



August 15, 2005

City of Carson, City Hall 701 East Carson Street Carson, CA 90749 Attn: Mrs. Sheri Repp Loadsman

Re: Water Supply Assessment - Carson Marketplace Project

Dear Mrs. Repp Loadsman:

The Water Supply Assessment (WSA) that the Carson Redevelopment Agency requested for the Carson Marketplace Project has been completed. The City of Carson is in our Dominguez District service area. California Water Service Company believes it will have adequate water supplies to meet the projected demands of the Carson Marketplace in addition to those of its existing customers and other anticipated future water users in the Dominguez District for the 20 – year period from 2005 to 2025 under normal, single dry year and multiple dry year conditions.

The WSA is enclosed. Please contact either John Foth or me at (310) 257-1400 if you have any questions about the report. Thank you.

Sincerely,

Terry S. Tamble District Manager

cc: J. Foth, Cal Water G. Schalman, PCR

enclosure



California Water Service Company Dominguez District

August 15, 2005

Carson Marketplace Project Water Supply Assessment

California Water Service Company Water Supply Assessment Report for the Carson Market Place Project Carson, California

August 11, 2005

1. Introduction

Carson Marketplace LLC is proposing to develop the Carson Marketplace, a 168 acre development located west of the San Diego Freeway (I-405) at and north of the Avalon Boulevard interchange in the City of Carson. The proposed project includes 1,550 residential units (1,150 to be sold and 400 to be rented), a 300 room hotel and 1,995,125 square feet of commercial area.

Under the requirements of SB 610, and in accordance with Section 10912(a) of the California Water Code (CWC), California Water Service Company (Cal Water), as the designated water supplier, must prepare an assessment of whether the projected water demands of the proposed project can be met by the proposed water supply. The proposed project falls within the definition of projects requiring a water supply assessment.

This report presents an estimate of the project's water demands, a description and assessment of the proposed water supply as to its adequacy to meet those demands in accordance with the requirements of CWC 10912 to10915, and implementation requirements on the part of Cal Water and other parties.

Cal Water's Rancho Dominguez District is comprised of three separate operating systems, one of which is the Dominguez District. The Dominguez District (District) is located at the southern portion of the Los Angeles coastal plain in the area known as the "South Bay." The District's 35 square mile service area is located 5 to 10 miles inland from the Los Angeles Harbor, includes most of the City of Carson, a large section of the City of Torrance, small sections of the Cities of Compton, Long Beach and Los Angeles and a portion of Los Angeles County. The northwest and west sections of the service area are adjacent to Cal Water's Hermosa-Redondo District. The system is surrounded by the cities of Long Beach, Compton, Torrance, Gardena, Redondo Beach and Los Angeles.

The South Bay area has a moderate coastal climate with mild dry summers and cool winters. Mean annual rainfall for this area is 13.6 inches. Major transportation links in the District include the San Diego Freeway (Interstate 405), the Harbor Freeway (Interstate 110), the Long Beach Freeway (State Highway 710), Torrance Boulevard, Crenshaw Boulevard, Carson Street, Del Amo Boulevard, Avalon Boulevard, Wilmington Avenue, Victoria Street, Sepulveda Boulevard and Alameda Street. Los Angeles International Airport (LAX) is about ten miles north of the District.

Major geological features of the region include the Palos Verdes Fault Zone, which, along with the Cabrillo Fault, is responsible for the uplift of base rock that forms the Palos Verdes Peninsula adjacent to and south of Hermosa-Redondo. The Newport-Inglewood Fault lies directly under the District. The Dominguez Hills, which is where California State University Dominguez Hills and one of the District's largest storage tank sites are located, is a surface expression of the Newport-Inglewood fault system. The Dominguez Channel provides the principal storm drainage for the District's service area.

The District's service area is primarily residential and commercial. Single-family residences account for 86.7% of all services; multifamily residences represent 2.9%; and commercial 9.0%, for a total of 98.6%. The remaining 1.4% includes industrial, governmental, and temporary customers such as construction services. The entire system is metered.

SB 610 requires an assessment of whether the proposed water supply for the Carson Marketplace development and for the District will meet the combined water demands during normal, single dry and multiple dry water years for the next 20 years.

Following are a brief description of the project, its projected water demands, the projected water demands for the District, the combined water demands and a description and assessment of the proposed water supply as to its adequacy to meet those demands in accordance with the requirements of CWC 10912 to10915, and implementation requirements on the part of Cal Water and other parties.

2. Project Description

Table 1 on the following page summarizes the type and intensity of land uses. The total number of residential dwelling units proposed is 1,550.

3. Carson Marketplace Water Demand Forecast

Potable Water Demand Forecast

Residential:

Cal Water data for the District residential water use for 2004 is based on both single family and multifamily service connection usage. Since multifamily service connections include a variable number of dwelling units, it is necessary to determine total water used for both single and multifamily dwelling units and divide by the total residential population. For 2004, the estimated residential population served by the District was 107,140 and total residential water use averaged 13,781,640 gallons/day. Therefore, average residential water use was 128.6 gallons/day/person. There were 29,831 total residential services in 2004 of which 27,965 (93.7%) were single-family residential services and the balance (1,866) were multifamily services. Single-family dwelling units have higher water use than condominiums and apartments because landscape irrigation usage is higher and internal water use on average is higher. From analyses of water consumption records in other Cal Water systems, average water use in condominiums and apartments can range from 25% to 65% of that for single-family residents. If the assumption is made that for the Carson Marketplace average water use by condominiums and apartments will be 50% of total average residential water use in the Dominguez District, then the estimated residential average daily water use for the Carson Marketplace is:

128.6 gallons/day/person x 0.50×3.16 persons/dwelling unit = 203 gallons/day/dwelling unit x 1,550 dwelling units = 314,650 gallons/day. (Note 3.16 persons/dwelling unit is used by some California planning agencies for both single-family and multifamily units.)

This compares to the suggested value by PCR Services Corporation (PCR) of 316,050 gallons/day, which is based on data derived by the County Sanitation Districts of Los Angeles (CCDLA).

