Water Supply Assessment for the Arantine Hills Specific Plan Project Corona, CA

Prepared for:

Bluestone Communities

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Introduction

This Water Supply Assessment (WSA) provides an evaluation of water demand and supplies for the proposed Arantine Hills Specific Plan (proposed Project) pursuant to the requirements of §10910-10915 of the California Water Code (CWC). The evaluation includes a description of the existing land uses, the proposed Project, the relevant existing regulations, the existing water supply service areas, and the existing water supply and water demands of the City of Corona, as supplied by the City of Corona Department of Water and Power (DWP). It quantifies the water demand of the existing land use and of the proposed Project, and identifies the difference between the existing land use and uses that would result from the proposed Project. The evaluation accounts for this difference within the projected water supply and water demand information for three weather year scenarios (average year, single-dry year, and multiple-dry water year) provided through various data sources to determine whether there is a sufficient water supply projected by the City to meet the proposed Project water demands plus that of the City's water supply service area through the next 20-years.

Proposed Project

Project Location

The Arantine Hills Specific Plan consists of 274.8 acres located at the foothills of the Santa Ana Mountains in the southeastern boundary of the City of Corona, Riverside County, California. The project is bounded by the Eagle Glen Specific Plan development on the north and west, by the rural residential Riverside County to the south, and by Interstate Highway 15 to the east. Figure 1 presents the regional location and Figure 2 presents the local vicinity map of the proposed Project. The Project site consists of portions of the following 7 parcels: APN 279-190-045-5, 279-240-018-5, 282-030-003-6, 282-030-004-7, 282-030-005-8, 282-030-006-9, 282-030-008-1.

Figure 1. Proposed Project Regional Location (KTGY, 2009)

Figure 2. Proposed Project Local Vicinity Map (KTGY, 2009)

Project Description

Existing land uses within the Arantine Hills Specific Plan area (plan area) consist entirely of agricultural land uses that were previously dominated by citrus groves. The City's existing General Plan Land Use Designation for the proposed Project area is entirely "Agricultural-Possible Future Urban Use". The existing zoning designation is Agriculture.

Previously, the Project site had been used for the production of grapefruit. A total of 41,584 trees were planted on 231 acres. Irrigation of these trees was accomplished through water purchased from the Elsinore Valley Municipal Water District (EVMWD) and by local onsite wells.

The proposed Project would create a master-planned community that includes a balanced residential, commercial and mixed-use development, as well as open space/recreation uses. The Specific Plan would establish land use types, locations, and densities; a circulation concept; infrastructure and public facility improvements; development standards and design guidelines; and an implementation program that would guide development for the Arantine Hills. A summary of the proposed Project land uses by planning area is presented as Table 1.

Table 1
Arantine Hills Land Use By Planning Area (KTGY, 2009)

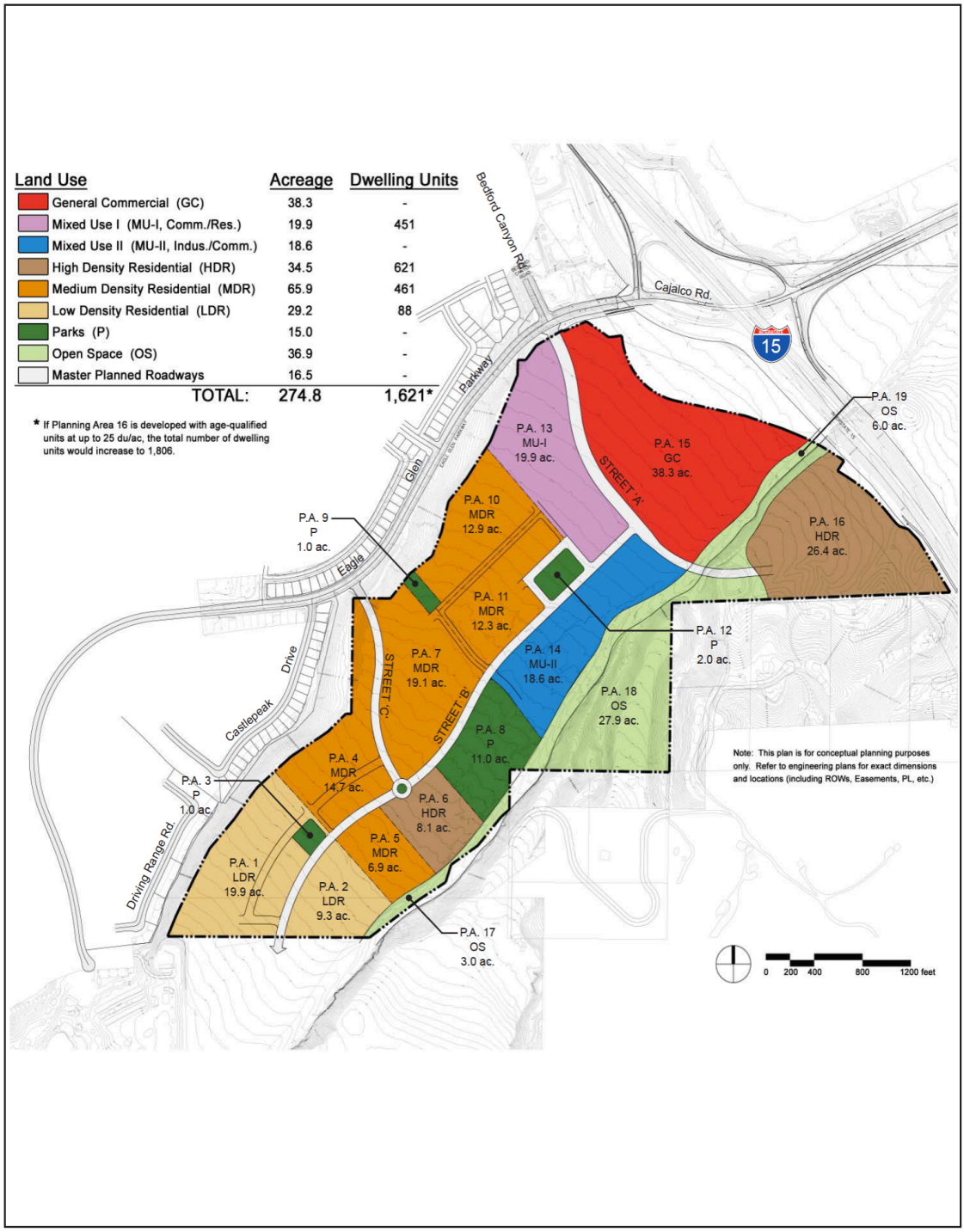
	Land Use	Acres	Density Range	Target Density	Target Units	Max Floor Area	CII Floor Space
PA						(FAR)	(Ft^2)
1	Low Density Residential (LDR)	19.9	3-6	3.0	60		
2	Low Density Residential (LDR)	9.3	3-6	3.0	28		
3	Park (P)	1.0					
4	Medium Density Residential (MDR)	14.7	6-15	7.0	103		
5	Medium Density Residential (MDR)	6.9	6-15	7.0	48		
6	High Density Residential (HDR)	8.1	15-36	18.0	146		
7	Medium Density Residential (MDR)	19.1	6-15	7.0	134		
8	Park (P)	11.0					
9	Park (P)	1.0					
10	Medium Density Residential (MDR)	12.9	6-15	7.0	90		
11	Medium Density Residential (MDR)	12.3	6-15	7.0	86		
12	Park (P)	2.0					
13	Mixed-Use I (MU-I)	19.9	25-40	35.0	451	2.00	118,000
14	Mixed-Use II (MU-II)	18.6				2.00	230,900
15	General Commercial (GC)	38.3				0.25	396,400
16	High Density Residential (HDR)	26.4	15-36	18.0	475		
17	Open Space (OS)	3.0					
18	Open Space (OS)	27.9					
19	Open Space (OS)	6.0					
	Master Planned Roadways	16.5					
	TOTAL	**274.8**			**1,621**		**745,300**

The proposed Project's land uses are described in more detail as the following:

- Approximately 129.6 acres of Residential development, providing 1,621 detached and attached single-family homes and multi-family dwellings (excluding mixed-use residential units).
- Approximately 38.3 acres of General Commercial land uses, providing retail, office, entertainment, lodging and employment opportunities.
- Approximately 38.5 acres of mixed-use development, including 19.9 acres of Mixed-Use I (commercial/residential) and 18.6 acres of Mixed-Use II (industrial/commercial). A total of 451 mixed-use residential units are planned in the Mixed-use I land use category.
- Approximately 36.9 acres of Open Space, including natural open space, land associated with Bedford Canyon Wash, and a water quality basin.
- Approximately 15.0 acres of Park land, including one 11.0-acre active neighborhood park, one 2.0-acre special use park, and two 1.0 acre mini parks.

The proposed Project would integrate these land uses through construction of public and private streets and pedestrian/bike trail circulation system. Boulevards and parkways within the planned neighborhoods would link the community with the parks, commercial centers, and mixed-use development. The proposed land use plan is shown as Figure 3.

Figure 3. Proposed Project Land Use Plan (KTGY, 2009)



The Arantine Hills Specific Plan is entirely located within the City of Corona DWP water supply service area. The City would serve the proposed Project with water for the required local and master planned facilities. The water distribution systems would be designed to satisfy the

water requirements for residential, commercial, recreational, landscaping and fire-fighting purposes associated with the development.

The minimum proposed water system improvements would consist of additional water transmission pipelines and a reservoir per the City's current Water Master Plan. The water distribution system would have the ability to serve potential future development to the south of Arantine Hills.

