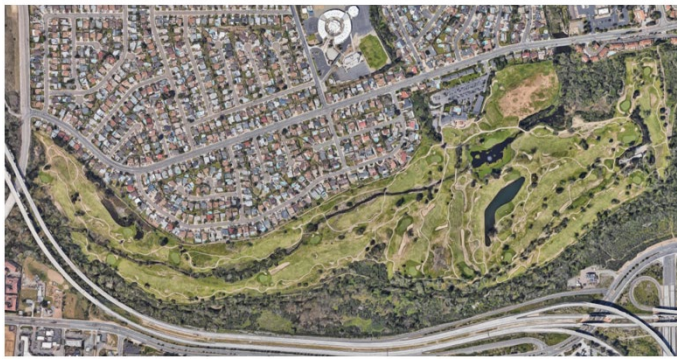
Appendix P1
Water Study



Carlton Oaks Golf Course Proposed Community Water Study

Lennar

Santee, California
November 22, 2021

Introduction

A development community at Carlton Oaks Golf Course (Development) is being planned within the Padre Dam Municipal Water District (District) service area, as shown in Figure 1. The District has requested that HDR Engineering, Inc. (HDR), complete a water study and hydraulic analysis on behalf of the developer, Lennar Homes, using the District's InfoWater hydraulic model to analyze the facilities needed to serve the project and provide improvement recommendations. This technical memorandum describes the hydraulic model analysis, results, and recommendations.

Background

The development is assumed to consist of three primary locations: PA-1 West Residential, PA-2 North Residential and PA-3 Hotel, as shown in Figure 1.

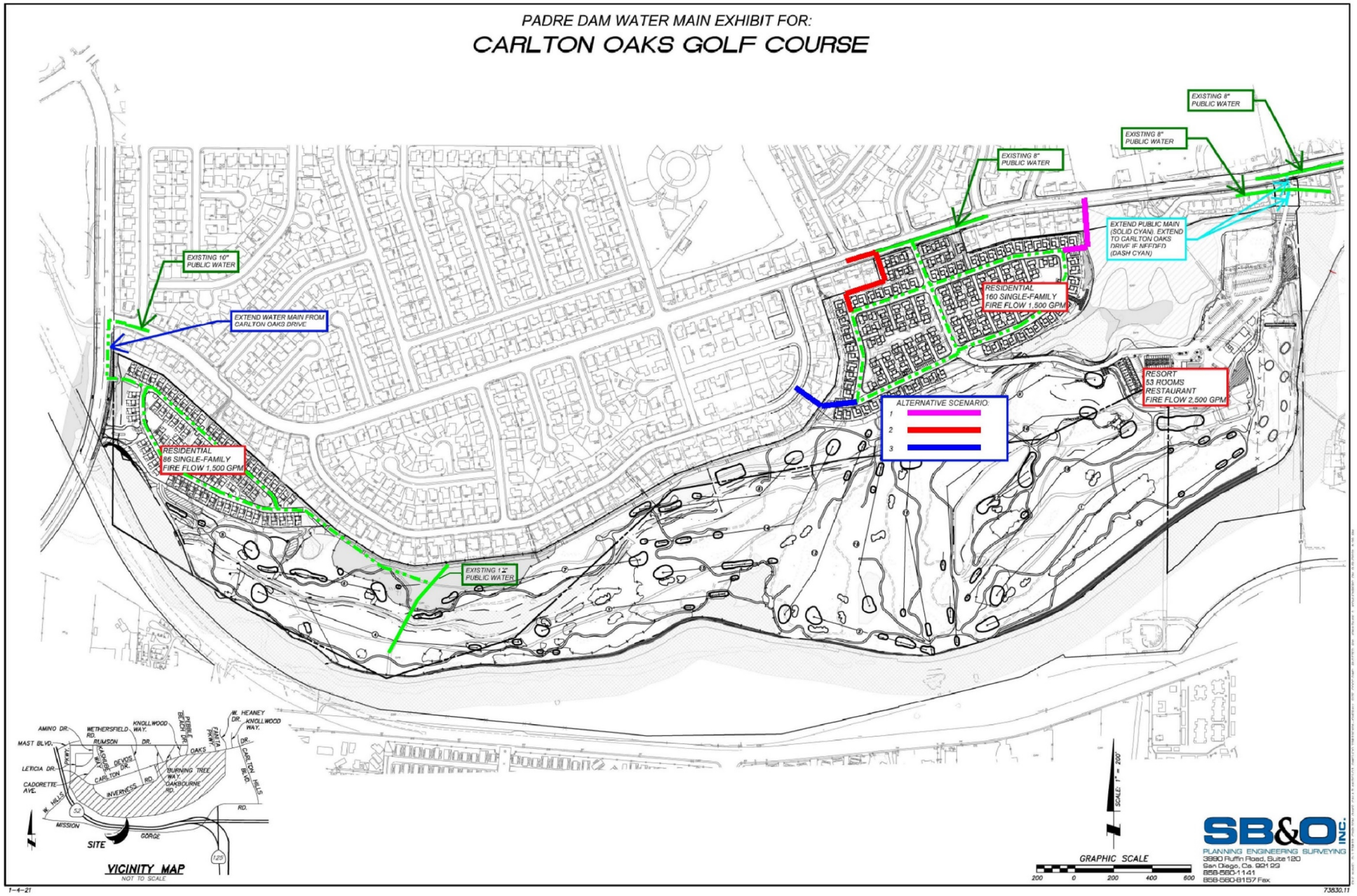
The PA-1 West Residential development will be located on a 9.4-acre site and consists of an 86-unit single-family residential development.

The PA-2 North Residential will be located on a 19.8-acre site and consists of a 160 single-family residential development.

The PA-3 Hotel site includes a 53-room resort facility with onsite restaurant.

The 2020 Comprehensive Facilities Master Plan (CFMP) evaluated the development as a demand node off the Carlton Oaks Drive water. No fire flow or other deficiencies were identified in the 2020 CFMP due to the development.

Figure 1. Carlton Oaks Golf Course Development Areas



Hydraulic Model Update & Analysis

The hydraulic model update and analysis consisted of the following:

- Update the hydraulic model to include development demands based on the water demand factors developed in the District's 2015 CFMP
- Maximum day demand (MDD) plus fire flow (FF) model analyses for existing and buildout conditions for each of the scenarios identified below
- Comparison of model results with 2015 CFMP criteria to evaluate existing and planned distribution system capacity

Maximum day demand plus fire flow scenarios were evaluated as part of the hydraulic analysis, including:

- PA-1 West Residential: For this area of the development, the pipeline towards PA-1 West Residential was extended to West Hills Parkway to serve to the 86-unit residential property. The PA-1 site is served by a public 8-inch system on-site, which connects to the existing 12-inch pipeline to the east. The model was analyzed under a MDD scenario plus a fire flow of 1,500 gpm.
- PA-2 North Residential: This 160-unit single-family residential development is served by a public water system and a connection in Carlton Oaks Drive and Burning Tree Way. The model was analyzed under a MDD scenario plus a fire flow of 1,500 gpm. Three alternatives for a secondary supply connection were evaluated, including:
    - Alternative 1: Service connection located at Carlton Oaks Drive east of Pebble Beach Drive
    - Alternative 2: Service connection located at Carlton Oaks Drive and east of Oakbourne Road
    - Alternative 3: Service connection located off Inverness Road south of Dunwoodie Road
- PA-3 Hotel: This area will be developed with a resort and on-site restaurant and served by fire service and domestic meter connections off the existing 8-inch water main in Calle del Verde. The model was analyzed for MDD and fire flow of 2,500 gpm.

