5.6.

CITY OF GARDEN GROVE

URBAN WATER MANAGEMENT

AND

WATER SHORTAGE CONTINGENCY PLAN UPDATE

1996-2000

CITY OF GARDEN GROVE
Utilities Services Division
13802 Newhope Street
Garden Grove, CA 92643

URBAN WATER MANAGEMENT
AND
WATER SHORTAGE CONTINGENCY PLAN
UPDATE

1996-2000

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I. INTRODUCTION

This report has been prepared in compliance with the Urban Water Management Planning Act, as amended.[1] It updates the *Water Management Plan* for the City of Garden Grove which was adopted in March 1991, and incorporates the City's Water Shortage Contingency Plan, adopted in February, 1992.[2]

This is the second *Urban Water Management Plan* to be prepared for the City of Garden Grove under the terms of AB 797 (1983) and subsequent amending legislation. The first plan was adopted prior to the passage of AB 11X of (1991) which requires the preparation of a *Water Shortage Contingency Plan*. This Plan combines the *Urban Water Management Plan* and the Water Shortage Contingency Plan. It also addresses changes required by recent legislation including AB 892 (1993), SB 1017 (1994) and AB 2853 (1994), and incorporates water conservation initiatives which the City is considering for implementation pursuant to the *Memorandum of Understanding Regarding Urban Water Conservation in California.*[3] The City adopted the MOU in November 1996.

The City will convene a public hearing in Garden Grove to receive comments on the Plan prior to it's adoption by the City Council. Upon adoption, the Plan will be filed with the Office of Water Conservation in the Department of Water Resources and will be used by the City staff to guide the City's water conservation efforts through the year 2000.

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[1]California Water Code, Division 6, Part 2.6; §10610, et. seq. Established by Assembly Bill 797 (1983).

[2]City of Garden Grove, California, *Urban Water Management Plan*, March 1991, 28 pps.; City of Garden Grove, *Water Shortage Contingency Plan*, adopted February, 1992, 20 pps.

[3]The *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU) was adopted in September 1991 by a large number of water suppliers, public advocacy organizations and other interested groups. It created the *California Urban Water Conservation Council* and established 16 Best Management Practices (BMPs) for urban water conservation. The City of Garden Grove adopted the MOU on November 12, 1996 .

C. Service Area

The City of Garden Grove's Utilities Services Division supplies customers throughout the City of Garden Grove, with four small exceptions. Three neighborhoods that are not within the corporate boundaries of the City are supplied with water by the Utilities Services Division. Two are in the vicinity of Chapman Avenue and Dale Street (one to the northwest and the other to the southeast) and the third is close by, in the area of Lampson Avenue and Beach Street. The fourth exception is a neighborhood that is within the City but is not connected to the Utilities Services Division system. This neighborhood is located north of Chapman Avenue and east of Western Avenue. Figure 2 shows the City limits and service areas, as well as the location of key water supply facilities, as described below.

D. Water Supply and Facilities

The Utilities Services Division obtains water from two sources: the Santa Ana River Groundwater Basin and the Municipal Water District of Orange County (MWDOC). In recent years, water from the groundwater basin has accounted for 90% or more of the Division's supply. Groundwater is pumped from 12 active wells located throughout the City. The MWDOC wholesales imported water to the City from northern California (State Water Project water) and the Colorado River (from U.S. Bureau of Reclamation developments). This water is distributed by the Metropolitan Water District of Southern California (MWD). The MWD treats water supplied to Garden Grove at the Diemer Filter Plant in northern Orange County. The Garden Grove water distribution system is connected to MWD transmission mains at four locations along the northern and eastern sides of the City.

The age, depth, design flow and 1993 production data for the 12 active wells operated by the Division is summarized in Table 1.

GARDEN GROVE WATER SYSTEM FEATURES

FIGURE 2

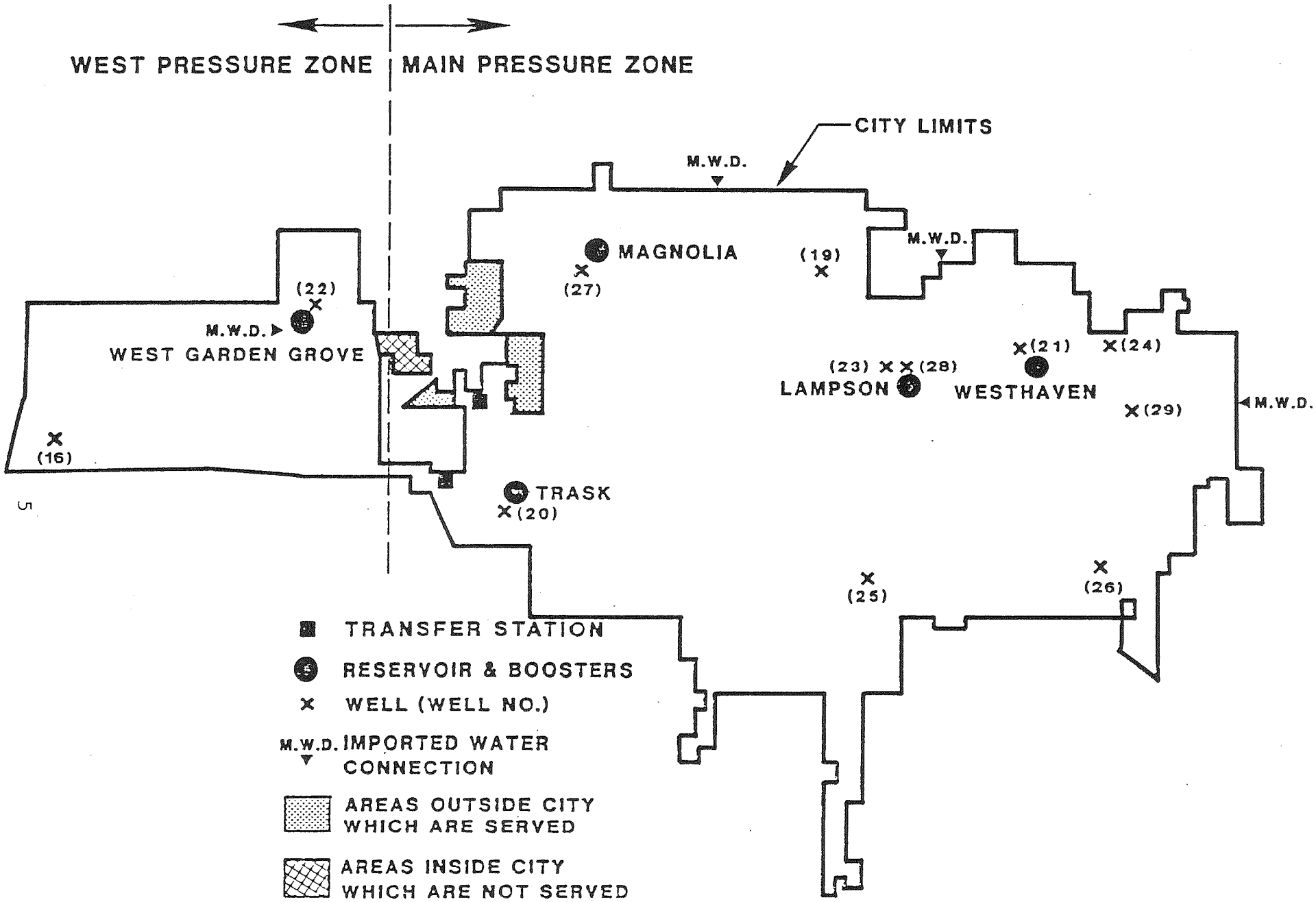


TABLE 1
ACTIVE WELLS
CITY OF GARDEN GROVE

Well No.	Well Description	Age (Yrs.)	Depth (Feet)	Design Flow (GPM)	Production (1993)
16	West Zone System Well	32 yrs.	910 ft.	2,000 GPM	--
19	Main Zone System Well	30 yrs.	942 ft.	1,900 GPM	2, 130 AF
20	Trask Reservoir Well	29 yrs.	934 ft.	2,000 GPM	1,012 AF
21	Westhaven Reservoir Well	27 yrs.	1,158 ft.	3,000 GPM	1,640 AF
22	West GG Reservoir Well	22 yrs.	1,020 ft.	3,300 GPM	1,733 AF
23	Lampson Reservoir Well	19 yrs.	860 ft.	2,300 GPM	3,024 AF
24	Main Zone System Well	14 yrs.	825 ft.	2,100 GPM	299 AF
25	Main Zone System Well	14 yrs.	987 ft.	1,000 GPM	377 AF
26	Main Zone System Well	8 yrs.	1,080 ft.	3,600 GPM	2,931 AF
27	Main Zone System Well; Magnolia Reservoir	8 yrs.	1,180 ft.	4,000 GPM	2,679 AF
28	Lampson Reservoir Well	8 yrs.	260 ft.	--	4,834 AF
29	Twin Lakes Freedom Park	new		4,500 GPM	-

In the past fifteen years as many as 18 wells have been taken out of active service and/or formally abandoned. Many of these wells were over 40 years old and reaching the end of their productive lives. In addition, a number of them were relatively shallow and subject to deterioration in water quality due to the gradual accumulation of nitrates. It should be noted that all of the currently active wells, except Well 28, are much deeper. These wells produce high quality water from deep within the groundwater basin. Well 28, the Lampson Reservoir well, was developed in conjunction with the OCWD specifically to draw water from the high yield Talbot aquifer. The nitrate concentration of water from this well exceeds drinking water standards, and is always blended with water from an adjacent well to produce a final product water that is within drinking water standards.

The Lower Santa Ana River Groundwater Basin is very large and is generally operated as a reservoir in which the net amount of water stored is increased in wet years to allow for managed overdrafts in dry years. The basin supplies almost half of Orange County's water supply, with annual production of around 310,000 acre-feet in recent years. The basin is recharged primarily from local rainfall (greater in wet years), base flow from the Santa Ana River (much of which is actually recycled wastewater from treatment plants in Riverside and San Bernardino Counties), imported water percolated into the basin, and reclaimed wastewater directly recharged into the basin. The production capability of the basin is being increased as a result of a variety of specific management initiatives including increased wastewater reclamation and the blending of lower quality water with potable water for public distribution. It is anticipated that the aquifer will be cleaned over time by drawing out low quality water and replacing it with high-quality recharge water.[1] The Garden Grove/OCWD special project involving the development of Lampson Well #28 for the extraction of high-nitrate Talbert Aquifer water for use in a blending program is a successful part of this effort.[2]

The City maintains four connections to the MWD system, which allows it to utilize water imported from the State Water Project and the Colorado Aqueduct. The characteristics of these connections are summarized in Table 2, below.

TABLE 2
IMPORTED WATER CONNECTIONS

Designation	Location	Capacity
OC-5	Lewis & Lampson	6,750 gpm
OC-50	Brookhurst & Katella	9,000 gpm
OC-35	Knott & Chapman	2,250 gpm
OC-22	Ninth & Katella	4,500 gpm
	Total Capacity	22,500 gpm

[1]Municipal Water District of Orange County, *1995 Regional Water Management Plan Update, p. 3-2.*

[2]The City and the Water District were awarded Honorable Mention for this program in the 1995 California Cities Helen Putman Awards For Excellence, Environmental Quality Partnerships category.

Three of the imported water connections have been upgraded in the past 3 years with the replacement of gate valves and the valve controls, and the addition of telemetry systems, which allow for accurate monitoring and control of the flow of water through these connections. In normal operating conditions the imported water connections are used as constant flow sources, i. e., the control valves deliver water into the system at a pre-ordered rate. They can also function as emergency standby sources, and with a total capacity of 22,500 gpm, they provide a substantial back-up supply for unusual conditions, such as a major fire.

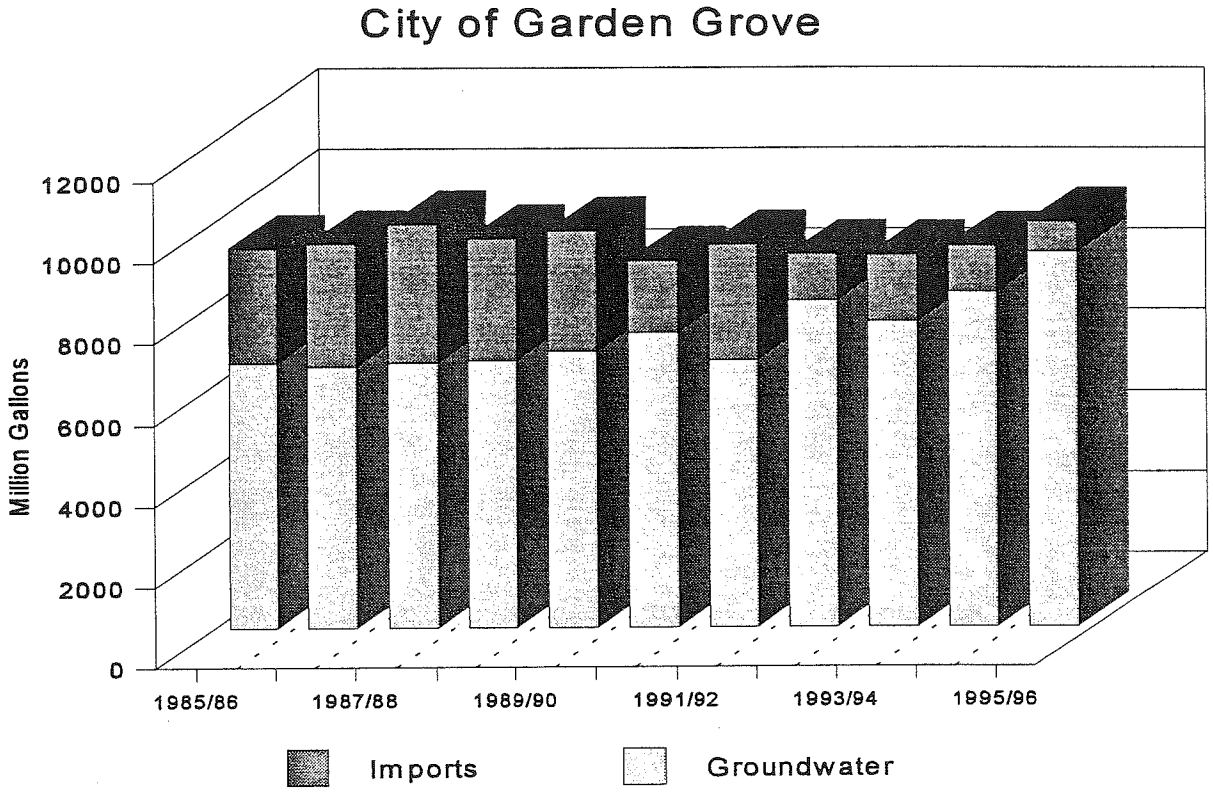
Garden Grove also maintains nine emergency inter-connections with the water systems of surrounding cities. The inter-connection valves are normally closed and must be manually opened. They have the capacity to deliver up to 13,200 gpm to the Garden Grove system.

E. STORAGE

The Water Division operates eight storage and distribution reservoirs at five sites with a combined capacity of 53 million gallons. The storage volume is the equivalent of more than two days average use and is more than adequate for peaking demands and fire fighting needs. The storage system is supported with 17 booster pumps located at the reservoir sites. The booster pumps have a total capacity of 43,100 gallons per minute, which is more than enough to keep the system pressurized under peak flow conditions.

III. PAST AND CURRENT WATER USE

FIGURE 3 - WATER PRODUCTION



A. WATER PRODUCTION AND PURCHASES

The total water production and import purchases for the City of Garden Grove for the past eight fiscal years are summarized in Table 3 and Figure 3. These data show that total water demand dropped during the 1991 - 1992 drought. Demand was 11.2% lower in FY 91/92 than it was in FY 89/90. Total production has subsequently rebounded to the level seen in 1989, although it remained below the 1989/90 peak for four years following the drought, despite modest growth in the population. It is noted that the amount of water imports purchased from the MWD have declined precipitously since 1991, when the feasibility of the Lampson Well #28 Nitrate Blending

TABLE 3
WATER PRODUCTION – 1985/86 - 1995/96

Year	Groundwater			Imported Water			Total Production	
	AFY	MG Y	Percent	AFY	MGY	Percent	AFY	MGY
1985/86	20,064 AF	6,537.8 mg	69.8%	8,673 AF	2,826.1 mg	30.2%	28,737 AF	9364.0 mg
1986/87	19,796	6,450.5	68.1%	9,269	3020.3	31.9%	29,065	9,470.8
1987/88	18,984	6,537.9	64.4%	10,477	3,413.9	35.6%	29,461	9,599.9
1988/89	20,231.5	6,598.4	68.6%	9,230.4	3,007.7	31.4%	29,461.9	9,600.0
1989/90	20,931.1	6,820.4	70.1%	8,926.8	2,908.8	29.9%	29,857.9	9,729.22
1990/91	22,332.8	7,277.2	80.5%	5,414.6	1,764.4	19.5%	27,747.4	9,041.52
1991/92	20,214.2	6,586.8	76.3%	6,287.8	2,048.9	23.7%	26,502.0	8,635.7
1992/93	24,716.0	8,053.7	87.6%	3,489.3	1,137.0	12.4%	28,205.3	9,190.7
1993/94	23,125.3	7,535.4	82.2%	5,031.2	1,639.4	17.8%	28,156.5	9,174.8
1994/95	25,356.5	8,262.4	87.9%	3,475.9	1,132.6	12.1%	28,832.4	9,395.0
1995/96	28,417.2	9,259.8	92.6%	2,278.1	742.3	7.4%	30,695.3	10,002.1

Project was proven. In 1993, for example, the City obtained over 23% of its entire groundwater supply from Well #28.[1]

B. Water Sales

Water sales for the calendar year 1996 are shown in Table 4, by service category.

In 1996, the District's customers have purchased an average of 741 gallons per day per connection (gpdpc). The residential category accounts for about 92% of the total connections and about 70% of total sales, with an average consumption of about 583 gpdpc. The commercial category, with 1,904 connections in 1996 (20.6% of the total) consumed an average of 2,091 gallons per day per connection while the City's 617 industrial connections used about 2,920 gpdpc. The connections that are primarily used for landscaping and agricultural irrigation have the highest sales per connection. The 297 connections in these categories (A - Agriculture, F - Freeway Landscaping, S - Schools and Z - Landscaping) consumed almost 624 mg in 1996, or 5,574 gpdpc. This is the equal to 6.7% of the Division's water sales. Although City Parks are not metered, the Division estimates that as much as 360 mgy are used by the Parks, primarily for irrigation. When combined with sales through metered connections, irrigation needs account for approximately 9.8% of the City's total water production and purchases.

In 1996, Garden Grove had an estimated population of 153,800 people. Aggregate water consumption (including water for parks and landscaping) was 173 gallons per capita per day (gpcpd). This is lower than the Orange County average consumption of 191 gpdpc, as reported by the MWDOC.[2] If the commercial, industrial and open space/irrigation demands are excluded, the sales to the residential sectors only amounted to 116 gpcpd. This is a fairly modest level of consumption when compared to many other California communities.

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[1]Based on calendar year (not fiscal year) data from: Boyle Engineering, *Draft Water System Master Plan Update*, 1996, p. 2-4

[2]MWDOC, *1995 Regional Urban Water Management Plan Update*, Table 2-2.

TABLE 4
1996 WATER SALES

BILLING CODE	SERVICE CATEGORY	CON-NECTIONS (No.)	UNITS BILLED (hcf)	SALES IN MGY	PERCENT OF TOTAL SALES
A	Agriculture	15	15,398	11.52	0.1%
C	Commercial	1,806	1,350,013	1,009.81	10.9%
E	Non-Public Schools	22	56,769	42.46	0.5%
F	Freeway Landscaping	14	39,916	29.86	0.3%
G	Churches	23	37,908	283.5	3.1%
H	Hospital	25	88,910	66.50	0.7%
I	Industrial	617	879,355	657.76	7.1%
L	Laundry	21	53,135	39.74	0.4%
M	Multi-Family Residential	1,715	2,637,996	1,973.22	21.3%
R	Single Family Residential	28,676	6,062,059	4,534.42	49.0%
S	Schools	112	598,837	447.93	4.8%
T	Condos/Townhomes	23	5,780	4.32	0.05%
W	Carwashes	7	12,314	9.21	0.1%
Z	Landscaping	156	179,749	134.45	1.5%
TOTAL SALES				**9,244.7 mg**	

UNMETERED SERVICES

CODE	SERVICE CATEGORY	ESTIMATED CONSUMPTION (HCF)	ESTIMATED CONSUMPTION (MGY)	PERCENT OF PRODUCTION
P	City Parks	480,000 est.	359.0 est.	3.6% est
FS	Fire Service	120,000 est.	89.8 est.	0.9%
TOTAL 1996 SALES & CONSUMPTION			**9,693.5 mg**	
UW	Unaccounted-for Water	10,002 mg estimated production - 9,693.5 mg sales & consumption = 308.5 mg UW		3.2%

IV. PROJECTED DEMAND

According to the U.S. Census, the City of Garden Grove had a 1990 population of 143,050 people. This was estimated to have increased to 153,800 people by 1996, an increase of 7.5 percent over 6 years, an average of 1.25 percent per year. By the year 2020, Orange County projections predict the population will rise to about 166,750, an increase of 16.6 percent over 1990 and 8.4 percent over the estimated 1996 population. It is expected that the rate of growth will continue at about 1.25 percent per year until 2000, after which it will decline to less than 0.4 percent per year. The overall population increase is expected to be a function of demographic changes as well as an increase in housing density due to the redevelopment of parcels at a variety of locations in the City.[1]

In addition, redevelopment with intensified land uses in the Community Center and Harbor Corridor areas of the City is anticipated. Boyle Engineering estimated that the average water demand from these areas could ultimately increase by 964 gallons per minute (gpm), which is equivalent to about 5.2 percent of the current average demand.[2] The redevelopment in these areas would be predominately commercial and industrial and would be additive to the citywide increases expected from demographic and housing densification changes.

