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March 20, 2013

Mr. Greg Blodgett
Project Manager
City of Garden Grove
11222 Acacia Parkway, 3rd Floor
Garden Grove, CA 92840

Sent via: greg1@ci.garden-grove.ca.us
714-741-5124

Re: *Proposed Upper-Upscale and Full Service, Select-Service and Suites Hotels Located in Garden Grove, California*

Dear Mr. Blodgett:

We have completed our analysis of the potential performance of the aforementioned hotels to be developed in Garden Grove, California, to the south of the Disneyland Resort and Anaheim Convention Center. This summary report is subject to the attached statement of general assumptions and limiting conditions.

Background

It is our understanding that you require an analysis for the support of the subject properties for your internal purposes. The development is proposed for a city owned parcel referred to as Site C situated on the northeast quadrant of Harbor Boulevard and Twintree Lane. The hotels will be a component of a mixed-use development site, with inline entertainment, retail and restaurants along Harbor Boulevard. It is estimated the project will take approximately 12 to 18 months to complete the working drawings and obtain financing, and approximately 18 to 24 months to construct. Horwath has assumed 2017 as the first full operating year of the subject hotels.

You are in negotiations with a developer for potential city subsidies for a development on Site C. General assumptions, published data, the developer's estimates as well as primary research have been considered to develop estimates of the future performance for the proposed project. It is our understanding that the project as proposed will consist of the following:

-
- 360-room full service, upper upscale hotel with approximately 15,000 square feet of conference/meeting space (including a 10,000-square foot ballroom), spa and fitness center
 - 150-room suites oriented hotel property
 - 150-room select service hotel property

Our analysis has consisted of researching published information on statistics and trends in the lodging industry in the Garden Grove/Anaheim area, demographic/economic trends, phone calls with principals knowledgeable of the area lodging market, in-house market data, and direct interviews with hotel companies and hotel management. Our market research and analysis was conducted in March 2013. Horwath previously researched support for the upper upscale hotel in a report dated March 25, 2011. Please refer to the previous report for expanded regional information and detail on the area and site. Where appropriate, Horwath has noted relevant updates to our assumptions contained in the previous report.

Our conclusions assume that the subject properties will be operated and marketed by a competent and efficient management company and affiliated with a national chain. Further, the properties will be constructed and furnished with quality materials commensurate with their targeted level of service prototype(s) and be well maintained over the projection period. Our projections of occupancy and average daily rate (ADR) are based on the level of services envisioned for the subject properties.

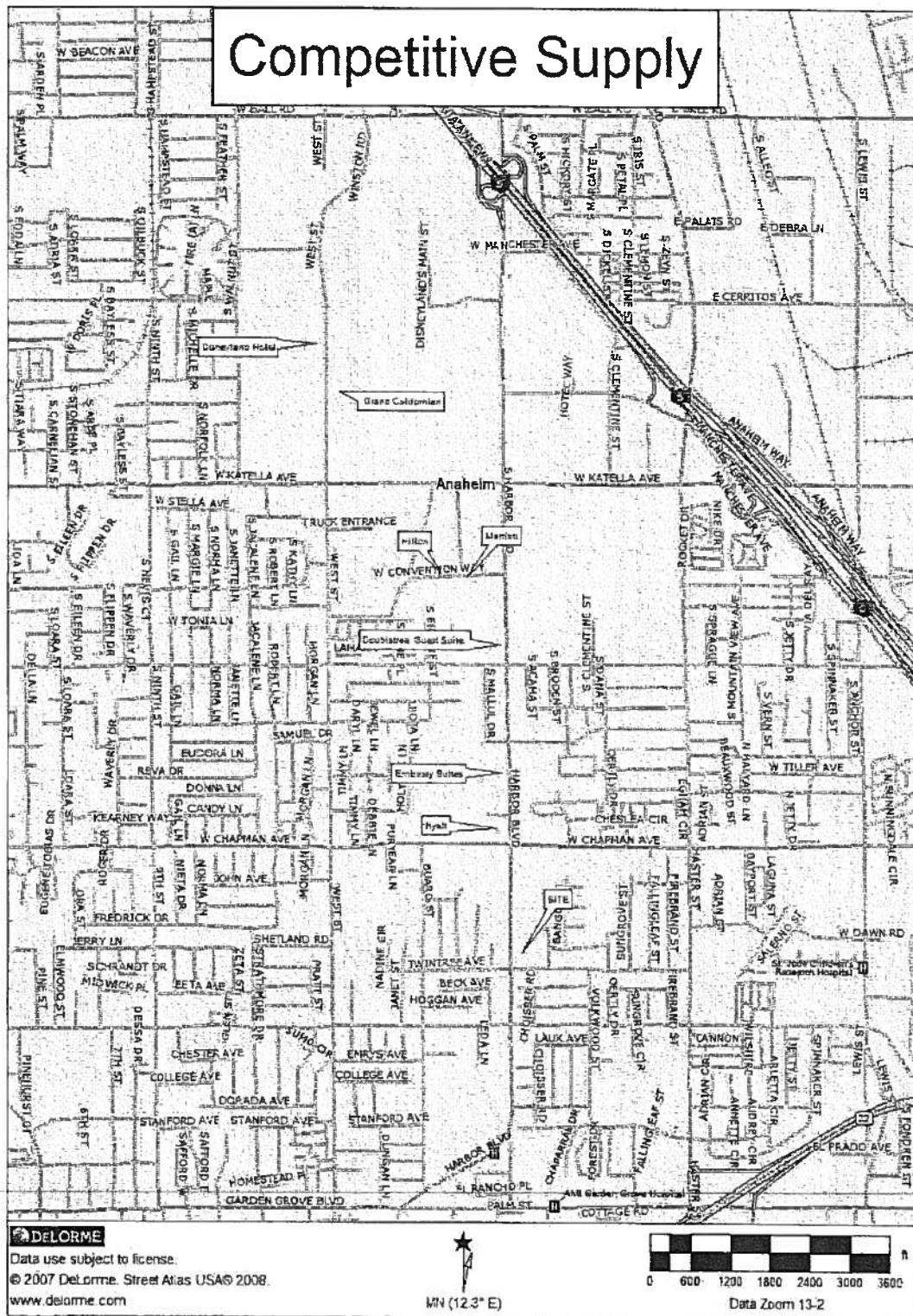
Competitive Lodging Market

There are numerous hotels within the competitive market area. In order to identify trends in the lodging market as well as support for the subject properties, we have identified a set of properties that we feel have successfully captured area demand in terms of occupancy and ADR. Assuming a ceiling in terms of ADR for the upper upscale property, we then determined a tiered capture of demand for the suites and select service properties due to their proximity and synergies within the proposed development.

There are seven full service properties that are achieving the highest average rates in the Garden Grove/Anaheim area. Chain affiliation and/or location relative to the Disneyland theme park are strong determinants as to the magnitude of both quoted and achieved rates. The locations of the properties are identified on the following map. A summary of these properties is presented as follows, followed by a map.

Competitive Set	Rooms	Open
Grand Californian Hotel	948	2001
Disneyland Hotel	969	1955
Hilton Anaheim	1,572	1984
Hyatt Regency Orange County	654	1987
Marriott Anaheim	1,030	1981
Embassy Suites Anaheim South	375	2002
Doubletree Guest Suites Anaheim Resort	251	2006
Total Keys	5,799	

Source: Hotel management & published sources



As indicated on the previous competitive supply chart, in 2012, there were seven properties totaling 5,799 guest rooms considered as the potential Garden Grove/Anaheim competitive supply for the subject upper upscale hotel. These properties were selected due to their ADR, size, facilities and amenities, quality and/or national brand affiliations, locations and market orientations.

With the exception of the two Disneyland hotels (Grand Californian Hotel and the Disneyland Hotel), all of the properties were nationally branded, chain-affiliated hotels. While there are some high-quality, independently owned and operated properties catering to Disneyland or the convention center, the importance of a chain affiliation is that it provides a recognizable, corporately mandated prototype that has been developed with a consistency in standard of operation, and benefits from shared support services such as marketing, reservations and frequent traveler reward programs. The independent properties were especially negatively impacted during the 2008/2009/2010 economic downturn, underscoring the importance of a recognized, national (or international) marketing program during downturns and/or off peak periods. As such, independently owned/operated properties were not included in the subject's competitive supply. Further, it should be noted that a Sheraton hotel in Garden Grove and one in Anaheim were not included in the competitive set as they share a reservation system with a third Sheraton property located closer to the Disneyland theme park, which has diluted their market share. As such, these properties have been negatively impacted by their lack of a brand differentiation coupled with secondary locations relative to the theme park, which impacted ADR. As this would have skewed the market set, they were not considered in the subject's competitive supply set.

The properties range in age from the 55 year-old Disneyland Hotel to the 203-room expansion of the Grand Californian Hotel in September 2009. All of the non-Disney properties are chain affiliated, and oriented toward either group or leisure visiting the Anaheim Convention Center or Disneyland. With the exception of the Hyatt Regency Orange County and Embassy Suites Garden Grove, all of the competitive properties are located within the city limits of Anaheim.

Competitive Supply Summary

The key similarities between the properties considered in the competitive set are their primary dependence upon Disneyland and/or convention center demand (or overflow compression), strong brand name affiliations, extent and quality of amenities, good physical conditions and their higher ADRs. As Harbor Boulevard develops with retail, commercial, and possibly a third gate in the future for Disneyland, and the Anaheim Convention Center expands, the Garden Grove properties will benefit. However, most of the Garden Grove properties do not have enough facilities or amenities to be considered "destinations" in this market. In other words, the subject will compete directly for the higher rated leisure demand staying in the competitive set, provide more of a focus of activity south along the Garden Grove portion of Harbor Boulevard, and help "drive rate" for the existing Garden Grove hotels. As of the date of this report, there is no upper upscale hotel located in the Garden Grove sector of the delineated Anaheim/Garden Grove competitive area.

Additions to Future Supply

We have concentrated on properties entering the Garden Grove/Anaheim area that would compete primarily for the higher rated (upscale) base leisure demand along Harbor Boulevard visiting the Disneyland Resort, or properties with significant meeting space. Due to the estimated size of the subject, as well as its proposed facilities and amenities, we have considered the following properties in

the future competitive supply. Although we are aware of other rumored and potential property additions, we have considered the status of their financing as our criteria for inclusion. Since the proposed additions to supply will benefit from public/private partnerships with the cities of Garden Grove and Anaheim, it is our opinion that they have a high probability of construction. The following chart summarizes our research, and further detail follows the chart.

Proposed Additions to Supply	Rooms	Open	Location
600-Key Great Wolf Lodge (1/3 competitive)	200	Jan-2017	Garden Grove
GardenWalk Hotel	466	Sep-2017	Anaheim
Total	666		

While approximately 90% of the hotel rooms accommodating Disneyland visitors are located in Anaheim, many are independent, older or "mom and pop" operations, representing an under utilization of their sites, in many cases. Over time, it is highly likely that many of these properties will be redeveloped or demolished and replaced with newer hotels. Due to the smaller land sizes of these properties and height restrictions in Anaheim, some of them may not be financially feasible, eventually pushing most of the future new development into the Garden Grove area (which lacks height restrictions). In the short term, however, we have considered only those properties that we estimate can obtain financing.

We are aware of no other hotels in the planning stages for inclusion in our projections of future supply. However, if additional rooms other than those mentioned in this report were to be added to the competitive supply, it could have a material impact on the market and the projected performance of the subject. The following chart reflects our estimate of the rooms included in the subject's future competitive supply.

Proposed Additions to Supply	2012	2013	2014	2015	2016	2017	2018
Current Rooms Supply	5,668						
Proposed Upscale Hotel- Garden Grove						360	
2 Disneyland Hotels (net)*	131						
Garden Walk District hotel Phase I (3rd Q 2017)						117	349
Great Wolf Lodge & Water Park (1/3 comp)						200	
Cumulative Rooms Supply	5,799	5,799	5,799	5,799	5,799	6,476	6,825
Total Annual Rooms Supply	2,116,635	2,116,635	2,116,635	2,116,635	2,116,635	2,363,558	2,490,943
Growth Over the Prior Year	2.3%	0.0%	0.0%	0.0%	0.0%	11.7%	5.4%

*Impact of rooms expansion

Hotel Rooms Demand

Historical Operating Performance

According to our research, the individual occupancies within the delineated competitive supply ranged from 72% to 84%, with the largest (the group hotels) reflecting the lower occupancies. Average daily rates ranged from \$131 to \$304. The highest rate was achieved by the two Disney hotels combined.

The following chart presents the aggregated historical supply and demand for the properties considered in the competitive market from 2008 through 2012.



Historical Market Performance of the Competitive Supply									
Year	Annual Supply	Percent Change	Occupied Rooms	Percent Change	Market Occupancy	Average Daily Rate	Percent Change	RevPAR	Percent Change
2008	2,050,205	N/A	1,516,580	N/A	74.0%	\$188.20	N/A	\$139.22	N/A
2009	2,050,205	0.0%	1,409,352	-7.1%	68.7%	173.29	-7.9%	119.12	-14.4%
2010	2,050,205	0.0%	1,442,765	2.4%	70.4%	172.49	-0.5%	121.38	1.9%
2011	2,068,820	0.9%	1,488,477	3.2%	71.9%	182.24	5.7%	131.12	8.0%
2012	2,116,635	2.3%	1,627,453	9.3%	76.9%	193.52	6.2%	148.80	13.5%
CAC	0.8%		1.8%			0.7%		1.7%	

Source: Horwath, STR CAC = compound annual change

As can be seen from the previous table, due to a gradual recovery from the economic recession, the downward trend began to reverse itself in 2010, which escalated in 2011 and continued into 2012 reflecting a 9.3% increase in occupied rooms. According to interviews, the strong recovery has continued into 2013, and several predict they are out of the recessionary period altogether. The significant uptick in both occupancy and ADR achieved in 2012 was also due to the completion of Disney's \$1.1 billion renovation which included the summer opening of Cars Land.

The ADR in the market increased at a 0.7% compound annual rate from 2008 to 2012, with increases in 2011 and 2012 erasing the declines from 2008 to 2010, resulting in revenue per available room (RevPAR) compound annual increase of 1.7%.

Estimated Growth in Supply and Demand

Based on our interviews, whether due to an improving economy, completion of renovations, reservations already on their books and a stronger January than expected, management at the delineated competitive set anticipates a stronger 2013 over 2012. Presented in the following table is a summary of the projected growth in supply, demand, and the resulting occupancy levels for the competitive market for the period 2013 to 2019, when the market is anticipated to stabilize.

Projected Market Performance of the Competitive Supply					
Year	Annual Supply	Percent Change	Occupied Rooms	Percent Change	Market Occupancy
2013	2,116,635	0.0%	1,660,000	2.0%	78%
2014	2,116,635	0.0%	1,676,600	1.0%	79%
2015	2,116,635	0.0%	1,715,300	2.3%	81%
2016	2,116,635	0.0%	1,773,900	3.4%	84%
2017	2,363,558	11.7%	1,837,500	3.6%	78%
2018	2,490,943	5.4%	1,901,800	3.5%	76%
2019	2,490,943	0.0%	1,920,800	1.0%	77%
CAAG	2.8%		2.5%		

Source: Horwath/HTL

A continued recovery is estimated for the market. The higher increases in occupied rooms beginning in 2015 reflect the completion of the expansion of the convention center (impact to be recognized in the 3rd quarter of 2015). There will be an absorption period whereby new room supply additions will negatively impact the occupancy of the existing supply beginning in 2017. Specifically, market occupancy peaks in 2016 at 84%, but declines as a percentage, as new rooms enter the competitive supply beginning in 2017. Market occupancy will continue to increase gradually as the new rooms are absorbed, due to no new supply additions and the marketing efforts of the individual properties. Market occupancy is anticipated to stabilize at 77% in 2019. While 77% is slightly less than the 78% anticipated in 2013, it is closer to the 76.9% occupancy experienced in 2012, which is felt to be more representative of a stable market. Further, according to our interviews, hoteliers anticipate pushing ADRs, which could potentially impact rising occupancies. A stabilized market occupancy reflects an even, sustainable rate that takes into account the peaks in excess of 77%, and the valleys that occur during the cyclical fluctuations of the economy. Further, new rooms are apt to be added to the supply when occupancies rise. A stabilized occupancy of 77% reflects a healthy lodging market.

Subject Occupancy and Average Daily Rate Estimates

Our estimates of occupancy and ADR are based on a survey of competitive hotels, an analysis of the segmentation of demand in the market, and our assessment of the subject hotels' expected market position. The occupancy of the subject hotel was estimated based on its ability to penetrate each market segment. The "penetration rate" of a hotel is the percentage of room nights captured relative to the property's "fair share" based on its number of rooms in relation to its competitive supply. Factors indicating a hotel would possess competitive advantages suggest a market penetration in excess of 100% of fair market share, while competitive weaknesses are reflected in penetration rates of less than 100%.

Blending the penetration rates estimated for the individual demand segments (leisure and group) results in an overall market penetration rate of 98% of market share in the stabilized (3rd) operating year for the subject due primarily to its distance from Disneyland. The foregoing assumptions result in an estimated occupancy beginning at 64% and stabilizing at 75% in the third operating year.

The subject's stabilized market mix, based on the penetration levels estimated previously, would be approximately 52% group and 48% leisure demand. A summary of the penetration levels and subsequent occupancies is shown as follows.

Proposed Upper Upscale Hotel – Garden Grove Market Penetration and Projected Occupancy			
	2017	2018	2019
TOTAL ROOMS AVAILABLE			
Proposed Hotel	131,400	131,400	131,400
Competitive Market	2,363,558	2,490,943	2,490,943
Fair Share of Supply	5.6%	5.3%	5.3%
ESTIMATED TOTAL MARKET DEMAND			
Leisure	914,100	946,100	955,600
Group	923,400	955,700	965,200
TOTAL	1,837,500	1,901,800	1,920,800
FAIR SHARE OF DEMAND			
Leisure	50,800	49,900	50,400
Group	51,300	50,400	50,900
TOTAL	102,100	100,300	101,300
SUBJECT PENETRATION			
Leisure	85%	95%	95%
Group	80%	90%	100%
ROOM NIGHTS CAPTURED			
Leisure	43,200	47,400	47,900
Group	41,100	45,400	50,900
TOTAL CAPTURED DEMAND	84,300	92,800	98,800
MARKET SHARE CAPTURED	4.6%	4.9%	5.1%
OVERALL MARKET PENETRATION			
	83%	93%	98%
SUBJECT OCCUPANCY			
	64%	71%	75%
MARKET MIX			
Leisure	51%	51%	48%
Group	49%	49%	52%
TOTAL	100%	100%	100%

Source: Horwath

We have stabilized the subject at 75% occupancy in 2019. A stabilized occupancy is recognized as a typical and sustainable rate, though some years it may fluctuate due to local economic conditions and/or new supply additions.

Based on rates being achieved by the competitive supply as well as the amenities and facilities to be offered by the subject, we then estimated its potential achievable ADR.

Average rates peaked in 2008 at \$188, before declining \$15 in 2009. While a slight recovery (\$1.00) was evident in 2010, it must be noted that this coincided with the rooms addition at the very pricey Grand Californian located on the grounds of Disneyland. A \$10 recovery occurred in 2011, followed by an additional \$12 increase in 2012, resulting in a \$6 increase over the 2008 ADR level. As noted previously, the aggregated ADR of the two Disney properties was \$278 in 2008, dropping to \$248 in 2010, but estimated at \$304 by year end 2012. It should also be noted that even with these strong ADRs, the aggregated occupancy of the Disney hotels in 2008 and 2012 was 87% and 81%, respectively. The Garden Grove properties will not be able to successfully compete on ADR with the



Disney hotels without the amenities to create a competitive "destination" to the Disneyland theme park. As the subject is located the farthest distance from the Disneyland Resort, it is more vulnerable to rate discounting and/or additions to supply. While the subject is anticipated to fill the upper upscale market niche as well as benefit from the Anaheim convention center, the Disneyland properties garner a premium due to their locations (and the upper upscale accommodations at the Grand Californian). Therefore, we have considered only the non-Disney properties in our analysis of a potential rate.

As noted previously, we are anticipating a premium over the non-Disney properties due to the quality of the facilities at the subject. We also anticipate continuing increases in ADRs due to an improving economy, the numerous renovations within the subject's delineated competitive supply, along with the \$1.1 billion renovation/expansion of Disneyland and compression created by the expansion of the convention center.

To estimate the most probable rate for the subject, we focused on the highest ADR of the non-Disneyland properties. Assuming 2008 was a representative year (prior to the economic downturn), and affording a premium of \$8.00 to the ADR achieved by the Embassy Suites, we have considered a \$155 ADR in 2008 value dollars if the subject were open and operating at that time. Inflating the rate considering a 3% annual inflation rate, we have estimated a market recovery ADR of \$170 by the subject in 2013 value dollars. We believe this rate positioning is appropriate taking into consideration the property's location, quality of the product, market orientation, and presumed brand identity.

