

Creekside Assisted Living Technical Appendices

Appendix L Water/Sewer Study

VALLECITOS WATER DISTRICT
CREEKSIDE ASSISTED LIVING FACILITY
WATER AND SEWER STUDY
WORK ORDER # 227930

FINAL TECHNICAL MEMORANDUM

May 4, 2020

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

INTRODUCTION

The proposed Creekside Assisted Living Facility (Project) is a 137 unit assisted living residential facility to be constructed on 3.79 acres located on the east side of Twin Oaks Valley Road south of Richmar Avenue (APNs 220-063-03 & 05). The San Marcos Creek floodway occupies approximately 1.54 acres along the eastern portion of the property. This area is undevelopable. The proposed development will occupy the remaining 2.25 acres.

The Project property is located within Vallecitos Water District's water and sewer service boundaries. Both water and wastewater services will be provided by VWD.

All new projects undergo evaluation by VWD to determine if the current water and sewer infrastructure is sufficient to accommodate the proposed water demands and sewage generation.

This study projects water demand and sewage generation increases due to the Project densification. It analyzes the following aspects of VWD's infrastructure and makes recommendations for capital improvements for impacts that are created due to the land use change:

- 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 proposed 3.79-acre Project lies completely within VWD's 920 Pressure Zone. Figures 1 and 2 show the development'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

The City of San Marcos' approved land use designation for the Project property is Commercial. Vallecitos Water District's 2018 Master Plan based its ultimate water demand planning on this approved land use. The Project is proposing a 137-unit assisted living residential facility which will result in a density increase.

Table 1 provides the average water demand generated both under the density planned for the 2018 Master Plan and with the proposed Project. The table shows that the Project will increase the projected average water demand from the 2018 Master Plan land use by 11,748 gpd.

Table 1 – Project Estimated Water Demands

Land Use Type	Area (acres)	Number of Units	Duty Factor (gpd/ac)	Duty Factor (gpd/unit)	Water Demand (gpd)
2018 Master Plan Land Use Demand					
Commercial	3.79		1,500		5,685
Total	3.79	-			5,685
Proposed Project Demand					
Flood Plain (Open Space)	1.54		200		308
Assisted Living	2.25	137		125	17,125
Total	3.79				17,433
Water Demand Increase					11,748

Legend:



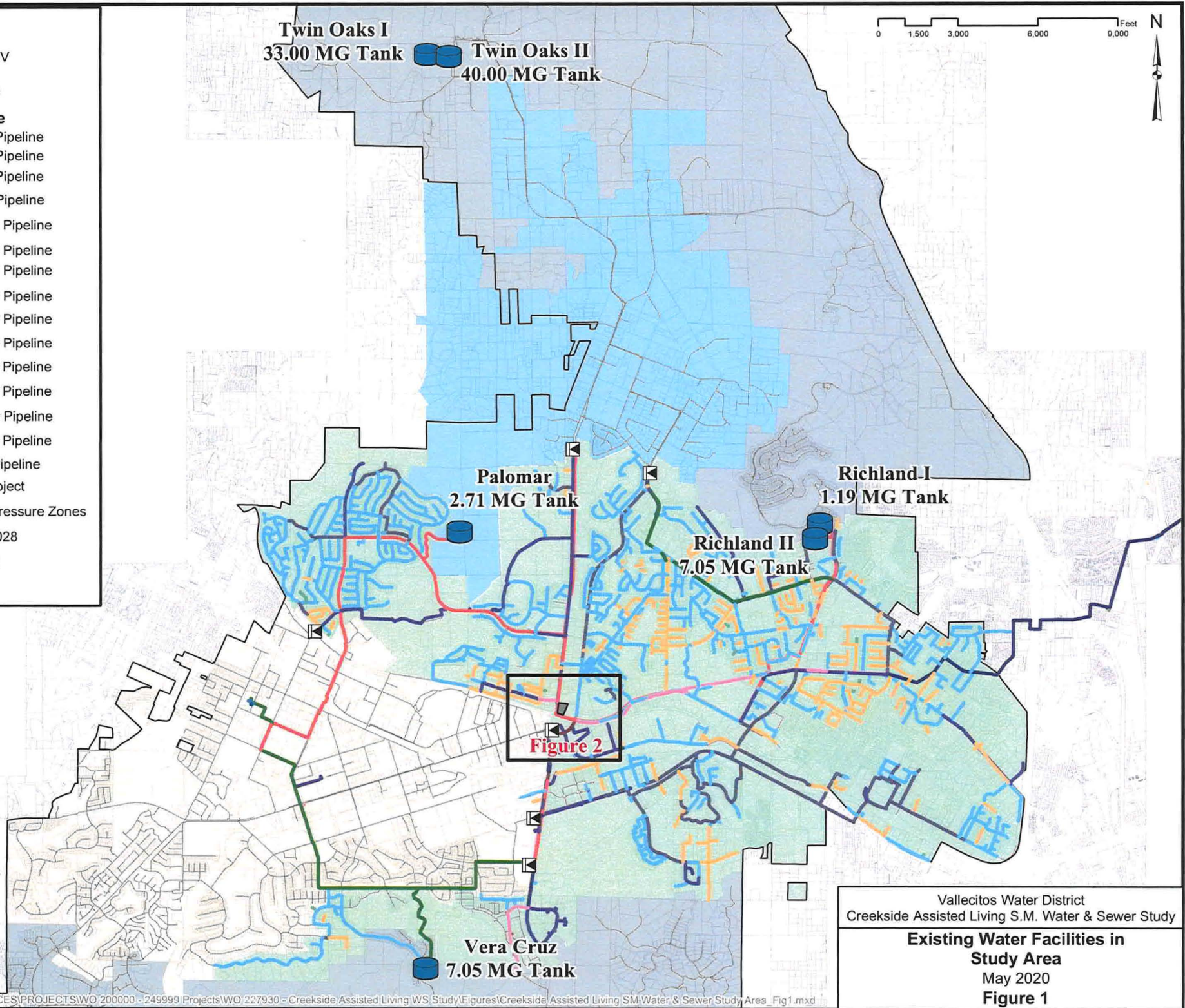
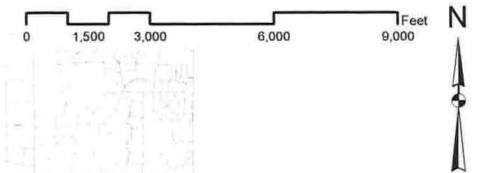
920 Zone PRV