Without considering conservation potential, the water demand in the City is projected to increase by about 22.9 percent (from 9,693.5 mgy [18,443 gpm] to 11,921.66 mgy [22,682 gpm]) by the year 2020. Water conservation measures described in this report have the potential to reduce overall average demand by 8 percent, as a conservative estimate, to as much as 16 percent as a best-case estimate. This would result in an adjusted demand increase in the range of 3.3 to 13.1 percent (320.7 mgy to 1,274.4 mgy) by the year 2020.

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[1]Boyle Engineering, *Draft Water System Master Plan Update*, June 1996, p. 3-10.

[2] ibid.

V. URBAN WATER MANAGEMENT PLAN PROGRAMS

A. INTRODUCTION

This chapter describes and evaluates the City of Garden Grove's Urban Water Management programs for the 1996 - 2000 period. It describes the water conservation programs that have been implemented by the City and other agencies including the MWDOC and the Metropolitan Water District as well as the programs that are being developed, continued or expanded under the present Plan.

The City of Garden Grove became a signatory to the *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU) and a member of the California Urban Water Conservation Council (CUWCC) on November 12, 1996. The MOU contains 16 Best Management Practices (BMPs). The BMPs are examples of sound water management practices that have been found to be cost effective and practicable in most instances throughout California. They are generally consistent with the water conservation practices that have been implemented by the City under the existing (1991) *Urban Water Management Plan.* The BMPs have also been adopted by the Municipal Water District of Orange County in it's 1995 *Regional Urban Water Management Plan Update.* Accordingly, the water conservation programs presented later in this chapter have been organized in a format that is consistent with the list of BMPs contained in the MOU.

B. PREEXISTING WATER CONSERVATION PROGRAMS

The City of Garden Grove has, in conjunction with other agencies, including the MWDOC and the Metropolitan Water District of Southern California, actively promoted water conservation initiatives by its customers and staff. While the City's service area population increased by 13.7 percent between 1989 and 1996 (from 135,286 to 153,814 people) total water consumption actually dropped by 0.9% from 9,780 mg in 1989 (considered a base year with non-drought conditions) to 9,693 mg in 1995 (also a non-drought year). Water use, on a per-capita basis, was 173 gpcpd in 1995 compared to 197 gpcpd in 1989.

Today, the City's on-going water conservation measures, some of which have been in place for many years, include the following:

1. Metering

Almost all water connections are metered. Metering is recognized as sound urban water management practice as well as a basic water conservation measure (BMP 4). The City's sources of supply are also metered, and the supply meters can be cross-checked against sales data to allow the City to identify water lost in the transmission/distribution system. The City has been operating a water meter testing and replacement program since 1980, and the volume of unaccounted-for-water has dropped dramatically as a result.

2. Maintenance of Water Use Records by User Type

While the record keeping itself does not save water, the data it provides is fundamental to evaluating the effectiveness of water conservation programs.

3. System Pressure Control Program

The City manages water pressure throughout its system and uses microprocessors to control reservoirs and improve efficiency. Pressure regulation limits pressure peaks so that more water will not be lost when fixtures leak or if water is inefficiently applied while at the same time ensuring that there is adequate pressure to meet fire flow needs.

4. Leak Reduction

The amount of water lost in the transmission and distribution system is well below the general industry standard of 8% to 10% — in 1996 it was 3.6 percent. The City endeavors to keep its water losses as low as possible through quick response to water main breaks and leak detection programs. The City's distribution system, with approximately 371 miles of water mains, is in good condition. There have only been between 7 and 11 water main breaks in each of the past three fiscal years.

Upon request, Garden Grove Utilities Services Division personnel will help customers check for water leakage in their own plumbing system. The City does not charge for this service. The staff is also trained to alert customers to higher than normal usage. Many internal leaks have been fixed as a result of these contacts.

5. Plumbing Fixtures Retrofit Programs

Garden Grove has benefitted from plumbing fixture retrofit programs implemented by the MWDOC and the Metropolitan Water District over the past 5 years. The City estimates that over 16,400 low flow shower heads and 4,600 ultra low flush toilets have been distributed in the City pursuant to these programs since 1991. The MWDOC calculates that the devices in place and operating are conserving approximately 112 acre-feet/year.

6. Public Education

Since the 1977-78 drought, the City has implemented regular public education and information efforts related to water conservation and a wise use ethic. A number of programs and activities have been undertaken in conjunction with the MWDOC while others have been implemented directly by the City. The programs and activities have included:

- The on-going maintenance of water conservation information and brochures at City Hall where they can be seen, read and taken by visitors;
- The display of water conservation messages on the cable television public access channel;
- The airing of a program about the City's water system called "The Water Story" on public access television;
- The preparation and distribution of a newsletter with water bills which frequently contains water conservation tips;
- The participation in Water Awareness Month, Earth Day and other environmental celebrations with public education booths and information kiosks;
- Sponsorship of information kiosks at other community and school fairs;
- The presentation of water service and conservation information on the City's internet homepage; and,
- The provision of speakers on water supply and conservation issues to local service clubs, college classes and special interest groups.

In addition, the City has greatly benefitted from the MWDOC's Public Information and Education program which includes extensive community outreach and a school education program for K through 8 grades. This program reaches over 18,000 students a year in the City of Garden Grove.

The City believes that all of these efforts not only improve the effectiveness of water conservation programs, but they will also prove beneficial during emergencies, when a more educated public is more understanding and cooperative in complying with any voluntary or mandatory restrictions that might be requested or imposed.

C. WATER CONSERVATION PROGRAMS — 1996 - 2000

1. Interior and Exterior Water Audits (BMP 1)

BMP 1: Implementation methods shall be at least as effective as identifying the top 20% of water users in each sector, directly contacting them (e.g. by mail and/or telephone) and offering the service on a repeating cycle; providing incentives sufficient to achieve customer implementation (e.g. free showerheads, hose end sprinkler timers, etc.)

On a continuing basis, the City's Customer Service Representatives conduct an informal "Inform and Respond" auditing program. This program has been internally developed in conjunction with the standard meter reading and billing process. Action is typically initiated when customers inquire about high water bills, possible leaks or possible conservation measures. Customer service representatives conduct residential site visits that include discussing high water bills, checking for leaks, providing information on possible conservation measures, and suggesting plumbing retrofits.

The City of Garden Grove is working cooperatively with the MWDOC and the Metropolitan Water District of Southern California (MWD) to develop a Residential Audit Program. It is expected to include additional methods and incentives to achieve customer implementation of conservation measures. The City will continue its "Inform and Respond" program activities, while the Residential Water Audit Program will target the top 20 percent of water users. The Program will include site audits, inspection of plumbing and irrigation, installation of conservation devices, and the dissemination of general conservation information. The City's initial goal for this program is to target 1,146 of the top water users a year for five years.

IMPLEMENTATION: The City staff is currently attending trainings sponsored by MWDOC and MWD. This will allow the staff to knowledgeably and effectively manage a vendor to conduct site visits. The City is proposing to budget up to $35,000 per year for the program, with anticipated

MWD co-payments for site surveys and installed conservation devices. It is expected that the program will begin in 1997.

2. Plumbing Retrofit (BMP 2)

> *BMP 2: Implementation methods shall be at least as effective as delivering retrofit kits including high quality low-flow showerheads to pre-1980 homes that do not have them and toilet displacement devices or other devices to reduce flush volume for each home that does not already have ULF toilets; offering to install the devices; and following up three times.*

The MWDOC, the MWD and the City have been distributing water conservation kits and low flow showerheads to Garden Grove customers actively since 1991. Programs may also have been implemented in the late 1970's and the 1980's although no information is available on exactly how many kits may have been distributed.

MWD conducted a mass showerhead distribution in 1991 through 1993, during which 12,443 low flow showerheads were distributed in Garden Grove. MWDOC has subsequently been distributing low flow showerheads in conjunction with several of it's water conservation programs. A total of 3,988 low flow showerheads have been installed through 1996, all of them in conjunction with ultra-low flush toilet retrofittings. MWDOC estimates that, in aggregate, the showerhead replacement work will result in a conservation saving of 33 acre-feet in 1997.

The City is not proposing a formal outreach program under BMP 2. Instead, residential water conservation efforts will be focused on other programs that it believes to be more effective, including the water audits (BMP 1), the public education programs (BMPs 7 and 8) and the MWDOC ULFT rebate program (BMP 16).

IMPLEMENTATION: The City will continue to recommend low flow showerheads in conjunction with its customer assistance and public education work and will distribute and install the devices during the audits conducted pursuant to BMP 1. (See also BMPs 1, 7, 8 and 16.)

3. Distribution System Audits and Leak Detection and Repair (BMP 3)

> *BMP 3: Implementation methods shall be at least as effective as at least once every three years completing a water audit of the water supplier's distribution system using methodology such as that described in the American Water Works Association's "Manual*

of Water Supply Practices, Water Audits and Leak Detection;" advising customers whenever it appears possible that leaks exist on customers' side of the meter; and performing distribution system leak detection and repair whenever the audit reveals that it would be cost effective.

Currently, the City maintains an emergency response program that aggressively repairs main breaks, hydrant leaks or breaks, and meter leaks. A team of water service workers is immediately formed to permanently repair main or hydrant breaks, and restore water service promptly.

Both a proactive approach and an "Inform and Response" approach are utilized for water meter leaks. Meter readers identify, log and report any meter leaks during their normal meter reading activities. Customer service workers identify any meter leaks or possible leaks existing on the customer's side of the meter during site visits to investigate high water bills or customer complaints. Finally, customers call in to report meter leaks which are logged. All meter leaks are investigated and repaired the same day, unless unable to do so, then next day service is performed.

Teams respond to an average of 10 main breaks annually within 371 miles of main, and an average of 15 hydrants annually out of 3,326 hydrants. An average of less than 3% of mains and hydrants require emergency response and quick repairs minimize water losses. Considering that the Citywide unaccounted-for water is approximately 3.6% and only a portion of this is actual water loss (water for main flushing and other maintenance needs is categorized as unaccounted-for water), regular distribution system water audits may not be cost effective. The City is therefore considering exempting itself from this BMP. However, the level of unaccounted-for water will continue to be regularly monitored and a system wide survey of distribution facilities could be implemented if water losses were to rise appreciably.

IMPLEMENTATION: The water service staff will continue to respond as quickly as possible to all reported main and hydrant leaks or breaks, and production and sales data will continue to be regularly reviewed so that any increases in the level of unaccounted-for water can be identified. Assuming that the level of unaccounted-for water remains as low as it has been in recent years, the potential benefits of a system wide survey are not likely to exceed its costs. BMP 3 would only be implemented during the term of this Plan only if the level of unexplained water losses increase and, in the judgement of management, there is a likelihood that the benefits of a system wide audit would exceed the costs of the survey.

4. Metering with Commodity Rates (BMP 4)

BMP 4: Implementation methods shall be requiring meters for all new connections and billing by volume of use.

Garden Grove requires meters for all new connections and bills by volume of use. All existing connections are metered except for a few that provide water for City parks and street median irrigation.

Customers are billed on the basis of a commodity charge plus a capital improvement charge. There is a minimum service charge for low volume users. The 1995/96 water rates set the commodity charge at $0.902 per hcf unit (1 hcf unit = 748 gallons) for the first 36 units, plus a capital improvement charge of $1.38 for a standard residential meter. The minimum service charge is $6.00. The commodity charge is levied under an inclining block rate structure with the cost per unit increasing after 36 units, after 250 units and after 500 units. The maximum commodity charge is $1.022 per unit. This rate structure encourages conservation by high volume users. The minimum charge and the capital improvement charge increase by meter size.

IMPLEMENTATION: This BMP is being implemented. During the term of this Plan, the City will consider the installation of more meters at City-operated park and irrigation connections so that consumption data can be gathered for better irrigation water management.

5. Large Landscape Water Audits and Incentives (BMP 5)

BMP 5: Implementation methods shall be at least as effective as identifying all irrigators of large (at least 3 acres) landscapes, contacting them directly, offering landscape audits using methodology such as that described in the Landscape Water Management Handbook prepared for the California Department of Water Resources and cost effective incentives to achieve customer implementation; providing follow-up audits at least once every five years; and providing multi-lingual training and information necessary for implementation.

There are 15 landscaped areas in the City of Garden Grove with three acres or more. All of these properties are owned by the City or by the Garden Grove Unified School District. The City has conducted audits on its own property, making conservation improvements with regards to irrigation controllers, use of drought resistant plants, and proper maintenance.

The City has also participated in the MWD water conservation program when it is made available. In 1995-96 large water users were offered water use surveys and audits, and the Garden Grove Unified School District participated. Four high schools, with over 69 acres of landscaped area, were audited.

Additionally, the City actively participates in a MWDOC and MWD sponsored irrigation management training. The training, called "Protector del Agua", is attended by Garden Grove landscape maintenance crews and numerous landscape maintenance companies doing business in Orange County, as well as in Garden Grove. This six week training is presented in both English and Spanish, and is offered annually. The City of Garden Grove continues to send employees, and recommends attendance by local landscape companies, for ongoing training in the latest landscape maintenance technology.

To support the more efficient use of water in City Parks, unmetered water connections for irrigation systems are planned to be metered in the coming few years. The meters will provide consumption data which will assist in more efficient landscape water management.

IMPLEMENTATION: The City will continue to participate, and encourage local landscape contractors to participate, in the MWDOC and MWD water conservation trainings. Unmetered landscaping water connections will be metered in the coming years and the water consumption data will be provided to the landscape maintenance supervisors, so that changes in water use can be monitored.

6. Landscape Water Conservation Requirements for Commercial, Institutional, Governmental and Multi-Family Developments (BMP 6)

> *BMP 6: Implementation methods shall be enacting and implementing landscape water conservation ordinances, or if the supplier does not have the authority to enact ordinances, cooperating with cities, counties and the green industry in the service area to develop and implement landscape water conservation ordinances pursuant to the "Water Conservation in Landscaping Act" (Government Code 65590 et. seq.).*

The City of Garden Grove has adopted an ordinance modeled on the State program. It is found in Title 9, Article IV of the Municipal Code. All new projects, virtually all residential home

additions and most landscape rehabilitation projects must comply with the provisions of this ordinance.

IMPLEMENTATION: The City will continue to implement the water conservation in landscaping ordinance. A study as to its effectiveness has not been conducted, although the City will weigh the benefits of such a study against its cost, and undertake the study if it is determined that useful data could be expected with a reasonable cost for the study.

7. Public Information (BMP 7)

> *BMP 7: Implementation methods shall be at least as effective as ongoing programs promoting water conservation and conservation related benefits including providing speakers to community groups and the media; using paid and public service advertising, using bill inserts; providing information on customers bills showing use in gallons per day for the last billing period compared to the same period the year before; providing public information to promote other water conservation practices; and coordinating with other governmental agencies, interest groups and public interest groups.*

The City of Garden Grove has conducted a variety of public education activities over the past decade and expects to continue these efforts during the term of this Plan. Most of the City's water related public information programs have been conducted in coordination and cooperation with the MWDOC and have focused, generally, on customer information, in-school education, and community outreach.

As a member agency of MWDOC, Garden Grove receives benefits from the regional agency that include a comprehensive Public Information and Education Program. The Program includes a Speakers Bureau which reaches civic and community groups, and local businesses and agencies; a School Education Program for K through 8th grades, reaching over 18,000 children per year in Garden Grove, press releases and public service announcements for special water programs, events or issues; organizes and conducts special countywide events for Water Awareness Month, Earth Day, and other environmental celebrations; and provides a large variety of water education and awareness materials to be used for events and by its member agencies.

The Garden Grove Utilities Services Division realizes that it is responsible to educate customers on water issues, and upholds the vision that every employee maintains a line of sight with its

customers. This means every Water Services employee is empowered to educate water customers at every opportunity.

During 1995/96, bill inserts were used for the Ultra-low Flush Toilet Replacement Program; over 4,000 brochures were distributed at local and regional events, through customer service site visits, and civic center counters; four local community group presentations were conducted; five press releases were sent out covering programs and current issues; staff participated in the Public Affairs and Water Conservation Workgroups with MWDOC; water service and conservation information was maintained on the City's homepage; several lead stories were featured on "This Week in Garden Grove," a news program for local cable programming; and "The Water Story," an 8 ½ minute video on Garden Grove's water system, was produced and aired on local cable as part of several community group presentations.

IMPLEMENTATION: The public information activities that are currently being implemented will be carried forward in this Plan. They include all of the implementation programs suggested in BMP 7, e. g. speakers to community groups, public service announcements, bill inserts, past usage information on bills, continued distribution of water conservation information and coordination with other public agencies and interest groups. In addition, these programs will be expanded and the public information efforts intensified in the event of a water shortage, as defined in the second part of this report, the *Water Shortage Contingency Plan*.

8. School Programs (BMP 8)

> *BMP 8: Implementation methods shall be at least as effective as ongoing programs promoting water conservation and conservation related benefits including working with the school districts in the water supplier's service area to provide educational materials and instructional assistance.*

The City of Garden Grove Utilities Services Division conducts school education in cooperation with the Municipal Water District of Orange County. Established in 1973, the MWDOC School Education Program is one of the oldest and most respected in the state. Originally the program taught children in kindergarten through third grade only. By featuring Ricki the Rambunctious Raindrop as the program mascot, children became familiar with the program and its messages. Students of all ages now recognize Ricki, and his name has become synonymous with water education and conservation throughout Orange County.

Today, the goals of the education program remain the same. The program has been expanded to include primary and secondary students. During the past school year more than 140,000 students were educated through MWDOC's program, of which approximately 18,000 students were from Garden Grove.

Grade specific programs are established for each grade level, along with a complete library of literature, films, videos, posters and displays that are available to teachers and schools. Throughout the year, additional activities complement the classroom presentation. These activities include a poster and slogan contest for students to express their conservation ideas; live theater; teacher workshops and inservices to supplement the program curriculum; participation in a variety of school events such as career days and science fairs; and distribution of literature and other educational materials.

The following is a brief outline of MWDOC's grade specific programs:

KINDERGARTEN	*Ricki and the Forms of Water* — a felt board presentation about the forms of water (liquid, solid and gas). Student coloring books provided.
GRADE 1	*The Water Cycle featuring Ricki the Rambunctious Raindrop* — Audio/visual presentation introducing the water cycle. Student coloring books provided.
GRADE 2	*The Water Cycle, Part II* — Audio/video presentation reviews the water cycle and introduces more advanced water concepts. Student coloring books provided.
GRADE 3	*The Journey of Water* — Audio/visual presentation about water importation, treatment and distribution. Student activity books provided.
GRADE 4	*Admiral Splash* — Presentation about California's water history, supply, treatment and conservation ideas. Student handouts, teacher guide and video provided.
GRADE 5	*Be Water Wise* — Humorous movie, discuss the Do's and Don'ts of water conservation. Student handouts and teacher guide provided.

GRADE 6 — *California Smith, Water Investigator* — Student materials, teacher guide and video explore Southern California's present and future water supply and the need for water conservation.

GRADES 7 & 8 — *The Water Puzzle: Putting the Pieces Together* — Review the different elements of the water story. Current issues such as transfers, recycling, banking, etc. are explored. Student activity book provided.

HIGH SCHOOL — *Water Politics* — This new unit presents students with several case studies designed to encourage discussion about local and worldwide water issues. Case studies present the challenges of current issues such as conflicts among urban, agricultural, and environmental interests; the economics of water; and conservation vs. developing new supplies. Complete teacher guide/workbook and video provided.

Other high school programs include:

Water Highways — designed for biology classes, this unit is also applicable to classes in environmental sciences. Students assess the positive and negative impacts of California's State Water Project upon fisheries, wildlife, the land, the economy and the people.

Water Quality — designed for physical sciences classes, this unit involves hands-on activities. The student, as a water quality lab technician, analyzes four water samples, detects the problems, suggests the causes, and proposes solutions.

Water Trade-Offs — designed for economics classes, this unit involves a cost/benefit analysis of a proposed trade-off between two water agencies. The students learn some of the fundamentals of economics in a "real world" framework.

