

Water Supply and Water Infrastructure Analysis

San Marcos Highlands

April 2015

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Acronyms

AF	Acre-feet
AFY	Acre-feet per year
APN	Assessor's Parcel Number
CIP	Capital Improvement Projects
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
DMP	Drought Management Plan
du/ac	Dwelling units per acre
ESP	Emergency Storage Program
gpd	Gallons per day
gpm	Gallons per minute
ICP	Integrated Contingency Plan
IID	Imperial Irrigation District
LAFCOs	Local Agency Formation Commissions
MGD	Million gallons per day
MOU	Memorandum of Understanding
MWD	Metropolitan Water District
psi	Pounds per square inch
RUWMP	Regional UWMP
SANDAG	San Diego Association of Governments
SB7	Senate Bill 7
SBX7-7	Senate Bill 7
SCAG	California Association of Governments
SDCWA	San Diego County Water Authority
SDIRWM	San Diego Integrated Regional Water Management
SWP	State Water Project
UWMP	Urban Water Management Plan
VID	Vista Irrigation District
VWD	Vallecitos Water District
WSAP	Water Supply Allocation Plan
WSDM Plan	Water Surplus and Drought Management Plan
WSDRP	Water Shortage and Drought Response Plan

Water Supply and Water Infrastructure Analysis San Marcos Highlands

1.0 Purpose of this Analysis

This document describes the existing water systems that the San Marcos Highlands project proposes to utilize for service and analyzes the project's contribution to system-wide demands for potable water and water infrastructure. The project is proposed to be served by the Vallecitos Water District (VWD) and Vista Irrigation District (VID) for potable water service.

VWD and VID have prepared urban water management plans that document each district's water supply availability and future plans for ensuring continued availability. This document analyzes the water supply availability for the proposed project.

2.0 Project Background and Details

In 1990, the City of San Marcos adopted a Specific Plan and Tentative Subdivision Map for the San Marcos Highlands which allowed for the development of 275 residences on the project site. In 2002, the City approved an amendment to the San Marcos Highlands Specific Plan which decreased the development to 230 residential units. The project was not developed and the required annexations were never pursued.

The proposed project is an amendment to the San Marcos Highlands Specific plan to reduce the development footprint, reduce the number of homes to be constructed, and to increase the amount of conserved open space. A total of 189 single-family residential units are proposed under the current proposed project modifications.

The entire project site covers 293.3 acres, with 262.14 of those acres making up the Specific Plan area. Within the Specific Plan area, there are 50.04 acres of residential development and 212.10 acres of open space use proposed. The project site is located within both the City of San Marcos and in the unincorporated County of San Diego within the City's adopted Sphere of Influence (Figure 1).

VID and VWD provide water services to areas that are within their authorized water service areas and spheres. Water service for the project would be split between VWD and VID water service area and spheres.

The portion of the project to be served by VWD would cover 38.48 acres, with 6.91 acres of residential (43 homes), 4.87 acres of public right of way and 26.7 acres of open space. The portion to be served by VID would cover 68.48 acres, with 22.37 acres of residential (146 homes), 10.15 acres of right of way, 1.58 acres of park, and 34.38 acres of open space. Reorganization would be required for water service. Of the area of the project to be developed (106.93 acres), approximately 37.5 acres are currently within the VWD Sphere of Influence and the remainder (69.43 acres) is within the VID Sphere of Influence. Figures 2 and 3 illustrate the existing and proposed water service areas for VWD and Figures 4 and 5 illustrate the same for VID.

As a result of the project layout and based upon input from VID and VWD, the most effective way to serve the project is to reorganize the water districts' service areas.

Specifically, portions of APN 184-240-32 and 184-241-06 would be detached from VID and annexed into the VWD water service area (4.03 acres total). Additionally, portions of APN 184-240-14 and -15 would be detached from the VWD and annexed into the VID water service area (3.06 acres). **Figures 3 and 5** show the proposed water district reorganization for VWD and VID, respectively.

Reorganization of the water district service areas would first require approval from the VWD Board of Directors and the VID Board of Directors for the proposed detachments and annexations. LAFCO approval would also be required. In addition to the proposed water service areas reorganizations, VWD and VID have mutually agreed that an emergency interconnection between the two water systems would be beneficial at the boundary between the two water districts.

Local Agency Formation Commissions (LAFCOs) are empowered under the California Government Code with discretionary authority over proposed changes of organization or reorganization for cities and special districts, and the establishment and maintenance of local agency spheres of influence. As the proposed project requires a reorganization involving annexation to the City of San Marcos and annexations/detachments between VID and VWD with corresponding sphere of influence changes, San Diego LAFCO approvals are required.

LAFCO requires that environmental analysis incorporate information required under Government Code Section 56000, et seq. Among other items, California Government Code Section 56668 stipulates that development projects are to be analyzed for the "timely availability of water supplies adequate for projected needs as specified in Section 65352.5." California Government Code Section 65352.5 codifies the importance of ensuring adequate water supply for a growing population. This section provides a standardized list of the key data points required for Lead Agencies to make an informed decision about the adequacy of available supply. This document will help support LAFCO in making the necessary findings for approval of the annexation and adjustment to the VWD and VID boundaries.

3.0 Previous Analysis

In December 2013, Dexter Wilson Engineering, Inc. prepared a memorandum summarizing the water and sewer service requirements for the San Marcos Highlands project. The memorandum is included as **Attachment A** to this document. This memorandum indicated that, due to the size of the project, a water supply assessment and verification report in accordance with SB 610 and SB 221 was not required.

The memo additionally concludes that because the majority of the area to be served is already within the VWD service area, the proposed project has already been accounted for in the VWD planning documents. Per the *San Marcos Highlands Water and Sewer Study* (April 2015) prepared by VWD, the proposed project would increase water use at the site from the 2008 Master Plan land use by 1,089 gallons per day (gpd) or 1.2 acre-feet annually. The VWD study is included as **Attachment B** to this document. Additional discussion on the conclusions of the VWD study are presented in Section 5.1, below.

Similarly, VID has confirmed their ability to provide service to the project via a July 2013 analysis (VID 2013a). It should be noted that this confirmation applies only to the proposed project and does not include service to future development.

4.0 Water Supply Analysis

As stated above, the project requires a reorganization of the water district service areas. This document summarizes water supply availability within these water districts.

The information below was obtained from each district's Urban Water Management Plan (UWMP). An UWMP "is prepared to support long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands" (VWD 2010). Each UWMP quantifies existing and projected water supply necessary to meet future demands within each district's respective service area. Conclusions from each district's UWMP are provided in their respective sections below.

Both VWD and VID are member agencies of the San Diego County Water Authority (SDCWA), which, in turn, is a member agency of the Metropolitan Water District (MWD). Accordingly, both VWD and VID relied substantially on information contained in the SDCWA UWMP in preparation of their respective planning documents. For the purpose of this analysis, each district's relation to the others is described to document the availability for water supply within the region and for the Highlands project in particular.

4.1 Vallecitos Water District

According to the 2010 VWD UWMP, VWD "is a public agency responsible for supplying water, wastewater and recycled water service to a 45 square mile area" covering approximately 87,700 people (1-1).

4.1.1 VWD Demand

The VWD UWMP utilizes land use classifications to accurately characterize and project water demand and use patterns within their service area. Land use data is obtained from the San Diego Association of Governments (SANDAG), which updates its forecasts every two to five years. The data used in preparation of the VWD UWMP is from SANDAG's 2050 Regional Growth Forecast, adopted by the SANDAG Board of Directors in February 2010.

Actual water demand as of 2010 was 16,318 acre-feet per year (AFY). Single- and multi-family residential uses make up 60 percent of total demand. The VWD UWMP notes that despite an increase in the number of users since 2005, total water consumption has decreased due to implementation of water conservation measures. Projected demand in AFY for normal water years is shown in Table 1, below.

Table 1. Projected Demand, Normal Water Years, VWD

2015	2020	2025	2030
27,125	30,152	32,618	34,972

Source: VWD UWMP, pages 2-14 and 2-15.

Note: These figures present baseline demand and do not incorporate any conservation measures. Incorporation of conservation measures decreases anticipated demand, as shown in the Tables 2, 3, and 4, below.

In addition to demand within its existing service area, VWD also provides water to the Olivenhain Municipal Water District (6.47 million gallons per day (MGD)) and the Carlsbad Municipal Water District (8.61 MGD).

Senate Bill 7 (SB7 or SBX7-7), enacted in November 2009, requires achievement of a 20 percent reduction in statewide water use by December 31, 2020. For VWD, the target figures for a normal water year are provided in Table 2, below, in AFY.

Table 2. Target Water Use per SB7, Normal Water Year, VWD

	2015	2020	2025	2030
Baseline Water Demand	27,125	30,152	32,618	34,972
SB7 Water Demand Target	19,284	17,464	18,788	19,559
Agricultural Water Use	1,263	1,250	1,238	1,225
Water Losses	1,356	1,508	1,631	1,749
Subtotal	21,903	20,222	21,657	22,532
Additional Conservation Required	5,222	9,930	10,961	12,439

Source: Adapted from VWD UWMP, page 6-2.

As shown in Table 2, above, VWD requires implementation of additional conservation measures to meet the projected SB7 water demand in a normal year. These reductions are taken into account in the reliability analysis below.

Baseline water use demands for dry water years and multiple dry water years are not included in the VWD UWMP; however, the document provides target figures for dry water years and multiple dry water years in compliance with SB7 conservation targets. These figures are provided in Tables 3 and 4, below.

Table 3. Target Water Use per SB7, Dry Water Year, VWD

	2015	2020	2025	2030
SB7 Water Demand Target	20,414	18,519	20,072	20,939
Agricultural Water Use	1,263	1,250	1,238	1,225
Water Losses	1,356	1,508	1,631	1,749
Subtotal	23,033	21,276	22,941	23,912

Source: VWD UWMP, page 6-3.

Table 4. Target Water Use per SB7, Multiple Dry Water Years, VWD

	2015	2020	2025	2030
Year 1				
SB7 supply	19,739	18,723	20,112	20,882
Agricultural Water	1,263	1,250	1,238	1,225
Water Losses	1,356	1,508	1,631	1,749
Subtotal	22,358	21,480	22,981	23,856
Year 2				
SB7 supply	19,795	19,418	20,748	21,508
Agricultural Water	1,263	1,250	1,238	1,225
Water Losses	1,356	1,508	1,631	1,749
Subtotal	22,414	22,175	23,617	24,482
Year 3				
SB7 supply	20,070	20,321	21,638	22,264
Agricultural Water	1,263	1,250	1,238	1,225
Water Losses	1,356	1,508	1,631	1,749
Subtotal	22,689	23,079	24,507	25,238

Source: VWD UWMP, page 6-4.

4.1.2 VWD Supply

As a member agency of the SDCWA, VWD currently receives 100 percent of its water supply from this water wholesaler. Total contracted supply in AFY and projected available supply for normal water years are shown in Table 5, below.

Table 5. Water Supply, VWD

Water Source	Contracted Volume (2010)	2015	2020	2025	2030
SDCWA	16,308	27,109	30,134	32,598	34,951

Source: VWD UWMP, page 4-10.

Supply figures for dry water years and multiple dry water years are not included in the VWD UWMP.

Minimum supplies potentially available based on a worst-case scenario using the driest three-year period are presented in AFY in Table 6, below.

Table 6. Minimum Supplies, VWD

Water Supply Sources	Average/Normal Water Year Supply	Multiple Dry Water Year Supply		
		Year 2012	Year 2013	Year 2014
SDCWA	16,318	16,002	16,788	17,416
Percent of normal year	100	98.1	102.9	106.7

Source: VWD UWMP, page 9-10.

As shown, current and future demands are greater than supply in normal water years.

4.1.3 VWD Water Supply Reliability

The VWD UWMP includes an assessment of water supply reliability. Supply and demand are compared for normal water year conditions through 2030. The following Table 7 presents this information.

Table 7. Water Supply Reliability, Normal Water Year, VWD

	2015	2020	2025	2030
Baseline Water Demand	27,125	30,152	32,618	34,972
SB7 Water Demand Target ⁽¹⁾	21,903	20,222	21,657	22,532
Available Local Supply	0	0	0	0
Available SDCWA Supply	27,109	30,134	32,598	34,951
Demand on SDCWA ⁽²⁾	21,903	20,222	21,657	22,532
Sufficient Supply?	Yes	Yes	Yes	Yes

(1) This includes agricultural water use and water losses.

(2) This figure was determined by subtracting available local supply from the identified SB7 water demand target. For VWD, this total equals the SB7 water demand target, since 100 percent of its water comes from SDCWA.

As shown in Table 7 above, the projected water supply availability identified above is greater than the SB7 demand figures, demonstrating that sufficient water exists to meet demand in a normal water year for VWD customers.

While dry water year and multiple dry water year demand and supply projections were not specified, the VWD UWMP provides SB7-compliant conservation target demands for these scenarios. Total demand is provided in Tables 1 through 4, above. Since no supply figures are available, quantitatively demonstrating water reliability during dry water years and multiple dry water years is not possible. To understand whether water supply could be provided to VWD in these scenarios, it is necessary to review SDCWA water supply commitments to its member agencies. As summarized below, and according to the VWD UWMP, "if MWD, SDCWA and VWD supplies are developed as planned, along with achievement of SB7 retail conservation targets, then no shortages are anticipated within VWD's service area in a single dry-year through 2030" (6-3). For multiple dry water years, as conclusions for SDCWA, below, indicate, water shortage possibilities may occur under multiple dry water year scenarios. Accordingly, for VWD, water supply shortages are likely under multiple dry water year conditions. In these cases, additional conservation measures would be necessary to reduce water demand and use.

4.1.4 VWD Drought Planning/Shortage Contingencies

The VWD UWMP acknowledges the uncertainty associated with relying on other entities for water supply, and indicates that VWD has explored the possibility of developing local resources to provide additional security, including "seawater desalination, recycled water purchasing, treated water purchases from other agencies and groundwater feasibility" (4-1). If developed, these projects could, in total, supply an additional 23,352 to 39,777 AFY in normal water years. Estimates for single and multiple dry water year supply were not available. As these alternative supply options are still in the planning phases, they were not factored into the water supply and demand projections above.

The regional Carlsbad Desalination Project began in 2012, after preparation of the VWD UWMP. This reverse-osmosis desalination plant, capable of supplying 50 MGD of de-salted ocean water safe for human consumption, is nearing its completion slated for September 2015. The facility will take water from Carlsbad's Agua Hedionda Lagoon and distribute it through a 54-inch pipeline 10 miles eastward for treatment at SDCWA's Twin Oaks Valley Water Treatment Plant facility. This supply will increase service reliability and take pressure off imported sources where water availability is limited due to pumping restrictions or drought. This supply will also provide an emergency water source.

VWD will receive 3,500 AFY of water from the plant to complement the imported water received from SDCWA. As described in the analysis above, the VWD UWMP predicts water shortages in multiple dry year scenarios. Since no supply figures are available, quantifying the anticipated shortage is not possible. It is anticipated that an additional 3,500 AFY will reduce but not eliminate this shortage.

A 1996 groundwater feasibility analysis was performed to assess the availability and usability of an underground water supply. The analysis estimated a limited supply, and indicated that treatment would be necessary prior to use. The analysis concluded that groundwater was not a reliable option.

Despite extensive planning, drought conditions have occasionally caused unanticipated shortages, resulting in a need for use restrictions and mandatory rationing. In response, VWD has developed extensive best management practices to ensure water conservation and efficient water use. These measures are categorized based on the severity of water shortages, and increasingly restrict water use in drought and/or emergency conditions. Fines can be levied for failure to comply with these regulations. As described in greater detail below for Drought Response Level 3, if drought conditions continue for an extended

period of time and such response level is declared, VWD will not make new water connections until adequate supply exists.

In May 2009, the VWD Board of Directors approved Ordinance No. 162 adopting a Drought Response Conservation Program, modeled after SDCWA's Model Drought Response Ordinance. According to the ordinance, the program "establishes regulations to be implemented during times of declared water shortages or emergencies to conserve water, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and prevent unreasonable use of water within the Vallecitos Water District" (VWD 2009). The ordinance establishes four levels of drought response actions, each level with increasingly restrictive on water use. The Ordinance 162 is included as **Attachment C**.

Drought Response Level 1, or "Drought Watch," calls for voluntary reduced consumer demand by ten percent. Voluntary conservation practices include, but are not limited to, prohibition of washing pavements, prohibition of inefficient landscape irrigation, irrigating before 10 am and after 6 pm, and repairing of all known water leaks within five days.

Drought Response Level 2, or "Drought Alert," requires mandatory water conservation practices to reduce consumer demand by 20 percent. All Level 1 conservation practices are required plus additional mandatory practices including, but not limited to, limiting irrigation as established by the General Manager, limiting sprinkler use to 10 minutes or less, and repairing of all known water leaks within 72 hours.

Drought Response Level 3, "Drought Critical," requires additional mandatory water conservation practices to reduce consumer demand by 40 percent. Compliance with Level 1 and 2 conservation practices are required plus additional mandatory practices including, but not limited to, limiting irrigation further as established by the General Manager, limiting sprinkler use to 8 minutes or less, prohibition of refilling pools, spas, or ornamental ponds, prohibition of washing vehicles, and repairing of all known water leaks within 48 hours. Under declaration of Drought Response Level 3, no new potable water service shall be provided and no new temporary or permanent meters shall be provided or installed unless a valid, unexpired building permit has been issued for the property as of the date of adoption of this response level and meter capacity fees have been paid. VWD will suspend consideration of water service annexations into its service area.

Drought Response Level 4, "Drought Emergency Condition," requires mandatory demand reduction over 40 percent. Compliance with Level 1, 2, and 3 conservation practices are required plus additional mandatory practices including, but not limited to, prohibition of landscape irrigation and repairing of all known water leaks within 24 hours.

On July 24, 2014, the San Diego County Water Authority activated its Level 2 "Drought Alert" conditions calling for mandatory water conservation measures in order to keep as much water as possible for storage in 2015 and comply with the emergency water conservation mandates adopted by the State of California. In support, on August 6, 2014 the VWD Board of Directors enacted Drought Response Level 2 of Ordinance No. 162 calling for mandatory water use restrictions for all customers.

VWD is signatory to the Memorandum of Understanding (MOU) with the California Urban Water Conservation Council (CUWCC) which requires implementation of BMPs to ensure water conservation measures are in place. Biannual reports detail VWD's progress in implementing such measures.

SDCWA developed a Water Storage and Drought Response Plan, a comprehensive plan that describes regional actions for reducing impacts of water shortage. Notably, supply augmentation measures and demand reductions up to 50 percent are identified in the plan.

VWD includes a Shortage Contingency Plan in its UWMP. The plan notes that VWD subscribes to SDCWA’s Integrated Contingency Plan (ICP) and Emergency Storage Program (ESP). The ICP describes emergency response procedures. “The ESP is a system of reservoirs, pipelines and other facilities that will work together to store and move water around the county in the event of a natural disaster. The ESP will provide, when complete, up to six months of emergency water storage in the San Diego region” (9-2). This translates to approximately 90,100 acre-feet (AF) of stored water. According to the SDCWA website, completion is anticipated in late 2014 (SDCWA 2014a).

4.1.5 VWD Conclusion

According to the VWD UWMP, “based on the information provided by MWD and the SDCWA, the water supply available to VWD is considered to be reliable” (6-5). However, while the data above demonstrates that VWD could meet anticipated demand for normal and single dry water year scenarios, some shortages may occur in multiple dry water years. Completion of the Carlsbad Desalination Project is anticipated to reduce but not eliminate this shortage.

4.2 Vista Irrigation District

According to the 2010 VID UWMP, VID is a public agency responsible for providing water service to approximately 126,000 people in a 21,200-acre area. 68.45 acres of the project (146 units) are proposed to be served by VID.

4.2.1 VID Demand

Future demand projections are based on population figures contained within SANDAG’s 2050 Regional Growth Forecast, adopted by the SANDAG Board of Directors in February 2010.

Total demand as of 2010 was 18,273 AF¹, approximately 69 percent of which is from single- and multi-family uses.² Over the past 20 years, population within VID’s service area has increased; however, water demand has remained relatively constant due to water conservation efforts. Projected demand in AFY for normal water years is shown in Table 8, below.

Table 8. Projected Demand for Normal Water Years, VID

2015	2020	2025	2030	2035
21,491	24,985	27,360	29,916	31,823

Source: VID UWMP, page 29.

Notes: these figures include water loss system-wide. These figures present baseline demand and do not incorporate any conservation measures. Incorporation of conservation measures decreases anticipated demand, as shown in Tables 9, 10, and 11, below.

¹ 19,235 AF including water loss.

² Additional users include mobile homes, commercial, industrial, institutional/government, landscape, and agriculture.

The following Table 9 identifies conservation targets required of SB7 and additional conservation needed to comply with these requirements in a normal water year. Figures are presented in AFY.

Table 9. Target Water Use per SB7, Normal Water Year, VID

	2015	2020	2025	2030	2035
Baseline Water Demand	21,491	24,985	27,360	29,916	31,823
SB7 Water Demand Target	22,685 ⁽¹⁾	21,372	22,365	23,236	25,411
Additional Conservation Required	0	3,613	4,995	6,680	6,412

Source: VID UWMP, page 35.

(1) For 2015, demand projections will be based on the baseline figure, as this is lower than the SB7 target.

As shown, 2015 projections are below SB7 use targets. For years 2020 through 2035, incorporation of additional water conservation measures will be required to achieve the SB7 goals in normal water years.

Based on statistical analysis, it was determined that an approximate five percent increase in normal water year demand would be expected for single dry water years and multiple dry water years. These figures are presented in AFY in Tables 10 and 11, below.

Table 10. Projected Demand for Dry Water Year, VID

2015	2020	2025	2030	2035
23,520	22,441	23,483	24,398	26,682

Source: VWD UWMP, page 62.

Table 11. Projected Demand for Multiple Dry Water Year, VID (In 5-Year increments)

2011	2012	2013
20,862	23,105	22,192
2016	2017	2018
23,304	23,088	22,872
2021	2022	2023
22,649	22,857	23,065
2026	2027	2028
23,666	23,849	24,032
2031	2032	2033
24,855	24,855	24,855

Source: VWD UWMP, pages 62-63.

4.2.2 VID Supply

VID relies on a variety of water sources including imported water from SDCWA, local surface water, and groundwater. As shown in Tables 12, 13, and 14, below, the majority of the VID supply is provided by purchasing water from SDCWA. Supply figures for a normal water year, single dry water year, and multiple dry water years are presented in AFY in Tables 12, 13, and 14, below.

Table 12. Water Supply, Normal Water Year, VID

Water Source	2015	2020	2025	2030	2035
SDCWA	16,989	15,961	16,954	17,825	20,000
Local surface water diversion	5,411	5,411	5,411	5,411	5,411
Local groundwater production	-	-	-	-	-
Total	22,400	21,372	22,365	23,236	25,411

Source: VID UWMP, page 15.

Note: Groundwater produced by VID is first pumped into storage where it blends with surface water; therefore, it is reported as surface water production in this table.

Table 13. Water Supply, Dry Water Year, VID

Water Source	2015	2020	2025	2030	2035
SDCWA	21,494	18,415	19,457	20,372	22,620
Local surface water diversion	4,026	4,026	4,026	4,026	4,026
Local groundwater production	-	-	-	-	-
Total	23,520	22,441	23,483	24,398	26,682

Source: VID UWMP, page 62.

Note: Groundwater produced by VID is first pumped into storage where it blends with surface water; therefore, it is reported as surface water production in this table.

Table 14. Water Supply, Multiple Dry Water Year, VID (in 5-year Increments)

Water Source	Year		
	2011	2012	2013
SDCWA	16,836	21,527	21,159
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	20,862	23,105	22,192
	2016	2017	2018
SDCWA	19,278	21,510	21,839
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	23,304	23,088	22,872
	2021	2022	2023
SDCWA	18,623	21,279	22,032
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	22,649	22,857	23,065
	2026	2027	2028
SDCWA	19,640	22,271	22,999
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	23,666	23,849	24,032
	2031	2032	2033
SDCWA	20,829	23,734	24,736
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	24,855	24,855	24,855

Source: VID UWMP, pages 62 and 63.

Minimum supplies potentially available based on a worst-case scenario using the driest three-year period are presented in AFY in Table 15, below.

Table 15. Minimum Supplies, VID

	Normal Water Year	Single Dry Water Year	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
Local Supply	5,411	4,026	4,026	1,578	1,003
SDCWA Supply	16,988	19,756	19,756	21,192	23,776
Total	22,399	23,782	23,782	22,770	24,779
	% of Normal Water Year	106%	106%	102%	111%

Source: VID UWMP, page 26.

4.2.3 VID Reliability

The VID UWMP includes an assessment of water supply reliability. Supply and demand are compared for normal, dry, and multiple dry water year conditions through 2035.³ The following Tables 16, 17, and 18 present this information.

As shown in Table 16 below, with the exception of year 2015, the projected water supply availability identified above is greater than the SB7 demand figures, demonstrating that sufficient water exists to meet demand in a normal water year. For year 2015, the baseline water demand is less than SB7 conservation targets. Available supply is greater than this baseline demand and therefore also demonstrates sufficient supply. No shortages are anticipated to occur in a normal water year.

Table 16. Water Supply Reliability, Normal Water Year, VID

	2015	2020	2025	2030	2035
Baseline Water Demand	21,491	24,985	27,360	29,916	31,823
SB7 Water Demand Target	22,685	21,372	22,365	23,236	25,411
Available Local Supply	5,411	5,411	5,411	5,411	5,411
Available SDCWA Supply	16,989	15,961	16,954	17,825	20,000
Subtotal	22,400	21,372	22,365	23,236	25,411
Demand on SDCWA ⁽¹⁾	16,080	15,961	16,954	17,875	20,000
Sufficient Supply?	Yes ⁽²⁾	Yes	Yes	Yes	Yes

(1) This figure was determined by subtracting available local supply from the identified SB7 water demand target (or baseline water demand for 2015).

(2) For baseline water demand, only for year 2015.

