



**APPENDIX I**  
Water and Sewer Analysis for the  
Meadowood Project



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February 10, 2016

Mr. Tom Kennedy, General Manager  
Rainbow Municipal Water District  
3707 Old Highway 395  
Fallbrook California 92028

**Re: Water and Sewer Analysis for the Meadowood Project (Revised)**

Dear Mr. Kennedy:

This analysis examines the feasibility and costs of a possible interagency service arrangement between the Valley Center Municipal Water District (VCMWD) and the Rainbow Municipal Water District (RMWD or District) for the provision of water and sewer service to the proposed Meadowood development (project). Specifically, this analysis examines a possible arrangement in which VCMWD would provide water and sewer service to the project using water and wastewater conveyance and appurtenant facilities owned and operated by RMWD, rather than through the construction of its own separate water conveyance, flow control facilities (FCFs) with San Diego County Water Authority (SDCWA), and wastewater reclamation plant. **Figure 1** illustrates the RMWD service area and planned developments, including the project, consistent with the County's General Plan.

**BACKGROUND**

The Meadowood development is located in the San Luis Rey River Valley area of northern San Diego County north and east of the intersection of SR-76 and Interstate 15 (I-15). The property encompasses 390 acres and is planned to consist of single-family and multi-family housing, a park, elementary school, maintained common area open space, unimproved natural open space and retained tree groves. The development area was approved by the San Diego Local Agency Formation Commission (LAFCO) to be annexed into the VCMWD service area. However, due to its proximity to other properties within the RMWD service area and lack of existing VCMWD infrastructure in the north, VCMWD and the developer are exploring receiving water and wastewater service through RMWD infrastructure with appropriate delivery and transportation costs.

RMWD is responsible for providing sewer service to 3,879 EDUs throughout its sewer service area. Meadowood is assumed at 850 EDUs, and would make-up about 22% of the RMWD sewer connections. The RMWD sewer service area is a small portion of the overall RMWD service area which encompasses over 7,800 potable water customers, with large agricultural water demands, and hence large capacity meters. Wastewater collected by RMWD is transferred to the City of Oceanside for treatment and disposal through a trunk and interceptor sewer system and primarily two existing sewer lift stations extending west along SR-76 and eventually to the RMWD boundaries along North River Road at Stallion Drive.

The Meadowood site contains no existing water distribution facilities available to serve the project. Previous investigations identified possible water sources with new FCF connections to the

SDCWA First and/or Second aqueduct<sup>1</sup>, which run north-south in direction to the east and west of the project, or a connection to nearby existing RMWD water distribution facilities. RMWD water facilities are available near the northern, western and southern boundaries of the project and are available in multiple pressure zones, which can potentially provide the project with both redundancy and flexibility for wholesale water supply.

Similar to water, no existing wastewater facilities exist on the project site. The RMWD wastewater service area boundary directly abuts the property on the west and proposed adjacent development in RMWD will construct sewer trunk and SLS facilities to convey wastewater from the eastern side of the I-15 to the existing trunk sewer and outfall on the western side of the I-15, within SR-76. In the absence of a connection to the RMWD wastewater system, the project has planned and approved the development of a water reclamation plant within its boundaries. This plant would collect and treat all of the wastewater from the development and use the resulting plant effluent as a recycled water source for irrigation within the development.

**Figure 1** depicts the water and wastewater service areas as well as the location of the Meadowood development relative to RMWD. As previously mentioned, the properties directly west of the Meadowood project site are within the RMWD service boundary and are also planned and approved for development. A new sewer lift station (SLS), the Pankey SLS, is to be constructed on the east side of the I-15 to support these developments. The Pankey SLS has been designed and is soon to be bid for construction. The final design capacity will accommodate Meadowood wet weather sewer flows so flows can be conveyed assuming RMWD moves forward with a transportation agreement with VCMWD or would be pumped directly to the projects' water reclamation plant.

**Table 1** and **Figure 1** present the planned developments anticipated throughout RMWD projected to be developed by 2035, including Meadowood. This magnitude of overall growth is consistent with the latest SANDAG Series Forecast for 2035. **Table 1** presents the development, type, and proposed equivalent dwelling units (EDUs) assumed by 2035. **Figure 1** presents the location of each development.

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<sup>1</sup> The SDCWA administrative code specifies a minimum connection size of 10 cfs, and sets minimum deliveries at 10 percent of rated capacity, which for the case of the minimum 10 cfs connection would provide for a minimum delivery order of 1.0 cfs. A new VCMWD connection serving project average project demands of approximately 1 cfs would, although oversized, be feasible in combination with operating storage provided within the project service area.

**Table 1 Planned Developments (assumed 2035)**

Reference Number	Proposed Development	Proposed EDUs	Development Type
1	Meadowood	850	Single Family
2	Horse Creek Ridge	751	Single Family
3	Campus Park West	538	Mixed
4	Vessels	400	Single Family
5	Polo Club	156	Single Family
6	Pala Mesa Highlands (Beazer)	130	Single Family
--	Horse Creek Ridge Business Center	100	Commercial
--	Palomar College	100	Commercial
7	Golf Green Estates	94	Single Family
8	Morris Ranch	89	Single Family
9	Leatherbury	85	Single Family
--	Bonsall Condos	76	Single Family
10	Olive Hill Estates	37	Single Family
11	Hidden Hills	53	Single Family
12	Dulan	51	Single Family
13	Lake Vista Estates	15	Single Family
14	Malabar Ranch	14	Single Family
--	Fallbrook Oaks (Cabrillo Medical)	13	Single Family
15	Silver Holdings	9	Commercial
16	Vista Valley Country Club	5	Commercial
	<b>Total</b>	<b>3,566</b>	

EDU = equivalent dwelling units  
 Note: Warner Ranch is not included in the analysis.

## HYDRAULIC ANALYSIS

Hydraulic analyses of the impact of providing water and wastewater service to the Meadowood development project were conducted to determine the potential impacts on the existing and future RMWD water and wastewater systems. The Meadowood approved project EIR is used as the primary basis for the analysis of water and sewer requirements, as well as planning studies completed by Dexter Wilson Engineering.