The following table presents our assumptions regarding the potential occupancy and ADR achievable by the subject over the five-year period beginning January 1, 2017. While rate discounting is typical in the early years, with real rate growth over and above inflation in subsequent years, we do not anticipate the property will be able to push ADR further, unless a "destination" for increased visitation is introduced in the Garden Grove area. We have assumed a general inflation assumption of 3.0% annually, consistent with the historic levels over the past 20 years.

Proposed Upper Upscale Hotel – Garden Grove - Projected Performance			
Year	Occupancy	ADR¹	Inflated ADR²
2017	64%	\$170.00	\$191.00
2018	71%	170.00	197.00
2019 ³	75%	170.00	203.00
2020	75%	170.00	209.00
2021	75%	170.00	215.00

¹ Average daily rate, presented in 2013 value dollars, rounded to the nearest \$1.00
² Average daily rate, presented in inflated dollars at 3% annually, rounded to the nearest \$1.00
³ Stabilized occupancy year

Suites and Select Service Hotels

In order to assess support for the operating performance estimated by the developer for the two other properties within the development, Horwath considered the operating performance of individual properties within the subjects' market area as well as reviewed published market projections. We have made the following assumptions regarding some of the positive factors for the proposed hotels:



- A selection of lodging alternatives offering tiered pricing of hotel product (upper upscale, all suite and select service) for referral/overflow;
- Location within a mixed-use development, offering retail and entertainment venues;
- Synergies related to sales and marketing campaigns and strategies as well as shared transportation options to the convention center, Disneyland park and other venues;
- A location along Harbor Boulevard that will benefit from the future location of a proposed third gate for Disneyland.

It should be noted that the suite and select service properties will have more competition than the upper upscale property in terms of supply, as well as not offer the meeting space and amenities to justify higher room rates. Further, we have estimated 2.5% annual inflation for ADR. Considering these and other factors, we have assumed the developers estimates as reasonable for the suites and select service properties as follows:

Proposed Hotels – Projected Performance						
Year	150-Room Suite Hotel			150-Room Select Service Hotel		
	Occ.	ADR ¹	ADR ²	Occ.	ADR ¹	ADR ²
2017	69%	\$116	\$125	68%	\$125	\$135
2018	71%	116	132	71%	125	137
2019 ³	74%	116	143	74%	125	149
2020	74%	116	147	74%	125	154
2021	74%	116	152	74%	125	158

¹ Average daily rate, presented in 2013 value dollars, rounded to the nearest \$1.00
² Average daily rate, presented in inflated dollars
³ Stabilized occupancy year

Land Residual Analysis

Subject to the terms and conditions of the proposed resort hotel development agreement between the City of Garden Grove and the developer, the city will provide the site to the developer at no cost, free and clear. The residual value is based on estimating the value of the completed and operating project less all development costs (which includes an allocation for developer profit). The remainder represents the amount the developer could afford to pay for the site. The indicated residual land value, including city assistance, is summarized as follows.

Residual Land Value	
	Total
ProjectMarket Value	\$116,200,000
Construction Cost	(147,700,000)
Land Value	(\$31,500,000)
Rounded:	(\$31,500,000)

Source: HorwathHL



STATEMENT OF ASSUMPTIONS AND LIMITING CONDITIONS

Economic and Social Trends - The consultant assumes no responsibility for economic, physical or demographic factors which may affect or alter the opinions in this report if said economic, physical or demographic factors were not present as of the date of the letter of transmittal accompanying this report. The consultant is not obligated to predict future political, economic or social trends.

Information Furnished by Others - In preparing the report, the consultant was required to rely on information furnished by other individuals or found in previously existing records and/or documents. Unless otherwise indicated, such information is presumed to be reliable. However, no warranty, either expressed or implied, is given by the consultant for the accuracy of such information and the consultant assumes no responsibility for information relied upon later found to have been inaccurate. The consultant reserves the right to make such adjustments to the analyses, opinions and conclusions set forth in this report as may be required by consideration of additional data or more reliable data that may become available.

Hidden Conditions - The consultant assumes no responsibility for hidden or unapparent conditions of the properties, subsoil, ground water or structures. No responsibility is assumed for arranging for engineering, geologic or environmental studies that may be required to discover such hidden or unapparent conditions.

Hazardous Materials - The consultant has not been provided any information regarding the presence of any material or substance on or in any portion of the subject property, which material or substance possesses or may possess toxic, hazardous and/or other harmful and/or dangerous characteristics. Unless otherwise stated in the report, the consultant did not become aware of the presence of any such material or substance during the consultant's inspection of the subject property. However, the consultant is not qualified to investigate or test for the presence of such materials or substances. The consultant assumes no responsibility for the presence of any such substance or material on or in the subject property, nor for any expertise or engineering knowledge required to discover the presence of such substance or material. Unless otherwise stated, this report assumes the subject property is in compliance with all federal, state and local environmental laws, regulations and rules.

Zoning and Land Use - Unless otherwise stated, the subject property is assumed to be in full compliance with all applicable zoning and land use regulations and restrictions.

Licenses and Permits - Unless otherwise stated, the property is assumed to have all required licenses, permits, certificates, consents or other legislative and/or administrative authority from any local, state or national government or private entity or organization that have been or can be obtained or renewed for any use on which the performance estimates contained in this report are based.

Engineering Survey - No engineering survey has been made by the consultant. Except as specifically stated, data relative to size and area of the subject property was taken from sources considered reliable and no encroachment of the subject property is considered to exist.

Subsurface Rights - No opinion is expressed as to the value of subsurface oil, gas or mineral rights or whether the property is subject to surface entry for the exploration or removal of such materials, except as is expressly stated.

Maps, Plats and Exhibits - Maps, plats and exhibits included in this report are for illustration only to serve as an aid in visualizing matters discussed within the report. They should not be considered as surveys or relied upon for any other purpose, nor should they be removed from, reproduced or used apart from the report.

Legal Matters - No opinion is intended to be expressed for matters which require legal expertise or specialized investigation or knowledge beyond that customarily employed by real estate consultants.

STATEMENT OF ASSUMPTIONS AND LIMITING CONDITIONS
(Continued)

Right of Publication - Possession of this report, or a copy of it, does not carry with it the right of publication. Without the written consent of the consultant, this report may not be used for any purpose by any person other than the party to whom it is addressed. In any event, this report may be used only with property written qualification and only in its entirety for its stated purpose.

Archeological Significance - No investigation has been made by the consultant and no information has been provided to the consultant regarding potential archeological significance of the subject property or any portion thereof. This report assumes no portion of the subject property has archeological significance.

Compliance with the Americans with Disabilities Act - The Americans with Disabilities Act ("ADA") became effective January 26, 1992. It is assumed that the property will be in direct compliance with the various detailed requirements of the ADA.

Definitions and Assumptions - The definitions and assumptions upon which our analyses, opinions and conclusions are based are set forth in appropriate sections of this report and are to be part of these general assumptions as if included here in their entirety.

Utilization of the Land and/or Improvements - It is assumed that the utilization of the land and/or improvements is within the boundaries or property described herein and that there is no encroachment or trespass.

Dissemination of Material - Neither all nor any part of the contents of this report shall be disseminated to the general public through advertising or sales media, public relations media, new media or other public means of communication without the prior written consent and approval of the consultant(s).

Distribution and Liability to Third Parties - The party of whom this report was prepared may distribute copies of this report only in its entirety to such third parties as may be selected by the party for whom this report was prepared; however, portions of this report shall not be given to third parties without our written consent. Liability to third parties will not be accepted.

Use in Offering Materials - This report, including all cash flow forecasts, market surveys and related data, conclusions, exhibits and supporting documentation may not be reproduced or references made to the report or to the Consultant in any sale offering, prospectus, public or private placement memorandum, proxy statement or other document ("Offering Material") in connection with a merger, liquidation or other corporate transaction unless The Consultant has approved in writing the text of any such reference or reproduction prior to the distribution and filing thereof.

Limits to Liability - The Consultant cannot be held liable in any cause of action resulting in litigation for any dollar amount which exceeds the total fees collected from this individual engagement.

Legal Expenses - Any legal expenses incurred in defending or representing ourselves concerning this assignment will be the responsibility of the client.

DECLARATION OF PUBLICATION

(2015.5 C.C.P.)

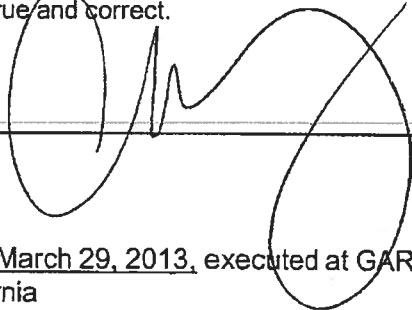
STATE OF CALIFORNIA,)
COUNTY OF ORANGE)

I AM A CITIZEN OF THE UNITED STATES AND A RESIDENT OF THE AFORESAID COUNTY; I AM OVER THE AGE OF EIGHTEEN YEARS AND NOT A PARTY TO OR INTERESTED IN THE ABOVE ENTITLED MATTER. I AM THE PRINCIPLE CLERK OF THE ORANGE COUNTY NEWS, A NEWSPAPER OF GENERAL CIRCULATION PRINTED AND PUBLISHED TWICE WEEKLY IN THE CITY OF GARDEN GROVE, COUNTY OF ORANGE, WEST JUDICIAL DISTRICT, AND WHICH NEWSPAPER HAS BEEN ADJUDGED A NEWSPAPER OF GENERAL CIRCULATION BY THE SUPERIOR COURT OF THE COUNTY OF ORANGE, STATE OF CALIFORNIA, UNDER THE DATE OF 3/20/64 CASE #A31502 THAT THE NOTICE, OF WHICH THE ANNEXED IS A PRINTED COPY, HAS BEEN PUBLISHED BY DISTRIBUTION IN EACH REGULAR AND EN-
.E ISSUE OF SAID NEWSPAPER AND NOT IN ANY SUPPLEMENT THEREOF ON THE FOLLOWING DATES, TO WIT:

March 29,

all in the year 2013

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.



signature

Date: March 29, 2013, executed at GARDEN GROVE, California

THIS SPACE IS FOR THE COUNTY CLERK'S STAMP

LEGAL NOTICE NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN THAT THE CITY COUNCIL OF THE CITY OF GARDEN GROVE WILL HOLD A PUBLIC HEARING IN THE COUNCIL CHAMBER OF THE COMMUNITY MEETING CENTER, 11300 STANFORD AVENUE, GARDEN GROVE, CALIFORNIA, ON THE DATE * INDICATED BELOW, TO RECEIVE AND CONSIDER ALL EVIDENCE AND REPORTS RELATIVE TO CONSIDERATION OF A PROPOSED RESORT HOTEL DEVELOPMENT AGREEMENT BETWEEN THE CITY OF GARDEN GROVE AND LAND & DESIGN, INC.

TUESDAY, APRIL 9, 2013, 6:30 P.M.

The proposed Resort Hotel Development Agreement ("Agreement") between the City of Garden Grove (the "City") and Land & Design, Inc. (the "Developer") pertains to an approximately five acre site located at the northeast corner of Harbor Boulevard and Twintree Lane on Harbor Boulevard (the "Site"). Pursuant to the proposed Agreement, the Developer would agree to construct a resort hotel project on the Site meeting certain quality thresholds and consisting of up to three hotels, event/meeting space, a retail/restaurant/entertainment component, and adequate structured parking (the "Project") and to operate the separate components of the Project in accordance with specified covenants. To assist in creating future financial feasibility necessary to allow the construction and operation of the Project to proceed, the City would agree to convey the Site to the Developer, to make certain annual financial assistance payments to the Developer in an amount measured by the tax revenues to the City generated by the Project over a period of twenty (20) years, and to provide certain other economic assistance.

ALL INTERESTED PARTIES are invited to attend the City Council Public Hearing, or write a letter, and express opinions or submit evidence for or against the proposal as outlined above. If you challenge the application in Court, you may be limited to raising only those issues raised at the Public Hearing described in this notice, or in written correspondence delivered to the City Council at, or prior to, the Public Hearing. Written correspondence received before 3:00 p.m. on the Wednesday before the hearing will be given to the City Council prior to the meeting. Information received after that time will be given to the City Council at the time of the meeting. Further information on the above matter may be obtained from Greg Blodgett, Senior Project Manager, City Hall, 11222 Acacia Parkway, Garden Grove, or by telephone at (714) 741-5124.

/s/ KATHLEEN BAILOR, CMC
City Clerk

Date: March 26, 2013
Publish: March 29, 2013

Orange County News
13-30252
Publish Mar. 29, 2013

RESOLUTION NO.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GARDEN GROVE, CALIFORNIA, APPROVING GROVE DISTRICT RESORT HOTEL DEVELOPMENT AGREEMENT BETWEEN THE CITY OF GARDEN GROVE AND LAND & DESIGN, INC.

THE CITY COUNCIL OF THE CITY OF GARDEN GROVE, CALIFORNIA, DOES HEREBY FIND AS FOLLOWS:

A. Land & Design, Inc. ("Developer") has proposed a development project consisting of a combination of hotels, retail, restaurant, and entertainment venues, and related parking facilities (the "Project"), for an approximately five (5) acre site located at the northeast corner of Harbor Boulevard and Twintree Lane (the "Site").

B. A small portion of the Site is owned by the City of Garden Grove, and the remainder of the Site is owned by the former Garden Grove Agency for Community Development (the "Agency").

C. On June 14, 2011, the Agency and the Developer entered into a Disposition and Development Agreement ("DDA") pertaining to the Site and the Project. In conjunction with the Agency's consideration and approval of the DDA, the City Council conducted a joint Public Hearing with the Agency, considered the evidence and testimony presented at the Public Hearing, and adopted Resolution No. 9045-11 making certain findings and consenting to the Agency's approval of the DDA. The findings contained in Resolution No. 9045-11 and the evidence and testimony presented at the June 14, 2011, joint Public Hearing are hereby incorporated by reference into this Resolution.

D. On or about December 12, 2012, the State Department of Finance determined that the DDA is not an "Enforceable Obligation" pursuant to the RDA Dissolution Act (Parts 1.8 and 1.85 of Division 24 of the Community Redevelopment Law, California Health and Safety Code Sections 33000, et seq.).

E. On November 13, 2012, the City Council adopted Resolution No. 9153-12 approving the International West Hotel – Harbor East (Site C) Mitigated Negative Declaration and Mitigation Monitoring Program, which analyzes the anticipated environmental impacts of the Project and provides for specified mitigation measures.

F. The City and Developer propose to enter into that certain Grove District Resort Hotel Development Agreement attached hereto as Exhibit "A" (the "Agreement"). Pursuant to the proposed Agreement, the Developer would agree to construct a resort hotel project on the Site meeting certain quality thresholds and consisting of up to three hotels, event/meeting space, a retail/restaurant/entertainment component, and adequate structured parking (the "Project") and to operate the separate components of the Project in accordance with specified covenants. To assure the financial feasibility necessary to allow the construction

and operation of the Project to proceed, the City would agree to convey the Site to the Developer, to make certain annual financial assistance payments to the Developer in an amount measured by the tax revenues to the City generated by the Project over a period of up to twenty (20) years, and to provide certain other economic assistance (collectively, the "Covenants Consideration"). Pursuant to the terms of the proposed Agreement, the City's obligation to convey the Site to the Developer is expressly contingent upon the approval by the City of Garden Grove as Successor Agency to the Garden Grove Agency for Community Development ("Successor Agency"), the Oversight Board to the Successor Agency, and the Department of Finance of a Long Range Property Management Plan providing for transfer of the portion of the Site owned by the Agency to the City at no cost for development purposes.

G. The City Council has been presented a report prepared by Horwath HTL, LLC ("Horwath"), dated March 20, 2013, containing an updated economic evaluation of the proposed Project on the Site, which report is hereby incorporated by reference into this Resolution. Based on the cost and revenue numbers for the Project, Horwath's report concludes that the Project's development costs compared to the estimated income and development values reasonably expected from the Project generates a negative residual land value, or financial feasibility gap, of approximately \$31.5 million, inclusive of City assistance in the form of conveyance of the Site at no cost to Developer. In addition, Horwath also evaluated other potential hotel and room number combinations permitted under the Agreement and concluded that all combinations resulted in a similar negative residual land value/feasibility gap.

H. On April 9, 2013, the City Council conducted a duly noticed Public Hearing, at which it considered the terms of the proposed Agreement, the March 20, 2013 Horwath report, the value of the assistance to provided by the City pursuant to the Agreement, the benefits the City will derive from the Agreement, the report of City Staff, and other evidence and testimony provided at the Public Hearing.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF GARDEN GROVE, CALIFORNIA, DOES RESOLVE, DECLARE, DETERMINE, AND ORDER AS FOLLOWS:

SECTION 1. Based on the evidence and testimony provided at the April 9, 2013 Public Hearing, the City Council hereby makes the following findings:

- A. The development and operation of the Project on the Site, as provided in the Agreement, is in the vital and best interest of the City and the welfare of its residents and is in accordance with the public purposes and provisions of applicable state and local laws. Without limiting the foregoing, development and operation of the Project will result in substantial benefits to the City, which include (i) additional "Grove District" branding, (ii) job creation and enhanced revenues to the City resulting from construction and operation of the Project, including

property taxes, sales taxes, and transient occupancy taxes, (iii) enhanced marketability that is likely to extend out-of-town leisure and convention visitors' lengths of stay in the City as a result of additional attractions and high-quality retail shopping and dining opportunities, and (iv) additional high-quality entertainment, restaurant and retail opportunities for the residents of Garden Grove and the surrounding area(s).

- B. The benefits provided by the Project will result in substantially more benefits to the City than the costs to the City of providing the Covenants Consideration provided for in the Agreement.
- C. The Project would not be able to be developed and operated without the assistance to be provided pursuant to the Agreement.
- D. The Agreement will result in only that assistance to the Developer which is necessary to fund the economic feasibility gap created by the quality of the Project required by this Agreement, and the total value of the assistance to be provided by the City pursuant to the Agreement will not exceed the feasibility gap for the Project.
- E. The amount of each payment required to be made by the City under the Agreement is a fair exchange for the consideration actually furnished pursuant to the Agreement by Developer during each fiscal year of the City in which payment is made; each payment to be made by the City under the Agreement has been calculated so that it will not exceed the resources available to make such payment; and in no event shall the City be immediately indebted to Developer for the aggregate payments provided for pursuant to the Agreement.

SECTION 2. The Grove District Resort Hotel Development Agreement between the City of Garden Grove and Land & Design, Inc., attached hereto as Exhibit "A", is hereby approved.

SECTION 3. The City Manager is hereby authorized to execute the Agreement and any related attachments, including any minor modifications as appropriate, and any other pertinent documents necessary to effectuate and/or implement the Agreement.

SECTION 4. The City Manager or his duly authorized representative is further authorized to implement the Agreement and take all further actions and execute all documents referenced therein and/or necessary and appropriate to carry out the Agreement. The City Manager or his duly authorized representative is hereby authorized to the extent necessary during the implementation of the Agreement to make technical or minor changes thereto after execution, as necessary to properly implement and carry out the Agreement, provided the

changes shall not in any manner materially affect the rights and obligations of the City.

SECTION 5. The City Clerk shall certify to the adoption of this Resolution.

Re:

Subject: Re:

From: Matthew Reid <matt.reid@landanddesign.com>

Date: Sun, 24 May 2015 08:53:30 -0700

To: Greg Blodgett <greg1@ci.garden-grove.ca.us>

CC: "Allan L. Roeder" <allanr@ci.garden-grove.ca.us>, Susan Emery <susan1@ci.garden-grove.ca.us>, Kingsley Okereke <kingsley@ci.garden-grove.ca.us>, Bill Murray <wem@ci.garden-grove.ca.us>

Thanks Greg,

This is good, however is not a "will serve" letter that is typically issued from the water district at the time of entitlement. We need a will serve letter as we are hearing in early summer, the Governor will be taking drastic actions, moving to heightened water conservation levels or tiers which could prohibit water meters from being issued for future projects, including ours.

If a "will serve" doesn't exist, I would strongly urge we get one quickly.

Matthew Reid

Land & Design, Inc.

