PIMA COUNTY
REGIONAL WASTEWATER RECLAMATION DEPARTMENT

Connection Fee Structure Review

May 7, 2012

RAFTELIS
FINANCIAL CONSULTANTS, INC.

Pima County Regional Wastewater Reclamation Department

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Section 1. Introduction

1.1 Background

Raftelis Financial Consultants, Inc. ("RFC") has been engaged by Pima County, Arizona ("County") to conduct a review of its connection fee assessment structure and provide a detailed evaluation of an alternative assessment structure on the basis of water meter size. RFC will also provide a benchmarking analysis of upfront fees, such as connection fees, on several regional peer utilities.

The County assesses connection fees to residential, commercial, and industrial customers based on the fixture unit equivalent. Connection fees are assessed to new structures and demolitions/renovations to existing structures that result in additional fixture units. As appropriate as it may be for assessing connection fees, the fixture unit methodology is complex and labor intensive. Essentially, each individual structure, plan, or renovation must be reviewed to calculate the number of fixture units, thus requiring a great deal of administrative effort when compared to other alternatives. Also, the assigned number of equivalent fixture units per plumbing fixture type is somewhat arbitrary and does not match in all respects either the Uniform Plumbing Code or the International Plumbing Code.

1.2 Evaluation of Alternatives

There are a number of methods used in the wastewater industry to assess upfront fees, such as connection fees. Several alternatives that could be considered by the County include connection fees assessed by:

- meter size (water meter),
- equivalent residential units (ERU),
- square footage, and
- lot size and density (per acre).

As part of a previous engagement for the County, RFC evaluated several alternative assessment structures, including those outlined above, which involved the development of pricing objectives associated with assessing connection fees. The full details of this study are described in an April, 2009 report titled "Pima County Regional Wastewater Reclamation Department – Connection Fee Structure Assessment." The matrix included specific criteria that represented the most important pricing objectives to serve as a basis for comparing the connection fee assessment

alternatives. The matrix was designed to help build a rationale basis for identifying a preferred assessment methodology.

The evaluation matrix was comprised of nine different criteria, which represent fundamental pricing objectives for connection fee methodologies, including: revenue sufficiency, cost equity, implementation, data availability, process complexity, customer impacts, customer acceptance, manpower requirements, and defensibility. Each assessment methodology was scored using a numerical grading from 1 to 5, with 1 and 5 representing the lowest and highest scores, respectively. The results of the evaluation matrix are presented in Table 1.

Table 1 – Evaluation Matrix

	Connection Fee Structures				
Objectives	**Existing Fee**	**Meter Size**	**ERUs**	**Sq. Ft.**	**Lot Size**
Revenue Sufficiency	5	5	5	5	5
Cost Equity	4	4	4	4	1
Implementation	5	4	3	4	1
Data Availability	3	4	2	3	5
Process Complexity	2	5	3	3	3
Customer Impacts	5	4	4	4	4
Customer Acceptance	4	4	4	4	3
Manpower Requirements	1	5	1	3	3
Defensibility	4	4	4	4	1
Total	33	39	30	34	26

1.3 Objectives

Based on the results of the evaluation matrix, the meter size approach was identified as the most effective connection fee assessment methodology that is consistent with the County's goals and objectives. The simplicity of using water meter size as a basis of assessment appeals to County staff, and the prevalence of this approach in the industry indicates widespread understanding and acceptance. Thus in this study, the primary objective is the development of the connection fees using the meter size approach and evaluating the results against the existing fee structure and the structures of peer utilities.

Section 2. Alternative Fee Structure

2.1 Existing Connection Fee Structure

The County's procedure for determining connection fees for all residential, commercial, and industrial customers connecting to the sewer system is based on the fixture unit equivalent. Pima County Codes define a "fixture unit equivalent" as a "unit of measure which expresses the potential loading on the public sanitary sewerage system of different kinds and sizes of plumbing fixtures."

The total number of plumbing fixtures of each type (i.e., number of sinks, water closets, etc.) is determined during the building permit application process from an evaluation of structure drawings and/or model plans. These values are multiplied by the corresponding number of fixture unit equivalents. For example, a bathtub has two fixture unit equivalents, a drinking fountain has one fixture unit equivalent, and a floor drain connected to a 4" waste line has eight fixture unit equivalents. The connection fee is then calculated by multiplying the total number of fixture unit equivalents by the set price per fixture unit equivalent.

Table 2 provides a listing of the County's current plumbing fixture types and associated fixture unit equivalents.

Table 2 – Plumbing Fixture Types and Associated Number of Fixture Unit Equivalents

Plumbing Fixture Type	**Fixture Unit Equivalents**
Bathtub	2
Bidet	2
Clothes washer (first)	2
Clothes washer (second and subsequent at same location, each)	6
Dental unit or cuspidor	1
Dishwasher (commercial)	3
Drain, condensate (1-1/2" waste)	1
Drain, floor (2" waste)	2
Drain, floor (3" waste)	6
Drain, floor (4" waste)	8
Drinking fountain	1
Floor sink (receptor)	3

Indirect waste receptor for refrigerator, coffee urn, waste station, etc. (2” waste)	3
Indirect waste receptor for commercial sink, dishwasher, etc. (3”waste)	6
Garbage disposal (commercial)	3
Shower, single stall	2
Shower, gang, per shower head	1
Sink (1-1/2” waste)	1
Sink (2” waste)	3
Sink, flushing rim, clinic	6
Sink, residential kitchen (with or without dishwasher or garbage disposal)	3
Sink, nail salon hand	1
Soft water loop drain	1
Urinal, pedestal or trough	6
Urinal, stall or wall (2”waste)	2
Urinal, waterless	1
Wash basin (lavatory)	1
Water closet, tank or flush valve type	5

The types of plumbing fixtures are designed for applicability for both residential and commercial/industrial structures. If, however, a plumbing fixture cannot be classified under the categories identified, then a more generalized approach related to discharge capacity is used. Table 3 provides the County’s equivalent fixture units based on the discharge capacity.

Table 3 – Discharge Capacity and Connection Fee Units

Discharge Capacity (in Gals. Per Min.) For Intermittent Flow Only		
Up to 7-1/2	Equals	1 fixture unit equivalent
8 to 15	Equals	2 fixture unit equivalent
16 to 30	Equals	4 fixture unit equivalent
31 to 50	Equals	6 fixture unit equivalent

The fee charge per fixture unit equivalent connection is determined by the type of structure. The price per fixture unit equivalent for a residential connection is lower than commercial or industrial connections, and both are subject to change as shown in Table 4:

Table 4 – Connection Fee Rate Increase

Type of Structure:	**Beginning July 1, 2011**	**Beginning July 1, 2012**	**Beginning July 1, 2013**
Residential	$264.61	$281.81	6.5 % increase
Non-Residential	$529.36	$563.77	6.5% increase

Connection fees are calculated and collected by Pima County. For new construction, developers must have approval in order to connect to the sewer system, and must show plans to identify how many plumbing fixtures are projected to be in the final structure. The connection fee is then calculated and charged to the developer.

Connection fees can also be assessed to existing structures. If an existing structure is going to be connected for the first time, a connection fee will be assessed. Also, renovations involving additional fixtures require additional connection fees. In this situation, the number of fixture units previously paid for is deducted from the total number of fixture units shown within the structure on the construction plans. This number is used to calculate the new connection fee. Site visits may be required to accurately assess the total number of plumbing fixtures by type in existing structures.

2.2 Upfront Fee Structure Alternatives

There are a number of methods used in the wastewater industry to assess upfront fees, such as connection fees. Several alternatives that have been considered by the County include connection fees assessed by:

- meter size (water meter),
- equivalent residential units (ERU),
- square footage, and
- lot size and density (per acre).

Although all of these assessment structures can be designed to recover the cost of capacity available to serve new customers, each requires different supporting data and levels of analysis that need to be considered carefully. Further, each leads to various levels of cost equity. After careful review and consideration by County staff, the recommended alternative connection fee structure is the meter size approach, which is detailed in the aforementioned 2009 report and summarized in the next section.

2.3 Recommended Alternative Connection Fee Structure

Assessing connection fees based on the water meter size of the new connection is a popular method for a number of reasons, including the lack of complexity for both the utility and its customers, which provides ease of implementation and administration, simplicity, minimum data requirements, and customer acceptance. Meter size is a readily identifiable detail, which creates consistency and limits upfront fee controversies or disputes. This structure encourages customers to use the proper meter size in development, thus providing a reasonable basis for a utility to determine the potential demand that new customer connections will place on the system.

One key disadvantage of the meter size system is the potential significant loading differences among customers within meter classes. Regarding 5/8-inch customers, the fee would be based on the projected usage for the smallest meter size, but the actual demand on the system could be much greater for one connection than another. While this method appears to be less flexible for customers within meter classes than the existing approach, its uniformity and simplicity is highly accepted in the water and wastewater utility industry. Under this approach, customers are assessed a fee for the original connection, but are not required to pay a supplemental fee for a renovation to the structure unless a larger meter is installed. As such, when compared to the County's current fee structure, the meter size approach may result in less overall revenue from customers, but will further reduce administrative requirements. Typically, meter-size data is readily available and can be incorporated into the assessment process with limited administrative effort. The straightforward, systematic approach is easy to implement and administer, and residential (most likely 5/8-inch) customers are treated equally.

2.4 Calculation Methodology

The typical procedure for a utility developing an upfront fee by meter size begins with the calculation of a charge for the smallest connection, usually a residential or commercial connection of 5/8-inch or 3/4-inch meter. The charge will be the product of a derived cost of capacity, expressed in gallons per day (gpd), multiplied by a specific level of anticipated flow from a residential customer and peak day, or weather-related, flow. For wastewater customers, this anticipated flow should, at a minimum, include a component based on daily indoor water usage, but can also include an adjustment for peak flows and/or to reflect system inflow and infiltration. The anticipated flow will represent a projected capacity need for customers connecting to the system with the smallest meter size. Using the residential charge as the basis for calculation, the upfront fees for larger meter sizes will be computed from a scale of factors related to either the capacity capability or the average customer demand of the respective meter relative to the average demand of 5/8-inch customers.

2.5 Alternative Fee Calculation

2.5.1 Fee for 5/8-inch Meters

The connection fee for 5/8-inch meters is calculated by multiplying the cost per gallon per day by the gallons per day demand for customers within the meter class including peak day demand. For the County, the residential customer demand component for a 5/8-inch meter is calculated using the anticipated demand per capita of 80 gpd multiplied by the estimated 2.7 people per

household[1], which equals 216.0 gpd, shown in Table 5. The 80 gpd per capita is a standard planning number for sewer systems identified by the Arizona Department of Environmental Quality. Both of these figures are used by the County to project system capacity needs, and they are each identified specifically on County capacity allocation request forms.

