



County of San Diego Fallbrook Projects – Feasibility Study

3rd Submittal – October 19, 2010

Prepared by:



I. BACKGROUND

Black & Veatch was contracted by the County of San Diego (County) through a Developer reimbursement agreement to analyze the feasibility for providing water and wastewater services to multiple proposed projects, collectively referred to as the “Fallbrook Projects.” The Planning Area’s development intensity requires a coordinated, planned approach to addressing potable water, recycled water and wastewater service for the proposed developments. The purpose of this study is summarized as follows:

- Review individual development studies and provide opinions on the adequacy of their approach
- Update information on possible service providers
- Evaluate the wastewater/water reclamation facility and system regarding the approach and its ability to meet the regional needs of the Planning Area

II. County Public Facility Element and Board Policies

The County’s review process for providing water and wastewater service to new development is governed by the Public Facility Element of the San Diego County General Plan and adopted Board Policies. While this study does not provide an opinion on the applicability of certain policies, it has considered them in evaluating the proposed development related to the new facilities proposed. The following summarizes the key sections, objectives and policies considered.

Public Facilities Element, Section 12, Wastewater

The wastewater section of the Public Facilities Element is focused on three objectives:

- *Objective 1 – The ongoing planning, management and development of sewage conveyance, treatment and disposal facilities to adequately meet future demands.* Objective 1 is addressed herein by evaluating the potential drainage area, reviewing the development study wastewater flow calculations and assessing the potential for other areas to use the proposed regional wastewater facilities.
- *Objective 2 - Assurance that privately-proposed wastewater treatment plants are consistent with sewer master plans and meet the anticipated needs of the project and the subregion.* Objective 2 is addressed herein by collecting criteria and information from potential service providers, reviewing disposal/reuse approaches, estimating treatment costs and reviewing the treatment plant’s ability to meet planned and future needs.

- *Objective 3 - Increased production and use of reclaimed water.* Objective 3 is addressed herein by reviewing the planned recycled water system.

Public Facilities Element, Section 13, Water

The water section of the Public Facilities Element is focused on three objectives:

- *Objective 1 – The ongoing planning, management and development of water conveyance and distribution systems to meet the county's future demands.* The distribution element of Objective 1 is addressed in this study by evaluating the sufficiency of the proposed water system in relation to the service area proposed.
- *Objective 2 – Management of the water resource at the regional level.* Objective 2 is addressed as part of the annexation process into the San Diego County Water Authority and the Water Supply Assessment work performed separate from this study.
- *Objective 3 – A prudent balance between water availability and consumption demands.* Objective 3 is addressed jointly as part of this study, and the annexation process into the County Water Authority and the Water Supply Assessment work performed separate from this study. Demands are evaluated in this study as related to consistency between agencies and in relation to typical and expected values.

County Board of Supervisor Policy I-78, Small Treatment Plant Facilities

This study does not include an opinion on the applicability of Policy I-78 related to the Fallbrook Projects. However, the study does summarize the review of proposed treatment plant components relevant to Policy I-78. The study summarizes public agency service providers and assesses the facility as a multi-user facility that provides sewer service to multiple uses.

County Board of Supervisor Policy I-84, Project Facility Availability and Commitment for Public Sewer, Water, School and Fire Services

This study does not include an opinion on the applicability of Policy I-84 related to the Fallbrook Projects. However, the study does provide related review and analysis related to the Sewer and Water Facility section of the policy. The study reviews the water, wastewater, and recycled water capital improvement projects needed for the Planning Area.

As background, the Meadowood development obtained Project Facility Availability Forms (Forms) for sewer and water service, in September 2005, from the San Luis Rey Municipal Water District (SLRMWD). These Forms were prepared by that District, with the intention of obtaining authorization to activate its latent powers. As of this date, that authorization did not occur and the Meadowood project does not now possess such Forms from a serving municipal water district (MWD). The Campus Park West development obtained such Forms for sewer and water service, from the Valley Center MWD (VCMWD), in April 2008. However, these Forms make it clear that the project is not within the VCMWD's Sphere of Influence and the project is outside the VCMWD's boundaries. As with Meadowood, this project does not now possess such Forms from a serving MWD. Neither of the projects will obtain final subdivision map approval from the County, without first obtaining Project Facility Commitment Forms, from a serving MWD.

III. Planning Area

The Planning Area generally includes areas not within the boundaries of an active municipal service provider and not within the San Diego County Water Authority service area. This area predominantly includes two developments primarily consisting of single family and multi-family residential units, and commercial and industrial land uses. Other public facilities are planned at this location, such as a school, a potential Sheriff’s station and a transit center. Based on the development potential, and the fact that several Municipal Water Districts (MWDs) exist in the area, the County has proposed that one Water Reclamation Facility (WRF) serve the proposed projects to treat wastewater and generate recycled water.

This Feasibility Study primarily reviews the Meadowood Project, being developed by Pardee Homes, and the Campus Park West (CPW) Project, being developed by Pappas Investments. However, the study also reviews other areas in the direct vicinity of the project in relation to County’s Public Facilities Elements and Board Policies. These other areas are described further in the demand analysis. Figure 1 displays the properties, and the existing service provider boundaries and service areas.

IV. Primary Project Descriptions

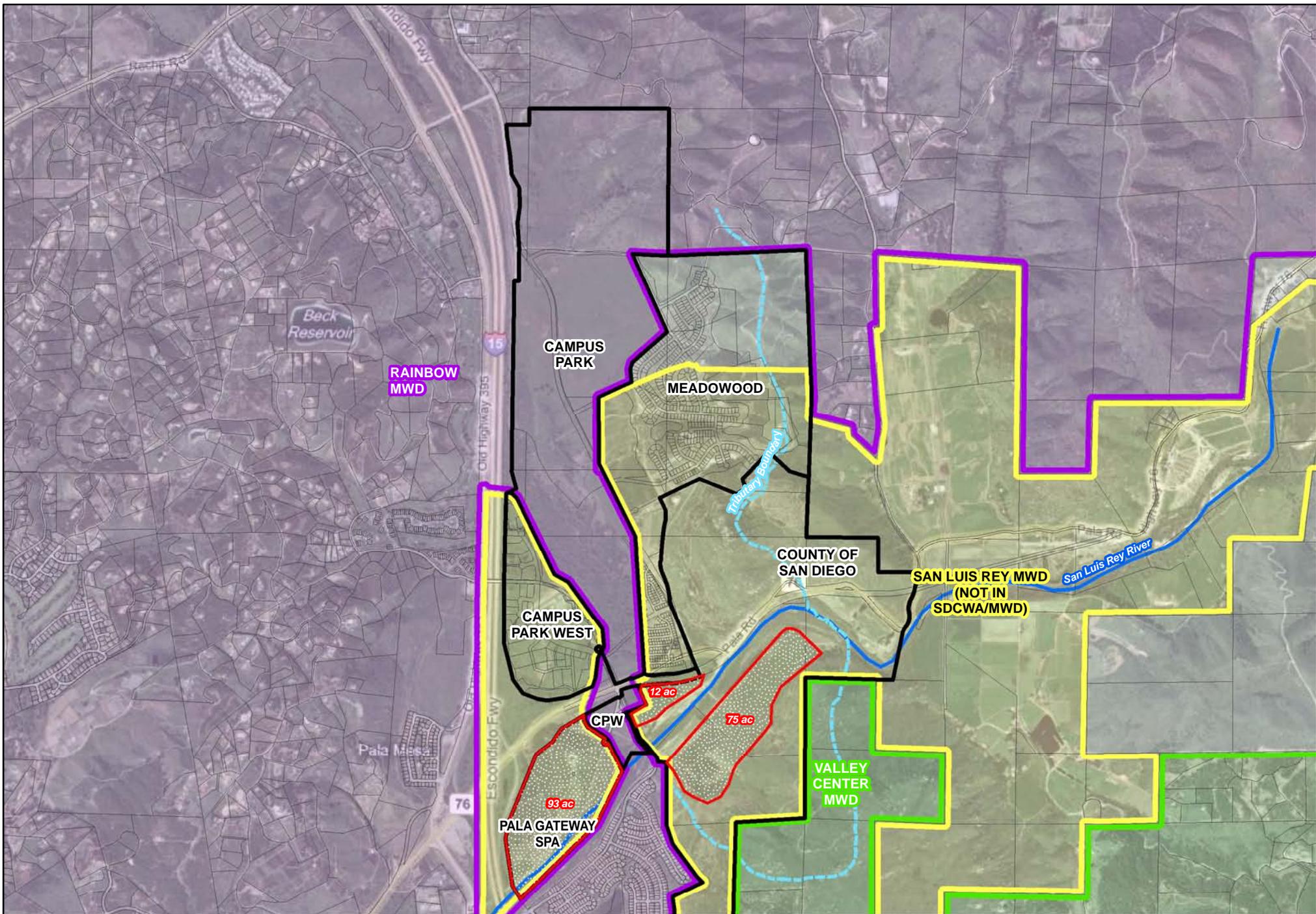
The following summarizes the two primary developments located in the Planning Area. The analysis for these projects was developed based on information provided by the project applicants.

Meadowood:

An approximately 390-acre property proposed for approximately 886 dwelling units (if no school is built) mixed between single family and multifamily. The project is located at the northeast quadrant of I-15 and SR 76, to the east of both the Campus Park and Campus Park West developments. An elementary school site and wastewater treatment plant site are also planned at the project site, as well as approximately 49- and 122-acre agricultural and biological habitat preserve areas, respectively. The site is partially located within the San Luis Rey Municipal Water District (SLRMWD), but is not located within the boundaries of the San Diego County Water Authority (SDCWA). Providers of both potable water and sewer service must be determined by the San Diego Local Agency Formation Commission (LAFCO). Access to the site is planned from a proposed Boulevard and Circulation Element roadway, known as Horse Ranch Creek Road. Approximately 2.4 million cubic yards of balanced cut/fill is anticipated to implement the project.

Campus Park West:

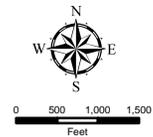
The subject site is an approximately 118-acre property, located at the northeast quadrant of I-15 and SR 76, which is generally bisected by SR 76. The project consists of a 51-lot subdivision, for a project comprising approximately 347,000 square feet of industrial uses; 350,000 square feet of general commercial uses; 307 dwelling units; and including approximately 48 dwelling units and 50,000 square feet each of commercial and office space, located within a mixed-use center. A possible Sheriff’s Station and a wastewater treatment plant may also be located within the project. The site is partially located within the SLRMWD north of SR 76 and in the Rainbow MWD south of SR-76. The northern portion of the property is not located within the boundaries of the SDCWA. The San Diego LAFCO must determine providers of both potable water and sewer disposal. Access



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

- Tributary Boundary
- Lot Lines

- Site Boundaries
- Future Areas



Fallbrook Project Feasibility Study
Agency Boundaries and Properties

Figure 1

to the property is via the existing Pankey Road, on both the north and south sides of SR 76. Approximately 700,000 cubic yards of balanced cut/fill is anticipated to implement the project.

V. Service Provider Update

Multiple public agency service providers could provide potable water, wastewater and recycled water service to the Planning Area. Service from the Rainbow Municipal Water District (RMWD), the San Luis Rey Municipal Water District, and the Valley Center Municipal Water District has been analyzed. In addition, the County of San Diego could be considered a possible service provider. On August 26, 2010, County and Black & Veatch staff held meetings with RMWD, VCMWD and SLRMWD. Meeting minutes are included in Appendix A. The service provider meetings provided updates on the desire to serve the two proposed developments and technical information on how the systems would work if that District were to provide service.

LAFCO Annexation

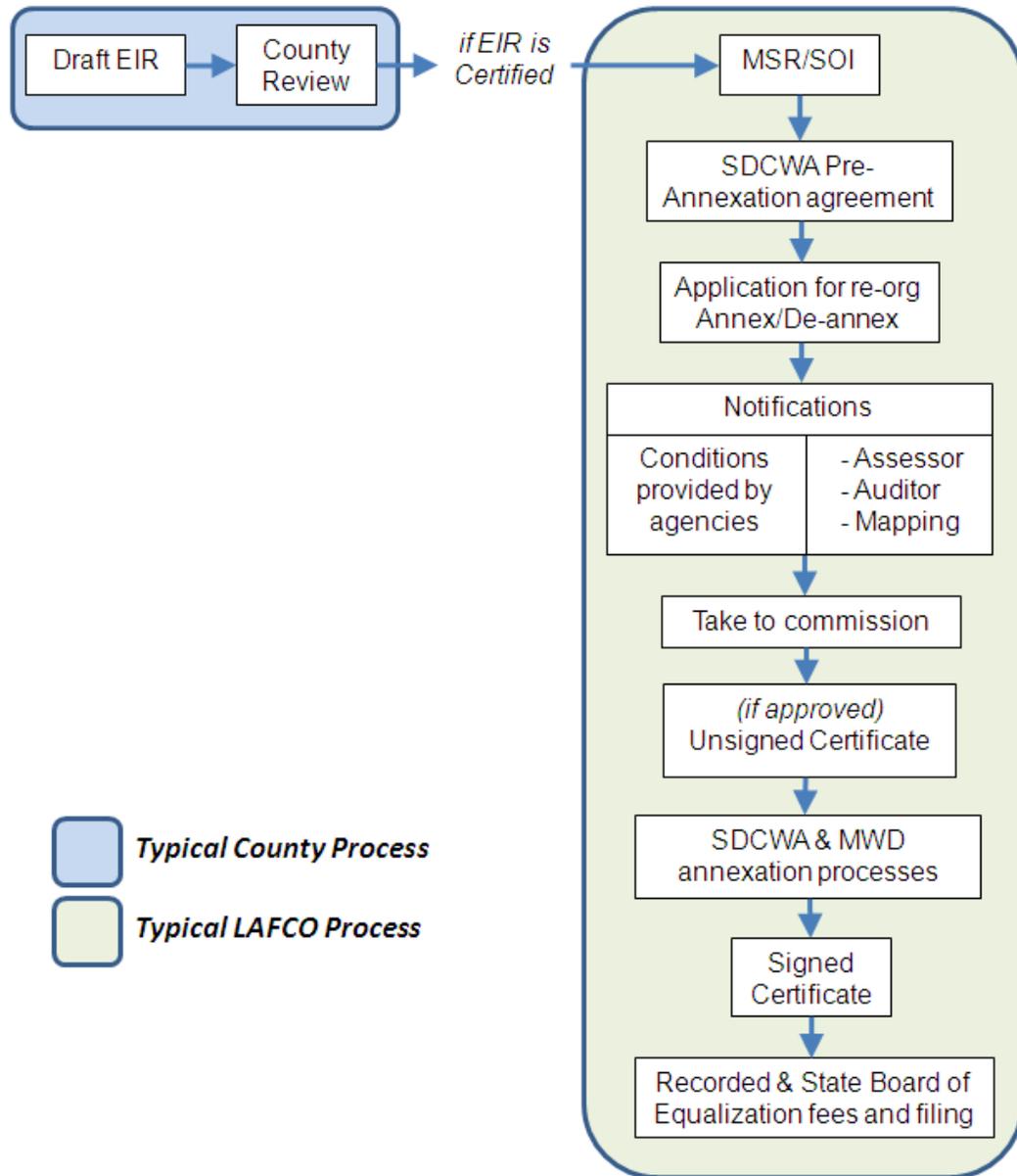
Established by State Law in 1963, the San Diego Local Agency Formation Commission (LAFCO) is a regulatory agency with quasi-legislative authority. While having county-wide jurisdiction, LAFCO is independent of county government. LAFCOs were designed to provide assistance to local agencies in overseeing jurisdictional boundary changes. LAFCOs are governed by the Cortese/Knox/Hertzberg Local Government Reorganization Act of 2000 (Government Code Section 56000, et seq.). LAFCO is responsible for coordinating, directing, and overseeing logical and timely changes to local governmental boundaries, including annexation and detachment of territory, incorporation of cities, formation of special districts, and consolidation, merger, and dissolution of districts. In addition, LAFCO is charged with reviewing ways to reorganize, simplify, and streamline governmental structure. A primary objective of LAFCO is to initiate studies and furnish information that contributes to the logical and reasonable development of public agencies. In 1994, LAFCOs were given the authority to initiate proposals involving district consolidation, dissolution, subsidiary district establishment, merger, and reorganization (combinations of the above jurisdictional changes).

A meeting was held with San Diego LAFCO on August 26, 2010. Meeting minutes are included in Appendix A. The meeting included developing a LAFCO process schematic, which is shown on Figure 2. Sketching this process led to the identification of a key process limitation between the County's land development approval process and the LAFCO process. The County of San Diego desires determinations from the LAFCO municipal service review. However, the MSR determinations are typically not completed until there are certified environmental documents (which can only occur after the County's land development approval. Therefore, coordination is required. This may involve preliminary determinations to facilitate the County's Land Development approval.

Service Provider Summary

This study updates the intentions, opportunities, concerns and capabilities of each service provider related to serving this project. Based on this qualitative analysis and the agency meetings, multiple agencies remain candidates for this project. The infrastructure systems are generally similar regardless of the service provider. Table 1 includes a service provider matrix with key considerations. The meeting minutes in the Appendix also provide further information.

