

Placer County
Water Supply Background
Information
for the proposed
Regional University Specific Plan
December 2007

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1.0 INTRODUCTION

The proposed Regional University Specific Plan (RUSP or proposed project) would be located on 1,157.5 acres west of the City of Roseville in the unincorporated portion of Placer County. The project applicant is proposing a 6,000 student university along with a new community consisting of over 3,000 residential units and mixed-use commercial.

Placer County (County) is conducting an environmental review under the requirements of the California Environmental Quality Act (CEQA) for the proposed RUSP. Placer County requested a Water Supply Assessment (WSA) from Placer County Water Agency (PCWA). PCWA's assessment (included as Appendix G of the RUSP EIR) concludes, "the Agency has an adequate water supply to meet the anticipated build out demands." This background document to the WSA has been prepared to provide additional information for use in the CEQA analysis for this project. The environmental review for the proposed project includes the need for an assessment of the available water supply to serve the project. The requirements for such a WSA are described in the sections of the California Water Code (Water Code) amended by the enactment of Senate Bill 610 (SB 610) in 2002. Approval of any tentative subdivision maps may also require a written verification of available water supplies under the sections of the Public Resources Code amended by the enactment of Senate Bill 221 (SB 221) in 2002.

SB 610 and SB 221 provide a nexus between the regional land use planning process and the environmental review process. These laws also reflect the growing awareness of the need to incorporate water supply and demand analysis at the earliest possible stage in the land use planning process. The core of these laws is an assessment of whether available water supplies are sufficient to serve the demand generated by a project, as well as the reasonably foreseeable cumulative demand in the region over the next 20 years under a range of hydrologic conditions.

This background document provides information on the available water supply to serve the proposed project, based on the sections of the Water Code amended by SB 610. In addition, this information can be used as part of the written verification of water supplies, as required under SB 221.

This document is divided into 4 sections: Introduction, Water Supply, Demand Analysis, and Conclusion. The Introduction describes the project and water supply planning under SB 610 and SB 221.

1.1. Project Description

The proposed Regional University Specific Plan (RUSP) project site encompasses approximately 1,157.5 acres in unincorporated Placer County, immediately west of the incorporated limits of the City of Roseville (see Figure 1-1). The proposed RUSP would include two primary components: a University campus and an adjoining community. The University is planned to accommodate approximately 6,000 students, with 800 professors and staff, offering both undergraduate and graduate degrees. The preliminary University plan includes a full range of academic, administrative, athletic, and performing arts facilities; 1,155 units for faculty and staff housing; student housing; and a retirement village. Additionally, a portion of the campus is planned for a private high school that could accommodate up to 1,200 students and accompanying staff and faculty. The proposed community would include 3,232 residential units of various densities, a mixture of commercial employment centers, open space, parks, and public uses. Figures 1-2 depicts the land use plan for the community portion of the project site, along with a conceptual layout of the University.

Climate

Western Placer County has cool, wet winters, and hot and dry summers. The historical annual average precipitation is 17 inches in the western portion of the County, while higher elevations in eastern portion of the county receive up to 60 inches of rain. The rainy season is typically November to March.¹

The Sacramento area has experienced two declared droughts in the last three decades. The drought of 1976 – 1977 accounted for only 7.5 inches of rain and is considered the single worst year on record. The drought of 1987–1992 is considered the most severe extended drought in California's history². Conversely, in years following drought periods, Sacramento was drenched with rainfall; for example, in 1997, regional water levels rose to record highs, which threatened levee breaks and flooded parts of the greater metropolitan area. This extreme climatic variability is common throughout California.

¹ PCWA, 2005, UWMP prepared by Brown and Caldwell. p 2-1.

² Priest, D.F. et al. 1993. *California's 1987-92 Drought: A summary of six years of drought*. State of California Department of Water Resources.

