
FINAL

Oro Valley Water Utility Development Impact Fees Study

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Prepared for



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Executive Summary

The Town of Oro Valley Water Utility (Water Utility) contracted with CH2M HILL to prepare this development impact fee study in order to comply with recent amendments to the Arizona Revised Statutes, which require existing impact fee programs in Arizona to be replaced with new fees prior to August 1, 2014.¹

Based on CH2M HILL's review and analysis of the Water Utility's customer characteristics, growth projections, and capital improvements plan projects and costs, adjustments are proposed to the existing Alternative Water Resources Development Impact Fee (AWRDIF) and Potable Water System Development Impact Fee (PWSDIF). Adjustments to the Water Utility's existing development impact fees are provided in Table ES-1 for the base (5/8-inch) meter size and for a multifamily unit.

TABLE ES-1
Existing and Proposed Development Impact Fees

Customer Class	Existing AWRDIF	Proposed AWRDIF	Percent Variance	Existing PWSDIF	Proposed PWSDIF	Percent Variance	Net Change
Single Family (5/8-inch meter)	\$4,982	\$4,045	-19%	\$2,567	\$2,015	-22%	-20%
Multi-Family (per unit)	\$2,390	\$1,941	-19%	\$1,230	\$967	-21%	-20%
Commercial (5/8-inch meter)	\$4,982	\$5,258	6%	\$4,110	\$2,619	-36%	-13%
Irrigation (5/8-inch meter)	\$4,982	\$7,280	46%	\$4,360	\$3,626	-17%	17%

The proposed development impact fees would result in decreases across all customer classes with the exception of the commercial and industrial AWRDIF and the irrigation AWRDIF. On a combined basis, the net change in proposed Water Utility development impact fees would be a decrease for all customer classes except irrigation, which would increase 17 percent. The complete schedule of AWRDIF and PWSDIF fees is provided in Section 4 of this report.

¹ Arizona Revised Statutes §9-463.05(K)

1.0 Introduction

Recent amendments to ARS §9-463.05 require existing impact fee programs in Arizona to be replaced with fees adopted under the new statute by August 1, 2014.² The Town of Oro Valley Water Utility (Water Utility) retained CH2M HILL to assist with its update to the Alternative Water Resources Development Impact Fee (AWRDIF) and Potable Water System Development Impact Fee (PWSIDIF) in order to meet the August 2014 deadline. This report contains CH2M HILL's findings and recommendations for both the AWRDIF and PWSIDIF. The development impact fee analysis and the associated infrastructure improvements plan (IIP) span a 10-year period beginning in year 2014 and ending in year 2023 - hereinafter referred to as the study period.

Calculations throughout this report are based on analysis conducted using Microsoft Excel® software. Calculation results may use rounded figures, but the analysis itself uses figures carried to their ultimate decimal places. As such, the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown in the report due to the rounding.

1.1 Objectives

The objectives of the analysis were to develop fair and equitable impact fees that recover the average cost to construct a unit of capacity for a customer connecting to the Water Utility system, and to comply with Town policies, Arizona State Statutes, and impact fee case law.

1.2 Background

Development impact fees in Arizona must meet the requirements of the Arizona Revised Statutes (ARS §9-463.05, as amended) and impact fee case law, namely the rational nexus criterion. The rational nexus criterion in essence means that development impact fees must be administered in a nondiscriminatory manner and must bear a reasonable and proportionate relationship to the burden imposed upon the municipality to provide additional necessary public facilities.

While the most recent changes in ARS §9-463.05 tightened the standards for demonstrating compliance with the rational nexus test, the underlying purpose and intent of the law remains the same - that development impact fees should reflect the average cost to construct a unit of capacity required to serve new development. Based on our review and analysis of the Water Utility's customer characteristics, growth projections, and capital improvements plan projects and costs, CH2M HILL designed the PWSIDIF and AWRDIF to recover the average cost of Water Utility infrastructure required to serve a new customer.

² Arizona Revised Statutes §9-463.05(k)

This development impact fee report follows and makes frequent reference to the recently amended ARS §9-463.05. The requirements defined in this statute include a detailed analysis of the land use and growth assumptions, level of service, and infrastructure required to serve new growth.

1.2.1 Water Utility Policies

The Town of Oro Valley Water Policies establish “the Oro Valley Water Utility as a financially self-supporting enterprise.”³ As such, all costs associated with the operation of the Water Utility are funded from revenues derived from the sale of water and other water-related income sources, including development impact fees. Furthermore, “water revenues in excess of the operating needs of the Water Utility shall be carried forward for future operating or future bond funding requirements and shall not be transferred to the Town’s General Fund.”⁴

1.2.2 Structure of Funds

The Water Utility manages three separate funds; the Operating Fund, the AWRDIF Fund, and the PWSDIF Fund. Each fund is briefly discussed below:

- **Operating Fund** - The primary fund for the Utility which includes management of O&M and labor expenditures for the potable and reclaimed water systems, and non-growth capital expenditures related to the existing water system. Revenue for this fund is generated through potable and reclaimed water sales, service fees and charges, groundwater preservation fees, investment income, and other miscellaneous revenue.
- **AWRDIF Fund** - This fund includes capital expenditures related to alternative water resource projects such as Central Arizona Project (CAP), and the related debt service. Revenue for this fund is generated from impact fees collected at the time new water meters are purchased, and interest income on AWRDIF fund cash reserves.
- **PWSDIF Fund** - This fund includes capital expenditures related to expansion or growth projects for the potable water system and related debt service. Revenue for this fund is generated through impact fees collected when new water meters are purchased and through interest income on PWSDIF fund cash reserves.

Revenues and expenses from these funds are segregated and managed separately. The forecasted impact fee revenue generated for the AWRDIF and PWSDIF funds are based on the growth projections and the proposed impact fees described herein. Development impact fee revenue is restricted to pay for new infrastructure and water acquisitions to serve future customers only.

³ Town of Oro Valley Mayor and Town Council Water Policies, Adopted October 23, 1996, as amended.

⁴ Ibid, Section II, A.1.c.

1.3 Impact Fee Methodologies

For the purposes of the AWRDIF and PWSDIF development, CH2M HILL evaluated industry-standard impact fee calculation methodologies defined by the American Water Works Association (AWWA) M1 Manual “*Principles of Water Rates, Fees, and Charges*” These methods include:

- Equity Buy-In method
- Incremental Cost method
- Hybrid method

The goal of the **equity buy-in method** is to achieve an equity position between new and existing customers of the system. This approach is best suited for existing facilities that have been oversized and have excess capacity available. It utilizes the original cost of existing assets, escalated to current value using a standard cost index such as Engineering News-Record Construction Cost Index. Adjustments are made to account for outstanding debt, developer contributions, and accumulated depreciation. The resulting estimate of current system equity is divided by the number of system service units (SUs) connected to the system to compute an average cost per SU.

The **incremental cost method** assigns to new development the incremental cost of system expansion needed to serve new development. This approach is best suited for communities that have limited existing capacity, and have prepared detailed growth-related capital project plans and acquisition plans. The cost of recently completed and projects proposed over a specified time frame (i.e., 10 years per Arizona State Statutes) including interest and financing costs, is divided by the number of equivalent customers that will be served by the additional capital projects to compute an average cost per SU.

Incremental average costs per SU may be additive for separate infrastructure components or may be combined on a weighted-average basis for similar infrastructure components.

The **hybrid method** applies principles from both methods and is appropriate where some existing reserve capacity for growth is available and new capacity is planned.

CH2M HILL utilized the incremental cost method to compute both the AWRDIF and PWSDIF, and included both recently-completed and proposed infrastructure projects as the basis for the incremental average cost per SU calculation.

2.0 Legal Framework

2.1 Necessary Public Services

Recent amendments to ARS §9-463.05 include a new definition of “necessary public services” for which development impact fees may be assessed. “Necessary public service” means facilities that have a life expectancy of 3 or more years and that are owned and operated by or on behalf of the municipality. For the purpose of the Water Utility, necessary public services include:

“Water facilities, including the supply, transportation, treatment, purification, and distribution of water, and any appurtenances to those facilities.”⁵

CH2M HILL designed the PWSIDIF and AWRDIF to include the infrastructure components defined in statute, as further described below:

- **Water Facilities**

- Supply – means infrastructure related to sources of supply, including but not limited to groundwater and CAP water, and any appurtenances and engineering services related to such water supply facilities.
- Transportation – means infrastructure related to the transportation, pumping, and storage of water, and any appurtenances to such facilities.
- Treatment – means infrastructure related to water treatment and any appurtenances and engineering services related to such facilities. Oro Valley does not include any of its Water Utility assets in this category for the purposes of determining development impact fees.
- Purification – means infrastructure related to purification of water and any appurtenances and engineering services related to such facilities. Oro Valley does not include any of its Water Utility assets in this category for the purposes of determining development impact fees.
- Distribution – means local distribution pipelines (typically less than 12 inches diameter) and main extensions and any appurtenances and engineering services related to such facilities. Oro Valley does not include any of its Water Utility assets in this category for the purposes of determining development impact fees.
- Appurtenances – appurtenances are included together with the categories described above for the purposes of determining development impact fees.

⁵ ARS §9-463.05.T.7(a)

- **Real Property** – includes real property required for location of the infrastructure facilities described above.
- **Engineering Services** – engineering services are included together with the water infrastructure categories described above for the purposes of determining development impact fees.
- **Financing** – includes interest and other finance costs related to the portion of the bonds issued to finance construction of necessary public services and/or facility expansions identified in the IIP.
- **Development Impact Fee Study** – includes the cost of conducting the development impact fee study in accordance with ARS §9-463.05.

