CITY OF BURLINGAME

Urban Water Management Plan

November 2005

USE OF ELECTRONIC FILES

The City of Burlingame 2005 Updated Urban Water Management Plan ("Plan") was prepared by Erler & Kalinowski, Inc. ("EKI") on behalf of the City of Burlingame ("City"). The Plan is the property of the City.

Any reader or user of the Plan ("User") is aware that differences may exist between the electronic files delivered and the printed hard-copy documents. In the event of a conflict between the signed documents prepared by EKI and any electronic files, the hard-copy documents shall govern.

EKI and the City do not have or undertake any responsibility with respect to the accuracy, completeness, or compliance with any applicable standard of care or contractual requirements for the work or the services provided by User. Reliance by User or any other third party on the enclosed electronic materials shall be at User's sole risk.

Under no circumstances shall use of electronic files by User be deemed a sale by EKI or the City, and EKI and the City make no warranties, either expressed or implied, of merchantability and fitness for any particular purpose. In no event shall EKI or the City be liable for indirect or consequential damages as a result of User's use or reuse of the attached electronic files.

EXECUTIVE SUMMARY

In 1983, the California Legislature enacted the Urban Water Management Planning Act (UWMP Act) which states that every urban water supplier providing water to 3,000 or more customers annually should meet the needs of its customers during normal, dry, and multiple dry years. The UWMP Act also requires suppliers to update their Urban Water Management Plan and submit it to Department of Water Resources every five years.

This updated plan has been prepared to reflect the recent changes to the UWMP Act and the regional coordination efforts between the Bay Area Water Supply and Conservation Agency (BAWSCA)and its members as well as the San Francisco Public Utilities Commission (SFPUC).

This Executive Summary is intended to provide a brief synopsis of the content and information contained in the body of the UWMP itself. But, as with all summaries, important information that is contained in the body of the report is omitted from the Executive Summary for the sake of brevity. Therefore, decisions developed based upon information contained in this UWMP should only be made after careful review of the body of the report itself and not the Executive Summary.

1. NOTIFICATION OF UWMP PREPARATION

On July 13, 2005, the City sent a letter to BAWSCA and its member agencies informing them of Burlingame's plan update and soliciting their input. In addition, a notification letter was sent to SFPUC, the San Francisco Planning Department, and the County of San Mateo.

Consistent with State requirements, Burlingame issued notifications soliciting public input including a notice in the City's e-News electronic newsletter as well as an advertisement in the San Mateo County Times on July 21 and July 30, 2005. To date, the City has not received any requests for participation in the UWMP development process.

2. WATER SOURCES

As described below, Burlingame's water supply sources include surface water purchased wholesale from SFPUC, recycled water, and groundwater.

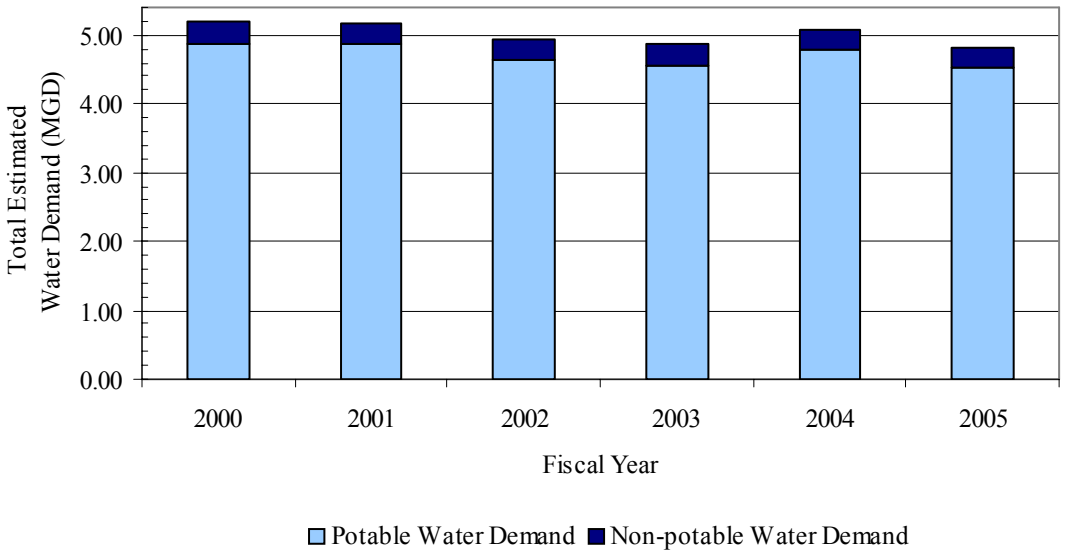
SFPUC Water

Burlingame receives water from the City and County of San Francisco's regional system, operated by the SFPUC. This supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local facilities in Alameda and San Mateo Counties.

In 1984 Burlingame, along with 27 other Bay Area water suppliers signed a Master Contract with the City and County of San Francisco, supplemented by an individual Water Supply Contract. These contracts, which expire in June 2009, provide for a 184 million gallon a day (MGD) Supply Assurance to the SFPUC's wholesale customers collectively. Burlingame's individual Supply Assurance is 5.23 MGD. Although the contracts expire in 2009, the Supply Assurance survives their expiration and continues indefinitely.

The SFPUC can meet the demands of its wholesale customers in years of average and above average precipitation. However, the Master Contract allows the SFPUC to reduce water deliveries during droughts, emergencies and for scheduled maintenance activities.

Figure 1 - Total Historical Water Demand



Recycled Water

The City currently uses approximately 300,000 gallons per day (GPD) of recycled water for internal use within the wastewater treatment plant. The City has not historically used recycled water outside of the plant and does not currently have the

treatment capabilities to meet the State criteria for non-potable uses such as irrigation.

Groundwater

Historically, the City has not utilized groundwater as a drinking water source. However, the City has maintained and intermittently operated one groundwater supply well located in Washington Park for irrigating landscaping mainly in the park.

In the future, it is expected that approximately 0.025 MGD of groundwater will be used on a more regular basis to supply irrigation water to portions of the park. The well was not constructed for drinking water purposes and Burlingame is not currently pursuing development of groundwater as a supplemental potable water supply.

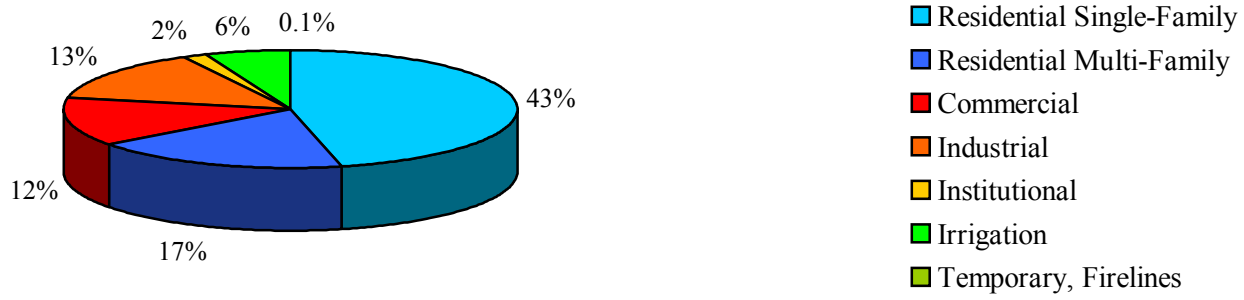
3. WATER DEMANDS

The following sections describe Burlingame's historic, current, and projected future water demands for both potable and non-potable water.

Current and Historic Total Water Demand

Figure 1 shows Burlingame's total historical water demand between 2000 and 2005, including metered water consumption, unmetered water used by the Water and Fire Departments, and water lost or unaccounted for within the system. Currently, approximately 95% of the total water demand is for potable water, which is purchased wholesale from SFPUC.

Figure 2 - Distribution of Total Water Demand



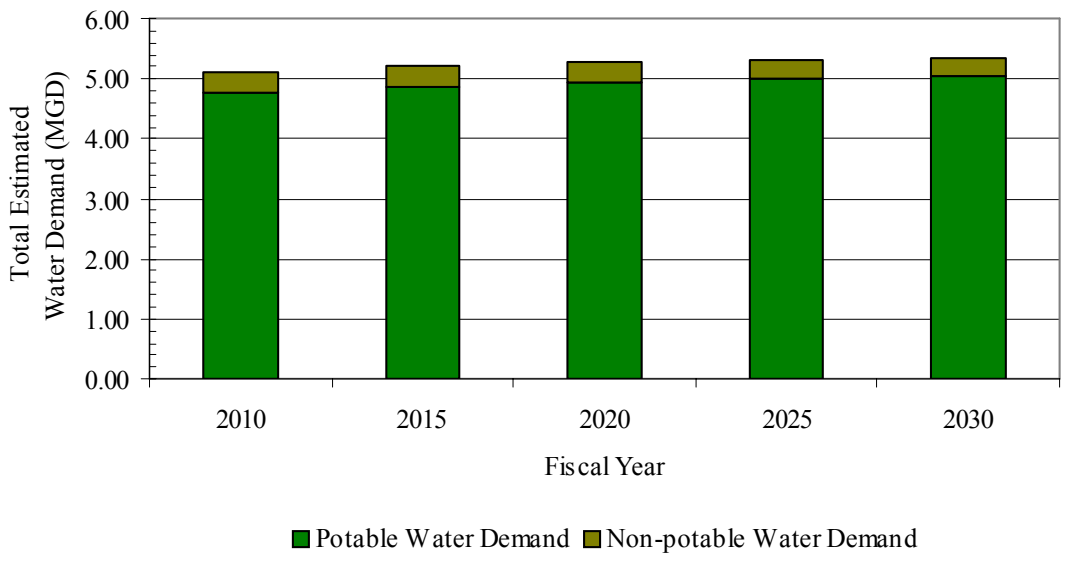
Current and Historic Potable Water Demand

As indicated in Figure 2, total potable water demand is grouped into the following seven water-use sectors:

- *Residential Single Family*
- *Residential Multi-Family*
- *Commercial*
- *Industrial*
- *Institutional*
- *Irrigation*
- *Other*

Between 2000 and 2005, the residential sectors accounted for the majority of potable water demand in the City. The *Commercial* and *Industrial* sectors accounted for approximately 12% and 13% of the total potable water demand, respectively, while the *Institutional* and *Irrigation* sectors accounted for 2% and 6% of the total potable water demand, respectively. The relative percentage of the total water demand by each sector has not varied significantly over the past five years and this pattern is not projected to change in the future.

Figure 3 - Total Projected Water Demand



Current and Historic Non-Potable Water Demand

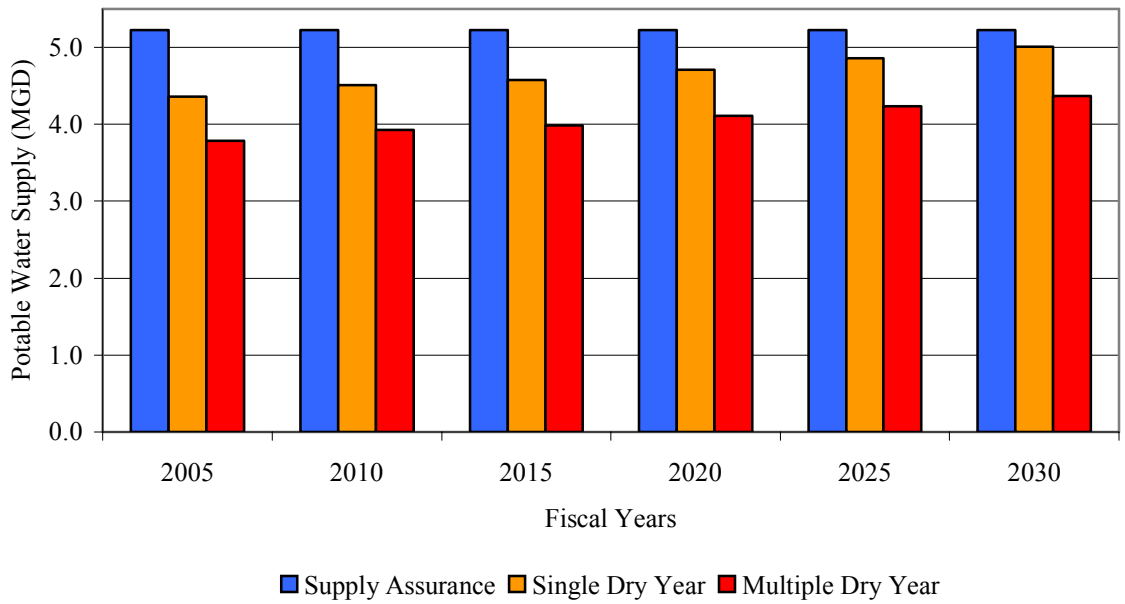
Approximately 5% of Burlingame's total water demand is for non potable water (see Figure 3). This primarily consists of recycled water demand at the wastewater treatment plant. Groundwater from the well has also been used in the past to offset potable water use for irrigation purposes, mainly at Washington Park.

Projected Total Water Demand

Burlingame's projected total water demand is the sum of its projected potable and non-potable water demands as indicated in Figure 3. Burlingame's projected potable water demands have been independently estimated by Burlingame and separately by SFPUC using two different methodologies. Both estimates assume implementation of an aggressive conservation program over the next 25 years as discussed later.

SFPUC estimates that Burlingame will purchase an annual average of approximately 4.68 MGD of water from SFPUC in 2030 while Burlingame estimates it will purchase an annual average of approximately 5.03 MGD. Both of these estimates are below Burlingame's Supply Assurance of 5.23 MGD during normal years. It should be pointed out that as a prudent planning strategy, the higher demand projection by the Burlingame methodology is being used to design future city infrastructure improvements.

Figure 4 - Burlingame Normal, Single Dry, and Multiple Dry Year Water Supplies



4. RELIABILITY OF WATER SUPPLY

The following sections describe Burlingame's normal, as well as single and multiple dry year water supply.

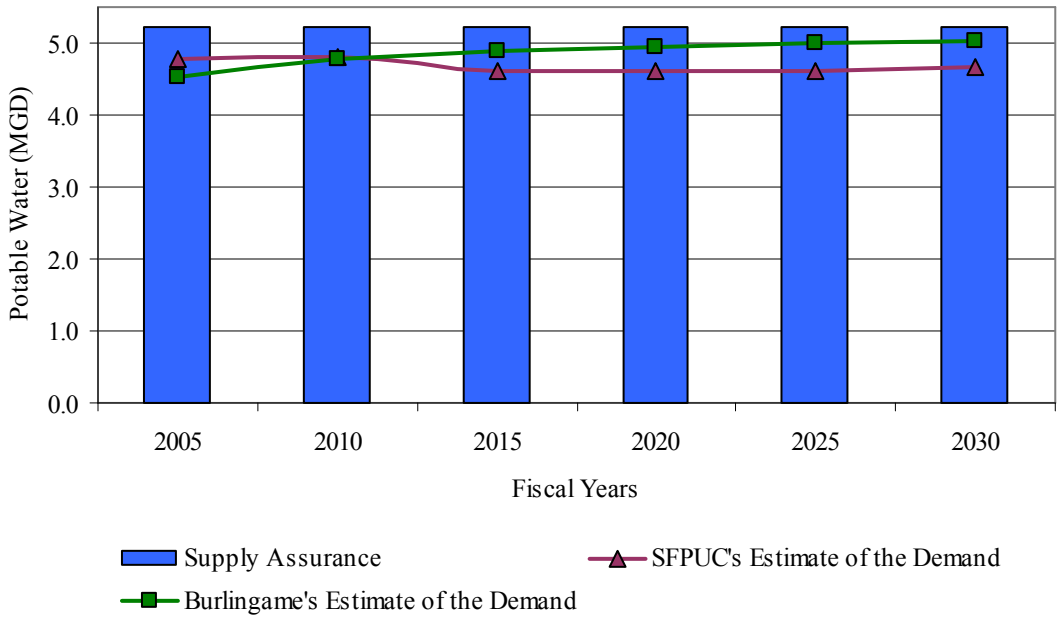
Burlingame's Normal Year Water Supply

SFPUC is contractually obligated to provide Burlingame with up to 100% of the City's Supply Assurance of 5.23 MGD during years of normal precipitation.

Burlingame's Single Dry Year and Multiple Dry Year Water Supply

During single dry and multiple dry years, SFPUC is no longer obligated to provide Burlingame with 100% of its Supply Assurance. Figure 4 shows Burlingame's Supply Assurance relative to SFPUC's estimate of single and multiple dry year water supplies. SFPUC has estimated that Burlingame's future dry year potable water supplies will be 2.77% of the total BAWSCA wholesale water allocation during dry years until 2010, and 2.70% thereafter. These estimates are contingent on SFPUC developing additional water supplies in the future.

Figure 5 - Burlingame's Hetch Hetchy Supply Assurance versus Projected Demand

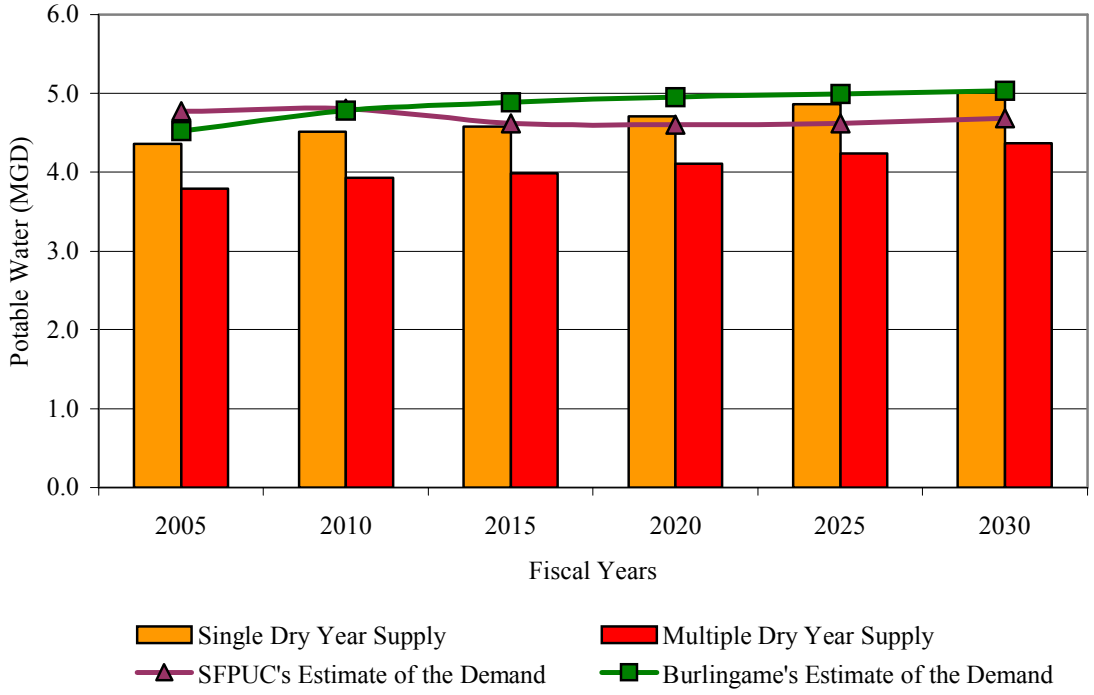


5. SUPPLY VERSUS DEMAND

This section contains a comparison of Burlingame's and SFPUC's projections of Burlingame's potable water demands relative to the projected water supplies.

with up to 100% of its Supply Assurance in a normal year, the City's potable water supplies should be sufficient to meet projected potable water demands in normal years through 2030 as indicated in Figure 5.

Figure 6 - Projected Demands versus Single-Dry and Multiple-Dry Year Supplies



Projected Normal Water Year Supply and Demand

Based on SFPUC and City projections of Burlingame's future potable water demands, Burlingame is not expected to exceed its Supply Assurance by 2030. Because SFPUC is obligated to supply Burlingame

Projected Single Dry and Multiple Dry Year Supply and Demand Comparison

During single dry and multiple dry years, SFPUC is no longer obligated to provide Burlingame with its Supply Assurance. For dry year scenarios, both the SFPUC's and the City's

projections of Burlingame's potable water demand exceed SFPUC's projected potable water supply as indicated in Figure 6.

Using SFPUC's projection of Burlingame's future potable water demands, Burlingame's estimated cutbacks range from 21% in 2005 to 7% in 2030. Using Burlingame's projection of future potable water demands, estimated cutbacks range from a high of 18% in 2010 to 13% in 2030. It is anticipated that these shortfalls in supply can be made up through aggressive implementation of the City's Water Shortage Contingency Plan, as discussed later.

6. POTENTIAL WATER SUPPLY PROJECTS AND PROGRAMS

The City is not actively pursuing additional potable water supplies to supplement its SFPUC potable water supply as its future demands are not expected to exceed its Supply Assurance.

7. DEMAND MANAGEMENT MEASURES

Following is a description of water conservation measures being pursued by Burlingame in order to achieve the projected total water demand.

Regional Water Conservation

BAWSCA and its member agencies look for opportunities to leverage available resources and capitalize on economics of scale in implementing water use efficiency projects. For example, in 2005, the SFPUC and BAWSCA administered a Spray Valve Installation Program where water conserving spray valves were offered to food service providers in BAWSCA member service areas.

Burlingame Water Conservation

Burlingame is committed to water conservation and efficient use of water and has commenced implementing the following management practices that have been developed by the California Urban Water Conservation Council.

- Residential Water Surveys
- Residential Retrofits
- System Water Audits
- Metering
- Large Landscape Provisions
- High-Efficiency Clothes Washers
- Public Information
- School Education
- Commercial, Industrial, Institutional Accounting
- Conservation Pricing
- Conservation Coordinator

- Waste Prohibitions
- Ultra Low Flow Toilets

8. WATER SHORTAGE CONTINGENCY PLAN

Burlingame's current Water Shortage Contingency Plan was developed in response to severe droughts that occurred between 1975 and 1977, and again between 1987 and 1992. During these drought periods, the City was forced to reduce water consumption by a maximum of 34%, exemplifying the vulnerability of SFPUC's Regional Water System to climatic conditions. In response to these droughts, the City Council adopted a Water Rationing Ordinance and a Water Rationing Plan.

Stages of Action

Five Stages of Action have been established and mechanisms have been identified to achieve water savings ranging from 5% to 50%.

Stage I refers to a 5% cutback from the City's normal year potable water supply which SFPUC estimates is necessary during single dry years. It should be achievable through development of a public awareness campaign informing customers of the drought conditions and asking them to change water use behaviors.

Stage II is to be implemented when the City's potable water supply falls 10% short of its normal year supply. It should be achievable through a 5% reduction in indoor water use and a 30% reduction in outdoor water use.

Stage III is to be implemented when the City's potable water supply is 20% less than its normal year supply. It should be achievable by decreasing indoor water use by 15% and outdoor water use by 50%.

Stage IV is to be implemented in the event of a 30% reduction in potable water supply, as was necessary during previous droughts. It should be achievable through the actions outlined in Stages 1 through III and modification or replacement of <u>all</u> high-flow plumbing fixtures as well as severe cutbacks in outdoor water use.

Stage V responds to a 50% reduction in potable water supply, and includes a prohibition of all water use except as required for public health and safety (50 gallons per capita per day) as well as a 100% cutback in outdoor water use.

Catastrophic Supply Interruption Plan

In the event of a catastrophic supply interruption plan, Burlingame, San Mateo County, and the SFPUC are prepared to take action to secure the reliability of the water supply. Planned responses to a catastrophic supply interruption are described in (1) SFPUC's Suburban Customer Water Supply Emergency Operations

and Notification Plan, (2) the City of Burlingame and San Mateo County's Emergency Operation Plans, and (3) the City of Burlingame Water System Emergency Response Plan.

Actions described in the above Plans primarily focus on maintaining flow in the regional water system. In the event that this water is unsafe for consumption, Burlingame has plans in place to distribute potable water to residents at emergency distribution centers within the City.

SFPUC Emergency Operations Plan

SFPUC has established a Suburban Customer Water Supply Emergency Operations and Notification Plan to accommodate suburban purchasers in the event of an emergency. The SFPUC Plan is updated periodically, with the next update scheduled for completion late 2005.

The purpose of the SFPUC Plan is to provide procedures and guidelines to be implemented by SFPUC and suburban customers in an emergency. SFPUC has committed to make every attempt to ensure that the Regional Water System does not run out of water (even if an emergency water use reduction alert, boil water notice, or unsafe water alert is needed) to maintain system pressure and fire protection capabilities.

The SFPUC Plan identifies four emergency response categories (Advisory, Alert, Emergency, and Major Emergency) and seven emergency planning scenarios. Response actions could include a reduction or change in the supply available to customers in one or more areas of the system, a change to an auxiliary supply, or both.

Burlingame's Potable Water Emergencies Plan

Burlingame's Potable Water Emergencies Plan was written in coordination with the County of San Mateo's Operational Area Emergency Operations Plan. Together, these Plans provide the framework for responding to major emergencies such as natural disasters, technological incidents, and national security/terrorism events. They outline a strategy to prepare for, mitigate, respond to, and recover from an emergency or disaster that affects the water utilities serving San Mateo County and the City.

Specifically, Burlingame's Plan outlines procedures that the City can follow to respond to water treatment and distribution emergencies that affect the City. The goals of Burlingame's Plan are to (1) maintain service of the City's water system pumps, storage facilities, and infrastructure; and (2) acquire and distribute drinking water to City residents in the event that SFPUC is not able to supply potable or treatable water through the Regional Water System.

In the event that SFPUC is unable to supply Burlingame with water

through the Regional System, the City can reroute water held in storage tanks through the system if such actions are necessary to maintain flow. Additionally, emergency power generators are available to power the City's pump stations.

In the event that water provided by SFPUC is not potable, the City can rely on water stored in its reservoirs to provide drinking water for a limited amount of time. The quantity of water available during an emergency will depend on the nature of the actual emergency (e.g., time of day, season, damage to infrastructure, etc.). Because reservoirs cannot be kept full all the time, Burlingame has on average approximately 1.6 million gallons of water in storage. Assuming the reservoirs survived a natural disaster and contained the entire 1.6 million gallons, this quantity would be sufficient to provide the City's residents with a minimal water supply for drinking purposes only for up to a month.

Additionally, in coordination with San Mateo County, Burlingame has also devised plans to purchase and distribute drinking water, most likely in one-gallon plastic containers, in the event that water within the system is unfit for consumption after an emergency. Distribution of bottled water will occur at emergency distribution centers within the City.

Besides containing information related to emergency drinking water distribution, Burlingame's Plan includes detailed information regarding personnel roles, responsibilities, emergency services, communication recovery, and reporting procedures. Burlingame conducts training exercises with San Mateo County twice a year in order to practice the implementation of this plan.

Emergency Response Plan

The City's Emergency Response Plan (ERP) includes procedures that can be implemented in the event of a terrorist or other intentional attack on the City's water system to lessen the impact on the safety and supply of drinking water. It is intended that the City's ERP would be used in conjunction with the City's Potable Water Emergencies Plan described above.

CITY OF BURLINGAME
2005 URBAN WATER MANAGEMENT PLAN

TABLE OF CONTENTS

1. INTRODUCTION 1
   1.1 Changes to the UWMP Act 1
   1.2 Regional Coordination Efforts 2
   1.3 Agency Coordination 3
   1.4 Water Management Tools 4
   1.5 Notification of UWMP Preparation 4
      1.5.1 Agency Notification 4
      1.5.2 Public Notification 5
2. SERVICE AREA INFORMATION 7
   2.1 Population 7
   2.2 Climate 7
   2.3 Demographics 8
   2.4 City Water Distribution System 8
      2.4.1 Water Distribution System 8
      2.4.2 Water System Connections to SFPUC 9
3. WATER DEMANDS 10
   3.1 Current and Historic Total Water Demand 10
      3.1.1 Current and Historic Potable Water Demand 11
         3.1.1.1 Water Use Sectors 11
         3.1.1.2 Water Demand Patterns 12
         3.1.1.3 Unaccounted for Water 12
      3.1.2 Current and Historic Non-Potable Water Demand 12
   3.2 Projected Total Water Demand 12
      3.2.1 Projected Potable Water Demand 13
         3.2.1.1 Burlingame Potable Water Demand Projections 13
         3.2.1.2 SFPUC Potable Water Demand Projections 14
      3.2.2 Projected Non-Potable Water Demand 15
         3.2.2.1 Burlingame Non-Potable Water Demand Projections 15
         3.2.2.2 SFPUC Non-Potable Water Demand Projections 15
   3.3 Water Use Sectors Not Included in the Demand Projections 15
      3.3.1 Sales to Other Agencies 16
      3.3.2 Saline Water Intrusion Barriers, Groundwater Recharge, and Conjunctive Use 16
      3.3.3 Agricultural 16
4. WATER SOURCES 17
   4.1 SFPUC Wholesale Water 17
      4.1.1 Description of Wholesale Water Supply 18
         4.1.1.1 Hetch Hetchy Watershed & System 18
         4.1.1.2 Alameda System 19
         4.1.1.3 Peninsula System 19
      4.1.2 Water Master Contract and Implications For Long Term Supply 20
      4.1.3 Water System Improvement Program 21
      4.1.4 Program Environmental Impact Report 21
   4.2 Recycled Water 21
   4.3 Groundwater 22

TABLE OF CONTENTS

4.3.1 Groundwater Basin Description 22
4.3.1.1 Aquifer Conditions and Properties 23
4.3.1.2 Groundwater Levels and Flow Directions 24
4.3.2 Groundwater Management 24
4.3.2.1 Groundwater Management Plan 25
4.3.2.2 Conjunctive Use 25
4.3.3 Historic Groundwater Use 26
4.3.4 Projected Future Groundwater Use 26
5. RELIABILITY OF WATER SUPPLY 28
5.1 Current and Projected Wholesale Water Supply 29
5.1.1 SFPUC's Water System Reliability Model 29
5.1.2 Interim Water Shortage Allocation Plan 31
5.1.3 Burlingame's Projected IWSAP Allocation 31
5.2 Burlingame's Projected Potable Water Supply 32
5.2.1 Burlingame's Normal Year Water Supply 32
5.2.1.1 Burlingame's Normal Year Potable Water Supply 32
5.2.1.2 Burlingame's Normal Year Non-Potable Water Supply 32
5.2.2 Burlingame's Single Dry Year Water Supply 33
5.2.2.1 Burlingame's Single Dry Year Potable Water Supply 33
5.2.2.2 Burlingame's Single Dry Year Non-Potable Water Supply 34
5.2.3 Burlingame's Multiple Dry Year Water Supply 34
5.2.3.1 Burlingame's Multiple Dry Year Potable Water Supply 34
5.2.3.2 Burlingame's Multiple Dry Year Non-Potable Water Supply 35
5.3 Water Quality Impacts on Reliability 35
6. POTENTIAL WATER SUPPLY PROJECTS AND PROGRAMS 37
6.1 Development of Desalinated Water 37
6.2 Water Transfers 37
6.3 Recycled Water Plan 38
6.3.1 Coordination 38
6.3.2 Wastewater Quantity, Quality and Current Uses 39
6.3.2.1 Wastewater Treatment System 39
6.3.2.2 Wastewater Quantity 39
6.3.2.3 Current Wastewater Uses 39
6.3.3 Potential Demand 40
7. SUPPLY VERSUS DEMAND 42
7.1 Projected Normal Water Year Supply and Demand 42
7.2 Projected Single Dry Year Supply and Demand Comparison 42
7.3 Projected Multiple Dry Year Supply and Demand Comparison 43
8. DEMAND MANAGEMENT MEASURES 45
8.1 Regional Water Conservation 45
8.2 Burlingame Water Conservation 46
8.2.1 BMP 1 - Residential Surveys 46
8.2.2 BMP 2 - Residential Retrofits 46
8.2.3 BMP 3 - System Water Audits 47
8.2.4 BMP 4 - Metering 47

TABLE OF CONTENTS

8.2.5 BMP 5 - Large Landscape 48
8.2.6 BMP 6 - High-Efficiency Clothes Washers 48
8.2.7 BMP 7 - Public Information 49
8.2.8 BMP 8 - School Education 49
8.2.9 BMP 9 - Commercial, Industrial, Institutional Accounting 49
8.2.10 BMP 10 - Wholesaler Incentives 50
8.2.11 BMP 11 - Conservation Pricing 50
8.2.12 BMP 12 - Conservation Coordinator 50
8.2.13 BMP 13 - Waste Prohibitions 50
8.2.14 BMP 14 - Ultra Low Flow Toilets 51
8.3 Schedule of Implementation 52
8.4 Effectiveness of Implementation 52
8.5 Conservation Savings 52
8.6 Evaluation of Demand Management Measures Not Implemented 53
9. WATER SHORTAGE CONTINGENCY PLAN 54
9.1 Ordinance 1101 54
9.2 Water Rationing Plan Resolution No. 49-92 55
9.3 Stages of Action 56
9.4 Estimate of Minimum Supply for Next Three Years 57
9.5 Catastrophic Supply Interruption Plan 58
9.5.1 SFPUC Emergency Operations Plan 58
9.5.2 Potable Water Emergency Operations Plan 59
9.5.3 Burlingame's Emergency Response Plan 60
9.6 Prohibitions, Penalties and Consumption Reduction Methods 61
9.7 Analysis of Revenue Impacts of Reduced Sales During Shortages 62
9.8 Draft Ordinance and Use Monitoring Procedure 63
10. ADOPTION AND IMPLEMENTATION OF UWMP 64
11. REFERENCES 65

TABLE OF CONTENTS

TABLES

Table 1. Coordination with Appropriate Agencies and Public
Table 2. Historic and Projected Service Area Population
Table 3. Average Monthly Climate Data for the City of Burlingame
Table 4. Pressure Zone Elevations and Number of Service Connections
Table 5. Water Storage Facility Information
Table 6. Historic Total Water Demand for the City of Burlingame Service Area
Table 7. Historic Potable Water Demand by Water Use Sector
Table 8. Projected Population and Water Demand for the City of Burlingame Service Area
Table 9. Comparison of Projected Potable Water Demand for the City of Burlingame Service Area
Table 10. Estimated Washington Park Well Demand
Table 11. Projected Water Supply for the City of Burlingame Service Area
Table 12. Recycled Water Uses Allowed In California, California Code of Regulations, Title 22, Article 3
Table 13. Projected Potable Water Supply vs. Demand - Normal Year
Table 14. Projected Potable Water Supply vs. Demand - Dry Years
Table 15. Budget & Expenditure for Conservation Related Activities
Table 16. Commercial and Residential Monthly Water Charges
Table 17. Water Shortage Contingency Plan - Water Allocations and Percent Reductions
Table 18. Water Shortage Contingency Plan - Water Use Regulations and Restrictions
Table 19. Water Shortage Contingency Plan - Stages of Action

FIGURES

Figure 1. Site Vicinity Map
Figure 2. Approximate Extent of the City of Burlingame
Figure 3. Current and Projected City of Burlingame Zoning
Figure 4. Schematic of City of Burlingame Water Distribution System
Figure 5. Major Water Distribution System Components
Figure 6. SFUPC Water System Improvement Program Projects
Figure 7. Site Vicinity Map and Location of the Westside Groundwater Basin
Figure 8. Conceptual Model of the Westside Groundwater Basin
Figure 9. Burlingame Wastewater Treatment Plant Schematic

TABLE OF CONTENTS

APPENDICES

Appendix A. Urban Water Management Planning Act, 2005.
Appendix B. UWMP Agency Notification Letters.
Appendix C. UWMP Public Notification Letters.
Appendix D. Letters to SFPUC and BAWSCA Regarding Year 2030 Water Purchase Projections for the City of Burlingame, 8 April and 14 June 2005.
Appendix E. SFPUC Master Supply Contract, May 1984 and the IWSAP.
Appendix F. Westside Partners Groundwater Management Plan, March 1999.
Appendix G. San Francisco Public Utilities Commission Purchase Projections.
Appendix H. City of Burlingame 2004 Water Quality Report.
Appendix I. City of Burlingame Ordinance 1476, Model Water Efficient Landscape Ordinance
Appendix J. City of Burlingame Ordinance 1629, High Efficiency Plumbing Fixture Rebate Program.
Appendix K. City of Burlingame Resolution 49-92, Water Rationing Plan.
Appendix L. SFPUC Suburban Customer Water Supply Emergency Operations and Notification Plan, Revision 5, April 2002. Emergency Planning Scenarios.
Appendix M. City of Burlingame Resolution 87-2005, Urban Water Management Plan, 2005 Update.