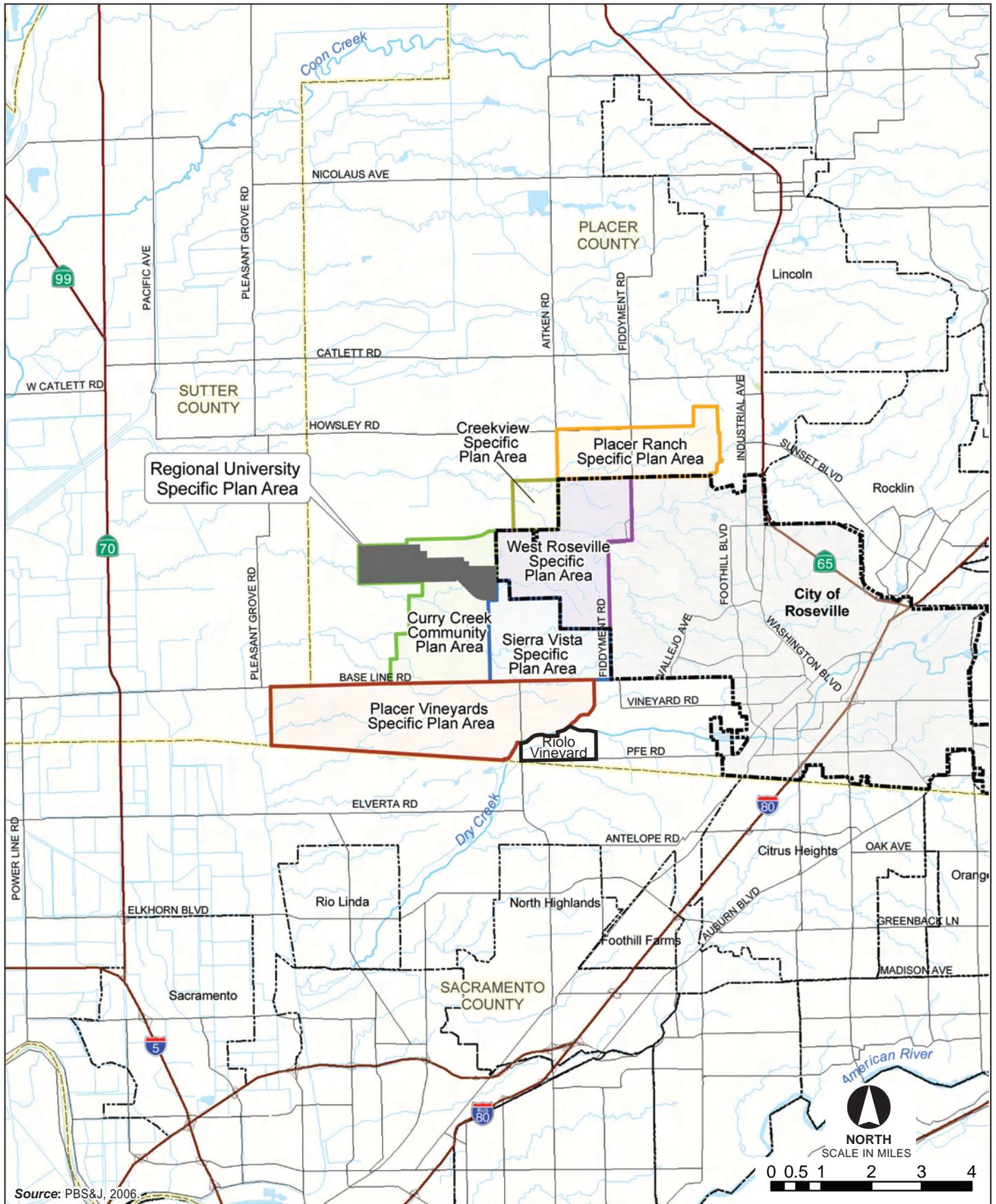
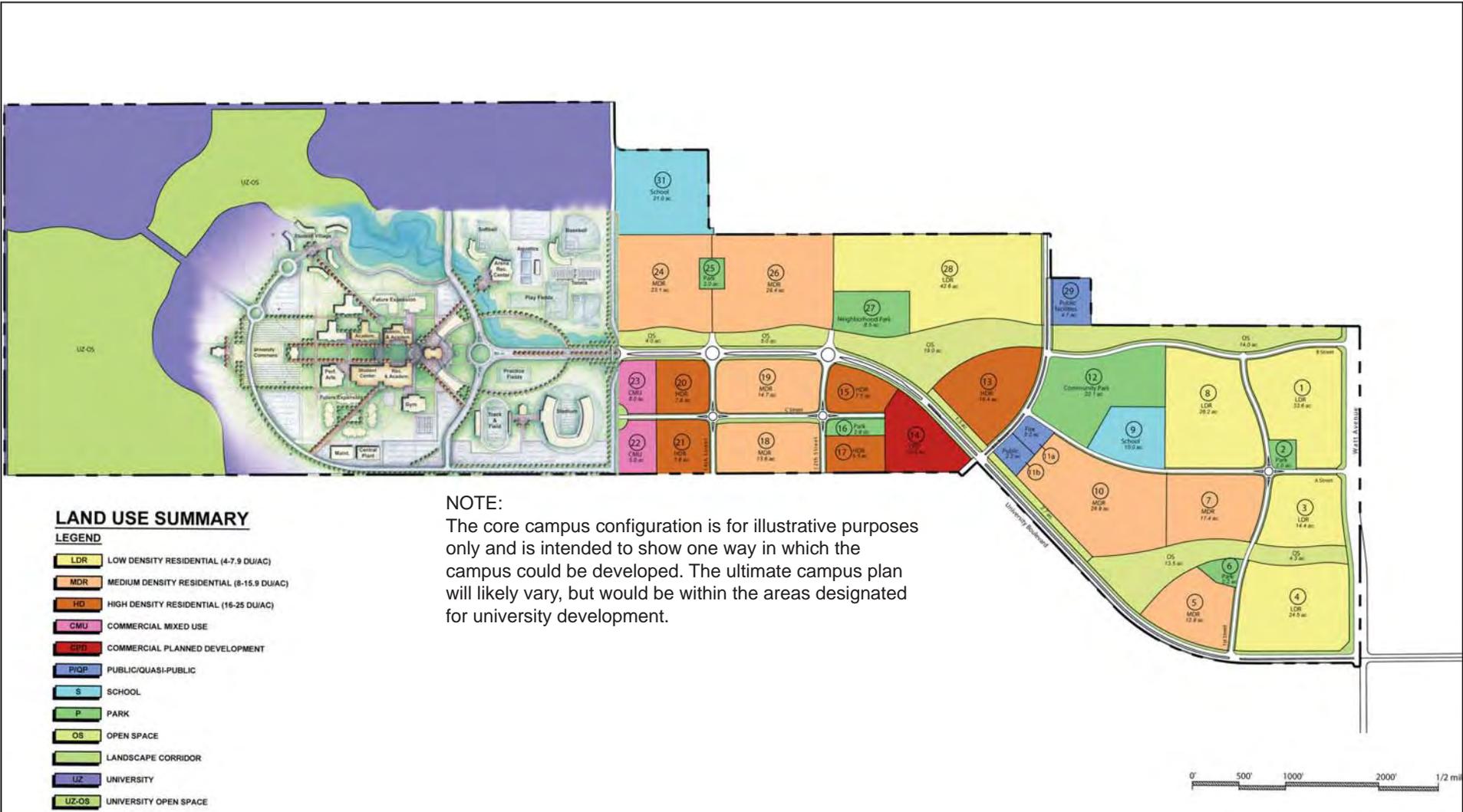


FIGURE 1-1
Project Location

D50840.02

Regional University Specific Plan EIR





Source: G.C. Wallace, 2006.



FIGURE 1-2
Proposed Regional University Community Land Use Plan with Illustrative Campus Layout

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1.2. Water Supply Planning

Senate Bill 610 and SB 221 were passed into law on January 1, 2002. These laws reflect the need to incorporate water supply and demand analysis at the earliest possible stage in the planning process. SB 610 amended portions of the Water Code, including Section 10631, which contains the Urban Water Management Planning Act, as well as adding Sections 10910, 10911, 10912, 10913, and 10915, which describe the required elements of a WSA. SB 221 amended Section 65867.5 and added Sections 66455.3 and 66473.7 to the Government Code. Upon signing these bills, Governor Gray Davis stated, “Most notably, these bills will coordinate local water supply and land use decisions to help provide California’s cities, farms and rural communities with adequate water supplies. Additionally, these bills increase requirements and incentives for urban water suppliers to prepare and adopt comprehensive management plans on a timely basis.”³

Senate Bill 610 is designed to build on the information that is typically contained in an Urban Water Management Plan (UWMP). The amendments to Water Code Section 10631 were designed to make water supply assessments and UWMPs consistent. A key difference between the WSAs and UWMPs is that UWMPs are required to be revised every five years, in years ending with either zero or five, while WSAs are required as part of the environmental review process for each individually qualifying project. As a result, the 20-year planning horizons for each type of environmental document may cover slightly different planning periods. Additionally, not all water providers who must prepare a WSA under SB 610 are required to prepare an UWMP.