**FIGURE 2
 TYPICAL COUNTY AND LAFCO PROCESSES**



The key challenges for each agency (listed alphabetically) appear to be:

- County of San Diego
 - The intent to serve the development has not been fully vetted, and therefore, has had the least consideration and evaluation
 - Would need to become a new member of the San Diego County Water Authority
 - Annexation of all the CPW and Meadowood properties
- Rainbow Municipal Water District
 - There remains no intention to service the project at the Board of Director level
 - Annexation of a portion of CPW and all of Meadowood

- San Luis Rey Municipal Water District
 - Completion of EIR based on current regional limits
 - Activating latent powers through LAFCO process
 - Agency creation including personnel capable of operating municipal potable water and wastewater collection systems, and wastewater treatment systems
 - Would need to become a new member of the San Diego County Water Authority
 - Annexation of a portion of the CPW project
 - Annexation of portion of northern-most approximately 172 acres of Meadowood
- Valley Center Municipal Water District
 - Annexation of all the CPW and Meadowood properties

**Table 1
Service Providers Key Considerations**

Agency:	County of San Diego	Rainbow MWD	San Luis Rey MWD	Valley Center MWD
Service Issues and Boundaries				
Intent to Serve	Unknown, Wastewater more likely	Not Supportive	Supportive	Supportive
Existing SDCWA member	No	Yes	No	Yes
Service area	Would have to establish new area	Part of CPW is within	Part of CPW & part of Meadowood within	Nearby
EIR status	Would likely require revision to current VCMWD efforts	Would likely require revision to current VCMWD efforts	Draft EIR covered larger regional area; was decertified due to lawsuits	Under development covering Meadowood and CPW
Ability to serve	Yes	Yes	Latent Powers must be activated	Yes
Agency Experience with Municipal Systems				
Potable Water	Yes	Yes	No	Yes
Recycled Water	No	No	No	Yes
Wastewater Collection	Yes	Yes	No	Yes
Wastewater Treatment	Yes	No	No	Yes
Infrastructure Approach				
Potable Water	New, independent system	Integrated with existing system	New, independent system	New, independent system
Wastewater	New, independent system	Integrated w/ existing or new independent system	New, independent system	New, independent system
Recycled Water	New, independent system	New, independent system	New, independent system	New, independent system

VI. Technical Review of the Development Studies

The following sections of this study summarize the technical review performed based on the CPW and Meadowood Water and Wastewater Studies. The Development Studies generally layout systems applicable to all the potential service providers (with only potable water service from Rainbow Municipal Water District differing). The following studies were reviewed:

- “Campus Park West Water, Recycled Water, and Sewer Study” for Pappas Investments by PBS&J, May 2010
- “Meadowood Water Study” for Pardee Homes by Dexter Wilson Engineering, May 5, 2009
- “Wastewater Service Alternative for Meadowood” for Pardee Homes by RW Beck, June 23, 2009

A. Demand/Flow Evaluation

Potable water demands, recycled water demands and wastewater flow projections are important for the sizing and layout of the related systems. As part of this study, the following demand/flow elements were evaluated and developed:

- **Tributary Area** - Review and assess the tributary area that may be served by these systems, particularly the water reclamation facility and potable water and recycled water reservoirs.
- **Demand/Flow Criteria** - Compare potential service provider criteria for consistency and conformance with usual and expected values.
- **Demand/Flow Estimates** – Review individual development demands as estimated in the related water studies.
- **Seasonal Recycled Water Evaluation** – Evaluate supplemental water requirements due to seasonal recycled water demands.
- **Demand/Flow Estimate Summary** – Summarize regional demands, including adjustments needed to account for supplemental water for the recycled water system.

A.1 Tributary Area Evaluation

Figure 1 displays the properties located in the tributary area related to this study. This area primarily includes the Meadowood project and Campus Park West. Other areas in the Planning Area that could possibly use the proposed regional facilities were evaluated. Other properties within the drainage area and outside of the Rainbow Municipal Water District were considered. One key drainage basin element is where the easterly basin boundary should be located. It was determined that the basin boundary should be located where the river necks through the steep slopes southeast of the Meadowood boundary (see Figure 1). The topography at this location provides a natural barrier which the study team concluded provided a reasonable limit to the area readily serviceable from a treatment plant located at the lower end of this region.

Three additional areas were identified based on the regional tributary area, and the possibility to serve some wastewater flows from the Campus Park Development (that may not have capacity in the Rainbow MWD system). They are summarized as follows:

Pala Gateway – This property is a 93-acre site located at the southeast corner of SR-76 and Pala Road. This site was previously part of a Specific Area Plan (SPA). The Pala Indian tribe currently plans to purchase this property for a Cultural Center. The actual land use for this property could vary. For the purposes of this study, it was assumed as either commercial or residential (3 dwelling units per acre). Both values produce similar potable water demands.

County San Diego Parcels –These properties include a 12 acre and a 75 acre site located along Pala Road south of the Meadowood Development. The sites are relatively low density. The County General Plan delineates this site for 1 dwelling unit per 4/8/20 acres. For this study, steep slopes were not included and the developable land was assumed at 1 dwelling unit per 8 acres.

Campus Park (wastewater only) –Campus Park is in the Rainbow Municipal Water District service area. However, there is the potential that 328.1 equivalent dwelling units will require sewer service. This arrangement was summarized in “Sewer Service Analysis for the Campus Park Project in the County of San Diego” by Dexter Wilson Engineering, March 24, 2009. These flows would be pumped directly to the water reclamation facility from a pump station in the south end of the development near Pala Road. Although the present developer has opted-out of this Study, these totals are included in the demand estimate as a potential flow requiring treatment plant capacity.

A.2 Demand/Flow Criteria

Unit demands are used for estimating potable water demands. Unit generation rates are used to estimate wastewater flows. Herein, these criteria are referred to as unit demand/flow criteria. A service provider criteria comparison was performed to evaluate the consistency between possible service providers, and to determine whether the criteria is within expected values based on other agencies in the region. Table 2 summarizes the criteria comparison. In addition, Table 2 also shows the criteria used in the developer studies. The agency criteria have similarities and differences – both in the actual unit demand/flow values used, and in their approach to estimating. In addition, the development studies use differing approaches and different unit demands/flows. Based on these findings, the study team concluded that evaluating the system from a regional perspective required demand and flow estimates based on a common methodology and reasonable unit demand/flow criteria (that generally fall within the values of any of the possible service provider criteria).

A.3 Demand/Flow Estimates

Tables 3, 4 and 5 summarize the development potable water demands, recycled water demands, and wastewater flows. The totals are based directly on the development studies and have the same values. As stated above, it was determined that a revised demand/flow estimate was needed – one which used common criteria for all the potential areas served by these regional facilities.

Tables 6, 7 and 8 summarize the regional demand estimates based on this feasibility study. These estimates were developed strictly for the purposes of this study, which focuses on evaluating the sizing of major regional facilities (particularly the reservoirs, water reclamation facility and disposal facilities). It is important to note that actual potable water demands and wastewater flows could be lower if the conservation measures conceptualized in the developer studies are implemented. The estimates were based on the information available to the study team as provided by the Developer’s engineers or in the submitted studies. The dwelling units and acreages should be confirmed by the Developers or their representatives.

Table 2
Potential Service Provider and Developer Study Unit Demand Criteria

Land Use Category	Unit Demand/Flow Criteria					
	Potential Service Providers				Development Studies	
	VCMWD	RMWD	SLRMWD	County of San Diego	Meadowood	Campus Park West
Potable Water Unit Demands (gallons/day/acre unless noted otherwise)						
Rural Residential	-	-	-	-	-	-
-with Ag	864	500-1000	-	-	-	-
-without Ag	489.6	-	-	-	-	-
Single Family Residential (EDU)	-	1500	500 gpd/EDU	-	500 gpd/ EDU	-
-Low Density	864	-	1000 gpd/DU	-	-	-
-Medium Density	1296	-	500 gpd/DU	-	-	-
-High Density	1742	-	-	-	-	-
Multi-Family Residential	3600	3500	375 gpd/DU	-	400 gpd/DU	173 gpd/DU
Commercial/Industrial/Office	1296/1152	5000	3000	-	-	1152-1296
Parks	-	-	4000 (4.5 afy/acre)	-	2000 (2.2 afy/acre)	2232 (2.5 afy/acre)
Fire/Police Stations	1728	-	-	-	-	-
Other Public Services	504	-	-	-	-	-
Education (schools)	403.2	-	1500	-	2000	-
Golf Courses	1555.2 (1.8 afy/acre)	-	-	-	-	-
Agriculture			2000 (2.2 afy/acre)	-	-	-
- Groves/Orchards	2131.2 (2.4 afy/acre)	-	-	-	3570 (4.0 afy/acre)	-
Right-of-Way	-	-	-	-	2000 (2.2 afy/acre)	2232 (2.5 afy/acre)
Wastewater Unit Demands (gallons/day/acre unless noted otherwise)						
Single Family Residential (EDU)	250 gpd/EDU	268 gpd/EDU	250 gpd/EDU	240 gpd/EDU	250 gpd/EDU	-
Multi-Family Residential	250 gpd/DU	-	250 gpd/DU	180 gpd/DU	250 gpd/DU	100% indoor use
Commercial/Industrial/Office	Varies per unit/type	-	2500	500	-	100% indoor use
Parks	-	-	250	-	-	0
Education (schools)	5-20 gpd/person	-	1250	-	-	-

- VCMWD Unit Demands: Table 1, VCMWD 2002 Master Plan, Water Demands Section
- RMWD Unit Demands: Table 6-2, RMWD 2006 Water Master Plan
- SLRMWD Unit Demands: Table 3-1, SLRMWD 2006 Master Plan for Water, Wastewater and Recycled Water Services

Table 3
Development Study Potable Water Demands

Land Use Category	Press Zone	Gross Acres	Net Acres	% Interior	DUs	Unit Demand	Avg. Annual Demand		
							(gpd)	(gpm)	(MGD)
Meadowood without Conservation									
Single-Family Residential	500 & 796	130.80	57.60		355	500 gpd/DU	177,500	123.26	0.18
Multi-Family Residential	500	50.10	29.50		489	400 gpd/DU	195,600	135.83	0.20
Elementary School	500	12.70	11.10	50%	42	2000 gpd/ac	11,100	7.71	0.01
Neighborhood Park	500	10.10	8.50	10%		2000 gpd/ac	1,700	1.18	0.00
HOA Areas	500	58.90	58.90	5%		2000 gpd/ac	5,890	4.09	0.01
R.O.W. Irrigation	500 & 796	9.20	9.20	0%		2000 gpd/ac	0	0.00	0.00
Retained Groves	796	49.30	49.30	0%		3570 gpd/ac	0	0.00	0.00
Subtotal		321.10	224.10		886		391,790	272.08	0.39
Meadowood with 25% Conservation									
Single-Family Residential	500 & 796	130.80	57.60		355	375 gpd/DU	133,125	92.45	0.13
Multi-Family Residential	500	50.10	29.50		489	300 gpd/DU	146,700	101.88	0.15
Elementary School	500	12.70	11.10	50%	42	1500 gpd/ac	8,325	5.78	0.01
Neighborhood Park	500	10.10	8.50	10%		1500 gpd/ac	1,275	0.89	0.00
HOA Areas	500	58.90	58.90	5%		1500 gpd/ac	4,418	3.07	0.00
R.O.W. Irrigation	500 & 796	9.20	9.20	0%		1500 gpd/ac	0	0.00	0.00
Retained Groves	796	49.30	49.30	0%		2678 gpd/ac	0	0.00	0.00
Subtotal		321.10	224.10		886		293,843	204.06	0.29
Campus Park West									
Multi-Family Residential	500	15.38	15.38		307	173 gpd/DU	53,134	36.90	0.05
Commercial	500	29.16	29.16	90%		1296 gpd/ac	34,012	23.62	0.03
Industrial	500	19.91	19.91	90%		1152 gpd/ac	20,643	14.34	0.02
Multi-Use:									
<i>Multi-Family Residential</i>	500	2.41	2.41		48	173 gpd/DU	8,308	5.77	0.01
<i>Commercial</i>	500	2.16	2.16	90%		1296 gpd/ac	2,519	1.75	0.00
<i>Office</i>	500	2.16	2.16	90%		1296 gpd/ac	2,519	1.75	0.00
HOA – Irrigation	500	11.16	11.16	0%		2.5 afy/ac	0	0.00	0.00
Biological Open Space	500	26.90	26.90	0%		0.0 gpd/ac	0	0.00	0.00
Right-of-Way	500	9.07	9.07	0%		2.5 afy/ac	0	0.00	0.00
Subtotal		118.31	118.31				121,135	84.12	0.12
Total CPW & Meadowood (w/o Conservation at Meadowood)							512,925	356.20	0.51
Total CPW & Meadowood (w/ Conservation at Meadowood)							414,978	288.18	0.41

Table 4
Development Study Recycled Water Demands

Land Use Category	Press Zone	Gross Acres	Net Acres	% Interior	DUs	Unit Demand	Avg. Annual Demand		
							(gpd)	(gpm)	(MGD)
Meadowood without Conservation									
Single-Family Residential	490 & 786	130.80	57.60		355	0 gpd/DU	0	0.00	0.00
Multi-Family Residential	490	50.10	29.50		489	0 gpd/DU	0	0.00	0.00
Elementary School	490	12.70	11.10	50%	42	2000 gpd/ac	11,100	7.71	0.01
Neighborhood Park	490	10.10	8.50	90%		2000 gpd/ac	15,300	10.63	0.02
HOA Areas	490	58.90	58.90	95%		2000 gpd/ac	111,910	77.72	0.11
R.O.W. Irrigation	490 & 786	9.20	9.22	100%		2000 gpd/ac	18,440	12.81	0.02
Retained Groves	786	49.30	49.30	100%		3570 gpd/ac	176,001	122.22	0.18
Subtotal		321.1	224.12		886		332,751	231.08	0.33
Meadowood with 25% Conservation									
Single-Family Residential	490 & 786	130.80	57.60		355	0 gpd/DU	0	0.00	0.00
Multi-Family Residential	490	50.10	29.50		489	0 gpd/DU	0	0.00	0.00
Elementary School	490	12.70	11.10	50%	42	1500 gpd/ac	8,325	5.78	0.01
Neighborhood Park	490	10.10	8.50	90%		1500 gpd/ac	11,475	7.97	0.01
HOA Areas	490	58.90	58.90	95%		1500 gpd/ac	83,933	58.29	0.08
R.O.W. Irrigation	490 & 786	9.20	9.22	100%		1500 gpd/ac	13,830	9.60	0.01
Retained Groves	786	49.30	49.30	100%		2678 gpd/ac	132,001	91.67	0.13
Subtotal		321.1	224.12		886		249,563	173.31	0.25
Campus Park West									
Multi-Family Residential	490	15.38	15.38	0%	307	0 gpd/DU	0	0.00	0.00
Commercial	490	29.16	29.16	10%		1296 gpd/ac	3,779	2.62	0.00
Industrial	490	19.91	19.91	10%		1152 gpd/ac	2,294	1.59	0.00
Multi-Use									
<i>Multi-Family Residential</i>	490	2.41	2.41		48	0 gpd/DU	0	0.00	0.00
<i>Commercial</i>	490	2.16	2.16	10%		1296 gpd/ac	280	0.19	0.00
<i>Office</i>	490	2.16	2.16	10%		1296 gpd/ac	280	0.19	0.00
HOA – Irrigation	490	11.16	11.16	100%		2.5 afy/ac	24,906	17.30	0.02
Biological Open Space	490	26.90	26.90	0%		0.0 gpd/ac	0	0.00	0.00
Right-of-Way	490	9.07	9.07	100%		2.5 afy/ac	20,242	14.06	0.02
Subtotal		118.31	118.31				51,780	35.96	0.05
Total CPW & Meadowood (w/o Conservation at Meadowood)							384,531	267.04	0.38
Total CPW & Meadowood (w/ Conservation at Meadowood)							301,343	209.27	0.30

Table 5
Development Study Wastewater Flows

Land Use Category	Gross Acres	Net Acres	% Interior	EDU	Unit Flow	Avg. Annual Flows		
						(gpd)	(gpm)	(MGD)
Meadowood								
Single-Family	130.80	57.60		355	250 gpd/EDU	88,750	61.63	0.09
Multi-Family	50.10	29.50		489	250 gpd/EDU	122,250	84.90	0.12
Elementary School	12.70	11.10		42	250 gpd/EDU	10,500	7.29	0.01
Neighborhood Park	10.10	8.50				0	0.00	0.00
HOA Areas	58.90	58.90				0	0.00	0.00
R.O.W. Irrigation	9.20	9.22				0	0.00	0.00
Retained Groves	49.30	49.30				0	0.00	0.00
Subtotal	321.10	224.12		886		221,500	153.82	0.22
Campus Park West								
Multi-Family Residential	15.38	15.38		307	173 gpd/DU	53,134	36.90	0.05
Commercial	29.16	29.16	90%		1296 gpd/ac	34,012	23.62	0.03
Industrial	19.91	19.91	90%		1152 gpd/ac	20,643	14.34	0.02
Multi-Use								
<i>Multi-Family Residential</i>	2.41	2.41		48	173 gpd/DU	8,308	5.77	0.01
<i>Commercial</i>	2.16	2.16	90%		1296 gpd/ac	2,519	1.75	0.00
<i>Office</i>	2.16	2.16	90%		1296 gpd/ac	2,519	1.75	0.00
HOA - Irrigation	11.16	11.16	0%		2.5 afy/ac	0	0.00	0.00
Biological Open Space	26.90	26.90	0%		0.0 gpd/ac	0	0.00	0.00
Right-of-Way	9.07	9.07	0%		2.5 afy/ac	0	0.00	0.00
Subtotal	118.31	118.31				121,135	84.12	0.12
Total CPW & Meadowood						342,635	237.94	0.34

