

CAMPUS PARK WEST PROJECT

APPENDIX R

WATER SUPPLY ASSESSMENT

SPA05-001, GPA05-003, REZ05-005,
TM 5424, LOG NO. 05-02-009

for the

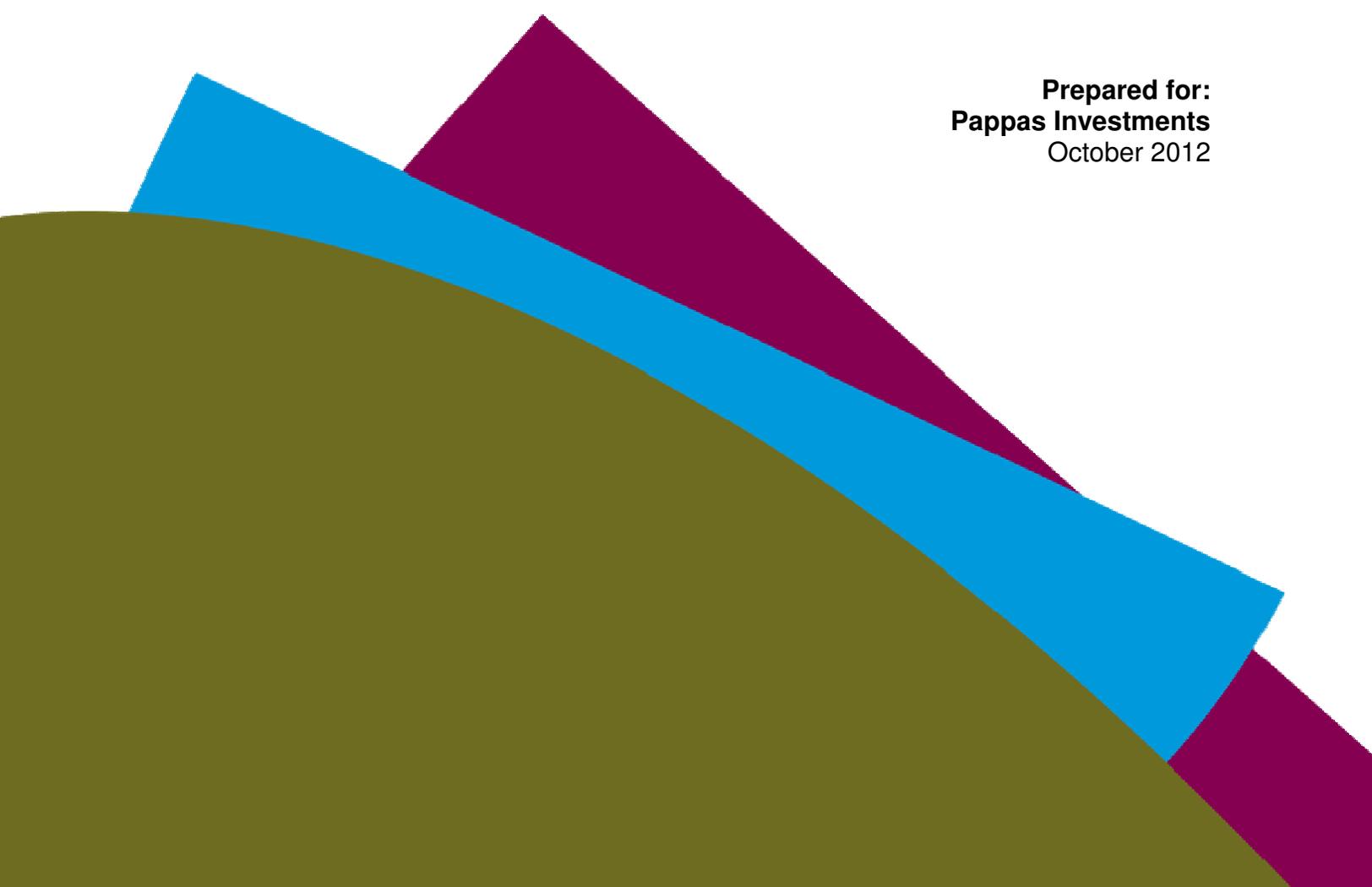
**DRAFT SUBSEQUENT
ENVIRONMENTAL IMPACT REPORT**

August 2013

Campus Park West Project

Water Supply Assessment

Prepared for:
Pappas Investments
October 2012



Campus Park West Project

Water Supply Assessment

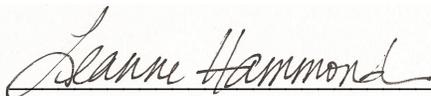
October 2012

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WATER SUPPLY ASSESSMENT FOR THE CAMPUS PARK WEST PROJECT

October 2012

Executive Summary

The majority of Campus Park West (Project) is located within the San Luis Rey Municipal Water District (SLRMWD) sphere of influence and a small percentage is within the Rainbow Municipal Water District (District). The District is a member agency of the San Diego County Water Authority and provides both water and sewer services, whereas the San Luis Rey Municipal Water District manages groundwater resources of the San Luis Rey River, its sole source of water. Water and sewer service will therefore be provided to Campus Park West by the District, and specific provisions for service have been outlined in a pre-annexation agreement dated May 22, 2012. The Campus Park West project will initiate annexation into the District and an amendment to the District's Sphere of Influence once the project is approved by the Water Authority.

Currently the District relies solely on "imported water" provided by the San Diego County Water Authority via the Metropolitan Water District of Southern California. To comply with the requirements of SB 610 and SB 221, the water supply planning for the District, the County Water Authority and the Metropolitan Water District will be discussed.

Campus Park West is an unincorporated portion of northern San Diego County east of Interstate 15 at State Route 76 (SR 76), near the community of Fallbrook. A majority of the project area is within the boundary of SLRMWD; however, SLRMWD is not a retail provider. Therefore the District is the most logical water distributor for Campus Park West as the closest retail water provider in the area. The District relies on San Diego Association of Governments (SANDAG) projections for population and land use to incorporate future water demands into water planning documents including the Urban Water Management Plan (UWMP).

The proposed water demands for the Project are 296 acre-feet per year and are accounted for through the Accelerated Forecasted Growth demand increment of the Water Authority's UWMP.

This WSA Report assesses, demonstrates, and documents that sufficient water supplies are planned for and are intended to be available over a 20-year planning horizon, under normal conditions and in single and multiple dry years, to meet the projected demand of the project inclusive of its defined mitigation measures.