Table 5 – Household Demand Calculation

Estimate of Usage Per Capita	80	gpd
Estimate of Number of People per Household	2.7	
Total Household Demand	**216.0**	**gpd**

Additional peak day flow, which recognizes that the utility must also size its system to accommodate demand from system inflow and infiltration (I&I), is incorporated using a 17.5% factor above that of the residential demand[2]. This results in a total demand component of 253.8 gpd. Using $16.02 for the cost of capacity and a daily demand per meter of 253.8 gpd, the connection fee for a new 5/8-inch meter is $4,066, shown in Table 6. This fee becomes the basis for the connection fees for larger meter sizes.

Table 6 – 5/8-inch Meter Connection Fee Calculation

Total Household Demand	216.0	gpd
Estimate of I&I Factor	17.5	%
Estimate of Total Usage Per 5/8-inch Meter	**253.8**	**gpd**
Cost Per Gallon Per Day	**$16.02**	
New Connection Fee for 5/8-inch Meters	**$4,066**	

2.5.2 Fees for 1-inch to 4-inch Meters

The 5/8-inch connection fee is based on projected demand per capita, which often represents a demand lower than what the meter is capable of flowing on a daily basis. Therefore, the connection fee for the smallest meter size may be low relative to the capacity of the meter. Conversely, customers with larger water meters tend to exhibit demand patterns in closer proximity to the meter's capability, which supports a basis for calculating equivalency ratios based on average customer demand rather than standard water meter capacity ratios, such as those identified by the American Water Works Association.

[1] Represents capacity planning statistic used by the County, as identified on capacity allocation request forms.
[2] Represents the average of the annual peak days for 2010 and 2011 daily wastewater flows in the metropolitan system.

As a result, the fees for meter sizes from 1-inch up to 4-inch are calculated using a set of escalation factors, or meter ratios, derived from historical average demand per customer within the respective meter classes. For this analysis, annual demand from 2009, 2010, and 2011 was segregated by meter size and compared to the number of accounts per meter size to arrive at the annual average demand per customer by meter size. Data was only available from Tucson Water, one of several billing providers for the County, but since Tucson Water represents approximately 85% of the County's customers, the data served as a good foundation for estimating the total demand and accounts. The results of the 3 year averages are shown in Table 7.

Table 7 – 3 Year Average Demands by Meter Size

Meter Size	3 Year Average (1) (gpd)
5/8"	160
1"	333
1 1/2"	1,063
2"	2,746
3"	6,395
4"	14,311
6"	23,936
8"	67,191

(1) See "Final Alternative Connection Fee Assessment Model FY2012.xlsx".

The meter ratios for meters up to 4" are presented on the right in Table 8, and are used to calculate the meter connection fees shown in Table 9 by multiplying the meter ratios by the 5/8-inch connection fee.

Table 8 – Meter ratios

Meter Size	3 Year Average (gpd)	3 Year Average Meter Ratios
5/8"	160	1.0
1"	333	2.1
1 1/2"	1,063	6.6
2"	2,746	17.2
3"	6,395	40.0
4"	14,311	89.4

Table 9 – Meter Connection Fees

Meter Size	3 Year Average Meter Ratios	Meter Fees
5/8”	1.0	$4,066
1"	2.1	$8,480
1 1/2"	6.6	$27,030
2"	17.2	$69,790
3"	40.0	$162,510
4"	89.4	$363,690

2.5.3 Fees for Meters above 4-inch

Briefly explained above, using a meter size approach for upfront fees can lead to inequity among customers within a particular meter class because of the potential variability in demand. It is typically observed that the larger the meter, the greater potential for variability in demand within the same meter size. Therefore, a strategy that can be used to address this inequity is to develop connection fees up to a certain meter size only, for example four-inch meters, as recommended in this case. Customers requiring a meter size larger than four inches are assessed a connection fee based on estimated usage. The usage will be estimated by the customer and will include detailed supporting data. The estimate will be approved by the County and multiplied by the cost of capacity to derive the fee.

Utilities often conduct a True-up at the end of the first year for large meter connections. This process evaluates the accuracy of the initial anticipated demand compared to the actual demand recorded throughout the year. If the average daily demand is outside of a percent window, such as +/- 10%, the fee initially paid is adjusted. This encourages customers to provide a more realistic projection of their demand, and in the cases where the demand was significantly higher than projected, the County would be able to justifiably collect additional revenue for the customer’s proportionate use of system capacity. The disadvantage to this approach is the True-up process may become complicated if there is not proper communication between the developer and customer that the customer may be liable for additional fees after the evaluation time period. It is recommended that the County consider this when implementing fees for large industrial customers.

2.5.4 Revenue Generation

The County is forecasting $16.8 million in revenue from connection fees in the current fiscal year (FY 2012).[3] For comparison purposes, revenue generated by the alternative fee structure was calculated by multiplying the estimated number of new meters by the alternative fees for the

[3] Appendix A of the November version of the 2011 Preliminary Official Statement (POS).

respective meter sizes. The number of new meters for 2012 represents the approximate increase in meters by meter size over the past two years. The resulting revenue, shown in Table 10, is approximately $16.5 million. This is lower than the FY 2012 estimate of $16.8 million when compared to the existing connection fee structure.

Table 10 – 2012 Revenue Calculation

	Projected Fees 2012	# of New Meters (1) 2012	Projected Revenue 2012
Fees and Revenue			
5/8"	$4,066	1,075	$4,370,950
1"	8,480	215	1,823,200
1 1/2"	27,030	16	432,480
2"	69,790	93	6,490,470
3"	162,510	7	1,137,570
4"	363,690	3	1,091,070
6" (2)	384,480	3	1,153,440
8" (2)	1,073,340	0	-
10"	-	0	-
			$16,499,180

(1) The customer growth by meter size for the base year was determined by the increase in meters from FY 2009 to FY 2010. However, the overall total number of new meters added annually of 1,412 is consistent with the annual new permits added in FY 2011.

(2) Fee represents average demand for customers at meter size multiplied by $16.02, the cost of capacity per gallon per day. This is used to estimate revenue generated by the estimated new meters.

The most significant challenges in forecasting revenue under the new connection fee structure are predicting both the number of new connections and their corresponding meter size. The approach discussed above is based on historical data and provides a reasonable basis for estimating revenues. However, it is not possible to predict precisely the level of revenue from the new connection fee structure, as it will be based ultimately on numerous factors including, for example, economic activity, housing starts, and customer preferences for connection sizes.

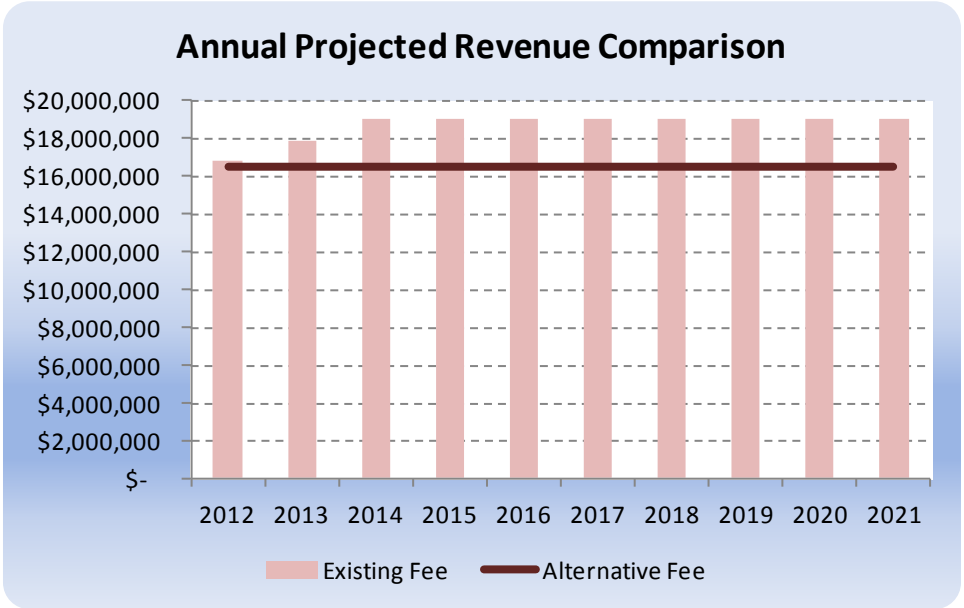
2.6 Projected Fees and Revenue Comparison

For the purpose of this analysis, no annual fee increases are incorporated into the forecast. Similarly, the annual increases in number of customers are not increased incrementally for additional system growth. These measures are used to conservatively project annual revenue based on the new connection fee structure.

Figure 1 shows the comparison between the current projection of revenue generated from the existing fee structure and the alternative fee structure. It is important to note that annual fee

increases have been approved for the existing fee structure through FY 2014, and therefore have been included in the analysis. The level of system growth will dictate future revenue from connection fees ultimately.

Figure 1 – Existing and Alternative Structure Revenue Comparison



2.7 Customer Impact Analysis

The alternative connection fee structure is substantially different in concept and actual fees from the existing fee structure. As a result of the changes described above, new customers of particular meter classes will experience a decrease or increase to the fees that were previously assessed based on equivalent fixture units. For example, the 5/8-inch meter fee is considerably lower than the existing residential fee. The alternative structure shifts more of the cost burden to large meter sizes, particularly the 1-inch, 1 ½-inch, and 2-inch customers. It is difficult to forecast the customer impacts for meters above 4-inch because the fee is estimated on a case-by-case basis

2.8 Conclusions and Recommendations

The recommendation of this report is for the County to transition from the assessment of connection fees on the basis of fixture units to the assessment on the basis of meter size. An assessment structure based on meter size is defensible, straightforward, and easily understood by customers. Although the County may experience a reduction in revenue, particularly from an inability to collect additional fees from renovations to existing structures, this approach provides an equitable allocation of system costs to new customers.

Section 3. Benchmarking Peer Utilities

Many utilities, just like the County, have found the need to reevaluate their upfront fee structure and adopt an alternative methodology to meet the volatile demand of new community growth, increase cost equity, address organizational objectives, and target future innovation for their wastewater utility. Even within the same general geographic region, connection fees or other upfront charges, vary significantly between utilities. RFC has conducted a comprehensive benchmarking analysis of 16 wastewater utilities in the southwestern United States, with a specific focus on large utilities in Arizona. This analysis will allow RFC to compare the County's current connection fee structure and assessment methodology with utilities that demonstrate similar operating and demographic characteristics.

Southwestern utilities face many similar externalities, including a high rate of population growth (Arizona was the fastest growing state in terms of population in 2009), and increasing demand for residential, commercial, and agricultural water. In 2001, the Arizona Department of Environmental Quality (ADEQ) changed the reclaimed water regulations by establishing the Aquifer Protection Permit, which established five classes of wastewater (A+, A, B+, B, C) and set new standards for the use of each class. The new classification standards for reclaimed water may have prompted utilities to upgrade their level of treatment to obtain an A+ rating, and while this allows for a variety of reuse options, for these utilities, the costs of compliance have been high. This section discusses the approaches and fees currently in place for the utilities that participated in our benchmarking analysis, shown here in Table 11.

