

*Appendix J*  
*Sewer and Water Master Plan Study*

## *Appendices*

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## **Sewer and Water Master Plan Study**

**Heritage Fields Project 2012**

**General Plan Amendment and Zone Change**

**Prepared For:**

**Heritage Fields El Toro, LLC**

**Great Park Neighborhoods**

**25 Enterprise**

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**June 6, 2012**

**JN 10-105001**

## **1 Background/Purpose**

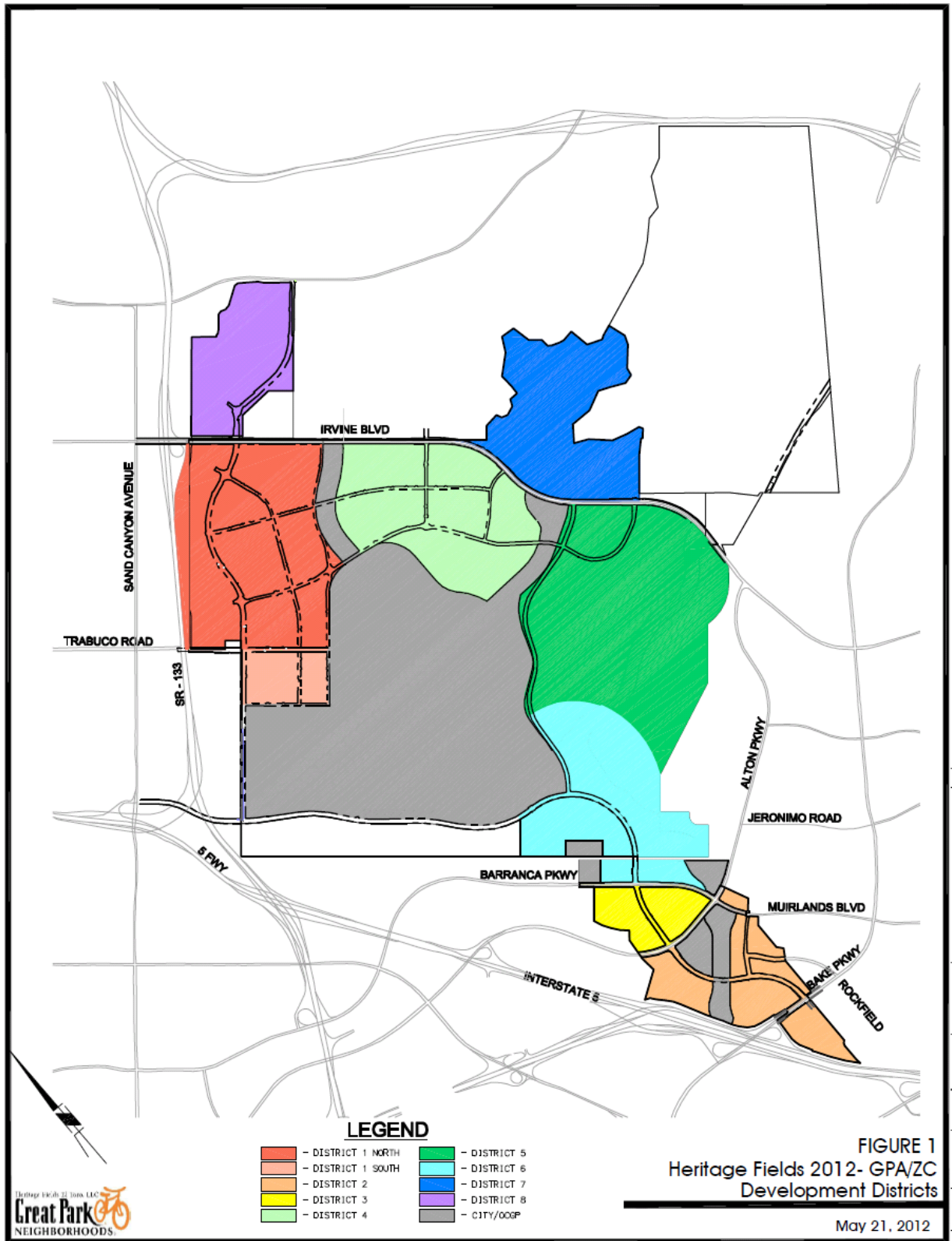
This study analyzes the Heritage Fields Project 2012 - General Plan Amendment and Zone Change's ("the 2012 Modified Project") "Sewer and Water Master Plan" ("2012 Master Plan") and compares it to the 2011 SEIR Approved Project, more specifically the "PA 30 and PA 51 Great Park/Great Park Neighborhoods Sub Area Master Plan Update", dated September 2011 (the "SAMP").