DWP prepared a Groundwater Management Plan (GWMP) pursuant to the guidance provided by AB3030 and the California Groundwater Management Act (Todd/AKM, 2008). The proposed Project will maximize the use of recycled municipal wastewater, consistent with the recommendations of the GWMP.

To reduce the proposed Project's demand for potable water, an extension of the existing recycled municipal wastewater system in the neighboring Eagle Glen development would provide recycled water for landscape irrigation in street rights-of-way, open space, slopes and parks, street parkways, entry monuments, fuel modification areas, as well as in commercial and industrial areas within the Project.

In 2001, the City of Corona adopted a Recycled Water Master Plan to efficiently utilize tertiary treated effluent from its water reclamation facilities. A Draft EIR Recycled Water Master Plan Project and a Final EIR Recycled Water Master Plan Project were prepared for the Recycled Water Master Plan in early 2001. An additional project specific environmental documentation was prepared, entitled Final Initial Study and Mitigated Negative Declaration for construction of the backbone infrastructure. The City filed a wastewater change petition with the State Water Resources Control Board in December 2009, to enable it to reduce its discharges to Butterfield Drain and Temescal Creek, both tributary to the Santa Ana River. The deadline to file protests to the City's wastewater change petition has passed. The City received only one protest from the California Department of Fish and Game (DFG) requesting additional information. The City is currently involved in discussions with DFG to provide additional information and settle the protest.

In March of 2007, the City received from the California Water Quality Control Board - Santa Ana Region, Board Order Number R8-2007-0005 and NPDES Number CA8000383 describing the Waster Discharge and Reclamation Requirements for the production and use of treated effluent from its Water Reclamation Facility Number 1.

The City estimates the following recycled water supply capacity over the next 20 years in Table 2.

Table 2
Recycled Water Supply Capacity

Year	Capacity (AFY)
2010	10,640
2015	12,330
2020	18,480
2025	18,480
2030	20,270

The City's historical recycled water use for recent years is presented in Table 3.

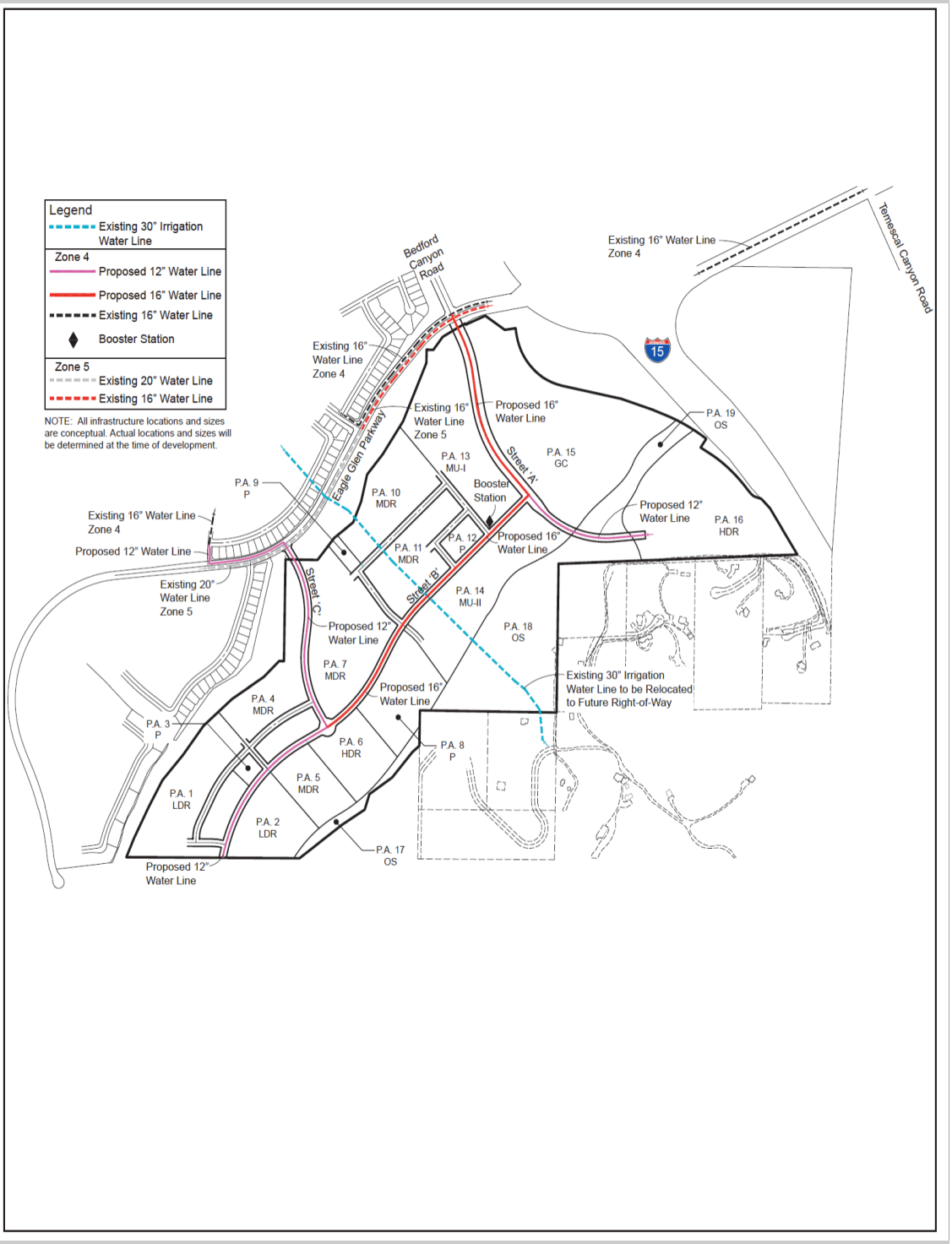
Table 3 Historical Recycled Water Use	
Year	**Capacity (AFY)**
2008	4,366
2009	4,315

The City will maintain ongoing coordination with the California Department of Public Health for the review and approval of the use of recycled water on an as required basis.

A comparison of the City's historical use and future recycled water supply capacity identifies a four fold average annual increase of recycled water. The City will therefore have more than sufficient supplies of recycled water to meet the anticipated needs of the proposed project, a maximum demand of 294 AFY for all exterior irrigation. An excess capacity of recycled water is therefore anticipated sufficient to meet the needs of existing recycled water demands, plus the proposed project, plus other recycled water demands throughout the City.

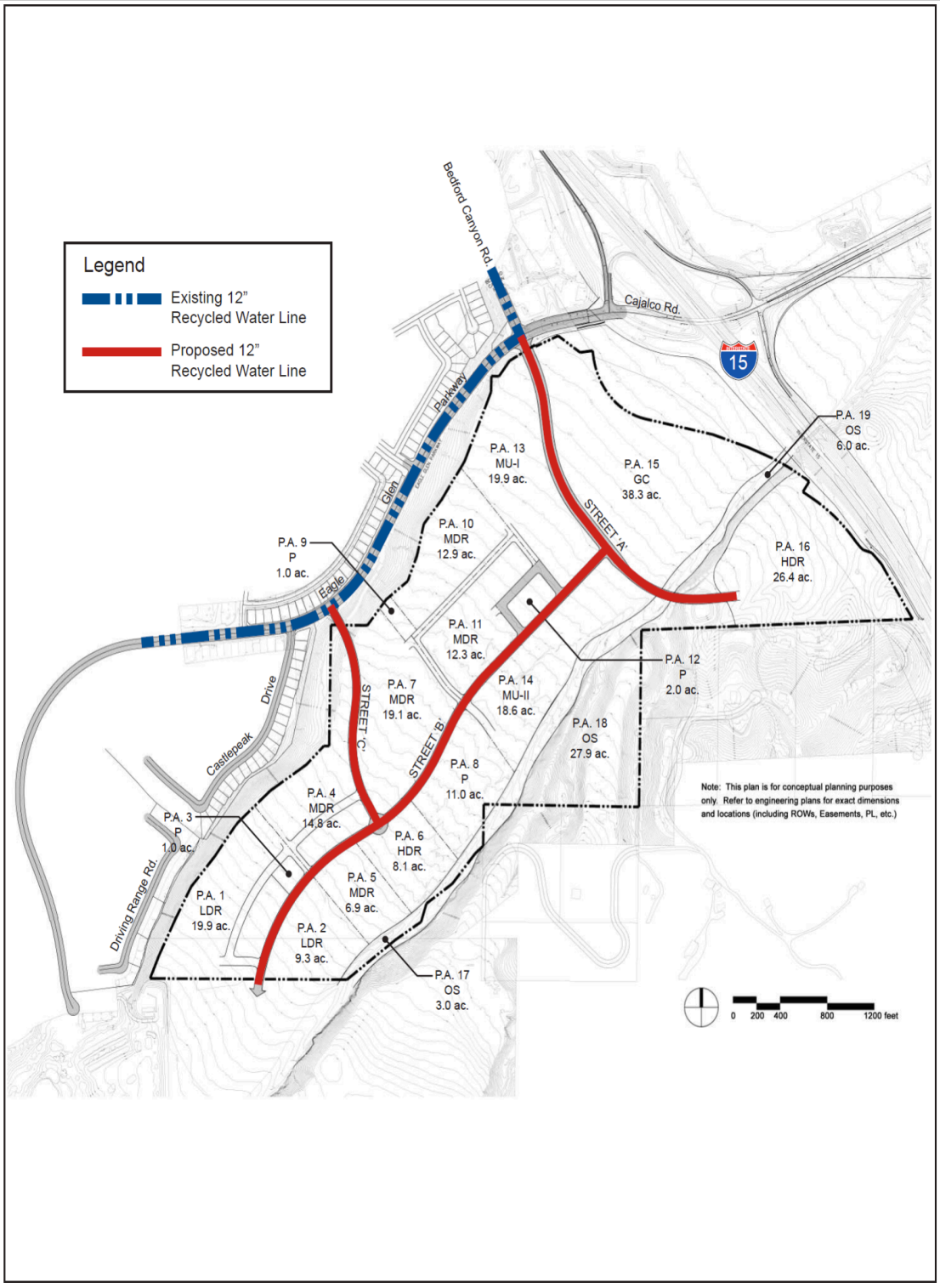
Refer to Figures 4 and 5 for information on the proposed Project's potable water distribution and reclaimed water distribution plans.

