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WATER SYSTEM ANALYSIS
FOR THE
OCEAN BREEZE RANCH PROJECT

December 7, 2018

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Prepared by:
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Job No. 1007-001

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December 7, 2018 1007-001

Ocean Breeze Ranch, LLC.
1550 South Coast Highway, Suite 201
Laguna Beach, CA 92651

Attention: Jim Conrad, Project Manager

Subject: Water System Analysis for the Ocean Breeze Ranch Project in the Rainbow Municipal Water District

Introduction

This report provides an analysis of the proposed water system for the Ocean Breeze Ranch (formerly Vessels Ranch) project. Specifically, this report will estimate water demands and identify existing and proposed water facilities that will serve the project. The Ocean Breeze Ranch project is a proposed single family residential community located in the unincorporated community of Bonsall, California, approximately 40 miles north of downtown San Diego. The project is located south of Pala Road (Highway 76), west of Interstate 15, and north of West Lilac Road. The Ocean Breeze Ranch project proposes the development of 398 single-family residential units, including estate lots/parcels and an equestrian lot. There are existing equestrian and agricultural uses on the property. Table 1 provides a land use summary for the project.

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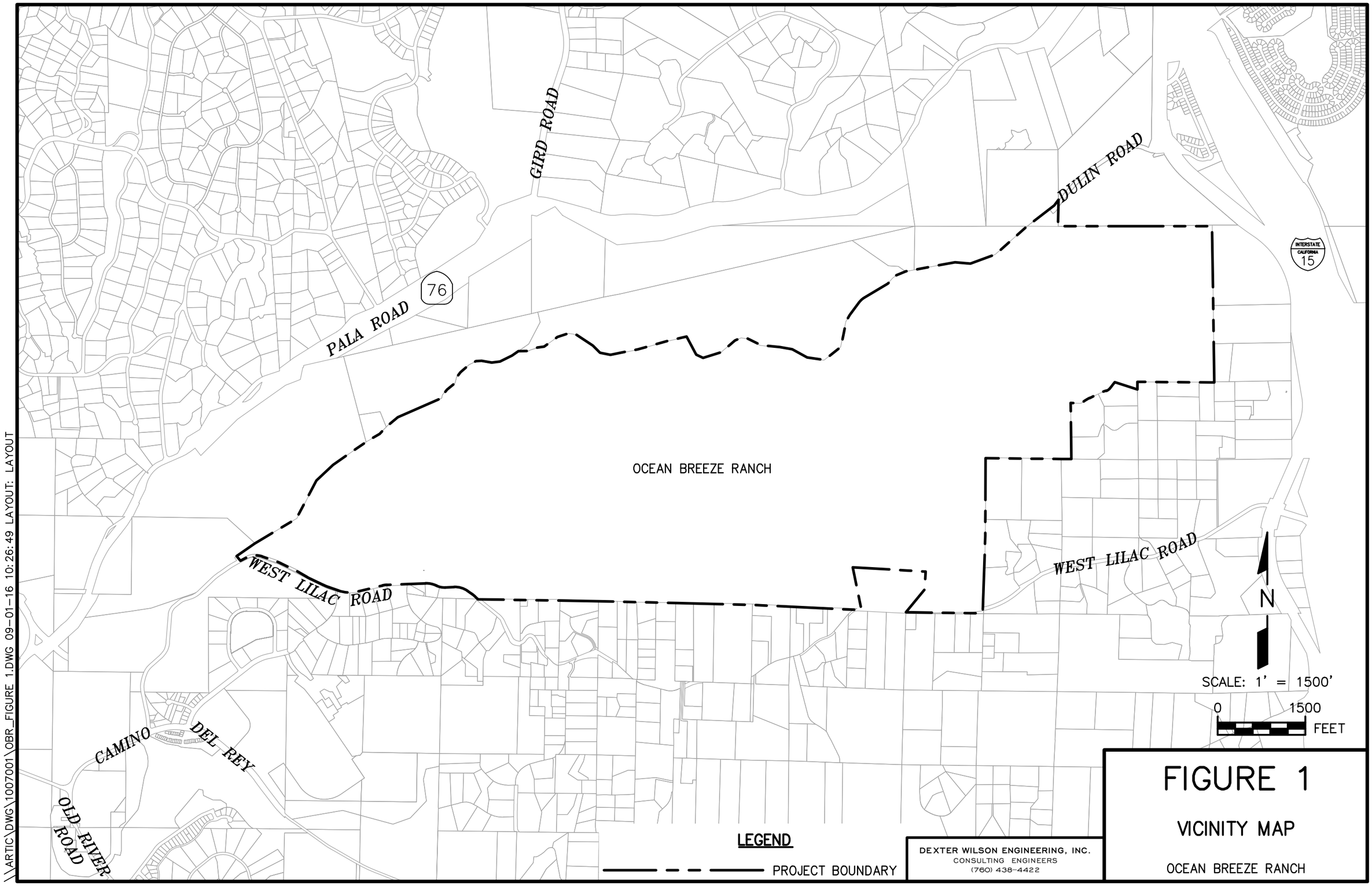
TABLE 1 OCEAN BREEZE RANCH LAND USE SUMMARY		
Description	**Gross Area, Ac.**	**Units**
Planning Area 1	67.7	144
Planning Area 2	66.5	237
Planning Area 3	130.7	14
School Sale Parcel	32.2	1
Hillside Estate Parcel	22.0	1
Equestrian Lot	203.2	1
Open Space/Circulation	880.2	---
TOTAL	**1,402.5**	**398**

Primary access to the development will be from West Lilac Road, but a connection to Dulin Road to the northeast is also proposed to serve the last phase of the project. Figure 1 presents a vicinity map for the project.

Water Service

The Ocean Breeze Ranch development is located within the community of Bonsall whose water service is provided by the Rainbow Municipal Water District. The project area is adjacent to the South 1011 Zone, Morro 865 Zone, and Rancho Monserate Pressure Reduced Zone facilities identified by the Rainbow Municipal Water District 2016 Master Plan.



\\ARTIC\DWG\1007001\OBR_FIGURE 1.DWG 09-01-16 10:26:49 LAYOUT: LAYOUT

The water supply to the 1011 Zone and 865 Zone in this area originates from three 1011 Zone Reservoirs, each with a capacity of 4.0 million gallons and a high water line of 1,011 feet. The Hutton 1011 Zone Reservoir is located just to the east of the project. A 1011/865 Zone pressure reducing station is located along West Lilac Road. There is a 24-inch 1011 Zone line in West Lilac Road and along the southern project boundary. This line supplies the 1011/865 Zone pressure reducing station along West Lilac Road at the southwest corner of the proposed project. An 8-inch line that is supplied off the 1011 Zone line along the southern project boundary traverses the project and supplies the Bonsall Vessels Ranch pressure reducing station within the site. This onsite pressure reducing station provides service to the equestrian center and associated facilities within the property. There is also an existing 8-inch line in Dulin Road near the northeast boundary of the project that is supplied from the Rancho Monserate pressure reducing station. This station provides a gradeline of approximately 490 feet. Figure 2 provides a map of existing water facilities in the vicinity of the project.