1. Purpose: Senate Bill 610 and 221

This Water Supply Assessment Report (WSA) is prepared on behalf of the Rainbow Municipal Water District (District) as the retail water provider for the Campus Park West Specific Plan Amendment (project). The project area is situated on 116.5 acres, subdivided into 23 lots for a mixed land use plan. The report provides a comprehensive review of current and projected water supplies including various factors affecting the availability of the San Diego County Water Authority (Water Authority).

The WSA is required by California law commonly known as Senate Bill (SB) 610 (specifically, Public Resources Code Section 21151.9 and California Water Code Sections 10631, 10656, 10657, 10910, 10911, 10912, and 10915). These requirements were instituted during the 2001 legislative session and became effective January 1, 2002. The law applies to projects larger than certain specified thresholds and that are subject to the California Environmental Quality Act (CEQA). The commercial floor space component of the Campus Park West project exceeds the specified threshold; and, therefore, is subject to the requirements of SB 610 for preparation of a WSA.

SB 221, a companion Senate Bill approved at the same time as SB 610, requires verification of water supplies as a condition of tentative map approval for residential subdivisions of 500 units or more. The Campus Park West project proposal contains fewer than 500 residential units; and, therefore, SB 221 is not applicable to the project.

After approval of this WSA, the report will be incorporated into the project EIR as a Water Supply Assessment report consistent with the requirements of the legislation enacted by SB 610. The District may cite the approved WSA Report as evidence that a sufficient water supply is available to serve the project inclusive of its defined mitigation measures.

2. Project Description

Project Location

The Campus Park West project site is located in an unincorporated area of San Diego County (County) in the Fallbrook Community Planning Area, approximately 6 miles southeast of downtown Fallbrook and 45 miles north of downtown San Diego. The project is comprised of approximately 116.5 acres (APN numbers 108-121-14, 125-061-01, 125-063-07, and 125-063-08) subdivided into 23 lots for a mixed-use land plan along the east side of Interstate 15 (I-15) and straddling Pala Road/State Route 76 (SR-76). The majority of the site, approximately 100 acres, is located north of Pala Road/SR-76 and approximately 17 acres are located south of Pala Road/SR-76. Pankey Road extends through the project site, and the Pala Mesa Drive I-15 overpass terminates at the project's western boundary. A vicinity map is provided on Figure 1-1.

Development to the west of the project includes the Pala Mesa Golf Resort and the surrounding residential development on the east side of I-15. A gas station and California Department of Transportation Park and Ride facilities are located southwest of the project site. A proposed mixed-use development project called Campus Park is located to the north and east, and the open space portion of Campus Park borders the eastern length of Campus Park West north of Pala Road/SR-76. Also, to the north is a proposed campus of Palomar Junior College and to the east is a planned master planned development known as Meadowood.

The main access to the project site will be from Pankey Road, which will be improved to extend north from SR-76 and connect with the Pala Mesa Drive overpass, providing access to the west side of Interstate 15. Pankey Road will serve as the main backbone road for the project.

Land Use

The Campus Park West Specific Plan Amendment identifies six Planning Areas (PA-1 through PA-6) which are shown on Figure 1-2. Proposed development includes residential, general commercial with a mixed-use core, and limited impact industrial land uses. The limited impact industrial and commercial uses are located adjacent to I-15 and SR-76 and the mixed use core is centrally located within the general commercial land use, allowing for a potential pedestrian-oriented linear marketplace. In addition to the developed areas there are open space areas, most of which are designated as Multiple Species Conservation Program (MSCP) open space. The proposed project has been included as a Hard-Lined Development Project in the final version of the North County MSCP Program.

Approximately 12.4 acres (4 lots) east of Pankey Road in PA-3 are designated for multi-family residential uses at a density of 20 dwelling units per acre (248 dwelling units). The general commercial area consists of 6 lots located west of the multi-family residential area in PA-2 and two lots in PA-4 and PA-5, which are located south of Pala Road/SR-76. The general commercial area totals approximately 52.4 acres and will contain approximately 503,500 square feet of commercial space. The mixed-use core is integrated into the general commercial land area in PA-2 and may contain a maximum of 35 dwelling units in addition to commercial and office space. PA-1 is located to the north of Pala Mesa Drive, west of Pankey Road and east of

I-15 and is the limited impact industrial area. This area consists of 4 lots totaling approximately 12.6 acres which may contain approximately 120,000 square feet of light industrial/office space. PA-6 is at the very south end of the project and includes only MSCP open space. Campus Park West includes three Home Owners Association (HOA) lots totaling 1.42 acres which are comprised of manufactured slopes, HOA maintained landscaped areas, and drainage facilities. There are four biological open space lots, including PA-6, which total approximately 31.0 acres. The proposed development per the Campus Park West Specific Plan Amendment is summarized in Table 2-1.

Table 2-1. Campus Park West Proposed Land Use Summary

Land Use	Gross Acreage (ac)	Dwelling Units (DU)	Density (DU/ac)	Building Area (sq ft)
Multi-Family Residential (PA-3)	12.4	248	20	
Commercial/Mixed Use (PA-2, -4 & -5)	52.4			503,000
Mixed Use residential (PA-2)	--	35	20	
Light Industrial/Office (PA-1)	12.6			120,000
HOA - irrigation	1.42			
Biological Open Space (includes PA-6)	31			
Right-of-Way*	6.7			
Totals	116.52	283		

Projected Water Demands

Water demand projections for the proposed development are based on the number of residential dwelling units, land area or building size and corresponding unit demand factors for specific land use types from the District Domestic Water and Sanitary Sewer Construction Standards Manual (December 2011). The water use factors applicable to Campus Park West are provided in Table 2-2.