Since there is good agreement between the estimate of residential water usage derived from Cal Water data and assumptions and those developed by PCR using CCDLA data, estimates of water demand for other activities for Carson Marketplace developed by PCR using CCDLA factors for those activities are used here and are summarized in Table 2.

Table 1
Carson Marketplace Land Use Summary

Category	Square Feet	Units	Rooms
B. A.L. and I			
<u>Residential</u>		400	
Apartment		400	
Condominiums		1,150	
Total		1,550	
Commercial Recreation/Enter	tainment		
Multiplex movie theater	110,000		
Bowling Alley	25,000		
Fitness Center	35,000		
Multi-purpose Recreation Cer	*		
Subtotal	214,000		
	21.,000		
<u>Retail</u>			
Shopping Center	610,000		
Electronic Superstore	50,000		
Home Improvement	150,000		
Discount Club	150,000		
Home Furnishing	350,000		
Office Supply	50,000		
Pet Supply	50,000		
Supermarket	90,000		
Subtotal	1,500,000		
<u>Hotel</u>	200,000		300
<u>Restaurants</u>			
High turnover	50,000		
Fast Food	15,000		
Quality	16,125		
Subtotal	81,125		
PROJECT TOTAL	1,995,125	1,550	300

Table 2
Carson Marketplace Land Use Summary

Category	Units or Area Sq. ft	Use Factor gal/day	Average Use gal/day
D 17 11 17 1			
<u>Residential Units</u>	400		
Apartment	400		
Condominiums	1,150		
Total	1,550	203/unit	315,000
Commonaial Page ation/Enta	utaina ant		
Commercial Recreation/Ente		0.129/aa fi	15 190
Multiplex movie theater	110,000	0.138/sq ft	15,180
Bowling Alley	25,000	0.165/sq ft	4,125 5,775
Fitness Center	35,000	0.165/sq ft	5,775
Multi-purpose Recreation Ce		0.850/sq_ft	3,520
Subtotal	214,000		28,600
Retail			
Shopping Center	610,000	0.358/sq ft	218,380
Electronic Superstore	50,000	0.110/sq ft	5,500
Home Improvement	150,000	0.110/sq ft	16,500
Discount Club	150,000	0.110/sq ft	16,500
Home Furnishing	350,000	0.110/sq ft	38,500
Office Supply	50,000	0.110/sq ft	5,500
Pet Supply	50,000	0.110/sq ft	5,500
Supermarket	90,000	0.650/sq ft	14,850
Subtotal	1,500,000	0.030/3 <u>q</u> 1t	321,230
Subtotal	1,500,000		321,230
<u>Hotel</u>	300	0.138/room	41,400
<u>Restaurants</u>			
High turnover	50,000	1.100/sq ft	55,000
Fast Food	15,000	1.100/sq ft	15,500
Quality	16,125	1.100/sq ft	17,740
Subtotal	81,125		89,240

TOTAL ESTIMATED DEMAND

795,470

Total Water Demand: 795,470 gallons/day or 552 gpm or 892 acre-ft/year

California Water Code 10631, Paragraph (e) (2), requires a water use projection (average annual demand forecast) in five-year increments for the 20-year forecasted period.

It is assumed that the time required for preparation and approval of the Carson Marketplace Plan and certification of the California Environmental Quality Act environmental impact report (EIR) is one year (mid-2006) and that finalization and approval of the developer plan and tentative map will occur concurrently. It is assumed that City of Carson approvals of the latter will require a half a year and will occur in December 2006 and that construction of proposed facilities will start in 2007. If it takes 24 months for the proposed facilities to be built, sold and initial occupancy to

start, then the Carson Marketplace water demands will start in late 2008 or beginning of 2009. It is also assumed that full occupancy and use will occur by 2010.

Assuming development occurs linearly, the water demand forecast for the Carson Marketplace Specific Plan in five-year increments is as follows:

	Carson Marketplace		
<u>Year</u>	Average Annual Daily Water Demand		
2005	none		
2010	795,470 gallons/day or 552 gpm		
2015	795,470 gallons/day or 552 gpm		
2020	795,470 gallons/day or 552 gpm		
2025	795,470 gallons/day or 552 gpm		

The maximum day demand for the Carson Marketplace was calculated by multiplying the average day demand by an estimated ratio of maximum day demand to average day demand. Since there are not good historical records for maximum day usage and this project does not have extensive areas for irrigation, a typical factor experienced in various Cal Water Districts of 1.5 was selected.

	Carson Marketplace		
<u>Year</u>	Maximum Day Water Demand		
2005	none		
2010	1,193,000 gallons/day or 829 gpm		
2015	1,193,000 gallons/day or 829 gpm		
2020	1,193,000 gallons/day or 829 gpm		
2025	1,193,000 gallons/day or 829 gpm		

Dominguez District Water Demand Forecast

Cal Water's projected total water demand forecasts in its Urban Water Management Plan (January 2005) for the Dominguez District are based on multiplying the forecast of projected services for each customer class by the anticipated demand per service for that class. Forecasts of growth in services are based on the ten-year average of growth in services by customer class. Three different demand scenarios per service per customer class (low, average and high) were developed. Low demand is calculated using the lowest recorded demand per service for each customer class during this period. Average demand is calculated as the mean value for this period. High demand is based on the highest recorded demand per service for each customer class. Maximum day demand forecasts are calculated for each of these three demand scenarios by multiplying 1.75 times the low, average or high day.

For a twenty-year projection, i.e., for the year 2025, the projected annual average daily demand is 47,132 acre-feet/year or 42.04 million gallons per day (MGD). Table 3 below shows the Dominguez District projected annual average daily water demands in five-year increments for the next 20 years.