Table 11 – Comparable Utilities and Upfront Wastewater Fees

Utility	State	Assessment Method	Typical Residential Fee
Gilbert Utilities Department	AZ	Meter	$5,866
Chandler Municipal Utilities Department	AZ	Meter	$5,272
Buckeye Wastewater Treatment Division	AZ	Meter	$3,902
City of Surprise Department of Public Works	AZ	Meter	$3,826
City of Tempe Water Utilities Division	AZ	Meter	$2,848
Phoenix Public Works Department	AZ	Meter	$2,622
Glendale Water and Wastewater Utilities	AZ	Meter	$2,330
City of Peoria Utilities Department	AZ	Meter	$1,923
Albuquerque Bernalillo County Water Authority	NM	Meter	$1,816
Scottsdale Water Resources Department	AZ	Sq. Ft. of Lot	$2,373
Sacramento Regional County Sanitation District	CA	ERU	$7,450
Eastern Municipal Water District	CA	ERU	$4,485
City of Riverside Public Works Department	CA	ERU	$3,805
Coachella Valley Water District	CA	ERU	$3,517

Clark County Water Reclamation District	NV	ERU	$2,066
City of Henderson Utility Services	NV	ERU	$1,800
Current Pima County Fee	*AZ*	*Fixture Units*	*$6,350*
Proposed Pima County Fee	*AZ*	*Meter*	*$4,066*

As Table 11 indicates, the majority of utilities in Arizona currently assess wastewater connection fees based on meter size, while Nevada and California utilities use ERUs. The level of upfront fees is fairly diverse, ranging from $1,800 in Henderson to $7,450 in Sacramento County.

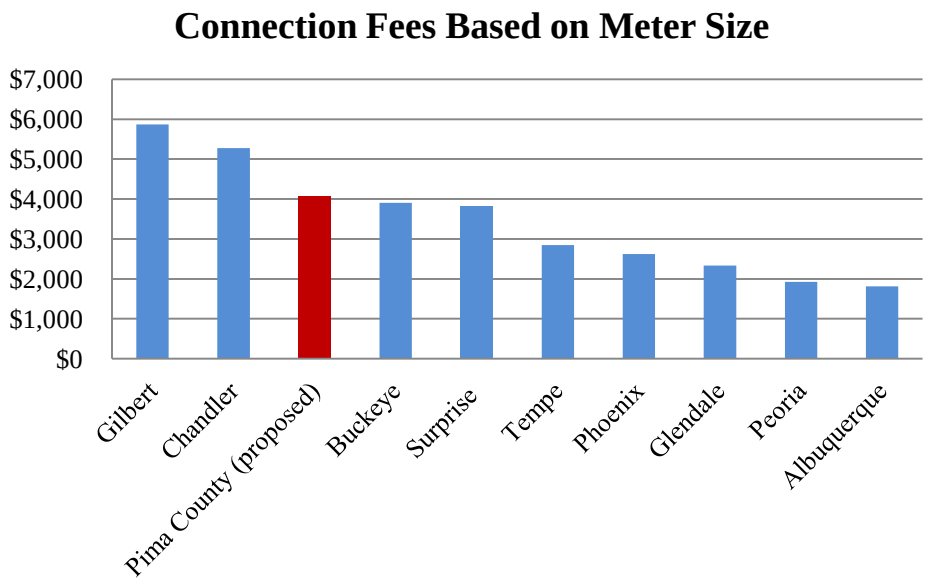
3.1 Fee Structures and Discussion of Relevant Utilities

3.1.1 Meter Size

Charging upfront fees based on the meter size of the new connection is popular for a number of reasons, including the lack of complexity for both the utility and its customers, which provides ease of implementation and administration, simplicity, minimum data requirements, and customer acceptance. Meter size is a readily identifiable detail, which creates consistency and limits upfront fee controversies or disputes. This structure encourages customers to use the proper meter size in development, thus providing a reasonable basis for a utility to determine the potential demand that new customer connections will place on the system.

The typical procedure for a utility developing an upfront fee by meter size begins with the calculation of a charge for the smallest connection, usually a residential connection of 5/8-inch or 3/4-inch meter. The charge will be the product of a derived cost of capacity, expressed in gallons per day (GPD), multiplied by a specific level of anticipated flow from a residential customer. For wastewater customers, this anticipated flow should, at a minimum, include a component based on daily indoor water for an ERU, but can also include an adjustment to reflect system inflow and infiltration. The anticipated flow will represent an average daily flow for customers connecting to the system with the smallest meter size. Using the residential charge as the basis for calculation, the upfront fees for larger meter sizes will be computed from a scale of factors related to either the capacity capability or the typical customer demand of the respective meter. Upfront fees for utilities that assess these fees by meter size can be seen in Figure 2.

Figure 2 – Comparison of Upfront Fees for Utilities that Assess Based on Meter Size (based on smallest meter size fee)



3.1.1.1 *<u>Gilbert Utilities Department, Gilbert AZ</u>*

Residential Fee for a 3/4" Meter: $5,866

Fee Includes: Wastewater Development and Capacity

The Town of Gilbert, Arizona (Gilbert) has experienced rapid growth over the last few decades, increasing from just over 5,000 residents in 1980 to more than 200,000 in 2010. For a 3/4-inch meter, new wastewater connections are charged $5,866; a fee that was last updated in 2009. The Gilbert Utilities Department has the capacity to treat 18 million gallons per day (MGD); however, typical daily treatment is approximately 7.5 MGD for 64,484 accounts.

3.1.1.2 *<u>Chandler Municipal Utilities Department, Chandler AZ</u>*

Residential Fee for a 3/4" Meter: $5,272

Fee Includes: Capacity, Infrastructure, and Expansion Costs

The Chandler Municipal Utilities Department (Chandler) assesses wastewater system development fees, which have been in place since 1997, and were last updated in 2009. As with Gilbert, Chandler has seen a significant increase in population, to its current population of 238,041, and currently serves 73,042 accounts. Treatment capacity for the Chandler treatment plants is 34.7 MGD and average flows are 22.7 MGD. The system includes 864 miles of sewer pipeline, and most of the collection system is between 10 and 15 years old. Chandler treats

wastewater at an A+ level, with treatment plants built in 1985 and 1999, and the most recent expansion project having concluded in 2009.

3.1.1.3 Pima County Regional Wastewater Reclamation Department, Pima County AZ

Proposed Residential Fee for a 5/8" Meter: $4,066

Fee to include: Cost per gallon per day

Pima County serves approximately 1.02 million residents and 261,946 accounts in the City of Tucson, the second largest city in Arizona, and surrounding areas. Pima County services an area of 370 square miles and has 3,506 miles of sewer pipeline. Pima County's current wastewater treatment capacity is 91.8 MGD, and a typical daily flow of 63.4 MGD is treated at the wastewater facilities. Portions of the collection system are more than 100 years old, and the oldest treatment facility, Roger Road, is more than 50 years old. Pima County is currently reviewing its connection fee structure. The proposed fee will be based on a projected 253.8 GPD per account, or 80 gpd per capita, 2.7 people per household, and 17.5% I&I factor.

3.1.1.4 Buckeye Wastewater Treatment Division, Buckeye AZ

Residential Fee for up to 1" Meter: $3,902

Fee Includes: Growth-related costs

The Buckeye Wastewater Treatment Division (Buckeye) assesses its wastewater development fee for up to a 1-inch water meter, based on a structure designed to recover growth-related costs. The Treatment Division serves 16,875 accounts and a population of 50,876 in a 600 square mile service area. Wastewater is delivered to the treatment plants through 210 miles of pipeline, and while the treatment plants have the capacity to treat 10.3 MGD, average daily flows are approximately 1.2 MGD. The Beloat Treatment Plant expansion was completed in 2011, but it is unclear whether the costs are included in the development fees. To calculate average per capita flows, Buckeye assumes 2.7 residents per dwelling unit, with each requiring 100 GPD. This equates to 270 GPD per wastewater account.

3.1.1.5 City of Surprise Department of Public Works, Surprise AZ

Residential Fee for a 3/4" Meter: $3,826

Fee Includes: Demand, capital costs, and non-capital costs

The tenth largest city in Arizona, the City of Surprise (Surprise) has a population of more than 117,000 people. The $3,826 wastewater development fee has been in place since 2006. The three treatment plants in Surprise have a total capacity of 16.3 MGD, but typically treat 7.8 MGD for 43,941 accounts. Surprise covers 45 square miles and includes 530 miles of sewer pipe. The collection system is approximately 10 years old, and the treatment plants were

expanded in 2008 and 2009. It is unclear whether Surprise's current development fees include the costs associated with the most recent plant expansions. Surprise uses a typical flow of 250 GPD per account to calculate its wastewater development fee.

The Sub-Regional Operating Group

The Sub-Regional Operating Group (SROG) was created in 1979 as the result of an agreement between the cities of Tempe, Mesa, Phoenix, Scottsdale, and Glendale. The agreement dealt with the liability of the joint ownership and operation of the 91st Avenue Wastewater Treatment Plant, as multi-city coordination allowed for lower costs of compliance with federal requirements and a higher degree of consistency of implementation within the region. Because each of these cities assess different upfront wastewater fees (and Scottsdale bases its fees on square feet, as opposed to the meter size), each will be discussed separately, but each utilizes the 91st Avenue Treatment Plant to some extent. The total plant capacity is 205 MGD, and was most recently expanded in 2008.

3.1.1.6 City of Tempe Water Utilities Division, Tempe AZ

Residential Fee for a 5/8" Meter: $2,848

Fee Includes: Costs of financing capital expansion and enlargement

The City of Tempe Water Utilities Division's (Tempe) wastewater development fees of $2,848 for a 5/8-inch meter and $4,272 for a 3/4-inch meter are designed to finance capital expansion and enlargement, and were put in place and last updated in 2008. The population of 161,719 translates to 42,344 accounts and a total treatment capacity of 18 MGD in the SROG, which has been expanded within the last five years, though the collection systems are approximately 50 years old. Development in Tempe is fairly concentrated, with a service area of only 42 square miles and 496 miles of sewer.

3.1.1.7 Phoenix Public Works Department, Phoenix AZ

Residential Fee for up to a 1" Meter: $600-$6,773

Fee Includes: Costs for large facilities (18-inch+ sewers, large lift stations, and treatment capacity)

The Phoenix Public Works Department (Phoenix) assesses different wastewater development impact fees for 14 areas in Phoenix, which average $2,622 and range from $600 to $6,773. The wastewater development impact fees are designed to finance infrastructure costs, including treatment capacity, large lift stations, and 18-inch+ sewers. This fee was first implemented in Northern Phoenix in the late 1980s, and had been adopted by the other 13 regions by 2000, with the most recent update to all the fees coming in 2006.