This impact fee analysis demonstrates that the required capital facilities are a consequence of new development and necessary for new development to occur, and that the AWRDIF and PWSDIF are proportionate to and a result of the additional demands of new development. These capital facilities as defined in the IIP will result in a beneficial use to new development.

In addition, CH2M HILL conducted an evaluation of credits for exactions or other dedications, as described in this report. This impact fee analysis also compares the new fees to Water Utility's current fee schedule, and recommends adjustments, where needed, to comply with ARS 9-463.05 and fulfill the rational nexus criterion.

2.2 Service Area

ARS 9-463.05 defines the service area as “the specified area within the boundaries of a municipality in which development will be served by necessary public services or facility expansions and within which a substantial nexus exists between the necessary public services or facility expansions and the development being served as prescribed in the infrastructure improvements plan.”⁶ The Water Utility chose to define its water service area for the AWRDIF and PWSDIF, as shown in Figure 1 below. This figure is also provided in 11x17 size in Appendix A: Water Utility Service Area Map.

⁶ ARS 9-463.05.T.(9)

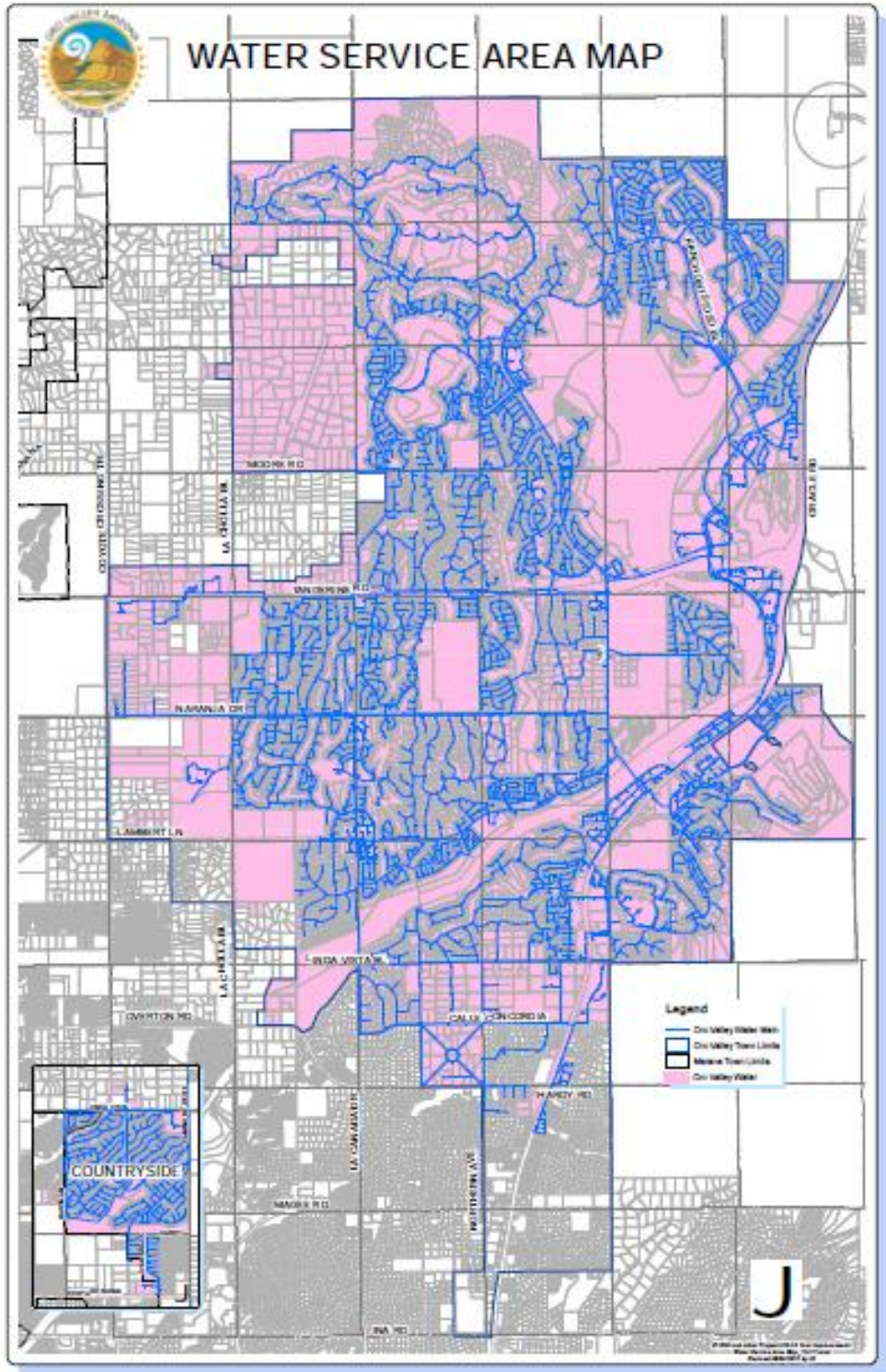


FIGURE 2-1
Water Service Area Map

If adopted, the Water Utility development impact fees would only apply to future growth and development within the Water Utility's defined service area and as it may change in the future due to annexations or other inclusions in the service area. Any development not located within, annexed into or included in the service area would not be entitled to or eligible to receive water service from the Water Utility.

2.3 Land Use Assumptions

The land use assumptions serve as the basis for the IIP and subsequent impact fee calculations for the Water Utility. ARS 9-463.05 defines "Land use assumptions" as the projections of changes in land uses, densities, intensities and population for a specified service area over a period of at least 10 years and pursuant to the general plan of the municipality.⁷ The *Oro Valley General Plan*, adopted in 2005, does not include projections of future population, land use, or Water Utility SUs. As such, land use assumptions were derived using GIS mapping according to current zoning and consistent with the Town's General Plan, as well as recent population growth forecasts submitted to the Arizona Department of Water Resources.⁸

When considering future Water Utility infrastructure investments (or utilization of existing capacity), it is difficult to provide an exact matching between the population and/or other measures of development growth and the necessary capital investment within a given timeframe due to such factors as:

- Water Utility infrastructure investments are made to serve long-term needs and require large, one-time financial commitments to serve growth over a period that may exceed the 10-year study period.
- Capacity utilization depends on the actual rate of development growth and new connections to the water system rather than the study period.
- Capacity must be available to serve new customers immediately upon connection to the Water Utility, requiring up-front investment and project construction prior to having exact certainty over the timing of those connections.

As such, the Water Utility performed an analysis of future land use using GIS based mapping to determine the SUs remaining in the existing water service area boundary depicted in Figure 1. The land use assumptions were based on current zoning for each remaining undeveloped and/or unserved parcel. The results of the analysis indicate a total of 4,131 new SUs in the Water Utility service area. These GIS land use maps are available electronically from the Water Utility upon request. The Water Utility service area land use assumptions are detailed in Table 2-1.

⁷ ARS 9-463.05.T.(6)

⁸ ADWR Annual Water Withdrawal and Use Report-Provider Summary 2012– March 25, 2013 – Schedule AWS – Part 2, page 7.

TABLE 2-1
Service Area Land Use Assumptions

	Current (2013)*	Future (2023)	Future Buildout	Increase
Single Family	18,710	NA	21,184	2,474
Multi-Family	1,860	NA	2,472	612
Commercial	830	NA	1,596	766
Irrigation	1,540	NA	1,819	279
Other	260	NA	-	-
Total SUs (Buildout)	23,200	NA	27,331	4,131
Total Population	43,062	47,182	NA	4,120

* Calendar year-end projection

Future growth within the service area in total SUs is anticipated at buildout - a period of at least 10 years and pursuant to the general plan of the Town. Future growth is comprised of single family, multi-family, commercial and irrigation SUs. The Water Utility anticipates an increase of 4,131 total SUs at buildout. The population is estimated to increase by 4,120 persons over the 10-year study period.

2.4 Changes in Growth and Development

ARS §9-463.05 requires that the municipality perform one of the following to monitor and respond to changes in growth and development over time:

- Appoint an infrastructure advisory committee to inform and monitor the municipality on a number of issues related to the land use assumptions and IIP, or
- Provide for a biennial certified audit of the municipality's land use assumptions, IIP, and development impact fees.

The Water Utility will conduct the biennial certified audit in order to comply with this requirement.

2.5 Credits

"If a municipality requires as a condition of development approval the construction or improvement of, contributions to or dedication of any facilities that were not included in a previously adopted IIP, the municipality shall cause the IIP to be amended to include the facilities and shall provide a credit toward the payment of a development impact fee for the construction, improvement, contribution or dedication of the facilities to the extent that the facilities will substitute for or otherwise reduce the need for other similar facilities in the IIP for which development impact fees were assessed."⁹

⁹ §9-463.05, B 11.

The Water Utility expects to enter into line extension agreements with developers to provide for water system expansion through pipelines and local distribution infrastructure to meet future demands for their specific development. Since this infrastructure is not included in the IIP, it is therefore not eligible for a credit toward development impact fee payments. Because the Water Utility is a financially self-supporting enterprise, impact fee credits, if any, may not be transferred between Water Utility and non-Water Utility sources. Furthermore, Town water policy prohibits entering into a “development agreement for any purpose that permits the developer to pay reduced water rates and/or reduced development impact fees.”¹⁰

Developers or other private parties may offer (but are not required as a condition of development approval) to provide or develop water infrastructure (transmission, distribution, storage, or pumping facilities) that may exceed the water demand and/or supply for proposed commercial or residential development. In these instances, it may be appropriate to offer an offset to the proposed PWSDIF, if such infrastructure is included in the IIP. Such offsets would depend upon the ability to integrate with the Town’s existing water system and would be subject to review and acceptance by the Town. In addition, the developer and Water Utility could enter into an over-sizing agreement consistent with Town Water Code. In this case the Water utility would pay for the incremental cost of over sizing and there would be no eligible credits to offset impact fees.