Table 6
Fallbrook Project Feasibility Study – Potable Water Demand Estimate

Land Use Category	Press Zone	Gross Acres	Net Acres	% Interior	DUs	Unit Demand	Avg. Annual Demand		
							(gpd)	(gpm)	(MGD)
Meadowood									
Single-Family Residential	500 & 796	130.80	57.60	no reuse	355	500 gpd/DU	177,500	123.26	0.18
Multi-Family Residential	500	50.10	29.50	90%	489	300 gpd/DU	132,030	91.69	0.13
Elementary School	500	12.70	11.10	50%	42	2000 gpd/ac	11,100	7.71	0.01
Neighborhood Park	500	10.10	8.50	10%		2000 gpd/ac	1,700	1.18	0.00
HOA Areas	500	58.90	58.90	5%		2000 gpd/ac	5,890	4.09	0.01
R.O.W. Irrigation	500 & 796	9.20	9.20	0%		2000 gpd/ac	0	0.00	0.00
Retained Groves	796	49.30	49.30	0%		3570 gpd/ac	0	0.00	0.00
Subtotal		321.10	224.10		886		328,220	227.93	0.33
Campus Park West									
Multi-Family Residential	500	15.38	14.25	90%	307	300 gpd/DU	82,890	57.56	0.08
Commercial	500	29.16	26.33	90%		2000 gpd/ac	47,394	32.91	0.05
Industrial	500	19.91	17.46	90%		2000 gpd/ac	31,428	21.83	0.03
Multi-Use									
<i>Multi-Family Residential</i>	500	2.41	2.16	90%	48	300 gpd/DU	12,960	9.00	0.01
<i>Commercial</i>	500	2.16	1.94	90%		2000 gpd/ac	3,489	2.42	0.00
<i>Office</i>	500	2.16	1.94	90%		2000 gpd/ac	3,489	2.42	0.00
HOA - Irrigation		11.16	5.19	0%		2000 gpd/ac	0	0.00	0.00
Biological Open Space		26.90	26.86	0%		0.0 gpd/ac	0	0.00	0.00
Right-of-Way		9.07	2.00	0%		2000 gpd/ac	0	0.00	0.00
Subtotal		118.31	98.13				181,651	126.15	0.18
Other Properties in the Planning Area									
Campus Park (wastewater only)	-				328.1	0 gpd/DU	0	0.00	0.00
County of SD 1, Single Fam.	500			no reuse	1.5	750 gpd/DU	1,125	0.78	0.00
County of SD 2, Single Fam.	500			no reuse	9.4	750 gpd/DU	7,031	4.88	0.01
Pala Gateway SPA	500		93	no reuse	279	500 gpd/DU	139,500	96.88	0.14
Subtotal							147,656	102.54	0.15
Total Planning Area							657,527	456.62	0.66

Table 7
Fallbrook Project Feasibility Study – Recycled Water Demand Estimate

Land Use Category	Press Zone	Gross Acres	Net Acres	% Irrigated	DUs	Unit Demand	Avg. Annual Demand		
							(gpd)	(gpm)	(MGD)
Meadowood									
Single-Family Residential	500 & 786	130.80	57.60	no reuse	355	0 gpd/DU	0	0.00	0.00
Multi-Family Residential	500	50.10	29.50	10%	489	300 gpd/DU	14,670	10.19	0.01
Elementary School	500	12.70	11.10	50%	42	2000 gpd/ac	11,100	7.71	0.01
Neighborhood Park	500	10.10	8.50	90%		2000 gpd/ac	15,300	10.63	0.02
HOA Areas	500	58.90	58.90	95%		2000 gpd/ac	111,910	77.72	0.11
R.O.W. Irrigation	500 & 786	9.20	9.22	100%		2000 gpd/ac	18,440	12.81	0.02
Retained Groves	786	49.30	49.30	100%		3570 gpd/ac	176,001	122.22	0.18
Subtotal		321.10	224.12		886		347,421	241.26	0.35
Campus Park West									
Multi-Family Residential	500	15.38	14.25	10%	307	300 gpd/DU	9,210	6.40	0.01
Commercial	500	29.16	26.33	10%		2000 gpd/ac	5,266	3.66	0.01
Industrial	500	19.91	17.46	10%		2000 gpd/ac	3,492	2.43	0.00
Multi-Use									
<i>Multi-Family Residential</i>	500	2.41	2.16	10%	48	300 gpd/DU	1,440	1.00	0.00
<i>Commercial</i>	500	2.16	1.94	10%		2000 gpd/ac	388	0.27	0.00
<i>Office</i>	500	2.16	1.94	10%		2000 gpd/ac	388	0.27	0.00
HOA - Irrigation		11.16	5.19	100%		2000 gpd/ac	10,380	7.21	0.01
Biological Open Space		26.90	26.86	0%		0.0 gpd/ac	0	0.00	0.00
Right-of-Way		9.07	2.00	100%		2000 gpd/ac	4,000	2.78	0.00
Subtotal		118.31	98.13				34,563	24.00	0.03
Other Properties in the Planning Area									
Campus Park (wastewater only)	-				328.1	0 gpd/DU	0	0.00	0.00
County of SD 1, Single Fam.	500			no reuse	1.5	0 gpd/DU	0	0.00	0.00
County of SD 2, Single Fam.	500			no reuse	9.4	0 gpd/DU	0	0.00	0.00
Pala Gateway SPA	500		93	no reuse	279	0 gpd/DU	0	0.00	0.00
Subtotal							0	0.00	0.00
Total Planning Area							381,984	265.27	0.38

Table 8
Fallbrook Project Feasibility Study – Wastewater Flow Estimate

Land Use Category	Gross Acres	Net Acres	% Interior	DUs	Unit Flow	Avg. Annual Flows		
						(gpd)	(gpm)	(MGD)
Meadowood								
Single-Family Residential	130.80	57.60		355	250 gpd/EDU	88,750	61.63	0.09
Multi-Family Residential	50.10	29.50		489	250 gpd/EDU	122,250	84.90	0.12
Elementary School	12.70	11.10		42	250 gpd/EDU	10,500	7.29	0.01
Neighborhood Park	10.10	8.50			0 gpd/ac	0	0.00	0.00
HOA Areas	58.90	58.90			0 gpd/ac	0	0.00	0.00
R.O.W. Irrigation	9.20	9.22			0 gpd/ac	0	0.00	0.00
Retained Groves	49.30	49.30			0 gpd/ac	0	0.00	0.00
Subtotal	321.10	224.12		886		221,500	153.82	0.22
Campus Park West								
Multi-Family Residential	15.38	14.25		307	250 gpd/DU	76,750	53.30	0.08
Commercial	29.16	26.33	90%		1620 gpd/ac	38,389	26.66	0.04
Industrial	19.91	17.46	90%		1620 gpd/ac	25,457	17.68	0.03
Multi-Use								
<i>Multi-Family Residential</i>	2.41	2.16		48	250 gpd/DU	12,000	8.33	0.01
<i>Commercial</i>	2.16	1.94	90%		1620 gpd/ac	2,826	1.96	0.00
<i>Office</i>	2.16	1.94	90%		1620 gpd/ac	2,826	1.96	0.00
HOA - Irrigation	11.16	5.19	0%		0 gpd/ac	0	0.00	0.00
Biological Open Space	26.90	26.86	0%		0 gpd/ac	0	0.00	0.00
Right-of-Way	9.07	2.00	0%		0 gpd/ac	0	0.00	0.00
Subtotal	118.31	98.13				158,249	109.89	0.16
Other Areas								
Campus Park (wastewater only)				328.1	250 gpd/DU	82,025	56.96	0.08
County of SD 1, Single Fam.				1.5	250 gpd/DU	375	0.26	0.00
County of SD 2, Single Fam.				9.4	250 gpd/DU	2,344	1.63	0.00
Pala Gateway SPA		93		279	250 gpd/DU	69,750	48.44	0.07
Subtotal						154,494	107.29	0.15
Total Planning Area						534,242	371.00	0.53

A.4 Seasonal Demand Adjustment

Seasonality is important to developing accurate potable water and recycled water demands. The demand tables in the previous section calculate a total recycled water demand potential. However, these demands can only be realized if there is enough wastewater available. This analysis concludes, similar to the Meadowood and Campus Park West Studies, that peak summertime recycled water demands will be greater than the wastewater available. Therefore, a supplemental water source is needed. Table 9 summarizes the mass-balance analysis using monthly peaking factors from the Campus Park West Study. Figure 3 displays the seasonal variation of recycled water demands and when supplemental water is needed.

Table 9
Recycled Water Monthly Analysis

Month	Days	Peaking Factor	Recycled Demand (MG)	Recycled Available (MG)	Recycled Deliveries (MG)	Potable Supplement (MG)	Recycled Disposal (MG)
Jan	31	20%	2.4	14.1	2.4	0.0	11.7
Feb	28	30%	3.2	12.7	3.2	0.0	9.5
Mar	31	50%	5.9	14.1	5.9	0.0	8.2
Apr	30	70%	8.0	13.6	8.0	0.0	5.6
May	31	100%	11.8	14.1	11.8	0.0	2.2
Jun	30	165%	18.9	13.6	13.6	5.3	0.0
Jul	31	200%	23.7	14.1	14.1	9.6	0.0
Aug	31	190%	22.5	14.1	14.1	8.4	0.0
Sep	30	160%	18.3	13.6	13.6	4.7	0.0
Oct	31	110%	13.0	14.1	13.0	0.0	1.1
Nov	30	70%	8.0	13.6	8.0	0.0	5.6
Dec	31	30%	3.6	14.1	3.6	0.0	10.5
Totals	365	--	139.4	165.7	111.4	28.0	54.4
Annual Average Totals (MGD)			0.38	0.45	0.31	0.08	0.15

Notes:

- Recycled water available equals wastewater available minus 15-percent treatment losses.

Supplemental water was discussed in both the Meadowood and Campus Park West Studies. The Meadowood Study discussed both groundwater (Meadowood Water Study page 2-9) and potable water (Meadowood Water Study page 3-2, Table 3-1, footnote 1). The Campus Park West Study assumed potable water (page 4-1). At this time, potable water appears the more appropriate assumption since the service provider is not yet determined (which could relate to groundwater rights) and the groundwater is higher in total dissolved salts (TDS) than what most southern California recycled water systems are designed at (1,300 mg/liter groundwater TDS versus 1,000 to 1,100 mg/liter). In addition, the historical groundwater TDS values listed in the Meadowood Wastewater Study also indicates that the groundwater TDS levels have steadily increased through the years.

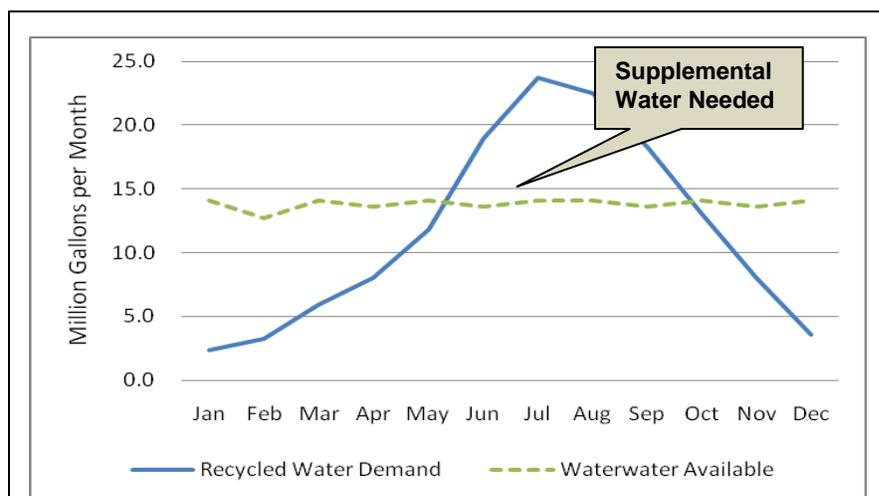


Figure 3. Recycled Water Demand vs. Wastewater Available. Recycled water demands vary seasonally due to the landscape irrigation patterns. The wastewater flows needed to make recycled water generally remain constant throughout the year. When demands exceed available recycled water, supplemental water is needed.

A.5 Demand/Flow Summary

Table 10 summarizes the potable water and recycled water demands, and wastewater flows for the planning area. These totals were used to evaluate the regional system infrastructure in the following sections. These totals also assume that there is no seasonal storage for recycled water (see disposal analysis section for further discussion).

**Table 10
Demand and Flow Summary**

Property	Feasibility Study Demands (MGD)			Developer Study Demands (MGD)		
	Potable Water	Recycled Water	Waste-water	Potable Water	Recycled Water	Waste-water
Meadowood	0.328	0.347	0.222	0.392	0.333	0.222
Campus Park West	0.182	0.035	0.158	0.121	0.052	0.121
Campus Pk (328 DUs WW)	0.000	0.000	0.082	-	-	-
County San Diego	0.008	0.000	0.003	-	-	-
Pala Gateway	0.140	0.000	0.070	-	-	-
Subtotal	0.658	0.382	0.534	0.513	0.385	0.343
Actual Recycled Water Served		0.305				
Potable Water Makeup	0.077					
Revised Total Demands	0.734	0.305	0.534			

Notes:

- The demand estimates above were developed for the purposes of estimating the approximate size of the regional facilities. Differences between the Feasibility Study and the developer studies are due to differences in unit demand/flow factors and estimating approaches. Conservation measures could reduce demands further.
- Potable water makeup could be eliminated with the use of seasonal storage. See disposal section.
- Meadowood totals are without the conservation measures outlined in the Meadowood Water Study.

B. Potable Water System Evaluation

The potable water system evaluation included a review of the developer studies and focused on the conveyance systems. The Conveyance system includes the aqueduct connection, transmission piping, storage tank, distribution piping and pressure reducing stations. Pipeline sizing using a hydraulic computer model was not within the scope of this evaluation and was not included in the development studies. The following summarizes the review, key considerations, and recommendations.

B.1 Potable Water System Summary

The proposed potable water system includes both a transmission aqueduct delivery system (from the proposed aqueduct connection to the reservoirs) and a distribution system (from the reservoirs to the customers). Figure 4 and Figure 5 display the two proposed transmission system options. Figure 4 would apply if the County of San Diego, the San Luis Rey MWD or the Valley Center MWD provides services to the Planning Area. Figure 5 would apply if the Rainbow MWD provides services to the Planning Area. Figure 6 displays the proposed distribution system, which is substantially the same for all possible service providers.

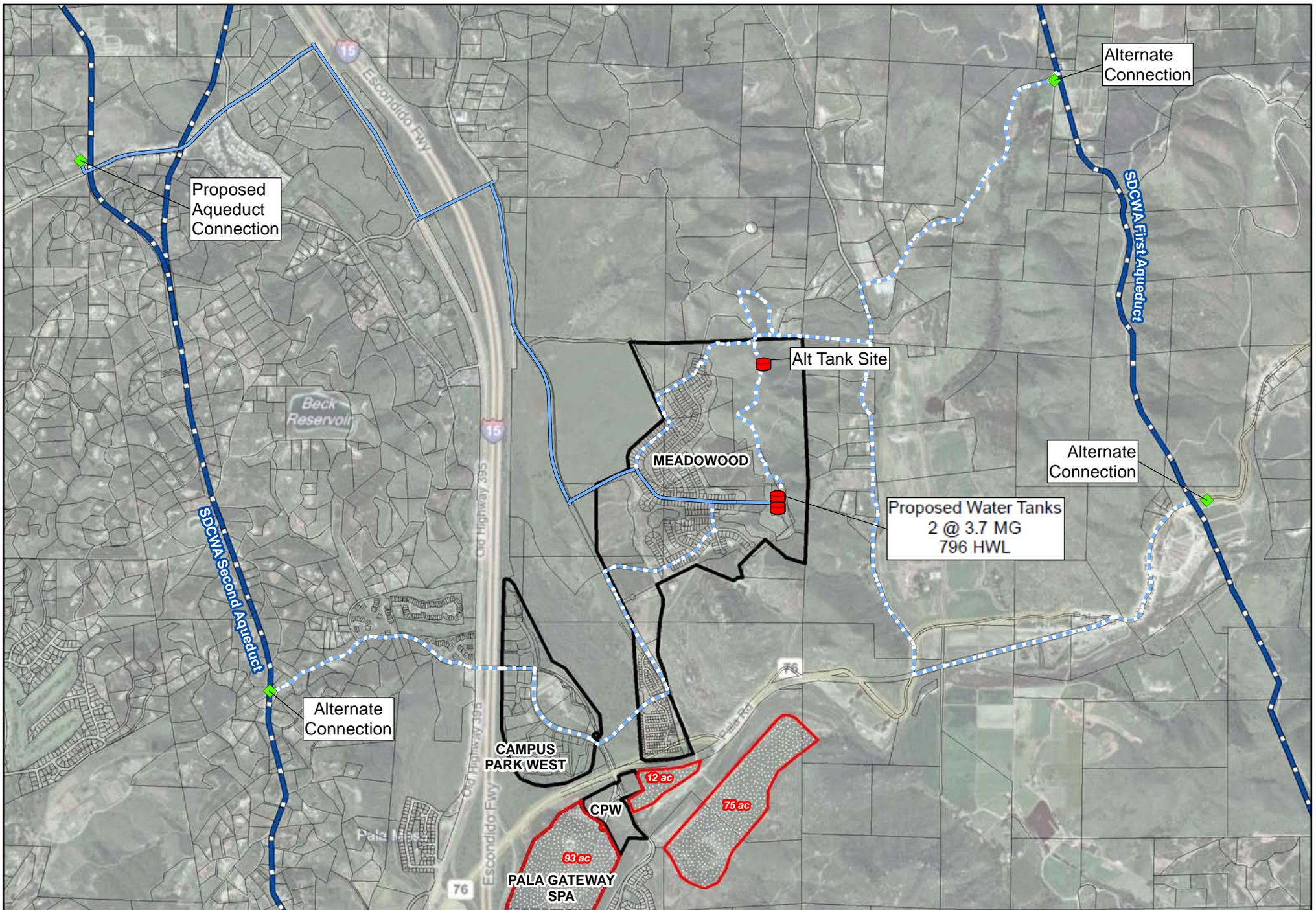
The potable water system approach in general appears suitable for the development and is consistent with other systems in the County. The system provides appropriate redundancies, including gravity storage (as opposed to pumped systems) and redundant piping to most areas downstream of the reservoir. The following key design and operational issues were noted based on a review of the Developer Studies:

Aqueduct Supply Reliability – Aqueduct operation has been reliable in general. Outages are typically scheduled and occur during lower demand periods in winter months. Other possible emergency scenarios include: an unexpected shutdown of the aqueduct, a transmission system pipeline failure, or a flow control facility failure at the aqueduct turnout. The potable water regulatory reservoirs are intended for these purposes.