Table 2-2. Water Use Factors

Land Use	Average Day Demand
Multi-Family Residential	300 gpd/DU
General Commercial/Mixed Use	3,000 gpd/acre
Light Industrial/Office	100 gpd/1,000 sq ft
Developed Parks	4,000 gpd/acre

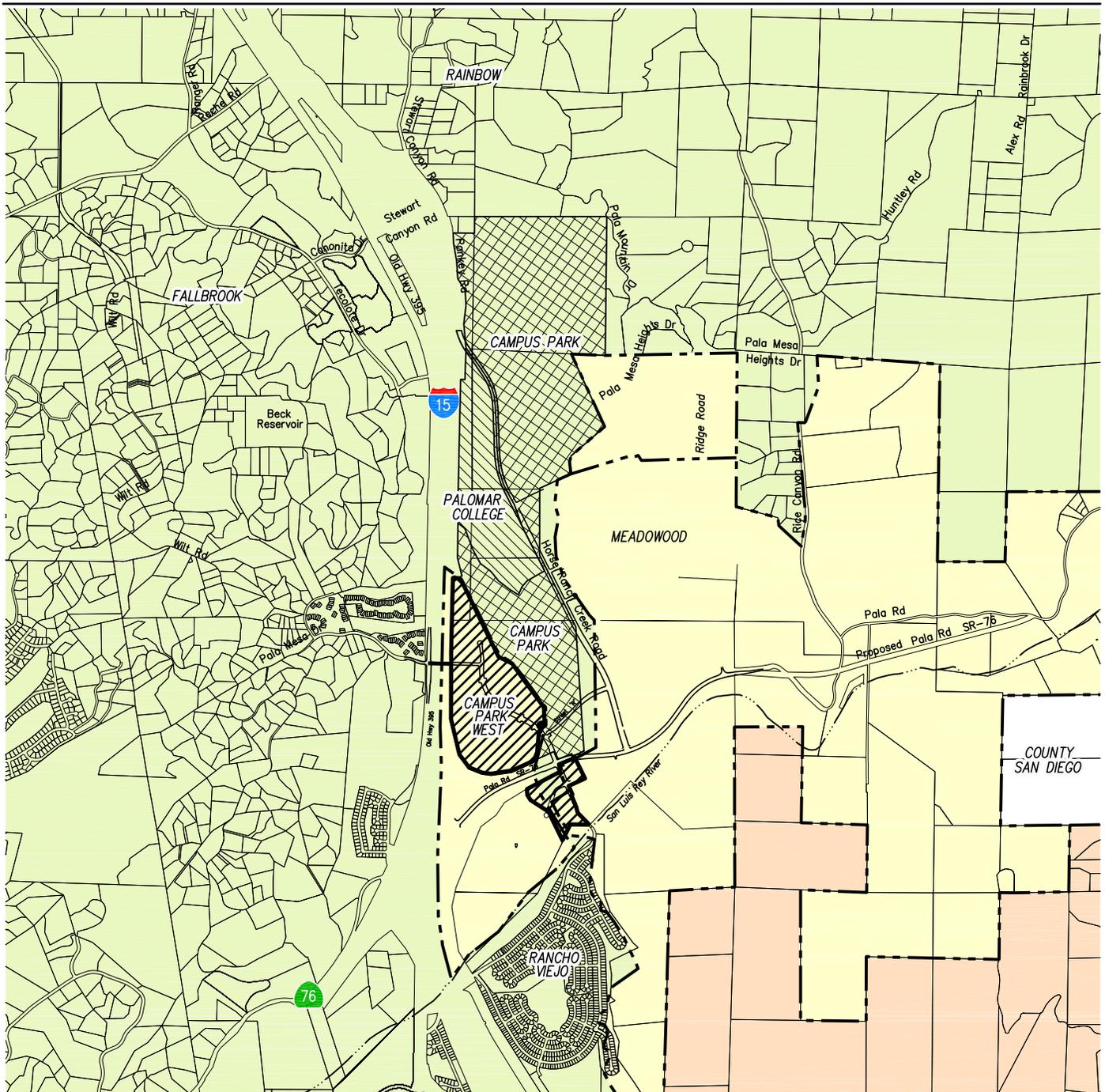
Projected water demands based on the water use factors and proposed development plan for Campus Park West are provided in Table 2-3. The total average day water is projected for be 0.261 MGD (296 acre-feet per year)

The projected water demand for Campus Park West is equivalent to 522.2 equivalent dwelling units (EDUs) of water demand based on one EDU equaling one single family residence with a demand of 500 gpd.

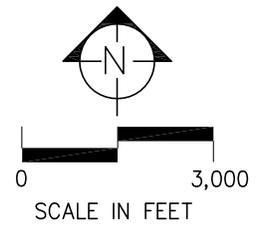
Table 2-3. Campus Park West Water Demand Projections

Land Use	Gross Acreage	Max Square Footage/ Units	Unit Use Factor	Average Annual Demand	
				gpd	gpm
Multi-Family Residential	12.4	248	300 gpd/DU	74,400	51.7
Commercial/Mixed Use	52.4	503,500	3,000 gpd/acre	157,200	109.2
Mixed Use residential	--	35	300 gpd/DU	10,500	7.3
Light Industrial/Office	12.6	120,000	100 gpd/1,000 SF	12,000	8.3
HOA - irrigation	1.42	--	4,000 gpd/acre	5,680	3.9
Biological Open Space	31	--	0 gpd/acre	-	0.0
Right-of-Way*	6.7	--	4,000 gpd/net acre	1,340	0.9
Totals	116.52			261,120	181

*Mostly pavement, with 5% of the area assumed irrigated (net acres)