¹⁰ Town of Oro Valley Mayor and Town Council Water Policies, Section II, A.1.f, adopted October 23, 1996, as amended.

3.0 Infrastructure Improvements Plan

A written plan that identifies each necessary public service or facility expansion that is proposed to be the subject of the development impact fee and complies with the specific requirements of ARS 9-463.05.(E) is provided in the following sections. These sections follow and comply with the seven subchapters of ARS 9-463.05.(E), which define the infrastructure improvements requirements. Engineering analysis and capacity calculations in this report were prepared by qualified professionals licensed in the State of Arizona, as applicable.

3.1 Description of Existing Necessary Public Services

The Water Utility has approximately 18,800 customer connections serving a population of 43,000, which includes customers within the Town boundaries and the Countryside service area. The Water Utility currently delivers water from three sources of supply:

- Groundwater is pumped from wells in the aquifer below the Town and delivered through the potable water distribution system.
- CAP water is delivered to the Oro Valley potable water system through Tucson Water's distribution system. Oro Valley also uses its CAP water indirectly through groundwater storage credits.
- Reclaimed water is used for irrigation of turf, predominantly for golf courses, and is delivered through a separate reclaimed water distribution system.

In 2012, a total of 7,444 acre feet of potable water was produced to deliver water supply to Water Utility customers. The wells in the Oro Valley Water Service Area produced 5,415 acre feet (1.76 billion gallons) and the wells in the Countryside Water Service Area produced 746 acre feet (243 million gallons) to deliver water supply to Water Utility customers. In addition, 1,283 acre feet of CAP water was delivered to the potable water system in accordance with an intergovernmental agreement with the City of Tucson. The total pumped from Water Utility wells in 2012 was 1,573 acre feet (513 million gallons) less than in 2011 primarily due to the Water Utility's CAP deliveries and ongoing water conservation efforts.

In 2012, the Water Utility also stored CAP water to obtain groundwater storage credits within the Tucson Active Management Area. The use of groundwater storage credits for recovery wells reduces the Water Utility's financial obligations to the Central Arizona Groundwater Replenishment District.

Groundwater levels continue to decline in the Oro Valley aquifer but to a significantly lesser extent than in previous years due to reductions in groundwater pumping. Well water levels declined an average of 1.29 feet in the Oro Valley Water Service Area and declined 2.75 feet in the Countryside Water Service Area in 2012. Operation of the reclaimed water system and the delivery of CAP water have slowed the groundwater decline, thus conserving,

preserving and protecting the aquifer and groundwater supply. The Water Utility plans to continue to utilize a mix of source water, including its remaining CAP water allocation, in the foreseeable future.

The following are some of the Water Utility's existing resources and assets as of December 31, 2012:

- Water Resources:
 - Groundwater Supply (Assured Water Supply): 13,384 acre feet per year
 - Groundwater Supply (Sustainable Supply Target) 5,500 acre feet per year
 - Reclaimed Water: 2,300 acre feet per year
 - Effluent Water: 1,500 acre feet per year
 - CAP Water: 10,305 acre feet per year

- Assets:
 - Water Distribution Storage Reservoirs: 19
 - Potable Water Reservoir Capacity: 11,600,000 gallons
 - Reclaimed Water Reservoir Capacity: 1,500,000 gallons
 - Potable Water Mains: 343 miles
 - Reclaimed Water Mains 12 miles
 - Potable Water Booster Stations: 25
 - Reclaimed Water Booster Stations: 2
 - Operating Wells: 22

The Water Utility has budgeted capital expenditures to repair, replace, and upgrade existing water facilities. These non-growth-related capital expenditures are funded with Operating Fund revenue (predominantly from water rates) and therefore are not considered in the AWRDIF and PWSDF analysis.

3.2 Service Unit Characteristics

In order to present water demands using a standardized measure of consumption, average consumption attributable to an individual unit of development (calculated pursuant to generally accepted engineering and planning standards) is expressed in terms of SUs. A Water Utility SU is represented by a residential customer with a 5/8-inch (or 5/8 x 3/4 inch) meter, which is the most common meter size in Oro Valley. Based on an examination of historic billing statistics and water system characteristics, the Water Utility's current SU demand characteristics are 110,790 gallons per year (9,232 gallons per month) or 0.34 AF annually.

If development impact fees are assessed, they must be assessed against commercial, industrial and residential development.¹¹ As such, the Water Utility will continue to charge proportionate fees across development categories based on the relative burdens imposed by and differential cost of providing water to specific categories of development. The level of consumption for each development category is provided in Table 3-1.

¹¹ ARS 9-463.05.B.(13)

TABLE 3-1
Oro Valley Water Utility Service Unit Characteristics and Capacity Factors

Development Category	Water Demand (gallons/year/SU)	Water Demand (acre feet/year/SU)	Service Unit Capacity Factor
Residential	110,790	0.34	1.00
Multifamily	53,180	0.16	0.48
Commercial and Industrial	144,000	0.44	1.30
Irrigation	199,400	0.61	1.80

The capacity factors express water demand on a SU basis and were determined based on an analysis of the Town’s water billing data. Capacity factors indicate that commercial, industrial, and irrigation categories demand more water per SU than the residential category, while the multifamily SU demands less water than all other categories.

3.3 Projected Service Units

The Water Utility installed 171 new water connections in year 2012 (or 245 SUs), approximately a 1.0 percent growth rate, and expects to add 300 new SUs in 2013 and 2014. The projected number of SUs necessitated by and attributable to new development in the service area based on the approved land use assumptions and calculated pursuant to generally accepted engineering criteria are provided in Table 3-2.

TABLE 3-2
Projected Annual Growth in Number of Service Units

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
2013 System SUs	23,200									
Projected Additional SUs	300	400	400	400	450	450	450	500	500	500
Total System SUs	23,500	23,900	24,300	24,700	25,150	25,600	25,050	26,550	27,050	27,550
Annual Growth (percent)	1.3%	1.7%	1.7%	1.6%	1.8%	1.8%	1.7%	1.9%	1.9%	1.8%

Annual growth is forecasted to increase from the current level of approximately 300 SUs in 2013 to 500 SUs annually by the end of the forecast period. The total number of additional SUs forecasted over the 10-year period is 4,050 SUs – just under the 4,131 SUs anticipated at buildout. The annual growth rate in SUs ranges from 1.3 to 1.9 percent, averaging 1.7 percent over the study period.

3.4 Projected Water Demands

The projected demand for water services required by new SUs over the 10-year forecast period is provided in Table 3-3.

TABLE 3-3
Projected Potable Water Demands

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
2013 System SUs	23,200									
Projected Additional SUs	300	400	400	400	450	450	450	500	500	500
Total System SUs	23,500	23,900	24,300	24,700	25,150	25,600	25,050	26,550	27,050	27,550
Potable Water System Demand (AF/year)	7,990	8,130	8,260	8,400	8,550	8,700	8,860	9,030	9,200	9,370

Annual growth in water demand is forecasted to increase from the current level of approximately 7,990 acre-feet to 9,370 acre-feet by the end of the study period. The annual growth rate in potable water system demand ranges from 1.3 to 1.9 percent, averaging 1.7 percent over the study period.

3.5 Analysis of Excess Available Capacity

3.5.1 Alternative Water Resources Excess Available Capacity

Since the 1940's groundwater levels have declined within the Water Utility's service area and it is anticipated that levels will continue to decline in the future without proactive measures. Based on the Town's 2002 *Assured Water Supply Hydrology Report*¹² and 2004 *Groundwater Action Plan*¹³, the Town has established a target "sustainable groundwater supply" of 5,500 AF per year. In 2005, the Water Utility pumped 10,520 acre feet, which represents the Water Utility's highest groundwater pumpage. In 2012, the Water Utility's total deliveries dropped to 9,543 AF (potable and reclaimed combined). Of that amount, 6,160 AF was groundwater pumpage and 1,283 AF was CAP water delivered to the potable system. The remaining amount was reclaimed water deliveries of 2,100 AF.

Until year 2005 the Water Utility's only source of water supply was groundwater from existing wells. In October 2005, the Water Utility began operation of the first phase of its reclaimed water system. The Water Utility current water supplies include:

- Groundwater from Town wells – groundwater from Town wells is limited to a "sustainable groundwater supply" of approximately 5,500 AF per year.
- Reclaimed Water – reclaimed water includes the delivery of treated wastewater effluent to irrigation customers. The total capacity of reclaimed water is approximately 2,300 AF.
- Colorado River water delivered through the CAP - The Town currently has a subcontract with CAWCD for 10,305 AF of CAP water rights. Of this amount, 1,283 AF was delivered in 2012 through a wheeling agreement with Tucson Water. It is

¹² Assured Water Supply Hydrology Report for the Oro Valley Water Utility, Brown and Caldwell, June 2002.

¹³ Groundwater Action Plan, Oro Valley Water Utility, Oro Valley, Arizona; Brown and Caldwell, August 2004.

anticipated that CAP water delivery capacity will increase to 3,500 AF annually over the 10-year study period.

The Town will increasingly rely on renewable reclaimed water and CAP water to meet its needs as existing groundwater production is reduced to approximately 5,500 AF per year in the future to protect and preserve the aquifer and minimize groundwater mining.

Existing customers use 6,160 AF per year of groundwater, which is 660 AF per year greater than the sustainable groundwater production flow rate of 5,500 AF per year. In early 2014, the Water Utility will complete its development of an additional 500 AF of the 660 AF of CAP water for existing customers. This leaves an additional amount of 160 AF needed for existing customers from the proposed infrastructure in the IIP for the AWRDIF projects.