Phoenix, the largest city in Arizona and the 7th largest city in the United States, has a population of more than 1.5 million residents, translating to more than 375,000 accounts. The city has six treatment plants, the largest being the 91st Avenue Wastewater Treatment Plant, which collectively have the capacity to process 293 MGD, and are currently processing 172 MGD at the tertiary treatment level. Treatment plants underwent significant expansion between 2000 and 2008, and the collection systems, including more than 5,000 miles of sewer lines, have been in place since the 1920s and are still expanding. Phoenix assumes 307 GPD of wastewater discharge for each household.

3.1.1.8 Glendale Water and Wastewater Utilities, Glendale AZ

Residential Fee for a 3/4" Meter: $2,330

Fee includes: Development costs and the retirement of debt services

The Glendale Water and Wastewater Utilities (Glendale) assess a $2,330 wastewater development impact fee that includes development costs and the retirement of debt service. Glendale's population is just over 225,000 and the Wastewater Utility services 59,049 accounts. The total treatment capacity is 29 MGD, with average daily flows of 12 MGD. The Glendale system also contains 680 miles of sewer pipeline. Glendale assumes wastewater flows of 288 GPD per household.

3.1.1.9 City of Peoria Utilities Department, Peoria AZ

Residential Fee for a 3/4" Meter: $1,923

Fee Includes: Acquisition, construction, and expansion of wastewater treatment plants; trunk lines to transport wastewater; lift stations; debt service; and other expenses or improvements related to the public wastewater system.

The City of Peoria Utilities Department charges a $1,923 wastewater expansion fee that was first put in place in 1999, and has been updated five times between implementation and 2008. The City of Peoria (Peoria) has a population of 154,065, with 50,836 wastewater accounts. The service area is 165 square miles, and includes 748 miles of sewer lines. The collection systems were first built in the 1960s, with the bulk of the lines constructed in the last ten years. Peoria has three treatment plants, with the largest constructed in 2008 and the other two constructed since 2002. The total treatment capacity is 16.5 MGD, and the average daily treatment is 10 MGD. Peoria assumes wastewater flows of 300 GPD per household.

3.1.1.10 Albuquerque Bernalillo County Water Utility Authority, Albuquerque NM

Residential Fee for a 3/4" Meter: $1,816

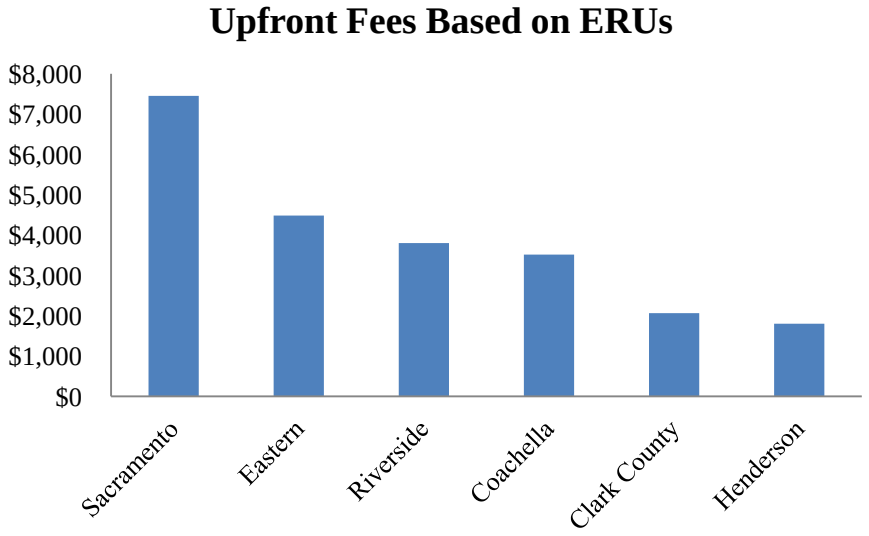
Fee Includes: Revenue to recover a part or all of the cost of public facilities providing system capacity for their use

The Albuquerque Bernalillo County Water Utility Authority (ABCWUA) is the only wastewater utility that we researched outside of Arizona using meter size to assess its wastewater expansion fees. The current fee was last updated in 2007, and includes the cost of part or all of public facilities providing system capacity for their use. The City of Albuquerque has a population of 907,775 and the Water Authority has 191,813 wastewater accounts. The service area includes 2,409 miles of sewer lines, and the treatment plants have a total capacity of 76 MGD, with a typical daily treatment level of 55 MGD. The County and ABCWUA are fairly similar, in terms of the number of accounts and the capacity of the treatment system.

3.1.2 Equivalent Residential Units

A connection fee methodology that uses ERUs as a basis for assessment has several advantages. Using this method attempts to correct some of the potential inequities associated with upfront fee assessment by meter size, such as the significant loading differences that can exist among customers within the same meter class (discussed in Section 1). Typically, an ERU represents the smallest meter size available for residential customers (often 5/8”). Utilities can then independently determine the GPD flow equivalent to a single ERU. Upfront fees assessed by ERU can also organize customers into common business and residential classifications, so that the demand, or loading on the wastewater system, can be estimated more accurately. This may result in a more equitable approach than assessment based on meter size, since the actual purpose or designation of the customer is taken into consideration for determining the upfront fee. Upfront fees for utilities that assess fees by ERUs are presented in Figure 3.

Figure 3 – Upfront Fees for Utilities that Assess Based on ERUs



3.1.2.1 Sacramento County Regional Sanitation District, Sacramento CA

Residential Fee: $7,450

Fee Includes: Capital costs/debt service payments for constructing facilities that benefit future customers

The Sacramento County Regional Sanitation District (SCRSD) assesses the highest wastewater impact fee in this benchmarking analysis, at $7,450. The fees have been in place since 1976, and were most recently updated in 2008. The treatment plants serving SCRSD's customers have 181 MGD of capacity and typically treat approximately 150 MGD to a secondary level. The SCRSD serves 1.3 million people and services 400,000 accounts. In the SCRSD, an ERU is determined to be 400 gallons per residential unit per day. One potential reason for SCRSD's high fee is the 400 GPD equivalency – most other utilities in this analysis consider an ERU to be between 220 GPD and 250 GPD.

3.1.2.2 Eastern Municipal Water District, Riverside County CA

Residential Fee: $4,485

Fee Includes: Revenue for planned and existing wastewater facility capacity

The Eastern Municipal Water District (EMWD) serves 699,000 customers and 180,000 accounts in southern California. Wastewater financial participation charges are assessed to generate revenue for planned and existing wastewater facility capacity. In terms of the service area, the EMWD covers 555 square miles with 1,727 miles of sewer pipeline. The treatment facility capacity is 121 MGD, with only 46 MGD of average flows treated at the tertiary level. In the EMWD, one ERU is determined to be 235 gallons per residential unit per day.

3.1.2.3 City of Riverside Public Works Department, Riverside CA

Residential Fee: $3,805

Fee Includes: Costs of conveying and treating wastewater for new development

The City of Riverside Public Works Department (Riverside) implemented its wastewater capacity fee in 1949, and has updated it several times since, most recently in 2011. Riverside serves a population of 300,000 and 64,064 accounts in an 88-square mile service area. Wastewater is treated at a tertiary level, and the total Riverside capacity is 40 MGD, with an average treatment of 38 MGD. The Riverside collection systems were first put in place in 1895, and have gradually expanded to 1,100 miles of sewer lines. A Riverside EDU is equivalent to 220 gallons per residential unit per day.

3.1.2.4 Coachella Valley Water District, Coachella CA

Residential Fee: $3,517

Fee Includes: Collection and treatment systems, plus expansion

The Coachella Valley Water District (CVWD) serves 104,888 accounts in a service area of approximately 1,000 square miles in California. Treatment plant capacity is 34 MGD, of which 18.3 MGD is typically treated. Of the three treatment plants in the CVWD, two treat at a tertiary level, and the system includes 1100 miles of sewer lines.

3.1.2.5 Clark County Water Reclamation District, Clark County NV

Residential Fee: $2,066

Fee Includes: Connection to the collection system

The Clark County Water Reclamation District (Clark County) first put its wastewater development approval fee in place in 1975, and has updated it as recently as 2011. Clark County serves almost 875,000 customers and 236,000 accounts in its 211-square mile service area. 2030 miles of sewer pipeline transport an average of 96 MGD to one of six treatment plants, where the total capacity is just under 160 MGD. The Clark County collection system is between 21 and 56 years old, and the largest and oldest plant was built in 1956, and has been expanded and upgraded several times. An ERU in Clark County is considered to be 250 GPD per equivalent residential unit. It appears that the wastewater development and approval fee in Clark County excludes the costs associated with the wastewater treatment facilities.

3.1.2.6 City of Henderson Utility Services, Henderson NV

Residential Fee: $1,800

Fee Includes: System buy-in for customer's proportionate share of facility costs incurred to serve them

The City of Henderson Utility Services (Henderson) has assessed wastewater system development fees since 1953, and updated them most recently in 2001. The utility serves a total population of 277,000, with 85,762 accounts, in its 105-square mile service area. 934 miles of sewer pipeline transport wastewater to the Segler Wastewater Reclamation Facility (WRF), where the facility treats approximately 22 MGD. The collection system was originally put in place in the late 1960s, but has been expanding ever since. The Segler WRF was constructed 30 years ago, but has also undergone expansion, with the most recent increasing the capacity of the facility from 24 MGD to 32 MGD in 2007. An ERU in Henderson is considered to be 250 GPD per equivalent residential unit.

3.1.3 Lot Size and Density (Per Acre)

Upfront fees can also be assessed by lot size while recognizing structure density. A utility implementing this approach derives upfront fees by first designating a lot size, which is usually an acre. The utility then determines the density per lot size. The density is correlated to the number of structures on the lot, not the number of people. This density value is used to determine the service usage per structure, or dwelling unit, in GPD. The usage developed from the density value is multiplied by the cost per GPD of capacity to assess the final upfront fee. Only one city in our study, Scottsdale, Arizona, assesses wastewater upfront fees based on lot square footage.

3.1.3.1 Scottsdale Water Resources Department, Scottsdale AZ

Residential Fee: $2,373

Fee Includes: Wastewater development

The Scottsdale Water Resources Department (Scottsdale) has assessed wastewater development impact fees since 1986, and updated them most recently in 2008. The utility serves a total population of 217,885, with 87,349 accounts, in its 185-square mile service area. Like Phoenix, Mesa, Tempe, and Glendale, Scottsdale participates in the SROG that shares the 91st Avenue Treatment Plant. 1,421 miles of sewer pipeline transport approximately 21 MGD, and the total treatment capacity is 23 MGD. The $2,373 wastewater development fee covers single family residences of 2,500 to 3,999 square feet, and is further scaled in increments of 1,500 square feet. Scottsdale assumes wastewater flows of 294 GPD per household.