Figure 4. Proposed Project Potable Water Distribution System Plan* (KTGY, 2009)



*Shown for illustrative purposes only. Subject to change.

Figure 5. Proposed Project Reclaimed Water Distribution System Plan* (KTGY, 2009)



*Shown for illustrative purposes only. Subject to change.

To promote water-efficient landscaping, water-use management and water conservation throughout the plan area, the irrigation system will conform to Corona Municipal Code Section 17.70 and adopted landscape guidelines for residential and commercial/industrial projects. These guidelines were modeled after California State Landscape Guidelines. The irrigation system would be designed to prevent runoff and overspray. Where applicable, the irrigation system would use drip and/or micro-spray technology to achieve as high an overall irrigation efficiency as possible. Plant material will be grouped in accordance with WULCOLS III (Water Use Classifications of Landscape Species) (DWR, 2000) and recycled water would be used to irrigate all common landscape areas throughout the plan area.

All the potable water and recycled water design criteria would be in accordance with the City of Corona Municipal Code, City of Corona's Standards and Specifications, DWP Design Policy, and California Department of Public Health Drinking Water Related Regulations.

Authority

Population growth in the State of California has resulted in additional water demand to existing water systems. The State legislature has enacted laws to ensure these increased demands are adequately addressed and that a firm source of water supply is available prior to approval of certain new developments. The regulations include Senate Bill 610 (SB610), authored by Senator Jim Costa, which is briefly described below. SB610 seeks to promote a more collaborative planning process between local water suppliers, cities and counties.

SB 610

Pursuant to California Water Code §10910, cities and counties, acting as lead agencies, request that water purveyors prepare WSAs for certain projects (as defined in Water Code §10912) subject to the California Environmental Quality Act (CEQA). "Projects" under SB610 are defined under Water Code §10912(a) as follows:

- A proposed residential development of more than 500-dwelling units,
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square-feet of floor space,
- A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square-feet of floor space,
- A proposed hotel or motel, or both, having more than 500 rooms,
- A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40-acres of land, or having more than 650,000 square-feet of floor area.
- A mixed-use project that includes one or more of the specified projects, or
- A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.

If a proposed Project meets any one of these criteria, a WSA must be prepared.
The primary issue for the WSA to determine is whether the projected water supply for the next 20 years – based on normal, single-dry, and multiple-dry water years – will meet the demand

projected for the project plus the existing and planned future uses, including agricultural and manufacturing uses, throughout the service area of the public water supplier.

If the lead agency is not able to identify any public water system that may supply water for the project, the lead agency shall prepare a water supply assessment after consulting with any entity serving domestic water supplies whose service area includes the site of the proposed project, the local agency formation commission, and the governing body of any public water system adjacent to the site of the project. The governing body of the lead agency must approve the water supply assessment prepared pursuant to this section at a regular or special meeting.

Proposed Project Water Supply & Demand

The City of Corona is within the water service area of the Western Municipal Water District (WMWD or Western), which is a member agency of the Metropolitan Water District of Southern California (MWDSC). MWDSC is the regional wholesale water provider throughout Southern California and supplies water to WMWD. As a member agency of the MWDSC, Western provides wholesale water to the cities of Corona, Norco, and Riverside and the water agencies of Elsinore Valley Municipal Water District (EVMWD) and the Rancho California Water District (RCWD). Western also serves customers in the unincorporated areas of El Sobrante, Eagle Valley, Temescal Creek, Woodcrest, Lake Mathews, and March Air Reserve Base.

As the CEQA lead agency, the City of Corona has determined that the proposed Project is subject to CEQA. The proposed Project specifically meets the SB610 “project” criteria by proposing a new residential development of more than 500-dwelling units. Therefore, pursuant to CWC §10912(a)(1), the proposed Project requires the preparation of a WSA.

The City of Corona supplies more than 3,000 AFY of water and serves more than 3,000 customers and therefore pursuant to the CWC is a California urban water supplier. In 2005 the City provided domestic water to nearly 146,700 customers with an estimated total water demand of 45,000 AFY. Therefore, the City of Corona is considered a public water utility responsible for the preparation of this WSA.

The Proposed Project has a water demand of approximately 709 AFY. A summary of the anticipated water demands for each of the planning areas in the proposed Project is presented as Table 4. Unit water demands were obtained from the City of Corona Water Master Plan (Corona, 2005a) and are consistent with values used for similar projects. Water demands are estimated separately for interior and exterior needs of the proposed Project to facilitate the identification of the uses of reclaimed water.

The City obtains its water from two sources. The primary source is groundwater from the Temescal, Bedford, and Coldwater Sub-Basins. The secondary source is water imported by MWDSC from the Colorado River and the State Water Project (SWP). MWDSC wholesales its water to WMWD and then to the City. To ensure comprehensive information and analysis are provided herein, the City consulted with Western in preparing their 2005 UWMP and reviewed various other water supply documents prepared by Western.

Table 4
Arantine Hills Specific Plan Area Project Water Demands By Planning Area

		Residential					Commercial				Total		
	Land Use	**Interior Unit Demand**	**DU**	**Interior Demand**	**Exterior Unit Demand**	**Exterior Demand**	**Interior Unit Demand**	**Interior Demand**	**Exterior Unit Demand**	**Exterior Demand**	**TOTAL INTERIOR**	**TOTAL EXTERIOR**	**TOTAL PA**
PA		AFY/du		AFY	AFY/du	AFY	AFY/acre	AFY	AFY	AFY	AFY	AFY	AFY
1	Low Density Residential (LDR)	0.34	60	20.4	0.34	20					20.40	20.40	40.81
2	Low Density Residential (LDR)	0.34	28	9.5	0.34	10					9.52	9.52	19.04
3	Park (P)				1.34	1.34					-	1.34	1.34
4	Medium Density Residential (MDR)	0.34	103	35.0	0.34	35					35.03	35.03	70.05
5	Medium Density Residential (MDR)	0.34	48	16.3	0.34	16					16.32	16.32	32.65
6	High Density Residential (HDR)	0.18	146	26.8	0.05	7					26.82	6.71	33.53
7	Medium Density Residential (MDR)	0.34	134	45.6	0.34	46					45.57	45.57	91.14
8	Park (P)				1.34	14.79					-	14.79	14.79
9	Park (P)				1.34	1.34					-	1.34	1.34
10	Medium Density Residential (MDR)	0.34	90	30.6	0.34	31					30.61	30.61	61.21
11	Medium Density Residential (MDR)	0.34	86	29.2	0.34	29					29.25	29.25	58.49
12	Park (P)				1.34	2.69					-	2.69	2.69
13	Mixed-Use I (MU-I)	0.18	451	82.9	-	-	1.80	5	1.12	4.46	87.74	4.46	92.19
14	Mixed-Use II (MU-II)						1.93	10	1.12	4.17	10.21	4.17	14.38
15	General Commercial (GC)						1.80	16	1.12	8.58	16.41	8.58	24.99
16	High Density Residential (HDR)	0.18	475	87.3	0.05	22					87.26	21.81	109.07
17	Open Space (OS)				1.12	3.36					-	3.36	3.36
18	Open Space (OS)				1.12	31.25					-	31.25	31.25
19	Open Space (OS)				1.12	6.72					-	6.72	6.72
	TOTAL		1621	**383.6**		**276.7**	**5.5**			**17.2**	**415**	**294**	**709**
	PA = Planning Area												
	DU = Dwelling Units												

Table 5 Arantine Hills - Water Demand Per Planning Area by Gross Area Flow Factor						
PHASE	**PA**	**Land Use**	**Area (Acres)**	**Flow Factor (gpd/acre)**	**Average Demand (gpd)**	**Average Demand (AFY)**
3	1	LDR	19.9	3540	70446	78.91
3	2	LDR	9.3	3540	32922	36.88
3	3	P	1	1200	1200	1.34
3	4	MDR	14.7	4000	58800	65.86
3	5	MDR	6.9	4000	27600	30.92
1	6	HDR	8.1	4160	33696	37.74
1	7	MDR	19.1	4000	76400	85.58
1	8	P	11	1200	13200	14.79
1	9	P	1	1200	1200	1.34
1	10	MDR	12.9	4000	51600	57.80
1	11	MDR	12.3	4000	49200	55.11
1	12	P	2	1200	2400	2.69
1	13	HDR	12.9	4160	53664	60.11
1	13	GC	7	1610	11270	12.62
1	14	MU-II	11.1	1500	16650	18.65
3	15	GC	38.3	1610	61663	69.07
4	16	HDR	25.1	4160	104416	116.96
1	17	OS	3	1000	3000	3.36
1	18	OS	27.9	1000	27900	31.25
1	19	OS	6	1000	6000	6.72
Total			249.5			787.71
	PA = Planning Area					

Previous City water studies calculated water demands based upon land area unit flow factors for each land use type as presented in Table 5. The estimated Project water demand was calculated as approximately 787 AFY and were included within the City's Water Master Plan and 2005 Urban Water Management Plan.