Each of these programs include a videotape, student books, teacher guides, pre- and post-tests, water supply and distribution maps and a program record sheet.
IMPLEMENTATION: Garden Grove and the MWDOC will continue to promote water education units and activities in the local schools with the provision of appropriate grade-level curriculum materials, often presented by one of the MWDOC's credentialed teachers. MWDOC staff will also

continue to be available as a resource for teachers and students. They are supported by a complete library of literature, videos, films, posters and displays. Teacher feedback on the materials and programs is regularly sought, so the programs can be reevaluated, revised and updated.

9. Commercial and Industrial Water Conservation (BMP 9)

BMP 9: Implementation methods shall be at least as effective as identifying and contacting the top 10% of the industrial and commercial customers directly (by mail and/or telephone); offering audits and incentives sufficient to achieve customer implementation; and providing follow-up audits at least once every five years if necessary.

In 1995-96, the City of Garden Grove offered it's commercial, institutional and industrial customers a free Water Use Survey Program. The CII (Commercial, Institutional and Industrial) Survey Program is implemented by the MWDOC and funded by MWD and the US Bureau of Reclamation. The program is offered annually, or as funding is made available.

The 1995-96 Orange County CII Program targeted the highest 90 water using businesses and institutions in the MWDOC service area. Participants in the program receive a detailed report identifying potential efficiency measures that they could implement along with an estimate of the savings potential and a cost/benefit analysis for each measure.

The City of Garden Grove was successful in obtaining the participation of 26 local businesses and institutions in the 1995-96 CII Survey Program, and will continue to actively participate in future programs as made available.

The City's Utilities Services Division staff has estimated that the 26 CII audits conducted in 1995-96 resulted in water savings of 47.2 mgy and an aggregate water cost savings of $172,000/year. Additional energy savings were also recognized, although not quantified.

It is also noted that the City's volume of use pricing has proven to be an effective incentive for water conservation among high-use commercial and industrial accounts where the cost of water is viewed as more than simply an incidental business cost.

The City's Water Division staff regularly receives, and always responds to, phone calls or walk-in complaints about excessive runoff from landscape irrigation systems, many of which are operated

by commercial customers. These are often symptoms of broken sprinkler heads or improper maintenance, and are typically corrected after a phone call or field visit from a customer service representative.

IMPLEMENTATION: The City will continue to work with the MWDOC in implementing the CII Program in Garden Grove. The City will also support customer's efforts to implement conservation measures recommended in the audits, and will continue to work with its commercial and institutional accounts, in response to queries or complaints, to improve their water use efficiency.

10. New Commercial and Industrial Water Use Review (BMP 10)

BMP 10: Implementation methods shall be at least as effective as assuring the review of proposed water uses for new commercial and industrial water service and making recommendations for improved water use efficiency before completion of the building permit process.

The City can recommend and implement a variety of water conservation measures through its planning and permitting authority over new construction within its boundaries. The City's landscape water conservation ordinance is implemented as part of the design review process for all new commercial projects.

The Water Division staff has noted that the 1992 legislative enactment of requirements for ultra-low flow fixtures and water conserving landscaping has substantially reduced the projected water consumption of new, as contrasted with existing, commercial projects.

IMPLEMENTATION: The City will continue to review new commercial and industrial water uses through the planning and permitting processes and will implement existing and future water conservation measures adopted for application to new development.

11. Conservation Pricing. Water Service-Sewer Service (BMP 11)

BMP 11: Implementation methods shall be at least as effective as eliminating nonconserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

The City of Garden Grove has had an inclining block rate structure in effect since 1991. Currently, customers are billed on the basis of a commodity charge plus a capital improvement charge. There is a minimum service charge for low volume users. The commodity charges can vary from year to year, as they are dependent on the costs of water purchased, electric and gas costs for pumping and the regional groundwater replenishment fees, all of which are highly variable. In 1995/96 water rates set the commodity charge at $0.902 per hcf unit (1 hcf unit = 748 gallons) for the first 36 units per bi-monthly billing period, plus a capital improvement charge of $1.38 for a standard residential meter. The minimum service charge is $6.00. The commodity charge increases to $0.942/unit after 36 units, to $0.982/unit after 250 units and to $1.022/unit after 500 units. This rate structure encourages conservation by high volume users. Even many single-family residents are encouraged to reduce summer sprinkling when their volume of use rises and their costs climb to a higher rate tier. The minimum charge and the capital improvement charge increase by meter size.

Fire protection service is billed on the basis of set bi-monthly charge plus a capital improvement charge. Both fees are based on meter size.

IMPLEMENTATION: Garden Grove will continue to maintain a conservation pricing rate structure for water service. The City will also continue, where feasible, to take advantage of Metropolitan Pricing Incentive and Disincentive programs initiated by the MWDOC and MWD. An excellent example is the City's groundwater recovery program involving the successful recovery and use of high nitrate groundwater through the Lampson Well #28 Nitrate Blending Project.

12. Landscape Water Conservation for Single Family Homes (BMP 12)

BMP 12: Implementation shall be at least as effective as providing guidelines, information and incentives for installation of more efficient landscapes and water saving packages (e.g. encouraging local nurseries to promote sales and use of low water using plants, providing landscape water conservation materials, new home owner packets and water bills, sponsoring demonstration gardens); and enacting and implementing landscape water conservation ordinances or, if the supplier does not have the authority to enact ordinances, cooperating with cities, counties, and the green industry in the service area to develop and implement landscape water conservation ordinances pursuant to the "Water Conservation in Landscaping Act". The ordinance shall be at least as effective as the Model Water Efficient Landscape Ordinance being developed by the Department of Water Resources.

The City of Garden Grove has adopted an ordinance implementing the California *Water Conservation in Landscaping Act.* The provisions of this ordinance will continue to be implemented throughout the term of this Plan, as required by the Act.

To support and encourage water conservation in landscaping, the City and MWDOC have distributed brochures and guidelines for water efficient landscaping; have participated in garden and home shows; have made awards to contest winning low-water use gardens; and have encouraged the conversion to water efficient landscaping in speakers presentations.

Perhaps the most effective incentive for the conversion to low-water using landscaping has been the tiered pricing structure, which has been in effect since 1991. (See BMP 11.) Many residential customers pay the minimum charge during wet winter months when outdoor use is very low, only to see their water bills increase substantially in summer months, especially if they use enough landscaping water to push them into the second tier of the inclining block rate schedule. The dramatic increase in summer water costs is, by itself, enough for some consumers to consider and choose water conserving, drought tolerant, plants when replanting their yards and gardens.

IMPLEMENTATION: The City will continue to implement the *Water Conservation in Landscaping Act,* support landscape water conservation with the distribution of informational materials and presentations, and will also continue to implement financial incentives for water conservation.

13. Water Waste Prohibition (BMP 13)

> *BMP 13: Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, sales of automatic (self regenerating) water softeners, single pass cooling systems in new connections, nonrecirculating systems in all new conveyer car washes and commercial laundry systems and non-recycling decorative water fountains.*

The City of Garden Grove has adopted a waste water prohibition ordinance. It is codified as Chapter 14.16 of the Municipal Code. Violation of the ordinance is considered an infraction for the first offence and can be charged as a misdemeanor for the second or subsequent offences. In addition, the City has a water shortage response program in the Municipal Code (section 14.40). It provides for successive stages of voluntary and mandatory water conservation that can be declared and implemented in response to drought or other emergencies. This program is described in greater detail in the *Water Shortage Contingency Plan,* section VI of this report.

IMPLEMENTATION: The City of Garden Grove will continue its regulations prohibiting water waste and will implement emergency Water Conservation Programs which further restrict non-essential uses of water when there is a declared water shortage.

14. Water Conservation Coordinator (BMP 14)

> *BMP 14: Implementation methods shall be at least as effective as designating a water conservation coordinator responsible for preparing the conservation plan, managing its implementation, and evaluating the results. For very small water suppliers, this might be a part-time responsibility. For larger suppliers this would be a full-time responsibility with additional staff as appropriate. This work should be coordinated with the supplier's operations and planning staff.*

The City of Garden Grove Utilities Services Division has a staff member whose duties include a variety of water conservation related responsibilities. They occupy about 15 percent of this person's job. In addition, other staff are regularly involved in the City's routine "Inform and Respond" auditing program. Garden Grove's water conservation coordinator works closely with the water conservation staff at MWDOC so that some of the on-going conservation programs can be jointly administered. These include the water audit programs, public education programs, the school education programs, the CII audit programs, and the ULFT retrofit programs. As noted, the City and MWDOC have utilized outside consultants for other water conservation related activities including the industrial and institutional audits and for the preparation of this report.

IMPLEMENTATION: The Water Conservation Coordinator will continue to fulfill the City's needs for the management and coordination of its water conservation programs, and the City will continue to work closely with the Municipal Water District of Orange County and the Municipal Water District of Southern California in the implementation of on-going and future conservation programs.

15. Financial Incentives (BMP 15)

> *BMP 15: Implementation methods shall be at least as effective as offering financial incentives to facilitate implementation of conservation programs.*

The City of Garden Grove's increasing block rate structure provides a powerful financial incentive for water conservation across the full range of the customer base. It serves to reinforce the

effectiveness of a number of the other water conservation programs and initiatives developed by the District and by the MWDOC and MWD. For example, the financial incentives built into the rate structure provide tangible incentives to implement recommendations and suggestions offered in the course of water audits (BMPs 1, 5 and 9), public education programs (BMP 7) and landscaping design and management programs (BMPs 6 and 12).

In addition, the City and supporting water wholesalers have incorporated direct financial incentives into several of their specific conservation programs including the distribution of free low flow showerheads (BMP 2), rebates for ULFT retrofits (BMP 16) and free participation in the commercial, industrial and large landscape water auditing programs (BMPs 5 and 9).

IMPLEMENTATION: The conservation pricing rate structure will remain in effect. The City, MWDOC and MWD will also continue to provide direct financial incentives to spur customer participation in a wide range of water conservation efforts.

16. Ultra Low Flush Toilet Replacement (BMP 16)

> *BMP 16: Water suppliers agree to implement programs for replacement of existing high-water-using toilets with ultra-low-flush toilets (1.6 gallons or less) in residential, commercial and industrial buildings. Such programs would be at least as effective as offering rebates of up to $100 for each replacement that would not have occurred without the rebate, or requiring the replacement at the time of resale, or requiring the replacement at the time of change of service.*

As described in section B, 5, (above), the City of Garden Grove, the MWDOC and the Metropolitan Water District have been operating ULFT replacement programs for the past 5 years. The City estimates that over 4,600 ultra low flush toilets have been distributed in the City pursuant to these programs since 1991. The MWDOC has calculated that the devices in place and operating are conserving approximately 112 acre-feet/year.

The City and MWDOC plan to continue two ULFT retrofit programs during the term of this plan, one for single family residential homes and the other for multi-family residential buildings. The programs, which are administered by the MWDOC, provide co-payments of $40.00 for standard white ULF toilets, installation hardware and low-flow showerheads . The single family residence program also offers an optional rebate choice which provides $50.00 toward the purchase of any

color or brand of ULF toilet selected by the participant. The multi-family program offers free delivery and pickup of cast-off toilets for owners purchasing more than 25 ULFT's.

In addition to these programs, it should be noted that all new construction, since 1992, has included ultra-low flow plumbing fixtures in accordance with State law.

IMPLEMENTATION: Garden Grove will continue to collaborate with the MWDOC in the implementation of its ULF toilet rebate programs throughout the term of this Plan.

17. Meter Calibration and Replacement Program

The purpose of calibrating and/or replacing water meters that have been in service for some time is to a) enhance revenue by ensuring payment for all water sold, b) encourage conservation by ensuring that customers pay for all water delivered, c) provide a point of reference for consumer knowledge of water use patterns from cycle to cycle and year to year, and d) increase the City's ability to account for its distributed water. This program is not included on the list of BMPs.

The City of Garden Grove has operated a formal meter testing, maintenance and replacement program since 1980. This program predated the *Urban Water Management Plan* and is considered an integral part of the City's water management strategy. As a result of this program, the amount of water lost through meter inaccuracy is very low. The City's program for regular meter replacement will continue throughout the term of this Plan.

IMPLEMENTATION: This measure has been implemented on an on-going basis and will be continued.

18. Wastewater Reclamation

The City of Garden Grove obtains approximately 90% of its water supply from the Lower Santa Ana River Groundwater Basin. The basin is recharged primarily from local rainfall (greater in wet years), base flow from the Santa Ana River (much of which is actually recycled wastewater from treatment plants in Riverside and San Bernardino Counties), imported water percolated into the basin, and reclaimed wastewater directly recharged into the basin. Accordingly, Garden Grove's

need to import water from outside sources is substantially reduced through the regional wastewater reclamation/groundwater recharge programs.

Furthermore, the production capability of the basin is being increased as a result of a variety of specific management initiatives including increased wastewater reclamation and the blending of lower quality water with potable water for public distribution. Garden Grove's award winning special project (in connection with the Orange County Water District) involving the blending of high-nitrate water from the Talbert Aquifer with high quality water from the Omnicron Aquifer has been very successful, providing almost one-quarter of the City's water in recent years.

IMPLEMENTATION: The City of Garden Grove will continue to support efforts of the regional water management agencies to utilize reclaimed wastewater as a primary resource for groundwater recharge in the central Orange County area. The City will continue to operate its nitrate blending project during the term of this Plan and will support other efforts to reclaim high nitrate water in the Talbert Aquifer, working toward the goal that the aquifer will be cleaned over time by drawing out low quality water and replacing it with high-quality recharge water.

19. Swimming Pool Covers

AB 1869 requires that updated *Urban Water Management Plans* consider whether swimming pool covers should be considered as a water conservation measure. Pool covers conserve water by reducing evaporation.

The City of Garden Grove does not regulate swimming pools during non-drought periods. The use of water to refill swimming pools is curtailed or eliminated during water rationing periods, depending upon the stage of the water shortage and rationing program.

IMPLEMENTATION: Garden Grove will implement swimming pool cover requirements during drought periods.

D. Alternatives Analysis: Extended Analysis

The *Urban Water Management Planing Act* (§10632) requires an extended analysis of certain water conservation and management alternatives by agencies that expect to be developing additional

supplies of water in future years. The City projects that water demand in the City could increase as much as 22.9 percent by the year 2020. Water conservation measures described in this report have the potential to reduce overall demand by 8 to 16 percent, resulting in an adjusted demand increase in the range of 3.3 to 13.1 percent by the year 2020.

Theoretically, the City of Garden Grove can purchase all the water it needs to serve its customers from the MWDOC. Any new water supply sources will be developed primarily to better manage the Santa Ana Groundwater Basin resource and to replace or upgrade inefficient wells, rather than to support population growth and new development. Nevertheless, some of the alternatives that should be addressed in an Expanded Analysis are already in place. These requirements are summarized below.

Management of Water System Pressures and Peak Demands. The City's distribution system pressures are managed to ensure that water pressure is within acceptable ranges for both domestic use and fire flow demands. Peak demands can be met with combinations of increased pressure rates and water from storage tanks.

Exchanges or transfer of water. The City of Garden Grove maintains four connections to the MWD system and nine emergency inter-city connections with surrounding communities. In aggregate, these connections have the ability to transfer well over 35,000 gpm into the City distribution system. The MWD connections are typically operating as constant flow sources, but they function as emergency standby sources when pressures drop significantly. The other interconnections are normally closed, but the valves can be opened in emergency situations.

E. Implementation Program and Schedule

Table 6 summarizes Garden Grove's implementation program for the *Urban Water Management Plan*. The implementation program is based on a five year time horizon, beginning with 1996. The schedule is intended to provide general guidance to the City for the enactment of the water conservation programs described in this report. The City will maintain full flexibility in funding and scheduling the various programs, and the implementation schedule may be modified as a result of new developments or changes in conditions. As required by State law, the entire plan will be reviewed after five years.

TABLE 6
IMPLEMENTATION PLAN SUMMARY

BMP #	*Program*	*1996*	*1997*	*1998*	*1999*	*2000*
1	Interior and Exterior Water Audits	D	M	M	M	M
2	Plumbing Retrofit	O	O	O	O	O
3	System Audit/Leak Detection	-/M	-/M	-/M	-/M	-/M
4	Metering with Commodity Rates	O	O	O	O	O
5	Large Landscape Audits and Incentives	O	O	O	O	O
6	Landscape Water Conservation for Commercial/Institutional Customers	O	O	O	O	O
7	Public Information Program	O	O	O	O	O
8	School Programs	O	O	O	O	O
9	Commercial and Industrial Water Conservation	D	M	M	M	M
10	New Commercial and Industrial Water Use Review	O	O	O	O	O
11	Conservation Pricing	O	O	O	O	O
12	Landscape Water Conservation, SFD	O	O	O	O	O
13	Waste Water Prohibition	O	O	O	O	O
14	Water Conservation Coordinator	O	O	O	O	O
15	Financial Incentives	O	O	O	O	O
16	Ultra Low Flush Toilet Replacement	O	O	O	O	O
-	Meter Calibration and Replacement	O	O	O	O	O
-	Wastewater Reclamation	O	O	O	O	O

Key to Symbols:
D = Develop Program
M = Maintain Program
O = Ongoing Program from First Plan or Before
- = No Activity this year

VI. WATER SHORTAGE CONTINGENCY PLAN

A. INTRODUCTION

AB11X (1991) amended the California Water Code provisions addressing *Urban Water Management Plans* to expand their scope to include the preparation of a *Water Shortage Contingency Plan* as one component of the updated *Urban Water Management Plans.* The City of Garden Grove adopted a four phase water conservation plan program[1] in 1991, and a *Water Shortage Contingency Plan* in February 1992.[2] This chapter is intended to serve as an update to the City's *Water Shortage Contingency Plan* as described in this chapter. *The Water Shortage Contingency Plan* is intended to be compatible with comparable Plans adopted by the MWDOC (*The Drought Management Plan*) and the MWD (*The Incremental Interruption and Conservation Plan*) as both agencies have authority over management and delivery of certain key water supplies utilized by the City. In the event of a water shortage emergency, Garden Grove will closely coordinate its response with the programs implemented by these agencies.

TABLE 7
WATER PRODUCTION
1985 - 1996

Year	*Amount (mg)*
1985/86	9,364.0
1986/87	9,470.8
1987/88	9,599.9
1988/89	9,600.0
1989/90	9,729.2
1990/91	9,041.5
1991/92	8,635.7
1992/93	9,190.7
1993/94	9,174.8
1994/95	9,395.0
1995/96	10,002.1

B. PAST, CURRENT AND PROJECTED WATER USE

The Utilities Services Division's total annual production between 1985/86 and 1995/96 are shown in Table 1 in Chapter III, above and in Table 7, on this page.

Between 1990 and 1995 the population of the City of Garden Grove increased by about 3.6% to approximately 148,500 people. The rate of growth is expected to be lower in coming years as there is very little vacant land. Growth will primarily come from redevelopment of existing uses with higher density projects. By 2020 the population is projected to reach 166,750, an increase of 16.6

[1]City of Garden Grove, Ordinance 2172, March 18, 1991.

[2]City of Garden Grove, Resolution 7438-92, February 18, 1992.

percent, an average of only 0.55% per year. Due to water conservation, overall demand is not expected to increase by as much as the population. Assuming that water demand will be reduced by 8% per customer, on average, total production in 2020 is projected at about 33,656 AF (10,966 mg). This would be an increase of 8.8% over the next 24 years, or about 0.36% per year, on average.

C. Estimate of Minimum Water Supply

Garden Grove receives its water from two different sources. Ninety percent, or more, comes from the Santa Ana River Groundwater Basin while 10% or less is imported through the auspices of the Municipal Water District of Orange County (MWDOC) via the State Water Project and Colorado River aqueduct.

Climatological data in California has been recorded since the year 1858. During the 20th century, California has experienced three periods of severe drought: 1928-34, 1976-77 and 1987-91. The year 1977 is considered to be the driest year of record in the Four Rivers Basin by the Department of Water Resources (DWR). These rivers flow into the San Francisco Bay Delta and are the source of water for the State Water Project.

Southern California and, in particular, Orange County sustained few adverse impacts from the 1976-77 drought, due in large part to the availability of Colorado River water and groundwater stored in the Santa Ana basin. But the 1987-91 drought created considerably more concern for Southern California and Orange County. By 1987 there were more limitations on imported water than there were a decade before because of several important developments. First, the Central Arizona Project was operational and had the right to divert substantial quantities of water from the Colorado River basin that had previously been surplus and available for import to California. Secondly, the supply for the City of Los Angeles from the Owens Valley Aqueduct had been reduced in order to preserve Mono Lake and other fish and wildlife resources in the Mono and Owens Valley basins. Thirdly, the population of Southern California, and hence, water demand, had increased substantially. Finally, voters had defeated Proposition 9, which would have completed the State Water Project, so the prospects for expanded supplies of imported water from the Sierra Nevada were dimmed, at least for the foreseeable future.