TABLE OF CONTENTS

ABBREVIATIONS

AB3030	1992 Assembly Bill 3030, Groundwater Management Act
ABAG	Association of Bay Area Governments
BAWSCA	Bay Area Water Supply and Conservation Agency
BMP	Best Management Practice
CEQA	California Environmental Quality Act
CII	Commercial, Industrial, and Institutional
CIP	Capital Improvement Program
CUWCC	California Urban Water Conservation Council
DSS	Decision Support System Model
DWR	Department of Water Resources
EOP	Emergency Operation Plans
ERP	Emergency Response Plan
ET	Evaporation-transpiration
FY	Fiscal year
GPC/D	Gallons per capita per day
GPD	Gallons per day
GPF	Gallons per flush
GPM	Gallons per minute
GWMP	Groundwater Management Plan
HHSA	Hetch Hetchy Supply Assurance
HTWTP	Henry Tracy Water Treatment Plant
in/mo	Inches per month
IWSAP	Interim Water Shortage Allocation Plan
MCL	Maximum contaminant level
MG	Million gallons
MGD	Million gallons per day
MOU	Memorandum of Understanding
PEIR	Programmatic Environmental Impact Report
psi	Pounds per square inch
PWEP	Potable Water Emergency Plan
RMF	Residential multi-family
RSF	Residential single family
SCADA	Supervisory Control and Data Acquisition
SCVWD	Santa Clara Valley Water District
SEMS	Standardized Emergency Management System
SFPUC	San Francisco Public Utilities Commission
SFPUD	San Francisco Planning Department
SMOA	San Mateo Operational Area
SWP	State Water Project
TAC	BAWSCA Technical Advisory Committee
TDS	Total dissolved solids
UAW	Unaccounted for water
ULFT	Ultra Low Flow Toilets

TABLE OF CONTENTS

ABBREVIATIONS (CONTINUED)

USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
WCC	Water Conservation Coordinator
WP	Washington Park
WQB	Water Quality Bureau
WRPR	Water Rationing Plan Resolution 49-92
WSIP	Water System Infrastructure Implementation Plan
WWTP	Wastewater Treatment Plant

UWMP ACT CROSS REFERENCES

Specific Section of the 2005 UWMP Act	Corresponding Sections in this UWMP	
10620 (d) (2)	1.3	Agency Coordination
10620 (f)	1.4	Water Management Tools
10621 (b)	1.5	Notification of UWMP Preparation
10631 (a)	2	Service Area Information
10631 (b)	4	Water Sources
10631 (b) (1) through (4)	4.3	Groundwater
10631 (c)	5	Reliability of Water Supply
10631 (d)	6.2	Water Transfers
10631 (e)	3	Water Demands
10631 (f)	8	Demand Management Measures
10631 (g)	8.6	Evaluation of Demand Management Measures Not Implemented
10631 (h)	6	Potential Water Supply Projects and Programs
10631 (i)	6.1	Development of Desalinated Water
10631 (k)	5.1	Current and Projected Wholesale Water Supply
10632(a) through (i)	9	Water Shortage Contingency Plan
10633(a) through (g)	6.3	Recycled Water Plan
10634	5.3	Water Quality Impacts on Reliability
10635 (a)	7	Supply versus Demand

1. INTRODUCTION

In 1983, the California Legislature enacted the Urban Water Management Planning Act ("UWMP Act") (Water Code Sections 10610 - 10656). The UWMP Act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet of water annually, should make every effort to ensure the appropriate level of water service reliability to meet the needs of its customers during normal, dry, and multiple dry years. Further, the UWMP Act requires urban water suppliers to update their UWMP and submit a complete plan to Department of Water Resources ("DWR") every five years. In accordance with the UWMP Act, Erler and Kalinowski ("EKI") has prepared, on behalf of the City of Burlingame ("City" or "Burlingame"), this 2005 update to the City's 2000 Urban Water Management Plan.

This UWMP has been prepared in general accordance with the format suggested in DWR's *Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan*, dated 18 January 2005. The text of specific sub-sections of the UWMP Act has been included in justified, courier font at the beginning of specific sections of this UWMP. The information presented in that section of the UWMP and associated figures, tables, attachments, and references are collectively intended to comply with the requirements of that sub-section of the UWMP Act. To the extent practicable, supporting documentation has been provided in Appendices A through L. Other sources for the information contained herein are provided in the references section of the document.

In addition, as described below, this UWMP has been prepared to reflect the recent changes to the UWMP Act and the regional coordination efforts between the Bay Area Water Supply and Conservation Agency ("BAWSCA"), the BAWSCA member agencies, and the San Francisco Public Utilities Commission ("SFPUC").

1.1 CHANGES TO THE UWMP ACT

Burlingame's 2005 UWMP describes how the City intends to manage its current and future water resources and demands to continue to provide customers with an adequate and reliable water supply. Additionally, Burlingame's 2005 UWMP reflects the following significant revisions that have been made to the UWMP Act since 2000. The most recent version of the UWMP Act is included as Appendix A.

- Pursuant to Senate Bill ("SB") 610, Costa, 2001:
  - If groundwater is identified as a source of available water, the UWMP must include (1) a copy of a groundwater management plan, if available, (2) a description of groundwater basin, including any adjudication information, and

(3) a description and analysis of amount and location of groundwater pumped for past five years and projected pumping.
  - The UWMP must include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use identified.
- Pursuant to Assembly Bill ("AB") 901, Daucher, 2001: The UWMP must include information, to the extend practicable, relating to the quality of existing sources of available water over given time periods and the manner in which water quality affects water management strategies and supply reliability.
- Pursuant to SB 672, Machado, 2001: The UWMP must describe water management tools and options used by the urban water supplier that will maximize resources and minimize the need to import water from other regions.
- Pursuant to SB 1518, Torlakson, 2002: The UWMP must include a description of the actual use of recycled water in comparison to previously projected uses. Additionally, an UWMP must include a description of the quantity of treated wastewater that meets recycled water standards being discharged that would otherwise be available for use in a recycled water project.
- Pursuant to SB 318, Alpert, 2004: The UWMP must describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

1.2 REGIONAL COORDINATION EFFORTS

Additionally, Burlingame's 2005 UWMP reflects coordination with BAWSCA and the SFPUC. BAWSCA is the agency that represents Burlingame and the 27 other cities, water districts, and utilities, in negotiations with SFPUC. SFPUC is the wholesale water supplier to all of the BAWSCA member agencies, also referred to as the "Suburban Purchasers." Together with SFPUC, BAWSCA developed common language for inclusion in each Suburban Purchasers' UWMP regarding the following issues:

- Quantity and reliability of SFPUC's Wholesale Water Supply;
- Description of SFPUC's Water System Infrastructure Implementation Plan ("WSIP") and the associated Programmatic Environmental Impact Report ("PEIR");
- Description of the Settlement Agreement and Master Water Sales Contract (collectively, the "Master Contract") between SFPUC and each BAWSCA agency (i.e., each Suburban Purchaser) and implications of the contract renewal in 2009;
- Description of BAWSCA and its powers and role;
- Description of the Interim Water Shortage Allocation Plan ("IWSAP") between BAWSCA agencies;
- Description of the Hetch Hetchy Supply Assurance ("HHSA"); and
- Description of BAWSCA's regional coordination efforts towards water demand management.

For clarification purposes, the common language provided to Burlingame by BAWSCA is presented in a different color from the remainder of the UWMP text and has been italicized for emphasis. As a result, there may be some redundancies in the information presented and the number of times that certain terms are abbreviated or defined.

As part of the coordination effort between SFPUC, BAWSCA, and each Suburban Purchaser, Burlingame's UWMP also incorporates the wholesale water supply and demand projection information developed by SFPUC on behalf of the Suburban Purchasers. SFPUC estimated its entire water supply and supply reliability, including the portion allocated to BAWSCA's Suburban Purchasers, using its Water System Reliability Model and the current IWSAP methodology. In addition, water demand projections for each individual Suburban Purchaser were made using a different model called a Decision Support System Model ("DSS Model"). SFPUC conducted these modeling efforts as part of its supporting water demand information for its WSIP and associated PEIR. Additional information related to the two models that SFPUC used to develop Burlingame's wholesale water supply and demand projections is (and the resultant projections) are included in Sections 3, 5 and 7 of this UWMP.

1.3 AGENCY COORDINATION

10620 (d) (2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

The Bay Area Water Supply and Conservation Agency (BAWSCA) was created on May 27, 2003 to represent the interests of 26 cities and water districts, and two private utilities, in Alameda, Santa Clara and San Mateo counties that purchase water on a wholesale basis from the San Francisco Regional Water System.

BAWSCA is the only entity having the authority to directly represent the needs of the cities, water districts and private utilities (wholesale customers) that depend on the regional water system. BAWSCA provides the ability for the customers of the regional system to work with San Francisco on an equal basis to ensure the water system gets fixed, and to collectively and efficiently meet local responsibilities.

BAWSCA has the authority to coordinate water conservation, supply and recycling activities for its agencies; acquire water and make it available to other agencies on a wholesale basis; finance projects, including improvements to the regional water system; and build facilities jointly with other local public agencies or on its own to carry out the agency's purposes.

Compliance with the Urban Water Management Planning Act lies with each agency that delivers water to its customers. In this instance the responsibility for completing an UWMP lies with the individual BAWSCA member agencies. BAWSCA's role in the development of the 2005 UWMP updates is to work closely with its member agencies and the SFPUC to maintain consistency between the multiple documents being developed and to ensure overall consistency with the WSIP and the associated environmental documents.

As a member of BAWSCA and the BAWSCA Technical Advisory Committee ("TAC"), the City has coordinated with BAWSCA and its 27 other member agencies throughout the update of Burlingame's UWMP. A summary of Burlingame's efforts to coordinate with SFPUC, the San Francisco Planning Department ("SFPD"), BAWSCA, and the 27 other BAWSCA member agencies provided in Section 1.3 and Table 1. An example of each of the notices described below is provided in Appendix B.

1.4 WATER MANAGEMENT TOOLS

10620 (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

In order to help maximize its water resources and reduce its dependency on imported water, the City is currently implementing, or planning to implement the water management tools described in Section 8 of this UWMP. These demand management measures will assist the City in its continued efforts toward improving water use efficiency. In addition, as described in Sections 4.2 and 6.3, Burlingame is investigating the feasibility of expanding its groundwater and recycled water resources to decrease the use of potable water for non-potable demands and increase supply reliability during dry years.

1.5 NOTIFICATION OF UWMP PREPARATION

10621. (b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

Preparation of the UWMP began in July 2005 for completion in December 2005, with notifications and interactions between stakeholders as discussed further below.

1.5.1 Agency Notification

Prior to preparing its UWMP, on 13 July 2005, the City sent a letter to BAWSCA and to each BAWSCA member agency informing them that the City was in the process of

updating its UWMP and soliciting their input in the update process. In addition, Burlingame sent a notification letter to SFPUC, SFPD, and the County of San Mateo ("County").

Two weeks prior to publishing a draft 2005 UWMP for public review, on 10 October 2005, Burlingame sent letters to BAWSCA, its 28 member agencies, SFPUC, SFPD, and the County informing them of the time and location that the draft UWMP would be available for review and requesting their input and comments on the UWMP. The UWMP was available for public review for 20 business days (between 25 October 2005 and 21 November 2005). A copy of this notice is included in Appendix B.

Two weeks prior to holding a public hearing on the 2005 UWMP, on 7 November 2005, Burlingame sent letters to BAWSCA, its 28 member agencies, SFPUC, SFPD, and the County informing them of the time and location of the public hearing on the draft UWMP and requesting their input and comments on the draft UWMP. A copy of this notice is included in Appendix B.

1.5.2 Public Notification

Consistent with requirements of California Government Code 6066[1], Burlingame issued public notifications soliciting public input during the preparation of 2005 UWMP.

Prior to commencing preparation of the UWMP, on 15 July 2005, the City published a public notice in the City's e-News electronic newsletter informing the public that the City was in the process of updating its UWMP. The public notice solicited input during the UWMP update process. In addition, the City published an advertisement in the San Mateo County Times on 21 July and 30 July 2005 to inform the public that the City was in the process of updating its UWMP. Copies of these public notices are included in Appendix C.

Two weeks prior to publishing a draft 2005 UWMP for public review, on 20 October 2005, Burlingame published a public notice in the City's e-News electronic newsletter informing the public that the draft 2005 UWMP would be available for public review at City Hall and at the Public Library. In addition, the City published an advertisement in the San Mateo Daily Journal on 10 October and 17 October 2005 to inform the public that the 2005 UWMP was available for review. The document was available for public review for 20 business days (between 25 October 2005 and 21 November 2005). Copies of these public notices are included in Appendix C.

---

[1] Government Code section 6066. Publication of notice pursuant to this section shall be once a week for two successive weeks. Two publications in a newspaper published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates, are sufficient. The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day.

Two weeks prior to holding a public hearing on the 2005 UWMP, on 9 November and 16 November 2005, Burlingame published a public notice in the San Mateo Daily Journal informing the public that the 2005 UWMP public hearing would be held at City Hall on 21 November 2005 at 7:00 PM. In addition, the City published an advertisement in the City's e-News electronic newsletter on 18 November to inform the public about the 2005 UWMP public hearing. Copies of these public notices are included in Appendix C.

2. SERVICE AREA INFORMATION

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631. (a) Describe the service area of the supplier; including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

The City of Burlingame is located in San Mateo County, approximately 15 miles south of the City of San Francisco, California (Figure 1). The City is bordered by the City of Millbrae directly to the north, the City of San Mateo to the southeast, the town of Hillsborough to the south, the City of San Francisco watershed lands to the west, and San Francisco Bay to the east. The City's potable water system serves approximately 9,000 connections, both within the City limits and in the unincorporated Burlingame Hills area. The City also supplies potable water, primarily for irrigation purposes, to San Mateo County's Coyote Point Park. The higher-elevation, unincorporated Burlingame Hills is located west of the City, while Coyote Point is located southeast of the City along San Francisco Bay (Figure 2).

As required by the UWMP Act, specific information related to the City's population, climate, and demographics is provided below. A brief description of the City's water system is also included.

2.1 POPULATION

The City currently serves a population of approximately 29,000 (ABAG, 2005). The City is predominantly zoned residential, with a commercial and industrial core in the eastern portion of the City. Much of the City is "built out," allowing for only modest population increases in the future assuming continuation of current zoning and densities. The Association of Bay Area Governments ("ABAG") provides population projections for San Francisco Bay Area cities (ABAG, 2005). The ABAG staff collects data on current land use and development policies of local governments and uses this information in its estimates of population growth. ABAG's projections anticipate that the City's service area will see a growth in its population to over 31,500 by 2020 and to nearly 32,000 by 2030 (Table 2).

2.2 CLIMATE

The climate in Burlingame is generally considered temperate. The average temperature is 57°F, with an average low of 49°F and an average high of 65°F (Table 3). The mean summer temperature (i.e., June through September) is 63°F. Precipitation averages 20

inches per year with most precipitation falling between November and March and little to none occurring April through September. The lack of rainfall during the warmer summer months contributes to a higher water demand in the summer, which is exacerbated by high evapo-transpiration ("ET") rates. ET records indicate an average loss of four inches per month ("in/mo"), with a high of 6 in/mo in June and July, and lows of 1 to 2 in/mo from December to January (Table 3).

2.3 DEMOGRAPHICS

Burlingame anticipates that in the next several years, some commercial and industrial areas may be rezoned as residential (EKI, 2004). The projected increase in the City's population will likely be attributable to this rezoning because the formerly unpopulated commercial and industrial zones would be replaced with single family or multi-family dwellings. Figure 3 shows the current and projected zoning for the City. At present, the City anticipates limited changes from Commercial to Low or Medium Density Residential use (Housing Element, 2002).

2.4 CITY WATER DISTRIBUTION SYSTEM

The City owns, operates, and maintains the potable water distribution system that serves drinking water to residential, commercial, and industrial establishments.

2.4.1 Water Distribution System

The City's distribution system consists of six pumping stations, five water storage tanks, and buried pipes of varying compositions, ages, and sizes (Figures 4 and 5). The distribution system provides water to eight pressure zones within the City's water service area. The elevation of the pressure zones, number of service connections and percent of total connections as of 2002 are shown in Table 4.

Approximately 80 percent of all service connections are located in the Aqueduct Zone, which contains most of the City's commercial, industrial, and multi-family residence units. Water is transferred between pressure zones through a system of pipes and pumping stations. The pumping stations currently operated by the City are referred to as:

1. Donnelly,
2. Easton,
3. Skyview,
4. Trousdale,
5. Hillside, and
6. Sisters of Mercy (Fire Flow Only).

Five of the pumping stations transfer water from the lower elevations of the City to the higher elevations, while the Sisters of Mercy station provides fire flow to the property Sisters of Mercy (Figures 4 and 5). The sizes of the pumps range between 7.5 and 75

horsepower. Current pump station conditions are described in the *Water System Pumping Station Study, Condition Assessment,* prepared by Olivia Chen Consultants, dated August 2003 (OCC, 2003).

Water is stored in the City's five water storage tanks that provide an aggregate water storage volume of 2.94 million gallons ("MG") (EKI, 2004) (Table 5). The largest water storage facility is the Hillside Tank, which holds 1.5 MG. The smallest water storage facilities are the individual tanks at the Alcazar and Donnelly sites. There are two tanks at each site and each tank holds 0.05 MG (Table 5).

2.4.2 Water System Connections to SFPUC

Water is supplied to the City via six metered turnouts connected to SFPUC's Sunset Supply Pipeline and Crystal Springs Pipelines Nos. 2 and 3. Because the pressures in the SFPUC pipelines vary between 95 pounds per square inch ("psi") and 105 psi, pressure reducing valves are in place at the turnouts to deliver water at consistent and manageable pressures to the City's distribution system.

Water from the turnouts is supplied to the Aqueduct Zone at sufficient pressure to supply end-users within this zone without additional pumping. As described above, to supply the elevated regions of the City, pumping stations boost water from the Aqueduct Zone to the more elevated pressure zones and their associated storage facilities.

3. WATER DEMANDS

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:
(A) Single family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.
(2) The water use projections shall be in the same five-year increments described in subdivision(a).

Water demand is dependent on climate, population, industry, and the types of development present in a community. Sections 3.1 and 3.2 describe Burlingame's historical and projected water demands for residential, commercial, industrial, institutional, and landscape irrigation purposes within the City (water use sectors A through F, as described above). As described in Section 3.3., this discussion does not include demands for the water use sectors G through I.

For the purposes of this UWMP, total water demand is defined as the sum of potable water demand and non-potable water demand. Non-potable water demands refer to the Washington Park irrigation demands (which can theoretically be met by groundwater extracted at the Washington Park well ("WP Well")) and the demand for recycled water at the wastewater treatment plant ("WWTP").

3.1 CURRENT AND HISTORIC TOTAL WATER DEMAND

The City's current and historic total water demands include the water consumed by metered accounts in the City ("metered water consumption"), unmetered water used by the Water and Fire Departments ("unmetered water consumption") and the water that is lost or unaccounted for within the system ("unaccounted for water" or "UAW"). Currently there are limited non-potable water demands within the City and approximately 95% of the total water demand is for potable water, which is purchased wholesale from SFPUC. Table 6 contains historical total water demands for the City for the period of fiscal years ("FY") 2000 through 2005.

3.1.1 Current and Historic Potable Water Demand

Records of Burlingame's historic potable water demand are maintained by the City's Finance Department. Total potable water demand for the City is equivalent to the sum of the metered water consumption, the unmetered water consumption, and the UAW. To more fully understand patterns of water use within Burlingame, the metered accounts were divided into the water use sectors described below.

3.1.1.1 Water Use Sectors

Each account within Burlingame is assigned into one of 55 categories for the purposes of water and sewer billing purposes. For the purposes of this UWMP, these 55 categories were grouped into seven water-use sectors, as described below:

- The *Residential Single Family ("RSF")* and *Residential Multi-Family ("RMF")* sectors incorporate residences from the City and from Burlingame Hills, the unincorporated portion of San Mateo County that is served by the City's water system.
- The *Commercial* sector includes those food-related businesses, such as bakeries and restaurants, and non-food related businesses such as laundromats and car washes.
- The *Industrial* sector includes larger businesses such as the chocolate manufacturing plant, the hotels, mortuaries, and other industries.
- The *Institutional* sector primarily includes government-related services (e.g. police and fire departments, City Hall) and religious and educational buildings. For purposes of this UWMP, small recreational areas were included in the institutional sector.
- The *Irrigation* sector includes the County parks (including Coyote Point Recreation Area), golf courses, and other parks.
- The *Other* sector includes *Temporary Services* and *Fireline* water use is estimated by the City's Water and Fire Departments and is typically a small portion of the total water demand (e.g., approximately 0.01 million gallons per day, "MGD").

The residential sectors (*RSF* and *RMF*) account for the majority of potable water use in the City (Table 7). *RSF* accounts represented an average of 43% of the total City water demand from FY 2000 through FY 2005 and *RMF* accounts represented 17% of the City's total water consumption over the same period. The *Commercial* and *Industrial* sectors each accounted for 12% of the total City water demand, while the *Institutional* and *Irrigation* sectors accounted for 2% and 6% of the total water demand, respectively. On average, the *Other* sector accounted for less than 1% of the total City water use between FY 2000 and 2005.

According to the City Consumption Reports prepared by the Finance Department for FY 2000 through FY 2005, the relative percentage of the total water demand by each

sector has not changed significantly. Likewise, as discussed further in Section 3.2.1, significant changes in water use patterns are not projected in the future. Between FY 2000 and FY 2005, 60% of the total water consumed City-wide was used within the residential sectors (*RSF* and *RMF*), 27% was used within the *Commercial, Industrial, Institutional ("CII")* sectors, and the remaining 6% was used for *Other* purposes (including *Temporary Meters, Firelines*, and *Irrigation*). Unmetered water use and unaccounted for water accounted for an average of 0.3% and 6.4%, respectively, of the total potable water purchased by the City.

3.1.1.2 Water Demand Patterns

Though the relative proportion of water consumed by each sector has remained fairly constant in recent years, the total quantity of potable water consumed by Burlingame has decreased in recent years (i.e., demand has decreased from 4.88 MGD in 2000 to 4.52 MGD in 2005) (Table 7). This decrease in total potable water demand may be due to a combination of climatic impacts, plumbing code impacts, water conservation measures implemented by the City, and a slow economy in recent years, particularly after the events of September 11th, 2001. However, as the economy recovers and population continues to increase within the City, water consumption is likely to increase in the future.

3.1.1.3 Unaccounted for Water

Based on records of the City's wholesale purchases from SFPUC, water billing data, and operational estimates of water volume used during system operations and maintenance, the City's Finance Department estimates the percentage of UAW within the system. Table 7 shows that the average UAW since 2000 is 6.36%. Typically, water suppliers try to maintain UAW at less than 10% of total demand. If UAW is greater than 10% of total demand, water suppliers typically perform a system-wide water audit to find and repair major leaks.

3.1.2 Current and Historic Non-Potable Water Demand

In addition to the potable water use described above, the City has historically used approximately 0.30 MGD of recycled water at the WWTP (Table 6). Groundwater from the WP Well has also been used in the past to offset potable water use for irrigation purposes at Washington Park and other City parks. However, since 2000, little to no water has been used from the WP Well and the quantity of WP Well water used prior to 2000 is unknown.

3.2 PROJECTED TOTAL WATER DEMAND

Burlingame's projected total water demand represents the sum of its projected potable and non-potable water demands. It is important to note that in the event that a non-potable water supply source becomes unavailable for some reason, the non-potable water

demands will have to be met with potable water sources, thereby increasing the projected future potable water demand.

3.2.1 Projected Potable Water Demand

Burlingame's projected potable water demands have been independently estimated by Burlingame and SFPUC using two different methodologies. As described further in Section 3.2.1.1, the City developed its potable water demand projections for purposes of its own Capital Improvement Program ("CIP") development and water planning. Burlingame's estimates were developed based on the current per capita water demand in the residential sector and the estimated rates of growth in the residential and CII sectors. Because water consumption is dependent on so many factors (e.g., climate, economy, population growth) Burlingame' projected potable water demands do not include estimates of future water savings due to implementation of specific water conservation measures.

In a separate effort associated with its development of the WSIP and PEIR, SFPUC estimated how much water each of its Suburban Purchasers would purchase from SFPUC in the next twenty-five years (i.e., SFPUC developed "Purchase Projections" for each of its customers).[2] Because Burlingame has no other sources of potable water, SFPUC's estimate of how much water Burlingame will purchase from SFPUC in the future is equivalent to SFPUC's estimate of Burlingame's future potable water demand. SFPUC conducted its estimate of Burlingame's future potable water demands using a DSS Model that took into account plumbing code impacts on water demand and assumptions about the effectiveness of water conservation measures on reducing total potable water demand (URS, 2004b). Additional detail regarding the development of these potable water demand projections is provided Section 3.2.1.2.

3.2.1.1 Burlingame Potable Water Demand Projections

The City developed its future potable water demand projections using the average water use from FY 2000 to FY 2005 as the baseline for each sector and projected forward as follows:

1) Water use in the *Residential* sector is expected to increase at a rate equal to the projected population growth;[3]
2) Water consumption in the *CII* sector will increase by 1% per year to accommodate potential future commercial development in the vacant parcels along Airport Boulevard;

---

[2] In correspondence documented in Appendix F between SFPUC and Burlingame, SFPUC's estimates of Burlingame's future potable water demand projections are referred to as Burlingame's "Purchase Projections".
[3] The population projections used to estimate residential growth are from ABAG, 2005.

3) Beginning in 2010, approximately 0.025 MGD of potable water that is currently used to irrigate Washington Park (*CII* demand) should be offset by the WP Well groundwater supply;[4]
4) Water consumption in the *Other* sector will remain constant (as 5.68% of the total demand per year) through 2030;[5]
5) Unmetered water demand will remain constant at 0.01 MGD through 2030;
6) The percentage of UAW will remain constant at 6.36% of the City's total potable water demand per year through 2030.[6]

Burlingame's potable water demands for each water use sector for the years 2010 through 2030 are shown in Table 8 (non-potable demand projections are described in Section 3.2.2). Based on these projections, the City does not anticipate exceeding the 5.23 MGD HHSA before 2030. Assuming the continued availability of existing non-potable water supply sources, the projected average daily potable water demand for Burlingame's service area in 2030 is 5.03 MGD. Though the City anticipates that the WP Well will be fully operational by 2010, the reliability of groundwater as a supply is unknown and is dependent on several factors, including the long-term production rate of the WP Well.

3.2.1.2 SFPUC Potable Water Demand Projections

SFPUC's potable water demand projections for Burlingame are shown in Table 9. As can be seen in the table, Burlingame's independent estimate of potable water demand projections are greater than those estimated by SFPUC. This difference in estimated potable water demands is due to different methodologies employed by the City and the SFPUC during their demand projections. The methodology that SFPUC used to derive these projections is explained below:

> *The water demand projections for this Urban Water Management Plan were developed as part of a series of technical studies performed in support of the Capital Improvement Program for the SFPUC Regional Water System: SFPUC Wholesale Customer Water Demand Projections (URS, 2004b); SFPUC Wholesale Customer Water Conservation Potential (URS, 2004a); SFPUC Wholesale Customer Recycled Water Potential (RMC, 2004); and SFPUC 2030 Purchase Estimates (URS, 2005).*
>
> *Water demand projections for the wholesale were developed using an "End Use" model* [also referred to herein as the "DSS Model"]. *Two main steps are involved in developing an End Use model: (1) Establishing base year water demand at the end-*

---

[4] The City has not yet determined the reliability of the groundwater supply but anticipates the WP Well to be fully operational by 2010.
[5] *Other* sector demands include water demands for irrigation, temporary meters, and firelines.
[6] This assumption is considered valid because the City continues performs main replacements to replace aging infrastructure.

use level (such as toilets, showers) and calibrating the model to initial conditions; and (2) Forecasting future water demand based on future demands of existing water service accounts and future growth in the number of water service accounts.

Establishing the base-year water demand at the end-use level is accomplished by breaking down total historical water use for each type of water service account (single family, multifamily, commercial, irrigation, etc.) to specific end uses (such as toilets, faucets, showers, and irrigation).

Forecasting future water demand is accomplished by determining the growth in the number of water service accounts in a wholesale customer service area. Once these rates of change were determined, they were input into the model and applied to those accounts and their end water uses. The DSS model also incorporates the effects of the plumbing and appliance codes on fixtures and appliances including toilets (1.6 gal/flush), showerheads (2.5 gal/minute), and washing machines (lower water use) on existing and future accounts.

Burlingame is committed to trying to achieve an average potable water demand of 4.68 MGD by 2030, as estimated by SFPUC. However, as documented in its letter to the SFPUC on 8 April 2005 and to BAWSCA on 14 June 2005, Burlingame considers the SFPUC's assumptions regarding Burlingame's water conservation potential (due to natural fixture replacement rates and implementation of water conservation measures) to be too aggressive for planning purposes and considers the SFPUC's projections to be a best-estimate of Burlingame's future potable water demands. Copies of the letters mentioned above are included in Appendix D.

3.2.2 Projected Non-Potable Water Demand

3.2.2.1 Burlingame Non-Potable Water Demand Projections

The 0.30 MGD recycled water demand at the WWTP is expected to remain constant through 2030. Groundwater use at the WP Well is expected to offset 0.025 MGD of potable water demand after 2010 (Table 8).

3.2.2.2 SFPUC Non-Potable Water Demand Projections

SFPUC did not project non-potable water demands for the City.

3.3 WATER USE SECTORS NOT INCLUDED IN THE DEMAND PROJECTIONS

This section describes why historical and projected water demands for the water use sectors described in Section 10631(e)(1) (G) through (I) and listed below were not included in Burlingame's water demand calculations:

- Sales to other agencies;

- Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and
- Agricultural.

3.3.1 Sales to Other Agencies

Two metered interties exist between the Burlingame water system and the City of Millbrae water system and Burlingame has served (sold) water to Millbrae in the past through these interties. However, water sales are not included in Burlingame's water demand estimate because, although Burlingame does have an understanding with Millbrae that it can buy or sell water in emergency situations or pursuant to project-specific agreements, Burlingame does not sell water under normal operating conditions.

3.3.2 Saline Water Intrusion Barriers, Groundwater Recharge, and Conjunctive Use

Burlingame does not use water for saline water intrusion barriers and does not currently participate in active groundwater recharge activities or a conjunctive use program.