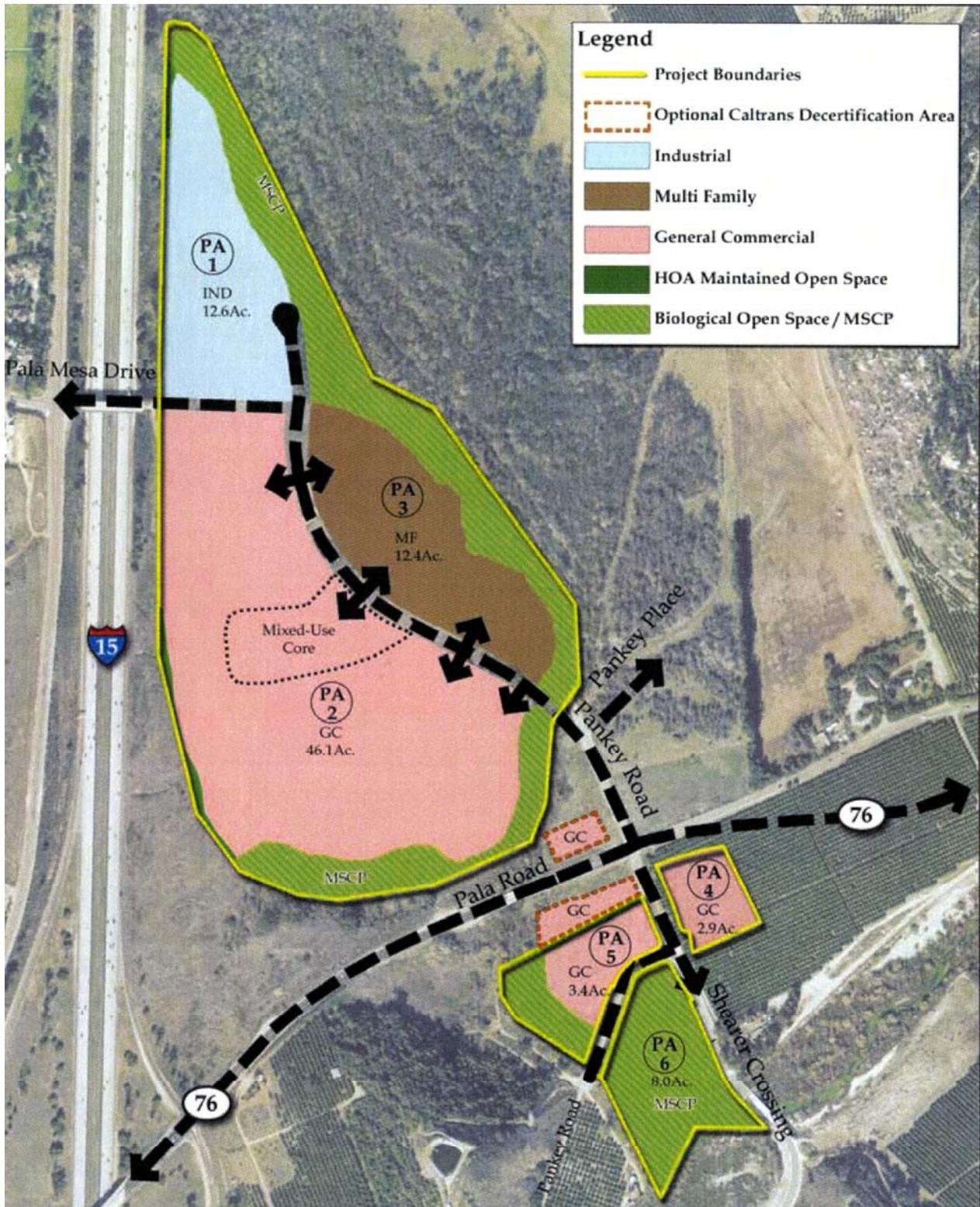


- WATER DISTRICT BOUNDARY
- RAINBOW MWD
- SAN LUIS REY MWD
- VALLEY CENTER MWD



**CAMPUS PARK WEST
VICINITY MAP**

Figure 1-1



SOURCE: Project Design Consultants

CAMPUS PARK WEST LAND USE

Figure 1-2

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3. Rainbow Municipal Water District

Rainbow Municipal Water District (District) was formed in 1953 under the Municipal Water Act of 1911 (Section 7100 et. seq. of the California Water Code) and is a local government agency providing water and sewer services to unincorporated areas in the northern inland section of San Diego County. The District joined the Water Authority and Metropolitan the same year to acquire the right to purchase and distribute imported water. Water received for distribution to customers is entirely imported and therefore the District relies on the Water Authority and Metropolitan for data to project future demands.

Population within the District's service area was 19,495 in 2010 and is expected to increase to 27,238 by 2035 according to the Water Authority and SANDAG. A projection of the population is provided in Table 3-1.

Table 3-1. Population Projections

Year	2010	2015	2020	2025	2030	2035
Service Area Population	19,495	19,944	20,696	22,520	24,904	27,238

Projection forecast by the Water Authority and SANDAG, 2010 Rainbow Urban Water Management Plan

Urban Water Management Plan

In accordance with the California Urban Water Management Planning Act, the District has prepared an Urban Water Management Plan (UWMP). The last update was completed in 2010 and was used to provide water demands and supply projections for this WSA.

Water Service Annexation

The portion of the project north of SR 76 is outside the Water Authority service area, and would need to annex to the Water Authority in order to receive water service from the Water Authority aqueduct system. The Water Authority Act (the section of the Water Code under which the Water Authority operates as a special district governmental agency) specifies that annexations into the Water Authority are at the discretion of the Water Authority Board of Directors.

The majority of Campus Park West is located within the San Luis Rey Municipal Water District sphere of influence and a small percentage is within the Rainbow Municipal Water District (District), as shown previously on Figure 1-1. The District is a member agency of the San Diego County Water Authority and provides both water and sewer services, whereas the San Luis Rey Municipal Water District manages groundwater resources of the San Luis Rey River, its sole source of water. Water and sewer service will therefore be provided to Campus Park West by the District, and specific provisions for service have been outlined in a pre-annexation agreement dated May 22, 2012. The Campus Park West project will initiate annexation into the District and an amendment to the District's Sphere of Influence once the project is approved by the Water Authority.

The District has existing water facilities in the vicinity of the Campus Park West project that have sufficient capacity to serve the project. Additionally, the supply capacity of the Water Authority and Metropolitan aqueduct connections are projected to be adequate for ultimate demands. Water supply facilities for Campus Park West will be integrated with proposed facilities for the Campus Park project to the north.

4. Historical and Projected Water Demands

The District's customer base is comprised of agricultural and domestic use. Historically, agriculture was a significant portion of the water demands. However, agriculture demand has significantly dropped due to drought conditions and supply restrictions from the State Water Project. An increase in the residential customer base is expected in the near future.

District Projected and Historical Water Demands

The District utilizes the Water Authority's projected demands based on the San Diego Association of Government's (SANDAG) most recent regional growth forecast to calculate future demands within their service area. This provides for consistency between San Diego County planning efforts and the Water Authority demand projections, thereby ensuring that adequate supplies are being planned for existing and future water users. SANDAG's growth forecasts are based on the land use planning policies of the cities within San Diego County, so planned growth is included in the water demand forecasts of the County. Sections 1 and 2 of the Water Authority's 2010 UWMP (June 2011) provide detail on the current population projection (in 5-year increments) as well as economic data utilized in their water supply planning.