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
- Unaffected Pipeline
- Proposed Project
- Unaffected Pressure Zones
- Twin Oaks 1028
- Richland 920
- 855 Zone



Vallecitos Water District
Creekside Assisted Living S.M. Water & Sewer Study

**Existing Water Facilities in
Study Area**
May 2020
Figure 1

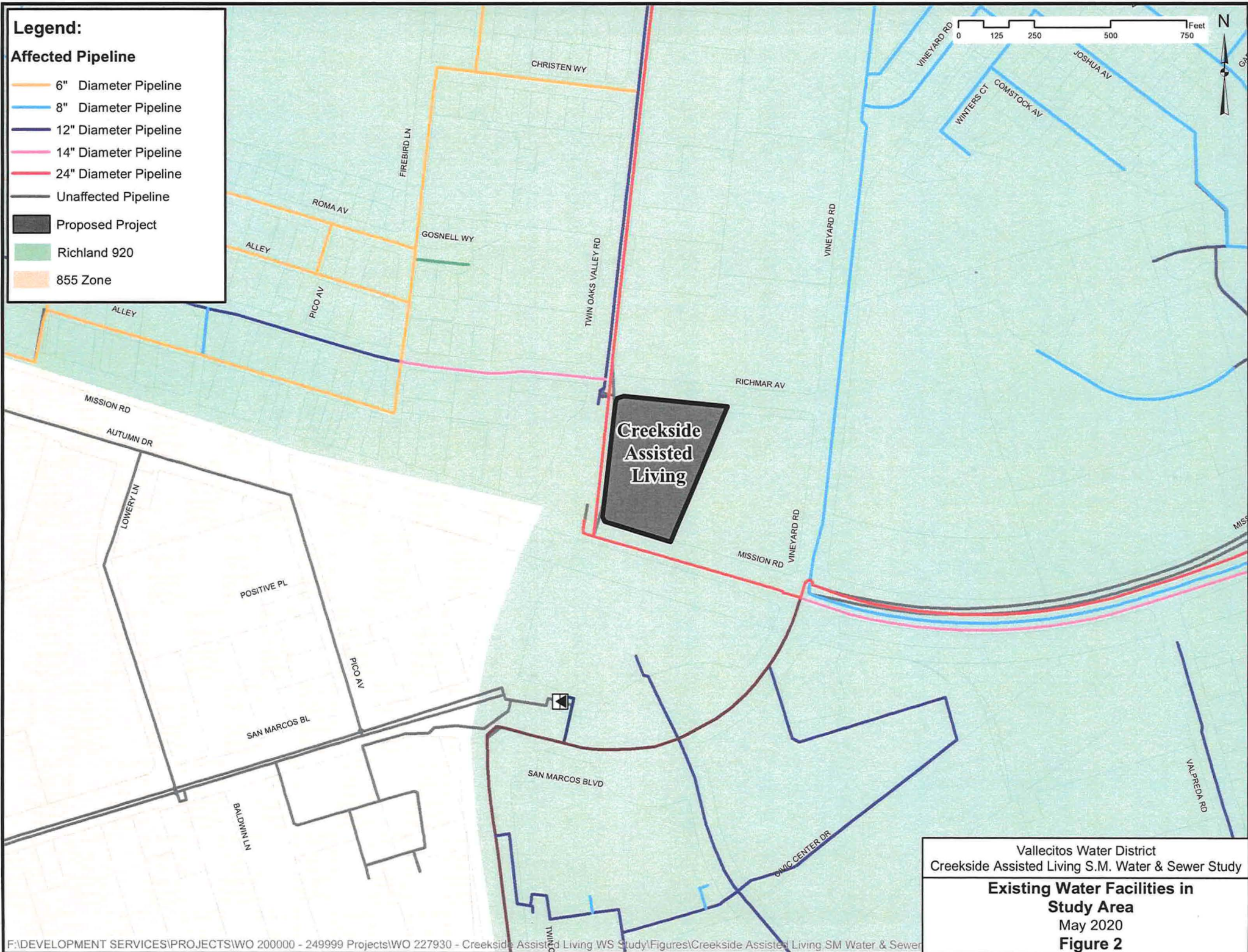
Legend:

Affected Pipeline

- 6" Diameter Pipeline
- 8" Diameter Pipeline
- 12" Diameter Pipeline
- 14" Diameter Pipeline
- 24" Diameter Pipeline
- Unaffected Pipeline

Proposed Project

- Richland 920
- 855 Zone



Vallecitos Water District
 Creekside Assisted Living S.M. Water & Sewer Study
**Existing Water Facilities in
 Study Area**
 May 2020
Figure 2

Water Distribution System Analysis

The 2018 Master Plan water system distribution 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 City of San Marcos Fire Marshall has set the required fire demand at 1,500 gpm for the Project.