As a part of the 2006 Water and Wastewater Master Plans, RMWD constructed computer hydraulic models for both the water and the sewer systems. The existing system models were constructed in InfoWater and InfoSewer, respectively, and were most recently updated in 2014 to primarily reflect changed demand and flow conditions. The models are currently being refined as a part of the 2016 Water and Wastewater Master Plan Updates to reflect recently constructed projects or soon to be constructed facilities. Since these hydraulic models are currently being updated, the results of the hydraulic analyses presented here are preliminary and may be subject to changes based on finalization of the 2016 Master Plan.

Both hydraulic models allow for extended period simulations which simulates an observed event with time varying flows (i.e. a two day rainstorm for the sewer system or a 24-hour maximum day demand on the water system). In 2014, the sewer model was re-calibrated and the water model updated with new demands. For the 2035 sewer analysis, the sewer model was loaded with the anticipated developments, summarized in **Table 1**.

## Water System Analysis

The Meadowood development can have two water supply sources, originating from the First and Second aqueducts, respectively, to provide supply reliability during scheduled shutdowns. **Figure 2** presents the Meadowood development project area as well as the surrounding RMWD water facilities. Shown on the figure is the plan for water service which includes new connections to existing and planned RMWD water facilities and a FCF between RMWD and VCMWD to control water supply on a daily basis. At this location the VCMWD water system would be master metered, with SCADA control.

As shown on **Figure 2**, two existing RMWD supply sources have been identified as the primary sources of supply for the project; those sources are Connection #10 off of the SDCWA First Aqueduct, which is supported by the Rice Canyon Tank (4.0 MG), and Connection #7 off of the SDCWA Second Aqueduct, which is supported by the Pala Mesa Tank (6.0 MG). Existing transmission pipelines from the aqueduct connections to the tanks and into the project will be used to provide maximum day water supply to the project.

The critical hydraulic condition to be met is supplying or delivering the maximum day water demand for the project through the RMWD water system. Under this condition, and assuming VCMWD provides the proposed water storage, water system design criteria for the Meadowood project could be met including, peak hour, max day plus fire flow, and tank filling conditions. A demand of approximately 500 gallons per minute (gpm) was used as the maximum day demand for the project, based on the project's estimated average day demand of 0.38 million gallons per day (mgd) (260 gpm or 425 acre-feet per year), and a system-wide maximum-day peaking factor of 1.9.

Two of the SDCWA water supply sources, Connection #10 and Connection #7, connecting from the First and/or Second aqueduct, respectively, were considered an alternative source to supply the project. Each source was analyzed for its ability to supply the project with a maximum day constant flow and the project would be required to provide adequate storage to serve daily peaking and emergencies. **Figure 2** illustrates the existing and proposed water supply sources for the project.

RMWD's Rice Canyon Tank (4.0 MG), which lies immediately north of the project boundary and receives its supply from Connection #10, would be the required connection point for the project to the RMWD system. This tank is not currently heavily utilized and the additional demands on the tank would likely provide RMWD with positive benefits in managing water quality. If VCMWD connects directly to the RMWD system further south and east of the project boundary, RWMD may run the risk of short-circuiting the tank and creating water quality problems, with the majority of the supply serving the project coming directly from Connection #10. One alternative, if this southerly connection is preferred, would be to construct a separate outlet pipeline from the tank to the VCMWD connection location.

The Pala Mesa Tank (6.0 MG), which lies west of the project and I-15, receives its flow from Connection #7. This water source and pressure zone (897) will serve as a secondary or redundant supply for the project. Transmission mains from the Pala Mesa Tank leading to the project are 18-inch and 12-inch, and based on the InfoWater modeling analysis have adequate capacity to deliver an additional 500 gpm of supply without adversely affecting the existing zone.

The hydraulic analysis confirms that with a new 12-inch supply line from Rice Canyon Tank, completion of the Pala Mesa Tank supplied water mains across SR-76 to the project, and new

VCMWD water storage on site, RMWD can provide adequate supply and meet its water system design criteria.

It is likely feasible that RMWD could provide operating storage and fire flow to the project without significant upgrades to its existing system, which would provide the project with the possibility of reducing the amount of on-site storage that is currently required. This analysis may be further refined and investigated in the Master Plan as part of RMWD's updated water storage and supply reliability evaluations.

### **Sewer System Analysis**

The Meadowood development has two options for transportation and disposal of wastewater generated within the project area: build a water reclamation plant on site as analyzed in the project EIR or connect to the RMWD wastewater trunk sewer system. This section analyzes the possible impacts of the project on RMWD's existing and planned wastewater infrastructure.

The addition of the project's wastewater flows into RMWD's system will impact the trunk sewer system as shown on **Figure 3**. For the analysis, sewer reaches were numbered for the purposes of segregating the impact of the project on various segments of the trunk sewer system. For the purpose of the sewer hydraulic analysis, a reach is defined as a segment of trunk sewer in which there are no variations in flow into the sewer.

The analysis of the impact of the Meadowood development on the RMWD wastewater conveyance system was performed using RMWD's InfoSewer hydraulic model which was calibrated to an extensive sewer flow meter program conducted in 2009 and updated to simulate 2035 conditions. In addition, PWWF data from a December 2010 storm event was used to develop an existing and 2035 PWWF design conditions.

Projected sewer flows of 0.28 mgd were initially reviewed from the 2009 Dexter Wilson study prepared for the developer. This flow equates to a per equivalent dwelling unit (EDU) generation rate of approximately 325 gpd per EDU based on a total of 850 EDUs currently projected by the developer. Based on discussions with VCMWD, a 200 gpd per EDU sewer generation rate was used resulting in a revised project sewer flow of 0.17 mgd (118 gpm).

