

Wastewater Development Fee Study

Prepared for:

City of Surprise, Arizona

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Table of Contents

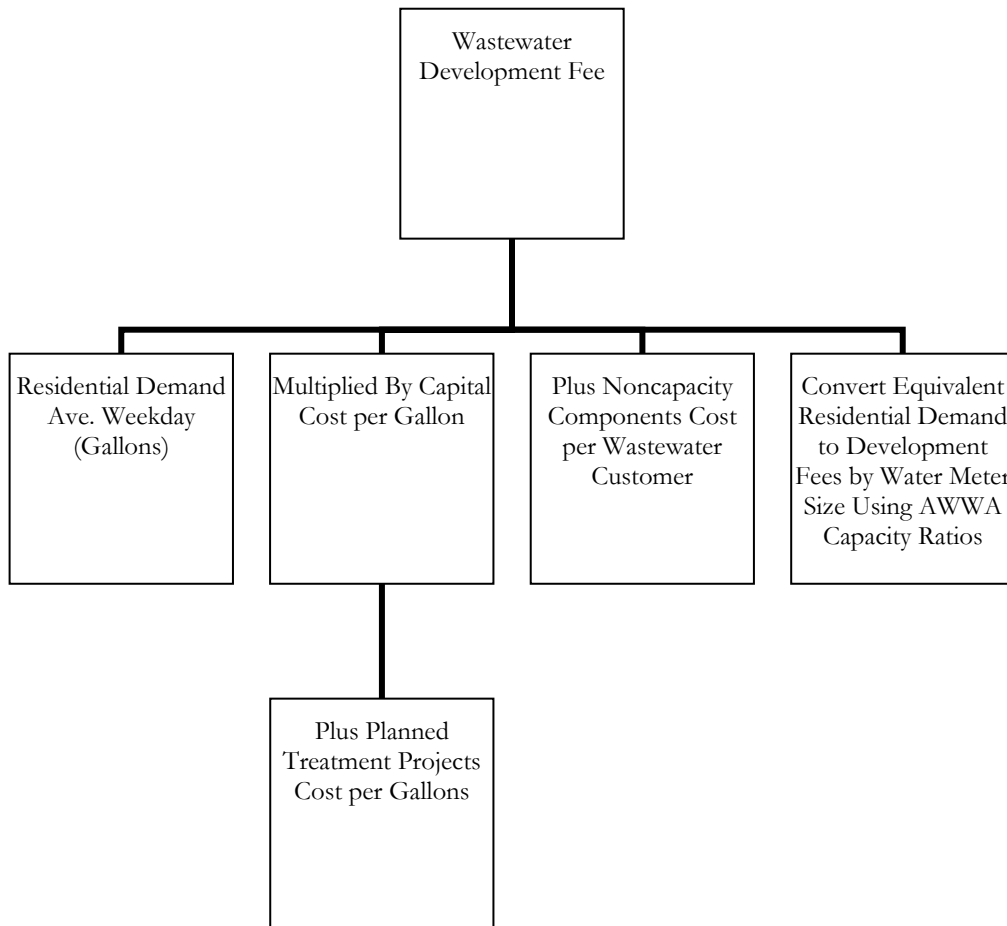
WASTEWATER	3
METHODOLOGY	3
<i>Figure 1: Wastewater Fee Methodology Chart</i>	3
COLLECTION & EXPENDITURE ZONES	3
<i>Figure 2: Wastewater Development Fee Areas</i>	5
WASTEWATER DEMAND.....	6
<i>Figure 3: Residential and Nonresidential Wastewater Projection Factors</i>	6
<i>Figure 4: Projected Wastewater Demand by SPA</i>	7
PLANNED WASTEWATER TREATMENT PROJECTS BY SPA	9
<i>Figure 5: Planned Wastewater Treatment Projects SPA 1</i>	9
<i>Figure 6: Planned Financing Costs for SPA 1</i>	10
<i>Figure 7: Planned Wastewater Projects SPA'S 2-6</i>	11
SUPPORT VEHICLES & EQUIPMENT	11
<i>Figure 8: Support Vehicles and Equipment</i>	12
DEVELOPMENT FEE STUDY.....	12
WATER RESOURCES DEVELOPMENT FEE.....	12
<i>Figure 9: Wastewater Development Fee Cost Summary SPA 1</i>	13
<i>Figure 10: Wastewater Development Fee Cost Summary SPA'S 2- 6</i>	13
<i>Figure 11: Wastewater Development Fee Schedule SPA 1</i>	13
<i>Figure 12: Wastewater Development Fee Schedule SPA'S 2- 6</i>	14