1.2.1. SB 610 Water Supply Assessment

The SB 610 water supply assessment process involves answering the following questions:

- Is the project subject to CEQA?
- Is it a project under SB 610?
- Is there a public water system?
- Is there a current UWMP that accounts for the project demand?
- Is groundwater a component of the supplies for the project?
- Are there sufficient supplies available to serve the project over the next 20 years?

³ Department of Water Resources, *Guidebook for Implementation of SB 610 and SB 221 of 2001, 2003.*

1.2.1.1. **“Is the Project Subject to CEQA?”**

The first step in the SB 610 process is determining whether the project is subject to CEQA. SB 610 amended Public Resources Code Section 21151.9 to read: “Whenever a City or county determines that a project, as defined in Section 10912 of the Water Code, is subject to this division [i.e., CEQA], it shall comply with part 2.10 (commencing with Section 10910) of Division 6 of the Water Code.” The County has determined that the RUSP is a project subject to CEQA. The information contained in this assessment will be used to inform and support the Environmental Impact Report (EIR) for the RUSP, and will be appended thereto.

1.2.1.2. **“Is It a Project Under SB 610?”**

The second step in the SB 610 process is to determine if a project meets the definition of a “Project” under Water Code Section 10912 (a). Under this section, a “Project” is defined as meeting any of the following criteria:

1. A proposed residential development of more than 500 dwelling units;
2. A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet (ft²) of floor space;
3. A commercial building employing more than 1,000 persons or having more than 250,000 ft² of floor space;
4. A hotel or motel with more than 500 rooms;
5. A proposed industrial, manufacturing, or processing plant, or industrial park, planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 ft² of floor area;
6. A mixed-use project that includes one or more of these elements; or
7. A project creating the equivalent demand of 500 residential units.

Alternately, if a public water system has less than 5,000 service connections, the definition of a “Project” also includes any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of service connections for the public water system. Because the proposed project is a residential development of more than 500 dwelling units, it meets the requirements as a “Project” under the Water Code.

1.2.1.3. **“Is There a Public Water System?”**

The third step in the SB 610 process is determining if there is a “public water system” to serve the project. Section 10912 (c) of the California Water Code (Water Code) states: “[A] public water system means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections.”

PCWA served 55,720 connections in 2004;⁴ therefore, PCWA qualifies as a public water system. Currently, the proposed project is in PCWA Zone 5, which supplies raw water to commercial agricultural customers. More importantly, to receive potable water supplies from PCWA, the proposed project would have to be annexed into PCWA Zone 1.

1.2.1.4. **“Is There a Current UWMP That Accounts for the Project Demand?”**

Step four in the SB 610 process involves determining if there is a current UWMP that considers the projected water demand for the project area. The Water Code requires that all public water systems providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 AFY, must prepare an UWMP, and this plan must be updated at least every five years on or before December 31, in years ending in five and zero.

Water Code Section 10910 (c)(2) states, “If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g) [i.e., the WSA].”

The PCWA Board of Directors adopted Resolution No. 05-34 approving the December 2005 Urban Water Management Plan on December 15, 2005. The UWMP contains projected water demands with an increase of 51,886 acre-ft/year of treated water in western Placer County which includes the proposed project. The UWMP plan also contains a water shortage contingency plan.

1.2.1.5. **“Is Groundwater a Component of the Supplies for the Project?”**

This section addresses the requirements of Water Code Section 10631 (b), paragraphs 1 through 4, which apply if groundwater is identified as an existing or planned source of water available to the supplier.

⁴ PCWA, 2005, UWMP prepared by Brown and Caldwell. p 3-2.

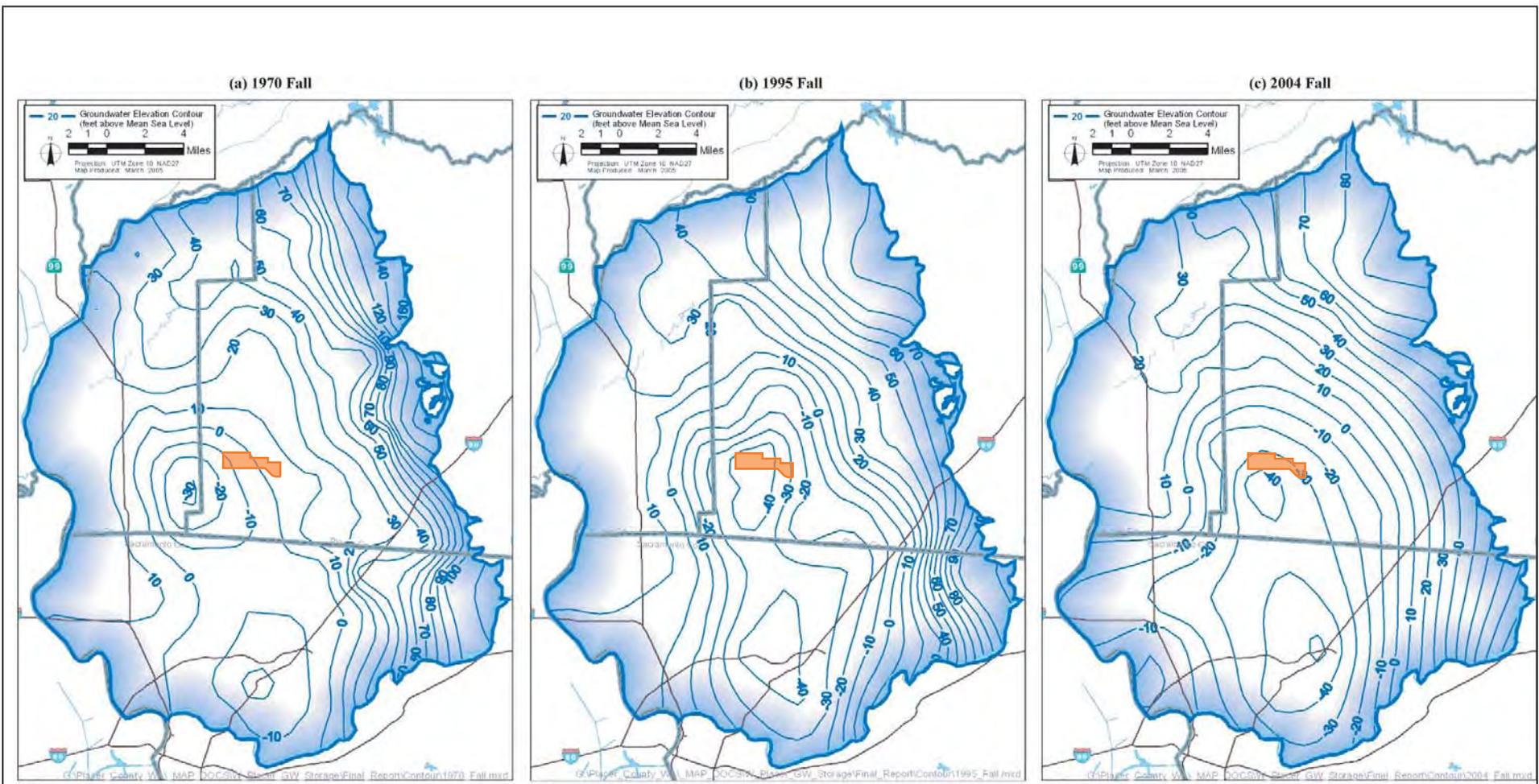
The RUSP is located in the 548-square mile North American (Subbasin) as described by the Department of Water Resources. The Subbasin's boundaries are the Feather and Sacramento Rivers on the west, the Bear River to the north, south to the American River and east to the Sierra Nevada. The underlying geology or hydrostratigraphy of the basin consists of a variety of geologic formations that make up the water bearing units. There are two aquifer systems: an upper unconfined system consisting of the Victor, Fair Oaks, and Laguna Formations, and a lower, semi-confined system in the Mehrten Formation. These geologic formations are composed of lenses and layers of inter-bedded sand, silt and clay with coarse-grained stream channel deposits.⁵ The groundwater contained in the upper aquifer system of the Victor, Fair Oaks and Laguna Formations is of superior quality compared to that in the lower semi-confined system, mainly because the water in the Mehrten Formation is higher in iron and manganese, and requires more treatment. The upper unconfined system only requires chlorination treatment to be potable.