Table 17. Water Supply Reliability, Dry Water Year, VID

	2015	2020	2025	2030	2035
Demand	23,520	22,441	23,483	24,398	26,682
Available Local Supply	4,026	4,026	4,026	4,026	4,026
Available SDCWA Supply	21,494	18,415	19,457	20,372	22,620
Subtotal	23,520	22,441	23,483	24,398	26,682
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes

Source: VID UWMP, page 62.

As shown in Table 17 above, the projected water supply availability is equal to the SB7 demand figures, demonstrating that sufficient water exists to meet demand in a single dry water year.

³ Year 2033 for multiple dry water year projections.

As shown in Table 18 below, the projected water supply availability appears equal to the SB7 demand figures. According to VID staff, water supply shortages are likely under multiple dry water year conditions (Hodgkiss 2014). This is consistent with the conclusions for SDCWA, presented below, that water shortage possibilities may occur under multiple dry water year scenarios. In these cases, additional conservation measures would be necessary to reduce water demand and use to match available water supply.

4.2.4 Drought Planning

VID is also signatory to the MOU with the CUWCC, which requires implementation of BMPs to ensure water conservation measures are in place. Biannual reports detail VID’s progress in implementing such measures. Additionally, VID prioritizes water conservation measures in its daily operation and planning. MWD and SDCWA implement numerous water conservation activities at the regional level. A three-tiered water rate schedule encourages water use efficiency by members like VID, where rates above a base level increase during times of severe supply cutbacks.

VID’s Water Shortage and Drought Management Plan describes a menu of actions available when drought conditions limit available supply from MWD and SDCWA. These actions are classified into a matrix that describes available actions at various stages of shortage, leaving allocations and use of emergency storage supply until the most severe conditions.

Table 18. Water Supply Reliability, Multiple Dry Water Year, VID

	2011	2012	2013
Demand	20,862	23,105	22,192
SDCWA	16,836	21,527	21,159
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	20,862	23,105	22,192
Sufficient Supply?	Yes	Yes	Yes
	2016	2017	2018
Demand	23,304	23,088	22,872
SDCWA	19,278	21,510	21,839
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	23,304	23,088	22,872
Sufficient Supply?	Yes	Yes	Yes
	2021	2022	2023
Demand	22,649	22,857	23,065
SDCWA	18,623	21,279	22,032
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	22,649	22,857	23,065
Sufficient Supply?	Yes	Yes	Yes
	2026	2027	2028
Demand	23,666	23,849	24,032
SDCWA	19,640	22,271	22,999
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	23,666	23,849	24,032
Sufficient Supply?	Yes	Yes	Yes
	2031	2032	2033
Demand	24,855	24,855	24,855
SDCWA	20,829	23,734	24,736
Local surface water diversion and groundwater production	4,026	1,578	1,033
Total	24,855	24,855	24,855
Sufficient Supply?	Yes	Yes	Yes

Source: VID UWMP, pages 62 and 63

Additionally, VID's Water Supply Response Program details scenarios where customers are required to reduce water use. Noncompliance can result in penalties and fees, or even suspension of service, for violators. These scenarios and associated recommended actions can be found in Appendix E of the VID UWMP. Finally, VID has an Emergency Response Plan that describes distribution of potable water supply in a disaster scenario. SDCWA has been increasing its emergency storage facilities to prepare for such situations. Additional detail on SDCWA actions is provided below.

Additionally, as mentioned above, the regional Carlsbad Desalination Project began in 2012. According to the VID UWMP, VID is monitoring the planned implementation of the regional desalination facility in Carlsbad, and the availability of desalinated seawater as a regional supply. No formal plans are in place for VID to acquire any supply from this project.

In 2011, the VID Board of Directors adopted Resolution 11-19 amending the District's Drought Response Conservation Program and renaming it the Water Supply Response Program with four water supply response levels. The Board's declaration of each response level is based on the condition of potable water supply from imported water from SDCWA, local surface water, and groundwater.

Level 1, Water Efficiency, is designed to ensure the efficient use of water and elimination of water waste via mandatory water use efficiency practices. Level 1 is considered to be active at all times unless a greater response level is declared. Level 1 conservation practices include, but are not limited to, prohibition of washing pavements, prohibition of inefficient landscape irrigation, irrigating before 10 am and after 6 pm, and repairing of all known water leaks within five days.

Level 2, Water Conservation, requires additional mandatory water use cutbacks of up to 20 percent. All Level 1 conservation practices are required plus additional mandatory practices including, but not limited to, limiting irrigation as established by the General Manager, limiting sprinkler use to 10 minutes or less, and repairing of all known water leaks within 72 hours.

Level 3, Water Shortage, includes mandatory water conservation measures to reduce usage of up to 40 percent. Compliance with Level 1 and 2 conservation practices are required plus additional mandatory practices including, but not limited to, limiting irrigation further as established by the General Manager, limiting sprinkler use to 8 minutes or less, prohibition of refilling pools, spas, or ornamental ponds, prohibition of washing vehicles, and repairing of all known water leaks within 48 hours. Under declaration of Drought Response Level 3, no new potable water service shall be provided and no new temporary or permanent meters shall be provided or installed unless a valid, unexpired building permit has been issued for the property as of the date of adoption of this response level and meter capacity fees have been paid. VID will suspend consideration of water service annexations into its service area.

Level 4, Water Emergency, requires incorporation of all previous mandatory water conservation measures for Levels 1 through 3 plus additional practices to reduce demand above 40 percent (VID 2014). Additional mandatory practices include, but are not limited to, prohibition of landscape irrigation and repairing of all known water leaks within 24 hours.

The VID Board of Directors has also declared a Level 2 Drought Conservation Condition and has implemented mandatory water conservation measures effective August 16, 2014. A summary of Levels 1 through 4 Water Conservation Measures are included in **Attachment D**.

4.2.5 VID Conclusion

According to information provided by SDCWA, sufficient water can be provided to meet VID demands during normal and a single dry water year through 2035. In multiple dry water years, however, there is a potential for shortages. In these cases, VID will implement water use restrictions and take other measures as necessary to ensure reduced water use to match available supply.

4.3 San Diego County Water Authority

SDCWA was established in 1943 to provide secure water resources for a growing population. SDCWA’s service area covers 1,486 square miles and a population of 3.2 million. SDCWA is comprised of 24 member agencies, including VWD and VID, which purchase water from SDCWA for distribution within their respective service areas.

4.3.1 SDCWA Demand

Water demand projections are based on growth forecast data obtained from SANDAG. Data utilized in preparation of the SDCWA UWMP is from SANDAG’s 2050 Regional Growth Forecast, adopted by the SANDAG Board of Directors in February 2010.

Actual demand as of 2010 was 566,443 AFY. Single- and multi-family residential uses make up 61 percent of total demand. Projected baseline demand in AFY for normal water years is shown in Table 19, below.

Table 19. Projected Demand, Normal Water Years, SDCWA

2015	2020	2025	2030	2035
654,022	722,040	790,229	850,899	903,213

Source: SDCWA UWMP, p. 2-6.

Note: These figures present baseline demand and do not incorporate any conservation measures. Incorporation of conservation measures decreases anticipated demand, as shown in Tables 20, 21, and 22, below.

As a water wholesale agency, SDCWA is not subject to the requirements of SB7; however, to ensure member agency compliance, SDCWA incorporates water use targets in its planning documents. The following Tables 20, 21, and 22 identify conservation targets required of SB7 and additional conservation needed to comply with these requirements in a normal water year, single dry water year, and multiple dry water years. Figures are presented in AFY.

Table 20. Target Water Use per SB7, Normal Water Year, SDCWA

	2015	2020	2025	2030	2035
Baseline Water Demand	654,022	722,040	790,229	850,899	903,213
SB7 Water Demand Target	647,285	675,089	717,995	753,619	785,685
Additional Conservation Required	6,737	46,951	72,234	97,280	117,528

Source: SDCWA UWMP, page 2-9.

Table 21. Target Water Use per SB7, Dry Water Year, SDCWA

	2015	2020	2025	2030	2035
Baseline Water Demand	694,257	765,409	836,967	901,210	956,544
SB7 Water Demand Target	687,520	718,458	764,733	803,930	839,016
Additional Conservation Required	6,737	46,951	72,234	97,280	117,528

Source: SDWCA UWMP, page 2-10.

Baseline demand projections were not provided in the SDCWA UWMP. Multiple dry water year demand projections shown in Table 22, below, are net of future conservation savings. Projections are in AFY.

Table 22. Target Water Use per SB7, Multiple Dry Water Year, SDCWA

2012	2013	2014
658,381	679,509	711,241
2016	2017	2018
682,338	705,461	740,326
2021	2022	2023
724,294 ⁽¹⁾	751,800	790,177
2026	2027	2028
772,892	801,649	844,137
2031	2032	2033
811,421	842,947	882,795

Source: SDCWA UWMP, page 2-11.

(1) Drop in demand from year 2018 to 2021 is due to full retail compliance with SB7.

4.3.2 SDCWA Supply

SDCWA relies heavily on imported water supplies purchased from MWD, transferred from Imperial Irrigation District and canal lining projects, and transferred as needed to offset reductions in received supply from MWD.

SDCWA is the largest member agency of MWD, and purchased 331,825 AF in 2010, or about 21 percent of the total water provided by MWD.⁴ Additionally, SDCWA has a preferential right estimated at 1.8 million AF of MWD water in 2030. Tables 23, 24, and 25, below, outline these suppliers in a normal water year, single dry water year, and multiple dry water years. Figures are presented in AFY.

⁴ SDCWA's preferential right is only 17.47 percent.

Table 23. Water Supply, Normal Water Year, SDCWA

Supplier	2015	2020	2025	2030	2035
MWD	358,189	230,601	259,694	293,239	323,838
Local Supplies					
Imperial Irrigation District Water Conservation and Transfer Agreement	100,000	190,000	200,000	200,000	200,000
All-American Canal Lining Project	56,200	56,200	56,200	56,200	56,200
Coachella Canal Lining Project	24,000	24,000	24,000	24,000	24,000
Carlsbad Seawater Desalination Facility ⁽¹⁾	0	56,000	56,000	56,000	56,000
<i>Subtotal</i>	<i>180,200</i>	<i>326,200</i>	<i>336,200</i>	<i>336,200</i>	<i>336,200</i>
Member Agency Supplies					
Surface Water	48,206	47,940	47,878	47,542	47,289
Water Recycling	38,660	43,728	46,603	48,278	49,998
Groundwater	11,710	11,100	12,100	12,840	12,840
Groundwater Recovery	10,320	15,520	15,520	15,520	15,520
<i>Subtotal</i>	<i>108,896</i>	<i>118,288</i>	<i>122,101</i>	<i>124,180</i>	<i>125,647</i>
Total⁽²⁾	647,285	675,089	717,995	753,619	785,685

Source: SDCWA UWMP, pages 4-5, 4-7, 4-10, and 9-2.

(1) Not yet constructed; on track for opening in September 2015 (Diehl 2015).

(2) Includes SB7 conservation measures

Table 24. Water Supply, Dry Water Year, SDCWA

Supplier	2015	2020	2025	2030	2035
MWD	430,431	305,101	338,501	376,023	409,389
Local Supplies					
Imperial Irrigation District Water Conservation and Transfer Agreement	100,000	190,000	200,000	200,000	200,000
All-American Canal Lining Project	56,200	56,200	56,200	56,200	56,200
Coachella Canal Lining Project	24,000	24,000	24,000	24,000	24,000
Carlsbad Seawater Desalination Facility ⁽¹⁾	0	56,000	56,000	56,000	56,000
<i>Subtotal</i>	<i>180,200</i>	<i>326,200</i>	<i>336,200</i>	<i>336,200</i>	<i>336,200</i>
Member Agency Supplies					
Surface Water	17,932	17,932	17,932	17,932	17,932
Water Recycling	38,660	43,728	46,603	48,278	49,998
Groundwater	9,977	9,977	9,977	9,977	9,977
Groundwater Recovery	10,320	15,520	15,520	15,520	15,520
<i>Subtotal</i>	<i>76,889</i>	<i>87,157</i>	<i>90,032</i>	<i>91,707</i>	<i>93,427</i>
Total⁽²⁾	687,520	718,458	764,733	803,930	839,016

Source: SDCWA UWMP, page 9-3.

(1) Not yet constructed; on track for opening in September 2015 (Diehl 2015).

(2) Includes SB7 conservation measures

Table 25. Water Supply, Multiple Dry Water Year, SDCWA

	2012	2013	2014
Member Agency Supply	69,597	84,440	103,907
Local Supply	170,200	180,200	180,200
MWD	317,760	319,177	320,456
Total	557,557	583,817	604,563
	2016	2017	2018
Member Agency Supply	78,943	93,408	112,499
Local Supply	236,200	236,200	266,200
MWD	322,661	323,350	324,100
Total	637,804	652,958	702,799
	2021	2022	2023
Member Agency Supply	87,732	100,719	118,331
Local Supply	336,200	336,200	336,200
MWD	326,697	327,671	328,695
Total	750,629	764,590	783,226
	2026	2027	2028
Member Agency Supply	90,367	103,114	120,486
Local Supply	336,200	336,200	336,200
MWD	332,058	333,272	334,532
Total	758,625	772,586	791,218
	2031	2032	2033
Member Agency Supply	92,051	104,807	122,188
Local Supply	336,200	336,200	336,200
MWD	338,575	340,009	341,486
Total	766,826	781,016	799,874

Source: SDCWA UWMP, pages 9-4 through 9-6.

Minimum supplies potentially available based on a worst-case scenario using the driest three-year period are presented in Table 26, below.

Table 26. Minimum Supplies, SDCWA

Supplier	Average Water Year 2013	Single Dry Water Year 2013	Multiple Dry Water Year Supply		
			2012	2013	2014
Member Agency Supply	95,805	72,028	69,597	84,440	103,907
Local Supply	180,200	180,200	170,200	180,200	180,200
MWD	319,177	319,177	317,760	319,177	320,456
Total	595,183	571,405	557,557	583,817	604,563

Source: SDCWA UWMP, page 11-14.

Note: These figures do not include utilization of carryover storage.

4.3.3 SDCWA Storage Capacity

SDCWA has developed a carryover water storage program to provide security and minimize impacts to member agencies in times of water shortage. Currently, this program incorporates storage capacity from member agencies and capacity as of 2012 totaled approximately 170,000 AF. Additionally, SDCWA participates in a groundwater banking program that provides 70,000 AF of storage for use in shortage periods.

In 2012, SDCWA completed the Olivenhain-Hodges Pumped Storage project that provides a total of 92,000 AF of storage capacity (SDCWA 2014b). In the future, additional capacity will be available through the raising of the San Vicente Dam (SDCWA 2014c).⁵ The San Vicente Dam raise will provide approximately 100,000 AF of storage capacity.⁶ Of this 192,000 AF, “a rolling two month average of consumptive demand is considered emergency storage, which will be available to offset complete loss of imported water supplies from Metropolitan during an extended shutdown or outage of the aqueduct system. The balance of the in-region storage is for carryover, seasonal, or operational storage needs” (SDCWA UWMP 1-10).

4.3.4 SDCWA Water Supply Reliability

The SDCWA UWMP includes an assessment of water supply reliability. Supply and demand are compared for normal, single dry water year, and multiple dry water year conditions through 2035. The following Tables 27, 28, and 29 present this information in AFY.

Table 27. Water Supply Reliability, Normal Water Year, SDCWA

	2015	2020	2025	2030	2035
Baseline Water Demand	654,022	722,040	790,229	850,899	903,213
SB7 Water Demand Target	647,285	675,089	717,995	753,619	785,685
Available Local Supply	180,200	326,200	336,200	336,200	336,200
Available MWD Supply	358,189	230,601	259,694	293,239	323,838
Member Agency Supply	108,896	118,288	122,101	124,180	125,647
Subtotal	647,285	675,089	717,995	753,619	785,685
Demand on MWD ⁽¹⁾	358,189	230,601	259,694	293,239	323,838
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes

(1) This figure was determined by subtracting available local and member supply from the identified SB7 water demand target. In this case, demand on MWD supply equals the available supply from MWD.

As shown in Table 27 above, and according to the SDCWA UWMP, “if Metropolitan, the Water Authority and member agency supplies are developed as planned, along with achievement of the SBX7-7 retail conservation target, no shortages are anticipated within the Water Authority’s service area in a normal year through 2035” (9-2).

Table 28. Water Supply Reliability, Single Dry Water Year, SDCWA

	2015	2020	2025	2030	2035
Baseline Water Demand	694,257	765,409	836,967	901,210	956,544
SB7 Water Demand Target	687,520	718,458	764,733	803,930	839,016
Available Local Supply	180,200	326,200	336,200	336,200	336,200
Available MWD Supply	430,431	305,101	338,501	376,023	409,389
Member Agency Supply	76,889	87,157	90,032	91,707	93,427
Subtotal	687,520	718,458	764,733	803,930	839,016
Demand on MWD ⁽¹⁾	430,431	305,101	338,501	376,023	409,389
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes

(1) This figure was determined by subtracting available local and member supply from the identified SB7 water demand target. In this case, demand on MWD supply equals the available supply from MWD.

⁵ Dam construction began in 2009 and is anticipated to be open to the public between late 2014 and late 2017. Once construction is complete, an additional three to five years are required to fill the reservoir.

⁶ Until these projects are complete, SDCWA is storing approximately 40,000 AF at Sweetwater Authority and City of San Diego reservoirs.

Assuming the years leading up to the dry water year scenario are normal or wetter than average, the SDCWA UWMP concludes that MWD should have adequate supply in a dry water year to meet anticipated demand. Additionally, "if Metropolitan, the Water Authority and member agency supplies are developed as planned, along with achievement of the SBX7-7 retail conservation target, no shortages are anticipated within the Water Authority's service area in a single dry-year through 2035" (9-4).

The following Table 29 illustrates three consecutive dry water years for each five-year increment.

Table 29. Water Supply Reliability, Multiple Dry Water Year, SDCWA

	2012	2013	2014	2016	2017	2018
SB7 Water Demand Target	658,381	679,509	711,241	682,338	705,461	740,326
Available Local Supply	170,200	180,200	180,200	236,200	236,200	266,200
Available MWD Supply	317,760	319,177	320,456	322,661	323,350	324,100
Member Agency Supply	69,597	84,440	103,907	78,943	93,408	112,499
Subtotal	557,557	583,817	604,563	637,804	652,958	702,799
Sufficient Supply?	No	No	No	No	No	No
Available Carryover Supply	40,000	40,000	30,000	44,534	40,000	30,000
Remaining	-60,824	-55,692	-76,678	0	-12,503	-7,527
Sufficient Supply?	No	No	No	Yes	No	No
	2021	2022	2023	2026	2027	2028
SB7 Water Demand Target	724,294	751,800	790,177	772,892	801,649	844,137
Available Local Supply	336,200	336,200	336,200	336,200	336,200	336,200
Available MWD Supply	326,697	327,671	328,695	332,058	333,272	334,532
Member Agency Supply	87,732	100,719	118,331	90,367	103,114	120,486
Subtotal	750,629	764,590	783,226	758,625	772,586	791,218
Sufficient Supply?	Yes	Yes	Yes	No	No	No
Available Carryover Supply	0	0	6,951	14,267	29,063	40,000
Remaining	26,335	12,790	0	0	0	-12,919
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes	No
	2031	2032	2033			
SB7 Water Demand Target	811,421	842,947	882,795			
Available Local Supply	336,200	336,200	336,200			
Available MWD Supply	338,575	340,009	341,486			
Member Agency Supply	92,051	104,807	122,188			
Subtotal	766,826	781,016	799,874			
Sufficient Supply?	No	No	No			
Available Carryover Supply	44,595	40,000	30,000			
Remaining	0	-21,931	-52,921			
Sufficient Supply?	Yes	No	No			

For analysis purposes for the multiple dry water year scenarios, SDCWA assumed that MWD would allocate its supply to member agencies. This assumption compels incorporation of stored water into supply projections.

Table 29, above, also identifies usage of carryover supply. As identified, current carryover supply is approximately 170,000 AF. The figures above do not assume full usage of this capacity in multiple dry water years. As a general rule, no more than one-third of available supply will be used in shortage years to avoid completely depleting the reserves.

Even with use of stored water, some shortage is possible in certain years, as shown in Table 29. Shortages in the earlier years are anticipated as the Carlsbad Seawater Desalination project is constructed and Imperial Irrigation District (IID) transfer supplies are still increasing to their maximum deliveries. Shortages projected for later years are due to regional growth and associated increased demands.

4.3.5 SDCWA Drought Planning/Shortage Contingencies

4.3.5.1 Storage

SDCWA has dry-year supplies and storage that could be relied upon when water supply is short, as described above. Raising the San Vicente Dam will provide an additional 100,000 AF of storage to ensure secure water supply. Once this and the other projects described above are completed, a rolling two-month average of water demand will be considered emergency storage. Use of this water could occur during severe drought conditions. Determining how much water is available for emergency use will occur on a case-by-case basis, but as a best practice, it is assumed that no more than one-third of available supply will be used in a single year. In times when stored supplies are insufficient to meet demand, interim response measures as described in the SDCWA Water Shortage and Drought Response Plan (WSDRP) will be implemented.

4.3.5.2 Planning

SDCWA prepared a Drought Management Plan (DMP), now called the WSDRP, which provides recommended actions in a drought such that MWD is allocating water to its member agencies. The WSDRP guides water shortage management. This plan focuses on a regional response to shortage situations and incorporates both supply augmentation and demand reduction measures. The Plan incorporates a response matrix that classifies potential response actions based on the severity of the shortage. The 2006 plan is based on the 2005 UWMP. The plan describes how SDCWA will reliably provide water to its member agencies and also incorporates a response matrix to guide decision-making in a drought. The matrix includes such actions as purchasing as-needed one-time water transfers and utilizing carryover storage. This plan also outlines SDCWA's process for allocating resources in a drought.

SDCWA's WSDRP provides the basis for its Model Drought Response Ordinance and four increasingly restrictive drought response levels that are summarized for VWD, above. As described for VWD and VID, above, Drought Response Level 1, or "Drought Watch," calls for voluntary reduced consumer demand by ten percent. Voluntary conservation practices include, but are not limited to, prohibition of washing pavements, prohibition of inefficient landscape irrigation, irrigating before 10 am and after 6 pm, and repairing of all known water leaks within five days.

Drought Response Level 2, or "Drought Alert," requires mandatory water conservation practices to reduce consumer demand by 20 percent. All Level 1 conservation practices are required plus additional mandatory practices including, but not limited to, limiting irrigation as established by the General Manager, limiting sprinkler use to 10 minutes or less, and repairing of all known water leaks within 72 hours.

Drought Response Level 3, "Drought Critical," requires additional mandatory water conservation practices to reduce consumer demand by 40 percent. Compliance with Level 1 and 2 conservation practices are required plus additional mandatory practices including, but not limited to, limiting irrigation further as established by the General Manager, limiting sprinkler use to 8 minutes or less, prohibition of refilling pools, spas, or ornamental ponds,

prohibition of washing vehicles, and repairing of all known water leaks within 48 hours. Under declaration of Drought Response Level 3, no new potable water service shall be provided and no new temporary or permanent meters shall be provided or installed unless a valid, unexpired building permit has been issued for the property as of the date of adoption of this response level and meter capacity fees have been paid. SDCWA will suspend consideration of water service annexations into its service area.

Drought Response Level 4, "Drought Emergency Condition," requires mandatory demand reduction over 40 percent. Compliance with Level 1, 2, and 3 conservation practices are required plus additional mandatory practices including, but not limited to, prohibition of landscape irrigation and repairing of all known water leaks within 24 hours.

Consistent with this ordinance, in July 2014 SDCWA activated its Level 2 "Drought Alert" conditions calling for mandatory water conservation measures in order to keep as much water as possible for storage in 2015 and comply with the emergency water conservation mandates adopted by the State of California. In turn, member agencies VWD and VID implemented their respective response levels to reduce consumer water use by up to 20 percent. This Drought Alert condition is still applicable until SDCWA's board of directors considers whether to establish water delivery reductions for fiscal year 2016 for its member agencies in response to Executive Order B-29-15 and recent Municipal Water District action approving up to 15 percent cuts to water supplies for member agencies. See Section 4.4.4, below, for additional details. A special meeting of the SDCWA board of directors is scheduled for May 14, 2015 to discuss regional drought response actions.

As summarized in its UWMP, SDCWA developed an ICP and ESP to protect public health and safety as well as prevent or limit economic damage due to severe water shortage. The ESP incorporates a six-month emergency supply, providing a rolling two-month average supply. When complete, the ESP will provide 90,100 AF of stored water to meet San Diego County's emergency needs through at least 2030. The ICP presents an emergency response plan and describes tools available.

The SDCWA UWMP identifies six uncertainty scenarios to develop strategies for managing such uncertainties. The plan describes each scenario and presents the anticipated water supply mix to meet anticipated demand. The plan also identifies potential gaps in available supply for each scenario. Strategies to manage these uncertain situations are summarized in Section 10.1.5 of the UWMP, along with specific projects to meet identified gaps. Section 11 of the SDCWA UWMP addresses shortage contingency measures to address water supply shortages due to unforeseen situations.

The SDCWA 2013 Regional Water Facilities Optimization and Master Plan Update incorporates projections for future water demands and supply identified in the 2010 UWMP to evaluate infrastructure needs and upgrades to meet water demand within SDCWA's service area (CH2MHILL 2014). This Plan describes and prioritizes capital improvement projects necessary to meet supply and demand through 2030. Two major planning projects include a regional desalination project⁷ and bi-national seawater desalination project⁸. Once developed, these projects could provide an additional 94,600 AF of available water storage. This figure was not incorporated into the reliability analysis above.

As identified in the SDCWA Supply section, above, future desalinated water from the regional Carlsbad Desalination Project has been factored into available supply projections

⁷ Not yet constructed; a feasibility study was prepared in 2009, indicating the earliest operation in 2019; additional technical studies are forthcoming.

⁸ Not yet constructed; the first of a four-phase feasibility study was completed in 2010.

beginning in 2020. As shown, even with development of this water source, water shortages in certain multiple dry years are projected.