In September 2011, Heritage Fields El Toro, LLC ("Heritage Fields") and the Orange County Great Park/ City of Irvine (OCGP) completed the SAMP that was subsequently approved by the Irvine Ranch Water District ("IRWD"). Heritage Fields will be developing the Great Park Neighborhoods, which consists of several districts surrounding the Orange County Great Park, specifically District 1 North, District 1 South, District 2, District 3, District 4, District 5, District 6, District 7, and District 8. The 2012 Modified Project includes residential, commercial, and mixed land uses and includes a 2,600 student High School. The OCGP, City of Irvine (the "City") and Orange County are the owners of the property covered by the SAMP. Figure 1 shows the approximate locations of the different development areas.

The SAMP addresses the required onsite and offsite sewer and water facilities needed for the specified land uses and was based upon a "Sensitivity Analysis" for land use. The "Sensitivity Analysis" considered the potential impact of higher densities throughout Existing PAs 30 and 51 to project sewer and water services.

This study compares the Average Day demands of the 2012 Modified Project to the SAMP (based upon the "Sensitivity Analysis"). There are portions of the proposed Project that do not impact Sewer and Water Master Plans. The consolidation of Existing PA 30 and Existing PA 51 into Combined PA 51 and the revisions to the County Master Plan of Arterial Highways do not alter required infrastructure or project demands and therefore do not impact the Sewer and Water Master Plan. The addition of 11 acres of property owned by TCA located between the edge of Existing PA 51 and SR-133, between Irvine Boulevard and Trabuco Road, to Combined PA 51 does not affect the SAMP since this area does not generate sewer and domestic water demand. Recycled water demand for this 11 acre site is minimal. The water and sewer demands of the relocated Wildlife Corridor are consistent with the 2011 SEIR Approved Project because the acreage and intended use are still consistent with the SAMP. Lastly, the implementation of recreational facilities within the approved OCGP is consistent with the demands for the OCGP in the SAMP.

Therefore, this study will focus primarily on the changes to the land uses for the 2012 Modified Project that would allow the development of an additional 4,606 dwelling units, including 1,194 density bonus units, in addition to the already approved 4,894 dwelling units. The 2012 Modified Project would also change the 2011 Approved Project by allowing development of 3,364,000 square feet of Medical and Science, 1,318,200 square feet of Multi-Use and 220,000 square feet of Community Commercial (the "9,500 Unit Option"). The 2012 Modified Project also includes an option to convert an additional 535,000 square feet of the proposed Multi-Use development to an additional 889 dwelling units within District 6 and Lot 48 of 2<sup>nd</sup> Amended VTTM 17008, plus an additional 311 density bonus units (the "10,700 Unit Option").



## 2. 2011 SEIR Approved Project -

Using values from the SAMP, the following tables summarize the sewer and water demands, by district, for the 2011 SEIR Approved Project and the Sensitivity Analysis.

Table A-1 2011 SEIR Approved Project - Sewer Demand Summary  
(Average Dry Weather Flow)

| Location                        | 2011 SAMP (4894 DU-<br>6.5 M sqft Non Res) |
|---------------------------------|--------------------------------------------|
| District 1                      | 283 gpm                                    |
| District 2                      | 68 gpm                                     |
| District 3                      | 37 gpm                                     |
| District 4                      | 146 gpm                                    |
| District 5                      | 87 gpm                                     |
| District 6                      | 11 gpm                                     |
| District 7                      | 130 gpm                                    |
| District 8                      | 124 gpm                                    |
| District 9                      | 0 gpm                                      |
| OCGP -Public Ownership Comb     | 49 gpm                                     |
| HF/OCGP -Public Ownership Total | 935 gpm                                    |

Table A-2 2011 SEIR Approved Project (Sensitivity Analysis) - Sewer Demand Summary  
(Average Dry Weather Flow)

| Location                        | 2011 SAMP (9500 DU-<br>6.5 M sqft Non Res) |
|---------------------------------|--------------------------------------------|
| District 1                      | 299 gpm                                    |
| District 2                      | 68 gpm                                     |
| District 3                      | 37 gpm                                     |
| District 4                      | 190 gpm                                    |
| District 5                      | 400 gpm                                    |
| District 6                      | 143 gpm                                    |
| District 7                      | 130 gpm                                    |
| District 8                      | 124 gpm                                    |
| District 9                      | 0 gpm                                      |
| OCGP -Public Ownership Comb     | 49 gpm                                     |
| HF/OCGP -Public Ownership Total | 1440 gpm                                   |