3.3.3 Agricultural

Burlingame does not sell water to agricultural customers and does not expect to in the future.

4. WATER SOURCES

```
10631. A plan shall be adopted in accordance with this chapter and
shall do all of the following:
10631. (b) Identify and quantify, to the extent practicable, the
existing and planned sources of water available to the supplier over
the same five-year increments described in subdivision (a). . .
```

The City purchases all of its potable water from SFPUC in accordance with the Settlement Agreement and Master Water Sales Contract, dated 21 May 1984, supplemented by an individual Water Supply Contract (Appendix E). As described above, the City also uses some recycled water and has historically used groundwater for non-potable purposes. The following sections describe Burlingame's water sources and quantify the City's projected recycled water and groundwater supplies through 2030. The quantities of wholesale water expected to be supplied by SFPUC over the next 25 years are discussed in Section 5.

In order to maintain consistency with the UWMPs prepared by SFPUC and the other BAWSCA member agencies, much of the language describing the SFPUC wholesale water supply in the following sections is common language provided by BAWSCA.

4.1 SFPUC WHOLESALE WATER

Burlingame receives water from the City and County of San Francisco's regional system, operated by the San Francisco Public Utilities Commission (SFPUC). This supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local facilities in Alameda and San Mateo Counties.

In 1984 Burlingame, along with 29 other Bay Area water suppliers signed a Settlement Agreement and Master Water Sales Contract (Master Contract) with San Francisco, supplemented by an individual Water Supply Contract. These contracts, which expire in June 2009, provide for a 184 million gallon a day (mgd, expressed on an annual average basis) Supply Assurance to the SFPUC's wholesale customers collectively. Burlingame's individual Supply Assurance is 5.23 mgd (or approximately 6,000 acre feet per year). Although the Master Contract and accompanying Water Supply Contract expire in 2009, the Supply Assurance (which quantified San Francisco's obligation to supply water to its individual wholesale customers) survives their expiration and continues indefinitely.

The SFPUC can meet the demands of its retail and wholesale customers in years of average and above average precipitation. The Master Contract allows the SFPUC to reduce water deliveries during droughts, emergencies and for scheduled

maintenance activities. The SFPUC and all wholesale customers adopted an Interim Water Shortage Allocation Plan in 2000 to address the allocation of water between San Francisco and wholesale customers in aggregate and among individual wholesale customers during water shortages of up to 20% of system-wide use. This plan, which also expires in June 2009, is described in more detail in Section 5.1.

4.1.1 Description of Wholesale Water Supply

Approximately 85 percent of the SFPUC water supply originates in the Hetch Hetchy watershed, located in Yosemite National Park, and runs down the Tuolumne River into the Hetch Hetchy Reservoir. Water from the Hetch Hetchy watershed is managed through the Hetch Hetchy Water and Power Project. The remaining 15 percent of SFPUC's water is produced in the Alameda and Peninsula watersheds and stored in six different reservoirs in Alameda and San Mateo Counties. Details of the various components of the regional water system are provided below in Sections 4.1.2, 4.1.3, and 4.4.4. Information on the Hetch Hetchy, Alameda, and Peninsula water systems is from SFPUC and BAWSCA websites. The following language provided by BAWSCA:

Burlingame receives water from the City and County of San Francisco's regional System, operated by SFPUC. This supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local watersheds and facilities in Alameda and San Mateo Counties.

The amount of imported water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, the SFPUC is very dependent on reservoir storage to firm-up its water supplies.

The SFPUC serves its retail and wholesale water demands with an integrated operation of local Bay Area water production and imported water from Hetch Hetchy. In practice, the local watershed facilities are operated to capture local runoff.

4.1.1.1 Hetch Hetchy Watershed & System

The Hetch Hetchy system is supplied by runoff from the upper Tuolumne River watershed on the western slope of the central Sierra Nevada. Three major reservoirs collect runoff: Hetch Hetchy Reservoir; Lake Lloyd; and Lake Eleanor. Storage space in New Don Pedro Reservoir is integrated into system operations. New Don Pedro Reservoir is owned by the Modesto and Turlock Irrigation Districts and is located on the Tuolumne River downstream of the Hetch Hetchy System. Water is diverted from Hetch Hetchy Reservoir into a series of tunnels and aqueducts from the Sierra Nevada to the San Joaquin Pipelines that cross the San Joaquin Valley to the Coast Range Tunnel which

connects to the Alameda system at the Alameda East Portal. Water stored in Hetch Hetchy reservoirs is also used for hydroelectric generation and released downstream to satisfy instream flow requirements.

Normally only Hetch Hetchy reservoir supplies water for municipal and industrial uses. Releases from Lake Eleanor and Lake Lloyd are used to satisfy instream flow requirements, satisfy downstream obligations, and produce hydroelectric power. Water stored in New Don Pedro Reservoir is credited to San Francisco's water bank account to allow diversions upstream and is also used to meet fishery water requirements on the lower Tuolumne River under the Federal Energy Regulatory Commission license held by the Modesto and Turlock Irrigation Districts.

Runoff from the protected, high altitude, granitic watershed upstream of Hetch Hetchy is of relatively high water quality. The quality of water provided from Hetch Hetchy Reservoir has been sufficient to support an exemption from filtration requirements from the United States Environmental Protection Agency ("USEPA"). Consequently, Hetch Hetchy water normally is not filtered prior to delivery.

4.1.1.2 Alameda System

The Alameda System includes conveyance facilities connecting the Hetch Hetchy system and Alameda water sources to the Peninsula System. These conveyance facilities include pipelines known as the Alameda Creek Siphons that connect the Coast Range Tunnel to the Irvington Tunnel. The Irvington Tunnel supplies the four Bay Division Pipelines that cross the South Bay Area to the Peninsula System. Bay Division Pipelines 1 and 2 cross the Bay near the Dumbarton Bridge. Bay Division Pipelines 3 and 4 traverse the southerly edge of the Bay delivering water to SFPUC customers along the way. All four pipelines reconnect near the inlet to the Pulgas Tunnel on the Peninsula. The Alameda System includes two reservoirs, San Antonio Reservoir and Calaveras Reservoir, which collect water from the upper Alameda Creek watershed in Alameda County. The Sunol Valley Water Treatment Plant filters and disinfects water supplied from San Antonio and Calaveras Reservoirs in the Alameda watershed. Water from the Sunol Water Treatment Plant comprises approximately 15 percent of total water delivered to the Bay Area.

A turnout from the South Bay Aqueduct of the California State Water Project can supply limited supplemental water to San Antonio Reservoir. However, the SFPUC currently possesses no entitlements to water to be delivered from the State Water Project.

4.1.1.3 Peninsula System

The Peninsula System includes conveyance facilities connecting the Bay Division Pipelines to San Francisco's in-City distribution system and to other SFPUC customers on the Peninsula. Two reservoirs, Crystal Springs and San Andreas, collect runoff from the San Mateo Creek watershed. Water from Pilarcitos Reservoir, on Pilarcitos Creek, serves the Coastside County Water District (which includes Half Moon Bay) directly and

can also deliver water to Crystal Springs and San Andreas Reservoirs. Water delivered from the Bay Division Pipelines in excess of Peninsula System and San Francisco in-City demands spills into Crystal Springs and San Andreas Reservoirs.

The Harry Tracy Water Treatment Plant ("HTWTP") filters and disinfects water supplied from Crystal Springs and San Andreas Reservoirs before it is delivered to Peninsula customers and San Francisco's in-City distribution system. Under normal conditions, the City can receive a portion of its water supply via the Sunset Supply Pipeline from the HTWTP, located in the adjacent City of Millbrae. Currently, SFPUC provides water from the HTWTP through a pressure reducing valve within the Sunset Supply Pipeline that will open during high demand periods (i.e., lower pressure) allowing water from HTWTP to flow south into the City.

4.1.2 Water Master Contract and Implications For Long Term Supply

The business relationship between San Francisco and its wholesale customers is largely defined by the "Settlement Agreement and Master Water Sales Contract (Master Contract)" executed in 1984. The Master Contract primarily addresses the rate-making methodology used by the City in setting wholesale water rates for its wholesale customers in addition to addressing water supply and water shortages for the regional water system. The contract expires on June 30, 2009.

In terms of water supply, the Master Contract provides for a 184 million gallon per day (mgd, expressed on an annual average basis) "Supply Assurance" to the SFPUC's wholesale customers subject to reduction in the event of drought, water shortage, earthquake, other acts of God, or rehabilitation and maintenance of the system. The Master Contract does not guarantee that San Francisco will meet peak daily or hourly customer demands when their annual usage exceeds the Supply Assurance. The SFPUC's wholesale customers have agreed to the allocation of the 184 mgd Supply Assurance among themselves, with each entity's share of the Supply Assurance set forth on a schedule adopted in 1993. This Supply Assurance survives the termination of the Master Contract in 2009.

The SFPUC can meet the water demands of its retail and wholesale customers in wet and normal years. The Master Contract allows the SFPUC to reduce water deliveries during droughts, emergencies, and for scheduled maintenance activities. The Interim Water Shortage Allocation Plan (IWSAP) between the SFPUC and its wholesale customers adopted in 2000 provides that the SFPUC determines the available water supply in drought years for shortages of up to 20% on an average, system-wide basis.

Further detail about the IWSAP is described in detail in Section 5.1.2.

4.1.3 Water System Improvement Program

In order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply, the SFPUC is undertaking a Water System Improvement Program (WSIP). The WSIP will deliver capital improvements aimed at enhancing the SFPUC's ability to meet its water service mission of providing high quality water to its customers in a reliable, affordable and environmentally sustainable manner.

The origins of the WSIP are rooted in the "Water Supply Master Plan" (April 2000). Planning efforts for the WSIP gained momentum in 2002 with the passage of San Francisco ballot measures Propositions A and E, which approved the financing for the water system improvements. Also in 2002, Governor Davis approved Assembly Bill No. 1823, the Wholesale Regional Water System Security and Reliability Act. The WSIP is expected to be completed in 2016.

Figure 6 indicates the locations of the various capital improvement projects which comprise the WSIP.

4.1.4 Program Environmental Impact Report

A Program Environmental Impact Report (PEIR) is being prepared under the California Environmental Quality Act (CEQA) for the Water Supply Improvement Program. A PEIR is a special kind of Environmental Impact Report under CEQA that is prepared for an agency program or series of actions that can be characterized as one large project. PEIRs generally analyze broad environmental effects of the program with the acknowledgment that site-specific environmental review may be required at a later date.

Projects included in the WSIP will undergo individual project specific environmental review as required. Under CEQA, project specific environmental review would result in preparation of a Categorical Exemption, Negative Declaration or Environmental Impact Report. Each project will also be reviewed for compliance with the National Environmental Policy Act and local, state and federal permitting requirements as necessary.

4.2 RECYCLED WATER

The City currently uses approximately 300,000 gallons per day ("GPD") of recycled water for internal use within the WWTP. The City has not historically used recycled water outside of the WWTP and does not currently have the treatment capabilities to meet the Title 22, Article 3 criteria for re-use of the recycled water for non-potable uses such as irrigation. Details regarding the WWTP capacities, average flows, and treatment processes are discussed in Section 6.3.2. Additional information regarding the potential use of recycled water in the future is also discussed in Section 6.3.

4.3 GROUNDWATER

Historically, the City has not utilized groundwater as a drinking water source (i.e., as described above, the sole source of the City's drinking water has been wholesale water supplied by the SFPUC). However, the City has maintained and operated one groundwater supply well located near Washington Park, which has been used to irrigate portions of City-owned landscaping and parks, including Washington Park, City Hall, Alpine Park, Victoria Park, and Burlingame High School (Roman & Lougee, 2000). The WP Well was not constructed for drinking water purposes and is not rated as a drinking water well.

The WP Well has been used intermittently since its construction in the early 1990's, and is not currently in operation. In 2004, the City began rehabilitation efforts at the WP Well and performed a short-term aquifer pump test to estimate the maximum sustainable pump rate. Based on the results of the short-term aquifer pump test, the maximum sustainable pump rate was estimated to be 150 gallons per minute ("GPM"). It is unknown, however, if this production rate is limited by the pump, the well construction, or the aquifer. Further, the City has not yet determined the long-term reliability of the groundwater supply. Historic and potential future use of the WP Well is described in more detail below. In addition, information related to the local groundwater basin is provided below.

4.3.1 Groundwater Basin Description

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (b) . . . . If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan: (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

Burlingame overlies the southern portion of the 40 square mile Westside Groundwater Basin ("Basin"). The Basin consists of unconsolidated colluvium that was deposited in a northwest trending trough in the underlying impervious bedrock. The approximate boundaries of the Basin are shown in Figure 7. The Basin is bounded by bedrock highs in Golden Gate Park to the North and at Coyote Point to the South (DWR Bulletin 118,

Rogge, 2003; Yates, 2003a; DWR, 2003). The San Bruno Mountains and San Francisco Bay form the eastern boundary of the Basin while the Serra Fault[7] and the Pacific Ocean form the western boundary (Rogge, 2003; Yates, 2003a; DWR, 2003). Adjoining groundwater basins are the Lobos Basin to the North and the San Mateo Plain Aquifer to the South.

It should be noted that Basin boundary shown on Figure 7 has only recently been identified in the literature (i.e., in Rogge, 2003; Yates, 2003a; DWR, 2003). Previously, the Basin was thought to be delineated to the west by the San Andreas Fault (CH2MHill, 1997) and the southern boundary had not been precisely defined. Phillips et al. (1993) tentatively determined that the southern Basin boundary was in Millbrae because of the increase in clay content that was encountered in boring logs. Millbrae was then identified as the southern boundary of the Basin in subsequent reports (CH2MHill, 1994; 1996; 1997; Luhdorff and Scalmanini, 2002). More recent review of work related to bedrock mapping and groundwater elevation contouring has led to re-defining the Basin's southern boundary at Coyote Point (Rogge, 2003; Yates, 2003a; DWR, 2003), and the Basin's western boundary along the Serra Fault. The modification of the southern boundary of the Basin has resulted in the inclusion of Burlingame within the Basin.

4.3.1.1 Aquifer Conditions and Properties

The Basin is composed of two main water-bearing units, the shallow, unconfined Colma aquifer and the deeper, confined Merced aquifer. Within the two major water bearing zones in the Basin, there are multiple smaller aquifer zones that are delineated vertically by different sand and clay layers within the Merced and Colma formations. The thickness and extent of these interbedded sand and clay layers vary spatially throughout the Basin.

All of the municipal groundwater extraction wells in the Cities of San Bruno, South San Francisco, and Daly City are screened in the deeper, confined Merced aquifer where the water quality is better. The specific yield of wells in the Basin has been observed to be greater in the northern portions of the Basin than in the southern (SBMP, 2001; Yates, 2003a). Shallow wells have been installed within the Colma, typically to monitor groundwater in the vicinity of chemical release sites. Steep downward vertical gradients exist between the unconfined (upper) and confined (deeper) aquifers, but the hydraulic connection between the two aquifers is thought to be limited (Yates, 2003a; Luhdorff & Scalmanini, 2002; Figure 8).

---

[7] The Serra Fault is a series of thrust faults parallel to the San Andreas Fault in the Coast Ranges (Rogge, 2003).

4.3.1.2 Groundwater Levels and Flow Directions

Groundwater levels have stayed fairly stable in the Basin in recent years, showing seasonal fluctuations and decreases in times of drought (SBMP 2001; Yates, 2003a). Figure 8 presents a conceptual model of the Basin with arrows indicating the general groundwater flow directions.

At the northern end of the Basin, groundwater in the shallow aquifer tends to flow in a westerly direction towards the Pacific Ocean. From South San Francisco southward to Burlingame, groundwater within the shallow aquifer generally flows east towards San Francisco Bay (Burns and McDonnell, 2002; Rogge, 2003; Yates, 2003a).

Throughout the Basin, groundwater flow in the deeper aquifer is generally east towards San Francisco Bay. The groundwater mounds observed near Coyote Point and Golden Gate Park add a northern and southern component to the flow, respectively. Additionally, historic groundwater extraction in the vicinity of San Bruno has created a local depression in the water table. A flow divide near the south end of the San Francisco airport separates the area where groundwater flows toward the pumping depression in San Bruno from the area where groundwater flows toward the Bay (Yates, 2003a). The divide trends south-southwest from near the Millbrae exit on Highway 101, and groundwater west of the divide is captured by the San Bruno wells (Yates, 2003a). In the vicinity of Burlingame, which is south of the groundwater divide, groundwater flow is generally east towards the San Francisco Bay. However, there is a concern in the future that extraction in the vicinity of San Bruno could cause saltwater intrusion along San Francisco Bay and beneath Burlingame. San Bruno was recently awarded a grant by DWR and is currently in the process of investigating the potential threat of saltwater intrusion to the Westside Basin.

4.3.2 Groundwater Management

```
10631. A plan shall be adopted in accordance with this chapter and
shall do all of the following:
10631. (b) . . . . If groundwater is identified as an existing or
planned source of water available to the supplier, all of the following
information shall be included in the plan: (1) A copy of any
groundwater management plan adopted by the urban water supplier,
including plans adopted pursuant to Part 2.75 (commencing with Section
10750), or any other specific authorization for groundwater management.
```

Burlingame has not historically utilized groundwater as a significant water supply source or participated in management of the Basin. However, other entities that overly the Basin, such as San Bruno and Daly City, rely on groundwater for a significant portion of their potable water supply and are actively involved in Basin management. For completeness, although Burlingame is not currently a contributing stakeholder in the Basin management, Burlingame has included information regarding those management efforts below.

4.3.2.1 Groundwater Management Plan

In 1996, San Bruno, Daly City, the SFPUC, and other stakeholders ("the Westside Partners") received an Assembly Bill 3030 grant ("AB3030") to develop a Groundwater Management Plan ("GWMP") to aid in managing groundwater use within the Basin.[8] The GWMP for the Basin was completed in 1999 as a series of Technical Memoranda (Appendix F).

In 2001, the City of Daly City received a grant from the California Department of Water Resources' AB303 program to complete several tasks directed toward improving groundwater management. One of the tasks was to combine the best elements of previous hydrologic models created for the Basin into a unified and updated modeling tool for ongoing use by entities involved in managing the Basin (Yates, 2003a). In 2003, Daly City approved a budget allocation from its Water Fund to continue work on the Basin model. Work currently being done on the model includes additional sensitivity testing of the model initial and boundary conditions as well as assumptions regarding permeability of the Serra Fault in the San Bruno-Burlingame area (Yates, 2003b).

4.3.2.2 Conjunctive Use

Due to increased concerns about declining water levels in nearby Lake Merced and to evaluate the potential for a Basin-wide conjunctive use program, the SFPUC instated a pilot conjunctive use program in 2002. Conjunctive use of the Basin would be expected to maintain groundwater levels, on average, higher than they are currently and mitigate potential impacts from saltwater intrusion and declining Lake Merced water levels. The conjunctive use program proposed by the SFPUC would work as follows:

- During wet years, when a surplus of Hetch Hetchy water is available, the water demand in the Basin would be met with surface water, allowing groundwater levels to recover.
- During dry years, groundwater would be used to supplement the surface water supply.

In 2002, major groundwater users within the Basin (e.g., Daly City, San Bruno and the California Water Service Company, the water supplier to South San Francisco) agreed to reduce their groundwater extraction from the Basin in exchange for additional surface water supplies at the same cost as their current groundwater supplies. The impact of the cessation of groundwater pumping on water levels in the aquifer and in Lake Merced is currently being evaluated.

---

[8] The intent of the AB3030 Grant Section 10750 *et seq.*, of the *California Water Code* was to encourage local water service agencies to cooperatively manage groundwater resources within their jurisdictions. As such, AB3030 provides a systematic procedure for development of a GWMP, which is intended to include guidelines for groundwater basin extraction, recharge, conveyance, and quality.

4.3.3 Historic Groundwater Use

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631. (b) . . . . If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan: (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

As discussed above, the City has not historically used groundwater as a drinking water source but has operated one groundwater well for irrigation purposes at Washington Park. The WP Well, storage tank, and distribution system were constructed in the early 1990's to supply City parks with groundwater. The WP Well was initially intended to supply irrigation water to Alpine Park, Victoria Park, and Washington Park, City Hall, and Burlingame High school, but the dimensions of the distribution system pipelines (1 to 2 inches diameter) made distribution to the outlying parks impractical. Instead, the WP Well was used to irrigate three sections of Washington Park: the ball field, the back park, and the front park.

The WP Well operated for approximately one year but data regarding the production capacity and pumping schedules during this operational period are not available. Consistent pumping was discontinued because of operational difficulties, and the WP Well has since been used only intermittently. Since the water extracted by the WP Well is not metered and its operation has been sporadic, the quantity of water extracted in recent years is not available. The WP Well's operational issues are currently being assessed and the City has begun rehabilitation on the WP Well; the WP Well is expected to be back in service prior to 2010.

4.3.4 Projected Future Groundwater Use

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631. (b) . . . . If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan: (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

In the future, it is expected that groundwater will be used on a regular basis to supply irrigation water to portions of Washington Park. The total demand from the three sections of Washington Park that are scheduled to receive groundwater for irrigation is estimated to be approximately 0.025 MGD (Table 10). This estimate is based on the

summer irrigation demand estimates of Washington Park based on irrigation schedules provided by Burlingame's Parks and Recreation Department (EKI, 2004) and monthly water use patterns for all City Parks (provided by City Consumption Reports) (EKI, 2004)[9]. According to production estimates of the WP Well and the available storage in the WP Well storage tank, the WP Well system has the capacity to meet these irrigation demands.[10] However, the City has not yet determined the long-term reliability of the groundwater supply and is not pursuing development of groundwater as a supplemental potable water supply.

[9] For the purpose of this UWMP, the City has assumed that monthly water use trends in Washington Park are similar to those trends observed at all of the City Parks. Based on the fraction of total annual water use consumed at all City Parks during each month of the year, and the estimated July irrigation demand at Washington Park, water demands were extrapolated for the months of August through June. The sum of these monthly demand estimates is 0.025 MGD.
[10] The potential pumping volume is based on the maximum sustainable pumping rate of 150 GPM.

5. RELIABILITY OF WATER SUPPLY

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631. (c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:
(1) An average water year.
(2) A single dry water year.
(3) Multiple dry water years.
For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

As described in Section 4, all of Burlingame's potable water supply is purchased from SFPUC. Approximately 5% of Burlingame's total water demand is for recycled water for non-potable use within the WWTP. It is anticipated that rehabilitation of the WP Well will provide the City with an additional 0.025 MGD of non-potable water for irrigation purposes, which will offset the City's potable water demand by an equivalent amount. However, because the WP Well has not operated for any consistent length of time, the long-term reliability of the groundwater supply in Burlingame has not been verified.

The following paragraphs describe the supply and reliability of each of these three water sources: potable water (also referred to by SFPUC as wholesale water), recycled water, and groundwater in a normal year (and/or a wet year), in a single dry year, and during a multiple dry year period.

5.1 CURRENT AND PROJECTED WHOLESALE WATER SUPPLY

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water -year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

As stated in the Master Contract, each BAWSCA agency's individual HHSA is survivable in perpetuity. However, the Master Contract specifies that in any given year, different quantities of water will be supplied to the BAWSCA agencies based on the climatic conditions. In years when precipitation is below average and SFPUC is unable to provide the BAWSCA agencies with their HHSAs, each BAWSCA agency is entitled to a percentage of its HHSA in accordance with assumptions regarding the division of available water pursuant to the Interim Water Shortage Allocation Plan. Estimates of Burlingame's water supply allocations in future dry years are based on assumptions regarding the division of available water pursuant to the IWSAP and findings from the SFPUC Water System Reliability Model. The IWSAP and the SFPUC Water System Reliability Model are described in further detail below.

Further, according to BAWSCA and SFPUC:

> *The SFPUC can meet the demands of its retail and wholesale customers in years of average and above-average precipitation. The Master Contract allows the SFPUC to reduce water deliveries to wholesale customers during periods of water shortage. Under the Master Contract, reductions to wholesale customers are to be based on each agency's proportional purchases of water from the SFPUC during the year immediately preceding the onset of shortage, unless this formula is supplanted by a water conservation plan agreed to by all parties.*

5.1.1 SFPUC's Water System Reliability Model

SFPUC's Water System Reliability Model was developed to estimate the future reliability of SFPUC's entire water supply including the water supply for all the Suburban Purchasers. Key assumptions that are incorporated into the SFPUC Water System Reliability Model are outlined below:

- The expansion of SFPUC's water supply portfolio (e.g., with groundwater from the Westside Basin) is consistent with SFPUC's *Water Supply Master Plan* and SFPUC's adopted WSIP.
- The historic climatic record (1920 to 2002) is used as a predictor of the frequency and severity of future droughts (and future water supply availability). Based on the hydrologic record, years 1987, 1988, and 1989 are selected as the representative dry year period.[11] SFPUC's methodology in developing its Water System Reliability Model is consistent with the methodology SFPUC employed in its WSIP, although SFPUC incorporated an 8-year design drought for purposes of developing its WSIP.
- The allocation of drought water supplies to each Suburban Purchaser is based on the terms of the current IWSAP. First the available drought water supplies as allocated between SFPUC and BAWSCA and then the BAWSCA allocation is further allocated between each Suburban Purchaser based on SFPUC's estimates of each Suburban Purchasers' future wholesale water demands.

Based upon the results of the Water System Reliability Model, SFPUC estimated that, if hydrologic conditions were the same in 2005 as they were in 1987, the first year of a multiple dry year period, would result in a 10% system-wide water shortage while subsequent dry year water supplies (representative of water years 1988 and 1989) would be reduced by as much as 20% (Table 1, Appendix G).

From 2010 to 2025, SFPUC projected system reliability to increase as the WSIP is completed,[12] such that if the representative dry years were projected forward there would be no system shortage during a representative single dry year, and up to a 10% shortage during a representative multiple dry year period (see Table 3, Appendix G).

SFPUC's reliability projection for 2030 results in a 10% system-wide cutback in the first year of a drought, and up to 20% cutbacks in subsequent dry years.

However, for planning purposes, since (1) the WSIP is designed to allow a maximum of a 20% system-wide water shortage and (2) the SFPUC Water System Reliability Model projects that future system-wide water supplies during multiple dry years could be reduced by as much as 20%, Burlingame has opted to evaluate the reliability of its future

---

[11] Although years 1987, 19988, and 1989 are representative of low rainfall years, they are not representative of the years of lowest water deliveries because the SFPUC Regional Water System has significant storage.

[12] The WSIP is planned to include (1) additional transmission capacity to improve the transfer of water from the Hetch Hetchy reservoir to local reservoirs, (2) additional local system storage capacity, and (3) additional water supplies to supplement existing water sources. Based upon these and other improvements, SFPUC's water supply reliability projections and the estimate system-wide water cutbacks vary over the planning horizon of this UWMP.

water supply against a 10% system-wide cutback during a single dry year and a 20% cutback during a multiple dry year period. Impacts to Burlingame of these system-wide water shortages are discussed in subsequent sections.

5.1.2 Interim Water Shortage Allocation Plan

The Master Contract's default formula discouraged SFPUC's wholesale customers from reducing purchases from SFPUC during periods of normal water supply through demand management programs or development of alternative supplies. To overcome this problem, SFPUC and its wholesale customers adopted an Interim Water Shortage Allocation Plan (IWSAP) in calendar 2000. This IWSAP applies to water shortages up to 20% on a system-wide basis and will remain in effect through June 2009.

The IWSAP has two components. The Tier One component of the IWSAP allocates water between San Francisco and the wholesale customer agencies collectively. The IWSAP distributes water between two customer classes based on the level of shortage:

Level of System Wide Reduction in Water Use Required	***Share of Available Water***	
	SFPUC Share	***Suburban Purchasers Share***
5% or less	*35.5%*	*64.5%*
6% through 10%	*36.0%*	*64.0%*
11% through 15%	*37.0%*	*63.0%*
16% through 20%	*37.5%*	*62.5%*

The Tier Two component of the IWSAP allocates the collective wholesale customer share among each of the 28 wholesale customers. This allocation is based on a formula that takes three factors into account, the first two of which are fixed: (1) each agency's Supply Assurance from SFPUC, with certain exceptions, and (2) each agency's purchases from SFPUC during the three years preceding adoption of the Plan. The third factor is the agency's rolling average of purchases of water from SFPUC during the three years immediately preceding the onset of shortage.

5.1.3 Burlingame's Projected IWSAP Allocation

In years when precipitation is below average and SFPUC is unable to provide retail agencies with their normal year supply, SFPUC's calculations assume that Burlingame is entitled to 2.77% of the total BAWSCA allocation until 2010, beyond which Burlingame's IWSAP allocation drops to 2.70%. Example IWSAP calculations provided by BAWSCA and SFPUC are provided in Appendix G.

The percentage of water that Burlingame receives in drought conditions is highly dependent on SFPUC's ability to secure the additional supplies that they are currently planning to obtain and Burlingame's wholesale water demand is relative to the demands of the other wholesale purchases. Therefore, it is important to note that Burlingame's drought supplies, as presented herein, are projections and may not be representative of actual available supplies in future drought years.

5.2 BURLINGAME'S PROJECTED POTABLE WATER SUPPLY

During a normal or wet year, SFPUC is obligated to supply Burlingame with water up to 100% of its HHSA; therefore, for the purposes of this UWMP, Burlingame's HHSA is considered to be Burlingame's total potable water supply during normal and wet years.

SFPUC has provided Burlingame with estimates of the potable water supplies that Burlingame can expect to receive from SFPUC during future single dry year and multiple dry years (see Appendix G).[13] These potable water supply estimates are based on SFPUC's Water System Reliability Model and use of the IWSAP (in its current formulation). The available drought water supplies estimated by the Water System Reliability Model are then allocated according to the IWSAP and using assumptions related to BAWSCA's total anticipated wholesale water demands and Burlingame's potable water demand.

5.2.1 Burlingame's Normal Year Water Supply

5.2.1.1 Burlingame's Normal Year Potable Water Supply

As discussed above, in accordance with the Master Contract and survivable in perpetuity, Burlingame has an HHSA of 5.23 MGD. SFPUC is obligated to provide Burlingame with up to 100% of the City's HHSA during years of normal precipitation; Table 11 shows Burlingame's potable and non-potable water supply projections through the year 2030.

5.2.1.2 Burlingame's Normal Year Non-Potable Water Supply

In addition to the wholesale potable water supply projections described above, the City also currently uses an average of 0.3 MGD of recycled water at the WWTP. This quantity of recycled water is expected to remain available at a constant volume through 2030 (Table 11).

The City also anticipates rehabilitating the WP Well system to provide an average of 0.025 MGD of groundwater for irrigation purposes by 2010. This groundwater supply should offset potable water demand for irrigation purposes in Washington Park, which

[13] This worksheet is based on a repeat of the actual historic hydrological period 1920 through 2002.

will vary seasonally according to the needs of the park, as described in Section 4.3.4 and in Table 11. The City's independent potable water demand projections incorporate this groundwater offset into estimated potable water demand projections from FY 2010 to 2030. However, as discussed above, because the long-term reliability of the groundwater supply in Burlingame has not been verified, in the future groundwater may not be a reliable source of non-potable water and Burlingame's projected potable water demands may increase by 0.025 MGD.

5.2.2 Burlingame's Single Dry Year Water Supply

SFPUC's single dry year wholesale water supply projections are based on the allocations projected by the Water System Reliability Model and the current IWSAP allocation percentages, with the assumption that the IWSAP will be extended beyond its current 2009 expiration date. Though the IWSAP is scheduled to expire in June 2009, unless extended by San Francisco and the wholesale customers, it currently presents the best method of estimating future allocations among BAWSCA agencies. As described in Section 5.1.1, for purposes of this UWMP, it is assumed that a single dry year reflects a 10% water shortage throughout the Regional Water System and a 12% cutback in BAWSCA's total wholesale water allocation.[14]

5.2.2.1 Burlingame's Single Dry Year Potable Water Supply

SFPUC used the Water System Reliability Model to model the total available water supplies in the Regional Water System from 2005 to 2030. Then, in accordance with the IWSAP Tier One allocation method, the BAWSCA agencies were allocated 64% of this total supply compared to the 64.5% of the total water supplies they receive during a normal year (see Section 5.1.1).

Based on the IWSAP Tier Two allocation method, it is estimated that Burlingame would be allocated 2.77% of the total BASWCA allocation during dry year periods through 2010, and 2.70% of the total BAWSCA allocation from 2010 to 2030. Table 11 shows the City's projected potable water supply based on SFPUC's projections of Burlingame's future potable water demand in years where there is a 10% system-wide shortage and application of the assumed IWSAP methodology. Because of the IWSAP calculation methodology, it is important to note that future single dry year wholesale water supplies will actually be contingent upon: (1) the City's actual wholesale water purchases during the three normal years preceding the single dry year, (2) the actual future growth in wholesale water demand of the other BAWSCA agencies, both of which are factors in determining individual allocations under the IWSAP, and (3) actual water supply availability in any given dry year. Additionally, future single dry year wholesale water

[14] In contrast, using the representative dry year methodology (i.e., projecting the hydrology of 1987 forward), SFPUC estimated that, from 2010 to 2025, it will be able to provide BAWSCA with at least, and in some years more than, 100% of its normal year supply during a single dry year (up to 2030).

supplies will be contingent upon whether the IWSAP, as currently formulated, will be renewed in 2009. Changes in any of these factors would result in different single dry year wholesale water supplies for the City.