Wastewater

METHODOLOGY

The Wastewater Development Fee includes the planned construction of wastewater treatment projects. The fee also includes a component for noncapacity assets (vehicles and equipment) that is calculated on a per customer basis using the incremental expansion methodology. As shown in Figure 1, the net capital cost per gallon of capacity for the planned projects is multiplied by the average daily residential demand in Surprise. The cost of noncapacity components per customer is then added to net capital cost per gallon. Fees for meters larger than 0.75 inches are derived from capacity ratios published by the American Water Works Association (AWWA).

Figure 1: Wastewater Fee Methodology Chart



COLLECTION & EXPENDITURE ZONES

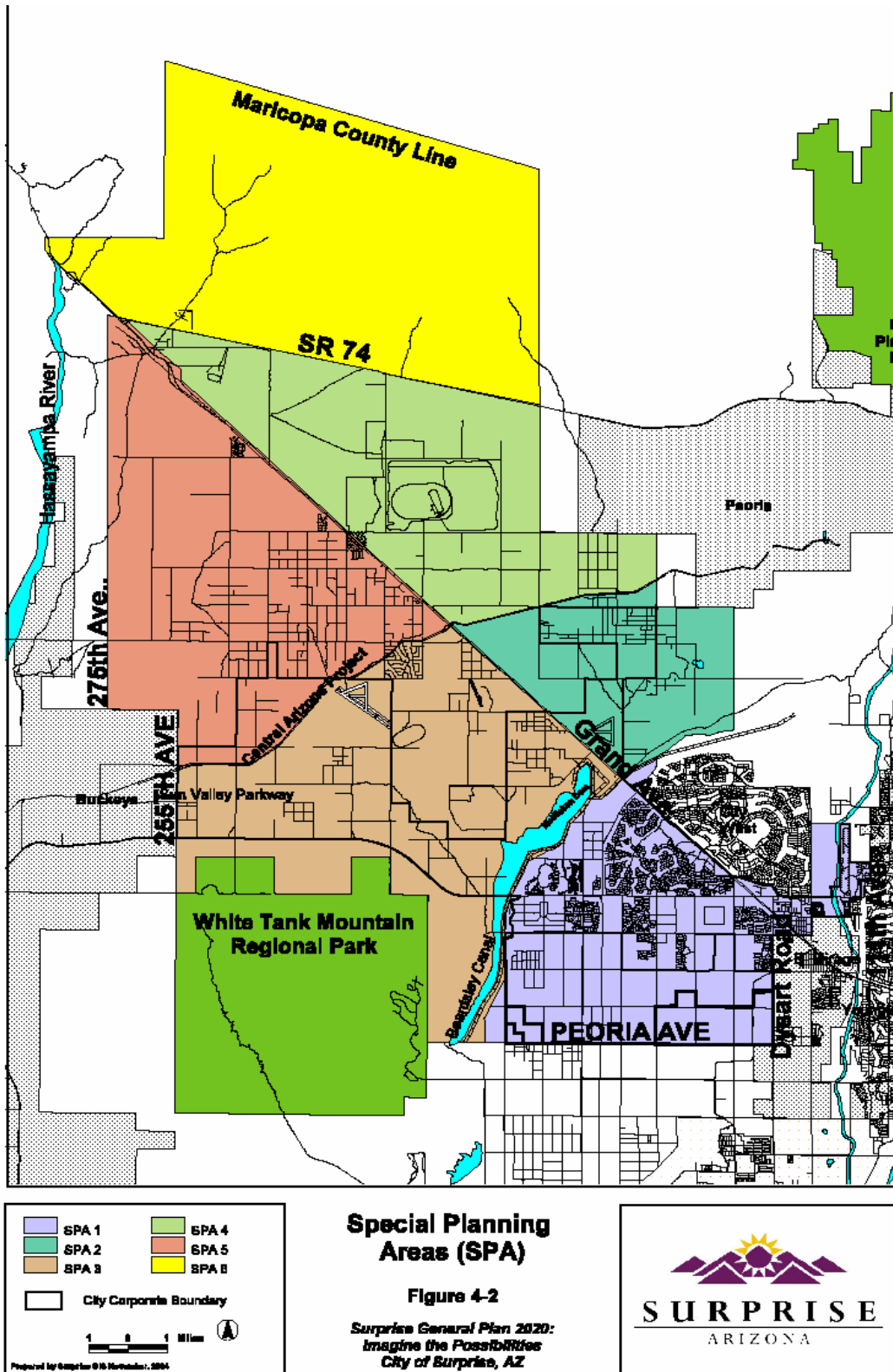
To better meet the demand, proportionality, and benefit requirements of the rational nexus test, TischlerBise recommends the City collect and expend the Wastewater Development Fee as follows:

SPA 1

SPA'S 2-6

These zones are used to document where in the City the development fee revenues are coming from and where capital projects for new growth will be provided. The collection and expenditures zone map in Figure 2 is provided to give the reader a general indication of the SPA boundaries. Larger, detailed maps will be maintained by the City.

Figure 2: Wastewater Development Fee Areas



WASTEWATER DEMAND

The City Water Services Division uses a figure of 250 gallons per customer for planning the construction of the wastewater system. This figure is used as the basis for the Wastewater Development Fees.

TischlerBise derived the following factors to project the future number of wastewater customers and wastewater demand.

Figure 3: Residential and Nonresidential Wastewater Projection Factors

Current Total Housing Units Citywide	49,914
Estimated Current Residential Sewer Customers	34,637
Sewer Customers per Housing Unit	0.69
Estimated Current Nonresidential Sewer Customers	363
Current Nonresidential Square Footage Citywide	7,135,761
Square Feet per Sewer Customer	19,666
Wastewater Gallons per Customer	250

Future projections of wastewater customers and wastewater demand by SPA are shown in Figure 4 below. These projections are derived using the data from Figure 3 and the development projections by SPA from Appendix A.

Figure 4: Projected Wastewater Demand by SPA

SPA 1	Fiscal Year =>	5 Year Intervals				
		2007	2012	2017	2022	2027
Housing Units		44,510	61,589	64,151	64,833	64,833
Projected Residential Wastewater Customers		30,887	42,739	44,517	44,990	44,990
Gallons per Residential Customer		250	250	250	250	250
Residential Daily Demand Subtotal		7,721,788	10,684,735	11,129,237	11,247,462	11,247,462
Nonresidential Square Footage (1,000's)		5,124	6,611	7,042	7,300	7,300
Projected Nonresidential Wastewater Customers		261	336	358	371	371
Gallons per Nonresidential Customer		250	250	250	250	250
Nonresidential Daily Demand Subtotal		65,141	84,043	89,515	92,803	92,803
TOTAL DAILY WASTEWATER DEMAND SPA 1		7,786,929	10,768,777	11,218,752	11,340,265	11,340,265
SPA 2	Fiscal Year =>	2007	2012	2017	2022	2027
Housing Units		3,232	6,424	11,624	26,222	31,293
Projected Residential Wastewater Customers		2,243	4,458	8,066	18,197	21,715
Gallons per Residential Customer		250	250	250	250	250
Residential Daily Demand Subtotal		560,636	1,114,402	2,016,516	4,549,162	5,428,827
Nonresidential Square Footage (1,000's)		187	357	578	1,057	1,370
Projected Nonresidential Wastewater Customers		10	18	29	54	70
Gallons per Nonresidential Customer		250	250	250	250	250
Nonresidential Daily Demand Subtotal		2,377	4,533	7,342	13,433	17,419
TOTAL DAILY WASTEWATER DEMAND SPA 2		563,013	1,118,934	2,023,858	4,562,595	5,446,246
SPA 3	Fiscal Year =>	2007	2012	2017	2022	2027
Housing Units		2,026	7,842	13,964	22,277	26,061
Projected Residential Wastewater Customers		1,406	5,442	9,690	15,459	18,085
Gallons per Residential Customer		250	250	250	250	250
Residential Daily Demand Subtotal		351,403	1,360,455	2,422,498	3,864,700	4,521,140
Nonresidential Square Footage (1,000's)		1,660	3,133	4,397	5,212	6,777
Projected Nonresidential Wastewater Customers		84	159	224	265	345
Gallons per Nonresidential Customer		250	250	250	250	250
Nonresidential Daily Demand Subtotal		21,098	39,826	55,901	66,263	86,146
TOTAL DAILY WASTEWATER DEMAND SPA 3		372,501	1,400,280	2,478,400	3,930,963	4,607,286
SPA 4	Fiscal Year =>	2007	2012	2017	2022	2027
Housing Units		0	0	613	1,954	3,623
Projected Residential Wastewater Customers		0	0	425	1,356	2,514
Gallons per Residential Customer		250	250	250	250	250
Residential Daily Demand Subtotal		0	0	106,368	338,917	628,586
Nonresidential Square Footage (1,000's)		0	0	76	1,289	2,053
Projected Nonresidential Wastewater Customers		0	0	4	66	104
Gallons per Nonresidential Customer		250	250	250	250	250
Nonresidential Daily Demand Subtotal		0	0	961	16,389	26,103
TOTAL DAILY WASTEWATER DEMAND SPA 4		0	0	107,329	355,306	654,688