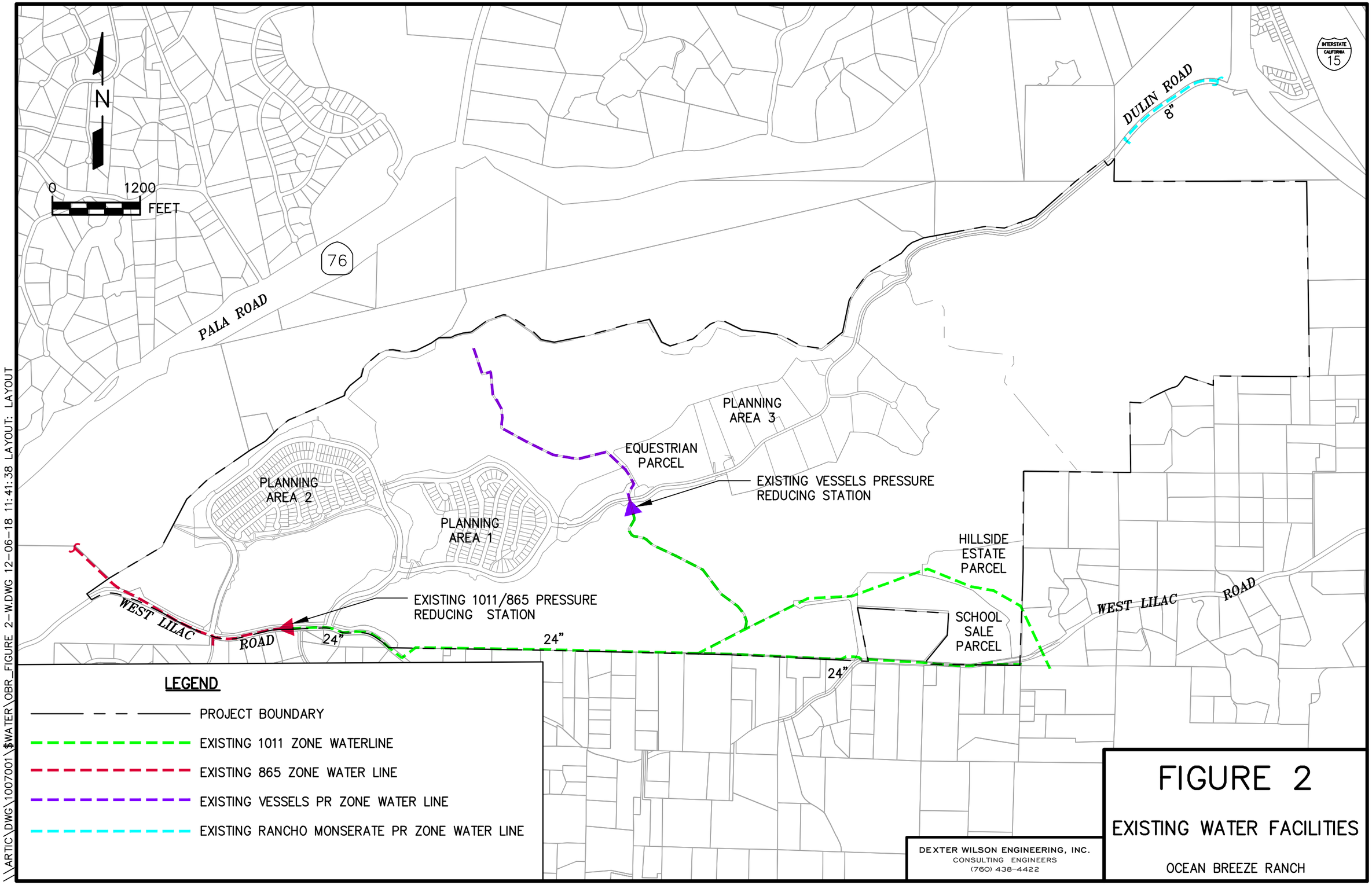
Water System Design Criteria

Water system planning and design criteria are based on the July 2016 Domestic Water, Recycled Water and Sanitary Sewer Facilities Construction Standards for the Rainbow Municipal Water District. Based on the design manual, applicable average day water demand factors are summarized in Table 2. To convert average day demands to maximum day demands and peak hour demands, factors of 2.0 and 4.5 are used, respectively.

TABLE 2
WATER DEMAND FACTORS

Land Use	Average Water Demand
Single Family Residential	900 gpd/unit
Parks	4,000 gpd/ac

Pipeline velocity must not exceed 5 feet per second (fps) under peak hour demands and 10 fps during maximum day demand plus fire flow demands.



\\ARTIC\DWG\1007001\$WATER\OBR_FIGURE 2-W.DWG 12-06-18 11:41:38 LAYOUT: LAYOUT

Potable Water Demands

Based on the water use factors presented in Table 2, the estimated average water demand for the project is provided in Table 3. The average daily potable water demand for the Ocean Breeze Ranch project is 490,600 gpd (341 gpm). The resulting maximum day demand and peak hour demand are 981,200 gpd (681 gpm), and 2,207,700 gpd, (1,533 gpm) respectively.

TABLE 3
OCEAN BREEZE RANCH
PROJECTED WATER DEMANDS

Description	Quantity	Water Demand Factor	Average Water Demand, gpd
Planning Area 1			
Residential	144 units	900 gpd/unit	129,600
Parks/HOA	1.1 Ac	4,000 gpd/Ac	4,400
Planning Area 2			
Residential	237 units	900 gpd/unit	213,300
Parks/HOA	3.0 Ac	4,000 gpd/Ac	12,000
Planning Area 3			
Residential – 5 acre lots	14 units	900 gpd/unit	12,600
Equestrian Estate Lot	1 unit	900 gpd/unit	900
Other			
School Sale Parcel	1 unit	900 gpd/unit	900
Hillside Estate Parcel	1 unit	900 gpd/unit	900
Equestrian	203.2 Ac	---[1]	116,000[2]
TOTAL			**490,600**

[1] Based on historical water use data for fiscal year 2015/2016.
[2] Only includes water supplied by RMWD. Additional non-potable well water was used for agricultural irrigation on this lot and surrounding properties.

Fire Flows

Fire flow requirements vary by the type of land use and are established by the local fire protection agency. For single family residential development, the typical fire flow is 1,500 gpm, but due to the rural nature of the project and input from the fire protection agency, a fire flow of 2,500 gpm has been evaluated in this study.

Available Water System Pressure

Water service to the majority of the project is proposed to be provided by pressure reducing off the 1011 Zone and 856 Zone to form a 490 Zone system onsite. The Rancho Monserate pressure reduced zone to the northeast also has a grade line of approximately 490 feet. The existing gradeline of this zone will be verified during final engineering of the project. Elevations on this portion of the project range between approximately 195 feet and 358 feet. Using this grade line provides the 490 Zone portion of the project with static water pressures between 57 psi and 128 psi. The estate lots proposed in the southeast corner of the project can be served by connecting to the 1011 Zone system. The pad elevations for these lots have not yet been established, but will likely be around 700 feet, resulting in a maximum static pressure of 135 psi. Appendix A summarizes the lot elevations and maximum static pressures for each of the lots in Planning Areas 1, 2, and 3.

Computer Model Development

The onsite public water system for the Ocean Breeze Ranch project was designed based on providing the necessary domestic and fire protection demands at the required pressures. To establish and evaluate the proposed onsite public water system, a computer model was used.

The KYPIPE computer software program developed by the University of Kentucky was used to evaluate the proposed onsite and offsite public water system. The program utilizes the Hazen-Williams equation for determining head loss in pipes and a "C" value of 120 was used for all pipes.

The Ocean Breeze Ranch development will connect to the existing 1011 Zone and 865 Zone systems and will construct two new 490 Zone pressure reducing stations. Planning Areas 1 and 2 can be served by looping off these connections. Planning Area 3 can be served as a later phase of the project by extending the onsite water system and connecting to the existing system in Dulin Road. A grade line of 490 feet was input at both pressure reducing stations in the hydraulic model for average day demand conditions. A grade line of 478 feet was assumed for maximum day demand plus fire flow conditions.