Table 3
California Water Service Company Dominguez District
Annual Average Daily Water Demand Forecasts

	Million	
<u>Year</u>	Gallons/day	Acre-ft/Year
2005	33.60	37,671
2010	35.48	39,774
2015	37.47	42,005
2020	39.68	44,489
2025	42.04	47,132

The forecasted increase in demand between 2005 and 2010 is 1.88 MGD. Carson Marketplace in 2010 is forecasted to have an average daily demand of 795,470 gallons/day or 42.3% of the forecasted growth in demand. The 2015 increase in demand relative to 2005 is 3.87 MGD. Carson Marketplace in 2015 is forecasted to have the same demand as in 2010 or is 20.5% of the forecasted growth in demand for the Dominguez District. The 2020 increase in demand relative to 2005 for the Dominguez District is 6.08 MGD. Carson Marketplace in 2020 is 13.1% of the forecasted growth in demand for the Dominguez District. The 2025 increase in demand relative to 2005 is 8.44 MGD. Carson Marketplace demand in 2025 is 9.4% of the forecasted growth in demand for the Dominguez District.

As indicated by the preceding comparisons, the forecasted water demand for Carson Marketplace constitutes a substantial increase in the Dominguez District water demand.

4. Water Supply

Cal Water Dominguez District Supply:

Overview. The Dominguez District system uses groundwater, purchased imported water and recycled water. Groundwater is extracted from the West Coast and Central Groundwater Basins. Purchased water from West Basin Municipal Water District (WBMWD) supplies 55% of the District's water demand and recycled water provides 8%. WBMWD serves as the regional wholesaler and developer of local supplies.

Specific water supply sources are:

- 1. Groundwater pumped from two adjudicated groundwater basins the West Coast Basin and the Central Basin.
- 2. Imported water purchased from Metropolitan Water District of Southern California through the West Basin Municipal Water District.
- 3. Desalted brackish groundwater water produced in the C. Marvin Brewer Desalter (desalination treatment plant) owned by West Basin Municipal Water District.

Recycled water provided by the West Basin Municipal Water District through their West Basin Water Recycling Plant located in El Segundo.

Groundwater

The District has sufficient groundwater production rights to supply 43% of the projected 2025 annual demand. The District holds adjudicated water rights in both the West Coast Basin and the

Central Basin.

The West Coast basin is a pressurized aquifer groundwater basin with three primary aquifers: the 200-Foot sands, the Silverado Aquifer and the Lower San Pedro Aquifer. These aquifers have continuity with the Pacific Ocean in Santa Monica Bay. Overdraft of the basin was caused by excessive pumping due to population growth and rapid industrialization of the Los Angeles Coastal Plain beginning in the 1930s. This overdraft caused lowering of the piezometric head of the aquifers, which increased pumping costs and resulted in seawater intrusion. The adjudication of the West Coast Basin began in 1945 when California Water Service Company, along with the City of Torrance and the Palos Verdes Water Company, filed a lawsuit in Superior Court, Los Angeles County, to acquire groundwater rights and control pumping in the basin. As part of the effort to resolve the overdraft condition, the West Basin Municipal Water District was formed in 1947 to distribute supplemental water to the major water purveyors with water imported into the region by the Metropolitan Water District of Southern California. In 1955, when those pumping groundwater better understood the severity of the overdraft, an interim agreement was signed to limit pumping. In 1961, the interim agreement was rescinded by judicial action and replaced by the West Coast Basin Judgment.

The Dominguez Water Company was identified as a party to the judgment and granted water rights. California Water Service Company, as a result of acquiring Dominguez Water Company, owns 10,417.45 acre-feet of adjudicated water rights in the West Coast Basin, or 16.15% of the total basin annual adjudicated rights of 64,486.25 acre-feet. This amount is in addition to the 4,070 acre-feet held by Cal Water's Hermosa-Redondo District. As a result of the reduction in pumping ordered by the adjudication and increased recharge from the injection wells of the seawater intrusion barrier, in-lieu replenishment and improved groundwater flow from the Central Basin, groundwater levels in the West Coast Basin have slowly recovered to near 1940 levels.

In the Central Basin, between the years 1934-35 and 1960-61, the population doubled and overall water use including groundwater increased more than 100%. Groundwater use during that period went from 169,000 acre-feet to 358,000 acre-feet per year. This increase in groundwater use resulted in overdraft of the Central Basin.

The adjudication of the Central Basin began out of the collective concern expressed by the major pumpers of the future impacts that reduced groundwater quantity and quality would have on their ability to supply their communities. The Central Basin Municipal Water District was formed in 1952 to distribute supplemental water to the major water purveyors. In 1954, it was annexed to the Metropolitan Water District of Southern California so that that region would have access to imported water supplies.

The Water Replenishment District was created in 1959, largely due to the cooperation between the West Coast Basin Water Association and the Central Basin Water Association, with the directive to facilitate artificial replenishment of the two basins as a means of eliminating overdraft and halting seawater intrusion. To quiet the title to and limit production of the groundwater in Central Basin, the Replenishment District filed a lawsuit in Superior Court, Los Angeles, in 1962 against more than 700 parties. Later that year, after a vast majority of the pumpers approved of the approach, the Court adopted an interim agreement to limit the production from the basin. In 1965, following extensive meetings by the parties to work out a settlement that was supported by pumpers representing over 75% of the basin's anticipated water rights, the court approved the stipulated judgment for the Central Basin.

This judgment established an adjudicated water right for each party, but limited the allowable pumping allocation to 80% of the water right, which equals 217,214 acre-feet annually. The Dominguez Water Company was identified as a party to the judgment and granted water rights. California Water Service Company, as a result of the acquisition of Dominguez Water Company, owns 6,480.0 acre-feet of adjudicated rights in the Central Basin, or 1.5% of the total basin annual adjudicated rights of 217,214.0 acre-feet. This amount is in addition to the 11,774 acre-feet held by Cal Water's East Los Angeles District.

Both the West Coast Basin and Central Basin judgments allow for transfer of rights through sale or lease agreements between parties and for the carryover of unused rights in an amount up to 20% of the groundwater rights held by a party. The Department of Water Resources of the State of California (DWR) is the designated Watermaster for both the West Coast Basin and Central Basin Adjudications. In that capacity, DWR accounts for all groundwater production in the basin, and annually reports on groundwater production and related groundwater-use transactions. The parties must file monthly production reports and notify the Watermaster regarding all leases or sales of rights.