SURPRISE, ARIZONA WASTEWATER DEVELOPMENT FEE STUDY

SPA 5	<i>Fiscal Year =></i>	2007	2012	2017	2022	2027
Housing Units		147	1,233	2,193	3,900	6,003
Projected Residential Wastewater Customers		102	856	1,522	2,706	4,166
Gallons per Residential Customer		250	250	250	250	250
Residential Daily Demand Subtotal		25,460	213,969	380,465	676,517	1,041,495
Nonresidential Square Footage (1,000's)		165	911	3,713	5,902	8,952
Projected Nonresidential Wastewater Customers		8	46	189	300	455
Gallons per Nonresidential Customer		250	250	250	250	250
Nonresidential Daily Demand Subtotal		2,097	11,581	47,195	75,029	113,806
TOTAL DAILY WASTEWATER DEMAND SPA 5		27,558	225,550	427,660	751,545	1,155,301

SPA 6	<i>Fiscal Year =></i>	2007	2012	2017	2022	2027
Housing Units		0	1,033	1,790	3,116	3,722
Projected Residential Wastewater Customers		0	717	1,242	2,162	2,583
Gallons per Residential Customer		250	250	250	250	250
Residential Daily Demand Subtotal		0	179,265	310,620	540,575	645,745
Nonresidential Square Footage (1,000's)		0	19	29	46	61
Projected Nonresidential Wastewater Customers		0	1	1	2	3
Gallons per Nonresidential Customer		250	250	250	250	250
Nonresidential Daily Demand Subtotal		0	236	367	584	780
TOTAL DAILY WASTEWATER DEMAND SPA 6		0	179,501	310,988	541,159	646,525

CITYWIDE	<i>Fiscal Year =></i>	2007	2012	2017	2022	2027
Housing Units		49,914	78,121	94,335	122,301	135,536
Projected Residential Wastewater Customers		34,637	54,211	65,463	84,869	94,053
Gallons per Residential Customer		250	250	250	250	250
Residential Daily Demand Subtotal		8,659,287	13,552,825	16,365,704	21,217,333	23,513,254
Nonresidential Square Footage (1,000's)		7,136	11,030	15,833	20,806	26,514
Projected Nonresidential Wastewater Customers		363	561	805	1,058	1,348
Gallons per Nonresidential Customer		250	250	250	250	250
Nonresidential Daily Demand Subtotal		90,713	140,218	201,282	264,500	337,057
TOTAL DAILY WASTEWATER DEMAND CITYWIDE		8,750,000	13,693,043	16,566,986	21,481,833	23,850,311

PLANNED WASTEWATER TREATMENT PROJECTS BY SPA

Figure 5 lists the City’s planned wastewater treatment projects for SPA 1 from the CIP. The projects listed in Figure 35 are the result of new development only. The total capacity of the projects is used to calculate the cost per gallon for these projects. The development fees will be used to fund these projects.

The planned projects listed will cost \$10.88 per gallon. The cost per gallon is calculated by dividing the total cost of \$87,000,000 by the projected 8,000,000 gallons of capacity of these projects (\$87,000,000/8,000,000 gallons = \$10.88 per gallon).

Figure 5: Planned Wastewater Treatment Projects SPA 1

MARGINAL APPROACH

Project	Prior Years	FY2007	FY2008	FY2009	FY2010	FY2011	TOTAL
SPA 1 South WRF Plant 4 & 5 (8 MGD's Capacity)	\$24,800,000	\$36,500,000	\$25,500,000	\$0	\$0	\$0	\$86,800,000
SPA 1 Kruger Dynamic Phasing Control Upgrade - Phase 2	0	\$0	\$200,000	\$0	\$0	\$0	\$200,000
							TOTAL \$87,000,000
							Gallons of Capacity 8,000,000
							Cost per Gallon \$10.88

City of Surprise, *Capital Improvements Plan FY2007*.