Groundwater samples from three agricultural wells were tested for Title 22 and radiological parameters.⁶ Test results indicate that groundwater at the RUSP site does not require treatment for arsenic. In other respects, the groundwater tested is suitable for potable use without treatment. Total Dissolved Solids and hardness were at moderate levels. No Volatile Organic Compound's were detected, and concentrations of metals other than iron and manganese were low or not detected. Nitrate concentrations were low, pesticides and herbicides, which are concerns in agricultural areas, were not detected. Natural radiological parameters were at low levels or were not detected in measurable amounts.

Subsurface groundwater levels in the area west of Roseville have been relatively stable since the early 1980s. Prior to that time, the region had experienced several decades of declining groundwater levels, much of it associated with steadily increasing pumping to meet residential development growth in northern Sacramento County in combination with established agricultural uses in the basin. Historical groundwater levels, shown in FIGURE 1-3, illustrate how groundwater levels have stabilized between 1995 and 2004.

⁵ Sacramento Groundwater Authority, *Groundwater Management Plan*, 2003, page 7.

⁶ West Yost and Associates, *Sampling and Analysis of Existing Agricultural Wells for the Regional University Specific Plan*, Southwestern Placer County, prepared for KT communities, January 20, 2006.



Source: PCWA, Western Placer County Groundwater Storage Study, Final Report, December 2005.



FIGURE 1-3
Groundwater Elevation Contour Maps for North American Groundwater Sub-Basin

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As determined by groundwater modeling of the North American Groundwater Sub-basin and stable groundwater levels over the last decade, the sustainable yield for ground water in the basin is estimated at 400,000 acre-ft/year.⁷ PCWA is a signatory of the Water Forum Agreement (WFA). The Water Forum agreement established policy for groundwater pumping in the Sacramento County portion of the North American Groundwater Sub-basin at 130,000 acre-ft/year. The remaining sustainable yield is divided between Sutter County and Placer County as 175,000 acre-ft/year and 95,000 acre-ft/year, respectively. Groundwater extraction in western Placer County, currently for agriculture is currently estimated to be about 90,000 AFY.⁸

PCWA does not currently use significant amounts of groundwater to meet potable demand within Western Area⁹, although it plans on expanding groundwater production in the future as a backup supply in the event of emergency or planned outages, or extended drought conditions. In order to ensure that there is no detrimental long-term effects of increased groundwater production, PCWA has proposed a groundwater banking program by implementing “in-lieu recharge”, whereby groundwater use is reduced or eliminated during average and above- average precipitation years and replaced increased surface water deliveries.

The 2005 UWMP projects groundwater to assist in supplying future potable water demand during dry years in the Western Area.¹⁰ The use of dry year pumping of groundwater supports the WFA co-equal objectives of providing a reliable and safe water supply to the Sacramento-Placer-El Dorado region, and preserving the environmental values of the lower American River. The WFA recommended a sustainable long-term annual groundwater yield for the three sub-basins.

“In general, the intent of the WFA is to increase the use of groundwater in dry years and reduce surface water diversions. The decrease in available dry year diversions is a consequence of the WFA objective to provide instream flows in the lower American River for environmental purposes. In wet years, when more surface water is available,

⁷ PCWA, Western Placer County Groundwater Storage Study, prepared by MWH, Final Report, December 2005, p 4-8.

⁸ PCWA, Western Placer County Groundwater Storage Study, prepared by MWH, Final Report, December 2005, p 4-8.

⁹ PCWA, 2005, UWMP prepared by Brown and Caldwell. p 4-4.

¹⁰ PCWA, 2005, UWMP prepared by Brown and Caldwell. p 4-8.

diversion will be increased and groundwater extraction will be reduced, thereby promoting recharge of the basin.”¹¹

In October 1998, PCWA adopted the Western Placer Groundwater Management Plan, and then based on new information the plan was updated in November 2003. In 2000, California voters passed Proposition 13 to fund groundwater storage and groundwater recharge feasibility studies and construction projects. Over \$200 million in grant and loan funding has been disbursed by DWR over three funding cycles (from financial years 2001 to 2003) through a competitive application process. PCWA received a Proposition 13 grant from DWR to conduct a feasibility study to develop alternatives for conjunctive use in western Placer County. In October 1998, PCWA adopted the Western Placer Groundwater Management Plan, and then updated the plan in November 2003.

1.2.1.6. “Are There Sufficient Supplies to Serve the Project Over the Next 20 Years?”