Total water demand is expected to increase from the current 9,543 AF per year to approximately 11,760 AF by 2023. It is anticipated that this demand will be met via 5,870 AF of groundwater; 2,300 AF of reclaimed water; and 3,500 AF of CAP water. Of the 3,500 AF of CAP water, 2,000 AF has been developed for and paid by existing (current) customers. Of the remaining 1,500 (and the basis for this AWRDIF analysis), 1,340 AF will be allocated to and paid by new development and 160 AF will be allocated to and paid by existing customers. The 160 AF will be funded with revenue collected from existing customers through the Water Utility's groundwater preservation fee (GPF), which is included in the monthly bills to existing customers.

The source of supply for the AWRDIF is the Town's allocation of CAP water. In 2007, the Town acquired 3,557 acre feet of additional CAP water to meet the water demands for future growth and development. The total acquisition cost including finance charges was \$2,607,471 for a cost of approximately \$733 per acre foot (or \$249 per SU). An analysis of the alternative water resources excess capacity available for new development is provided in Table 3-4.

TABLE 3-4
Water Facilities - Alternative Water Resources Excess Available Capacity

Project Category	Project Costs	Additional Capacity (acre-feet)	Service Units	Cost per Service Unit
Water Facilities				
Source of Supply	\$ 2,362,129	3,557	10,462	\$226
Financing	<u>245,342</u>	3,557	10,462	<u>23</u>
TOTAL	\$2,607,471	3,557	10,464	\$249

The Water Utility's investment in its source of supply water facilities results in an average cost per SU of \$249, including financing expenses. Detailed calculations are provided in Appendix B: Excess Available Capacity Tables.

3.5.2 Potable Water System Excess Available Capacity

The potable water system consists of the resources and assets as described in Section 3.1. All of the Water Utility's resources and assets work together to provide consistent water

pressure and flow to approximately 18,800 customer accounts (or approximately 23,200 SUs). Estimating network system capacity is subjective, so the potable water system excess available capacity was estimated using:

- Pumping capacity
- Normalized pipe capacity per SU
- Hydraulic flow modeling

The results from all three estimates were consistent and demonstrated that the 2000 and 2003 bond projects were constructed with excess capacity of approximately 40 percent, or 4,300 SUs versus the 10,524 SUs designed to be served those projects. The excess available capacity analysis indicates that the current system therefore has sufficient capacity to serve a total of 27,500 SUs (or an additional 4,300 SUs more than the 2013 system SUs). However, it should be noted that capacity is determined based on a network basis for the entire water system, which does not preclude the need for additional capacity investments in certain portions of the system where capacity may be constrained.

An analysis of the potable water system excess available capacity to meet the water demands of future growth and development is provided in Table 3-5 below.

TABLE 3-5
Water Facilities - Potable Water System Excess Available Capacity

Project Category	Project Costs	Additional Capacity (acre-feet)	Service Units	Cost per Service Unit
Water Facilities				
Transportation and Appurtenances	\$13,104,410	3,578	10,524	\$1,245
Financing	<u>4,688,669</u>	3,578	10,524	<u>446</u>
TOTAL	\$17,793,079	3,578	10,524	\$1,691

The Water Utility’s previous investment in its potable water system water transportation facilities provides excess available capacity with an average cost per SU of \$1,691, including financing expenses. Detailed calculations are provided in Appendix B: Excess Available Capacity Tables.

3.6 Description of Infrastructure Attributable to New Development

The Water Utility provided a description of the necessary facility expansions and their costs necessitated by and attributable to new development in the service area based on the approved land use assumptions. These include the alternative water expansion projects funded via AWRDIF revenue, and the potable water expansion projects funded via PWSDIF revenue.

Necessary facility expansions are described in Appendix C: Alternative Water Resources Expansion Related Projects and Appendix D: Potable Water System Expansion Related Projects. Detailed calculations of the AWRDIF and PWSIDIF are provided in Appendix E: Expansion Related Capital Improvements.

3.6.1 Alternative Water Resources Expansion Projects

A summary of the alternative water facilities expansion projects and their costs necessitated by and attributable to new development in the service area is provided in Table 3-6 below.

TABLE 3-6
Water Facilities - Alternative Water Resources Expansion Projects

Project Category	Project Costs	Additional Capacity (acre-feet)	Service Units	Cost per Service Unit
Water Facilities				
Transportation and Appurtenances	\$12,660,000	1,500	4,412	\$2,870
Financing	<u>4,051,200</u>	1,500	4,412	<u>918</u>
TOTAL	\$16,771,200	1,500	4,412	\$3,788

The Water Utility's future investment in its alternative water resources transportation projects will provide additional capacity with an average cost per SU of \$3,788, including financing expenses.

3.6.2 Potable Water System Expansion Projects

A summary of the potable water facilities expansion projects and their costs necessitated by and attributable to new development in the service area is provided in Table 3-7 below.

TABLE 3-7
Water Facilities - Potable Water System Expansion Projects

Project Category	Project Costs	Additional Capacity (acre-feet)	Service Units	Cost per Service Unit
Water Facilities				
Transportation and Appurtenances	\$3,750,000	386	1,135	\$3,304
Real Property	500,000	386	1,135	581
Financing	<u>1,360,000</u>	386	1,135	<u>1,198</u>
TOTAL	\$5,610,000	386	1,135	\$4,943

The Water Utility's future investment in its potable water system transportation projects and real property will provide additional capacity with an average cost per SU of \$4,943, including financing expenses.

3.7 Forecast of Non-Development Impact Fee Revenue

The Town of Oro Valley Water Policies establish the “the Oro Valley Water Utility as a financially self-supporting enterprise”¹⁴ and therefore new SUs connecting to the Water Utility potable water system are subject to both the PWSDIF and AWRDIF will not generate any additional revenues through state-shared revenue, federal revenue, ad valorem property taxes, construction contracting or similar excise taxes that would inure to the benefit of the Water Utility. Construction sales taxes collected by the Town of Oro Valley are collected by and benefit the Town’s general fund, not to the Water Utility. The Water Utility may collect certain taxes on behalf of the Town of Oro Valley or other taxing authorities, but the associated revenues are transferred to the Town or other authorities and the Water Utility does not receive any tax revenue. The capital recovery portion of the Water Utility’s current rates and fees are recovered for repair and replacement capital costs, not new growth. As such, a forecast of non-development impact fee revenue is not applicable and associated non-development impact fee credits are not applicable to the Water Utility.

In addition, PWSDIF and AWRDIF-related debt is paid with impact fee revenue and therefore no debt-service credit is provided.

3.8 Interest Charges and Finance Costs

The Water Utility will fund all or a portion of the potable water system or alternative water resources projects by issuing revenue bonds. Projected interest charges and other finance costs may be included in determining the amount of development impact fees if the monies are used for the payment of principal and interest on the portion of the bonds issued to finance the construction of the necessary public services or facility expansions identified in the IIP.

For the purposes of this analysis, CH2M HILL assumed a 3.75 percent interest rate, 2 percent debt issuance expense, and 0.5 percent bond insurance expense. Based on these assumptions, interest and financing added approximately 32 percent to the cost of the future improvements. Actual interest charges and finance costs incurred (or to be incurred) were included for existing infrastructure with excess capacity.

3.9 Subfund Accounting

Monies received from the proposed AWRDIF and PWSDIF will be placed in separate funds (the AWRDIF Fund and PWSDIF Fund) and accounted for separately from the Water Utility Operating Fund. Interest earned on monies in these funds will be credited back to the respective fund.

¹⁴ Town of Oro Valley Mayor and Town Council Water Policies, Adopted October 23, 1996, as amended.

3.10 Summary and Conclusions

CH2M HILL computed the infrastructure and finance cost per SU for the water utility's IIP using the project categories defined by ARS §9-463.05. Both excess available capacity and expansion projects were included in the calculation of an average cost to construct a new unit of capacity (or to utilize an existing unit of capacity). This methodology arrives at an average cost to construct a new unit of capacity (or utilize an existing unit of capacity) at the same level of service; it does not rely on the timing of new development, but applies the cost of new capacity across all SUs that will be served by that capacity regardless of when growth may occur. Minor changes to the list of projects (or existing infrastructure) that provide capacity for new development should not require recalculation of the development impact fee since a single project is likely to have an insignificant impact on the average cost of capacity across all necessary system infrastructure.

4.0 Determination of Development Impact Fees

Based on the foregoing analysis in the IIP presented in Section 3, the development impact fees were determined according to the project categories defined by ARS §9-463.05. The results of the analysis and cost per SU for both the AWRDIF and PWSDIF are summarized in Tables 4-1 and 4-2, respectively.

TABLE 4-1
Water Facilities - Alternative Water Resources Infrastructure Summary

Project Category	Project Costs	Additional Capacity (acre-feet)	Service Units	Cost per Service Unit
Water Facilities				
Source of Supply	\$ 2,362,129	3,557	10,462	\$ 226
Transportation and Appurtenances	12,660,000	1,500	4,412	2,870
Treatment	-	-	-	-
Purification	-	-	-	-
Distribution	-	-	-	-
Real Property	-	-	-	-
Engineering Services	Included above	Included above	Included above	Included above
Financing	245,342	3,557	10,462	23
	4,051,200	1,500	4,412	918
Development impact fee Study ¹	<u>30,028</u>	-	4,050	<u>7</u>
TOTAL	\$19,348,699	-	-	\$4,045

1. The Development Impact Fee Study was conducted for \$60,056 in total and was evenly applied to the Water Utility's two impact fees.