Table 4-1. Historical Water Demands Purchased from the Water Authority

Year	Estimated Potable Water Use (AFY)
1995	21,000
1996	24,686
1997	24,817
1998	19,107
1999	25,403
2000	29,929
2001	27,427
2002	31,702
2003	28,881
2004	33,477
2005	25,252
2006	30,459
2007	33,305
2008	27,045
2009	26,420
2010	18,322

Source: Rainbow Municipal Water District 2010 UWMP (Table 6)

The District used the Water Authority's projections for normal, dry year and multiple dry years to determine future demands. The tables below summarize both the District's and the Water Authority's future demands with conservation. Conservation is discussed in Section 7.

Table 4-2. Normal Water Demand with Conservation

Year	District (AFY)	Water Authority (AFY)
2015	21,537	641,437
2020	21,070	676,375
2025	22,446	722,315
2030	24,078	758,954
2035	26,137	792,549

Source: Rainbow Municipal Water District 2010 UWMP (Table 10)

Table 4-3. Single Dry Year Water Demand with Conservation

Year	District (AFY)	Water Authority (AFY)
2015	23,045	681,850
2020	22,545	720,348
2025	24,017	769,689
2030	25,763	809,915
2035	27,967	846,553

Source: Rainbow Municipal Water District 2010 UWMP (Table 11)

Table 4-4. Multiple Dry Years Water Demand with Conservation

Group	Year	District (AFY)	Water Authority (AFY)
1	2016	23,206	684,965
	2017	23,369	707,726
	2018	23,532	742,211
2	2021	22,703	726,025
	2022	22,862	754,233
	2023	23,022	793,297
3	2026	24,185	777,049
	2027	24,354	806,049
	2028	24,525	848,762
4	2031	25,943	816,466
	2032	26,125	848,206
	2033	26,308	888,263

Source: Rainbow Municipal Water District 2010 UWMP (Table 12)

5. Water Supply

The District's 2010 UWMP contains a comparison of projected supply and demands within its existing boundaries through the year 2035. Projected potable water resources to meet demands as planned are primarily supplied with imported water purchased from the Water Authority. The District currently has no local supply of potable water or groundwater resources.

The District's primary resource of potable water is imported through the Water Authority. Rainbow is a member agency of the Water Authority and Metropolitan. The District imports all of its potable water through seven turnouts located on the Metropolitan/Water Authority Aqueducts. The Water Authority in turn, currently purchases most of its water from Metropolitan. Due to Rainbow's dependency on these two agencies, this WSAV report includes information on the existing and projected supplies, supply programs, and related projects of the Water Authority and Metropolitan along with the demands and supplies within Rainbow's service area.

The information and conclusions presented in this report are based upon sources (Metropolitan and Water Authority) outside the control of the District; therefore, there is no affirmation regarding the validity of the projections or availability of future water supplies and the District takes no responsibilities.

Water Sources

- **Ground Water**

The District currently does not utilize groundwater as a source of water supply. A groundwater study within the Rainbow Valley was done in May 2005 and was enclosed in the 2005 UWMP. The study determined that the potential exists within the District to utilize groundwater as a supplemental water supply. The infrastructure necessary, such as reverse osmosis treatment to bring down high total dissolved solids (TDS) levels will be determined with future research. At such time the economic viability of such infrastructure will also be investigated. District is also looking into buying water rights from the City Carlsbad from the San Luis Rey River.

- **Recycled water**

The District currently does not generate nor distribute recycled water. Furthermore, due to the financial impacts of acquiring or producing recycled water and installing and maintaining a parallel recycled water transmission and distribution system, a recycled water system is not planned at this time. One option for recycled water in the future is the proposed Meadowood project to the east, which includes a wastewater treatment and reuse option for disposal. Should the development proposal be realized, the District could obtain recycled water from a Valley Center Municipal Water District owned and operated facility. In this scenario, a recycled water pipeline in Pankey Road could serve irrigation use within the project. Other options include recycled water from Fallbrook Public Utilities District or Valley Center Municipal Water District's Moosa Canyon plant with a recycled water pipeline extension to the District's Beck reservoir.

- **Desalination**

Desalination is a process under which saline water is separated from salt water to potable water. A reverse osmosis seawater desalination plant which will be constructed in the City of Carlsbad is a fully permitted private desalination project owned by Poseidon Resources LLC. The desalination plant's feasible output was determined to be 56,000 acre feet annually. The District considered an agreement with Poseidon to purchase water; however, the Water Authority will pursue an allocation. Due to the location of the District in respect to the plant, the District cannot directly receive the desalinated seawater. Development of desalinated sea water, brackish ocean water and brackish ground water as a long term supply is not a viable option for the District. Any such developments are to be done by the Water Authority, or private developers. The Water Authority has the ability of supplementing their overall water supply with desalinated water. Per their Regional Water Facilities Master Plan the Water Authority concludes that it should pursue seawater desalination "for a major portion of the (Water) Authority's supply portfolio". Sea water desalination is the preferred choice for a coastal regions since it can provide a source of water with abundant storage capacity, is not effected by hydrologic cycle, provides treated water and is becoming economically competitive to new imported water sources. The Water Authority has developed a seawater desalination program to evaluate seawater desalination possibilities for the County which is described in their 2010 updated UWMP. On September 27, 2012, the Water Authority approved a financing agreement with Poseidon to purchase the water from desalination plant.

- **Transfer and Exchange**

Transfers and exchanges are encouraged by the Act in order to improve the reliability and quality of the water supply. Water Authority has an agreement with IID to transfer 200,000 AFY of conserved water to San Diego region. The District has interconnections with the City of Oceanside and Fallbrook Public Utility District (FPUD) because of their close proximity. These interconnections are used for emergency supply. The District and FPUD have an emergency exchange agreement, which was enacted in 1986 to transfer water in an emergency event.

- **Water Supply Projects**

In 2010, District finished construction on two reservoir covers. The covers not only comply with California Department of Public Health (CDPH) regarding treated storage reservoirs, it also saves the District water losses due to evaporation. District is currently under construction on another reservoir cover which will contribute to the savings with a total of 78 AF/Y.

Supply Projections

The supply projections contained in the Water Authority and District 2010 UWMPs are summarized below in Table 5-1.