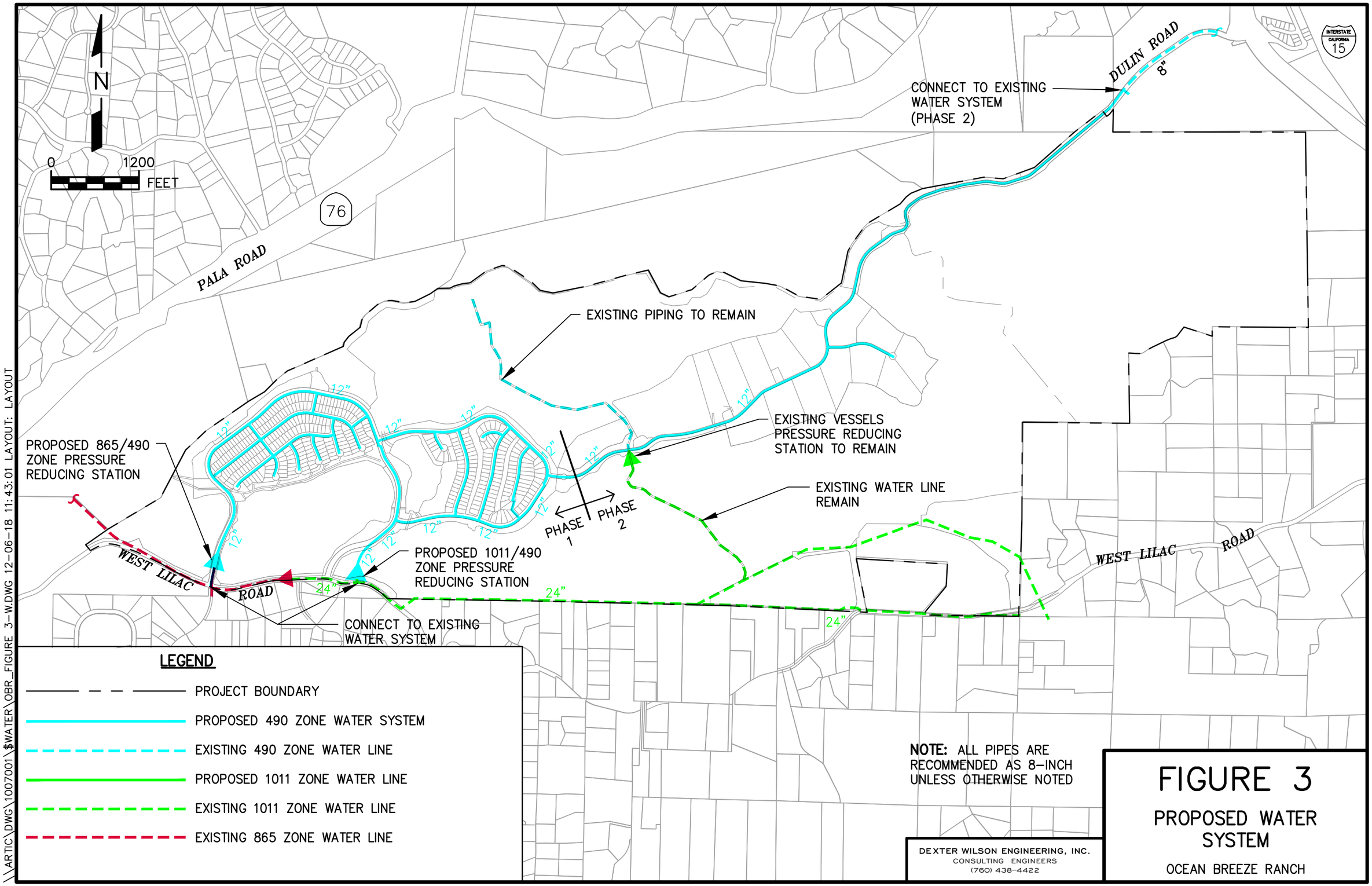
Computer Modeling Results

Detailed computer modeling of the water system for Ocean Breeze Ranch was performed to determine the sizing necessary to provide adequate domestic and fire protection. In modeling the Ocean Breeze Ranch water system, the computer model and analysis shows that the 490 foot grade line will be sufficient to provide domestic and fire protection service to the development. The computer modeling confirms that 8-inch and 12-inch piping within the project is required to meet the domestic and fire protection needs of this area. Although a connection will also be made to the Rancho Monserate 490 Zone, this supply was not included in the computer modeling to be conservative and since it will not be made until the last phase of the project. Computer modeling scenarios considered in this report include average day demands, maximum day demands plus fire flow, and peak hour demands. For the maximum day demand plus fire flow scenarios, we evaluated a 1,500 gpm fire flow within the project at a few locations.

Appendix B presents the computer model printout results for the Ocean Breeze Ranch project and Exhibit A provides the corresponding node and pipe diagram.

Onsite Water System

The proposed water system layout for the Ocean Breeze Ranch project is provided as Figure 3. The onsite public water system for Ocean Breeze Ranch will be a looped layout to connect to the existing 1011 Zone and 865 Zone with 490 Zone pressure reducing stations near each connection. A connection to the existing 490 Zone to the northeast is also recommended, but may be completed during the last phase of development.



\\ARTIC\DWG\1007001\$WATER\OBR_FIGURE 3-W.DWG 12-06-18 11:43:01 LAYOUT: LAYOUT

The estate lots in the southeast corner of the project are proposed to take service directly from the 1011 Zone by connecting to the existing system adjacent to these parcels.

Pressure Reducing Stations

The proposed pressure reducing stations will need to work in conjunction with the existing Rancho Monserate pressure reducing station. The existing Rancho Manserate Station has 2-inch and 10-inch pressure reducing valves with the 2-inch valve handling low and typical demand periods and the 10-inch valve set to open during high demands.

The new pressure reducing stations are proposed to have 2-inch and 8-inch pressure reducing valves. The 8-inch pressure reducing valve can accommodate maximum continuous flows of up to 3,100 gpm. The 2-inch valve would be set to operate with the existing 2-inch valve at the Rancho Monserate station to accommodate low and typical demands while achieving circulation of the water from both sources. Table 4 summarizes the proposed pressure reducing valve minimum and maximum flow rates and preliminary output set points.

TABLE 4
OCEAN BREEZE RANCH
PROPOSED PRESSURE REDUCING STATIONS

Valve Size	Min. Continuous Flow, gpm	Max. Continuous Flow, gpm	Output HGL Setting[1]
2-inch	15	210	490
6-inch	200	3,100	478

[1] To be confirmed during final engineering based on actual set points at existing Rancho Monserate reducing station

Recycled Water

There is not a source of recycled water near the project. All sewage collected by RMWD is conveyed to the City of Oceanside for treatment and re-use or disposal. Therefore, the Ocean Breeze Ranch project is not proposing the use of recycled water onsite.

Conclusion and Recommendations

The following conclusions and recommendations are summarized based on the water system analysis prepared for the Ocean Breeze Ranch subdivision.

1. The Ocean Breeze Ranch subdivision will be served by the Rainbow Municipal Water District 1011 and 490 Pressures Zones. The 490 Zone is formed by pressure reducing off the Morro 865 and South 1011 Zones.

2. The water system supplying the Ocean Breeze Ranch development will consist of two pressure reducing stations with one supplied by the 865 Zone and one supplied by the 1011 Zone. The proposed onsite 490 Zone will also be connected to the existing Rancho Monserate 490 Zone located to the northeast of the project. There are also 2 estate lots in the southeast corner of the project that will be served directly from the 1011 Zone.

3. All proposed piping is recommended as 8-inch and 12-inch as shown on Figure 3.

4. Individual pressure regulators will be required at all building pads where static pressures will exceed 80 psi.

Please feel free to contact us if you have any question or require additional information.

Dexter Wilson Engineering, Inc.

Stephen M. Nielsen

Stephen M. Nielsen, P.E.