To avoid excessive velocity and headloss within the distribution system, the following pipeline design criteria was also utilized:

- Maximum allowable velocity: 7 feet per second
- Maximum allowable headloss 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 site
- Average Day Demand with the proposed Project
- Maximum Day Demand with existing demands at the Project site
- Maximum Day Demand with the proposed Project
- Peak Hour Demand with existing demands at the Project site
- Peak Hour Demand with the proposed Project
- Maximum Day Demand plus Fire Flow with existing demands at the Project site
- Maximum Day Demand plus Fire Flow with the proposed Project

Per the 2018 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. The model found that the Project did not create any distribution system deficiencies under average day demand or maximum day plus fire flow demand conditions.

Water Storage Analysis

The 2018 Master Plan outlines VWD's potable water storage reservoirs for each pressure zone as follows:

1.5 times 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 Project 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 existing and ultimate build-out (Master Plan) conditions relative to the existing storage provided within each zone.

Table 2 – Existing Reservoir Storage Capacity and Requirements

Pressure Zone	Existing ADD (MGD)	Existing Storage Requirement (MG)	Ultimate ADD (MGD)	Ultimate Storage Requirement (MG)	Existing Storage Available (MG)
855	3.74	50.05	6.79	101.25	0
920 Richland	5.61		10.40		18
1028 Twin Oaks	0.66		3.06		73
Totals	10.01	50.05	20.25	101.25	91

The Project will increase the projected average water demand by approximately 11,748 gallons per day as shown in Table 1.

Therefore, the amount of additional reservoir storage is 500% of the development's average day demand, or:

$$11,748 \text{ gallons} * 500\% = \mathbf{58,740 \text{ gallons}}$$

The analysis finds that water storage capacity is currently available to serve the Project's increased storage requirements. Master Plan projects address and accommodate the ultimate build-out storage deficiency and Water Capital Facility Fees paid by this project will be used for the increase in storage necessitated by the Project's demand calculated above.

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 stations by this Project.

WASTEWATER SYSTEM ANALYSIS

The proposed 3.79-acre Project lies completely within VWD sewer shed 24C. Figures 3 through 6 show the development's location in relation to sewer shed boundaries, identify wastewater infrastructure within the vicinity of the development, and identify the downstream collection infrastructure that will be impacted by the development.

Wastewater Flow Projections

The City of San Marcos' approved land use designation for the Project property is Commercial. Vallecitos Water District's 2018 Master Plan based its ultimate water demand planning on this approved land use. The Project is proposing a 137-unit assisted living residential facility which will result in a density increase.

Table 3 provides the average wastewater flow generated both under the density planned for in the 2018 Master Plan and with the proposed Project. The table shows that the Project will increase the projected average wastewater generation from the 2018 Master Plan by 12,577 gpd.

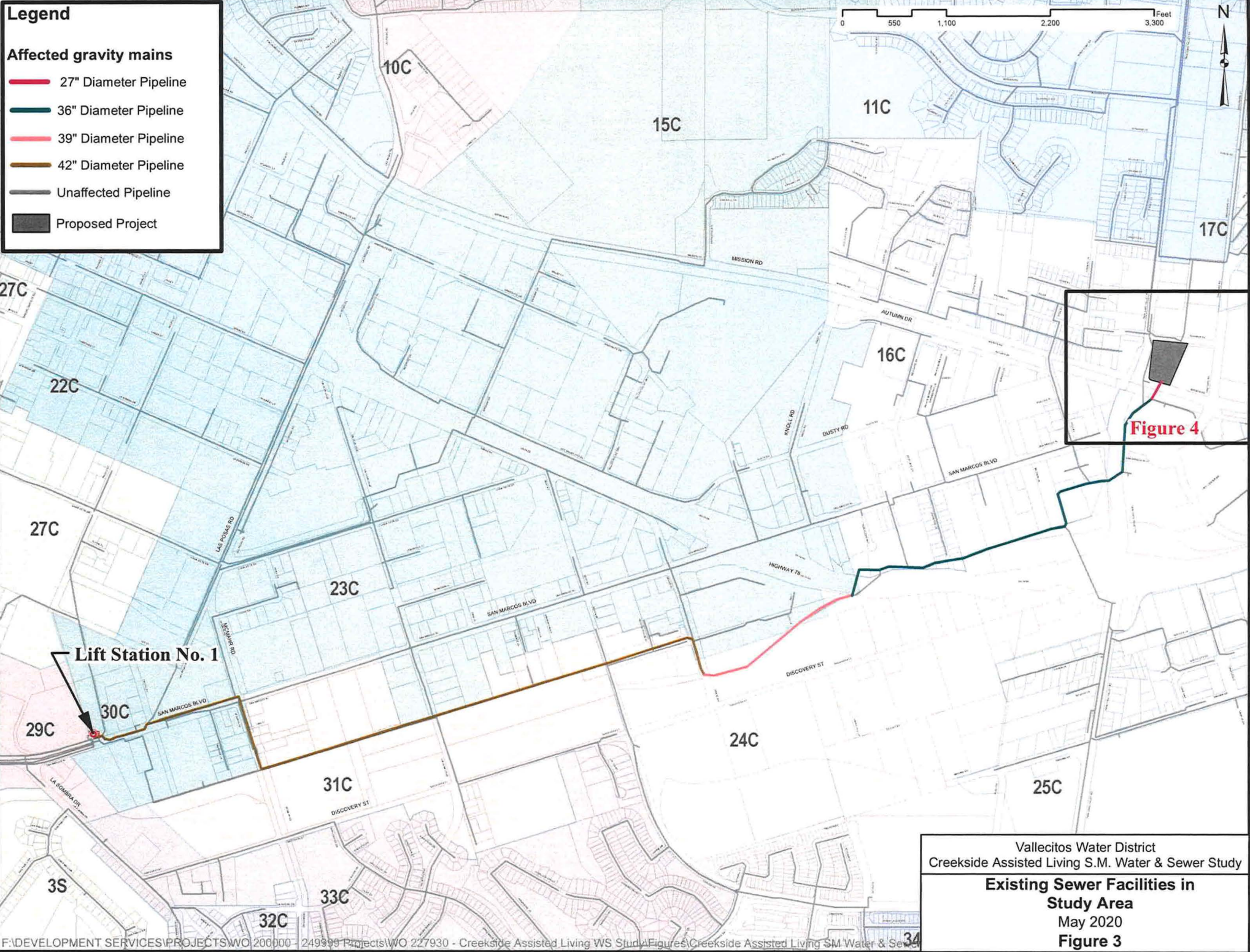
Table 3 – Project Estimated Wastewater Flows