Aqueduct Operation – The potable water system operation will be important in relation to managing the inflows and the regulatory reservoir levels. Aqueduct supplies require delivering a constant flowrate into the system – a flowrate that that can only be adjusted twice per day. Therefore, the regulatory reservoirs will need to provide enough operational storage to regulate without filling and causing flow rejection at the aqueduct connection. This is related to the storage volumes, discussed further below.

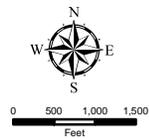
Pipeline Sizing and Operation - The final service provider should require a hydraulic analysis to be performed both on the aqueduct transmission piping and the distribution system to confirm the sufficiency of the operation of both the transmission piping to the reservoir, and the distribution system from the reservoir to the end users.

Water Quality – Water quality will be a key operational issue due to the large regulatory tank volumes. This is unavoidable based on the need to provide large volumes of emergency storage.



- Alternative
- ◆ Connection/Flow Control
- Aqueducts
- ▭ Site Boundaries
- Preferred
- Planned Reservoirs
- Lot Lines
- ▭ Future Areas

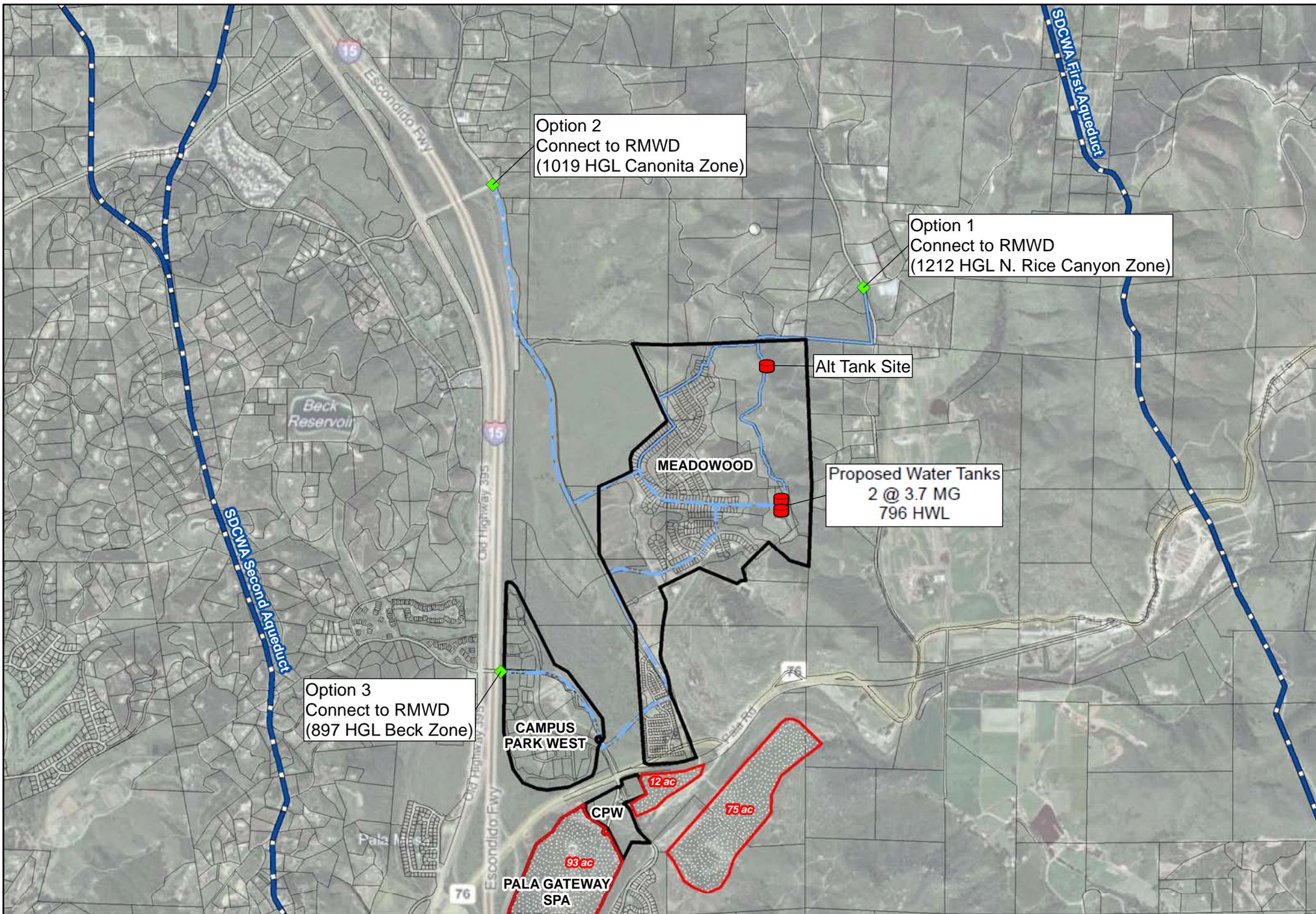
HGL = Hydraulic Grade Line HWL = High Water Level



Fallbrook Project Feasibility Study
Water Transmission - VCMWD/SLR Alternatives

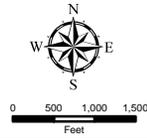
Figure 4





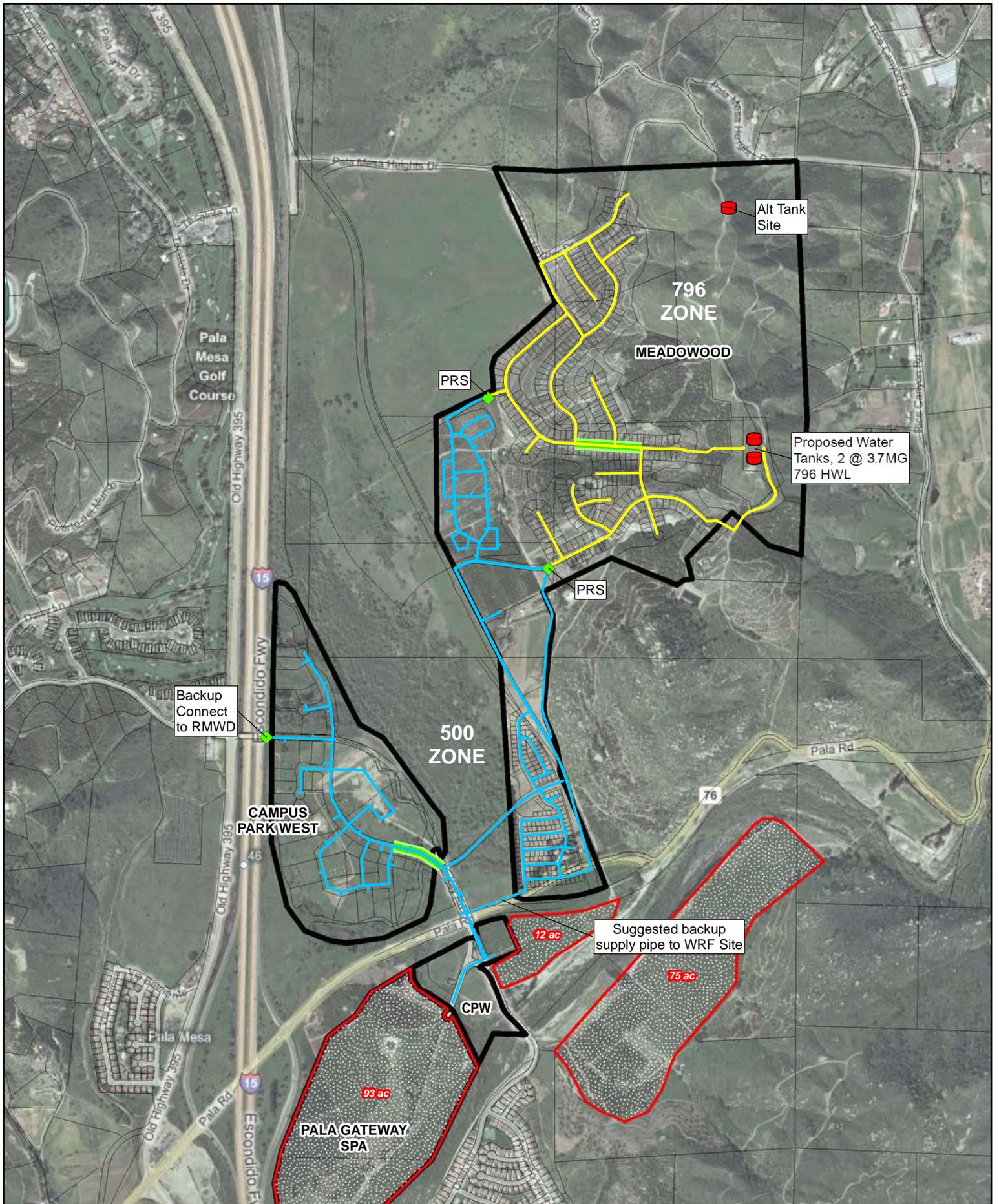
- Alternative 1
- Alternative 2
- Alternative 3
- ◆ Connection/Flow Control
- Planned Reservoirs
- ▭ Aqueducts
- Lot Lines
- ▭ Site Boundaries
- ▭ Future Areas

HGL = Hydraulic Grade Line HWL = High Water Level

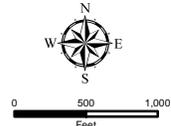


Fallbrook Project Feasibility Study
Water Transmission - RMWD Alternatives

C.Holmgren | 9/10/2010 | Figure 5 - Water Tx - RMWD Alternatives.mxd



- 796 Zone
- 500 Zone
- Suggested Pipe
- Critical Link
- ◆ Connection/Flow Control
- Planned Pump Station
- Planned Reservoirs
- Lot Lines
- Site Boundaries
- Future Areas



Fallbrook Project Feasibility Study
Water Distribution System

Figure 6 **BLACK & VEATCH**
Building a world of difference.

To minimize the impacts, the selected service provider will likely require the tank design include elements to help manage water quality. Specifics of these requirements should be based on individual agency preferences.

Distribution System Operation – A majority of the proposed distribution system provides looped pipelines from the reservoir. Two critical, single feed pipelines are also identified on Figure 6. The proposed pressure regulation stations are generally reliable and also redundant. The operation should be straightforward.

Distribution Piping Separation – The potable water piping will need to meet the California Department of Health separation criteria for potable water mains. This affects the distance between potable water mains, recycled water mains, wastewater and storm drain pipelines.

Water Reclamation Facility Piping Redundancies - The Water Reclamation Facility is a critical facility. As such, a relatively short parallel pipeline should be added to provide looped capacity from the plant to a secondary feed. This pipeline is shown on Figure 6.

Access to Potable Water Infrastructure - Other properties identified in the Planning Area should have the ability to connect to the regional facilities. Although no specific improvements are noted herein, the development plans should not preclude this.

Rainbow MWD Backup – If the service provider selected is not RMWD, it still would be beneficial for the developments and RMWD to have an emergency interconnection between the two systems. The location and related hydraulic service pressures will dictate whether the entire development, or only lower portions, would be backed up. Although no action can occur at this time, and noting that this is highly dependent on the RMWD’s desire for such a facility, it should be explored once the development service provider is determined.

B.2 Potable Water Storage Tank Sizing for Regional Uses

This study included a review of the capacity and proposed siting of the potable water and recycled water tanks in relation to the Planning Area’s needs. It was assumed that the tanks would be sited on the preferred south site, identified in both the Meadowood and Campus Park West studies. It was also assumed that the potable water tanks would be split into two equal tanks for redundancy and operational benefits. This development study approach regarding the tanks is appropriate.

The Planning Area potable water demands (from Table 6) were used to evaluate the tank sizing for the potable water system. The adjusted recycled water demands (Table 10) were used to evaluate the tank sizing for the recycled water system.

Potable Water Tank Sizing - Potable water storage for this Planning Area will serve the following purposes:

- A planned wintertime shutdown of the aqueduct. The San Diego County Water Authority suggests 10 days of storage for this scenario (based on average annual demands).

- Fire flow storage (less than 1 million gallons, depending on criteria and fire flow duration)
- Unplanned outages, such as a break in the transmission pipeline to the reservoir, an issue at the flow control facility, or an unplanned aqueduct shutdown.
- Regulatory capacity to prevent flow rejection at the aqueduct turnout, which also includes regulatory capacity to supply varying distribution system demands during the day.

There are multiple approaches to sizing the storage tanks based on the needs outlined above. Typically, the criteria are based on providing the greater of either 10 days of average annual demands for the longer term aqueduct outage; or providing a combination of operational, fire flow storage and a shorter duration emergency scenario. Based on the size of this Planning Area, the Developer Study approach to use 10 days of average annual demands appears reasonable. Table 11 calculates revised volumes.

Table 11
Potable and Recycled Water Tank Sizing

Element	Potable	Recycled
Demands (MGD)	0.73	0.31
Criteria	10 Average Days	75% Maximum Day
Max Day Factor	N/A	3
Basins/Tanks	2	1
Total Required (MG)	7.3	0.7
Required per Tank (MG)	3.7	0.7
Development Study Parameters		
Height (FT)	32	24
High Water Level (Feet MSL)	795.5	785.5
Bottom Elevation (Feet MSL)	764.5	762.5
Revised Required Diameter (FT)	142	71

Recycled Water Tank Sizing – Recycled water storage for this Planning Area will serve (and not serve) in the following capacities:

- Regulatory storage. Reclamation systems typically operate between 10 PM and 6 AM (due to restrictions on most types of use). Therefore, large peaking occurs during these times. The regulatory storage supplements the reclamation plant output during these times. During the day, the tank fills back up again.
- This tank does not serve as a seasonal storage basin (see disposal section)

Recycled water tank sizing is based on providing this regulatory storage during the peak summertime demands. Tank sizing is usually specific to the system and the peaking it experiences. The sizing approaches used in the development studies appears reasonable. This study employed a similar approach. The estimated recycled water tank size is shown in Table 11.

Tank Sizing Summary – The revised tank sizes in Table 11 are slightly larger than the development studies (as expected due to the larger service area). It is important to note that employing the conservation measures conceptualized in the development studies could reduce these totals (subject to the service provider). In addition, seasonal storage, as discussed further in the disposal section, could reduce the potable water storage totals by eliminating the supplemental potable water element summarized in Table 10. Overall, the increased tank diameters appear to fit on the preferred site with some additional grading. The key technical parameters of the high water elevation and locating the tank on native “cut” ground (not on “fill”) appear to be met. The embankment screening may be affected to a degree and the Developers should confirm any impacts to their environmental or aesthetic plans.

C. Recycled Water Distribution System Evaluation

The recycled water distribution system evaluation included a review of the developer studies. The developer studies do not include extensive details on the recycled water distribution system. Our understanding is that a recycled water pump station will be located at the water reclamation facility. This pump station will provide water to the distribution system and the proposed recycled water tank with a high water elevation of 786 feet. Key recycled water distribution system components are displayed on Figure 7.