Project water demands for this Water Supply Assessment were calculated based upon per dwelling unit water demand factors. Per dwelling unit factors were calculated from the planned number of dwelling units as described within the Project Specific Plan derived from the same unit area flow factors provided by the City's Water Master Plan (Corona, 2005a). Exterior demands are calculated based upon local evapotranspiration factors for ornamental and turf areas. The project water demand calculated on a per dwelling unit basis is 709 AFY as presented in Table 4. This refined project demand is based upon the greater project detail described within the Project Specific Plan.

The proposed Project will maximize the use of recycled municipal wastewater, consistent with the recommendations of the GWMP. The City will not be providing recycled water to single-family homeowner maintained landscape area. Table 6 presents the anticipated split between the demands for potable and recycled water. Interior potable water demands were calculated based upon per unit water demand factors for each land use type described within the City's UWMP. All irrigation of commercial landscapes, parks, fuel modification areas, entry monuments, median strips and open spaces are planned for use of recycled water.

Table 6 Arantine Hills Specific Plan Area Project Water Demand By Supply Source				
	LAND USE	INTERIOR POTABLE	EXTERIOR POTABLE	EXTERIOR RECYCLED
PA		AFY	AFY	AFY
1	Low Density Residential (LDR)	20	20	0
2	Low Density Residential (LDR)	10	10	0
3	Park (P)	0		1
4	Medium Density Residential (MDR)	35	35	0
5	Medium Density Residential (MDR)	16	16	0
6	High Density Residential (HDR)	27	7	0
7	Medium Density Residential (MDR)	46	46	0
8	Park (P)	0		15
9	Park (P)	0		1
10	Medium Density Residential (MDR)	31	31	0
11	Medium Density Residential (MDR)	29	29	0
12	Park (P)	0		3
13	Mixed-Use I (MU-I)	88	0	4
14	Mixed-Use II (MU-II)	10	0	4
15	General Commercial (GC)	16	0	9
16	High Density Residential (HDR)	87	22	0
17	Open Space (OS)	0		3
18	Open Space (OS)	0		31
19	Open Space (OS)	0	7	0
	TOTAL	415	222	72

Environmental Setting

Climate

The climate of the plan area is typical of Southern California, characterized as having mild temperatures year round. The mean annual rainfall in the City of Corona and vicinity is approximately 10 inches. Reference evapotranspiration is 56.4 inches per year or approximately 4.7 AFY/acre. Table 6 presents the monthly reference evapotranspiration and rainfall data from the University of Riverside (Station 44) as provided on their CIMIS website database at *www.cimis.water.ca.gov* for the period of record from June 1985. Evapotranspiration and rainfall data is used in calculations of irrigation water demands.

Table 7 Project Area Climate Characteristics (inches)							
	Jan	Feb	Mar	Apr	May	Jun	
Standard Monthly ETo	2.49	2.91	4.16	5.27	5.94	6.56	
Average Rainfall	2.16	2.15	1.75	0.81	0.23	0.07	
	Jul	Aug	Sep	Oct	Nov	Dec	**Total**
Standard Monthly ETo	7.22	6.92	5.35	4.05	2.94	2.56	**56.4**
Average Rainfall	0.04	0.12	0.26	0.32	0.93	1.21	**10.1**

Water Service Areas

City of Corona Water Service Area

The City provides municipal water service to an area of approximately 39 square-miles. This area includes approximately 32 square-miles within the City's municipal area, and 7 square-miles within the City's Sphere of Influence (SOI) in Riverside County. The proposed Project would be directly serviced by the City of Corona for all of its water demands (City of Corona, 2005a, 2005b).

The City currently maintains and operates 21 groundwater production wells for its municipal supply (City of Corona 2005a, 2005b). Locations of the City wells and those of other historical groundwater pumpers are shown in Figure 6.

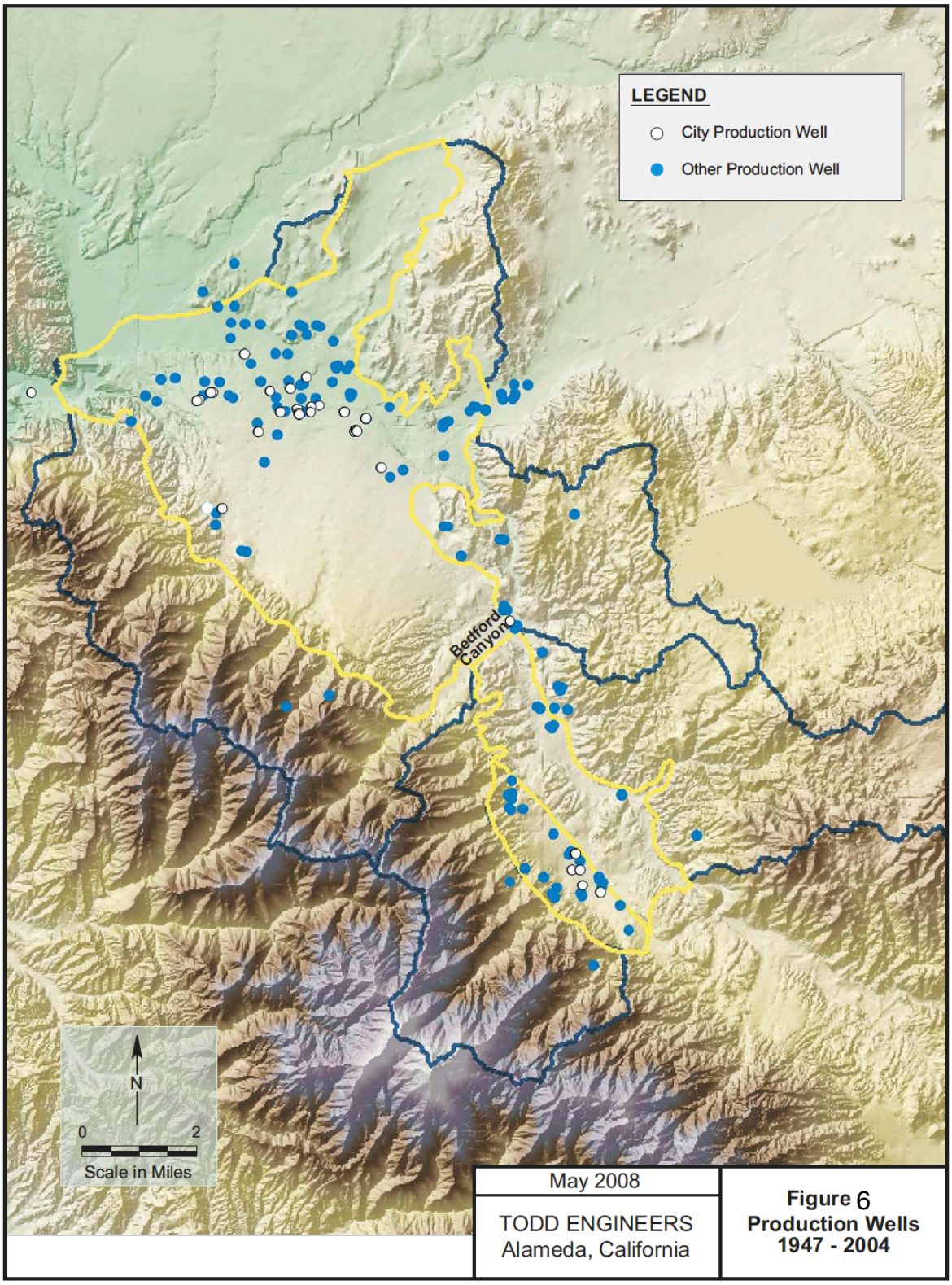
The City's secondary water supply source is imported Colorado River and State Project Water from MWDSC through WMWD.

The City's water supply availability as described within the City's UWMP (City of Corona, 2005b) is detailed in Table 8 for years 2010 to 2030.

Table 8
City of Corona Water Service Area Current and Planned Water Supplies (AFY)
(City of Corona 2005b)

	YEAR					
Water Supply Source	2005	2010	2015	2020	2025	2030
Imported Water Western Municipal Water District						
MWDSC - Colorado River	32,598	32,598	32,598	32,598	32,598	32,598
MWDSC-SWP	7,281	7,281	7,281	7,281	7,281	7,281
Total Imported Water Supply	39,879	39,879	39,879	39,879	39,879	39,879
Groundwater						
Coldwater Sub-Basin	2,780	2,780	2,780	2,780	2,780	2,780
Temescal Sub-Basin	39,208	44,473	49,737	49,737	49,737	49,737
Bedford Sub-Basin	-	-	-	-	-	-
Total Groundwater Supply	41,988	47,253	52,517	52,517	52,517	52,517
Recycled Municipal Wastewater						
Recycled Supply	1,120	7,842	12,232	12,232	12,232	12,232
TOTAL SUPPLY	**82,987**	**94,974**	**104,718**	**104,718**	**104,718**	**104,718**

The City's 2005 UWMP's total groundwater supply projections have decreased. The changes in capacity in the total groundwater availability are primarily attributed to decreased groundwater levels in the Temescal Sub-basin as a result of changes in land use, groundwater recharge, groundwater pumping and less than normal rainfall. The Temescal Sub-basin supply was projected to be 44,473 AFY in year 2010 however, the actual supply capacity is 22,341 AFY for a reduction of 22,132 AFY.


LEGEND
City Production Well
Other Production Well
Bedford Canyon
N
0
2
Scale in Miles
May 2008
TODD ENGINEERS
Alameda, California
Figure 6
Production Wells
1947 - 2004

The Coldwater Sub-basin supply has increased from what is stated in the UWMP. The basin was projected to supply 2,780 AFY in the year 2010, however, the basin actually has the capacity to supply 4,000 AFY (Todd/AKM, 2008) for an increase of 1,220 AFY.