The total cost per SU and the basis for the AWRDIF is \$4,045.

TABLE 4-2
Water Facilities - Potable Water System Infrastructure Summary

Project Category	Project Costs	Additional Capacity (acre-feet)	Service Units	Capital Cost per Service Unit
Water Facilities				
Source of Supply	-	-	-	-
Transportation and Appurtenances	\$16,854,410	3,964	11,659	\$1,446
Treatment	-	-	-	-
Purification	-	-	-	-
Distribution	-	-	-	-
Real Property	500,000	-	11,659	43
Engineering Services	Included above	Included above	Included above	Included above
Financing	6,048,669	-	11,659	519
Development impact fee Study ¹	<u>30,028</u>	-	4,050	<u>7</u>
TOTAL	\$23,433,107	-	-	\$2,015

1. The Development Impact Fee Study was conducted for \$60,056 in total and was evenly applied to the Water Utility's two impact fees.

The total cost per SU and the basis for the PWSIDIF is \$2,015.

4.1 Proposed Development Impact Fees Schedule

The Water Utility's development impact fees are a one-time payment by new customers to recover costs required to support growth. The proposed AWRDIF and PWSIDIF are applicable to new single-family residential; multifamily residential; commercial and industrial; and irrigation meters. New connections with meter sizes larger than 5/8 inch are adjusted based on their relative meter capacities currently utilized by the Water Utility (originally derived from capacity ratios published by the AWWA) such that the fee assessment schedule is proportionate, fair and equitable. Tables 4-3 through 4-5 provide the proposed impact fee assessment schedules.

TABLE 4-3
Alternative Water System Development Impact Fee Schedule

ORO VALLEY WATER UTILITY					
ALTERNATIVE WATER RESOURCES DEVELOPMENT IMPACT FEES					
Customer Class	Existing Demand Adjustment Factor	Proposed Demand Adjustment Factor	AWWA Meter Capacity Ratio	Existing AWRDIF	Proposed AWRDIF
Single Family Residential (per meter)					
5/8-inch	1.0	1.0	1.0	\$ 4,982	\$ 4,045
3/4-inch	1.0	1.0	1.5	\$ 7,470	\$ 6,067
1-inch	1.0	1.0	2.5	\$ 12,450	\$ 10,111
1.5-inch	1.0	1.0	5.0	\$ 24,910	\$ 20,223
2-inch	1.0	1.0	8.0	\$ 39,850	\$ 32,356
Multifamily Residential (per unit)					
Per Unit	0.48	0.48	NA	\$ 2,390	\$ 1,941
Commercial and Industrial (per meter)					
5/8-inch	1.0	1.3	1.0	\$ 4,982	\$ 5,258
3/4-inch	1.0	1.3	1.5	\$ 7,470	\$ 7,887
1-inch	1.0	1.3	2.5	\$ 12,450	\$ 13,145
1.5-inch	1.0	1.3	5.0	\$ 24,910	\$ 26,289
2-inch	1.0	1.3	8.0	\$ 39,850	\$ 42,063
3-inch	1.0	1.3	16	\$ 79,710	\$ 84,126
4-inch	1.0	1.3	25	\$ 124,550	\$ 131,447
6-inch	1.0	1.3	50	\$ 249,100	\$ 262,894
8-inch	1.0	1.3	80	\$ 398,560	\$ 420,631
Irrigation (per meter)					
5/8-inch	1.0	1.8	1.0	\$ 4,982	\$ 7,280
3/4-inch	1.0	1.8	1.5	\$ 7,470	\$ 10,920
1-inch	1.0	1.8	2.5	\$ 12,450	\$ 18,200
1.5-inch	1.0	1.8	5.0	\$ 24,910	\$ 36,401
2-inch	1.0	1.8	8.0	\$ 39,850	\$ 58,241
3-inch	1.0	1.8	16	\$ 79,710	\$ 116,482
4-inch	1.0	1.8	25	\$ 124,550	\$ 182,004
6-inch	1.0	1.8	50	\$ 249,100	\$ 364,007
8-inch	1.0	1.8	80	\$ 398,560	\$ 582,412

TABLE 4-4
Potable Water System Development Impact Fee Schedule

ORO VALLEY WATER UTILITY					
POTABLE WATER SYSTEM DEVELOPMENT IMPACT FEES					
Customer Class	Existing Demand Adjustment Factor	Proposed Demand Adjustment Factor	AWWA Meter Capacity Ratio	Existing PWSDIF	Proposed PWSDIF
Single Family Residential (per meter)					
5/8-inch	1.0	1.0	1.0	\$ 2,567	\$ 2,015
3/4-inch	1.0	1.0	1.5	\$ 3,850	\$ 3,022
1-inch	1.0	1.0	2.5	\$ 6,420	\$ 5,037
1.5-inch	1.0	1.0	5.0	\$ 12,840	\$ 10,074
2-inch	1.0	1.0	8.0	\$ 20,540	\$ 16,118
Multifamily Residential (per unit)					
Per Unit	0.48	0.48	NA	\$ 1,230	\$ 967
Commercial and Industrial (per meter)					
5/8-inch	1.6	1.3	1.0	\$ 4,110	\$ 2,619
3/4-inch	1.6	1.3	1.5	\$ 6,170	\$ 3,929
1-inch	1.6	1.3	2.5	\$ 10,280	\$ 6,548
1.5-inch	1.6	1.3	5.0	\$ 20,550	\$ 13,096
2-inch	1.6	1.3	8.0	\$ 32,880	\$ 20,953
3-inch	1.6	1.3	16	\$ 65,760	\$ 41,906
4-inch	1.6	1.3	25	\$ 102,750	\$ 65,478
6-inch	1.6	1.3	50	\$ 205,500	\$ 130,956
8-inch	1.6	1.3	80	\$ 328,800	\$ 209,530
Irrigation (per meter)					
5/8-inch	1.7	1.8	1.0	\$ 4,360	\$ 3,626
3/4-inch	1.7	1.8	1.5	\$ 6,540	\$ 5,440
1-inch	1.7	1.8	2.5	\$ 10,900	\$ 9,066
1.5-inch	1.7	1.8	5.0	\$ 21,800	\$ 18,132
2-inch	1.7	1.8	8.0	\$ 34,880	\$ 29,012
3-inch	1.7	1.8	16	\$ 69,760	\$ 58,024
4-inch	1.7	1.8	25	\$ 109,000	\$ 90,662
6-inch	1.7	1.8	50	\$ 218,000	\$ 181,324
8-inch	1.7	1.8	80	\$ 348,800	\$ 290,118