SMN:pjs

Attachments

APPENDIX A

LOT SUMMARY TABLE

OCEAN BREEZE RANCH LOT SUMMARY		
Lot Number	**Pad Elevation, Ft.**	**Max. Static Pressure, psi**
PLANNING AREA 1		
1	241.8	107.5
2	238.0	109.2
3	238.0	109.2
4	238.4	109.0
5	240.1	108.3
6	241.7	107.6
7	243.0	107.0
8	243.8	106.7
9	266.4	96.9
10	268.8	95.8
11	270.7	95.0
12	271.9	94.5
13	272.2	94.4
14	272.2	94.4
15	272.0	94.5
16	270.8	95.0
17	269.2	95.7
18	267.6	96.4
19	266.0	97.1
20	264.3	97.8
21	262.8	98.4
22	261.4	99.0
23	260.1	99.6
24	258.7	100.2
25	257.3	100.8
26	255.7	101.5
27	253.6	102.4
28	251.7	103.2
29	252.0	103.1
30	254.6	102.0
31	256.4	101.2
32	257.8	100.6
33	258.1	100.5
34	260.4	99.5
35	261.8	98.9
36	263.1	98.3
37	264.3	97.8
38	265.5	97.3

Lot Number	Pad Elevation, Ft.	Max. Static Pressure, psi
39	266.8	96.7
40	268.0	96.2
41	269.2	95.7
42	270.4	95.1
43	271.5	94.7
44	272.1	94.4
45	272.2	94.4
46	272.2	94.4
47	271.6	94.6
48	270.3	95.2
49	268.3	96.1
50	265.8	97.1
51	312.5	76.9
52	312.0	77.1
53	311.5	77.3
54	311.0	77.6
55	311.8	77.2
56	312.6	76.9
57	311.7	77.3
58	312.3	77.0
59	312.8	76.8
60	313.0	76.7
61	306.5	79.5
62	304.2	80.5
63	302.6	81.2
64	301.0	81.9
65	299.7	82.5
66	298.5	83.0
67	297.2	83.5
68	295.7	84.2
69	294.4	84.7
70	292.8	85.4
71	290.7	86.4
72	287.9	87.6
73	284.4	89.1
74	280.6	90.7
75	276.5	92.5
76	272.7	94.2
77	271.3	94.8
78	275.1	93.1
79	278.9	91.5
80	282.9	89.7
81	286.7	88.1
82	289.6	86.8
83	292.0	85.8

Lot Number	Pad Elevation, Ft.	Max. Static Pressure, psi
84	293.8	85.0
85	295.1	84.4
86	296.3	83.9
87	297.4	83.4
88	298.7	82.9
89	299.9	82.4
90	301.2	81.8
91	302.8	81.1
92	304.8	80.2
93	306.8	79.4
94	308.0	78.9
95	311.2	77.5
96	313.2	76.6
97	314.8	75.9
98	316.1	75.3
99	339.4	65.3
100	338.2	65.8
101	336.6	66.5
102	334.9	67.2
103	333.3	67.9
104	331.8	68.5
105	330.3	69.2
106	329.0	69.8
107	327.7	70.3
108	326.0	71.1
109	324.6	71.7
110	323.3	72.2
111	322.0	72.8
112	320.4	73.5
113	319.0	74.1
114	318.2	74.4
115	317.2	74.9
116	322.1	72.7
117	323.5	72.1
118	324.8	71.6
119	326.1	71.0
120	327.3	70.5
121	328.7	69.9
122	330.0	69.3
123	331.8	68.5
124	334.8	67.2
125	337.6	66.0
126	339.4	65.3
127	353.4	59.2
128	355.8	58.1

Lot Number	Pad Elevation, Ft.	Max. Static Pressure, psi
129	357.8	57.3
130	357.8	57.3
131	357.4	57.5
132	354.4	58.8
133	351.0	60.2
134	346.8	62.0
135	342.0	64.1
136	337.2	66.2
137	332.3	68.3
138	326.5	70.8
139	320.4	73.5
140	311.9	77.2
141	306.1	79.7
142	298.7	82.9
143	290.9	86.3
144	283.0	89.7
PLANNING AREA 2		
145	197.1	126.9
146	197.6	126.7
147	198.1	126.5
148	198.5	126.3
149	199.0	126.1
150	199.5	125.9
151	199.9	125.7
152	200.4	125.5
153	200.8	125.3
154	201.3	125.1
155	201.8	124.9
156	202.2	124.7
157	202.5	124.6
158	203.8	124.0
159	204.3	123.8
160	204.7	123.6
161	205.2	123.4
162	205.6	123.2
163	206.1	123.0
164	206.6	122.8
165	207.1	122.6
166	207.7	122.3
167	208.0	122.2
168	208.0	122.2
169	207.8	122.3
170	207.2	122.5
171	206.6	122.8
172	206.0	123.1

Lot Number	Pad Elevation, Ft.	Max. Static Pressure, psi
173	205.5	123.3
174	204.9	123.5
175	204.4	123.7
176	203.8	124.0
177	202.4	124.6
178	202.3	124.7
179	202.8	124.4
180	203.3	124.2
181	203.7	124.0
182	204.2	123.8
183	204.7	123.6
184	205.1	123.4
185	205.7	123.2
186	206.3	122.9
187	206.9	122.7
188	207.5	122.4
189	208.1	122.1
190	208.5	122.0
191	210.2	121.2
192	210.7	121.0
193	211.2	120.8
194	207.3	122.5
195	207.1	122.6
196	206.6	122.8
197	206.2	123.0
198	205.7	123.2
199	205.2	123.4
200	204.8	123.6
201	204.7	123.6
202	205.2	123.4
203	205.6	123.2
204	206.1	123.0
205	206.6	122.8
206	207.0	122.6
207	207.5	122.4
208	208.4	122.0
209	208.8	121.8
210	209.2	121.7
211	209.3	121.6
212	209.3	121.6
213	209.1	121.7
214	208.6	121.9
215	208.2	122.1
216	207.8	122.3
217	207.3	122.5

Lot Number	Pad Elevation, Ft.	Max. Static Pressure, psi
218	206.9	122.7
219	206.4	122.9
220	208.0	122.2
221	208.9	121.8
222	209.3	121.6
223	209.6	121.5
224	209.6	121.5
225	209.3	121.6
226	208.8	121.8
227	208.4	122.0
228	208.0	122.2
229	207.5	122.4
230	207.1	122.6
231	206.6	122.8
232	206.2	123.0
233	205.7	123.2
234	205.2	123.4
235	204.8	123.6
236	204.3	123.8
237	203.0	124.4
238	202.5	124.6
239	202.0	124.8
240	201.5	125.0
241	201.0	125.2
242	200.6	125.4
243	200.1	125.6
244	199.7	125.8
245	199.2	126.0
246	198.7	126.2
247	198.3	126.4
248	197.8	126.6
249	197.4	126.8
250	196.9	127.0
251	196.4	127.2
252	196.0	127.4
253	195.9	127.4
254	196.4	127.2
255	195.9	127.4
256	197.4	126.8
257	197.8	126.6
258	198.3	126.4
259	198.7	126.2
260	199.2	126.0
261	199.7	125.8
262	200.1	125.6

Lot Number	Pad Elevation, Ft.	Max. Static Pressure, psi
263	200.6	125.4
264	201.0	125.2
265	201.5	125.0
266	202.0	124.8
267	202.5	124.6
268	203.0	124.4
269	204.4	123.7
270	204.8	123.6
271	205.3	123.4
272	205.8	123.1
273	206.2	123.0
274	206.7	122.7
275	207.2	122.5
276	207.7	122.3
277	208.1	122.1
278	208.8	121.8
279	209.4	121.6
280	209.4	121.6
281	209.4	121.6
282	208.3	122.1
283	207.1	122.6
284	206.3	122.9
285	206.8	122.7
286	207.3	122.5
287	207.7	122.3
288	207.8	122.3
289	206.9	122.7
290	207.5	122.4
291	207.5	122.4
292	207.3	122.5
293	206.9	122.7
294	206.5	122.8
295	206.0	123.1
296	205.5	123.3
297	205.1	123.4
298	204.8	123.6
299	204.1	123.9
300	203.6	124.1
301	203.1	124.3
302	202.6	124.5
303	202.1	124.7
304	201.5	125.0
305	201.8	124.9
306	203.0	124.4
307	203.5	124.1

Lot Number	Pad Elevation, Ft.	Max. Static Pressure, psi
308	203.5	124.1
309	203.3	124.2
310	202.8	124.4
311	202.3	124.7
312	201.7	124.9
313	201.2	125.1
314	200.7	125.3
315	200.2	125.6
316	199.8	125.7
317	199.3	126.0
318	199.0	126.1
319	200.6	125.4
320	201.1	125.2
321	201.6	125.0
322	202.1	124.7
323	202.6	124.5
324	203.2	124.3
325	200.1	125.6
326	199.3	126.0
327	198.6	126.3
328	198.0	126.5
329	197.7	126.6
330	198.3	126.4
331	198.8	126.2
332	199.3	126.0
333	199.7	125.8
334	200.1	125.6
335	200.4	125.5
336	202.4	124.6
337	201.7	124.9
338	200.9	125.3
339	200.2	125.6
340	199.6	125.8
341	199.1	126.0
342	198.5	126.3
343	198.5	126.3
344	198.8	126.2
345	199.3	126.0
346	199.8	125.7
347	200.3	125.5
348	200.8	125.3
349	201.3	125.1
350	201.8	124.9
351	202.4	124.6
352	206.2	123.0