The details of the model update and analysis are discussed in the following subsections.

Model Demand Updates

Domestic water demands for the Development were calculated based on unit demand factors developed in the 2015 CFMP. The 2015 CFMP lists per capita water use for the District's Western Service Area as 100 gallons per capita per day (gpcd) based on 2012 billing data (2015 CFMP Table 3.5). For residential developments, the number of dwelling units was converted to a population using SANDAG's average of 2.75 people per dwelling unit 2015 CFMP (2015 CFMP Section 3.1.6.1). Thus, the residential demands were calculated as a product of the per capita water consumption, people per dwelling unit, and number of the residential units. To calculate the demand for the PA-3 Hotel site, 2015 CFMP Table 3.6 was used for water demand for commercial developments at 1,000 gallons per day per acre (gpd/acre). A MDD peaking factor of 2.0 was applied to average annual demands, per the criteria in the 2015 CFMP.

Table 1 summarizes demands for all the development sites. Total Development average annual demands were estimated at 74,550 gpd.

Table 1. Development Demands

Area	Land Use Type	Units	Unit Demand Factors (gpd/unit)	Projected Development Demand (gpd)	Projected Development Demand (gpm)	Projected Development MDD (gpm)
PA-1	Single Family Residential	86 units	275[a]	23,650	16.42	32.84
PA-2	Single Family Residential	160 units	275	44,000	30.56	61.12
PA-3	Commercial	6.9 acres	1,000[b]	6,900	4.79	9.58
[a] Source: 2.75 people per unit (2015 CFMP Section 3.1.6.1) x 100 gpcd (2015 CFMP Table 3.5) = 275 gpd/unit						
[b] Source: Table 3.5 of the 2015 District 2015 CFMP						

Evaluation Criteria

Criteria defined in the 2015 CFMP were used to evaluate the updated hydraulic model for MDD plus fire flow conditions. Table 5.1 of the 2015 CFMP lists system evaluation criteria for MDD plus FF conditions, including:

- Maximum velocity of 10 feet per second (fps)
- Minimum residual pressure of 20 pounds per square inch (psi)

Based on these criteria, model results were evaluated. The results of the analysis are discussed in the following section.

Model Analysis and Results

The updated model was analyzed for fire flow capacity under existing and buildout demand conditions based on the evaluation criteria discussed in the previous section. For comparison, the model was also run for MDD under existing system conditions to provide estimated static pressures and velocities. The model results are discussed below.

PA-1 West Residential

The PA-1 West residential development was represented in the hydraulic model by extending an 8-inch line from the existing distribution system along West Hills Parkway, as shown in Figure 2. The 8-inch line extends to a proposed 8-inch looped public water system for on-site service and connects to the existing 12-inch line off Inverness Road to the east that is located within an easement. The PA-1 West Residential demand was equally distributed and applied to the model junctions (16.42 gpm per node) based on the demand calculations shown in Table 1. The fire flow demand was modeled at 1,500 gpm, with the most critical results occurring with the fire flow demand applied to model node J9678.

Figure 2. PA-1 West Residential Project Area Model Layout

The updated model was run for MDD conditions plus a fire flow of 1,500 gpm. Model results indicate the existing system can serve the development and meet the residual pressure criteria (20 psi) at the PA-1 West Residential site. Additionally, the velocity criterion of 10 fps is satisfied under the MDD plus fire flow conditions. Model results under buildout demand conditions are also within the pressure and velocity criteria and existing facilities are adequate to provide water service to the development. Model results under existing and buildout conditions are presented in Appendix A.