4.3.5.3 Regional Collaboration

SDCWA participates in multi-agency Integrated Regional Water Management Planning efforts to ensure “an integrated, balanced, and consensus-based approach to ensuring the long-term sustainability of the Region’s water supply, water quality, and natural resources” (SDIRWM 2013). Preparation of the initial IRWM Plan in 2007⁹ for the San Diego Region was necessary to secure state funding for project implementation. This Plan was prepared by SDCWA, the city of San Diego, and the county of San Diego. Of primary importance has been projects that seek to diversify water supply. This plan is current as of 2013.

SDCWA is aware of potential complications to water supply certainty due to climate change. To that end, SDCWA has supported numerous studies and projects to better understand the influence climate change may have on water supply and demand for the San Diego Region. The largest of these will be completed in partnership with the Scripps Institution of Oceanography and San Diego State University. In the interim, SDCWA has “adopted a qualitative evaluation approach that uses a manageable number of climate change scenarios to develop a range of potential demands” according to its UWMP (2-11).

4.3.6 Conclusion

According to the SDCWA UWMP, SDCWA anticipates meeting all future demands of its member agencies in normal and single dry-year scenarios. During multiple dry water years, shortages are anticipated.

4.4 Metropolitan Water District

Formed in 1928, MWD is a wholesale agency formed “for the purpose of developing, storing, and distributing water to the residents of Southern California” (1-6). MWD consists of 26 member agencies, including SDCWA, and has a service area covering six counties, 5,200 square miles, and 19 million people.

4.4.1 MWD Demand

Water demand projections are based on growth forecast data obtained from the Southern California Association of Governments (SCAG) and SANDAG. Data utilized in preparation of the MWD Regional UWMP (RUWMP) is from SCAG’s 2007 Regional Transportation Plan and SANDAG’s 2050 Regional Growth Forecast, adopted by the SANDAG Board of Directors in February 2010.

Projected demand in AFY for normal water years is shown in Table 30, below.

Table 30. Projected Demand, Normal Water Years, MWD

2015	2020	2025	2030	2035
5,480,000	5,662,000	5,804,000	5,961,000	6,101,000

Source: MWD RUWMP, page 2-12.

Note: These figures present baseline demand and do not incorporate any conservation measures. Incorporation of conservation measures decreases anticipated demand, as shown in Tables 31, 32, and 33, below.

⁹ The Department of Water Resources approved this plan in 2009.

As a water wholesale agency, MWD is not subject to the requirements of SB7; however, like SDCWA, to ensure member agency compliance, MWD incorporates water use targets in its planning documents. The following Tables 31, 32, and 33 identify conservation targets required of SB7 and additional conservation needed to comply with these requirements in a normal water year, single dry water year, and multiple dry water years. Figures are presented in AFY.

Table 31. Target Water Use per SB7, Normal Water Year, MWD

	2015	2020	2025	2030	2035
Baseline Water Demand	5,449,000	5,632,000	5,774,000	5,930,000	6,069,000
Demand with Existing Water Conservation Measures	4,513,000	4,665,000	4,741,000	4,834,000	4,913,000
SB7 Water Demand Target	4,323,000	4,285,000	4,361,000	4,454,000	4,533,000
Additional Conservation Required	190,000	380,000	380,000	380,000	380,000

Source: MWD RUWMP, page 2-14.

Table 32. Target Water Use per SB7, Dry Water Year, MWD

	2015	2020	2025	2030	2035
Baseline Water Demand	5,480,000	5,662,000	5,804,000	5,961,000	6,101,000
Demand with Existing Water Conservation Measures	4,544,000	4,695,000	4,771,000	4,865,000	4,945,000
SB7 Water Demand Target	4,354,000	4,315,000	4,391,000	4,485,000	4,565,000
Additional Conservation Required	190,000	380,000	380,000	380,000	380,000

Source: MWD RUWMP, page 2-12.

Table 33. Target Water Use per SB7, Multiple Dry Water Year, MWD

	2015	2020	2025	2030	2035
Baseline Water Demand	5,478,000	5,702,000	5,862,000	6,017,000	6,161,000
Demand with Existing Water Conservation Measures	4,542,000	4,735,000	4,829,000	4,921,000	5,005,000
SB7 Water Demand Target	4,352,000	4,355,000	4,449,000	4,541,000	4,625,000
Additional Conservation Required	190,000	380,000	380,000	380,000	380,000

Source: MWD RUWMP, page 2-13.

4.4.2 MWD Supply

Historically, approximately half of the region’s water supply has been locally sourced. The remainder is imported from Northern California from the California State Water Project (SWP) via the California Aqueduct and from the Colorado River via the Colorado River Aqueduct (CRA). As shown in Tables 34, 35, and 36, below, this ratio has and is projected to shift to rely more on imported water.

MWD is entitled to approximately 48 percent of available supply from the SWP, or 1,911,500 AFY. 100,000 AF of this total is transferred to the Coachella Valley Water District and Desert Water Agency. Recently, water diversions from the Sacramento Bay-Delta have been limited due to ecological considerations. MWD’s supply figures assume a new Delta conveyance as fully operational in 2022, thereby increasing supply. Based on figures provided by the State Department of Water Resources, anticipated water delivery is

estimated at 60 percent of entitlements (1.15 million AF) under long-term average conditions, and 7 percent of entitlements (134,000 AF) under a single dry water year.

Prior to 1964, MWD had a secure 1.212 million AFY allotment from the Colorado River; however, MWD's allotment dropped to 550,000 AFY due to U.S. Supreme Court ruling in Arizona v. California. MWD's priority is fourth out of seven, with a total of 3.85 million AFY allocated elsewhere in California. The CRA can deliver up to 1.25 million acre-feet of water per year (AFY). MWD participates in an agreement with other member agencies to permit water transfers as possible.

Tables 34, 35, and 36, below, outline local and regional water supplies to MWD in a normal water year, single dry water year, and multiple dry water years.

Table 34. Water Supply, Normal Water Year, MWD

Supplier	2015	2020	2025	2030	2035
Local Supply					
Groundwater	1,429,000	1,430,000	1,429,000	1,431,000	1,431,000
Surface Water	103,000	102,000	102,000	102,000	102,000
Los Angeles Aqueduct	224,000	225,000	226,000	229,000	230,000
Groundwater Recovery	101,000	108,000	114,000	120,000	126,000
Total Recycling	348,000	375,000	394,000	410,000	426,000
Other Imported Supply ⁽¹⁾	190,000	281,000	288,000	288,000	288,000
Subtotal	2,395,000	2,522,000	2,553,000	2,581,000	2,603,000
Storage	685,000	931,000	1,076,000	964,000	830,000
Subtotal	685,000	931,000	1,076,000	964,000	830,000
Regional Supply					
SWP	1,550,000	1,629,000	1,763,000	1,733,000	1,734,000
CRA	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Subtotal	2,800,000	2,879,000	3,013,000	2,983,000	2,984,000
Total	5,880,000	6,332,000	6,642,000	6,528,000	6,417,000

Source: MWD RUWMP, pages 2-14 and 2-19.

(1) This includes IID/SDCWA water transfer and Coachella and All-American Canal Lining Projects

Table 35. Water Supply, Dry Water Year, MWD

Supplier	2015	2020	2025	2030	2035
Local Supply					
Groundwater	1,457,000	1,395,000	1,407,000	1,423,000	1,416,000
Surface Water	98,000	97,000	97,000	97,000	97,000
Los Angeles Aqueduct	66,000	66,000	66,000	66,000	66,000
Groundwater Recovery	101,000	108,000	114,000	120,000	126,000
Total Recycling	348,000	375,000	394,000	410,000	426,000
Other Imported Supply	190,000	281,000	288,000	288,000	288,000
Subtotal	2,260,000	2,322,000	2,366,000	2,405,000	2,419,000
Storage	685,000	931,111	1,076,000	964,000	830,000
Subtotal	685,000	931,111	1,076,000	964,000	830,000
Regional Supply					
SWP	522,000	601,000	651,000	609,000	610,000
CRA	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Subtotal	1,772,000	1,851,000	1,901,000	1,859,000	1,860,000
Total	4,717,000	5,104,111	5,343,000	5,228,000	5,109,000

Source: MWD RUWMP, pages 2-12 and 2-17.

Table 36. Water Supply, Multiple Dry Water Year, MWD

Supplier	2015	2020	2025	2030	2035
Local Supply					
Groundwater	1,386,000	1,389,000	1,389,000	1,397,000	1,396,000
Surface Water	91,000	91,000	91,000	91,000	91,000
Los Angeles Aqueduct	63,000	67,000	71,000	75,000	78,000
Groundwater Recovery	100,000	107,000	113,000	119,000	125,000
Total Recycling	340,000	370,000	390,000	407,000	423,000
Other Imported Supply	191,000	282,000	288,000	288,000	288,000
<i>Subtotal</i>	<i>2,171,000</i>	<i>2,305,000</i>	<i>2,343,000</i>	<i>2,378,000</i>	<i>2,402,000</i>
Storage	246,000	373,000	435,000	398,000	353,000
<i>Subtotal</i>	<i>246,000</i>	<i>373,000</i>	<i>435,000</i>	<i>398,000</i>	<i>353,000</i>
Regional Supply					
SWP	752,000	794,000	835,000	811,000	812,000
CRA	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
<i>Subtotal</i>	<i>2,002,000</i>	<i>2,044,000</i>	<i>2,085,000</i>	<i>2,061,000</i>	<i>2,062,000</i>
Total	4,419,000	4,722,000	4,863,000	4,837,000	4,817,000

Source: MWD RUWMP, pages 2-13 and 2-18.

MWD takes a holistic approach to water supply within its service area. Not only it the Authority focused on importing water, but it also coordinates storage resources within its service area for the benefit of all member agencies. According to the SDCWA UWMP, Section 135 of the Metropolitan Act permits MWD member agencies to “acquire for use within the agency supplies based on preferential rights at any time” (9-4).

Minimum supplies potentially available based on a worst-case scenario using the driest three-year period are presented in AFY in Table 37, below. These figures incorporate water storage levels as of 2010 and projected demand and supply under a multiple dry-year scenario.

Table 37. Minimum Supplies, MWD

	2011	2012	2013
Current Programs			
In-region storage	351,000	50,000	17,000
SWP	582,000	625,000	611,000
CRA	998,000	932,000	937,000
<i>Subtotal</i>	<i>1,931,000</i>	<i>1,607,000</i>	<i>1,565,000</i>
Programs Under Development			
In-region storage	12,000	12,000	12,000
SWP	23,000	30,000	374,000
CRA	176,000	176,000	176,000
<i>Subtotal</i>	<i>211,000</i>	<i>218,000</i>	<i>562,000</i>
Total	2,142,000	1,825,000	2,127,000

Source: MWD RUWMP, page 1-24.

4.4.3 MWD Water Supply Reliability

The MWD RUWMP includes a description of various actions that will be explored and/or implemented to meet future water demands as described below in the Drought Planning section. The projections below incorporate these actions.

Table 38. Water Supply Reliability, Normal Water Year, MWD

	2015	2020	2025	2030	2035
Baseline Water Demand	5,449,000	5,632,000	5,774,000	5,930,000	6,069,000
SB7 Water Demand Target	4,323,000	4,285,000	4,361,000	4,454,000	4,533,000
Available Local Supply	2,395,000	2,522,000	2,553,000	2,581,000	2,603,000
Storage	685,000	931,000	1,076,000	964,000	830,000
Available SWP and CRA Supply	2,800,000	2,879,000	3,013,000	2,983,000	2,984,000
<i>Subtotal</i>	<i>5,880,000</i>	<i>6,332,000</i>	<i>6,642,000</i>	<i>6,528,000</i>	<i>6,417,000</i>
Demand on regional supply ⁽¹⁾	1,826,000	1,660,000	1,705,000	1,769,000	1,826,000
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes

(1) This figure was determined by subtracting available local supply from the identified SB7 water demand target plus incorporating a figure as provided in MWD Administrative Code Section 4114 to account for water replenishment.

As shown, MWD anticipates sufficient supply in a normal water year to meet demands.

Table 39. Water Supply Reliability, Dry Water Year, MWD

	2015	2020	2025	2030	2035
Baseline Water Demand	5,480,000	5,662,000	5,804,000	5,961,000	6,101,000
SB7 Water Demand Target	4,354,000	4,315,000	4,391,000	4,485,000	4,565,000
Available Local Supply	2,260,000	2,322,000	2,366,000	2,405,000	2,419,000
Available Storage	685,000	931,111	1,076,000	964,000	830,000
Available SWP and CRA Supply	1,772,000	1,851,000	1,901,000	1,859,000	1,860,000
<i>Subtotal</i>	<i>4,717,000</i>	<i>5,104,111</i>	<i>5,343,000</i>	<i>5,228,000</i>	<i>5,109,000</i>
Demand on regional supply ⁽¹⁾	1,991,000	1,889,000	1,921,000	1,974,000	2,039,000
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes

(1) This figure was determined by subtracting available local supply from the identified SB7 water demand target plus incorporating a figure as provided in MWD Administrative Code Section 4114 to account for water replenishment.

As shown, MWD anticipates sufficient supply in a dry water year to meet demands.

Table 40. Water Supply Reliability, Multiple Dry Water Year, MWD

	2015	2020	2025	2030	2035
Baseline Water Demand	5,478,000	5,702,000	5,862,000	6,017,000	6,161,000
SB7 Water Demand Target	4,352,000	4,355,000	4,449,000	4,541,000	4,625,000
Available Local Supply	2,171,000	2,305,000	2,343,000	2,378,000	2,402,000
Available Storage	246,000	373,000	435,000	398,000	353,000
Available SWP and CRA Supply	2,002,000	2,044,000	2,085,000	2,061,000	2,062,000
<i>Subtotal</i>	<i>4,419,000</i>	<i>4,722,000</i>	<i>4,863,000</i>	<i>4,837,000</i>	<i>4,817,000</i>
Demand on regional supply ⁽¹⁾	2,056,000	1,947,000	2,003,000	2,059,000	2,119,000
Sufficient Supply?	Yes	Yes	Yes	Yes	Yes

(1) This figure was determined by subtracting available local supply from the identified SB7 water demand target plus incorporating a figure as provided in MWD Administrative Code Section 4114 to account for water replenishment.

As shown, MWD anticipates sufficient supply in multiple dry water years to meet demands.

4.4.4 MWD Drought Planning

To ensure existing and future demands can be met, MWD engages in a variety of BMPs to maximize water use efficiency. MWD is also signatory to the CUWCC MOU. MWD also promotes water conservation through various outreach programs aimed at residential, commercial, industrial, and institutional users. These are described in greater detail in Section 3.4 of the MWD RUWMP.

To safeguard against emergency conditions, MWD relies on emergency storage collected during times of excess supply. Currently, MWD has approximately 30 storage programs, including both groundwater and surface storage in reservoirs. In total, these programs provide more than 5 million AF of storage. Additionally, a number of projects are under development that would add increased storage and regional supply available from the SWP and CRA. Once developed, these projects are forecast to add 588,000 to 1,051,000 AF in a normal water year, 762,000 to 1,036,000 AF in a dry water year, and 404,000 to 755,000 AF in a multiple dry water year scenario. This is described in the MWD Water Surplus and Drought Management Plan (WSDM Plan) that guides operational and planning scenarios during both surplus and shortage conditions. This Plan aids in managing water resources to minimize the need for allocations. Should allocations become necessary, according to its UWMP, MWD describes its methodology for allocating supplies in shortage conditions in its 2008 Water Supply Allocation Plan (WSAP). Within the WSDM Plan, MWD addresses the interconnectedness of storage during surplus years to minimize impacts during shortage years. The MWD WSAP is based on the WSDM Plan.

The 2010 Integrated Water Resources Plan describes standard best strategies, incorporates a buffer to account for uncertain scenarios, and, if needed, describes strategies for acquiring additional water supply. This document “represents Metropolitan’s comprehensive planning process and will serve as Metropolitan’s blueprint for long-term water reliability, including key supply development and water use efficiency goals” (RUWMP, ES-1).

The RUWMP indicates that MWD has the option of allocating resources to member agencies even if full supply exists in order to ensure future security.

In an acknowledgement of the state’s drought conditions, on April 1, 2015, California Governor Jerry Brown ordered state officials to impose mandatory water restrictions to reduce statewide water usage by 25 percent via Executive Order B-29-15. Among other restrictions, irrigation with potable water of ornamental turf, on public street medians, and outside of newly constructed homes is prohibited under this Order. In response, and pursuant to the RUWMP, on April 14, 2015 the MWD board of directors approved a water supply cut of up to 15 percent to member agencies. The cuts will begin July 1, 2015. Individual member agencies will see varied supply cuts, which will be determined based on the availability of local water supply and existing water conservation efforts of each agency.

Section 135 of the Metropolitan Act grants member agencies preferential rights to MWD water. These rights are based on each member’s historic payments to MWD for various charges. Note this does not include payment for water. MWD can impose penalties on its member agencies including SDCWA for water use in excess of its allotment. These penalties can be passed through to VWD and VID on a pro rata basis for any exceedance. Water rates in subsequent years can also be increased, and water allocations can decrease.

MWD has also developed an Emergency Storage Requirement to provide water supply in emergency situations. This requirement is the difference between normal water year demand and dry water year demand, plus sufficient supply to cover seasonal peak

demands. In addition to current storage capacity described above, emergency storage of 1,669,100 AF is available to MWD to meet this demand.

4.4.5 Conclusion

Tables 38, 39, and 40, above, demonstrate that MWD can provide reliable supply under normal, single dry, and multiple dry water year scenarios through 2035. This, in turn, would provide SDCWA with adequate supply in normal and single dry water years; however, in multiple dry water years shortages should be anticipated. These shortages would be passed along to member agencies VWD and VID, resulting in potential shortages in multiple dry water years. For normal and single dry year scenarios, sufficient supply exists to meet anticipated demand for VWD and VID. In multiple dry water years, additional conservation measures would be necessary to reduce water demand and use from VWD and VID to match available water supply.

5.0 Project Analysis

5.1 Vallecitos Water District

An April 2015 *San Marcos Highlands Water Sewer Study Final Technical Memorandum* was prepared by VWD to determine the increased water demand resulting from implementation of the proposed project. The memorandum also analyzed if the current water distribution infrastructure and storage reservoirs were sufficient to accommodate the increased water demands. The technical memorandum assumed a total of 189 units, and used the land uses contained in VWD's 2008 Master Plan (PBS&J 2010).

The San Marcos Highlands Specific Plan consists of approximately 262.14 acres¹⁰. Approximately 141.14 acres are currently located within the adopted Sphere of Influence and the incorporated boundary of the City of San Marcos. The remaining 121 acres are currently located within the unincorporated territory of the County of San Diego (Figure 1). LAFCO approval is required for reorganization to annex the 121 acres into the City of San Marcos from the unincorporated County.

Approximately 37.5 of the 106.93 acres to be annexed to the City of San Marcos are currently located within the VWD sphere of influence and service area. LAFCO approval is required for a reorganization between VWD and VID that would result in a total of 38.48 acres within the VWD service area and sphere of influence (Figure 3).

Within the 38.48 acres, the project proposes 43 single-family homes on 6.91 acres, 4.87 acres dedicated as public right of way, and 26.70 acres of open space. The remaining 68.45 acres are proposed to be served by VID.

The 38.48 acres of the project proposed for inclusion within VWD's service boundary lies partially within VWD's 920 Pressure Zone. The project proposes to connect to VWD's water system via the existing 10-inch main in Ardilla Way on the south edge of the development. An additional connection to the 12-inch water main in Las Posas Road will be required to provide a looped system along with an inter-agency connection point between the VWD system and the VID system.

¹⁰ Total project acreage is 293.3 acres, consisting of the Specific Plan area, 26.27 acres outside the Specific Plan area to be used as biological mitigation, and a 4.7-acre offsite habitat linkage easement.

The proposed project was not included in the VWD 2008 Master Plan projections. The 2008 Master Plan projections for the project area only include the 37.5 acres of the proposed development presently located within VWD’s sphere of influence and service area. The land use assumptions for the project site were Rural Residential (0.125-1.0 dwelling units per acre [du/ac]). The proposed project requires water service to 43 single-family homes on 6.91 acres, for a density of 4-8 du/ac. The April 2015 Final Technical Memorandum prepared by VWD estimated average water demand using the 2008 approved land use and assuming development of the proposed project. This information is presented in Table 41, below.

Table 41. Average Water Demand, Approved and Proposed Land Uses, VWD

Land Use Type	Area (acres)	Duty Factor (gpd/acre)	Water Demand (gpd)
2008 Master Plan Land Use Demand			
Rural Residential (0.125-1.0 du/ac)	37.50	600	22,500
Total	37.50		22,500
Proposed Project			
Residential 4-8 du/ac (43 du)	6.91	2,500	17,275
Public Right of Way	4.87	200	974
Open Space	26.70	200	5,340
Total	38.48		23,589

Source: VWD Final Technical Memorandum, April 2015.

Development of the project will increase the intensity of development on the project site and, as shown in Table 41, above, result in a greater demand of water than was previously identified in VWD’s Master Plan. Water demand for the 2008 approved land use would be 22,500 gpd. Under the proposed project, projected average water demand would increase to 23,589 gpd. The project’s contribution represents an increase of 1,089 gpd above flow projected in the 2008 Master Plan.

The project will offset this additional demand through the use of groundwater for the establishment and irrigation of the proposed habitat restoration areas. Groundwater could also be used for the slopes, public/private parks, ongoing open space irrigation (as needed) and right-of-way landscaping.

This would eliminate the demand for potable water from VWD for the public right-of-way (974 gpd) and the open space (5,340 gpd). This results in a net demand of 17,275 gpd from VWD, which is below the demand assumed in the 2008 Master Plan.

5.1.1 VWD Water Infrastructure

The 2008 Master Plan outlines VWD’s water system distribution and pressure criteria. These criteria ensure that the proposed distribution system will provide adequate, but not excessive, water pressure and the conveyance system can accommodate peak demands without excessive wear or energy usage.

The water service pressure criteria to be met by the proposed project are as follows:

- Minimum allowable pressure at peak hour demand: 40 pounds per square inch (psi)
- Minimum allowable pressure at max day plus fire demand: 20 psi
- Maximum allowable pressure: 150 psi

The demand criteria for minimum allowable pressure at peak hour applies for the entire pressure zone that the development lies within. The developer has stated that the City of San Marcos Fire Marshal has set the required fire demand for the proposed project at 1,500 gallons per minute (gpm). If the actual fire flow requirements exceed 1,500 gpm, additional analysis will be required.

VWD modeled eight water scenarios ranging from average to maximum demand with and without the proposed project to identify system deficiencies that may be created due to the additional water demands of the proposed project, and to recommend capital improvements to mitigate such deficiencies. According to the analysis, the proposed project is not projected to create any new VWD water distribution system deficiencies.

Potable water storage reservoirs are sized for operational, emergency, and fire flow storage. According to the 2008 Master Plan, VWD requires each pressure zone to have reservoirs sized for the greater of 450 percent of average day demand plus fire flow storage or 500 percent of average day demand.

While the project is located within the 920 Pressure Zone, water storage for this zone is located within two pressure zones. The following Table 42 shows the required storage in these zones, plus an additional pressure zone that requires storage.

Table 42. Required Water Storage, VWD

Pressure Zone	Year 2015 ADD (MGD)	Year 2015 Storage Requirement (MG)	Year 2030 ADD (MGD)	Year 2030 Storage Requirement (MG)	Existing Storage Available (MG)
855	6.33	31.7	6.33	31.7	0
920 Richland	9.66	48.3	9.66	48.3	18
1028 Twin Oaks	1.41	7.1	2.34	11.7	73
Totals	17.40	87.1	18.33	91.7	91
Additional Storage Required Year 2015					0
Additional Storage Required Year 2030					0.7

Source: VWD Final Technical Memorandum, April 2015.

As shown, the water storage analysis finds that water storage capacity is currently available to serve the project’s increased storage requirements but predicts a local water storage deficit of 0.7 MG in 2030. According to the analysis, the 2008 Master Plan projects address and accommodate the existing storage deficiency. The developer will be responsible for adding the proportional share of the project’s increased density to the overall reservoir storage. As the project will increase the projected average water demand from the existing residential density by approximately 1,089 gallons per day as shown above, the amount of additional reservoir storage required is 500% of the development’s average day demand, or 5,445 gallons.

The project developer will be required to pay Water Capital Facility Fees per VWD Ordinance 175 prior to being eligible for water service. These fees are not allocated to specific projects; rather, these fees will contribute to planned water storage capital improvement projects (CIP) projects as listed in the 2008 Master Plan. The Master Plan lists 11 planned water storage projects, including project R-10, which would increase water storage in Pressure Zone 1028 with a 10.72 MG reservoir. Pressure Zone 1028, as identified in Table 42, above, is one of the two zones providing water storage for the proposed project. VWD implements their CIP projects when there is sufficient need. Project R-10 is identified as a Phase 4 project, for construction in 2021-2025; however, the actual timing would be contingent on

anticipated need. According to the April 2015 Memorandum, no other storage conditions are applicable. Even with implementation of Project R-10, a storage deficiency of 0.7 MG is still projected in 2030 according to current planning documents.

Pump stations are sized to supply maximum day flows while meeting all pressure criteria within their service areas. The proposed project is not located in a pressure zone that is served by pumping; therefore, no pump station upgrade requirements are necessary.

In conclusion, the project will generate an additional water demand of 1,089 gpd, necessitating the development of additional water storage. As described above, the projected water supply availability is greater than the SB7 demand figures, demonstrating that sufficient water exists to meet demand in a normal water year. Therefore, this increase in water demand generated by the proposed project can be handled by the water supply available from SDCWA via VWD.

5.2 Vista Irrigation District

The project requires LAFCO approval for a reorganization between VID and VWD that would result in a total of 68.45 acres of the project within the VID service area and sphere of influence (Figure 5). Within the 68.45 acres, the project proposes 146 single-family homes on 22.37 acres, 10.15 acres dedicated as public right of way, 1.58 acres of park, and 34.38 acres of open space.

The project proposes to connect to VID’s water system via the existing 14-inch pipelines on the western and northeastern property boundaries. As stated above, an additional connection to the 12-inch water main in Las Posas Road will be required to provide a looped system along with an inter-agency connection point between the VWD system and the VID system.