Land Use Type	Area (acres)	Number of Units	Duty Factor (gpd/ac)	Duty Factor (gpd/unit)	Water Demand (gpd)
2018 Master Plan Land Use Flows					
Commercial	3.79		1,200		4,548
Total	3.79	-			4,548
Proposed Project Demand					
Flood Plain (Open Space)	1.54		0		0
Assisted Living	2.25	137		125	17,125
Total	3.79				17,125
Sewer Generation Increase					12,577

Legend

Affected gravity mains

- 27" Diameter Pipeline
- 36" Diameter Pipeline
- 39" Diameter Pipeline
- 42" Diameter Pipeline
- Unaffected Pipeline
- Proposed Project



Vallecitos Water District
 Creekside Assisted Living S.M. Water & Sewer Study
**Existing Sewer Facilities in
 Study Area**
 May 2020
Figure 3

Legend

Affected gravity mains

27" Diameter Pipeline

36" Diameter Pipeline

39" Diameter Pipeline

Unaffected Pipeline

Proposed Project

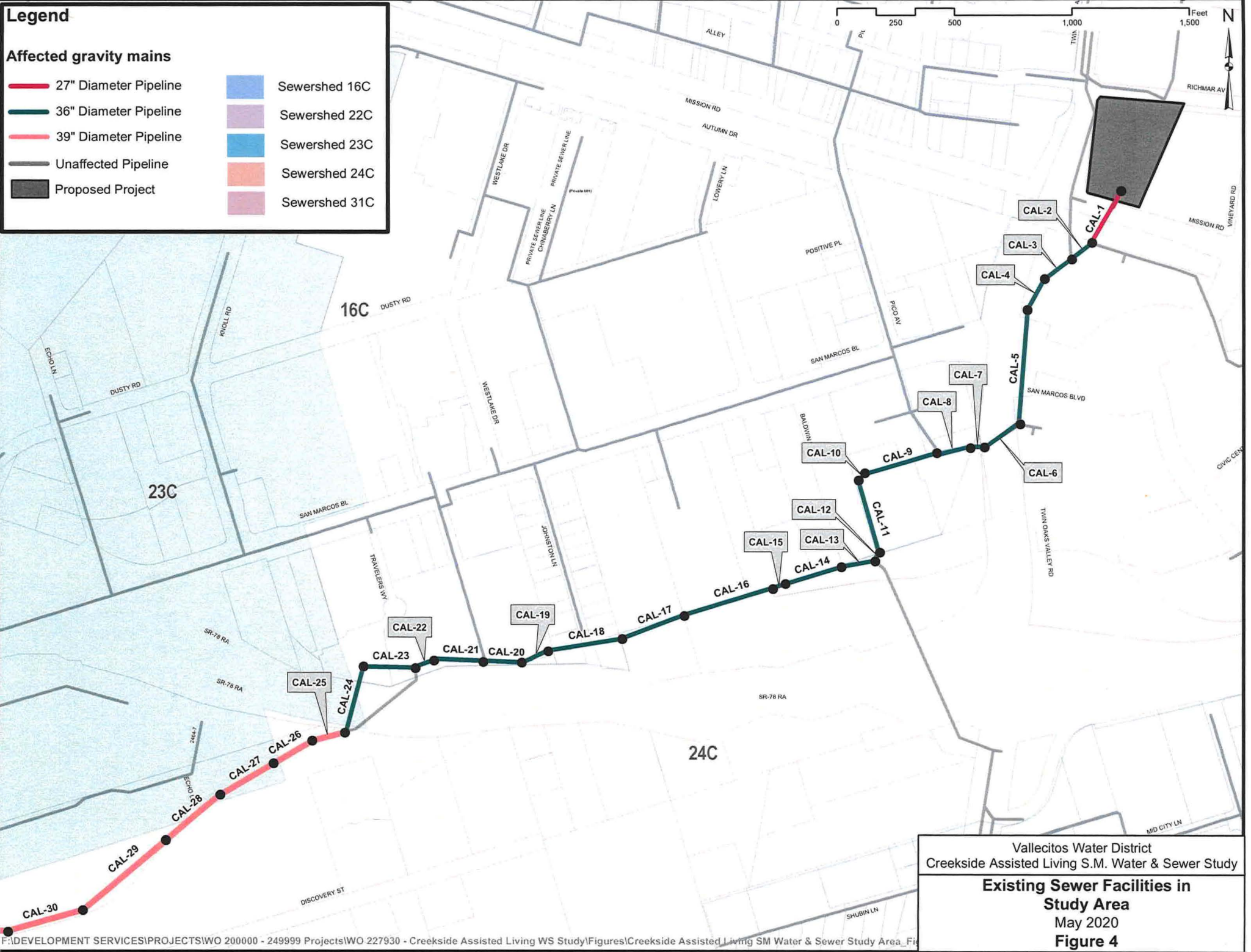
Sewershed 16C

Sewershed 22C

Sewershed 23C

Sewershed 24C









Sewershed 31C

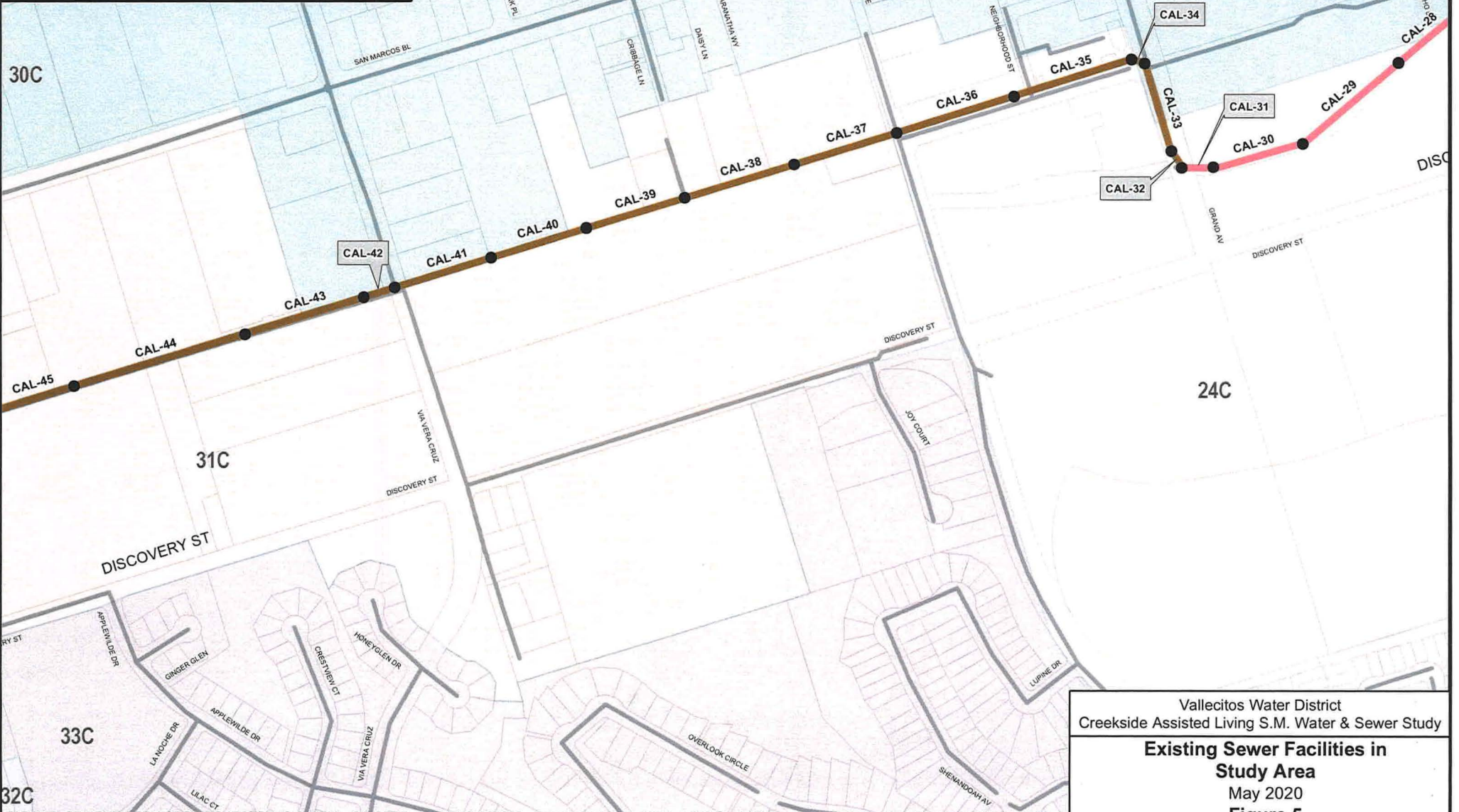


Vallecitos Water District
Creekside Assisted Living S.M. Water & Sewer Study
**Existing Sewer Facilities in
Study Area**
May 2020
Figure 4

Legend

Affected gravity mains

	39" Diameter Pipeline		Sewershed 24C
	42" Diameter Pipeline		Sewershed 31C
	Unaffected Pipeline		Sewershed 23C
	Sewershed 22C		Sewershed 32C



Vallecitos Water District
 Creekside Assisted Living S.M. Water & Sewer Study
**Existing Sewer Facilities in
 Study Area**
 May 2020
Figure 5