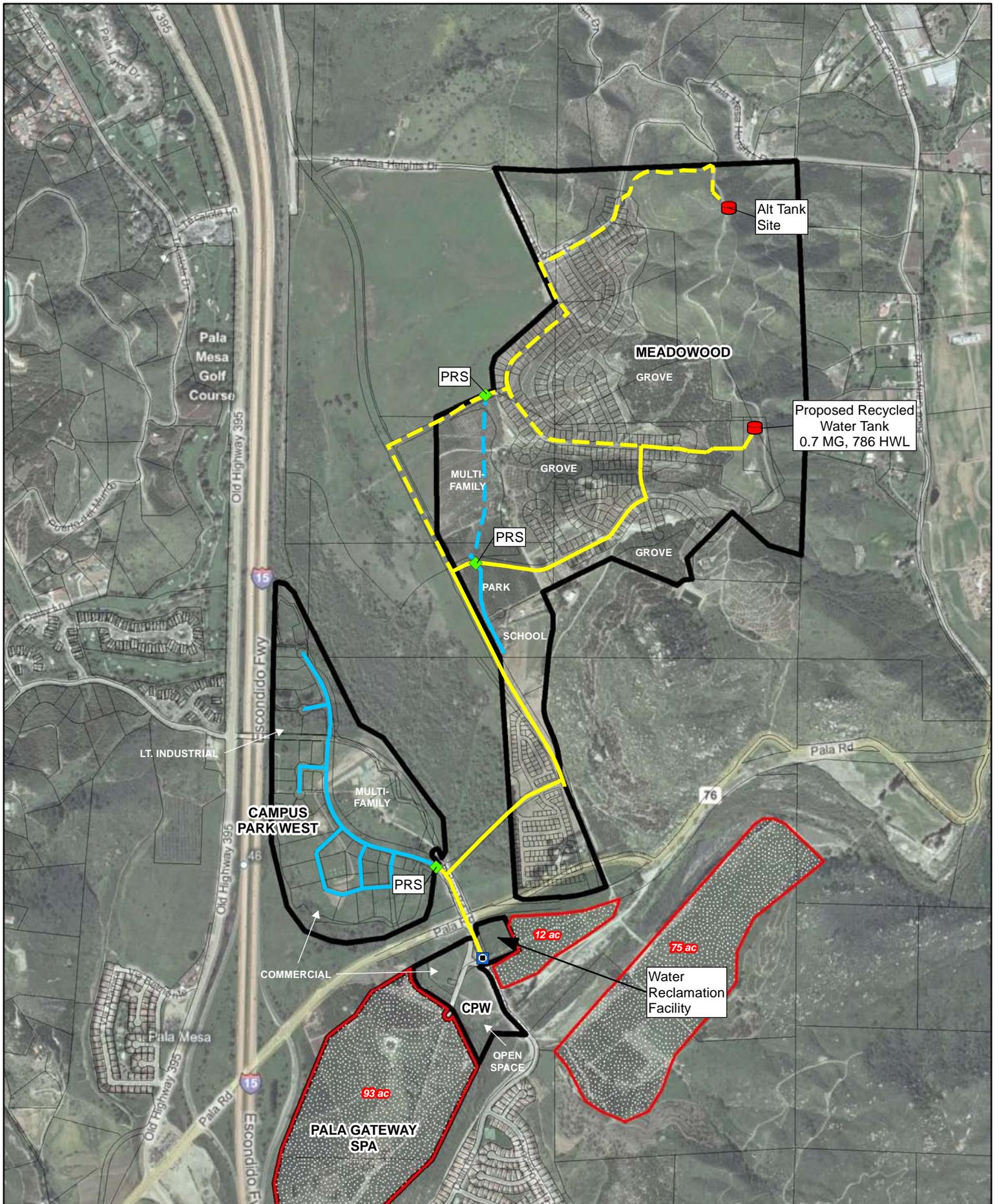
Recycled Water Pressure Zones and Delivery Method - Similar to the potable water system, a pressure reducing station (or multiple pressure reducing stations) will likely be required to service the lower elevation areas of the Meadowood Development, and all of the Campus Park West Development. The lower zone was assumed to be at a similar 500 foot hydraulic grade as the potable water system low zone. This will require a small amount of parallel piping in Meadowood and a pressure reducing station. This piping and the pressure reducing station was not shown in the Meadowood study, but is included on Figure 7. A pressure reducing station was shown on the Campus Park West study, and is also shown on Figure 7.

Recycled Water Tank – the recycled water tank sizing was described above (see potable water tank section and Table 11).

Recycled Water Pump Station – the recycled water pump station (located at the water reclamation facility) will be required to operate over a large flow range, particularly when the tank is out of service. The pump design should consider these flow ranges and operational parameters.

Potable Water Backup – a potable water fill pipeline with an appropriate air-gap should be provided to allow supplemental potable water into the recycled water tank. This appurtenance may be used to supplement flows during peak summertime irrigation demands, or in the event of a pump station or pipeline failure that limits recycled water supplies into the system.

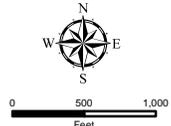
Recycled Water Piping Separation – recycled water pipelines must meet California Department of Public Health requirements for pipeline separation. These separations should be shown on the development plans.



- Planned Recycled Water, 796 Zone
- Alternative Recycled Water Transmission, 796 Zone
- Planned Recycled Water, 500 Zone
- Alternative Recycled Water Transmission, 500 Zone

- ◆ Connection/Flow Control
- Planned Pump Station
- Planned Reservoirs
- Lot Lines

- Site Boundaries
- Future Areas



Fallbrook Project Feasibility Study
Recycled Water Major Facilities

Access to Recycled Water Infrastructure - Other properties identified in the Planning Area should have the ability to connect to the regional facilities. Although no specific improvements are noted herein, the development plans should not preclude this.

D. Wastewater Collection System Evaluation

The wastewater collection system evaluation included a review of the developer studies. In general, there is not a lot of information in the studies specific to the collection system. Both systems appear to gravity flow the wastewater southward towards the proposed water reclamation facility. Onsite wastewater collection system piping is unclear in the Meadowood Study. However, this is not considered a critical issue in this feasibility study since the possible service providers identified herein would (and should) require detailed piping layouts and a hydraulic analysis to confirm piping alignments, sizes, flows, velocities, and easements. Key wastewater collection system components are displayed on Figure 8.

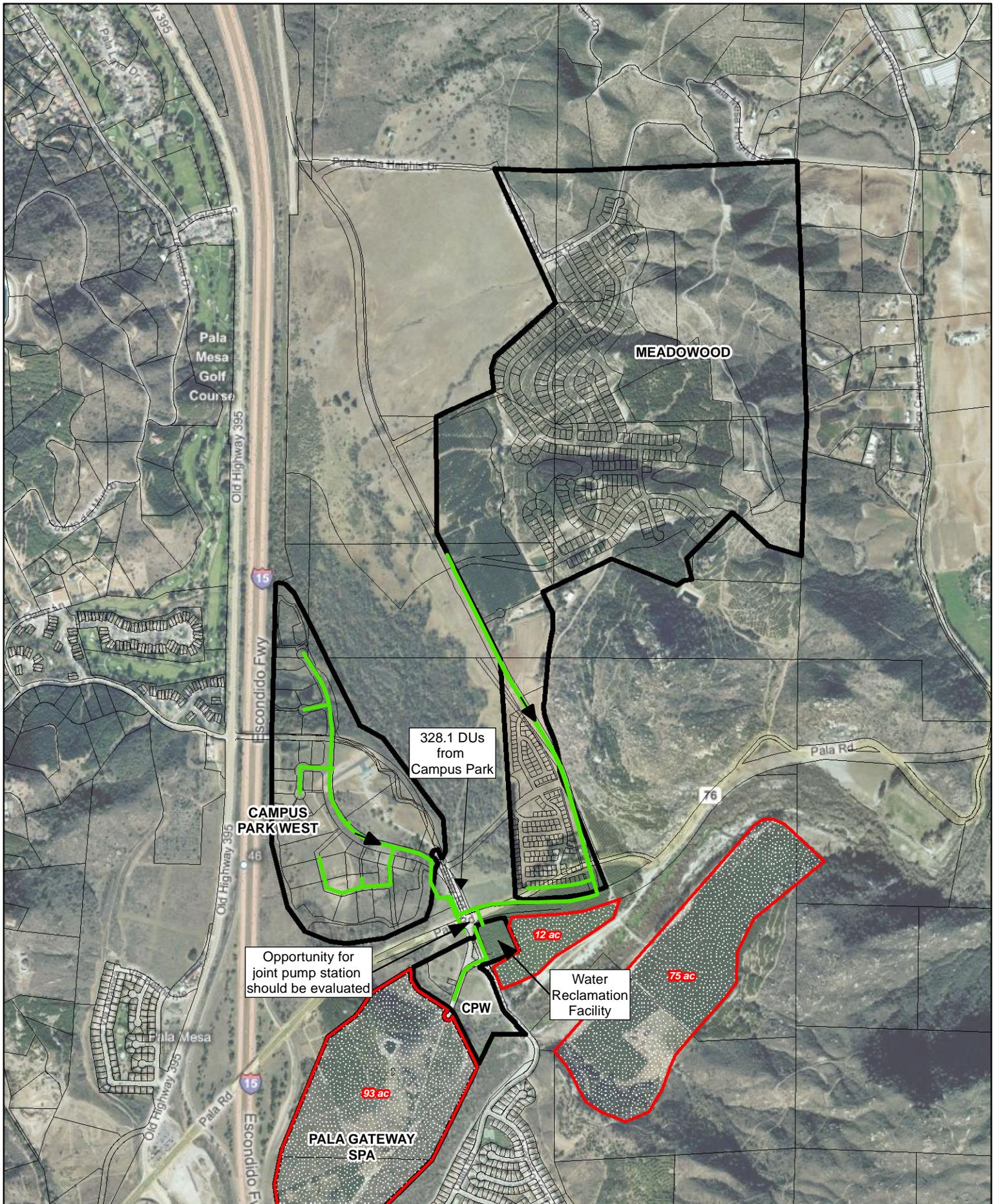
Overall, the system appears feasible, noting that a joint pump station approach would likely save the Developers costs, and provide a lower operational burden on the service provider and the customers responsible for the costs. The following summarizes the key wastewater collection system issues:

Wastewater Pump Station - One key collection system parameter that should be coordinated at the Planning Area scale is the wastewater pump station. It is unclear whether a single or multiple pump stations would be needed (assuming the water reclamation facility is sited south of Pala Road). A single wastewater pump station serving Campus Park West, Meadowood, and the 328 EDUs from Campus Park (if required) could conceptually serve all these needs. The facility would then pump directly to the headworks of the water reclamation facility.

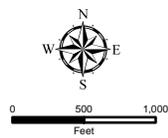
Access to Wastewater Infrastructure - Other properties identified in the Planning Area should have the ability to connect to the regional facilities. Although no specific improvements are noted herein, the development plans should not preclude this.

E. Water Reclamation Facility

The water reclamation facility is a critical component for the Planning Area. The water reclamation plant will treat wastewater to secondary standards in accordance with the Clean Water Act. In addition, the water reclamation facility will have tertiary facilities to create recycled water conforming to State of California Title 22 Standards. Siting the water reclamation facility is important. Multiple locations were conceptualized as part of the developer studies. The facility sited as part of this Feasibility Study is based on the larger Planning Area evaluated herein, which requires a capacity of approximately 0.50 to 0.55 million gallons per day. Figure 9 includes a conceptual layout.

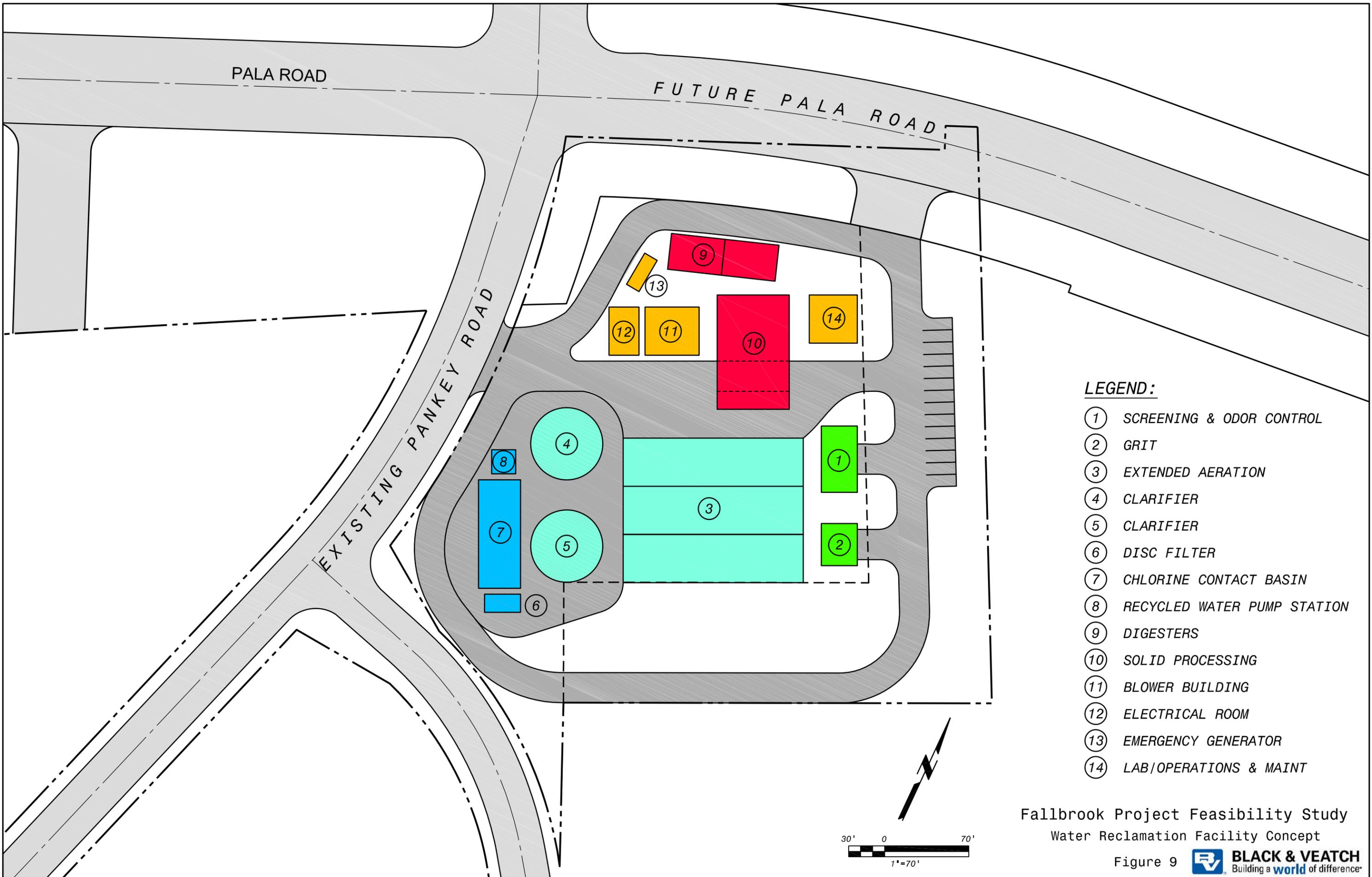


- Wastewater
- Site Boundaries
- Lot Lines
- Future Areas



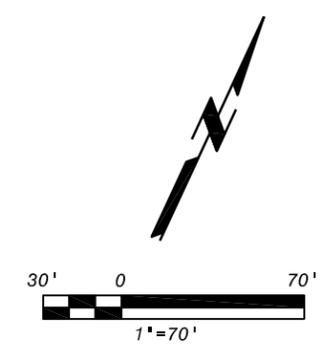
Fallbrook Project Feasibility Study
Wastewater Major Facilities

Figure 8 **BLACK & VEATCH**
Building a world of difference.



LEGEND:

- ① SCREENING & ODOR CONTROL
- ② GRIT
- ③ EXTENDED AERATION
- ④ CLARIFIER
- ⑤ CLARIFIER
- ⑥ DISC FILTER
- ⑦ CHLORINE CONTACT BASIN
- ⑧ RECYCLED WATER PUMP STATION
- ⑨ DIGESTERS
- ⑩ SOLID PROCESSING
- ⑪ BLOWER BUILDING
- ⑫ ELECTRICAL ROOM
- ⑬ EMERGENCY GENERATOR
- ⑭ LAB/OPERATIONS & MAINT



Fallbrook Project Feasibility Study
Water Reclamation Facility Concept

E.1 Process Selection

The wastewater treatment process selected was extended aeration (for secondary treatment) and cloth media filters followed by chlorination (for tertiary treatment). For plants of this size, extended aeration is a common approach used for secondary treatment and would likely meet the RWQCB water quality permit limits based on the limits listed in Table 12, which is an excerpt of Table 3-3 of the RWQCB Basin Plan for the San Luis Rey Hydrologic Unit, Bonsall sub area 903.12. The assumed processes are well suited for smaller sized plants, such as the one proposed for this project. Operating an extended aeration plant is simpler than other types of plants, which is important for smaller, more rural plants. Both Rainbow MWD and Valley Center MWD stated their desire for an extended aeration plant if they were to operate this facility.

Table 12
Excerpt from Table 3-3 of the RWQCB Basin Plan for San Diego County

Ground Water		Hydrologic Basin Unit Number	Constituent (mg/L or as noted)														
			TDS	Cl	SO4	%Na	NO3	Fe	Mn	MBAS	B	ODOR	Turb NTU	Color Units	F		
SAN LUIS REY HYDROLOGIC UNIT		903.00															
Lower San Luis	HA	3.10	800 ^r	300	400	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0		
Mission	HSA ^a	3.11	1,500 ^{cd}	500 ^{cd}	500 ^{cd}	60	45 ^{cd}	0.85 ^{cd}	0.15 ^{cd}	0.5 ^d	0.75 ^{cd}	none	5	15 ^d	1.0 ^d		
Bonsall	HSA	3.12	1,500^{cd}	500^{cd}	500^{cd}	60	45^{cd}	0.85^{cd}	0.15^{cd}	0.5^d	0.75^{cd}	none	5	15^d	1.0^d		
Moosa	HSA	3.13	1,200 ^r	300	400	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0		
Valley Center	HSA	3.14	1,100 ^r	300	400	60	10	0.3	0.05	0.5	0.75	none	5	15	1.0		

HA - Hydrologic Area
HSA - Hydrologic Sub Area (Lower case letters indicate endnotes following the table).

The following specialized process approaches may prove beneficial for the project depending on final wastewater flows, siting constraints and the water quality limits established in the RWQCB permit. These processes require a smaller footprint than the conventional extended aeration process, and were therefore considered less critical for siting purposes.