Table 5-1. Water Authority Water Supply Projections (AFY)

Water Supply Source	2010	2015	2020	2025	2030	2035
Imperial Irrigation	70,000	10,000	190,000	20,000	20,000	20,000
Groundwater Supplier Surface Diversion	21,377	22,170	26,970	26,970	26,970	26,970
Supplier Surface Diversion	27,336	59,327	59,327	59,327	59,327	59,327
Recycled Water	28,065	39,920	44,344	49,425	53,256	57,032
Desalination	0	0	56,000	56,000	56,000	56,000
Channel Lining	80,200	80,200	80,200	80,200	80,200	80,200
Total	226,978	211,617	456,841	291,922	295,753	299,529

Source: Rainbow Municipal Water District 2010 UWMP (Table 4)

6. Availability of Sufficient Supplies

The District's water supply is dependent on the Water Authority as the wholesale water supplier. Therefore the water supply reliability assessment relies on the Water Authority's 2010 UWMP. Water Code section 10635 requires that every urban water supplier assess the reliability of its water services during normal, dry and multiple dry water years. The water supply and demand assessment compare the total projected water use with expected water supply over the next 20 years in five-year increments. The assessment contained in the 2010 UWMP projects reliability through the next 25 year to correspond with population growth forecasted by SANDAG.

The Water Authority's 2010 UWMP provides for a comprehensive planning analysis at a regional level and includes water use associated with accelerated forecasted residential development as part of its municipal and industrial sector demand projections. These housing units were identified by SANDAG in the course of its regional housing needs assessment, but are not yet included in existing general land use plans of local jurisdictions. The demand associated with accelerated forecasted growth is intended to account for SANDAG's land use development currently projected to occur between 2035 and 2050, but has the likely potential to occur on an accelerated schedule. SANDAG estimates that this accelerated residential development could occur within the planning horizon of the 2010 UWMP update. These units are not yet included in local jurisdictions' general plans, so their projected demands are incorporated at a regional level. When necessary, this additional demand increment shown in Table 6-1, termed Accelerated Forecasted Growth, can be used by member agencies to meet the demands of development projects not identified in the general land use plans, as part of general plan amendments, and/or new annexations.

Therefore, the near-term service for the proposed water demands of the Project can be accounted for in the Water Authority's 2010 UWMP accelerated forecasted growth demand increment. As documented in the Water Authority's 2010 UWMP, the Water Authority is planning to meet future and existing demands which include the demand increment associated with the accelerated forecasted growth. The Water Authority will also assist its member agencies in tracking the certified EIRs provided by the agencies that include water supply assessments that utilize the accelerated forecasted growth demand increment, to demonstrate adequate supplies for the development. In addition, the next update of the demand forecast for the Water Authority's 2015 UWMP will be based on SANDAG's most recently updated forecast, which will include the Project.

The forecasted normal year water demands compared with the projected supplies for the Water Authority are shown in Table 6-2. This demonstrates that with existing supplies and implementation of the projects discussed in the Water Authority's planning documents there will be adequate water supplies to serve the anticipated growth of the Project. Table 6-3 provides a comparison of single dry year supply with projected total water demands over the next 20 years in five-year increments. Multiple dry year scenarios are shown in Tables 6-4 through 6-6.

Table 6-1. Total Regional Baseline Demand Forecast (AFY)

	2015	2020	2025	2030	2035
Baseline M&I Demand ^{1,2,3}	590,731	661,415	728,574	788,174	839,417
Baseline Agricultural Demand - Program	30,358	27,164	26,531	25,927	25,324
Baseline Agricultural Demand - Full Service	2,500	22,370	21,849	21,352	20,854
Near-Term Annexations ⁴	5,709	6,670	6,670	6,670	6,670
Accelerated Forecasted Growth	2,224	4,421	6,605	8,776	10,948
Total Baseline Demand Forecast	631,522	722,040	790,229	850,899	903,213

Source: Water Authority 2010 UWMP (Table 2-2)

¹ Includes approximately 12,000 AF of demand for Camp Pendleton – provided by base staff.

² Reflects passive historic conservation savings.

³ Includes increment of demand associated with the decay of historic active conservation program savings

(2015 = 7,111 AF; 2020 = 14,221 AF; post-2020 = 21,332 AF).

⁴Known near-term annexation demands include: Escondido (314 AF), Otay Ranch Village 13 and parcels East of Village 13 (2,361 AF), Peaceful Valley Ranch (70 AF), Sycuan Reservation (392 AF), Stoddard Parcel (2 AF), San Ysidro Mt. Parcel Village 17 (148 AF), Viejas (2,000 AF), Rincon (417 AF), Meadowood Development (460 AF), Pauma Ranch (76 AF) and Warner Ranch/Sycamore Ranch (430 AF). Including the demands for these parcels does not limit the Board's discretion to deny or approve these or other annexations not contemplated at this time.

Table 6-2. Water Authority Normal Year Demand and Supply Comparison (AFY)

	2015	2020	2025	2030	2035
Water Authority Supplies					
IID Water Transfer ¹	100,000	190,000	200,000	200,000	200,000
ACC and CC Lining Projects ²	80,200	80,200	80,200	80,200	80,200
Proposed Regional Seawater Desalination	0	56,000	56,000	56,000	56,000
Sub-Total	180,200	326,200	336,200	336,200	336,200
Member Agency Supplies					
Surface Water	48,206	47,940	47,878	47,542	47,289
Water Recycling	38,660	43,728	46,603	48,278	49,998
Groundwater	11,710	11,100	12,100	12,840	12,840
Groundwater Recovery	10,320	15,520	15,520	15,520	15,520
Sub-Total	108,896	118,288	122,101	124,180	125,647
Metropolitan Water District Supplies	358,189	230,601	259,694	293,239	323,838
Total Projected Supplies	647,285	675,089	717,995	753,619	785,685

Source: Water Authority 2010 UWMP (Table 9-1)

¹Imperial Irrigation District Water Transfer

²All-American and Coachella Canals canal lining projects

Table 6-3. Water Authority Single Dry Year Demand and Supply Comparison

	2015	2020	2025	2030	2035
Water Authority Supplies					
IID Water Transfer	100,000	190,000	200,000	200,000	200,000
ACC and CC Lining Projects	80,200	80,200	80,200	80,200	80,200
Proposed Regional Seawater Desalination	0	56,000	56,000	56,000	56,000
Sub-Total	180,200	326,200	336,200	336,200	336,200
Member Agency Supplies					
Surface Water	17,932	17,932	17,932	17,932	17,932
Water Recycling	38,660	43,728	46,603	48,278	49,998
Groundwater	9,977	9,977	9,977	9,977	9,977
Groundwater Recovery	10,320	15,520	15,520	15,520	15,520
Sub-Total	76,889	87,157	90,032	91,707	93,427
Metropolitan Water District Supplies	430,431	305,101	338,501	376,023	409,389
Total Projected Supplies	687,520	718,458	764,733	803,930	839,016