3755 Avocado Blvd | #516 | LaMesa, CA 91942

858.735.1858 cell

Skype - [matthew.reid.ca](https://www.skype.com/user/matthew.reid.ca)

matt.reid@landanddesign.com

Check out our new website www.landanddesign.com

On May 24, 2015, at 8:45 AM, Greg Blodgett <greg1@ci.garden-grove.ca.us> wrote:

Matt,

Attached is a copy the site C Water Study which was part of the entitlements for site C. We can discuss this item at our meeting next Wednesday

Greg Blodgett
SR Project Manager
City of Garden Grove
Economic Development

<Final_International_West_WSA_8_23_11.pdf>

*Sun 24 May 2012
08:53:30-0700*

HARBOR BOULEVARD SITE C HOTELS WATER SUPPLY ASSESSMENT

August 2011

Prepared for:
CITY OF GARDEN GROVE



Prepared by:
PSOMAS
3 Hutton Centre Drive
Suite 200
Santa Ana, CA 92707
Project No. 2GAR021500

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ABBREVIATIONS/ACRONYMS

AF	Acre-feet
AFY	Acre-feet per year
AWWA	American Waterworks Association
BDCP	Bay Delta Conservation Plan
BEA	Basin Equity Assessment
BMP	Best Management Practice
BPP	Basin Production Percentage
CAWCD	Central Arizona Water Conservation District
CDR	Center for Demographic Research
CEQA	California Environmental Quality Act
cfs	Cubic feet per second
CRA	Colorado River Aqueduct
CSUF	California State University Fullerton
CUP	Conjunctive Use Program
CVP	Central Valley Project
CVWD	Coachella Valley Water District
DMM	Demand Management Measure
DWCV	Desert Water Agency/Coachella Valley Water District
DWR	California Department of Water Resources
EIR	Environmental Impact Report
ESA	Endangered Species Act
ET	Evapotranspiration
FY	Fiscal Year
GMP	Groundwater Management Plan
gpd	Gallons per day
gpm	Gallons per minute
GWRS	Groundwater Replenishment System
HGL	Hydraulic grade line
IID	Imperial Irrigation District
IRP	Integrated Resources Planning
ksf	Thousand square feet
LACDPW	Los Angeles County Department of Public Works
LRP	Local Resources Program
LTFP	Long Term Facilities Plan
MAF	Million acre-feet
Metropolitan,	
MWD	Metropolitan Water District of Southern California
MGD	Million gallons per day
MOU	Memorandum of Understanding
MPR	Master Plan Report
MSL	Mean Sea Level

MWDOC	Municipal Water District of Orange County
NPDES	National Pollutant Discharge Elimination
OCSD	Orange County Sanitation District
OCWD	Orange County Water District
PVID	Palo Verde Irrigation District
QSA	Quantification Settlement Agreement
RA	Replenishment Assessment
RUWMP	Regional Urban Water Management Plan
SAR	Santa Ana River
SB	Senate Bill
SCAG	Southern California Association of Governments
SDCWA	San Diego County Water Authority
sf	Square feet
SNWA	Southern Nevada Water Authority
SSS	Seasonal Shift Storage
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAF	Thousand Acre-Feet
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WOCWB	West Orange County Water Board
WRD	Water Replenishment District
WSA	Water Supply Assessment
WSDM	Water Surplus and Drought Management

EXECUTIVE SUMMARY

This Water Supply Assessment (WSA) has been prepared for the City of Garden Grove Harbor Boulevard Site C Hotels Project (the “Proposed Project”) in accordance with applicable sections of the Public Resources Code and California Water Code as referenced in Senate Bill 610. The Proposed Project includes 3 hotels and 19 casitas with ancillary restaurant, ballroom and meeting space uses on approximately 5 acres located in an urbanized area in the City of Garden Grove, Orange County. The project site is entirely surrounded by development, which consists of commercial, retail, and residential uses.

The purpose of this WSA is to provide information to verify that there is sufficient water supply available to the City to provide for the Proposed Project now and into the future. This WSA evaluates the additional water demands that will need to be served by the City as a result of the development of the Proposed Project.

Water Demand

In 2009/10, the City’s water demand was approximately 26,000 acre-feet per year (AFY), which was actually 3,480 AFY less than what was projected in the 2005 Urban Water Management Plan (UWMP) and 3,972 less than projected in the City’s 2008 Water Master Plan. These totals include unaccounted for water. The 2009/10 demand is also 3,206 AFY less than what was actually used in 2005/06 (four years prior). In essence, this means that City businesses and residents are using substantially less water than was originally forecast, which is likely due to the fact that (i) the previous 2005 UWMP and Water Master Plan conservatively over-estimated water demand, and (ii) development has slowed due to the economic downturn, (iii) water demand is being reduced due to effective conservation efforts being undertaken by the City and consumers and due to more stringent codes and more efficient appliances (e.g., high-efficiency clothes washing machines, low flow toilets, more efficient landscape irrigation, etc.); (iv) the City adopted substantial water rate increases over the past few years; (v) 2009/10 was the first year Metropolitan Water District of Southern California (Metropolitan) enacted its Water Allocation Plan; and (vi) precipitation was above average in 2009/10.

At the end of the 20-year planning period for this WSA, as required by SB 610, City water demand for 2029/30 is projected to be approximately 30,472 AFY. This projection in future demand for the City was based on the City’s 2010 Urban Water Management Plan (UWMP), which was adopted by City Council on June 14, 2011. This demand projection was based on detailed development and water demand projections included in the 2008 Water Master Plan, including the Proposed Project, and then adjusted based on existing demands and recent conservation.

The total water demand for the Proposed Project is 206.1 acre-feet per year (AFY) for the proposed hotels, 19 casitas and ancillary uses on the Project site. Taking this 206.1 AFY of water demand for the proposed new uses and subtracting out 4.8 AFY of existing

water use from land uses on the existing site to be removed; the total net new demand for the Proposed Project is 201.3 AFY.

Supply Projections

The City's sources of supply consist of groundwater and imported surface water. Over the past five years, the City has received, on average, 69 percent of its water supply from its groundwater wells that access the Orange County Groundwater Basin and 31 percent from imported water from the Metropolitan Water District of Southern California (Metropolitan).

Analysis of water supply projections for the City demonstrates that projected supplies will meet demand through fiscal year 2029/30. These projections consider water development programs and projects as well as water conservation, as described in the City's 2010 UWMP and Section 5 of this WSA. The City's groundwater and imported water supplies are anticipated to remain stable based on studies and reports of the Orange County Water District (OCWD) and the Metropolitan Water District of Southern California (Metropolitan), respectively. Statewide water planning is also considering current dry conditions and Bay Delta pumping scenarios, which are also discussed in Section 5.

Based on the expected long-term average Basin Production Percentage (BPP), the City's water supply projection assumes that up to 62 percent will be groundwater, and the remaining 38 percent will be imported water during normal, single-dry, and multiple dry years, consistent with Orange County Water District (OCWD) conservative planning estimates. Both the imported water and groundwater sources have been confirmed as reliable by Metropolitan and OCWD, respectively. Additionally, analyses of normal, single-dry, and multiple-dry year scenarios also demonstrate the City's ability to meet demand during the 20-year analysis period.

Moreover, should extraordinary circumstances require it, the City can meet its water demand by (1) increasing production of groundwater beyond the BPP up to the basin safe yield, (2) increasing imported water purchases from available storage programs, and/or (3) decreasing demand through water conservation measures. The latter method has proved effective in reducing citywide demands well below 10 percent as demonstrated during the recent Water Allocation Plan enacted by Metropolitan in 2009/10 and 2010/11 and passed through to the City by Municipal Water District of Orange County (MWDOC), the City's imported water wholesaler and Metropolitan member agency.

Reliability of future water supplies to the region will be ensured through continued implementation of the OCWD Groundwater Management Plan, OCWD's Long Term Facilities Plan, local agency programs, and the combined efforts and programs among member agencies of Metropolitan and cooperative agencies. These agencies include all water wholesalers and retailers, the Orange County Sanitation District, the Santa Ana Regional Water Quality Control Board, and the Santa Ana Watershed Project Authority.

Conclusion

The information included in this water supply assessment identifies a sufficient and reliable water supply for the City, now and into the future, including a sufficient water supply for the Proposed Project. These supplies are also sufficient to provide for overall City-wide growth at the rate projected in the City's 2008 Water Master Plan.

Existing infrastructure is adequate to provide the estimated water demand to the Project site; however, an internal fire loop will most likely be required to be constructed around the site to provide adequate fire fighting capability to all structures located on the parcel.

1.0 INTRODUCTION

Harbor Boulevard Site C Hotels – General Description/Location

The Harbor Boulevard Site C Hotel and Restaurant development (Proposed Project or Project) consists of 3 hotels, totaling up to 750 rooms, a building along the back (easterly side) of the site housing the parking structure with ancillary restaurant, ballroom, and meeting space uses and 19 casitas, and restaurants around the hotels to be constructed on a total site area of approximately 5 acres. In addition to the parking structure, the site also includes some surface parking.

The site currently includes eight assessor parcels located on the east side of Harbor Boulevard between Twintree Lane and Chapman Avenue. Regional access to the site is via Harbor Boulevard from State Route 22 approximately 1 ¼ miles to the north and from Interstate 5 approximately 1 ¾ miles to the west. The Project site is approximately 2 miles south of the Disneyland Resort and is entirely surrounded by existing development, which consists of commercial, retail and residential uses.

Purpose of this Water Supply Assessment (WSA)

The purpose of this WSA is to provide information to ascertain if there is sufficient water supply available to the City to provide for the Proposed Project now and in the future. This WSA develops the additional water demands that will need to be served by the City as a result of the proposed Harbor Boulevard Site C Hotels project. This additional demand is then added to the other projected demands on the City over the next 20 years and compared to available supplies. The proposed land use and commensurate additional water demand requires the preparation of a new WSA in conjunction with the environmental documentation for the Project.

2.0 LEGISLATION

Because of the size of the Proposed Project, the State of California's Senate Bill (SB) 610 requires that a WSA be completed to evaluate the potential affects of the proposed development on current and future water supplies. Prior to recordation of a final tract or parcel map, a Water Supply Verification in accordance with SB 221 may be required. In addition to the threshold triggering the requirement for a WSA at 500 residential dwelling units or more, one of the other thresholds is 500 hotel rooms or more. The following outlines the requirements of SB 610.

2.1 SB 610 – Costa – Water Supply Planning

SB 610 was adopted into law on October 9, 2001. It mandates that a city or county approving certain projects subject to CEQA (i) identify any public water system that may supply water for the project, and (ii) request the public water system to prepare a specified water supply assessment. The assessment is to include the following:

1. A discussion of whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing.
2. The identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project and water received in prior years pursuant to those entitlements, rights, and contracts.
3. A description of the quantities of water received in prior years by the public water system under the existing water supply entitlements, water rights, or water service contracts.
4. A demonstration of water supply entitlements, water rights, or water service contracts by the following means:
 - a. Written contracts or other proof of entitlement to an identified water supply.
 - b. Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.
 - c. Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.
 - d. Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

5. The identification of other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system.
6. If groundwater is included for the supply for a proposed project, the following additional information is required:
 - a. Review of any information contained in the Urban Water Management Plan (UWMP) relevant to the identified water supply for the proposed project.
 - b. Description of any groundwater basin(s) from which the proposed project will be supplied. Adjudicated basins must have a copy of the court order or decree adopted and a description of the amount of groundwater the public water system has the legal right to pump. For non-adjudicated basins, information on whether the DWR has identified the basin as over-drafted or has projected that the basin will become over-drafted if present management conditions continue, in the most current bulletin of DWR that characterizes the condition of the basin, and a detailed description of the efforts being undertaken in the basin to eliminate the long-term overdraft condition.
 - c. Description and analysis of the amount and location of groundwater pumped by the public water system for the past five years from any groundwater basin which the proposed project will be supplied. Analysis should be based on information that is reasonably available, including, but not limited to, historic use records.
 - d. Description and analysis of the amount and location of groundwater projected to be pumped by the public water system from any groundwater basin by which the proposed project will be supplied. Analysis should be based on information that is reasonably available, including, but not limited to, historic use records.
 - e. Analysis of the sufficiency of the groundwater from the basin(s) from which the proposed project will be supplied.

The WSA shall be included in any environmental documentation prepared for the project. The WSA may include an evaluation of any information included in that environmental documentation. A determination shall be made whether the projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses.

Additionally, SB 610 requires new information to be included as part of an UWMP if groundwater is identified as a source of water available to the supplier. Information must include a description of all water supply projects and programs that may be undertaken to meet total projected water use. SB 610 prohibits eligibility for funds from specified bond acts until the plan is submitted to the State.

3.0 HARBOR BOULEVARD SITE C HOTELS

3.1 Proposed Project Description

The Proposed Project is located in an urbanized area in the City of Garden Grove, Orange County. *Figure 3.1* shows the Proposed Project's regional location, with the conceptual site plan shown on *Figure 3.2*. The Proposed Project includes full-service hotels with a maximum of 769 rooms; approximately 39,000 square feet (sf) of meeting space; 55,000 sf of restaurant space; a resort pool; and a parking structure.

As mentioned previously, the site currently includes eight assessor parcels of which only three are owned by the City of Garden Grove. Existing land uses include commercial use along Harbor Boulevard and single family residential use along Twintree Lane. The Proposed Project will replace all other uses currently located within the project site and is proposed for completion by year 2014. The Proposed project has been analyzed in one complete phase and all existing water demands on-site are assumed to be gone by at least one year prior to that time to make way for construction.

3.2 Proposed Project Water Demands

Existing demands within the Proposed Project site area were accounted for in the Water Master Plan and 2010 UWMP, along with all of the other existing demands within the City, so any water use associated with existing parcels (all planned to be phased out/demolished and replaced with the Proposed Project demands) will generate a credit against water demand for the Proposed Project. Therefore, water meter readings for the past four years, related to existing parcels, were compiled and are included in Appendix A. Table 3.1 summarizes the existing water use as would have been reflected in the 2010 UWMP.

Table 3.1
Existing Water Use Breakdown on Project Site
(Acre-Feet per Year (AFY))

	Water Use
Commercial - Harbor Blvd	3.0
Single Family Residential -- Twintree Lane	1.8
Total	4.8

To estimate the demand for hotel use within the Proposed Project, we have compared water use data gathered from three hotels in Anaheim from meter reads averaged over a recent five-year period totaling 2,350 rooms. These hotels averaged 167 gallons per day (gpd) per room with one hotel, the Anaheim Hilton, having a significant amount of conference room and banquet space. The Hilton had an 11% higher room demand than

the next highest hotel with more nominal ancillary uses so it is logical to assume the more typical hotels would average about 10% less or 150 gpd per room. For the Proposed Project, water demands for the conference/banquet space is calculated separately and estimated at 350 gpd per 1,000 square feet of floor space (gpd/ksf). The demand for the freestanding restaurant is estimated using the conservative Los Angeles County Sanitation District demand factor of 1,000 gpd/ksf of dining space. Based on the above discussion, the estimated total water demand projections for the Proposed Project are as shown in Table 3.2.

**Table 3.2
 Estimated Water Demand for Proposed Project**

Project Land Use	Quantity	Units	Demand Factor		Water Demand	
					GPD	AFY
Hotel	769	Rooms	150	gpd/room	115,350	129.2
Conference/Banquet	39,000	SF	350	gpd/ksf	13,650	15.3
Restaurant	55,000	SF	1,000	gpd/ksf	55,000	61.6
TOTAL					184,000	206.1

Taking the 206.1 acre-feet per year (AFY) of water demand for the Proposed Project from Table 3.2 and subtracting out the 4.8 AFY of existing water use that was included in the existing uses in the 2010 UWMP and will no longer be a draw on the water system once the Project is constructed; the total net new demand for the Proposed Project is 201.3 AFY.

Existing infrastructure is adequate to provide the estimated water demand to the Proposed Project site, however, an internal fire loop will most likely be required to be constructed around the site to provide adequate fire fighting capability to all locations on the parcel.



Source: Google Earth, 2011



P S O M A S

FIGURE 3.1
REGIONAL LOCATION OF PROPOSED PROJECT



Land & Design, Inc.
 LAND DEVELOPMENT, CONSTRUCTION & DESIGN SERVICES

E-TICKET HOSPITALITY, LLC

FULL SERVICE HOTEL
 19 STORIES - 242,000 SF
 348 KEYS
 22 ROOM/FLOOR
 -30 CASITAS W/ PRIVATE PATIO & POOL DECK
 -FANTASY POOL DECK W/BAR
 -SPA DECK
 -3 MEAL RESTAURANT & BAR
 5,000 SF
 -ALL DAY RESTAURANT, 8,000 SF.

CONFERENCE CENTER
 BALLROOM AND MEETING ROOMS
 38,000 SF

LIMITED SERVICE HOTEL #1
 15 STORIES - 120,000 SF
 200 KEYS
 4-15 ROOMS/FLOOR
 -MEETING ROOMS, 1,000 SF
 -POOL DECK / FITNESS CENTER

LIMITED SERVICE HOTEL #2
 16 STORIES - 131,800 SF
 200 KEYS
 4-14 ROOMS/FLOOR
 -MEETING ROOMS, 1,000 SF
 -POOL DECK / FITNESS CENTER

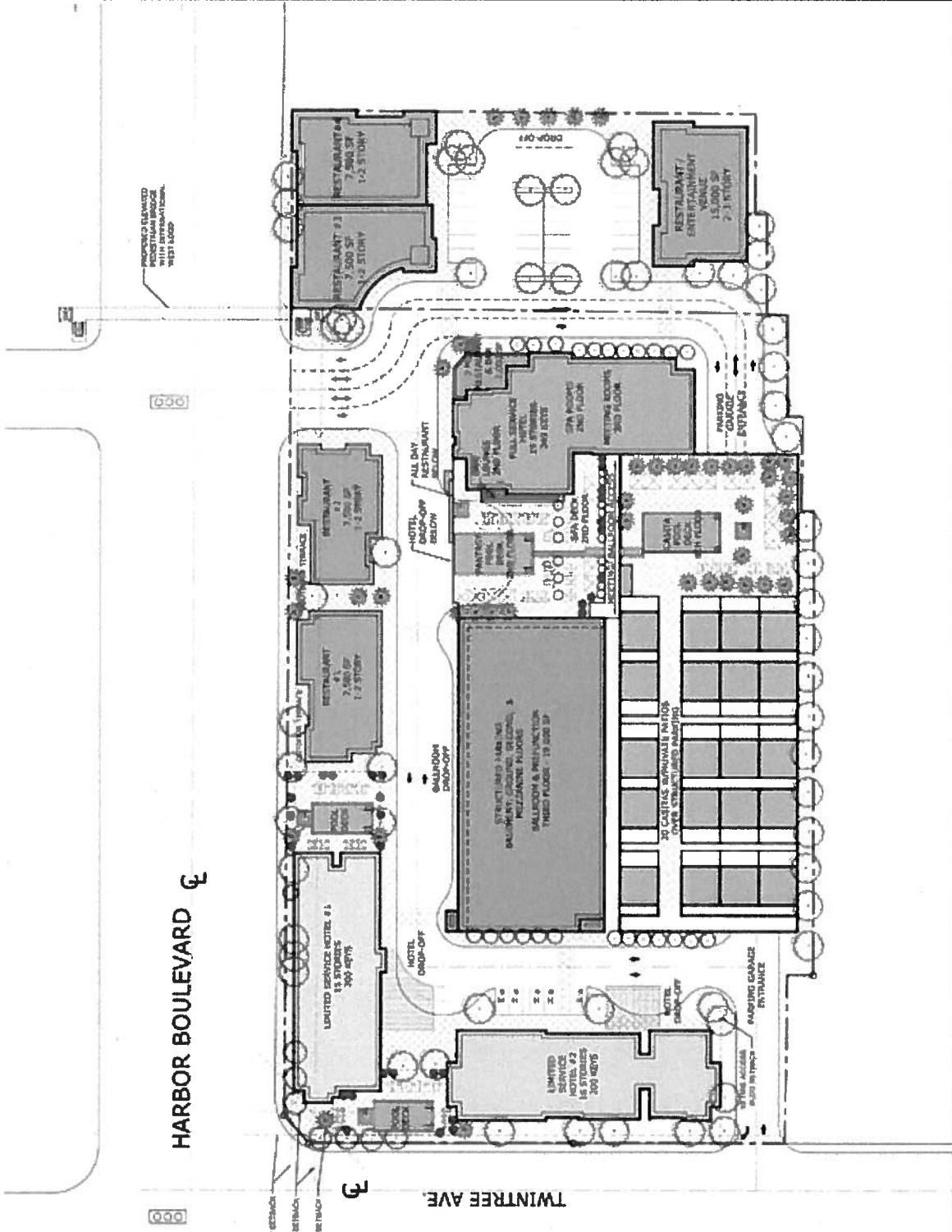
RESTAURANTS / RETAIL
 -RESTAURANT #1 7,500 SF
 -RESTAURANT #2 7,500 SF
 -RESTAURANT #3 7,500 SF
 -RESTAURANT #4 7,500 SF
 -RESTAURANT/
 ENTERTAINMENT
 VENUE
 15,000 SF

PARKING PROVIDED
 TOTAL 1,270 SPACES

SITE INFORMATION
 LOT AREA = 238,980 SF
 FLOOR AREA = 578,500 SF
 FLOOR TO AREA RATIO = 2.4



FIGURE 3.2
 CONCEPTUAL SITE PLAN



SITE PLAN - SCHEME 3.3
 SCALE: 1/64" = 1'-0"

07.27.11
 JOB # 1043P
 Description: Hotel and related brands plans are for
 architectural purposes only and final program may contain
 a combination of brands shown or different brands altogether.