A summary of the past 5 years of the City's groundwater production is presented in Table 9.

Table 9 Groundwater Well Production
Actual Well Production (AFY)

Well Number	Well Maximum Design Capacity (2010)	2010[1]	2009	2008	2007	2006	2005[2]
Well #03	968	1,021	1,076	996	1,116	1,316	1,342
Well #07A	887	715	894	1,367	1,149	1,269	1,374
Well #08	0	0	0	0	0	0	0
Well #08A	1,774	1,842	1,964	2,117	1,843	1,884	1,623
Well #09A	1,774	1,435	1,573	1,586	1,455	1,557	2,245
Well #11	1,290	584	560	615	556	618	653
Well #12A	1,532	837	1,077	705	588	604	757
Well #13	807	668	780	736	757	723	942
Well #14	1,613	1,378	1,407	1,040	1,094	1,257	1,231
Well #15	1,774	1,742	1,715	1,735	1,557	1,747	1,575
Well #16	0	0	0	0	0	0	0
Well #17A	1,290	1,048	1,230	1,376	1,701	1,767	1,918
Well #19	1,452	1,228	1,486	1,729	1,710	1,858	2,173
Well #20	484	314	364	628	633	961	1,264
Well #21	2,420	2,058	2,024	1,961	2,004	1,622	1,653
Well #22	1,129	956	1,444	2,092	2,004	2,321	2,773
Well #23	807	475	0	0	0	0	0
Well #24	484	0	458	382	465	507	517
Well #25	1,290	1,008	1,405	2,256	1,337	2,408	2,556
Well #26	565	582	500	671	934	858	1,078
Well #27	807	780	752	683	336	436	544
Well #28	1,936	1,777	2,153	2,485	2,330	2,251	2,525
Well #29	1,129	964	953	0	0	0	0
Total	26,213	21,414	23,817	25,162	23,572	25,965	28,745

(1) Partial year data, January to April.

(2) Partial year data.

Furthermore, the City's recycled water capacity as stated in Table 8 and in the City's 2005 UWMP are less than the most recent supply projections as present in Table 2 of this report. The recycled water capacity increases by approximately 8,000 AFY in 2030.

The City currently has the capacity to supply 10,640 AFY of tertiary disinfected municipal recycled wastewater meeting Title 22 requirements for appropriate non-potable uses. Approximately 4,300 AFY of recycled water is used for non-residential irrigation including but not limited to parks, freeway landscaping, and school yards in the proposed Project.

The City's water supply for meeting potable water demand therefore includes local groundwater and imported surface water purchased from WMWD. The City's updated water supply availability, takes into account the reduction of groundwater supply and increase in recycled water supply, is detailed in Table 10 for years 2010 to 2030.

Table 10 Updated City of Corona Water Service Area Current and Planned Water Supplies (AFY)						
	YEAR					
Water Supply Source	2005	2010	2015	2020	2025	2030
Imported Water Western Municipal Water District						
MWDSC - Colorado River	32,598	32,598	32,598	32,598	32,598	32,598
MWDSC-SWP	7,281	7,281	7,281	7,281	7,281	7,281
Total Imported Water Supply	39,879	39,879	39,879	39,879	39,879	39,879
Groundwater						
Coldwater Sub-Basin	2,780	4,000	4,000	4,000	4,000	4,000
Temescal Sub-Basin	39,208	22,341	27,605	27,605	27,605	27,605
Bedford Sub-Basin	-	-	-	-	-	-
Total Groundwater Supply	41,988	26,341	31,605	31,605	31,605	31,605
Recycled Municipal Wastewater						
Recycled Supply	1,120	10,640	12,320	18,480	18,480	20,724
TOTAL SUPPLY	**82,987**	**76,860**	**83,804**	**89,964**	**89,964**	**92,208**

The City's yearly average water demand is 42,462 AFY with approximately 43 percent being supplied from local groundwater wells, 57 percent from state import water (City of Corona 2005b). The City's past five year average demand is 43,754 AFY. The City's Water Master Plan estimates ultimate build-out demand at 49,408 AFY in the year 2020 (City of Corona 2005a, 2005b).

The City's total water use for years 2006 through 2009 is presented in Table 11.

Table 11 Recent City of Corona Water Demands	
Year	**Water Demand (AFY)**
2006	43,603
2007	45,426
2008	43,870
2009	42,118
Average	43,754

Western Municipal Water District Service Area

The WMWD service area covers approximately 527 square-miles throughout western Riverside County and serves roughly 24,000 retail and eight wholesale customers, including the City of Corona. Approximately two-thirds of the water WMWD sells is treated and the remaining is raw water. Roughly one-quarter of the water WMWD sells is for agricultural uses with the remainder used for domestic purposes (WMWD, 2009).

The majority of water that WMWD purchases comes from the State Water Project (SWP), which transports water from Northern California via the California Aqueduct. WMWD water is also imported (approximately one-fifth) from the Colorado River Aqueduct and a very small quantity is purchased from San Bernardino Basin. WMWD also operates several wells for pumping groundwater in its Murrieta Division (WMWD, 2009).

Urban Water Management Plan Review

The City of Corona prepared and adopted its most recent Urban Water Management Plan (UWMP) update in 2005. The City's 2005 water demand was estimated at 45,000 AFY and ultimate build-out demand at 49,408 AFY for the year 2020. This WSA is based on information obtained from the adopted UWMP for the City, updated water supplies provided by the City, and WMWD. Relevant information in the City's UWMP includes the following:

•The City re-estimated its build-out water demand using projected land uses from the City of Corona General Plan.

•The City's groundwater supply is pumped from the Temescal Sub-Basin, Coldwater Sub-Basins, and Bedford Sub-Basin.

•The City has capacity to supply disinfected tertiary Title 22 municipal wastewater as recycled water to its customers and for the City's use.

•The City has implemented the California Urban Water Council (CUWCC) Best Management Practices (BMPs) to address water conservation and is a signatory to their Memorandum of Understanding.

Pursuant to the City's UWMP, the City currently has adequate water supply sources to meet the future water demands under the single and multi-dry water year conditions for the plan area. The Arantine Hills Project is entirely in the City's water service area and was included within the 2005 UWMP water demands.

City of Corona Groundwater Management Plan

The City of Corona developed a Groundwater Management Plan in 2008 (GWMP) to support the management of a reliable and sustainable groundwater resource for the City (Todd/AKM, 2008).

The GWMP follows the guidelines set forth by AB 3030, the California Department of Water Resources Groundwater Management Act, which provides a systematic procedure for an existing local agency to develop a groundwater management plan. The GWMP allows the City of Corona to address issues of groundwater recharge and storage in order to effectively manage the local sub-basins and the City's water supply. Implementation of the GWMP under AB 3030 also allows the City to raise revenue to pay for facilities to manage the groundwater basins. AB 3030, the Local Groundwater Management Assistance Act of 2000, was enacted to provide grants to local public agencies to carry out groundwater monitoring and groundwater management activities. Preferential funding is given to agencies that have adopted a GWMP and demonstrate collaboration with other agencies in the management of the affected groundwater basin.

Most of the City's groundwater production is from the Temescal Sub-Basin. The primary aquifer that supports the City groundwater production has been designated the Channel Aquifer in the City's GWMP(Todd/AKM, 2008). This aquifer consists of a relatively homogeneous and highly permeable sand layer approximately 200-feet thick. The Channel Aquifer is limited in extent and occurs in the northern portion of the Temescal Sub-Basin as shown on Figure 7. In addition, the City also produces groundwater from alluvial fan aquifers that are adjacent to the Channel Aquifer in the subsurface of the Temescal Sub-Basin.

Typical depths for the City's wells in the Temescal Sub-Basin range from about 200 to 500 feet with a design capacity per Table 8 of 22,340 AFY. Average pumping from the Temescal Sub-Basin was 10,821 AFY from 1990 to 2002, with groundwater pumping increasing by 80 percent to more than 19,000 AFY since 2002 (Todd/AKM, 2008). Figure 8 presents the area sub-basins. The Temescal Sub-Basin is bounded on the west by the Santa Ana Mountains and the east by low-lying El Sobrante de San Jacinto and La Sierra hills. The sub-basin is connected to three adjacent groundwater basins. The boundary with the Chino Sub-Bain to the north is marked by the Santa Ana River and the low lying hills in the Norco area. Groundwater flows into the sub-basin from the Riverside-Arlington Sub-Basin through the Arlington Gap. The southern boundary of the Temescal Sub-Basin is located at a constriction of the alluvium along Temescal Wash at Bedford Canyon where it connects with the Bedford Sub-Basin of the Elsinore Groundwater Basin (Todd/AKM, 2008).