The principle mechanisms for recharge in the West Coast Basin are the injection of water into the seawater intrusion barriers, in-lieu replenishment, and inflow to the West Coast Basin from the Central Basin. The Central Basin is recharged through percolation of water applied to surface spreading ponds in the Montebello Forebay, in-lieu replenishment, and inflow to the Central Basin from the San Gabriel Valley.

The Los Angeles County Department of Public Works owns and operates all groundwater recharge facilities as a county-funded activity through a longstanding inter-agency agreement. As a result, the costs associated with the capture and recharge of storm runoff water are not directly accountable in the cost of water replenishment. All other water used for replenishing the groundwater of the Central and West Coast Basins is funded by the WRDSC through the Replenishment Assessment. Additionally, the WRDSC manages various groundwater quality cleanup programs. To finance its designated responsibilities, the WRDSC levies a Replenishment Assessment on every acre-foot of groundwater produced in the Central and West Coast Basins.

Cal Water's operational plan for managing water supplies in the Dominguez District includes coordinating with existing regional conjunctive-use programs and taking advantage of economic incentives and the lease market when possible. Because the carryover amount fluctuates, annual allowable extractions vary.

The Dominguez District owns eleven wells. Total design capacity of Company-owned wells is 13,760 gpm. If the wells are operated at a ninety percent daily runtime, they can produce 12,380 gpm or 17.83 MGD or 19,992 AF per year. This potential production is greater than the total annual adjudicated right of the District of 16,897.45 acre-feet. Cal Water has temporarily lost a major portion of its well production capacity due to a combination of groundwater quality, mechanical and reduced efficiency issues. It is currently working on restoring this lost capacity by adding treatment facilities, well rehabilitation and replacement of old wells with new ones.

Imported Water

Imported water is delivered through eight WBMWD service connections from four MWDSC distribution feeders - the Palos Verdes Feeder, Victoria Feeder, Long Beach Lateral and Extension and the Sepulveda Feeder. The total rated capacity of the eight service connections is 72,000 gpm. If operated at full capacity, these connections could deliver 103.68 MGD. This

rate of delivery exceeds the projected maximum day demand for the year 2025 of 73.57 MGD (1.75 x 42.04) by 30 MGD.

MWDSC classifications of service and rate structure have changed in recent years and further changes are anticipated in the near future. Key to the changes is the establishment of Purchase Agreements for Imported Water Provided WBMWD. These agreements, that became effective January 1, 2003, have a term of five years and establish new concepts with respect to water sales within Metropolitan Water District's service area. The agreement sets a Base Allocation for each Purchaser, which is essentially their share of the supply Metropolitan Water District has made available to the WBMWD. The Base Allocation is based on that Purchaser's five-year average non-surplus water purchased during fiscal years ending 1997 through 2001. Over the term of the agreement, the Purchaser commits to purchase a minimum 60% of the Base Allocation times five, which is known as the Purchase Commitment. If a Purchaser does not purchase during the term of the agreement the full Purchase Commitment, then they must pay for the balance at the average Tier 1 Supply Rate, initially set at \$73 per acre-foot.

A two-tier rate and annual allocation is another aspect of these agreements. The agreement sets a Tier 1 Annual Maximum at 90% of the Base Allocation. All water purchased in any year in an amount that is equal to or less than the Tier 1 Maximum will be purchased at the Tier 1 Rate, initially set at \$510 per acre-foot. Any amount of water purchased in excess of the Tier 1 Annual Maximum will cost the Tier 2 Rate, initially set at \$591 per acre-foot.

In the Imported Water Purchase agreement for California Water Service Company with the WBMWD, the Base and Tier Allocations are established as a combined allocation of four Cal Water Districts (Dominguez, Hermosa-Redondo, Palos Verdes and East Los Angeles). Under this, the Dominguez District shares in the combined allocations with the three other California Water Service districts. Cal Water's Base Allocation is 69,370 acre-feet, the Tier 1 Annual Maximum is 62,433 acre-feet and the Purchase Commitment is 208,110 acre-feet.

In-lieu Seasonal Storage currently remains a valid economic incentive program, but purchases of this class of water do not count toward the Purchase Commitment. Shift Seasonal Storage and Emergency service classifications were eliminated. Seasonal Storage Service is a classification for water that is available for delivery during the winter (October through April) in years of adequate supply. Monthly certification is required to receive this reduced-price Seasonal Storage Service.

To qualify for In-lieu Seasonal Storage Service water rates, a purveyor must reduce the demand for supplemental water from MWDSC in the summer months (May to September) and shift production of groundwater from winter to summer. The baseline production ratio between local groundwater supply and total demand verifies that this shift has been accomplished. Under the In-lieu classification, the groundwater not pumped is left in the ground in order to augment groundwater replenishment efforts. This retirement results in a rebate or compensation for this action by the Water Replenishment District.

This program benefits MWDSC by reducing the summer peak flows that were beginning to tax MWDSC's treatment facilities and distribution system, and also enables MWDSC to maximize water importation during the winter when surplus flows are abundant in the areas of origin. Cal Water's participation in this conjunctive use program will depend on the makeup of the economic incentives provided by these changes.

Desalted Brackish Groundwater

The Department of Water Resources' Annual Summary of Watermaster Service reports on groundwater status in the basin. This summary includes figures depicting lines of equal water level elevation in the fall and spring of each year, lines of equal change in water level, and charts showing historical fluctuation of water level elevation in wells throughout the basin. These references clearly indicate that, since the reduction in pumping began in 1954 and the adjudication was implemented in 1961, groundwater levels in the West Coast Basin have risen approximately twenty feet. However, most groundwater elevations in the basin remain below sea level, requiring the maintenance of seawater intrusion barriers.

Seawater intrusion has been a problem in the West Coast Basin since the 1930s. Two seawater intrusion barriers, the West Coast Basin Barrier and the Dominguez Gap Barrier, have addressed the threat of losing the basin to salt water. The Los Angeles County Department of Public Works operates both barriers and the Water Replenishment District buys the water used in these facilities from WBMWD. Seawater intrusion has been effectively halted at the barrier alignment; however, a large body of brackish water still lies inland of the barrier. This saline plume is a result of seawater intrusion that occurred prior to operation of the barrier and is being addressed through desalination using reverse osmosis facilities like the C. Marvin Brewer Desalter.