- **Aero-Mod SEQUOX®**– The Aero-mod system is a condensed extended aeration process. The system takes up less space than a conventional layout, and aims to use common wall construction to reduce costs. Valley Center MWD noted interest in this approach.
- **Bardenpho ®** – The Bardenpho process may be applicable if more stringent nutrient level limits are imposed by the RWQCB permit. The closest Bardenpho plant to this location is the 2.0 MGD Padre Dam Municipal Water District Santee Water Reclamation Facility, in Santee, California (approximately 30 miles south of the Planning Area).
- **Membrane Bioreactor (MBR)** – MBRs are becoming more common and integrate the membrane filtration step with the biological treatment processes, thereby eliminating the need for secondary clarification and tertiary filtration. For tertiary plants, this approach allows a more compact treatment plant footprint at the expense of added operational costs. Valley Center MWD currently operates an MBR plant, but would likely not allow a new plant using this approach if they were selected as the service provider.

E.2 Water Reclamation Plant Siting

Figure 9 includes a concept layout of the water reclamation facility, using the southeast parcel in the Campus West Park Development for this purpose. This parcel was previously identified as one of the preferred wastewater treatment plant sites in the Developer Studies. The site is the farthest from residential homes, is nearest to the bottom of the Planning Area drainage basin, and the site size and configuration appears well suited to the use (assuming all weather access can be provided as shown). The site will also need to be located above the 100-year floodplain, which appears achievable, but should be confirmed by the Developers. The water reclamation facility layout fits on this parcel, provided that certain elements (mostly paving) can be built in the limited building areas noted in the Campus Park West development plans. In addition, it is assumed that the easement bisecting the property will not be needed or used. These assumptions should be confirmed by the Developers.

Key siting considerations include ingress and egress from the site, the ability for solids handling trucks to maneuver through the solids processing facility, operational and maintenance accessibility, and aligning processes and components efficiently. The facility was laid out to generally flow east to west. The layout attempts to best use the limited topography changes to benefit plant hydraulics and efficiency. The more odorous processes (headworks and solids processing) were located towards the east or interior of the site. The influent wastewater pump station is assumed to be located offsite (see wastewater collection section for key issues).

One key element of the site is the potential need to provide a buffer between the facility and adjacent land uses. The Developer Study's note a 250 foot desirable residential buffer based on meetings with the Valley Center MWD. This buffer area is shown on Figure 10. Buffer limits and specific requirements will need to be defined via discussions with the selected service provider.

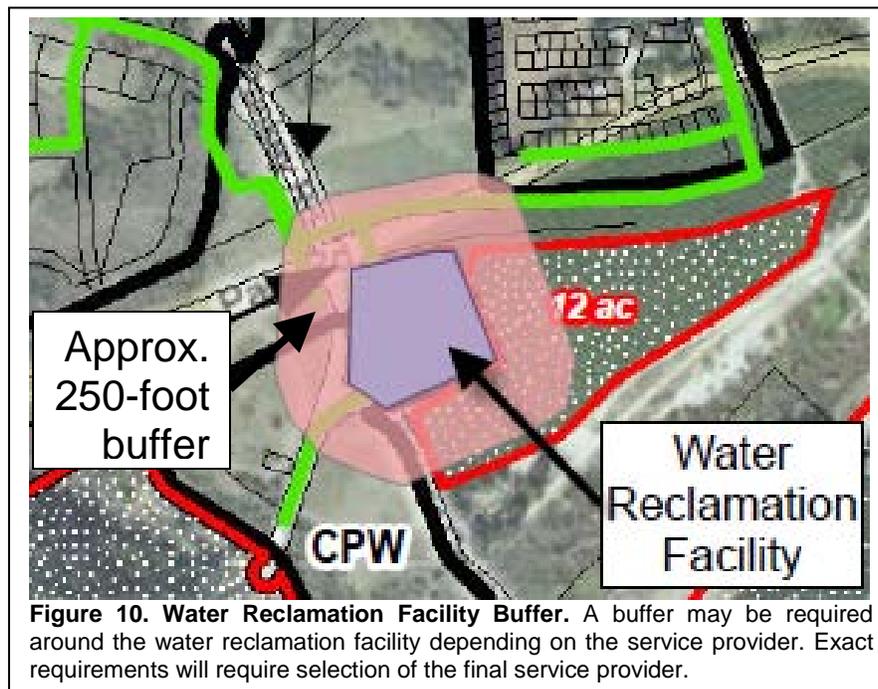


Figure 10. Water Reclamation Facility Buffer. A buffer may be required around the water reclamation facility depending on the service provider. Exact requirements will require selection of the final service provider.

Costs for this plant are estimated to be comparable to other similar plants. The layout and processes presented are based on a conventional treatment approach utilizing an n+1 design to meet CDPH Title 22 treatment reliability criteria. Multiple agencies in San Diego operate similar types of inland facilities, including extended aeration and tertiary treatment systems. These facilities are designed and operated to comply with the same or similar regulatory criteria. For a plant of this size, the proposed approach will provide reliable treatment capability with capital, operation, and maintenance costs in-line with similar facilities.

F. Disposal System

Disposal needs are some of the most challenging elements of this project. With a water reclamation system, disposal needs can be dramatically reduced, or eliminated depending on the total recycled water demand and seasonal timing of that demand. Based on the calculations developed in Tables 7, 8, 9, and 10, there is a need for disposal (beyond the recycled water system) since annual wastewater generation exceeds annual recycled water demands. In addition, the seasonal influence of recycled water demands will require greater disposal volumes, unless the excess recycled water is stored in seasonal storage ponds for use in the drier months when recycled water demands increase.

There are multiple approaches to address disposal for this project, all of which will be highly dependent on the permitting process and related effluent limits associated with the State of California Regional Water Quality Control Board (RWQCB). In addition, the selected service provider will likely have requirements and practices specific to their desired operation. Since these variables are unknown at this time, this Feasibility Study evaluates disposal based on the information provided in the Developer Studies, and Black & Veatch's opinion on probable options and possible permit conditions.

F.1 Disposal Approaches

Based on discussions with the service providers and permitting specialists, the following disposal and permit requirements appear likely candidates for this project:

- **Seasonal Storage** – A lined reservoir that stores excess recycled water in wet months for use in dry months. A form of seasonal storage is the RWQCB Failsafe storage. Managing water quality is an important operational element of these facilities.
- **Failsafe Permit Requirement** – The RWQCB typically requires failsafe storage of up to 84 days for reclamation facilities where there is no other way to dispose of the wastewater (such as an ocean outfall or percolation pond). This storage is used when wet weather causes recycled water use to dissipate below the reclamation plant output. The 84 days can be negotiated based on the amount of reuse and disposal capabilities.
- **Percolation** – Percolation ponds are unlined basins used to dissipate treated wastewater into the groundwater basin. Percolation ponds will likely have more stringent water quality limits, as listed in the RWQCB Basin Plan and via negotiation with the RWQCB during the

permitting process. Percolation ponds generally require less space than spray fields, but may require more treatment processes and expense to meet the water quality limits.

- **Spray Fields** – Spray fields allow application of treated wastewater to a field. Spray fields can be set up for irrigating agricultural crops, which provides a beneficial reuse. This beneficial reuse also reduces nutrient loading in the root zone, which may allow less intensive nutrient treatment at the water reclamation plant. Use of spray fields is generally limited to drier months (a disadvantage in this case where the disposal need is in the wetter months), but still may be possible. In addition, spray field approaches need to be established as a permanent method of disposal (i.e. the service provider may need to own the underlying land and lease it out for the agricultural and disposal uses).

F.2 Disposal Option Evaluation

Disposal options were evaluated in relation to the revised demands developed as part of this Feasibility Study. Table 14 summarizes different approaches and their effect on the disposal needs. The approaches were developed to bracket the possible disposal alternatives and to estimate the potential acreage needed for the facilities.

- **Option A: 84-Day Failsafe Storage** – This alternative assumes construction of 84-days of failsafe storage in accordance with RWQCB baseline requirements. The failsafe storage also provides wet weather seasonal storage, which could eliminate the need for supplemental potable water flows in the summertime. The net disposal volume required, after meeting all recycled water demands and maximizing beneficial use, was calculated to be 26.4 MG (with a peak month disposal rate of 0.25 MGD). Since annual recycled water production exceeds demands, percolation ponds, spray fields, or other disposal methods will be required by the RWQCB to dispose of excess flows. The area required for percolation ponds would likely be less than that required for Option B.
 - Option A seasonal storage/failsafe capacity = 42 MG or an 9.8 acre basin, 15-foot deep with 3:1 side slopes (does not include access roads). Of this volume, 28 MG would be used for seasonal storage. (15 feet is the California Department of Safety of Dams exception limit. Deeper basins may be possible without DSOD jurisdiction).
 - Option A disposal volume assuming seasonal storage = appears feasible within the planning area, but the firm totals cannot be determined based on available information.
- **Option B: Maximize Disposal/No Storage** – This alternative assumes an approach that maximizes disposal with little to no failsafe/seasonal storage (depending on final permit negotiations). Since the disposal need is in the winter months, percolation ponds were assumed in lieu of spray fields.
 - Option B seasonal storage/failsafe capacity = none
 - Option B disposal volume = appears feasible within the planning area, but the firm totals cannot be determined based on available information.

Table 14
Disposal/Seasonal Storage Options

Component	Units	A	B	C	D
		RWQCB 84-days storage, dispose excess	Maximize disposal, no storage	Match storage to demands, dispose excess	Increase reuse to eliminate disposal
Nominal WRF Recycled Water Capacity	MGD	0.50	0.50	0.50	0.50
Average Annual Recycled Water Demand	MGD	0.38	0.38	0.38	0.46
Potable Water Supplementation	MG	0.0	28.0	0.0	0.0
Disposal and/or Storage Needed	MG	54.4	54.4	54.4	46.0
Regulatory Storage Requirement	Days	84.0	0 (negotiated)	56 (negotiated)	84.0
Regulatory Storage Requirement	MG	42.0	0.0	28.0	42.0
Regulatory Storage Used for Seasonal Storage	MG/ acres	28.0/6.8	0.0/0.0	28.0/6.8	46.0/10.8
Total Average Yearly Disposal Volume	MG	26.4	54.4	26.4	0.0
Peak Month Disposal (w/o seasonal storage)	MGD	0.38	0.38	0.38	0.00
Peak Month Disposal (with seasonal storage)	MGD	0.25	0.38	0.25	0.00
Supplemental Potable Water Requirement		None	Highest	None	None
Storage Volume Requirement		Highest	Lowest	Moderate	Highest
Disposal Volume Requirement		Moderate	Highest	Moderate	None
Beneficial Use		Moderate	Lowest	Moderate	Highest

Notes:

- Beneficial reuse of disposal options increases if agricultural spray fields are used in lieu of percolation ponds.
- Option A and C monthly disposal totals estimated by sending a maximum of 3.9 MG to seasonal storage reservoirs per month
- Seasonal storage acreage is surface water area, assuming 15 foot depth, 3:1 side slopes.

- **Option C: Storage Matched to Demands** – This alternative assumes that the RWQCB’s typical failsafe storage volume could be negotiated downward to more closely match the actual seasonal storage needed based on the provision that there would be a disposal mechanism equal to the excess treated wastewater available in the winter months. Actual storage volume required may be greater depending on discussions with the RWQCB and final regulatory requirements. Percolation ponds would also be required, similar to the Option A.
 - Option C seasonal storage/failsafe capacity = 28 MG or a 6.8 acre basin, 15-foot deep with 3:1 side slopes (does not include access roads). (15 feet is the California Department of Safety of Dams exception limit. Deeper basins may be possible without DSOD jurisdiction).
 - Option C disposal volume = same as Option A, less than Option B
- **Option D: Increase reuse to match disposal needs** – This alternative assumes finding additional reuse customers (which could include agricultural spray fields) to increase recycled water demands to match the average annual wastewater available. With sufficient seasonal storage, beneficial use is maximized and no other disposal is needed during typical years (i.e. all the excess treated wastewater in the wintertime is stored and used in the summertime). The resulting seasonal storage volume is slightly greater than the 84-day RWQCB failsafe storage requirement in Option A. However, no other disposal areas would likely be required. This approach may require serving customers in the Rainbow MWD service area, or developing agricultural spray fields in the Pala Gateway or County of San Diego properties.
 - Option D seasonal storage/failsafe capacity = 46 MG; or a 10.8 acre basin, 15-foot deep with 3:1 side slopes (does not include access roads). (15 feet is the California Department of Safety of Dams exception limit. Deeper basins may be possible without DSOD jurisdiction).
 - Option D disposal volume = none (unless additional reuse includes spray fields which is a form of disposal)

F.4 Disposal Locations

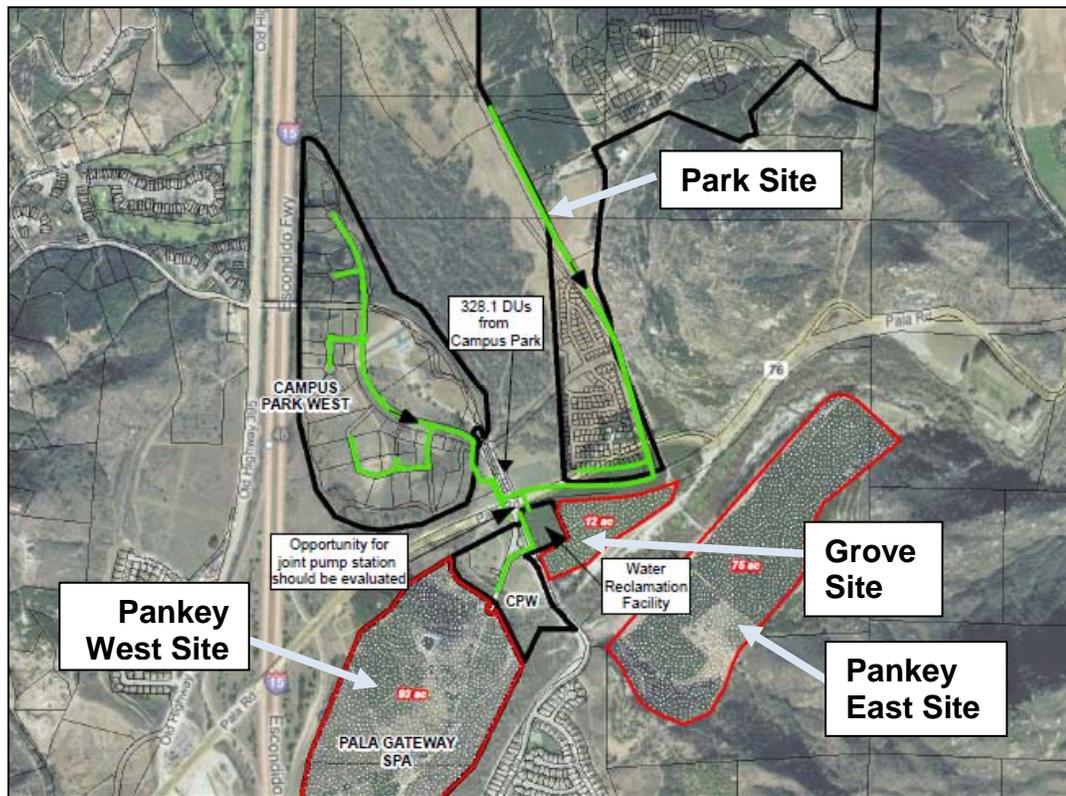
Six wet weather basins/disposal locations were identified in the Wastewater Service Analysis for Meadowood. Four of these locations are in the Planning Area, and are shown on Figure 11. The Park Site was eliminated in the Meadowood Studies due to low soil permeability. The Grove Site and Pankey East Site, both owned by the County may be appropriate disposal and seasonal storage locations.

F.5 Disposal Sizing Conclusions

The four disposal options outlined above were assessed in regards to the available land based on information provided in the Development Studies. Table 14 also lists a qualitative evaluation of the options. Each option appears feasible provided that the land totals above can be identified and provided by developments in the Planning Area, and within the Bonsall HSA. Each approach has

varying benefits and impacts. Ultimately, the final option will require service provider selection and permit conditions from the RWQCB. One last, but important note is that hydrogeologic exploration and a groundwater model are needed to adequately assess disposal basins – particularly wet weather effects and the potential for mounding, which could limit disposal during critical times.

Figure 11
Disposal Locations



G. Individual Project WRF Scenario

Although the County prefers that the proposed developments in this area connect to a single Regional WRF and supporting infrastructure, it should be noted that if one project is not approved or not built, the construction and implementation of a Regional WRF may not be necessary or feasible. Therefore, an allowance may be necessary for the installation and construction of an individual project WRF. Each development proposal for Meadowood and Campus Park West includes Water and Sewer Studies that address the installation of a WRF that may service the individual project.

If one project is approved and the second not approved or built, there may be a period of time when there may not be a demand for the construction of a Regional WRF. In that circumstance, each developer may be permitted to install a project-serving WRF, and supporting infrastructure, that will be decommissioned upon the construction and operation of the Regional WRF. As part of each project's Major Use Permit (MUP) governing the individual WRF, the Meadowood and Campus Park West developments would be conditioned to cease operations of the project-specific WRF, to remove it and to connect to the Regional WRF. The serving municipal district would be bound to comply with this requirement, as the condition will be included with the WRF MUP.