Appendix

Appendix - Comprehensive Benchmarking Analysis Results

City	State	Residential Upfront Fee	Fee Structure	Fee Includes	Fee has been in place since	Fee last updated	Population Served	Treatment Capacity (MGD)	Treatment Current (MGD)	Accounts	Service Area Size (square miles)	Miles of Sewer	Age of the Collection Systems	Age of the Treatment Plants	Level of Treatment
Gilbert	AZ	$5,866	Meter	Fee Based on the Ratio of Manufacturer's Maximum Meter Capacity to ¾" Meter Maximum Capacity.		2009	208,453	18	7.5	64,484					A+
Chandler	AZ	System Development Fee - $5,272	Meter	(3/4" Meter Charge) X (Manufacturer's Maximum Meter Operating Capacity (GPM)/30(GPM)) - capacity, infrastructure, and expansion	1997	2009	238,041	34.7	22.7	73,042		864	10-15 years	1985 - 1999, expansion finished in 2009	A+
Pima County	*AZ*	*$4,066*	*Meter*	*Based on an assumed cost per gallon per day*		*Proposed Fee*	*1,020,000*	*91.8*	*63.4*	*261,946*	*370*	*3,506*	*Portions are more than 100 years old*	*Oldest is Roger Road Facility, 50+ years*	*Treats for Nitrogen*
Buckeye	AZ	$3,902	Meter	"Recover growth-related costs"			50,876	10.3	1.16	16,875	600	210		Beloat - expanded 2011	Treats for Nitrogen
Surprise	AZ	$3,826	Meter	Based on demand, capital costs and other non-capital costs	2006	2006	117,517	16.3	7.8	43,941	45	530	10 years	2009 expansion	Treats for Nitrogen
Tempe	AZ	$2,848	Meter	Finance capital expansion and enlargement		2008	161,719	9	N/A	42,344	42	496		Approximately 5 years	Treats for Nitrogen
Phoenix	AZ	$600-$6,773	WW impact fees based on fixture units; WW DOF based on meter size	Costs for large facilities (18"+ sewers, large lift stations, treatment capacity)	WW impact fees in North and City-wide WW DOF initiated in 1980s; more area-specific WW impact fees added since	2006	1,500,000	293	172	391,267	540	5,000	4,980	91st Ave WWTP built in 1957 with numerous expansions (last in 2010); 23rd Ave WWTP built in 1926 with expansions	91st Ave - B+
Glendale	AZ	$2,330	Meter	Includes development and retirement of debt service			227,721	29	12	59,049		680			91st Ave - B+
Peoria	AZ	$1,923	Meter	Includes, but is not limited to, acquisition, construction and expense of waste water treatment plants, trunk lines to transport waste water, lift stations, debt service and other expenses or improvements related to the public waste water system.	1999	2008 (5th update)	154,065	16.5	10	50,836	166	748	Started in 1960s, bulk probably happened in the 2000s	Largest went online in 2008, another built in 2002 (no expansion), third built in 2005 and expanded in 2007	Tertiary, Nutrient Removal
Albuquerque	NM	$1,816	Meter	recover a part or all of the cost of public facilities providing system capacity for their use	2007		907,775	76	55	191,813		2,409			Southside Water Reclamation Plant - Removes Nitrogen
Scottsdale	AZ	$2,373	Sq. Foot	Wastewater development	1986	2008	217,885	23	21	87,349	185	1,421			Water Campus - A+
Sacramento	CA	$7,450	ESD	Captial costs/debt service payments for constructing facilities that benefit future customers	1976	2008	1,300,000	400 MGD for Peak Wet Weather Flow; permitted capacity is 181 MGD	150	400,000	250+	151 (Interceptors Only)	Less than 10 - 50+	30 years (1982)	Secondary
Eastern	CA	$4,485	ERU	for planned and existing wastewater facility capacity			699,000	121	46	180,000	555	1,727			5 Plants - Tertiary Treatment
Riverside	CA	$3,805	ERU	Costs to convey to, and treat, new development	1949	2011	301,626	40	38	64,064	88	1,100	1,895	1941	Riverside Water Quality Control Plant -Tertiary treatment
Coachella	CA	$3,517	ERU	Costs factor in collection and treatment systems, plus expansion			202,660	34	18.3	104,888	1,000	1,100			2/3 plants do tertiary treatment
Clark County	NV	$2,066	ERU	Connection to the Collection System	1975	2011	872,586	159.34	96.26	236,627	212	2,030	21-56 years old	Laughlin built 1985, Desert Breeze built 2003, Central Plant expanded within the last 5 years	
Henderson	NV	$1,800	ERU	System buy-in for customer's proportionate share of facility costs incurred to serve them.	1953	2001	277,885	32	21.75	85,762	105	934	Up to 55 years	WRF 30 yrs (from 24mgd facility to 32mgd in 2007)	Segler WRF removes nitrogen and phosphorous

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Memorandum

To: Mr. Jackson Jenkins, Director
From: Mr. Harold Smith, Vice President, Raftelis Financial Consultants, Inc.
Mr. Bart Kreps, Manager, Raftelis Financial Consultants, Inc.

Date: March 7, 2012

RE: Cost of Capacity

Raftelis Financial Consultants, Inc. (RFC) is pleased to submit this memorandum summarizing the results of our financial review of Pima County, Arizona's (County) cost of wastewater treatment and conveyance capacity. The following summary documents our evaluation approach, key assumptions, and methodologies used to support the calculation. The Appendix to this document (attached) provides additional supporting detail.

Background Information

The County is responsible for the operation, maintenance, administration, and capital investment in the wastewater collection, treatment, and disposal system. The County has made substantial capital investments in wastewater treatment and conveyance infrastructure, and has initiated the design and construction of an extensive capital program, a significant portion of which is the Regional Optimization Master Plan (ROMP); a regulatory-driven investment plan to meet permitting requirements for environmental compliance. Additional capital investment needs include ongoing reinvestment in wastewater collection and conveyance infrastructure, as well as system improvements related to capacity expansion.

Alternative Methodologies for Calculating Cost of Capacity

There are a variety of alternatives for calculating the cost of capacity. The most prevalent and accepted methodologies include the marginal-incremental cost approach, the system buy-in approach or a hybrid approach, which includes some combination of both the marginal incremental and system buy-in approaches. The marginal-incremental cost approach focuses on the cost of adding additional facilities to serve new customers. It is most appropriate in situations where existing utility facilities do not have available capacity to provide service to new customers. The system buy-in approach is based on the concept that existing users, through user fees and other miscellaneous charges, develop a valuable public capital facility. This method is appropriate for utility systems with capacity already in place, and it provides an estimate of the cost of providing a unit of capacity based on the net equity of the existing assets. Another alternative is a system average cost approach, which is a hybrid of both the marginal incremental

and system buy-in approaches. The system average cost approach focuses on the total value and total capacity of the utility system or the value of the portion of the utility system and related capacity available to serve new customers. When focusing on the value of the utility system available to serve new customers, the approach is designed to recover the current value of all existing facilities available to serve future demand plus the capital improvements to the system benefiting growth. Since the costs under this approach represent the available capacity in the system, it is appropriate to determine a unit cost by dividing this cost by the related available capacity to serve new customers.

Recommended Approach

The County currently has approximately 81.5 million gallons per day (MGD) of treatment capacity in its Ina Road Water Reclamation Facility (Ina Road), Roger Road Water Reclamation Facility (Roger Road), and Randolph Park Water Reclamation Facility (Randolph Park). This capacity serves the County's metropolitan service area (MSA).

Table 1: Pima County Treatment Capacity (Metropolitan Service Area)

Treatment Facilities (MSA) (1)	Capacity (MGD)
Ina Road WRF	37.5
Roger Road WRF	41.0
Randolph Park WRF	3.0
Total	81.5

Notes:
(1) Data provided by County staff (MasterColorTrib_JacksonMap22X28Fnalsm.pdf).

Demand forecasts developed for the ROMP identify a total capacity need of 85.0 MGD in the MSA by 2030. The ROMP includes the construction of a new 32.0 MGD Water Reclamation Campus which is designed to meet more stringent effluent discharge requirements. The existing Roger Road facility will be decommissioned after the new facility is built adjacent to the existing site. The ROMP also includes an upgrade and expansion of Ina Road to provide 50.0 MGD of higher level treatment standards consistent with all state and federal requirements. Randolph Park will address the remaining treatment needs in the MSA.

The County also owns, operates, and maintains several smaller treatment facilities, or outlying facilities, which serve customers outside of the MSA. The total combined capacity for these facilities, which individually serve specific localities, is approximately 10.3 MGD. Table 2 identifies each outlying facility and its existing rated capacity.

Table 2: Pima County Treatment Capacity (Outlying Facilities)

Treatment Facilities (Outlying Facilities) (1)	Capacity (MGD)
Green Valley WRF	4.10
Avra Valley WRF	4.00
Corona de Tucson WRF	1.30
Marana WRF (2)	0.70
Arivaca Junction WRF	0.10
Pima County Fairgrounds WRF	0.04
Rillito Vista WRF	0.02
Mt. Lemmon WRF	0.02
Total	10.3
Total Historical Treatment Capacity	91.8

Notes:
(1) Data provided by County staff (MasterColorTrib_JacksonMap22X28Fnalsm.pdf).
(2) Ownership of the Marana Wastewater Reclamation Facility is currently being litigated. The asset value of that facility is included in this memorandum under the presumption that the County will be successful in the litigation.

The only improvements to the outlying facilities contained in the County's Capital Improvements Plan (CIP) include an expansion to the Marana Water Reclamation Facility of 1.5 MGD, which increases the total capacity in the outlying facilities to 11.8 MGD. In total, the County is projected to have 96.8 MGD of treatment capacity (see Table 3) over the next five to ten years.

Table 3: Projected Pima County Treatment Capacity

Treatment Facilities (1)	Capacity (MGD)
Ina Road WRF	50.0
Water Reclamation Campus	32.0
Randolph Park WRF	3.0
Total	85.0

Treatment Facilities (Outlying Facilities)	Capacity (MGD)
Green Valley WRF	4.10
Avra Valley WRF	4.00
Corona de Tucson WRF	1.30
Marana WRF (2)	2.20
Arivaca Junction WRF	0.10
Pima County Fairgrounds WRF	0.04
Rillito Vista WRF	0.02
Mt. Lemmon WRF	0.02
Total	11.8
Total Projected Treatment Capacity	**96.8**

Notes:
(1) Projected system capacity identified in the ROMP.
(2) Includes 2.0 MGD expansion to the Marana WRF in the Capital Improvement Plan.

In FY 2011, the County's average annual flows were approximately 63.4 MGD, which suggest sufficient available capacity to serve new customers based on the total projected treatment capacity. The County's existing conveyance system also has sufficient capacity to serve new customers with some expansion and asset replacement required to maintain this capacity. As a result, the system average cost approach which can focus on system value available to serve new customers (existing and planned improvements) and capacity available to serve new customers, appears to apply to the situation in the County. There is available capacity in the system to serve new demand; however, this capacity must be maintained and/or upgraded to meet more stringent regulatory requirements.