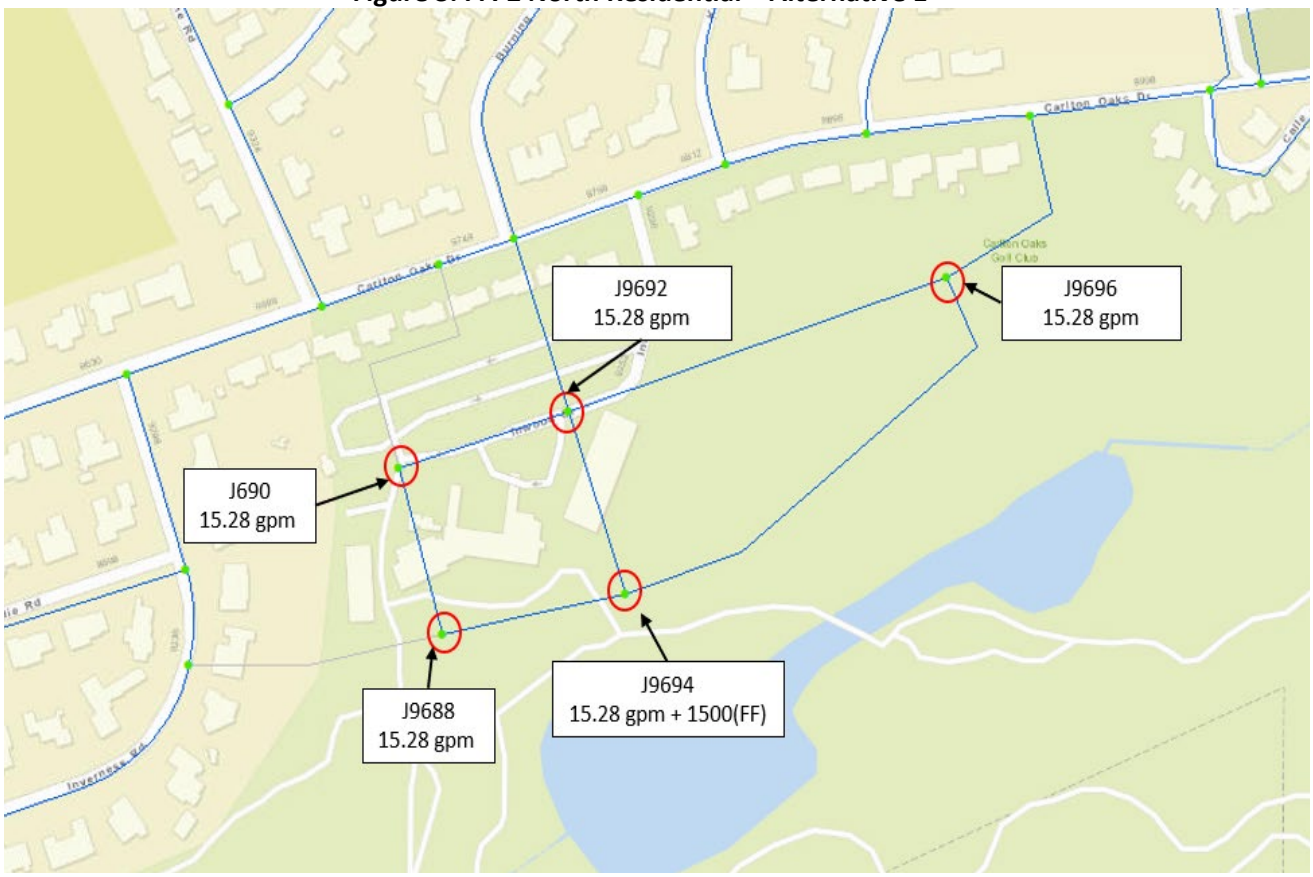
PA-2 North Residential

The PA-2 North Residential development area was modeled representing three connection alternatives for providing domestic service and fire flow. The scenarios and model results are discussed below.

PA-2 NORTH RESIDENTIAL ALTERNATIVE 1:

The Alternative 1 scenario includes service connections to the 160-unit residential site along Carlton Oaks Drive at Burning Tree Way and a second connection west of Pebble Beach Drive, as shown in Figure 3. The on-site network is proposed as a public 8-inch looped water system. Domestic demand was distributed equally across the model nodes (15.28 gpm per node). The fire flow demand was modeled at 1,500 gpm, with the most critical results occurring with the fire flow demand applied to model node J9694.

Figure 3. PA-2 North Residential – Alternative 1

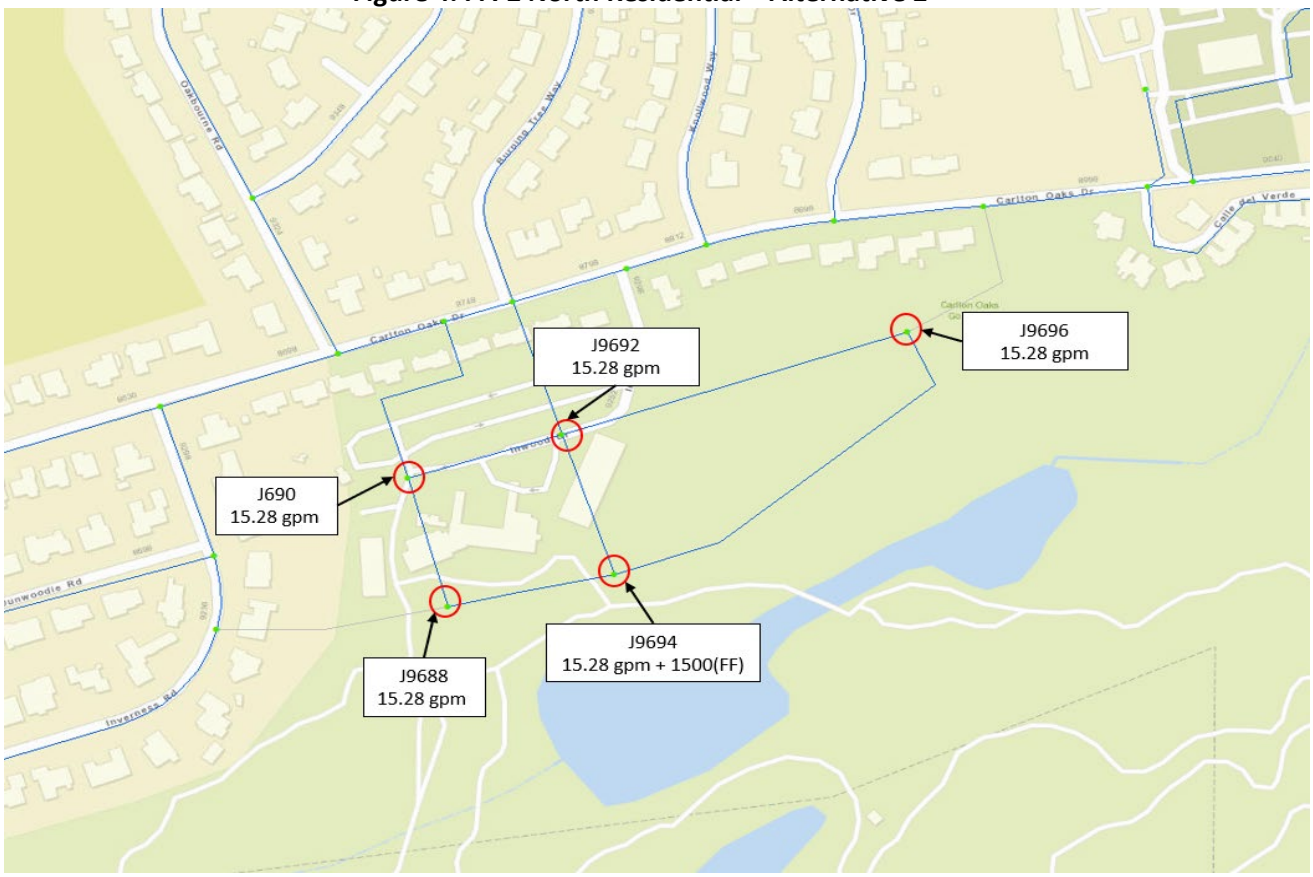


Model results for Alternative 1 indicate that the existing system can serve the PA-2 development and meet the residual pressure criteria (20 psi). Additionally, the velocity criterion of 10 fps is satisfied under the MDD plus fire flow conditions. Model results under the existing and buildout demand conditions are within the pressure and velocity criteria and existing facilities are adequate to provide water service to the development. Model results under existing and buildout conditions are presented in Appendix A.

PA-2 NORTH RESIDENTIAL ALTERNATIVE 2:

The Alternative 2 scenario includes service connections along Carlton Oaks Drive at Burning Tree Way and a second connection east of Oakbourne Road, as shown in Figure 4. The on-site network is proposed as a public 8-inch looped water system. Domestic demands and fire flow are the same as Alternative 1.