All flows generated in the development area will be conveyed to the proposed Pankey SLS which is being constructed by Campus Park (Horse Creek Ridge) to serve development within the RMWD service area that is adjacent to the project area. Improvement plans for trunk sewers and the Pankey SLS have been prepared. The planned construction of the Pankey SLS will allow for the conveyance of wastewater across the I-15 from new development. Additionally, RMWD plans to divert wastewater from the existing Plant B Interceptor Sewer to the Pankey SLS and abandon this sewer. Since the project comes into the RMWD system at nearly the farthest point from the land outfall, nearly the entire sewer trunk system must be analyzed for impact of the project's flows.

Based on the 2014 calibrated sewer model, the District's system is currently at capacity under existing PWWF for several interceptor reaches. The District is moving forward with planned upgrades to alleviate the capacity concerns as identified in the previous master plan within SR-76 and North River Road, which also included upgrades to SLS No. 1. It is assumed that occupancies for the project will occur after RMWD has completed these upgrades. The sewer analysis, therefore, assumes updated 2035 peak wet weather flows plus Meadowood flows, and the 2006 Master Plan sewer improvements in place. Based on the projected flows from each anticipated development listed in **Table 1** and the existing flows, approximate flow for each reach

of the sewer system was determined (**Table 2**). Also presented in **Table 2** are the anticipated flows from Meadowood and their percent flow of each major reach. **Table 3** presents a status of each major reach of trunk sewer, and identifies the reaches planned for upgrades.

Under year 2035 PWWF conditions, the hydraulic analysis showed the project's sewer flows caused minor surcharging in sewer reaches 10 to 14 (see **Figure 3**). The volume of flow conveyed to the Pankey SLS during a PWWF event, required that the SLS operate two pumps, which increased flows through the interceptor system. Incremental upsizing of reaches 10 to 14 will alleviate the surcharging. Additional review is recommended at the Pankey SLS to ensure the wet well levels and pump flows which are simulated are consistent with the latest SLS design. In summary, the sewer model simulations confirm that under 2035 peak wet weather conditions, RMWD can convey sewer flows from the project via the Pankey SLS with an upgrade in diameter (18-inch to 21-inch) of the proposed CIP sewer reaches 10 to 14 and meet its sewer system design criteria. The analysis also assumes RMWD moves forward with the proposed CIP North River Road reach 15 (30-inch) and SLS No. 1 upgrades.

**Table 2 Existing and Projected Average Annual Sewer Flow by Reach**

Reach Name	Existing Flow (gpm)	Projected Flow Developed within Reach (gpm)	Cumulative Flow into Reach (gpm)	Cumulative Flow out of Reach (gpm)	Meadowood Flow in Reach (gpm)	Meadowood % of Flow in Reach (%)
Reach 1	47	47	0	47	0	0%
Reach 2	0	482	47	529	118	26%
Reach 3	91	119	529	647	118	26%
Reach 4	75	88	647	735	118	21%
Reach 5	38	38	735	773	118	18%
Reach 6	10	10	773	784	118	17%
Reach 7	12	12	784	796	118	17%
Reach 8	60	62	796	857	118	16%
Reach 9	2	2	857	859	118	15%
Reach 10	1	1	859	860	118	15%
Reach 11	10	12	860	872	118	15%
Reach 12	2	11	872	883	118	15%
Reach 13	93	168	883	1051	118	15%
Reach 14	27	73	1051	1124	118	12%
Reach 15	12	12	1124	1136	118	11%
Pankey SLS				529	118	26%
SLS #1				1051	118	12%
SLS #2				1124	118	11%

**Table 3 Trunk Sewer Reach Pipeline Status**

Reach Name	Affected Pipe Length (ft)	Existing Pipe Size(s) (in)	Master Plan Pipe Size(s) (in)	Proposed Pipe Size(s) (in)	Pipeline Status
Reach 1	--	--	--	--	Existing
Reach 2	--	--	--	--	To Be Built by Developer
Reach 3	2,871	21	21	21	Existing
Reach 4	12,058	24, 21, 18	24, 21, 18	24, 21, 18	Existing
Reach 5	931	12	18	18	Under Construction
Reach 6	1,708	12	18	18	Under Construction
Reach 7	5,028	12	18	18	Under Construction
Reach 8	1,332	12	18	18	Under Construction
Reach 9	1,320	12	18	18	Under Construction
Reach 10	491	12	18	<b>21</b>	Planned CIP
Reach 11	1,766	12	18	<b>21</b>	Planned CIP
Reach 12	945	12	18	<b>21</b>	Planned CIP
Reach 13	3,850	12, 15	18	<b>21</b>	Planned CIP
Reach 14	7,418	15	18	<b>21</b>	Planned CIP
Reach 15	16,003	15	30	<b>30</b>	Planned CIP

## CAPACITY AND O&M CHARGE CONSIDERATIONS AND DRAFT FRAMEWORK – WATER

If supplied via RMWD facilities, the primary water supply for Meadowood would be from the northeast via RMWD’s Connection #10 and the Rice Canyon Tank with a redundant supply from the southwest via the Pala Mesa Tank and recently constructed conveyance improvements associated with the neighboring Campus Park development. The proposed water supply from RMWD would provide the development with the ability to access operational and/or emergency storage as well as delivering average-day to maximum day flows. RMWD becomes a direct provider of water to VCMWD and will need to recover capital costs for the share of system capacity dedicated to the project, and associated O&M costs.

### Operation and Maintenance Costs (Delivery Charges)

RMWD should recover costs for O&M as a delivery charge for use of a portion of the water system. There are number of methodologies to estimate delivery costs. The recommended delivery charge to VCMWD is based on the following assumptions:

- This O&M cost includes pipelines, tanks, pump stations, PRSs, valves and water quality sampling and is exclusive of water purchases.
- A new operating cost has been included to maintain and monitor the two new FCFs which will service the project. This maintenance and monitoring may be performed by RMWD or possibly by the SDCWA. This analysis assumes that RMWD will maintain and monitor the meters and that VCMWD will pay the RMWD approved operating costs of two 6-inch meters.
- **Table 4** includes a summary of the proposed Monthly O&M Charges per Table 6-4 of the Raftelis Financial Consultants (RFC) Potable Water Cost of Service Study, which was performed concurrently with this study. The applicable portion of the proposed charges is the Meter Component, which is proposed to be \$33.44 per month for a 1” meter.