Table 4 summarizes the portion of the County's projected wastewater treatment capacity that is reserved for existing customers and the portion that is available to serve new customers.

Table 4: Projected Treatment Capacity

Projected Treatment Capacity (MGD)		
Reserved for Existing Customers (MGD) (1)	Available for New Customers	Total
63.4 *65.5%*	33.4 *34.5%*	96.8 100.0%

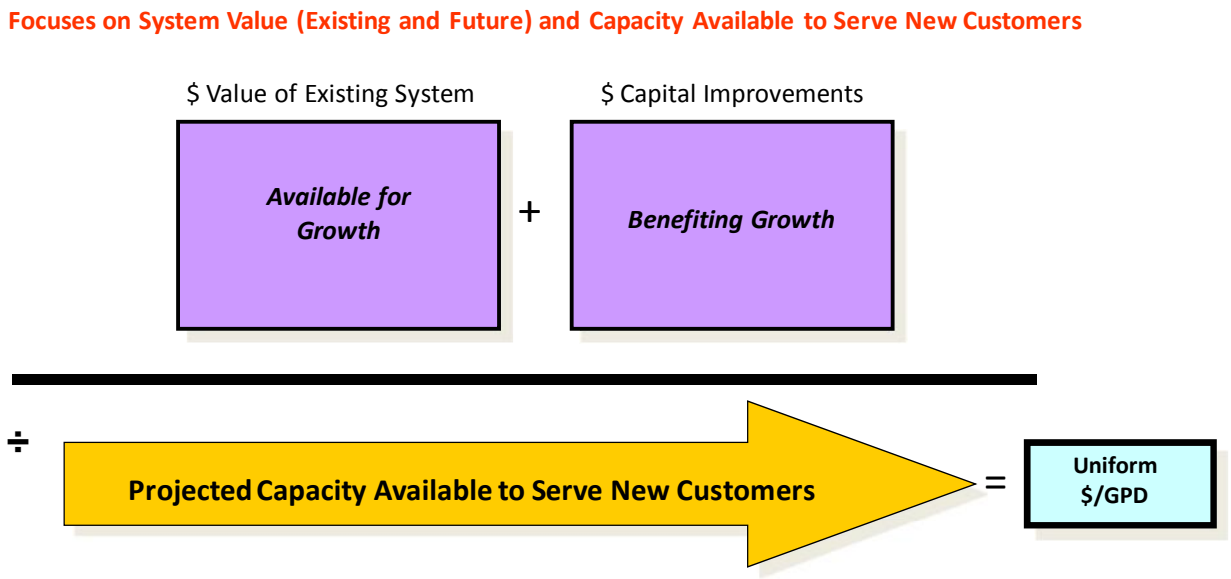
Notes:

(1) 2010 annual wastewater plant flows provided by County staff. Includes all plant flows measured at the County's treatment facilities serving both the metropolitan service area and outlying service areas (Year end flows.xlsx)

As seen above, 63.4 MGD, or 65.5%, of the County's projected wastewater treatment capacity is reserved for existing customers. While 33.4 MGD, or 34.5%, of the County's projected wastewater treatment capacity is available to serve new customers.

Table 5 demonstrates how the system value (in purple) is identified and included in the value used to determine the cost of capacity under the system average cost approach. As can be seen below, the unit cost per gallon per day ($/gpd) is determined by dividing the system value available for growth plus future capital improvements benefiting growth by projected available capacity to serve new customers (yellow arrow).

Table 5: System Average Cost Approach



Calculating the Cost of Capacity

The County's cost of capacity, based on the system average cost approach, should reflect the value of wastewater treatment and conveyance assets in the existing system available to serve new customers as well as new capital investments that benefit growth. For the purpose of the calculation, RFC defined the existing wastewater treatment system to include: Ina Road, Randolph Park, and the outlying facilities. The existing Roger Road plant is excluded as the ROMP involves the construction of a new facility, and these costs are captured in the capital program. The core wastewater conveyance, or "trunk", system serving each of these treatment facilities was also determined based on available fixed asset data. However, the fixed asset data did not separate trunk wastewater conveyance infrastructure from local collection lines. As a result, it was necessary to define a reasonable basis for allocating existing pump stations, lift stations, and piping infrastructure between the conveyance system and local collection lines. RFC, through discussion with County staff, determined that it would be reasonable and appropriate to use the total inch/feet of piping in the County's wastewater system, with the size of the line as the differentiating factor to allocate between conveyance and collection. Specifically, RFC assumed that the percentage of inch/feet of piping infrastructure 10 inches and larger should be allocated to the conveyance system, and the remaining inch/feet of piping infrastructure 8 inches and small be allocated to the collection system. As a result, 35.4% of the existing fixed assets related to pump stations, lift stations, and piping infrastructure were assumed to be associated with the conveyance system (see Table 6).

Table 6: Pima County Piping Infrastructure

Collection and Conveyance System (1)

Diameter	Length (FT)	Inch/FT	% Inch/FT
0	534	0	0.0%
1.25	1,351	1,689	0.0%
2	1,857	3,714	0.0%
3	9,141	27,423	0.0%
4	25,320	101,279	0.1%
6	1,674,323	10,045,936	5.6%
7	380	2,660	0.0%
8	13,292,815	106,342,523	59.0%
10	705,924	7,059,239	3.9%
12	925,470	11,105,643	6.2%
14	21,060	294,843	0.2%
15	493,650	7,404,751	4.1%
16	7,683	122,934	0.1%
18	408,186	7,347,346	4.1%
20	9,821	196,426	0.1%
21	178,423	3,746,880	2.1%
22	36,008	792,176	0.4%
24	158,889	3,813,346	2.1%
27	53,273	1,438,367	0.8%
30	187,275	5,618,243	3.1%
33	58,239	1,921,880	1.1%
36	67,991	2,447,664	1.4%
39	24,814	967,746	0.5%
42	41,913	1,760,364	1.0%
48	39,425	1,892,379	1.0%
54	16,853	910,072	0.5%
60	11,637	698,249	0.4%
66	30,832	2,034,923	1.1%
72	25,069	1,805,004	1.0%
78	4,028	314,184	0.2%
79	45	3,555	0.0%
84	417	35,028	0.0%
Total	**18,512,648**	**180,256,466**	

Collection	8-inch & below	64.6%
Conveyance	10-inch & above (2)	35.4%
		100.0%

Notes:
(1) Data provided by County staff in Excel file "Assets.xlsx" dated October 17, 2011.
(2) Rounded.

Additionally, it is reasonable to include prior, related investments in land and available reserves that have been paid for and accumulated by existing customers. The estimated value for existing system assets is based on the replacement cost new less depreciation (RCNLD) methodology. This methodology estimates a current value for the County's wastewater infrastructure rather than using original cost less depreciation (OCLD) or book value. A summary of the County's total fixed assets and portion available to serve new customers is provided in the attached Appendix (Schedule 2 and Schedule 4).

The total amount of capital improvements identified in the County's FY 2012 Regional Wastewater Reclamation Department (RWRD) Adopted Budget include the ROMP, conveyance system augmentation, conveyance system rehabilitation, outlying treatment facility expansions, and other system improvements. RFC worked closely with County staff to identify the specific projects related to providing system capacity. For projects that include capacity to serve both

existing and future customers, RFC included only 34.5% of these costs, to reflect the portion of these costs (34.5%) related to serving new customers (see Table 4). For projects that include capacity expansions to serve future customers only, the entire cost of these projects were included in the determining the value of the system available to serve new customers. Detailed information on the specific projects and portion of future costs included in the cost of capacity calculation are provided in the Appendix (Schedule 2).

The treatment elements of the existing system and planed capital improvements will provide a total of 96.8 MGD of treatment capacity. Of this amount, 33.4 MGD (see Table 4) will be available to serve new customers. Since the conveyance system is constructed or will be augmented to provide this level of treatment capacity to serve new customers, the 33.4 MGD is considered the limiting capacity factor provided by the non-wastewater treatment infrastructure (land, conveyance and pumping, and reserves). Thus, dividing the capital costs available to serve new customers by 33.4 MGD results in cost per gpd of $16.02.

A summary of the cost of capacity calculation is provided in Table 7.

Table 7: Cost of Capacity (gpd)

	Capital Costs (1)	Capacity (MGD) (2)	Cost per GPD
Cost of Capacity Per Gallon Per Day (gpd)			
Land	$ 3,611,653	33.4	$ 0.11
Conveyance and Pumping	186,805,925	33.4	5.59
Wastewater Treatment	326,465,255	33.4	9.77
Reserves (3)	18,218,108	33.4	0.55
Cost of Capacity (per gpd)	**$ 535,100,941**		**$ 16.02**

Notes:
(1) Represents the portion of system capital costs available to serve new customers.
(2) Represents the portion of total projected system capacity available to serve new customers.
(3) Includes only the related portion of unrestricted cash and cash equivalents and emergency reserve identified in the County's FY 2011 Statement of Net Assets.

Appendix

-Supporting Detail-

Schedule 1
Pima County Regional Wastewater Reclamation Department
Capacity Fee Calculation