VII. Study Conclusions

The following summarizes the overall conclusions of the study:

- The Projects appear feasible based on this Feasibility Study. A cooperative approach between the various property owners would benefit all parties involved. Each development could provide needed elements to make the overall plan work.
- Identifying the service provider must be determined to finalize the requirements for the project. Although this study does not formally recommend a service provider, it is the preparer's opinion that the Valley Center MWD seems the most logical choice due to three key parameters – willingness to serve, experience with municipal service in all elements needed for these projects, and being an existing member of the San Diego County Water Authority.
- Potable water and recycled water demands, and wastewater flows are interrelated for this type of project area. Finalizing these values will rely on service provider selection (which affects criteria), firm definition on what conservation measures will apply (affects all demands and flows), and selection of disposal approaches (affects whether supplemental potable water is needed or total recycled water demands).
- Siting issues are particularly important for the major infrastructure components. The largest components are the disposal ponds/seasonal storage reservoirs and the treatment plant site. The potable water and recycled water tanks and the flow control facilities also need adequate space.
- Water treatment and disposal approaches are particularly important, and cannot be finalized until a service provider is selected and the RWQCB permitting process is initiated. This is a critical step. A more detailed disposal analysis will be required that looks closer at the groundwater hydrology and mounding potential related to disposal.
- In the event that demand for the Regional WRF is not available, as described in Section G above, the County may permit the submittal of an MUP application for the individual projects, to construct a project-serving WRF. The MUP will be conditioned upon proportionate contributions to site and construct the Regional WRF, as well as to connect to that Regional WRF, when such connection is feasible. Additionally, the individual project WRF will be decommissioned, in compliance with the requirements of the serving municipal water district.

APPENDIX A
Potential Service Provider & LAFCO Meeting Minutes

Meeting Memorandum



Project: Rainbow Municipal Water District
Subject: Fallbrook Project
Client: Rainbow Municipal Water District
Meeting Date: Thursday, 8/26/10
Location: Rainbow Municipal Water District

Page: 1 of 2
Issue Date: 9/8/10
BV Job No. 169077

Attendees:

Rainbow Municipal Water District
Brian Lee

Black & Veatch (B&V)
James Strayer
Dave Cover

County of San Diego
Dennis Campbell (phone)

1. Fallbrook Project

- Rainbow Board sentiment still appears against growth and the projects. The Board has not supported annexation in the past. The group discussed opportunities and barriers.

2. Water

- RMWD will serve portion within district for CPW for water. Service would be as shown in the PBS&J study with pressure reducing stations at Pala Road/SR76.
- Rainbow Valley groundwater and San Luis Rey groundwater were noted as possible groundwater sources.

3. Reuse – While it was recognized that the desire to serve the developments remains doubtful, there was discussion on possible integration of two RMWD facilities into the development's reuse system.

- Beck Reservoir. A large 204 million gallon uncovered reservoir, originally developed for agricultural uses. It is not under Department of Safety of Dams (DSOD) jurisdiction until residential uses surpass 50% (which is coming). The reservoir has a single inlet outlet and its size can create water quality issues. The reservoir needs significant work (\$30m to \$40m) and is currently bigger than needed. RMWD suggested a possible partnership to help fund improvements and bring the reservoir into compliance. RMWD has also conceptualized a water treatment plant at Beck.
- Bonsall Tank - 6-8 MG empty reservoir in Bonsall right alongside water authority. 5 MGD short in south zone. Surrounded by AG with raw water next to right. Plus, across the street from VCMWD.

- These tanks and usage may offer opportunities for a joint use agreement between RMWD and the service provider for the area.

4. Wastewater

- System designed for 0.75 million gallons per day (MGD).
- RMWD upgraded their Pump Station to handle 1.0 MGD, then again to 1.5 MGD.
- Capacity at San Luis Rey Wastewater Treatment Plant (WTP) at 1.5 MGD. This total includes infill and infiltration, and therefore has a dry weather capacity of 1.35 MGD.
- System is not sized for daily flow at build-out. Some lift stations are old and hydraulically limited. Right now probably around 0.95 to 1.0 MGD capacity
- Have sold capacity for around 6000 EDUs. Through buy back has reduced to 5900. RMWD is trying to get down to 5600 EDUs. System capacity and Boards desire is to be around 1.0 MGD.
- Campus park Agreement. RMWD can take back CPW EDUs if not used by 2012.
- Also mentioned Campus Park plan to pump into Rainbow then to private system (Dexter Wilson report). Dave Davis is Campus Park point of contact.

5. Treatment

- RMWD's sewage flows to the San Luis Rey Wastewater Treatment Plant in Oceanside. Rainbow discussed a 1 MGD skid mounted package plant concept with storage.
- RMWD is comfortable with the disposal potential. RMWD felt the challenge would be with conformance with recycled water regulations.
- RMWD noted multiple opportunities to use reuse water, including golf courses (Golf Course America, Pala Mesa and Fallbrook) and agricultural growers – particularly the growers in the south (the growers to the north mostly grow avocados and citrus which are more sensitive to the higher salt levels in recycled water).

6. Other Items

- RMWD staff provided Black & Veatch with an electronic copy of the District's 2006 Water Master Plan.

Meeting Memorandum



Project: San Luis Rey Municipal Water District
Subject: Fallbrook Project
Client: San Luis Rey Municipal Water District
Meeting Date: August 26, 2010
Location: County of San Diego, Teleconference

Page: 1 of 1
Issue Date: 9/8/10
BV Job No. 169077

Attendees:

<u>San Luis Rey MWD</u>	<u>Black & Veatch (B&V)</u>
Victor Pankey, President (phone)	James Strayer
Susan Trager, General Council (phone)	Megan Meachum (phone)

County of San Diego
Dennis Campbell

Teleconference

1. **Service Potential and Interest** – The San Luis Rey Municipal Water District still has interest in activating their powers and serving the developments.
2. **Master Plan and EIR** – Susan referred to the 2006 SLRMWD Master Plan and EIR as having technical reference material. Subsequent to the meeting, the County provided electronic copies to Black & Veatch.
3. **Water Supply** - Initial plan was to annex into the San Diego County Water Authority and the Metropolitan Water District. The District is now looking at groundwater options.
4. **Financing** - The District has a pay as you go philosophy and does not want to build something not used by development.

Meeting Memorandum



Project: Valley Center Municipal Water District
Subject: Fallbrook Project
Client: Valley Center Municipal Water District
Meeting Date: August 26, 2010
Location: Valley Center Municipal Water District

Page: 1 of H
Issue Date: 9/8/10
BV Job No. 169077

Attendees:

Valley Center Municipal Water District
Wally Grabbe, P.E.

Black & Veatch (B&V)
James Strayer
Dave Cover

County of San Diego
Dennis Campbell (phone)

1. Service Provider Update

- Wally summarized VCMWD's position (from Gary Arant) that while the District is not looking to expand their service area, they would consider taking on the Fallbrook project provided they were the appropriate service provider. He noted there is some Board support if this was the case.
- The Developers would need to take care of all requirements to annex into the San Diego County Water Authority and Metropolitan Water District.

2. Water

- Overall system - VCMWD noted no critical gaps in the proposed plan.
- Piping & Pumping - VCMWD did note that reliability is important and the layout would need to address appropriate levels of redundancy.
- Reservoir - Regulation capacity and days of storage are important to prevent rejecting water at the aqueduct connection and ensuring that the system can accommodate a maximum of two flow changes per day from SDCWA.

3. Wastewater Treatment

- VCMWD has two existing wastewater treatment plants, with experience dating back to the 1970's.
 - **Lower Moosa Canyon** - The Lower Moosa Canyon plant is in the Lawrence Welk Resort area. Treatment was previously provided by multiple smaller plants. It now is a conventional plant with headworks and an extended aeration process with a recently added

anoxic zone. It is a secondary plant that disposes effluent using percolation ponds. Solids are handled using a centrifuge, disposed of in a local landfill. Belt press and new centrifuges technology would be considered in other plants. The equipment is old, but has worked fine. The 40/50 horsepower motor was noted as drawing a lot of power. Disinfection is achieved by chloramination, with material provided via bulk deliveries. VCMWD is open to onsite generated disinfection approaches.

- **Woods Valley Plant** – The Woods Valley Plant is a 0.070 MGD (70,000 gpd) MBR plant. The plant produces recycled water and delivers it to the golf course. The plant has a 45 day emergency wet weather basin. This amount was negotiated down from the normal 84 to 90 days storage based on mass balance calculations and the large amount of irrigation for disposal. The District's experience with the MBR system has not been positive. Current expansion plans include use of Aero-Mod process in lieu of addition MBRs.
- **Other Proposed Plants** - Other plants that have been looked at include: North Village, Lilac and Live Oak (now withdrawn)
- **Process** – VCMWD is currently looking at the Aero - Mod process. The process is a form of extended aeration. In general, there was agreement that an extended aeration process would be appropriate for a new plant. The Aero – Mod process is of interest to VCMWD since it is compact and includes the clarifiers. For the layout of the proposed Fallbrook Projects treatment plant, a more conventional extended aeration process was discussed. A more conventional layout would provide a footprint size that would not be reliant on a proprietary process layout and was therefore agreed to be a good approach at this stage. *See Lower Moosa Canyon for additional process considerations.*
- **Disposal** - Agricultural users were noted as being acceptable disposal concepts, along with spray fields, provided that the use does not ultimately change. To the degree practical, beneficial reuse was noted as preferred over spray fields for disposal only. The need to have ownership of this land and dedicated use requirements were discussed (including leasing land for this purpose for agricultural use while preventing it from future development that would not allow disposal).
- **Treatment Phasing** – Phasing was discussed as a critical issue. Initially, the developments will have low flow challenges. The possibility of interim capacity or a temporary plant was discussed, but it was also noted that there would need to be assurances to make sure the ultimate plant site was built and financed to meet District standards. The County noted concerns about interim operation of a temporary plant and the need to make sure the final plant is built to appropriate standards. It was also noted that any interim plant should be located on the permanent plant site. The Woods Valley cleanup and replacement agreement, which included bonding, was cited as an example. One potential option presented by VCMWD includes transfer of initial low flows to RMWD (within their

existing capacity limits) with future use of the associated forcemain to transfer flows back to the new WWTP if necessary to help RMWD manage sewage flows within their existing limits.

- **Treatment plant buffers** – The District noted the need for a 250 ft. buffer and all weather access

Meeting Memorandum



Project: LAFCO
Subject: Fallbrook Project
Client: Local Agency Formation Commission
Meeting Date: August 26, 2010
Location: County of San Diego

Page: 1 of 4
Issue Date: 9/8/10
Revision Date: 10/4/10
BV Job No. 169077

Attendees:

LAFCO
Ingrid Hansen

Black & Veatch (B&V)
James Strayer
Megan Meachum (phone)

County of San Diego
Dennis Campbell

-
1. **General Annexation Issues and Process** – The LAFCO process related to this project was developed in the meeting and is provided as Figure 1 in these meeting minutes.
- **MSR/SOI Step** - The Municipal Service Review (MSR) is a study that makes determinations. Based on these determinations, LAFCO staff can make recommendations to changing an agency's Sphere of Influence (SOI). If the Commission approves the recommended sphere amendments and territory has been included in an agency's sphere, the proposed annexation or reorganization can be submitted to LAFCO.
 - **Environmental Documentation** – The MSR/SOI evaluation requires a certified EIR addressing the requirements of that process (which can differ from other requirements – most notably in this case, the County's Land Development review process and project-specific CEQA review). The SOI EIR evaluates the viable planning area, identifies whether sufficient resources exist, and addresses whether existing services would be diminished.
 - **County approval related to LAFCO process** - As noted on Figure 1, there is a sequencing challenge related to reviews and approvals specific to the Meadowood project. LAFCO's SOI process requires CEQA environmental review, which in this case, needs to be included within the project-specific EIR. Therefore, LAFCO will not make an SOI determination without a County certified EIR. Based on this, the County process for approving the development EIR may require determinations to show compliance with the MSR/SOI process. Coordination between the County and LAFCO is required to work through how to complete these steps. Preliminary determinations may be appropriate to aid completion of

the County review, which would then allow the remaining processes to occur.

- **Non-contiguous boundaries** - One key question raised by the County was whether non-contiguous property could be annexed (portions of Campus Park West are surrounded by the Rainbow Municipal Water District). LAFCO staff cited that for water/wastewater services, it can occur, provided that the property is first covered under the service provider's Sphere of Influence. The Municipal Service Review/Sphere of Influence analysis process evaluates this sphere of influence issue.
- **San Diego County Water Authority (SDCWA), Metropolitan Water District (MWD) Annexations** –Those portions of Campus Park West and all of Meadowood that are not within the San Diego County Water Authority will need to be annexed. The annexation process starts with a pre-annexation agreement with the SDCWA. SDCWA and MWD conditions become LAFCO conditions. LAFCO must have SDCWA and MWD certify that the conditions are met prior to recording the annexations. These processes were conservatively estimated at one year each, or two years total.

2. San Luis Rey Municipal Water District (SLRMWD) Considerations:

- **SLRMWD MSR/EIR** - The SLRMWD process included a working group and environmental evaluation. LAFCO indicated some members of the working group and the developers felt the sphere of influence outlined in the study was too aggressive and covered more area than it should have, including land within the Rainbow Water District and area well to the east of Meadowood and Campus Park West. After the EIR was initially certified, three lawsuits were filed. LAFCO cited the suing parties as Rainbow MWD, Pala Indian Tribe, and the Endangered Habitats League. As a result, on February 20, 2008, the SLRMWD voted to settle the lawsuits and on March 19, 2010, the Program EIR was de-certified and all findings thereto rescinded.
- **Zero Sphere** - LAFCO also conceptualized providing SLRMWD with a "zero sphere." This would have allowed the agency to remain, without having any set territory within its sphere of influence. This arrangement would allow individual areas to annex into the selected service provider whose sphere would ultimately overlap the SLRMWD's service area. This concept was initially considered, but has not yet been agreed to by SLRMWD.
- **SLRMWD** - In LAFCO's opinion, service from SLRMWD would likely require the following:
 - Provide a certified EIR (Programmatic EIR specific to LAFCOs requirements for a Sphere of Influence Update). This would likely require successful defense of the lawsuits or changes to their master plan and proposed service area. [As a note, the SLRMWD indicated, by letter dated February 18, 2009, to the County that

without developer money to cover the preparation costs of the environmental and MSR planning documents, as well as indemnification against potential lawsuits, the SLRMWD is not able to re-initiate activation of its latent powers]. Obtain appropriate determinations in the MSR/SOI process, which would need to be modified if the service plan or areas served were to change.

- Activate their latent powers for both water and sewer service (with LAFCO approval) and begin the annexation process [see note above].
- Assuming the conditions above could be met, become a member of the San Diego County Water Authority (SDCWA), requiring annexation into the SDCWA and the Metropolitan Water District (MWD).

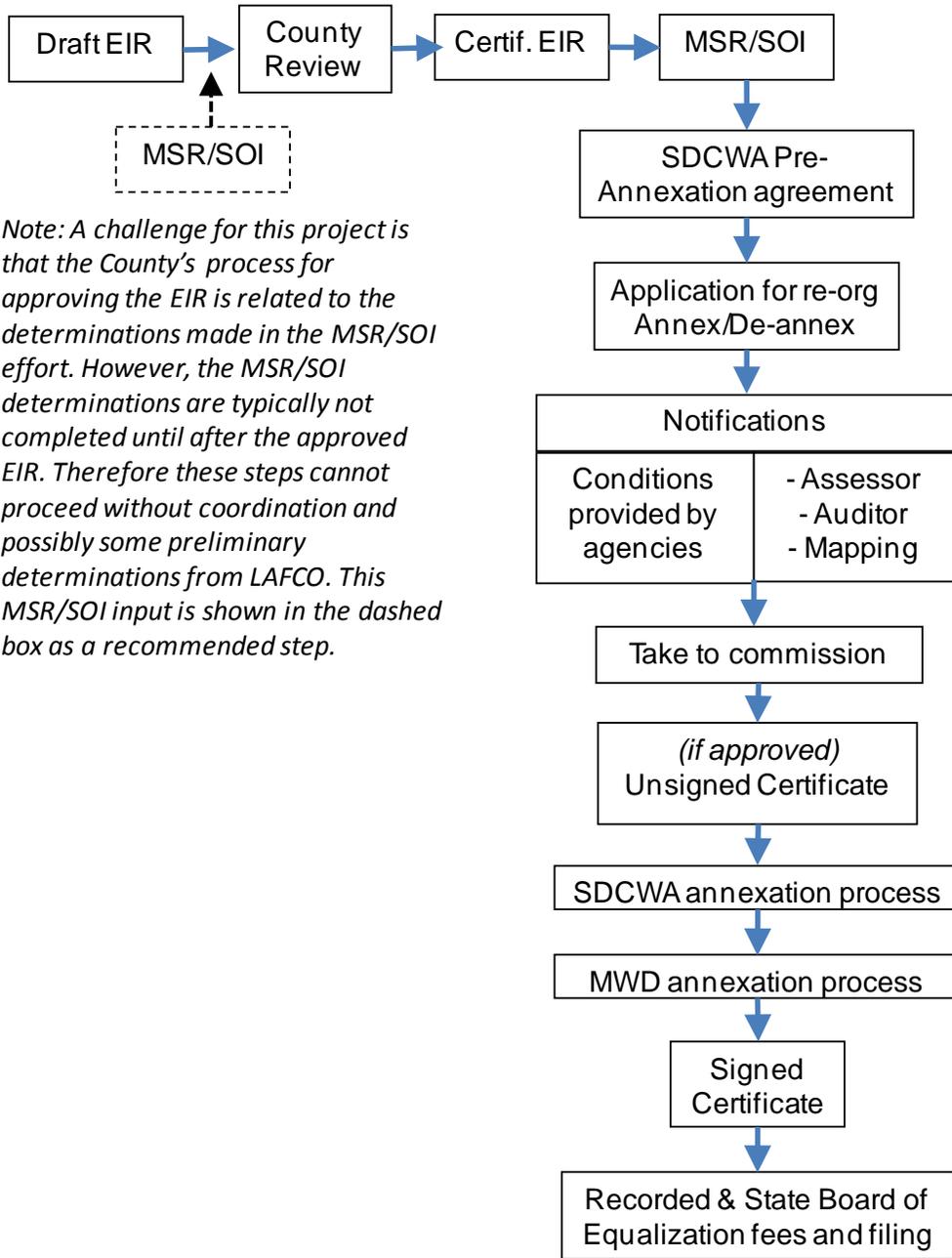
3. Rainbow MWD (RWMD) - In LAFCO's opinion, service from RWMD would likely require the following:

- Obtain Rainbow MWD Board support to serve the projects
- Complete EIR for sphere update and obtain approval of MSR/SOI Update Study that amends Rainbow MWD's sphere to include the two proposed developments
- Annex portions into SDCWA/MWD
- Annex areas outside RWMD, into RWMD

4. Valley Center MWD (VCMWD) - In LAFCO's opinion, service from VCMWD would likely require the following:

- Obtain Valley Center MWD Board support to serve the projects
- If necessary, update the Project EIR to meet LAFCO SOI requirements. It was noted that Pardee is leading this effort currently, and that Pardee's counsel is aware that the study must be regional in nature.
- Complete MSR/SOI. If the MSR/SOI info from the 2006 MSR/SOI Study is deemed to remain current, then it would likely require little effort to complete, and the determinations were expected to be more straightforward to make.
- Annex portions into SDCWA/MWD
- Annex into VCMWD

**FIGURE 1
LAFCO ANNEXATION PROCESS**



Note: A challenge for this project is that the County's process for approving the EIR is related to the determinations made in the MSR/SOI effort. However, the MSR/SOI determinations are typically not completed until after the approved EIR. Therefore these steps cannot proceed without coordination and possibly some preliminary determinations from LAFCO. This MSR/SOI input is shown in the dashed box as a recommended step.