Dominguez Water Corporation, with the support of the WBMWD, the Water Replenishment District of Southern California, Metropolitan Water District of Southern California and the United States Bureau of Reclamation, established a seawater desalinization demonstration project in July of 1993, known as the C. Marvin Brewer Desalter. Their goal was to demonstrate that this seawater plume could be extracted, treated, and put to beneficial use in an economical manner. Cost data on the project indicates that the average monthly expenditure per acre-foot of potable water produced is \$660. That cost is further reduced through an incentive program offered by MWDSC, known as the Local Projects Program, so that the unit cost to the customer is slightly less than non-interruptible imported service from MWDSC.

Recycled Water

The WBMWD has constructed what will ultimately be one of the largest water reuse projects in the United States. In the Phase I User Report, HYA Consulting Engineers identified over 105 economically feasible recycled water users with a combined estimated average annual demand of 19,100 AF. The project, when fully constructed, has the potential to deliver nearly 70,000 AF of tertiary treated recycled water per year. Following treatment at the Hyperion Water Treatment Plant, owned by the City of Los Angeles and located near the Los Angeles airport, recycled water will be used for injection at the seawater intrusion barriers, for industrial operations and for landscape irrigation. Cal Water began purchasing recycled water from the WBMWD in 2000. In 2004, Cal Water sold 3,616 acre-feet of recycled water.

Emergency Supplies

During an actual or threatened temporary shortage of imported water to the West Basin, the WRDSC is authorized by the West Coast Basin Judgment to enter into agreements that allow the over-extraction of groundwater by water purveyors in the basin. This authorized over-extraction can last for four months and may be used to produce a maximum of 10,000 acre-feet. Such agreements are not subject to the "make-up" provisions of the Judgment. If the shortage continues beyond four months, further over-extraction would require court approval. The normal production capacity of District wells would enable participation in this emergency supply. However, given the current short-term limitation on well capacity, the District would not be in the position to participate in any authorized over-extraction program. As a result, the District's

customers would be exposed to the full effect of a shortage until the District can increase its well production.

There are ten interconnections in the Dominguez District, five of which are for emergency exchanges of water and five are for routine operational exchanges of water. Of the emergency inter-connections, one is with the City of Compton, one with Southern California Water Company, one with the City of Torrance and two are with Cal Water's Hermosa-Redondo District. All emergency interconnections are non-metered, two-way connections. Of the operational interconnections, four are metered one-way connections with Cal Water's Hermosa-Redondo District that enable water to be delivered to the Dominguez system. The final operational interconnection is with Southern California Water Company. This is a temporary metered connection to supply a portion of Southern California Water Company's service area until they are able to restore inoperative supply facilities. Once Southern California Water has upgraded their system, the meter will be removed and this interconnection will be placed in emergency use status.

Water Quality

The drinking water delivered in the Dominguez District, whether its source is groundwater or imported water, must meet or surpass all federal and state drinking water standards. Methane, hydrogen sulfide and nitrification are the main water quality issues in the Dominguez District. Wells that have had water quality conditions that exceeded drinking water standards have had treatment facilities added or have been taken out of service.

Future Water Supplies

Future supplies will depend on feasibility for operational use, reliability, cost-effectiveness, economic incentives, requirements to comply with drinking water standards and regional supply plans.

Sources must be operationally feasible and add to overall reliability within the distribution system. Through treatment of wells with useful lives and in good condition or repair of wells with equipment problems or replacement of wells that have been shut down with new ones, the Dominguez District intends to reestablish production capacity consistent with its adjudicated rights. The distribution system has the capacity to deliver current and future demands of the Dominguez District's customers. No additional major distribution facilities are required to meet demand flows and maintain required pressures for the next 20 years.

To maintain adequate production capacity, it is Cal Water's plan to provide facilities that permit full use its annual adjudicated rights and take full advantage of economic incentives offered by MWDSC and WRDSC.

Because the reliability of MWDSC's imported water supplies has deteriorated in recent years, Metropolitan has implemented programs that provide the following:

- Financial incentives for development of local supplies
- ◆ Seasonal use of imported supplies in a manner that maximizes importation into Southern California
- Storage of surplus imported supplies for future use
- Restoration of the usability of contaminated local groundwater

Cal Water is committed to pursuing alternatives that provide the lowest achievable water cost without burdening its customers and the Company with excessive costs.

Cal Water regularly evaluates and critiques the proposed water rates of regional water supply and management agencies. The Company was instrumental in developing and promoting the In-lieu Replenishment concept in the 1960s and today is striving, through its work with regional water agencies, to improve these programs by maintaining the economic incentives and regional supply benefits.

For these programs to be successful, MWDSC and WRDSC must guarantee incentives for a given level of participation. It is anticipated that periodic dry spells will result in temporary suspension of the programs, resulting in delayed investment paybacks. If no assurance is provided that full-scale incentives will be maintained, projects that now appear feasible could burden ratepayers in the future. Conversely, as water rates change, projects that appear not to be cost-effective today may become economically feasible in the future. Any program that modifies the operational strategy of the Dominguez District or requires the installation of additional facilities to enhance supply reliability must, prior to being implemented, be evaluated to determine what impact that project will have on regional supply conditions. These ramifications are interrelated; impacting one will affect the others.

Supply conditions include the following:

- The West Coast and Central Basins are adjudicated groundwater basins.
- Seawater intrusion barriers exist within the basins.
- The West Basin Municipal Water District offers a reclamation program.
- Basin overdraft has caused declining groundwater levels.
- Shortages of available imported water supplies will become more frequent.

Water Supply Alternatives

Cal Water regularly evaluates alternate water supply strategies for the Dominguez District. The alternatives are compared against projected water rates for MWDSC, WBMWD and WRDSC and the estimated fixed capital costs along with projected annual operation and maintenance costs. Cal Water plans to conduct a detailed water supply alternative analysis as part of its Water Supply and Facility Master Plan scheduled for 2005.