The management of the Santa Ana Groundwater Basin is also a concern. The basin is used as a reservoir to store water during wet years to allow for overdraft pumping in dry years. A number

CONSERVATION MEASURE	Stage			
	1	2	3	4
Use of water limited to the hours of 6 PM and 10 am the following day. Watering of livestock and irrigation of propagation beds permitted at any time.			X	
Use of water for other than livestock watering is prohibited.				X
Washing of Autos, Trucks, Boats, Mobile Equipment, etc.				
Every other day unless done at a commercial car wash.	X			
"Designated irrigation days" (Every other day) between 6 PM and 10 am the following day unless done at a commercial car wash.		X		
Prohibited except at a commercial car wash.			X	
Prohibited except for reasons of public health, safety and welfare (i. e. garbage trucks, food-delivery vehicles).				X
Commercial car washes not using partially reclaimed or recycled water to reduce usage volume by 20 percent.			X	
Filling or Refilling of Swimming Pools, Spas, Ponds, etc.				
Once every other day.	X			
"Designated irrigation days" (Every other day) between 6 PM and 10 am the following day.		X		
"Designated irrigation days" (every 3 - 4 days) between 6 PM and 10 am the following day.			X	
Prohibited.				X
Golf Courses, Parks, Schools, Grounds, Recreational Fields				
Watering between 4 PM and 10 am the following morning. Watering of golf greens permitted at any time.	X	X		
Watering between 4 PM and 10 am the following morning. Golf green watering permitted at any time.			X	

CONSERVATION MEASURE	Stage			
	1	2	3	4
Watering prohibited, except for plant material classified as being rare, exceptionally valuable, or essential to the well-being of rare or endangered animals.				X
Sidewalks, Driveways, Parking Areas, Tennis Courts, Patios or Other Paved Areas				
Water should not be used to wash down such surfaces.	X			
Watering to wash down such surfaces is prohibited, except to alleviate immediate fire or sanitation hazards.		X	X	X
Restaurants				
Should avoid serving water to customers unless specifically requested.	X			
May not serve water to customers unless specifically requested.		X	X	X
Ornamental Fountains, Similar Structures				
Should not be operated.	X			
Operation is prohibited.		X	X	X
Fire Hydrants				
Use limited to fire fighting, system testing, construction activities, other activities necessary to maintain the public health, safety and welfare.	X	X	X	X
Other Provisions				
Use of water softening devices is prohibited			X	X
Water leaks (major leaks) to be repaired immediately.			X	X
New construction meters or permits for unmetered service shall not be issued.			X	X
No water is to be used for air conditioning purposes (i. e. swamp cooling).				X

E. Mandatory Provisions to Reduce Water Use

Phase 1 of the City's Water Shortage Contingency Plan would be a voluntary program. Each of the subsequent three Phases involve mandatory prohibitions that become increasingly broad in response to increasingly severe water shortages.

In addition, the City of Garden Grove has adopted an ordinance[1] prohibiting the waste of water, at any time. The ordinance defines water waste as excess runoff from lawn and garden watering or irrigation or the escape of water through leaks in a plumbing or distribution system for a period of longer than 24 hours after the break has been, or should have been, discovered.

F. Consumption Limits

The City's response to any recognized water shortage requiring the adoption of a voluntary (Stage 1) or mandatory (Stage 2, 3 or 4) water rationing program would include a 10% reduction goal for Stage 1 and an additional 10% reduction for each succeeding stage.

G. Penalties or Charges for Excess Use

The City of Garden Grove maintains an inclining block rate schedule to encourage water conservation. In the event of a water shortage that would require implementation of a mandatory conservation stage, the City Council could increase the unit charges for each block and/or adopt an excess-use charge to be levied on water consumption exceeding the required conservation reduction from a customers base allocation.

H. Impacts on Revenues and Expenditures

The City's Utilities Services Division receives its revenue from fixed revenues, minimum bi-monthly charges and unit charges. The cost of purchasing water and producing groundwater would decrease as the usage decreases.

---

[1]City of Garden Grove, Ordinance No. 2112

Should a forty percent cutback occur for an extended period of time, the Utilities Services Division has the potential of losing up to twenty percent of its required operating revenues. To balance the budget, the City Council could draw from the Water Replacement Fund and/or reexamine the water rate structure or projected expenditures.

I. Draft Ordinance

As described above, Garden Grove has an adopted Water Conservation Program in place, pursuant to Ordinances 2172 and 2212. Ordinance 2172 establishes the framework for a 4-stage water shortage contingency response, while Ordinance 2212 prohibits the waste of water at any time.

J. Mechanism For Determining Actual Reductions

Since all billable Garden Grove customers are metered and the sources of supply are metered, the City has consumption and sales data available on an on-going basis. This data can be used to measure the effectiveness of any water shortage contingency stage that may be implemented. Monthly water allocation reports are prepared by the City's Utilities Services Division and can be regularly evaluated to determine the effectiveness of the overall response to a water shortage.

In a water shortage period, the Utilities Services Division would have to generate comparisons of current consumption data with data from a corresponding billing period 12 or 24 months previous, as appropriate. The Division would also have to develop a mechanism to review customer's records against past data for compliance with the adopted reduction goal then in effect. A list of all non-complying customers would then have to be developed for appropriate enforcement action.

APPENDIX A

BEST MANAGEMENT PRACTICES REPORT

CALIFORNIA URBAN WATER CONSERVATION COUNCIL
BEST MANAGEMENT PRACTICES
RETAIL WATER AGENCY ANNUAL REPORT

REPORT PERIOD JULY 1, 1995 TO JUNE 30, 1996

RETURN COMPLETED REPORT TO AGENCY AS REQUIRED:

DUE: NOVEMBER 1, 1996
CUWCC 455 CAPITOL MALL, STE 705 SACRAMENTO, CA 95814-4408

WATER AGENCY AND SERVICE AREA INFORMATION

AGENCY NAME City of Garden Grove

ADDRESS 13802 Newhope Street

CITY, STATE ZIP Garden Grove, California 92843

NAME OF CONSERVATION COORDINATOR Terry Lane

PHONE 714/741-5395 FAX 714/638-9906 E-MAIL ADDRESS _____

NAME OF PERSON PREPARING THIS REPORT Denise Landstedt

PHONE 714/741-5395 FAX 714/638-9906 E-MAIL ADDRESS _____

YEAR AGENCY SIGNED THE MOU 1996 DATE THIS REPORT SUBMITTED July 1997

THIS AGENCY IS A(N) MUNICIPALITY X SPECIAL DISTRICT ____ INVESTOR OWNED ____ MUTUAL ____

IS THIS AGENCY ALSO A WATER WHOLESALER? YES ____ NO X IF "YES," PLEASE COMPLETE BOTH WHOLESALE AND RETAIL REPORTS.

IN ADDITION TO WATER, UTILITY SERVICES PROVIDED BY THIS AGENCY INCLUDE:

SEWER X ELECTRICITY ____ GAS ____ RECLAIMED WATER ____ OTHER ____

IS THIS AGENCY A BUREAU OF RECLAMATION CONTRACTOR? YES ____ NO X

IS THIS AGENCY A STATE WATER PROJECT CONTRACTOR? YES ____ NO X

Land Use Planning
Attachment B

The City of Garden Grove updated and adopted its General Plan in October 1995. The following is the General Plan Implementation Program as it relates to water.

CIRCULATION AND INFRASTRUCTURE

Goal

Water and wastewater systems which meet the needs of the community.

Policies

Continue to maintain these systems to ensure their longevity for as long as can reasonably be expected.

Continue to improve and replace aging systems to ensure the provision of these services to all areas of the community.

As development intensifies in areas of the City, ensure that infrastructure systems are adequate to accomodate any intensification of uses, as well as existing uses.

Implementation

Design and implement a development monitoring system to evaluate the individual and cumulative impact of proposed development on the service capacity of these facilities, and require mitigation of impacts and/or necessary improvements as part of development requirements.

Make use of specific plans and development agreements that specify the nature, timing, cost, and financing mechanisms to be used to fund improvements and services.

Utilize, where appropriate, public financing mechanisms, such as special assessment districts, and community facillities districts, such as Mello-Roos, to fund improvement and service costs.

GROWTH MANAGEMENT

Goal

Satisfactory levels of service related to public facilities and services.

Policy

Maintain, and improve when possible, the water infrastructure facilities within the City.

Implementation

Continue to inspect, improve and/or replace existing facilities within the community to ensure that these facilities meet the standards established by the City's Engineering Services Division and the Water Master Plan.

Require that all new development is evaluated in terms of its impact on existing water facilities.

CUWCC RETAIL WATER AGENCY ANNUAL REPORT - 1995-96

AGENCY	CITY OF GARDEN GROVE

BUDGET

AGENCY EXPENDITURES AND PROPOSED BUDGET				
		PRIOR YEAR (ACTUAL)	REPORT YEAR (ACTUAL	FOLLOWING YEAR (PROPOSED)
1.	OPERATIONS	$ 13,460,718	$ 13,398,160	$ 15,416,800
2.	CAPITAL	$ 207,789	$ 201,441	$ 245,600
3.	TOTAL	$ 13,668,507	$ 13,559,601	$ 15,662,400
4.	CONSERVATION -1*	$ 11,544	$ 14,527	$ 16,388
5.	CONSERVATION -2**	$	$	$
6.	TOTAL CONSERVATION 3***			

1* IF CONSERVATION EXPENDITURES OR PROPOSED BUDGET IS INCLUDED IN "TOTAL" (No. 3) LINE ABOVE, THEN SHOW THAT AMOUNT ON LINE 4. (EXCLUDE YOUR AGENCY'S OWN EMPLOYEE STAFFING COST)

2** IF CONSERVATION EXPENDITURES OR PROPOSED BUDGET IS NOT INCLUDED IN "TOTAL" (No. 3) LINE ABOVE, THEN SHOW CONSERVATION EXPENDITURES/PROPOSED BUDGET ON LINE 5. (EXCLUDE STAFFING)

3*** TOTAL FOR CONSERVATION INCLUDING STAFFING COSTS (Line No. 6).

ANNUAL SUPPLY

Specify wholesalers or sources of supply with quantities during this report year:

ALL SOURCES OF ANNUAL SUPPLY		
SIGNATORY TO MOU ✓	LIST EACH SOURCE SEPARATELY	ACRE-FEET
X	ORANGE COUNTY WATER DISTRICT (Groundwater)	28,417.2 AF
X	MUNICIPAL WATER DISTRICT of ORANGE COUNTY (Import)	2,278.1 AF
	IF WHOLESALER AS WELL, SUBTRACT AMOUNT SOLD TO RETAILERS	AF
	TOTAL WATER INTO THE RETAIL SYSTEM	30,695.3 AF

WATER REUSE SURVEY

IS YOUR AGENCY ACTIVELY PARTICIPATING IN WATER RECLAMATION PLANNING AND IMPLEMENTATION?

YES _____ NO X

ATTACH AN EXPLANATION OF YOUR AGENCY'S RECLAMATION PROGRAM. (ATTACHMENT "A")

Policies

Monitor land uses draining into water sources and water recharge areas, to prevent potential contamination from hazardous or toxic substances.

Minimize soil erosion and sedimentation from construction activities through monitoring and regulation.

Conserve and enhance the water supply available to the City.

Require water conservation design and operation in new development.

Implementation

Continue to enforce the City Ordinance which requires new development to submit a water conservation plan which meets State requirements, incorporating measures such as the use of low flow plumbing fixtures.

Continue to require new development to use water efficient landscape irrigation systems, drought tolerant plantings in approved landscaping plans, and similar water conservation features, as stipulated in the City Ordinance which related to water conservation, in accordance with State requirements.

Policy

Encourage the use of reclaimed water in all applications for which potable water is not necessary.

Implementation

Support the OCWD's Seal Beach Reclamation Plant and the Green Acres Project, as well as other water reclamation efforts.

Work with the OCWD to examine the potential of expanding water reclamation efforts to include Garden Grove, as well as the Willowick Golf Course, owned by the City.

When available, use reclaimed water for irrigation of City parks, median strips, and other public areas.

Encourage the use of reclaimed water in industry, construction, landscaping, golf courses, and other uses where potable water is not necessary to its application.

Policy

Educate citizens in water conservation and encourage its practice.

Implementation

Use local media (public service radio and cable television announcements), newsletters, school programs, advertising materials such as buttons and bumper stickers, distribution of a home water user's handbook, and water bill enclosures promoting water conservation techniques to inform citizens of the importance of water conservation and to teach its practice.

Coordinate with other water agencies to evaluate the potential to establish a rebate program for the replacement of aging, leaking, and/or inefficient plumbing with more efficient water-saving plumbing.

Encourage drought tolerant landscaping as a replacement for water consumptive landscaping in existing development.

Encourage the use of "drip irrigation" systems rather than conventional agricultural irrigation systems where practical and feasible.

Policy

Practice water conservation in the management of public properties.

Implementation

Work with contractors to continue water conservation measure, i.e., irrigation timer/control valves, inspections, etc.

Require automated or computerized irrigation control systems for purposes of water conservation in public areas. Identify opportunities for future coversion to the computerized system.

Policy

Coordinate and monitor the community's water conservation efforts to ensure their effectiveness.

Implementation

Annually review water conservation program in the community and modify or expand these programs as necessary.

ATTACHMENT BMP 3 - A

Distribution System Water Audits, Leak Detection and Repair

The City of Garden Grove became signatory to the CUWCC Memorandum of Understanding on November 12, 1996. No formal program has been proposed or developed for BMP 3 at this time.

Currently, the City maintains a response program that aggressively repairs main breaks, hydrant leaks or breaks, and meter leaks. A team of water service workers is immediately formed to permanently repair main or hydrant breaks, and restore water service promptly.

Both a proactive approach and an inform and response approach are utilized for water meter leaks. Meter readers identify, log and report any meter leaks during their normal meter reading activities. Customer service workers identify any meter leaks or possible leaks existing on the customers' side of the meter during site visits to investigate high water bills or customer complaints. Finally, customers call in to report meter leaks which are logged. All meter leaks are investigated and repaired the same day, unless unable to do so, then next day service is performed.

Teams respond to an average of 10 main breaks annually within 371 miles of main, and an average of 15 hydrants annually out of a total of 3,326 hydrants. An average of less than 3% of mains and hydrants require emergency response, and produces minimal water loss. Considering the Citywide water loss is identified at approximately 3%, a cost/benefit analysis is being considered for exemption to this BMP.

- Participation in Inter-Jurisdictional Planning Forums;
- Development of a Seven Year Capital Improvement Program;
- Housing options and job opportunities; and
- A TDM Ordinance.

- Adopt a Local TDM Ordinance.
- Agree to expend all Measure M revenues within three years of receipt.
- Adopt a Traffic Circulation Plan (General Plan Circulation Element) consistent with the Orange County Master Plan of Arterial Highways.
- Adopt and fund a Local Pavement Management Plan.
- Satisfy the Maintenance of Effort requirements.
- Adopt a Seven Year Capital Improvement Program.

The City of Garden Grove has compiled with the Measure M requirements, including adoption of a Growth Management Element (March 26, 1992) and a TDM Ordinance (April 23, 1991), and is eligible for Measure M revenues.

4.2 WATER INFRASTRUCTURE

The City's Water System Master Plan was prepared in 1986 to evaluate the City of Garden Grove's existing water system and determine its ability to serve the ultimate needs of the City. The City is currently updating their Water System Master Plan, it is anticipated that the updated Master Plan will be completed in late 1995.

The 1986 Plan and the Master Plan of Deficient Water Mains, updated in 1991, have identified the need for several improvements, many of which have been completed. These improvements range from the replacement of four-inch diameter pipes to six-inch diameter pipes and the installation of new water mains, to improvements related to the nitrate blending project, a project which blends high-nitrate well water with high quality groundwater in a City reservoir to lower nitrate levels.

Additional information can be found in Chapter Three, Circulation and Infrastructure, of the General Plan, and Sections 3.6.1, Water Resources, and 3.13.1, Water Infrastructure, of the Existing Conditions Report.

ATTACHMENT BMP 1 - A

Interior and Exterior Water Audits and Incentive Programs for Single Family Residential, Multi Family Residential, and Governmental/Institutional Customers

The City of Garden Grove became signatory to the CUWCC Memorandum of Understanding on November 12, 1996. City staff is currently working cooperatively with the Municipal Water District of Orange County (MWDOC) and the Metropolitan Water District of Southern California (MWD) to develop a Residential Audit Program.

The City currently maintains an inform and respond type program to inquiries about high water bills, possible leaks, and possible conservation measures. Customer Service Representatives conduct residential site visits that include discussing high water bills, providing conservation information, and suggested plumbing inspection and retrofit.

Final development of the City's Residential Water Audit Program will include additional methods and incentives to achieve customer implementation of conservation measures. The City will continue to respond to customer inquiries, while the Residential Water Audit Program will target the top 20 percent of water users. The Program will include site audits, inspection of plumbing and irrigation, installation of conservation devices, and general conservation information.

The Program is anticipated to target 1146 top water users a year for five years. The City is proposing to budget up to $35,000 per year for the Program, with anticipated MWD co-payments for site surveys and installed conservation devices.

City staff is currently attending training sponsored by MWDOC and MWD, which will allow staff to knowledgeably and effectively manage a vendor to conduct the site visits. It is anticipated that the City's Residential Audit Program will begin in Summer 1997.

CUWCC RETAIL WATER AGENCY ANNUAL REPORT - 1995-96

AGENCY	CITY OF GARDEN GROVE

BMP 2 PLUMBING, NEW AND RETROFIT
SECTIONS 2a AND 2b OF BMP 2 HAVE BEEN SATISFIED. NO FURTHER REPORTING IS REQUIRED.

c. PLUMBING RETROFIT
Implementation methods shall be at least as effective as delivering retrofit kits including high quality low-flow showerheads to pre-1980 homes that do not have them and toilet displacement devices or other devices to reduce flush volume for each home that does not already have ULF toilets; offering to install the devices; and following up at least three times.

2c PLUMBING RETROFIT		
IMPLEMENTATION	SINGLE FAMILY	MULTI-FAMILY
1. TOTAL HOUSEHOLDS IN SERVICE AREA	28,659	17,818
2. PRE-1980 HOUSEHOLDS IN SERVICE AREA	28,022	14,794
3. PRE-1980 HOUSEHOLDS RETROFITTED PRIOR TO CURRENT REPORT YEAR (1995-96)	4,980	ø
4. TARGET HOUSEHOLDS FOR RETROFIT (LINE 2 - LINE 3)	23,042	14,794
5. ANNUAL TARGET* OF HOUSEHOLDS TO BE RETROFITTED (LINE 4 ÷ 6 YEARS)	19,928	1,644
6. HOUSEHOLDS RETROFITTED DURING REPORT YEAR	ø	ø

* "Annual target" is the number of retrofits agency should accomplish each year in order to meet its commitment by the end of the MOU term.

DEVICES DELIVERED		
DEVICES	NUMBER DURING REPORT YEAR	TOTAL PRIOR TO REPORT YEAR 1995-96
LOW FLOW SHOWERHEADS	2,496	16,431
FAUCET AERATORS		
TOILET TANK DISPLACEMENT DEVICES		
DYE TABLETS 2 APARTMENT COMPLEXES	200	200
OTHER (specify)		

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 2 - A)

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH.
(TITLED ATTACHMENT BMP 2 - B)

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 2 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 2 - C")	

ATTACHMENT BMP 2 - A

Plumbing, New and Retrofit
Section 2c

The City of Garden Grove became signatory to the CUWCC Memorandum of Understanding on November 12, 1996. No formal program has been proposed for BMP 2 at this time, except for what will be accomplished through BMP 1.

Information for "Pre-1980 Households Retrofitted Before 7/1/92" is not available, except for a Metropolitan Water District of Southern California Mass Showerhead Distribution in 1991 for a total of 4,980. If there has been any additional retrofit activity prior to 1992, that information is not known.

The Municipal Water District of Orange County has prepared a Water Conservation Achievement report for the City of Garden Grove, which identifies showerhead installed for this BMP, and the estimated water conserved. For 1991, 4,980 showerhead installed saved 15 acre feet. Please refer to Attachment BMP 2 - B.