The next step in the SB 610 process is to prepare the actual assessment of the available water supplies, including the availability of these supplies in all water-year conditions over a 20-year planning horizon, and an assessment of how these supplies relate to project-specific and cumulative demands over that same 20-year period. In this case, the period covers the years 2005 to 2025.

Water Code Section 10910 (c)(4) states: “If the City or County is required to comply with this part pursuant to subdivision (b), the water assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the City or county for the project during normal, single dry and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.”

There are three primary areas to be addressed in a water supply assessment:

- relevant water supply entitlements, water rights, and water contracts;
- a description of the available water supplies;
- analysis of the demand placed on those supplies, both by the project and on cumulative basis.

Water entitlements are addressed in Section 2 and the analysis of the demand is discussed in Section 3. Section 4 contains results and conclusions.

¹¹ Sacramento Groundwater Authority, *Groundwater Management Plan*, 2003, page 24.

2.0 WATER SUPPLY

This section reviews the PCWA's water supply entitlements and water rights.

2.1. Water Supply Entitlements and Water Rights

Water Code Section 10910 (d)(1) states: "The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the City or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights or water service contracts."

2.2. Water Rights and Contracts

Water rights are a historically important means of securing water use in California. These rights date back to the Gold Rush days of the 1850's, whereby water claims were made by "first in time, first in rights"; this established a water user's right to divert water from a specific point on a stream for a specific use. Since 1914, the State Water Resources Control Board (SWRCB) has been charged with administrating and regulating all water rights permits in California. Under this process, an application is filed and the SWRCB issues a permit for surface water diversion, including the approved place of use (POU) for that water.

The water supplies for PCWA Zones 1 and 5 are summarized in TABLE 2-1 below and show three sources of surface water. PCWA purchased PG&E's Lower Drum Diversion Water System in 1968 and then entered into a water supply contract with PG&E to establish a reliable supply from this point of diversion. The contract will terminate on May 1, 2013; consequently, if renewed the contract could be subject to revised pricing schedules. The Middle Fork American River Project (MFP) supplies are based on SWRCB's permits 13856 and 13858 but are limited to 120,000 acre-ft /year by contracts with the United States Bureau of Reclamation (USBR). PCWA's Central Valley Project (CVP) water was originally allocated at 117,000 acre-ft /year based on the construction of the Auburn Dam. In the absence of the Auburn Dam, certain provisions in the USBR contract were renegotiated and PCWA's annual entitlement was adjusted to 35,000 acre-ft/year.

TABLE 2-1			
SURFACE WATER SUPPLIES FOR PCWA ZONE 1 AND 5			
Source	Acre-ft per year	Reductions	Entitlement
PG&E Yuba and Bear Rivers Project	100,400	subject to shutdown during emergency or maintenance	June 18, 1968 Water Supply Contract with PG&E amended by the "1995 Transfer Agreement between Pacific Gas and Electric Company and Placer County Water Agency" dated march 20 1996. Terminates on May 1, 2013, should be renewable, subject to possible revisions in price
Middle Fork American River Project (MFP)	120,000	subject to: 1) FERC limitations, 2) SWRCB requirements for water quality, such as minimum Delta Flows, 3) PG&E MFP Power Purchase Contract	PCWA and USBR 1970 Water Service Contract, based on SWRQB permits 13856 and 13858
CVP Supplies	35,000	The CVP water is subject to reduction during most dry year events. According to the CVP water shortage policy drafted in 2001, municipal and industrial use is subject to a maximum 25-percent cutback.	Contract No. 14-06-200-5082A USA and PCWA, modified July 8, 1992.
TOTAL	255,400		
Source: PBS&J, March 2006, <i>Integrated Water Resources Plan</i> , PCWA, August 2006.			

2.3. Reliability of Water Supplies

An important aspect when discussing water supplies and reliability within the Sacramento region is the Water Forum Agreement (WFA); this is an agreement between multiple stakeholders of the Sacramento metropolitan area and lower foothill regions. After seven years of meetings, subcommittee negotiations and small group operations, the Water Forum members established a working agreement that provides water quality and reliability for all participants. The WFA's coequal goals were to (1) provide a reliable and safe water supply for the region's economic health and planned development through to the year 2030, and (2) preserve the fishery, wildlife, recreational and aesthetic values of the Lower American River.¹² From these goals, the Water Forum signatories determined seven major elements that must be implemented during the next 30 years if the agreement is to be successful. The elements specific to water supply reliability include: Increased Surface Water Diversions, Actions to Meet Customers' Needs While Reducing Diversion Impacts in Drier Years, Water Conservation, Groundwater Management, and the Water Forum Successor Effort. Each of these elements plays a vital role in the Water Forum's objectives.

¹² Water Forum Agreement 2000, page 29.

As a signatory of the WFA, PCWA is actively participating in all seven elements. In an effort to continue to develop a reliable water supply consistent with the WFA, many of the local water providers are participating in the Sacramento River Water Reliability Study, the USBR is the federal lead agency and PCWA is the local lead agency. These agencies are charged with review of the feasibility study for another Sacramento River diversion. The Sacramento River Water Reliability Study includes development of alternatives, an environmental evaluation, and consultation with federal and State agencies regarding potential impacts. If PCWA cannot successfully negotiate diverting 35,000 acre-ft/year of their American River entitlements from a new Sacramento River diversion, they will proceed to develop additional diversions from the American River.

The WFA does not limit PCWA diversions even in drought years. PG&E supplies have experienced historical reductions and CVP water is typically reliable to 75 percent of the full entitlement or roughly 26,250 acre-ft/year. A summary of the projected reliability of surface water supplies is presented in TABLE 2-2.

Source	Normal	Single Dry Year ^a	Multiple Dry Years ^b			
			1	2	3	4
PG&E Yuba and Bear Rivers Project	100,400	50,200	75,300	75,300	75,300	75,300
Middle Fork American River Project	120,000	120,000	120,000	120,000	120,000	120,000
CVP Supply	35,000	26,250	26,250	26,250	26,250	26,250
Total	255,400	196,450	221,550	221,550	221,550	221,550

a. based on 1977 drought year
b. based on 1987 – 1992 drought years
Source: PCWA, 2005, UWMP prepared by Brown and Caldwell, page 4-8.

To achieve full use of these entitlements in all years the following key water projects must be completed:

1. a new 35,500 acre-ft/year pump station on the American River to replace the temporary pump station with a capacity of 13,000 acre-ft/year and
2. the proposed Sacramento River Diversion to capture 35,500 acre-ft/year of American River entitlements from the Sacramento River

3.0 WATER DEMAND ANALYSIS

This section shows the calculated water demand for the proposed project as well as projected demand for the entire system and then compares the demand to the supply. PCWA proposes to meet the water demands with groundwater until the infrastructure and connections become available to provide surface water.