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4.0 CITY OF GARDEN GROVE WATER DEMAND AND SUPPLIES

4.1 Overview of Supply and Demand

The City currently obtains water from the following primary water sources: (1) naturally and artificially recharged local groundwater, and (2) imported water. In addition, the City of Garden Grove Water Services Division maintains seven emergency interconnections with adjacent water retailers that are temporarily utilized on an as-needed basis. Over the past five years, the City has received, on average, 69 percent of its water supply from groundwater from the Orange County Groundwater Basin and 31 percent from imported water from the Metropolitan Water District of Southern California (Metropolitan). The Orange County Groundwater Basin is managed by the Orange County Water District (OCWD). Each of the sources of water for the City are briefly discussed in this section and more fully discussed in the subsequent sections.

Population Growth

Based on the State of California, Department of Finance 2010 population projections, Garden Grove’s population density was approximately 9,866 people per square mile (May 2010). The City of Garden Grove currently provides water to both residents and businesses within a service area of approximately 17.8 square miles.

The population in Garden Grove was approximately 123,300 in 1980, and grew approximately 43.6% to 2010’s population of 177,020 people. The Center for Demographic Research (CDR) at California State University Fullerton projects a 10% increase in the City’s population over the next 25 years. This represents an average growth rate of 0.4 percent per year. These projections for Orange County communities are also utilized by the Southern California Association of Governments (SCAG). Only minimal changes in land use are anticipated over the next 25 years. Based on the City’s 2010 UWMP, Garden Grove’s water service area population is projected to increase to approximately 191,044 by the year 2030 and 194,550 by year 2035. Table 4.1, below, shows this most recent population data from CDR/SCAG.

**Table 4.1
Water Service Area Population – Past, Current and Projected**

Year	2005	2010	2015	2020	2025	2030	2035
City of Garden Grove	171,201	177,020	180,526	184,032	187,538	191,044	194,550

Source: Center for Demographic Research, California State University, Fullerton 2010

Water Demand

Currently, the total water demand for retail customers served by the City is approximately 27,500 acre-feet annually consisting entirely of potable water. In the last five years, the City’s water demand has decreased by about 5 percent while population has increased by 2.5%. Some of this was due to water conservation efforts of the City (park irrigation reductions) and its residents due to the water allocation program under effect from Municipal Water District of Orange County and Metropolitan going into its second straight year. Some of this conservation could subside and per capita use could rise slightly above its current low now that the state wide drought has officially been declared over and the water allocation has been lifted. Per capita use could also rise with improvements in the economic picture. With its diligence in the promotion of water conservation as well as financial incentives to customers to retrofit their homes and businesses with water efficient devices and appliances, the City is projecting only a 7% demand increase in the next 25 years despite a projected 10% population growth.¹

Additionally, the passage of Senate Bill x7-7 (SBx7-7) will increase efforts to reduce the use of potable supplies in the future. This new law requires all of California’s retail urban water suppliers serving more than 3,000 AFY or 3,000 service connections to achieve a 20 percent reduction in demands (from a historical baseline) by 2020. Due to great water conservation efforts in the past decade, the City is on its way to meeting this requirement on its own. Moreover, the City has elected to join the Orange County 20x2020 Regional Alliance for measuring compliance with this requirement. The City, together with 28 other retail agencies in Orange County are committed to reduce the region’s water demand by 2020 through the leadership of MWDOC, the region’s wholesale provider.

The City’s 2009/10 total water demand approximately 26,000 AF, which was met through a combination of 62% local groundwater and 38% imported water. Table 4.2 provides a projection of the City’s water supply sources for the next 25 years based on their 2010 UWMP. Groundwater supply is projected to account for approximately 62% of the City’s total water supply on average over the next 25 years. Imported water from MWDOC meets the remaining demand. The BPP is projected to be 62% for all years.

Table 4.2 Water Demand Projections (AFY)

Water Supply Sources	Fiscal Year Ending				
	2015	2020	2025	2030	2035
MWDOC (Imported)	11,111	11,281	11,409	11,579	11,745
BPP Groundwater	18,129	18,407	18,615	18,893	19,162
Total	29,240	29,688	30,024	30,472	30,907

¹ City of Garden Grove 2010 UWMP, June 2011

As the regional wholesale supplier of imported water for Orange County, MWDOC in collaboration with each of its member agencies as well as with Metropolitan, its wholesaler, develops demand projections for imported water. MWDOC also collaborates with the Orange County Water District (OCWD) to develop demand projections for local groundwater. The City's 25-year demand projections for imported water shown in Table 4.2 are based on the projections provided by the City to MWDOC. The projections are based on a small increase in population of approximately 0.4 percent per year between 2010 and 2035 because the City is almost built out.

Table 4.3 shows historic water production by source for the past five years and total water sales. During certain seasons of 2006 and 2007, OCWD operated the In-lieu Program with Metropolitan by purchasing water from Metropolitan to meet demands of member agencies rather than pumping water from the groundwater basin. In 2008, 2009, and 2010 OCWD did not utilize in-lieu water because such water was not available to purchase from Metropolitan. This program was recently re-instated by Metropolitan due to the wet winter of 2009/10. In-lieu water is included in groundwater production quantities shown in Table 4.3.

The variance between the Water Supply and Water Sales figures is the result of system losses or unaccounted-for-water. The City has an unaccounted-for-water loss of about 4.5% based on the average system losses experienced by the City over the past five-year period. The American Waterworks Association (AWWA) states that the average unaccounted-for-water loss is approximately 10 percent. This water loss occurs due to meter inaccuracies, fire suppression, fire flow testing, hydrant and pipe flushing, pipeline breaks, etc.

**Table 4.3
City of Garden Grove Historical
Production by Source with Sales (AFY)**

Water Source	Fiscal Year Ending				
	2006	2007	2008	2009	2010
Imported Water	10,322	9,416	5,811	8,542	9,908
Groundwater Production	18,703	21,126	23,116	18,905	16,129
Total Water Supply	29,025	30,542	28,927	27,447	26,038
Total Water Sales	28,174	28,944	27,620	26,150	24,470

Demand and Supply Comparison

Table 4.4 shows the projected water demand and supply for the City of Garden Grove for a normal year utilizing data from the City's 2010 UWMP. The water demand projections included in the UWMP are based on the City's 2008 Water Master Plan projections subsequently modified for recent reductions in use. A land use-based methodology was used to project water demands included in the Proposed Project as a part of the Harbor Boulevard Development Plan Area. The projections included 5,900 hotel rooms and 139,000 square feet of restaurants in the Harbor Boulevard Development Plan Area.

The Proposed Project is scheduled to open in 2014 with a net demand increase of 201 AFY (total projected demand from Table 3.2 minus existing demand from Table 3.1). The Project demand is subtracted out from the citywide demand in the 2015 fiscal year projection and shown separately from there on into the future. The total City demand without the Proposed Project (first line under Demand in Table 4.4) was taken from Table 4.2 above with the net Proposed Project demand removed. Supply projections are based on groundwater production equal to 62% of the projected water demand and imported water supplying the remaining 38% demand. These supply projections are discussed in Section 5.4 of this report and do not represent the total supply capacity, but rather the projected supply needed to meet projected demands, as regional water suppliers to the City of Garden Grove including Metropolitan Water District and Municipal Water District of Orange County show surplus water supplies will be available.

Table 4.4
Projected Water Demand and Supply
City of Garden Grove, including the Proposed Project (AFY)

Water Sources	2015	2020	2025	2030	2035
SUPPLY					
Imported	11,111	11,281	11,409	11,579	11,745
Groundwater	18,129	18,407	18,615	18,893	19,162
Total Potable Supply	29,240	29,688	30,024	30,472	30,907
DEMAND					
Total City Demand	29,039	29,487	29,823	30,271	30,706
Additional Proposed Project Demand	201	201	201	201	201
Total Demand	29,240	29,688	30,024	30,472	30,907

4.2 Groundwater

The information in this section is intended to furnish the information required by Water Code section 10910(f).

Lower Santa Ana River Groundwater Basin

Local groundwater has been the cheapest and most reliable source of supply for the City. The City relies on approximately 10,000 acre-feet of groundwater from the Lower Santa Ana River Groundwater Basin (Orange County Basin) each year. This local source of supply has historically met approximately 60-80% of the City's total annual demand. The Basin underlies the north half of Orange County beneath broad lowlands. A description of the Coastal Plain of the Basin or DWR's Groundwater Basin Number 8-1, dated September 2001, states that the Basin underlies a coastal alluvial plain in the northwestern portion of Orange County. The Basin covers an area of approximately 350 square miles, bordered by the Coyote and Chino Hills to the north, the Santa Ana Mountains to the northeast, the Pacific Ocean to the southwest, and terminates at the

Orange County line to the northwest, where its aquifer systems continue into the Central Basin of Los Angeles County.²

The Basin is dominated by a deep structural depression containing a thick accumulation of fresh water-bearing imbedded marine and continental sand, silt and clay deposits. The sediments containing easily recoverable fresh water extend to approximately 2,000 feet in depth. Although water bearing aquifers exist below that level, reduced water quality and pumping make these materials economically unviable at present. Upper, middle and lower aquifer systems are recognized in the Basin with well production yields ranging from 500 to 4,500 gallons per minute, but are generally 2,000 to 3,000 gallons per minute.³

The aquifers comprising the Basin form a complex series of interconnected sand and gravel deposits. The Basin holds millions of acre feet of water, of which about 1.25 to 1.5 million AF is available for use.⁴ As set forth in DWR Bulletin 118 and in the 2009-2010 OCWD Engineer's Report, the Orange County Basin is a managed basin and not in a state of overdraft. To ensure that the Basin is not overdrawn, OCWD recharges the Basin with local and imported water. Groundwater conditions in the Basin are influenced by the natural hydrologic conditions. The Basin is recharged primarily by four sources: (1) local rainfall, which varies due to the extent of the annual seasonal precipitation; (2) storm and base flows from the Santa Ana River, which includes recycled wastewater from treatment plants in Riverside and San Bernardino Counties; (3) imported water; and (4) highly treated recycled wastewater. The Basin generally operates as a reservoir in which the net amount of water stored is increased in wet years to allow for manageable overdrafts in dry years.

Basin Production Percentage

As stated, the Orange County Groundwater Basin is managed by the OCWD, a special district created by the State Legislature in 1933 pursuant to the OCWD Act, an uncodified statutory scheme set forth in the State's Water Code. The Basin is unadjudicated. The Basin meets approximately 60 to 70 percent of the water supply demand within the boundaries of OCWD. There are 19 major producers including cities, water districts, and private water companies, extracting water from the Basin serving a population of approximately 2.55 million.⁵ All pumpers within the basin are permitted to pump from the Basin, but OCWD is charged with managing the groundwater basin. OCWD manages the Basin largely through the Basin Production Percentage (BPP) that it establishes each water year.

² DWR's Bulletin 118-1 Basin Description for Coastal Plain of Orange County Groundwater Basin Number 8-1. September 5, 2001.

³ DWR's Bulletin 118-1 Basin Description for Coastal Plain of Orange County Groundwater Basin Number 8-1. September 5, 2001.

⁴ Orange County Water District 2020 Master Plan Report. Chapter 3, Orange County Groundwater Basin Hydrology. 2000.

⁵ MWDOC and Center for Demographics Research (2008)

The BPP is set based on groundwater conditions, availability of imported water supplies, ideal precipitation, Santa Ana River runoff, and basin management objectives. In essence, the BPP represents a set percentage identifying the amount of groundwater all pumpers in the basin can pump without paying a high “pumping tax” or Basin Equity Assessment (BEA) to OCWD (described below). Thus, for example, if OCWD establishes a BPP of 65%, all pumpers within the Basin, including the City, can supply 65% of their water needs from groundwater supplies at a cost significantly less than the cost of imported water. The BPP is a major factor for the City in determining the cost of groundwater production. Groundwater production equal to or less than the BPP pays a replenishment assessment (RA). Funds collected by OCWD through RA payments made by all producers in the basin are used to fund groundwater replenishment and recharge programs aimed at ensuring the long-term viability and stability of the Basin.

If groundwater production greater than the BPP occurs, a Basin Equity Assessment (BEA) is charged against the producer on the amount of groundwater extracted beyond the BPP. The BEA is an additional fee (i.e., a higher “pumping tax”) paid on each AF of water pumped above the BPP, making the total cost of that water to Garden Grove equal to the cost of Tier 2 imported water from Metropolitan, plus well production costs.⁶ Thus, the BPP creates pricing incentives to ensure that groundwater producers pump within the framework established by the BPP.

Like funds collected by OCWD through the RA, funds collected by OCWD through the BEA are also used to fund groundwater replenishment, and recharge and recycling programs aimed at ensuring the long-term viability and stability of the Basin. The programs funded by the RA and the BEA include all of the groundwater replenishment, recharge, and recycling programs discussed below.

As part of its Basin management function, OCWD operates an extensive groundwater monitoring program whereby OCWD routinely tests all groundwater production wells located within the Basin in compliance with Title 22 of the California Administrative Code. OCWD maintains a sophisticated laboratory whereby chemists test the well water for traces of pollution, hydrocarbons, pesticides, and other chemical components. OCWD’s laboratories process tens of thousands of samples a year, and perform hundreds of thousands of analyses a year. As part of its monitoring and management duties, OCWD has developed and adopted a Groundwater Management Plan which is a program to increase water supplies and increase monitoring and groundwater contamination cleanup.

⁶ Metropolitan charges a Tier 1 water rate to recover the cost of maintaining a reliable amount of supply and a Tier 2 rate to include the cost of developing additional supply to encourage efficient use of local resources. As an example, Metropolitan’s Tier 1 rate for treated water as of January 1, 2011 is \$744 per acre-foot and the Tier 2 rate for treated water is \$869 per acre-foot.

Recharge and Replenishment

Recharging water into the basin through natural and artificial means is essential to support pumping from the basin. Active recharge of groundwater began in 1949, in response to increasing drawdown of the basin and consequently the threat of seawater intrusion. In 1949, OCWD began purchasing imported Colorado River water from Metropolitan, which was delivered to Orange County via the Santa Ana River upstream of Prado Dam. The Basin's primary source of recharge is flow from the Santa Ana River. OCWD diverts river flows into recharge basins located in and adjacent to the Santa Ana River and its main Orange County tributary, Santiago Creek. Other sources of recharge water include natural infiltration and recycled water. Today OCWD owns and operates a network of recharge facilities that cover 1,067 acres. The recharge capacity has exceeded 10,000 AFY with the addition of the La Jolla Recharge Basin which came online in 2008. The La Jolla Recharge Basin is a 6-acre recharge basin.

The production capability of the Basin has increased as a result of wastewater reclamation and the blending of waters of different qualities to produce high-quality potable water for public distribution. The most recent example of a highly successful OCWD wastewater reclamation project is the construction and operation of OCWD's new water-purification plant, which is designed to turn wastewater into drinking water. This new Groundwater Replenishment System (GWRS) project has been praised by the environmental community because these types of projects reduce the amount of energy needed to transport water from the northern part of the state to the southern part of the state, thereby reducing greenhouse gas emissions. OCWD's GWRS program is being emulated throughout the State and in other parts of the country. This OCWD GWRS currently treats and recharges up to 70 million gallons per day of wastewater back into the Basin for future potable use. This equates to the recycling of over 72,000 AFY of wastewater back into the Basin for future extraction and potable use.

A treatment plant expansion of 30 million gallons per day is currently in the design process by OCWD, and it will increase the recharge capacity of the GWRS to 90,000 AFY. The treatment system is being laid out so that it could eventually be expanded to 130 million gallons per day.

OCWD, MWDOC, and Metropolitan have developed a successful and efficient groundwater replenishment program (in-lieu program) to increase storage in the Orange County Groundwater Basin. The Groundwater Replenishment Program allows Metropolitan to sell groundwater replenishment water to OCWD and make direct deliveries to the City's distribution system in lieu of producing water from the groundwater basin when surplus water is available. This in-lieu program indirectly replenishes the basin by avoiding pumping. In the in-lieu program, OCWD requests the City to halt pumping from specified wells. The City then takes replacement water through its import connections, which is purchased by OCWD from Metropolitan (through MWDOC). OCWD purchases the water at a reduced rate, and then bills the City the amount it would have had to pay for energy and the Replenishment Assessment (RA) if it had produced the water from its wells. The deferred local production results in water

being left in local storage for future use. In 2008 and 2009, OCWD did not utilize in-lieu water because such water was not available to purchase from Metropolitan.

Groundwater Production

According to OCWD's Engineer's Report for fiscal year 2009/2010, total groundwater production from the Basin in OCWD's jurisdiction was 285,575 AF, which was a 12% decrease from the previous year. In 2010, the City of Garden Grove produced groundwater for potable use from 11 existing wells located throughout the City as set forth in Section 5 (Figure 5.1). The City's existing wells range in depth from 280 to 1,200 feet, with production varying from 1,600 gpm to 3,600 gpm and total system capacity of approximately 28,255 gpm (excludes Well 28 based on inactive status). The City is also drilling a new well (Well 31). The addition of Well 31 and the retrofitting of Well 28 will bring the City's production capacity to 13 active-operating wells and a total system capacity of 35,755 gpm. Groundwater produced at these wells is easily accessible to City water distribution and storage facilities. For the location of each of the City's wells, refer to Section 5, Figure 5.1.

Section 5 of this WSA sets forth various groundwater production scenarios as required by the Water Code (Single Dry Year and Multiple Dry Years), and these latter tables and accompanying text should be reviewed for an understanding of how groundwater production by the City may be affected by hypothetical future conditions. This additional information set forth in Section 5 will furnish some of the additional information pertaining to the sufficiency of the groundwater basin in various pumping scenarios as required by Water Code section 10910(f)(5).

4.3 Imported Water (Surface Water) - Metropolitan

The information in this section is intended to furnish the information required by Water Code section 10910(d).

Metropolitan provides imported water supplies to the City through the Metropolitan member agency, MWDOC. Metropolitan is the wholesale water agency that serves supplemental imported water from northern California through the State Water Project (SWP) and the Colorado River via the Colorado River Aqueduct (CRA) to 26 member agencies located in portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties.

The construction of the SWP was authorized by the State Legislature in 1951. Eight years later, the Legislature passed the Burns-Porter Act, which provided a mechanism for bonds to be issued to pay for the construction of certain portions of the SWP facilities. The DWR has entered into contracts with water districts and regional agencies (SWP Contractors) specifying the amount of SWP water to be delivered to each SWP Contractor. Each SWP Contractor was provided with a contract amount and capacity rights to the SWP aqueduct and storage system in return for payments intended to cover operation and maintenance, bondholder obligations, and repayment of moneys loaned

from the California Water Fund. DWR water supply contracts contemplate that the SWP would deliver 4.2 million AFY to 29 SWP Contractors. Although the SWP is not fully constructed and cannot yet deliver the full 4.2 million AFY in all years, the SWP has fully met SWP Contractors' water needs twelve out of the 17 years following 1992 (the end of a six year drought). The dry years include 1994, 2001, and 2007 through 2009. Of SWP water deliveries, about 70 percent is delivered to SWP urban contractors and about 30 percent is delivered to SWP agricultural contractors. Kern County Water Agency and Metropolitan are the largest Contractors with DWR for SWP water.⁷

From a statewide perspective, the maximum capacity of the overall SWP transportation system is generally limited by the capacity of the system pumps. The capacity of the California Aqueduct is 10,300 cubic feet per second (cfs) at its northern end, and 4,480 cfs below the Edmonston pumping plant (1,000 cfs equates to approximately 82.6 acre-feet per hour, 1,980 acre-feet per day and 725,000 AFY). If these transportation rates were maintained for a full year, they would result in the transport of approximately 7.2 million acre-feet near the Delta and 3.2 million acre-feet to users in Southern California.⁸

Demand can have a significant effect upon the reliability of a water system. For example, if the demand occurs only three months in the summer, a water system with a sufficient annual supply but insufficient water storage may not be able to reliably meet the demand. If, however, the same amount of demand is distributed over the year, the system could more easily meet the demand because the need for water storage is reduced. Because the City of Garden Grove overlies the Orange County Groundwater Basin and can utilize the Basin to smooth out seasonal peaks, its imported water reliability is enhanced.

Metropolitan's SWP imported water is stored at Castaic Lake on the western side of their service area and at Silverwood Lake near San Bernardino. Metropolitan water imported from the Colorado River via the Colorado River Aqueduct (CRA) is stored at Diamond Valley Lake and Lake Mathews in Riverside County.

Through the 1996 Integrated Resources Plan and subsequent updates, Metropolitan has worked toward identifying and developing water supplies to provide 100 percent reliability. Due to competing needs and uses for all of the water sources and regional water operation issues, Metropolitan undertook a number of planning processes: the Integrated Resources Planning (IRP) Process, the Water Surplus and Drought Management (WSDM) Plan, the Strategic Planning Process, the Regional Urban Water Management Plan, and the Report on Metropolitan Water Supplies: A Blueprint for Water Reliability. Combined, these documents provide a framework and guidelines for optimum water planning into the future. Reliability of Metropolitan's supply is further discussed in Section 5.0, Reliability of Water Supplies.