ATTACHMENT BMP 2 - B

CITY OF GARDEN GROVE
Water Conservation Achievement

RESIDENTIAL PLUMBING ONLY

A. PROGRAM PARTICIPATION TO DATE

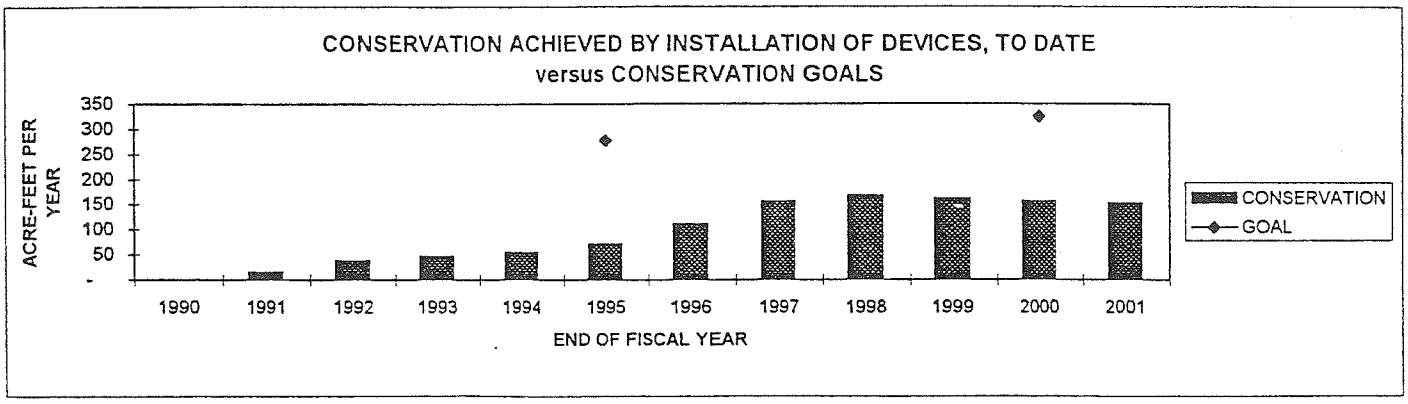
Program Name	Fiscal Year Ending Jun.	Number of Toilets Replaced with ULFTs SF	MF	Total	# Low-Flow Showerheads Installed
Metropolitan Mass Showerhead Distrib.	1991				4,980
	1992				4,980
	1993				2,483
				-	-
MWDOC '93-94 WAM	1994	469		469	392
MWDOC '94-95 WAM	1995	772		772	623
MWDOC MF ULFT	1994		213	213	213
	1995		109	109	109
	1996		194	194	194
95-96 ULFT	1996	1,465	212	1,677	1,570
	1997	271	10	281	-
96-97 Co-Pay	1997	704	184	888	888
				-	-
TOTALS TO DATE		3,681	922	4,603	16,431

B. ESTIMATED WATER CONSERVED, BY YEAR

	Fiscal Year Ending June of	SF ULFTs Devices Installed	SF ULFTs Water Saved AF/yr	MF ULFTs Devices Installed	MF ULFTs Water Saved AF/yr	Showerheads Devices Installed	Showerheads Savings AF/yr		This Year Savings AF	Goal AF/yr [2]
	1990		[1]		[1]		[1]			
	1991					4,980	15		15	
	1992					4,980	38		38	
Historical	1993					2,483	48		48	
^	1994	469	6	213	5	605	43		55	
|	1995	772	23	109	13	732	36		72	278
|	1996	1,465	52	406	25	1,764	34		112	
partial	1997	975	85	194	40	888	33		157	
|	1998		98		44		26		169	
|	1999		98		44		20		162	
v	2000		98		44		15		157	326
Projected	2001		98		44		11		153	
		3,681		922		16,431				

[1] Savings in the first year of installation is 50% of the annual savings rate since the device is in service on average 50% of the time.

[2] Conservation Goals shown are Agency's share of MWDOC goals for Residential Plumbing Retrofits set by Metropolitan's IRP work group.



CUWCC RETAIL WATER AGENCY ANNUAL REPORT - 1995-96

AGENCY	CITY OF GARDEN GROVE

BMP 3 DISTRIBUTION SYSTEM WATER AUDITS, LEAK DETECTION AND REPAIR

Implementation methods shall be at least as effective as at least once every three years completing a water audit of the water supplier's distribution system using methodology such as that described in the American Water Works Association's "Manual of Water Supply Practices: Water Audits and Leak Detection;" advising customers whenever it appears possible that leaks exist on the customers' side of the meter; and performing distribution system leak detection and repair whenever the audit reveals that it would be cost effective.

A DISTRIBUTION SYSTEM AUDIT MAY BE A PART OF YOUR AGENCY'S OPERATIONS DEPARTMENT, AND SUCH SYSTEM AUDIT FULFILLS BMP 3, AND IS AN IMPORTANT PART OF A CONSERVATION PROGRAM.

CHECK STATUS OF AGENCY LEAK DETECTION PROGRAM

HAVE A PROGRAM _____

PROPOSE A PROGRAM ____

NO PROGRAM __X__

DATE OF YOUR AGENCY'S LAST COMPLETE SYSTEM AUDIT _____

PROPOSED DATE OF NEXT COMPLETE WATER AUDIT _____

PERCENTAGE OF SYSTEM LOSSES DURING REPORT YEAR __3%__

MILES OF MAIN IN DISTRIBUTION SYSTEM ____371____

MILES OF MAIN SURVEYED PER YEAR__Ø____

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 3 - A")

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH.
(TITLED "ATTACHMENT BMP 3 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 3 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 3 - C")	

ATTACHMENT BMP 3 - A

Distribution System Water Audits, Leak Detection and Repair

The City of Garden Grove became signatory to the CUWCC Memorandum of Understanding on November 12, 1996. No formal program has been proposed or developed for BMP 3 at this time.

Currently, the City maintains a response program that aggressively repairs main breaks, hydrant leaks or breaks, and meter leaks. A team of water service workers is immediately formed to permanently repair main or hydrant breaks, and restore water service promptly.

Both a proactive approach and an inform and response approach are utilized for water meter leaks. Meter readers identify, log and report any meter leaks during their normal meter reading activities. Customer service workers identify any meter leaks or possible leaks existing on the customers' side of the meter during site visits to investigate high water bills or customer complaints. Finally, customers call in to report meter leaks which are logged. All meter leaks are investigated and repaired the same day, unless unable to do so, then next day service is performed.

Teams respond to an average of 10 main breaks annually within 371 miles of main, and an average of 15 hydrants annually out of 3,326 hydrants. An average of less than 3% of mains and hydrants require emergency response, and produces minimal water loss. ~~Along with~~ Citywide water loss identified at approximately 3%, a cost/benefit analysis is being considered for exemption to this BMP.

CUWCC RETAIL WATER AGENCY ANNUAL REPORT - 1995-96

AGENCY
CITY OF GARDEN GROVE

BMP 4 METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS.

Implementation methods shall be requiring meters for all new connections and billing by volume of use; and establishing a program for retrofitting any existing unmetered connections and billing by volume of use; for example, through a requirement that all connections be retrofitted at or within six months of resale of the property or retrofitted by neighborhood.

RETAIL WATER CONNECTIONS- METER INFORMATION				
ACCOUNT SECTOR	NUMBER OF POTABLE CONNECTIONS METERED	NUMBER OF POTABLE CONNECTIONS UNMETERED	NUMBER OF NON-POTABLE CONNECTIONS METERED	NUMBER OF NON-POTABLE CONNECTIONS UNMETERED
1. SINGLE FAMILY RESIDENTIAL	28,659	Ø		
2. MULTI -FAMILY RESIDENTIAL	1,741	Ø	Ø	Ø
3. COMMERCIAL	1,836	Ø	Ø	Ø
4. INSTITUTIONAL	201	Ø	Ø	Ø
5. INDUSTRIAL	617	Ø	Ø	Ø
6. IRRIGATION	310	Ø	Ø	Ø
7. TOTAL URBAN USE	33,364	Ø	Ø	Ø
8. AGRICULTURAL (Commercial Farming)	Ø	Ø	Ø	Ø
9. OTHER (non-urban)	Ø	Ø	Ø	Ø

IS THIS AGENCY BILLING ALL CUSTOMERS BY VOLUME OF USE ? YES X NO_____.

WHAT PERCENTAGE OF CONNECTIONS ARE UNMETERED? Ø %.

ATTACH PLAN FOR METERING ACCOUNTS WHICH AT THIS TIME ARE NOT METERED.
INCLUDE TIMELINE AND BUDGET. (TITLED "ATTACHMENT BMP 4- A')

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH.
(TITLED "ATTACHMENT BMP 4 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 4 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 4 - C")	

ATTACHMENT BMP 4 - A

Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

The City requires meters for all new connections and conducts billing by volume of use. All residential and commercial connections are metered and there are no unmetered connections that would require retrofit at resale of property.

As identified in the City's Urban Water Management Plan, some City parks and medians are not billed by volume of use, but on a level charge. Most of these connections, however, are metered for irrigation management.

CUWCC RETAIL WATER AGENCY ANNUAL REPORT - 1995-96

AGENCY	
	CITY OF GARDEN GROVE

BMP 5 LARGE LANDSCAPE WATER AUDITS AND INCENTIVES

Implementation methods shall be at least as effective as identifying all irrigators of large (at least 3 acres) landscapes (e.g. golf courses, green belts, common areas, family housing landscapes, schools, business parks, cemeteries, parks and publicly owned landscapes on or adjacent to road right-of-way); contacting them directly (by mail and/or telephone); offering landscape audits using methodology such as that described in the "Landscape Water Management Handbook" prepared for the California Department of Water Resources; and cost-effective incentives sufficient to achieve customer implementation; providing follow-up audits at least once every five years; and providing multilingual training and information necessary for implementation.

LARGE LANDSCAPE WATER AUDITS (SURVEYS) AND INCENTIVES		
1. TOTAL NUMBER OF ALL 3 ACRE + LANDSCAPES IN SERVICE AREA		15
2. SURVEYS COMPLETED PRIOR TO THIS REPORT YEAR (1995-96)		4
3. SURVEYS OFFERED DURING THIS REPORT YEAR	NEW	4
	FOLLOW UP	annually
4. SURVEYS COMPLETED DURING REPORT YEAR	NEW	4
	FOLLOW UP	annually
5. SURVEYS ESTIMATED FOR NEXT REPORT YEAR	NEW	undetermined
	FOLLOW UP	
6. AGENCY COST PER SURVEY*		$ Part of Total Budget
7. TOTAL COST PER SURVEY INCLUDING COST SHARING		$ N/A

* Amount per survey paid by your district. Do not include cost sharing from other agencies.

ACREAGE SURVEYED	
ACRES SURVEYED DURING REPORT YEAR	69.12
TOTAL ACRES SURVEYED OVER LIFE OF PROGRAM	69.12

DOES AGENCY OFFER IRRIGATION TRAINING IN LANGUAGES OTHER THAN ENGLISH? YES X NO_____

DOES AGENCY OFFER INCENTIVES TO PARTICIPANTS? YES X NO_____

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 3 - A")

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 5 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 5 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 5 - C")	

ATTACHMENT BMP 5-A

Large Landscape Water Audits and Incentives

All landscape property located within the City of Garden Grove equaling three acres and over is owned by the City of Garden Grove or the Garden Grove Unified School District (GGUSD).

The City of Garden Grove has conducted audits on it's own property, making conservation improvements with regards to irrigation controllers, use of drought resistant plants, and proper maintenance.

The City of Garden Grove participates in Metropolitan Water District of Southern California (MWD) Water Conservation Program when it is made available. In 1995-96, large water users were offered water use surveys and audits, including participation by the GGUSD. The GGUSD had four high schools audited, including over 69 acres of landscape maintenance.

Additionally, the City actively participates in a Municipal Water District of Orange County and MWD sponsored irrigation management training. The training, called "Protector Del Agua", is attended by Garden Grove landscape maintenance crews and numerous landscape maintenance companies doing business in Orange County, as well as in Garden Grove. This six week training is presented in both English and Spanish, and is offered annually. The City of Garden Grove continues to send employees, and recommends attendance by local landscape companies, for ongoing training in the latest landscape maintenance technology.

AGENCY CITY OF GARDEN GROVE

BMP 6 LANDSCAPE WATER CONSERVATION REQUIREMENTS FOR NEW AND EXISTING COMMERCIAL, INDUSTRIAL, INSTITUTIONAL, GOVERNMENTAL AND MULTI FAMILY DEVELOPMENTS.

Implementation methods shall be enacting and implementing landscape water conservation ordinances, or if the supplier does not have the authority to enact ordinances, cooperating with cities, counties and the green industry in the service area to develop and implement landscape water conservation ordinances pursuant to the "Water Conservation in Landscaping Act:" (Act) (California Government Code § 65590 et seq.). The ordinance shall be at least as effective as the Model Water Efficient Landscape Ordinance developed by the Department of Water Resources. A study of the effectiveness of this BMP will be initiated within two years of the date local agencies must adopt ordinances under the Act.

This BMP has been satisfied. No further reporting required.

ARE YOU MONITORING WATER SAVINGS FOR THIS BMP? YES _____ NO X

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 6 - A")

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH.
(TITLED "ATTACHMENT BMP 6 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 6 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 6 - C")	

ATTACHMENT BMP 6 - A

Landscape Water Conservation Requirements for New and Existing Commercial, Institutional, Governmental and Multi-Family Developments

The City of Garden Grove incorporated the State Model Landscape Conservation Ordinance into Title 9, Article IV. Landscaping of the City's Municipal Code in 1992.

A study has not yet been conducted of the effectiveness of this BMP. City staff will make a determination of a the cost/benefit of such a study. If it is determined that a study may produce valuable data on water conservation, then guidelines will be developed and implemented for an effective study.

Article IV. Landscaping

9.16.140 Purpose. To establish landscape standards and water waste prevention in order to mitigate the effects of urbanization and excessive water use on the environment and to provide an aesthetically pleasing urban setting. This title establishes water-efficient landscape design standards consisting of maximum applied water allowance, plant material percentages, design, quantities, location, species types, combinations of plant types (i.e., shrubs and groundcover) and size and shape of materials. The city recognizes the importance of landscaping and water efficiency to the health and well-being of the community and desires to enhance the overall appearance of development projects in the city. It is the intent of this article to establish a measure of uniformity in landscaping that will provide a structure for designing, installing and maintaining water-efficient landscapes for new projects as well as providing a mechanism to require updating and upgrading of existing landscaping in existing developments when improvements are intended. (Ord. 2249 § 2 (part), 1992)

9.16.150 General provisions. A. General landscaping requirements as defined herein shall be provided in all zones.

B. Parcels zoned or used for single-family purposes shall provide landscaping in all areas not covered by buildings, structures, patios or driveways.

C. For the purpose of this section, the front yard shall be determined by a line drawn parallel to the front building plane. This shall also include any accessory structure such as a garage, if the structure is attached.

D. The following regulations are for maximum coverage of hardscape in the R-1 (single-family residential) zone:

1. The maximum permitted percentage of hardscape coverage in the front yard setback as defined above shall be fifty percent. Private sidewalks and walkways are exclusive of this fifty percent so long as they do not exceed a width of five feet.

2. The front yard area shall be measured from the front building plane to the property lines. In areas where no sidewalks exist, the measurement shall be from the front building plane to the sidewalk or street dedication line. Any area that is in a street or sidewalk dedication must be fully landscaped except for a standard driveway.

3. Sidewalks fronting the property should not be included in the calculations of the front yard, however parkways or that area between the frontage, sidewalk and the street curb shall be specifically included in the calculated front yard.

E. All developed properties shall be required to be in compliance with the provisions of this subsection when any additions of one or more square feet are proposed.

F. It is not the intent of this section to require identical landscape materials or landscape designs for all developments. Where existing mature landscaping is in good, healthful condition, every effort shall be made to retain and to incorporate said landscaping into the overall landscape theme.

G. The hearing body may, through the site plan review procedure, modify the requirements with consideration to the size and species of trees used and may require landscaping in excess of the minimum area specified for a proposed development in order to achieve a superior project.

H. Adjacent uses shall be considered when designing landscaping to mitigate the negative impacts of parking areas, activities, storage or structures by appropriate screening measures.

I. Every effort shall be made to provide landscaping that is compatible with neighboring uses.

J. All unpaved areas shall be planted with an effective combination of trees, grass berms, groundcover, lawn, shrubbery and/or approved dry decorative landscape material.

K. A water-efficient landscape documentation package shall be required for all new and rehabilitated landscaping for public agency projects, and for any private development projects that require a discretionary permit. This regulation shall not apply to the following:

1. Homeowner-provided landscaping at individual single-family homes and condominium units;

2. Cemeteries;

3. Registered historical sites;

4. Ecological restoration projects that do not require a permanent irrigation system;

5. Any project with a landscaped area less than two thousand five hundred square feet;

L. The following requirements shall apply to the water-efficient landscape package:

1. A copy of the water-efficient landscape package conforming to this chapter shall be submitted to the city. No permit shall be issued until the city reviews and approves the landscape documentation package.

2. If effective precipitation is included in the calculation of the estimated total water use, then an effective precipitation disclosure statement from the landscape professional and the property owner shall be submitted with the landscape documentation package. (Ord. 2260 § 2 (61), 1993; Ord. 2249 § 2 (part), 1992)

9.16.160 Landscaping requirements. A. Minimums.

1. All required landscaped setback areas, including front, rear, side, side street and landscaped areas within parking lots shall meet the requirements prescribed herein.

B. Percentage.

1. Ten percent of all multiple-family residential, office professional commercial, and industrial parking areas, exclusive of required setbacks are to be landscaped.

C. Parking Lot Landscaping.

1. Size. For parking facilities, a variety of tree sizes is required for every ten parking spaces. Trees must be a minimum of fifteen-gallons diameter with

a one inch caliper truck, eight feet in height with a two and one-half foot head or larger. These trees may be grouped or clustered and shall conform to the matrix of plant materials established by the development services department.

2. Street Frontage. One twenty-four inch box tree of a two and one-quarter inch caliper trunk diameter, ten feet in height, and a five foot head is required for every thirty feet of street frontage. (These trees may be grouped or clustered.) All trees shall be placed within a root barrier per city of Garden Grove development services specification street tree planting detail.

3. Area. Minimum landscaped area that may be counted is twenty-four square feet.

D. Trees.

1. No trees shall be planted under any eave, overhang or balcony.

2. All trees in landscape planters ten feet in width or less shall be provided with tree root barricades.

E. Tree Numbers.

Parking Area—One per eight spaces

Street Setbacks—One per twenty feet

Balance of Site—One per six hundred square feet (less parking area building).

F. Tree Size.

Total site:

48″	36″	24″	15 gal.	Other
10%	10%	15%	60%	5%

G. Planter Width.

1. Minimum width of finger planter is three feet, inside clear dimension.

2. Minimum width of all planters is three feet clear, interior dimensions, not inclusive of retaining curb or wall.

3. Minimum width of building perimeter landscape planter is three feet.

H. Groundcover.

1. All areas required to be landscaped shall be covered with turf, nondeciduous groundcover or other types of plantings.

2. All plant spacing shall be as indicated by the landscape architect according to the latest standards as adopted by the American Society of Landscape Architects.

I. Paved Areas. Only those portions that are required by municipal code or by site plan to be used directly for parking spaces, aisles, refuse storage areas, drives or walkways shall be paved. All other areas not needed for the above shall be landscaped. Patios may be paved.

J. Excess of Minimum Areas—Authority. The hearing body may require landscaping in excess of the minimum area specified for a proposed development, provided that the additional landscaping is necessary to:

1. Screen adjacent objectionable uses, parking areas, activities, storage or structures that could cause a negative impact on new development based on aesthetics, noise, odors, etc.; or

2. Provide landscaping that is compatible with neighboring uses; or

3. Screen the use from neighboring negative impacts such as traffic, outside storage, etc.

K. Landscape Plans.

1. Each landscape plan shall be compatible with the shape and topography of the site and the architectural characteristics of the structure(s) on the site.

2. Each landscape plan shall be compatible with the character of adjacent landscaping, provided the quality of the adjacent landscaping meets the standard of these guidelines.

3. Each landscape plan shall illustrate a concern for design elements such as balance, scale, texture, form and unity.

4. Each landscape plan shall address the functional aspects of landscaping such as drainage, erosion prevention, wind barriers, provisions for shade and reduction of glare.

5. Each landscape plan shall demonstrate a concern for solar access, including exposure and shading of window areas.

6. Landscaping shall be used to relieve solid, unbroken elevations and to soften continuous wall expanses.

7. The applicant must submit a planting inventory and plan of existing planting materials on a development site which are to be retained. Every effort shall be taken to ensure that mature existing landscaping is utilized as part of the development plan. A landscaping retention program shall be approved with the discretion action by the hearing body.

L. Substitute Landscaping.

1. Materials such as crushed rock, redwood chips, pebbles and stone may not be used in lieu of live plant materials, although their limited use may be approved by the hearing body through the site plan review process. Artificial plants and synthetic groundcovers are prohibited.

M. Screening.

1. Landscaping shall be required to screen storage areas, trash enclosures, parking areas, public utilities, freeways, highways and other similar land uses or elements that do not contribute to the enhancement of the surrounding area. Where plants are required for screening, such screening shall consist of the use of evergreen shrubs and/or trees closely spaced. Berming is suggested as an effective screening measure for parking lots and where adjacent site areas are contiguous to street frontages. Such berming shall not exceed thirty-six inches above the highest adjacent curb.

2. Perimeter landscaping adjacent to the property lines is required in parking areas. Planter area curbs shall be used in place of wheel stops.

N. Separation.

1. All landscaping shall be separated from parking and vehicular circulation areas by a raised, continuous six inch portland cement concrete curb.

2. Other materials that accomplish the same purpose may be approved by the hearing body through the site plan review process.

3. All trees shall be staked in accordance with standards maintained by the development services department.

O. Arterial Site Entries.

1. Unless otherwise delineated, all developments having a contiguous property line to a primary or secondary arterial highway shall observe a fifteen-foot setback that shall be landscaped. All other nonarterial highways shall observe a ten-foot setback unless otherwise delineated by the governing zone.

2. Landscaping at major entry points are considered the focal points for landscaping emphasis and shall contain a variety of trees, flowers and shrubs with special concern for visibility and safety.

3. No landscaping material other than trees shall exceed a height of thirty-six inches above the highest adjacent curb at street entrances and parking lot accessway intersections.

4. No berming at street entrances and parking lot accessway intersections shall exceed a height of thirty-six inches above the highest adjacent curb.