3.1. Proposed Project Water Demand

The water demand for the proposed project was determined based on demand factors from the Water Master Plan for the Regional University Specific Plan (WMP), prepared for KT Communities by West Yost Associates. Total water demand at buildout of the proposed project is 3,220 acre-ft/year. As shown in TABLE 3-1, the potable water demands are 2,448 acre-ft/year.¹³ Public irrigation demands, most of which can be met with recycled water, are 772 acre-ft/year, as shown in TABLE 3-2.

¹³ West Yost and Associates, Water Master Plan for the Regional University Specific Plan, prepared for KT Communities, revised December 7, 2006.

**TABLE 3-1
BUILDOUT POTABLE WATER DEMAND**

Land Use Type	Gross ^a Area, acres	Density	Units	Unit Demand ^b		Annual Demand afy	Avg. Day Demand, gpm
				gpd/unit	gpd/ac		
Community							
Low Density Residential (5 DU/ac)	68.8	5	DU/ac	703	—	271	168
Low Density Residential (6 DU/ac)	62.5	6	DU/ac	608	—	255	158
Medium Density Residential (9 DU/ac)	29.4	9	DU/ac	539	—	160	99
Medium Density Residential (11 DU/ac)	82.2	11	DU/ac	386	—	391	242
Medium Density Residential (12 DU/ac)	28.3	12	DU/ac	386	—	147	91
High Density Residential (18 DU/ac)	16.4	18	DU/ac	371	—	123	76
High Density Residential (22 DU/ac)	15.2	22	DU/ac	230	—	86	53
High Density Residential (24 DU/ac)	12.7	24	DU/ac	230	—	79	49
Community Commercial	22.2	—	—	—	2,759	55	34
Public (Includes Public Facilities & Fire Station)	9.1	—	—	—	3,219	26	16
Parks and Village Green ^c	40.1	—	—	—	0	0	0
School	31.0	—	—	—	3,379	23	15
Open Space ^d	63.8	—	—	—	0	0	0
ROW and Landscape Setback ^d	75.8	—	—	—	0	0	0
Subtotal	557.5					1,616	1,002
Regional University							
Faculty Housing	60.0	5.5	DU/ac	608	—	225	139
University Campus	356.5	—	—	—	—	—	—
Per Capita Demands ^e	—	6,800	Persons	69	—	526	326
High School ^{f, g}	40.0	—	—	—	3,379	30	19
Retirement Housing ^f	6 to 12	75	Units	608	—	51	32
Open Space ^d	183.5	—	—	—	—	—	—
Subtotal	600.0	—	—	—	—	832	516
Total	1,157.5	—	—	—	—	2,448	1,518

Notes:

a. Net to gross area ratios applied as follows:

Land uses with specified land use density (residential areas): 1

Commercial and public: 0.8

School: 0.2

Eighty percent of the total acreages of the commercial and public areas and schools were assumed to have a water requirement, consistent with the PCWA Final Integrated Water Resources Plan Executive Summary (Brown and Caldwell, August 2006). One-hundred percent of the water demand in commercial and public areas was assumed to be met using the potable water supply. Twenty-five percent of the total water use for schools was assumed to be indoor demand for potable water. Twenty-five percent of 0.8 is 0.2. The remainder of the water demand for schools was assumed to be for irrigation supply, which will be met using the recycled water distribution system.

b. West Yost, Water Master Plan for the Regional University, updated December 7, 2006, Table 3-3.

c. Included in public-area irrigation demands.

d. No irrigation requirement.

e. University Campus per capita demands include water demands for academic buildings, residential halls, administrative buildings, warehouse and maintenance buildings, performing arts venues, visual arts facilities, common areas and gathering spots, and athletic facilities, including a gym, 20,000-seat stadium, and aquatic center. Per capita demands from University of California, Davis, Draft Domestic Water Master Plan (WYA, 2000).

f. Acreage included in 356.5-acre University Campus

g. High School or similar land use.

Source: West Yost, Water Master Plan for the Regional University, updated December 7, 2006, Table 3-3.

**TABLE 3-2
BUILDOUT PUBLIC IRRIGATION DEMANDS**

Land Use Type	Gross ^a Area, acres	Net: Gross Area Ratio	Net Area, Acres	Unit Demand ^b		Annual Demand afy	Avg. Day Demand, gpm
				gpd/unit	af/ac/yr		
Community							
Parks and Village Green	40.1	0.8	32	—	3.62	116	72
School	31.0	0.6	19	—	3.62	67	42
ROW and Landscape Setback	74.5	0.4	30	—	3.62	108	67
Subtotal	146.9	—	81	—	—	293	182
Regional University^c							
University Campus	356.5	0.3	108	—	3.62	392	243
High School	40.0	0.6	24	—	3.62	87	54
Subtotal	396.5	—	132	—	—	479	297
Total	543.4	—	213	—	—	772	479
Notes:							
a. Net to gross area ratios applied as follows: Parks and Village Green: 0.8 Schools: 0.6 Rights-of-way (ROW) and landscape setbacks: 0.4 University Campus: 0.3 Eighty percent of the total acreages of the parks, schools and the Village Green were assumed to have a water requirement, consistent with the PCWA Final Integrated Water Resources Plan Executive Summary (Brown and Caldwell, August 2006). One-hundred percent of the water demand in the park and Village Green was assumed to be met using the potable water supply. Seventy-five percent of the total water use for the schools was assumed to be outdoor demand for irrigation water. Seventy-five percent of 0.8 is 0.6. The remainder of the water demand for the schools was assumed to be for indoor supply, which will be met using the potable water distribution system. ROW and landscape setback acreages include streets, sidewalks and bike paths. Approximately 40 percent of the total area was assumed to have a turf irrigation requirement. If lower water use landscaping is used, a larger percentage of the ROW and landscape setback acreage can be irrigated.							
b. West Yost, Water Master Plan for the Regional University, updated December 7, 2006							
c. Approximately one-third of the core campus area at the University of California-Davis is irrigated. Approximately one-third of the total acreage of the Regional University was assumed to have a turf grass irrigation requirement. If lower water use landscaping is used, a larger percentage of the University acreage can be irrigated.							
Source: West Yost, Water Master Plan for the Regional University, updated December 7, 2006, Table 3-4.							