- The delivery costs (**Table 4**) for VCMWD are estimated to be approximately \$362,000 per year based on 850 units with 1-inch meters and 2 6-inch meter connections to the RMWD system.

<b>Table 4 Water System O&amp;M Charges</b>	
<b>O&amp;M Charge</b>	<b>Proposed Cost</b>
Meter Component per Unit <sup>(1)</sup>	\$33.44
Connection Meter Component <sup>(2)</sup>	\$869.55
<b>Estimated Annual O&amp;M Charge <sup>(3)</sup></b>	<b>\$362,000</b>

<sup>(1)</sup> Meter Component O&M Charge shown is for a single 1-inch meter for a single month per the RFC Potable Water Cost of Service Study. Project contains 850 1-inch meters.  
<sup>(2)</sup> Meter Component O&M Charge shown is for a single 6-inch meter for a single month per the RFC Potable Water Cost of Service Study. Project contains two 6-inch meters at the connection points to RMWD.  
<sup>(3)</sup> Annual cost is the cost for 850 1-inch meters and two 6-inch meters for 12 months at the proposed Meter Component of the O&M Monthly Fixed Charges in the RFC Potable Water Cost of Service Study.

### Capital Costs (District Connection Fee)

RMWD should recover costs for providing water capacity to VCMWD in RMWD’s existing infrastructure and future capital improvements that benefit VCMWD. As part of VCMWD, Meadowood would be constructing a retail water distribution system including tanks, pipelines and other water appurtenances. It is presumed these capital costs will be in lieu of paying any connection fees to VCMWD, since no water system exists in the area. The project is exploring a connection to the existing RMWD water system in order to receive service and it is recommended that the District’s existing Capacity Fees be applied to the project. By connecting to the RMWD system, the development would be benefiting from the whole RMWD water system. The District will be updating its Capacity Fees in 2016. The amount of a full retail RMWD water capacity fee for a 1” meter is \$14,422 per EDU. Should VCMWD provide, install and inspect the meters, the full retail cost would be reduced by the cost charged by Rainbow to provide or perform those items. The combined charge for a 1” meter (\$225) and inspection of the installation (\$1,100) is \$1,325. Subtracting this cost from the full retail charge of \$14,422 reduces the capacity fee to \$13,097.

### CAPACITY AND TRANSPORTATION CHARGE CONSIDERATIONS AND DRAFT FRAMEWORK – SEWER

The cost basis for sewer primarily includes transportation costs associated with the O&M of the RMWD trunk sewer system, including the existing and proposed sewer lift stations to convey sewer flows through RMWD. There are numerous methodologies to recover transportation costs. This study primarily bases transportation costs on a proportional share of flow through the system. In addition, cost contributions toward necessary RMWD CIP trunk sewer and lift station improvement projects required to be upsized in order to serve the project are included in addition to the District’s existing system buy-in cost. VCMWD must acquire wastewater treatment and disposal capacity directly from Oceanside and therefore no costs to/from RMWD are included for acquisition of treatment plant capacity or transportation costs through Oceanside’s system.

### Operation and Maintenance Costs (Transportation Charges)

The recommended transportation cost is based on the following assumptions and calculations:

- A major share of the annual O&M sewer system costs, including RMWD administration costs and depreciation, allocated to the sewer account.

- This O&M cost includes trunk sewers, collection sewers, and lift stations, but is exclusive of O&M costs paid to Oceanside for treatment and disposal.
- RMWD (and Oceanside) will require metering and measurement of wastewater strength at each connection to the RMWD system as RMWD is billed for strength and flow from the City of Oceanside.
- The proposed transportation cost for VCMWD would be proportioned on a per gallon basis for the use of the sewer system that recognizes VCMWD would have very little sewer system to maintain and would be a very large user of the RMWD system. Most of RMWD O&M costs are attributed to the interceptors and lift stations, which VCMWD would access and contribute proportionally based on the amount of flow contributed to the system.
- Trunk sewer reaches 1 through 15 (**Figure 3** and **Table 3**) are the primary facilities for assigning transportation costs and includes three lift stations and force mains.
- **Table 5** presents a summary of the 2014 operating costs for the RMWD sewer system, excluding operating costs paid to Oceanside. The total annual cost, with depreciation, excluding Oceanside, is to be an estimated at \$1,995,500.
- The District currently has an average sewer flow of 0.7 MGD. Therefore the unit operating costs for the RMWD system is approximately \$2,851,000 per MGD. The project would add an additional 0.17 MGD at \$2,851,000 per MGD (see **Table 5**).
- Based on this methodology, potential transportation costs would be on the order of magnitude of \$485,000 per year, which equates to approximately \$570 per year per DU.

**Table 5 Sewer System Transportation Costs**

Operating Expense <sup>(1)</sup>	Sewer System Cost <sup>(2)</sup>
Sewer Services <sup>(3)</sup>	\$899,824
Administrative and General	\$601,407
Depreciation	\$494,283
<b>Total</b>	<b>\$1,995,514</b>
FY 2013-14 Average Sewer Flow (mgd)	0.70
Cost per MGD	\$2,851,000
Proposed Project Flow	0.17
<b>Estimated Annual Transportation Charge</b>	<b>\$485,000</b>

<sup>(1)</sup> Where applicable, operating costs split between the water and sewer systems based upon the length of pipe. The water system accounts for approximately 85% of the total amount of pipe within RMWD, the sewer system the other 15%.