5.2.2.2 Burlingame's Single Dry Year Non-Potable Water Supply

Recycled water and groundwater supplies are not expected to be affected by single dry year conditions (Table 11) (i.e., non-potable water supply will stay constant at 0.3 MGD and 0.025 MGD for recycled water and groundwater, respectively).

5.2.3 Burlingame's Multiple Dry Year Water Supply

As described in Section 5.1.1, for purposes of this UWMP, it is assumed that a multiple dry year period reflects up to a 20% water shortage throughout the Regional Water System and a 23% cutback in BAWSCA's wholesale water allocation.[15]

5.2.3.1 Burlingame's Multiple Dry Year Potable Water Supply

SFPUC used its Water System Reliability Model to model the total available water supplies in the Regional Water System. Then, in accordance with the IWSAP Tier One allocation method, BAWSCA agencies were allocated 62.5% of this total supply compared to the 64.5% of the total water supplies they receive during a normal year (see Section 5.1.1).

Based on the IWSAP Tier Two allocation method, it is estimated that Burlingame would be allocated 2.77% of the total BASWCA allocation during single and multiple dry year periods through 2010, and 2.70% of the total BAWSCA allocation from 2010 to 2030. Table 11 shows the City's projected potable water supplies based on SFPUC's estimate of Burlingame's future potable water demand and application of the assumed IWSAP methodology in years representative of a 20% cutback in system-wide supply. Because of the IWSAP calculation methodology, it is important to note that future single dry year wholesale water supplies will actually be contingent upon: (1) the City's actual wholesale water purchases during the three normal years preceding the single dry year, (2) the actual future growth in wholesale water demand of the other BAWSCA agencies, both of which are factors in determining individual allocations under the IWSAP, and (3) actual water supply availability in any given dry year. Additionally, future single dry year wholesale water supplies will be contingent upon whether the IWSAP, as currently formulated, will be renewed in 2009. Changes in any of these factors would result in different multiple dry year wholesale water supplies for the City.

---

[15] Using the representative dry year methodology (i.e., projecting the hydrology of 1987, 1988, and 1989 forward), SFPUC anticipates there will be 10% to 20% system-wide cutback during at least one of the three years of a future multiple-dry year period (see Table 3, Appendix G).

5.2.3.2 Burlingame's Multiple Dry Year Non-Potable Water Supply

Recycled water and groundwater supplies are not expected to be affected by multiple dry year conditions (i.e., non-potable water supply will stay constant at 0.3 MGD and 0.025 MGD for recycled water and groundwater, respectively).

5.3 WATER QUALITY IMPACTS ON RELIABILITY

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

As discussed in Section 4, the majority of the water supply to the Hetch Hetchy Regional Water System is from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains. The Hetch Hetchy Reservoir is considered a very high quality water source due to low total dissolved solid ("TDS") concentrations and other factors. Additional water supplies from the Alameda and Peninsula sources come from areas with restricted access to protect the source water quality.

The quality of Burlingame's potable water is monitored by both by the City and by SFPUC's Water Quality Bureau ("WQB"). SFPUC uses an extensive water sample collection and testing protocol at its various water sources throughout the Regional Water System. During 2004, over 137,000 tests of source water and treated drinking water samples were conducted within the Regional Water System and analyzed by the SFPUC WQB.[16] The City also routinely collects and analyzes samples throughout the City's potable water distribution system, including the storage reservoirs. A copy of the combined Burlingame and SFPUC 2004 water quality report is included as Appendix H.[17] As can be seen in Appendix H, all of the analyzed constituents were detected at concentrations below the Maximum Contaminant Level ("MCL").

Future supplemental water sources currently being pursued by SFPUC are currently of unknown water quality. Depending upon the water quality of such future sources of water and how SFPUC proposes to blend the future water supplies into the existing system, some impacts to water quality are possible.

The results of Burlingame and SFPUC's water quality assessments showed that SFPUC watersheds have very low levels of contaminants, and that those contaminants that are found at low levels are associated with wildlife and, to a limited extent, human recreation. While existing water supply contracts between SFPUC and the City expire in 2009, for the purposes of this UWMP, it is anticipated that this high-quality potable water

---

[16] http://sfwater.org/detail.cfm/MC_ID/10/MSC_ID/51/MTO_ID/63/C_ID/2525
[17] http://www.burlingame.org/water/report.htm

source will continue to be available to the City through the planning horizon ending in the year 2030.

Groundwater extracted from the WP Well is also of relatively high quality (i.e., low TDS). Due to its proximity to San Francisco Bay, there is risk that prolonged extraction from the WP Well will lead to saltwater intrusion. When the WP Well is brought into production, the groundwater will be monitored on a regular basis to evaluate water quality trends. In addition, Burlingame has requested to receive the groundwater quality data that San Bruno will be collecting from the monitoring well that San Bruno installed in Burlingame to monitor for saltwater intrusion as a result of groundwater extraction by San Bruno.

6. POTENTIAL WATER SUPPLY PROJECTS AND PROGRAMS

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single dry, and multiple dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

The City is not actively pursuing additional potable water supplies to supplement its normal year SFPUC potable water supply. Since Burlingame's current potable water demand (4.52 MGD) is less than its SFPUC HHSA, and its projected potable water demands through 2030 are not expected to exceed its 5.23 MGD HHSA, the City does not anticipate a need for additional potable water supplies in the current planning horizon.

6.1 DEVELOPMENT OF DESALINATED WATER

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

As described above, Burlingame does not anticipate a need for supplemental water supplies in the near future and is not pursuing desalination at this time.

6.2 WATER TRANSFERS

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis….

Though the SFPUC Master Contract does permit water transfers, Burlingame does not presently anticipate the need for water right transfers during normal year conditions. However, should that condition change in the future, it is possible that Burlingame could purchase water from another BAWSCA agency. For example, if another BAWSCA agency is able to use groundwater, or another surface water supply (e.g., from the State

Water Project "SWP" or Santa Clara Valley Water District "SCVWD") instead of a portion of its SFPUC HHSA, that SFPUC water may be available for transfer. Some agencies are also beginning to consider regional recycled water facilities and desalinization facilities, which would open additional possibilities for future water right transfers.

In addition, if in a future drought Burlingame should need additional water, the IWSAP allows for voluntary transfers of shortage allocations between SFPUC and any wholesale customer and between wholesale customer agencies (see Section 5.1.1). Also, water "banked" by a wholesale customer, through reductions in usage greater than required, may also be transferred.

6.3 RECYCLED WATER PLAN

Recycling, or reclaiming, water involves treating wastewater to an acceptable level such that it can be reused for irrigation, cooling, and other non-potable applications. The appeal of water recycling is its potential to offset the use of potable supplies. The regulatory requirements for recycled water are defined in the California Code of Regulations, Title 22, Article 3 and differ for different uses (e.g. irrigation for food crops, landscape, and recreation). Table 12 contains a summary of the Title 22 reclaimed water regulations for each of the permitted uses. Because recycled water is treated wastewater, its availability is closely linked to the treatment capability of the City's WWTP. The following section describes Burlingame's wastewater treatment and water recycling facilities and current and projected uses of recycled water.

6.3.1 Coordination

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

The City coordinates with adjacent municipalities and wastewater agencies in both the treatment and discharge of its wastewater. Burlingame's WWTP processes wastewater from the City, the unincorporated Burlingame Hills, and the Town of Hillsborough. The WWTP is located approximately at sea level along the San Francisco Bay. The WWTP contains facilities to recycle a portion of the treated wastewater for use within the WWTP.

Once treated, the City's effluent is sent, through a joint transport system with the City of Millbrae, to South San Francisco. Prior to discharge into the San Francisco Bay through the South San Francisco Outfall, the Burlingame-Millbrae wastewater undergoes dechloramination along with the wastewater effluent from South San Francisco, San Bruno, and the City and County of San Francisco.

6.3.2 Wastewater Quantity, Quality and Current Uses

10633 (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.
(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

The following sections provide information regarding the WWTP collection and treatment system, wastewater quantities, and current uses of wastewater within Burlingame.

6.3.2.1 Wastewater Treatment System

Burlingame's WWTP treatment process includes four treatment steps: (1) Primary sedimentation, (2) secondary biological treatment, (3) sodium hypochlorite disinfection, and (4) contact time in a plug flow detention facility. Recycled wastewater undergoes an additional flocculation and clarification treatment step. Figure 9 is a schematic of the treatment process at the WWTP facility. Following treatment at the WWTP, the effluent is sent to South San Francisco through the Burlingame–Millbrae Central Bay Outfall system and discharged after dechlorination into a joint-use deep-water outfall in the San Francisco Bay (Nolte, 1982; Roman & Lougee, 2000).

6.3.2.2 Wastewater Quantity

The average daily flow of wastewater treated at the City's WWTP has remained fairly constant since the early 1980's. The 1982 Wastewater Management Facilities Master Plan identifies an existing average flow of 4.00 MGD (Nolte, 1982). The present average daily flow is approximately 4.1 MGD and this flow is not expected to increase significantly in the foreseeable future.[18]

6.3.2.3 Current Wastewater Uses

The Burlingame WWTP uses approximately 300,000 GPD of treated wastewater for internal use within the plant. However, the treated wastewater does not meet Title 22, Article 3 recycled water requirements for non-potable uses outside of the WWTP and is discharged into the San Francisco Bay through the Burlingame-Millbrae Central Outfall system after use (Nolte 1982).

---

[18] Current and projected wastewater average daily flows were provided by Veolia Water North America.

6.3.3 Potential Demand

10633 (d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.
(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.
(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

At this time the City is unable to project potential future uses of recycled water demands. However, the City has allocated $60,000 for each of the FY 2007-2008 and FY 2008-2009 budgets for a study examining the feasibility of expanding Burlingame's use of recycled water.

Table 12 identifies the accepted uses of recycled water as outlined in Title 22. These uses include specific types of irrigation, impoundment, cooling and air conditioning, and other uses such as groundwater recharge, dust control, and flushing toilets and urinals. All of the activities identified in Table 12 are allowed for disinfected, tertiary treated recycled water. A smaller subset of these activities is permitted for use with disinfected, secondary treated recycled water.

If a larger-scale recycled water program were to be implemented in Burlingame, irrigation water users on Airport Boulevard would be candidates for receiving the recycled water. According to the 2000 UWMP (Roman & Lougee, 2000), non-potable water pipelines have been installed in the Bayside Park driving range and soccer fields south of the WWTP. In addition, all new developments along Airport Boulevard are required to install non-potable water lines that could, in the future, carry recycled water for irrigation. The 2000 UWMP also indicates that ten hotels (five within a ½-mile radius of the wastewater treatment plant) use irrigation meters, and may be potential candidates for recycled water in the future.

Irrigation needs for Coyote Point and its golf course, hotel landscaping, and City parks and school fields could also potentially be met by recycled water, especially as these irrigation demands typically are greatest during the summer months, the time of greatest

potable water demand (EKI, 2004). Construction water for dust control and moisture conditioning for compaction could also potentially be met with reclaimed water. If the recycled water is high enough quality (i.e., sufficiently low in minerals and salts), it could potentially be used for cooling water for industrial processes at local industries.

While the use of recycled water to reduce potable water demands is a potentially viable alternative in Burlingame, to extend current use of recycled water within the City would require expensive infrastructure and additional treatment capacities. Until more detailed studies can be conducted, the City does not anticipate an increase in its use of recycled water in the near future.

7. SUPPLY VERSUS DEMAND

10635 (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

The following sections compare Burlingame's projected potable water demands to projected potable water supplies based on information provided by SFPUC and an independent potable water demand analysis conducted by the City (Section 3.2). As discussed previously, the City developed its potable water demand projections for purposes of CIP development and water planning. For the purposes of this analysis, non-potable demands and supplies are not expected to change with time or climatic conditions. Potable water demand projections and wholesale (or potable) water supplies however, are expected to vary as a function of time and hydrologic conditions and are therefore the focus of this UWMP's supply and demand analysis.

7.1 PROJECTED NORMAL WATER YEAR SUPPLY AND DEMAND

Based on SFPUC and City projections of future potable water demands, Burlingame is not expected to exceed its HHSA by 2030. As described in Section 3.2.5, Burlingame's potable water demand was estimated by SFPUC using a DSS Model that incorporated Burlingame's historic potable water purchases and made projections of future water savings due to implementation of water conservation measures and through Plumbing Code impacts.

Burlingame developed an independent estimate of future potable water demand that indicated that Burlingame would need more water than SFPUC anticipated in its modeling (but less than its HHSA). However, because SFPUC is obligated to supply Burlingame with up to 100% of its HHSA, the City's potable water supplies should be sufficient to meet projected potable water demands in normal years through 2030 (Table 13).

7.2 PROJECTED SINGLE DRY YEAR SUPPLY AND DEMAND COMPARISON

During single and multiple dry years, SFPUC is no longer obligated to provide Burlingame with its HHSA. As discussed in Sections 5.5.1 and 5.3, SFPUC has

estimated Burlingame's future single dry year potable water supplies according to findings of its Water System Reliability Model and the terms of the IWSAP. Based on the current IWSAP, SFPUC estimated that Burlingame would be allocated 2.77% of the total BAWSCA wholesale water allocation during single dry years until 2010. After 2010, SFPUC's estimate of Burlingame's allocation drops to 2.70% of the BASWCA allocation. SFPUC's estimates of Burlingame's allocation during a single dry year also make assumptions about the volume and reliability of supplemental water supplies that SFPUC hopes to secure in the future (see Section 5.1.1). Therefore, that is why Burlingame's cutbacks during drought years are projected to be smaller in the future.

Comparison of SFPUC's single dry year water supply projections (assuming a 10% system-wide water supply shortage) to the potable water demand projections developed by SFPUC and Burlingame (Section 3.2) indicates that the City may have to institute a range of water shortage conservation measures during dry years. Table 14 shows that the projected single dry year wholesale water supply will not be sufficient to meet Burlingame's projected potable water demands through the year 2030 and the City may have to decrease its total potable water demand by up to 6% during a single dry year. However, if Burlingame successfully reduces its future potable water demand to meet SFPUC's potable water demand projections, and the assumptions that SFPUC made regarding its future supplemental water supplies and the IWSAP are valid, then Burlingame's potential cutbacks may range from 6% in 2010 to 1% in 2015, and Burlingame may not face a water shortage during a single dry year between 2020 and 2030. It is estimated that potable water demand cutbacks on the order of 6% can be met by implementing Stages I and II of its Water Shortage Contingency Plan (see Section 9).

7.3 PROJECTED MULTIPLE DRY YEAR SUPPLY AND DEMAND COMPARISON

For multiple dry year scenarios representative of a 20% system-wide water supply shortage, both the SFPUC's and City's potable water demand projections for Burlingame (Section 3.2) exceed SFPUC's projected potable water supply (Table 14). As described in Section 3.2, SFPUC's potable water demand projections incorporate increasing effects of plumbing codes and conservation efforts beginning in 2010 (URS, 2004a). The City's projected water demands do not incorporate these efforts, but instead project water use based on the average consumption from FY 2000 to 2005 for each water use sector and assumes trends in each sector's water use patterns. Comparison of SFPUC's projected potable water demands and multiple dry year supplies indicate that projected cutbacks are higher in earlier years (21% in 2005) and become smaller in future years (7% in 2030). This is likely due to two main factors: (1) the methodology employed by SFPUC in estimating dry year supplies is not the same methodology SFPUC used to estimate the City's future potable water demand (Section 3.2); and (2) SFPUC anticipates increases in water supply in future years due to newly acquired sources, which in turn increases the total BAWSCA allocation and the quantity of water that Burlingame would receive from a 2.7% allocation of BAWSCA's dry year supply.

Comparing Burlingame's potable water demand projections to the SFPUC multiple dry year wholesale water supply projections shows only small changes in percent cutbacks over time (i.e., from 18% in 2010 to 13% in 2030). Though Burlingame's potential future potable water demand cutbacks are higher assuming the City's potable water demand projections (i.e., compared to SFPUC's potable water demand projections for Burlingame), the City's actual ability to cutback potable water use during a drought may be more difficult in the SFPUC scenario because the SFPUC potable water demand projections already include implementation of aggressive conservation measures (i.e., demand may have "hardened" more in the SFPUC future demand scenarios). Burlingame predicts that potable water demand cutbacks on the order of 15% to 20% can be met by implementing Stages II and III of its Water Shortage Contingency Plan (see Section 9).

8. DEMAND MANAGEMENT MEASURES

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:
(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

A) Water Surveys for Single Family and Multi-Family Residential Customers
B) Residential Plumbing Retrofit
C) System Water Audits, Leak Detection, and Repair
D) Metering
E) Large Landscape Conservation Program and Incentives
F) High-Efficiency Appliance Promotion Programs
G) Public Information Programs
H) School Education Programs
I) Conservation Programs for Commercial, Industrial, Institutional Customers
J) Wholesale Agency Assistance Programs
K) Non-Promotional Water Pricing Programs
L) Water Conservation Coordinator
M) Waste Water Prohibition
N) Residential Ultra Low Flush Toilet Replacement

To the degree that information is available, Burlingame has described its current and projected future efforts to conserve potable water use within the City. For the purposes of this UWMP, EKI has referred to the UWMP Act Demand Management Measures as Best Management Practices ("BMPs").

8.1 REGIONAL WATER CONSERVATION

BAWSCA and its member agencies look for opportunities to work with other water agencies, including the SFPUC and SCVWD, and leverage available resources in implementing water use efficiency projects. For example, in 2005, the SFPUC and BAWSCA entered into a Memorandum of Understanding (MOU) regarding the administration of a Spray Valve Installation Program. Through this MOU, SFPUC and BAWSCA will work cooperatively to offer and coordinate installation of water conserving spray valves to food service providers in BAWSCA member service areas. Recently the Bay Area Efficient Clothes Washer Rebate Program, a single rebate program offered by all major water agencies in the greater Bay Area including BAWSCA and the SFPUC, was recipient of $1.5M in Proposition 50 grant funds for implementation as early as FY 2006/2007.

BAWSCA and its member agencies will continue to look to partner with other agencies to develop regional water conservation efforts that look beyond local issues of supply and cost-effectiveness to examine costs, benefits and other related issues on a system-wide level. The goal is to maximize the efficient use of water regionally by capitalizing on variations in local conditions and economies of scale.

8.2 BURLINGAME WATER CONSERVATION

Likewise, although Burlingame does not anticipate future potable water demands to exceed its HHSA before 2030, Burlingame is committed to water conservation and efficient use of water and has implemented the majority of the California Urban Water Conservation Council's ("CUWCC") 14 BMPs. A description of each BMP and the actions Burlingame has taken, or plans to take, towards implementation of these BMPs is outlined below.

8.2.1 BMP 1 - Residential Surveys

Burlingame's residential surveys ("surveys") are performed on request or when triggered by customer calls regarding high bills or leak investigations. The surveys consist of a personal visit to the residence by the Water Conservation Coordinator ("WCC") aimed at determining the source of increased water use (e.g. leaks, swimming pools, etc.). This site visit includes checks for leaks in toilets and faucets, showerhead flow rates and replacement recommendations, as well as checks on irrigation and landscape systems.

In addition, the WCC provides the customer with a Water Conservation Kit. Each Water Conservation Kit contains two low flow shower heads, toilet tank leak detection dye tablets, tank displacement water bags, soil moisture indicators for potted plants, and other devices that simplify water conservation for the City's residential customers. Since 2000, the City has conducted over 3,000 residential water surveys at a total cost of approximately $60,000 (Table 15). In addition to residential surveys performed by the WCC, 750 Residential Audit Kits have been distributed since 2005.[19] The City will continue to implement BMP-1 on an "on request" basis.

8.2.2 BMP 2 - Residential Retrofits

In its efforts to increase water conservation in recent years, the City has instituted a number of rebate programs designed to encourage customers to upgrade their homes with water efficient fixtures. The largest rebates that the City offers are for ultra low flow toilets ("ULFTs") and water efficient clothes washers. These programs are discussed in depth below in Sections 7.2.6 (BMP-6) and 7.2.14 (BMP-14). In addition, low flow shower heads, faucet aeration devices, and toilet tank displacement devices are available

[19] Audit kit information was provided through personal communication with Public Works Superintendent Phil Scott.

to residents in Water Conservation Kits that are available for pick-up at City Hall and that the City distributes during Residential Surveys (BMP-1). Since 2000, the City has distributed more than 450 Water Conservation Fixture Retrofit Kits.[20] The City will continue to implement BMP-2 in the same manner that it has historically.

8.2.3 BMP 3 - System Water Audits

To minimize water loss within the system, the City conducts leak investigation and repair on a regular basis. The number of leak investigations has increased 70% since 2001 (Table 15). Leak investigations are triggered by abnormally high water bills.[21] When leaks in the system are detected, they are repaired by the City. Leaks on the customer's side of the meter are reported to the customer and the City advises them on repair.

The City conducts annual system water audits to determine the quantity of water lost (UAW) by comparing the City's purchased potable water supplies with its recorded potable water use. Table 7 shows the quantity of potable water that the City purchased from SFPUC and the amount of potable water consumed within the City (both for customer accounts, City accounts, and unmetered use). Water purchases are recorded in the City's Fiscal Reports, while total metered and unmetered use is recorded by the City register.[22] According to the Fiscal Reports, the City had an average UAW of 6.36% between 2000 and 2005, with a low of 4.96% and a high of 7.23% loss.

The City will continue to monitor its potable water distribution system efficiency to maintain it above 90% efficient.

8.2.4 BMP 4 - Metering

All customers are metered and billed by meter size and the quantity of use (Table 16). New customers with large landscaped areas (i.e., greater than once acre) are required to install separate irrigation meters in accordance with Ordinance 1476, enacted January 1993 and described below in Section 7.2.5 (Appendix I). The City has very few residences that approach one acre in size, and the majority of these irrigation meters are held by CII accounts. The installation of such meters is enforced through the City's building codes and planning department.

Currently, the majority of the City's 9,078 water meters are read manually by City employees. Meters are rechecked frequently when a customer's bill is suspiciously

---

[20] Retrofit kit information provided through personal communication with Public Works Superintendent Phil Scott.
[21] The City defines a water bill as abnormally high if it exceeds water use from the same billing cycle of the previous year by more than 20%. Additionally, the City will respond to customer complaints of high water bills.
[22] Unmetered water use is estimated by the Fire and Water Departments.

higher than previous months. If a meter recheck confirms a large increase in water use, the City proceeds with a leak investigation or residential survey.

Of the City's 9,078 meters, approximately 2,000 of them are touch-read and can be modified to have radio capabilities. The City currently budgets approximately $35,000 for the installation of two to three hundred new meters annually.[23] Burlingame is considering increasing this budget to expedite the meter replacement program. A pilot program to determine the preferred brand of meter will be implemented in early 2006. It is the City's eventual goal to provide customers with radio enabled meter-reading devices that can also be checked from inside the home. This will allow customers to monitor their own water use and alert them if there is a leak.

8.2.5 BMP 5 - Large Landscape

In January of 1993, the City adopted the California Model Efficiency Landscape Ordinance as its own water efficiency landscape ordinance (Ordinance No. 1476, Appendix I). This Ordinance includes provisions for new and rehabilitated landscapes, as well as for existing landscapes. Provisions include maximum water allowances, estimated water use, landscape and irrigation design plans, irrigation, maintenance, and auditing schedules, grading design plans, and a soil analysis. Compliance with Ordinance No. 1476 is overseen by the City Planning Department.

8.2.6 BMP 6 - High-Efficiency Clothes Washers

As of May 2000, the City began providing a $75 rebate to homeowners who purchase a high efficiency washing machine for a single dwelling unit. The rebate is given as a credit against the customer's water bill in accordance with City Ordinance No. 1629 (Appendix J). To qualify for a rebate, the washing machines must meet the criteria for High-Efficiency Washing Machines established by the Consortium for Energy Efficiency specifications. The result is a savings of up to 20 gallons of water per load. Guidelines and applications for the City's High-Efficiency cloths washer rebates can be found on the City's website.[24]

Since 2000, the City has rebated a total of $20,000 for the installation of 276 high efficiency washing machines. The number of washing machine rebates issued each year has grown steadily since implementation of the rebate program (i.e., from 35 in 2000 to 102 in 2005, see Table 15). The City will continue to offer up to $10,000 in rebates for High-Efficiency Washers and ULFT per year.

---

[23] Information on meter replacements was provided by Public Works Superintendent Phil Scott and City Engineer Syed Murtuza. Based on a cost of $125 per meter and $50,000 budgeted annually in the Capital Improvements Program.
[24] http://www.burlingame.org/water/rebates.htm

8.2.7 BMP 7 - Public Information

The City budgets $26,000 per year for public information programs. Current public information programs sponsored by the City include City-hosted booths at community events (e.g., at "Art in the Park"), water bill inserts informing customers about water conservation and rebate programs, and distribution of water conservation literature and kits.[25] Public information literature (e.g., water conservation pamphlets) and the Water Conservation Kits are available at special events and at City Hall. The City also maintains educational information (e.g. water-saving tips, and rebate programs) on its website. In addition to the 750 Water Conservation Kits distributed since 2000, the City has distributed over 400 water conservation pamphlets and 200 soil moisture meters. Annual expenditure for materials and maintenance of these kits is approximately $22,000 (Table 15).

The City will continue to promote water conservation through public information in the future.

8.2.8 BMP 8 - School Education

The City currently provides literature, information, and classroom visits upon request. Visits include an informational presentation on the City's water and wastewater system, conducted by Donna Allen from Veolia Water North America, the company that operates and maintains the WWTP.

In addition to requested visits, the City has previously participated in school curriculum programs and poster competitions and is currently considering participation in BAWSCA's "Our Water" school education program. "Our Water" is a creative and user-friendly approach to water conservation education at the elementary school level developed by Kollage Community School for the Arts in Belmont. "Our Water" is an integrated curriculum combining water conservation lessons from the Water Education Foundation's "California Water Story" curriculum for 4th grade, with instruction in visual, performing, and literary arts. The "Our Water" curriculum is presented in 50-minute sessions conducted once a week over nine weeks. Each school or class is assigned an arts instructor in visual art, dance, or poetry. Pre- and post-tests are given to students to measure the effectiveness of the program in enhancing their water conservation awareness.

8.2.9 BMP 9 - Commercial, Industrial, Institutional Accounting

The City provides commercial and industrial customers with assistance in conducting water audits and in determining ways to cost-effectively reduce water consumption. The City has established an annual budget to conduct the audits (Table 15). In 2004, the City

[25] Information regarding Public Information activities provided by Public Works Superintendent Phil Scott.

conducted water-use audits on three hotels that were major water users within the CII sector. The cost of the 2004 audit was approximately $50,000. The purpose of the audits is to identify inefficient, wasteful, or malfunctioning fixtures. It includes inspection of plumbing fixtures, cooling equipment and irrigation methods. Where applicable, the City identifies opportunities for in-house recycling of process-water, low-flow fixtures and toilets, and landscaping water conservation.

The City will continue to offer audits to CII customers who request them.

8.2.10 BMP 10 - Wholesaler Incentives

This BMP does not apply to Burlingame because Burlingame is not a wholesale water agency.

8.2.11 BMP 11 - Conservation Pricing

During non-drought years, the City's water customers are billed for every 1,000 gallons of water used, with an additional fixed monthly charge according to their meter size. Rates are based on wholesale water prices from the SFPUC, and are slightly higher for residents of Burlingame Hills than for residents of the City of Burlingame (i.e., $4.66 and $4.19 respectively, see Table 16). In the future, Burlingame intends to consider the effects of implementing an increasing block rate schedule for water charges.

In times of drought, the City's rate structure for water use changes according the per capita residential allocation plan set forth in Resolution 49-92 (Appendix K). The plan allocates 100 GPD for the first person, 70 GPD for the 2nd, 3rd, and 4th, occupants, and 50 GPD for each additional occupant. Customers who exceed their allocation by 10% are billed at two times the regular charge, while an exceedance of 30% or more results in five times the regular rate. Additional conservation actions specified in Resolution 49-92 are explained in Section 9.2.

8.2.12 BMP 12 - Conservation Coordinator

Water conservation specialist Martin Hernandez performs the duties of "Water Conservation Coordinator" for the City. Mr. Hernandez responds to leak investigations, performs residential surveys, maintains water conservation material and kits, provides customer service to low pressure and dirty water reports, and completes the other water conservation activities on behalf of the City.

8.2.13 BMP 13 - Waste Prohibitions

The City's Water Rationing Plan (Resolution 49-92, Appendix K) includes a subsection that reduces water waste during times of shortage by prohibiting, mandating, and encouraging various actions.

Prohibitions include:

- Additional water allocation for new landscaping
- Gutter or street flooding
- Using a hose to clean hard surfaces (e.g. sidewalk)
- Use of potable water in decorative fountains
- Use of potable water for non-essential construction purposes (e.g. backfill consolidation, dust control)

Mandates include:

- Positive shutoff valves for all hoses
- Low water use landscaping designs and irrigations systems for new or renovated landscaping
- Restaurant/Hotels shall serve water upon request only
- Water used for cooling purposes must be recycled
- Broken/defective plumbing must be repaired immediately
- Water-saving fixtures or devices must be incorporated into new construction projects if they are to obtain a service connection

Encouraged Actions include:

- Use of groundwater or reclaimed water for irrigation of turf areas, median strips, and street sweepers
- Use of reduction flow equipment for vehicle dealer/fleet washing

In non-drought years, the City encourages water conservation, but does not mandate the aforementioned actions.

8.2.14 BMP 14 - Ultra Low Flow Toilets

City Ordinance 1629, effective July 2000, encourages the installation of ULFTs in existing residences by providing a $50 credit against a customer's water bill for the purchase of one ULFT. Qualifying toilets must meet the criteria for ULFT established by California Urban Water Conservation Council of 1.60 gallons per flush ("GPF"). Each single family dwelling unit is eligible for one of the $50 rebate for toilets using 1.6 GPF. The City does not offer rebates toward the installation of ULFT in connection with new building construction. Guidelines and applications for the City's ULFT rebate program can be found on the City's website.[26]

Since 2000, the City has budgeted $10,000 per year for the implementation of the ULFT rebate program. In the five years of operation, the City has rebated a total of $6,300 to customers for 126 ULFTs (Table 15). The City will continue to offer up to 200 ULFT rebates per year.

---

[26] http://www.burlingame.org/water/rebates.htm

8.3 SCHEDULE OF IMPLEMENTATION

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (f) (2) A schedule of implementation for all water demand management measures proposed or described in the plan.

The City strives to meet BMP recommendations and to implement demand management measures in a timely manner. Each of the aforementioned BMPs is currently being implemented by the City or scheduled for implementation as described above.

8.4 EFFECTIVENESS OF IMPLEMENTATION

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (f)(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

The City does not currently evaluate the effectiveness (in terms of water savings) of each individual BMP described above. However, as described in Section 3.1, potable water use within the City has declined since 2000, and although no official study has been conducted regarding the specific causes of this decline, it has been attributed, in part, to the City's increased water conservation efforts.

8.5 CONSERVATION SAVINGS

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (f) (4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

The City does not currently implement a formal program for tracking the effectiveness of the individual BMPs on water use savings within the City. Potential methods for quantifying the water saved by BMPs that the City implements could include development of a database that would allow the City to track those accounts that had retrofitted their plumbing fixtures as part of a BMP (e.g. water-efficient clothes washers, ULFT and other low-flow fixtures), and comparing water use at those accounts pre- and post- retrofit. The City may consider such an analysis in future years, although normalizing the results for climatic, land use or other changes at an account may make such determination of water savings difficult.

8.6 EVALUATION OF DEMAND MANAGEMENT MEASURES NOT IMPLEMENTED

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
10631 (g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:
(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.
(2) Include a cost-benefit analysis, identifying total benefits and total costs.
(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.
(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

Burlingame currently implements or plans to implement 13 of the 14 BMPs described by the CUWCC. The remaining BMP, the Wholesaler Incentives (BMP-11) does not apply to Burlingame because Burlingame is not a wholesale water supplier.

9. WATER SHORTAGE CONTINGENCY PLAN

Burlingame's current Water Shortage Contingency Plan was developed in response to severe droughts that occurred in California between 1975 and 1977, and again between 1987 and 1992. During these periods of extreme dryness, the City was forced to reduce consumption by a maximum of 34%, exemplifying the vulnerability of SFPUC's Regional Water System to climatic conditions. In response to these droughts, the City Council adopted the Water Rationing Ordinance (No. 1101) in April of 1977, and adopted Water Rationing Plan Resolution 49-92 (No. 49-92) as an amendment to Ordinance No. 1101 in 1992. The following section describes the City's response to these historical drought events and the resulting ordinances that are currently in place to manage water demands during future droughts. A copy of Water Rationing Plan Resolution 49-92 ("WRPR" or "Plan 49-92") is included as Appendix K.