The proposed project was included in VID’s UWMP projections. The UWMP projections for the project area include more than the 68.45 acres proposed within VID’s sphere of influence. The land use assumptions for the project site, calculated for the 68.45 acres within VID’s service area, were primarily Single Family Residential, with Spaced Rural Residential and Open Space land uses as well. The proposed project requires water service to 146 single-family homes. The estimated average water demand using the land uses assumed in the UWMP and assuming development of the proposed project are presented in Table 43, below.

Table 43. Average Water Demand, Approved and Proposed Land Uses, VID

Land Use Type	Area (acres)	Duty Factor (gpd/acre)	Water Demand (gpd)
UWMP Land Use Demand			
Spaced Rural Residential	0.21	650	137
Single Family Residential	40.92	1,020	41,738
Open Space ⁽¹⁾	27.33	0	0
Total	68.46		41,875
Proposed Project			
Single Family Residential (146 du)	22.37	1,020	22,817
Public Right of Way ⁽²⁾	10.15	0	0
Park	1.58	1,250	1,975
Open Space ⁽¹⁾	34.38	0	0
Total	68.48		24,792

(1) The duty factor for open space is zero.

(2) The residential demand factor includes right of way.

Development of the project will decrease the intensity of development on the project site and, as shown in Table 43, above, result in a lower demand of water than was previously identified in VID's UWMP. Water demand for the UWMP approved land use would be 41,875 gpd. Under the proposed project, projected average water demand would decrease to 24,792 gpd. The project would result in a decrease of 17,083 gpd below flow projected in the UWMP.

As described above, the projected water supply availability is greater than the SB7 demand figures, demonstrating that sufficient water exists to meet demand in a normal water year. Since the project would result in less water use than assumed in the UWMP, there is sufficient water supply available from SDCWA via VID to serve the project.

5.2.1 VID Water Infrastructure

According to its Water Availability Letter, VID's water system design criteria require a minimum residual pressure of 30 psi during peak hour conditions be provided at each water meter required for the project, and required fire flows for the project must maintain a minimum of 20 psi during maximum dry conditions (VID 2013b). According to VID's Fire Flow Information Request, the project will meet these criteria. Peak hour pressures within the project site are expected to range from 47 psi to 126 psi. Fire flows of 1,500 gpm are expected to be available with residual pressures ranging from 30 psi to 124 psi. The portion of the project site that will be served by VID will be within VID's 984 Pressure Zone (VID 2013a).

VID's Potable Water Master Plan (VID 2000) summarizes the existing distribution system and identifies recommendations for the existing and ultimate system. Deficiencies in the existing system are identified, including areas of high and low pressure, and 21 specific water system improvements are included in the plan recommending replacing, creating parallel, and installing new pipelines along with installing new pressure regulating stations. Ultimate buildout conditions are anticipated to demand 19 specific improvements to handle projected increases in water demand. These projects are identified for implementation regardless of development of the proposed project. As the projected water demand will be less than was previously identified in VID's UWMP, no additional improvements beyond those identified in the Potable Water Master Plan will be required.

5.3 Analysis Summary

As identified above, MWD can provide reliable supply under normal, single dry, and multiple dry water year scenarios through 2035. This would provide SDCWA with adequate supply in normal and single dry water years; however, in multiple dry water years shortages may occur. These shortages would be passed along to member agencies VWD and VID, resulting in potential shortages in multiple dry water years. For normal and single dry year scenarios, sufficient supply exists to meet anticipated demand for VWD and VID. In multiple dry water years, additional conservation measures would be employed to reduce water demand and use from VWD and VID to match available water supply such that any projected supply shortages would be offset by these measures. These measures would include those provided in each District's Drought Response Conservation Program consistent with the declared drought response level, as well as any additional measures provided in each District's drought contingency planning documents as outlined above. This water supply availability is summarized in Table 44, below.

Table 44. Water Supply Reliability by Planning Scenario and Water District

Water District	Water Supply Planning Scenarios – Adequate Supply?		
	Normal Water Year	Dry Water Year	Multiple Dry Water Year
VWD	Yes	Yes	Shortages May Occur*
VID	Yes	Yes	Shortages May Occur*
SDCWA	Yes	Yes	Shortages May Occur*
MWD	Yes	Yes	Yes

Note: * While shortages may occur in multiple dry water years, drought contingency measures would be implemented to reduce demand to match or be less than available supply.

6.0 References

- California Government Code. Section 56668.
<http://law.onecle.com/california/government/56668.html>. Viewed December 3, 2014.
- California Government Code. Section 65352.5.
<http://codes.lp.findlaw.com/cacode/GOV/1/7/d1/3/6/s65352.5>. Viewed December 3, 2014.
- CH2MHILL. 2014. Final 2013 Regional Water Facilities Optimization and Master Plan Update. March. <http://www.sdcwa.org/master-plan-documents>. Viewed December 1, 2014.
- Dexter Wilson Engineering, Inc. 2013. San Marcos Highlands Water and Sewer Service. December 30.
- Diehl, Phil. 2015. "Carlsbad Desalination Project Nears Completion." April 11.
<http://www.utsandiego.com/news/2015/apr/11/carlsbad-desalination-project-nears-completion/?#article-copy>
- Hodgkiss, Brett. 2014. Personal communication. May 20.
- Metropolitan Water District of Southern California (MWD). 1999. Water Surplus and Drought Management Plan (WSDM Plan). Report No. 1150. August.
http://www.mwdh2o.com/mwdh2o/pages/yourwater/WSDM_Report1150.pdf. Viewed December 1, 2014.
- Metropolitan Water District of Southern California (MWD). 2010. Regional Urban Water Management Plan (RUWMP). November.
http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf. Viewed December 1, 2014.
- PBS&J. 2010. 2008 Vallecitos Water District Master Plan. November.
<http://www.vwd.org/departments/engineering/capital-facilities/master-plan>. Viewed December 1, 2014.
- San Diego County Water Authority (SDCWA). 2006. Water Shortage and Drought Response Plan. May. Updated April 2012. <http://www.sdcwa.org/sites/default/files/files/water-shortage-drought-response-plan.pdf>. Viewed December 1, 2014.
- San Diego County Water Authority (SDCWA). 2011. 2010 Urban Water Management Plan (UWMP). June. <http://www.sdcwa.org/2010-urban-water-management-plan>. Viewed December 1, 2014.
- San Diego County Water Authority (SDCWA). 2014a. Emergency Storage Project.
<http://www.sdcwa.org/emergency-storage-project>. Viewed December 1.
- San Diego County Water Authority (SDCWA). 2014b. Lake Hodges Projects.
<http://www.sdcwa.org/lake-hodges-projects>. Viewed December 1.
- San Diego County Water Authority (SDCWA). 2014c. San Vicente Dam Raise.
<http://www.sdcwa.org/san-vicente-dam-raise>. Viewed December 1.

- San Diego Integrated Regional Water Management (SDIRWM). 2014. 2013 IRWM Plan. <http://sdirwmp.org/2013-irwm-plan-update#codeword>. Viewed December 1.
- Vallecitos Water District (VWD). 2009. Ordinance No. 162, An Ordinance of the Board of Directors of the Vallecitos Water District Repealing Ordinance No. 159 and Adopting a Drought Response Conservation Program. http://www.vwd.org/home/showdocument?id=821_ Viewed December 2, 2014.
- Vallecitos Water District (VWD). 2010. Urban Water Management Plan (UWMP). <http://www.vwd.org/departments/engineering/capital-facilities/urban-water-management-plan-uwmp->. Viewed December 1, 2014.
- Vallecitos Water District (VWD). 2015. San Marcos Highlands Water and Sewer Study, Work Order #130305, Final Technical Memorandum. April 9.
- Vista Irrigation District (VID). 2000. VID Potable Water Master Plan. December.
- Vista Irrigation District (VID). 2011. 2010 Urban Water Management Plan (UWMP). June 28. http://www.vid-h2o.org/pdf/publication/2010_UWMP_6-28-2011.pdf. Viewed December 1, 2014.
- Vista Irrigation District (VID). 2013a. Fire Flow Information Request. Prepared by Brian S. Smith, Director of Engineering. July 11.
- Vista Irrigation District (VID). 2013b. Water Availability Letter. Prepared by Al Ducusin, Engineering Department Manager. March 28.
- Vista Irrigation District (VID). 2014. Water Supply Response Levels. http://www.vid-h2o.org/conservation/waterresponse.asp_ Viewed December 2, 2014.

Figure 1. Existing City of San Marcos Boundary

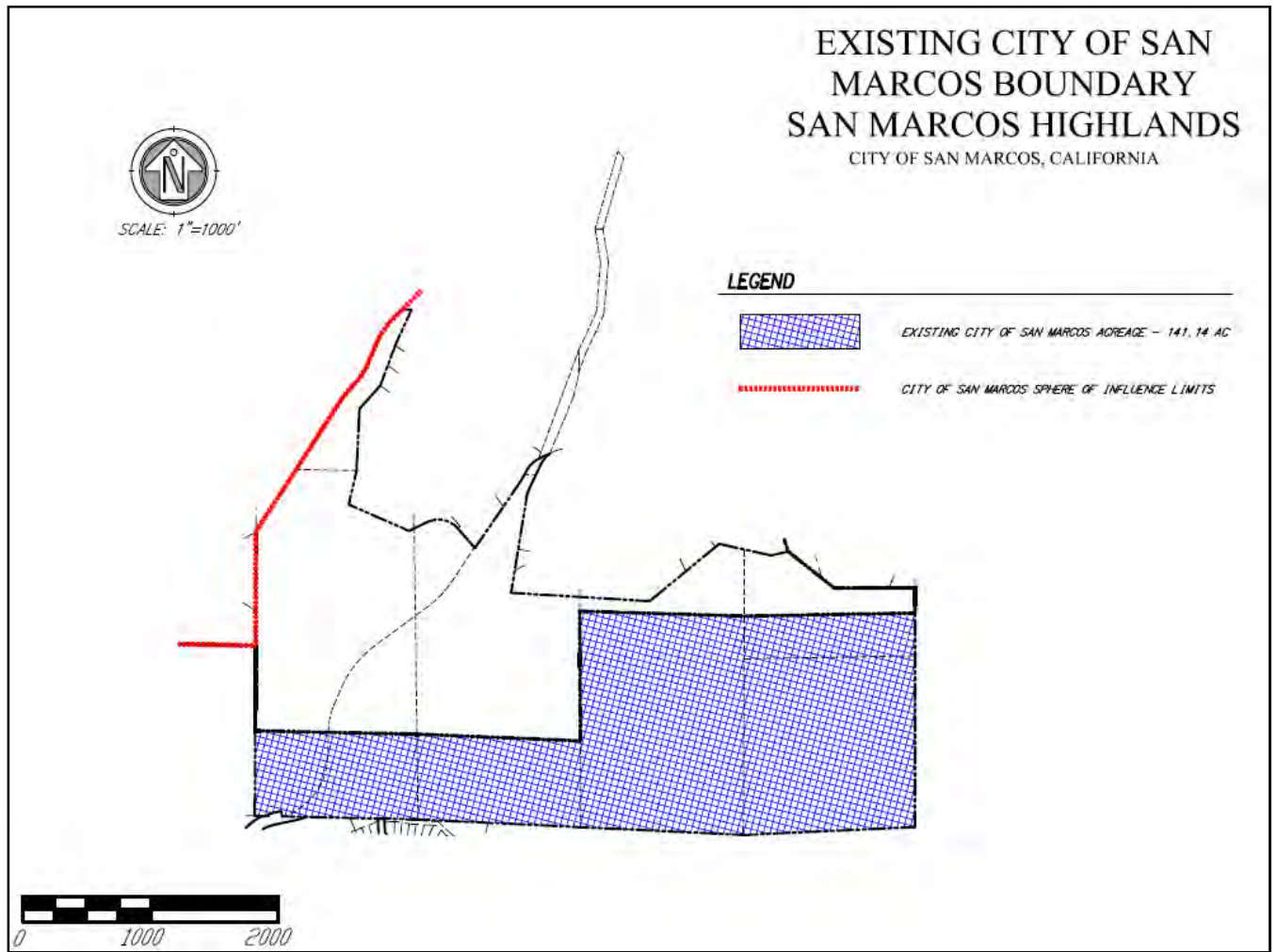


Figure 2. Existing Water Service Area, VWD

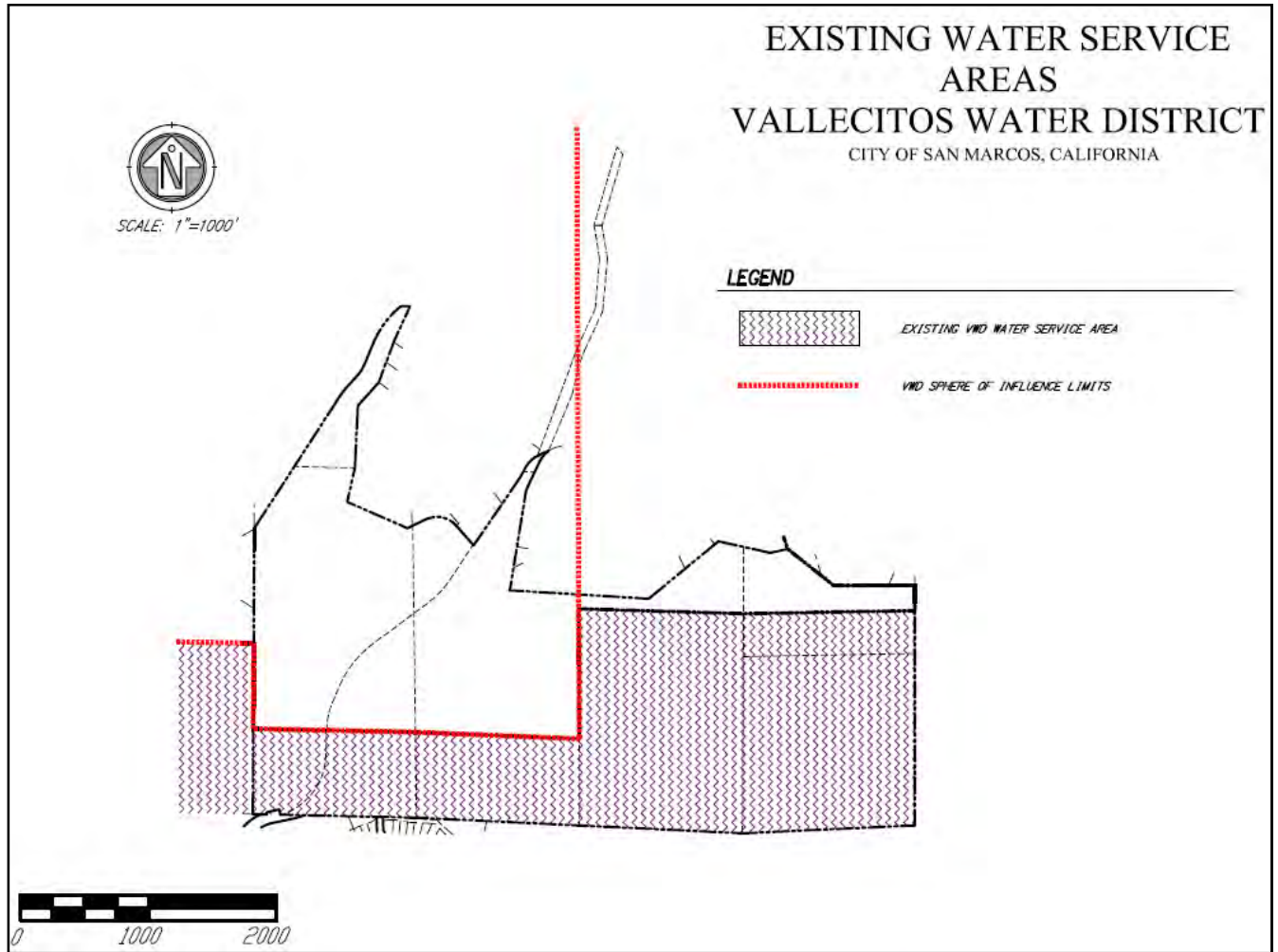


Figure 3. Proposed Water Service Area, VWD

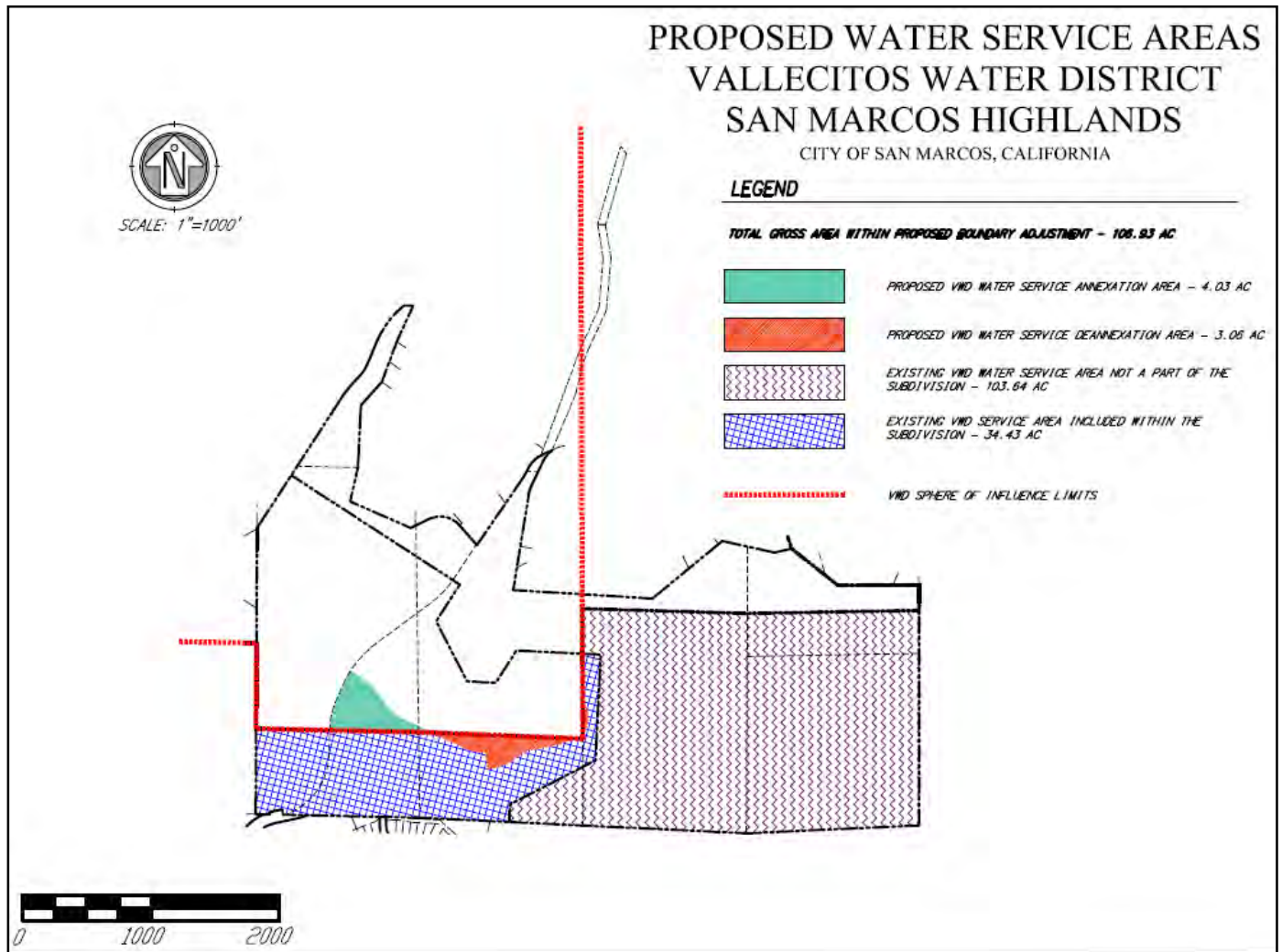


Figure 4. Existing Water Service Area, VID

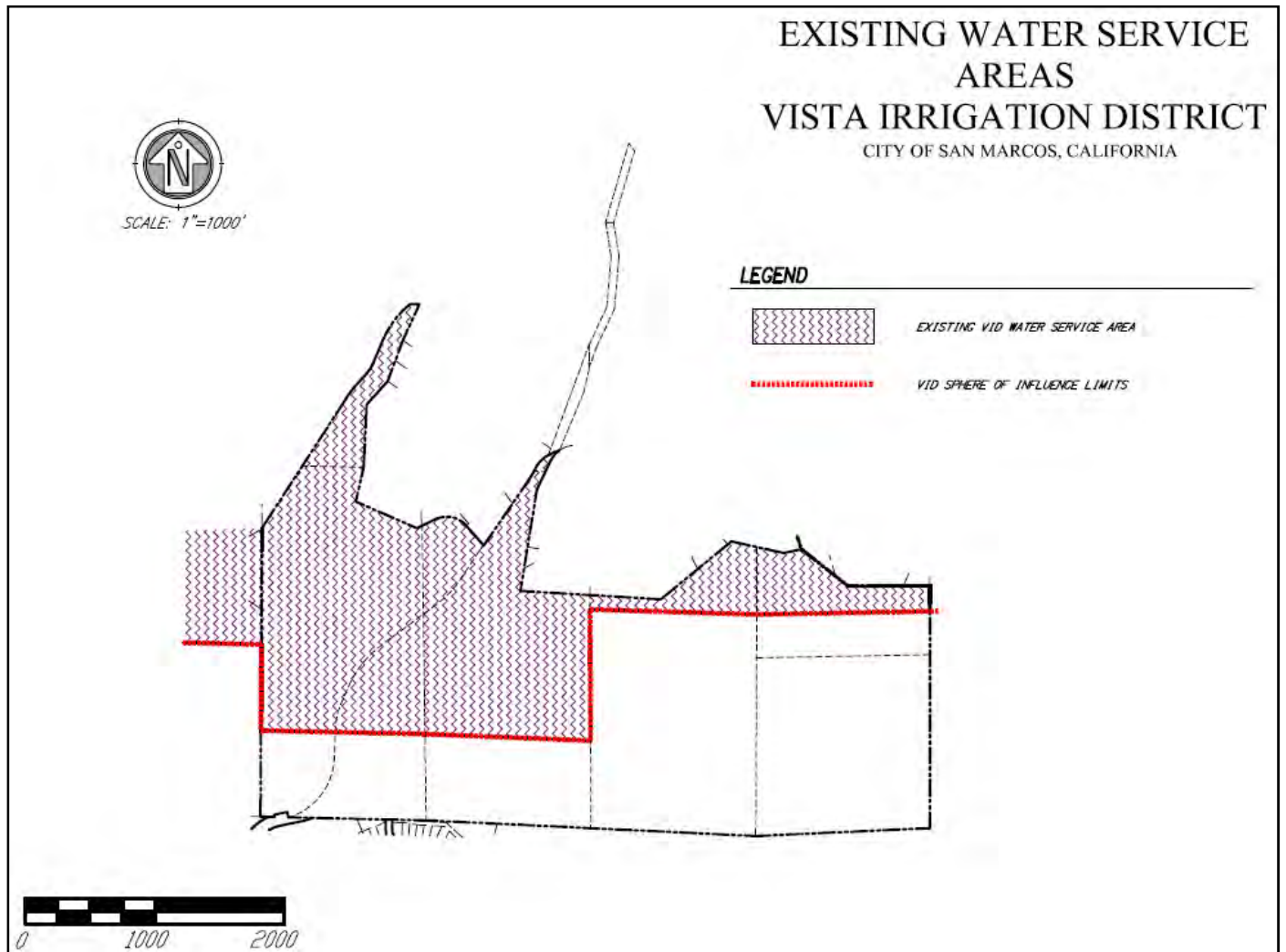
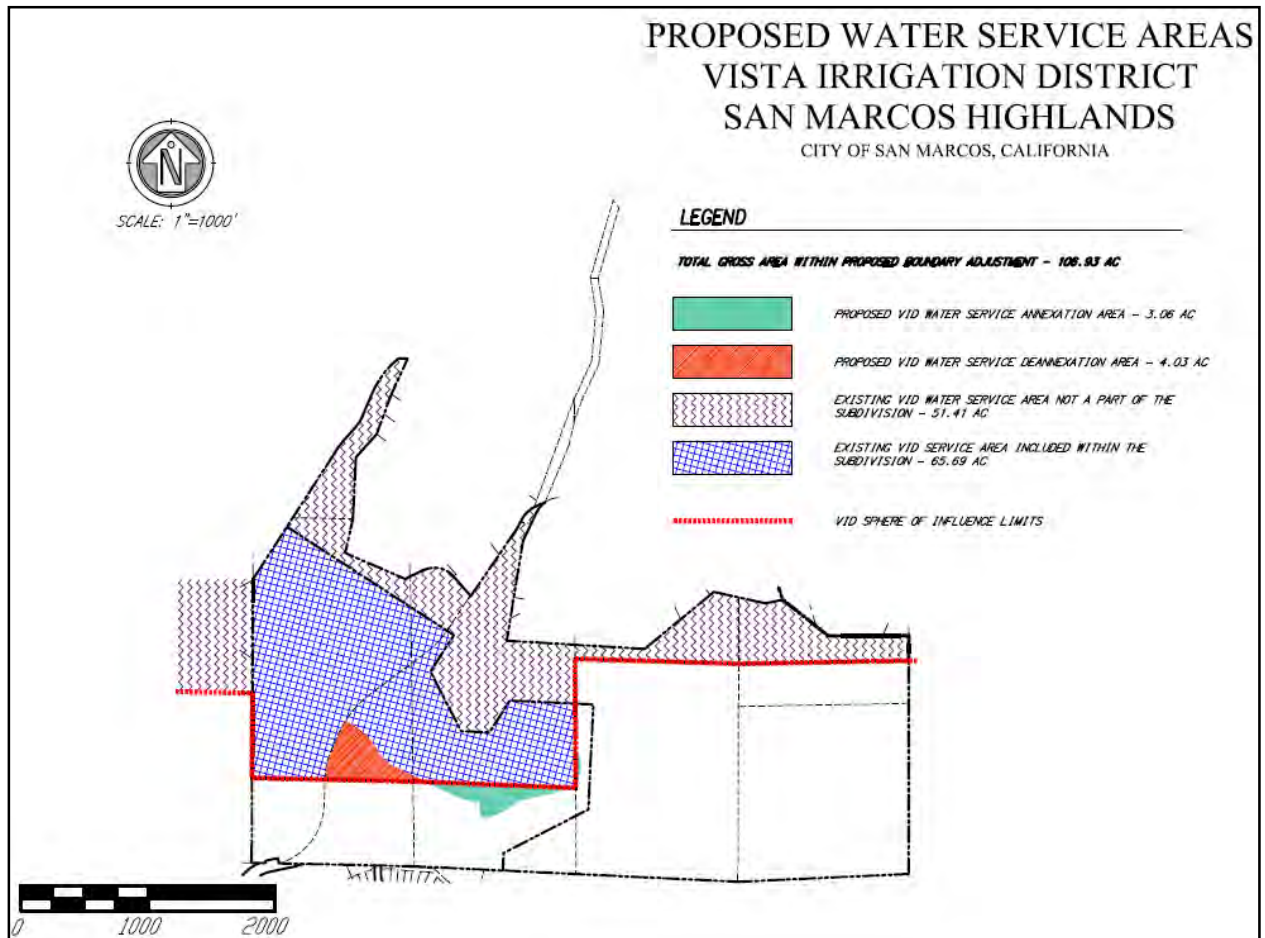


Figure 5. Proposed Water Service Area, VID



Appendices

Attachment A
Dexter Wilson Analysis

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NATALIE J. FRASCHETTI, P.E.