Metropolitan member agencies receive imported water at various delivery points along their system, and pay for it at tiered and/or uniform rates established by the Board, depending on the class of service. Metropolitan has recently increased its ability to supply

⁷ See, generally Bulletin No. 132-06 and latter supplements to Bulletin No. 132.

⁸ DWR, Bulletin No. 132-05, December 2006.

water, particularly in dry years, through implementation of storage and transfer programs. Metropolitan’s 26 member agencies deliver to their customers a combination of groundwater, local surface water, recycled water and imported water purchased from Metropolitan. For some member agencies, Metropolitan supplies all the water used within their service area, while others obtain varying amounts of water from Metropolitan to supplement local supplies. Metropolitan has provided between 45 and 60 percent of the municipal, industrial and agricultural water used in its service area.⁹

Historical water demands in the Metropolitan service area increased from 3.14 million acre feet (MAF) in 1980 to 3.93 MAF in 1990. Total water use is projected to grow from its current 4.03 MAF in 2010 to a projected 4.23 MAF in 2030.¹⁰ For the Orange County service area, according to Metropolitan, demands are projected to increase approximately 0.95 percent between 2010 and 2030.¹¹ Table 4.5, *Total Retail Water Demand in Metropolitan’s Service Area for Orange County*, shows the historic and projected total retail water demands for Metropolitan’s Orange County service area. The water demand forecasts account for water savings resulting from plumbing codes, price effects, and actual and projected implementation of water conservation through BMP’s and DMM’s as mandated by Senate BillX7-7.¹²

**Table 4.5
Total Retail Water Demand
in Metropolitan’s Service Area for Orange County -
Includes Municipal and Industrial, and Agriculture (AF)**

County	Reported			Projected					
	1995	2000	2005	2010	2015	2020	2025	2030	2035
Orange	577,000	660,000	629,000	629,000	624,000	651,000	634,000	635,000	635,000

Source: The Regional Urban Water Management Plan for the Metropolitan Water District of Southern California, Appendix A.1 Demand Forecast. November 2010.

Imported water represents approximately 38% of the City’s water supply. The City currently relies on 10,941 AFY of imported water wholesaled by Metropolitan through MWDOC to supplement local groundwater.

⁹ Metropolitan Water District of Southern California, Regional Urban Water Management Plan, November 2010.

¹⁰ Metropolitan Water District of Southern California, Regional Urban Water Management Plan, November 2010.

¹¹ Metropolitan Water District of Southern California, Regional Urban Water Management Plan, November 2010.

¹² Metropolitan Water District of Southern California, Regional Urban Water Management Plan, November 2010.

4.4 Municipal Water District of Orange County

MWDOC supplies the City with treated water from Metropolitan conveyed through four metered connections, with a total capacity of 22,500 gallons per minute. All of the infrastructure and programs are in place and no further regulatory permits are required to permit MWDOC to convey imported water to these facilities for use by the City. A description of the amount of imported Metropolitan water delivered to the City in the past and anticipated to be delivered to the City in the future under a variety of scenarios is set forth in Section 5 of this WSA.

MWDOC was formed by Orange County voters in 1951 under the Municipal Water District Act of 1911 to provide imported water to much of Orange County. MWDOC is the second largest member agency of Metropolitan, providing imported water to 30 retail water agencies and cities. It serves 2 million people in 600 square miles of service area.

The West Orange County Water Board (WOCWB), a Joint Powers Agency, manages surface water deliveries through MWDOC to five of its member agencies including the cities of Garden Grove, Fountain Valley (with no voting rights), Huntington Beach, Westminster, and Seal Beach. The board oversees the maintenance of two feeder pipelines that connect to the treated surface water supply. The pipelines have a capacity of 21 cubic feet per second (cfs) and 45 cfs. The City of Fountain Valley has entered into an agreement to access imported water from the feeder pipelines, specifically OC-9 and OC-35. Each of the member agencies has paid for the capacity of the feeder pipelines and directly pays MWDOC for the use of water.

Approximately 50% of the water requirement in Orange County depends on imported water coming from two sources: The Colorado River Aqueduct and the State Water Project. Historical retail water usage in the MWDOC service area has been increasing over time to a high of 0.530 MAF in 2006/07 (excluding basin replenishment but including agricultural, recycled water and non-potable water use), primarily due to growth within the service area. In recent years, retail water usage in the MWDOC service area has been dropping, due primarily to the southern California water picture; to 0.488 MAF in 2008/09 (the last non-water allocation year) and to 0.448 MAF in 2009/10 (the first year of Metropolitan's Water Allocation Plan).

4.5 Recycled Water

The City of Garden Grove currently does not own or operate wastewater treatment facilities. Wastewater generated in Garden Grove is transported via large trunk sewer mains approximately five miles to the Orange County Sanitation District's (OCSD) facilities located in the cities of Fountain Valley and Huntington Beach. Indirectly, the City is part of a reclamation program by participating in the reclamation projects of OCWD and the OCSD. As manager of the Basin, OCWD strives to maintain and increase the reliability of the Basin by increasing recycled water usage to replace dependency on

groundwater. To further this goal, OCWD and OCSD have jointly constructed two water recycling projects, described below:

OCWD Green Acres Project

The Green Acres Project (GAP) is a water recycling effort that provides recycled water for landscape irrigation at parks, schools and golf courses as well as for industrial uses, such as carpet dyeing.

GAP provides an alternate source of water to the cities of Fountain Valley, Huntington Beach, Newport Beach, Santa Ana, and Mesa Consolidated Water District. Current water users include Mile Square Park in Fountain Valley, Costa Mesa Golf Course, Home Ranch bean field and Chroma Systems carpet dyeing. Due to a growing demand for water in Orange County, it is sensible that recycled water be used whenever possible for irrigation and industrial uses to supplement groundwater.

OCWD Groundwater Replenishment System

The Groundwater Replenishment System (GWRS) takes highly treated sewer water and purifies it to levels that meet state and federal drinking water standards. It uses a three-step process that includes reverse osmosis, which is used by manufacturers of bottled water, as well as microfiltration and ultraviolet light and hydrogen peroxide advanced oxidation treatment. The water will then be used to keep the ocean out of our groundwater basin and be percolated into deep aquifers where it eventually becomes part of our natural drinking water supply. The GWRS water exceeds all federal and state drinking water standards. The underground basin provides more than half of the water used by north and central Orange County.

5.0 RELIABILITY OF WATER SUPPLIES

This section provides a description of Metropolitan's, MWDOC's, OCWD's, and the City of Garden Grove's efforts in securing adequate water supply as well as reliability of the region and the City's normal, single dry year, and multiple dry year water supplies.

The Southern California region faces a challenge in satisfying its water requirements and securing its firm water supplies. Increased environmental regulations and the competition for water from outside the region have resulted in reduced supplies of imported water. Continued population and economic growth correspond to increased water demands within the region, putting an even larger burden on local supplies.

Reliability is a measure of a water system's expected success in managing water shortages. Reliability planning requires information about the following: (1) expected frequency and severity of shortages; (2) how additional water management measures are likely to affect the frequency and severity of shortages; and (3) how available contingency measures can reduce the impact of shortages when they occur. The reliability of the City's water supply is currently dependent on the reliability of both groundwater managed by OCWD and imported water supplies managed and delivered by Metropolitan. Despite the ongoing water supply challenges within the region, the goal and statutory mission of these agencies are to identify and develop projects to meet the water demands in the region. Sections 5.1 and 5.2 discuss these agencies, their roles in water supply reliability, and the near and long-term efforts they are involved with to ensure future reliability of water supplies to the City and the region as a whole.

State funding has been made available, through California voters' approval, to increase reliability of state water supplies. In March 2000, California voters approved Proposition 13, which authorized the State to issue \$1.97 billion of its general obligation bonds for water projects. Additionally, California voters approved Proposition 50 in November 2002 and Proposition 84 in November 2006, which authorized the issuance by the State of \$3.4 billion and \$5.4 billion, respectively, of its general obligation bonds for water projects. Types of water projects eligible for funding under Propositions 13, 50, and 84 include water conservation, groundwater storage, water treatment, water quality, water security and Colorado River water management projects, many of which are within the scope of the California Plan.

5.1 Metropolitan Water District of Southern California

Metropolitan was formed in the late 1920's. Collectively, charter members recognized the limited water supplies available within the region, and realized that continued prosperity and economic development of Southern California depended upon the acquisition and careful management of an adequate supplemental water supply. This foresight made the continued development of Southern California possible.

Metropolitan acquires water from Northern California via the State Water Project (SWP) and from the Colorado River to supply water to most of Southern California. As discussed above, as a wholesaler, Metropolitan has no retail customers, and distributes treated and untreated water directly to its 26 member agencies. One such member agency is the Municipal Water District of Orange County (MWDOC), of which the City of Garden Grove is one of its 30 member agencies.

Through a series of Integrated Resources Plans initiated in 1996 and most recently updated in 2010, Metropolitan has worked toward identifying and developing water supplies to provide 100 percent reliability. Due to competing needs and uses for all of the water sources and regional water operational issues, Metropolitan undertook a number of planning processes: the Integrated Resources Planning (IRP) Process, the Water Surplus and Drought Management Plan, the Strategic Planning Process, the Report on MWDSC Water Supplies: A Blueprint for Water Reliability, and most recently, the October 2010 IRP update and the November 2010 Regional Urban Water Management Plan. Combined, these documents provide a framework and guidelines for optimum water planning into the future.

The dry hydrology experienced in California in the last few years has diminished snowmelt and runoff levels as well as resulted in environmental restrictions being imposed on water imports from the San Francisco Bay/Sacramento-San Joaquin Delta (Bay-Delta). Other extraordinary events added to the stressed conditions of Southern California water supply including record-dry hydrology in Southern California causing groundwater basins and local reservoirs to drop to very low operating levels; restrictions of SWP deliveries by federal court orders to protect endangered Delta smelt and salmon; and environmental issues related to Owens Lake and Lower Owens River affecting supply availability in the Los Angeles Aqueduct system. SWP delivery restrictions due to the biological opinions resulted in a combined loss of about 700 TAF of the available SWP supplies in 2008 and 2009, reducing the likelihood that regional storage can be refilled in the near-term.

Moreover, the Colorado River watershed is experiencing an extended decade of drought. In the effort to increase supply reliability from this source, Metropolitan has implemented various programs over the years to facilitate the transfer of water from agricultural agencies to urban uses.

The reliability and operational issues related to Metropolitan's various sources of supply are discussed in detail by major source in the subsequent sections. It should be noted that some of the recent issues surrounding operational limitations in supply related to species protection and Delta issues are considered by Metropolitan to be somewhat short-term in nature and are not affecting the overall 20-year planning period that is being considered in this WSA.

5.1.1 State Water Project

The SWP is owned and operated by the California Department of Water Resources (DWR). The reliability of the SWP impacts Metropolitan's member agencies' ability to plan for future growth and supply. On an annual basis, each of the 29 SWP contractors, including Metropolitan, request an amount of SWP water based on their anticipated yearly demand. In most cases, Metropolitan's requested supply is equivalent to its full Table A Amount,¹³ currently at 1,911,500 AFY, and in certain wetter years additional supply may be made available. The full Table A amount is defined as the maximum amount of imported water to be delivered and is specified in the contract between the DWR and the contractor. After receiving the requests, DWR assesses the amount of water supply available based on precipitation, snow pack on northern California watersheds, volume of water in storage, projected carry over storage, and Sacramento-San Joaquin Bay Delta regulatory requirements.

Due to the uncertainty in water supply, contractors are not typically guaranteed their full Table A Amount, but instead a percentage of that amount based on the available supply. Table 5-1, *SWP Deliveries to Metropolitan*, lists the historical SWP deliveries to Metropolitan and the delivery's percentage compared to the full Table A amount. Once the percentage is set early in the water year, the agency can count on that amount of supply or more in the coming year. The percentage is typically set conservative and then held or adjusted upwards later in the year based on a reassessment of precipitation, snow pack, etc.

Litigation filed by several environmental interest groups (NRDC v. Kempthorne (Case No. 05CV01207-OWW-GSA); Pacific Coast Federation of Fishermen's Associations v. Gutierrez (Case No. 06CV00245-OWW)) has alleged that certain biological opinions and incidental take permits granted by state and federal agencies for water permits in the Sacramento-San Joaquin Bay Delta inadequately analyzed impacts on species listed as endangered under the Federal Endangered Species Act (ESA). In 2007, Federal District Judge Wanger issued a decision, finding the United States Fish and Wildlife Service's biological opinion for Delta smelt to be invalid. Judge Wanger issued an Interim Remedial Order and Findings of Fact and Conclusions of Law requiring that the SWP and Central Valley Project (CVP) operate according to certain specified criteria until a new biological opinion for the Delta smelt was issued by the United States Fish and Wildlife Service.

¹³ Two types of deliveries are assumed for the SWP contractors: Table A and Article 21. Table A Amount is the contractual amount of allocated SWP supply, set by percentage amount annually by DWR; it is scheduled and uninterruptible. Article 21 water refers to the SWP contract provision defining this supply as water that may be made available by DWR when excess flows area available in the Delta (i.e., Delta outflow requirements have been met, SWP storage south of the Delta is full, and conveyance capacity is available beyond that being used for SWP operations and delivery of allocated and scheduled Table A supplies). Article 21 water is made available on an unscheduled and interruptible basis and is typically available only in average to wet years, generally only for a limited time in the later winter.

Table 5.1
SWP Deliveries to Metropolitan
(AF)

Year	SWP Delivery	% of Full Table A Amount
1981	826,951	43%
1982	856,996	45%
1983	385,308	20%
1984	501,682	26%
1985	740,410	39%
1986	756,142	40%
1987	769,603	40%
1988	957,276	50%
1989	1,215,139	64%
1990	1,457,676	76%
1991	624,861	33%
1992	746,991	39%
1993	663,390	35%
1994	845,305	44%
1995	451,305	24%
1996	642,871	34%
1997	724,393	38%
1998	521,255	27%
1999	790,538	41%
2000	1,442,615	75%
2001	1,119,408	59%
2002	1,413,745	74%
2003	1,560,569	82%
2004	1,792,246	94%
2005	1,720,350	90%
2006	1,911,500	100%
2007	1,146,900	60%
2008	669,025	35%
2009	764,600	40%
2010	955,750	50%
2011	1,338,050	80%

Source: Table A data extracted from DWR Website; 2011 data represents the initial allocation of 25% plus the subsequent notices to SWP Contractors in December 2010, January 2011, and April 2011, increasing the allocation to 50%, 60%, and 80%, respectively. Metropolitan's full Table A amount is 1,911,500 AFY

DWR bi-annually prepares a report on the current and future for SWP water supply conditions. The 2009 State Water Project Delivery Report (2009 Report) is the most current of these reports dated August 2010. The 2009 Report shows a continuing erosion of the ability of the SWP to deliver water. For current conditions, the dominant factor for these reductions is the restrictive operational requirements contained in the federal biological opinions. For future conditions, it is these requirements combined with the forecasted effects of climate change.

Deliveries estimated for the 2009 Report are reduced by the operational restrictions of the biological opinions issued by the U.S. Fish and Wildlife Service in December 2008 and the National Marine Fisheries Service in June 2009 governing the SWP and CVP operations. To illustrate the effect of these operational restrictions, the median value estimated for the primary component of SWP Table A deliveries for Current Conditions in the 2005 Report is 3,170 thousand acre feet (taf); in the 2007 Report is 2,980 taf; and in the 2009 Report is 2,680 taf; for a reduction of almost 500 taf. For the 2009 studies, the changes in run-off patterns and amounts are included along with a potential rise in sea level. Sea level rise has the potential to require more water to be released to repel salinity from entering the Delta in order to meet water quality objectives established for the Delta. The effect of the operational restrictions in addition to the incorporation of potential climate change impacts amounts to an estimated reduction of 970 taf when the median value for annual SWP deliveries for Future Conditions in the 2005 Report (3,750 taf) is compared to the updated value in the 2009 Report (2,600 taf).

The DWR has altered the operations of the SWP to accommodate species of fish listed under the Federal and California Endangered Species Acts (ESAs). These changes in project operations have influenced the manner in which water is diverted from the Bay-Delta and SWP deliveries to the southern part of the State. Restrictions on Bay-Delta pumping beginning in 2008 under the Interim Remedial Order in *NRDC v. Kempthorne* have resulted in reduced deliveries of SWP water to Metropolitan.

Based on DWR estimates of SWP deliveries under the Interim Remedial Order, and assuming an equal division of curtailments between the SWP and CVP,¹⁴ Metropolitan has met firm demands in calendar years 2008, 2009 and 2010. However, Metropolitan has been withdrawing supplies from surface and groundwater storage to meet current demands. Anticipating that storage could be significantly reduced by the end of 2010, Metropolitan and its member agencies are calling for voluntary water conservation to lower demands and reduce drawdown from water storage. In fact on April 14, 2009, Metropolitan adopted a Level 2 Allocation, which equates to a 10 percent reduction in regional water supplies. Based on similar water supply conditions, this same level of allocation was adopted on April 13, 2010 for this current fiscal year by Metropolitan. If

¹⁴ Assuming an equal division of curtailments between the SWP and the CVP is conservative and may have the effect of overstating the amount of SWP curtailment. As an example, in January of 2009, the Bureau of Reclamation, which operates the CVP, provided notice to agricultural customers that it intended to not provide any water deliveries to agricultural customers in 2009. Thus, in the short term it appears as though agricultural users which receive water through the CVP may suffer deeper water cuts as compared to water purveyors which receive water from the SWP.

necessary, mandatory water allocations could be imposed in the future to cause further reductions in water use and reduce drawdown from water storage reserves. Metropolitan's member agencies and retail water suppliers in Metropolitan's service area also have the ability to implement water conservation and allocation programs, and some of the retail suppliers in Metropolitan's service area have initiated conservation measures.

To create a systemic solution to the issues facing the Delta (which have existed since the 1970's), Governor Schwarzenegger created the Delta Vision process, which is aimed at identifying long-term solutions to the conflicts in the Bay-Delta, including natural resource, infrastructure, land use and governance issues. The Delta Vision Blue Ribbon Task Force presented findings and recommendations for a sustainable Delta as a healthy ecosystem and water supply source on January 17, 2008. In addition, state and federal resource agencies and various environmental and water user entities are currently engaged in the development of the Bay-Delta Conservation Plan (BDCP), which is aimed at addressing ecosystem needs and securing long-term operating permits for the SWP. On November 18, 2010 the BDCP Steering Committee released a Working Draft of all Plan components completed to date. A public draft BDCP is expected to be completed and available for public review in 2011. Following a public review period, a final BDCP is expected before the end of 2012. Recently, statewide officials have expressed support for the construction of the peripheral canal, which would alleviate some of the delta species considerations by transferring river water south before it reaches the Bay Delta.

The issues, such as the recent decline of some fish species in the Delta and surrounding regions and certain operational actions in the Delta, may impact Metropolitan's water supply from the Delta. SWP operational requirements may be further modified through the consultation process for new biological opinions for listed species under the Federal ESA or from the California Department of Fish and Game's actions regarding the California ESA. Decisions in current or future litigation, listings of additional species (such as the longfin smelt), or new regulatory requirements could adversely affect SWP operations in the future by requiring additional export reductions, releases of additional water from storage, or other operational changes impacting water supply operations. However, based on information provided by DWR and Metropolitan, a 22 to 30 percent cutback in SWP deliveries to the south could be foreseeable in the future years until statewide systemic solutions are provided.¹⁵

5.1.2 Colorado River Aqueduct

The Colorado River was Metropolitan's original source of water after Metropolitan's establishment in 1928. Metropolitan has a legal entitlement to receive water from the Colorado River under a permanent service contract with the Secretary of the Interior. Water from the Colorado River or its tributaries is also available to other users in California, as well as to users in the states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming (the "Colorado River Basin States"), resulting in both competition

¹⁵ Metropolitan Water District of Southern California, 2007 IRP, October 2007, and Metropolitan Water District of Southern California, Appendix A, Water Revenue Refunding Bonds 2008, Series C, July 10, 2008.

and the need for cooperation among these holders of Colorado River entitlements. In addition, under a 1944 treaty, Mexico has an allotment of 1.5 million acre-feet of Colorado River water annually, except in the event of extraordinary drought or serious accident to the delivery system in the United States, when the water allotted to Mexico would be curtailed. Mexico also can schedule delivery of an additional 200,000 acre-feet of Colorado River water per year if water is available in excess of the requirements in the United States and the 1.5 million acre-feet allotted to Mexico.

The Colorado River Aqueduct (CRA), which is owned and operated by Metropolitan, transports water from the Colorado River approximately 242 miles to its terminus at Lake Mathews in Riverside County. After deducting for conveyance losses and considering maintenance requirements, up to 1.2 million acre-feet of water a year may be conveyed through the CRA to Metropolitan's member agencies, subject to availability of Colorado River water for delivery to Metropolitan as described below.