9.1 ORDINANCE 1101

The State of California experienced extremely dry years between 1975 and 1977 when runoff in the Sacramento and San Joaquin Valleys averaged 37% and 26% of average flow (DWR, 2000). To help mitigate the effects of the drought, the Burlingame City Council enacted Ordinance 1011 in April 1977 requiring a mandatory 28% cutback in water consumption from total water use in 1976. Some of the rationing practices required by the City of Burlingame Ordinance 1011 included:

- Repairing broken or defective plumbing, sprinklers, watering, or irrigation equipment immediately.
- Reducing irrigation of lawns, gardens, playfields, parks, median strips, golf courses, cemeteries, and landscaping of any type by at least 50% compared to the same billing period in the previous year.
- Eliminating new irrigation services and expansion of existing irrigation facilities.
- Eliminating use of water that flooded or ran off in gutters or streets.
- Eliminating the use of hoses to wash vehicles or building surfaces or parts.
- Eliminating filling any new or existing swimming pools with water.
- Eliminating use of hoses for cleaning sidewalks, driveways, patios, parking lots, etc.
- Requiring all new construction to include water saving devices in interior plumbing fixtures and minimize landscaping.
- Eliminating use of water in decorative fountains.
- Requiring restaurants to serve water to customers only upon request.
- Using reclaimed water for construction water purposes.

These mandates were enforced by the City until 1978 when increased precipitation brought an end to the drought.

9.2 WATER RATIONING PLAN RESOLUTION NO. 49-92

Almost a decade after the 1975-1977 drought event, the City was faced again with extreme dry conditions. The 1987-1992 drought was notable for its six-year duration of significantly below average runoff flows and statewide nature of impacts (runoff in the Sacramento and San Joaquin Valleys averaged 56% and 47% of average flow those years) (DWR, 2000). Statewide reservoir storage was approximately 40% of average by the third year of the drought, and did not return to average conditions until 1994 (DWR, 2000).

Between 1987 and 1992 the City was forced to reduce water use by 34% at the peak of the drought, from 5.0 MGD in 1988 to 3.3 MGD in 1991 (EKI, 2004). Though Ordinance 1101 called on the City to implement many water conservation measures, it was amended in 1992 to increase the rate penalty for customers whose water use exceeds their drought allocation by more than 30%. Like its predecessor, Water Rationing Plan Resolution No. 49-92 mandated the implementation of conservation measures, prohibited the use of potable water for certain activities, and instituted strict penalties to accounts not in compliance with the WRPR 49-92.

The conditions set forth in WRPR 49-92 become effective upon ratification by the Burlingame City Council in time of drought. Once initiated, the WRPR distributes water based on a per capita allocation for single family residential accounts, and a percentage reduction for multifamily dwellings, commercial, industrial, institutional, and irrigation accounts. The WRPR water use allocations and percent reductions outlined in the WRPR are described below and in Table 17.

Each single family dwelling (including duplexes) is allocated 100 GPD for the first inhabitant, 70 GPD each for the second, third, or fourth inhabitants, and 50 GPD for each additional inhabitant. Service connections with landscaping receive allocations based on the landscape area, including 50 GPD for lots under 10,000 square feet, 150 GPD for lots exceeding 10,000 square feet but less than ¾ acre, and between 150 to 300 GPD for lots larger than ¾ acre.

For all other accounts (e.g., RMF, CII, and Irrigation), the percent reductions required by the WRPR differ both between customer category and for different months of the year. Irrigation/Park accounts are required to cut back the most, with a 50% reduction required during both the Summer and Winter months. Institutional accounts face the second harshest cutbacks (i.e., 25% cutbacks required in all twelve months), while Commercial, Industrial and Hotel (with food) accounts are required to reduce their water use by 25% during the Summer (June 1 through November 30), and by15% in Winter months (December 1 through May 31). Other food-related commercial accounts are required to lower their water usage by 20% in the Summer and 10% in the Winter, while multi-family dwellings must reduce water use by 15% and 7% for Summer and Winter months, respectively.

In addition to water use allocations, WRPR 49-92 prohibits or mandates a number of water conserving actions. These actions are described in detail in the WRPR itself (Appendix K) and summarized in Table 18.

If the allocations identified in the WRPR were to be implemented today, as is, Burlingame could expect to achieve up to a 20% reduction in total potable water demand.

9.3 STAGES OF ACTION

10632. The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier: (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

The City's WRPR 49-92 does not currently include "Stages of Action" associated with specific cutback requirements. However, for the purposes of this UWMP, five Stages of Action have been established (each Stage corresponds to a water supply condition and City-wide water use reduction goal, from 5% to 50%) and identified mechanisms by which the City would expect to achieve the required water savings for each Stage of Action. These Stages of Action, and their associated cutbacks, are described in Table 19.

The first stage, Stage I, refers to a 5% cutback from the City's normal year potable water supply and is representative of the projected cutbacks that SFPUC estimated Burlingame would have to achieve during single dry years. It is anticipated 5% reductions in demand are achievable through development of public awareness campaign to inform its customers of the drought conditions. Past experience has shown that when informed of drought conditions, customers modify their water use behavior to a significant enough degree that Burlingame should be able to achieve a 5% cutback in total potable water demand.

The second stage of action, Stage II, is to be implemented when the City's potable water supply falls 10% short of its normal year supply. It is estimated that a Stage II overall reduction of 10% could be achieved through a 5% reduction in indoor water use and a 30% reduction in outdoor water use. Potential methods for such reductions include increased emphasis on development and implementation of a public information campaign (e.g., notices of drought conditions), and by developing and enforcing a landscape irrigation schedule for single family residences (Table 19).

The third stage of action, Stage III, is to be implemented when the City's potable water supply is 20% less than its normal year supply. The steps to achieve a Stage III reduction include all of the steps outlined in Stage II, as well as the additional mandates described in Table 19. To achieve the 20% reduction in water use required in Stage III, it is estimated that the City would have to decrease indoor water use by 15% and decrease

outdoor water use by 50%. In the event of a Stage III reduction, the City will initiate an aggressive program to work with customers to retrofit or replace of high flush toilets, showerheads, and faucet aerators with low-water use fixtures. Water savings can be achieved either through simple, inexpensive modifications such as toilet tank displacement devices, or through actual replacement of the fixtures (e.g., installation of ULFTs). The City also plans to further restrict potable water use for irrigation purposes at all accounts (residential and CII) and to restrict non-essential uses of potable water (e.g., water used for fountains and swimming pools, car washing, sidewalk washing, etc.) as necessary to meet the 20% reduction.

The fourth stage of action, Stage IV, is described in Table 19 and identifies mechanisms by which the City can reduce demand in the event of 30% reduction in potable water supply, as was necessary during previous droughts during the late 1980's and early 1990's. Such reductions could be accomplished through the actions outlined in Stages 1 through III and mandatory modification or replacement of all high-flow plumbing fixtures and severe cutbacks in outdoor water use. By eliminating irrigation at public parks, the golf course, all external CII accounts, and other irrigation areas, and by further restricting single family residential outdoor water use, it is estimated that external water use can be reduced by 75%.

The fifth stage of action, Stage V, includes the City's response to a 50% reduction in potable water supply, as mandated by the UWMP Act. In a Stage V situation, the City will prohibit all water use except as required for public health and safety (50 GPC/D). Reductions in Stage V will include a 100% cutback in outdoor water use.

9.4 ESTIMATE OF MINIMUM SUPPLY FOR NEXT THREE YEARS

10632 (b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

As described in Section 9, the driest three-year historic sequence on record that impacted the City's potable water supply since 1920 occurred between 1990 and 1992. Based on the water supply information provided to the City by SFPUC from its Water Supply Reliability Model, it is estimated that the City's minimum supply for the next three years (2006 to 2008) will be 4.36 MGD if there is a single dry year in that period or 3.79 MGD if there is a multiyear drought.

9.5 CATASTROPHIC SUPPLY INTERRUPTION PLAN

10632(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

In the event of a catastrophic supply interruption, the response procedures that Burlingame would follow are described in:

- The SFPUC's Suburban Customer Water Supply Emergency Operations and Notification Plan ("SFPUC EOP") (OCC, 2002);
- San Mateo County's Emergency Operation Plan
- Burlingame's Emergency Operations Plan;
- Burlingame's Potable Water Emergency Plan; and
- Burlingame's Water System Emergency Response Plan.

Actions described in these Plans focus on maintaining flow within, and from, the regional water system pipelines. In the event that this water is unsafe for consumption, Burlingame plans to distribute potable water to residents at emergency distribution centers. The following sections summarize the information presented in the aforementioned Plans, including measures to be taken to ensure the reliability of the water supply, and describe the methods by which Burlingame would distribute drinking water to its residents in the event of a water system emergency.

9.5.1 SFPUC Emergency Operations Plan

In accordance with California Government Code Section 8607.2, SFPUC has established a Suburban Customer Water Supply Emergency Operations and Notification Plan to accommodate the Suburban Purchasers in the event of an emergency. The SFPUC EOP was initially completed in June 1996, and has since undergone five major revisions, the most current one in April 2002. SFPUC is presently in the process of completing a sixth revision to the SFPUC EOP, which is scheduled for completion later this year.

The purpose of the SFPUC EOP is to provide procedures and guidelines to be implemented by SFPUC's Water Supply & Treatment Division, Water Quality Bureau, SFPUC's Suburban Purchasers, and the City Distribution Division. The SFPUC EOP states that SFPUC will make every attempt to ensure that the regional water system does not run out of water to maintain system pressure and fire protection capabilities (even if an emergency water use reduction alert, boil water notice, or unsafe water alert is needed).

The SFPUC EOP also evaluates potential actions to be taken by SFPUC and the other above named entities in the event of several different types of emergencies, including:

- Earthquake
- Dam Failure
- Fires
- Sewage Spill
- Contamination of Water Supplies
- Hazardous Spills or Leaks
- Sever Storms or Leaks
- Aqueduct, Pipeline or Reservoir Failure
- Environmental Response
- Civil Unrest
- National Security Emergency
- Widespread Power Outage
- Process/Plant Failures
- Terrorist Threat/Event

To best respond the variety of potential emergencies, the SFPUC EOP defines four emergency response categories (i.e., Advisory, Alert, Emergency, and Major Emergency) and seven emergency planning scenarios to be implemented in the case of a water supply emergency. A complete description of these seven scenarios is included as Appendix L. The SFPUC's response to a particular emergency will depend on the severity of the event, the supplies impacted, the customers impacted, and the system demand at the time of the emergency. For each emergency, the impact may be a reduction or change in the supply available to customers in one or more areas of the system, a change to an auxiliary supply, or both.

For example, in the event of contamination of a source of supply, SFPUC may choose to eliminate that source from the system which would result in either a reduced supply or changes in the supply source (e.g., if the Hetch Hetchy supply were impacted, SFPUC would increase production at the Harry Tracy Water Treatment Plant, and/or the Sunol Valley Water Treatment Plant), until the quality and reliability of the contaminated source is restored (See Appendix L).

9.5.2 Potable Water Emergency Operations Plan

Burlingame's Emergency Operations Plan ("EOP") was written in coordination with the County of San Mateo's Operational Area Emergency Operations Plan Potable Water Procurement and Distribution Annex ("SMOA EOP"). Together, these Plans provide the framework for responding to major emergencies or disasters associated with natural disasters, technological incidents, and national security/terrorism emergencies. Annexes to these Plans outline a strategy to prepare for, mitigate, respond to, and recover from an emergency or disaster that affects the water utilities that serve the population with San Mateo County, and the City in particular.

Burlingame's Potable Water Emergency Plan ("PWEP"), an annex to the City's EOP, guides the City's emergency management in an organized response to water treatment and distribution emergencies that affect the City. The City conducts training twice a year to help assure that City personnel are up to date regarding of the emergency response

procedures. Detailed information on personnel roles, responsibilities, emergency services, communication, recovery, and reporting procedures are provided in the PWEP.

In the event of an emergency, Burlingame will implement its PWEP, the first step of which involves conducting an immediate Damage Assessment of the System to identify and report any problems associated with pumps, storage facilities, and water infrastructure. Critical pump stations have onsite emergency power generators to provide uninterrupted power and the City can supply a portable generator to provide power those pump stations that are not permanently equipped with emergency generators. The City can also pump water to different parts of the system through alternate routes if a pump station is inoperable or can backfeed the system from Mills Reservoir.

If the water supplied through the regional water system is not potable or cannot otherwise be treated for potable use, Burlingame will distribute emergency drinking water supplies, most likely in one-gallon plastic containers, from designated Emergency Shelters (such as City facilities and school campuses). The location of these shelters will be determined based on the emergency at-hand. It is estimated that, given the normal operating capacity of its storage reservoirs, Burlingame has approximately 1.6 million gallons of water in storage. In an emergency situation, this quantity would be sufficient to provide the City's residents with five gallons per person per day for 11 days, two gallons per person per day for 27 days, or one gallon per person per day for 54 days.

9.5.3 Burlingame's Emergency Response Plan

The City's Water System Emergency Response Plan ("City's ERP") includes plans and procedures that can be implemented in the event of a terrorist or other intentional attack on the public water system to lessen the impact of on the safety and supply of drinking water. It is the City's intent that the ERP be used in conjunction with the SMOA EOP Center Guidebook and Section Checklists and the City's EOP.

Much of the information contained in the City's ERP was compiled from the USEPA's *Response Protocol Toolbox: Planning for and Responding to Drinking Water Contamination Threats and Incidents*, the final module of which is dated April, 2004. The purpose of USEPA's Guidance Document is to assist water systems in complying with the Public Health Security and Bioterrorism and Response Act, dated 12 June 2002 (42 USC 201 et seq.).

The City's ERP details threat evaluations, site characterizations, planned public health and operational responses, public notification strategies, short-term alternate domestic water supplies, and remediation and recovery actions. The City's ERP considers five different potential incidents identified from available USEPA guidance:

- Contamination of the water system;
- Contamination at a major event;

- Notification from health officials of potential water contamination;
- Intrusion through Supervisory Control and Data Acquisition ("SCADA") system; and
- Structural damage.

Evaluation of these threats is to be carried out according to the management structure outlined in the City's ERP. Agencies included in this discussion are consistent with the five designated levels of the Standardized Emergency Management System ("SEMS") defined in the California Code of Regulations, Title 19 (Division 2, Chapter 1). The SEMS is intended to standardize responses to emergencies that involve multiple jurisdictions or multiple agencies. The organizational levels referred to in these regulations are: (1) field response (e.g., local fire and police departments), (2) local government (i.e., the City of Burlingame), (3) operational area (i.e., San Mateo County), (4) regional, and (5) State (led by the Governor's Office of Emergency Services). The management structures defined in the City's ERP, EOP, the SMOA EOP, and the SFPUC EOP are all consistent with SEMS standards.

9.6 PROHIBITIONS, PENALTIES AND CONSUMPTION REDUCTION METHODS

10632 (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning. (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply. (f) Penalties or charges for excessive use, where applicable.

In order to ensure that customers comply with the provisions of the WRPR, the City specifies certain actions, prohibition of actions, and penalties to be instituted during times of drought. As described in the BMP section of this document (Section 7.2), these actions include:

<u>Prohibitions:</u>

- Additional water allocation for new landscaping
- Gutter or street flooding
- Using a hose to clean hard surfaces (e.g. sidewalk)
- Use of potable water in decorative fountains
- Use of potable water for non-essential construction purposes (e.g. backfill consolidation, dust control)

Mandates:

- Positive shutoff valves for all hoses
- Low water use landscaping designs and irrigations systems for new or renovated landscaping
- Restaurant/Hotels shall serve water upon request only
- Water used for cooling purposes must be recycled
- Broken / defective plumbing must be repaired immediately
- Water-saving fixtures or devices must be incorporated into new construction projects if they are to obtain a service connection

Encouraged Actions:

- Use of groundwater or reclaimed water for irrigation of turf areas, median strips, and street sweepers
- Use of reduction flow equipment for vehicle dealer/fleet washing

A more complete list of the WRPR water use regulations and restrictions can be found in Table 18 and Appendix K.

In addition to the above prohibitions, mandates, and encouraged actions, the WRPR states that water accounts found to be "excessive users" are "subject to review and possible reduction, including termination of service." The WRPR also stipulates penalties to be imposed on customers who are in excess of their WRPR-defined water allocations. For consumption up to 110% of the allocation, customers are charged two times the regular unit charge for each unit of water used above their allocation. For excess consumption up to 130% over allocation the charge increases to three times the regular unit charge and for excess water use over 130% of allocation the City charges customers five times the regular unit charge for water used above their allocation. Under certain circumstances (e.g., repeated violations of water use restrictions) the City may install a flow restriction devise or terminate service at the offending account.

9.7 ANALYSIS OF REVENUE IMPACTS OF REDUCED SALES DURING SHORTAGES

10632 (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

In the event of a drought, if the City anticipates significant loss in revenue due to decreased consumption, the City can raise the water rates to make up for the revenue loss. The City Council would have to approve any such change in rates.

9.8 DRAFT ORDINANCE AND USE MONITORING PROCEDURE

```
10632 (h) A draft water shortage contingency resolution or ordinance.
10632 (i) A mechanism for determining actual reductions in water use
pursuant to the urban water shortage contingency analysis.
```

A copy of the City's WRPR No. 49-92 is included as Appendix K. Based on FY 2000 through 2005 water use within the City's service area, implementation of Resolution No. 49-92 should theoretically result in a 20% reduction in water use. In order to determine the actual reduction in water use during water shortage periods, the City plans to increase the frequency at which it conducts meter readings to ensure that customers are conserving water. By frequently monitoring water use at its residential and CII accounts, the City will ensure compliance with water shortage rationing and be able to inflict penalties on those who are not complying with the WRPR or the Stage of Action being enforced. Non-compliance with the required water conservation will result in the penalties described in Section 9.2, including fines, flow restriction devices, and termination of service as a last resort.

10. ADOPTION AND IMPLEMENTATION OF UWMP

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code.. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

As described in Section 1.3, the City informed the public and the appropriate agencies of (1) its intent to prepare a UWMP, (2) when and where the UWMP was available for public review, and (3) when the public hearing regarding the UWMP would be held. All notifications were completed in compliance with the stipulations of Section 6066 of the Government Code.

This UWMP was adopted by Resolution No. 87-2005 by the City Council during its 21 November 2005 City Council meeting (Appendix M).

11. REFERENCES

ABAG, 2005. Association of Bay Area Governments. *Projections 2005, Forecast for the San Francisco Bay Area to the Year 2025. 2005.*

Burns and McDonnell, 2002. *Building 84; Bedrock Investigation Report; San Francisco Maintenance Center; San Francisco International Airport, California*; prepared for United Airlines, 2002.

CH2MHill, 1994. *Technical Memorandum 8, Summary of Results, Westside Basin Field Investigation;* prepared for San Francisco Water Department; 13 p., 2002.

CH2MHill, 1996. *Revised Draft for Technical Memorandum 4 (1993), Groundwater Resources; Investigation;* prepared for San Francisco Water Department; 36 p., 1996.

CH2MHill, 1997. *Review Draft of Technical Memorandum 18, Westside Basin Groundwater Model;* prepared for San Francisco Water Department; 16p., 1997.

DWR, 2000. State of California, The Resources Agency, Department of Water Resources. *The Preparing for California's Next Drought: Changes Since 1987-92,* July 2000.

DWR, 2003. California's Department of Water Resources, *Groundwater Bulletin 118.*

EKI, 2004. Erler and Kalinowski, Inc., *City of Burlingame Water System Master Plan*, 2004.

Housing Element, 2002. City of Burlingame, *General Plan Housing element,* July 2002.

Luhdorff and Scalmanini, 2002. *Conceptualization of the Lake-Aquifer System Westside Groundwater Basin, San Francisco and San Mateo Counties*, 2002.

Nolte, 1982. George S. Nolte and Associates, *City of Burlingame Wastewater Management Facilities Master Plan*, 1982.

OCC, 2002. Olivia Chen Consultants, Inc. and Barbara Foster Associates, *SFPUC – Suburban Customer Water Supply Emergency Operations and Notifications Plan,* Rev. 5, April 2002.

OCC, 2003. Olivia Chen Consultants, *Water System Pumping Station Study, Condition Assessment,* August 2003.

Phillips et al., 1993. Phillips, S.P., Hamlin, S.N. & Yates, E.B., *Geohydrology, Water Quality, and Estimation of Groundwater Recharge in San Francisco, CA, 1987-92*; Geological Survey; Water Resources Investigation Report 93-4019, 1993.

RMC, 2004. Raines, Melton & Carella, Inc., *SFPUC Wholesale Customer Recycled Water Potential Technical Memorandum*, December 2004.

Rogge, 2003. *Dimensions of the Westside Groundwater Basin San Francisco and San Mateo Counties, California*, 2003.

Roman & Lougee and Stetson, 2001. Roman & Lougee and Stetson Engineers Inc., City of Burlingame, *Technical Memorandum No. 1 for Water Quality, Water Distribution System and Storage Tanks – Phase 1*, January 2001.

Roman & Lougee, 2000. Roman & Lougee Consulting Engineers Inc., *2000 Urban Water Management Plan,* November 2000.

SBMP, 2001. Bookman-Edmonston Engineering, Inc. and Hydrofocus Inc., *City of San Bruno Water System Master Plan Update Westside Basin Proposed Groundwater Management Plan,* 2001.

URS, 2004a. United Research Center, *SFPUC Wholesale Customer Water Conservation Potential Technical Memorandum*, December 2004.

URS, 2004b. United Research Center, *SFPUC Wholesale Customer Water Demand Projections Technical Memorandum*, December 2004.

URS, 2005. United Research Center, *SFPUC 2030 Purchase Estimates Technical Memorandum*, February 2005.

Yates, 2003a. *Westside Basin Unified Groundwater Model.*

Yates, 2003b. *Correspondence with Mr. Gus Yates, Fall 2003*

Table 1
Coordination with Appropriate Agencies and Public
City of Burlingame, California

Action	SFPUC	SFPD	BAWSCA	BAWSCA Member Agencies	San Mateo County	Public
Sent notice of intention to prepare UWMP (a)	X	X	X	X	X	X
Participated in UWMP development	X	--	X	X	--	--
Notice of Public Review Period (b)	X	X	X	X	X	X
Received copy of draft UWMP	--	X	X	--	X	-- (c)
Commented on the draft UWMP	--	--	--	--	--	--
Sent notice of public hearing for UWMP (d)	X	X	X	X	X	X
Attended public meetings	--	--	--	--	--	X
Received copy of adopted UWMP	--	X	X	--	X	-- (e)

Abbreviations:
BAWSCA = Bay Area Water Supply and Conservation Agency
SFPUC = San Francisco Public Utilities Commission
SFPD = San Francisco Planning Department
TBD = To be determined
UWMP = Urban Water Management Plan

Notes:
(a) Notice of intention to prepare the UWMP was sent to agencies on July 13, 2005. Public notice was published in the City's e-News electronic newsletter on July 15, 2005 and in the San Mateo County Times on July 21 and July 30, 2005.
(b) Notice of public review was sent to agencies on October 10, 2005. Public notice was published in the City's e-News electronic newsletter on October 19, 2005 and in the San Mateo Daily Journal on October 10 and October 17, 2005.
(c) A copy of the draft UWMP was made available to the Public at City Hall Public Works Department and the Burlingame Public Library.
(d) Notice of the time, date, and location of the Public hearing was sent to agencies on November 7, 2005. Public notice was published in the City's e-News electronic newsletter on November 18, 2005 and in the San Mateo Daily Journal on November 9 and November 16, 2005.
(e) A copy of the adopted UWMP is available to the Public at City Hall Public Works Department.

Table 2
Historic and Projected Service Area Population
City of Burlingame, California

	Historic (a) (b)			Projected (b)					
Year	**1980**	**1990**	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Population	26,173	26,801	29,354	29,400	30,200	31,000	31,500	31,700	31,900

Notes:

(a) Historic population data (1980 through 1990) are from the City of Burlingame, *General Plan Housing* Element, July 2002.

(b) FY 2000 through 2030 population estimates are from the Association of Bay Area Governments, *Projections 2005, Forecast for the San Francisco Bay Area to the Year 2030*, December 2005.

Table 3
Average Monthly Climate Data for the City of Burlingame
City of Burlingame, California

	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
ET (in) (a)	1.6	2.0	3.6	4.8	5.7	6.3	6.5	5.9	4.7	3.4	2.1	1.4	**47.9**
Precipitation (in) (b)	4.5	3.6	2.8	1.4	0.4	0.1	0.0	0.1	0.2	1.0	2.4	3.7	**20.1**
Temp (F)	49.1	52.0	53.7	55.8	58.5	61.3	62.7	63.5	64.1	61.0	55.1	49.8	-- (c)
$Temp_{Max}$ (F)	55.7	59.1	61.2	63.9	66.8	70.0	71.4	72.1	73.5	70.2	62.9	56.4	-- (c)
$Temp_{Min}$ (F)	42.4	44.8	46.1	47.6	50.1	52.6	53.9	54.9	54.7	51.8	47.3	43.2	-- (c)

Abbreviations:

ET = Average Evapotranspiration
F = Degrees Fahrenheit
in = inches
Temp = Average Temperature
$Temp_{Max}$ = Average maximum temperature
$Temp_{Min}$ = Average minimum temperature

Notes:

(a) Evapotranspiration data are from the Department of Water Resources, California Irrigation Management Information System.
(b) Precipitation and temperature data are from the National Oceanic and Atmospheric Association's National Weather Service.
(c) Data not applicable and/or available.

Table 4
Pressure Zone Elevations and Number of Service Connections
City of Burlingame, California

Zone Name	Elevation (ft) (a)		Number of Service Connections (b)	Percent of Total Connections (c)
	Minimum	Maximum		
Adeline Pressure Regulator	170	430	131	1.5%
Alcazar	240	420	329	3.7%
Aqueduct	5	115	7,218	80.8%
Canyon Pressure Regulator	150	280	25	0.3%
Donnelly	100	310	138	1.5%
Hillside Pressure Tank	100	180	272	3.0%
Mills	340	600	686	7.7%
Skyview Pressure Tank	540	618	132	1.5%

Abbreviations:
ft = Feet

Notes:
(a) Minimum and maximum elevations of pressure zones from Roman & Lougee and Stetson (January 2001).
(b) The number of service connections per zone were estimated for 2002 based on water consumption billing data provided to Erler & Kalinowski Inc. ("EKI"), by the City of Burlingame's water billing department from the Water Master Plan (EKI, 2004).
(c) The percent of total connections provides the percentage of service connections per zone out of the total number of service connections in the City's distribution system in 2002 (8,931). Data from the City of Burlingame Water Master Plan (EKI, 2004).

Table 5
Water Storage Facility Information
City of Burlingame, California

Storage Facility Name (b)	Storage Capacity (MG)	Water Level Elevation (ft) (a)	
		Min	Max
Alcazar	0.10	499	517
Donnelly	0.10	343	361
Hillside	1.50	223	240
Mills	1.07	656	685
Skyview	0.17	612	626
Total Capacity	2.94	-- (c)	-- (c)

Abbreviations:

ft = Feet
Max = Maximum
Min = Minimum
MG = Millions of gallons

Notes:

(a) Water elevation is measured in feet above mean sea level.
(b) Storage facility data for Hillside, Mills, and Skyview tanks are from Roman & Lougee and Stetson, 2001. Data for Alcazar and Donnelly tanks from the City of Burlingame Water Master Plan (EKI, 2004).
(c) Data not applicable and/or available.

Table 6
Historic Total Water Demand for the City of Burlingame Service Area (a)
City of Burlingame, California

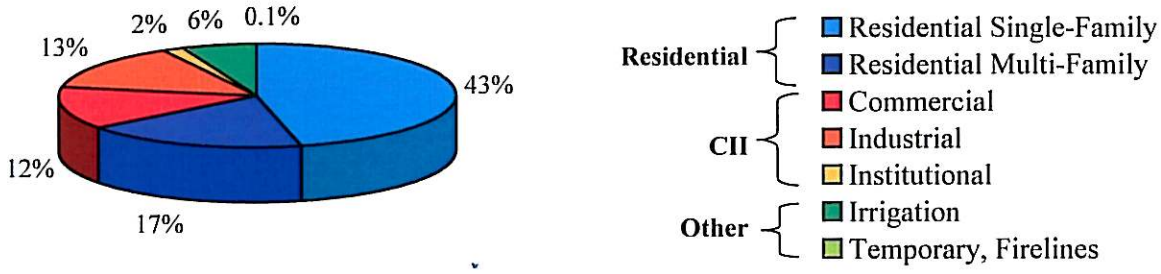
Water Demand	2000	2001	2002	2003	2004	2005
Groundwater	0.00	0.00	0.00	0.00	0.00	0.00
Recycled Water (b)	0.30	0.30	0.30	0.30	0.30	0.30
Subtotal Non-potable Water	0.30	0.30	0.30	0.30	0.30	0.30
Potable Water (c)	4.88	4.88	4.64	4.57	4.78	4.52
Total Water Demand (MGD)	5.18	5.18	4.94	4.87	5.08	4.82

Abbreviations:
SFPUC = San Francisco Public Utilities Commission
MGD = Millions of gallons per day

Notes:
(a) Values are reported in millions of gallons per day ("MGD") for the fiscal years 2000 though 2005. For breakdown of potable water demand see Table 7.
(b) Recycled water is used at the waste water treatment plant.
(c) Quantity of water purchased from SFPUC, as recorded in the City's Salesamaster Reports.

Table 7
Historic Potable Water Demand by Water Use Sector (a)
City of Burlingame, California

	Customer Sectors	2000	2001	2002	2003	2004	2005	Average	% of Total
Residential	Residential Single-Family	760	759	749	732	774	697	745	43%
	Residential Multi-Family	306	303	291	285	291	286	294	17%
	Subtotal Residential	*1,066*	*1,062*	*1,041*	*1,017*	*1,065*	*983*	*1,039*	60%
CII	Commercial	228	239	201	193	196	207	211	12%
	Industrial	269	248	211	198	214	219	227	13%
	Institutional	30	30	32	26	26	27	29	2%
	Subtotal CII	*527*	*518*	*444*	*418*	*436*	*453*	*466*	27%
Other	Irrigation	93	96	93	92	106	92	96	6%
	Temporary, Firelines	5	2	1	1	2	1	2	0%
	Subtotal Other	*98*	*99*	*94*	*94*	*109*	*93*	*98*	6%
	Subtotal Metered (b)	*1,691*	*1,678*	*1,578*	*1,529*	*1,610*	*1,529*	*1,603*	*93%*
	Unmetered (c)	3	5	4	5	8	6	5	0.3%
	Unaccounted for water (d)	5.0%	5.5%	6.6%	7.1%	7.2%	6.8%	6.36%	6.4%
	Total Water Purchased (MG) (e)	1,783	1,781	1,694	1,668	1,746	1,650	1,720	100%
	Total Water Purchased (MGD)	4.88	4.88	4.64	4.57	4.78	4.52	4.71	100%



Abbreviations:
CII = Commercial, Industrial, and Institutional
MG = Millions of gallons
MGD = Millions of gallons per day

Notes:
(a) Except where noted, demand values are reported in millions of gallons for the fiscal years ("FY") 2000 through 2005.
(b) Metered water use was provided by the City's Consumption Reports (FY 2000 through 2005).
(c) Unmetered water is estimated by the City Water and Fire Departments on a monthly basis. Reported by the City's Salesmaster Report.
(d) Unaccounted for water is the quantity of water purchased less the known quantity of water used. Reported as a percent of the total water purchased.
(e) Total Water Purchased is the quantity of potable water purchased wholesale from San Francisco Public Utility Commission as reported by the City's Salesmaster Report.

Table 8
Projected Population and Water Demand for the City of Burlingame Service Area (a)
City of Burlingame, California

		Average Demand 2000-2005 (b)	Projected Demand 2010	2015	2020	2025	2030
	Projected Population (c)	-- (d)	30,200	31,000	31,500	31,700	31,900
	Estimated Annual Population Growth	--	2.6%	2.6%	1.6%	0.6%	0.6%
Potable	Residential Water Demand (d)	2.85	2.93	3.00	3.05	3.07	3.09
	Per Capita Water Use (Gal/Day)	96.89	--	--	--	--	--
	CII Potable Water Demand (f)	1.28	1.29	1.30	1.32	1.33	1.34
	CII Non-potable Water Offset (g)	0.00	-0.025	-0.025	-0.025	-0.025	-0.025
	Other Water Demand	0.27	0.27	0.27	0.28	0.28	0.28
	Subtotal Metered Water	*4.39*	*4.46*	*4.56*	*4.62*	*4.66*	*4.69*
	Unmetered Water	0.01	0.01	0.01	0.01	0.01	0.01
	Unaccounted for Water	6.36%	0.30	0.31	0.32	0.32	0.32
	Subtotal Potable Water Demand (g)	*4.71*	*4.78*	*4.88*	*4.95*	*4.99*	*5.03*
Non-Potable	Groundwater Demand (g)	0.00	0.025	0.025	0.025	0.025	0.025
	Recycled Water Demand	0.30	0.30	0.30	0.30	0.30	0.30
	Subtotal Non-potable Water Demand	*0.30*	*0.325*	*0.325*	*0.325*	*0.325*	*0.325*
Total Estimated Water Demand (MGD) (h)		5.01	5.11	5.21	5.28	5.32	5.35

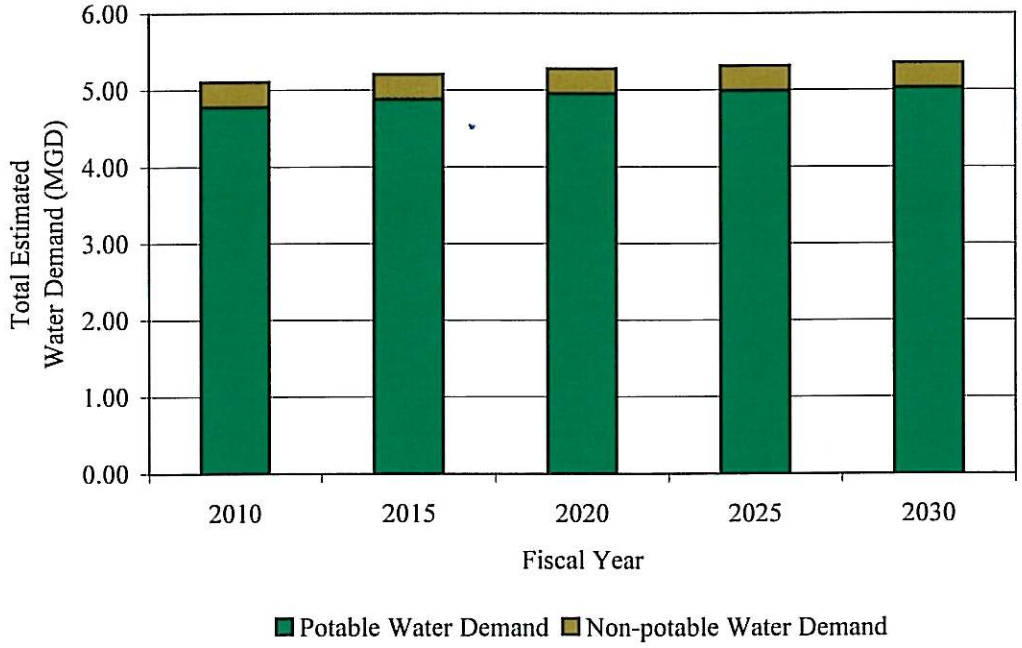


Table 8

Projected Population and Water Demand for the City of Burlingame Service Area (a)

City of Burlingame, California

Abbreviations:

CII = Commercial, Industrial, Institutional

MGD = Millions of gallons per day

Notes:

(a) Except where otherwise noted, demand values are reported in millions of gallons per day in five year increments for the fiscal years ("FY") 2010 through 2030.