Table A-3 2011 SEIR Approved Project - Water Demand Summary  
(Average Day)

| Location                        | 2011 SAMP (4894 DU-6.5 M sqft<br>Non Res) |
|---------------------------------|-------------------------------------------|
| District 1                      | 382 gpm                                   |
| District 2                      | 80 gpm                                    |
| District 3                      | 44 gpm                                    |
| District 4                      | 205 gpm                                   |
| District 5                      | 108 gpm                                   |
| District 6                      | 16 gpm                                    |
| District 7                      | 212 gpm                                   |
| District 8                      | 184 gpm                                   |
| District 9                      | 0 gpm                                     |
| OCGP -Public Ownership Comb     | 67 gpm                                    |
| HF/OCGP -Public Ownership Total | 1298 gpm                                  |

Table A-4 2011 SEIR Approved Project (Sensitivity Analysis) - Water Demand Summary  
(Average Day)

| Location                        | 2011 SAMP (9500 DU-6.5 M sqft<br>Non Res) |
|---------------------------------|-------------------------------------------|
| District 1                      | 406 gpm                                   |
| District 2                      | 80 gpm                                    |
| District 3                      | 44 gpm                                    |
| District 4                      | 261 gpm                                   |
| District 5                      | 609 gpm                                   |
| District 6                      | 158 gpm                                   |
| District 7                      | 212 gpm                                   |
| District 8                      | 184 gpm                                   |
| District 9                      | 0 gpm                                     |
| OCGP -Public Ownership Comb     | 67 gpm                                    |
| HF/OCGP -Public Ownership Total | 2021 gpm                                  |

### 3. 2012 Modified Project Sewer Demands

Sewer generation values were calculated for the 2012 Modified Project, including optional conversion, and then compared to the values in the SAMP (for the 2011 SEIR Approved Project). These values were derived using the IRWD Generation Factors and Peak Flow Factors that were used as part of the SAMP. The following tables summarize these demands by district.

Table B-1 2012 Modified Project - Sewer Demand Summary  
(Average Dry Weather Flow)

| Location                        | 2012 Project (9500 DU-<br>6.1 M sqft Non Res) |
|---------------------------------|-----------------------------------------------|
| District 1                      | 299 gpm                                       |
| District 2                      | 71 gpm                                        |
| District 3                      | 43 gpm                                        |
| District 4                      | 146 gpm                                       |
| District 5                      | 420 gpm                                       |
| District 6                      | 106 gpm                                       |
| District 7                      | 130 gpm                                       |
| District 8                      | 124 gpm                                       |
| OCGP -Public Ownership Comb     | 49 gpm                                        |
| HF/OCGP -Public Ownership Total | 1396 gpm                                      |

Table B-2 2012 Modified Project (Optional Conversion) - Sewer Demand Summary  
(Average Dry Weather Flow)

| Location                        | 2012 Project (10,700<br>DU- 5.6 M sqft Non<br>Res) |
|---------------------------------|----------------------------------------------------|
| District 1                      | 315 gpm                                            |
| District 2                      | 71 gpm                                             |
| District 3                      | 43 gpm                                             |
| District 4                      | 146 gpm                                            |
| District 5                      | 420 gpm                                            |
| District 6                      | 192 gpm                                            |
| District 7                      | 130 gpm                                            |
| District 8                      | 124 gpm                                            |
| OCGP -Public Ownership Comb     | 49 gpm                                             |
| HF/OCGP -Public Ownership Total | 1490 gpm                                           |

#### 4. 2012 Modified Project Domestic Water Demands

Domestic Water generation values were calculated for both of options for the 2012 Modified Project and then compared to the values in the SAMP. These values were derived using the IRWD Generation Factors and Peak Flow Factors that were used as part of the SAMP. The following tables summarize these demands by district.

Table C-1 2012 Modified Project - Water Demand Summary  
(Average Day)

| Location                        | 2012 Project (9500 DU-<br>6.1 M sqft Non Res) |
|---------------------------------|-----------------------------------------------|
| District 1                      | 398 gpm                                       |
| District 2                      | 81 gpm                                        |
| District 3                      | 50 gpm                                        |
| District 4                      | 205 gpm                                       |
| District 5                      | 600 gpm                                       |
| District 6                      | 99 gpm                                        |
| District 7                      | 212 gpm                                       |
| District 8                      | 184 gpm                                       |
| OCGP -Public Ownership Comb     | 67 gpm                                        |
| HF/OCGP -Public Ownership Total | 1896 gpm                                      |

Table C-2 2012 Modified Project (Optional Conversion) - Water Demand Summary  
(Average Day)

| Location                        | 2012 Project (10,700<br>DU- 5.6 M sqft Non Res) |
|---------------------------------|-------------------------------------------------|
| District 1                      | 418 gpm                                         |
| District 2                      | 81 gpm                                          |
| District 3                      | 50 gpm                                          |
| District 4                      | 205 gpm                                         |
| District 5                      | 600 gpm                                         |
| District 6                      | 212 gpm                                         |
| District 7                      | 212 gpm                                         |
| District 8                      | 184 gpm                                         |
| OCGP -Public Ownership Comb     | 67 gpm                                          |
| HF/OCGP -Public Ownership Total | 2029 gpm                                        |