California is apportioned the use of 4.4 million acre-feet of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to, but not used by, Arizona and Nevada when such supplies have been requested for use in California. Under the 1931 priority system that has formed the basis for the distribution of Colorado River water made available to California, Metropolitan holds the fourth priority right to 550,000 acre-feet per year. This is the last priority within California's basic apportionment of 4.4 million acre-feet. In addition, Metropolitan holds the fifth priority right to 662,000 acre-feet of water, which is in excess of California's basic apportionment.

Until 2002, Metropolitan had been able to take full advantage of its fifth priority right as a result of the availability of surplus water and apportioned but unused water. However, Arizona and Nevada increased their use of water from the Colorado River, leaving no unused apportionment available for California since the late 1990s. In addition, a severe drought in the Colorado River Basin has reduced storage in system reservoirs, resulting in no surplus water being available since 2002. Prior to 2002, Metropolitan could divert over 1.2 million acre-feet in any year, but since that time, Metropolitan's deliveries of Colorado River water varied from a low of 535,000 acre-feet in 2006 to a projected high of 1,150,000 acre-feet in 2010.

Metropolitan has taken steps to augment its share of Colorado River water through agreements with other agencies that have rights to use such water. Under a 1988 water conservation agreement (the "1988 Conservation Agreement") between Metropolitan and the Imperial Irrigation District (IID), IID has constructed and is operating a number of conservation projects that are currently conserving 105,000 acre-feet of water per year. In 2007, the conserved water augmented the amount of water available to Metropolitan by 85,000 acre-feet and, by prior agreement, to the Coachella Valley Water District (CVWD) by 20,000 acre-feet.

In 1992, Metropolitan entered into an agreement with the Central Arizona Water Conservation District (CAWCD) to demonstrate the feasibility of CAWCD storing Colorado River water in central Arizona for the benefit of an entity outside of the State of Arizona. Pursuant to this agreement, CAWCD created 80,909 acre-feet of long-term storage credits that may be recovered by CAWCD for Metropolitan. Metropolitan, the Arizona Water Banking Authority, and CAWCD executed an amended agreement for recovery of these storage credits in December 2007. In 2007, 16,804 acre-feet were recovered. Metropolitan has requested that 25,000 acre-feet be recovered in 2008, and expects to request the balance of the storage credits over the next several years. Water recovered by CAWCD under the terms of the 1992 agreement allows CAWCD to reduce its use of Colorado River water, resulting in Arizona having an unused apportionment. The Secretary of the Interior is making this unused apportionment available to Metropolitan under its Colorado River water delivery contract.

In April 2008, Metropolitan's Board authorized the expenditure of \$28.7 million to join the CAWCD and the Southern Nevada Water Authority (SNWA) in funding the construction by the Bureau of Reclamation of the new 8,000 acre-foot off-stream regulating reservoir near Drop 2 of the All-American Canal in Imperial County. The Drop 2 Reservoir is expected to save up to 70,000 acre-feet of water per year by capturing and storing water that would otherwise be lost. In return for its funding, Metropolitan received 100,000 acre-feet of water that is stored in Lake Mead until recovered. Besides the additional water supply, the new reservoir will add to the flexibility of Colorado River operations.

Metropolitan and the Palo Verde Irrigation District (PVID) signed the program agreement for a Land Management, Crop Rotation and Water Supply Program in August 2004. This program provides up to 133,000 acre-feet of water available to Metropolitan in certain years. The term of the program is 35 years. Fallowing of approximately 20,000 acres of land began on January 1, 2005. In 2005, 2006, 2007, 2008 and 2009 approximately 108,700, 105,000, 72,300, 94,300 and 102,200 acre-feet, respectively, of water were saved through these programs.¹⁶

With Arizona's and Nevada's increasing use of their respective apportionments and the uncertainty of continued Colorado River surpluses, in 1997 the Colorado River Board of California, in consultation with Metropolitan, IID, PVID, CVWD, the Los Angeles Department of Water and Power and the San Diego County Water Authority (SDCWA), embarked on the development of a plan for reducing California's use of Colorado River water to its basic apportionment of 4.4 million acre-feet when use of that basic allotment is necessary (California Plan). In 1999, IID, CVWD, Metropolitan and the State of California agreed to a set of Key Terms aimed at managing California's Colorado River supply. These Key Terms were incorporated into the Colorado River Board's May 2000 California Plan that proposed to optimize the use of the available Colorado River supply through water conservation, transfers from higher priority agricultural users to Metropolitan's service area and storage programs.

¹⁶ Metropolitan Water District of Southern California, Regional Urban Water Management Plan, November 2010.

To implement these plans, a number of agreements have been executed. One such agreement, the Quantification Settlement Agreement (QSA), is a landmark agreement signed by the four California Colorado River water use agencies and the U.S. Secretary of the Interior, which will guide reasonable and fair use of the Colorado River by California through the year 2037. The QSA was authorized in October 2003 and defined Colorado River water deliveries to the four California agencies as well as facilitated transfers from agricultural agencies to urban users. The QSA is a critical component of the California's Colorado River Water Use Plan.

5.1.3 Water Transfer and Exchange Programs

California's agricultural activities consume approximately 34 million acre-feet of water annually, which is 80 percent of the total water used for agricultural and urban uses and 40 percent of the water used for all consumptive uses. Voluntary water transfers and exchanges can make a portion of this agricultural water supply available to support the State's urban areas. Such existing and potential water transfers and exchanges are an important element for improving the water supply reliability within Metropolitan's service area and accomplishing the reliability goal set by Metropolitan's Board of Directors. Metropolitan is currently pursuing voluntary water transfer and exchange programs with state, federal, public and private water districts and individuals. The following information on these programs has been extracted from Metropolitan's 2010 Regional UWMP:

- **Semitropic Storage Program:** Metropolitan has a groundwater storage program with Semitropic Water Storage District located in the southern part of the San Joaquin Valley. The maximum storage capacity of the program is 350 TAF. The specific amount of water Metropolitan can store in and subsequently expect to receive from the programs depends upon hydrologic conditions, any regulatory requirements restricting Metropolitan's ability to export water for storage, and the demands placed on the Semitropic Program by other program participants. During the recent dry year of 2008, the storage program delivered 125 TAF to Metropolitan. During wet years, Metropolitan has the discretion to use the program to store portions of its SWP entitlement water that are in excess of the amounts needed to meet Metropolitan's service area demand. In Semitropic, the water is delivered to district farmers who use the water in-lieu of pumping groundwater. During dry years, the districts return Metropolitan's previously stored water to Metropolitan by direct groundwater pump-in return and the exchange of State Water Project entitlement water.
- **Arvin-Edison Storage Program:** Metropolitan amended the groundwater storage program with Arvin-Edison Water Storage District in 2008 to include the South Canal Improvement Project. The project increases the reliability of Arvin-Edison returning higher water quality to the California Aqueduct. The program storage capacity is 350 TAF. The specific amount of water Metropolitan can expect to store in and subsequently receive from the programs depends upon hydrologic conditions and any regulatory requirements restricting Metropolitan's ability to

export water for storage. The storage program is estimated to deliver 75 TAF. During wet years, Metropolitan has the discretion to use the program to store portions of its SWP Table A supplies which are in excess of the amounts needed to meet Metropolitan's service area demand. The water can be either directly recharged into the groundwater basin or delivered to district farmers who use the water in-lieu of pumping groundwater. During dry years, the district returns Metropolitan's previously stored water to Metropolitan by direct groundwater pumping in return or by exchange of surface water supplies.

- **San Bernardino Valley MWD Storage Program:** The San Bernardino Valley MWD Storage program allows for the purchase of a portion of San Bernardino Valley Municipal Water District's State Water Project supply. The program includes a minimum purchase provision of 20 TAF and the option of purchasing additional supplies when available. This program can deliver between 20 TAF and 70 TAF in dry years, depending on hydrologic conditions. The expected delivery for a single dry year similar to 1977 is 70 TAF. The agreement with San Bernardino Valley MWD also allows Metropolitan to store up to 50 TAF of transfer water for use in dry years.
- **Kern-Delta Water District Storage Program:** This groundwater storage program has 250 TAF of storage capacity. When fully developed, it will be capable of providing 50 TAF of dry-year supply. The water can be either directly recharged into the groundwater basin or delivered to district farmers who use the water in-lieu of pumping groundwater. During dry years, the district returns Metropolitan's previously stored water to Metropolitan by direct groundwater pumping in return or by exchange of surface water supplies.
- **Mojave Storage Program:** Currently operated as a demonstration program, the program will store SWP supply delivered in wet years for subsequent withdrawal during dry years. When fully developed, the program is expected to have a dry-year yield of 35 TAF depending on hydrologic conditions.
- **Central Valley Transfer Programs:** Metropolitan expects to secure Central Valley water transfer supplies via spot markets and option contracts to meet its service area demands when necessary. Hydrologic and market conditions, and regulatory measures governing Delta pumping plant operations will determine the amount of water transfer activity occurring in any year. Transfer market activity in 2003, 2005, 2008, and 2009 provide examples of how Metropolitan has secured water transfer supplies as a resource to fill anticipated supply shortfalls needed to meet Metropolitan's service area demands.
 - In 2003, Metropolitan secured options to purchase approximately 145 TAF of water from willing sellers in the Sacramento Valley during the irrigation season. These options protected against potential shortages of up to 650 TAF within Metropolitan's service area that might have arisen from a decrease in Colorado River supply or as a result of drier than expected hydrologic conditions. Using these options, Metropolitan purchased approximately 125 TAF of water for delivery to the California Aqueduct.

- In 2005, Metropolitan, in partnership with seven other State Water Contractors, secured options to purchase approximately 130 TAF of water from willing sellers in the Sacramento Valley, of which Metropolitan's share was 113 TAF. Metropolitan also had the right to assume the options of the other State Water Contractors if they chose not to purchase the transfer water. Due to improved hydrologic conditions, Metropolitan and the other State Water Contractors did not exercise these options.
- In 2008, Metropolitan in partnership with seven other State Water Contractors, secured approximately 40 TAF of water from willing sellers in the Sacramento Valley, of which Metropolitan's share was approximately 27 TAF.
- In 2009, Metropolitan in partnership with eight other buyers and 21 sellers participated in a statewide Drought Water Bank, which secured approximately 74 TAF, of which Metropolitan's share was approximately 37 TAF.

Metropolitan's recent water transfer activities have demonstrated its ability to develop and negotiate water transfer agreements either working directly with the agricultural districts who are selling the water or through a statewide Drought Water Bank. Because of the complexity of cross-Delta transfers and the need to optimize the use of both CVP and SWP facilities, DWR and USBR are critical players in the water transfer process, especially when shortage conditions increase the general level of demand for transfers and amplify ecosystem and water quality issues associated with through-Delta conveyance of water. Therefore, Metropolitan views state and federal cooperation to facilitate voluntary, market-based exchanges and sales of water as a critical component of its overall water transfer strategy.

In addition to the previously mentioned programs, Metropolitan also manages or participates in the following existing SWP programs located outside of its service area:

- ***Sacramento Valley Water Management Agreement (Phase 8 Settlement):*** Metropolitan is a signatory to the Sacramento Valley Water Management Agreement (Phase 8 Settlement) that includes work plans to develop and manage water resources to meet Sacramento Valley in-basin needs, environmental needs under the SWRCB's Water Quality Control Plan, and export supply needs for both water demands and water quality. The agreement specifies about 60 water supply and system improvement projects by 16 different entities in the Sacramento Valley.
- ***Monterey Amendment:*** Metropolitan was a signatory to the 1994 Monterey Amendment to resolve disputes between the urban and agricultural SWP contractors over how contract supplies are to be allocated in times of shortage by amending certain provisions of the long-term water supply contracts with DWR. The Monterey Amendment altered the water allocation procedures such that both shortages and surpluses would be shared in the same manner for all contractors, eliminating the prior "agriculture first" shortage provision. In turn, the agricultural

contractors agreed to permanently transfer 130,000 AF to urban contractors and permanently retire 45,000 AF of their contracted supply.

- **SWP Terminal Storage:** Metropolitan has contractual rights to 65,000 AF of flexible storage at Lake Perris (East Branch terminal reservoir) and 153,940 AF of flexible storage at Castaic Lake (West Branch terminal reservoir). This storage provides Metropolitan with additional options for managing SWP deliveries to maximize yield from the project.
- **Yuba Dry-year Water Purchase Program:** In December 2007, Metropolitan entered into an agreement with DWR providing for Metropolitan's participation in the Yuba Dry Year Water Purchase Program between Yuba County Water Agency and DWR through 2025.
- **Desert Water Agency/Coachella Valley Water District (DWCV) SWP Table A Transfer:** Under the transfer agreement, Metropolitan transferred 100,000 AF of its SWP Table A amount to DWCV effective January 1, 2005. DWCV pays all SWP charges for this water, including capital costs associated with capacity in the SWP to transport this water to Perris Reservoir as well as the associated variable costs. The amount of water actually delivered in any given year depends on that year's SWP allocation. Water is delivered through the existing exchange agreements between Metropolitan and DWCV. While Metropolitan transferred 100,000 AF of its Table A amount, it retained other rights, including interruptible water service, its full carryover amounts in San Luis Reservoir, its full use of flexible storage in Castaic and Perris Reservoirs, and any rate-management credits associated with the 100,000 AF. In addition, Metropolitan is able to recall the SWP transfer water in years in which Metropolitan determines it needs the water to meet its water management goals. The main benefit of the agreement is to reduce Metropolitan's SWP fixed costs in wetter years when there are more than sufficient supplies to meet Metropolitan's water management goals, while at the same time preserving its dry-year SWP supply.
- **DWCV Advance Delivery Program:** Under this program, Metropolitan delivers Colorado River water to DWCV in advance of the exchange for their SWP Contract Table A allocations. By delivering enough water in advance to cover Metropolitan's exchange obligations, Metropolitan is able to receive DWCV's available SWP supplies in years in which Metropolitan's supplies are insufficient without having to deliver an equivalent amount of Colorado River water.
- **DWCV Other SWP Deliveries:** Since 2008, Metropolitan has provided DWCV's written consent to take delivery from the SWP facilities non-SWP supplies separately acquired by each agency. These deliveries include water acquired from the Yuba Dry Year Water Purchase Program and the 2009 Drought Water Bank.

5.1.4 Supply Management Strategies

On the regional level, Metropolitan has taken a number of actions to secure a reliable water source for its member agencies. Metropolitan recently adopted a water supply allocation plan for dealing with potential shortages that takes into consideration the impact on retail customers and the economy, changes and losses in local supplies, the investment in and development of local resources, and conservation achievements.¹⁷ Additional actions taken by Metropolitan during the first half of 2008 include the adoption of a \$1.9 billion spending plan, increased rates and charges,¹⁸ and the funding of a new reservoir to benefit Colorado River supply capabilities.¹⁹ Metropolitan's approved budget for 2010/11 included rate increases of 7.5 percent with another 7.5 percent increase planned for 2011/12 to maintain these this spending for the improvement of water conveyance facilities, water transfers, and providing financial assistance to member agency's local conservation, recycling, and groundwater clean-up efforts²⁰.

5.1.5 Metropolitan Conjunctive Use Program

Since 2004, OCWD, MWDOC, and participating producers have participated in Metropolitan's Conjunctive Use Program (known as the MWD Long-Term Groundwater Storage Program or MWD CUP). This program allows for the storage of Metropolitan water in the Orange County groundwater basin. The existing Metropolitan storage program provides for Metropolitan to store 66,000 AF of water in the basin in exchange for Metropolitan's contribution to improvements in basin management facilities. These improvements include eight new groundwater production wells, improvements to the seawater intrusion barrier, construction of the Diemer Bypass Pipeline. This water can be withdrawn over a three-year time period. The preferred means to store water in the Metropolitan storage account has been through the in-lieu deliveries to participating groundwater producers.

5.1.6 Metropolitan Groundwater Replenishment Program

OCWD, MWDOC, and Metropolitan have developed a successful and efficient groundwater replenishment program (in-lieu program) to increase storage in the Orange County Groundwater Basin. The Groundwater Replenishment Program allows Metropolitan to sell groundwater replenishment water to OCWD and make direct deliveries to the City's distribution system in lieu of producing water from the groundwater basin when surplus water is available. This in-lieu program indirectly replenishes the basin by avoiding pumping. In the in-lieu program, OCWD requests the City to halt pumping from specified wells. The City then takes replacement water through its import connections, which is purchased by OCWD from Metropolitan (through MWDOC). OCWD purchases the water at a reduced rate, and then bills the City the

¹⁷ Metropolitan Water District Press Release dated February 12, 2008.

¹⁸ Metropolitan Water District Board Meeting, March 11, 2008, and Press Release of same date, regarding spending plan and adoption of rates and charges.

¹⁹ Metropolitan Water District Board Meeting, April 8, 2008, and Press Release of same date, regarding new reservoir.

²⁰ Metropolitan Water District, Annual Budget, website mwdh2o.com.

amount it would have had to pay for energy and the Replenishment Assessment (RA) if it had produced the water from its wells. The deferred local production results in water being left in local storage for future use. In 2008, 2009, and 2010 OCWD did not utilize in-lieu water because such water was not available to purchase from Metropolitan.

5.2 Municipal Water District of Orange County

To assure an adequate water supply, MWDOC works with its member agencies each year to develop a forecast of future water demands and local supplies. With the aid of a computer model, MWDOC forecasts the imported demand by subtracting total demand from available local supplies. MWDOC then advises Metropolitan annually of how much water MWDOC anticipates to purchase during the next five-year period. To supply water, MWDOC enters into a written service agreement with each member agency; in turn, MWDOC then contracts with Metropolitan to provide water for the member agencies' demand.

It is important to note that MWDOC does not currently provide any source of water other than imported supplies from Metropolitan. In its Regional Urban Water Management Plan (RUWMP), Metropolitan presents its supply availability at the regional level, rather than at the member-agency level. This approach does not enable MWDOC to quantify the availability of imported supply from Metropolitan specific to MWDOC. However, because Metropolitan is able to demonstrate 100% reliability in meeting demands through 2035. With the addition of planned supplies under development, Metropolitan's 2010 RUWMP finds that Metropolitan will be able to meet full-service demands from 2015 through 2035, even under a repeat of the worst drought. In addition to meeting full-service demands from 2015 through 2035, Metropolitan projects reserve and replenishment supplies to refill system storage. MWDOC has determined that the availability of its imported supply should equate to its projected imported demand. MWDOC's 2010 UWMP states that it will meet full-service demands to its customers from 2015 through 2035.²¹ Based on the data compiled in the MWDOC plan, MWDOC expects full reliability for normal, single dry-years, and multiple dry-years for the next 25-year period.

Although Metropolitan will meet all of its member agencies' demands, MWDOC is working with its member agencies to decrease dependence on imported water by encouraging further development of local supplies. In addition, MWDOC assists its member agencies with various programs designed to improve water service reliability including water conservation programs and water recycling projects.

5.3 Orange County Water District

The mission of the OCWD is to provide local water retailers with a reliable, adequate, high quality water supply at the lowest reasonable cost in an environmentally responsible manner. Efforts have been made to develop and secure new supplies. Also in December 2008, OCWD secured the rights to divert and use up to 362,000 AFY of Santa Ana River

²¹ City of Garden Grove 2010 UWMP, June 2011.

water through a decision of the State Water Resources Control Board. Description to other recent OCWD projects can be found in OCWD's 2009 GWMP.

As has been discussed previously throughout this WSA, the primary source of water for the City is the Orange County Groundwater Basin (Basin). OCWD is responsible for the protection of water rights to the Santa Ana River in Orange County as well as the management and replenishment of the Basin.²² OCWD replenishes and maintains the Basin at safe levels while significantly increasing the Basin's annual yield by utilization of the best available technology. Other than recycled water, OCWD primarily recharges the Basin with water from the Santa Ana River and to a lesser extent with imported raw water purchased from Metropolitan. According to the OCWD's Groundwater Management Plan Update 2009 dated July 9, 2009, natural recharge accounted for 69,000 acre-feet and artificial recycled water injection and recharge accounted for 272,000 acre-feet in 2008.

As of January 2008, OCWD began recharging recycled water from the Groundwater Replenishment System (GWRS). The GWRS, the largest water purification project of its kind in the world, can currently produce up to 72,000 AFY of recycled water, and has increased Orange County's water independence by providing a locally controlled, drought-proof supply of safe, high-quality water. The EIR has been completed and design commenced for a GWRS Expansion Project to increase production to over 90,000 acre-feet per year. Other processes such as recycling of wastewater, conservation and water use efficiency programs, and creative water purchases have aided in replenishing the basin to desired levels to meet required demands.

As discussed previously, OCWD establishes the Basin Production Percentage (BPP) each water year. The BPP is set based on groundwater conditions, availability of imported water supplies, anticipated precipitation, Santa Ana River runoff, and basin management objectives. The BPP was initially established in 1969 and has ranged from 62 to 89 percent. The average BPP over its 42-year history is 71.1 percent. Based on discussions with OCWD staff and background analysis provided by OCWD dated September 2010, as well as MWDOC's 2010 UWMP, the current sustainable BPP was determined to be 62%. The current BPP could increase by approximately 4 percent as a result of the GWRS Expansion Project discussed above. Due to the continuing drought conditions and declining groundwater levels, OCWD adopted a 62% BPP for 2009/10 and again for 2010/11. It was noted that the 2035 estimate could be plus or minus 5% based on a myriad of factors and an average projected BPP between 62% and 65% was recommended for agency use in long-term planning.