TABLE 4-5

Comparison of Existing and Proposed AWRDIF and PWSDIF

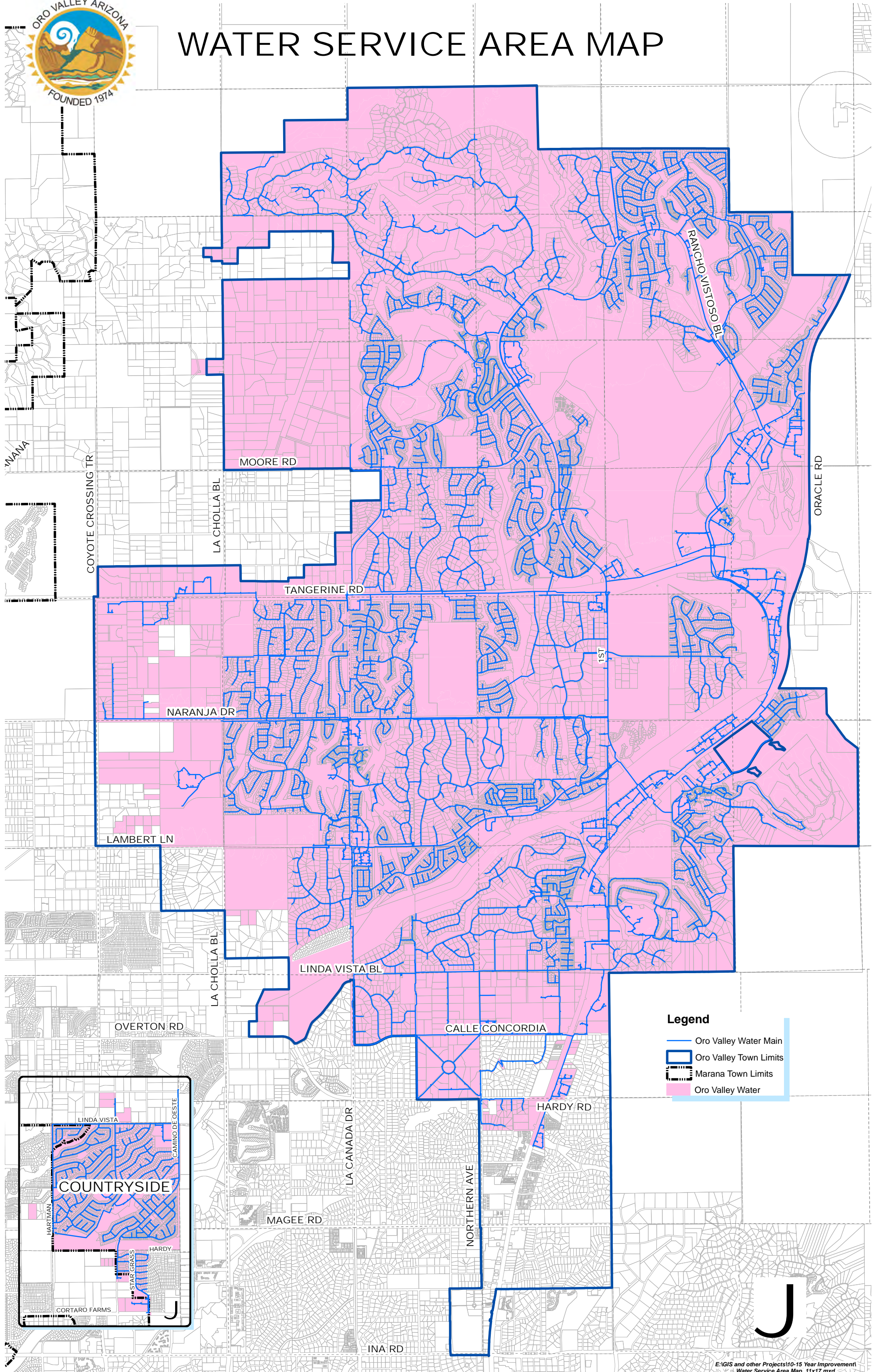
ORO VALLEY WATER UTILITY									
EXISTING AND PROPOSED DEVELOPMENT IMPACT FEES									
Customer Class	Existing AWRDIF	Proposed AWRDIF	Percent Variance	Existing PWSDIF	Proposed PWSDIF	Percent Variance	Existing Fees (combined)	Proposed Fees (combined)	Net Change
Single Family Residential (per meter)									
5/8-inch	\$ 4,982	\$ 4,045	-19%	\$ 2,567	\$ 2,015	-22%	\$ 7,549	\$ 6,059	-20%
3/4-inch	\$ 7,470	\$ 6,067	-19%	\$ 3,850	\$ 3,022	-22%	\$ 11,320	\$ 9,089	-20%
1-inch	\$ 12,450	\$ 10,111	-19%	\$ 6,420	\$ 5,037	-22%	\$ 18,870	\$ 15,148	-20%
1.5-inch	\$ 24,910	\$ 20,223	-19%	\$ 12,840	\$ 10,074	-22%	\$ 37,750	\$ 30,296	-20%
2-inch	\$ 39,850	\$ 32,356	-19%	\$ 20,540	\$ 16,118	-22%	\$ 60,390	\$ 48,474	-20%
Multifamily Residential (per unit)									
Per Unit	\$ 2,390	\$ 1,941	-19%	\$ 1,230	\$ 967	-21%	\$ 3,620	\$ 2,908	-20%
Commercial and Industrial (per meter)									
5/8-inch	\$ 4,982	\$ 5,258	6%	\$ 4,110	\$ 2,619	-36%	\$ 9,092	\$ 7,877	-13%
3/4-inch	\$ 7,470	\$ 7,887	6%	\$ 6,170	\$ 3,929	-36%	\$ 13,640	\$ 11,816	-13%
1-inch	\$ 12,450	\$ 13,145	6%	\$ 10,280	\$ 6,548	-36%	\$ 22,730	\$ 19,693	-13%
1.5-inch	\$ 24,910	\$ 26,289	6%	\$ 20,550	\$ 13,096	-36%	\$ 45,460	\$ 39,385	-13%
2-inch	\$ 39,850	\$ 42,063	6%	\$ 32,880	\$ 20,953	-36%	\$ 72,730	\$ 63,016	-13%
3-inch	\$ 79,710	\$ 84,126	6%	\$ 65,760	\$ 41,906	-36%	\$ 145,470	\$ 126,032	-13%
4-inch	\$ 124,550	\$ 131,447	6%	\$ 102,750	\$ 65,478	-36%	\$ 227,300	\$ 196,925	-13%
6-inch	\$ 249,100	\$ 262,894	6%	\$ 205,500	\$ 130,956	-36%	\$ 454,600	\$ 393,850	-13%
8-inch	\$ 398,560	\$ 420,631	6%	\$ 328,800	\$ 209,530	-36%	\$ 727,360	\$ 630,161	-13%
Irrigation (per meter)									
5/8-inch	\$ 4,982	\$ 7,280	46%	\$ 4,360	\$ 3,626	-17%	\$ 9,342	\$ 10,907	17%
3/4-inch	\$ 7,470	\$ 10,920	46%	\$ 6,540	\$ 5,440	-17%	\$ 14,010	\$ 16,360	17%
1-inch	\$ 12,450	\$ 18,200	46%	\$ 10,900	\$ 9,066	-17%	\$ 23,350	\$ 27,267	17%
1.5-inch	\$ 24,910	\$ 36,401	46%	\$ 21,800	\$ 18,132	-17%	\$ 46,710	\$ 54,533	17%
2-inch	\$ 39,850	\$ 58,241	46%	\$ 34,880	\$ 29,012	-17%	\$ 74,730	\$ 87,253	17%
3-inch	\$ 79,710	\$ 116,482	46%	\$ 69,760	\$ 58,024	-17%	\$ 149,470	\$ 174,506	17%
4-inch	\$ 124,550	\$ 182,004	46%	\$ 109,000	\$ 90,662	-17%	\$ 233,550	\$ 272,666	17%
6-inch	\$ 249,100	\$ 364,007	46%	\$ 218,000	\$ 181,324	-17%	\$ 467,100	\$ 545,331	17%
8-inch	\$ 398,560	\$ 582,412	46%	\$ 348,800	\$ 290,118	-17%	\$ 747,360	\$ 872,530	17%

APPENDIX A

Water Utility Service Area Map



WATER SERVICE AREA MAP



IVANA

COYOTE CROSSING TR

LA CHOLLA BL

MOORE RD

RANCHO NISTOSOL BL

ORACLE RD

TANGERINE RD

1ST

NARANJA DR

LAMBERT LN

LA CHOLLA BL

LINDA VISTA BL

OVERTON RD

CALLE CONCORDIA

HARDY RD

LA CANADA DR

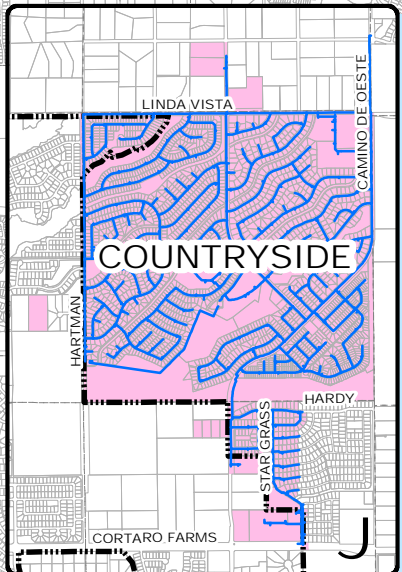
NORTHERN AVE

MAGEE RD

INA RD

Legend

- Oro Valley Water Main
- Oro Valley Town Limits
- Marana Town Limits
- Oro Valley Water



J

APPENDIX B

Excess Available Capacity Tables

APPENDIX B

Town of Oro Valley Water Utility

Table B-1: Alternative Water Resources Excess Available Capacity

Project No.	Project Name	Project Type	Completion Year	Capital Cost	Interest and Financing Cost	Total Project Cost	Additional Capacity (acre-feet)	Additional Service Units	Development Impact Fee per Service Unit
	CAP Water Acquisition	Source of Supply	2007	\$ 2,362,129	\$ 245,342	\$ 2,607,471	3,557	10,462	\$ 249
	TOTAL			\$ 2,362,129	\$ 245,342	\$ 2,607,471	3,557	10,462	\$ 249

APPENDIX B

Town of Oro Valley Water Utility

Table B-2: Potable Water System Excess Available Capacity

Project No.	Project Name	Project Type	Completion Year	Capital Cost	Interest and Financing Cost	Total Project Cost	Additional Capacity (acre-feet)	Additional Service Units	Development Impact Fee per Service Unit
<u>Series 2000 Bond Expansion Related Projects</u>									
1	WP 4 Well, Booster and Reservoir	Transportation	2003	\$ 1,678,816	\$ 698,937	\$ 2,292,149	3,578	10,524	\$777
2	WP1 D Zone Booster	Transportation	2003	415,587	173,020	567,416			
3	WP 14 "H & I" Zone Booster	Transportation	2002	1,155,169	480,928	1,577,194			
4	12 Inch Steam Pump Mains	Transportation	2001	467,196	194,506	637,879			
5	16" South "C" Zone Main	Transportation	2004	428,542	178,414	585,104			
6	CDO Crossing to WP1	Transportation	2004	596,023	248,141	813,772			
7	16" WP1 to WP4 Main	Transportation	2003	661,725	275,494	903,478			
8	12" El Con Main NO COSTS	Transportation	NA	NA	NA	NA			
9	12" Well Feed Main NO COSTS	Transportation	NA	NA	NA	NA			
10	16" Oracle Main (20%) Ventana	Transportation	2001	256,356	106,728	350,011			
11	12" Moore Rd Interconnect	Transportation	2003	113,297	47,169	154,688			
Subtotal - Series 2000 Bond				\$ 5,772,710	\$ 2,403,337	\$ 8,176,047			
<u>Series 2003 Bond - Expansion Related Projects</u>									
12	South Oracle "D" Zone 16" Main	Transportation	2004	\$ 741,245	\$ 231,050	\$ 943,996	3,578	10,524	\$914
13	New Well - TW C-99	Transportation	2005	500,074	155,876	636,859			
14	North La Canada E-Zone 16" Main	Transportation	2004	413,284	128,823	526,329			
15	Shadow Mountain Estates 12" Main	Transportation	2005	505,001	157,412	643,133			
16	WP 15 Reservoir	Transportation	2007	1,828,736	570,027	2,328,947			
17	Stone Canyon H-Zone 12" Main	Transportation	2007	257,530	80,274	327,972			
18	La Canada E-Zone Reservoir 3.0 MG	Transportation	2011	2,792,137	870,325	3,555,866			
19	La Canada E-Zone 24" Main	Transportation	2011	293,693	91,546	374,026			
Subtotal Series 2003 Bond				\$ 7,331,700	\$ 2,285,332	\$ 9,617,032			
TOTAL				\$ 13,104,410	\$ 4,688,669	\$ 17,793,079	3,578	10,524	\$ 1,691

APPENDIX C

Alternative Water Resources Expansion Related Projects

Appendix C-1
Town of Oro Valley Water Utility
Alternative Water Resources Development Impact Fee Project Descriptions

New water infrastructure is needed to meet demands in the water service area served by the Oro Valley Water Utility. These demands will be met by the development of the Town of Oro Valley's Central Arizona Project water. The Town of Oro Valley Water Utility is regulated by the Arizona Department of Water Resources (ADWR) and is a member of the Tucson Active Management Area (TAMA). The Town needs to develop and use alternative renewable water resources, including its CAP water, to reduce ground water mining and reach safe yield in TAMA in 2025.