Lot Number	Pad Elevation, Ft.	Max. Static Pressure, psi
353	205.4	123.3
354	204.7	123.6
355	204.0	123.9
356	203.2	124.3
357	202.4	124.6
358	201.5	125.0
359	201.2	125.1
360	201.3	125.1
361	201.5	125.0
362	202.3	124.7
363	203.1	124.3
364	203.8	124.0
365	204.9	123.5
366	205.9	123.1
367	205.0	123.5
368	204.8	123.6
369	204.1	123.9
370	203.6	124.1
371	203.1	124.3
372	202.7	124.5
373	203.0	124.4
374	203.2	124.3
375	203.9	124.0
376	204.2	123.8
377	204.7	123.6
378	205.2	123.4
379	205.8	123.1
380	206.6	122.8
381	207.7	122.3
PLANNING AREA 3		
382	260.0	99.7
383	263.0	98.4
384	265.0	97.5
385	265.0	97.5
386	265.0	97.5
387	280.0	91.0
388	280.0	91.0
389	260.0	99.7
390	240.0	108.3
391	260.0	99.7
392	255.0	101.8
393	255.0	101.8
394	255.0	101.8
395	250.0	104.0

APPENDIX B

COMPUTER MODEL RESULTS

OCEAN BREEZE RANCH
HYDRAULIC MODELING OUTPUT

The following conditions were modeled:

1. Average day demands.

2. Peak hour demands.

3. Maximum day demands plus 2,500 gpm fire flow at Node 14.

4. Maximum day demands plus 2,500 gpm fire flow at Node 52.

5. Maximum day demands plus 2,500 gpm fire flow split between Nodes 56 and 58.

FLOWRATE IS EXPRESSED IN GPM AND PRESSURE IN PSIG

A SUMMARY OF THE ORIGINAL DATA FOLLOWS

PIPE NO.	NODE NOS.		LENGTH (FEET)	DIAMETER (INCHES)	ROUGHNESS	MINOR LOSS K	FIXED GRADE
1	0	2	1000.0	12.0	120.0	.00	490.00
3	2	4	950.0	12.0	120.0	.00	
4	4	6	250.0	8.0	120.0	.00	
5	2	6	800.0	8.0	120.0	.00	
6	6	10	250.0	8.0	120.0	.00	
7	8	10	650.0	8.0	120.0	.00	
9	10	12	280.0	8.0	120.0	.00	
11	12	14	350.0	8.0	120.0	.00	
13	6	16	790.0	8.0	120.0	.00	
15	4	18	1050.0	12.0	120.0	.00	
17	16	18	250.0	8.0	120.0	.00	
19	16	20	300.0	8.0	120.0	.00	
21	14	22	250.0	8.0	120.0	.00	
23	22	20	250.0	8.0	120.0	.00	
25	24	20	280.0	8.0	120.0	.00	
27	24	26	280.0	8.0	120.0	.00	
29	18	26	725.0	12.0	120.0	.00	
31	26	28	370.0	12.0	120.0	.00	
33	28	30	975.0	8.0	120.0	.00	
35	0	30	800.0	12.0	120.0	.00	490.00
37	30	40	800.0	12.0	120.0	.00	
39	40	38	600.0	8.0	120.0	.00	
41	38	36	550.0	8.0	120.0	.00	
43	34	32	250.0	8.0	120.0	.00	
45	28	34	750.0	12.0	120.0	.00	
47	34	36	330.0	12.0	120.0	.00	
49	36	46	750.0	12.0	120.0	.00	
51	44	46	650.0	8.0	120.0	.00	
53	42	44	650.0	8.0	120.0	.00	
55	40	42	300.0	12.0	120.0	.00	
57	42	50	500.0	12.0	120.0	.00	
59	50	48	1050.0	8.0	120.0	.00	
61	46	48	370.0	12.0	120.0	.00	
63	48	52	450.0	12.0	120.0	.00	
65	50	52	700.0	12.0	120.0	.00	
67	52	54	2200.0	12.0	120.0	.00	
69	54	56	2000.0	12.0	120.0	.00	
71	56	58	900.0	8.0	120.0	.00	

JUNCTION NUMBER	DEMAND	ELEVATION	CONNECTING PIPES		
2	13.00	195.00	1	3	5
4	14.00	202.00	3	4	15

6	13.00	203.00	4	5	6	13
8	13.00	201.00	7			
10	13.00	199.00	6	7	9	
12	13.00	201.00	9	11		
14	14.00	205.00	11	21		
16	13.00	207.00	13	17	19	
18	13.00	203.00	15	17	29	
20	14.00	207.00	19	23	25	
22	13.00	204.00	21	23		
24	14.00	204.00	25	27		
26	13.00	209.00	27	29	31	
28	13.00	212.00	31	33	45	
30	.00	255.00	33	35	37	
32	13.00	238.00	43			
34	14.00	244.00	43	45	47	
36	13.00	266.00	41	47	49	
38	13.00	270.00	39	41		
40	13.00	252.00	37	39	55	
42	13.00	272.00	53	55	57	
44	14.00	299.00	51	53		
46	13.00	314.00	49	51	61	
48	13.00	339.00	59	61	63	
50	14.00	316.00	57	59	65	
52	13.00	358.00	63	65	67	
54	3.00	260.00	67	69		
56	3.00	230.00	69	71		
58	3.00	280.00	71			

OUTPUT SELECTION: ALL RESULTS ARE OUTPUT EACH PERIOD

THIS SYSTEM HAS 38 PIPES WITH 29 JUNCTIONS , 8 LOOPS AND 2 FGNS

THE RESULTS ARE OBTAINED AFTER 8 TRIALS WITH AN ACCURACY = .00046

OCEAN BREEZE RANCH WATER SYSTEM ANALYSIS

AVERAGE DAY DEMANDS

PIPE NO.	NODE NOS.		FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
1	0	2	164.18	.10	.00	.00	.47	.10
3	2	4	106.53	.04	.00	.00	.30	.05
4	4	6	32.67	.01	.00	.00	.21	.04
5	2	6	44.66	.05	.00	.00	.29	.07
6	6	10	45.45	.02	.00	.00	.29	.07
7	8	10	-13.00	.00	.00	.00	-.08	-.01
9	10	12	19.45	.00	.00	.00	.12	.01
11	12	14	6.45	.00	.00	.00	.04	.00
13	6	16	18.88	.01	.00	.00	.12	.01
15	4	18	59.85	.02	.00	.00	.17	.02
17	16	18	-18.68	.00	.00	.00	-.12	-.01
19	16	20	24.56	.01	.00	.00	.16	.02
21	14	22	-7.55	.00	.00	.00	-.05	.00