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Response to Comments

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2nd Submittal Comments and Responses

Pardee Comment/Responses

Comment: Page 1, Section II, First Paragraph, First Sentence: The County's review process for **providing water and wastewater service to** new development is governed by the Public Facility Element of the San Diego County General Plan and adopted Board Policies.

Response: Edit made

Comment: Page 2, Section II, Last Sentence: Neither of the projects will obtain final **subdivision map** approval **from the County**, without first obtaining Project Facility Commitment Forms, from a serving MWD.

Response: Edit made

Campus Park West Comment/Responses

1. Demand estimation

Comment: We understand the need for consistency and conservativeness of the water and recycled water demands and the sewage generation rate, given all the unknowns, including the service provider. We have noted the the reduction in Campus Park West potable water demand from 201,101 gallons per day (gpd) (1st Draft) to 181,651 gpd, because of lower unit demand factors for commercial and industrial uses, it is still approximately 50% more than the 121,135 gpd which was reported in the Campus Park West Water, Recycled Water, and Sewer Study (CPW Study) (PBS&J, 2010).

When the Draft Feasibility Study is approved by the County, the preferred water purveyor may determine that these more conservative unit demand factors must be utilized. Although, the Draft Feasibility Study notes that the unit demand factors will be determined by the service provider; we request the County reconsider our Project specific unit demands for the analyses since, in general, the County's consultant agrees that the design criteria is conservative. Furthermore the conservative design criteria will oversize the water infrastructure.

Response: The demand estimation approach is clearly stated as being applicable only to the purposes of this study. The totals should not be considered an opinion what the actual demands will be, only an estimation of demands for gross infrastructure sizing based on the information available and no selected service provider. The demands remained unchanged in this submittal.

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2. WRF Siting.

Comment: The proposed regional water reclamation facility has been sited within the CPW development in the Draft Feasibility Study. The County should be aware that at least five potential sites were identified for the water reclamation facility in the Wastewater Service Alternative for Meadowood (RW Beck, 2009), with the Meadowood site being the preferred option. No mention was made of this potential site or any other suitable sites in the Draft Feasibility Study. It was our understanding that a part of the scope of work was to evaluate alternative plant sites and recommend a preferred site from a regional perspective. Maybe this was done and the background information was not included in the report.

We believe it is prudent for the County to consider those sites identified in the RW Beck study from a regional service perspective. In particular, the study mentions “the Grove” site which is the 12-acre parcel, identified as County land, east of the CPW project as a potential candidate. We feel additional site selection analyses should be presented prior to identifying the CPW site as the recommended site.

Response:

- a. **Reference to the RW Beck Study.** *The CPW study was produced later than the RW Beck Study and was therefore considered more relevant to site selection. The CPW report, Figure 5-1 included two sites, one in Southern Meadowood and one in CPW.*
- b. **Scope of this Feasibility Study.** *The scope of this study included “Wastewater Reclamation Facility (WRF) Evaluation – Based on demands and criteria provided in the existing developer studies identify a location and layout a treatment plant site showing major components based on the preferred service provider’s preferences.” The scope did not include an alternatives analysis. Other sites could be alternatives provided that they are not located in the floodplain. The size would remain roughly the same regardless of location, as long as adequate access is provided.*
- c. **Why we provided a layout on the CPW Site.** *The CPW site was, in the report preparer’s opinion, the more logical a site for the WRF of the two sites proposed in the CPW study. The CPW site appeared more suited for this purpose due to:*
 - *It is further downstream*
 - *it isn’t majorly impacted by the Pala Road/SR-76 realignment*
 - *it is further from residential units*
 - *it’s square site is more suited towards a treatment plant layout*
 - *it is more contiguous to the larger parcels that are potential recharge/storage locations*

APPENDIX B Response to Comments

3. WRF site

Comment: The conceptual site layout on Figure 9 suggests that there is no available land for other development on the water reclamation plant parcel. We would like the County to consider the potential for some site development on the parcel, through refinement of the plant lay-out.

We understand that the County's consultant is reviewing the storage/disposal options. We agree that the percolation ponds should be in close proximity to the water reclamation facility. Based on the limited space available at the CPW site, the percolation ponds will probably have to be located offsite.

Also we would like to note, that Pankey Road is being realigned by CPW and the new alignment should be shown on all graphics; especially Figure 9.

Response:

- a. **Paragraph 1.** *A more specific request is required to address possible modifications to the WRF. The current layout occupies the whole area, and per paragraph 3, below, the site will be further constrained based on the Pankey Road realignment. There are smaller footprint treatment plant options, but those will be subject to the service provider's approval, and may cost more depending on the system. Since an alternative process approach cannot be confirmed at this time, a more conventional treatment plant approach remains more applicable based on our meetings with the potential service providers.*
- b. **Paragraph 2.** *As suggested, the percolation ponds will most likely not fit on the WRF site as shown. While the projects appear feasible, the sizing and location of percolation ponds cannot be finalized without further groundwater analysis. This is an important issues and is noted in the disposal and conclusions section of the 3rd submittal.*
- c. **Paragraph 3.** *We received a site plan showing the proposed realignment of Pankey Road. We could revise the figure as suggested. This would require moving some treatment structures into the south and east portions of the site. We understood these areas to be limited in relation to buildings and structures per the previous CPW site plan sent to us. We can modify the figure to the new site plan layout, provided that we can move structures into these areas and we adjust the scope accordingly to allow this change.*

4. Buffer zone around the WRF

Comment: Note that on Figure 8 the buffer zone appears to be shown for a Meadowood water reclamation site, although there was no mention of it in the text. The shading on Figure 10 should be clarified to more clearly depict which is the 250 feet buffer zone. Also, the buffer zone discussions which we have been a part of were all in the context of a buffer zone to residential uses only. Please confirm that the buffer zone is not required for other land uses.

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Response: Figure 8 and 10 include background hatching from the CPW report. We will try and extract that from the graphic in the third submittal. When we met with the VCMWD we understood the buffer to be applicable to all land uses. We will request a clarification from Valley Center regarding this and incorporate into the third submittal if we receive a response in time.

5. Seasonal Storage

Comment: As you are aware the CPW Study did not include seasonal storage, however percolation ponds were identified as a disposal method. The Draft Feasibility Study introduced seasonal and disposal storage as potential benefits in managing the recycled water. As part of the 3rd Draft we would like an indication of where this storage would be located as well as estimated cost.

Response: Both percolation and seasonal storage were looked at since both were proposed in at least one of the development studies. They both have merits and the final approach will be highly dependent on RWQCB permitting requirements. We also want to note that seasonal storage would reduce the overall water demands by reducing potable water supplement needs (an important issue for CPW based on review comment #1, above). Percolation ponds do not provide this potable water offset. Regarding siting, seasonal storage has been roughly sized in the 3rd submittal, but not sited beyond conceptualizing that these facilities would be co-located with, or replace the percolation ponds. Cost estimates for disposal facilities are not within the scope of this study.

6. County SD support

Comment: In Table 1, under the “County of San Diego” column, the “intent to serve” is presented as “Unknown”. Has County the staff considered any position with regard to providing services such that this should be updated in the report?

Response: While there is some support from County staff (particularly with possible wastewater service), it has not been fully vetted with County management to understand whether this is supported. One minor modification was made to Table 1.

APPENDIX B Response to Comments

1st Submittal Comments and Responses

Campus Park West 1st Submittal Comments and Responses

1. It was noted on page 5 that the current Rainbow Water District Board of Directors has no intention of providing service to the Fallbrook Projects. We are keenly aware of this situation, however, we hope the County recognizes that the policy and opinions of the current Board members should not necessarily influence the technical findings and recommendations of which agency provides the most efficient service. Future circumstances of the District, such as Board member changes, may revise their current position. *RESPONSE: We agree and if this situation changes the service provider matrix could be updated*
2. In its summary of potential water purveyors, we want to be sure it is duly noted that SLRMWD, as we understand, is only a groundwater management district and provides no retail services. Significant measures would need to be undertaken to not only activate latent powers, but also to form a retail agency responsible for all aspects of utility service. *RESPONSE: The team feels that Table 1, Agency Experience with Municipal Systems, and the bullets under Section V address this.*
3. To ensure clarity of the tables and text, the word “potable” should prefix “water” where necessary. *RESPONSE: This change will be made to add clarity.*
4. We believe the potable water use factors used in Table 6 to determine the regional residential water demands are on the conservative side based on the prior work conducted for the Campus Park West Project and a need to develop realistic water use factors given the water supply picture in San Diego County. As a result the Draft Feasibility Study increases the Campus Park West potable water demand from 121,135 gpd to 203,101 gpd which is approximately a 70 percent increase.

Assuming three persons per dwelling unit (DU), single family use rate of 500 gallons per day per DU (gpd/DU) and the multi-family use rate of 400 gpd/DU equates to 167 gpd per capita (gpcd) and 133 gpcd, respectively. These demand factors are much higher than what is currently being used, especially in light of the current drought and water supply picture. For reference, excerpts from the Handbook of Water Use and Conservation (Vickers, 2001) of the water demands for the typical household are presented in Table 1. A typical per capita potable water demand is 69.3 gpcd without conservation and 45.3 gpcd with conservation which is about half of water demand for the regional facilities.

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**Table 1
Average Household Water Use¹**

Use	No Conservation		With Conservation ²	
	Gallons per Capita	Percentage of Total Daily Use	Gallons per Capita	Percentage of Total Daily Use
Showers	11.6	16.80%	8.8	19.50%
Clothes Washers	15	21.70%	10	22.10%
Dishwashers	1	1.40%	8.2	18.00%
Toilets	18.5	26.70%	0.7	1.50%
Baths	1.2	1.70%	1.2	2.70%
Leaks	9.5	13.70%	4	8.80%
Faucets	10.9	15.70%	10.8	23.90%
Other Domestic Uses	1.6	2.20%	1.6	3.40%
Total	69.3		45.3	

1. *Handbook of Water Use and Conservation*, Amy Vickers, 2001.
2. By installing more efficient water fixtures and regularly checking for leaks, households can reduce daily per capita water use by about 35% to about 45.2 gallons per day.

The water demand of 57.5 gpcd used in the Campus Park West Water, Recycled Water, and Sewer Study (CPW Study) (PBS&J, 2010) we believe is within the range of the household use presented in Table 1. While the higher 69.3 gpcd may be used for single family DU, the demand of 57.5 gpcd appears reasonable for the multi-family DU since there is no significant potable water irrigation (all on recycled water).

We recognize, at the planning level, a need to develop uniformity and to also maintain a level of conservativeness; however, we request consideration for using our previously derived unit water factors. Because of the need to develop new or offset water supplies, this potable water demand becomes extremely important to the Campus Park West development offset. *RESPONSE: While the study team generally agrees with the points made above, it is important to note a few points regarding unit demands, the proposed developments, and the purpose of this study in relation to the individual development studies. We agree that current trends have shown water usage is lower than most agency criteria. We also agree that conservation will continue to be promoted in the southwest and drive unit demands lower. On the other hand, the economic factors influencing current water demands are not permanent and will likely show some increases over time as an economic recovery is established. More importantly, while conservation measures have been conceptualized in the developer studies, we are not aware that there has been a firm commitment to implement these measures throughout the developments as opposed to stating them as possible approaches or best practices. These approaches can include: drought tolerant landscaping, low flow clothes washers, leakage repair, and low water intensity commercial and industrial businesses. Since the intent of this study is making sure*

APPENDIX B Response to Comments

enough space has been provided for key regional facilities (e.g. the water reclamation facility and the reservoirs) the team feels it remains prudent to estimate water use based on approximate service provider criteria until such time as a service provider is identified, development water practices are determined, and unit demands are finalized with the service provider. It is important to note that this study is not intended to set water offset requirements as part of annexation into an agency, the San Diego County Water Authority or the Metropolitan Water District.

4. (same number as above per comments) It should be noted that the CPW Study water demand factors for the commercial and industrial sectors are the same as used by the Valley Center Municipal Water District. These water demand factors are about half of the proposed regional water demands, and are reasonable with conservation measures.
RESPONSE: We have revisited the commercial and industrial factors. The agency criteria include a wide variability of unit demands. After further review, and review of other San Diego County agency unit demands, the study unit factors have been changed to 2000 gpd/acre. We estimated a consumptive use factor of 10%, which did have some affect the wastewater unit generation rate (from 1500 gpd per acre to 1620 gpd/acre).

5. The unit water demands proposed by the Draft Feasibility Study for HOA and Right-of-Way irrigation are slightly lower than that used in the CPW Study. The CPW Study will consider revising the potable water demands based on these use factors, if necessary.
RESPONSE: The totals are lower since it appeared that the entire right of way acreage was used instead of just the irrigated portion. If we are incorrect in this conclusion, our totals should be higher and we request CPW confirm.

6. Please provide an explanation of how the available recycled water in Table 9 was calculated so that we can better understand the difference between the annual average available wastewater flow of 0.53 million gallons per day (mgd) and the available recycled water supply of 0.45 mgd shown in Table 9. *RESPONSE: The difference is 15% which represents the losses occurring through tertiary treatment.*

7. Consider adding as one of the study goals the need for careful planning to develop the most efficient potable water, recycled water, and wastewater collection, treatment and disposal facilities that will equally benefit all the Fallbrook Projects. *RESPONSE: Agree with this statement and will look to incorporate into an appropriate location.*

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Meadowood 1st Submittal Comments and Responses

Page 1, Section I, 1st paragraph – general edit. *Response: edits made with minor modification.*

Page 1, Section II, 1st paragraph – general edit. *Response: not changed since the County process includes other elements in addition to water and wastewater.*

Page 2, Section III, 1st paragraph – general edit regarding the planning area. *Response: An additional sentence has been added to clarify. The Planning Area as defined in this study does not include the other two developments in the Rainbow Service Area.*

Page 4, Section V, 1st paragraph – note about County service. *Response: The County is a viable service provider and this question may be asked by the Board of Supervisors. Table 1 lists the limitations of this alternative.*

Page 4, Section V, 3rd paragraph – strikeout. *Response: The County plans on meeting with LAFCO to discuss process. If revised direction is provided, a future revision to this may be warranted.*

Page 5, Figure 2, note box. *Response: The note box was removed in the text. The meeting minutes attached with the 2nd submittal includes revisions based on LAFCO's review of the draft minutes provided in the 1st submittal.*

Page 5, Figure 2, annexation box. *Response: revised*

Page 9, Table 2, unit demand footnotes. *Response: added*

Page 16, last paragraph, groundwater supplementation. *Response: agree that the ability to use groundwater was cited in the Meadowood Water Study (which is noted earlier in this paragraph). However, the Meadowood Water Study also discusses this supplemental water being potable water (reference also cited in this paragraph). Also, the Meadowood Wastewater study lists historical TDS values that indicate a consistent TDS increase through the years. The intent of this study is not to establish the development's water demands, but to try and make sure the regional infrastructure is sufficient to support the Planning Area. Therefore, for the purposes of this study, the potable assumption seems most appropriate at this time. The study now notes that seasonal storage would eliminate this supplemental water need.*

Page 18 note. *Response: The County is working to clarify this sequencing and plans to meet with LAFCO's director. This section doesn't appear in the 2nd submittal.*

Meeting Minutes (multiple comments). *Response: Since these were meeting minutes, the contents cannot be changed unless it did not capture the discussion held at the meeting.*