The following projects are part of the Infrastructure Improvements Plan to be built over the next 10 years to develop and deliver water supply to meet future demands.

1- La Cholla D-E Blending Booster Station (Transportation)

Infrastructure improvements associated with blending groundwater with CAP water will be located on Naranja Drive near La Cholla Blvd. Blending is necessary for water quality and reducing total dissolved solids (TDS) in the water system prior to delivering additional CAP water to meet future demands. A new booster pump facility will deliver groundwater to mix with CAP water. The facility will consist of booster pumps, flow meters, valves, electrical controls, telemetry and security wall. Engineering services will be required and are included in the project cost.

Total cost: **\$ 300,000**

2 – Wheeling of 1,000 Acre Feet of CAP Water to Oro Valley (Transportation)

This project will wheel (deliver) an additional 1,000 acre feet per year through the Tucson Water Naranja Reservoir facility to the Oro Valley water system. Construction of a booster station and associated pipelines at the Tucson Water Oasis reservoir site is required. This project is required to increase flow and provide adequate pressure to deliver additional CAP water. Engineering services will be required and are included in the project cost.

Total cost: **\$ 930,000**

3 – 24-Inch Pipeline – Naranja to La Cholla to Tangerine. (Transportation)

The addition of a new 24-inch pipeline from the Tucson Water Naranja reservoir facility to La Cholla north to Tangerine Road is required to deliver Oro Valley CAP water into the Oro Valley Water Utility's distribution system. Engineering services will be required and are included in the project cost.

Total cost: **\$ 2,800,000**

4 – Oro Valley Water Utility Naranja CAP Booster Station Upgrade. (Transportation)

Installation of a new pump at the Tucson Water Naranja facility and an upgrade of electrical service and controls is required to deliver Oro Valley CAP water into our distribution system.

Engineering services will be required and are included in the project cost.

Total cost: **\$ 1,200,000**

5 – E to C PRV Naranja Reservoir (OV). (Transportation)

Installation of a new pressure reducing valve (PRV) at Naranja Reservoir on the Oro Valley system to efficiently deliver additional CAP water to meet future demands.

Engineering services will be required and are included in the project cost.

Total cost: **\$ 100,000**

6 – Oro Valley Water Utility CAP 12-Inch Pipeline. (Transportation)

Installation of a new 12-inch CAP water main located on W. Camino Alto. The new main will reduce water velocity and excessive pressure for the efficient delivery of additional CAP water. Engineering services will be required and are included in the project cost.

Total cost: **\$ 880,000**

7 – Oro Valley Water Utility CAP 16-Inch Pipeline. (Transportation)

Installation of a new 16-inch pipeline from the Tucson Water Oasis booster station to the Tucson Water Naranja reservoir facility for delivery of additional CAP water to the Oro Valley water system. Engineering services will be required and are included in the project cost.

Total cost: **\$ 1,100,000**

8 – Wheeling of 500 Acre Feet of CAP Water to Oro Valley. (Transportation).

This project will wheel (deliver) an additional 500 acre feet per year of Oro Valley's CAP water through the Tucson Water Naranja reservoir facility to the Oro Valley water system. This project includes system improvements and the extension of a new 24-inch pipeline on Tangerine Road from La Cholla to La Canada. This is required to transport and convey the additional 500 acre feet per year of CAP water. On the west end, it will connect to the 24-inch pipeline that will be constructed to La Cholla and Tangerine. On

the east end, it will connect the existing main at the intersection of La Canada and Tangerine. Engineering services will be required and are included in the project cost.

Total cost: **\$ 3,300,000**

9 – Steam Pump C-D Booster Station. (Transportation)

Installation of a new C to D zone Booster Station at Steam Pump Ranch. The new pump is required to efficiently deliver additional CAP water to meet future demands. Engineering services will be required and are included in the project cost.

Total cost: **\$ 1,200,000**

10– Big Wash D-E Booster Station. (Transportation)

Installation of a new D to E zone Booster Station at the Big Wash reservoir facility located at the Oro Valley Marketplace. This new pump station will efficiently deliver CAP water to meet future demands. Engineering services will be required and are included in the project cost.

Total cost: **\$ 800,000**

11 – Inlet/Outlet Modifications at Allied Signal Reservoir. (Transportation)

Installation of a new level control valve to prevent overflowing at the Oro Valley Allied Signal reservoir. This project is required as additional CAP water is delivered to meet future demands. Engineering services will be required and are included in the project cost.

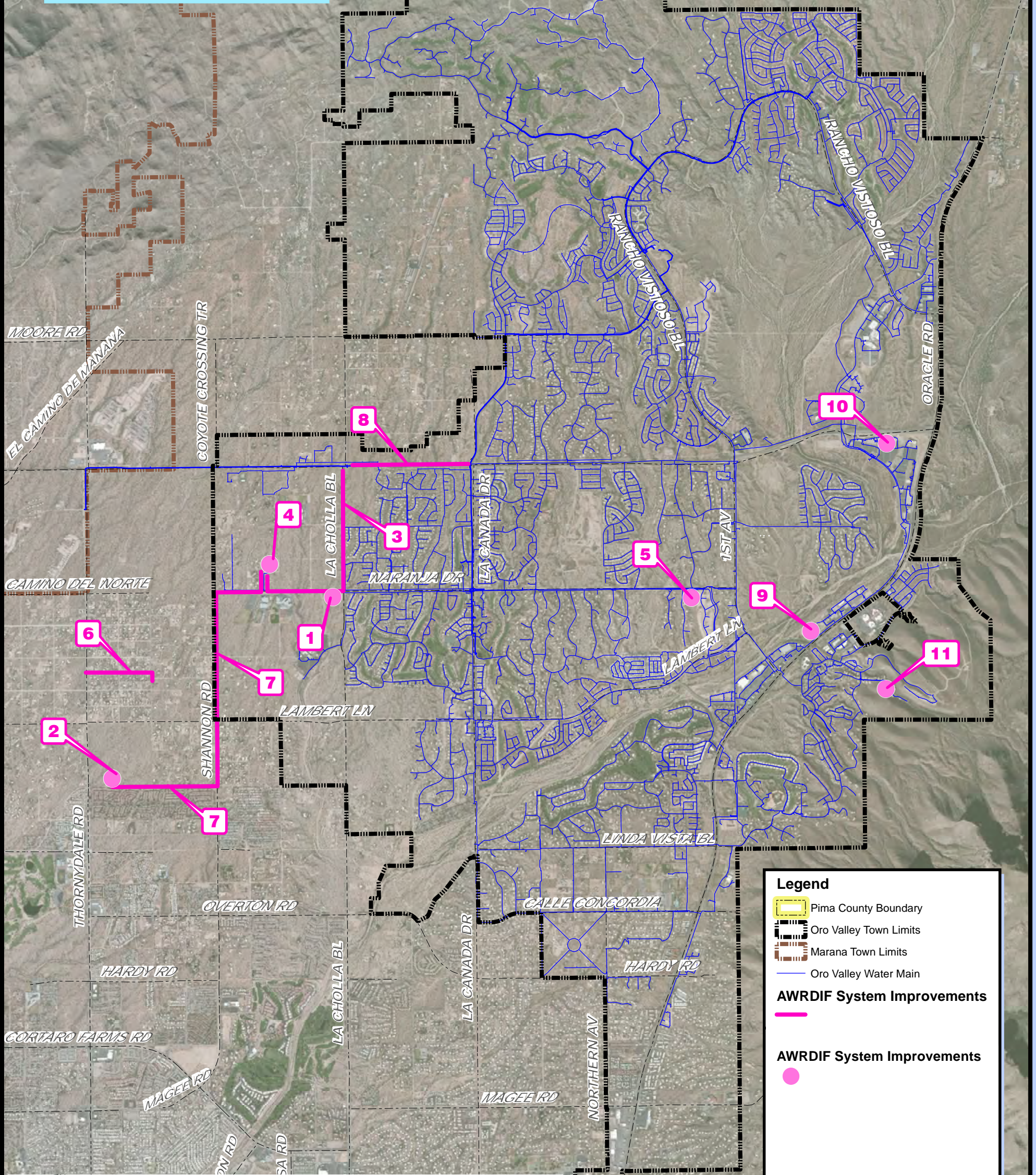
Total cost: **\$ 50,000**

PINAL COUNTY

PIMA COUNTY



- ALTERNATIVE WATER RESOURCES DEVELOPMENT IMPACT FEE PROJECTS**
- 1 La Cholla D-E Blending Booster Station
 - 2 Wheeling OVWU CAP 1000 AF/Year
 - 3 24" Pipe - Naranja La Cholla to Tangerine
 - 4 OVWU CAP Naranja Booster Station Upgrade
 - 5 E to C PRV Naranja Reservoir
 - 6 OVWU CAP 12" Pipe
 - 7 OCWU CAP 16-Inch Pipe Oasis
 - 8 Wheeling OVWU CAP 500 AF/Year
 - 9 Steam Pump C-D Booster Station
 - 10 Big Wash D-E Booster Station
 - 11 Inlet Outlet Modifications at Allied Signal Reservoir



Legend

- Pima County Boundary
- Oro Valley Town Limits
- Marana Town Limits
- Oro Valley Water Main
- AWRDIF System Improvements**
- AWRDIF System Improvements
- AWRDIF System Improvements



**TOWN OF ORO VALLEY WATER UTILITY
10 YEAR ALTERNATIVE
WATER RESOURCES IMPROVEMENTS**

Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, Swisstopo, and the GIS User Community

APPENDIX D

Potable Water System Expansion Related Projects

Appendix D-1
Town of Oro Valley Water Utility
Potable Water System Development Impact Fee Project Descriptions

1 – Property Acquisition. (Real Property)

Acquisition of property for a new Palisades Reservoir. The property is located in the vicinity of First Ave. and Palisades. The property is required for a new 1.0 million gallon reservoir and future booster station to meet future demands.