Legend

Affected gravity mains

42" Diameter Pipeline

Unaffected Pipeline

Sewershed 22C

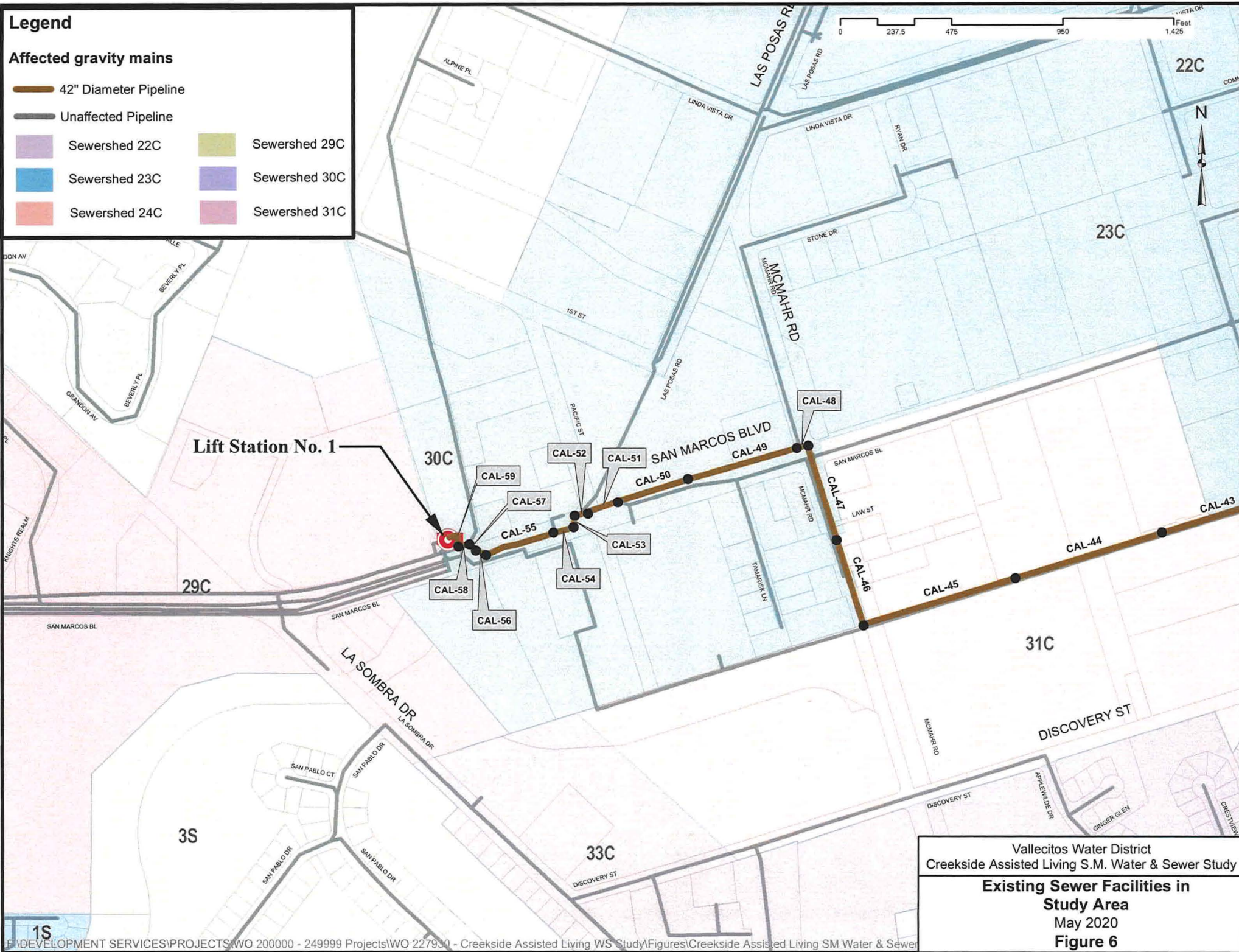
Sewershed 23C

Sewershed 24C

Sewershed 29C

Sewershed 30C

Sewershed 31C



Vallecitos Water District
Creekside Assisted Living S.M. Water & Sewer Study
**Existing Sewer Facilities in
Study Area**
May 2020
Figure 6

Wastewater Collection System Analysis

The 2018 Master Plan outlines VWD's wastewater system design criteria which 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: $\frac{1}{2}$ full maximum at peak flow
- Pipes over 12 inches in diameter: $\frac{3}{4}$ 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 8 inches in diameter and smaller: 0.4% minimum
- Slope for pipes over 8 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:

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

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 flows (see Figures 3 through 6).

The modeling results show that there are no system deficiencies under peak wet weather flows during ultimate build-out conditions as shown in Table 4.

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

				Wastewater Flows with Existing Density				Wastewater Flows with Proposed Density			
Pipe ID Number	Length (ft)	Diameter (in)	Slope	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
CAL-1	261	27	0.008	2386	0.30			2419	0.30		
CAL-2	135	36	0.003	6136	0.43			6169	0.43		
CAL-3	128	36	0.005	6161	0.37			6194	0.38		
CAL-4	140	36	0.007	6164	0.34			6197	0.34		
CAL-5	470	36	0.004	6166	0.40			6199	0.40		
CAL-6	184	36	0.003	6182	0.43			6215	0.43		
CAL-7	36	36	0.002	6184	0.48			6217	0.48		
CAL-8	146	36	0.005	6185	0.38			6218	0.38		
CAL-9	318	36	0.004	6547	0.41			6580	0.41		
CAL-10	39	36	0.004	6547	0.41			6580	0.41		
CAL-11	319	36	0.004	6548	0.41			6581	0.41		
CAL-12	38	36	0.004	6549	0.41			6582	0.41		
CAL-13	139	36	0.004	8807	0.48			8840	0.49		
CAL-14	294	36	0.003	8810	0.53			8843	0.53		
CAL-15	12	36	0.017	8811	0.33			8844	0.33		
CAL-16	438	36	0.005	8814	0.45			8847	0.46		
CAL-17	229	36	0.005	8817	0.45			8850	0.46		
CAL-18	371	36	0.006	8821	0.43			8854	0.43		
CAL-19	124	36	0.005	8824	0.46			8857	0.46		