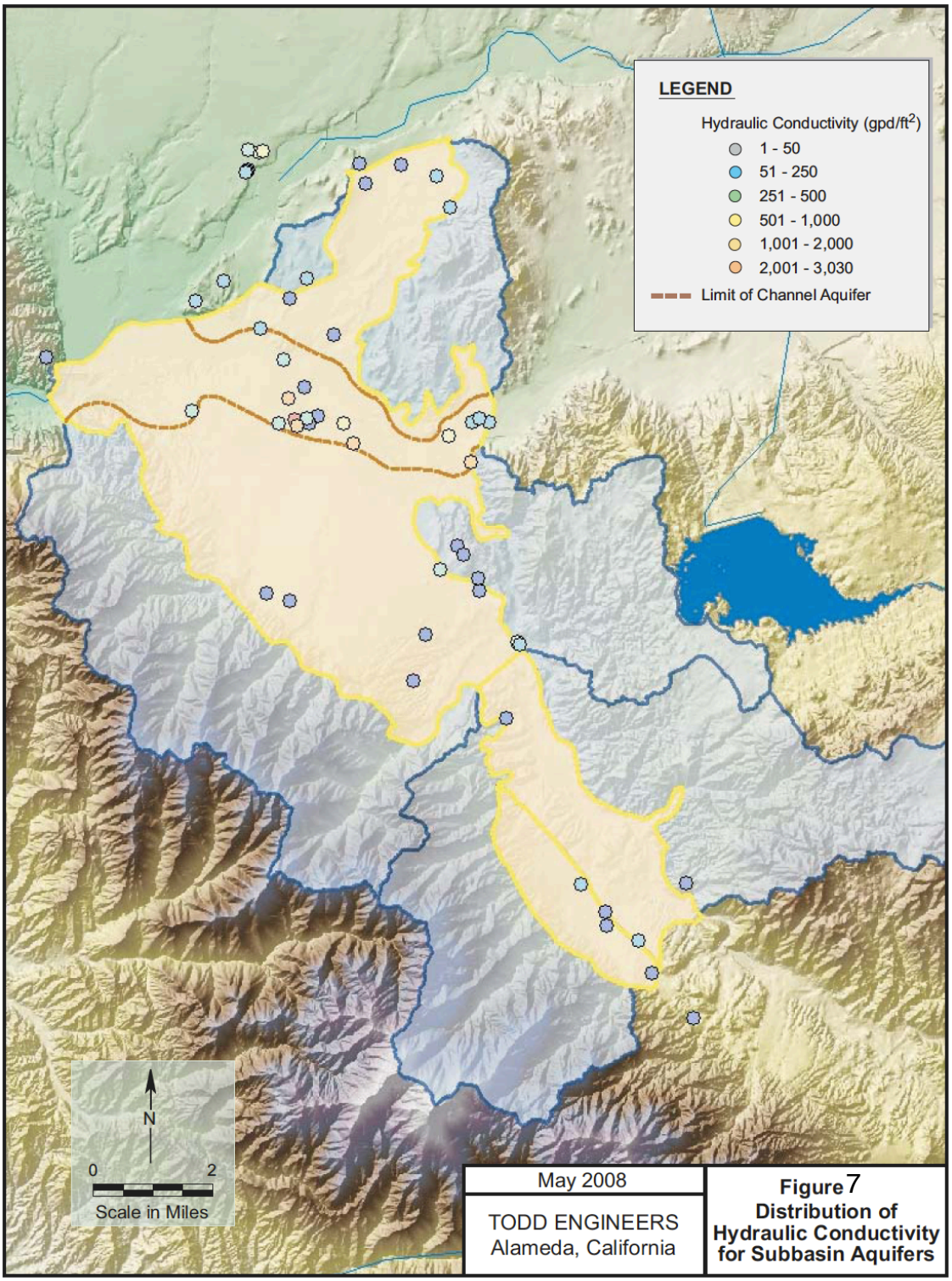
The Temescal Sub-Basin also includes a small subarea west of the La Sierra Hills and east of the Santa Ana River. This northeastern area is referred to as the Norco area, and consists of relatively low permeability alluvium and bedrock redicuum flanked on the east and west by bedrock outcrops (Todd/AKM, 2008).

The Bedford Sub-Basin connects to the Temescal Sub-Basin near the base of the Beford Canyon where the alluvium along Temescal Wash thins as the wash leaves the sub-basin and traverses northward through bedrock.

No potable groundwater is currently pumped by the City from the Bedford Sub-basin, but the City has done so in the past. The City currently has two non-potable wells located in the Bedford Sub-Basin that are used to supplement the City's recycled water system. The City's average pumping from these wells is 327 AFY.

The Coldwater Sub-Basin connects to the Bedford Sub-Basin along a trace of the Glen Ivy Fault Zone, a locally named fault related to the larger basin-bounding Chino-Elsinore Fault Zone. Average pumping from the Coldwater Sub-Basin was 6,284 AFY from 1990 to 2004, with groundwater pumping ranging between 3,800 and 4,600 since 2002 (Todd/AKM, 2008).

None of the three sub-basins from which the City has extracted groundwater are adjudicated. However, under a stipulated judgement entitled Orange County Water District vs. City of Chino, et al (1968), the City, with other purveyors upstream above Prado Dam, have the right to use all surface and groundwater supplies originating above Prado Dam without interference from water purveyors downstream of Prado Dam, provided that the average adjusted base flow at Prado Dam is at least 42,000 AFY. To ensure provision of the judgement, the City is required to provide a baseline flow of 1,625 AFY from the City's WRF (Todd/AKM, 2008).


LEGEND
Hydraulic Conductivity (gpd/ft2)
1 - 50
51 - 250
251 - 500
501 - 1,000
1,001 - 2,000
2,001 - 3,030
Limit of Channel Aquifer
N
0
2
Scale in Miles
May 2008
TODD ENGINEERS
Alameda, California
Figure 7
Distribution of Hydraulic Conductivity for Subbasin Aquifers

Groundwater data for the Bedford Sub-Basin is limited to a few wells and is not sufficient to analyze long term trends. Nonetheless, one City owned well located near the boundary of the Temescal Sub-Basin has been used to plot groundwater elevations. The data indicate that

groundwater elevations have been more stable than those in the Coldwater and Temescal Sub-Basins. Water level fluctuations have generally been less than 60-feet in the last 40 years.

The GWMP developed strategies for more sustainable management and use of groundwater resources to meet increasing future demands with decreasing groundwater levels in the regional groundwater basins.

The GWMP identified the following objectives for the management and operations of the relevant basins:

- Operate the groundwater basin in a sustainable manner for beneficial uses;
- Increase the reliability of water supply for basin users;
- Prevent substantial water level declines in Channel Aquifer;
- Protect groundwater quality in unconfined aquifers;
- Maintain required outflow at Prado Dam; and
- Monitor groundwater levels, quality, and storage.

The GWMP developed 25 groundwater management strategies to meet the Plan's objectives. These strategies are grouped into the following management categories:

1. New and Replacement Water Supply Wells and Wellhead Treatment
2. Groundwater Treatment Process Improvements
3. Enhanced Groundwater Recharge
4. Groundwater Monitoring Program
5. Expanded Use of Recycled Water
6. Use of Imported Water
7. Wastewater Pond Maintenance
8. Coordination with Regulatory Agencies
9. Water Conservation and Demand Management

Various management strategies have been identified within these categories to achieve the Plans objectives. The GWMP proposes that these management strategies be implemented through 2020 to assist in reducing demands for imported water and meeting projected demands.

The City shares the three groundwater sub-basins with the City of Norco, Home Gardens County Water District, Lee Lake Water District (LLWD), and Elsinore Valley Municipal Water District (EVMWD). LLWD participated in the GWMP and has proposed a groundwater recharge project with recycled water in the Bedford Sub-Basin.

The City of Corona prepared and circulated a Draft Programmatic Environmental Impact Report (DPEIR) for the identification, analysis and mitigation of potential environmental impacts associated with the implementation of the GWMP. The DPEIR circulated from February 2, 2010 to March 19, 2010. The DPEIR describes the following range of alternatives to the GWMP that could feasibly attain most of the basic project objectives and avoid or substantially lessen any of the associated significant environmental impacts:

- The No Project Alternative With Future Growth;
- The No Project Alternative Existing Development Only;
- Alternative 1, Increased Reliance on Groundwater Resources: the City would increase the volume of groundwater pumped from the local groundwater basins and reduce its use of imported water; and,
- Alternative 2, Increased Reliance on Imported Water Resources: the City would increase the volume of imported water used and reduce its use of groundwater.

The DPEIR provides project-level assessments of the following projects that serve to implement the management strategies contained in the GWMP. The analysis of these components was conducted at a sufficient level of detail such that additional environmental documentation was not necessary:

- Recycled Water Zone 3 to Zone 2 Interconnect Project
- Lincoln and Cota Street Percolation Ponds Maintenance Program
- Storm Water Diversion and Percolation Project

The DPEIR provides program-level assessments of the remaining management strategies and projects contained in the GWMP. Prior to implementation of these strategies and projects, additional analysis is required to determine the need for subsequent environmental documentation.

Urban Water Management Plan Supply and Demand Projections

All water for the proposed Project will be supplied from the City of Corona through groundwater and imported water sources. The project Applicant has also identified areas where recycled water would be used for landscape irrigation in street rights-of-way, designated open space, trails, slopes, and parks, commercial and industrial areas, and other areas as permitted by the Department of Water and Power. The analysis is presented for the sufficiency of supply from the City and then from the WMWD.

City of Corona Water Supply Sufficiency

The City of Corona's UWMP estimates the water supply and demand during normal, single-year and multiple-year drought for the City is shown as Table 10, and is projected to year 2030. The table shows the amount of City water needed to meet the service area's demand.

The water supply and demand forecast presented in the City's 2005 UWMP indicates that the City does not anticipate supply deficits in normal years due to stability of its raw water and groundwater supply. A comparison of the City's historical use and future recycled water supply capacity identifies a four fold average annual increase of recycled water. The City will therefore have more than sufficient supplies of recycled water to meet the anticipated needs of the proposed project. An excess capacity of recycled water is therefore anticipated sufficient to meet the needs of existing recycled water demands, plus the proposed project, plus other recycled water demands throughout the City.

The City's demands can be met under all supply conditions through the year 2030. The City is evaluating the implementation of the recommended projects and operational strategies from its GWMP to use as a guide for the coordinated and sustainable management of its regional groundwater resources.