	Asset Value or Estimated Cost (1)	Capacity in MGD's (5)	Cost per gpd
Asset Categories			
Land	$ 3,611,653	33.4	$ 0.11
Wastewater Conveyance & Pumping			
Existing Assets (3)			
Pumping	$ 58,673		
Lift Stations	121,831		
Conveyance	113,336,881		
Capital Improvements			
Harrison Rd. - Millmar Rd. to Escalante	712,950		
North Rillito Interceptor Relief Sewer	2,272,810		
System-Wide Sewer Conveyance Augmentation	41,014,240		
CRRPS Facility Modifications	992,048		
Conveyance SCADA System Upgrade Richey Rd to Ina Rd	1,124,010		
Region Wide Conveyance Odor Control System	113,659		
Region Wide Conveyance Odor Control	371,575		
RW Conveyance Vapor Treatment Unit Odor Control	244,680		
Tanque Verde Interceptor - Tucson CC to Craycroft Rd.	11,242,813		
Santa Cruz Interceptor - Phase III	15,199,756		
Total Conveyance Component	$ 186,805,925	33.4	$ 5.59
Wastewater Treatment			
Existing Assets (3)			
Treatment Plant in Service (1)	$ 74,613,316		
Capital Improvements			
ROMP Ina Rd WPCF HPO Replacement	44,559,450		
ROMP Ina Rd WPCF HPO 12.5 MGD Expansion	23,821,063		
ROMP Ina Rd. WPCF BNRAS System Modification	3,690,294		
Ina Rd. WPCF Biosolids Facilities Improvements	23,250,752		
ROMP Ina Rd. WPCF Power Generation & Dist.	6,030,600		
Ina Rd. WPCF Class A Biosolids Improvements	11,112,450		
ROMP 32 MGD Reclamation Campus	74,209,500		
PCRWRD Central Laboratory Complex	5,575,200		
PCWRD Central Laboratory Complex Civil Site	3,867,450		
ROMP SCADA	4,643,700		
Corona de Tucson WRF Security Improvements	367,770		
Green Valley WRF Security Improvements	343,206		
Security Master Plan Implementation	1,675,389		
WW Avra Valley WRF Security	329,820		
Corona de Tucson WRF Second Fine Screen	53,820		
Corona de Tucson WWTF-UV Disinfection & Filtration	1,380,000		
Green Valley WRF Replace Washer/Compactor	98,325		
Green Valley WWTF Sludge Digestion Facility Cover	172,500		
Ina Rd. WPCF SCADA Process Optimization	273,230		
Ina Rd. WPCF Grit Classifiers	208,725		
Ina Rd. WPCF East Plant	336,375		
Ina Rd. WPCF Rough Screens	151,628		
Ina Rd. Aeration Optimization	395,025		
Ina Rd. WPCF Primary Clarifier Concrete Repair	1,014,300		
Ina Rd. WPCF Replacement of Thickened Sludge Pumps	336,375		
Ina Rd. WPCF Upgrade of Blower Heat Exchanger	690,000		
SCADA Cyber Security Upgrade	225,975		
SCADA Master Plan Implementation Program	4,474,995		
Marana WWTP Expansion	38,564,024		
Total Treatment Component	$ 326,465,255	33.4	$ 9.77
Reserves (4)	$ 18,218,108	33.4	$ 0.55
Total Cost of Capacity	$ 535,100,941	33.4	$ 16.02
Cost of Capacity (gpd) (6)			$ 16.02
Estimated Design Flow Per Customer Per Day (gpd) (2)			253.80
Calculated Charge per Average Residential Customer			$ 4,065.88

Notes:
(1) Excludes an asset value for the existing Roger Road wastewater treatment facility. Includes only costs associated with capacity available to serve new customers.
(2) Assumes 80 gallons per day and 2.7 persons per household. Both figures represent planning estimates used by the County to project system capacity need and each are included on County capacity allocation request forms. Also includes a 17.5% adjustment for infiltration and inflow (I&I) based on an average of maximum daily flows to average daily flows in 2010 and 2011. The adjustment for I&I recognizes the County's need to provide sufficient system capacity to address wet weather flows.
(3) From Schedule 2: Cost of Capacity (Existing System).
(4) Includes related portion of unrestricted cash and cash equivalents identified in the FY 2011 Statement of Net Assets. Also includes related portion of reserves available in the County's emergency reserve for the RWRD. These unrestricted reserves are included in the calculated cost of capacity as they are assumed to be an asset generated by existing customers to support core system capacity.
(5) Includes only capacity that will be available to serve new customers.
(6) Rounded up to nearest penny.

Schedule 2
Pima County Regional Wastewater Reclamation Department
Cost of Capacity Calculation (Existing System)

		Asset Value - System Wide (1)			EXCLUDES EXISTING ROGER ROAD: Asset Value (Treatment - Ina & Outlying Facilities) (4)			AVAILABLE TO SERVE NEW CUSTOMERS (5): Asset Value (Treatment - Ina & Outlying Facilities) (4)		
		Original Cost	OCLD	RCNLD	Original Cost	OCLD	RCNLD	Original Cost	OCLD	RCNLD
Treatment & Conveyance										
Fixed Asset Description										
Pumping (2)	35.4%	$ 302,289	$ 121,134	$ 170,066	$ 302,289	$ 121,134	$ 170,066	$ 104,290	$ 41,791	$ 58,673
Lift Stations (2)	35.4%	455,646	185,645	353,133	455,646	185,645	353,133	157,198	64,048	121,831
Treatment Plant & Buildings		334,685,680	184,981,918	283,197,042	243,480,558	150,681,926	216,270,480	84,000,793	51,985,265	74,613,316
Conveyance (2)	35.4%	224,513,879	138,459,580	328,512,699	224,513,879	138,459,580	328,512,699	77,457,288	47,768,555	113,336,881
Land		8,977,139	8,977,139	13,450,466	7,099,406	7,099,406	10,468,558	2,449,295	2,449,295	3,611,653
Unrestricted Cash and Cash Equivalents (3)		52,806,111	52,806,111	52,806,111	52,806,111	52,806,111	52,806,111	18,218,108	18,218,108	18,218,108
Net Assets		$ 621,740,744	$ 385,531,528	$ 678,489,517	$ 528,657,890	$ 349,353,803	$ 608,581,047	$ 182,386,972	$ 120,527,062	$ 209,960,461

		Unit Cost ($/gpd)				Unit Cost ($/gpd)				Unit Cost ($/gpd)		
	Capacity	Original Cost	OCLD	RCNLD	Capacity	Original Cost	OCLD	RCNLD	Capacity (5)	Original Cost	OCLD	RCNLD
Fixed Asset Description												
Pumping	91.77	$ 0.00	$ 0.00	$ 0.00	50.8				17.5			
Lift Stations	91.77	0.00	0.00	0.00	50.8				17.5			
Treatment Plant & Buildings	91.77	3.65	2.02	3.09	50.8	$ 4.80	$ 2.97	$ 4.26	17.5	$ 4.80	$ 2.97	$ 4.26
Conveyance	91.77	2.45	1.51	3.58	50.8				17.5			
Land	91.77	0.10	0.10	0.15	50.8	$ 0.14	$ 0.14	$ 0.21	17.5	$ 0.14	$ 0.14	$ 0.21
Reserves (Unrestricted)	91.77	0.58	0.58	0.58	50.8				17.5			
Net Assets		$ 6.77	$ 4.20	$ 7.39		$ 4.94	$ 3.11	$ 4.47		$ 4.94	$ 3.11	$ 4.47

		Cost of Capacity				Cost of Capacity				Cost of Capacity		
	ERU	Original Cost	OCLD	RCNLD	ERU	Original Cost	OCLD	RCNLD	ERU	Original Cost	OCLD	RCNLD
Fixed Asset Description												
Pumping	253.8	$ 0.84	$ 0.34	$ 0.47	253.8	$ -	$ -	$ -	253.8	$ -	$ -	$ -
Lift Stations	253.8	1.26	0.51	0.98	253.8	-	-	-	253.8	-	-	-
Treatment Plant & Buildings	253.8	925.61	511.59	783.21	253.8	1,217.16	753.26	1,081.14	253.8	1,217.16	753.26	1,081.14
Conveyance	253.8	620.92	382.93	908.54	253.8	-	-	-	253.8	-	-	-
Land	253.8	24.83	24.83	37.20	253.8	35.49	35.49	52.33	253.8	35.49	35.49	52.33
Reserves (Unrestricted)	253.8	146.04	146.04	146.04	253.8	-	-	-	253.8	-	-	-
Total Cost of Capacity		$ 1,719.49	$ 1,066.23	$ 1,876.44		$ 1,252.65	$ 788.75	$ 1,133.47		$ 1,252.65	$ 788.75	$ 1,133.47

Notes:
(1) Fixed asset data by category provided by County staff on June 10, 2011.
(2) Represents allocation of the trunk conveyance system only. Allocation is based on the percentage of inch/feet of piping infrastructure 10-inches and larger compared to the total amount of inch/feet piping in the entire collection and conveyance system. The length and size of sewer pipes in the County's system was provided by County staff in Excel file "Assets.xlsx" dated October 17, 2011.
(3) Includes $32.8 million of unrestricted cash and cash equivalents identified in the FY 2011 Statement of Net Assets. Also includes $20 million of funds available in the County's emergency reserve for the wastewater utility. These reserves are included in the calculated cost of capacity, as they are assumed to be an asset generated by existing customers to support core system capacity.
(4) The cost of the existing Roger Road facility is excluded since it will be decommissioned and replaced with a new 32 million gallon per day (MGD) Water Reclamation Campus. The cost of the new Water Reclamation Campus is included in the capital improvement program (see Schedule 3: Capital Improvement Program)
(5) Represents the portion of capacity in the existing Ina Road, Randolph Park, and outlying facilities that will be available to serve new customers. This assumes current demand of 63.4 MGD and projected available capacity of 96.8 MGD. The difference of 33.4 MGD, or approximately 34.5% of total projected capacity, is assumed to be available to serve new customers.

Schedule 3
Pima County Regional Wastewater Reclamation Department
Capital Improvement Program

		Capital Improvements Program							
	% Allocated (3)	Prior Years (2)	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	Beyond	Total
Capital Improvement Projects (1)									
Conveyance Augmentation									
Harrison Rd. - Millmar Rd. to Escalante	100.0%	$ -	$ 712,950	$ -	$ -	$ -	$ -	$ -	$ 712,950
North Rillito Interceptor Relief Sewer	100.0%	80,228	2,182,582	10,000	-	-	-	-	2,272,810
System-Wide Sewer Conveyance Augmentation	100.0%	19,772	4,504,468	9,990,000	10,000,000	12,000,000	4,500,000	-	41,014,240
Conveyance Rehabilitation									-
Continental Ranch Regional Pump	0.0%	234,000	5,000	-	-	-	-	-	239,000
CRRPS Facility Modifications	34.5%	-	2,231,500	644,000	-	-	-	-	2,875,500
Forty Niner Country Club Rehabilitation	0.0%	175,000	1,950,000	-	-	-	-	-	2,125,000
Quail Creek Lift Station	0.0%	50,000	700,000		-	-	-	-	750,000
Sabino Pump Lift Station	0.0%	307,904	718,000	-	-	-	-	-	1,025,904
Sewer Manhole Rehabilitation	0.0%	475,434	9,600	-	-	-	-	-	485,034
Skyline Country Club Hacienda del Sol	0.0%	210,800	10,200	-	-	-	-	-	221,000
System-wide Conveyance Rehab. Program	0.0%	200,000	1,590,978	3,356,000	4,000,000	1,988,250	-	-	11,135,228
WW Sewer Manhole Rehab. #2	0.0%	-	675,000	-	-	-	-	-	675,000
ROMP (Regional Optimization Master Plan)									
ROMP Ina Rd WPCF HPO Replacement	34.5%	45,500,000	40,501,000	36,400,000	6,756,826	-	-	-	129,157,826
ROMP Ina Rd WPCF HPO 12.5 MGD Expansion	34.5%	17,982,000	30,301,000	16,952,000	3,811,558	-	-	-	69,046,558
ROMP Ina Rd. WPCF BNRAS System Modification	34.5%	4,781,001	959,800	4,282,800	672,902	-	-	-	10,696,503
Ina Rd. WPCF Biosolids Facilities Improvements	34.5%	24,943,000	21,104,800	19,507,800	1,837,884	-	-	-	67,393,484
ROMP Ina Rd. WPCF Power Generation & Dist.	34.5%	7,840,000	7,147,000	2,100,000	393,000	-	-	-	17,480,000
Ina Rd. WPCF Class A Biosolids Improvements	34.5%	500,000	5,171,900	11,620,600	9,945,000	4,972,500	-	-	32,210,000
ROMP 32 MGD Reclamation Campus	34.5%	15,838,175	78,611,916	83,252,828	19,459,413	17,937,668	-	-	215,100,000
Roger Rd. Demolition	0.0%	69,716	62,897	1,075,000	1,230,000	1,110,149	-	37,559,906	41,107,668
PCRWRD Central Laboratory Complex	34.5%	11,726,921	4,433,079	-	-	-	-	-	16,160,000
PCWRD Central Laboratory Complex Civil Site	34.5%	3,949,410	5,835,266	1,425,324	-	-	-	-	11,210,000
ROMP SCADA	34.5%	4,243,989	4,325,000	4,134,901	756,110	-	-	-	13,460,000
Security Master Plan Implementation									
Corona de Tucson WRF Security Improvements	34.5%	-	1,066,000	-	-	-	-	-	1,066,000
Green Valley WRF Security Improvements	34.5%	-	984,800	10,000	-	-	-	-	994,800
Security Master Plan Implementation	34.5%	-	464,200	2,277,000	2,115,000	-	-	-	4,856,200
WW Avra Valley WRF Security	34.5%	205,504	750,496	-	-	-	-	-	956,000