Figure 4. PA-2 North Residential – Alternative 2

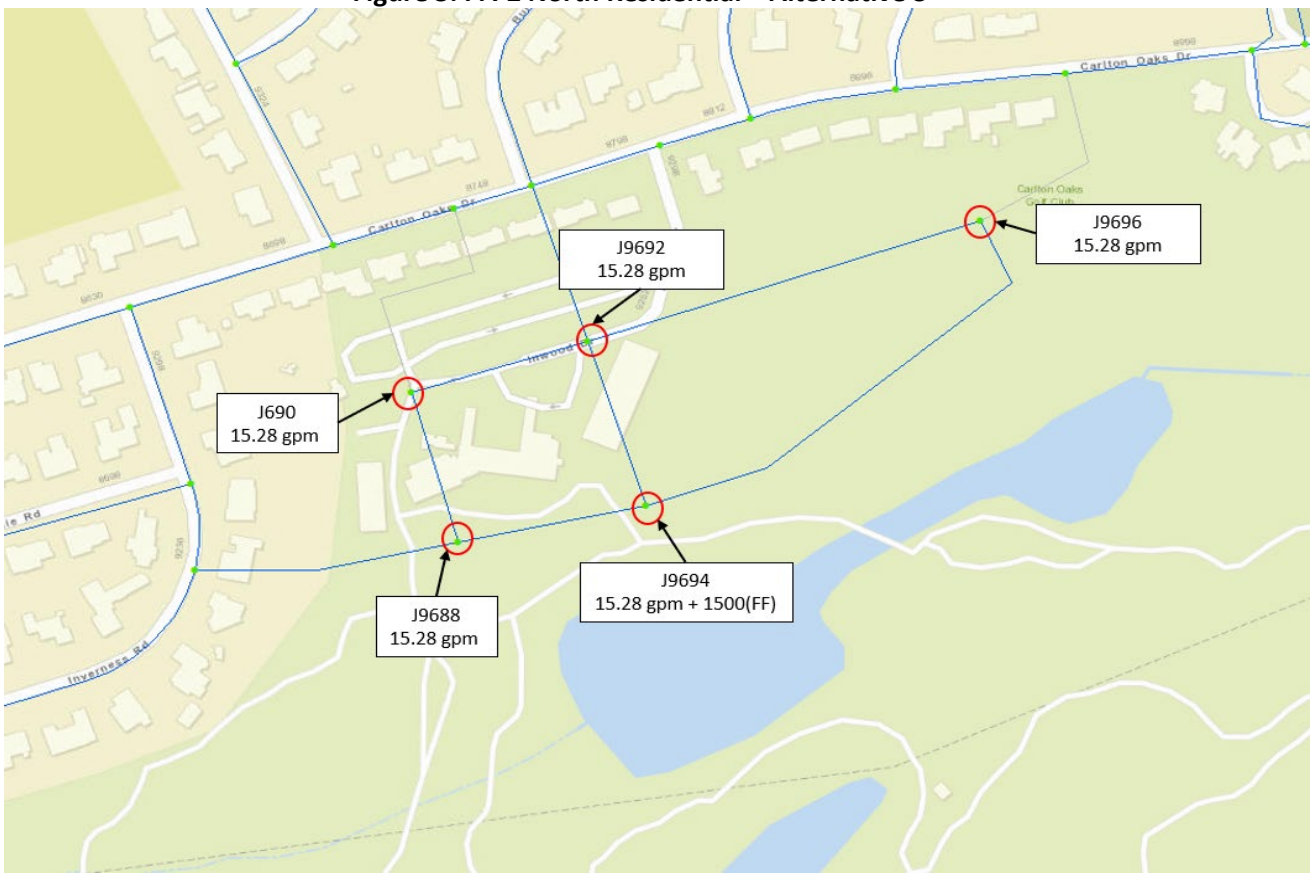


Model results for Alternative 2 indicate that the existing system can serve the PA-2 development and meet the residual pressure criteria (20 psi). Additionally, the velocity criterion of 10 fps is satisfied under the MDD plus fire flow conditions. Model results under the existing and buildout demand conditions are within the pressure and velocity criteria and existing facilities are adequate to provide water service to the development. Model results under existing and buildout conditions are presented in Appendix A.

PA-2 NORTH RESIDENTIAL ALTERNATIVE 3:

The PA-2 North Residential Alternative 3 scenario includes service connections along Carlton Oaks Drive at Burning Tree Way and a second connection off Inverness Road south of Dunwoodie Road, as shown in Figure 5. The on-site network is proposed as a public 8-inch looped water system. Domestic demand and fire flow were kept the same as Alternative 1.