3.2. No Net Increase in Groundwater Withdrawal

Section 1.2.1.5 discusses the improved and stabilized groundwater levels in the North American Sub-basin, with this understanding groundwater may provide a drought resistant supply providing no net increase in average annual groundwater pumping occurs.

The proposed site has been farmed with rice and winter cereal crops not requiring irrigation. A water balance included in the Water Master Plan¹⁴ shows a historical net groundwater withdrawal of 2,440 acre-ft/year based on 600 acres of rice requiring 3,000 acre-ft/year of irrigation water that resulted in 560 acre-ft/year of recharge. TABLE 3-3 shows the change in net groundwater withdrawal anticipated upon implementation of the proposed project.

TABLE 3-3	
CHANGE IN NET GROUNDWATER WITHDRAWAL (ACRE-FT/YEAR)	
	RUSP Water Master Plan Demand
Historical Net Groundwater Withdrawal	2,440
RUSP Demand ^a	2,448
Public Space Irrigation Demand ^a	772
Residential Irrigation Demand ^b	500
Recycled Water Demand ^c	680
Recharge by Irrigation ^d	130
Proposed Net Groundwater Withdrawal ^e	2,080
Change in Groundwater Withdrawal ^f	-360
a. From Tables 3-1 and 3-2 b. Based on 40 percent of total residential demand c. Recycled Water based on 80 percent of public space irrigation demand. d. 10 percent of total irrigation e. The difference of the total RUSP demand and the sum of the recycled water demand and groundwater recharge. f. Difference between proposed withdrawal and historical withdrawal. Source: PBS&J, March 2006	

Recycled water will reduce the need for irrigation with potable water and is a key element to achieve no net increase in average annual groundwater withdrawal. The City of Roseville will be the wholesaler of recycled water from the Pleasant Grove Regional Wastewater Treatment Plant (PGWWTP). The daily amount of recycled water available is limited to the amount of wastewater sent to the PGWWTP. As a result, the irrigation demand can not be completely met with recycled water during the peak irrigation season. Analysis of recycled water demand and supply was included in the Recycled Water Master

¹⁴ West Yost and Associates, *Water Master Plan for the Regional University Specific Plan*, December 7, 2006.

Plan.¹⁵ The results of the recycled water supply and demand analysis show that approximately 680 acre-ft, or approximately 90 percent, of the 772 acre-ft of irrigated demand can be met with recycled water.

3.3. System Demand

TABLE 3-4 shows the historical water sales and production for PCWA over the last 20 years. The data illustrates significant growth averaging roughly six percent per year over this period. Unaccounted losses of treated water have averaged almost 15 percent per year during the last 20 years.

TABLE 3-4 HISTORIC TREATED WATER USAGE FOR ZONE 1, (ACRE-FT/YEAR)				
Year	Water Sales	Water Production	Unaccounted Water	
1985	10,260	12,199	1,989	15.9%
1986	10,808	13,604	2,796	20.6%
1987	12,018	14,336	2,318	16.2%
1988	12,541	14,354	1,814	12.6%
1989	13,776	14,677	901	6.1%
1990	14,251	16,126	1,875	11.6%
1991	15,317	17,143	1,827	10.7%
1992	15,983	19,408	3,425	17.6%
1993	16,164	19,375	3,211	16.6%
1994	17,625	20,311	2,686	13.2%
1995	16,999	19,795	2,797	14.1%
1996	18,006	20,649	2,643	12.8%
1997	19,875	24,072	4,197	17.4%
1998	17,711	20,787	3,076	14.8%
1999	21,232	25,580	4,613	18.0%
2000	22,866	27,897	5,031	18.0%
2001	24,324	29,191	4,867	16.7%
2002	26,646	31,678	5,032	15.9%
2003	27,960	32,335	4,375	13.5%
2004	33,129	38,035	4,906	12.9%
Source: PCWA, 2005, UWMP, Table 3-7				

¹⁵ West Yost and Associates, *Recycled Water Master Plan for the Regional University Specific Plan*, December 7, 2006.

Estimated water use by account was calculated in the most UWMP and is summarized in TABLE 3-5. The table shows treated water demands will nearly triple and raw water will increase by 8 percent over the next 25 years.

	2000	2005	2010	2015	2020	2025	2030
Residential	12,672	13,589	16,720	21,709	27,388	33,102	36,726
Commercial	2,679	2,873	3,535	4,590	5,790	6,998	7,764
Landscape	415	445	548	711	897	1,084	1,203
Municipal	650	697	858	1,114	1,405	1,698	1,884
Multi-unit	1,322	1,418	1,744	2,265	2,857	3,453	3,831
Agriculture	425	425	425	425	425	425	425
Industrial	1,160	1,244	1,531	1,987	2,507	3,030	3,362
City of Lincoln	2,614	7,700	11,550	15,400	19,250	23,100	25,085
Resale	519	600	600	600	600	600	600
No-usage	5	0	0	0	0	0	0
Construction	404	500	500	500	500	500	500
Treated Water Demand	22,866	29,491	38,011	49,301	61,619	73,990	81,380
Treated Water Losses ^a	5,031	4,719	6,082	7,888	9,859	11,838	13,021
Total Treated Water	27,897	34,210	44,093	57,189	71,478	85,828	94,401
Raw water	79,651	74,959	76,166	77,393	78,639	79,905	81,200
Sacramento Suburban Water District ^b	10,019	18,000	25,000	29,000	29,000	29,000	29,000
City of Roseville ^c	0	3,000	4,118	6,753	11,075	18,164	29,800
San Juan Water District ^d	10,698	13,684	14,311	14,976	15,625	16,370	17,100
Sales to other agencies	20,717	34,684	43,429	50,729	55,700	63,534	75,900
TOTAL DEMAND	128,265	143,853	163,688	185,311	205,817	229,267	251,501
a. assume 16 percent accounted for water b. Delivery to Sacramento Suburban Water District is curtailed to meet demand for water within Placer County and no delivery will occur during dry years. c. City of Roseville has a contract with options for a total 30,000 acre-ft/year d. San Juan Water District has a contract for a maximum of 29,000 acre-ft/year Source: PCWA, 2005, UWMP, Table 3-10 and 3-13							

3.4. Comparison of Available Water Supplies versus Demand

Section 10910 (c)(3) of the Water Code states, “the water supply assessment for the project shall include a discussion with regard to whether the public water system’s total projected water supplies available for normal, dry and multiple dry water years during a 20-year projection will meet the projected water

demand associated with the proposed project, in addition to the public water system’s existing and planned future uses, including agricultural and manufacturing uses.”