Imported and groundwater supplies are reduced by 97% for single dry year conditions and are reduced by 50% for multi-dry water year drought conditions as described within the City of Corona's 2005 UWMP. Table 12 presents the Projected Water Supply and Demand Comparisons.

Table 12
City of Corona Water Service Area
Projected Water Supply and Demand Comparisons for
Normal Year, Single Dry Year, and Multi Dry Water Year (AFY)

Normal Year					
	2010	**2015**	**2020**	**2025**	**2030**
Supply	76,860	83,804	89,964	89,964	92,208
City Service Area Demand	46,470	47,939	49,408	49,408	49,408
Difference (Supply - Demand)	30,390	35,865	40,556	40,556	42,800
Difference As % of Demand	65.4%	74.8%	82.1%	82.1%	86.6%
Single-Year Drought					
	2010	**2015**	**2020**	**2025**	**2030**
Supply	74,873	81,659	87,819	87,819	90,063
City Service Area Demand (1)	41,823	43,145	44,467	44,467	44,467
Sufficiency (Supply - Demand)	33,050	38,514	43,352	43,352	45,596
Difference As % of Demand	79.0%	89.3%	97.5%	97.5%	102.5%
Multi-Year Drought					
	2010	**2015**	**2020**	**2025**	**2030**
Supply (3)	43,750	48,062	54,222	54,222	56,466
City Service Area Demand (2)	41,922	46,397	46,597	46,897	46,897
Sufficiency (Supply - Demand)	1,828	1,665	7,625	7,325	9,569
Difference As % of Demand	4.4%	3.6%	16.4%	15.6%	20.4%

(1) Proposed project demand under single year drought assumes drought reductions to 90%, 90%, 90%, 90% and 90% of normal, per City 2005 UWMP, Table 25 demand reductions.

(2) Proposed project demands under multi-year drought assumes drought reductions to 93%, 103%, 104%, 104% and 104% of normal, per City 2005 UWMP, Table 27-37 demand modifications.

(3) Supply under multi-year drought assumes 50% import and groundwater supplies, and 100% recycled water supply.

To reduce water demand during declared water shortages, the City has invested in developing a diverse water supply to ensure redundancy and flexibility during possible interruptions of its water supplies. The City has developed additional supply capacity to offset supply interruption from maintenance, equipment failures, natural disasters, and drought (City of Corona, 2005a, 2005b). Because the City's local well water is substantially lower in cost compared with MWD Colorado River water and SWP, the City has invested in improving the capacity of the local supply through implementation of capital improvement and replacement projects and continued planning. Planning efforts have enabled the City to be adequately prepared to accommodate a 100 percent increase in water demand under normal water year conditions (City of Corona 2005a, 2005b).

The City of Corona has constructed the Temescal Desalter, which became operational in 2001 to partially offset demand on WMWD's imported water supplies. Annual production by the Temescal Desalter for years 2005 through 2009 is presented in Table 13. The desalter is fed by wells in the Temescal Sub-Basin.

Table 13
Temescal Desalter Production 2005 - 2009[1]

YEAR	Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual Totals
	AF/ month	AF/ month	AF/ month	AF/ month	AF/ month	AF/ month	AF/ month	AF/ month	AF/ month	AF/ month	AF/ month	AF/ month	AFY
2009	1,036	927	1,012	991	1,026	953	1,010	994	959	969	809	922	13,616
2008	983	933	1,031	950	1,022	1,011	1,083	1,069	983	1,017	984	1,044	14,117
2007	794	712	744	684	735	704	691	700	659	780	928	924	11,062
2006	699	628	740	755	769	657	730	803	816	791	770	759	10,923
2005	787	744	863	883	923	964	1,007	976	932	916	903	716	12,618

(1) Production from desalter feed wells are included in Table 9 Groundwater Well Production.

In times of water shortage, the City has three inter-ties with the City of Riverside, City of Norco, and Lee Lake Water District (LLWD). Water supply from the City of Riverside is for emergency use of up to 2 mgd from Riverside to Corona via gravity flow. The inter-tie with Norco has a capacity of 5.76 mgd to Norco from WMWD; although Norco would not have capacity to deliver any significant volume of water to Corona. Lastly, the inter tie with LLWD would only be used for a small number of residences and businesses along the Interstate 15 corridor, approximately five miles south of Interstate 91.

Table 11 presents the proposed Project's net water demands in the City's supply and demand comparisons. The comparison shows that the City's water supplies are sufficient through 2030.

Western Metropolitan Water District Supply Sufficiency

The City of Corona has purchased an average of 25,000 AFY from WMWD for the past several years. WMWD provides the City water through two sources, the Mills Pipeline and raw water for treatment at the Sierra Del Oro and Lester Water Treatment Plants. The Mills Pipeline is treated water and is sent directly to the City's system. The City of Corona does not anticipate a change in the water quantities that they purchase from WMWD. According to the data provided in the WMWD's 2005 UWMP, the WMWD has sufficient capacity to accommodate the City's water demands through the year 2030 during average water years.

WMWD prepared a Drought Contingency Plan (WMWD, 1992) to respond to water shortages within its retail water service area. In May 2009, WMWD adopted Ordinance 374 (WMWD, 2009) establishing a retail customer water conservation and supply shortage program in response to the State's drought. This ordinance authorizes WMWD to implement water conservation measures to regulate water consumption activities. The ordinances adopts a water conservation program that establishes six stages of water conservation and supply shortage response measures to be implemented by WMWD. WMWD adopted Resolution 2627 in July 2009, adopting a Stage 2 (Minimal Water Shortage, 6-10 percent reduction) water conservation program. The anticipated results of these actions are a decrease in water demands and concurrent reductions in the use of local water supplies during droughts. The overall effect should be greater reliability in drought water supplies.

Under most water shortage scenarios, WMWD anticipates being able to meet demands; however, during a prolonged long-term drought allocation will be calculated on the basis of need (i.e., impact on retail customers and regional economy; investments in local resources including recycling and conservation; population growth; changes in local supplies; participation in MWD interruptible programs; and investment in MWD facilities), rather than historical purchases (WMWD, 2005). During a severe water shortage, WMWD would enforce allocations using rate surcharges of up to 3 times the full-service rate for deliveries exceeding 102 percent of the allocation (WMWD, 2005), and enforce penalties for non-compliance of reduction requirements.

The minimum water supply for the next three years has been estimated for the WMWD retail service area. Based on a three-year drought sequence, both the SWP and Colorado River sources could be reduced. However, MWD has identified a resource management plan that should result in 100 percent reliability for non-discounted non-interruptible demands through 2030 (MWD, 2005 as cited in WMWD, 2005).

The results of the analysis of the normal year, single-dry and multiple-dry years analysis from WMWD's UWMP is presented in Table 14 for the service area demands through the year 2030.

Table 14
Western Municipal Water District
Water Supply and Demand Comparison for
Normal Year, Single Dry Year and Multi Dry Year (AFY)

Normal Year					
	2010	**2015**	**2020**	**2025**	**2030**
District Wholesale Water Supply	88,902	101,146	111,837	123,784	134,028
District Wholesale Demand	88,902	101,146	111,837	123,784	134,028
Sufficiency (Supply - Demand)	0	0	0	0	0
Difference As % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Single-Year Drought					
	2010	**2015**	**2020**	**2025**	**2030**
District Wholesale Water Supply	91,174	104,098	115,339	127,936	138,930
District Wholesale Demand	91,174	104,098	115,339	127,936	138,930
Sufficiency (Supply - Demand)	0	0	0	0	0
Difference As % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Multi-Year Drought					
	2010	**2015**	**2020**	**2025**	**2030**
District Wholesale Water Supply	91,174	104,098	115,339	127,936	138,930
District Wholesale Demand	91,174	104,098	115,339	127,936	138,930
Sufficiency (Supply - Demand)	0	0	0	0	0
Difference As % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

(1) Sufficient supplies exist to meet demands for MWD's agencies, therefore supplies will equal demands for the normal year, single drought and multi-year drought, Per WBMWD 2005 UWMP and MWD Draft Regional Urban Water Management Plan, May 2005.

Water Supply Reliability

The City adopted a resolution that institutes a program of voluntary reduction of nonessential uses of water to reduce consumption by 15 percent, and implemented penalty rates during a water shortage emergency (City of Corona, 2005b). These resolutions were adopted in 2009 (City of Corona, 2009) and would be applied during declared water shortages.

The City of Corona relies on MWD's Integrated Resources Plan (IRP), which directs resource operations to help attain the Southern California region's 100 percent reliability goal. MWD's first IRP was developed in 1999 and later updated in 2004. The existing IRP (MWD, 2004) assumes that new local efforts, including increasing supplies and lowering demands, will meet the needs of population growth for the region.

MWD is currently updating the IRP to outline a strategy for water reliability through the year 2030. Conditions that have changed since the last update include drought conditions along the Colorado River for eight of the last nine years, which is the longest dry period on the river in recorded history; and the deteriorating environmental conditions of the Sacramento-San Joaquin Delta, which are restricting water deliveries. During 2007-2010 MWD has tapped its reserves to maintain deliveries to its member agencies. MWD approved a water supply allocation plan for 2010. In 2010, MWD was allotted 45% of the water its entitled from the State Water Project due to water shortages and environmental restrictions.