MEMORANDUM

1000-001

TO: Jason Simmons, CCI

FROM: ^{SMN} Stephen M. Nielsen, Dexter Wilson Engineering, Inc.

DATE: December 30, 2013

SUBJECT: San Marcos Highlands Water and Sewer Service

This memorandum summarizes water and sewer service requirements for the San Marcos Highlands project in the City of San Marcos.

BACKGROUND

The San Marcos Highlands project is located at the northern terminus of Las Posas Road in San Marcos. The project encompasses a total of approximately 293 acres and proposes development of 189 single family residential units on a portion of the property. The majority of the project will remain as natural open space. A portion of the project is already within the City of San Marcos and a portion will need to be annexed from the County of San Diego. A portion of the property will remain in the County of San Diego as open space.

The project is entirely within the Vallecitos Water District (VWD) for sewer service and within VWD and the Vista Irrigation District (VID) for water service.

SEWER SERVICE

The San Marcos Highlands project is within the ultimate sewer boundary identified in the VWD Master Plan (2008), but the project will require annexation into the VWD sewer district in order to be eligible for sewer service. No expansion of the VWD Sphere will be required to provide sewer service to the project. Sewer service to the project involves offsite conveyance and treatment facilities as discussed in more detail below.

Sewer Conveyance Facilities

To provide service to the project, the San Marcos Highlands project will construct onsite 8-inch gravity sewer lines. This is the smallest size allowed by VWD and these lines have been sized to meet the needs of the project only. Flows from the project will be connected to the existing conveyance system at two locations. The first connection is to an existing 15-inch trunk sewer in Las Posas Road at the southern project boundary. The second connection is to an existing 8-inch gravity sewer line in Avenida Abeja, just south of the project.

From the connection to the existing system, flow is conveyed south in Las Posas Road and west in San Marcos Boulevard to Lift Station Number 1. This lift station then pumps flows to either the Meadowlark Water Reclamation Facility or to the Encina Wastewater Authority through a land outfall for treatment. The August 27, 2013 San Marcos Highlands Water and Sewer Study prepared by VWD evaluated the impact of the project on offsite sewer facilities and concluded that no upgrades to the conveyance facilities are required as a result of the San Marcos Highlands project.

Treatment

VWD operates and maintains the Meadowlark Reclamation Facility which has a capacity of 5.0 million gallons per day (mgd). VWD also has capacity rights at the Encina Wastewater Authority of 7.67 mgd liquid handling capacity. Thus, the District currently has a treatment capacity of 12.67 mgd. Although VWD projects that this capacity will be used up

by around 2030, current flows within the District average approximately 7.0 mgd. Thus, there is significant available treatment capacity in the near term. The San Marcos Highlands participation in future system upgrades will be mitigated through the payment of wastewater capacity fees in effect at the time the project develops.

WATER SERVICE

Water service to the San Marcos Highlands project is proposed to be provided by VID and VWD as described below. Because of the size of the proposed project, a water supply assessment and verification report in accordance with Senate Bills SB 610 and SB 221 is not required for the project.

Jurisdictional Boundaries

Of the area of the project to be developed, approximately 37.5 acres are currently within the VWD Sphere of Influence and the remainder is within the VID Sphere of Influence. As a result of the project layout and based on input from both VID and VWD, it has been determined that the most efficient way to serve the project is to de-annex approximately 3.06 acres from the VWD service area and to annex approximately 4.03 acres into the VWD service area. This adjustment of boundaries allows the water service areas to be provided in a way that prevents customers on the same street from being served by both VID and VWD. These proposed boundary adjustments are reflected in the exhibit provided as Attachment 1 to this memorandum. As shown on the exhibit, approximately 37.5 acres within the subdivision are currently within the VWD service area. With the proposed annexation/de-annexation, approximately 38.5 acres will be within the VWD service area.

Adjustment of water district boundaries as described above will require approvals from the VWD Board, VID Board, and the Local Agencies Formation Commission (LAFCO). In addition to the proposed boundary changes, VWD and VID have mutually agreed that an emergency interconnection between the two water systems would be beneficial at the jurisdictional boundary.

Vallecitos Water District

VWD is a public agency responsible for providing water, wastewater, and recycled water service to an approximately 45 square mile area. VWD is a member agency of the San Diego County Water Authority (SDCWA) and currently receives 100 percent of its potable water supply from this water wholesaler. The VWD system is fed from several connections to the SDCWA aqueducts and maintains an extensive distribution system of storage, pumping, and pipelines to provide service to approximately 88,000 people within its service area.

The California Urban Water Management Planning Act requires urban water suppliers that provide water for municipal services to more than 3,000 connections or is supplying more than 3,000 acre feet of water annually to assess the reliability of its water sources over a 20 year planning horizon. In compliance with this requirement, VWD most recently adopted a 2010 Urban Water Management Plan (UWMP) and will update this document in 2015. Because of its reliance on water supplied by SDCWA, the VWD UWMP relies heavily on the findings from the SDCWA 2010 UWMP. SDCWA in turn relies on the Metropolitan Water District (MWD) 2010 UWMP since MWD is a major supplier of water to SDCWA. The MWD, SDCWA, and VWD UWMPs conclude that if supplies are developed as planned along with achievement of water conservation goals, then no shortages are anticipated through the year 2030.

Because the majority of the area to be served is already within the VWD service area, the San Marcos Highlands project was accounted for in the VWD planning documents. The water demand projections from all properties within their Sphere are incorporated into the 2010 UWMP and provided to SDCWA and MWD for incorporation into their regional planning documents. Per the August 27, 2013 study prepared by VWD, the San Marcos Highlands project, as currently proposed, will increase planned water use from this property by 1,089 gpd, or 1.2 acre feet annually. This increase will have a negligible impact on the water supply planning for the District.

The San Marcos Highlands project is within the VWD 920 Pressure Zone for water service. There are 43 single family homes that are proposed to be served by extending the VWD 920 Zone system. Service will be provided by connecting to the VWD system at two locations

near the southern project boundary and constructing onsite water lines. An inter-agency connection is proposed between the VWD and VID systems in the area. The San Marcos Highlands project participation in regional water system facility upgrades will be mitigated through the payment of water capacity fees as applicable at the time the project develops.

Vista Irrigation District

VID is a public agency responsible for providing water service to approximately 124,000 people. VID has a variety of water sources including imported water from SDCWA, local surface water, groundwater, and recycled water. The majority of the VID supply is met by purchasing water from SDCWA.

The California Urban Water Management Planning Act requires urban water suppliers that provide water for municipal services to more than 3,000 connections or is supplying more than 3,000 acre feet of water annually to assess the reliability of its water sources over a 20 year planning horizon. In compliance with this requirement, VID most recently adopted a 2010 Urban Water Management Plan (UWMP) and will update this document in 2015. Because of its reliance on water supplied by SDCWA, the VID UWMP relies heavily on the findings from the SDCWA 2010 UWMP. SDCWA in turn relies on the Metropolitan Water District (MWD) 2010 UWMP since MWD is a major supplier of water to SDCWA. The MWD, SDCWA, and VID UWMPs conclude that if supplies are developed as planned along with achievement of water conservation goals, then no shortages are anticipated through the year 2030.

The San Marcos Highlands project was accounted for in VID planning documents and VID has confirmed their ability to provide service to the project. Demands for the area of the project within the VID Sphere were incorporated into the 2010 UWMP and provided to SDCWA and MWD for incorporation into regional planning documents. The project is within the VID 984 Zone for water service and VID conducted a hydraulic analysis dated July 11, 2013 to confirm that service can be provided to the project by expanding the existing system in the vicinity of the project. This expansion is based on the needs of the San Marcos Highlands project only and does not include oversizing to accommodate future service to other properties. The VID system will serve 143 single family residential homes

Jason Simmons
December 30, 2013
Page 6

within the project and will require an emergency interconnection with the VWD system. Because the VID system is operated at a higher hydraulic grade line than the VWD system (984 feet versus 920 feet), VID has the ability to serve the lots on the upper elevations of the project without the need for pumps. If VWD were to serve the whole project, a public pump station or individual house pumps at many of the upper lots would be required. The San Marcos Highlands project participation in regional facility upgrades will be mitigated through the payment of water capacity fees that are in effect at the time the project develops.

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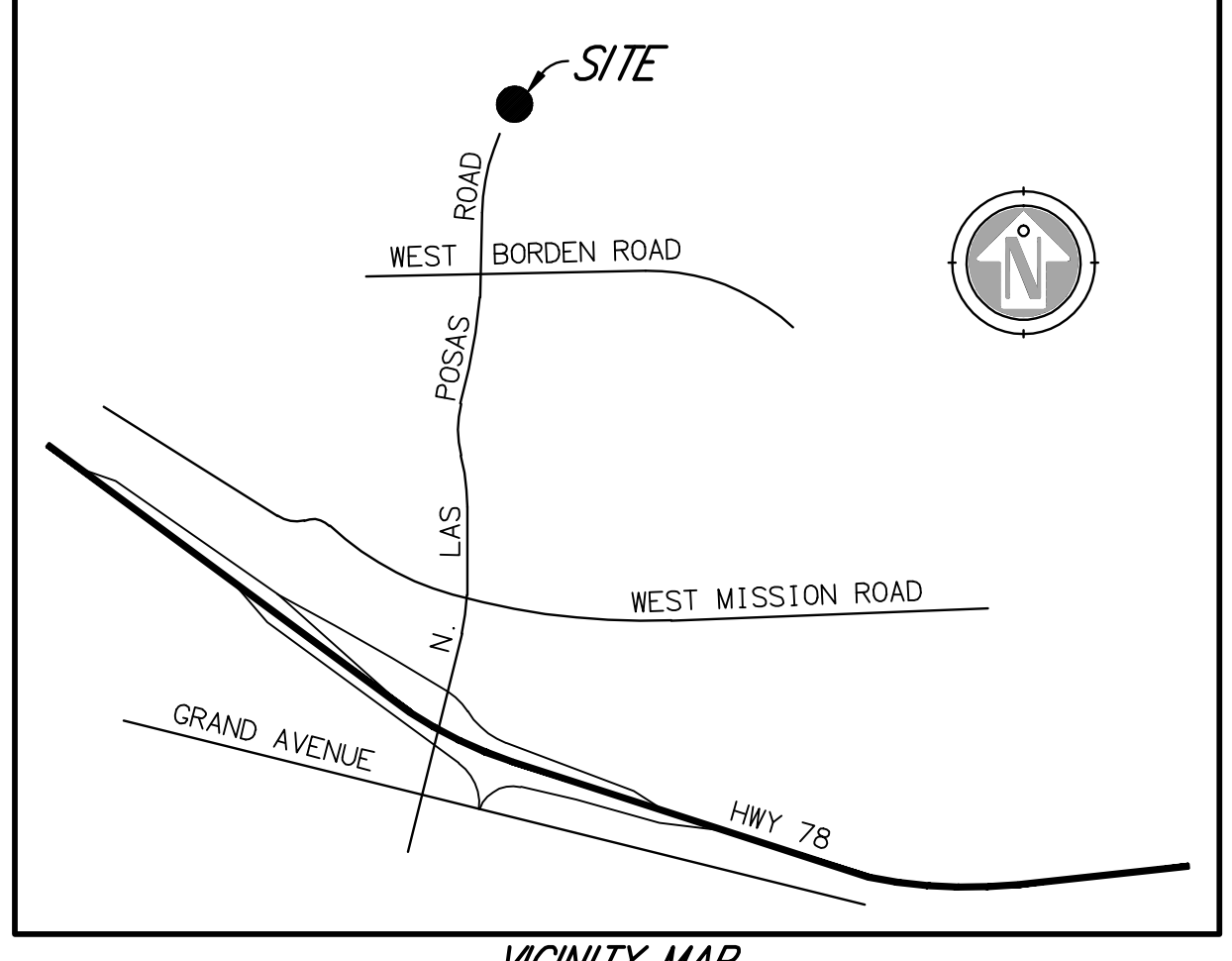
Attachment

ATTACHMENT 1

WATER SERVICE AREA MAP

PROPOSED AND EXISTING WATER SERVICE AREAS SAN MARCOS HIGHLANDS



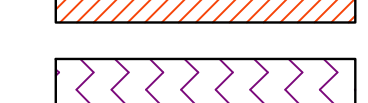
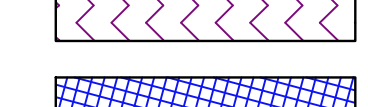
CITY OF SAN MARCOS, CALIFORNIA

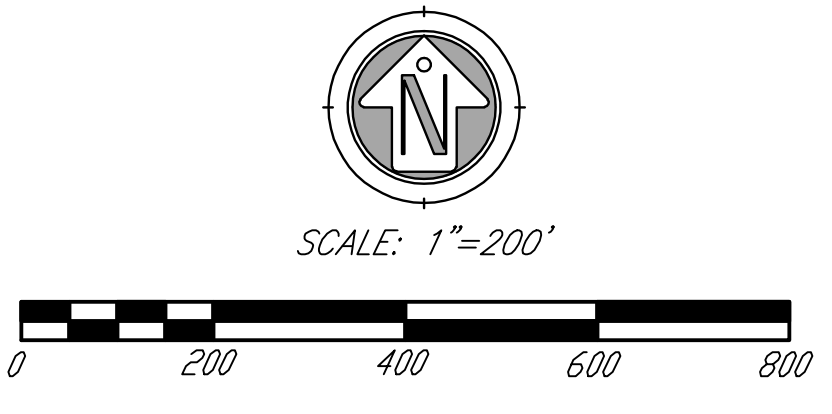
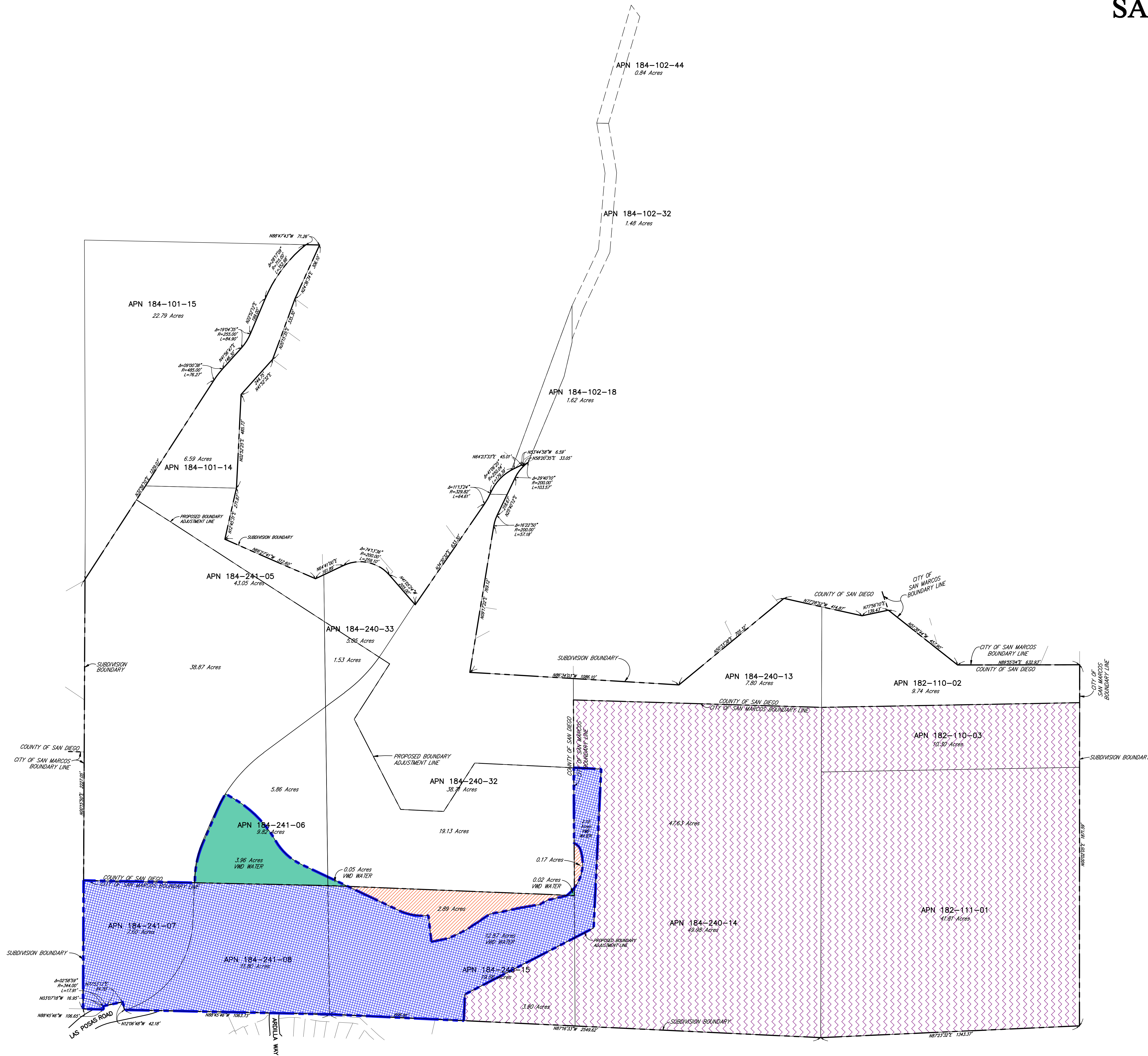


VICINITY MAP
NOT TO SCALE

LEGEND

TOTAL GROSS AREA WITHIN PROPOSED BOUNDARY ADJUSTMENT - 106.93 AC

-  PROPOSED VMD WATER SERVICE ANNEXATION AREA - 4.03 AC
-  PROPOSED VMD WATER SERVICE DEANNEXATION AREA - 3.06 AC
-  EXISTING VMD WATER SERVICE AREA NOT A PART OF THE SUBDIVISION - 103.64 AC
-  EXISTING VMD SERVICE AREA INCLUDED WITHIN THE SUBDIVISION - 34.43 AC



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Attachment B
Vallecitos Water District Water/Sewer Study

VALLECITOS WATER DISTRICT
SAN MARCOS HIGHLANDS WATER AND SEWER STUDY
WORK ORDER # 130305

FINAL TECHNICAL MEMORANDUM

April 9, 2015

Prepared By: Robert Scholl, P.E. and Eileen Koonce

INTRODUCTION

On March 19, 2013, and September 10, 2014, Vallecitos Water District (VWD) provided comments to the City of San Marcos regarding the San Marcos Highland's (Developer's) request for a specific plan amendment for the San Marcos Highlands project (Project) and a Notice of Preparation (NOP), which consists of 189 single family homes, 3 mini-parks and open space on 262 acres. District comments stated that the Project is not located within the current VWD service boundaries and areas outside of the District boundaries would require annexation in accordance with Ordinance No. 153. Due to the proximity of Vista Irrigation District (VID) service boundaries and Sphere of Influence, those areas outside of the VWD boundaries must be reviewed by VWD, VID and the Local Agency Formation Commission (LAFCO) to determine the appropriate service areas and agency boundaries. Annexation and/or de-annexation will require action by VWD, VID, and LAFCO.

The District has prepared this Water and Sewer Study (Study) at the request of the Developer. The District is authorized to provide water and sewer services within its service boundaries. No consideration has been given regarding the potential service boundaries as none of the jurisdictional agencies have formally considered any boundary modifications. Changes to the service boundaries will require an update of this study by the District to determine any associated impacts and conditions of service and ensure contiguous service boundaries are maintained and islands or discontinuous boundaries are not created.

PROJECT DESCRIPTION

The proposed Project consists of a Specific Plan Amendment (SPA) and a Tentative Subdivision Map (TSM) for a residential development (Subdivision) located along a proposed northerly extension of Las Posas Road, north of Borden Road. The original property consists of 262.14 acres. Approximately 141.14 acres are currently located within the City of San Marcos and the remaining 121 acres are currently located within the County of San Diego. The Developer proposes a SPA, TSM and a boundary adjustment which will result in a final Subdivision acreage of 106.94 acres all of which is proposed to be within the City of San Marcos. The proposed Subdivision will consist of 189 single-family homes, public right of way and open space.

Both water and wastewater services are proposed to be provided by the Vallecitos Water District (VWD). Approximately 37.5 of the Subdivision's 106.94 acres are currently located within the VWD Sphere of Influence. The Project proposes to adjust the District's water service boundary so that 38.48 acres of the Subdivision are within the VWD water service area (see Figure 3). Within the 38.48 acres, the Subdivision proposes 43 single-family homes on 6.91 acres, 4.87 acres dedicated as public right of way and 26.70 acres of open space. The remaining 68.46 acres are proposed to be served water by Vista Irrigation District (VID). Also, the portion of the Project outside VWD's Sphere of Influence will require LAFCO approval.

None of the Project is currently located within the VWD sewer service boundary. All Project property (including right of way and open space) must be annexed into the VWD sewer improvement district in order to be eligible for sewer service.

This Study considers the projected water demand and sewage generation from the Project's Subdivision to determine if the current water and sewer infrastructure is sufficient to accommodate the Subdivision and provides recommendations for needed capital improvements to provide service.

The Study will evaluate the systems:

- Water distribution system, including the need to upsize pipelines, install new pipelines, or install flow control facilities
- Water storage, including the need for additional storage and the adequacy of existing storage tanks and reservoirs to serve the proposed development
- Water pump stations, including the need to install new pump stations or upsize existing pump stations to serve the proposed development
- Wastewater collection system, including the need to upsize pipelines and manholes, or the need to install new pipelines and manholes
- Wastewater lift stations, including the need to install new lift stations or upsize existing lift stations to serve the proposed development
- Wastewater land outfall, including the need to construct a parallel land outfall to serve this and other proposed developments
- Wastewater treatment facilities, including the need for obtaining additional capacity at the Encina Water Pollution Control Facility (EWPCF) or for expanding the Meadowlark Water Reclamation Facility (MRF)

WATER SYSTEM ANALYSIS

The Project identified 38.48 acres to be served by VWD and is partially within VWD’s 920 Pressure Zone. Figures 1 and 2 show the Subdivision’s location in relation to pressure zone boundaries, identify pipelines within the vicinity of the development, and identify storage reservoirs that supply the development area.

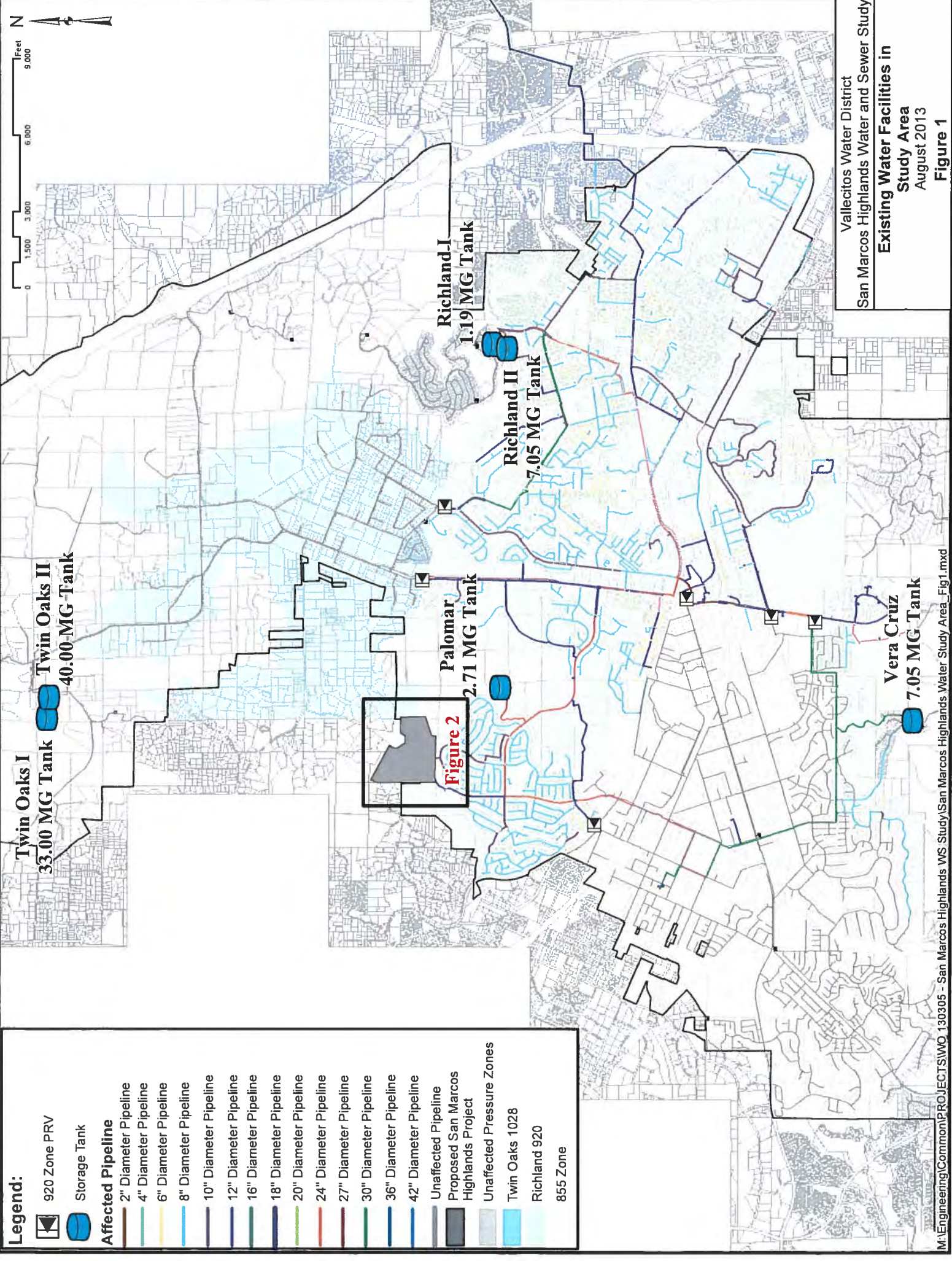
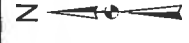
Water Demand Projections

Land use for the 37.5 acres of the Project currently within the VWD Sphere of Influence is designated Rural Residential in the 2008 Master Plan. The Project proposes VWD water service to 43 single-family homes on 6.91 acres.