5. All trees whether singularly placed or placed on clusters shall not inhibit standard visibility parameters.

6. Parking may be designed to overhang landscaped areas. Maximum permitted overhang is two feet where planter areas have a minimum dimension of five feet or more. Otherwise, concrete wheel stops shall be installed. Any broken or damaged wheel stops shall be replaced.

P. Landscaping and Irrigation Plans Required.

1. Landscape and irrigation plans shall be required for all projects requiring approval by the hearing body, except for R-1 single-family homes. Such plans shall be submitted for discretionary approval to the hearing body. Said plans shall be prepared in accordance with requirements and standards established pursuant to this chapter.

Q. In addition to the above, the following are requirements that shall apply to the landscape design plan.

1. Any plants may be used in the landscape, providing the estimated applied water use recommended does not exceed the maximum applied water allowance and that the plants meet the specifications set forth in this section.

2. Plants having similar water use shall be grouped together in distinct hydrozones.

3. Plants shall be selected appropriately based upon their adaptability to the climatic, geologic and topographical conditions of the site. Protection and preservation of native species and natural areas are encouraged. The planting of trees is encouraged wherever it is consistent with the other provisions of this article.

R. Irrigation Requirements.

1. All landscaped areas shall be provided with an approved irrigation system that shall include an automatic, time-controlled sprinkler system when the site is zoned commercial or industrial or when the site is zoned residential and permits more than three dwelling units.

2. Irrigation shall be performed in conformance with city ordinances or with water conservation practices.

S. System Design.

1. Irrigation system shall consist of underground piped water lines and sprinklers designed to provide head-to-head coverage. Water meter and line sizes shall be calculated from total water demand that should be, at least, the sum of maximum irrigation demand and all building demand.

2. Due to varying irrigation requirements, separate control valves and/or sprinkler heads shall be used when shrubs and turf all appear on the same landscape plan. The irrigation system shall be designed so that overspray onto structures, streets, sidewalks, windows, walls and fences is minimized. Approved backflow prevention devices are required on all sprinkler systems.

T. In addition to the above, the following are requirements that shall apply to the landscape design plan.

1. Irrigation Design Criteria.

a. Runoff and Overspray. Soil types and infiltration rate shall be considered when designing irrigation systems. All irrigation systems shall be designed to avoid runoff, low- head drainage, overspray or other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways or structures. Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match application rates to infiltration rates therefore minimizing runoff.

Special attention shall be given to avoid runoff on slopes and to avoid overspray in planting areas with a width less than ten feet, and in median strips.

No overhead sprinkler irrigation systems shall be installed in median strips less than ten feet wide.

b. Irrigation Efficiency. For the purpose of determining the maximum water allowance, irrigation efficiency is assumed to be 0.625. Irrigation systems shall be designed, maintained and managed to meet or exceed 0.625 efficiency.

c. Equipment.

Water Meters. Separate landscape water meters shall be installed for all projects except for single-family homes or any project with a landscaped area of less than two thousand five hundred square feet, or as required by the water services division.

Controllers. Automatic control systems shall be required for all irrigation systems and must be able to accommodate all aspects of the design.

Valves. Plants which require different amounts of water shall be irrigated by separate valves. If one valve is used for a given area, only plants with similar water use shall be used in that area. Anti-drain (check) valves shall be installed in strategic points to minimize or prevent low-head drainage.

Sprinkler Heads. Head and emitters shall have consistent application rates within each control valve circuit. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability and ease of maintenance.

Rain-Sensing Override Devices. Rain-sensing override devices shall be required on all irrigation systems.

Soil Moisture-Sensing Devices. It is recommended that soil moisture-sensing devices be considered where appropriate.

2. Recycled Water.

a. At such time as recycled water is available, the installation of recycled water irrigation systems (dual distribution systems) shall be required to allow for the current and future use of recycled water.

b. Irrigation systems shall make use of recycled water unless a written exemption has been granted by the local water agency, stating that recycled water meeting all health standards is not available and will not be available in the foreseeable future.

c. The recycled water irrigation systems shall be designed and operated in accordance with all local and state codes.

3. Irrigation Design Plan Specifications. Irrigation systems shall be designed to be consistent with hydrozones.

The irrigation design plan shall be separate from, but use the same format as, the landscape design plan. The scale shall be the same as that used for the landscape design plan.

The irrigation design plan shall accurately and clearly identify:

a. Location and size of separate water meters for the landscape;

b. Location, type and size of all components of the irrigation system, including automatic controllers, main and lateral lines, valves, sprinkler heads,

rain switches, quick couplers and backflow prevention devices;

c. Static water pressure at the point of connection to the public water supply;

d. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (psi) for each station.

4. Maximum Applied Water Allowance. A project's maximum applied water allowance shall be calculated using the following formula:

MAWA = (ETO) (0.8) (LA) (0.62) where:

MAWA	= Maximum applied water allowance (gallons per year)
ETO	= Reference evapotranspiration (inches per year)
0.8	= ET adjustment factor
LA	= Landscaped area (square feet)
0.62	= Conversion factor (to gallons per square foot)

5. Irrigation Schedules. Irrigation schedules satisfying the following conditions shall be submitted as part of the landscape documentation package.

a. An annual irrigation program with monthly irrigation schedules shall be required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas.

b. The irrigation schedule shall:

i. Include run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station; and

ii. Provide the amount of applied water (in hundred cubic feet, gallons, or in whatever billing units the local water supplier uses) recommended on a monthly and annual basis.

c. The total amount of water for the project shall include water designated in the estimated total water use calculation plus water needed for any water features, which shall be considered as a high water using hydrozone.

d. Recreational areas designated in the landscape design plan shall be highlighted and the irrigation schedule shall indicate if any additional water is needed above the maximum applied water allowance because of high plant factors (but not due to irrigation inefficiency).

e. Irrigation scheduling shall incorporate the use of evapotranspiration data such as those from the California Irrigation Management Information System (CIMIS) weather stations to apply the appropriate levels of water for different climates, whenever possible.

f. Landscape irrigation shall be scheduled between ten p.m. and six a.m., whenever possible to avoid irrigating during times of high wind or high temperature.

g. A licensed landscape architect or contractor, certified irrigation designer, or other licensed or certified professional in a related field shall conduct a final field observation and shall provide a certificate of substantial completion to the city. The certificate shall specifically indicate that plants were installed as specified, that the irrigation system was installed as designed, and that an irrigation audit has been performed prior to the final field inspection.

h. Certification shall be accomplished by completing a certificate of substantial completion and delivering it to the development services department, and to the owner of record.

i. Water Waste Prevention. The irrigation system shall prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff, low-head drainage, overspray or other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways or structures. Penalties for violation of these prohibitions shall be established locally.

j. Effective Precipitation. If effective precipitation is included in the calculation of the estimated total water use, an effective precipitation disclosure statement shall be completed, signed and submitted with the landscape documentation package. No more than twenty-five percent of the local annual mean precipitation shall be considered effective precipitation in the calculation of the estimated total water use. (Ord. 2260 § 2 (62), 1993; Ord. 2249 § 2 (part), 1992)

9.16.170 Compliance. A. Any modification to an approved landscape or irrigation plan must be approved by the hearing body prior to installation or said landscaping or irrigation.

B. All approvals of such plans are subject to and dependent upon the applicant complying with all

applicable ordinances, codes, regulations, adopted policies and the payment of all applicable fees and assessments.

C. No final inspection or occupancy clearance will be granted until all of the landscaping and irrigation is installed in accordance with the approved plans.

D. Landscaping and irrigation systems shall be located and designed as specified on the approved plans. (Ord. 2249 § 2 (part), 1992)

9.16.180 Maintenance requirements and violations. A. Maintenance. All landscaping shall be maintained. Maintenance of landscaping areas shall include, but not be limited to, the following:

1. Irrigation equipment shall be in working condition at all times.

2. Litter shall be removed from all landscaped areas in a timely fashion.

3. All sod areas shall be mowed on a regular basis. Sod areas shall at all times be kept green. Accumulation of leaves, bark and other similar plant materials shall be removed in a timely fashion. Planting areas must be kept in a weed free fashion.

4. Landscaping maintenance shall include pruning, cultivating, weeding, fertilizing, replacement of plants and watering on a regular basis.

5. Landscape maintenance shall also include pruning or removal of overgrown vegetation, cultivated or uncultivated, that is likely to harbor rats, vermin or other nuisances or that causes detriment to neighboring properties or property.

6. Landscape maintenance shall also include the removal of dead, decayed, diseased or hazardous trees, weeds and debris constituting unsightly appearance, dangerous to public safety and welfare or detrimental to neighboring properties or property values. Compliance shall be by removal, replacement or maintenance requirement.

7. Any removal of mature landscaping must be replaced with landscaping of similar size and maturity as that which was removed.

B. Violations. Use of landscaped areas for purposes other than for landscaping as approved in the landscape plan shall be a misdemeanor.

1. Wilful failure to maintain the landscaping shall be punishable by fine, or by imprisonment, or both fine and imprisonment. (Ord. 2260 § 2 (63), 1993; Ord. 2249 § 2 (part), 1992)

CUWCC RETAIL WATER AGENCY ANNUAL REPORT - 1995-96

AGENCY
CITY OF GARDEN GROVE

BMP 7 PUBLIC INFORMATION

Implementation methods shall be at least as effective as ongoing programs promoting water conservation and conservation related benefits including providing speakers to community groups and the media; using paid and public service advertising; using bill inserts; providing information on customers' bills showing use in gallons per day for the last billing period compared to the same period the year before; providing public information to promote other water conservation practices; and coordinating with other governmental agencies, industry groups and public interest groups.

DOES AGENCY DO ITS OWN PUBLIC INFORMATION PROGRAM? YES X NO_____

IF NOT, NAME OF AGENCY PROVIDING PUBLIC INFORMATION PROGRAM: Incooperation with the Municipal Water District of Orange County

CHECK THE PUBLIC INFORMATION METHODS USED BY AGENCY:

PUBLIC INFORMATION ✓		
PUBLIC INFORMATION MEDIUM	REPORTING AGENCY	SUPPORTING AGENCY
BILL INSERTS OR MESSAGES	X	
BROCHURES	X	
DEMONSTRATION GARDEN(S)		X
PAID ADVERTISING		
PREVIOUS USE SHOWN ON BILL	X	
PUBLIC SERVICE ANNOUNCEMENTS		X
SPEAKERS BUREAU	X	X
SPECIAL EVENTS (FAIRS, FESTIVAL, FORUMS)	X	X
INTERNET HOMEPAGE ADDRESS: www.CI.garden-grove.CA.US	X	
OTHER (specify) Press release, Community letters	X	X

PLEASE ATTACH A LIST OF MATERIALS (NO COPIES OF ITEMS, PLEASE) AND INCLUDE ANY OTHER INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT (TITLED "ATTACHMENT BMP 7-A")

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 7-B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 7 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 7 - C")	

ATTACHMENT BMP 7 - A

Public Information

The City of Garden Grove Water Services Division conducts public information efforts in coordination and cooperation with the Municipal Water District of Orange County (MWDOC) which promotes local water programs, water conservation and conservation benefits, legislative issues, and general information for the education of water customers.

As a member agency of MWDOC, Garden Grove receives benefits that include a comprehensive Public Information and Education Program. The Program includes a Speakers Bureau which reaches civic and community groups, and local businesses and agencies; a School Education Program for K through 8th grades, reaching nearly 20,000 children per year in Garden Grove; press releases and public service announcements for special water programs, events, or issues; organizes and conducts special countywide events for Water Awareness Month, Earth Day, and other environmental celebrations; and provides a large variety of water education and awareness materials to be used for events and by its member agencies.

The Garden Grove Water Services Division realizes that it is responsible to educate customers on water issues, and upholds the vision that every employee maintains a line of sight with its customers. This means every Water Services employee is empowered to educate our water customers at every opportunity.

During 1995/96, bill inserts were used for the Ultra-Low-Flush-Toilet Replacement Program; over 4,000 brochures were distributed at local and regional events, through Customer Service site visits, and civic center counters; four local community group presentations were conducted; five press releases were sent out covering local programs and current issues; staff participated in the Public Affairs and Water Conservation Workgroups with MWDOC; water service and conservation information was maintained on the City's homepage; several lead stories were featured on "This Week in Garden Grove," a news program for local cable programming; and "The Water Story", an 8 1/2 minute video on Garden Grove's water system, was produced and aired on local cable and as part of several community group presentations.

CITY OF GARDEN GROVE
WATER AWARENESS PROGRAM
BROCHURES AND HANDOUTS

GARDEN GROVE PUBLICATIONS

Use Water Wisely
Garden Grove Water System Status

MWD, MWDOC, WATER EDUCATION FOUNDATION, and O.C. EMA PUBLICATIONS

You Can Make A Difference
Be Water Tight
The Top Ten Tips For Saving Water (and a bunch more)
Water Saving Guide
How to Have a Green Garden in a Dry State
Take a Day Off: Water Conservation/Turfgrass
A Homeowner's Guide to Garden and Lawn Water Savings
Drip: The Most Practical Way to Water Plants, Drip Irrigation Makes Sense
The Ocean Begins At Your Front Door!
The California Dream...Just Add Water
Use Your Head and Save: O.C. Residential ULFT Replacement Program
Saving Water is Good For Business: CII Water Use Survey
Let's Talk Water: The Water Issues Speakers Bureau of Orange County
Water Education for Teachers and Students: Orange County Program Guide
Water Conservation Kits

CUWCC RETAIL WATE.. AGENCY ANNUAL REPORT 1995-96

AGENCY
CITY OF GARDEN GROVE

BMP 8 SCHOOL EDUCATION

Implementation methods shall be at least as effective as ongoing programs promoting water conservation and conservation related benefits including working with the school districts in the water supplier's service area to provide educational materials and instructional assistance.

DOES AGENCY DO ITS OWN PUBLIC INFORMATION PROGRAM? YES_____ NO_____

AGENCY PARTICIPATES IN ANOTHER AGENCY'S PROGRAM YES__X__ NO_____

IF "YES," PLEASE INDICATE AGENCY SUPPLYING PROGRAM. MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

SCHOOL EDUCATION PROGRAM ✓	REPORTING AGENCY PROGRAM	SUPPORTING AGENCY
ASSEMBLIES		X
BOOKS		X
CONTESTS		X
MAPS, CHARTS, POSTERS		X
PROFESSIONAL PLAYS		X
SCHOLARSHIPS		
SCIENCE FAIRS		X
STUDENT PLAYS		
TEACHER GRANTS		
TEACHER TRAINING		X
TOURS		X
VIDEOS		X
WATER AWARENESS MONTH ACTIVITIES		X
OTHER (specify)		X

GRADES TARGETED													
KDG	1	2	3	4	5	6	7	8	9	10	11	12	COLLEGE
X	X	X	X	X	X	X	X	X	X	X	X	X	

ESTIMATED NUMBER OF STUDENTS REACHED DURING REPORT YEAR 18,000

PLEASE ATTACH A LIST OF MATERIALS USED (NO COPIES OF ITEMS, PLEASE) AND ANY OTHER INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT. (TITLED "ATTACHMENT BMP 8-A")
IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 8-B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 8 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 8 - C")	

ATTACHMENT BMP 8 - A

School Education

The City of Garden Grove Water Services Division conduct school education in cooperation with the Municipal Water District of Orange County (MWDOC). Established in 1973, the MWDOC School Education Program is one of the oldest and most respected in the state. Originally the program taught children in kindergarten through third grade only. By featuring Ricki the Rambunctious Raindrop as the program mascot, children became familiar with the program and its messages. Students of all ages now recognize Ricki, and his name has become synonymous with water education and conservation through Orange County.

Today, the goals of the education program remain the same. The program has been expanded to include primary and secondary students. During the past school year more than 140,000 students were educated through MWDOC's program, of which approximately 18,000 students were from Garden Grove.

MWDOC's three part-time credentialed teachers present a grade-specific curriculum on water awareness and conservation for grades K-12 throughout their service area and through contract with the rest of Orange County.

Grade specific programs are established for each grade level, along with a complete library of literature, films, videos, posters and displays that are available to teachers and schools. Throughout the year, additional activities complement the classroom presentation. These activities include a poster and slogan contest for students to express their conservation ideas; live theater; teacher workshops and inservices to supplement the program curriculum; participation in a variety of school events such as career days and science fairs; and distribution of literature and other educational materials.

The following is a brief outline of MWDOC's grade specific programs:

KINDERGARTEN	Ricki and the Forms of Water - a felt board presentation about the forms of water (liquid, solid, gas). Student coloring books provided.
GRADE 1	The Water Cycle featuring Ricki the Rambunctious Raindrop - Audio/video presentation introducing the water cycle. Student coloring books provided.
GRADE 2	The Water Cycle Part II - Audio/video presentation reviews the water cycle and introduces more advanced water concepts. Student coloring books provided.

GRADE 3 — The Journey of Water - Audio/video presentation about water importation, treatment and distribution. Student activity books provided.

GRADE 4 — Admiral Splash - Presentation about California's water history, supply, treatment and conservation ideas. Student handouts, teacher guide and video provided.

GRADE 5 — Be Water Wise - Humorous movie, discuss the Do's and Don'ts of water conservation. Student handouts and teacher guide provided.

GRADE 6 — California Smith, Water Investigator - Student materials, teacher guide and video explore Southern California's present and future water supply and the need for water conservation.

GRADES 7 & 8 — The Water Puzzle: Putting the Pieces Together - Review the different elements of the water story. Current issues such as transfers, recycling, banking, etc. are explored. Student activity book provided.

HIGH SCHOOL — Water Politics - This new unit presents students with several case studies designed to encourage discussion about local and worldwide water issues. Case studies present the challenges of current issues such as conflicts among urban, agricultural and environmental interests; the economics of water; and conservation vs. developing new supplies. Complete teacher guide/workbook and video provided.

Other High School programs include:

Water Highways - designed for biology classes, this unit is also applicable to classes in environmental sciences. The student assesses the positive and negative impacts of California's State Water Project upon fisheries, wildlife, the land, the economy and the people.

Water Quality - designed for physical science classes, the unit involves hands-on activities. The student, as a water quality lab technician, analyzes four water samples, detects the problems, suggests the causes, and proposes solutions.

Water Trade-Offs - designed for economics classes, the unit involves a cost/benefit analysis of a proposed trade-off between two water agencies. The students learn some of the fundamental of economics in a "real world" framework.

Each of these programs include a videotape, student books, teacher guides, pre and post-tests, water supply and distribution maps and a programs record sheet.

CUWCC RETAIL WATER AGENCY ANNUAL REPORT- 1995-96

AGENCY	CITY OF GARDEN GROVE

BMP 9 COMMERCIAL AND INDUSTRIAL WATER CONSERVATION , AND 20% GOVERNMENTAL/INSTITUTIONAL.

Implementation methods shall be at least as effective as identifying and contacting the top 10% of the industrial and commercial customers directly (by mail and/or telephone); offering audits and incentives sufficient to achieve customer implementation; and providing follow-up audits at least once every five years if necessary.

COMMERCIAL AND INDUSTRIAL WATER CONSERVATION				
SURVEYS (AUDITS)		COMMERCIAL	INDUSTRIAL	GOV'T/INST.
1. NUMBER OF ALL COMMERCIAL/ INDUSTRIAL CONNECTIONS (Reference page 3)		1,836	617	182
2. NUMBER OF TARGETED INDUSTRIAL CUSTOMERS (10% OF LINE 1) (GOV'T/INST 20%)		184	62	36
3. SURVEYS COMPLETED PRIOR TO THIS REPORT YEAR (1995-96)	New	Ø	Ø	Ø
	Follow up			
4. SURVEYS OFFERED DURING THE REPORT YEAR	New	17	7	4
	Follow up			
5. SURVEYS COMPLETED DURING REPORT YEAR	New	15	7	4
	Follow up			
6. SURVEYS PLANNED FOR NEXT YEAR	New	Undetermined	until program is offered	
	Follow up			
7. AGENCY COST PER SURVEY (Excluding cost sharing)		$Staff time	only/in budget	$
8. TOTAL COST PER SURVEY (Including cost sharing)		$800-1200	800-10,000	$800-1200

ARE SURVEY PROGRAMS COORDINATED WITH WASTEWATER UTILITY(S)? YES_____ NO__X__

ARE SURVEY PROGRAMS COORDINATED WITH ENERGY UTILITY(S)? YES _____ NO_X___

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP9 - A")

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 9 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 9 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 9 - C")	

ATTACHMENT BMP 9-A

Commercial and Industrial Water Conservation

In 1995-96, the City of Garden Grove offered it's commercial, institutional and industrial customers a free Commercial, Institutional and Industrial Water Use Survey Program. The CII Survey Program is implemented by the Municipal Water District of Orange County (MWDOC), and funded by the Metropolitan Water District of Southern California (MWD) and the U.S. Bureau of Reclamation. The Program is offered annually, or as funding is made available.

The 1995-96 Orange County CII Program targeted the highest 90 water using businesses and institutions in the MWDOC service area. The City of Garden Grove was successful in obtaining 26 local businesses and institutions participation in the 1995-96 CII Survey Program, and will continue to actively participate in future programs as made available.