The availability and reliability of Colorado River water supplies available to MWD are detailed in several published documents. For instance, MWD's 2005 Regional Urban Water Management Plan discusses the agency's access to Colorado River water by noting first that several water agencies in California have rights to divert water from the river. Through the 1931 Seven Party Agreement, apportionments of California's share of Colorado River were accorded to seven agencies, including MWD. (MWD 2005 RUWMP at A.2-9.) According to MWD, Colorado River water is delivered to the agency by way of the Colorado River Aqueduct (CRA), which has a delivery capacity of 1,800 cubic feet per second, or 1.3 million acre-feet per year. The CRA conveys water 242 miles from the Lake Havasu intake to Lake Mathews, a terminal reservoir near the City of Riverside. (Id.)

In recent years, agreements between MWD and several other water agencies, discuss and outline projects to increase Colorado River water supply reliability. In 1992, MWD entered into an agreement with Central Arizona Water Conservation District (CAWCD) which authorized CAWCD to create an 80,909 AF long-term storage credit to be recovered by MWD through CAWCD. MWD recovered 16,804 AF in 2007, 25,000 AF in 2008 and expects to recover the remaining credit in the next several years. The terms of the 1992 agreement allow CAWCD to reduce its use in Colorado River water, resulting in Arizona having an unused apportionment. The unused apportionment is being made available to MWD under a delivery contract with the Secretary of the Department of the Interior.

Beginning in 2003, California's apportionment of Colorado River water has been limited to 4.4 million AFY. Many elements of the California Plan to secure Colorado River water are outlined and being put into effect under the October 2003 Quantification Settlement Agreement (QSA). This agreement is by and between Coachella Valley Water District (CVWD), Imperial Irrigation District (IID) and MWD. The QSA establishes Colorado River water use limits for CVWD, IID and MWD, provides for specific acquisitions of conserved

water and water supply arrangements for up to 75 years, and restores the opportunity for MWD to receive "special surplus water" under the Interim Surplus Guidelines. There are some complicating factors associated with the QSA completion, particularly the fate of the Salton Sea. A major program implemented by the QSA is a water transfer from IID to San Diego County Water Authority (SDCWA). The program would reduce the volume of agricultural run-off from IID into the Salton Sea, which in turn would accelerate the natural trend of the Salton Sea to hyper-salinity.

This transfer has been subject to considerable litigation and in November of 2003, IID filed a validation action seeking judicial determination of the QSA and thirteen other agreements IID has with SDCWA to determine if the agreements are valid, legal and binding. Other lawsuits have also been filed challenging the QSA on various legal grounds. The QSA has been involved in litigation since it was adopted in 2003 and the potential effects of those matters on the availability and reliability of MWD's Colorado River supplies, and thus Corona's supply through Western, remain speculative and cannot be determined at this time. The January 2010 tentative decision by the Sacramento County Superior County found that the mitigation funding mechanism for the QSA (related to California's use of Colorado River water) exceeded the debt limitation requirements under State law. This tentative decision has become final and is on appeal. The decision is stayed pending the appeal. Notably, the ongoing QSA litigation and availability and reliability of MWD's Colorado River water, is only one component of MWD's overall water supply portfolio. There are several reasons, however, it is not certain that this decision will have any affect on the availability and reliability of MWD's Colorado River supplies. For example, MWD holds senior rights to the Colorado River and other Colorado River supplies, independent of the QSA. The U.S. Department of the Interior determines deliveries from the Colorado River and the Department is not a party to the case and thus not bound by the ruling. Beyond that, it is possible that action will be taken to correct the funding mechanism. Finally, the effect of the ruling has been stayed by the Court of Appeal, allowing the QSA to be implemented unless otherwise directed by the courts. For these and other reasons, it remains speculative as to whether and to what degree, if any, the QSA litigation will affect the amount of Colorado River water delivered to MWD by the Department of the Interior.

In August 2004, MWD and Palo Verde Irrigation District signed a program agreement for Land Management, Crop Rotation and Water Supply Program. This 35-year agreement provides MWD up to 118,000 AF of available water in certain years.

In 2008, MWD joined with CAWCD and Southern Nevada Water Authority (SNWA) to construct a new 8,000 AF off-stream regulating reservoir near Drop 2 of the All-American Canal in Imperial County. MWD's participation in the project secured them 100,000 AF of water stored in Lake Mead with annual recovered up to 34,000 AF through year 2010 and 25,000 AF between 2011 and 2036.

The City also relies on the SWP as a source in its supply portfolio. The reliability of the SWP is being affected by both the 2007 ruling regarding the protection of Delta Smelt and effects of climate change. On August 31, 2007, a U.S. District Judge ruled that the SWP was in violation of the federal Endangered Species Act as it is threatening the existence of the Delta Smelt, a fish species living in the Sacramento Delta. To help protect the Delta Smelt, the Judge ordered water imports to be cut by up to 35 percent from the SWP and the Central Valley Project until Biological Opinion for the species can be prepared. Pursuant to the Draft State Water Project Reliability Report the SWP is facing 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 n the federal biological opinions. For future conditions, it is these requirements and the forecasted effects of climate change." (DWR, 2009)

In July 2006, DWR issued "Progress on Incorporating Climate Change into Management of California's Water Resources," as required by Executive Order S-3-05, which instituted biennial reports on potential climate change effects on several areas, including water resources. The report's purpose is to demonstrate how various analytical tools, currently used by DWR, could be used to address issues related to climate change. The report focuses on assessment methodologies and preliminary study results from four climate change scenarios.

Potential impacts of climate change are presented for the SWP and for the Sacramento-San Joaquin Delta, both of which are related to the Western service area's imported water supplies. Since much of Western's service area relies on imported SWP supplies as part of its overall supply mix, any reduction or change in the availability of those supplies could have negative impacts on the water supply of the region. Reductions in the quantity of SWP water availability would force Western to rely more heavily on local groundwater, local surface flows, or other sources of imported water. It is possible that local surface flows could also be reduced by changes in snow pack due to global warming, which would reduce natural recharge, thus exacerbating groundwater availability problems.

The SWP analysis presents potential impacts on SWP operations, including reservoir inflows, delivery reliability, and average annual carryover storage, as well as many other operational parameters. SWP allocations to SWP contractors are referred to as "Table A" allocations. The analysis assumes forecast levels of climate change in year 2050, with 2020 land use levels. Some of the main impacts include changes to south of Delta "Table A" allocation deliveries (from an increase of about 1 percent in a wetter scenario to about a 10 percent reduction for a drier climate change scenario), increased winter runoff and lower "Table A" allocations in the three driest climate change scenarios, lower carryover storage in drier scenarios, and higher carryover storage in a wetter scenario. (WMWD, 2008)

MWD and WMWD are working diligently on these projects and many others to further secure Colorado River and State Water Project water supplies. Based on the programs in place and discussions mentioned herein, it is anticipated that MWD will be able to provide sufficient water to WMWD, and in turn WMWD will be able to continue supply Colorado River and State Water Project water to the City.

Future Groundwater Supply

The City's UWMP details the plans for two additional water supply projects: Rincon and El Sobrante Groundwater Treatment Projects for the Temescal Sub-basin. Both projects would add roughly 11,000 AFY to the current system.

The City's GWMP also describes groundwater management strategies that provide potential for improving the management of the groundwater basins. Tables 15-17 present recommended strategies from the GWMP. The City is underway with evaluating the environmental impact associated with the implementation of many of these strategies.

Table 15 Recommended Groundwater Strategies for Expanded Groundwater Use		
Strategy Number	**Project Description**	**Annual Water Yield (AF)**
C-1	New Water Wells	1935
C-3	Rincon Groundwater Treatment Project	5600
C-4	Wellhead Treatment for Wells 6,7, and 17	4800
C-5	El Sobrante Groundwater Treatment Project	5600
C-6	Groundwater Treatment Program	3800
C-7	Groundwater Blending Program	1800

Table 16 Recommended Groundwater Strategies for Enhanced Recharge		
Strategy Number	**Project Description**	**Annual Water Yield (AF)**
C-9	Coldwater Sub-basin Enhanced Recharge Project	2000
C-10	Recharge Basins within Oak Avenue Detention Basin	5000
C-11	Recharge Basins within Main Street Detention Basins	1500
C-12	Upgradient Injection Wells	4800
C-13	Recycled Water Injection Wells	4500
C-22	Lincoln and Cota Street Percolation Ponds Maintenance Program	1000

Table 17 Recommended Recycled Water Strategies		
Strategy Number	**Project Description**	**Annual Water Yield (AF)**
C-14	Recycled Water Zone 3 to Zone 3 Interconnect	1800
C-15	Recycled Water Zone 4 to Zone 3 Interconnect	3000

The proposed strategies outlined within the GWMP will increase groundwater storage within the Temescal Sub-Basin by approximately 16,800 AFY. The plan also proposes strategies that increase pumping within the Temescal Sub-Basin by 23,353 AFY. The City, through its internal

capital improvement program management, will evaluate and prioritize the strategies in order to balance the increased pumping strategies with the increased storage strategies.

Conclusion

The proposed Project would create an estimated water demand of 709 AFY. The proposed Project demands were included within the City's 2005 UWMP water demand projections.

The City's 2005 UWMP identifies an availability of sufficient water supplies to meet future needs for the City's water service area through its anticipated build-out, projected to occur in year 2030 under normal, single-dry and multiple-dry water years. This report is a refinement of the analysis in the 2005 UWMP, accounting for changes in groundwater production from wells in the Temescal Sub-Basin and recent SWP and Colorado River water litigation issues.

The conclusion of this assessment is that Corona has sufficient water supplies to support the proposed Arantine Hills Specific Plan.

The specific facility requirements for the proposed project are being determined as a part of the City's review of the project Specific Plan, its associated environmental impact report, and development application for the proposed project. Additionally, the City may undertake additional design and permitting reviews and or approvals as required when it would be determined if additional facilities and cost contributions are required by the proposed project to provide water service.

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