The City plans to debt finance \$47,600,000 of the planned \$86,800,000 costs for Plants 4 and 5 and use development fees to repay the debt service. Thus the planned financing costs are included in the Wastewater Development Fees for SPA 1. The financing assumptions are shown in Figure 5 below. The financing costs total \$35,399,698 which results in a cost per gallon figure of \$4.42 (\$35,399,698/8,000,000 gallons of capacity in Plants 4 and 5).

Figure 6: Planned Financing Costs for SPA 1

20 YEAR BOND DATA

Loan amount:	\$47,600,000
Annual interest rate:	6.00%
Term in years:	20
Payments per year:	1

Payment Schedule						
No.	Beginning Balance	Interest	Principal	Total Payment	Ending Balance	Cumulative Interest
1	\$47,600,000	\$2,856,000	\$1,293,985	\$4,149,985	\$46,306,015	\$2,856,000
2	\$46,306,015	\$2,778,361	\$1,371,624	\$4,149,985	\$44,934,391	\$5,634,361
3	\$44,934,391	\$2,696,063	\$1,453,921	\$4,149,985	\$43,480,470	\$8,330,424
4	\$43,480,470	\$2,608,828	\$1,541,157	\$4,149,985	\$41,939,313	\$10,939,253
5	\$41,939,313	\$2,516,359	\$1,633,626	\$4,149,985	\$40,305,687	\$13,455,611
6	\$40,305,687	\$2,418,341	\$1,731,644	\$4,149,985	\$38,574,043	\$15,873,953
7	\$38,574,043	\$2,314,443	\$1,835,542	\$4,149,985	\$36,738,501	\$18,188,395
8	\$36,738,501	\$2,204,310	\$1,945,675	\$4,149,985	\$34,792,826	\$20,392,705
9	\$34,792,826	\$2,087,570	\$2,062,415	\$4,149,985	\$32,730,410	\$22,480,275
10	\$32,730,410	\$1,963,825	\$2,186,160	\$4,149,985	\$30,544,250	\$24,444,099
11	\$30,544,250	\$1,832,655	\$2,317,330	\$4,149,985	\$28,226,920	\$26,276,754
12	\$28,226,920	\$1,693,615	\$2,456,370	\$4,149,985	\$25,770,551	\$27,970,370
13	\$25,770,551	\$1,546,233	\$2,603,752	\$4,149,985	\$23,166,799	\$29,516,603
14	\$23,166,799	\$1,390,008	\$2,759,977	\$4,149,985	\$20,406,822	\$30,906,611
15	\$20,406,822	\$1,224,409	\$2,925,576	\$4,149,985	\$17,481,246	\$32,131,020
16	\$17,481,246	\$1,048,875	\$3,101,110	\$4,149,985	\$14,380,136	\$33,179,895
17	\$14,380,136	\$862,808	\$3,287,177	\$4,149,985	\$11,092,959	\$34,042,703
18	\$11,092,959	\$665,578	\$3,484,407	\$4,149,985	\$7,608,552	\$34,708,280
19	\$7,608,552	\$456,513	\$3,693,472	\$4,149,985	\$3,915,080	\$35,164,793
20	\$3,915,080	\$234,905	\$3,915,080	\$4,149,985	\$0	\$35,399,698

Total Interest Payments \$35,399,698

Gallons of Capacity 8,000,000

Cost per Gallon \$4.42

Figure 7 lists the City’s planned wastewater treatment projects for SPA’s 2-6 from the CIP. These projects are the result of new development only. The total capacity of the projects is used to calculate the cost per gallon for these projects. The development fees will be used to fund these projects.

The planned projects listed under the marginal approach will cost \$0.24 per gallon for land purchases and \$11.80 per gallon for wastewater treatment plants. The cost per gallon for land purchases is calculated by dividing the total cost of \$22,000,000 by the projected 90,000,000 gallons of capacity of the wastewater treatment plants that will ultimately be sited on the land (\$22,000,000/90,000,000 gallons = \$0.24 per gallon). This calculation is repeated for wastewater treatment plants resulting in a cost per gallon of \$11.80 (\$236,000,000/20,000,000 gallons of capacity = \$11.80 per gallon).