Total cost: \$ **500,000**

2 – Palisade Reservoir Facility C-E Booster Station. (Transportation)

Installation of a new C-E zone booster station at the Palisades reservoir site. This includes new electrical service, telemetry, controls and piping system to meet future demands. Engineering services will be required and are included in the project cost.

Total cost: \$ **450,000**

3 – 1.0 Million Gallon Palisades Reservoir. (Transportation)

Construct a new 1.0 million gallon potable water reservoir, control building and security wall at the new Palisades site to meet future demands. Engineering services will be required and are included in the project cost.

Total cost: \$ **1,650,000**

4 – New 16-Inch Pipeline. (Transportation)

Installation of a new 16-inch main from the Palisades reservoir site to First Ave. The main will connect to an existing C zone pipe to meet future demands. Engineering services will be required and are included in the project cost.

Total cost: \$ **1,650,000**

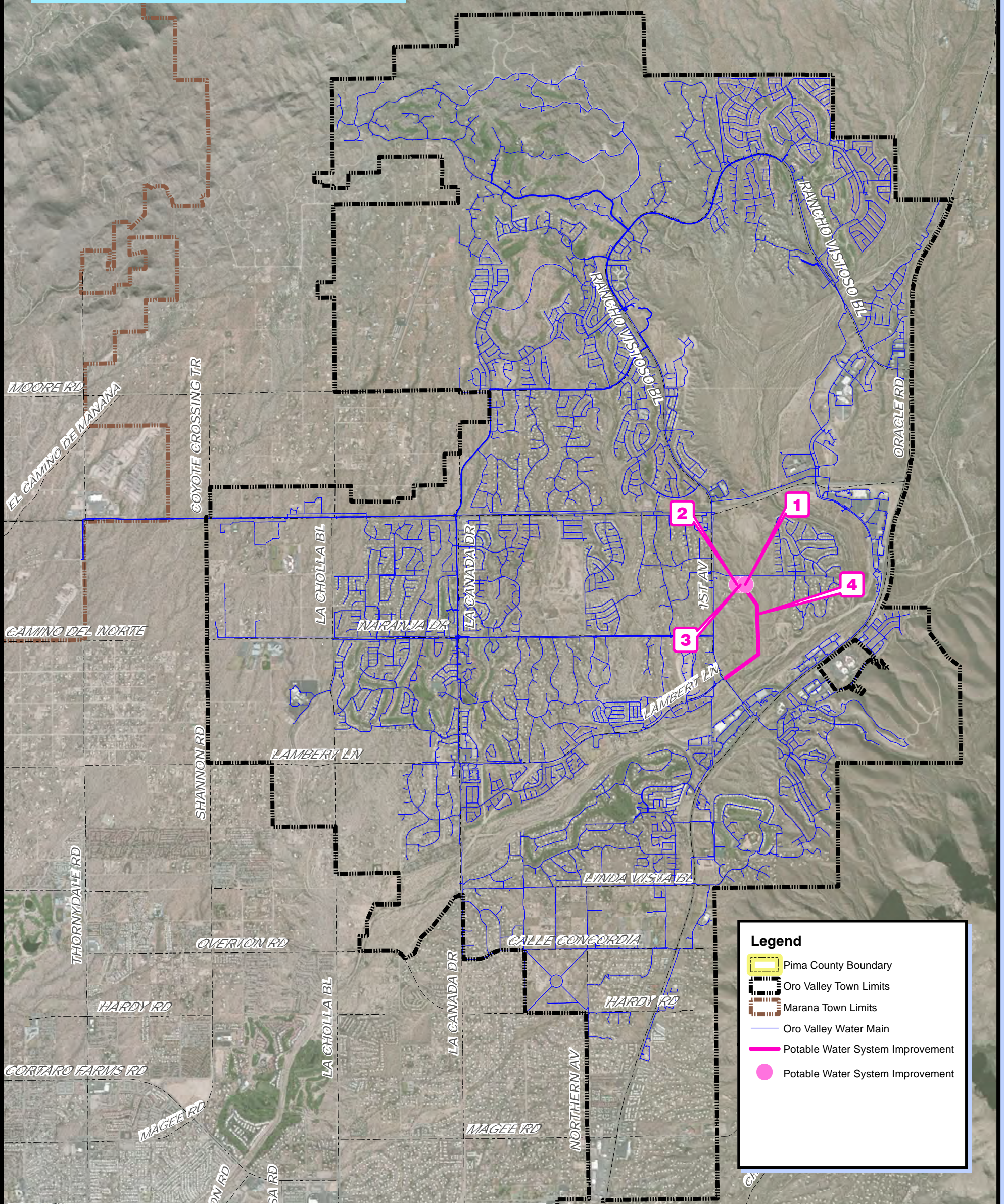
PINAL COUNTY

PIMA COUNTY



POTABLE WATER SYSTEM DEVELOPMENT IMPACT FEE FUND PROJECTS

- 1** Property Acquisition C Zone Reservoir
- 2** Booster Station C to E Zone
- 3** 1.0 MG Reservoir C Zone
- 4** New 16" Main C Zone



Legend

- Pima County Boundary
- Oro Valley Town Limits
- Marana Town Limits
- Oro Valley Water Main
- Potable Water System Improvement
- Potable Water System Improvement



TOWN OF ORO VALLEY WATER UTILITY 10 YEAR POTABLE WATER SYSTEM IMPROVEMENTS

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, Swisstopo, and the GIS User Community

APPENDIX E

Expansion Related Capital Improvements

APPENDIX E

Town of Oro Valley Water Utility

Table E-1: Alternative Water Resources Expansion Related Capital Improvements

Project No.	Project Name	Project Type	Completion Year	Capital Cost	Interest and Financing Cost	Total Project Cost	Additional Capacity (acre-feet)	Additional Service Units	Development Fee per Service Unit
<u>Phase 1 Projects (1,000 AF/Year)</u>									
1	CAP La Cholla D-E Blending Booster Station	Transportation	2014	\$ 300,000	\$ 96,000	\$ 396,000	1,000	2,941	3,281
2	Wheeling of 1000 Acre Feet CAP Water to Oro Valley	Transportation	2016	930,000	297,600	1,227,600			
3	24-Inch Pipeline - Naranja to La Cholla to Tangerine	Transportation	2018	2,800,000	896,000	3,696,000			
4	Oro Valley Water Utility Naranja CAP Booster Station Upgrade	Transportation	2018	1,200,000	384,000	1,584,000			
5	E to C PRV Naranja Reservoir	Transportation	2018	100,000	32,000	132,000			
6	Oro Valley Water Utility CAP 12-Inch Pipeline	Transportation	2018	880,000	281,600	1,161,600			
7	Oro Valley Water Utility CAP 16-inch Pipeline	Transportation	2019	1,100,000	352,000	1,452,000			
<u>Phase 2 Projects (500 AF/Year)</u>									
8	Wheeling of 500 Acre Feet of CAP Water to Oro Valley	Transportation	2019	3,300,000	1,056,000	4,356,000	500	1,471	4,802
9	Steam Pump C-D Booster Station	Transportation	2021	1,200,000	384,000	1,584,000			
10	Big Wash D-E Booster Station	Transportation	2021	800,000	256,000	1,056,000			
11	Inlet/Outlet Mod. at Allied Signal Reservoir.	Transportation	2021	50,000	16,000	66,000			
TOTAL				\$ 12,660,000	\$ 4,051,200	\$ 16,711,200	1,500	4,412	\$ 3,788

APPENDIX E

Town of Oro Valley Water Utility

Table E-2: Potable Water System Expansion Related Capital Improvements

Project No.	Project Name	Project Type	Completion Year	Capital Cost	Interest and Financing Cost	Total Project Cost	Additional Capacity (acre-feet)	Additional Service Units	Development Fee per Service Unit
1	Property Acquisition	Real Property	2019	\$ 500,000	\$ 160,000	\$ 660,000			
2	Palisade Reservoir Facility C-E Booster Station	Transportation	2021	\$ 450,000	\$ 144,000	\$ 594,000			
3	1.0 Million Gallon Palisades Reservoir	Transportation	2022	\$ 1,650,000	\$ 528,000	\$ 2,178,000	386	1,135	\$ 4,943
4	New 16-Inch Pipeline	Transportation	2022	\$ 1,650,000	\$ 528,000	\$ 2,178,000			
TOTAL				\$ 4,250,000	\$ 1,360,000	\$ 5,610,000	386	1,135	\$ 4,943