Assessment of Existing Supply Capacity:

The existing supply facilities have more than adequate capacity to provide for projected demand through the year 2025 under normal conditions. Supply capacity consists of 15.0 MGD of total annual adjudicated groundwater rights, 103.7 MGD of contracted for imported water and 3.08 MGD of recycled water for a total of 121.78 MGD of water supply. Maximum day demand for 2025 is projected to be 73.57 MGD. The Carson Marketplace projected maximum day demand is estimated to be 1.19 MGD. Therefore, total forecasted maximum day demand for both the Dominguez District and the Project is 74.76 MGD or 47 MGD less than supply capacity under normal conditions.

The existing supply places a high degree of reliance on the continued availability of imported water. While it is recognized that MWDSC will continue its efforts to provide a reliable and

affordable imported water supply, it is also recognized that, as the demand for water increases, the costs for imported water will also rise. Therefore, Cal Water believes it has become increasingly more important to enhance and develop facilities that shift reliance toward use of local supplies.

Groundwater Expansion

As discussed previously, the production capacity of the wells owned by the Dominguez District is sufficient to produce all of the adjudicated water rights held by Cal Water for the Dominguez District. To accomplish this, these wells would have to operate almost ninety percent of the time.

Cal Water plans to develop new wells in the Dominguez District as new well sites can be located and demand conditions dictate. This additional capacity will facilitate greater participation in the economic incentive programs and enable the Dominguez District to over-extract groundwater during authorized supply shortages. Recent problems with secondary water quality standards will require the Dominguez District to install treatment on many existing and potentially new wells.

As previously discussed, Cal Water will continue to evaluate and support cost-effective projects that provide for increased reliable supplies from reclamation, desalination and water transfers.

DEMAND SIDE MANAGEMENT PROGRAMS

The Dominguez District conducts several public information conservation programs. Cal Water believes that managing demand is an important element in the overall management of water supply and has made efforts to promote conservation through educational, informational, and customer assistance activities.

External Measures to Achieve Public Support

Cal Water participates in a cost-sharing program with the WBMWD providing public information and low-water-using fixture replacement.

Internal Measures to Achieve Efficient Water Use

Cal Water recognizes the importance of conservation in managing water resources. Cal Water participates in efforts to develop demand management strategies, standards, and criteria by working with the California Urban Water Conservation Council. This Council was formed as part of the MOU primarily to oversee the implementation of the BMPs and to improve water conservation practices and analyses. Cal Water is committed to this process and the development of an integrated resource plan.

Cal Water's conservation programs are intended to assist customers in their efforts to use water efficiently as well as to educate them about their water supply. This is intended to lead them to making informed decisions concerning efficient use of water and enable them to better respond to required reductions in water use should a water shortage or emergency occur.

Cal Water's current conservation program in the Dominguez District costs \$102,500 per year. In Cal Water districts where such programs have been actively promoted, Cal Water has been able to reduce projected demand by 10%. Accordingly, Cal Water will continue to actively promote in the Dominguez District conservation through educational, informational, and customer assistance activities. Cal Water programs include distribution system water audits and leak

detection, promotion of water efficient landscape guides, residential surveys, public and school education. Cal Water promotes installation of water conserving fixtures such as toilets, showers, washing machines, and low-water-use landscaping.

Implementation of Supply Plans and Conservation Programs

The Dominguez District, supported by engineering, water quality and customer service staff in San Jose and Torrance, is responsible for planning, designing, construction, operating, maintaining and managing all Dominguez District water system facilities and programs.

Cal Water schedules the design and construction of new wells and related distribution and storage facilities so as to increase supply capacity ahead of projected demand growth thereby providing excess supply capacity to accommodate more rapid growth than anticipated and dry weather periods that might result in temporary reductions in the water supply.

Cal Water plans to implement its water demand management programs in the Carson Marketplace to encourage efficient water use by its residents and businesses. More specifically, it will work with the developer with respect to installation of water conserving fixtures such as toilets, showers, washing machines, and low-water-use landscaping.

Water Supply Permits and Approvals

For prospective new well sites, Cal Water follows a standard procedure in which it establishes interest on the part of a property owner to sell all or a designated piece of its property to Cal Water for a water supply purpose. In the case of a well site, Cal Water first determines its suitability for a production well. This includes a conducting a sanitary survey, Phase 1 environmental assessment, a right-of-entry agreement, design and construction of a test hole, testing of water quality and evaluation of findings. If a site is determined to be suitable, Cal Water generally purchases the property from the owner. In the case of public properties, it may enter into a long-term lease or obtain a permanent easement.

After a well is constructed and before use, Cal Water is required to demonstrate to DHS that water from the well complies with all drinking water standards. Cal Water also is required to file the well logs obtained by the driller with the Department of Water Resources.

Design and Construction of Water Supply System

Cal Water will provide Carson Marketplace LLC with a will serve letter indicating its intention to serve as the water utility. A complete water system includes distribution lines, possible storage facilities, SCADA, meters, etc. As project planning and design proceed further, Cal Water anticipates working closely with Carson Marketplace LLC, its planner and engineer, the City of Carson, CA Dept of Health Services and any other agencies that may be involved with the planning, design, construction and operation of the proposed water delivery system.

Cal Water will review all proposed design drawings and specifications for both potable and recycled water systems for compliance with state standards and Cal Water's standards with respect to storage requirements, pipe sizes, fire flows, equipment, materials, communication and control systems and interties with Cal Water's Dominguez District system.

Cal Water's Dominguez District, supported by its engineering, water quality and customer service staff, will be responsible for providing ongoing operations and maintenance services for potable and recycled water systems.

Capital costs for design and construction of the project water distribution system are the responsibility of the developer of Carson Marketplace.

With respect to the Dominguez District, Cal Water has an ongoing capital improvement program to upgrade and improve the distribution system, replace wells that have reached the end of their useful life, and provide treatment of groundwater when needed. The capital improvement program also provides for new facilities required by growth in demand. Cal Water's Dominguez District capital improvement program is separate from and will not include costs associated with the water system required within the Carson Marketplace.

SB 610 Section 10910 Paragraph (d)(2) requires an identification of existing water supply entitlements, water rights, or water service contracts held by the public water system shall be demonstrated by providing information related to all of the following. (Responses follow.)

