY 2021-22 (Rate per kgals)</u>	<u>Average Flows (kgals)</u>	<u>Monthly Bill</u>
<u>City of El Mirage</u>			
Residential	\$2.30	8.83	\$20.28
Commercial	2.30	24.49	56.23
Landscape	2.30	31.88	73.21
<u>City of Surprise</u>			
Residential	\$2.30	6.38	\$14.64
Commercial	2.30	43.60	100.12

Thousands of Gallons

Customer Type	Class	Period	Year	Average Use FY 2021-22				
				Annual Use	Average Monthly Use	Average per Account Per Month	Average Monthly Bill	Average Accounts
El Mirage Water Only	Residential	Annualized AWC	2020	11,554	963	8.83	\$20.28	109
El Mirage Water Only	Commercial	Annualized AWC	2020	19,984	1,665	24.49	56.23	68
El Mirage Water Only	Landscape	Annualized AWC	2020	26,400	2,200	31.88	73.21	69
City of Surprise	Residential	Jan-Mar	2020	75,212	6,268	6.38	14.64	983
City of Surprise	Commercial	Jan-Mar	2020	111,972	9,331	43.60	100.12	214
Total (Kgals)				245,122	20,427			
Acre Feet				752.14	62.68			
Gals/AF				325,900	325,900			

Fiscal Year	Assessment Rates of One Acre Foot of Water	Projected Recharge Water Cost	Projected Recharge Water Rate per 1,000 Gals
2021-22	\$739	\$555,830	\$2.27
2022-23	773	581,403	2.37
2023-24	791	594,942	2.43
2024-25	795	597,950	2.44
2025-26	796	598,702	2.44

Recharge Cashflow Analysis

Description	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26
Revenue					
Recharge Fee (\$/Kgals)	\$2.30	\$2.37	\$2.43	\$2.44	\$2.44
Projected Flows (Kgals)	245,122	245,122	245,122	245,122	245,122
Projected Revenue	562,830	581,403	594,942	597,950	598,702
Expenses					
Fee Study Cost	7,000	0	0	0	0
Projected Expenses	7,000	0	0	0	0
Net Cashflow to Offset Recharge Costs	\$555,830	\$581,403	\$594,942	\$597,950	\$598,702

Description	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26
Cost per Acre Foot	\$739	\$773	\$791	\$795	\$796
Acre Feet of Recharge Water	752.14	752.14	752.14	752.14	752.14
Total Cost of Recharge	555,830	581,403	594,942	597,950	598,702
Add: Fee Study Cost	7,000	0	0	0	0
Total Cost of Recharge	562,830	581,403	594,942	597,950	598,702
Projected Flows (Kgals)	245,122	245,122	245,122	245,122	245,122
Water Recharge Cost (\$ per Kgals)	\$2.30	\$2.37	\$2.43	\$2.44	\$2.44