## 5. Recycled Water Master Plan

There are no land use modifications proposed by the 2012 Modified Project that significantly impact the use of recycled water at this time. Changes in land use density and the conversion of non residential uses to residential uses do not significantly change the use of recycled water. The SAMP "Sensitivity Analysis" already assumed lower recycled water demands due to the removal of a golf course. Implementation of the recreational facilities and the relocation of the Wildlife Corridor do not alter the recycled water demand as compared to the 2011 SEIR Approved Project. Therefore, the recycled water demands for the 2012 Modified Project will remain similar to the demands for the 2011 SEIR Approved Project.

The following tables summarize the recycled water demands by district.

Table D-1 2011 SEIR Approved Project - Recycled Water Demand Summary  
(Average Day)

| Location                        | 2011 SAMP (4894 DU-<br>6.5 M sqft Non Res) |
|---------------------------------|--------------------------------------------|
| District 1                      | 132 gpm                                    |
| District 2                      | 69 gpm                                     |
| District 3                      | 47 gpm                                     |
| District 4                      | 38 gpm                                     |
| District 5                      | 1245 gpm                                   |
| District 6                      | 46 gpm                                     |
| District 7                      | 36 gpm                                     |
| District 8                      | 34 gpm                                     |
| District 9                      | 27 gpm                                     |
| OCGP -Public Ownership Comb     | 1128 gpm                                   |
| HF/OCGP -Public Ownership Total | 2802 gpm                                   |

Table D-2 2011 SEIR Approved Project (Sensitivity Analysis) –  
Recycled Water Demand Summary (Average Day)

| Location                        | 2011 SAMP (9500 DU-<br>6.5 M sqft Non Res) |
|---------------------------------|--------------------------------------------|
| District 1                      | 132 gpm                                    |
| District 2                      | 69 gpm                                     |
| District 3                      | 47 gpm                                     |
| District 4                      | 38 gpm                                     |
| District 5                      | 166 gpm                                    |
| District 6                      | 43 gpm                                     |
| District 7                      | 36 gpm                                     |
| District 8                      | 34 gpm                                     |
| District 9                      | 27 gpm                                     |
| OCGP -Public Ownership Comb     | 1128 gpm                                   |
| HF/OCGP -Public Ownership Total | 1720 gpm                                   |

## 6. Results and conclusion

When comparing the sewer demands for the 2012 Modified Project to the SAMP (Sensitivity Analysis), the sewer demands for the 9,500 Unit Option are 3% less than the 2011 SEIR Approved Project and the sewer demands for the 10,700 Unit Option are 3% more than the 2011 SEIR Approved Project (See Table Below). Neither is a not noteworthy change in comparison to the 2012 Modified Project.

Sewer Demand Comparison Summary (Average dry weather Demand)

| Description                              | 2011 SAMP | 2011 SAMP<br>(Sensitivity<br>Analysis) | 2012 SSEIR (9500 DU-<br>6.1 M sqft Non Res) | 2012 SSEIR<br>(10700 DU-5.6 M<br>sqft Non Res) |
|------------------------------------------|-----------|----------------------------------------|---------------------------------------------|------------------------------------------------|
| HF/OCGP -<br>Public<br>Ownership<br>Comb | 935 gpm   | 1440 gpm                               | 1396 gpm                                    | 1490 gpm                                       |

When comparing the domestic water demands for the 2012 Modified Project to the SAMP (Sensitivity Analysis), the domestic water demand for the 9,500 Unit Option is 6% less than for the 2011 SEIR Approved Project and the domestic water demand for the 10,700 Unit Option is less than 1% more than for the 2011 SEIR Approved Project. (See Table Below). Neither is a noteworthy change in comparison to the 2012 Modified Project.

Domestic Water Demand Comparison Summary (Average day Demand)

| Description                              | 2011SAMP | 2011 SAMP<br>(Sensitivity<br>Analysis) | 2012 SSEIR (9500 DU-<br>6.1 M sqft Non Res) | 2012 SSEIR<br>(10700 DU-5.6 M<br>sqft Non Res) |
|------------------------------------------|----------|----------------------------------------|---------------------------------------------|------------------------------------------------|
| HF/OCGP -<br>Public<br>Ownership<br>Comb | 1298 gpm | 2021 gpm                               | 1896 gpm                                    | 2029 gpm                                       |