(A) Written contracts or proof of entitlement to an identified water supply.

Proof of entitlement to use of the aforementioned adjudicated groundwater, imported water and recycled water cited as the supply sources for the Dominguez District and project are a matter record. If required, copies of the various documents are available for review.

(B) <u>Copies of a capital outlay program for financing the delivery of a water supply system</u> that has been adopted by the public water system.

The developer of Carson Marketplace, if required, can produce a copy of their plan for financing the estimated capital outlays for the water system.

Capital costs for design and construction of the water distribution system within the development is the responsibility of the developer of the Carson Marketplace.

With respect to the Dominguez District, Cal Water has an ongoing capital improvement program to upgrade and improve the distribution system, replace wells that have reached the end of their useful life, provide treatment of groundwater due to water quality problems. The capital improvement program also provides for new facilities required by growth in demand such as wells, storage facilities, booster pump stations, etc. Cal Water's Dominguez District capital improvement program is separate from and does not include any of the aforementioned costs associated with the required water system for the Carson Marketplace Specific Plan. A summary of this capital program can be provided if required.

(C) <u>Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.</u>

Cal Water is required or may be required to obtain the following permits including:

mendment permit from California Department of Health Services

(DHS)

- 2. A conditional use permit from the Carson City Planning Department
- 3. Well construction/building permit from the Carson City Planning Department
- 4. Well drilling permit from the local health department
- 5. An air quality permit from the South Coast Air Quality Management District

Cal Water is highly experienced in preparing applications and obtaining the necessary permits as they are needed in order to proceed with design, construction, start-up and operation of the required water supply facilities.

(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

As previously noted, Cal Water is familiar with the approvals it must obtain from the health department, planning and building inspection department, the California Dept. of Water Resources and California Dept. of Health Services and the South Coast Air Quality Management District.

5. Water Supply Assessment

Carson Marketplace Supply Reliability Analysis

SB 610 requires an assessment as to whether the proposed water supply for Carson Marketplace will meet the projected water demand for the next 20 years during:

1) normal, 2) single dry and 3) multiple dry water years.

Normal. The preceding total supply analyses indicates that existing supplies are more than adequate to provide a long term (20+ years) sustainable supply to meet the forecasted water demands for both the Dominguez District and the Carson Marketplace under normal conditions.

<u>Single dry year</u>. Cal Water estimates that the availability of supply to the Dominguez District and Carson Marketplace will not be affected by a single dry year. It is anticipated that total water demand will be the same as a normal year. Some customers may increase lawn irrigation due to reduced precipitation while others, based on water use advice and information from Cal Water and public water agencies wholesaling water, may reduce consumption.

Multiple dry years.

The water source for Cal Water's Dominguez District in 2000 was 55% imported water purchased from WBMWD, 37% groundwater, and 8% recycled water. In recent years, the percentage of imported purchased water has been higher (77% in 2004) due to loss of existing wells. Cal Water is taking steps to reduce the percentage of purchased water through implementation of additional new local supplies. While there is no formal entitlement to the imported water from MWDSC, reductions for drought or emergencies are made based on historical use. In the past, these reductions have been made on a basis of cuts to the total demand of a community. Since the Dominguez District is supplied from WBMWD and MWDSC, Cal Water is obligated to function within the Shortage Contingency Planning of those agencies.

As a member agency of MWDSC, the WBMWD responded to the 1987 - 1992 drought by implementing a demand reduction program known as the Incremental Interruption and Conservation Program (IICP). The IICP consisted of a six-stage program of supply curtailment using the demand in the 1989 - 1990 base year. The approved IICP provided for the following

six stages of supply curtailment:

Stage 1

• Voluntary ten percent reduction in MWDSC deliveries

Stage II

- Overall reduction of ten percent in MWDSC deliveries
- Five percent reduction in MWDSC firm deliveries
- Ten percent call on groundwater pumping
- 40 percent reduction in groundwater replenishment with imported water
- No change in seawater intrusion barrier deliveries.

Stage III

- Overall reduction of 17 percent in MWDSC deliveries
- Ten percent reduction in MWDSC firm deliveries
- 20 percent call on groundwater pumping
- 50 percent reduction in groundwater replenishment with imported water
- No change in seawater intrusion barrier deliveries.

Stage IV

- Overall reduction of 24 percent in MWDSC deliveries
- 15 percent reduction MWDSC firm deliveries
- 30 percent call on groundwater pumping
- 75 percent reduction in groundwater replenishment with imported water
- No change in seawater intrusion barrier deliveries

Stage V

- Overall reduction of 31 percent in MWDSC deliveries
- 20 percent reduction in MWDSC firm deliveries
- 50 percent call on groundwater pumping
- 90 percent reduction in groundwater replenishment with imported water
- No change in seawater intrusion barrier deliveries

Stage VI

- Overall reduction of 50 percent in MWDSC deliveries
- 30 percent reduction in MWDSC firm deliveries
- 100 percent call on groundwater pumping
- 100 percent reduction in groundwater replenishment with imported water
- Implement emergency over-pumping provisions of basin judgments

All cities and water utilities in the WBMWD service area were requested to adopt by March 31, 1991, water conservation ordinances with the following use restrictions. Each of the following restrictions has certain exemptions where appropriate. As MWD's IICP is modified, member agencies such as WBMWD will make revisions to their IICPs in order to maintain consistency.

- 1. Lawn watering and landscape irrigation with potable water is permitted only between the hours of 4 p.m. and 6 a.m.
- 2. Irrigation with recycled water is permitted on any day at any time.
- 3. Washing of buildings, facilities, equipment, autos, trucks, trailers, boats, airplanes and other types of mobile equipment is prohibited.
- 4. Water shall not be used to wash down sidewalks, driveways, parking areas, tennis courts, patios or other paved areas.
- 5. Water shall not be allowed to run off landscaped areas onto streets or sidewalks due to poorly maintained sprinklers or excessive watering.
- 6. Filling and refilling of pools and spas should be permitted only between the hours of 6 p.m. and 6 a.m.
- 7. Using recycled water in ponds, fountains and artificial lakes should be encouraged.
- 8. Flushing of water mains will not be permitted.
- 9. Restaurants shall not serve water to their customers unless specifically requested.
- 10. Leaks should be repaired as soon as discovered and shall not be allowed to continue for more than 48 hours.