23	22	20	-20.55	.00	.00	.00	-.13	-.02
25	24	20	9.99	.00	.00	.00	.06	.00
27	24	26	-23.99	-.01	.00	.00	-.15	-.02
29	18	26	28.17	.00	.00	.00	.08	.00
31	26	28	-8.82	.00	.00	.00	-.03	.00
33	28	30	-47.15	-.07	.00	.00	-.30	-.07
35	0	30	176.82	.10	.00	.00	.50	.12
37	30	40	129.66	.05	.00	.00	.37	.07
39	40	38	27.58	.02	.00	.00	.18	.03
41	38	36	14.58	.00	.00	.00	.09	.01
43	34	32	13.00	.00	.00	.00	.08	.01
45	28	34	25.34	.00	.00	.00	.07	.00
47	34	36	-1.66	.00	.00	.00	.00	.00
49	36	46	-.08	.00	.00	.00	.00	.00
51	44	46	6.15	.00	.00	.00	.04	.00
53	42	44	20.15	.01	.00	.00	.13	.02
55	40	42	89.08	.01	.00	.00	.25	.03
57	42	50	55.94	.01	.00	.00	.16	.01
59	50	48	9.38	.00	.00	.00	.06	.00
61	46	48	-6.94	.00	.00	.00	-.02	.00
63	48	52	-10.55	.00	.00	.00	-.03	.00
65	50	52	32.55	.00	.00	.00	.09	.01
67	52	54	9.00	.00	.00	.00	.03	.00
69	54	56	6.00	.00	.00	.00	.02	.00
71	56	58	3.00	.00	.00	.00	.02	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
2	13.00	489.90	195.00	127.79
4	14.00	489.85	202.00	124.74
6	13.00	489.84	203.00	124.30
8	13.00	489.82	201.00	125.16
10	13.00	489.83	199.00	126.02
12	13.00	489.82	201.00	125.16
14	14.00	489.82	205.00	123.42
16	13.00	489.83	207.00	122.56
18	13.00	489.84	203.00	124.30
20	14.00	489.83	207.00	122.56
22	13.00	489.82	204.00	123.86
24	14.00	489.83	204.00	123.86
26	13.00	489.83	209.00	121.69
28	13.00	489.83	212.00	120.39
30	.00	489.90	255.00	101.79
32	13.00	489.83	238.00	109.13
34	14.00	489.83	244.00	106.53
36	13.00	489.83	266.00	96.99
38	13.00	489.83	270.00	95.26
40	13.00	489.85	252.00	103.07
42	13.00	489.84	272.00	94.40
44	14.00	489.83	299.00	82.69
46	13.00	489.83	314.00	76.19
48	13.00	489.83	339.00	65.36
50	14.00	489.83	316.00	75.33
52	13.00	489.83	358.00	57.13
54	3.00	489.83	260.00	99.59
56	3.00	489.83	230.00	112.59
58	3.00	489.83	280.00	90.93

THE NET SYSTEM DEMAND = 341.00

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
1	164.18
35	176.82

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 341.00
THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE DEMANDS ARE CHANGED FROM ORIGINAL VALUES BY A FACTOR = 4.50

THE RESULTS ARE OBTAINED AFTER 2 TRIALS WITH AN ACCURACY = .00000

PEAK HOUR DEMANDS

PIPE NO.	NODE NOS.		FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
1	0	2	738.83	1.68	.00	.00	2.10	1.68
3	2	4	479.38	.72	.00	.00	1.36	.75
4	4	6	147.03	.15	.00	.00	.94	.61
5	2	6	200.95	.87	.00	.00	1.28	1.08
6	6	10	204.54	.28	.00	.00	1.31	1.12
7	8	10	-58.50	-.07	.00	.00	-.37	-.11
9	10	12	87.54	.07	.00	.00	.56	.23
11	12	14	29.04	.01	.00	.00	.19	.03
13	6	16	84.95	.17	.00	.00	.54	.22
15	4	18	269.34	.27	.00	.00	.76	.26
17	16	18	-84.07	-.05	.00	.00	-.54	-.22
19	16	20	110.52	.11	.00	.00	.71	.36
21	14	22	-33.96	-.01	.00	.00	-.22	-.04
23	22	20	-92.46	-.06	.00	.00	-.59	-.26
25	24	20	44.94	.02	.00	.00	.29	.07
27	24	26	-107.94	-.10	.00	.00	-.69	-.34
29	18	26	126.77	.05	.00	.00	.36	.06
31	26	28	-39.67	.00	.00	.00	-.11	-.01
33	28	30	-212.18	-1.17	.00	.00	-1.35	-1.20
35	0	30	795.67	1.54	.00	.00	2.26	1.93
37	30	40	583.49	.87	.00	.00	1.66	1.08
39	40	38	124.11	.27	.00	.00	.79	.44
41	38	36	65.61	.08	.00	.00	.42	.14
43	34	32	58.50	.03	.00	.00	.37	.11
45	28	34	114.01	.04	.00	.00	.32	.05
47	34	36	-7.49	.00	.00	.00	-.02	.00
49	36	46	-.37	.00	.00	.00	.00	.00
51	44	46	27.67	.02	.00	.00	.18	.03
53	42	44	90.67	.16	.00	.00	.58	.25
55	40	42	400.87	.16	.00	.00	1.14	.54

57	42	50	251.71	.11	.00	.00	.71	.23
59	50	48	42.23	.06	.00	.00	.27	.06
61	46	48	-31.21	.00	.00	.00	-.09	.00
63	48	52	-47.48	.00	.00	.00	-.13	-.01
65	50	52	146.48	.06	.00	.00	.42	.08
67	52	54	40.50	.02	.00	.00	.11	.01
69	54	56	27.00	.01	.00	.00	.08	.00
71	56	58	13.50	.01	.00	.00	.09	.01

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
2	58.50	488.32	195.00	127.11
4	63.00	487.61	202.00	123.76
6	58.50	487.45	203.00	123.26
8	58.50	487.10	201.00	123.98
10	58.50	487.17	199.00	124.87
12	58.50	487.11	201.00	123.98
14	63.00	487.10	205.00	122.24
16	58.50	487.28	207.00	121.45
18	58.50	487.33	203.00	123.21
20	63.00	487.17	207.00	121.41
22	58.50	487.11	204.00	122.68
24	63.00	487.19	204.00	122.72
26	58.50	487.29	209.00	120.59
28	58.50	487.29	212.00	119.29
30	.00	488.46	255.00	101.17
32	58.50	487.22	238.00	108.00
34	63.00	487.25	244.00	105.41
36	58.50	487.25	266.00	95.87
38	58.50	487.32	270.00	94.17
40	58.50	487.59	252.00	102.09
42	58.50	487.43	272.00	93.35
44	63.00	487.27	299.00	81.58
46	58.50	487.25	314.00	75.07
48	58.50	487.25	339.00	64.24
50	63.00	487.32	316.00	74.24
52	58.50	487.26	358.00	56.01
54	13.50	487.24	260.00	98.47
56	13.50	487.23	230.00	111.47
58	13.50	487.23	280.00	89.80

THE NET SYSTEM DEMAND = 1534.50

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
1	738.83
35	795.67

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 1534.50
THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE DEMANDS ARE CHANGED FROM ORIGINAL VALUES BY A FACTOR = 2.00

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
14	2528.00

THE FOLLOWING CHANGES IN PIPE DATA ARE SPECIFIED

FOR PIPE NUMBER 1 THE VALUE OF THE FIXED GRADE IS CHANGED TO 478.0

FOR PIPE NUMBER 35 THE VALUE OF THE FIXED GRADE IS CHANGED TO 478.0

THE RESULTS ARE OBTAINED AFTER 3 TRIALS WITH AN ACCURACY = .00454

MAXIMUM DAY DEMANDS PLUS 2500 GPM FIRE FLOW AT NODE 14

PIPE NO.	NODE NOS.		FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
1	0	2	1726.91	8.09	.00	.00	4.90	8.09
3	2	4	1113.69	3.41	.00	.00	3.16	3.59
4	4	6	724.10	2.91	.00	.00	4.62	11.65
5	2	6	587.22	6.32	.00	.00	3.75	7.90
6	6	10	1198.02	7.40	.00	.00	7.65	29.61
7	8	10	-26.00	-.02	.00	.00	-.17	-.02
9	10	12	1146.02	7.64	.00	.00	7.31	27.27
11	12	14	1120.02	9.15	.00	.00	7.15	26.14
13	6	16	87.30	.18	.00	.00	.56	.23
15	4	18	361.59	.47	.00	.00	1.03	.45
17	16	18	-684.75	-2.63	.00	.00	-4.37	-10.51
19	16	20	746.05	3.69	.00	.00	4.76	12.32
21	14	22	-1407.98	-9.98	.00	.00	-8.99	-39.93
23	22	20	-1433.98	-10.33	.00	.00	-9.15	-41.30
25	24	20	715.93	3.19	.00	.00	4.57	11.41
27	24	26	-743.93	-3.43	.00	.00	-4.75	-12.25
29	18	26	-349.16	-.30	.00	.00	-.99	-.42
31	26	28	-1119.09	-1.34	.00	.00	-3.17	-3.62
33	28	30	-494.83	-5.61	.00	.00	-3.16	-5.76
35	0	30	1455.09	4.71	.00	.00	4.13	5.89
37	30	40	960.26	2.18	.00	.00	2.72	2.73
39	40	38	266.44	1.10	.00	.00	1.70	1.83
41	38	36	240.44	.83	.00	.00	1.53	1.51
43	34	32	26.00	.01	.00	.00	.17	.02
45	28	34	-650.26	-.99	.00	.00	-1.84	-1.33
47	34	36	-704.26	-.51	.00	.00	-2.00	-1.54
49	36	46	-489.82	-.59	.00	.00	-1.39	-.78
51	44	46	145.36	.39	.00	.00	.93	.60
53	42	44	173.36	.54	.00	.00	1.11	.83
55	40	42	667.82	.42	.00	.00	1.89	1.39
57	42	50	468.46	.36	.00	.00	1.33	.72
59	50	48	112.58	.39	.00	.00	.72	.37
61	46	48	-370.46	-.17	.00	.00	-1.05	-.47
63	48	52	-283.89	-.13	.00	.00	-.81	-.29
65	50	52	327.89	.26	.00	.00	.93	.37
67	52	54	18.00	.00	.00	.00	.05	.00
69	54	56	12.00	.00	.00	.00	.03	.00