Figure 5. PA-2 North Residential – Alternative 3

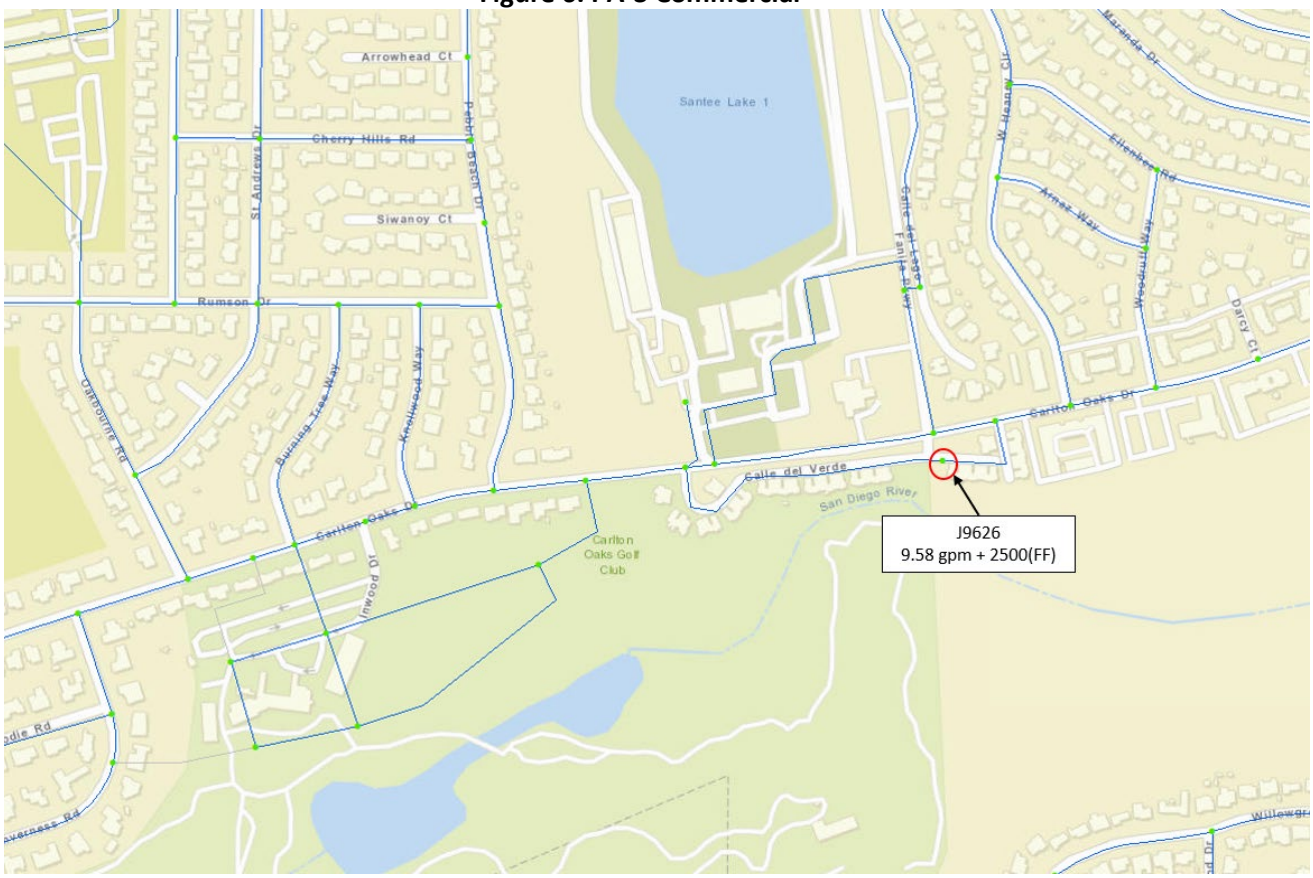


Model results for Alternative 3 indicate that the existing system can serve the PA-2 development and meet the residual pressure criteria (20 psi). Additionally, the velocity criterion of 10 fps is satisfied under the MDD plus fire flow conditions. Model results under the existing and buildout demand conditions are within the pressure and velocity criteria and existing facilities are adequate to provide water service to the development. Model results under existing and buildout conditions are presented in Appendix A.

PA-3 Hotel

The PA-3 Hotel scenario evaluates the commercial demands of the 53-room resort and on-site restaurant for MDD and a 2,500 gpm fire flow with service off the existing 8-inch water main in Calle del Verde. The demands allocated for PA-3 are shown in Figure 6.

Figure 6. PA-3 Commercial



Model results indicate that the existing system can serve the PA-3 development and meet the residual pressure criteria (20 psi). Additionally, the velocity criterion of 10 fps is satisfied under the MDD plus fire flow conditions. Model results under the existing and buildout demand conditions are within the pressure and velocity criteria and existing facilities are adequate to provide water service to the development. Model results under existing and buildout conditions are presented in Appendix A.

Conclusion & Recommendations

The model analysis indicates that the District's existing system can adequately serve the Carlton Oaks development while meeting the evaluation criteria defined in the 2015 CFMP under existing and buildout condition: minimum residual system pressure of 20 psi and maximum pipe velocities of 10 fps under MDD plus fire flow conditions. The analysis results indicate that the fire flow requirement of 1,500 gpm for residential development and 2,500 gpm for the resort development are the driving factor in evaluating system capacity. The analysis shows little difference between existing and buildout conditions indicating that the Gravity pressure zone has sufficient capacity to serve the Development under current conditions and in the future.

The PA-1 West Residential: The proposed water facilities will include an extension of the existing 10-inch water main in Carlton Oaks Drive, at West Hills Parkway, south to the entrance of the project; extending through the project and connecting to an existing 12" water main creating a looped supply for supply redundancy and improved water quality.

The PA-2 North Residential: The proposed facilities will include a connection to the existing 8-inch water main in Carlton Oaks Drive at Burning Tree Way, with three alternatives for a secondary connection creating a looped supply for supply redundancy and improved water quality. A preferred alternative should consider constructability of a secondary connection adjacent to existing development and availability of utility easement.

The PA-3 Hotel: The proposed facilities include fire service and domestic water meter connections to Calle del Verde. The facilities from these connections to the resort will be private.