(b) Water use data are from City's FY 2000 through 2005 Salesmaster and Consumption Reports.

(c) Projected populations for Burlingame's service area are taken from Association of Bay Area Government's *Projections 2005, Forecast for the San Francisco Bay Area to the Year 2030,* dated December 2005.

(d) Data not applicable and/or available.

(e) Residential water demand is estimated to increase the same rate as population growth, multiplied by the average per capita water use between FY 2000 and 2005.

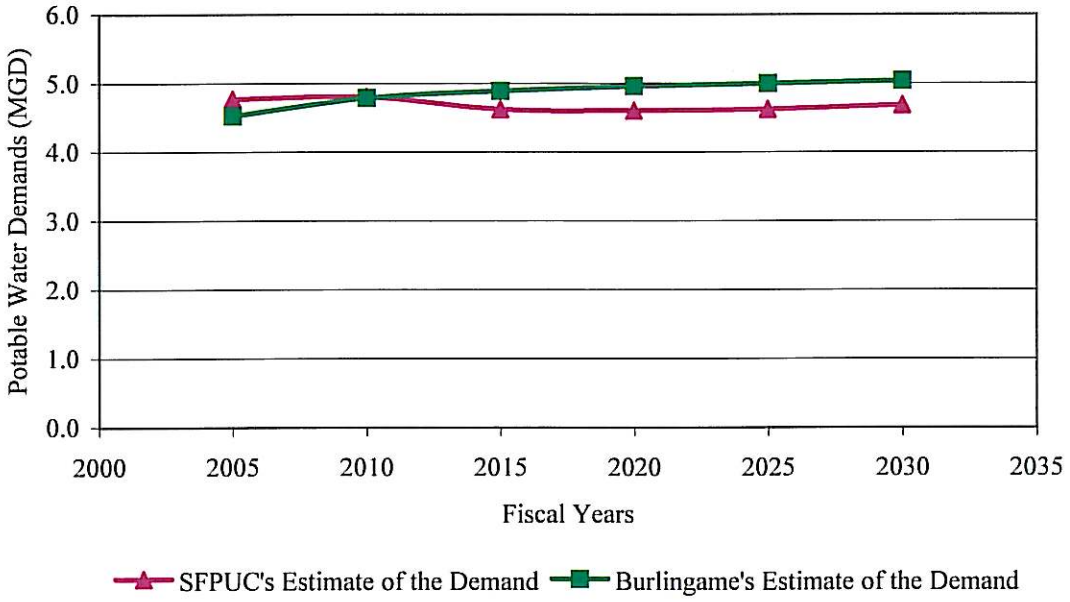
(f) CII water demand is estimated as 29% of total potable water use, based on FY 2000 through 2005 data. CII water demand is predicted to grow at the fixed rate of 1% per year from the FY 2000 through 2005 average.

(g) Rehabilitation of the Washington Park Well is expected to offset approximately 0.025 MGD of CII potable water demand annually, beginning in FY 2010. The long-term reliability of this supply has not been verified.

(h) Total estimated water demand is equal to the sum of non-potable and potable water demands.

Table 9
Comparison of Projected Potable Water Demand for the City of Burlingame Service Area (a)
City of Burlingame, California

	2005	2010	2015	2020	2025	2030
SFPUC Estimate (b)	4.77	4.80	4.62	4.60	4.62	4.68
Burlingame Estimate (c)	4.52	4.78	4.88	4.95	4.99	5.03



Abbreviations:
MGD = Millions of gallons per day
SFPUC = San Francisco Public Utilities Commission

Notes:
(a) Values are reported in millions of gallons per day ("MGD") in five year increments for the fiscal years ("FY") 2005 through 2030.
(b) SFPUC potable water demand projections are based on the Demand Management Decision Support System Model (URS 2004). These projections incorporate plumbing code impacts on water demand and assumptions about the effectiveness of water conservation measures on reducing total potable water demand. Water saving impacts due to conservation measures were modeled beginning in FY 2010. Potable projected water demand estimates were provided to Burlingame in a letter from SFPUC dated June 1, 2005 (see Appendix F).
(c) Burlingame's potable water demand projections are based on per capita water demand in the residential sector, and estimated residential and CII growth rates (See Table 8). Estimates also assumes a 0.025 MGD offset in potable water following rehabilitation of the Washington Park Well prior to FY 2010. It should be noted however, that long-term reliability of this supply has not been verified.

Table 10
Estimated Washington Park Well Demand (a)
City of Burlingame, California

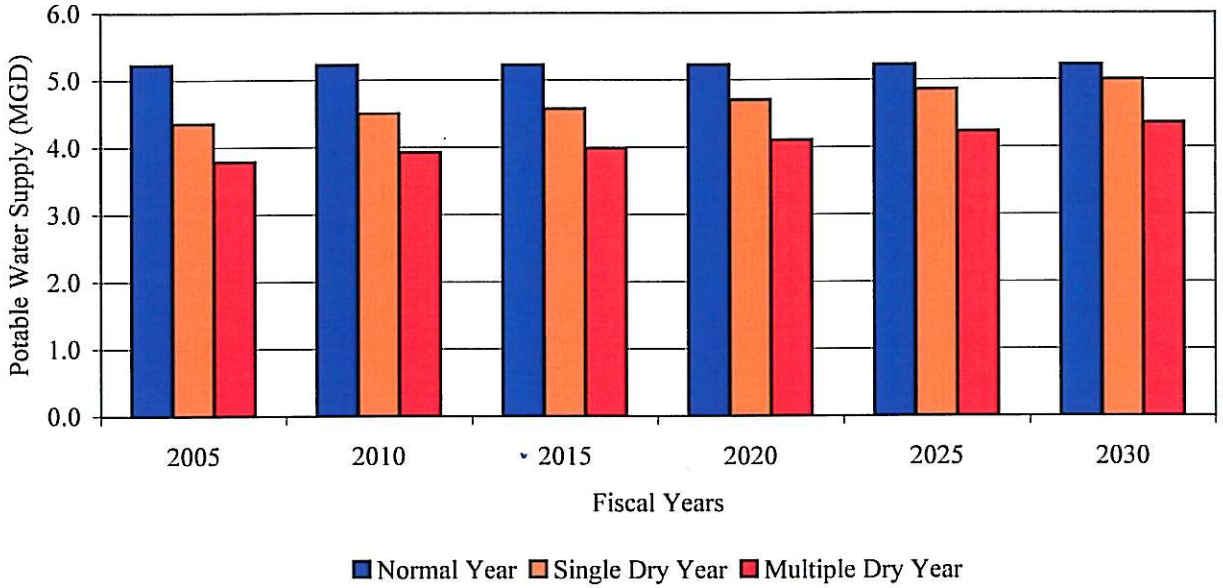
Washington Park Section (b)	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Annual
Back Park (HG)	1,353	1,878	1,355	978	679	124	40	40	44	261	475	1,081	8,309
Front Park (HG)	6,452	8,952	6,459	4,665	3,238	591	191	191	208	1,247	2,263	5,155	39,613
Ballfield (HG)	7,291	10,116	7,298	5,271	3,659	668	216	216	235	1,409	2,557	5,825	44,760
Total (MG)	1.51	2.09	1.51	1.09	0.76	0.14	0.04	0.04	0.05	0.29	0.53	1.21	9.27
Total (MGD)	--	--	--	--	--	--	--	--	--	--	--	--	0.025

Abbreviations:
HG = Hundreds of gallons
MG = Millions of gallons
MGD = Millions of gallons per day

Notes:
(a) Estimated summer irrigation schedules for Washington Park were provided by Park Supervisor Bob Disco. Irrigation demands for July were used to extrapolate water demands for the other 11 months based on the each months average percent of total annual water demand consumed in all City parks from fiscal years ("FY") 2000 through 2005. Monthly trends for City parks were determined from City's Consumption Reports from FY 2000 through 2005.
(b) Demand estimates do not include irrigation of the playground or infield.

Table 11
Projected Water Supply for the City of Burlingame Service Area (a)
City of Burlingame, California

	Water Source	2005	2010	2015	2020	2025	2030
Non-Potable	Groundwater	0.00	0.025	0.025	0.025	0.025	0.025
	Recycled Water	0.30	0.300	0.300	0.300	0.300	0.300
	Subtotal Non-potable Water Estimate	*0.30*	*0.325*	*0.325*	*0.325*	*0.325*	*0.325*
Potable	Normal Year (b)	5.23	5.23	5.23	5.23	5.23	5.23
	Single Dry Year (c)	4.36	4.51	4.58	4.71	4.86	5.01
	Multiple Dry Years 2 & 3 (c)	3.79	3.93	3.99	4.11	4.24	4.37
Total	**Normal Year (MGD)**	5.53	5.56	5.56	5.56	5.56	5.56
	Single Dry Year (MGD)	4.66	4.84	4.91	5.04	5.19	5.34
	Multiple Dry Year (MGD)	4.09	4.26	4.32	4.44	4.57	4.70



Abbreviations:
MGD = Millions of gallons per day
SFPUC = San Francisco Public Utilities Commission
HHSA = Hetch-Hetchy Supply Assurance
BAWSCA = Bay Area Water Supply and Conservation Agency

Notes:
(a) Values are reported in millions of gallons per day in five year increments for the fiscal years ("FY") 2005 through 2030.
(b) In accordance with the Master Contract, SFPUC is obligated to provide Burlingame with up to 100% its HHSA during normal years. SFPUC is not obligated to provide Burlingame with its HHSA during dry years.

Table 11
Projected Water Supply for the City of Burlingame Service Area (a)
City of Burlingame, California

Notes Continued:

(c) SFPUC projects that if the representative dry years 1987 through 1989 were projected forward for 2010 through 2025, there would be no system shortage during a single dry year, and up to a 10% shortage during multiple dry years. SFPUC's projection for 2030 includes a 10% system-wide cutback in a single dry year, and up to 20% cutbacks during multiple dry years (see projected allocations in table below).

	Year / Projected Water Supply Allocation (MGD)					
Hydrologic Year	2005	2010	2015	2020	2025	2030
Single Dry Year (1987)	4.36	4.8	4.62	4.6	4.62	5.01
Multiple Dry Year 2 (1988)	3.79	4.51	4.58	4.72	4.87	4.37
Multiple Dry Year 3 (1989)	3.79	4.51	4.58	4.72	4.87	5.01

However, for planning purposes in this UWMP, a "single dry year" is defined as a 10% system-wide supply cutback, and "multiple dry years" are taken to be representative of 20% system-wide supply cutbacks. Based on values provided by SFPUC (i.e., allocation assumptions outlined in the IWSAP), Burlingame will receive 2.77% of projected BAWSCA allocation during a 10% to 20% system-wide cutback until 2010, and 2.70% of BAWSCA's allocation from FY 2010 to 2030. See Appendix G and Section 5 of the text for further discussion.

Table 12

Recycled Water Uses Allowed In California, California Code Of Regulations, Title 22, Article 3 (a)

City of Burlingame, California

	Treatment Level				
	Disinfected Tertiary Recycled Water	Disinfected Secondary-2.2 Recycled Water	Disinfected Secondary-23 Recycled Water	Undisinfected Secondary Recycled Water	Other
IRRIGATION					
• Food crops where recycled water contacts the edible portion of the crop, including all root crops • Parks and playgrounds • School yards • Residential landscaping • Unrestricted access golf courses • Any other irrigation uses not prohibited by other provisions of the California Code of Regulations	Allowed	Not allowed	Not allowed	Not allowed	Coagulation unnecessary provided filter effluent turbidity ≤ 2 NTU, turbidity of influent is continuously measured, influent turbidity > 5 NTU for ≤ 15 min and never > 10 NTU, and that there is capability to automatically activate chemical addition or divert the wastewater if the filter influent turbidity > 5 NTU for > 15 min.
• Food crops where edible portion is produced above ground and not contacted by recycled water	Allowed	Allowed	Not allowed	Not allowed	
• Cemeteries • Freeway landscaping • Restricted access golf courses • Ornamental nursery stock and sod farms where access by general public is not restricted • Pasture for animals producing milk for human consumption • Nonedible vegetation with access control to prevent use as a park, playground or school yard	Allowed	Allowed	Allowed	Not allowed	
• Orchards with no contact between edible portion and recycled water • Vineyards with no contact between edible portion and recycled water	Allowed	Allowed	Allowed	Allowed	

Table 12

Recycled Water Uses Allowed In California, California Code Of Regulations, Title 22, Article 3 (a)

City of Burlingame, California

	Treatment Level				
	Disinfected Tertiary Recycled Water	Disinfected Secondary-2.2 Recycled Water	Disinfected Secondary-23 Recycled Water	Undisinfected Secondary Recycled Water	Other
IRRIGATION					
• Non food-bearing trees, including Christmas tree farms not irrigated less than 14 days before harvest and restricting access to the public	Allowed	Allowed	Allowed	Allowed	
• Fodder and fiber crops and pasture for animals not producing milk for human consumption					
• Seed crops not eaten by humans	Allowed	Allowed	Allowed	Allowed	
• Food crops that undergo commercial pathogen-destroying processing before consumption by humans					
• Ornamental nursery stock and sod farms not irrigated less than 14 days before harvest, retail sale, or allowing access by the general public					
IMPOUNDMENT					
• Non-restricted recreational impoundments, with supplemental monitoring for pathogenic organisms	Allowed (b)	Not allowed	Not allowed	Not allowed	1) Total coliform bacteria, measured at a point between the disinfection process and the point of entry to use impoundment must: a) median concentration ≤ MPN of 2.2 per 100 mL over last 7 days; AND b) total ≤ 23 per 100 mL in all but one sample in a 30-day period. 2) a) Conventional tertiary treatment OR b) Monitored for presence of pathogenic organisms in accordance with the following: 1) Sampled and analyzed monthly for Giardia, enteric viruses, and Cryptosporidium during first 12 months of operation and use.

Table 12

Recycled Water Uses Allowed In California, California Code Of Regulations, Title 22, Article 3 (a)

City of Burlingame, California

	Treatment Level				
	Disinfected Tertiary Recycled Water	Disinfected Secondary-2.2 Recycled Water	Disinfected Secondary-23 Recycled Water	Undisinfected Secondary Recycled Water	Other
IMPOUNDMENT					
• Non-restricted recreational impoundments, with supplemental monitoring for pathogenic organisms, *Continued.*	Allowed (b)	Not allowed	Not allowed	Not allowed	*Continued.* Sampled and analyzed quarterly thereafter. Sampling may be discontinued after two years. 2) Samples shall be taken at a point following disinfection and prior to the point where the recycled water enters the use impoundment. Results shall be submitted quarterly to the regulatory agency.
• Restricted recreational impoundments and publicly accessible fish hatcheries	Allowed	Allowed	Not allowed	Not allowed	
• Landscape impoundments without decorative fountains	Allowed	Allowed	Allowed	Not allowed	
COOLING AND AIR CONDITIONING					
• Industrial or commercial cooling or air conditioning involving cooling tower, evaporative condenser, or spraying that creates a mist	Allowed (c)	Not allowed	Not allowed	Not allowed	If the cooling system uses a cooling tower or otherwise creates a mist that could come into contact with employees or the public, it shall also comply with the following: a) a drift eliminator shall be used whenever the cooling system is in operation. b) a chlorine, or other biocide, shall be used to treat the cooling system recirculating water.
• Industrial or commercial cooling or air conditioning not involving a cooling tower, evaporative condenser, or spraying that creates a mist	Allowed	Allowed	Allowed	Not allowed	
OTHER USES					
• Groundwater recharge	Allowed under special case-by-case permits by RWQCBs (d)				

Table 12

Recycled Water Uses Allowed In California, California Code Of Regulations, Title 22, Article 3 (a)

City of Burlingame, California

	Treatment Level				
	Disinfected Tertiary Recycled Water	Disinfected Secondary-2.2 Recycled Water	Disinfected Secondary-23 Recycled Water	Undisinfected Secondary Recycled Water	Other
OTHER USES					
• Flushing toilets and urinals • Priming drain traps • Industrial process water that may contact workers • Structural firefighting • Decorative fountains • Commercial laundries • Consolidation of backfill around potable water pipelines • Artificial snow making for commercial outdoor use • Commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.	Allowed	Not allowed	Not allowed	Not allowed	Coagulation unnecessary provided filter effluent turbidity < 2 NTU, turbidity of influent is continuously measured, influent turbidity > 5 NTU for < 15 min and never > 10 NTU, and that there is capability to automatically activate chemical addition or divert the wastewater if the filter influent turbidity > 5 NTU for > 15 min.
• Industrial boiler feed • Nonstructural fire fighting • Backfill consolidation around non-potable piping • Soil compaction • Mixing concrete • Dust control on roads and streets • Cleaning roads, sidewalks and outdoor work areas • Industrial process water that will not come into contact with workers	Allowed	Allowed	Allowed	Not allowed	
• Flushing sanitary sewers	Allowed	Allowed	Allowed	Allowed	

Table 12

Recycled Water Uses Allowed In California, California Code Of Regulations, Title 22, Article 3 (a)

City of Burlingame, California

Abbreviations:

NTU = Nephelometric turbidity units
mL = Milliliters
MPN = Most probable number

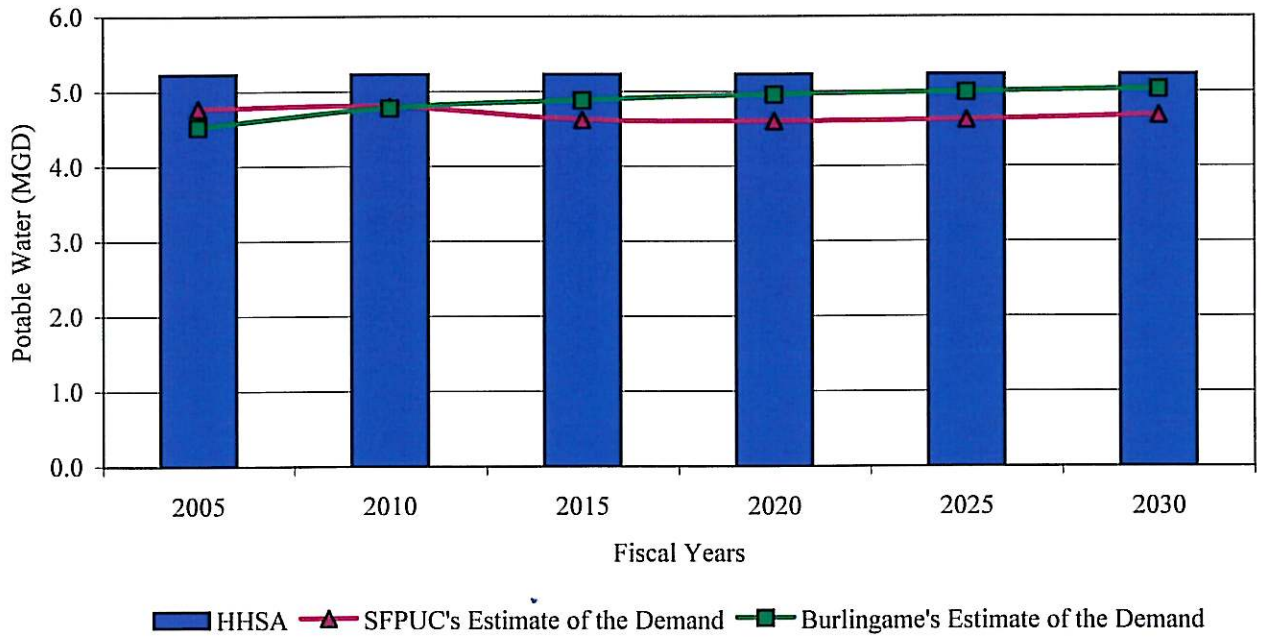
Notes:

(a) Summary from the Title-22: California Water Recycling Criteria (September 1998).
(b) With "conventional tertiary treatment." Additional monitoring for two years or more is necessary with direct filtration.
(c) Drift Eliminators and/or biocides are required if public or employees can be exposed to mist.
(d) Refer to Groundwater Recharge Guidelines, California Department of Health Services.

Table 13
Projected Potable Water Supply vs. Demand for the City of Burlingame Service Area - Normal Year (a)

City of Burlingame, California

	2005	2010	2015	2020	2025	2030
HHSA (b)	5.23	5.23	5.23	5.23	5.23	5.23
SFPUC Estimate of the Demand (c)	4.77	4.80	4.62	4.60	4.62	4.68
Difference	*0.46*	*0.43*	*0.61*	*0.63*	*0.61*	*0.55*
HHSA (b)	5.23	5.23	5.23	5.23	5.23	5.23
Burlingame's Estimate of the Demand (d)	4.52	4.78	4.88	4.95	4.99	5.03
Difference	*0.71*	*0.45*	*0.35*	*0.28*	*0.24*	*0.20*



Abbreviations:

CII = Commercial, Industrial, and Institutional
HHSA = Hetch-Hetchy Supply Assurance
MGD = Millions of gallons per day
SFPUC = San Francisco Public Utilities Commission

Notes:

(a) Values are reported in millions of gallons per day ("MGD") in five year increments for the fiscal years ("FY") 2005 through 2030.
(b) In accordance with the Master Contract, SFPUC is obligated to provide Burlingame with up to 100% its HHSA during normal years.

Table 13
Projected Potable Water Supply vs. Demand for the City of Burlingame Service Area - Normal Year (a)

City of Burlingame, California

Notes Continued:

(c) SFPUC potable water demand projections are based on the Demand Management Decision Support System Model (URS 2004). These projections incorporate plumbing code impacts on water demand and assumptions about the effectiveness of water conservation measures on reducing total potable water demand. Water saving impacts due to conservation measures were modeled beginning in FY 2010. Potable projected water demand estimates were provided to Burlingame in a letter from SFPUC dated June 1, 2005 (see Appendix F).

(d) Burlingame's potable water demand projections are based on per capita water demand in the residential sector, and estimated residential and CII growth rates (see Table 8). Burlingame's potable water demand projections also assume a 0.025 MGD offset in potable water following rehabilitation of the Washington Park Well prior to FY 2010. It should be noted however, that long-term reliability of this supply has not been verified.

Table 14
Projected Potable Water Supply vs. Demand for the City of Burlingame Service Area - Dry Years (a)

City of Burlingame, California

		2005	2010	2015	2020	2025	2030
Single Dry Year	Single Dry Year Supply Estimate (b)	4.36	4.51	4.58	4.71	4.86	5.01
	SFPUC's Estimate of the Demand (c)	4.77	4.80	4.62	4.60	4.62	4.68
	Difference	*-0.41*	*-0.29*	*-0.04*	*0.11*	*0.24*	*0.33*
	% Cutback	*9%*	*6%*	*1%*	*-- (d)*	*-- (d)*	*-- (d)*
	Single Dry Year Supply Estimate (b)	4.36	4.51	4.58	4.71	4.86	5.01
	Burlingame's Estimate of the Demand (e)	4.52	4.78	4.88	4.95	4.99	5.03
	Difference	*-0.16*	*-0.27*	*-0.30*	*-0.24*	*-0.13*	*-0.02*
	% Cutback	*4%*	*6%*	*6%*	*5%*	*3%*	*0.4%*
Multiple Dry Years 2 & 3	Multiple Dry Year Supply Estimate (f)	3.79	3.93	3.99	4.11	4.24	4.37
	SFPUC's Estimate of the Demand (c)	4.77	4.80	4.62	4.60	4.62	4.68
	Difference	*-0.98*	*-0.87*	*-0.63*	*-0.49*	*-0.38*	*-0.31*
	% Cutback	*21%*	*18%*	*14%*	*11%*	*8%*	*7%*
	Multiple Dry Year Supply Estimate (f)	3.79	3.93	3.99	4.11	4.24	4.37
	Burlingame's Estimate of the Demand (e)	4.52	4.78	4.88	4.95	4.99	5.03
	Difference	*-0.73*	*-0.85*	*-0.89*	*-0.84*	*-0.75*	*-0.66*
	% Cutback	*16%*	*18%*	*18%*	*17%*	*15%*	*13%*

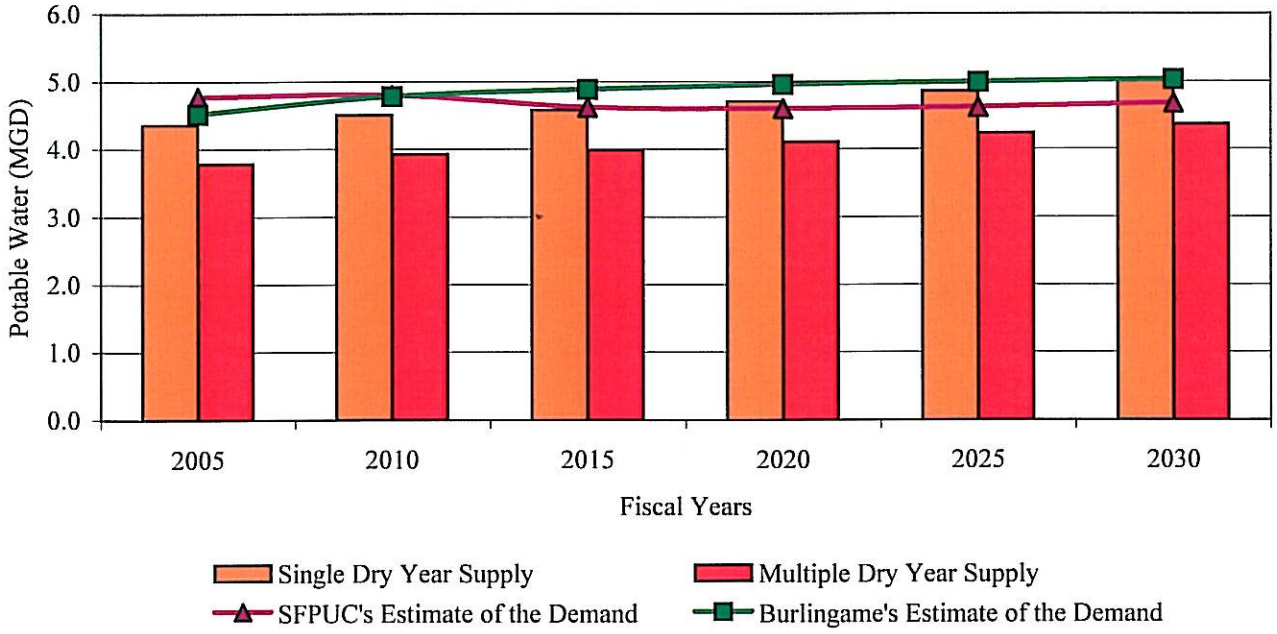


Table 14
Projected Potable Water Supply vs. Demand for the City of Burlingame Service Area - Dry Years (a)

City of Burlingame, California

Abbreviations:

BAWSCA = Bay Area Water Supply and Conservation Agency
CII = Commercial, Industrial, and Institutional
HHSA = Hetch-Hetchy Supply Assurance
IWSAP = Interim Water Shortage Allocation Plan
MGD = Millions of gallons per day
SFPUC = San Francisco Public Utilities Commission

Notes:

(a) Values are reported in millions of gallons per day ("MGD") in five year increments for the fiscal years ("FY") 2005 through 2030.

(b) Estimates for single dry years and the first year of a multiple year drought based on a 10% system-wide cutback, or a 12% cutback in BAWSCA's total allocation.

(c) SFPUC potable water demand projections are based on the Demand Management Decision Support System Model (URS 2004). These projections incorporate plumbing code impacts on water demand and assumptions about the effectiveness of water conservation measures on reducing total potable water demand. Water saving impacts due to conservation measures were modeled beginning in FY 2010. Potable projected water demand estimates were provided to Burlingame in a letter from SFPUC dated June 1, 2005 (see Appendix F).

(d) Based on SFPUC's assumptions, no cutback is required.

(e) Burlingame's potable water demand projections are based on per capita water demand in the residential sector, and estimated residential and CII growth rates (See Table 8). Estimates also assumes a 0.025 MGD offset in potable water following rehabilitation of the Washington Park Well prior to FY 2010. It should be noted however, that long-term reliability of this supply has not been verified.

(f) Water supply estimates during the second and third years of a multiple year drought are based on a 20% system-wide cutback, or a 23% cutback in BAWSCA's total allocation. Further discussion on historical dry year periods and SFPUC's Water System Improvement Plan is provided in Table 11 and Section 5 of the text.

Table 15
Budget & Expenditure for Conservation Related Activities (a)
City of Burlingame, California

		2001	2002	2003	2004	2005	Total
Budget	Public Info Budget (b)	$26,000	$26,000	$26,000	$26,000	$26,000	$130,000
	CII Audit Budget (b)	$70,000	$70,000	$67,000	$56,000	$50,000	$313,000
	Washer/Toilet Rebate Budget (b)	$10,000	$10,000	$10,000	$10,000	$10,000	$50,000
Expenditures	*Residential Surveys (c)*						
	# of Surveys	578	624	642	624	574	3041
	Hours	189.75	192.3	242.5	194.5	169.3	988
	Labor Cost (d)	$11,772	$11,930	$15,045	$12,067	$10,503	$61,317
	# of Kits	-- (e)	--	--	--	--	750
	Kit Cost (f)	--	--	--	--	--	$638
	Leak Investigations	89	95	85	122	153	544
	Washer/Toilets Rebates						
	# of Toilets	--	40	23	36	27	126
	Toilet Rebate Cost (g)	--	$2,000	$1,150	$1,800	$1,350	$6,300
	# of Washers	--	35	50	89	102	276
	Washer Rebate Cost (h)	--	$2,625	$3,750	$6,675	$7,650	$20,700
	Water Conservation Kits						
	Hours	54.00	33.50	65.80	29.00	36.90	219
	Labor Cost (f)	$3,350	$2,078	$4,082	$1,799	$2,289	$13,599
	Retrofit Kits						
	# of Kits	--	--	--	--	--	450
	Kit Cost (f)	--	--	--	--	--	$2,250
	Commercial/Industrial Audits	--	--	--	--	$50,000	$50,000
	Conservation Booklets						
	# of Booklets	--	--	--	--	--	400
	Booklet Cost (f)	--	--	--	--	--	$400
	Soil Moisture Meter						
	# of Meters	--	--	--	--	--	200
	Meter Cost (f)	--	--	--	--	--	$1,400
	Total Expenditures	**$ 15,122**	**$ 18,634**	**$ 24,027**	**$ 22,341**	**$ 71,793**	**$156,604**

Abbreviations

CII = Commercial, Industrial, Institutional

FY = Fiscal Year

Notes:

(a) Based on data from City of Burlingame, Operating and Capital Outlay Worksheets for the Public Works: Water Operations/Maintenance (FYs 2001 through 2005) and personal communications with Public Works Superintendent, Phil Scott.

Table 15
Budget & Expenditure for Conservation Related Activities (a)
City of Burlingame, California

Notes continued:

(b) Budget items reflect how much the City has budgeted for each activity in the given FY. These values do not necessarily reflect actual expenditures.
(c) Residential surveys are quantified by the number of responses to high bill complaints.
(d) Labor costs were calculated assuming an hourly wage of $62.04 for a water service worker.
(e) Data not applicable and/or available.
(f) Based on the following price schedules: $0.85 per residential survey kit, $5 per retrofit kit cost, $2 per soil moister meter cost, and $1 per conservation booklet.
(g) Toilet rebate is based on $50 per low flow toilet.
(h) Washer rebate is based on $75 per high efficiency washer.