Table 1 – Project Subdivision Estimated Water Demands

Land Use Type	Area (acres)	Multi-Family Residential Units	Duty Factor (gpd/acre)	Water Demand (gpd)
2008 Master Plan Land Use Demand				
Rural Residential (0.125-1.0 du/ac)	37.50		600	22,500
Total	37.50	-		22,500
Proposed San Marcos Highlands Demand				
Residential 4-8 du/ac (43 du)	6.91		2,500	17,275
Public Right of Way	4.87		200	974
Open Space	26.70		200	5,340
Total	38.48	-		23,589

Table 1 provides the average water demand calculations under the density planned for in the 2008 Master Plan and under the proposed Project Subdivision. The table shows that the proposed VWD portion of the Project will increase the projected average water demand, from the 2008 Master Plan land use, by approximately 1,089 gallons per day.



Legend:

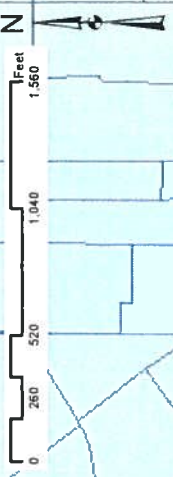
- 920 Zone PRV
- Storage Tank
- Affected Pipeline**
- 2" Diameter Pipeline
- 4" Diameter Pipeline
- 6" Diameter Pipeline
- 8" Diameter Pipeline
- 10" Diameter Pipeline
- 12" Diameter Pipeline
- 16" Diameter Pipeline
- 18" Diameter Pipeline
- 20" Diameter Pipeline
- 24" Diameter Pipeline
- 27" Diameter Pipeline
- 30" Diameter Pipeline
- 36" Diameter Pipeline
- 42" Diameter Pipeline
- Unaffacted Pipeline
- Proposed San Marcos Highlands Project
- Unaffacted Pressure Zones
- Twin Oaks 1028
- Richland 920
- 855 Zone

Vallecitos Water District
 San Marcos Highlands Water and Sewer Study
**Existing Water Facilities in
 Study Area**
 August 2013
Figure 1

Legend:

Affected Pipeline

- 8" Diameter Pipeline
- 15" Diameter Pipeline
- Proposed San Marcos Highlands
- Richland 920
- La Cienega 1275
- Twin Oaks 1028



**San Marcos
Highlands
Development**

ARDILLA WY

LAS POSAS RD

BORDEN RD

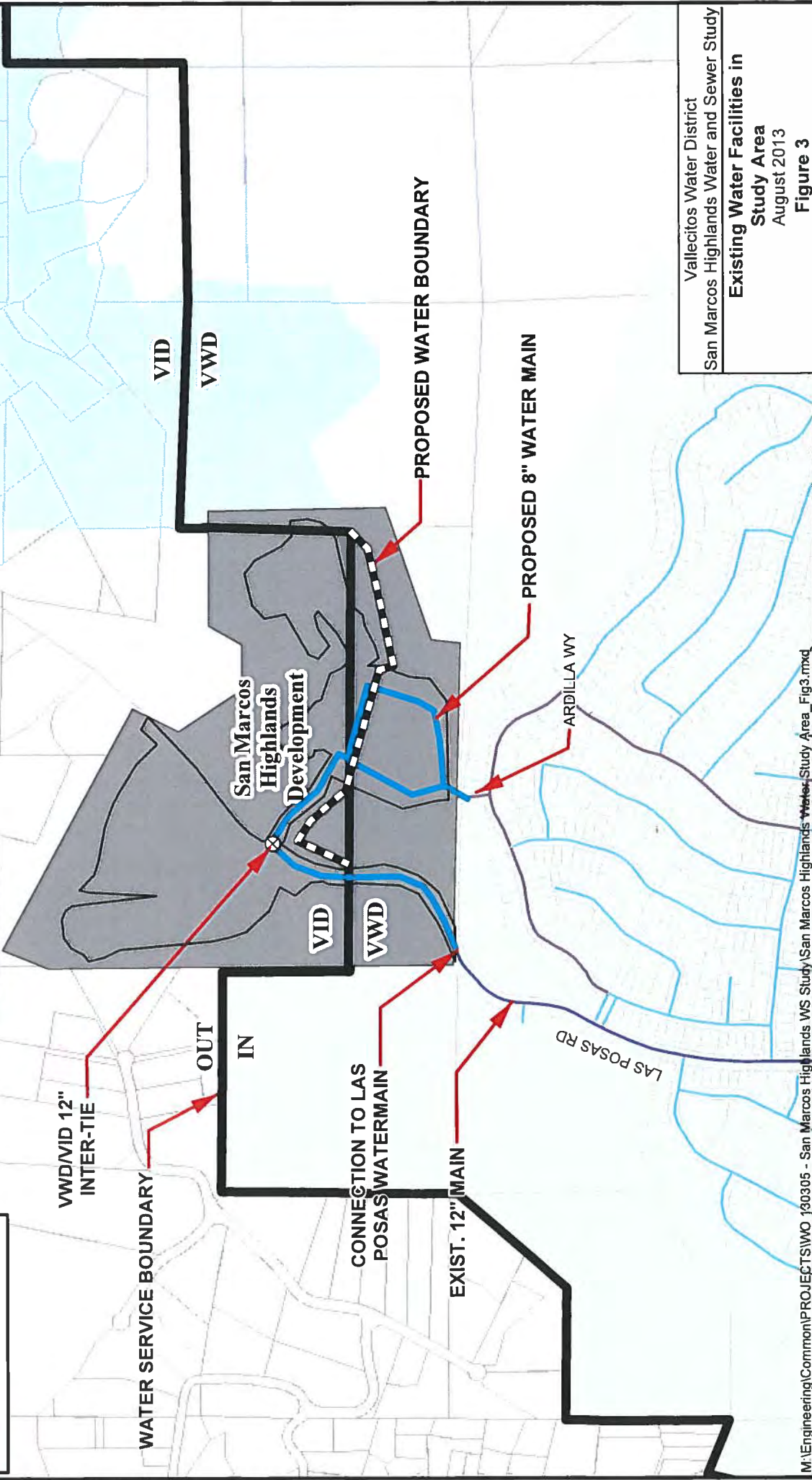
Vallecitos Water District
San Marcos Highlands Water and Sewer Study
**Existing Water Facilities in
Study Area**
August 2013
Figure 2



Legend:

Affected Pipeline

- 8" Diameter Pipeline
- 10" Diameter Pipeline
- 12" Diameter Pipeline
- Proposed San Marcos Highlands
- Richland 920
- La Cienega 1275
- Twin Oaks 1028



Vallecitos Water District
 San Marcos Highlands Water and Sewer Study
**Existing Water Facilities in
 Study Area**
 August 2013
Figure 3

Water Distribution System Analysis

The 2008 Master Plan water system distribution design and pressure criteria are as follows:

Water Distribution Infrastructure Criteria

The water service pressure criteria to be met by this development are as follows:

- Minimum allowable pressure at peak hour demand: 40 psi
- Minimum allowable pressure at max day plus fire demand: 20 psi
- Maximum allowable pressure: 150 psi

The Developer has represented to the District that the City of San Marcos Fire Marshall has set the required fire demand for this development at 1,500 gpm. If the actual fire flow requirements exceed 1500 gpm, additional analysis will be required.

- Maximum allowable velocity: 7 feet per second
- Maximum allowable head loss gradient: 15 feet per 1,000 feet
- Hazen-Williams C-factor: 130

Water Model Scenarios

The following scenarios were modeled to identify system impacts that may be created by the proposed water demands, and to recommend any improvements required to provide service to the Project:

Average Day Demand with existing demands at the Project Development

- Average Day Demand with the proposed Project Development
- Maximum Day Demand with existing demands at the Project Development
- Maximum Day Demand with the proposed Project Development
- Peak Hour Demand with existing demands at the Project Development
- Peak Hour Demand with the proposed Project Development
- Maximum Day Demand plus Fire Flow with existing demands at the Project Development
- Maximum Day Demand plus Fire Flow with the proposed Project Development

Per the 2008 Master Plan, maximum day demands for this Project are 300% those of average day demands, and peak hour demands are 620% those of average day demands.

Water Model Results

Modeling focused on the infrastructure in the direct vicinity of the Project, as shown in Figure 2, found that the Project did not create any deficiencies in the existing distribution system and identified required on-site improvements which are listed in the Study's conclusions.

Water Storage Analysis

The 2008 Master Plan outlines VWD’s potable water storage reservoirs for each pressure zone criteria as follows:

1.5 times average day demand (ADD) (operational storage) + 3.0 times ADD (emergency storage) + fire flow demand = 4.5 times ADD + fire flow demand:

OR

5.0 times ADD, whichever is greater.

The VWD portion of the Subdivision is located entirely within the VWD 920 pressure zone. Water storage for this zone is located within the 920 Richland and 1028 Twin Oaks pressure zones, as shown in Figure 1. Table 2 shows the required storage in the 855, 920 Richland, and 1028 Twin Oaks pressure zones for Year 2015 (current) and Year 2030 (Master Plan) relative to the existing storage provided within each zone.

Table 2 – Existing Reservoir Storage Capacity and Requirements

Pressure Zone	Year 2015 ADD (MGD)	Year 2015 Storage Requirement (MG)	Year 2030 ADD (MGD)	Year 2030 Storage Requirement (MG)	Existing Storage Available (MG)
855	6.33	31.7	6.33	31.7	0
920 Richland	9.66	48.3	9.66	48.3	18
1028 Twin Oaks	1.41	7.1	2.34	11.7	73
Totals	17.40	87.1	18.33	91.7	91

The proposed VWD portion of the Subdivision will increase the projected average water demand by approximately 1,089 gallons per day as shown in Table 1.

Therefore, the amount of additional reservoir storage required is 500% of the VWD portion of the Subdivision’s average day demand, or:

$$1,089 \text{ gallons} * 500\% = \mathbf{5,445 \text{ gallons}}$$

Master Plan projects address and accommodate the existing storage deficiency and Water Capital Facility Fees paid by this Project will be used for any increase in facility size necessitated by the Project’s demand calculated above.

The analysis finds that water storage capacity is currently available to serve the Project’s increased storage requirements.

Water Pump Station Analysis

Since the proposed Project is located in a pressure zone that is not served by pumping, there are no impacts to existing or proposed pump station by this Project.

WASTEWATER SYSTEM ANALYSIS

The Project and Subdivision, if annexed as proposed into VWD’s sewer improvement district, consists of 189 single-family homes, right of way and open space on 106.94 acres and would lie completely within VWD sewer shed 10C. Figures 4 - 7 show the development’s location in relation to sewer shed boundaries, identify wastewater infrastructure within the vicinity of the development, proposed connection points and identifies the downstream collection infrastructure providing service to the Project.

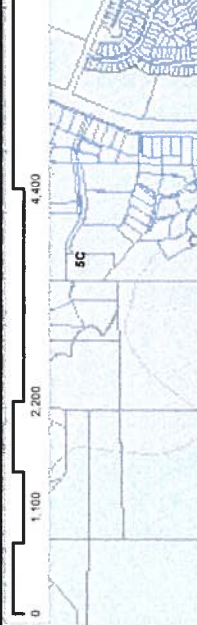
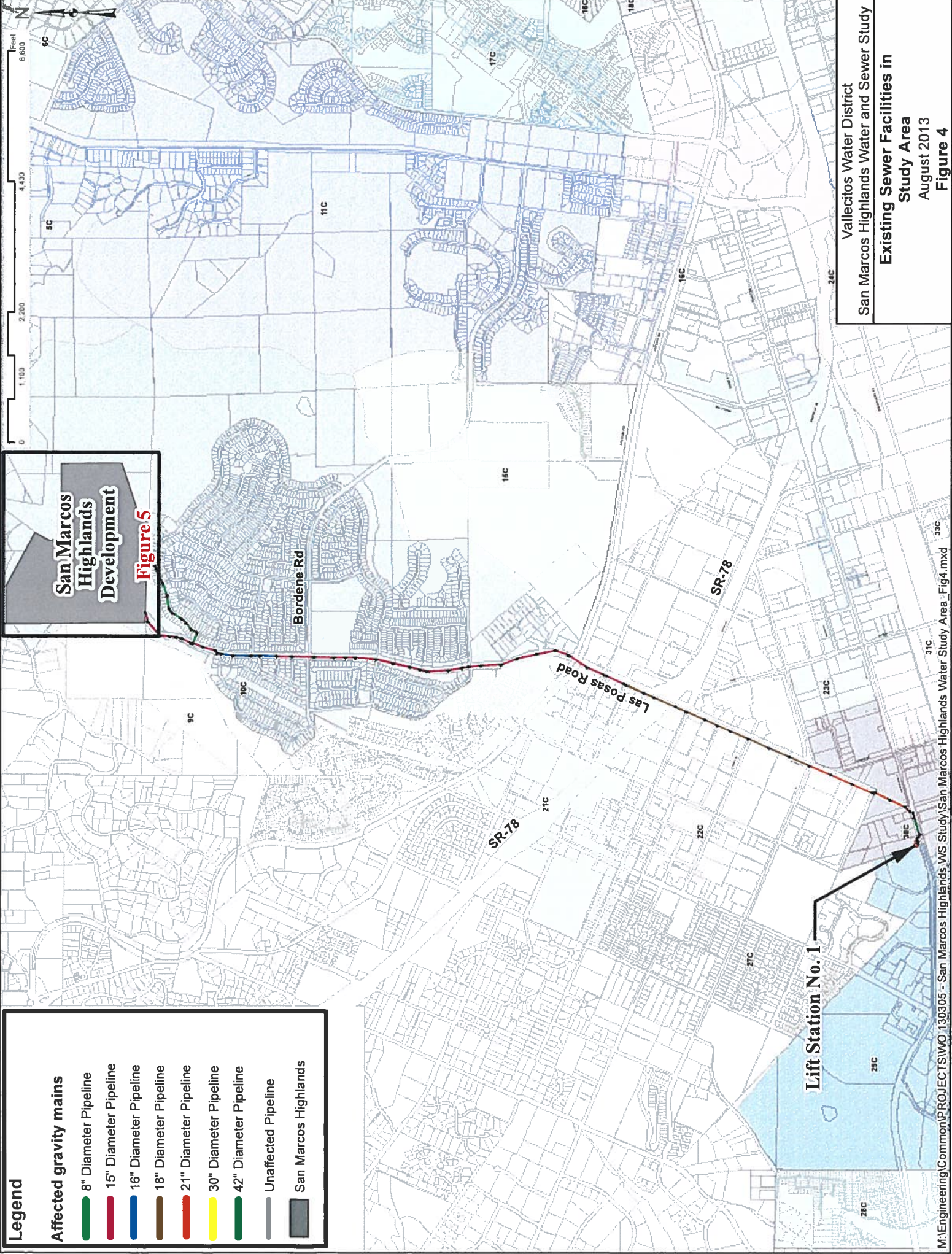
Wastewater Flow Projections

According to information provided for the 2008 Master Plan, the General Plan designation by the City of San Marcos and County of San Diego for the Project is Rural Residential. None of this Project is within the current VWD sewer service boundary, however approximately 37.5 acres are located within the VWD Sphere of Influence and the 2008 Master Plan included them for planning purposes.

Table 3 – Project Subdivision Estimated Wastewater Flows

Land Use Type	Area (acres)	Multi-Family Residential Units	Duty Factor (gpd/acre)	Wastewater Flow (gpd)
2008 Master Plan Land Use Flows				
Rural Residential (0.125-1.0 du/ac)	37.5		150	5,625
Total	37.50	-		5,625
Proposed San Marcos Highlands Flows				
Residential (4-8 du/ac)	29.28	198	1,300	38,064
Right of Way	15.02		0	0
Open Space	61.08		40	2,443
Parks	1.56		250	390
Total	106.94	-		40,897

Table 3 provides the average wastewater flow generated under the density planned for in the 2008 Master Plan and under the proposed Project Subdivision density. The table shows that the Subdivision will increase the projected average wastewater flow from the 2008 Master Plan land use by approximately 35,272 gallons per day.



San Marcos Highlands Development
Figure 5

Legend	
█	Affected gravity mains
█	8" Diameter Pipeline
█	15" Diameter Pipeline
█	16" Diameter Pipeline
█	18" Diameter Pipeline
█	21" Diameter Pipeline
█	30" Diameter Pipeline
█	42" Diameter Pipeline
█	Unaffected Pipeline
█	San Marcos Highlands

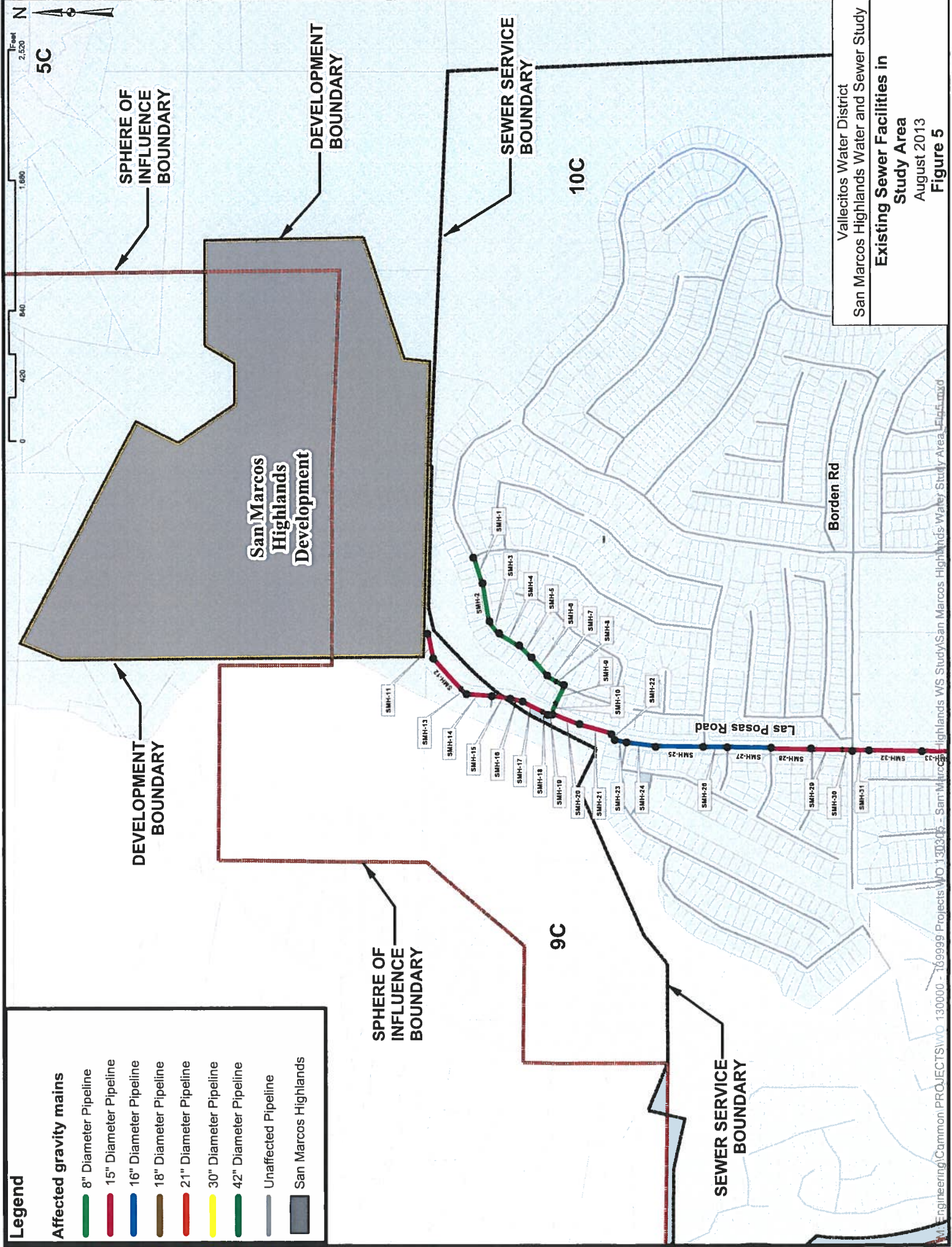
Lift Station No. 1

Vallecitos Water District
 San Marcos Highlands Water and Sewer Study
 Existing Sewer Facilities in Study Area
 August 2013
 Figure 4

Legend

Affected gravity mains

- 8" Diameter Pipeline
- 15" Diameter Pipeline
- 16" Diameter Pipeline
- 18" Diameter Pipeline
- 21" Diameter Pipeline
- 30" Diameter Pipeline
- 42" Diameter Pipeline
- Unaffected Pipeline
- San Marcos Highlands



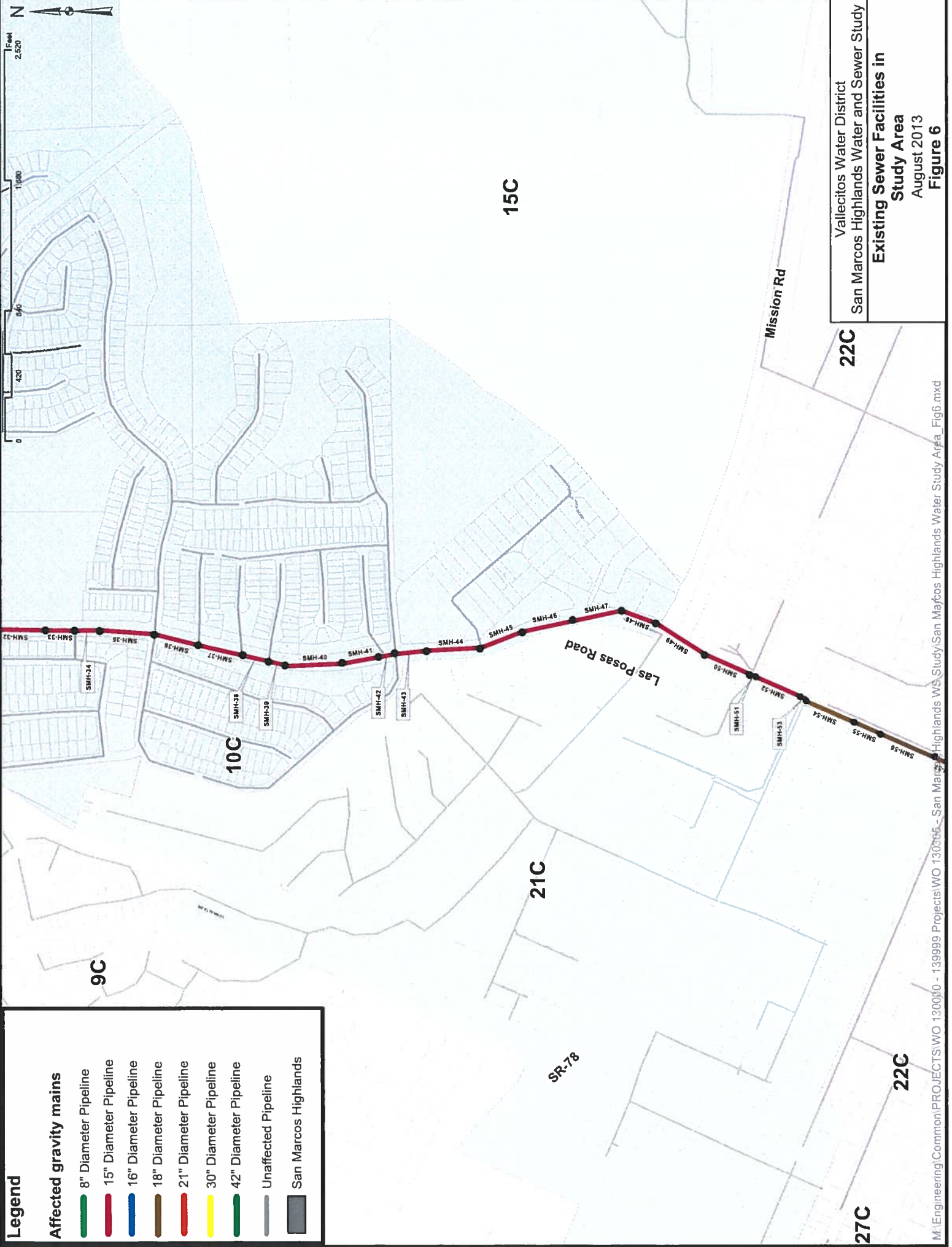
Vallecitos Water District
 San Marcos Highlands Water and Sewer Study
Existing Sewer Facilities in Study Area
 August 2013
Figure 5