Source: Water Authority 2010 UWMP (Table 9-2)

Table 6-4. Water Authority Multiple Dry Year Demand and Supply Assessment Three-Year Increments – 2012-2014 and 2016-2018 (AFY)

	2012	2013	2014	2016	2017	2018
Member Agency Supplies	69,597	84,440	103,907	78,943	93,408	112,499
Water Authority Supplies	170,200	180,200	180,200	236,200	236,200	266,200
Metropolitan Allocation (Preferential Right)	317,760	319,177	320,456	322,661	323,350	324,100
Total Estimated Core Supplies w/o Storage Tanks	557,557	583,817	604,563	637,804	652,958	702,799
Total Demands w/ SBX7-7 ¹ Conservation	658,381	679,509	711,241	682,338	705,461	740,326
Potential Supply; (Deficit) or Surplus	(100,824)	(95,692)	(106,678)	(44,534)	(52,503)	(37,527)
Utilization Carryover Supplies	40,000	40,000	30,000	44,534	40,000	30,000
Total Projected Core Supplies with Utilization of Carryover Storage Supplies	597,557	623,817	634,563	682,338	692,958	732,799
Remaining Potential Supply, (Deficit) or Surplus, that will be handled through Management Actions	(60,824)	(55,692)	(76,678)	0	(12,503)	(7,527)

Source: Water Authority 2010 UWMP (Table 9-3 and 9-4)

Table 6-5. Water Authority Multiple Dry Year Demand and Supply Assessment Three-Year Increments – 2021-2023 and 2026-2028 (AFY)

	2021	2022	2023	2026	2027	2028
Member Agency Supplies	87,732	100,719	118,331	90,367	103,114	120,486
Water Authority Supplies	336,200	336,200	336,200	336,200	336,200	336,200
Metropolitan Allocation (Preferential Right)	326,697	327,671	328,695	332,058	333,272	334,532
Total Estimated Core Supplies w/o Storage Tanks	750,629	764,590	783,226	758,625	772,586	791,218
Total Demands w/ SBX7-71 Conservation	724,294	751,800	790,177	772,892	801,649	844,137
Potential Supply; (Deficit) or Surplus	26,335	12,790	(6,951)	(14,267)	(29,063)	(52,919)
Utilization Carryover Supplies	0	0	6,951	14,267	29,063	40,000
Total Projected Core Supplies with Utilization of Carryover Storage Supplies	750,629	764,590	790,177	772,892	801,649	831,218
Remaining Potential Supply, (Deficit) or Surplus, that will be handled through Management Actions	26,335	12,790	0	0	0	(12,919)

Source: Water Authority 2010 UWMP (Table 9-5 and 9-6)

Table 6-6. Water Authority Multiple Dry Year Demand and Supply Assessment Three-Year Increments – 2031-2033 (AFY)

	2031	2032	2033
Member Agency Supplies	92,051	104,807	122,188
Water Authority Supplies	336,200	336,200	336,200
Metropolitan Allocation (Preferential Right)	338,575	340,009	341,486
Total Estimated Core Supplies w/o Storage Tanks	766,826	781,016	799,874
Total Demands w/ SBX7-71 Conservation	811,421	842,947	882,795
Potential Supply; (Deficit) or Surplus	(44,595)	(61,931)	(82,921)
Utilization Carryover Supplies	44,595	40,000	30,000
Total Projected Core Supplies with Utilization of Carryover Storage Supplies	811,421	821,016	829,874
Remaining Potential Supply, (Deficit) or Surplus, that will be handled through Management Actions	0	(21,931)	(52,921)

Source: Water Authority 2010 UWMP (Table 9-7)

This report demonstrated that there are sufficient water supplies over a 20-year planning horizon to meet the projected water demands of the Project within the District and Water Authority service area. The Project water demands are included in the regional water resource planning documents of the Water Authority and Metropolitan Water District.

7. Water Shortage and Drought Management

Water Shortage Contingency Plan

District ordinance 08-01 addresses the possible water shortage scenarios in conjunction with the Water Authority Drought Management Plan. The sections within the ordinance discuss stages each with both Voluntary and Mandatory reduction of water usage. Subsections herein shall discuss various components of the water shortage contingency plan.

- **Stages of Action**

There are 4 different stages of water shortage scenarios within ordinance 08-01. Each stage has specific instructions for various water uses to be prohibited or to be restricted. Drought Response Level 1 is for periods when the District is notified that due to drought or other supply reductions, there is a reasonable probability there will be supply shortages and that a consumer demand reduction of up to 10 percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands. Public outreach and conservation practices are promoted during Drought Response Level 1; however, cut backs are not mandatory. For Drought Response Level 2 there is a 20 percent reduction. There is a list of conservation practices which during Drought Response Level 1, are voluntary, and during Drought Response Level 2 are mandatory. Drought Response Level 3 and 4 require a 40 and more than 40 percent reduction, respectively.

- **Catastrophic Supply Interruption Plan**

A catastrophic water shortage occurs when a disaster, such as an earthquake, results in insufficient available water to meet the region's needs or eliminates access to imported water supplies. The Water Authority's Emergency Response Plan (ERP) and the Emergency Storage Plan (ESP) are developed to protect public health and safety and to prevent or limit economic damage that could occur from a severe shortage of water supplies. The ERP covers concepts such as the authorities, policies, and procedures associated with emergency response activities, emergency staffing, management, and organization required to assist in mitigating any significant emergency or disaster, mutual aid agreements and covenants that outline the terms and conditions under which mutual aid assistance will be provided and pre-emergency planning and emergency operations procedures. The ESP identifies and implements plans to acquire additional storage facilities.

For the District, it is important that the water stored in District reservoirs are monitored and proactively managed to not allow the volumes of all the reservoirs to drop to very low level. Practice should be to maintain at a minimum the required emergency fire flow storage within all reservoirs at all time. The District has developed an ERP which discusses actions the District will take during a catastrophic interruption of water supplies to ensure operation during such an event. Contingency plans are prepared for each event. Backup generators have been purchased and are easily wired into pump stations for quick connects in case of a power

ouage. Storage facilities are kept at an optima level in case of fire flow demands, aqueduct shutdowns, and general operation.