Table 16
Commercial and Residential Monthly Water Charges
City of Burlingame, California

	Service Area	2004	2005	2006
Rates (a)	Burlingame	$3.42	$3.81	$4.19
	Burlingame Hills	$3.86	$4.27	$4.66
	Meter Size (in)	**2004**	**2005**	**2006**
Service Charges	5/8"& 3/4"	$13	$17	$19
	1"	$23	$30	$33
	1.5"	$44	$58	$63
	2"	$70	$93	$102
	3"	$106	$157	$192
	4"	$162	$245	$321
	6"	$302	$472	$640
	8"	$473	$770	$1,025

Abbreviations:
in = inches

Notes:
(a) Rates are per 1,000 gallons of water used.

Table 17
Water Shortage Contingency Plan - Water Allocations and Percent Reductions (a)
City of Burlingame, California

	Summer (June 1- Nov 30)	Winter (Dec 1-May 31)
Residential *(Single Family and Duplex)*	GPD/person	GPD/person
First Person	100	100
2nd-4th Persons	70	70
5 or more persons	50	50
Landscape Lot Size	GPD/lot	GPD/lot
<10,000 square feet	50	50
>10,000 square feet	150	150
>3/4 Acre	300 (b)	300 (b)
	Reduction	Reduction
Residential *(Multi-Family)*	15%	7%
Commercial *(Food Related)*	20%	10%
Commercial *(Non-food Related)*	25%	15%
Industrial	25%	15%
Institutional	25%	25%
Irrigation/Parks	50%	50%

Abbreviations:
GPD = Gallons per day

Notes:
(a) Allocations and reductions as described in City Resolution 49-92. If implemented, Resolution 49-92 would result in a 20% cutback in water use.
(b) Maximum allowance, if water conservation measures are implemented.

Table 18
Water Shortage Contingency Plan - Water Use Regulations and Restrictions (a)
City of Burlingame, California

- Water waste, flooding or runoff into the street or gutters is prohibited.
- Hoses cannot be used to clean hard surface areas (sidewalks, driveways, roofs, awnings, etc.).
- Hoses used for any purpose must have positive shutoff valves.
- Restaurants or hotel banquets can serve water only upon request.
- Potable water cannot be used to clean, fill or maintain levels in decorative fountains. The use of groundwater is permitted.
- Additional water allocations will not be allowed for new landscaping or expansion of existing landscaping. Low water use landscaping designs and irrigation systems must be employed for new or renovating landscaping.
- Water service connections for new construction will only be granted if water-saving fixtures or devises are incorporated into the plumbing system.
- Use of potable water for consolidation of backfill, dust control or other non-essential construction purposes in prohibited. The use of groundwater and/or reclaimed water is permitted when approved by the Department of Health
- Verified water waste as determined by the City will serve as prima facie evidence that the allocation assigned to the water account is excessive. The allocation will then be subject to review and possible reduction, including termination of service.
- Water used for all cooling purposes must be recycled.
- The use of groundwater and/or reclaimed water is strongly encouraged when approved by the Dept. of Health for the following uses: Irrigation of turf areas, irrigation of median strips, street or parking lot sweepers/washers.
- Use of reduction water flow equipment for the washing of fleet or dealer vehicles is strongly encouraged. Positive shutoff valves must be used.
- Broken or defective plumbing, sprinklers, or irrigation systems which permit the escape or leakage of water must be immediately repaired.

Notes:

(a) Regulation and restriction of water use as described in City Resolution 49-92.

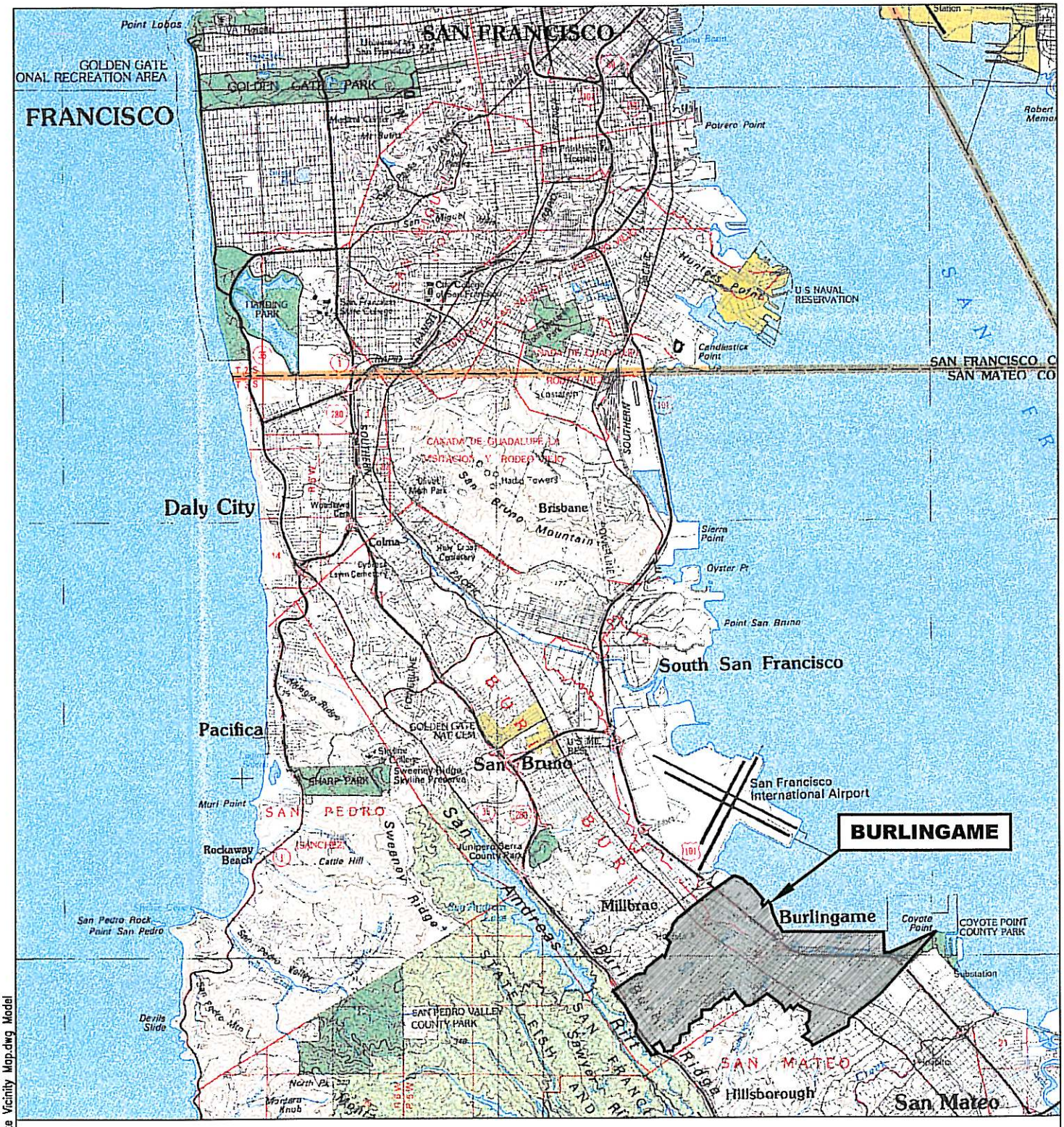
Table 19
Water Shortage Contingency Plan - Stages of Action (a)
City of Burlingame, California

Stage of Action	Supply Reduction	Cutbacks (a)	Reduction Methods (b)
Stage I	5% (c)	Indoor (5%)	• Public notification o Bill inserts o Advertisements (begin with newspaper and move to radio and/or television)
		Outdoor (5%)	• Voluntary conservation measures
Stage II	10% (c)	Indoor (5%)	• Public information o Notification in hotel rooms of drought conditions o Notification in restrooms of drought conditions o Restaurants serve water only upon request
		Outdoor (30%)	• Public Information • Limit landscape irrigation (3 days/week, 7pm to 9am) • Offer rebates on efficient irrigation systems (e.g., Drip irrigation)
Stage III	20% (d)	Indoor (15%)	• Retrofit plumbing fixtures (Mandatory) o Replace toilets with ULFTs / tank displacement devices o Replace showerheads, install faucet aerators
		Outdoor (50%)	• Limit irrigation (2 days/week, 7pm to 9am) • Restrict nonessential water uses: o Potable water in decorative fountains / swimming pools o Car and boat washing / Sidewalk and building washing o Construction purposes (e.g., backfill consolidation, dust control)
Stage IV	30% (e)	Indoor (20%)	• More aggressive fixture retrofit program (Mandatory)
		Outdoor (75%)	• No irrigation at Coyote Park and other dedicated irrigation areas • No nonessential water use • No irrigation at CII accounts • Limit irrigation at RSF and RMF accounts (2 days/week, 7pm to 9am)
Stage V	50% (f)	Indoor (42%)	• All water use prohibited except as required for public health and safety (50 GPC/D) and fire protection
		Outdoor (100%)	• No landscape irrigation • No nonessential water use

Table 19
Water Shortage Contingency Plan - Stages of Action (a)
City of Burlingame, California

Abbreviations:
CII = Commercial, Industrial, and Institutional
GPC/D = gallons per capita per day
MDY = Multiple dry year
RMF = Residential multi-family
RSF = residential single family
ULFT = ultra low flow toilet
SFPUC = San Francisco Public Utilities Commission
UWMP = Urban Water Management Plan

Notes:
(a) Rationale for the percentage supply reduction for each stage was based on projected reductions in SFPUC's water supply, historic cutbacks, and/or by requirements of the UWMP Act. Combined savings from the specified indoor and outdoor cutbacks are expected to achieve the total desired cutback for each stage.
(b) Reduction methods for each stage are based on the City's Consumption Reports (fiscal years 2000 through 2005) and URS 2004.
(c) SFPUC anticipates a system-wide supply reduction of 10% during a single dry year period or in the first year of a multiple dry year period, which is equal to a 12% reduction in BAWSCA's total supply.
(d) SFPUC anticipates a system-wide supply reduction of 20% during the latter years of a multiple dry year period, which is equal to a 23% reduction in BAWSCA's total supply.
(e) Based on historic cutbacks in the City's water supply during multiple dry-year periods.
(f) The UWMP Act mandates that the City consider a 50% supply reduction.



Notes:

1. All locations are approximate.
2. U.S.G.S. 1:100,000 Series Topographic Map, San Francisco Quadrangle, California, 1978.

N

0 2 4

(Approximate Scale in Miles)

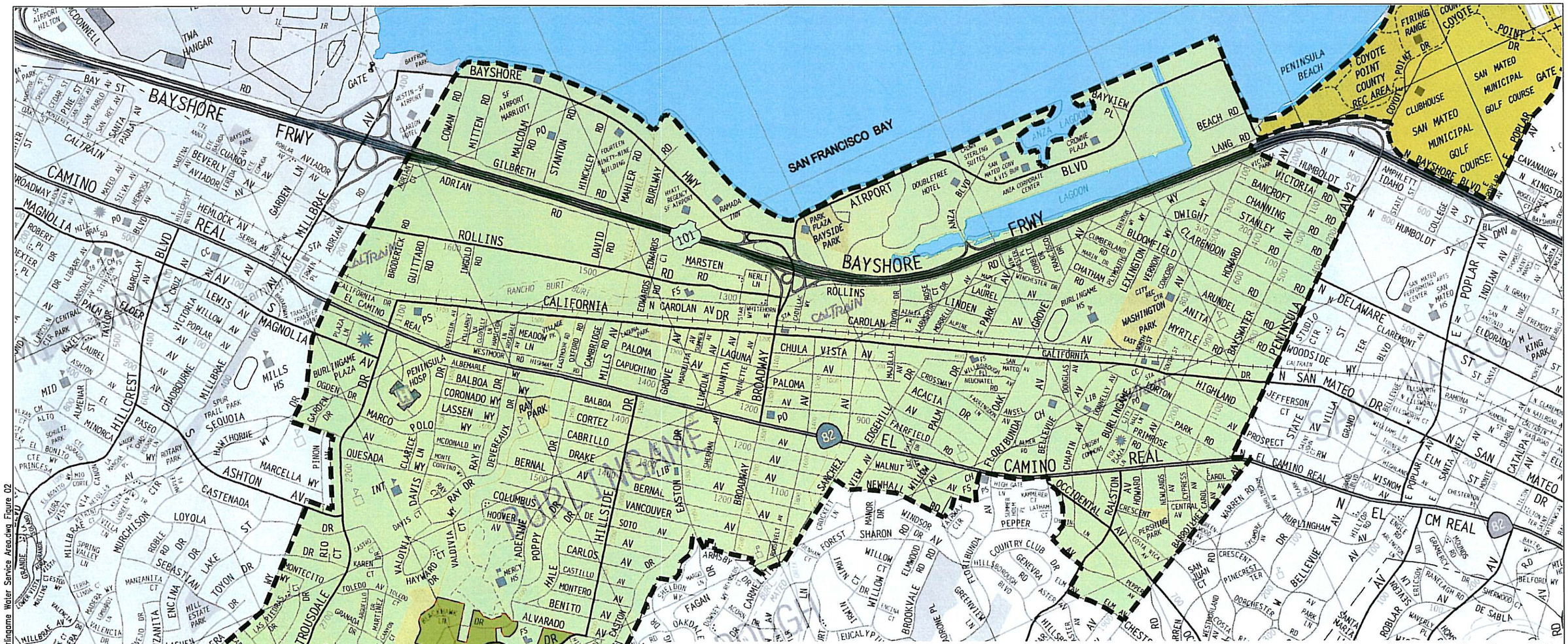
Erler & Kalinowski, Inc.

Site Vicinity Map

City of Burlingame
Burlingame, CA
November 2005
EKI A20031.08

Figure 1

20051128.10471525 G:\A20031.08\Dec05\Figure 01 – Site Vicinity Map.dwg Model



Source: Thomas Brothers Maps, 2003

Legend:

- City of Burlingame
- Unincorporated Area of Burlingame (Note 3)
- Coyote Point
- City of Burlingame Water Service Area

Notes:

1. All locations are approximate.
2. Source: Thomas Borthers Maps, 2003.
3. Unincorporated areas of Burlingame are served with potable water by the City of Burlingame.

N

0 1600 3200

(Approximate Scale in Feet)

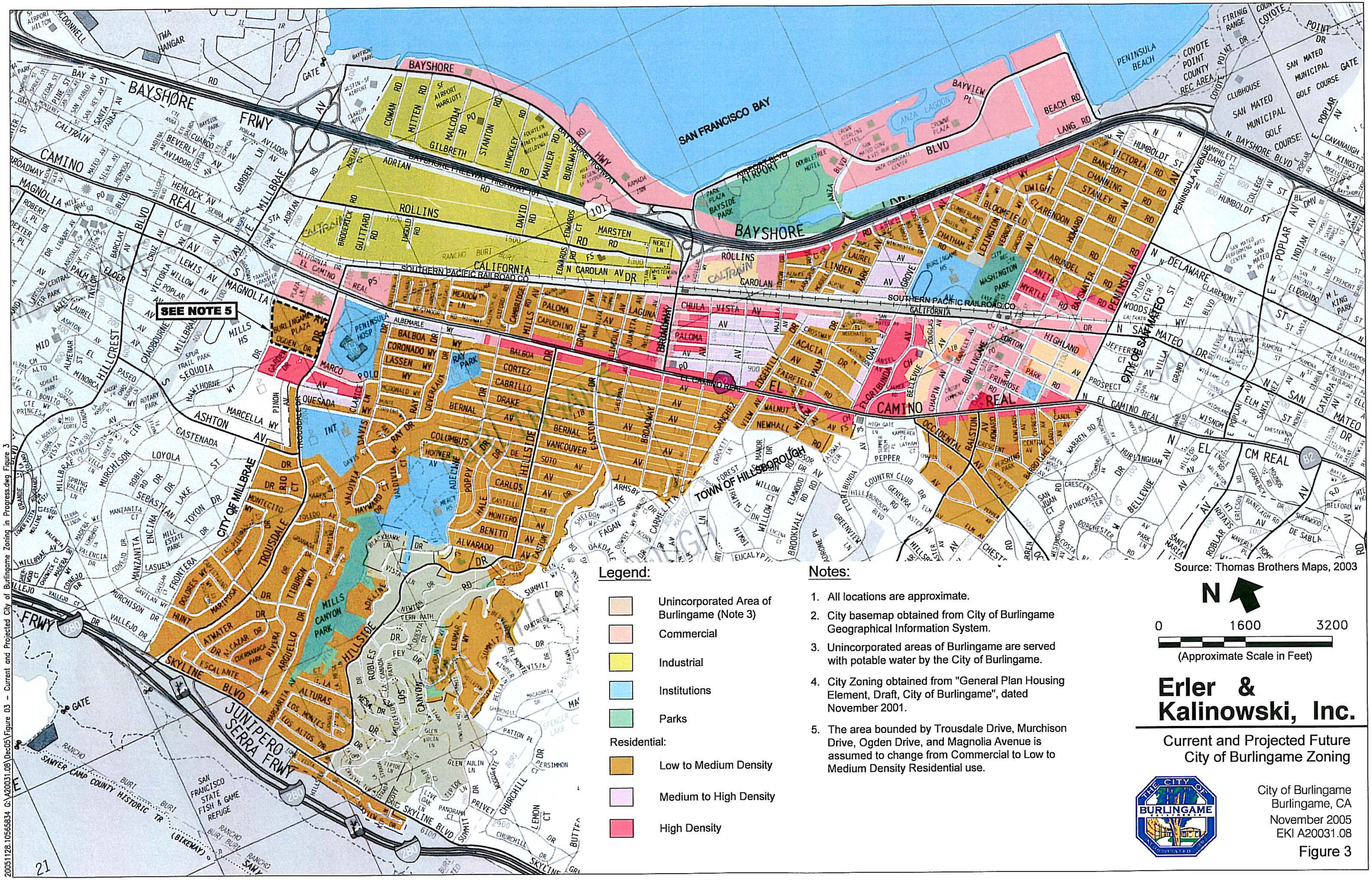
Erler & Kalinowski, Inc.

Approximate Extent of the City of Burlingame Service Area

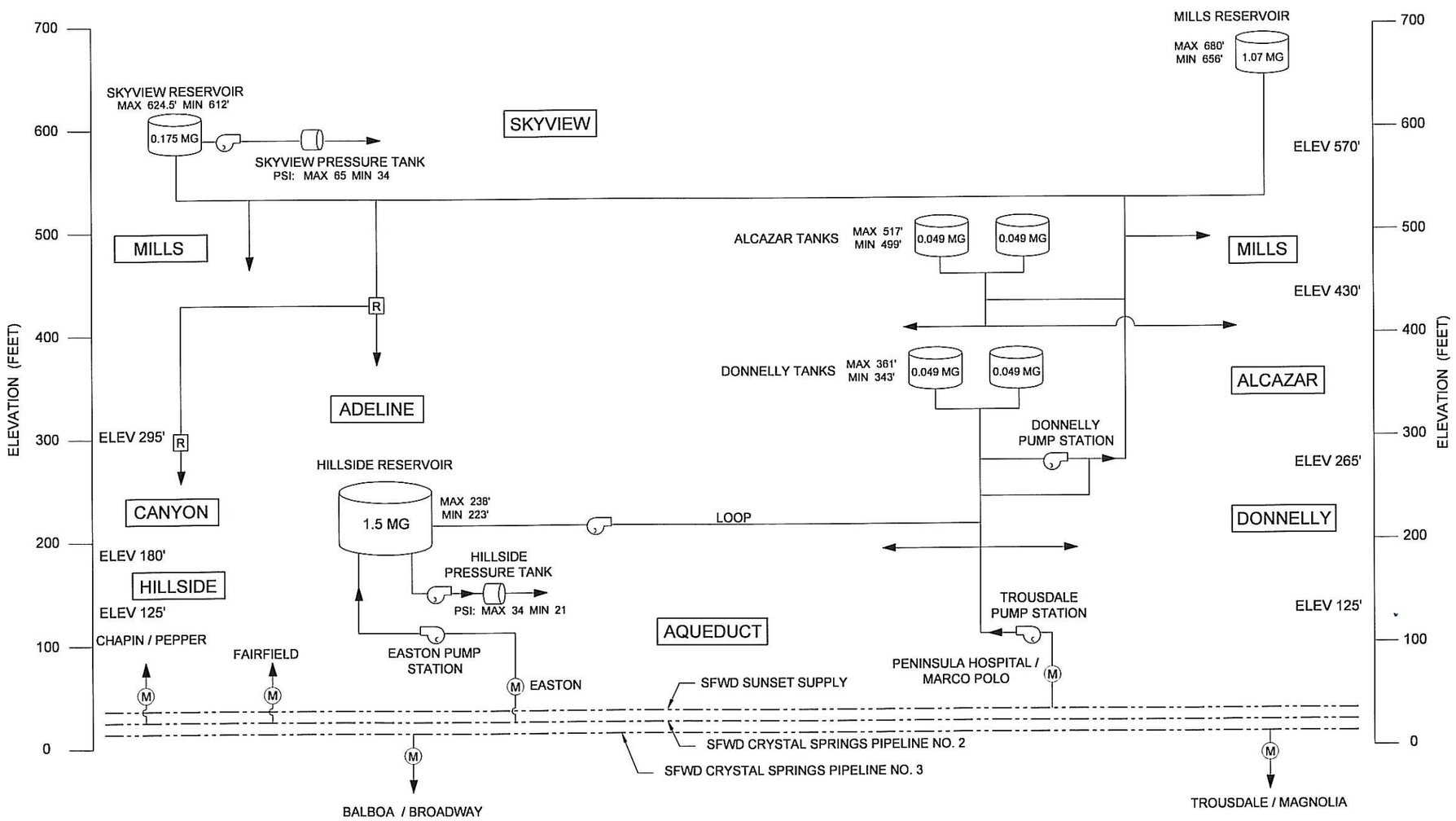
City of Burlingame
Burlingame, CA
November 2005
EKI A20031.08

Figure 2

20051128.11000043 G:\A20031.08\Dec05\Figure 02 - Approximate Extent of the City of Burlingame Water Service Area.dwg Figure 02



20051128.10565834 G:\A20031.08\Dec05\Figure 03 - Current and Projected City of Burlingame Zoning in Progress.dwg Figure 3



Legend:

- SFWD Meter Connection
- Pressure Regulating Valve
- Pump Station
- Pressure Tank
- Reservoir Tank
- SFWD Aqueduct Distribution System Zone

Notes:

1. Schematic Created by Stetson Engineers, Inc.
2. SFWD = San Francisco Water Department
3. MG = Million Gallons
4. Not to scale

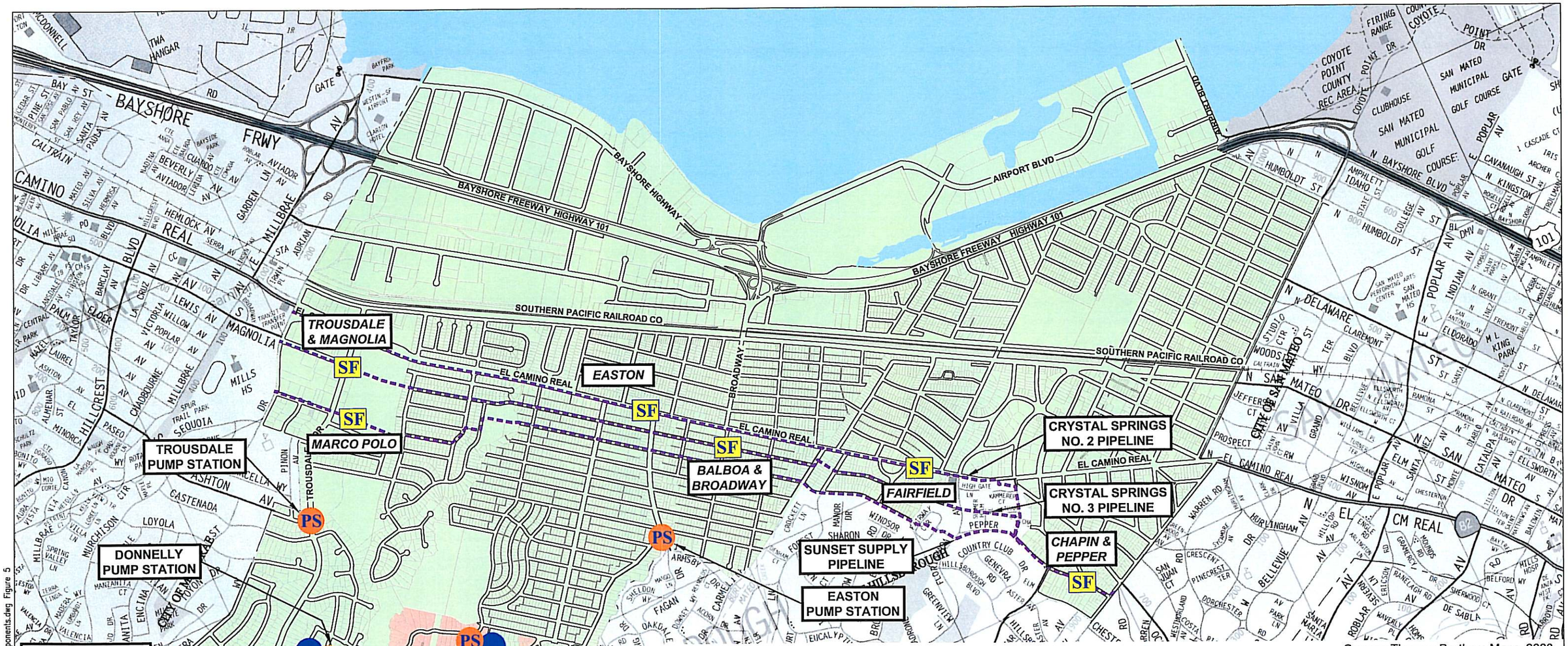
Erler & Kalinowski, Inc.

Schematic of City of Burlingame Water Distribution System

City of Burlingame
Burlingame, CA
November 2005
EKI A20031.08

Figure 4

20051128.11014758 G:\A20031.08\Dec05\Figure 04 – Schematic of City of Burlingame Water Distribution System.dwg Figure 4



Source: Thomas Brothers Maps, 2003

N

0 1600 3200

(Approximate Scale in Feet)

Legend:

- City of Burlingame
- Unincorporated Area of Burlingame (Note 3)
- Tank Location
- SF SFPUC Turnout Location
- PS Pumping Station Location
- Existing SFPUC Transmission Mains

Abbreviations:

SFPUC = San Francisco Public Utilities Commission

Notes:

1. All locations are approximate.
2. City basemap obtained from City of Burlingame Geographical Information System.
3. Unincorporated areas of Burlingame are served with potable water by the City of Burlingame.

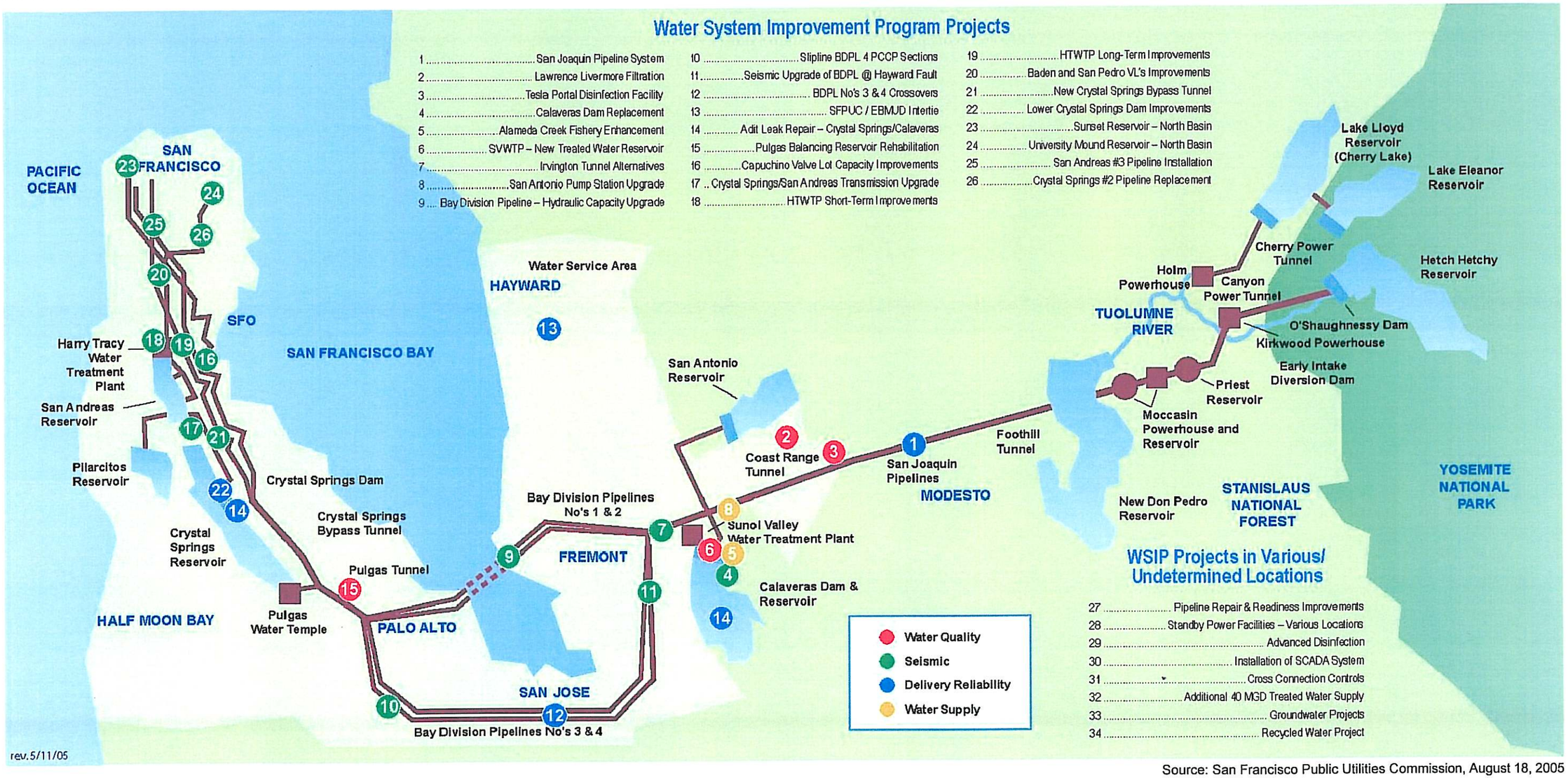
Erler & Kalinowski, Inc.

Major Water Distribution System Components

City of Burlingame
Burlingame, CA
November 2005
EKI A20031.08

Figure 5

20051128.11030939 G:\A20031.08\Dec05\Figure 05 - Major Water Distribution System Components.dwg Figure 5



Source: San Francisco Public Utilities Commission, August 18, 2005

Abbreviations:

BDPL	= Bay Division Pipeline
EBMUD	= East Bay Municipal Utility District
HTWTP	= Henry Tracy Water Treatment Plant
MGD	= Millions of Gallons per Day
PCCP	= Prestressed Concrete Cylinder Pipe
SCADA	= Supervisory Control and Data
SFO	= San Francisco Airport
SFPUC	= San Francisco Public Utilities Commission
SVWTP	= Sunol Valley Water Treatment Plant
WSIP	= Water System Infrastructure Implementation Plan

Notes:

1. All locations are approximate.
2. Not to scale

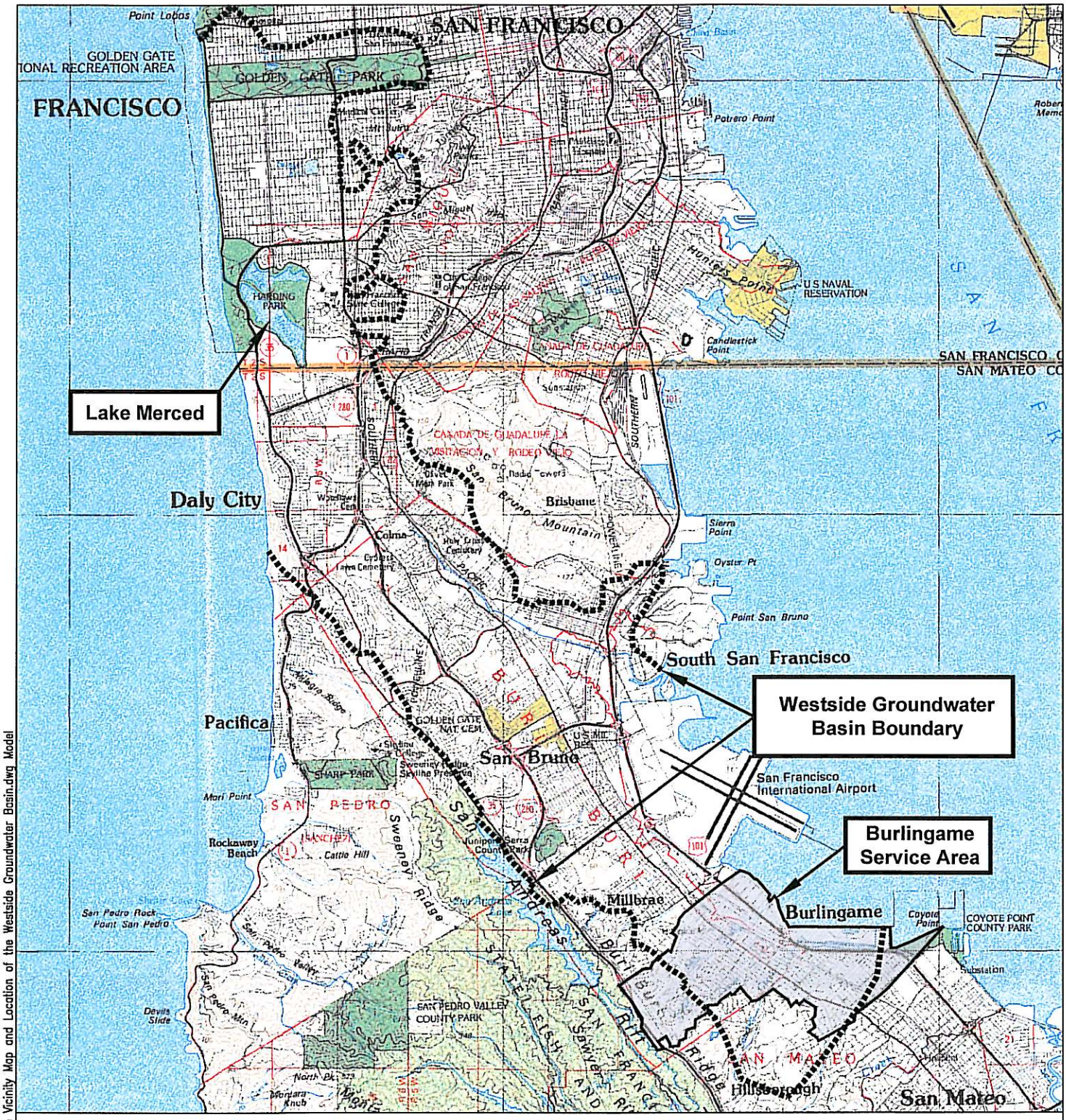
Erler & Kalinowski, Inc.