<sup>(2)</sup> Operating expenses based on the RMWD FY 2013-14 Report on Examination of Financial Statements, audit by Hosaka, Rotherman & Company

<sup>(3)</sup> Sewer Services cost has been reduced by \$864,000, which is the approximate annual cost of transmission to and treatment by the City of Oceanside

Note: The estimated annual costs and associated information presented in this table are presented to demonstrate the proposed methodology for calculating annual O&M costs and the approximate annual cost to the project under that methodology

### Capital Costs (District Connection Fee)

RMWD should recover costs for providing sewer conveyance capacity to VCMWD in RMWD's existing infrastructure and future capital improvements that benefit VCMWD. Specifically, the District's sewer policy Section 9.13.010 states:

“...the District may establish by agreement or Resolution the fees and charges it deems appropriate that shall be imposed for providing sewer services to premises located outside the District provided, **that such fees and charges shall not be less than would apply to similar service within the District...**”

As part of VCMWD, Meadowood must construct a sewage collection system. It is presumed these capital costs will be in lieu of paying any sewer system connection fees to VCMWD, notwithstanding Oceanside treatment and disposal costs. VCMWD would acquire capacity in Oceanside's wastewater treatment, conveyance, and disposal system by paying capacity fees to Oceanside. The project is exploring a connection to the existing RMWD sewer system in order to transmit its wastewater to Oceanside and it is required that the District's existing Capacity Fees be applied to the project. The District will be updating its Capacity Fees in 2016. The current out of District connection fee for this project is the existing Capacity Fee (\$18,190), less the cost of treatment and disposal at Oceanside (assumed to be \$5,000 per EDU), less the cost of lateral inspection (\$1,100 per EDU) and plus the expansion component (\$4,300 per EDU) resulting in a total connection fee of \$16,390 per EDU (see **Table 7**).

**Table 6 Sewer System Expansion Projects**

Project Description	Estimated Cost	Meadowood % Responsible	Proposed Cost
<b>Planned New Construction</b>			
CPW Sewer and Forcemain Reimbursement <sup>(1)</sup>	\$1,714,096	31%	\$218,000
Pankey SLS	\$3,500,000	26%	\$916,000
Subtotal			\$1,201,000
<b>Planned and Required Upgrades</b>			
Reach 10-14 - Increase CIP Pipeline Size from 18" to 21" to Increase Available Capacity	\$541,000	100%	\$541,000
Reach 14 - Increase LS #1 Capacity	\$177,000	100%	\$177,000
Reach 15 <sup>(2)</sup> - Planned Upgrade of Existing 15" to 30" to Provide Ultimate Capacity	\$13,300,000	11%	\$1,466,300
Subtotal			\$728,000
<b>Total</b>			<b>\$3,623,000<sup>(3)</sup></b>

<sup>(1)</sup> Cost and Meadowood allocation from DR Horton Sewer Amendment, Exhibit 6

<sup>(2)</sup> Cost estimate cited from Tetra Tech Preliminary Design Report, Oct 2013

<sup>(3)</sup> Expansion component for Meadowood equals \$4,300 per EDU (\$3,623,000 per 850 EDUs).

**Table 7 Out of District Sewer Connection Costs**

Asset	Cost/EDU
Existing Capacity Fee <sup>(1)</sup>	\$12,090
Expansion Costs	\$4,300
<b>Total Connection Fee</b>	<b>\$16,390</b>

<sup>(1)</sup> Excludes Investments in Sewer Rights (Oceanside treatment) and inspection cost

## District Policy Review

In order to ensure equitability for new customers when compared to existing RMWD customers and other developments in this area, the District has indicated that it must follow existing policies related to out of service fees and charges. Specifically, the District's sewer policy Section 9.13.010 states:

“...the District may establish by agreement or Resolution the fees and charges it deems appropriate that shall be imposed for providing sewer services to premises located outside the District provided, **that such fees and charges shall not be less than would apply to similar service within the District...**”

This policy requires the District to charge the current sewer capacity fee of \$17,090 per EDU for VCMWD to connect to the sewer system which would include sewer conveyance, treatment, and disposal. However, VCMWD has indicated that they will separately negotiate treatment and disposal costs with Oceanside. Therefore it appears fair and reasonable that the “buy-in” portion of the capacity/connection fee for VCMWD could be reduced appropriately for treatment and disposal and would not be construed as charging less than existing customers.

RMWD is currently in the pre-design phase for its own water reclamation facility that would treat all wastewater locally and end the arrangement with Oceanside. This project was contemplated in the agreement between VCMWD and RMWD to conduct this study. In this agreement, VCMWD agreed to send wastewater to a potential future RMWD water reclamation plant on the condition that the treatment capacity and O&M costs would not exceed those charged by Oceanside. Any out of service area agreement that may arise from this study will need to quantify with some precision what the costs for the City of Oceanside are and should the RMWD plant go forward these costs would be added back in to the capacity fee for the Meadowood project.

Although no specific water policy was found, it is likely that the District Board of Directors would apply similar guidelines and principles to the water buy-in fee component. To charge a significantly lower capacity fee for permanent out of service area connections to the RMWD system could expose RMWD to significant risk of lawsuits of equity from neighboring developments and/or the Building Industry Association. If the proposed connection were temporary a different argument could be made, however since this connection is proposed to be in perpetuity then the principle of equity would most likely be adhered to by the District Board.

Since there is no RMWD treatment portion of a water capacity fee, and since that fee is collected separately by the San Diego County Water Authority (SDCWA), the full water capacity fee, currently \$13,097 per EDU (1-inch meter) could be charged to VCMWD for connecting to the RMWD water system.

It should be noted here that RMWD will be revising its capacity fees upon the completion of the 2016 Water Master Plan and these changes will likely conform to the hybrid methodology described in the Raftelis report. It is expected that the revised capacity fees should be completed in the Spring of 2016. To support the revision of Capacity Fees which will take place next year, RMWD has also initiated an Asset Valuation Study which will review and revise the value of existing assets as necessary. For these reasons, the numerical values for capacity fees outlined in this report are subject to change.

In summary, Raftelis has made recommendations for the development of updated Capacity Fees which include using the buy-in and incremental expansion methodologies. Analyses presented in previous versions of this report presented attempts to calculate an updated Capacity Fee for

the Water and Sewer systems based upon information which is currently under review by the District and likely to change. For this reason, those analyses have been removed from this study in favor of enforcing the District's existing Capacity Fees until fully updated Capacity Fees have been generated by the District.