In the summer of 1991, WBMWD went to Stage V of the IICP. Since all deliveries to the Dominguez District are "Firm Deliveries", the district faced a mandatory 20% reduction. Dominguez District customers responded with a 25% reduction.

MWDSC and WBMWD developed the 1995 Drought Management Plan (DMP) in anticipation that severe (30 - 35%) reductions in State Water Project deliveries would occur in 1995, as a result of 1994 being the fourth driest year on record. While the 1995 DMP was never implemented, it set forth various supply strategies and modified the IICP procedures (see MWDSC's and WBMWD's Urban Water Management Plans for greater detail.) The rationing stages for the 1995 IICP are as follows:

Stage	Reduction in Agricultural Deliveries	Plus Conservation of Firm Deliveries	Overall Reduction, Percent
	30%	5%	6%
II	30%	10%	11%
Ш	40%	15%	16%
IV	50%	20%	22%
V	75%	25%	28%
VI	90%	30%	33%

The 1995 IICP contains a tiered disincentive rate schedule that would be charged on each acrefoot purchased above an agency's target allocation. The disincentive rates are listed in the following table. The 1995 IICP contains a provision for interagency transfers if an agency wants to avoid a disincentive charge.

Stage	Disincentive As Percent of Non-interruptible Rate	\$/AF Based on Rounded FY 1994 - 1995 Rate
1	40%	134.00
II	50%	168.00
III	90%	302.00
IV	125%	419.00
V	165%	553.00
VI	200%	670.00

The 1995 DMP modified the calculation for determining the baseline allocation for determining reductions in water deliveries. This was done to take into consideration the impacts of conservation activities and the development of alternative local supplies. It is currently not clear how this will impact the Dominguez District. Based on the three-year average method identified (years in average are 2002, 2003, 2004), with no adjustment for conservation through BMP implementation, the District will have a baseline allocation of approximately 30,300 AF per year.

Using 1995 IICP staged reductions the Dominguez District can anticipate having the following available supplies:

Baseline	30,300 AF
Stage I	28,800 AF
Stage II	27,200 AF
Stage III	25,700 AF
Stage IV	24,300 AF
Stage V	22,800 AF
Stage VI	21,200 AF

MWDSC is in the process of developing a Water Supply and Drought Management Plan. This plan will establish formal procedures for dealing with both short and surplus supply conditions.

Hence, for a Stage V level of drought, Cal Water would receive 22,800 AF/year of imported purchased water. The Dominguez District's current well capacity of 16,897 AF/year might be expected to be reduced by 15% due to reduced groundwater recharge and maximum allowable pumping by other users within the adjudicated basins. So 14,360 AF/year of groundwater might be available. Recycled water would continue to be supplied in the amount of 3,600 AF/year. Total supply using these assumptions would be 40,760 AF/year (22,800 + 14,360 +3,600). Forecasted normal 2025 District water demand is 47,132 AF/year and Carson Marketplace demand is 892 AF/year; therefore, total 2025 normal demand would be 48,024 AF/year.

To reduce demand so that it is consistent with anticipated supply during a drought period, Cal Water has developed a four-stage rationing plan, which includes both voluntary and mandatory water use restrictions. Following is a summary of this program:

<u>Stage</u>	<u>Shortage</u>	Demand Reduction Goal	Type of Program
1	5 – 10%	10%	Voluntary
2	10 - 20%	20%	Voluntary or Mandatory
3	20 - 35%	35%	Mandatory
4	35 - 50%	50%	Mandatory

A description of the actions to be taken by Cal Water follows:

<u>Stage 1:</u> Ongoing public information campaign consisting of distribution of literature, speaking engagements, monthly bill inserts, and conservation messages printed in local newspapers. Educational programs in area schools are ongoing.

Stage 2: Cal Water aggressively continues public information and education program. Requests customers to reduce consumption voluntarily 10% to 20%. If the decision is to go to a mandatory program, requests CPUC approval first. Support passage of drought ordinances by government agencies.

Stage 3: Implement mandatory reductions after receiving CPUC approval. Institute rationing programs through fixed allotments based on percentage cutbacks. Implement rate changes to penalize use over allotment. Maintain rigorous public information campaign explaining water shortage conditions. Implement water use restrictions such as those pertaining to lawn and landscape irrigation, banning the filling of pools and fountains, etc. Monitor production weekly for compliance with reductions. Installation of flow restriction devices on customers who consistently exceed their allocation.

<u>Stage 4:</u> Intensify all of the steps in Stage 3 and monitor production daily for compliance with necessary reductions.

With respect to demand and supply for multiple dry years, if groundwater level declines were impacting the yield of wells, users could be required to reduce consumption. Cal Water believes that it could achieve a 10% to 20% reduction based on a voluntary reduction program (Stage 2) and 20% to 35% reduction (Stage 3) if a mandatory program is required. In the 1991 drought, Cal Water requested a 20% reduction, but achieved 25% from its customers. A 25% reduction in total demand for 2025 would amount to a decrease of 12,000 AF/year. Overall, demand would drop to 36,000 AF/year (48,000 – 12,000). This compares to an estimated multi-dry year supply of 40,760 AF/year. The Dominguez District would have a supply "cushion" under these assumptions of 4,760 AF/year or about 13.2% more than the estimated reduced total 2025 water demand.

6. Conclusion

Based on:

- Cal Water's current water supply capacity for the Dominguez District,
- Cal Water's ability to supply water to the Carson Marketplace with its existing supply system,

- Cal Water's plans for increasing local groundwater supplies in the Dominguez District
- ♦ Historical experience with single dry years and multiple dry years,
- ◆ In-place, ongoing conservation programs and best management practices for reducing demand during single and multi-year droughts,

Cal Water believes it will have adequate water supplies to meet the projected demands of the Carson Marketplace in addition to those of its existing customers and other anticipated future water users in the Dominguez District for the 20-year period from 2005 to 2025 under normal, single dry year and multiple dry year conditions.