APPENDIX A: Model Results

Figure A.1 - Junction Map

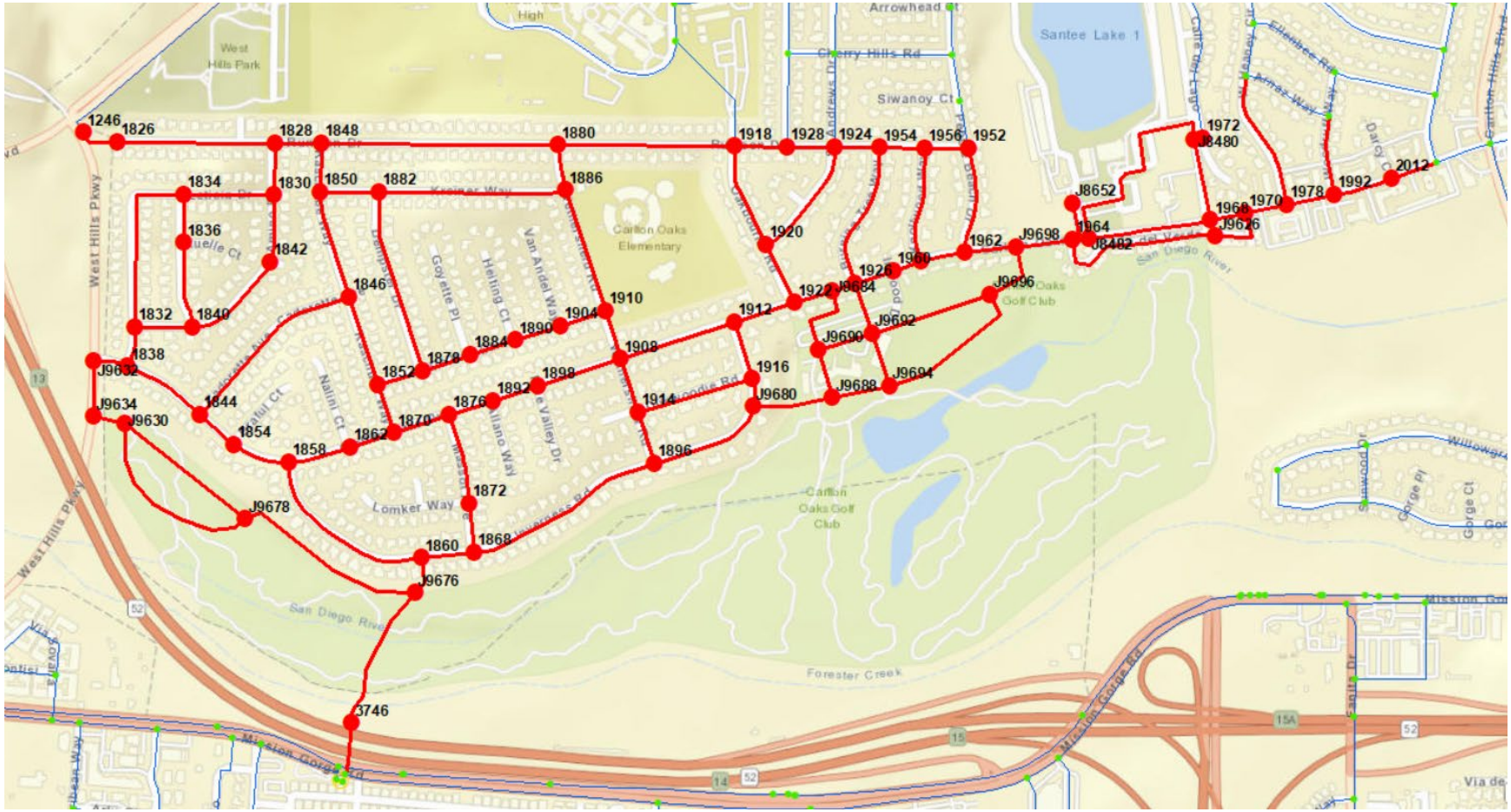


Table A.1 – Model Results for Junctions

				Existing					Build out				
				PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3	PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3
ID	MDD (gpm)	FF (gpm)	Elevation (ft)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)
1246	1.3		379	103	104	103	103	103	103	104	103	103	103
1826	5.84		374	105	106	105	105	105	105	106	105	105	105
1828	6.84		370	107	108	108	107	107	107	108	107	107	107
1830	4.48		359	112	113	112	112	112	112	113	112	112	112
1832	7		332	123	124	124	124	124	123	124	124	124	124
1834	7.4		360	111	112	112	112	112	111	112	112	112	112
1836	5.94		349	116	117	117	116	116	116	117	117	116	116
1838	3.58		330	124	125	125	125	125	124	125	125	125	125
1840	6.58		334	122	124	123	123	123	122	124	123	123	123
1842	5.24		348	116	117	117	117	117	116	117	117	117	117
1844	7.28		328	125	126	126	126	126	125	126	126	126	126
1846	9.58		347	117	118	118	117	117	117	118	118	117	117
1848	9.5		370	107	108	108	107	107	107	108	107	107	107
1850	4.7		365	109	110	110	109	109	109	110	110	109	109
1852	4.26		343	119	120	119	119	119	119	120	119	119	119
1854	6.42		327	126	127	126	126	126	126	127	126	126	126
1858	7.56		329	125	126	126	125	125	125	126	126	125	125
1860	7.64		322	128	130	129	129	129	128	130	129	129	129
1862	8.82		341	120	121	120	120	120	120	121	120	120	120
1868	8.12		320	129	130	130	129	129	129	130	130	129	129
1870	2.8		341	120	121	120	120	120	120	121	120	120	120
1872	11.1		326	126	127	127	127	127	126	127	127	127	127
1876	4.02		335	122	123	123	123	123	122	123	123	123	122
1878	8.12		342	119	120	120	119	119	119	120	120	119	119
1880	12.6		416	87	88	87	87	87	87	88	87	87	87
1882	11.36		373	106	107	106	106	106	106	106	106	106	106
1884	8.68		349	116	117	117	116	116	116	117	117	116	116

				Existing					Build out				
				PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3	PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3
ID	MDD (gpm)	FF (gpm)	Elevation (ft)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)
1886	10.28		405	92	93	92	92	92	92	93	92	92	92
1890	7.12		357	113	114	113	113	113	113	113	113	113	113
1892	6.72		345	118	119	119	118	118	118	119	119	118	118
1896	8.48		318	130	131	130	130	130	130	130	130	129	130
1898	7.26		349	116	117	117	116	116	116	117	117	116	116
1904	5.78		362	111	111	111	111	111	111	111	111	111	111
1908	4.56		354	114	115	114	114	114	114	115	114	114	114
1910	9.14		362	111	111	111	111	111	111	111	111	111	111
1912	3.96		350	116	116	116	115	115	116	116	116	115	115
1914	5.12		335	122	123	123	122	122	122	123	123	122	122
1916	6.06		351	115	116	116	115	115	115	116	116	114	115
1918	7.14		380	103	103	103	103	102	103	103	103	103	102
1920	6.04		360	112	111	111	111	110	111	111	111	111	110
1922	2.08		347	117	117	116	116	116	117	117	116	116	116
1924	5.36		369	108	107	107	107	107	108	107	107	107	107
1926	3.46		349	116	115	114	115	115	116	115	114	115	115
1928	3.54		377	104	104	104	104	103	104	104	104	104	103
1952	3.06		330	125	124	124	124	123	125	124	124	124	123
1954	3.52		358	112	112	112	112	111	112	112	112	112	111
1956	3.54		345	118	117	117	118	116	118	117	117	118	116
1958	2.8		332	124	122	122	123	121	124	122	122	123	121
1960	14.32		338	121	120	119	120	119	121	120	119	120	119
1962	3.62		323	128	126	127	127	124	128	126	127	127	124
1964	5.08		321	129	127	128	128	118	129	127	128	128	118
1968	0		323	128	127	127	128	117	128	127	127	128	117
1970	4		325	127	126	127	127	116	127	126	127	127	116
1972	5.24		327	126	125	126	126	116	126	125	126	126	116
1978	11.14		327	126	126	126	126	120	126	126	126	126	120

				Existing					Build out				
				PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3	PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3
ID	MDD (gpm)	FF (gpm)	Elevation (ft)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)	Pressure (psi)
1992	5.28		330	125	125	125	125	120	125	125	125	125	120
2012	17.6		332	124	124	124	124	121	124	124	124	124	121
3746	0.08		317	133	134	134	134	134	133	134	134	134	134
J8480	0.54		327	126	125	126	126	116	126	125	126	126	116
J8482	1.72		321	129	127	128	128	118	129	127	128	128	118
J8652	0		321	129	127	128	128	118	129	127	128	128	118
J9626	9.58	2500	324	128	126	127	127	110	127	126	127	127	110
J9630	16.42		313	128	133	133	132	132	128	133	133	132	132
J9632	0		329	123	126	126	125	125	123	126	126	125	125
J9634	0		323	125	129	128	128	128	125	129	128	128	128
J9676	0		321	129	130	130	130	130	129	130	130	130	130
J9678	16.42	1500	312	127	134	133	133	133	127	134	133	133	133
J9680	0		327	126	126	126	125	126	126	126	126	125	126
J9684	0		348	117	116	114	116	115	117	116	114	116	115
J9688	15.28		324	127	123	122	124	125	127	123	122	124	125
J9690	15.28		332	124	120	119	121	122	124	120	119	121	122
J9692	15.28		329	125	122	121	122	123	125	122	121	122	123
J9694	15.28	1500	326	126	122	121	122	125	126	122	121	122	125
J9696	15.28		323	128	125	123	124	126	128	125	123	124	126
J9698	0		322	128	126	127	128	121	128	126	127	128	121