Based on the sewer policy above, the District could adopt an out of service capacity/connection charge that is equivalent to what new customers within RMWD would pay to connect to the existing systems. The capacity fees charged to VCMWD could be as follows:

- A sewer capacity fee based on the existing capacity fee (\$18,190 per EDU) less the cost of treatment and disposal to Oceanside for VCMWD (assumed at \$5,000 per EDU), less the cost of inspection (\$1,100 per EDU) and including the cost of expansions to the system required to serve the project (\$4,300 per EDU) resulting in a **sewer capacity fee charged to VCMWD of \$16,390 per EDU.**
- A water capacity fee based on the existing capacity fee (\$14,422 per EDU) less the cost of meter materials and installation inspection resulting in a **water capacity fee charged to VCMWD of \$13,097 per EDU.**

Until the District updates its capacity fees, which is anticipated in the Spring/Summer of 2016, VCMWD could be subject to the current capacity fees for obtaining service, unless otherwise approved by the District Board.

## TECHNICAL REVIEW AND RESPONSE TO COMMENTS

A preliminary analysis was prepared and submitted to RMWD on August 14, 2015 and subsequently provided to VCMWD and the Meadowood project consultant for review. These are attached as Appendix A.

## SUMMARY AND CONCLUSIONS

In summary, the analysis examines the feasibility and costs of a possible interagency service arrangement between the VCMWD and RMWD for the provision of water and sewer service to the proposed Meadowood development and offers the following conclusions:

- The arrangement is feasible with various facility upgrades and connecting pipelines.
- Both the water and sewer service connections are subject to the District's existing Capacity Fees, which are scheduled to be updated in 2016.
- Preliminary transportation and delivery costs are presented to provide a fair share annual cost opinion to convey water and sewer flows through the existing RMWD systems. This analysis is subject to further refinement based on updated operating costs and review by both agencies.
- This analysis, presenting the upfront and annual costs to connect to the District's water and sewer systems, appears to be favorable to constructing a new VCMWD wastewater treatment plant at the project site and new VCMWD water supply facilities from the SDCWA aqueduct and storage facilities on the project sight.

- The master plans will also evaluate options for RMWD wastewater reclamation and recycled water development, which may provide water management and efficiency benefits to both agencies.

We appreciate the opportunity to assist RMWD and VCMWD in the analysis and look forward to receiving your comments. Please call me at 858.514.1042 if you have any other questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert J. Warren".

Robert J. Warren, PE  
Project Manager

## APPENDIX A

### VCMWD Comments

Comments were initially received from VCMWD at a July 30, 2015 meeting and formally provided to the District in memorandum on September 22, 2015. The comments have been reviewed and considered in this revised analysis.

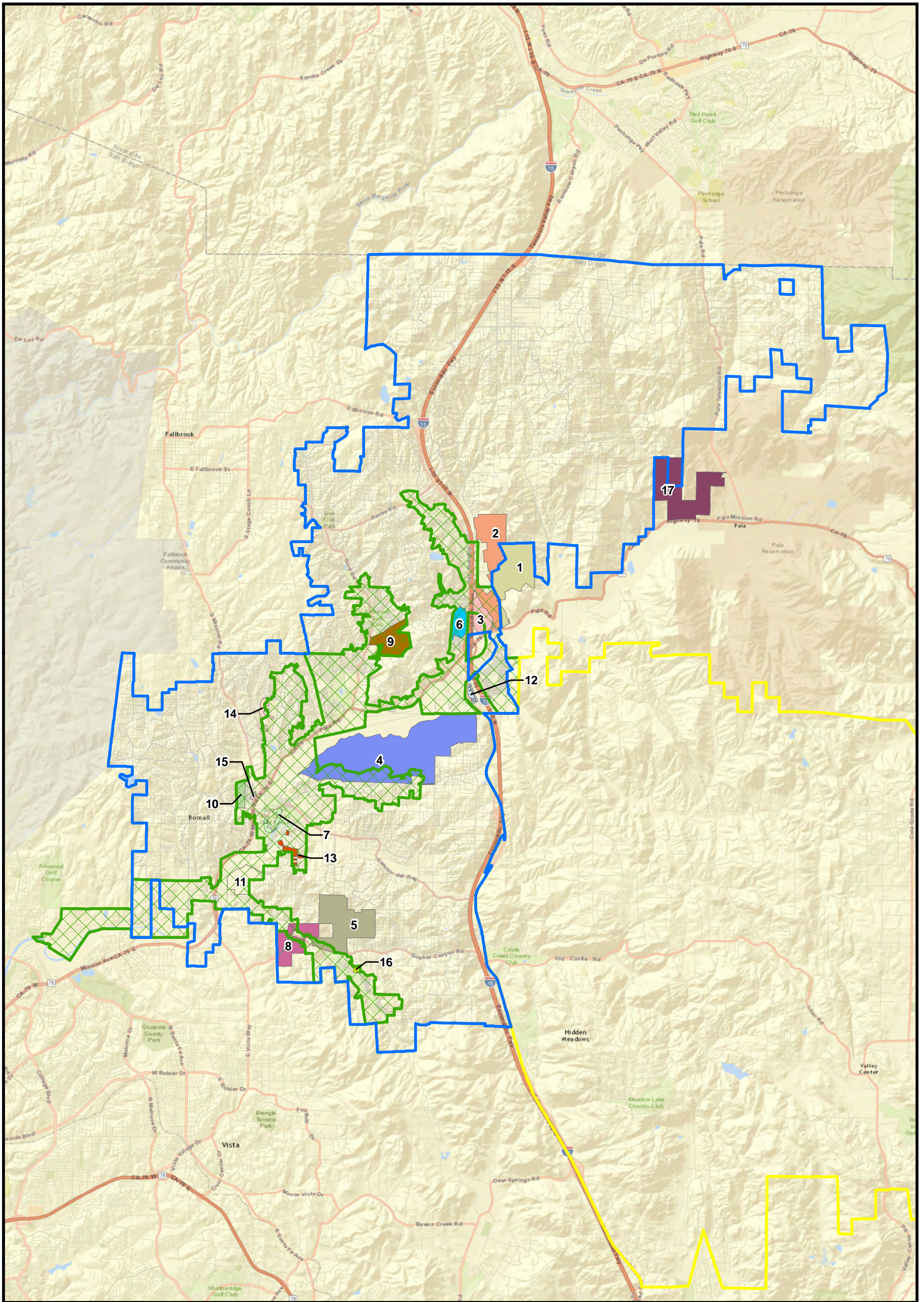
### Financial Peer Review

As part of the response to VCMWD, Atkins retained the services of a financial consultant (Raftelis) to provide an independent review of the proposed analysis and methodologies for the estimated water and sewer connection or capacity fee. Their primary objective:

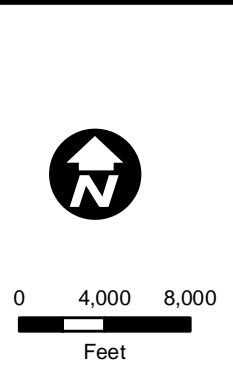
- Provide input and guidance on industry standard “Out of District/Service” connection fees for fair and equitable recovery of capacity costs.
- Provide response on VCMWD comments related to inclusion of depreciation in the buy-in component as well as input on a proportionate share of the water and sewer systems for the buy-in component.
- Provide an opinion on a component “buy-in” charge for District customers, although that methodology is currently not the current District wide capacity fee basis.
- Summarize independent recommendations in a memorandum.

The Memo dated October 21, 2015 by Raftelis summarizing findings and recommendations has been attached to this revised analysis. Key highlights:

- The “Hybrid Methodology” was confirmed for the capacity or connection fee charge for VCMWD for both water and sewer systems. This includes both a “buy-in” component and an expansion component.
- The “buy-in” component should include asset replacement cost less depreciation (RCLD) as this is a more reasonable and defensible approach and addresses that the system is not new and has been used by all current users.
- The “buy-in” fee should also include current reserve balances and outstanding debt for their respective systems in the calculation.
- The equivalent dwelling units (EDUs) for the water connection fee should be based on the water meter equivalency of each existing connection. Meter equivalency standards are provided by the American Water Works Association (AWWA). This analysis would provide more clarity to the definition of an EDU and would be more equitable, recognizing that existing agriculture users in the District have access to several times more capacity with larger water meters than a typical single family units
- The entire existing water and sewer systems should be considered in the analysis, not a portion of the system based on miles of pipe or number of pumps used. The premise is that new customers, especially those who are out of District, are on par with all existing customers that have benefited from the whole systems.



RMWD Boundary	Morris Ranch
VCMWD Boundary	Olive Hill Estates
Existing Sewer Area	Pala Mesa Highlands
Campus Park West	Polo Club
Dulan	Silver Holdings
Golf Green	Vessels
Horse Creek Ranch	Vista Valley Country Club
Hidden Hills	Warner Ranch
Malabar Ranch	Leatherbury
Meadowood	Lake Vista Estates