ATTACHMENT BMP 9-B

Commercial and Industrial Water Conservation

During 1995-96, 26 commercial and industrial water use surveys were conducted in the City of Garden Grove. The CII Survey Program, implemented by MWDOC and funded by MWD and the U.S. Bureau of Reclamation, was conducted by Pequod Associates, Inc. and Garden Grove Water Services staff. The surveys are designed to identify ways for businesses to use water more efficiently, and to make recommendations for change, including costs and savings estimates.

Although Garden Grove is predominantly residential, the 26 surveys combined represent the 63,051 ccf/year in water savings and $172,000/year in cost savings resulting from the recommendations. Additional energy savings were recognized, although not estimated.

CUWCC RETAIL WATER AGENCY ANNUAL REPORT - 1995-96

AGENCY
CITY OF GARDEN GROVE

BMP 10 NEW COMMERCIAL INDUSTRIAL AND INSTITUTIONAL WATER USE REVIEW

Implementation methods shall be at least as effective as assuring the review of proposed water uses for new commercial and industrial water service and making recommendations for improved water use efficiency before completion of the building permit process.

DOES AGENCY HAVE A PROGRAM TO REVIEW NEW COMMERCIAL AND INDUSTRIAL WATER USES? YES X
NO_____

If "No," an Exemption must be filed.

IF NO, WHAT AGENCY(s) IS RESPONSIBLE FOR THE REVIEW? _____

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 10 - A")

IE YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH.
(TITLED "ATTACHMENT BMP 10 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 10 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 10 - C")	

AGENCY CITY OF GARDEN GROVE

BMP 11 CONSERVATION PRICING. WATER SERVICE - SEWER SERVICE

Implementation methods shall be at least as effective as eliminating nonconserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

CURRENT AGENCY RATE STRUCTURES ✓										
SECTOR	LIFELINE*		FLAT**		UNIFORM***		INCLINING BLOCK****		DECLINING BLOCK *****	
	WATER	SEWER	WATER	SEWER	WATER	SEWER	WATER	SEWER	WATER	SEWER
SINGLE FAMILY RESIDENTIAL	X						X			
MULTI-FAMILY RESIDENTIAL	X						X			
COMMERCIAL							X			
INDUSTRIAL							X			
PUBLIC AGENCY							X			
IRRIGATION							X			
RECLAIMED										
AGRICULTURAL							X			
OTHER							X			

* LIFELINE = MINIMAL AMOUNT OF WATER ALLOTTED TO CUSTOMER.
* *FLAT = ALL CUSTOMERS PAY THE SAME PRICE REGARDLESS OF USAGE.
(NOT CONSIDERED A WATER CONSERVING RATE STRUCTURE. REQUIRES AN EXEMPTION.)
*** UNIFORM =PRICE PER UNIT USED IS CONSTANT .
**** INCLINING BLOCK = PRICE IS HIGHER AS USE IS GREATER
***** DECLINING BLOCK = PRICE IS LOWER AS USE IS GREATER
(NOT CONSIDERED A WATER CONSERVING RATE STRUCTURE. REQUIRES AN EXEMPTION.)

PLEASE ATTACH A COPY OF AGENCY'S CURRENT RATE STRUCTURES INCLUDING DATE OF ADOPTION.
- Tiered rate structure adopted in 1991 -

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 11- A")

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH.
(TITLED "ATTACHMENT BMP 11 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 11 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 11 - C")	

CITY OF GARDEN GROVE

PUBLIC SERVICES DEPARTMENT
WATER SERVICES DIVISION

1995/96 GARDEN GROVE WATER RATES AND FEES

Garden Grove Water Rate Structure has been designed to provide stable revenue to maintain and preserve the water system, to equitably charge for the cost of providing service, and to achieve sound and efficient management of water resources.

All Garden Grove water users are assessed a commodity charge, minimum charge, and a capital improvement charge. If 6 units of water or less are used, then only the minimum charge applies. Fire Protection Service is charged as shown below.

CUSTOMER CHARGE

CUBIC FEET *(used bi-monthly)*	COMMODITY CHARGE *(per 100 cubic feet)*
0 - 3,600	0.902
next 25,000	0.942
next 50,000	0.982
excess	1.022

METER SIZE *(in inches)*	BI-MONTHLY MINIMUM CHARGE	CAPITAL IMPROVEMENT CHARGE
5/8 or 3/4	$ 6	$ 1.38
1	$ 16	$ 1.94
1 1/2	$ 31	$ 2.48
2	$ 47	$ 4.00
3	$ 78	$ 15.18
4	$ 108	$ 19.32
6	$ 247	$ 28.98

FIRE PROTECTION SERVICE

METER SIZE *(in inches)*	BI-MONTHLY CHARGE	CAPITAL IMPROVEMENT CHARGE
2	$ 11	$ 4.00
4	$ 19	$ 19.32
6	$ 29	$ 28.98
8	$ 38	$ 40.02
10	$ 48	$ 40.02
12	$ 58	$ 40.02

DEPOSITS

METER SIZE *(in inches)*	DEPOSIT
5/8 or 3/4	$ 50
1	$ 65
1 1/2	$ 80
2	$ 110
3	$ 180
4	$ 250
6	$ 575

OTHER FEES

ITEM	FEE
Late Payment	$ 10
Pull Meter	$ 20
Replace Meter	$ 20
Lock	$ 20
Return Check	$ 10
After-hours Service	$ 50
Bench Test	$ 50
Angle Stop	$ 50

7/1/96

ORDINANCE NO. 2268

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF GARDEN GROVE AMENDING SECTION 14.12.010 OF CHAPTER 14.12 OF TITLE 14 OF THE GARDEN GROVE MUNICIPAL CODE TO MODIFY WATER SERVICE RATES AND CHARGES

THE CITY COUNCIL OF THE CITY OF GARDEN GROVE DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. Code Amendment

A. Title 14, Chapter 14.12, Section 14.12.010(a) of the Garden Grove Municipal Code is hereby amended to read as follows:

SECTION 14.12.010 - RATES AND CHARGES

(a) MINIMUM CHARGE. The minimum charge for metered service shall be:

METER SIZE (IN INCHES)	BI-MONTHLY MIN. CHARGE
5/8 x 3/4	$ 6.00
1	16.00
1 1/2	31.00
2	47.00
3	78.00
4	108.00
6	247.00

Implementation of Schedule W-CA will result in a commodity adjustment effective July 1, 1993, to cover the increase in water purchase costs. This increase will be $0.092 per water billing (100 cubic feet), and will result in an average increase of $0.83 per month to the water bill of the average residential customer. This increase is necessary to insure that the water fund break even, not generate a deficit.

The OCWD rates increased in January 1993 to offset the loss of property tax revenue and will again increase rates for the 1993/94 budget year due to additional losses in property tax revenue to the State. MWD increased rates due new water quality mandates, and additional storage required in Southern California effective July 1, 1993. As a result of these increases, the water fund will be significantly impacted, requiring the need for a rate adjustment.

RECOMMENDATION

It is recommended that the City adopt an ordinance revising the water rates of the City by using Schedule W-CA (Water Commodity Adjustment Clause), to incorporate the annual adjustment in the water commodity costs (see Attachment B for Draft Ordinance).

RICHARD J. CONRAD
Public Services Director

By: Terry E. Lane
Water Services Manager

rm

Attachments - A - Schedule W-CA
B - Ordinance

and was passed on June 22, 1993 by the following vote:

AYES:	COUNCILMEMBERS:	(3)	CHUNG, LEYES, KESSLER,
NOES:	COUNCILMEMBERS:	(2)	BROADWATER, DINSEN
ABSENT:	COUNCILMEMBERS:	(0)	NONE

/s/ CAROLYN MORRIS, CMC
CITY CLERK

ORDINANCE NO. 2269

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF GARDEN GROVE AMENDING SECTION 14.12.010 OF CHAPTER 14.12 OF TITLE 14 OF THE GARDEN GROVE MUNICIPAL CODE TO MODIFY WATER SERVICE RATES AND CHARGES

THE CITY COUNCIL OF THE CITY OF GARDEN GROVE DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. Code Amendment

Title 14, Chapter 14.12, Section 14.12.010 of the Garden Grove Municipal Code is hereby amended to add subsection (e), to read as follows:

(e) ANNUAL RATE ADJUSTMENTS

The City Manager is hereby authorized to administratively adjust water rate charges on an annual basis, based upon actual increases incurred by City for acquisition of ground water and imported water. Such adjustments shall take effect on or after July 1 of each fiscal year.

The rate adjustment shall be calculated pursuant to the following formula:

The percentage of pumping rate shall be multiplied times the cost of ground water per acre foot and added to the product of the percentage of imported water times imported water costs. This shall yield an average cost per acre foot. The existing per acre foot cost shall then be subtracted from the new total per acre cost under this formula. The difference between the two shall then be divided by 435.6 billing units per acre foot. The product of this division shall then constitute the new additional cost per billing unit.

The percentage of water to be pumped and the percentage to be purchased shall be established by the Water Operations Manager prior to May 1 of each year, based on the basin production percentage assigned to the City of Garden Grove by the Orange County Water District.

Section 2. Severability. Should any sentence, section, clause, part, or provision of this Ordinance be declared to be invalid by a court of competent jurisdiction, the same shall not

affect the validity of the Ordinance as a whole, or any part thereof, other than the part declared to be invalid.

Section 3. This ordinance shall take precedence over any inconsistent provisions of the Municipal Code.

Section 4. This ordinance shall take effect thirty (30) days after adoption and shall, within fifteen (15) days of adoption, be published with the names of the Councilmembers voting for and against the same in the Orange County Evening News, a newspaper of general circulation, published and circulated in the City of Garden Grove.

The foregoing Ordinance was passed by the City Council of the City of Garden Grove on the *22nd* day of *June* , 1993.

ATTEST: /s/ FRANK KESSLER
MAYOR

/s/ RUTH E. SMITH
DEPUTY CITY CLERK

STATE OF CALIFORNIA)
COUNTY OF ORANGE) SS:
CITY OF GARDEN GROVE)

I, Ruth E. Smith, Deputy City Clerk of the City of Garden Grove, do hereby certify that the foregoing Ordinance was introduced and presented on June 15, 1993 with vote as follows:

AYES:	COUNCILMEMBERS:	(3)	CHUNG, LEYES, KESSLER
NOES:	COUNCILMEMBERS:	(2)	BROADWATER, DINSEN
ABSENT:	COUNCILMEMBERS:	(0)	NONE

and was passed on June 22, 1993 by the following vote:

AYES:	COUNCILMEMBERS:	(3)	CHUNG, LEYES, KESSLER,
NOES:	COUNCILMEMBERS:	(2)	BROADWATER, DINSEN
ABSENT:	COUNCILMEMBERS:	(0)	NONE

/s/ CAROLYN MORRIS, CMC

City of Garden Grove

INTER-DEPARTMENT MEMORANDUM

To:	George L. Tindall	From:	Richard J. Conrad
Dept:	City Manager	Dept:	Public Services
Subject:	ANNUAL ADJUSTMENT TO COMMODITY CHARGE	Date:	June 8, 1993

OBJECTIVE

To consider a method for annual adjustment of the City's Water Rate Schedule Commodity Charge.

BACKGROUND

The City's Water Enterprise pays commodity charges to the Metropolitan Water District of Southern California (MWD) and the Municipal Water District of Orange County (MWDOC) for its import water supply. The City also pays a replenishment assessment to the Orange County Water District (OCWD), and purchases electricity and gas to pump water.

The City's water fund should break even, not generate a deficit whenever revenues and expenses are compared.

Increases to commodity rates for purchased water are beyond the direct control of the City, and should be passed on to the water customers if the water fund is to break even, not generate a deficit. Many other cities, including Anaheim, Santa Ana, and Fullerton, have incorporated into their rate structure, the automatic adjustment in charges for groundwater, imported water, and utilities.

ANALYSIS

To provide for the automatic adjustment of the City's water rate, a schedule commodity charge (W-CA) per water billing unit (100 cubic feet), should be established on an annual basis whenever the cost per acre-foot of water is increased or decreased. These cost fluctuations are due to changes in the OCWD groundwater replenishment assessment, the cost of electricity and gas associated with water pumping, and the MWD charge for imported water.

Attachment A details a method of determining the cost of water paid by the utility (baseline cost) per acre-foot of water, and for calculating any resulting change (adjustment method) to the rate schedule commodity charge per water billing unit.

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Exemption: All residential customers with 5/8" by 3/4" meters who use 600 cubic feet of water or less in a billing period, shall pay minimum charge as shown under subsection (a) above only.

Section 2. Severability. Should any sentence, section, clause, part, or provision of this Ordinance be declared to be invalid by a court of competent jurisdiction, the same shall not affect the validity of the Ordinance as a whole, or any part thereof, other than the part declared to be invalid.

Section 3. This ordinance shall take precedence over any inconsistent provisions of the Municipal Code.

Section 4. This ordinance shall take effect thirty (30) days after adoption and shall, within fifteen (15) days of adoption, be published with the names of the Councilmembers voting for and against the same in the Orange County Evening News, a newspaper of general circulation, published and circulated in the City of Garden Grove.

The foregoing Ordinance was passed by the City Council of the City of Garden Grove on the day of , 1993.

ATTEST:

/s/ FRANK KESSLER
MAYOR

/s/ RUTH E. SMITH
DEPUTY CITY CLERK

STATE OF CALIFORNIA)
COUNTY OF ORANGE) SS:
CITY OF GARDEN GROVE)

I, Ruth E. Smith, Deputy City Clerk of the City of Garden Grove, do hereby certify that the foregoing Ordinance was introduced and presented on June 15, 1993 with vote as follows:

AYES:	COUNCILMEMBERS:	(3)	CHUNG, LEYES, KESSLER
NOES:	COUNCILMEMBERS:	(2)	BROADWATER, DINSEN
ABSENT:	COUNCILMEMBERS:	(0)	NONE

AGENCY
CITY OF GARDEN GROVE

BMP 12 LANDSCAPE WATER CONSERVATION FOR NEW AND EXISTING SINGLE FAMILY HOMES

Implementation methods shall be at least as effective as providing guidelines, information and incentives for installation of more efficient landscapes and water saving practices (e.g. encouraging local nurseries to promote sales and use of low water using plants, providing landscape water conservation materials in new home owner packets and water bills, sponsoring demonstration gardens); and enacting and implementing landscape water conservation ordinances or, if the supplier does not have the authority to enact ordinance, cooperating with cities, counties, and the green industry in the service area to develop and implement landscape water conservation ordinances pursuant to the "Water Conservation in Landscaping Act "(Act")(California Government Code § 65590 et seq.). The ordinance shall be at least as effective as the Model Water Efficient Landscape Ordinance being developed by the Department of Water Resources.

LANDSCAPE WATER CONSERVATION FOR SINGLE FAMILY HOMES ✓		
IMPLEMENTATION METHODS	AGENCY	SUPPORTING AGENCY
MANDATORY REQUIREMENTS	X	
AWARDS/RECOGNITION	X	
BROCHURES	X	
DEMONSTRATION GARDEN		X
GARDEN CONTEST	X	
GARDEN OR HOME SHOWS	X	
GIVEAWAYS	X	
GUIDELINES	X	
INCENTIVES (ATTACH DETAILS)	X	Tiered Pricing
NEW HOME INFORMATION PACKET		
NURSERY PLANT TAGGING		
REBATES		
SPEAKERS	X	X
OTHER (Specify)		

ATTACH A LIST OF MATERIALS AND ANY INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 12- A")
IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH.
(TITLED "ATTACHMENT BMP 12 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 12 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 12 - C")	

AGENCY
CITY OF GARDEN GROVE

BMP 13 WATER WASTE PROHIBITION

Implementation methods shall be enacting and enforcing measures prohibiting gutter flooding, sales of automatic (self-regenerating) water softeners, single pass cooling systems in new connections, non-recirculating systems in all new conveyor car wash and commercial laundry systems and nonrecycling decorative water fountains.
Modification: (1995) Signatories shall also support efforts to develop state law regarding exchange-type water softeners that would: 1. Allow the sale of only more efficient, demand-initiated regenerating (DIR) models; 2 develop minimum appliance efficiency standards that (a) increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used; and (b) implement an identified maximum number of gallons discharged per gallon of soft water produced; 3. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. BMPI Signatories shall also include water softener checks in home water audit programs and include information about DIR and exchange-type water softeners in their educational efforts to encourage replacement of less efficient timer models.

NAME OF AGENCY OR APPROPRIATE JURISDICTION ENACTING WATER WASTE ORDINANCE/WATER WASTE PROHIBITIONS IN AGENCY'S SERVICE AREA CITY OF GARDEN GROVE

PROHIBITIONS APPLY AT ALL TIMES X DURING SHORTAGE X SEASONAL _____

ATTACH A COPY OF AGENCY'S ORDINANCE(S)\PROHIBITIONS. (Attachment 13)

WATER WASTE PROHIBITIONS ✓	
GUTTER FLOODING	X
ALL AUTOMATIC WATER SOFTENERS IN NEW CONNECTIONS	
SINGLE PASS COOLING SYSTEMS	
NONRECIRCULATING CAR WASHES	X
NONRECIRCULATING LAUNDRIES	
NONRECIRCULATING FOUNTAINS	X
CUSTOMER PLUMBING LEAKS	X
MIDDAY IRRIGATION	X
HOSING OF HARD SURFACES	X
WATER AUTOMATICALLY SERVED IN RESTAURANTS	X
OTHER (Specify)	

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 13 - A")
IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 13 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 13 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 13 - C")	

presentation, the director of the department may turn off the water and discontinue such service. In case the water is turned off, as herein provided, it shall not be turned on again until all charges for services rendered at the point of service and which are delinquent have been fully paid. (Ord. 1607 § 2, 1977: Ord. 834 § 1 (part), 1965: Ord. 630 § 1 (part), 1963; prior code § 7330.8).

14.12.090 Bimonthly billing. Customers shall be billed on a bimonthly basis. (Ord. 834 § 1 (part), 1965: prior code § 7330.9).

14.12.100 Rate change effective dates. Billing at the rates established pursuant to Section 14.12.010 shall become effective after the next regularly scheduled meter reading date for metered accounts following the effective date of the ordinance establishing such rates. Billing at the rates established pursuant to Section 14.12.030 shall commence at the effective date of the ordinance establishing such rates. (Ord. 1530 § 2 (part), 1976: Ord. 959 § 1 (part), 1967: Ord. 834 § 1 (part), 1965: prior code § 7330.10).

Chapter 14.16

USAGE REGULATED

Sections:

14.16.010 Waste in plumbing. Any person who, as owner or occupant of any premises, fails, refuses, or neglects to maintain said premises with plumbing of such character and quality as to prevent the wasting of water, shall, ten days after being served by the director by written notice of such intention, have all water service discontinued pending such repairs. (Prior code § 7340).

14.16.020 Irrigation, sprinkling, etc. The use of water for irrigation, sprinkling, wetting, construction or industrial purposes may be restricted, if and when such use is contrary to the public safety or welfare. (Prior code § 7341).

14.16.030 Pools and tanks. When an abnormally large quantity of water is desired for filling a swimming pool or for other purposes, arrangements must be made with the water department prior to taking such water.

Permission to take water in unusual quantities shall be given only if it can be safely delivered through the city's facilities and if other consumers are not inconvenienced. (Ord. 630 § 1 (part), 1963; prior code § 7342).

14.16.040 Consumers outside city. Sale may be made to consumers outside the city limits in accordance with all rules, regulations and rates only on the recommendation of the director and with the approval of the city council.* (Prior code § 7343).

14.16.050 Shutting off water for repairs. The water department reserves the right to shut off the water in their mains for the purpose of making extensive repairs, or for any other purposes found necessary. The city shall not be responsible for any damages which may occur due to water shutoffs. The owner and/or consumer shall be conclusively presumed to have made all necessary precautions in compliance with the building codes and regulations of the plumbing code in anticipation of emergency shutoffs. (Prior code § 7344).

* A manual of council procedure is on file in the office of the city clerk.

14.16.060 Pressures. The water department will endeavor to maintain such pressures as recommended by the National Board of Fire Underwriters. In the event any consumer deems that pressures are inadequate, the consumer shall furnish at his own expense whatever devices are necessary to boost the pressure for his own premises. In the event water pressures are in excess of any consumer's normal requirements, it shall be the responsibility of such water consumer to install such devices on his own premises to protect his plumbing and/or to reduce the pressure for his normal needs. (Ord. 630 § 1 (part), 1963; prior code § 7345).

14.16.070 Waste of water prohibited. No water use shall waste any water supplied through the distribution facilities of the city of Garden Grove.

The following practices constitute "waste" of water as referenced in this section:

The watering of grass, lawns, ground-cover, shrubbery, open ground, crops and trees, including agricultural irrigation, in a manner or to an extent which allows a substantial quantity of excess water to run off the area being watered. Every water user is deemed to have its water distribution lines and facilities under its control at all times and to know the manner and extent of its water use and excess run-off; or

The escape of water through breaks or leaks within the water user's plumbing or distribution system for a period in excess of twenty-four hours within which the break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of eight hours, after the water user actually discovers the leak or break, is a reasonable time to correct the leak or break. (Ord. 2212 § 1, 1992).