Water Use Efficiency Measures

- **Conservation Measures**

Demand Management Measures are methods or ways to conserve water through efficient tools, education and encouragement through incentives. Currently there are 14 best management practices (BMP's) that are promoted by California Urban Water Conservation Council (CUWCC). All of these BMP's are implemented by the Water Authority and the District is a participating member of the Water Authority program and the CUWCC. The District became a signatory to the Memorandum of Understanding (MOU) of the CUWCC in 2009. As a member of CUWCC, the District is required to submit a BMP report every 2 years regarding the implementation of the 14 BMPs. Refer to the Annual CUWCC BMP Report and Section 3 of the Water Authority 2010 UWMP for descriptions of current BMPs.

- **Water Survey Programs for Residential Customers**

The District has not developed an independent marketing strategy for single or multifamily residential water survey program to detect leaks; including toilets, toilet flappers and faucets, check flow rates; including showerheads, aerators and toilets, and other checks to determine efficient use of water and recommend or offer to replace with low flow devices. At present, RMWDs participation is limited to its association with the Water Authority program. The District should consider the initiation of a water survey program to increase the visibility of the District's programs. Such information can be supplied as a leaflet within the monthly water bill.

- **Residential Plumbing Retrofit**

The District, as a member of the Water Authority, participates in an incentive program for water conserving devices.

- **System Water Audits**

The District had a water pipe audit program that would perform leak detection on its pipelines. The last survey was done for FY 2004-2005. Currently, the District has not continued the program due to financial constraints. As leak detection technology improves the District will consider bring back the water system audits.

- **Commodity Rate Metering**

In 2010 the District retailed water at a commodity rate of \$2.55 for each unit of water for the first 6 units and \$2.60 a unit thereafter. A unit of water is equivalent to one Hundred Cubic Feet (HCF) or 748 gallons. Included in this rate are costs necessary to pay Metropolitan and the Water Authority for the costs of imported water.

- **Large Landscape Conservation**

The Water Authority has a large audit programs and services to assist in water use efficiency through new technology and education.

- **High Efficiency Washing Machines**

The District is a participating member of the Water Authority's Voucher Program to promote efficient machines through incentives for water saving devices.

- **Public Information Programs**

The Public information Program used public service announcements, brochures, newsletters in bills, demonstration gardens, special events and its speaker's bureau to give speeches as its medium to relay the message of conservation. Public can learn how outdoor irrigation can waste water, how the region uses recycled water and how to avoid polluting our local streams and bays.

- **School Education Programs**

The Water Authority has several programs available to school teachers and other youth programs to promote water education among local youth. The programs for teachers are grouped into elementary and secondary categories with 10 programs for K through 6 and 7 programs for 7 through 12th grades respectively. In addition to these grade specific programs, the Water Authority offers a badge program for youth organizations, mini-grants and Xeriscape gardening workshop for teachers, and does the exhibit at Reuben H. Fleet Center. These programs teach water-related activities and science experiments. In addition to highlighting water conservation issues and provides an understanding of California's water supply, these activities are designed to integrate math, science, art and language. Secondary school level programs emphasize on are water quality, water distribution, water conservation, the water cycle and fresh and salt water topics.

- **Conservation Programs for Commercial, Industrial and Institutional Accounts**

The Water Authority managed a Commercial Institutional Industrial (CII) Voucher Program for all participating member agencies. In July 2008, the Water Authority switched to Metropolitan's regional CII Save a Buck Program. These programs installed 56,000 CII water saving devices and saved 18,400 AF of water savings from 1993 to 2009.

- **Conservation Pricing**

The District is in preliminary stages of establishing a pricing schedule to promote water conservation and as such has yet to determine stepping points. Also being considered at the time is a rate structure that includes a different schedule for agricultural, industrial and domestic uses.

- **Wholesale Agency Programs**

All the programs with which the District participates are administrated by the Water Authority and in some instances by Metropolitan. Therefore this section is a summary of programs offered by the Water Authority. Other programs can be found in the Water Authority UWMP Section 3 Demand Management.

- **Water Conservation Coordinator**

The District has a water conservation coordinator and works with the Water Authority staff to coordinate water conservation related issues.

- **Water Waste Prohibition**

For most arid regions with limited water supply, water waste prohibition is an innate concept well understood and readily practiced. However that was not the case in Southern California with the abundant imported water from Colorado River, the area residents created water intense lush landscapes. With the increasing demand for water in the region, local governments and water districts created regulations to regulate water conservation. The District adopted an ordinance in 1990 to promote water conservation and created an emergency water management program. The ordinance, No 90-1, was later superseded by ordinance 91-5 which in turn was slightly amended with ordinance 91-8. Section 7 of the ordinance, "Water Conservation Stages", states that no customer shall waste or use district provided water unreasonably regardless of the conservation stage of a given time. Any violation of this ordinance is a misdemeanor which is punishable with imprisonment or fine.

- **Residential Ultra-Low Flush Toilet Replacement Programs**

The Water Authority implemented a financial incentive program for water conserving devices from 1991 to 2008. Vouchers were used to encourage replacement of water wasting devices to high efficient devices. The program replaced over 500,000 water-efficient toilets and other devices. In 2008, the Water Authority transitioned over to the regional SoCal WaterSmart rebate program.

- **20 Gallon Challenge**

Increased conservation is essential for residents, business and public agencies due to historic dry conditions and reduced water deliveries from the State Water Project. The Water Authority has developed a conservation campaign to increase the conservation methods called the 20 Gallon Challenge. The 20 Gallon Challenge is region wide, and promotes voluntary water conservation by pledging to save 20 gallons per person, per day to save water now to allow for water in storage for the coming years.

- **Determination of DMM Implementation**

DMM is determined through the evaluation of applications for loans and grants to the Department of Water Resource to implement DMM's identified in Section 6. The District is a signatory to the CWUCC MOU participating member of the Water Authority and Metropolitan's programs.

Conservation Management

Since the District's last UWMP in 2005, there have been some demographic changes due to recent droughts. Customers have had to decrease usage under implementation of a Stage 2 Drought by the District. Drought Management Planning is practiced by the District through cutbacks and restrictions of usage by its customers.

References

Rainbow Municipal Water District (June 2011) *Updated 2010 Urban Water Management Plan*

San Diego County Water Authority (June 2011) *2010 Urban Water Management Plan*