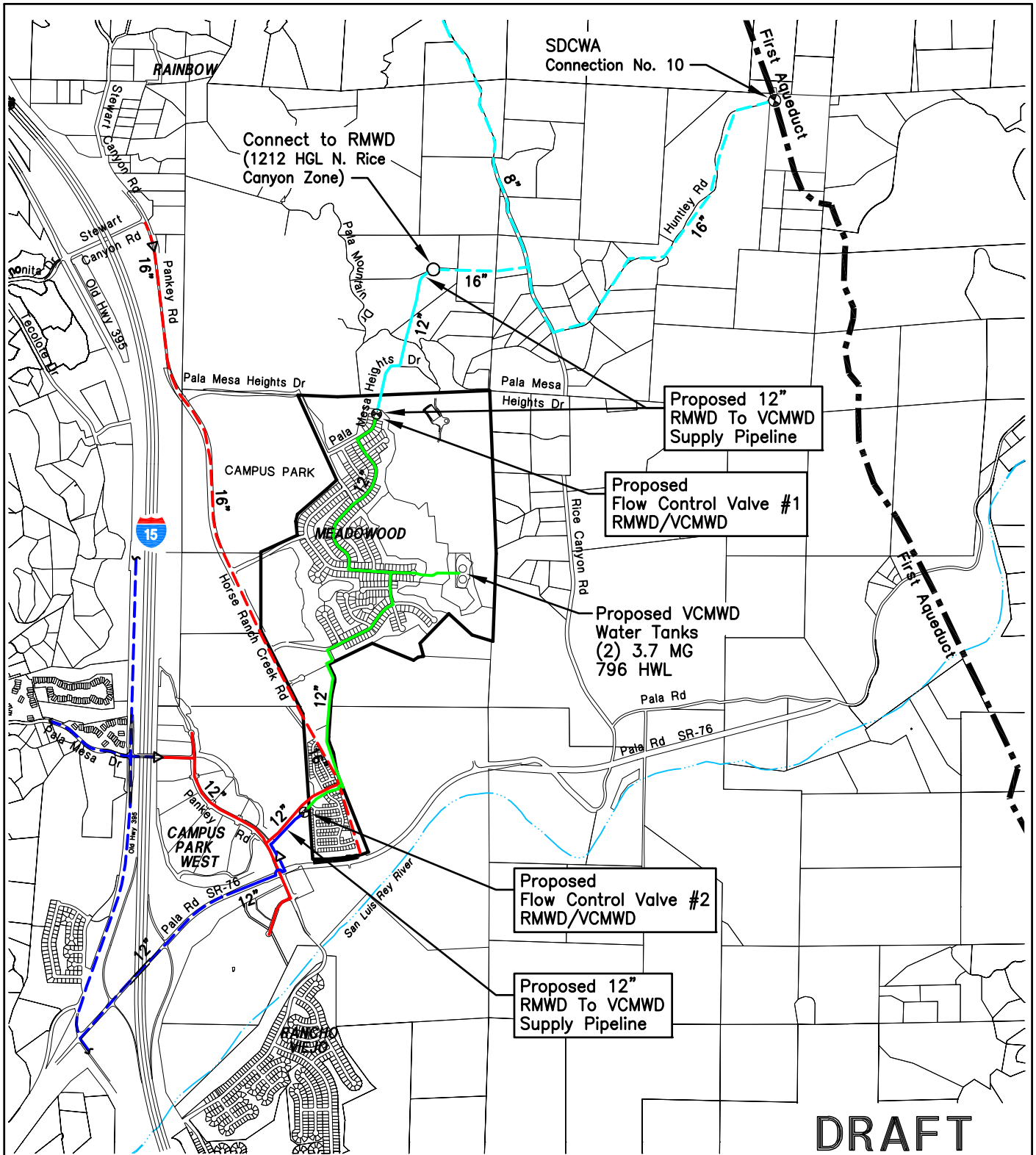
**ATKINS**

**Figure 1**  
**Rainbow Municipal Water District**  
**Water and Sewer Service Areas and**  
**2035 Planned Developments**

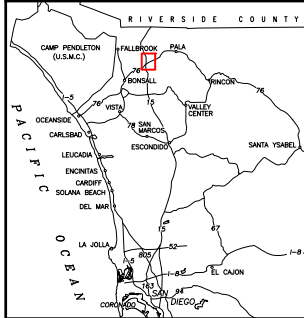
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Job No.: 100032829	Date: 7/16/2015

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**DRAFT**



	EXISTING 660 CAMPUS PARK
	EXISTING 897 BECK ZONE
	EXISTING 1212 ZONE
	PROPOSED 660 ZONE
	PROPOSED 796 ZONE (VCMWD)
	PROPOSED 1212 ZONE
	PRS
	FLOW CONTROL

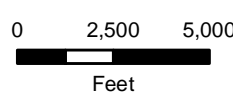
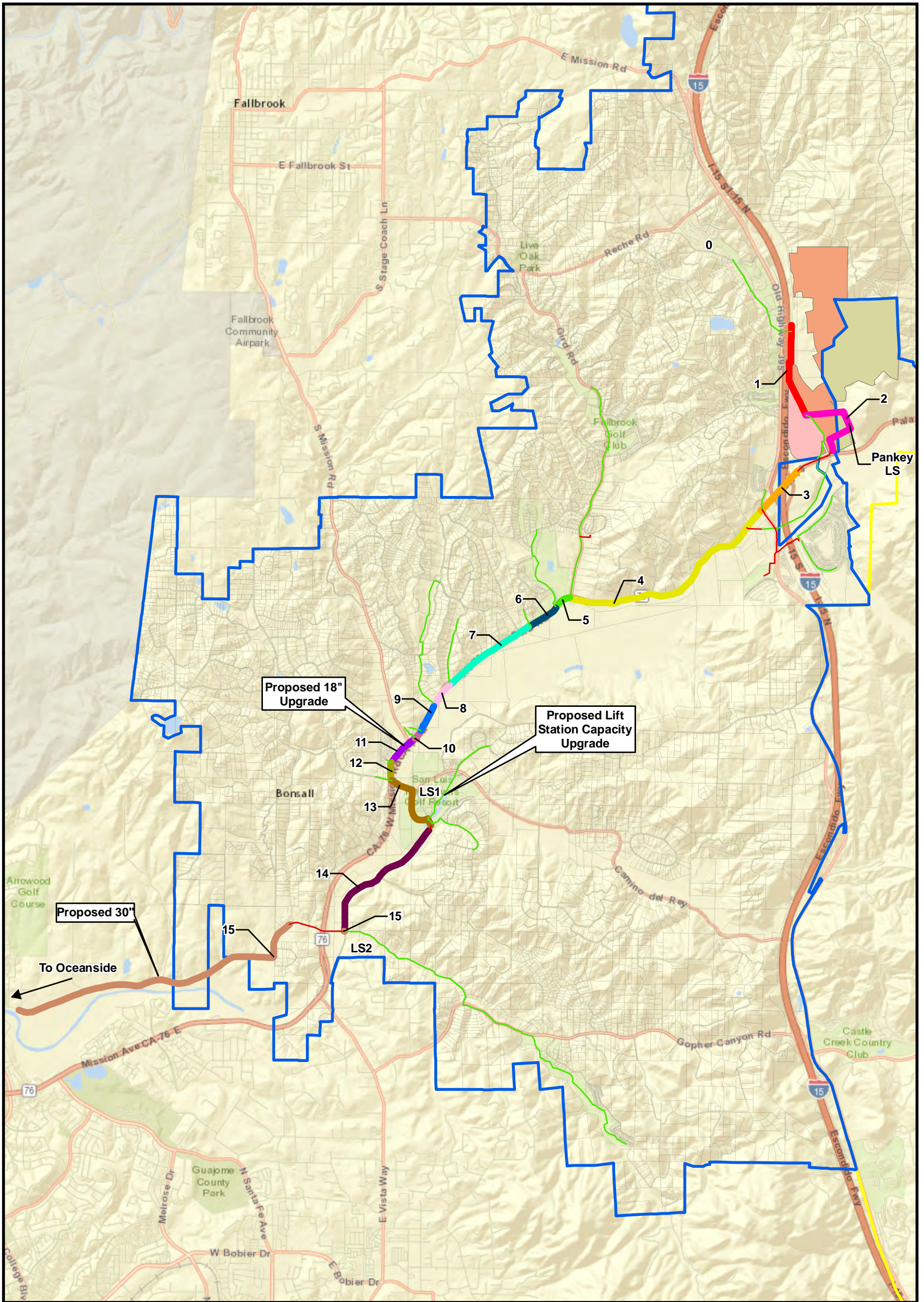
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**ATKINS**

Figure 2

**PROPOSED  
RMWD TO VCMWD  
WATER SERVICE PLAN**

Prepared by: leal5448	Scale: 1"=2400'
Job No.: 100032829	Date: 7/7/2015



**ATKINS**

**Figure 3  
Trunk Sewer Reaches  
Rainbow Municipal Water District**

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Job No.: 100032829	Date: 7/16/2015

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