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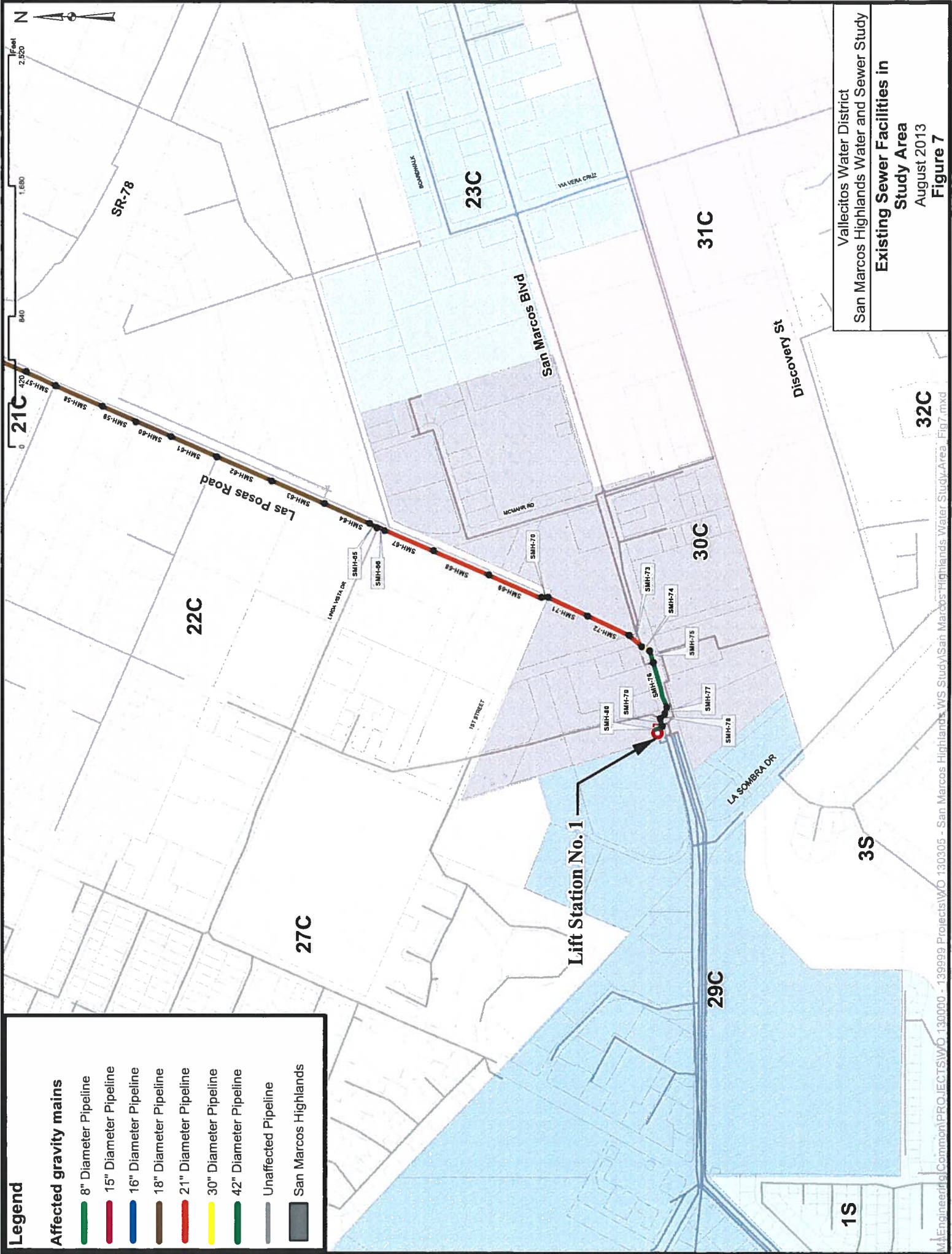
Legend

Affected gravity mains

- 8" Diameter Pipeline
- 15" Diameter Pipeline
- 16" Diameter Pipeline
- 18" Diameter Pipeline
- 21" Diameter Pipeline
- 30" Diameter Pipeline
- 42" Diameter Pipeline
- Unaffected Pipeline
- San Marcos Highlands



Vallecitos Water District
 San Marcos Highlands Water and Sewer Study
**Existing Sewer Facilities in
 Study Area**
 August 2013
Figure 6



Legend

Affected gravity mains

- 8" Diameter Pipeline
- 15" Diameter Pipeline
- 16" Diameter Pipeline
- 18" Diameter Pipeline
- 21" Diameter Pipeline
- 30" Diameter Pipeline
- 42" Diameter Pipeline
- Unaffected Pipeline
- San Marcos Highlands

Vallecitos Water District
 San Marcos Highlands Water and Sewer Study
Existing Sewer Facilities in Study Area
 August 2013
Figure 7

Wastewater Collection System Analysis

The 2008 Master Plan wastewater system design criteria are as follows:

Wastewater Collection Infrastructure Criteria

The wastewater pipeline criteria to be met both within and downstream of the development are as follows:

- Pipes 12 inches in diameter and smaller: ½ full maximum at peak flow
- Pipes over 12 inches in diameter: ¾ full maximum at peak flow
- Minimum velocity: 2 feet per second
- Maximum velocity: 10 feet per second
- Manning's n for gravity pipes: .013
- Hazen-Williams C-factor for force mains/siphons: 120
- Slope for pipes 12 inches in diameter and smaller: 0.4% minimum
- Slope for pipes over 12 inches in diameter: to be determined by VWD

When flow depth in gravity pipes exceeds maximum levels as stated above, a pipe upsize will be specified.

Wastewater Model Scenarios

The following scenarios were modeled to identify system impacts that may be created by the proposed sewer generation, and to recommend any improvements required to provide service to the Project Subdivision:

- Average Dry Weather Flow with existing flows at the Project Development
- Average Dry Weather Flow with the proposed Project Development
- Peak Dry Weather Flow with existing flows at the Project Development
- Peak Dry Weather Flow with the proposed Project Development
- Peak Wet Weather Flow with existing flows at the Project Development
- Peak Wet Weather Flow with the proposed Project Development

The peak dry weather curve is:

$$\text{Peak Dry Weather Factor} = 2.16 \times (\text{Average Dry Weather Flow Rate})^{-0.1618}$$

The wet weather peak curve is:

$$\text{Peak Wet Weather Factor} = 2.78 \times (\text{Average Dry Weather Flow Rate})^{-0.087}$$

Wastewater Model Results

Modeling focused not only on the sewer collection infrastructure in the direct vicinity of the Project, but also on all downstream infrastructure from the development to Lift Station No. 1 on San Marcos Boulevard that would be impacted by the Project Subdivision flows (see Figures 5 and 6). The modeling results showed that the wastewater flow from the proposed Subdivision does not result in any system deficiencies under peak wet weather flows during ultimate build-out conditions. Table 4 presents a summary of the modeling results from this analysis.

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

Pipe ID Number	Length (ft)	Diameter (in)	Slope	Wastewater Flows with Existing Density at San Marcos Highlands Development Site				Wastewater Flows with Proposed San Marcos Highlands Development			
				Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diameter Ratio	Replacement Diameter (in)	Replacement PWWF Depth-to-Diameter Ratio	Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diameter Ratio	Replacement Diameter (in)	Replacement PWWF Depth-to-Diameter Ratio
SMH-1	215	8	0.0730	27	0.09	-	-	69	0.15	-	-
SMH-2	228	8	0.0724	29	0.10	-	-	71	0.15	-	-
SMH-3	90	8	0.0356	30	0.12	-	-	72	0.18	-	-
SMH-4	183	8	0.0301	33	0.13	-	-	75	0.19	-	-
SMH-5	102	8	0.0196	33	0.14	-	-	75	0.21	-	-
SMH-6	160	8	0.0081	35	0.18	-	-	77	0.27	-	-
SMH-7	24	8	0.0071	36	0.19	-	-	78	0.28	-	-
SMH-8	95	8	0.0045	37	0.22	-	-	79	0.32	-	-
SMH-9	156	8	0.0308	52	0.16	-	-	94	0.21	-	-
SMH-10	19	8	0.0263	52	0.17	-	-	94	0.22	-	-
SMH-11	166	15	0.0050	253	0.24	-	-	303	0.26	-	-
SMH-12	291	15	0.0075	254	0.21	-	-	304	0.24	-	-
SMH-13	21	15	0.0076	254	0.21	-	-	304	0.23	-	-
SMH-14	169	15	0.0152	254	0.18	-	-	304	0.20	-	-
SMH-15	122	15	0.0041	255	0.25	-	-	305	0.27	-	-
SMH-16	152	15	0.0021	255	0.30	-	-	305	0.33	-	-
SMH-17	152	15	0.0053	255	0.23	-	-	305	0.26	-	-
SMH-18	36	15	0.0042	255	0.25	-	-	305	0.27	-	-
SMH-19	43	15	0.0047	256	0.24	-	-	306	0.27	-	-
SMH-20	173	15	0.0052	309	0.26	-	-	401	0.30	-	-

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

Pipe ID Number	Length (ft)	Diameter (in)	Slope	Wastewater Flows with Existing Density at San Marcos Highlands Development Site				Wastewater Flows with Proposed San Marcos Highlands Development			
				Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diameter Ratio	Replacement Diameter (in)	Replacement PWWF Depth-to-Diameter Ratio	Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diameter Ratio	Replacement Diameter (in)	Replacement PWWF Depth-to-Diameter Ratio
SMH-21	241	15	0.0050	310	0.26	-	-	402	0.30	-	-
SMH-22	32	16	0.0063	310	0.23	-	-	402	0.26	-	-
SMH-23	45	16	0.0111	310	0.20	-	-	402	0.22	-	-
SMH-24	188	16	0.0053	354	0.25	-	-	446	0.29	-	-
SMH-25	323	16	0.0056	354	0.25	-	-	446	0.28	-	-
SMH-26	153	16	0.0033	395	0.30	-	-	487	0.34	-	-
SMH-27	275	16	0.0055	398	0.27	-	-	490	0.30	-	-
SMH-28	260	15	0.0050	407	0.30	-	-	499	0.34	-	-
SMH-29	200	15	0.0050	413	0.30	-	-	505	0.34	-	-
SMH-30	67	15	0.0045	413	0.31	-	-	505	0.35	-	-
SMH-31	120	15	0.0042	695	0.42	-	-	787	0.45	-	-
SMH-32	350	15	0.0040	695	0.43	-	-	787	0.46	-	-
SMH-33	180	15	0.0039	695	0.43	-	-	787	0.46	-	-
SMH-34	170	15	0.0041	715	0.43	-	-	807	0.46	-	-
SMH-35	350	15	0.0214	715	0.28	-	-	807	0.30	-	-
SMH-36	301	15	0.0073	794	0.39	-	-	886	0.41	-	-
SMH-37	236	15	0.0174	802	0.31	-	-	894	0.33	-	-
SMH-38	167	15	0.0144	806	0.33	-	-	898	0.35	-	-
SMH-39	145	15	0.0145	813	0.33	-	-	905	0.35	-	-
SMH-40	350	15	0.0146	813	0.33	-	-	905	0.35	-	-

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

Pipe ID Number	Length (ft)	Diameter (in)	Slope	Wastewater Flows with Existing Density at San Marcos Highlands Development Site				Wastewater Flows with Proposed San Marcos Highlands Development			
				Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diameter Ratio	Replacement Diameter (in)	Replacement PWWF Depth-to-Diameter Ratio	Peak Wet Weather Flow (gpm)	PWWF Depth-to-Diameter Ratio	Replacement Diameter (in)	Replacement PWWF Depth-to-Diameter Ratio
SMH-41	235	15	0.0196	813	0.30	-	-	905	0.32	-	-
SMH-42	115	15	0.0043	821	0.46	-	-	913	0.49	-	-
SMH-43	252	15	0.0044	864	0.47	-	-	956	0.50	-	-
SMH-44	356	15	0.0051	864	0.45	-	-	956	0.48	-	-
SMH-45	284	15	0.0042	880	0.48	-	-	972	0.51	-	-
SMH-46	344	15	0.0041	885	0.49	-	-	977	0.52	-	-
SMH-47	321	15	0.0040	888	0.49	-	-	980	0.52	-	-
SMH-48	239	15	0.0046	892	0.47	-	-	984	0.50	-	-
SMH-49	350	15	0.0166	893	0.33	-	-	985	0.35	-	-
SMH-50	320	15	0.0228	895	0.31	-	-	987	0.32	-	-
SMH-51	35	15	0.0143	895	0.35	-	-	987	0.37	-	-
SMH-52	367	15	0.0159	903	0.34	-	-	995	0.36	-	-
SMH-53	367	15	0.0050	905	0.47	-	-	997	0.49	-	-
SMH-54	325	18	0.0108	905	0.29	-	-	997	0.31	-	-
SMH-55	180	18	0.0072	1288	0.39	-	-	1380	0.41	-	-
SMH-56	389	18	0.0082	1288	0.38	-	-	1380	0.39	-	-
SMH-57	204	18	0.0049	1288	0.43	-	-	1380	0.45	-	-
SMH-58	281	18	0.0057	1321	0.42	-	-	1413	0.44	-	-
SMH-59	280	18	0.0039	1321	0.47	-	-	1413	0.49	-	-
SMH-60	226	18	0.0031	1321	0.50	-	-	1413	0.52	-	-

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

Pipe ID Number	Length (ft)	Diameter (in)	Slope	Wastewater Flows with Existing Density at San Marcos Highlands Development Site				Wastewater Flows with Proposed San Marcos Highlands Development			
				Peak Weather Flow (gpm)	PWWF Depth-to-Diameter Ratio	Replacement Diameter (in)	Replacement PWWF Depth-to-Diameter Ratio	Peak Weather Flow (gpm)	PWWF Depth-to-Diameter Ratio	Replacement Diameter (in)	Replacement PWWF Depth-to-Diameter Ratio
SMH-61	363	18	0.0044	1321	0.45	-	-	1413	0.47	-	-
SMH-62	385	18	0.0078	1321	0.39	-	-	1413	0.40	-	-
SMH-63	380	18	0.0081	1325	0.38	-	-	1417	0.40	-	-
SMH-64	339	18	0.0086	1325	0.38	-	-	1417	0.39	-	-
SMH-65	41	18	0.0063	2090	0.53	-	-	2182	0.55	-	-
SMH-66	81	21	0.0053	2508	0.49	-	-	2600	0.50	-	-
SMH-67	304	21	0.0053	2508	0.49	-	-	2600	0.50	-	-
SMH-68	312	21	0.0029	2508	0.59	-	-	2600	0.60	-	-
SMH-69	380	21	0.0047	2508	0.51	-	-	2600	0.52	-	-
SMH-70	33	21	0.0182	2560	0.35	-	-	2652	0.36	-	-
SMH-71	297	21	0.0054	2560	0.49	-	-	2652	0.50	-	-
SMH-72	295	21	0.0064	2560	0.47	-	-	2652	0.48	-	-
SMH-73	112	21	0.0143	2562	0.38	-	-	2654	0.38	-	-
SMH-74	15	42	0.0533	9598	0.20	-	-	9690	0.21	-	-
SMH-75	138	42	0.0029	9598	0.44	-	-	9690	0.44	-	-
SMH-76	347	42	0.0009	9598	0.62	-	-	9690	0.63	-	-
SMH-77	18	42	0.0056	9598	0.36	-	-	9690	0.37	-	-
SMH-78	9	42	0.0333	9598	0.23	-	-	9690	0.23	-	-
SMH-79	9	42	0.0111	9697	0.31	-	-	9789	0.31	-	-
SMH-80	73	42	0.0641	10371	0.20	-	-	10463	0.20	-	-

Wastewater Lift Station Analysis

Lift stations are sized for peak wet weather flow with manufacturer's recommended cycling times for pumping equipment. Since the proposed Project is not located in a sewer shed that is served by a lift station, there are no lift station upgrade requirements for this Project.

Parallel Land Outfall Analysis

VWD's existing land outfall is shown in Figure 8. The outfall is approximately 8 miles in length and consists of 4 gravity pipeline sections and 3 siphon sections varying in diameter from 20 inches to 54 inches. VWD maintains the entire pipeline from Lift Station No. 1 to the Encina Water Pollution Control Facility (EWPCF). From Lift Station No. 1 to El Camino Real, VWD is the sole user of this pipeline. From El Camino Real to the EWPCF, the ownership capacity is as shown in Table 5 below:

Table 5 – Land Outfall Capacity Ownership by Agency

Agency	Ownership Percentage	Capacity (MGD)
Carlsbad	23.98%	5.00
Vista	17.99%	3.75
VWD	58.03%	12.10
Totals	100.00%	20.85

The Meadowlark Water Reclamation Facility (MRF) has a capacity of 5.0 MGD with a peak wet weather capacity of 8.0 MGD. Therefore, VWD has a combined peak wet weather wastewater collection capacity of 20.10 MGD (12.10 MGD + 8.0 MGD).















VWD's 2014 average daily wastewater flow was 7.2 MGD. This corresponds to a peak wet weather flow of 16.9 MGD, which falls within VWD's combined peak wet weather collection capacity.

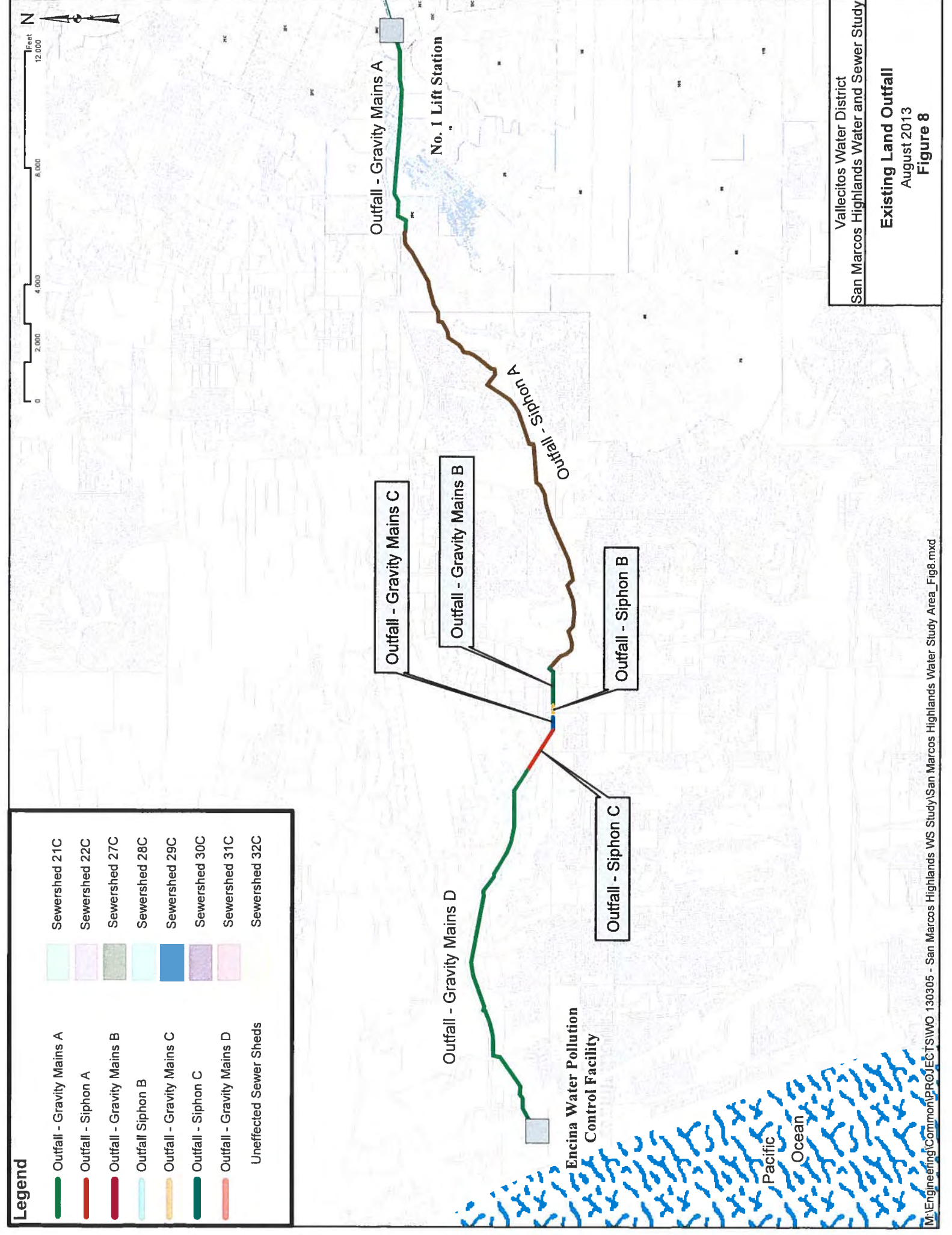
The 2008 Master Plan estimated that, under approved land uses, VWD has an ultimate build-out average daily flow of 13.3 MGD. This corresponds to a peak wet weather flow of 29.5 MGD, which exceeds VWD's peak wet weather collection capacity. To accommodate additional wastewater flows from planned development, the 2008 Master Plan recommended conveyance of peak flows to the EWPCF through a parallel land outfall.

The Subdivision proposes to generate an additional average wastewater flow of 35,272 gpd and Wastewater Capital Facility Fees paid by this Project will be used for any increase in Master Plan Land Outfall pipeline size necessitated by the Project's additional wastewater generation.

The analysis finds that outfall capacity is currently available to serve the Project Subdivision's increased wastewater generation.

Legend

- | | | | |
|---|---------------------------|---|---------------|
|  | Outfall - Gravity Mains A |  | Sewershed 21C |
|  | Outfall - Siphon A |  | Sewershed 22C |
|  | Outfall - Gravity Mains B |  | Sewershed 27C |
|  | Outfall Siphon B |  | Sewershed 28C |
|  | Outfall - Gravity Mains C |  | Sewershed 29C |
|  | Outfall - Siphon C |  | Sewershed 30C |
|  | Outfall - Gravity Mains D |  | Sewershed 31C |
| | Unaffected Sewer Sheds | | Sewershed 32C |



Vallecitos Water District
 San Marcos Highlands Water and Sewer Study
Existing Land Outfall
 August 2013
Figure 8

Wastewater Treatment Facility Analysis

VWD utilizes two wastewater treatment facilities to treat wastewater collected within its sewer service area.

- The Meadowlark Reclamation Facility (MRF) has liquids treatment capacity of up to 5.0 MGD with a peak wet weather capacity of 8.0 MGD. MRF does not have solids treatment capacity, and therefore all solids are treated at the Encina Water Pollution Control Facility (EWPCF).
- The EWPCF is located in the City of Carlsbad. This is a regional facility with treatment capacity of up to 40.51 MGD. VWD's current ownership capacity is as noted below:

Solids Treatment Capacity

VWD currently owns 10.47 MGD of solids treatment capacity at EWPCF. The ultimate average wastewater flow identified in the 2008 Master Plan is 13.3 MGD, resulting in a projected solids treatment capacity deficiency of 2.83 MGD.

VWD's 2014 average daily wastewater flow was 7.2 MGD. Therefore, the analysis finds that adequate solids treatment capacity exists at this time to serve the Project.

Liquids Treatment Capacity

VWD currently owns 7.67 MGD of liquids treatment capacity at the EWPCF in addition to the liquids treatment capacity of 5.0 MGD at MRF for a total of 12.67 MGD of liquids treatment capacity. The ultimate average wastewater flow identified in the 2008 Master Plan is 13.3 MGD, resulting in a projected liquids treatment capacity deficiency of 0.67 MGD.

VWD's 2014 average daily wastewater flow was 7.2 MGD. Therefore, the analysis finds that adequate liquids treatment capacity exists at this time to serve the Project.

Ocean Disposal Capacity

VWD currently owns 10.47 MGD of ocean disposal capacity at the EWPCF. The ultimate average wastewater flow identified in the 2008 Master Plan is 13.3 MGD, resulting in an ocean disposal deficiency of 2.83 MGD.

VWD's 2014 average daily wastewater flow was 7.2 MGD. Therefore, the analysis finds that adequate ocean disposal capacity exists at this time to serve the Project.

The District has determined that adequate wastewater treatment and disposal capacity exists for this proposed Subdivision at this time subject to the qualifications referenced below.

CONCLUSIONS AND CONDITIONS

The proposed Project Subdivision is expected to increase average daily water demands by 1,089 gallons per day and wastewater flow by 35,272 gallons per day over the ultimate flows projected in the 2008 Master Plan.

The study concludes that the proposed Subdivision will result in the following:

- An increase of 5,445 gallons of potable water storage capacity.
- An increase of 35,272 gpd in solids and liquids treatment, and ocean disposal capacity at the Encina Water Pollution Control Facility.

- An increase of 35,272 gpd in the parallel land outfall's capacity.

The District has determined that adequate water storage, wastewater treatment/disposal and land outfall capacities exist at this time and payment of Water and Wastewater Capital Facility Fees satisfies the Subdivision's increases in capacity to water storage, wastewater treatment/disposal, and land outfall. No other conditions to water storage, wastewater treatment/disposal, or land outfall apply.

The following items are required as conditions of providing service to the proposed Project Subdivision:

- The Project must be annexed into the VWD for Water and Sewer Service in accordance with Ordinance No. 153 and comply with any and all terms and conditions that may be required when considered by the District Board of Directors prior to service being provided
- Payment of all applicable Water and Wastewater Capital Facility fees in effect at the time service is committed in accordance with District rules and regulations.
- Construction and acceptance of all on-site water and sewer facilities identified in this Study prior to service being provided in accordance with all rules and regulations in effect at the time service is provided.
- Construction of the wastewater collection facilities shown in Figure 5 to provide service to the proposed Project Subdivision.
- Construction of the water distribution facilities shown in Figure 3 to provide service to the proposed Project Subdivision, including a 12" looped water system with connections at Las Posas Road and Ardilla Way, and a metered inter-agency water connection on Las Posas Road between the VWD system and the VID system.

The District currently has water and sewer capacity available to serve the Project Subdivision as proposed. However, the ability to provide water and sewer service in the future depends upon ultimate build-out of the Project Subdivision and could change depending upon the timing of the build-out, as well as annexations and build-outs of other development projects, continued reliable water supplies from the San Diego County Water Authority, the District's treatment capacity at the EWPCF, and other factors affecting growth in the District which may change over time.

This Study is based on the current adopted land use utilized in VWD's 2008 Master Plan. The study addresses the incremental facility impacts of this Project Subdivision only and does not include or consider any additional projects within VWD's service area that have deviated from adopted Master Plan land uses. Any land use changes upstream and/or downstream of the Study area may necessitate a revision of any onsite and offsite studies. VWD shall determine if and when revisions to a study are necessary. Costs for revising this Study shall be borne by the Developer.