14.16.080 Violation an infraction or misdemeanor. Any person violating any of the provisions of Section 14.16.070 in the first instance is guilty of an infraction.

Any person violating these provisions for the second or additional instances is guilty of a misdemeanor. (Ord. 2212 § 2, 1992).

Chapter 14.20

PROTECTIVE MEASURES

Sections:

ployees who in line of duty may be required to enter upon private premises. (Prior code § 7380).

14.32.020 Right of entry. Upon presentation of official identification, any officer, inspector, foreman, meter reader of authorized employee of the city, on official business, shall be allowed free access at all reasonable hours, to any premises supplied with city water. (Ord. 630 § 1 (part), 1963; prior code § 7381).

14.32.030 Refusal of admittance. Any person who, as owner or occupant of any premises, refuses admittance to or hinders or prevents inspection by an authorized employee of the water department, may, after service of twenty-four hour notice of intention have all the water cut off. (Ord. 630 § 1 (part), 1963; prior code § 7382).

14.32.040 Identification cards to be turned in. Every officer or employee, upon resignation or dismissal from the water department, shall surrender and deliver to the proper officials all identification cards, badges and credentials of the water department. (Ord. 630 § 1 (part), 1963; prior code § 7383).

14.32.050 Unauthorized use of official identification. No unauthorized person shall possess, carry, wear or exhibit any badge and/or official identification of the water department, nor shall any person, whether or not possession be authorized, display, exhibit or cause to be exhibited any badge or other official identification of the water department, at any time, place or in any manner or for any purpose which is not authorized by the water director. (Ord. 834 § 2, 1965; Ord. 630 § 1 (part), 1963; prior code § 7384).

Chapter 14.36

CONSTRUCTION AND ABANDONMENT OF WATER WELLS

Sections:

14.36.010 County ordinances adopted. Article 2, Section 4-5-14 through Section 4-5-31 of the Orange County Code entitled "Construction and abandonment of water wells," and fee schedule adopted by the county of Orange, all as amended from time to time, are adopted by reference by the city. Three copies of the ordinances and amendments thereto and the fee schedule are on file in the office of the city clerk. The city may from time to time adopt by ordinance additional provisions relating to these sections which are not codified but shall be available in the office of the city clerk. (Ord. 1952 § 1, 1986).

Chapter 14.40

WATER CONSERVATION PROGRAM

Sections:

14.40.010 Application. The provisions of this chapter shall apply to all persons, customers, and property served by city water services. (Ord. 2172 § 1 (part), 1991).

14.40.020 Authorization. The city manager or a designated representative is authorized and directed to implement the provisions of this chapter. (Ord. 2172 § 1 (part), 1991).

14.40.030 Mandatory conservation phase implementation. The city shall monitor the projected supply and demand for water by its customers on a daily basis. The city manager, with the assistance of the public services director, shall determine the extent of the conservation required through the implementation and/or termination of particular water conservation stages in order for the city to prudently plan for and supply water to its customers. (Ord. 2172 § 1 (part), 1991).

14.40.031 Procedure for declaring the implementation and/or termination of various water conservation stages. Based upon the daily monitoring of projected water supply and demand, the city manager shall recommend the declaration of an appropriate stage of water conservation in accordance with the provisions of this section. A recommendation for implementation of any stage beyond Stage 1 (voluntary compliance — water watch) shall be reported to the city council at its next regular meeting. The city council shall thereupon ratify the declaration, rescind the declaration, or direct the declaration of a different stage. The stage declared and associated regulations shall become effective immediately upon announcement. (Ord. 2172 § 1 (part), 1991).

14.40.032 Announcement of a water stage declaration. The declaration of any water conservation stage beyond Stage 1 shall be made by public announcement or notice. Such announcement or notices shall be published a minimum of three consecutive times in a newspaper of general circulation. (Ord. 2172 § 1 (part), 1991).

14.40.040 Water conservation stages. No customer of the city shall knowingly make, cause, use, or permit the use of water supplied by the city for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner in excess of the amounts authorized by this chapter, or during any period of time other than the periods of time specified in this chapter. At no time shall water be wasted or used unreasonably. The following stages set forth in this chapter shall take effect upon declaration as herein provided. (Ord. 2172 § 1 (part) 1991).

14.40.041 Stage 1 — Voluntary conservation — Water watch. Stage 1 applies during times of regional drought when, in the spirit of cooperation, the city desires to assist in overall water conservation and water consumption reduction. During Stage 1, the following water conservation measures shall apply on a voluntary basis: (a) Lawn watering and landscape irrigation should be limited to once every other day, unless a hand-held hose equipped with a positive shut-off nozzle, a hand-held bucket, or a drip irrigation system is used. It also is suggested that watering be done between the hours of six p.m. and ten a.m. the following morning, to minimize usage during peak hours.

(b) The washing of autos, trucks, trailers, boats, airplanes, and other types of mobile equipment should be limited to once every other day unless done at a commercial car wash.

(c) The filling or refilling of swimming pools, spas, ponds, and artificial lakes should be limited to once every other day.

(d) Watering of golf courses, parks, schools, grounds, and recreational fields is recommended between the hours of four p.m. and ten a.m. the following morning, to minimize usage during peak hours.

(e) Water should not be used to wash down sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas, except to alleviate immediate fire or sanitation hazards.

(f) Restaurants should avoid serving water to their customers unless the customers specifically request it.

(g) It is recommended that ornamental fountains or similar structures not be operated.

(h) The use of water from fire hydrants should be limited to fire fighting, system testing and related activities, for construction activities, or for other activities necessary to maintain the public health, safety, and welfare. (Ord. 2172 § 1 (part), 1991).

14.40.042 Stage 2 — Mandatory conservation — Water alert. Stage 2 applies during periods when the probability exists that the city will not be able to meet all of the water demands of its customers. During Stage 2, the following water conservation measures shall apply on a mandatory basis, except when reclaimed or recycled water is used.

(a) Lawn watering and landscape irrigation, including construction meter irrigation, is permitted only on designated irrigation days between the hours of six p.m. and ten a.m. the following morning. For purposes of Stage 2 regulations, a "designated irrigation day" is determined by the last digit in the street address. Properties with addresses ending in an even number may use water on even numbered days, and properties with addresses ending in an odd number may use water on odd numbered days.

EXCEPTION: Watering is permitted at any time on any day if a hand-held hose equipped with a positive shut-off nozzle, a hand-held faucet-filled bucket of five gallons or less, or a drip irrigation system is used.

(b) Agricultural users and commercial nurseries as defined by the Metropolitan Water District Code are exempt from Stage 2 irrigation restrictions, but are required to curtail all nonessential water use. The watering of livestock and irrigation of propagation beds are permitted at any time.

(c) Washing of autos, trucks, trailers, boats, airplanes, and other types of mobile equipment is permitted only on designated irrigation days between the hours of six p.m. and six a.m. the following morning. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shut-off nozzle for quick rinses.

EXCEPTIONS: Washing is permitted at any time on the immediate premises of a commercial car wash. Washing also is permitted without the above restrictions where the health, safety, and welfare of the public is contingent upon frequent vehicle cleaning, such as with refuse trucks and vehicles used to transport food and perishables.

(d) Filling or refilling of swimming pools, spas, ponds, and artificial lakes is permitted only on designated irrigation days between the hours of six p.m. and six a.m. the following morning.

(e) Watering of golf course, parks, schools, grounds, and recreational fields is permitted only between the hours of four p.m. and ten a.m. the following morning.

EXCEPTION: Golf course greens may be watered at any time.

(f) The use of water from fire hydrants shall be limited to fire fighting, system testing, and related activities, for construction activities, or for other activities necessary to maintain the public health, safety, and welfare.

(g) Water shall not be used to wash down sidewalks, driveways, parking area, tennis courts, patios, or other paved areas, except to alleviate immediate fire or sanitation hazards.

(h) Restaurants shall not serve water to their customers except when specifically requested.

(i) The operation of any ornamental fountain or similar structure is prohibited. (Ord. 2172 § 1 (part), 1991).

14.40.043 Stage 3 — Mandatory conservation — Water warning. Stage 3 applies during periods when the city will not be able to meet all of the water demands of its customers. During Stage 3, the following water conservation measures shall apply except when reclaimed water is used:

(a) Lawn watering and landscape irrigation, including construction meter irrigation, is permitted only on designated irrigation days and only between the hours of six p.m. and six a.m. the following morning. For purposes of Stage 3 regulations, the "designated irrigation day" is determined by the last digit in the street address. Properties with addresses ending in an even number may use water on Tuesdays and Saturdays. Properties with addresses ending in an odd number may use water on Wednesdays and Sundays.

(b) Agricultural users and commercial nurseries shall use water only between the hours of six p.m. and six a.m. the following morning. The watering of livestock and the irrigation of propagation beds are permitted at any time.

(c) Washing of autos, trucks, trailers, boats, airplanes, and other types of mobile equipment is prohibited.

EXCEPTION: Washing is permitted at any time on the immediate premises of a commercial car wash. Washing also is permitted where the public health, safety, and welfare is contingent upon frequent vehicle cleaning, such as with refuse trucks and vehicles used to transport food and perishables.

(d) The use of water by all types of commercial car washes not using partially reclaimed or recycled water shall be reduced in volume by twenty percent.

(e) Filling or refilling of swimming pools, spas, ponds, and artificial lakes is permitted only on designated irrigation days between the hours of ten p.m. and six a.m. the following morning.

(f) The use of water softening devices is prohibited.

(g) Watering golf courses, parks, school grounds and recreational fields is permitted only between the hours of six p.m. and six a.m. the following morning.

EXCEPTION: Golf course greens may be watered at any time.

(h) The use of water from fire hydrants shall be limited to fire fighting, system testing, and related activities, or to other activities necessary to maintain the public health, safety, and welfare.

(i) Water shall not be used to wash down sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas, except to alleviate immediate fire or sanitation hazards.

(j) Restaurants shall not serve water to their customers except when specifically requested.

(k) The operation of any ornamental fountain or similar structure is prohibited.

(l) All water leaks shall be repaired immediately.

(m) New construction meters or permits for unmetered services will not be issued. Construction water shall not be used for earth work or road construction purposes.

(n) The prohibited uses of water as described above are not applicable to that use of water necessary for public health, safety, and welfare or for essential governmental services such as police, fire, and other similar emergency services. (Ord. 2172 § 1 (part), 1991).

14.40.044 Stage 4 — Mandatory conservation — Water emergency. Stage 4 applies during periods of severe drought and/or when a major failure of any supply or distribution facility, whether temporary or permanent, occurs in the water distribution system of the State Water Project, the Metropolitan Water District, the Municipal Water District of Orange County, or city facilities. During Stage 4, the following water conservation measures shall apply, except when reclaimed or recycled water is used:

(a) All outdoor irrigation of vegetation is prohibited.

(b) The use of water for agricultural or commercial nursery purposes, except for livestock watering, is prohibited.

(c) Washing of autos, trucks, trailers, boats, airplanes, and other types of mobile equipment is prohibited.

EXCEPTION: Such washings are exempted from the above regulation where the health, safety, and welfare of the public is contingent upon frequent vehicle cleaning, such as with refuse trucks and vehicles used to transport food and perishables.

(d) The filling, refilling or adding of water to swimming pools, spas, ponds, and artificial lakes is prohibited.

(e) The use of water-softening devices is prohibited.

(f) Watering of all golf course areas is prohibited. Watering of parks, school grounds, and recreation fields is prohibited, with the exception of plant materials classified as being rare, exceptionally valuable, or essential to the well being of rare or endangered animals.

(g) The use of water from fire hydrants shall be limited to fire fighting, system testing, or related activities necessary to maintain the public health, safety, and welfare.

(h) Water shall not be used to wash down sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas, except to alleviate immediate fire or sanitation hazards.

(i) Restaurants shall not serve water to their customers except when specifically requested.

(j) The operation of any ornamental fountain or similar structure is prohibited.

(k) New construction meters or permits for unmetered service will not be issued. Construction water shall not be used for earth work or road construction purposes.

(l) The use of water for commercial, manufacturing, or processing purposes shall be reduced in volume by fifty (50) percent.

(m) No water shall be used for air conditioning purposes.

(n) All water leaks shall be repaired immediately.

(o) The prohibited uses of water as described above are not applicable to that use of water necessary for public health, safety and welfare, or for essential governmental services such as police, fire, and other similar emergency services. (Ord. 2172 § 1 (part), 1991).

14.40.050 Notice of Violation. Except as otherwise provided in Section 14.40.090, prior to enforcement, any person who is suspected of violating this chapter shall be given a written notice containing the description of the violation. This person then shall have twenty-four hours to correct the violation. (Ord. 2172 § 1 (part), 1991).

14.40.060 Failure to comply. Except as otherwise provided in Section 14.40.090, for the first failure to comply, the city may immediately install a flow restricting device in the customer's water service line for a period not less than forty-eight hours and until the customer satisfies the city that failure to comply will not continue. The customer shall pay fifty dollars for installing and removing the flow restricting device prior to the removal of the device.

Except as otherwise provided in Section 14.40.090, for the second or subsequent failure to comply with this chapter, the city may discontinue water service for a period of not less than twenty-four hours and until the customer satisfies the city that failure to comply will not continue. The customer shall pay one hundred fifty dollars for restoration of water service, prior to the restoration of water service. (Ord. 2172 § 1 (part), 1991).

14.40.070 Appeal procedure. Except as otherwise provided in Section 14.40.090, a customer shall have the right to appeal by filing a written request for appeal within five days with the city manager or its designee. Within ten days after receipt of a request, a written decision shall be issued. The decision of the city manager or its designee shall be final. (Ord. 2172 § 1 (part), 1991).

14.40.080 Violations. Any person violating any provision of this chapter or failing to comply with any of the mandatory requirements of this chapter, is guilty of a misdemeanor, regardless of whether a flow restricting device is installed. If, after any order of the city made pursuant to this chapter has become final, the person to whom such order is directed shall fail, neglect, or refuse to obey the order, the person shall also be guilty of a misdemeanor. Violation of any city order shall constitute

an offense separate from each and every other violation of this chapter. Any person violating any provision of this chapter or any city order, shall be guilty of a separate offense for each and every day during any portion of which any violation of this chapter is committed, continued or permitted by any person. (Ord. 2172 § 1 (part), 1991).

14.40.090 Alternative actions. Nothing in the foregoing sections shall be construed to prevent the filing of a criminal action, or a civil court action or to enjoin any violations, pursuant to applicable law, if deemed legally appropriate by the city attorney. (Ord. 2172 § 1 (part), 1991).

CUWCC RETAIL WATER AGENCY ANNUAL REPORT - 1995-96

AGENCY	CITY OF GARDEN GROVE

BMP 14 WATER CONSERVATION COORDINATOR

Implementation methods shall be at least as effective as designating a water conservation coordinator responsible for preparing the conservation plan, managing its implementation, and evaluating the results. For very small water suppliers, this might be a part-time responsibility. For larger suppliers this would be a full-time responsibility with additional staff as appropriate. This work should be coordinated with the suppliers operations and planning staff.

DOES THIS AGENCY HAVE A CONSERVATION COORDINATOR? YES X NO_____

PERCENTAGE OF TIME CONSERVATION COORDINATOR DEDICATES TO WATER CONSERVATION PROGRAM
15 %

DOES THIS AGENCY ALSO HAVE OTHER STAFF PERSONS DEDICATED TO WATER CONSERVATION ACTIVITIES?

YES X NO_____

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 14 - A")
IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH.
(TITLED "ATTACHMENT BMP 14 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 14 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 14 - C")	

CUWCC RETAIL WATER AGENCY ANNUAL REPORT 1995-96

AGENCY
CITY OF GARDEN GROVE

BMP15 FINANCIAL INCENTIVES

Offering financial incentives to facilitate implementation of conservation programs. Initial recommendations for such incentives will be developed by the Council within two years of initial signing of the MOU, including incentives to improve the efficiency of landscape water use.

BMP	INCENTIVE
1. INTERIOR AND EXTERIOR SURVEYS (AUDITS)	Currently in development
2. PLUMBING RETROFIT	Periodic free low flow shower heads
3. SYSTEM WATER SURVEY (AUDIT)	CII program participation at no cost
4. METERING AND COMMODITY RATES	Yes, all customers
5. LANDSCAPE WATER SURVEYS (AUDIT)	CII program participation at no cost
6. NON-RESIDENTIAL LANDSCAPE	CII program participation at no cost
7. PUBLIC INFORMATION	Yes, free by City and MWDOC
8. SCHOOL INFORMATION	Yes, free by MWDOC
9. COMMERCIAL/INDUSTRIAL SURVEY (AUDIT)	CII program participation at no cost
10. NEW COMMERCIAL/INDUSTRIAL SURVEY (AUDIT)	Ordinance adopted
11a CONSERVATION PRICING-WATER	Increasing block rates
11b. CONSERVATION PRICING-SEWER	
12. RESIDENTIAL LANDSCAPE	Conservation pricing; Awards
13. WATER WASTE PROHIBITION	Ordinance adopted
14. CONSERVATION COORDINATOR	Yes
15. FINANCIAL INCENTIVES	Conservation pricing
16. TOILET REPLACEMENT WITH ULFT	Participate with MWDOC, available for $40 co-pay

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 15 - A")

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 15 - B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 15 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 15 - C")	

CUWCC RETAIL WATER AGENCY ANNUAL REPORT 1995-96

AGENCY: CITY OF GARDEN GROVE

BMP 16 ULTRA LOW FLUSH TOILET REPLACEMENT

Water suppliers agree to implement programs for replacement of existing high-water-using toilets with ultra-low-flush (1.6 gallons of less) in residential, commercial, and industrial buildings. Such programs will be at least as effective as offering rebates of up to $100 for each replacement that would not have occurred without the rebate, or requiring replacement at the time of resale, or requiring replacement at the time of change of service. This level of implementation will be reviewed by the Council after development of assumptions included in the following two paragraphs using the economic principles included in paragraphs 3 and 4 of Exhibit 3.

USE METHOD DESCRIBED IN EXHIBIT SIX, "ASSUMPTIONS AND METHODOLOGY FOR DETERMINING ESTIMATES OF RELIABLE WATER SAVINGS FROM THE INSTALLATION OF ULF TOILETS". INDICATE AGENCY'S TOTAL TOILET REPLACEMENT TARGET FOR TERM OF THE MOU BASED ON RATE OF RESALE: TOTAL RETROFIT TARGET FOR TERM OF MOU? TOTAL RETROFITS PRIOR TO THIS REPORT YEAR (1995-96)?

NUMBER OF ULFTs PLACED DURING REPORT YEAR

SECTOR	REBATES	FREE DISTRIBUTON	DIRECT INSTALL	REPLACE ON HOME RESALE	CHANGE OF SERVICE	OTHER co-pay	WATER SAVINGS
SINGLE FAMILY	149					1,465	57 AF
MULTI-FAMILY						406	25 AF
COMM/INDUST.							AF
PUBLIC AGENCY							AF
TOTAL	149					1,871	82 AF

COST PER ULFT RETROFIT INCLUDING ADMINISTRATIVE COSTS

WATER USE SECTOR	REBATE OFFERED PER ULFT	FREE DISTRIBUTION	DIRECT INSTALL PER ULFT	REPLACE ON HOME RESALE	CHANGE OF SERVICE PER ULFT	OTHER PER ULFT
SINGLE FAMILY	$ Ø	$	$	$	$	$ Ø
MULTI-FAMILY	$	$	$	$	$	$
COMM/INDUST.	$	$	$	$	$	$
PUBLIC AGENCY	$	$	$	$	$	$
TOTAL FOR EACH PROGRAM INCLUDING ADMINISTRATIVE COSTS	REPORTING AGENCY $	REPORTING AGENCY $	REPORTING AGENCY $	REPORTING AGENCY $	REPORTING AGENCY $	REPORTING AGENCY $
	OTHER AGENCY OR CONSUMER $ 70	OTHER AGENCY OR CONSUMER $	OTHER AGENCY OR CONSUMER $	OTHER AGENCY OR CONSUMER $	OTHER AGENCY OR CONSUMER $	OTHER AGENCY OR CONSUMER $60MWDOC 40Consumer

TOTAL FOR ALL PROGRAMS	REPORTING AGENCY	OTHER AGENCY OR CONSUMER
$ 170	$ Minimal admin.	$ 170

TOTAL FOR ALL PROGRAMS BOTH REPORTING AGENCY, OTHER AGENCY OR CONSUMER - $

IF YOU HAVE INFORMATION REGARDING IMPLEMENTATION OF THIS BMP THAT IS PERTINENT TO YOUR REPORT, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 16 - A") See attachment 2-B

IF YOU HAVE ANY DATA REGARDING WATER SAVINGS FOR THIS BMP, PLEASE ATTACH. (TITLED "ATTACHMENT BMP 16-B")

EXEMPTION ✓	
AGENCY EXEMPTS ITSELF FROM IMPLEMENTATION OF BMP 16 AN EXEMPTION REQUIRES A COST BENEFIT ANALYSIS. PLEASE ATTACH. (TITLED "ATTACHMENT BMP 16 - C")	