Schedule 3
Pima County Regional Wastewater Reclamation Department
Capital Improvement Program (Con't)

		Capital Improvements Program							
	% Allocated (3)	Prior Years (2)	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	Beyond	Total
Capital Improvement Projects (Continued)									
Utility Modifications									
COTDOT - 22nd Street: I-10 to Tucson Blvd, Sewer Utility	0.0%	-	373,000	392,000	412,000	-	-	-	1,177,000
COTDOT-Broadway, Euclid to Campbell, Sewer Utility	0.0%	-	-	115,000	-	-	-	-	115,000
COTDOT-Grant Rd., Corridor Improvement, Sewer Utility	0.0%	-	220,000	231,000	243,000	-	-	-	694,000
PCDOT-La Canada, River Rd. to Ina Rd. Sewer Utility	0.0%	250,000	100,000		-	-	-	-	350,000
PCDOT-La Cholla, Magee Rd. to Tangerine Rd. Sewer Utility	0.0%	-	100,000	-	-	-	-	-	100,000
PCDOT-Magee/Cortaro Farms Rd. Thornydale to La Canada	0.0%	-	100,000	25,000	-	-	-	-	125,000
Prince Rd. & I-10 ADOT Sewer Modifications	34.5%	427,409	2,601,474	-	-	-	-	-	3,028,883
Sewer Utility Modification Program	0.0%	-	4,138,750	4,917,000	5,782,250	3,000,000	-	-	17,838,000
Wastewater Reclamation									
Conveyance SCADA System Upgrade Richey Rd to Ina Rd	34.5%	-	569,000	2,025,000	664,000	-	-	-	3,258,000
Corona de Tucson WRF Second Fine Screen	34.5%	-	156,000	-	-	-	-	-	156,000
Corona de Tucson WWTF-UV Disinfection & Filtration	34.5%	-	-	2,000,000	2,000,000	-	-	-	4,000,000
DMAFB Flow Meter Station	0.0%	100,000	268,000	-	-	-	-	-	368,000
Green Valley WRF Replace Washer/Compactor	34.5%	275,000	10,000	-	-	-	-	-	285,000
Green Valley WWTF Sludge Digestion Facility Cover	34.5%	-	500,000	-	-	-	-	-	500,000
Ina Rd. WPCF SCADA Process Optimization	34.5%	258,697	350,000	183,273	-	-	-	-	791,970
Ina Rd. WPCF Grit Classifiers	34.5%	90,000	215,000	300,000	-	-	-	-	605,000
Ina Rd. WPCF East Plant	34.5%	965,000	10,000	-	-	-	-	-	975,000
Ina Rd. WPCF Rough Screens	34.5%	25,000	60,000	354,500	-	-	-	-	439,500
Ina Rd. Aeration Optimization	34.5%	463,000	682,000	-	-	-	-	-	1,145,000
Ina Rd. WPCF Primary Clarifier Concrete Repair	34.5%	-	1,225,000	1,715,000	-	-	-	-	2,940,000
Ina Rd. WPCF Replacement of Thickened Sludge Pumps	34.5%	-	525,000	440,000	10,000	-	-	-	975,000
Ina Rd. WPCF Upgrade of Blower Heat Exchanger	34.5%	-	-	-	-	-	-	2,000,000	2,000,000
Region Wide Conveyance Odor Control System	34.5%	314,446	15,000	-	-	-	-	-	329,446
Region Wide Conveyance Odor Control	34.5%	1,027,030	50,000	-	-	-	-	-	1,077,030
RW Conveyance Vapor Treatment Unit Odor Control	34.5%	459,217	250,000	-	-	-	-	-	709,217
SCADA Cyber Security Upgrade	34.5%	-	645,000	10,000	-	-	-	-	655,000
SCADA Master Plan Implementation Program	34.5%	-	1,639,000	4,854,000	3,183,000	2,320,000	975,000	-	12,971,000
Tanque Verde Interceptor - Tucson CC to Craycroft Rd.	100.0%	-	-	-	-	-	-	11,242,813	11,242,813
Santa Cruz Interceptor - Phase III	100.0%	8,575,063	6,624,693	-	-	-	-	-	15,199,756
Marana WWTP Expansion	100.0%	16,353,142	200,000	-	-	-	22,010,882	-	38,564,024
System Wide Treatment Plant Rehab & Enhancement Program	0.0%	-	-	2,135,000	3,996,000	500,000	-	-	6,631,000
Total Capital Improvement Projects		**$ 168,915,858**	**$ 238,636,349**	**$ 216,735,026**	**$ 77,267,943**	**$ 43,828,567**	**$ 27,485,882**	**$ 50,802,719**	**$ 823,672,344**
Check: Adopted CIP Total		$ 168,915,858	$ 238,636,349	$ 216,735,026	$ 77,267,943	$ 43,828,567	$ 27,485,882	$ 50,802,719	$ 823,672,344

Notes:

(1) Capital improvement projects costs taken from the Pima County Regional Wastewater Reclamation Department (RWRD) FY 2011/2012 Adopted Budget: Summary of Active Capital Improvement Projects Fiscal Years 2011/2012 - 2015/2016 and Beyond.

(2) Represent cash flow expenditures in prior years that are currently captured as construction work in progress.

(3) Represents the portion of capital improvement costs that are expansion related and included in the calculated cost of capacity. Based on input from County staff, certain projects are related entirely to providing additional system capacity while others include only a portion of the capacity related costs. This portion is based on the projected available capacity to serve new customers as a percentage of total system capacity. Specifically, this assumes current demand of 63.4 MGD and projected available capacity of 96.8 MGD. The difference of 33.4 MGD, or approximately 34.5% of total projected capacity, is assumed to be available to serve new customers.

Schedule 4
Pima County Regional Wastewater Reclamation Department
Fixed Assets

	RWRD System				Roger Road Facility Only				Ina Road Reclamation Facility Only				Outlying Facilities Only (Excluding Randolph Park)			
	Acquired Cost	Accumulated Depreciation	OCLD (2)	RCNLD (3)	Acquired Cost	Accumulated Depreciation	OCLD (2)	RCNLD (3)	Acquired Cost	Accumulated Depreciation	OCLD (2)	RCNLD (3)	Acquired Cost	Accumulated Depreciation	OCLD (2)	RCNLD (3)
Categories (1)																
Asset Class 1																
Buildings and Other Improvements	$ 256,124,326	$ 133,662,470	$ 122,461,856	$ 208,060,532	$ 87,625,533	$ 56,295,724	$ 31,329,808	$ 63,624,048	$ 77,771,711	$ 47,092,288	$ 30,679,424	$ 66,911,205	$ 43,190,928	$ 19,498,085	$ 23,692,843	$ 34,570,657
Buildings	$ 74,159,356	$ 12,458,879	$ 61,700,477	$ 70,495,696	$ 3,579,589	$ 609,405	$ 2,970,184	$ 3,302,513	$ 64,623,166	$ 10,691,111	$ 53,932,055	$ 61,663,967	$ 4,612,092	$ 786,644	$ 3,825,448	$ 4,416,484
Equipment	$ 103,683,034	$ 24,138,773	$ 79,544,261	$ 86,681,226												
Non-Depreciable	$ 95,655	$ -	$ 95,655	$ 100,040												
Other Improvements	$ 15,530,568	$ 1,638,804	$ 13,891,764	$ 15,000,867												
Treatment Facility	$ 4,401,998	$ 3,582,413	$ 819,586	$ 4,640,814	$ -	$ -	$ -	$ -	$ 4,355,900	$ 3,542,229	$ 813,671	$ 4,613,263	$ -	$ -	$ -	$ -
Other	$ 376,286	$ -	$ 376,286	$ 94,071												
Asset Class 2																
Manhole	$ 56,549,452	$ 12,806,760	$ 43,742,692	$ 69,581,807												
Sewer Pipe	$ 233,538,091	$ 58,408,100	$ 175,129,990	$ 350,429,505												
Pump Station	$ 516,714	$ 202,486	$ 314,228	$ 348,555												
Asset Class 3																
Lift Station	$ 1,287,135	$ 762,714	$ 524,422	$ 997,552												
Manhole	$ 49,111,291	$ 26,450,736	$ 22,660,555	$ 53,292,177												
Sewer Pipe	$ 225,893,528	$ 126,302,752	$ 99,590,776	$ 369,047,817												
Pump Station	$ 192,529	$ 192,529	$ -	$ 90,106												
Asset Class 4																
Land	$ 8,977,139	$ -	$ 8,977,139	$ 13,450,466	$ 1,877,733	$ -	$ 1,877,733	$ 2,981,908					$ 2,489,861	$ -	$ 2,489,861	$ 2,995,148
Manhole	$ 14,015,765	$ 3,849,220	$ 10,166,545	$ 15,798,335												
Pump Station	$ 144,680	$ 116,722	$ 27,958	$ 41,751												
Sewer Pipe	$ 55,111,871	$ 15,273,672	$ 39,838,199	$ 69,852,333												
Sewer Easement	$ 2,366,925	$ -	$ 2,366,925	$ 2,424,194												

Notes:
(1) Based on fixed asset data provided by County staff on June 10, 2011 (RWRD assets - Additional data Request CONFIDENTIAL ATTORNE.xls).
(2) Original Cost Less Depreciation.
(3) Replacement Cost New Less Depreciation. Assumes a 25% remaining life for assets fully depreciated yet still in service.
Replacement values based on the Engineering New Record construction cost indices through June 2011.