As discussed previously, the BPP is a major factor for the City in determining the cost of groundwater production. For groundwater production equal to or less than the BPP, groundwater producers, including Garden Grove, pay a replenishment assessment. If groundwater production greater than the BPP occurs, a Basin Equity Assessment (BEA) will be assessed. The BEA is an additional fee paid on each acre foot (AF) of water pumped above the BPP, making the total cost of that water to Garden Grove equal to the cost of Tier 2 imported water from Metropolitan.

²² OCWD Groundwater Management Plan, 2004.

Total water demand within Orange County Water District (OCWD) was 428,720 AF for the 2009-10 water year (beginning July 1, 2008 and ending June 30, 2009)²³. In the same period, groundwater production (excluding groundwater production used to supply the Talbert Barrier) for the water year totaled 285,575 AF.²⁴ For the water year, a total of 22,141 AF of supplemental water was used for the purpose of groundwater replenishment and barrier maintenance to prevent seawater intrusion from occurring in areas of the groundwater basin adjacent to the Pacific Ocean in Huntington Beach, Costa Mesa, and Fountain Valley.²⁵

For the water year ending June 30, 2010, the “annual overdraft” (annual basin storage decrease without supplemental replenishment water) was 64,060 AF.²⁶ The accumulated basin overdraft on June 30, 2010 was 323,000 AF.²⁷ Average precipitation within the basin was 117 percent of normal during the water year, totaling 15.71 inches.²⁸

Based on the groundwater basin conditions for the water year ending June 30, 2010, OCWD may purchase up to 134,000 AF of water for groundwater replenishment during the ensuing year, under provisions of the District Act. Since the formation of OCWD in 1933, OCWD has made substantial investment in facilities, basin management and water rights protection, resulting in the elimination and prevention of adverse long-term “mining” overdraft conditions. OCWD continues to develop new replenishment supplies, recharge capacity and basin protection measures to meet projected production from the basin during average/normal rainfall and drought periods. OCWD has invested in seawater intrusion control (injection barriers), recharge facilities, laboratories and basin monitoring to effectively manage the basin. Some of these programs include:

Recharge Facilities - OCWD currently owns and operates approximately 1,000 acres of recharge spreading facilities located in cities of Anaheim and Orange adjacent to the SAR and Santiago Creek. OCWD has built a recharge system that provides the majority of water supplied by the District. The 17 major facilities in the Anaheim/Orange area are grouped into four major components: the Main River System, the Off-River System, the Deep Basin System, and the Burris Pit/Santiago System. Each system has a series of percolation spreading basins, either shallow or deep, whose sidewalls and bottoms allow for percolation into the underlying aquifer.

Seawater Intrusion Barriers - OCWD’s Talbert Barrier is composed of a series of injection wells that span the 2.5-mile-wide Talbert Gap between the Newport and Huntington mesas. The Talbert Barrier wells can inject approximately 42 mgd of water into four aquifer zones. Injecting water through the wells forms a hydraulic barrier to seawater that would otherwise migrate inland toward areas of groundwater production.

²³ Orange County Water District, *2009-2010 Engineer’s Report on Groundwater Conditions, Water Supply and Basin Utilization in the Orange County Water District*, February 2011.

²⁴ Orange County Water District, *2009-2010 Engineer’s Report*, February 2011.

²⁵ Orange County Water District, *2009-2010 Engineer’s Report*, February 2011.

²⁶ Orange County Water District, *2009-2010 Engineer’s Report*, February 2011.

²⁷ Orange County Water District, *2009-2010 Engineer’s Report*, February 2011.

²⁸ Orange County Water District, *2009-2010 Engineer’s Report*, February 2011.

The Alamitos seawater intrusion barrier is composed of a series of injection wells that span the Los Angeles/Orange County line in the Seal Beach-Long Beach area. It is operated by the Los Angeles County Department of Public Works (LACDPW) in cooperation with OCWD and the Water Replenishment District (WRD). The source of this water is a blend of purified wastewater from WRD and potable supplies from Metropolitan. Also, the Alamitos Barrier System includes four extraction wells located seaward of the injection barrier to create a pumping trough to remove the degraded brackish groundwater.

Groundwater Monitoring – OCWD has one of the most sophisticated groundwater monitoring programs in the country. The District runs more than 350,000 analyses of water from more than 650 wells every year. OCWD performs nearly 50 percent more water quality tests than it is required to do in order to ensure the highest water quality possible. In 2004, OCWD completed a 10-year, \$10 million Santa Ana River Water Quality and Health Effects Study, which demonstrated the safety of SAR water as a source for recharging the groundwater basin. A panel of nationally recognized experts provided an independent review of the study and validated its positive results.

5.3.1 OCWD Long Term Facilities Plan (LTFP)

OCWD has prepared a LTFP to evaluate potential basin and water quality enhancement projects that may be implemented in the 20-year planning period. The LTFP was proposed to do the following:

- Evaluate projects to cost effectively increase the amount of sustainable basin production and protect water quality
- Develop an implementation program for the recommended projects
- Establish the basin's future maximum (target) annual production amount and correspondingly how much new recharge capacity would be required
- Estimate impacts to potential future RA rates and long-term BPPs

The LTFP utilizes information developed in OCWD's Groundwater Management Plan. The LTFP includes a master list of developed and proposed projects. The various projects are grouped into five categories: (1) recharge facilities, (2) water source facilities, (3) basin management facilities, (4) water quality management facilities, and (5) operational improvements facilities. Each project is evaluated using criteria such as technical feasibility, cost, institutional support, functional feasibility, and environmental compliance. The LTFP includes an implementation plan for recommended projects over the 20 year planning period.

5.3.2 OCWD Groundwater Management Plan (GMP)

OCWD recently published its GMP, 2009 Update. The 2009 GMP updates an earlier version, finalized in March 2004. The GMP 2009 Update provides information on District operations, lists projects completed since publication of the 2004 report, and

discusses plans for future projects and operations. Over fifteen major projects completed between 2004 and 2008 have improved OCWD operations, increased recharge capacity, and improved water quality.²⁹ The GMP complies with SB 1938, passed in 2002, which includes a list of items to be included in a GMP. The GMP's objectives include (1) protecting and enhancing groundwater quality, (2) cost-effectively protecting and increasing the basin's sustainable yield, and (3) increasing the efficiency of OCWD's operations.³⁰ Various programs, policies, goals, and projects are defined in the GMP to assist OCWD staff in meeting these objectives. The potential projects described in the GMP are discussed in further detail in the LTFP. The GMP describes the following:

- Background and purpose of the GMP
- Hydrogeology of the basin
- Range of activities and management programs, including groundwater monitoring, groundwater quality management, production management, recharge water supply, and improvement projects
- Historical and future water demands and integrated demand/supply management strategies
- Financial management programs
- Recommendations for continued proactive basin management

5.4 City of Garden Grove

5.4.1 Water System

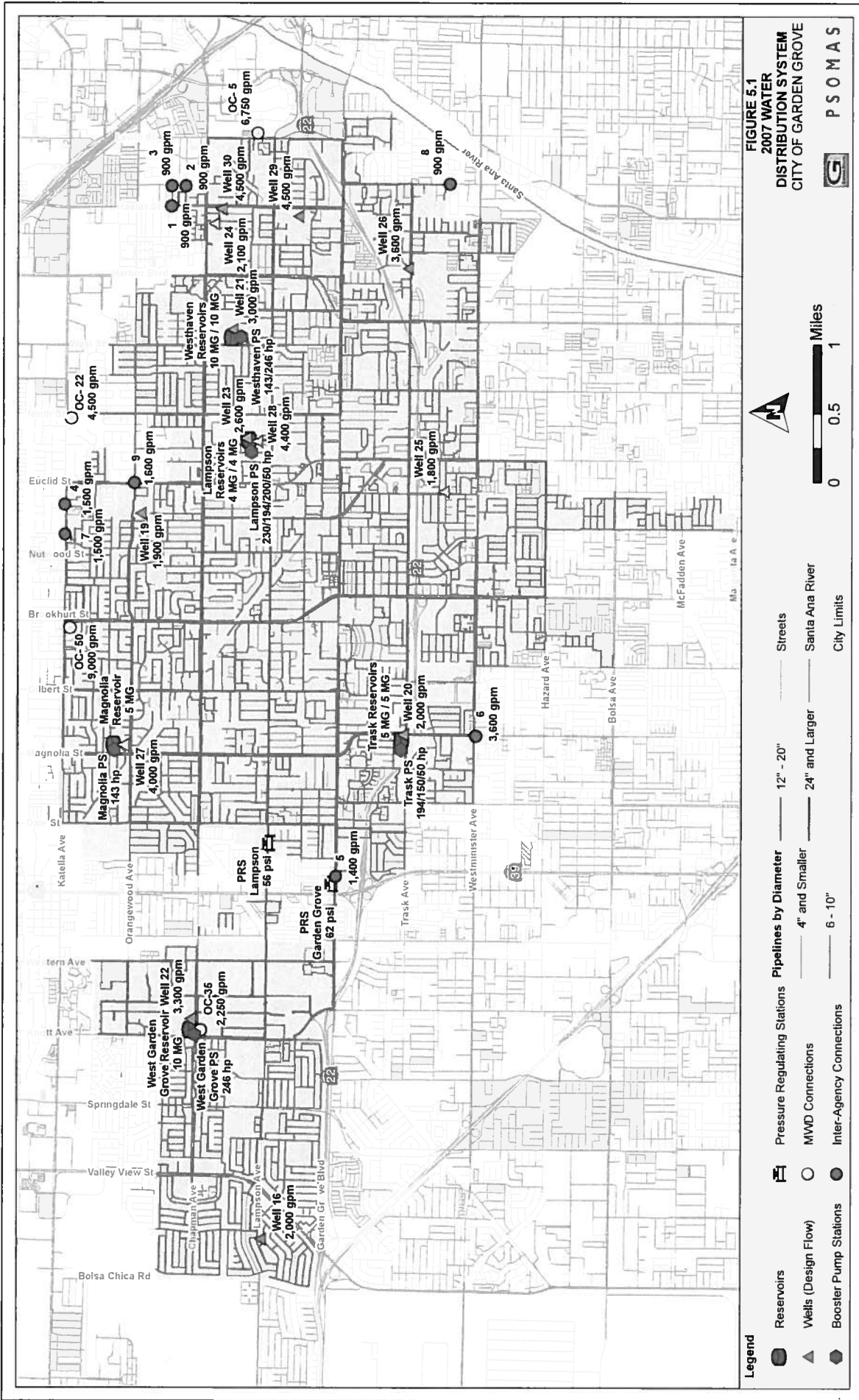
Today, the City of Garden Grove's Water Services Division provides water service to approximately 177,000 persons within its 18.2-square mile service area. The service area and City boundary are generally contiguous. A map of the City's service area is shown in Figure 5.1. The City's basic water services include single and multi-family residential and general services (i.e., commercial, industrial, municipal, and institutional consumers).

Today the Water Services Division has 433 miles of transmission and distribution mains, 8 reservoirs with a capacity of 53 million gallons, 11 active groundwater wells with a combined production capacity of about 30,400 gallons per minute (gpm), 5 booster pumping stations, 2 pressure regulating stations, and 4 imported water connections, where the City receives water from MWDOC. A distribution map from the City's 2008 Water Master Plan showing key transmission mains, wells, reservoirs, and pumping stations is also shown in Figure 5.1.

The water system service area has elevations ranging from 25 feet above mean sea level (MSL) in the west portion of the City to 130 feet above MSL. To provide appropriate operation pressures for this range of elevations, the water system is divided into two pressure zones. The lowest pressure zone operates at a static hydraulic grade line (HGL) elevation of 200 feet above MSL and the highest pressure zone has a static HGL elevation of 220 feet above MSL.

²⁹ Orange County Water District, Groundwater Management Plan Update, July 9, 2009.

³⁰ Orange County Water District, Groundwater Management Plan Update, July 9, 2009.



Source: City of Garden Grove Water System Master Plan, Carolo, September 2008

5.4.2 Past and Current Efforts

Reliability is a measure of a water system's expected success in managing water shortages. The City has strategies to manage water demand with respect to frequency and magnitude of supply deficiencies. The City recognizes water conservation as a priority in its water use planning. The long-term goal of the City's water conservation program is to achieve and maintain water use efficiency in the City of Garden Grove Water Services Division's service area. Specific objectives for achieving this goal include the following:

- Elimination of wasteful practices in water use;
- Continued development of information on both current and potential water conservation practices; and
- Ongoing implementation of conservation practices

The City participates in a number of conservation activities in southern California on a regional level. Municipal Water District of Orange County (MWDOC) implements regional conservation programs, such as school education programs, on behalf of the City. Additionally, the City recently completed a program to install Evapotranspiration (ET) irrigation controllers, or weather-based controllers, at a number of City parks and plans to install drought tolerant landscaping and a more efficient irrigation system in the Brookhurst Street median in 2010/2011.

On December 11, 1991, an agreement known as the "Memorandum of Understanding Regarding Water Conservation in California" (MOU) was signed in Sacramento. This agreement mandated the implementation of water conservation programs throughout the state known as Urban Water Conservation Best Management Practices (BMPs). Currently, there are 14 BMP's. The City became a signatory to the agreement in December 2000. One of the City's obligations as a signatory to the MOU is to submit a BMP Retail Water Agency Report filing to the California Urban Water Conservation Council (CUWCC) every two years and the City's has been diligent in preparing and filing these reports.

The City passed Ordinance No. 2751 on July 14, 2009, which amended and updated the City's water conservation program to add additional water conservation measures mandated by Metropolitan. The purpose of this ordinance is to provide a permanent mechanism that allows the City to deal with extended water shortages in a timely, systematic way. On February 9, 2010, the City passed Ordinance No. 2769, which amended Title 9 (Zoning Ordinance) of the Municipal Code to incorporate landscape water efficiency requirements into Title 9. And on March 23, 2010, the City passed Ordinance No. 2770, which extended the authorization for the use of artificial turf from strictly residential to all zoning categories subject to specified standards. All of these actions have, and will continue to provide for the more efficient use of water within the City's service area.

Another method of increasing water reliability is Metropolitan's Long-Term In-Lieu Groundwater Storage Program, which the City has consistently participated in when this

water has been made available by Metropolitan. With the drought of the past few years this program was discontinued by Metropolitan, but following the wet water year of 2009/10, it was reinstated. The major goals of this program include the following: (1) achievement of greater water supply reliability through increased conjunctive use of imported and local water supplies; and (2) reduction of member agencies' dependence on deliveries from Metropolitan during times of shortage. The Long-Term Storage credits apply to water that is imported in-lieu of groundwater pumping. For each acre-foot of Long-Term Storage water claimed, the City is provided discounts from Metropolitan and OCWD, resulting in a unit cost of Long-Term Storage water approximately equivalent to the unit cost of pumped groundwater. But, this provides significant benefits to the Orange County Groundwater Basin as overall water levels are increased, thus enhancing regional water supply reliability.

The City has the ability to certify for Groundwater Seasonal Shift Storage (SSS) and Groundwater Long-Term Storage credits. The following describes these programs the City participates in:

- Groundwater Seasonal Shift Storage credits are received when the City pumps additional groundwater during the summer months (May through September) and, correspondingly, imports from Metropolitan an identical quantity during the winter months (October through April), within a 12-month period. Metropolitan charges the City a discounted unit cost for the "shifted" imported quantity.
- The Long-Term Storage credit applies to water that is imported in lieu of groundwater pumping. For each acre-foot of Long-Term Storage water claimed, the City is provided discounts from Metropolitan and OCWD, resulting in a unit cost of Long-Term Storage water approximately equivalent to the unit cost of pumped groundwater. Although the Long-Term Storage Program is essentially cost-neutral for the City, it provides the following benefits: (1) water is imported when Metropolitan has an abundant supply; and (2) groundwater resources are conserved (i.e. the long-term import quantity would have been pumped from the groundwater if the City did not participate).

BEA Exempt-Nitrate Blending Project

Between the years of 1990 and 2005, the City participated in a blending agreement with OCWD where they were allowed to pump above the BPP, but would pay an adjusted BEA. The adjusted BEA allowed the City to deduct the additional expenses that were incurred from the blending project. The Lampson Well Nitrate Blending Project is not only beneficial to the City, but also benefits the overall Orange County Basin by cleaning the Talbert Aquifer of nitrates. Under the agreement, the City was allowed to extract 4,000 AFY from wells containing high nitrate concentrations. Currently, OCWD considers the City's BEA-exempt agreement to be expired.

The Garden Grove Nitrate Blending Project is located at the City's Lampson Reservoir site. Groundwater pumped from two wells, No. 28 (high nitrate concentration) and Well

No. 23 (low nitrate concentration) were blended in order to meet the maximum contaminant level (MCL) for nitrate. The blending project has been shut down since 2005 due to a three-year period of higher nitrate concentration content in Well 28. Well 28 was operated on a constant speed pump, requiring the City to pinch the discharge valve, thus making it very inefficient to operate. The City is currently retrofitting Well 28 with a variable frequency drive and reinstated the blending operation between Wells 23 and 28 in July 2011.

The City also drilled a new well (Well 31) and anticipates completing equipping of the well and bringing it on line by April 2013. The addition of Well 31 along with the retrofitting of Well 28 will bring the City's production capacity to 13 active-operating wells and a total system capacity of 39,000 gpm. Prior to that work, the most recent addition was Well 30 which was constructed under the Orange County Groundwater Conjunctive Use Program (CUP) and activated in July 2008. The addition of Well 30 enables the City to pump stored water during dry periods. The City actually pumped CUP water for a two-year period during 2008 and 2009.

Huntington Beach Sea Water Desalination Project

As technology progresses, additional water supplies and facilities are being brought on line to further assure water supply reliability well into the future.

One recent example is the proposal by Poseidon Resources, Inc. to build a 50 million gallon per day (50 MGD) (56,000 AFY) seawater desalination project in Huntington Beach called the Huntington Beach Sea Water Desalination Facility. Poseidon Resources is working with local and state agencies to obtain the required permits to ensure proper safeguards to the community and environment. On September 7, 2010, a revised EIR was approved and on September 20, 2010, a Coastal Development Permit and Tentative Parcel Map for the project were approved by the Huntington Beach City Council. The Project also has an approved National Pollutant Discharge Elimination System (NPDES) Permit issued by the Santa Ana Regional Water Quality Control Board in 2006, an approved lease amendment from the California State Lands Commission authorizing Poseidon to use existing offshore seawater intake and discharge facilities utilized by the Huntington Beach Generating Station, and a conditional approval from the Department of Public Health. The project still needs approval from the California Coastal Commission prior to commencing construction, which could begin in 2011 and the facility could be operational in 2013.

The City of Garden Grove has been participating in the Poseidon workshops since October 2009. In January 2010, the City Council approved signing a Letter of Intent, a Confidentiality Agreement, and signing a Memorandum of Understanding between the Orange County retailers and Poseidon. All three of these documents are non-binding. The City has told Poseidon that they would consider an agreement to purchase 5,000 to 10,000 acre-feet annually, from the seawater desalination plant to be constructed at their site in Huntington Beach. This water would be provided to Garden Grove either by direct

delivery or by exchanges with another retailer, involving groundwater and/or imported water.

5.5 Dry Year Reliability Comparison

Metropolitan Supplies and Demands

As previously noted, Garden Grove obtains its imported water from MWDOC who is their Metropolitan member agency. As a part of its Integrated Water Resources Plan Implementation Report process (IRP)³¹, and more recently in its 2010 RUWMP, November 2010, Metropolitan chose the year 1977 as the single driest year since 1922, and the years 1990-1992 as the driest multiple (3) years over that same period. These years were selected because they represent the timing of the least amount of available water resources from the SWP, a major source of Metropolitan's supply.

Concurrently and following the preparation of its 2010 RUWMP, Metropolitan has prepared a 2010 IRP Update, which was adopted by the Metropolitan Board of Directors on October 12, 2010.

Based on Metropolitan's 2010 RUWMP and 2010 IRP, Table 5.2, *Metropolitan's Regional Water Supply/Demand Reliability Projections*, summarizes Metropolitan's current imported supply availability and demand projections for average year, single dry year, and multiple dry years over the 20-year period beginning in 2015 and ending in 2035. The supply projections include current programs and programs under development as well as in-region storage and programs. Reference is made to Metropolitan's 2010 RUWMP for a description of these programs under development, but they include only programs Metropolitan is confident can be implemented and do not include other more speculative programs, like the Poseidon Huntington Beach desalination plant. Even if the programs under development are removed, there are surpluses in all years and scenarios listed below. Demands are firm demands on Metropolitan and also include commitments for IID-SDCWA transfers and canal lining.