Figure A.2 – Pipe Map

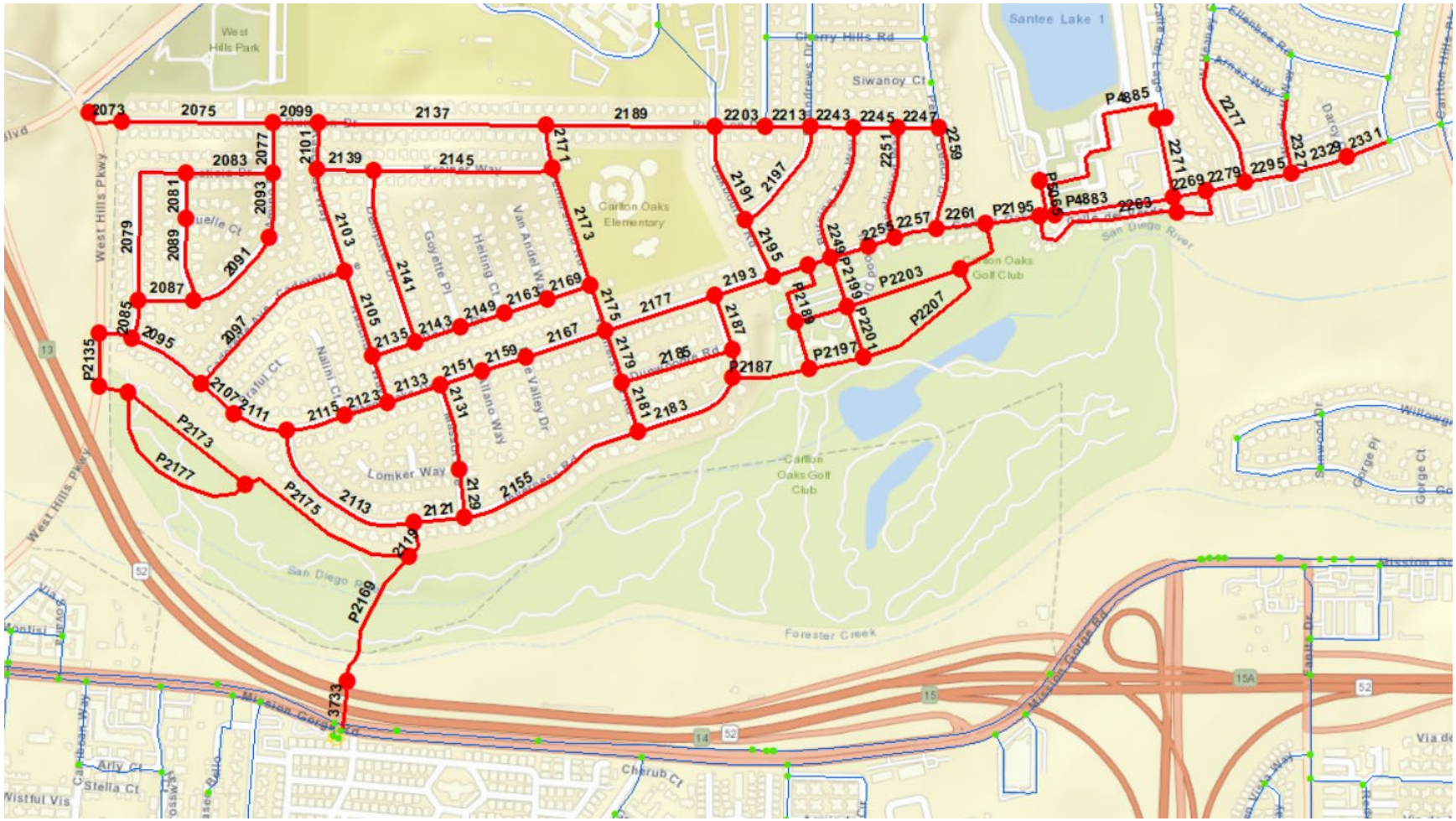


Table A.2 – Model Results for Pipes

			Existing					Build out				
			PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3	PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3
ID	Length (ft)	Diameter (in)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)
2073	221	12	0	1	1	1	1	0	1	1	1	1
2075	871	10	1	1	1	1	1	1	1	1	1	1
2077	290	10	1	1	1	1	1	1	1	1	1	1
2079	1004	8	1	0	0	0	1	1	0	0	0	1
2081	268	8	0	0	0	0	0	0	0	0	0	0
2083	501	8	1	1	1	1	1	1	1	1	1	1
2085	227	10	1	1	1	1	1	1	1	1	1	1
2087	320	10	1	1	1	1	1	1	1	1	1	1
2089	476	8	0	0	0	0	0	0	0	0	0	0
2091	586	10	1	1	1	1	1	1	1	1	1	1
2093	372	10	1	1	1	1	1	1	1	1	1	1
2095	484	10	2	0	0	0	0	2	0	0	0	0
2097	1085	8	1	1	1	1	1	1	1	1	1	1
2099	258	10	1	0	0	0	0	1	0	0	0	0
2101	268	10	0	1	1	0	1	0	1	1	0	1
2103	610	10	0	1	1	1	1	0	1	1	1	1
2105	513	10	1	0	0	0	0	1	0	0	0	0
2107	254	10	1	1	1	1	1	1	1	1	1	1
2111	324	10	1	1	1	1	1	1	1	1	1	1
2113	1030	10	1	2	2	2	2	1	2	2	2	2
2115	350	10	0	1	1	1	1	0	1	1	1	1
2119	213	12	2	3	3	3	3	2	3	3	3	3
2121	290	10	2	3	3	3	3	2	3	3	3	3
2123	256	10	0	1	1	1	1	0	1	1	1	1
2125	280	10	1	1	1	1	1	1	1	1	1	1
2129	273	10	1	1	1	1	2	1	1	1	1	2
2131	505	10	1	1	1	1	2	1	1	1	1	2

			Existing					Build out				
			PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3	PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3
ID	Length (ft)	Diameter (in)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)
2133	322	10	1	0	0	0	0	1	0	0	0	0
2135	258	10	0	1	1	1	1	0	1	1	1	1
2137	1316	10	0	1	1	1	1	0	1	1	1	1
2139	322	8	1	0	0	0	0	1	0	0	0	0
2141	1028	8	0	0	0	0	1	0	0	0	0	1
2143	280	10	0	1	1	1	1	0	1	1	1	1
2145	1040	8	0	0	0	1	1	0	0	0	1	1
2149	264	10	0	0	1	1	0	0	0	1	1	0
2151	254	10	0	1	1	1	1	0	1	1	1	1
2155	1133	10	1	1	1	2	1	1	1	1	2	1
2159	268	10	0	1	1	1	1	0	1	1	1	1
2163	262	10	0	0	1	1	0	0	0	1	1	0
2167	481	10	0	1	1	1	1	0	1	1	1	1
2169	261	10	0	0	1	1	0	0	0	1	1	0
2171	254	10	0	1	1	0	1	0	1	1	0	1
2173	707	10	0	1	1	0	1	0	1	1	0	1
2175	280	10	1	0	0	1	0	1	0	0	1	0
2177	660	8	0	1	2	2	1	0	1	2	2	1
2179	310	6	1	1	1	1	1	1	1	1	1	1
2181	300	8	1	1	1	0	1	1	1	1	0	1
2183	664	8	0	1	1	2	1	0	1	1	2	1
2185	660	6	0	1	1	2	1	0	1	1	2	1
2187	330	8	1	1	2	1	1	1	1	2	1	1
2189	978	10	0	2	1	1	2	0	2	1	1	2
2191	581	6	0	1	1	1	1	0	1	1	1	1
2193	356	8	0	3	3	1	3	0	3	3	1	3
2195	363	8	0	1	2	2	0	0	1	2	2	0
2197	687	8	0	0	1	1	0	0	0	1	1	0