71	56	58	6.00	.00	.00	.00	.04	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
2	26.00	469.91	195.00	119.13
4	28.00	466.50	202.00	114.62
6	26.00	463.59	203.00	112.92
8	26.00	456.17	201.00	110.57
10	26.00	456.18	199.00	111.45
12	26.00	448.55	201.00	107.27
14	2528.00	439.40	205.00	101.57
16	26.00	463.40	207.00	111.11
18	26.00	466.03	203.00	113.98
20	28.00	459.71	207.00	109.51
22	26.00	449.38	204.00	106.33
24	28.00	462.90	204.00	112.19
26	26.00	466.33	209.00	111.51
28	26.00	467.67	212.00	110.79
30	.00	473.29	255.00	94.59
32	26.00	468.66	238.00	99.95
34	28.00	468.67	244.00	97.36
36	26.00	469.18	266.00	88.04
38	26.00	470.01	270.00	86.67
40	26.00	471.10	252.00	94.95
42	26.00	470.69	272.00	86.10
44	28.00	470.15	299.00	74.17
46	26.00	469.76	314.00	67.50
48	26.00	469.94	339.00	56.74
50	28.00	470.33	316.00	66.87
52	26.00	470.06	358.00	48.56
54	6.00	470.06	260.00	91.03
56	6.00	470.06	230.00	104.03
58	6.00	470.06	280.00	82.36

THE NET SYSTEM DEMAND = 3182.00

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
1	1726.91
35	1455.09

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3182.00
THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE DEMANDS ARE CHANGED FROM ORIGINAL VALUES BY A FACTOR = 2.00

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
52	2526.00

THE FOLLOWING CHANGES IN PIPE DATA ARE SPECIFIED

FOR PIPE NUMBER 1 THE VALUE OF THE FIXED GRADE IS CHANGED TO 478.0

FOR PIPE NUMBER 35 THE VALUE OF THE FIXED GRADE IS CHANGED TO 478.0

THE RESULTS ARE OBTAINED AFTER 5 TRIALS WITH AN ACCURACY = .00036

MAXIMUM DAY DEMANDS PLUS 2500 GPM FIRE FLOW AT NODE 52

PIPE NO.	NODE NOS.		FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
1	0	2	1247.73	4.43	.00	.00	3.54	4.43
3	2	4	873.64	2.18	.00	.00	2.48	2.29
4	4	6	181.81	.23	.00	.00	1.16	.90
5	2	6	348.09	2.40	.00	.00	2.22	3.00
6	6	10	263.44	.45	.00	.00	1.68	1.79
7	8	10	-26.00	-.02	.00	.00	-.17	-.02
9	10	12	211.44	.33	.00	.00	1.35	1.19
11	12	14	185.44	.33	.00	.00	1.18	.93
13	6	16	240.47	1.20	.00	.00	1.53	1.51
15	4	18	663.82	1.45	.00	.00	1.88	1.38
17	16	18	55.94	.03	.00	.00	.36	.10
19	16	20	158.53	.21	.00	.00	1.01	.70
21	14	22	157.44	.17	.00	.00	1.00	.69
23	22	20	131.44	.12	.00	.00	.84	.49
25	24	20	-261.96	-.50	.00	.00	-1.67	-1.77
27	24	26	233.96	.40	.00	.00	1.49	1.44
29	18	26	693.77	1.08	.00	.00	1.97	1.49
31	26	28	901.73	.90	.00	.00	2.56	2.43
33	28	30	-287.28	-2.05	.00	.00	-1.83	-2.10
35	0	30	1934.27	7.98	.00	.00	5.49	9.98
37	30	40	1646.99	5.93	.00	.00	4.67	7.41
39	40	38	89.39	.15	.00	.00	.57	.24
41	38	36	63.39	.07	.00	.00	.40	.13
43	34	32	26.00	.01	.00	.00	.17	.02
45	28	34	1163.01	2.92	.00	.00	3.30	3.89
47	34	36	1109.01	1.18	.00	.00	3.15	3.56
49	36	46	1146.40	2.84	.00	.00	3.25	3.79
51	44	46	162.39	.48	.00	.00	1.04	.73
53	42	44	190.39	.64	.00	.00	1.22	.98
55	40	42	1531.60	1.94	.00	.00	4.34	6.48
57	42	50	1315.22	2.44	.00	.00	3.73	4.89
59	50	48	113.67	.40	.00	.00	.73	.38
61	46	48	1282.78	1.73	.00	.00	3.64	4.66
63	48	52	1370.45	2.37	.00	.00	3.89	5.27
65	50	52	1173.55	2.77	.00	.00	3.33	3.96
67	52	54	18.00	.00	.00	.00	.05	.00
69	54	56	12.00	.00	.00	.00	.03	.00
71	56	58	6.00	.00	.00	.00	.04	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
2	26.00	473.57	195.00	120.71
4	28.00	471.39	202.00	116.74
6	26.00	471.17	203.00	116.21

8	26.00	470.70	201.00	116.87
10	26.00	470.72	199.00	117.75
12	26.00	470.39	201.00	116.73
14	28.00	470.06	205.00	114.86
16	26.00	469.97	207.00	113.95
18	26.00	469.95	203.00	115.68
20	28.00	469.76	207.00	113.86
22	26.00	469.89	204.00	115.22
24	28.00	469.27	204.00	114.95
26	26.00	468.86	209.00	112.61
28	26.00	467.97	212.00	110.92
30	.00	470.02	255.00	93.17
32	26.00	465.04	238.00	98.38
34	28.00	465.05	244.00	95.79
36	26.00	463.87	266.00	85.74
38	26.00	463.94	270.00	84.04
40	26.00	464.09	252.00	91.90
42	26.00	462.14	272.00	82.40
44	28.00	461.51	299.00	70.42
46	26.00	461.03	314.00	63.71
48	26.00	459.31	339.00	52.13
50	28.00	459.70	316.00	62.27
52	2526.00	456.93	358.00	42.87
54	6.00	456.93	260.00	85.34
56	6.00	456.93	230.00	98.34
58	6.00	456.93	280.00	76.67

THE NET SYSTEM DEMAND = 3182.00

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
1	1247.73
35	1934.27

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3182.00
THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE DEMANDS ARE CHANGED FROM ORIGINAL VALUES BY A FACTOR = 2.00