³¹ Metropolitan develops Integrated Water Resources Plans (IRPs), which lay out how Metropolitan will secure and provide water to its customer base. These IRPs utilize hydrological and other data provided by DWR and are updated periodically through IRP Report Updates to reflect changing conditions.

**Table 5.2
Metropolitan's Regional
Water Supply/Demand Reliability Projections (AFY)**

Region Wide Projections	2015	2020	2025	2030	2035
Supply Information					
Projected Supply During an Average Year ^[1]	4,073,000	4,499,000	5,140,000	4,998,000	4,865,000
Projected Supply During a Single Dry Year ^[1]	3,219,000	3,644,000	4,013,000	3,859,000	3,726,000
Projected Supply During Average of Multiple 3 Dry Year Period ^[1]	2,652,000	2,970,000	3,253,000	3,214,000	3,170,000
Demand Information					
Projected Demand During an Average Year ^[2]	2,006,000	1,933,000	1,985,000	2,049,000	2,106,000
Projected Demand During a Single Dry Year ^[2]	2,171,000	2,162,000	2,201,000	2,254,000	2,319,000
Projected Demand During Average of Multiple 3 Dry Year Period ^[2]	2,236,000	2,188,000	2,283,000	2,339,000	2,399,000
Surplus Information					
Projected Surplus During an Average Year	2,067,000	2,566,000	3,155,000	2,949,000	2,759,000
Projected Surplus During a Single Dry Year	1,048,000	1,482,000	1,812,000	1,605,000	1,407,000
Projected Surplus During Average of Multiple 3 Dry Year Period	416,000	782,000	970,000	875,000	771,000

[1] Projected supplies include current supplies and supplies under development. This data was obtained from Metropolitan's 2010 RUWMP, adopted by the Board on November 9, 2010 (Tables 2-9 through 2-11).

[2] Demand data obtained from Metropolitan's 2010 RUWMP, adopted by the Board on November 9, 2010 (Tables 2-9 through 2-11).

Metropolitan has had a long and successful track record in implementing resource management actions and measures to allow for consistency in available water supply in dry years. Some of these programs, segregated by category, have included the following:

Conservation

- Providing incentives to facilitate the installation of water conserving devices. Metropolitan is also looking at refining their current incentive program to include more options, streamlined administrative processes, and more standardization across programs to increase participation. Total incentive payments for FY 2006/07 were \$15.4 million and for FY 2007/08 were \$18.1 million, which created 8,300 AF and 7,400 AF of new conserved water savings, respectively, bringing the total to 120,000 AF of conserved annual water savings, since 1991.

- Promoting water savings through legislative measures.
- Pursuing specific implementation strategies outlined in Metropolitan's Conservation Strategy Plan, jointly developed with its member agencies.

Local Resources Programs (LRP)

- Providing incentives of up to \$250 per acre-foot to expand water recycling and groundwater recovery programs. Eighty-six participating water recycling and groundwater recovery projects are expected to collectively produce about 363,000 AFY once fully implemented. Since inception of the LRP in 1982, Metropolitan has provided more than \$244 million for the production of about 1.3 MAF of recycled water and recovered groundwater.
- Encouraging development of seawater desalination by promoting improved regional facilitation and funding. Additional information on desalination is included later in this section.
- Updating policies to allow for an open process to accept and view project applications on a continuous basis, with a goal of development of an additional 174,000 acre-feet per year of local water resources.

In-Basin Groundwater Storage

- Promoting dry-year conjunctive use programs with member and retail agencies, which provide more than 415,000 AF of additional storage within Metropolitan's service area with a contractual yield of more than 115,000 AF during dry conditions. Metropolitan has allocated \$52.4 million to these programs to date. Metropolitan also has about 63,000 AF in local supplemental storage through agreements with several member agencies.

In-Basin Surface Water Storage

- Providing storage in Metropolitan's Diamond Valley, Lake Mathews and Lake Skinner Reservoirs.
- Providing flexible storage in DWR's Castaic Lake and Lake Perris Reservoirs.
- Plan process.

City of Garden Grove

The City's water demand in fiscal year 2009/10 approximately 26,000 AF including unaccounted-for-water. Based on the City's 2010 UWMP, water demand for year 2035 is projected to be 30,907 AFY, including the Proposed Project. Table 4.2, shown previously, depicts the projected water demands for the City based on the 2010 UWMP and used in this section to evaluate future water supply reliability. Additional water demands generated by the Proposed Project are also considered in this analysis. As shown in the water supply and demand tables below (Tables 5.4 through 5.10), all projected Project demands can be met with estimated supply.

Reliability of a supply is impacted by climatic variation. To analyze the changes of reliability due to climate, in its 2010 UWMP the City has documented that it is 100% reliable for single dry and multi-dry year demands through 2035 with an increase of 5.6% above normal year demands using FY 2003-04 as the base year.

Based on the annual MWDOC survey completed by each Producer in the spring of 2008, the estimated demand for groundwater in the OCWD boundary will increase from 519,000 AFY in 2015 to 558,000 AFY in 2035 representing a 7.5 percent increase over a 20 year period. OCWD's estimated total annual groundwater production for the water year 2010-2011 is 295,000 AF based on a BPP of 62 percent and includes 22,000 AF of production from water quality improvement projects.

The OCWD Basin Production Percentage (BPP) is calculated by dividing groundwater basin pumping by total water demands. The BPP was initially established in 1969 and has ranged from a current low of 62 percent to 89 percent. For fiscal year 2008/09 the BPP was established at 69 percent. The BPP for 2009/10 and 2010/11 has been established at 62 percent, the lowest in its 42-year history (1976/77 was also 62 percent) primarily due to the fact that seven out of the past nine years have been drier than normal resulting in low groundwater levels. The average BPP for the past twenty years is 73 percent. A conservative BPP of 62 percent is assumed in the City's 2010 UWMP to be a reasonable estimate for normal, single dry, and multiple dry years. However, during wet and normal years a higher BPP could be used, or the basin could be over pumped in dry years and recharged in wet years to even out drought conditions. The 62 percent BPP assumption for all conditions is thought to be reasonable and conservative.

The City or any producer can always pump groundwater above the BPP. If this occurs, the producer pays the BEA pump tax which is a higher payment, as compared to the RA, than is paid by a producer for groundwater produced within the BPP limits. Because the BEA exemption agreement between the City and OCWD has expired, it is assumed here that OCWD will disallow the agreement to continue and the City's groundwater production will stay within the BPP without the BEA adjustment. However, the City is making improvements to the blending facilities and is planning to appeal the BEA exemption once the interim blending system is in place.

Demand on imported supply typically increases during dry years when the weather is hot and there is a decrease in local runoff. As discussed previously in this section, Metropolitan demonstrated it has developed flexible water supplies through transfers and storage programs designed to increase its resources during dry water year conditions. Table 5.3 above shows Metropolitan has projected sufficient supplies to meet demands within its service area through year 2035. Imported water supply to the City as set forth in Tables 5.4 through 5.10 is calculated as the difference of total demand less local groundwater supplies. Analysis shows that long-term groundwater and imported water are anticipated to remain stable to the City, based on OCWD and Metropolitan studies and reports.

Table 5.4 presents future normal year water demands based on growth factors developed in Section 4 of this WSA. Table 5.5 shows single-dry water year supply and demand projections and Tables 5.6 through 5.9 shows the multiple-dry water years projected supply and demand. In the multiple dry year scenarios, the first two years of each five-year period are assumed to be a normal years with the three dry years occurring in years three, four and five.

Table 5.3
City of Garden Grove
Projected Water Supply and Demand
Normal Year (AFY)

Water Sources	2015	2020	2025	2030	2035
Supply	Normal Water Years				
Imported ^[1]	11,111	11,281	11,409	11,579	11,745
Local (Groundwater) ^[2]	18,129	18,407	18,615	18,893	19,162
Total Supply	29,240	29,688	30,024	30,472	30,907
Demand					
Total Demand without the Proposed Project ^[3]	29,039	29,487	29,823	30,271	30,706
Net Proposed Project Demand ^{[4][5]}	201	201	201	201	201
Total Demand	29,240	29,688	30,024	30,472	30,907
Supply/ Demand Difference	0	0	0	0	0

[1] Equal to Total Demand minus Local Groundwater Supply.

[2] This figure represents 62% of total Garden Grove water demand based on the anticipated BPP forecasts as discussed previously in this WSA.

[3] This figure represents normal year demand based on the City of Garden Grove's 2010 UWMP and excludes Net Proposed Project Demand.

[4] This figure represents net demand for the Proposed Project (total Project normal year demand minus existing project site demand).

[5] Proposed Project is assumed to be built out by 2014.

Table 5.4
City of Garden Grove
Projected Water Supply and Demand
Single Dry Year (AFY)

Water Sources	2015	2020	2025	2030	2035
Supply	Single Dry Years				
Imported ^[1]	12,748	12,944	13,090	13,285	13,476
Local (Groundwater) ^[2]	18,129	18,407	18,615	18,893	19,162
Total Supply	30,877	31,351	31,705	32,178	32,638
Demand					
Total Demand without the Proposed Project ^[3]	30,665	31,138	31,493	31,966	32,426
Net Proposed Project Demand ^{[3][4][5]}	212	212	212	212	212
Total Demand	30,877	31,351	31,705	32,178	32,638
Supply/ Demand Difference	0	0	0	0	0

[1] Equal to Total Demand minus Local Groundwater Supply.

[2] This figure represents 62% of total Garden Grove normal year water demand based on the anticipated BPP forecasts as discussed previously in this WSA.

[3] Single Dry Year Demand = Normal Year Demand x 1.056 (5.6% increase).

[4] This figure represents net demand for the Proposed Project (Total Project normal year demand minus existing project site demand).

[5] Proposed Project is assumed to be built out by 2014.

**Table 5.5
City of Garden Grove
Projected Water Supply and Demand
Multiple Dry Water Years 2011-2015 (AFY)**

Water Sources	2011	2012	2013	2014	2015
Supply	Normal Years		Multiple Dry Years		
Imported ^[1]	10,975	11,009	12,671	12,710	12,749
Local (Groundwater) ^[2]	17,907	17,962	18,018	18,073	18,129
Total Supply	28,882	28,971	30,688	30,783	30,877
Demand					
Total Demand without the Proposed Project ^[3]	28,882	28,971	30,688	30,571	30,665
Net Proposed Project Demand ^{[3][4][5]}	0	0	0	212	212
Total Demand	28,882	28,971	30,688	30,783	30,877
Supply/ Demand Difference	0	0	0	0	0

[1] Equal to Total Demand minus Local Groundwater Supply.

[2] This figure represents 62% of total Garden Grove normal year water demand based on the anticipated BPP forecasts as discussed previously in this WSA.

[3] Multiple Dry Year Demand = Normal Year Demand x 1.056 (5.6% increase).

[4] This figure represents net demand for the Proposed Project (total Project normal year demand minus existing project site demand).

[5] Proposed Project is assumed to be built out by 2014 and therefore included in 2014 and beyond.

Table 5.6
City of Garden Grove
Projected Water Supply and Demand
Multiple Dry Water Years 2016-2020 (AFY)

Water Sources	2016	2017	2018	2019	2020
Supply	Normal Years		Multiple Dry Years		
Imported ^[1]	11,145	11,179	12,866	12,905	12,944
Local (Groundwater) ^[2]	18,184	18,240	18,295	18,351	18,407
Total Supply	29,330	29,419	31,161	31,256	31,351
Demand					
Total Demand without the Proposed Project ^[3]	29,129	29,218	30,949	31,044	31,138
Net Proposed Project Demand ^{[3][4][5]}	201	201	212	212	212
Total Demand	29,330	29,419	31,161	31,256	31,351
Supply/ Demand Difference	0	0	0	0	0

[1] Equal to Total Demand minus Local Groundwater Supply.

[2] This figure represents 62% of total Garden Grove normal year water demand based on the anticipated BPP forecasts as discussed previously in this WSA.

[3] Multiple Dry Year Demand = Normal Year Demand x 1.056 (5.6% increase).

[4] This figure represents net demand for the Proposed Project (Total Project normal year demand minus existing project site demand).

[5] Proposed Project is assumed to be built out by 2014 and therefore included in 2014 and beyond.

**Table 5.7
 City of Garden Grove
 Projected Water Supply and Demand
 Multiple Dry Water Years 2021-2025 (AFY)**

Water Sources	2021	2022	2023	2024	2025
Supply	Normal Years		Multiple Dry Years		
Imported ^[1]	11,307	11,333	13,032	13,061	13,090
Local (Groundwater) ^[2]	18,448	18,490	18,532	18,573	18,615
Total Supply	29,755	29,822	31,563	31,634	31,705
Demand					
Total Demand without the Proposed Project ^[3]	29,554	29,621	31,351	31,422	31,493
Net Proposed Project Demand ^{[3][4][5]}	201	201	212	212	212
Total Demand	29,755	29,822	31,563	31,634	31,705
Supply/ Demand Difference	0	0	0	0	0

- [1] Equal to Total Demand minus Local Groundwater Supply.
- [2] This figure represents 62% of total Garden Grove normal year water demand based on the anticipated BPP forecasts as discussed previously in this WSA.
- [3] Multiple Dry Year Demand = Normal Year Demand x 1.056 (5.6% increase).
- [4] This figure represents net demand for the Proposed Project (total Project normal year demand minus existing project site demand).
- [5] Proposed Project is assumed to be built out by 2014 and therefore included in 2014 and beyond.

**Table 5.8
City of Garden Grove
Projected Water Supply and Demand
Multiple Dry Water Years 2026-2030 (AFY)**

Water Sources	2026	2027	2028	2029	2030
Supply	Normal Years		Multiple Dry Years		
Imported ^[1]	11,443	11,477	13,208	13,247	13,286
Local (Groundwater) ^[2]	18,670	18,726	18,782	18,837	18,893
Total Supply	30,114	30,203	31,989	32,084	32,178
Demand					
Total Demand without the Proposed Project ^[3]	29,913	30,002	31,777	31,872	31,966
Net Proposed Project Demand ^{[3][4][5]}	201	201	212	212	212
Total Demand	30,114	30,203	31,989	32,084	32,178
Supply/ Demand Difference	0	0	0	0	0

[1] Equal to Total Demand minus Local Groundwater Supply.

[2] This figure represents 62% of total Garden Grove normal year water demand based on the anticipated BPP forecasts as discussed previously in this WSA.

[3] Multiple Dry Year Demand = Normal Year Demand x 1.056 (5.6% increase).

[4] This figure represents net demand for the Proposed Project (total Project normal year demand minus existing project site demand).

[5] Proposed Project is assumed to be built out by 2014 and therefore included in 2014 and beyond.

Table 5.9
City of Garden Grove
Projected Water Supply and Demand
Multiple Dry Water Years 2031-2035 (AFY)

Water Sources	2031	2032	2033	2034	2035
Supply	Normal Years		Multiple Dry Years		
Imported ^[1]	11,612	11,645	13,400	13,438	13,475
Local (Groundwater) ^[2]	18,947	19,001	19,054	19,108	19,162
Total Supply	30,559	30,646	32,454	32,546	32,638
Demand					
Total Demand without the Proposed Project ^[3]	30,358	30,445	32,242	32,334	32,426
Net Proposed Project Demand ^{[3][4][5]}	201	201	212	212	212
Total Demand	30,559	30,646	32,454	32,546	32,638
Supply/ Demand Difference	0	0	0	0	0

[1] Equal to Total Demand minus Local Groundwater Supply.

[2] This figure represents 62% of total Garden Grove normal year water demand based on the anticipated BPP forecasts as discussed previously in this WSA.

[3] Multiple Dry Year Demand = Normal Year Demand x 1.056 (5.6% increase).

[4] This figure represents net demand for the Proposed Project (total Project normal year demand minus existing project site demand).

[5] Proposed Project is assumed to be built out by 2014 and therefore included in 2014 and beyond.

6.0 CONCLUSION

Currently, the total water demand for retail customers served by the City is approximately 27,500 acre-feet annually consisting entirely of potable water. In the last five years, the City's water demand has decreased by about 5 percent while population has increased by 2.5%. Some of this was due to water conservation efforts of the City (park irrigation reductions) and its residents due to the water allocation program under effect from MWDOC and Metropolitan going into its second straight year. Some of this conservation could subside and per capita use could rise slightly above its current low now that the statewide drought has officially been declared over and the water allocation has been lifted. Per capita use could also rise with improvements in the economic picture. With its diligence in the promotion of water conservation as well as financial incentives to customers to retrofit their homes and businesses with water efficient devices and appliances, the City is projecting a 7% demand increase in the next 25 years despite a projected 10% population growth.

Since the Proposed Project was a part of the Harbor Boulevard Development Area, which was included in the land use projections of the 2008 Water Master, it can be considered as included in the water demand projections of the City's 2010 UWMP. The Proposed Project's estimated net additional demand of 201 AFY can then be subtracted from the 30,472 AFY generating a total 2030 demand without the Proposed Project of 30,271 AFY. It should be noted that the additional net demand for the Proposed Project is less than 0.6 percent of the total projected City-wide demand at the end of the 20-year planning period required to be analyzed for WSA purposes.

Analysis of water supply projections for the City demonstrates that projected supplies will meet demands through fiscal year 2035. These projections consider water development programs and projects as well as water conservation, as described in the City's 2010 UWMP, June 2011 and Metropolitan's 2010 RUWMP, November 2010. Metropolitan's 2010 RUWMP projects significant surplus supply conditions in all normal, single dry, and multiple dry year scenarios. Since the City's original demand projections that were provided to MWDOC, and in turn Metropolitan, were higher than the revised projections, their demand projections should be overstated and also included the Proposed Project demands. The City's groundwater and imported water supplies are anticipated to remain stable based on OCWD and Metropolitan studies and reports.

The City's water supply projection is based on utilizing up to 62 percent groundwater (normal, single dry and multiple dry years) based on an expected average long-term Basin Production Percentage, and its share of imported water is confirmed reliable by Metropolitan. Analysis of normal, single dry, and multiple dry year scenarios also demonstrate the City's ability to meet demand during the 20-year planning period.

Additionally, if extraordinary circumstances require, the City can meet its water demand by (1) increasing production of groundwater beyond the BPP up to the basin safe yield, (2) increasing imported water purchases, and/or (3) decreasing demand through water

conservation measures, which has proved to be extremely effective over the past couple of years under Metropolitan's recently lifted Water Allocation Plan.

Reliability of future water supplies to the region will be ensured through continued implementation of the OCWD Groundwater Management Plan, OCWD's Long Term Facilities Plan, local agency programs, and the combined efforts and programs among member and cooperative agencies of Metropolitan. These agencies include all water wholesalers and retailers, the Orange County Sanitation District, the Santa Ana Regional Water Quality Control Board, and the Santa Ana Watershed Project Authority.

Collectively, the information included in this WSA identifies a sufficient and reliable water supply for the City, now and into the future, including a sufficient water supply for the Proposed Project.

7.0 REFERENCES

The following documents were used, in conjunction with discussions with the City of Garden Grove staff, in preparing this water supply assessment:

California State Department of Finance (DOF), *Series E-4 Population Data by City, 2000 to 2010*, April 2010.

City of Garden Grove, *Water Master Plan Report*, Carollo, September 2008

City of Garden Grove, *2010 Urban Water Management Plan*, May 2011.

Department of Water Resources (DWR), *Bulletin 118-1 Basin Description for Coastal Plain of Orange County Groundwater Basin Number 8-1*, September 5, 2001.

DWR, *2009 State Water Project Delivery Reliability Report*, August 2010.

DWR, *2007 State Water Project Delivery Reliability Report*, August 2008.

Metropolitan Water District of Southern California (MWD), *Water Revenue Refunding Bonds, 2008 Series C, Appendix A*, July 2008.

Metropolitan Water District of Southern California (MWD), *2010 Regional Urban Water Management Plan for the Metropolitan Water District of Southern California*, November 2010.

Metropolitan Water District of Southern California (MWD), *Integrated Water Resources Plan Update*, October 2010.

Metropolitan Water District of Southern California (MWD), *2007 Integrated Water Resources Plan Implementation Report*, October 2007.

Metropolitan Water District of Southern California (MWD), *2006 Integrated Water Resources Plan Implementation Report*, October 2006.

Municipal Water District of Orange County (MWDOC), *Draft 2010 Regional Urban Water Management Plan*, April 2011.

Municipal Water District of Orange County (MWDOC), *South Orange County Water Reliability Study: Phase 2 System Reliability Plan*, September 2004.

Municipal Water District of Orange County (MWDOC) Website, Available:
<http://www.mwdoc.com>. 2010.

Orange County Water District (OCWD), *Orange County Water District 2020 Master Plan Report*, 2000.

Orange County Water District (OCWD), *Engineer's Report*, 2009-2010.

Orange County Water District (OCWD), *The OCWD Act*.

Orange County Water District (OCWD), *OCWD v. City of Chino, et al*, (Civ. Case No. 117628), *Judgment and Settlement Documents*.

Orange County Water District (OCWD), *Groundwater Management Plan Update 2009*, July, 2009.