			Existing					Build out				
			PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3	PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3
ID	Length (ft)	Diameter (in)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)
2203	293	10	0	1	1	1	1	0	1	1	1	1
2213	260	10	0	1	1	1	1	0	1	1	1	1
2243	250	8	0	2	2	1	3	0	2	2	1	3
2245	250	8	0	1	1	0	2	0	1	1	0	2
2247	243	8	0	0	0	0	1	0	0	0	0	1
2249	810	6	0	2	2	2	1	0	2	2	2	1
2251	643	6	0	2	2	1	2	0	2	2	1	2
2253	228	8	0	1	3	2	3	0	1	3	2	3
2255	160	8	1	1	4	2	3	1	1	4	2	3
2257	249	8	1	0	3	2	4	1	0	3	2	4
2259	592	8	0	2	1	0	3	0	2	1	0	3
2261	286	8	1	2	2	2	7	1	2	2	2	7
2263	958	8	0	1	1	1	6	0	1	1	1	6
2265	89	8	1	2	1	1	1	1	2	1	1	1
2269	195	8	1	2	1	1	1	1	2	1	1	1
2271	458	8	0	1	1	0	0	0	1	1	0	0
2277	780	8	0	1	1	0	4	0	1	1	0	4
2279	235	8	1	3	2	2	9	1	3	2	2	9
2295	271	8	1	2	2	1	6	1	2	1	1	6
2327	446	6	0	0	0	0	2	0	0	0	0	2
2329	331	8	1	2	2	2	5	1	2	2	2	5
2331	264	8	2	2	2	2	5	2	2	2	2	5
3733	287	18	2	2	2	2	2	2	2	2	2	2
P4881	53	8	0	0	0	0	0	0	0	0	0	0
P4883	686	8	0	1	1	1	1	0	1	1	1	1
P4885	1268	8	0	1	0	0	0	0	1	0	0	0
P5065	224	4	0	0	0	0	0	0	0	0	0	0
P2125	343	8	1	1	1	1	10	1	1	1	1	10

			Existing					Build out				
			PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3	PA-1	PA-2 (ALT-1)	PA-2 (ALT-2)	PA-2 (ALT-3)	PA-3
ID	Length (ft)	Diameter (in)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)	Velocity (ft/s)
P2133	192	8	5	1	1	1	1	5	1	1	1	1
P2135	308	8	5	1	1	1	1	5	1	1	1	1
P2169	832	12	5	4	4	4	4	5	4	4	4	4
P2173	858	8	2	1	1	1	1	2	1	1	1	1
P2175	1092	8	5	2	2	2	2	5	2	2	2	2
P2177	1060	8	2	1	1	1	1	2	1	1	1	1
P2179	156	8	0	1	1	2	1	0	1	1	2	1
P2183	213	8	0	4	5	2	3	0	4	5	2	3
P2185	136	8	0	4	1	2	2	0	4	1	2	2
P2189	455	8	0	-	4	-	1	0	-	4	-	1
P2191	278	8	0	2	3	0	0	0	2	3	0	0
P2193	308	8	0	3	1	0	1	0	3	1	0	1
P2195	315	8	1	3	2	2	7	1	3	2	2	7
P2197	323	8	0	2	3	4	0	0	2	3	4	0
P2199	294	8	0	6	6	6	1	0	6	6	6	1
P2201	309	8	0	4	5	4	0	0	4	5	4	0
P2203	692	8	0	1	2	2	0	0	1	2	2	0
P2207	862	8	0	3	2	2	0	0	3	2	2	0
P2209	177	8	5	1	1	1	1	5	1	1	1	1
P2205	371	8	-	4	-	-	-	-	4	-	-	-
P2187	445	8	-	-	-	5	-	-	-	-	5	-

APPENDIX B: Correspondence

Technical Memorandum

Date:	Monday, November 22, 2021
Project:	Carlton Oaks Golf Course Proposed Community Water Study
To:	Tom Martin, Padre Dam Municipal Water District
From:	Leanne Hammond, HDR
Subject:	Carlton Oaks Golf Course Proposed Community Water Study – Response to Comments

Dear Mr. Martin:

We have received and reviewed the Padre Dam Municipal Water District (District) comments dated November 8, 2021 on the draft Carlton Oaks Golf Course Proposed Community (Project) Water Study, October 2021. The following summarizes our response to your comments:

1. The exhibit from SB&O included as Exhibit 1 in the HDR report is very hard to read and interpret. Use a higher resolution file and provide more detail in exhibit 1.

Exhibit/Figure 1 in the water study has been replaced with a more detailed exhibit.

2. Standardize the nomenclature between previously submitted exhibits from 2018 and the HDR Report.

The development areas are referred to as PA-1 West Residential, PA-2 North Residential, and PA-3 Hotel to be consistent with previously submitted exhibits.

3. One observation is the 2020 Master Plan treated the development as a demand node off the Carlton Oaks water main. No fire flow or other deficiencies were identified as a result of the development.

This comment is noted; however, references to the 2020 CFMP will not be included in this water study as the 2020 CFMP is not yet a publicly adopted document.

4. Change “CFMP” to “2015 CFMP” for clarity in all locations.

Revised as noted.

5. State the Master Plan water peaking factor in the Evaluation Criteria description.

The maximum day demand peaking factor of 2.0 has been noted within the Evaluation Criteria writeup.

6. Remove Figure 2. It is not relevant to this water study.

Figure 2 has been removed.

7. Note in the project description that portions of this project are outside the Padre Dam boundary and are located in the City of San Diego. These will need to be annexed into the District.

The need for an easement is noted; however, easements and/or annexations are outside the intent of the water study for confirming hydraulic capacity of the water system.

8. Add MDD to the header in Table 1 and Table 2.

MDDs for the areas have been added to the Project demand table.

9. Remove the loop between the commercial area and Carlton Oaks East.

The looped pipeline between PA-2 and PA-3 has been removed.

10. Add a loop in the Carlton Oaks West to the existing 12" public water main running north and south across the golf course as shown in the attached exhibit.

All proposed public water lines have been looped to provide two sources of supply.

11. Revise the water study to include three scenarios for Carlton Oaks East as shown on the exhibit.

The PA-2 North Residential proposed public water system has been evaluated under 3 scenarios providing a second connection to existing water mains.

12. Describe the differences between the three scenarios and discuss the pros and cons for each of them.

The connection alternatives for PA-2 North Residential have been discussed in the revised water study.

We feel the attached November 2021 study, along with these responses and clarifications, adequately address water system issues for this Project and we request that the District approve the revised study. Please feel free to contact me with any questions or comments you may have.

Respectfully submitted,

HDR

Leanne Hammond, P.E. Project Manager

LMH:ksj

c: Josh Schroeder, SB&O, Inc.
Joel Engleson, HDR
Kanchan Joshi, HDR