The total cost per gallon for the planned water resource projects in SPA’s 2-6 is \$12.04 (\$0.24 + \$11.80 = \$12.04).

Figure 7: Planned Wastewater Projects SPA’S 2-6

MARGINAL APPROACH

LAND PURCHASES

Project	FY2007	FY2008	FY2009	FY2010	FY2011	TOTAL
SPA 2 WRF Land Purchase (10 MGD Capacity)	\$0	\$0	\$2,000,000	\$0	\$0	\$2,000,000
SPA 3 WRF Land Purchase (30 MGD's Total On Site)	\$0	\$0	\$5,000,000	\$0	\$0	\$5,000,000
SPA 4 WRF Land Purchase (10 MGD's Total On Site)	\$0	\$0	\$0	\$5,000,000	\$0	\$5,000,000
SPA 5 WRF Land Purchase (10 MGD's Total On Site)	\$0	\$0	\$5,000,000	\$0	\$0	\$5,000,000
SPA 6 WRF Land Purchase (30 MGD's Total On Site)	\$0	\$0	\$5,000,000	\$0	\$0	\$5,000,000
TOTAL						\$22,000,000

Gallons of Capacity 90,000,000

Cost per Gallon \$0.24

MARGINAL APPROACH

PLANTS

	Prior Years	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012-2016	TOTAL
SPA 2 WRF Plant 1 (4 MGD)	\$2,000,000	\$14,800,000	\$30,400,000	\$0	\$0	\$0	\$0	\$47,200,000
SPA 2 WRF Plant 2 (4 MGD)	\$0	\$0	\$0	0	\$4,000,000	\$21,600,000	\$21,600,000	\$47,200,000
SPA 3 WRF Plant 1 (4 MGD)	\$1,600,000	\$2,400,000	\$21,600,000	\$21,600,000	\$0	\$0	\$0	\$47,200,000
SPA 4 WRF Plant 1 (4 MGD)	\$0	\$0	\$4,000,000	\$21,600,000	\$21,600,000	0	0	\$47,200,000
SPA 5 WRF Plant 1 (4 MGD)	\$0	\$0	\$0	\$0	\$0	\$4,000,000	\$43,200,000	\$47,200,000
TOTAL								\$236,000,000

Gallons of Capacity 20,000,000

Cost per Gallon \$11.80

City of Surprise, *Capital Improvements Plan FY2007*.

SUPPORT VEHICLES & EQUIPMENT

As new growth requires additional wastewater infrastructure, additional support vehicles and equipment will be needed. Figure 8 lists the City’s current inventory of Wastewater vehicles and equipment. The 16 vehicles and equipment have a total replacement value of \$1,050,000. This results in a cost per customer of \$26.38.

Figure 8: Support Vehicles and Equipment

<i>Type of Vehicle/Equipment</i>	<i>Units in Service</i>	<i>Unit Price*</i>	<i>Replacement Cost</i>
3/4 Ton Pickup Truck	2	25,000	\$50,000
Quads	2	12,000	\$24,000
Light Duty Pickup Truck	2	18,000	\$36,000
1/2 Ton Pickup Truck	5	22,000	\$110,000
Camera Truck	1	165,000	\$165,000
Vactor Truck	2	220,000	\$440,000
SUV	1	25,000	\$25,000
Crane Truck	1	200,000	\$200,000
TOTAL	16		\$1,050,000

* Surprise Fleet Management.

Estimated Number of Current Sewer Customers 39,800

Cost Per Sewer Customer \$26.38

DEVELOPMENT FEE STUDY

The City should update its development fees every three years to ensure the methodologies, assumptions, and cost factors used in the calculations are still valid and accurate. As we do with many of our Arizona development fee clients, TischlerBise has included the cost of preparing the current Wastewater Development Fee in the fee calculations in order to create a source of funding to conduct this regular update. This cost (\$15,300) is allocated to the projected increase in gallons over the next three years. This results in a development fee study cost per demand unit of \$0.005 per gallon (\$15,300/3,000,000 gallons).