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

				Wastewater Flows with Existing Density				Wastewater Flows with Proposed Density			
Pipe ID Number	Length (ft)	Diameter (in)	Slope	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
CAL-20	167	36	0.005	8,826	0.45			8,859	0.46		
CAL-21	201	36	0.004	9,120	0.49			9,153	0.50		
CAL-22	91	36	0.005	9,121	0.46			9,154	0.46		
CAL-23	220	36	0.005	9,122	0.46			9,155	0.46		
CAL-24	286	36	0.005	9,125	0.44			9,158	0.46		
CAL-25	210	39	0.004	9,220	0.48			9,253	0.44		
CAL-26	176	39	0.003	9,224	0.54			9,257	0.48		
CAL-27	271	39	0.002	9,227	0.54			9,260	0.54		
CAL-28	297	39	0.002	9,230	0.54			9,263	0.54		
CAL-29	452	39	0.002	9,233	0.54			9,266	0.54		
CAL-30	337	39	0.002	9,235	0.54			9,268	0.54		
CAL-31	123	39	0.008	9,427	0.37			9,460	0.37		
CAL-32	58	42	0.004	9,429	0.40			9,462	0.40		
CAL-33	308	42	0.003	9,432	0.43			9,465	0.43		
CAL-34	69	42	0.001	9,437	0.60			9,470	0.60		
CAL-35	448	42	0.003	9,441	0.43			9,474	0.43		
CAL-36	448	42	0.003	9,446	0.43			9,479	0.43		
CAL-37	404	42	0.006	9,802	0.37			9,835	0.37		
CAL-38	404	42	0.006	9,806	0.37			9,839	0.37		
CAL-39	368	42	0.003	9,813	0.44			9,846	0.44		

Table 4 - Wastewater Model Results and Recommended Gravity Main Improvements

				Wastewater Flows with Existing Density				Wastewater Flows with Proposed Density			
Pipe ID Number	Length (ft)	Diameter (in)	Slope	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
CAL-40	368	42	0.003	9,817	0.44			9,850	0.44		
CAL-41	368	42	0.003	9,822	0.44			9,855	0.44		
CAL-42	120	42	0.002	9,878	0.50			9,911	0.50		
CAL-43	471	42	0.004	9,883	0.41			9,916	0.41		
CAL-44	650	42	0.004	9,889	0.41			9,922	0.41		
CAL-45	677	42	0.004	9,896	0.41			9,929	0.41		
CAL-46	373	42	0.004	9,905	0.41			9,938	0.41		
CAL-47	420	42	0.004	9,910	0.41			9,943	0.41		
CAL-48	20	42	0.001	9,913	0.62			9,946	0.62		
CAL-49	486	42	0.004	9,940	0.41			9,973	0.41		
CAL-50	500	42	0.004	9,945	0.41			9,978	0.41		
CAL-51	503	42	0.008	10,393	0.35			10,426	0.35		
CAL-52	20	42	0.013	10,396	0.31			10,429	0.31		
CAL-53	15	42	0.053	14,107	0.25			14,140	0.25		
CAL-54	138	42	0.003	14,110	0.55			14,143	0.55		
CAL-55	347	42	0.002	14,120	0.62			14,153	0.62		
CAL-56	18	42	0.002	14,122	0.62			14,155	0.62		
CAL-57	10	42	0.004	14,124	0.50			14,157	0.50		
CAL-58	10	42	0.01	14,316	0.39			14,349	0.39		
CAL-59	73	42	0.004	14,896	0.52			14,929	0.52		

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 7. 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 through the land outfall was 7.5 MGD. This corresponds to a peak wet weather flow of 17.5 MGD, which falls within VWD's combined peak wet weather collection capacity.

The 2018 Master Plan estimated that, under approved land uses, VWD has an ultimate build-out average dry weather flow of 14.4 MGD. This corresponds to a peak wet weather flow of 31.7 MGD, which exceeds VWD's combined peak wet weather collection capacity. To accommodate additional wastewater flows from planned development, the 2018 Master Plan recommended conveyance of peak flows to the EWPCF through a parallel land outfall.