Attachment C
VWD Ordinance No. 162

ORDINANCE NO. 162

**AN ORDINANCE OF THE BOARD OF DIRECTORS
OF THE VALLECITOS WATER DISTRICT
REPEALING ORDINANCE NO. 159
AND ADOPTING A
DROUGHT RESPONSE CONSERVATION PROGRAM**

BE IT ORDAINED by the Board of Directors of the Vallecitos Water District as follows:

**SECTION 1: DECLARATION OF NECESSITY AND INTENT OF DROUGHT
MANAGEMENT PLAN**

This ordinance, patterned after the San Diego County Water Authority model Ordinance, establishes regulations to be implemented during times of declared water shortages or emergencies to conserve water, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and prevent unreasonable use of water within the Vallecitos Water District. Such actions are to ensure adequate supplies of water to meet the needs of the public, and further the public health, safety, and welfare, recognizing that water is a scarce natural resource that requires careful management. This ordinance establishes four levels of drought response actions to be implemented in times of shortage or emergency with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing available supplies.

SECTION 2: APPLICATION

(a) The provisions of this ordinance apply to any customer using water provided by the Vallecitos Water District ("District").

(b) This ordinance is intended solely to further the conservation of water. It is not intended to implement any provision of Federal, State, or local statutes, ordinances, or regulations relating to protection of water quality or control of drainage or runoff. Refer to the local jurisdiction or Regional Water Quality Control Board for information on any storm water ordinances and storm water management plans.

(c) Nothing in this ordinance is intended to affect or limit the ability of the District to declare and respond to an emergency, including an emergency that affects the ability of the District to supply water.

(d) The provisions of this ordinance do not apply to use of the water from private wells or to recycled water.

(e) Nothing in this ordinance shall apply to use of water that is subject to a special supply program, such as the Metropolitan Water District of Southern California Interim Agricultural Water Program (IAWP) or the San Diego County Water Authority Special Agricultural Rate Programs. Violations of the conditions of special supply programs are subject to the penalties established under the applicable program. A person using water subject to a special supply program and other water provided by the District is subject to this ordinance in the use of the District provided other water only.

SECTION 3: DROUGHT RESPONSE LEVEL 1 – DROUGHT WATCH

This is a “Drought Watch” condition, and applies when the San Diego County Water Authority notifies the District that, due to drought or other supply reductions, there is a reasonable probability there will be supply shortages and that a voluntary consumer demand reduction of up to 10 percent is required in order to meet anticipated demands. The District General Manager shall declare the existence of a Drought Response Level 1 and implement the Level 1 voluntary conservation practices. With this alert, the District will increase public outreach and awareness and take action to encourage the Level 1 conservation practices:

(a) LEVEL 1 VOLUNTARY CONSERVATION PRACTICES

(1) Washing pavements, including sidewalks, driveways, parking lots, tennis courts, or patios (except to alleviate sanitation hazards) is prohibited.

(2) Water waste that is the direct result of inefficient landscape irrigation (runoff, low head drainage, or overspray, etc.) as well as water flows onto non-targeted areas such as adjacent properties, hardscapes, and roadways is prohibited.

(3) Only irrigate residential and commercial landscapes before 10 a.m. and after 6 p.m.

(4) Use a hand-held hose equipped with a positive shut-off nozzle or bucket to irrigate landscaped areas, including trees and shrubs located on residential and commercial properties that are not watered by an automatic system.

(5) Nursery and commercial grower products may be irrigated before 10 a.m. and after 6 p.m. only. Watering with a hand-held hose equipped with a positive shutoff nozzle, bucket, or by drip/micro-irrigation system/equipment is permitted anytime. Irrigation of nursery propagation beds and the watering of livestock are also permitted anytime.

(6) Use re-circulated water to operate ornamental fountains.

(7) Wash vehicles using a bucket and hand-held hose with positive shut-off nozzle, mobile high pressure/low volume wash system, or at a commercial site that re-circulates water on site. Avoid washing during hot conditions when additional water is required due to evaporation.

(8) Serve and refill water in restaurants and other food establishments only upon request.

(9) Offer guests in hotels, motels, and other commercial lodging establishments the option of not laundering towels and linens daily.

(10) All water leaks shall be repaired within five days of notification by the District unless other arrangements are made with the General Manager.

(11) Use recycled or non-potable water for construction purposes when available and permitted for use in accordance with all local, State and Federal regulations.

SECTION 4: DROUGHT RESPONSE LEVEL 2 – DROUGHT ALERT

This is an official "Drought Alert" condition, and applies when the San Diego County Water Authority notifies the District that, due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction of up to 20 percent is necessary to have sufficient supplies to meet anticipated demand. The District Board of Directors shall declare the existence of Drought Response Level 2 condition, the allocation reduction, and implement Level 2 mandatory conservation practices. If the mandatory reduction is 10% or less, the District General Manager shall have the authority and discretion to determine the administration of the conservation practices. All District customers shall comply with conservation practices required during Level 1 Drought Watch, and shall also comply with the applicable Level 2 Drought Alert mandatory conservation practices:

(a) LEVEL 2 MANDATORY CONSERVATION PRACTICES

(1) Residential and commercial landscape irrigation is limited to no more than three assigned days per week on a schedule established by the General Manager of the District. Landscape irrigation is limited to no more than once per week, from November through May, on a schedule established by the General Manager and posted by the District. This shall not apply to commercial growers or nurseries.

(2) Irrigation, using sprinklers, is limited to no more than 10 minutes per watering station per assigned day. Systems using water-efficient devices, including but not limited to: weather based controllers, drip/micro-irrigation systems and stream rotors are excluded.

(3) Water landscaped areas, including trees and shrubs located on residential and commercial properties, not irrigated by a landscape irrigation system governed by Section 4 (a) (1), on the same schedule set forth in Section 4 (a) (1) by using a bucket, a hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation.

(4) All water leaks shall be repaired within 72 hours of notification by the District unless other arrangements are made with the District General Manager.

(5) Operation of ornamental fountains or similar decorative water features is prohibited unless re-circulated water is used.

SECTION 5: DROUGHT RESPONSE LEVEL 3 – DROUGHT CRITICAL

This is an official "Drought Critical" condition, and applies when the San Diego Water Authority notifies the District that due to increasing cutbacks caused by drought or other reduction of supplies, a consumer demand reduction of up to 40 percent is required in order to have sufficient supplies available to meet anticipated demands. The District Board of Directors shall declare the existence of a Drought Response Level 3 condition, the allocation reduction, and implement mandatory Level 3 conservation practices. All District customers shall comply with the conservation practices required during Level 1 Drought Watch, Level 2 Drought Alert, and shall also comply with Level 3 Drought Critical mandatory conservation practices:

(a) LEVEL 3 MANDATORY CONSERVATION PRACTICES

(1) Residential and commercial landscape irrigation will be limited to two assigned days per week on a schedule established by the General Manager and posted by the District. Landscape irrigation will be limited to no more than once per week, from November through May, on a schedule established by the General Manager and posted by the District. Nurseries and commercial growers shall remain exempt.

(2) Irrigation, using sprinklers, will be limited to no more than 8 minutes per watering station per assigned day. Systems using water-efficient devices, including but not limited to: weather based controllers, drip/micro-irrigation systems and stream rotors are excluded

(3) Water landscaped areas, including trees and shrubs located on residential and commercial property, not irrigated by a landscape system, governed by Section 5 (a) (1), on the same schedule set forth in Section 5 (a) (1) by bucket, hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation.

(4) Ornamental lakes or ponds shall not be refilled, except to the extent needed to sustain aquatic life, provided that such aquatic life are of significant value and have been actively managed within the water feature prior to declaration of a drought response level under this ordinance.

(5) The filling or refilling of pools or spas is prohibited.

(6) Washing vehicles except at commercial carwashes that re-circulate water by high pressure/low volume wash systems is prohibited.

(7) All leaks shall be repaired within forty-eight hours of notification by the District unless other arrangements are made with the District General Manager.

(b) NEW POTABLE WATER SERVICE ALLOWANCE

Upon the declaration of a Drought Response Level 3 condition, no new potable water service shall be provided, no new temporary meters or permanent meters shall be provided or installed, and no statements of immediate ability to serve or provide potable water service (such as, will serve letters, certificates or letters of availability) shall be issued, except under the following circumstances:

(1) A valid, unexpired building permit has been issued for the property as of the date of adoption of a Drought Response Level 3 and meter capacity fees have been paid; or

(2) The project is necessary to protect the public's health, safety and welfare; or

(3) The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of the District.

(c) WATER RESETTING/METER TURN ON

This provision shall not be construed to preclude the resetting or turn-on of meters to provide continuation of water service or to restore service that has been interrupted for a period of one year or less.

(d) MISCELLANEOUS PROVISIONS

(1) Upon the declaration of a Drought Response Level 3 condition, the District will suspend consideration of water service annexations to its service area.

(2) The District may establish a water allocation for property served by the District using a method that does not penalize persons for the implementation of conservation methods or the installation of water saving devices. If the District establishes water allocation, it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the District customarily mails the billing statement for fees or charges for on-going water service. Following the effective date of the water allocation as established by the District, any person that uses water in excess of the allocation shall be subject to a penalty in the amount as adopted by the District Board of Directors from time to time for each billing unit of water in excess of the allocation. The penalty for excess water usage shall be cumulative to any other remedy or penalty that may be imposed for violation for this ordinance.

SECTION 6: DROUGHT RESPONSE LEVEL 4 - DROUGHT EMERGENCY CONDITION

This is an official "Drought Emergency" condition, and applies when the San Diego County Water Authority Board of Directors declares a water shortage emergency pursuant to California Water Code Section 350 and notifies the District that Level 4 requires a mandatory demand reduction of more than 40 percent in order for the District to have adequate supplies available to meet anticipated demands. The District shall declare a Drought Emergency in the manner and on the grounds provided in California Water Code Section 350. All District customers shall comply with conservation practices required during Level 1 Drought Watch, Level 2 Drought Alert, and Level 3 Drought Critical conditions and shall also comply with the Level 4 Drought Emergency mandatory conservation practices:

(a) LEVEL 4 MANDATORY CONSERVATION PRACTICES

(1) All landscape irrigation and other outdoor watering for residential and commercial customers, not including commercial growers and nurseries, is prohibited, except the minimum use necessary for:

(i) Maintenance of existing landscaping necessary for fire protection as specified by the Fire Marshal of the local fire protection agency having jurisdiction over the property to be irrigated;

(ii) Maintenance of existing landscaping for erosion control;

(iii) Maintenance of plant materials identified to be rare or essential to the well being of rare animals.

(iv) Maintenance of landscaping within active public parks and playing fields, day care centers, school grounds, cemeteries, and golf

course greens, provided that such irrigation does not exceed two days per week according to the schedule established in Section 5 (a) (1).

(v) Watering of livestock; and

(vi) Public Works projects and actively irrigated environmental mitigation projects.

(2) All water leaks shall be repaired within twenty-four (24) hours of notification by the District unless other arrangements are made with the General Manager.

(b) The District may establish a water allocation for property served by the District. If the District establishes water allocation, it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the District customarily mails the billing statement for fees or charges for on-going water service. Following the effective date of the water allocation as established by the District, any person that uses water in excess of the allocation shall be subject to a penalty in the amount as adopted by the Board of Directors from time to time for each billing unit of water in excess of the allocation. The penalty for excess water usage shall be cumulative to any other remedy or penalty that may be imposed for violation of this ordinance.

SECTION 7: HARDSHIP VARIANCE

If, due to unique circumstances, a specific requirement of this ordinance would result in undue hardship to a customer using District water or to property upon which District water is used, that is disproportionate to the impacts to District water users generally or to a similar property or classes of water uses, then the person may apply for a variance to the requirements as provided in this Section.

(a) The variance may be granted or conditionally granted, only upon a written finding of the existence of facts demonstrating an undue hardship to a customer using District water or to property upon which District water is used, that is disproportionate to the impacts to District water users generally or to similar property or classes of water use due to specific and unique circumstances of the user or the user's property.

(1) An application for a Hardship Variance shall be in writing and may be accompanied by photographs, maps, drawings, and other information in support of the application.

(2) An application for a Hardship Variance shall be denied unless the General Manager finds, based on the information provided in the application, supporting documents or such additional information as may be requested, and on the water use information for the property as shown by the records of the District, all of the following:

(i) That the variance does not constitute a grant of special privilege inconsistent with the limitation upon other District customers.

(ii) That because of special circumstances applicable to the property or its use, the strict application of this ordinance would have a disproportionate impact on the property or use that exceeds the impacts to customers generally.

(iii) That authorization of such variance will not be of substantial detriment to adjacent properties, and will not materially affect the ability of the District to effectuate the purpose of this Ordinance and will not be detrimental to the public interest.

(iv) The condition or situation of the subject property or the intended use of the property for which the variance is sought is not common, recurrent or general in nature.

(b) The General Manager shall exercise approval authority and set a hearing within 10 days upon receipt of a completed application for a Hardship Variance. The General Manager shall notify the applicant of the decision to approve, conditionally approve, or deny the variance within 5 days of the hearing.

(c) A customer may appeal the decision of the General Manager by filing a request for a hearing before the District Board of Directors, at a regularly scheduled Board meeting, within 10 days of the decision. The District will provide written notice of the hearing day to the customer. At the hearing before the Board the customer may present testimony and written documentation demonstrating that the Hardship Variance is warranted in accordance with the requirements of this section. The decision of the Board of Directors shall be final.

SECTION 8: VIOLATIONS AND PENALTIES

In addition to any other remedies which the District may have for the enforcement of this Ordinance pursuant to Water Code Section 31029, any person who uses, causes to be used, or permits the use of water in violation of this ordinance is guilty of an offense punishable as provided herein. Each day that a violation of this ordinance occurs is a separate offense. Administrative fines may be levied for each violation of a provision of this ordinance as follows:

(a) FINES

(i) One hundred dollars (\$100.00) for a first violation.

(ii) Two hundred dollars (\$200.00) for a second violation of any provision of this ordinance within one year of the prior violation.

(iii) Five hundred dollars (\$500.00) for each additional violation of this ordinance within one year of the prior violation.

(iv) Violation of a provision of this ordinance is subject to enforcement through installation of a flow-restricting device in the meter.

(b) Each violation of this ordinance may be prosecuted as a misdemeanor punishable by imprisonment in the county jail for not more than 30 days or by a fine not exceeding \$1,000, or by both as provided in Water Code Section 377.

(c) Willful violations of the mandatory conservation measures and water use restrictions as set forth during Stage 4 Drought Emergency condition may be enforced by discontinuing service to the property at which the violation occurs as provided by Water Code Section 346.

(d) All remedies provided for herein shall be cumulative and not exclusive.

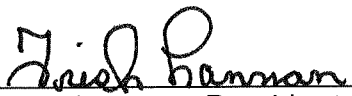
SECTION 9: EFFECTIVE DATE

This ordinance is effective immediately upon adoption or as otherwise established by State law for the Vallecitos Water District.


PASSED, APPROVED AND ADOPTED this 6th date of May, 2009, by the following vote:

AYES: FERGUSON, GENTRY, POLTL, SHELL, HANNAN
NOES:
ABSTAIN:
ABSENT:

ATTEST:



Trish Hannan, President
Board of Directors
Vallecitos Water District



William W. Rucker, Secretary
Board of Directors
Vallecitos Water District

Attachment D
VID Water Conservation

WATER SUPPLY RESPONSE LEVELS

The District’s Board of Directors has adopted a Water Supply Response Program that has four water supply response levels, Level 1 – Water Efficiency, Level 2 – Water Conservation, Level 3 – Water Shortage, and Level 4 – Water Emergency. The declaration of each level is based on the condition of the potable water supply. Below are conditions under which each level is declared and links to water conservation measures under each level.

Level 1 – Water Efficiency

Level 1 is designed to ensure customers use water efficiently and eliminate waste at all times. Mandatory water use efficiency practices are in effect.

Level 2 – Water Conservation

Cutbacks are required by drought or other reductions in supplies and a reduction of up to 20% is required to meet demands. Water conservation measures are mandatory.

Level 3 - Water Shortage

Increasing cutbacks required by drought or other reductions in supplies and a reduction of up to 40% is required to meet demands. Water conservation measures are mandatory.

Level 4 – Water Emergency

Water shortage emergency is declared and a reduction of more than 40% is required to meet demands. Water conservation measures are mandatory.

As soon as a particular level is declared to exist, the water-use efficiency practices, water conservation measures and/or water use restrictions set forth in that level will apply to all district water services until a different level is declared. Please be aware that non-compliance with the measures required in water supply response levels 1 through 4 may result in a violation being issued and a fee being added to your water bill.

If you have any questions about the District’s Water Supply Response Program, feel free to contact Water Conservation at (760) 597-3160.

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SUBSECTIONS:

- Water Conservation Educational Programs
Water Supply Response Levels

RELATED LINKS:

- bewaterwise.com
Landscape Watering Calculator
Metropolitan's Current Water Supply Conditions
Residential Water Calculator
Save Our Water
WaterSmartsd.org
When in Drought

Vista Irrigation District

1391 Engineer Street
Vista, CA 92081-8840
Phone: 760.597.3100
Fax: 760.598.8757
Email: info@vid-h2o.org
Hours: 8 a.m. to 5 p.m.
(Monday Through Friday)

SEARCH

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SUBSECTIONS:

- [Water Conservation Educational Programs](#)
- Water Supply Response Levels**

Vista Irrigation District
 1391 Engineer Street
 Vista, CA 92081-8840
 Phone: 760.597.3100
 Fax: 760.598.8757
 Email: info@vid-h2o.org
 Hours: 8 a.m. to 5 p.m.
 (Monday Through Friday)

WATER SUPPLY RESPONSE LEVEL 1 – Water Efficiency

Level 1 applies at all times unless the District Board of Directors has declared another level. Level 1 is designed to ensure customers use water efficiently and eliminate water waste at all times.

At Level 1, the District will utilize its public education and outreach efforts to raise public awareness of the following mandatory water-use efficiency practices:

1. No washing down paved surfaces, including but not limited to sidewalks, driveways, parking lots, tennis courts, or patios, except when it is necessary to alleviate safety or sanitation hazards or to maintain, repair, construct/reconstruct streets.
2. No water waste resulting from inefficient landscape irrigation, such as runoff, low head drainage, or overspray, etc. Similarly, water shall not flow onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
3. Irrigate residential and commercial landscape before 10 a.m. and after 6 p.m. only. Irrigation of new turf/plantings is exempt from these watering hour restrictions for a period of 30 days following the date of planting. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used.
4. Irrigate nursery and commercial grower’s products before 10 a.m. and after 6 p.m. only. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time.
5. Use construction meters to irrigate landscape before 10 a.m. and after 6 p.m. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used.
6. Use re-circulated water to operate ornamental fountains.
7. Wash vehicles using a bucket and a hand-held hose with positive shut-off nozzle, mobile high pressure/low volume wash system, or at a commercial site that re-circulates (reclaims) water on-site. Avoid washing during hot conditions when additional water is required due to evaporation.

8. Serve and refill water in restaurants and other food service establishments only upon request.
9. Offer guests in hotels, motels, and other commercial lodging establishments the option of not laundering towels and linens daily.
10. Repair all water leaks within five (5) days of notification by the district unless other arrangements are made with the general manager.
11. Use recycled or non-potable water for construction purposes when available.

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SUBSECTIONS:

[Water Conservation](#)
[Educational Programs](#)
Water Supply Response Levels

Vista Irrigation District
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(Monday Through Friday)

WATER SUPPLY RESPONSE LEVEL 2 – Water Conservation

A Level 2 may be declared when the Water Authority notifies its member agencies that due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction of up to 20 percent is required in order to have sufficient supplies available to meet anticipated demands. The District Board of Directors may declare Level 2 and implement the mandatory Level 2 conservation measures identified in this resolution to achieve a consumer demand reduction of up to 20%. The General Manager shall have the authority and discretion to implement water conservation measures commensurate with the level of demand reduction required and/or the reduction targets achieved, as described below. The General Manager shall inform the Board of Directors of the status of the implementation of the measures set forth in this section and the resulting water conservation in a timely manner.

All persons using District water shall comply with Level 1 water-use efficiency practices during Level 2, and shall also comply with the following additional conservation measures:

1. Limit residential and commercial landscape irrigation to assigned days per week on a schedule established by the general manager and posted by the district. This section shall not apply to landscape irrigation systems using weather based irrigation controllers, or commercial growers or nurseries.
2. Limit lawn watering and landscape irrigation using sprinklers to time limits per watering station per assigned day as established by the general manager and posted by the district. This provision does not apply to landscape irrigation systems using water efficient devices, including but not limited to: weather based controllers, drip/micro-irrigation systems and stream rotor sprinklers.
3. Turf/Plant establishment is allowed if required by a landscape permit or necessary for erosion control, landscape renovation after a natural disaster, or establishment, repair or renovation of public use fields for schools or parks. New turf/plantings are exempt from the irrigation limitations set forth in a level 2 condition for a period of 30 days following the date of planting.
4. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system, on the same schedule set forth in section 1 by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation.
5. Repair all leaks within seventy-two (72) hours of notification by the district unless other

arrangements are made with the general manager.

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SEARCH

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SUBSECTIONS:

- [Water Conservation](#)
- [Educational Programs](#)
- Water Supply Response Levels**

Vista Irrigation District
1391 Engineer Street
Vista, CA 92081-8840
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Email: info@vid-h2o.org
Hours: 8 a.m. to 5 p.m.
(Monday Through Friday)

WATER SUPPLY RESPONSE LEVEL 3 – Water Shortage

A Level 3 may be declared when the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction of supplies, a consumer demand reduction of up to 40 percent is required in order to have sufficient supplies available to meet anticipated demands. The District Board of Directors may declare Level 3 and implement the Level 3 conservation measures identified in this resolution to achieve a consumer demand reduction of up to 40%. The General Manager shall have the authority and discretion to implement water conservation measures commensurate with the level of demand reduction required and/or the reduction targets achieved, as described below. The General Manager shall inform the Board of Directors of the status of the implementation of the measures set forth in this section and the resulting water conservation in a timely manner.

All persons using District water shall comply with Level 1 water-use efficiency practices and Level 2 water conservation practices during Level 3 and shall also comply with the following additional mandatory conservation measures:

1. Stop filling or re-filling ornamental lakes or ponds, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of another level under this resolution.
2. Stop operating ornamental fountains or decorative water features which discharge into the air a spray, mist, jet or stream of water. These types of fountains and water features may be operated on a limited basis for maintenance purposes only. All water features that have flowing or cascading water, whether decorative or otherwise, shall be maintained so as to prevent leaking and may only be filled to replace normal evaporation. The operation of fountains and water features that do not use re-circulated water is prohibited.
3. Stop washing vehicles except at commercial carwashes that re-circulate water, or by high pressure/low volume wash systems.
4. Repair all leaks within forty-eight (48) hours of notification by the district unless other arrangements are made with the general manager.

Upon the declaration of Level 3, no new potable water service shall be provided, no new temporary meters or permanent meters shall be provided, and no statements of immediate ability to serve or provide potable water service (such as, will serve letters, certificates, or letters of availability) shall be issued, except under the following circumstances:

1. A valid, unexpired building permit has been issued for the project; or
2. The project is necessary to protect the public's health, safety, and welfare; or
3. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of district.

This provision shall not be construed to preclude the resetting or turn-on of meters to provide continuation of water service or to restore service that has been interrupted for a period of one year or less.

Upon the declaration of Level 3, District will suspend consideration of annexations to its service area.

The district may establish a water allocation for property served by the district using a method that does not penalize persons for the implementation of conservation methods or the installation of water saving devices. If the district establishes a water allocation it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the district customarily mails the billing statement for fees or charges for on-going water service. Following the effective date of the water allocation as established by the district, any person that uses water in excess of the allocation shall be subject to a penalty for each billing unit of water in excess of the allocation. The penalty for excess water usage shall be cumulative to any other remedy or fee that may be imposed for violation of this resolution.

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WATER SUPPLY RESPONSE LEVEL 4 – Water Emergency

A Level 4 applies when the Water Authority Board of Directors declares a water shortage emergency pursuant to California Water Code section 350 and notifies its member agencies that Level 4 requires a demand reduction of more than 40 percent in order for the District to maximize supplies available to meet anticipated demands. The District Board of Directors shall declare a Level 4 emergency in the manner and on the grounds provided in California Water Code section 350.

All persons using District water shall comply with water-use efficiency practices and conservation measures required under Level 1, Level 2, and Level 3 and shall also comply with the following additional mandatory conservation measures:

1. Stop all residential and commercial landscape irrigation, unless the district has determined that recycled water is available and may be lawfully applied to the use. This restriction shall not apply to the following categories of use.
 - A. Maintenance of trees and shrubs that are watered on the same schedule established during a level 3 Drought critical condition by using a bucket, hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation;
 - B. Maintenance of existing landscaping necessary for fire protection as specified by the Fire Marshal of the local fire protection agency having jurisdiction over the property to be irrigated;
 - C. Maintenance of existing landscaping for erosion control;
 - D. Maintenance of plant materials identified to be rare or essential to the well being of rare animals;
 - E. Maintenance of landscaping within active public parks and playing fields, day care centers, school grounds, cemeteries, and golf course greens, provided that such irrigation does not exceed two (2) days per week according to the schedule established by the general manager and posted by the district.
 - F. Watering of livestock; and
 - G. Public works projects and actively irrigated environmental mitigation projects.

H. Irrigation of crops and landscape products of commercial growers and nurseries.

2. Repair all water leaks within twenty-four (24) hours of notification by the district unless other arrangements are made with the general manager.

The district may establish a water allocation for property served by the district. If the district establishes a water allocation it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the district customarily mails the billing statement for fees or charges for on-going water service. Following the effective date of the water allocation as established by the district, any person that uses water in excess of the allocation shall be subject to a penalty for each billing unit of water in excess of the allocation. The penalty for excess water usage shall be cumulative to any other remedy or fee that may be imposed for violation of this resolution.

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