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
58	1256.00
56	1256.00

THE FOLLOWING CHANGES IN PIPE DATA ARE SPECIFIED

FOR PIPE NUMBER 1 THE VALUE OF THE FIXED GRADE IS CHANGED TO 478.0

FOR PIPE NUMBER 35 THE VALUE OF THE FIXED GRADE IS CHANGED TO 478.0

THE RESULTS ARE OBTAINED AFTER 2 TRIALS WITH AN ACCURACY = .00000

MAXIMUM DAY DEMANDS PLUS 2500 GPM FIRE FLOW SPLIT BETWEEN NODES 56 AND 58

PIPE NO.	NODE NOS.		FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
1	0	2	1247.73	4.43	.00	.00	3.54	4.43
3	2	4	873.64	2.18	.00	.00	2.48	2.29
4	4	6	181.81	.23	.00	.00	1.16	.90
5	2	6	348.09	2.40	.00	.00	2.22	3.00
6	6	10	263.43	.45	.00	.00	1.68	1.79
7	8	10	-26.00	-.02	.00	.00	-.17	-.02
9	10	12	211.43	.33	.00	.00	1.35	1.19
11	12	14	185.43	.33	.00	.00	1.18	.93
13	6	16	240.47	1.20	.00	.00	1.53	1.51
15	4	18	663.83	1.45	.00	.00	1.88	1.38
17	16	18	55.94	.03	.00	.00	.36	.10
19	16	20	158.53	.21	.00	.00	1.01	.70
21	14	22	157.43	.17	.00	.00	1.00	.69
23	22	20	131.43	.12	.00	.00	.84	.49
25	24	20	-261.96	-.50	.00	.00	-1.67	-1.77
27	24	26	233.96	.40	.00	.00	1.49	1.44
29	18	26	693.77	1.08	.00	.00	1.97	1.49
31	26	28	901.73	.90	.00	.00	2.56	2.43
33	28	30	-287.28	-2.05	.00	.00	-1.83	-2.10
35	0	30	1934.27	7.98	.00	.00	5.49	9.98
37	30	40	1646.99	5.93	.00	.00	4.67	7.41
39	40	38	89.39	.15	.00	.00	.57	.24
41	38	36	63.39	.07	.00	.00	.40	.13
43	34	32	26.00	.01	.00	.00	.17	.02
45	28	34	1163.01	2.92	.00	.00	3.30	3.89
47	34	36	1109.01	1.18	.00	.00	3.15	3.56
49	36	46	1146.40	2.84	.00	.00	3.25	3.79
51	44	46	162.39	.48	.00	.00	1.04	.73
53	42	44	190.39	.64	.00	.00	1.22	.98
55	40	42	1531.60	1.94	.00	.00	4.34	6.48
57	42	50	1315.22	2.44	.00	.00	3.73	4.89
59	50	48	113.67	.40	.00	.00	.73	.38
61	46	48	1282.78	1.73	.00	.00	3.64	4.66
63	48	52	1370.45	2.37	.00	.00	3.89	5.27
65	50	52	1173.55	2.77	.00	.00	3.33	3.96
67	52	54	2518.00	35.78	.00	.00	7.14	16.27
69	54	56	2512.00	32.39	.00	.00	7.13	16.19
71	56	58	1256.00	29.08	.00	.00	8.02	32.31

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
2	26.00	473.57	195.00	120.71
4	28.00	471.39	202.00	116.74
6	26.00	471.17	203.00	116.21
8	26.00	470.70	201.00	116.87
10	26.00	470.72	199.00	117.75
12	26.00	470.39	201.00	116.73
14	28.00	470.06	205.00	114.86
16	26.00	469.97	207.00	113.95
18	26.00	469.95	203.00	115.68

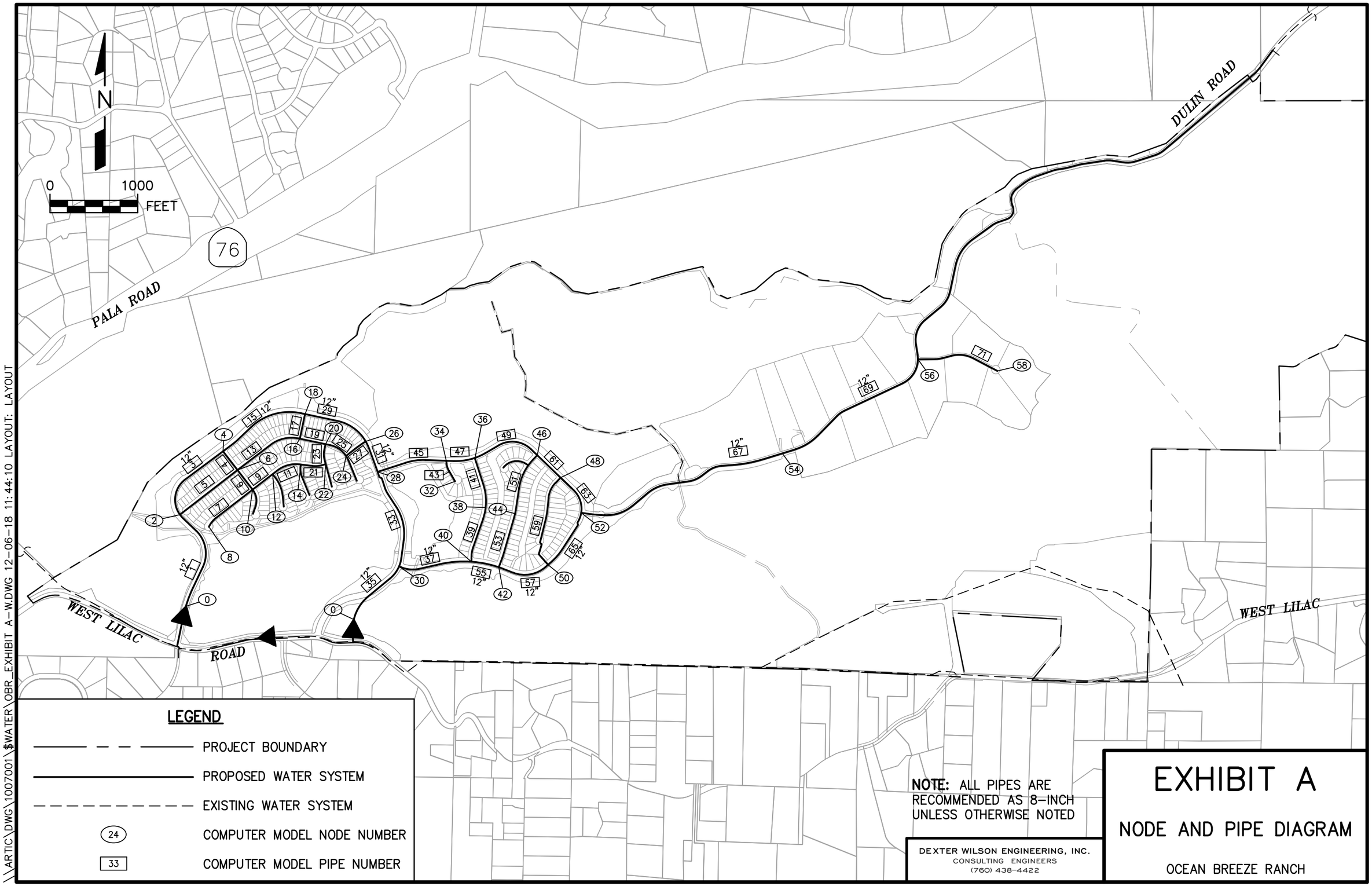
20	28.00	469.76	207.00	113.86
22	26.00	469.89	204.00	115.22
24	28.00	469.27	204.00	114.95
26	26.00	468.86	209.00	112.61
28	26.00	467.97	212.00	110.92
30	.00	470.02	255.00	93.17
32	26.00	465.04	238.00	98.38
34	28.00	465.05	244.00	95.79
36	26.00	463.87	266.00	85.74
38	26.00	463.94	270.00	84.04
40	26.00	464.09	252.00	91.90
42	26.00	462.14	272.00	82.40
44	28.00	461.51	299.00	70.42
46	26.00	461.03	314.00	63.71
48	26.00	459.31	339.00	52.13
50	28.00	459.70	316.00	62.27
52	26.00	456.93	358.00	42.87
54	6.00	421.15	260.00	69.83
56	1256.00	388.76	230.00	68.80
58	1256.00	359.68	280.00	34.53

THE NET SYSTEM DEMAND = 3182.00

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
1	1247.73
35	1934.27

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3182.00
THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00



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