The demand estimates from TABLE 3-5 are compared to the normal year, dry year, and multiple dry year supplies presented in TABLE 2-2. PCWA can exercise curtailment of deliveries to Sacramento Suburban Water District during dry years, this action effectively returns 29,000 acre-ft to their (PCWA) supply portfolio. Currently, PCWA’s surface water supplies are reduced until 2015 due to infrastructure and diversion limitations for MFP and CVP entitlements. However, once completed PCWA would be able to utilize all of these entitlements.

Total supplies are supplemented with recycled water up to 6,400 acre-ft/year in 2030. Recycled water offsets groundwater pumping during a single dry year in 2025 and 2030; in addition, under a multiple dry years recycled water can compensate for groundwater losses in 2030. By using recycled water, no groundwater would be needed over the multiple dry year scenarios, but nearly 20,000 acre-ft of groundwater is required for the single dry year scenario in 2030.

TABLE 3-6						
SUPPLY AND DEMAND COMPARISON DURING NORMAL YEARS (ACRE-FT/YEAR)						
	2005	2010	2015	2020	2025	2030
TOTAL SUPPLY	198,400	199,165	256,700	257,610	259,158	261,800
Surface Water ^a	198,400	198,400	255,400	255,400	255,400	255,400
Groundwater ^b	0	0	0	0	0	0
Recycled Water ^c	0	765	1,300	2,210	3,758	6,400
TOTAL DEMAND	143,853	163,688	185,311	205,817	229,267	251,501
Treated ^d	34,210	44,093	57,189	71,478	85,828	94,401
Raw ^d	74,959	76,166	77,393	78,639	79,905	81,200
Sales ^e	34,684	43,429	50,729	55,700	63,534	75,900
DIFFERENCE^f	54,547	35,477	71,389	51,793	29,891	10,299

a. assumes that new MFA pump station and Sacramento River Diversion are completed in 2015. See surface water reliability in TABLE 2-2
b. Groundwater only used to match demand
c. Recycled Water Supply in Zone 1, except for City of Lincoln, UWMP 2005 Table 4-4.
d. Treated water demand estimates TABLE 3-5.
e. Includes projected demand from contracts and not full contracted amount of 84,000 acre-ft/year.
f. Total Supply minus Total Demand
Source: PBS&J, March 2006

**TABLE 3-7
SUPPLY AND DEMAND COMPARISON DURING SINGLE DRY YEAR (ACRE-FT/YEAR)**

	2005	2010	2015	2020	2025	2030
TOTAL SUPPLY	196,450	197,215	197,750	198,660	200,267	222,501
Surface Water ^a	196,450	196,450	196,450	196,450	196,450	196,450
Groundwater ^b	0	0	0	0	59	19,651
Recycled Water ^c	0	765	1,300	2,210	3,758	6,400
TOTAL DEMAND	125,853	138,688	156,311	176,817	200,267	222,501
Treated ^d	34,210	44,093	57,189	71,478	85,828	94,401
Raw ^d	74,959	76,166	77,393	78,639	79,905	81,200
Sales ^e	16,684	18,429	21,729	26,700	34,534	46,900
DIFFERENCE^f	70,597	58,527	41,439	21,843	0	0

a. Surface water reductions based on cutbacks similar to 1977 drought
b. Groundwater only used to match demand
c. Recycled Water Supply in Zone 1, except for City of Lincoln, UWMP 2005 Table 4-4.
d. Treated water demand projects see TABLE 3-5.
e. Includes projected demand from contracts and not full contracted amount of 84,000 acre-ft/year.
f. Total Supply minus Total Demand
Source: PBS&J, March 2006

**TABLE 3-8
SUPPLY AND DEMAND COMPARISON FOR MULTIPLE DRY YEARS (ACRE-FT/YEAR)**

	2005	2010	2015	2020	2025	2030
TOTAL SUPPLY	198,400	199,165	222,851	223,761	225,309	227,951
Surface Water ^a	198,400	198,400	221,551	221,551	221,551	221,551
Groundwater ^b	0	0	0	0	0	0
Recycled Water ^c	0	765	1,300	2,210	3,758	6,400
TOTAL DEMAND	125,853	138,688	156,311	176,817	200,267	222,501
Treated ^d	34,210	44,093	57,189	71,478	85,828	94,401
Raw ^d	74,959	76,166	77,393	78,639	79,905	81,200
Sales ^e	16,684	18,429	21,729	26,700	34,534	46,900
DIFFERENCE^f	72,547	60,477	66,540	46,944	25,042	5,450

a. assumes that new MFA pump station and Sacramento River Diversion are completed in 2015. See surface water reliability in TABLE 2-2. Surface water cutbacks are based on similar cutback experienced in 1987 to 1992.
b. Groundwater only used to match demand
c. Recycled Water Supply in Zone 1, except for City of Lincoln, UWMP 2005 Table 4-4.
d. Treated water demand projects see TABLE 3-5.
e. Includes projected demand from contracts and not full contracted amount of 84,000 acre-ft/year.
f. Total Supply minus Total Demand
Source: PBS&J, March 2006

4.0 CONCLUSION

According to the requirements of Water Code Section 10910(c)(3), the water supply assessment shall include a discussion of “whether the public water system’s total projected water supplies available ... will meet the projected water demand associated with proposed project, in addition to the public water system’s existing and planned future uses.” This assessment finds that PCWA has sufficient water entitlements to serve the western Placer County service area for the next 25 years. PCWA’s approach to the growing demand in western Placer County is based on an integrated water supply plan that incorporates conjunctive groundwater uses with recycled water.

The ability for PCWA to meet these demands is hinged on completion of a new MFP pumping station and the Sacramento River Diversion to increase supplies by 70,500 acre-ft/year. Based on the projected demands from the 2005 UWMP, completion of both these projects is required to meet normal year demands shortly after 2015.

The supply and demand analysis for a single dry year (TABLE 3-7) relies on nearly 20,000 acre-ft/year of groundwater production to meet estimated demands during dry years in 2030. The proposed development of approximately 2,448 acre-ft/year of groundwater for this project would be just over 12 percent of the required groundwater production to meet single dry year demand in 2030. The groundwater basin has stabilized and using groundwater for this proposed project will result in no net increase in average annual basin withdrawals. As such, the proposed project may be served by groundwater extractions at a sustainable rate of 2,448 acre-ft/yr (TABLE 3-3) until surface water connections are available.