WATER RESOURCES DEVELOPMENT FEE

Figures 9 and 10 provide a summary of the variables used to calculate the Wastewater Resources Development Fee. Future revenue credits have been considered to avoid potential double payment for capital facilities and no such credit is needed for this fee category. Developers may be eligible for site-specific credits or reimbursements only if they provide system improvements that have been included in the Wastewater Development Fee calculation schedule. Specific policies and procedures related to site-specific credits for system improvements are addressed in the ordinance that establishes the City's fees. Project improvements normally required as part of the development approval process are not eligible for credits against development fees.

Figure 9: Wastewater Development Fee Cost Summary SPA 1

<i>Cost Summary</i>		<i>Standards:</i>
Gallons per Day per Residential Connection		250
Planned Treatment Cost per Gallon		\$10.88
Projected Financing Cost per Gallon		\$4.42
Development Fee Study Cost per Gallon		\$0.005
Net Capital Cost per Gallon of Capacity		<u>\$15.31</u>
Cost per Customer Non-capacity Assets		<u>\$26.38</u>

Figure 10: Wastewater Development Fee Cost Summary SPA'S 2- 6

<i>Cost Summary</i>		<i>Standards:</i>
Gallons per Day per Residential Connection		250
Planned Treatment Cost per Gallon		\$12.04
Development Fee Study Cost per Gallon		\$0.005
Net Capital Cost per Gallon of Capacity		<u>\$12.05</u>
Cost per Customer Non-capacity Assets		<u>\$26.38</u>

A capacity ratio by meter size was used to convert the residential equivalent fee for a 0.75-inch meter into a proportionate fee for larger meter sizes. The capacity ratios by meter size are from the American Water Works Association (AWWA). For a one-inch meter, Surprise will use a conservative, typical-service ratio (see AWWA Manual 1, page 24). For all other meter sizes, Surprise will use ratios that assume 33% of maximum capacity, indexed to 0.75" meter (see AWWA Manual 6). If a large-scale development submits an independent engineering analysis, the Wastewater Development Fee may be based on the net capital cost per gallon of capacity for each SPA and the annualized average day demand for the particular development

Figure 11: Wastewater Development Fee Schedule SPA 1

Development Fees

<u>All Development</u>			<i>Capacity</i>	<i>Non-capacity</i>	
<i>Meter Size (inches)</i>	<i>Type</i>	<i>Capacity Ratio</i>	<i>Total</i>	<i>Total</i>	<i>TOTAL</i>
0.75	Displacement	1.0	\$3,826	\$26	\$3,853
1.00	Displacement	1.3	\$4,870	\$26	\$4,896
1.50	Displacement	3.3	\$12,630	\$26	\$12,657
2.00	Displacement	5.3	\$20,194	\$26	\$20,221
3.00	Compound	10.7	\$40,813	\$26	\$40,840
3.00	Turbine	12.0	\$45,773	\$26	\$45,800
4.00	Compound	17.0	\$65,011	\$26	\$65,037
4.00	Turbine	20.5	\$78,421	\$26	\$78,447
6.00	Compound	33.0	\$126,302	\$26	\$126,329
6.00	Turbine	41.2	\$157,656	\$26	\$157,683
8.00	Compound	53.3	\$204,067	\$26	\$204,094
8.00	Turbine	60.2	\$230,205	\$26	\$230,231

Figure 12: Wastewater Development Fee Schedule SPA'S 2- 6

Development Fees

<u>All Development</u>			<i>Capacity</i>	<i>Non-capacity</i>	
<i>Meter Size (inches)</i>	<i>Type</i>	<i>Capacity Ratio</i>	<i>Total</i>	<i>Total</i>	<i>TOTAL</i>
0.75	Displacement	1.0	\$3,012	\$26	\$3,039
1.00	Displacement	1.3	\$3,834	\$26	\$3,860
1.50	Displacement	3.3	\$9,944	\$26	\$9,970
2.00	Displacement	5.3	\$15,899	\$26	\$15,925
3.00	Compound	10.7	\$32,132	\$26	\$32,159
3.00	Turbine	12.0	\$36,037	\$26	\$36,063
4.00	Compound	17.0	\$51,183	\$26	\$51,209
4.00	Turbine	20.5	\$61,740	\$26	\$61,766
6.00	Compound	33.0	\$99,437	\$26	\$99,463
6.00	Turbine	41.2	\$124,121	\$26	\$124,148
8.00	Compound	53.3	\$160,661	\$26	\$160,687
8.00	Turbine	60.2	\$181,238	\$26	\$181,265