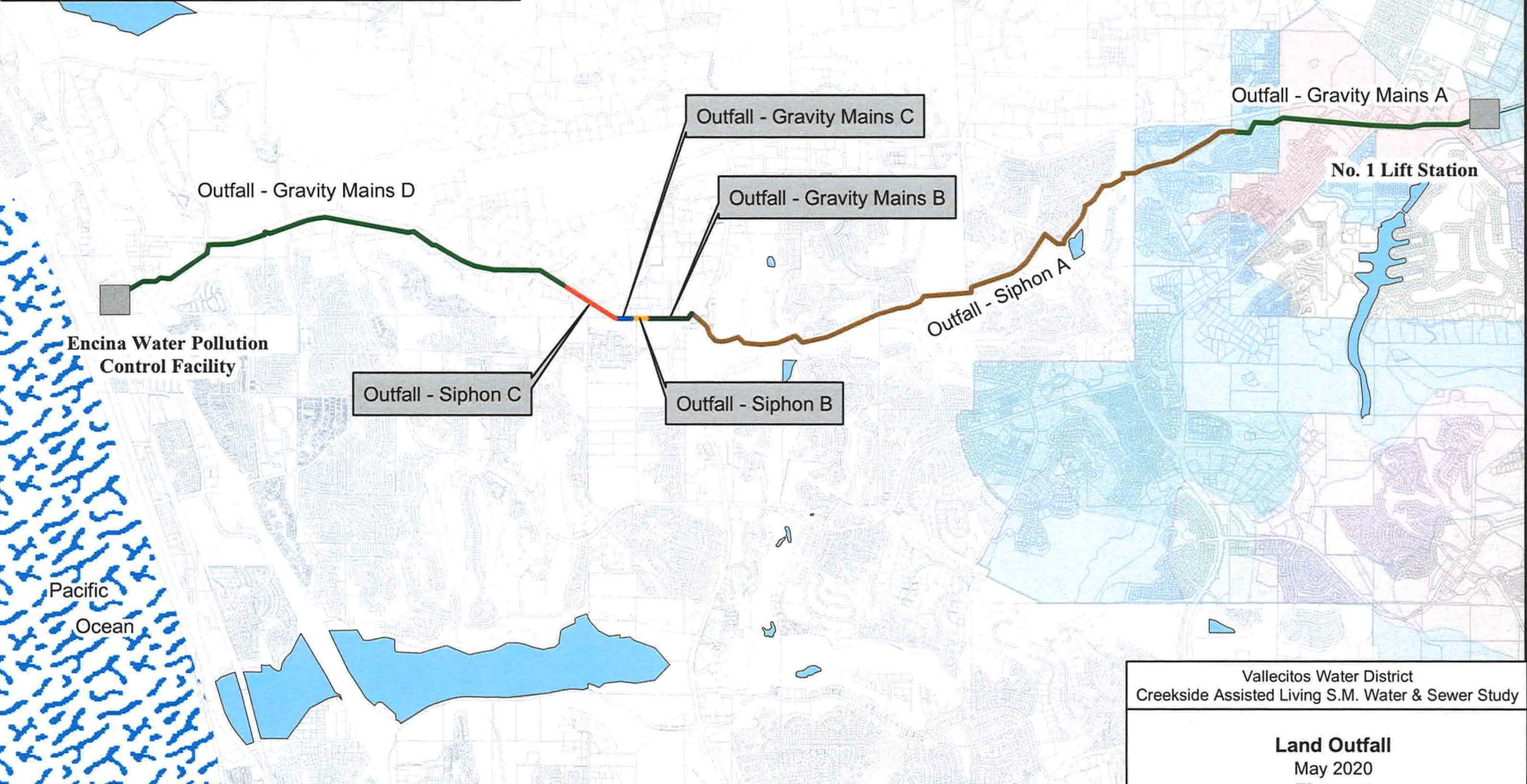
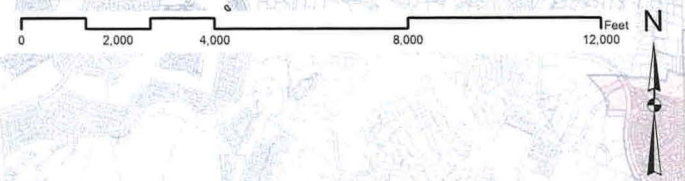
The Project proposes to generate 12,577 gallons per day of additional average wastewater flow that was not accounted for in the Land Outfall's capacity studied in the 2018 Master Plan.

The analysis finds that outfall capacity is currently available to serve the Project's proposed wastewater generation. Wastewater Capital Facility Fees paid by this Project will be used toward design and construction of a parallel land outfall to be sized to accommodate ultimate build-out wastewater flows.

Legend

- Outfall - Gravity Mains A
- Outfall - Siphon A
- Outfall - Gravity Mains B
- Outfall Siphon B
- Outfall - Gravity Mains C
- Outfall - Siphon C
- Outfall - Gravity Mains D
- Uneffected Sewer Sheds

- Sewershed 21C
- Sewershed 22C
- Sewershed 27C
- Sewershed 28C
- Sewershed 29C
- Sewershed 30C
- Sewershed 31C
- Sewershed 32C



Vallecitos Water District
Creekside Assisted Living S.M. Water & Sewer Study

Land Outfall
May 2020
Figure 7

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 noted below.

Solids Treatment Capacity

VWD currently owns 10.47 MGD of solids treatment capacity at EWPCF. VWD's 2014 average daily wastewater flow was 7.5 MGD. Therefore, the analysis finds that adequate solids treatment capacity exists at this time to serve the Project.

The ultimate average wastewater flow identified in the 2018 Master Plan is 14.4 MGD, resulting in a projected solids treatment capacity deficiency of 3.93 MGD.

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. VWD's 2014 average daily wastewater flow was 7.5 MGD. Therefore, the analysis finds that adequate liquids treatment capacity exists at this time to serve the Project.

The ultimate average wastewater flow identified in the 2018 Master Plan is 14.4 MGD, resulting in a projected liquids treatment capacity deficiency of 1.73 MGD.

Ocean Disposal Capacity

VWD currently owns 10.47 MGD of ocean disposal capacity at the EWPCF. VWD's 2014 average daily wastewater flow was 7.5 MGD. Therefore, the analysis finds that adequate ocean disposal capacity exists at this time to serve the Project.

The ultimate average wastewater flow identified in the 2018 Master Plan is 14.4 MGD, resulting in an ocean disposal deficiency of 3.93 MGD.

The District has determined that adequate wastewater treatment and disposal capacity exists for the proposed Project at this time subject to the qualifications referenced in the Conclusions and Conditions.

CONCLUSION AND CONDITIONS

The proposed Project is expected to increase average daily water demands over the ultimate demands projected in the 2018 Master Plan by 11,748 gpd. The Project is also expected to increase wastewater flow over ultimate flows projected in the 2018 Master Plan by 12,577 gpd.

The study concludes that the proposed development will result in the following impacts:

- An increase of 58,740 gallons of potable water storage requirement.
- An increase of 12,577 gallons per day in solids handling, liquids handling and ocean disposal capacity requirements at the Encina Water Pollution Control Facility.
- An increase of 12,577 gallons per day in the parallel land outfall's capacity requirement.

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

- Payment of all applicable Water and Wastewater Capital Facility Fees in affect at the time service is committed in accordance with District rules and regulations.
- Construction and acceptance of all on-site water and sewer facilities prior to service.

The District currently has water and sewer capacity available to serve the Project as proposed. However, the ability to provide water and sewer service in the future depends upon ultimate build-out of the Project and could change depending upon the timing of the build-out, as well as 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 2018 Master Plan. The study addresses the incremental facility impacts of this Project 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 the Study are necessary. Costs for revising this Study shall be borne by the Developer.