SFPUC Water System Improvement Program Projects

City of Burlingame
Burlingame, CA
November 2005
EKI A20031.08

Figure 6

20051128.1104186I G:\A20031.08\Dec05\Figure 06 - SFUPC Water System Improvement Program Projects.dwg Layout1



Notes:

1. All locations are approximate.
2. U.S.G.S. 1:100,000 Series Topographic Map, San Francisco Quadrangle, California, 1978.

N

0 2 4

(Approximate Scale in Miles)

Erler & Kalinowski, Inc.

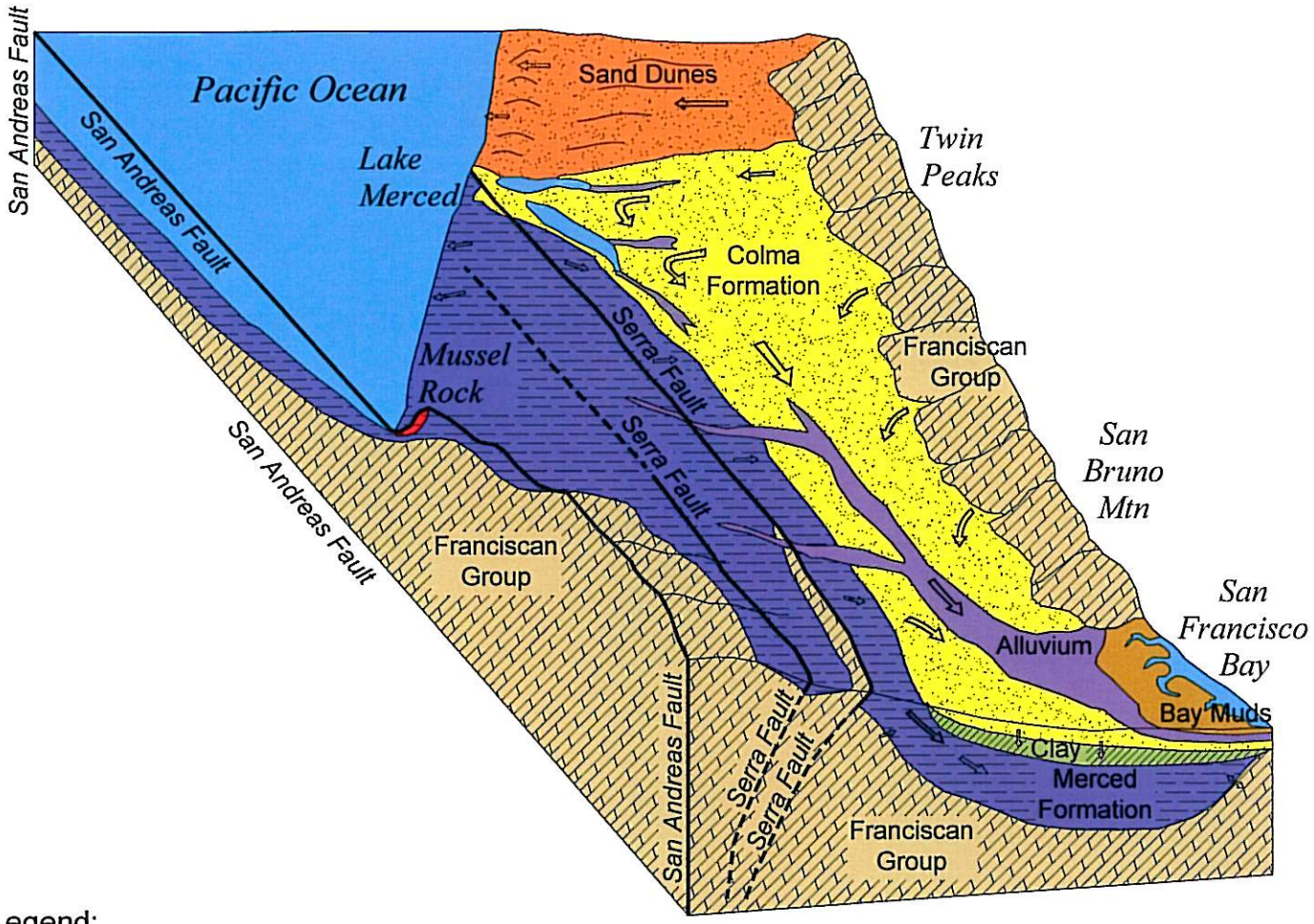
Site Vicinity Map and Location of the Westside Groundwater Basin

City of Burlingame
Burlingame, CA

November 2005
EKI A20031.08

Figure 7

20051128.11083173 G:\A20031.08\Dec05\Figure 07 – Site Vicinity Map and Location of the Westside Groundwater Basin.dwg Model



Legend:

- Colma Formation - sand and silty sand with interbedded silt, gravel, and clay layers
- Merced Formation - sand with thin interbedded silt and clay layers
- Bedrock - Franciscan Formation
- Clay Aquitard

Notes:

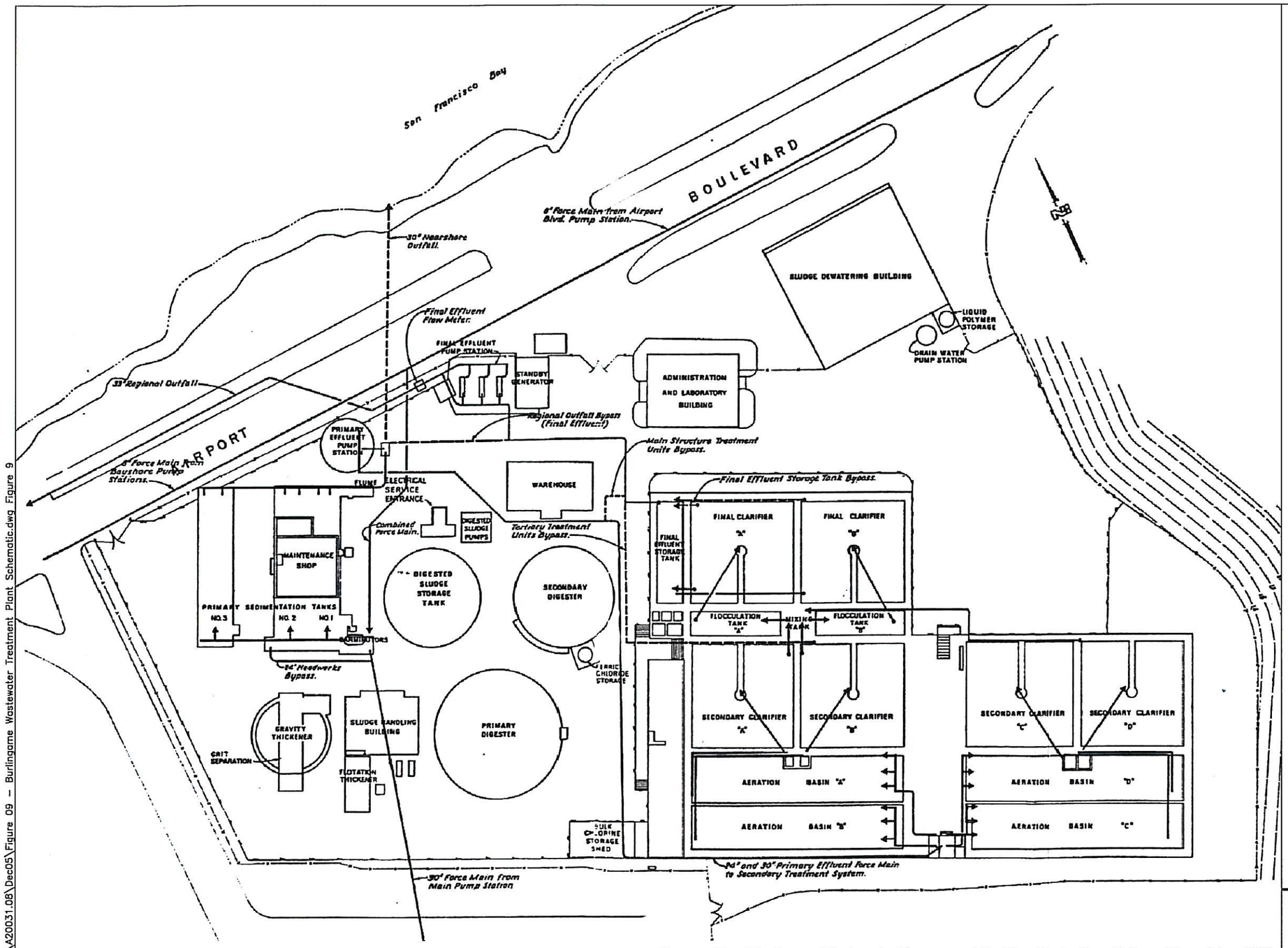
1. All locations are approximate.
2. This figure presents a conceptual model of the Westside Groundwater Basin showing the different geologic formations within the Basin. The arrows show generalized groundwater flow directions within the Basin.
3. Source: Rogge, 2003, *Dimensions of the Westside Groundwater Basin, San Francisco and San Mateo Counties, California,* Masters Thesis at San Francisco State University.

Erler & Kalinowski, Inc.

Conceptual Model of the Westside Groundwater Basin

City of Burlingame
Burlingame, CA
November 2005
EKI A20031.08

Figure 8



Source: City of Burlingame Wastewater Management Facilities Master Plan, Nolte and Associates, 1983

N

Notes:

1. All locations are approximate
2. Not to scale

Erler & Kalinowski, Inc.

Burlingame Wastewater Treatment Plant Schematic

City of Burlingame
Burlingame, CA
November 2005
EKI A20031.08
Figure 9

20051128.11095279 G:\A20031.08\Dec05\Figure 09 – Burlingame Wastewater Treatment Plant Schematic.dwg Figure 9

Appendix A

Urban Water Management Planning Act, July 2005

This Page Intentionally Left Blank

Established: AB 797, Klehs, 1983
Amended: AB 2661, Klehs, 1990
AB 11X, Filante, 1991
AB 1869, Speier, 1991
AB 892, Frazee, 1993
SB 1017, McCorquodale, 1994
AB 2853, Cortese, 1994
AB 1845, Cortese, 1995
SB 1011, Polanco, 1995
AB 2552, Bates, 2000
SB 553, Kelley, 2000
SB 610, Costa, 2001
AB 901, Daucher, 2001
SB 672, Machado, 2001
SB 1348, Brulte, 2002
SB 1384, Costa, 2002
SB 1518, Torlakson, 2002
AB 105, Wiggins, 2004
SB 318, Alpert, 2004

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in

its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS
Article 1. General Provisions

10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)

(1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.

(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(1) An average water year.
(2) A single dry water year.
(3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e)

(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.

(K) Conservation pricing.

(L) Water conservation coordinator.

(M) Water waste prohibition.

(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council

in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including,

but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5 Water Service Reliability

10635.

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Articl 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644.

(a) An urban water supplier shall file with the department and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the

plans shall be filed with the department and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the outstanding elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

10657.

(a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.

(b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.

Appendix B

Agency Notification Letters

This Page Intentionally Left Blank

The City of Burlingame

PUBLIC WORKS DEPARTMENT
(650) 558-7230

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

CORPORATION YARD
(650) 558-7670

July 8, 2005

Member Agency
Bay Area Water Supply and Conservation Agency

Re: **Notice of Preparation of Urban Water Management Plan - 2005 Update**

The Urban Water Management Plan Act (Water Code Section 10610 – 10657) requires the City of Burlingame ("Burlingame") to update its Urban Water Management Plan ("UWMP") in 2005. The City is currently reviewing our existing UWMP, which was prepared in 2000, and considering revisions to the document. We invite your agency's participation in this revision process.

A draft of the 2005 UWMP will be made available for public review and a public hearing will be scheduled later this year. In the meantime, if you would like more information regarding Burlingame's 2000 UWMP and our schedule for preparing the 2005 UWMP, or if you would like to participate in the preparation of the 2005 UWMP, please contact Syed Murtuza, P.E. at:

501 Primrose Road
Burlingame, CA 94010-3906
(650) 558-7230
smurtuza@burlingame.org

Yours very truly,

THE CITY OF BURLINGAME
George Bagdon, P.E.
Director of Public Works

By_____
Syed Murtuza, P.E.
Assistant Director of Public Works

The City of Burlingame

PUBLIC WORKS DEPARTMENT
(650) 558-7230

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

CORPORATION YARD
(650) 558-7670

October 10, 2005

Member Agency
Bay Area Water Supply and Conservation Agency

Re: **Notice of Availability of Draft Urban Water Management Plan - 2005 Update**

The Urban Water Management Plan Act (California Water Code Section 10610 – 10657) ("Act") requires the City of Burlingame ("Burlingame") to update its Urban Water Management Plan ("UWMP") in 2005. Additionally, Section 10620(d)(2) of the Act requires that "*Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, ...*". Burlingame has prepared a draft of the 2005 update to our UWMP and we invite your agency's participation in reviewing the draft document.

The draft UWMP will be made available for public review on October 25, 2005 at the Burlingame Main Library located at 480 Primrose Road, Burlingame, California 94010 and at City Hall, Public Works Department located at 501 Primrose Road, Burlingame, California 94010. Comments on the draft UWMP plan should be submitted in writing to Mr. Syed Murtuza by November 21, 2005 at the address below. If you have any questions regarding the draft UWMP, please contact:

Syed Murtuza, P.E.
Assistant Director of Public Works
501 Primrose Road
Burlingame, CA 94010-3906
(650) 558-7230
smurtuza@burlingame.org

Yours very truly,

THE CITY OF BURLINGAME
George Bagdon, P.E.
Director of Public Works

By_____
Syed Murtuza, P.E.
Assistant Director of Public Works

The City of Burlingame

PUBLIC WORKS DEPARTMENT
(650) 558-7230

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

CORPORATION YARI
(650) 558-767(

November 7, 2005

Member Agency
Bay Area Water Supply and Conservation Agency

Re: **Notice of Public Hearing for Draft Urban Water Management Plan - 2005 Update**

The Urban Water Management Plan Act (California Water Code Section 10610 – 10657) requires the City of Burlingame to update its Urban Water Management Plan (UWMP) in 2005. Additionally, Section 10620(d)(2) of the Act requires that "*Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source,...*". Burlingame is conducting a public hearing prior to the City Council's adoption of the 2005 UWMP and we invite your agency's participation in this process.

The public hearing will be held at 6:00 pm on Monday, November 21, 2005 at Burlingame City Hall, City Council Chambers, located at 501 Primrose Road, Burlingame, California 94010. Comments on the draft 2005 UWMP may be made prior to the public hearing to Mr. Syed Murtuza at the address below, or at the public hearing. A draft of the 2005 UWMP is available for review at the Burlingame Main Library located at 480 Primrose Road, Burlingame, California 94010 and at City Hall, Public Works Department located at 501 Primrose Road, Burlingame, California 94010. If you have any questions regarding the draft 2005 UWMP, please contact:

Syed Murtuza, P.E.
Public Works Department, Engineering Division
501 Primrose Road
Burlingame, CA 94010-3906
(650) 558-7230

Yours very truly,

THE CITY OF BURLINGAME
George Bagdon, P.E.
Director of Public Works

By_____
Syed Murtuza, P.E.
Assistant Director of Public Works

This Page Intentionally Left Blank

Appendix C

Public Notification Letters

This Page Intentionally Left Blank

The City of Burlingame

PUBLIC WORKS DEPARTMENT
(650) 558-7230

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

CORPORATION YARD
(650) 558-7670

NOTICE OF PREPARATION OF URBAN WATER MANAGEMENT PLAN - 2005 UPDATE

The City of Burlingame ("Burlingame") will be reviewing and updating our Urban Water Management Plan ("UWMP") during 2005. UWMPs are developed by cities in order to help ensure a reliable water supply sufficient to meet the needs of our customers. Burlingame's current UWMP was prepared in 2000 and, as required by California law, must be updated every 5 years. We encourage all of our customers to participate in this review and revision process.

A draft of the 2005 UWMP will be made available for public review and a public hearing will be scheduled later this year. In the meantime, if you would like more information regarding Burlingame's 2000 UWMP and our schedule for preparing the 2005 UWMP, or if you would like to participate in the preparation of the 2005 UWMP, please contact:

Syed Murtuza, P.E.
Public Works Department
501 Primrose Road
Burlingame, CA 94010-3906
(650) 558-7230
smurtuza@burlingame.org

From: City of Burlingame [mailto:cityclerk@cityofburlingame.org]
Sent: Friday, July 15, 2005 11:06 AM
To: zucca, matt
Subject: Urban Water Management Plan

City of Burlingame e-News

NOTICE OF PREPARATION OF
URBAN WATER MANAGEMENT PLAN - 2005 UPDATE

The City of Burlingame will be reviewing and updating our Urban Water Management Plan (UWMP) during 2005. UWMPs are developed by cities in order to help ensure a reliable water supply sufficient to meet the needs of our customers. Burlingame's current UWMP was prepared in 2000 and, as required by California law, must be updated every 5 years. We encourage all of our customers to participate in this review and revision process.

A draft of the 2005 UWMP will be made available for public review and a public hearing will be scheduled later this year. In the meantime, if you would like more information regarding Burlingame's 2000 UWMP and our schedule for preparing the 2005 UWMP, or if you would like to participate in the preparation of the 2005 UWMP, please contact:

Philip Monaghan, P.E.
Public Works Department
501 Primrose Road
Burlingame, CA 94010-3906
(650) 558-7230
pmonaghan@burlingame.org

The City of Burlingame

PUBLIC WORKS DEPARTMENT
(650) 558-7230

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

CORPORATION YARD
(650) 558-7670

NOTICE OF AVAILABILITY FOR PUBLIC REVIEW
URBAN WATER MANAGEMENT PLAN - 2005 UPDATE

The City of Burlingame ("Burlingame") has prepared a draft update of its Urban Water Management Plan ("UWMP"). UWMPs are developed by cities in order to help ensure a reliable water supply sufficient to meet the future needs of their customers. Burlingame's current UWMP was prepared in 2000 and, as required by California law, must be updated every 5 years.

A draft of the 2005 UWMP will be made available for public review on October 25, 2005 at the Burlingame Main Library located at 480 Primrose Road, Burlingame, California 94010 and at City Hall, Public Works Department located at 501 Primrose Road, Burlingame, California 94010. Comments on the draft UWMP plan should be submitted in writing to Mr. Syed Murtuza at the address below or made at the public hearing currently scheduled as part of the November 21, 2005 City Council meeting. A separate notice will be distributed in advance of the public hearing. If you have any questions regarding the draft UWMP, please contact:

Syed Murtuza, P.E.
Assistant Director of Public Works
501 Primrose Road
Burlingame, CA 94010-3906
(650) 558-7230
smurtuza@burlingame.org

The City of Burlingame

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

NOTICE OF AVAILABILITY FOR PUBLIC REVIEW URBAN WATER MANAGEMENT PLAN - 2005 UPDATE

The City of Burlingame ("Burlingame") has prepared a draft update of its Urban Water Management Plan ("UWMP"). UWMPs are developed by cities in order to help ensure a reliable water supply sufficient to meet the future needs of their customers. Burlingame's current UWMP was prepared in 2000 and, as required by California law, must be updated every 5 years.

A draft of the 2005 UWMP will be made available for public review on October 25, 2005 at the Burlingame Main Library located at 480 Primrose Road, Burlingame, California 94010 and at City Hall, Public Works Department located at 501 Primrose Road, Burlingame, California 94010. Comments on the draft UWMP plan should be submitted in writing to Mr. Syed Murtuza at the address below or made at the public hearing currently scheduled as part of the November 21, 2005 City Council meeting. A separate notice will be distributed in advance of the public hearing. If you have any questions regarding the draft UWMP, please contact:

Syed Murtuza, P.E. - Assistant Director of Public Works
501 Primrose Road Burlingame, CA 94010-3906
(650) 558-7230

THE DAILY JOURNAL
Leading local news coverage in San Mateo County
WWW.SMDAILYJOURNAL.COM
MONDAY, OCTOBER 17, 2005 • VOL VI, EDITION 52

The City of Burlingame

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

NOTICE OF AVAILABILITY FOR PUBLIC REVIEW URBAN WATER MANAGEMENT PLAN - 2005 UPDATE

The City of Burlingame ("Burlingame") has prepared a draft update of its Urban Water Management Plan ("UWMP"). UWMPs are developed by cities in order to help ensure a reliable water supply sufficient to meet the future needs of their customers. Burlingame's current UWMP was prepared in 2000 and, as required by California law, must be updated every 5 years.

A draft of the 2005 UWMP will be made available for public review on October 25, 2005 at the Burlingame Main Library located at 480 Primrose Road, Burlingame, California 94010 and at City Hall, Public Works Department located at 501 Primrose Road, Burlingame, California 94010. Comments on the draft UWMP plan should be submitted in writing to Mr. Syed Murtuza at the address below or made at the public hearing currently scheduled as part of the November 21, 2005 City Council meeting. A separate notice will be distributed in advance of the public hearing. If you have any questions regarding the draft UWMP, please contact:

Syed Murtuza, P.E. - Assistant Director of Public Works
501 Primrose Road Burlingame, CA 94010-3906
(650) 558-7230
smurtuza@burlingame.org

Sent on October 19, 2005

City of Burlingame e-News

REBROADCAST OF OCTOBER 6TH CANDIDATE FORUM ON COMCAST

The October 6th Council Candidate Forum held at Burlingame City Hall will air on Channel 27 at the following times:

Oct. 17 at 4 p.m.
Oct. 19 at 4 p.m.
Oct. 29 at 8 p.m.
Oct. 30 at 8 p.m.
Nov. 3 at 8 p.m.
Nov. 5 at 8 p.m.
Nov. 6 at 8 p.m.

PARENT-TEEN ALCOHOL & DRUG WORKSHOP - NOVEMBER 3

Learn what's effective and what's not when talking with your teens about alcohol and other drugs. This free workshop is sponsored by the Burlingame Parks & Recreation Department and is funded by the Shinnyo-en Temple. Although the workshop is geared for parents, teens are encouraged to attend as well. It will be held on Thursday, November 3rd, from 7:00 to 9:00 p.m. at the Burlingame Recreation Center at 850 Burlingame Avenue. Please RSVP by calling the Recreation Center at 650-558-7300. Refreshments will be provided.

UPDATED URBAN WATER MANAGEMENT PLAN - AVAILABLE OCTOBER 25

A draft of Burlingame's 2005 Urban Water Management Plan (UWMP) will be made available for public review on October 25, 2005, at the Burlingame Main Library, 480 Primrose Road and at City Hall, Public Works Department, 501 Primrose Road. This plan is updated every five years. Comments on the draft UWMP plan should be submitted in writing to Mr. Syed Murtuza at City Hall or made at the public hearing currently scheduled as part of the November 21, 2005 City Council meeting.

DISASTER PREPAREDNESS FAIR - NOVEMBER 12

San Mateo County's Office of Emergency Services is sponsoring Disaster Preparedness Day on Saturday, November 12, from 10 a.m. to 2 p.m. at the San Mateo County Expo Center at 2495 S. Delaware Street in San Mateo. Admission is free.

VISIT WWW.BURLINGAME.ORG FOR MORE INFORMATION ON THESE EVENTS

THE DAILY JOURNAL
Leading local news coverage in San Mateo County
WWW.SMDAILYJOURNAL.COM
WEDNESDAY, NOVEMBER 9, 2005 • VOL VI, EDITION 72

The City of Burlingame

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

NOTICE OF PUBLIC HEARING URBAN WATER MANAGEMENT PLAN - 2005 UPDATE

The City of Burlingame has prepared a draft update of its Urban Water Management Plan (UWMP). Water agencies develop UWMPs in order to help ensure a reliable water supply sufficient to meet the future needs of their customers. The current UWMP was prepared in 2000 and, as required by California law, must be updated every five years.

A public hearing will be conducted prior to the City Council's adoption of the 2005 UWMP. The public hearing will be held at 6:00 pm on Monday, November 21, 2005 at Burlingame City Hall, City Council Chambers, located at 501 Primrose Road, Burlingame, California 94010. Comments on the draft 2005 UWMP may be made prior to the hearing to Mr. Syed Murtuza at the address below, or at the public hearing. A draft of the 2005 UWMP is available for review at the Burlingame Main Library located at 480 Primrose Road, Burlingame, California 94010 and at City Hall, Public Works Department located at 501 Primrose Road, Burlingame, California 94010. If you have any questions regarding the draft 2005 UWMP, please contact:

Syed Murtuza, P.E.
Public Works Department, Engineering Division
501 Primrose Road
Burlingame, CA 94010-3906
(650) 558-7230

The City of Burlingame
CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

NOTICE OF PUBLIC HEARING URBAN WATER MANAGEMENT PLAN - 2005 UPDATE

The City of Burlingame has prepared a draft update of its Urban Water Management Plan (UWMP). Water agencies develop UWMPs in order to help ensure a reliable water supply sufficient to meet the future needs of their customers. The current UWMP was prepared in 2000 and, as required by California law, must be updated every five years.

A public hearing will be conducted prior to the City Council's adoption of the 2005 UWMP. The public hearing will be held at 6:00 pm on Monday, November 21, 2005 at Burlingame City Hall, City Council Chambers, located at 501 Primrose Road, Burlingame, California 94010. Comments on the draft 2005 UWMP may be made prior to the hearing to Mr. Syed Murtuza at the address below, or at the public hearing. A draft of the 2005 UWMP is available for review at the Burlingame Main Library located at 480 Primrose Road, Burlingame, California 94010 and at City Hall, Public Works Department located at 501 Primrose Road, Burlingame, California 94010. If you have any questions regarding the draft 2005 UWMP, please contact:

Syed Murtuza, P.E.
Public Works Department, Engineering Division
501 Primrose Road
Burlingame, CA 94010-3906
(650) 558-7230

sanger elizabeth

From: Doris Mortensen [dmortensen@burlingame.org]
Sent: Friday, November 18, 2005 9:32 AM
To: sanger elizabeth
Subject: Public Notices

City of Burlingame e-News

NOTICE OF PUBLIC HEARING

URBAN WATER MANAGEMENT PLAN - 2005 UPDATE

The City of Burlingame has prepared a draft update of its Urban Water Management Plan (UWM Water agencies develop UWMPs in order to help ensure a reliable water supply sufficient to meet future needs of their customers. The current UWMP was prepared in 2000 and, as required California law, must be updated every five years.

A public hearing will be conducted prior to the City Council's adoption of the 2005 UWMP. T public hearing will be held at 6:00 pm on Monday, November 21, 2005 at Burlingame C Hall, City Council Chambers, located at 501 Primrose Road, Burlingame, California 9401 Comments on the draft 2005 UWMP may be made prior to the hearing to Mr. Syed Murtuza at address below, or at the public hearing. A draft of the 2005 UWMP is available for review at Burlingame Main Library located at 480 Primrose Road, Burlingame, California 94010 and at City H Public Works Department located at 501 Primrose Road, Burlingame, California 94010. If you ha any questions regarding the draft 2005 UWMP, please contact:

Syed Murtuza, P.E., Public Works Department, Engineering Division
501 Primrose Road, Burlingame, CA 94010-3906
Telephone No.: (650) 558-7230

AMERICANS SUPPORTING AMERICANS ADOPT-A-UNIT PROGRAM

In May 2004, the Burlingame City Council formally adopted Bravo Company, 1/327, 101st Airborne Division. The self-named Bushmasters troop numbers about 140 men who were sent back to Iraq late in September of this year. Click on this link: http://www.burlingame.org/ASA-DC_3535138.pdf to view a picture of the troops taken at Fort Campbell, Kentucky last May.

The Burlingame citizens' Adopt-A-Unit committee has worked hard to raise funds, gather donated items and find ways to show our community's support to members of the military for their sacrifice on behalf of our country.

The committee has been asked to help support the Family Christmas Party for those wives and children that remain at Ft. Campbell. Donations have allowed the committee to arrange for a gift certificate for food and toys for the party. Guittard Chocolate Company is donating 4 cases of Christmas mints to be used at the Battalion gathering on December 3rd.

This Page Intentionally Left Blank

Appendix D

Letters to SFPUC and BAWSCA Regarding Year 2030 Water Purchase Projections for the City of Burlingame, 8 April and 14 June 2005

This Page Intentionally Left Blank

The City of Burlingame

PUBLIC WORKS DEPARTMENT
(650) 558-7230

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

CORPORATION YARD
(650) 558-7670

April 8, 2005

Paula Kehoe
Manager of Water Resource Planning
San Francisco Public Utilities Commission
1145 Market Street, 4th Floor
San Francisco, CA 94103

Subject: Year 2030 Water Purchase Projections for the City of Burlingame

Dear Ms. Kehoe:

The City of Burlingame ("Burlingame") is submitting this letter in response to the Bay Area Water Supply and Conservation Agency's ("BAWSCA's") letter, dated March 9, 2005, requesting Burlingame's projected water purchases from the San Francisco Public Utilities Commission ("SFPUC") Regional Water System. The water purchase estimate for 2030 was originally included in the *SFPUC Capital Improvement Program, Wholesale Customer Best Estimate of Water Purchases* ("Water Purchase Best Estimate") submitted by Burlingame on November 8, 2004. As requested in BAWSCA's March 9, 2005 letter, this letter presents Water Purchase Best Estimates in 5-year increments for the years of 2010, 2015, 2020, 2025, and 2030.

As indicated above, Burlingame submitted the Water Purchase Best Estimate on November 8, 2004. The Water Purchase Best Estimate for Burlingame was established by SFPUC and their subconsultants URS Grainer ("URS") and Maddaus Water Management ("MWM") and is based on a water demand projection model, discussed further below, developed by MWM (MWM, 2003). Burlingame received training on the use of MWM's water demand projection model during February 2005.

2030 WATER PURCHASE PROJECTIONS FOR BURLINGAME

The attached Table 1 and the associated Figure 1 contain Burlingame's projected water purchases for the above years as estimated in Burlingame's Water System Master Plan ("WSMP") (EKI, 2004) and in the SFPUC Wholesale Customer Demand Projection Information, Appendix C3, dated December 2004, ("Demand Report") (URS, 2004).

SFPUC 2030 Water Purchase Projections

We understand from reviewing the Demand Report that an end-use demand model, called the Demand Side Management Least-Cost Planning Decision Support System ("DSS") model (Maddaus, 2003), was used to project total water demand out to 2030 for the SFPUC wholesale customer service area, including Burlingame. End-use models distribute the total water demand between specific water end uses such as toilets, faucets, or irrigation. Then, population growth projections and assumptions regarding natural fixture replacement rate, plumbing code impacts, and water conservation impact on water demands can be combined to estimate future water demands.

When plumbing code impacts and natural fixture replacements are not considered in the DSS model (i.e. per-capita water demand is assumed to remain constant), the model estimates Burlingame's 2030 average annual water purchases at 5.54 MGD. When plumbing code impacts and natural fixture replacements are considered in the DSS model, the DSS model estimates Burlingame's 2030 average annual water purchases at 4.9 MGD, a reduction in water purchases of 12% associated solely with the "natural" replacement rate of plumbing fixtures. Further, when water conservation efforts are incorporated into the DSS model, the model estimates Burlingame's 2030 average annual water purchases are reduced to 4.7 MGD.

Burlingame's preliminary review of the DSS model indicates that the model's 2030 water purchase projections are sensitive to the assumptions made regarding certain factors, including:

- Population and employment growth,
- The percentage of old fixtures in Burlingame and the water use per fixture,
- The percentage of old fixtures that will naturally be replaced in Burlingame and associated water savings per year,
- Water savings achieved due to implementation of water conservation measures.

The DSS model prepared by SFPUC for use in the Water Purchase Best Estimate makes assumptions regarding the above input parameters based upon the available published literature. The DSS model therefore is a non-conservative, best-estimate of Burlingame's future water purchases. Burlingame is committed to trying to achieve the target average annual water purchases of 4.7 MGD by 2030 established in the Water Purchase Best Estimate.

WSMP 2030 Water Purchase Projections Used for System Infrastructure Improvements

The WSMP utilized a constant per-capita water demand (expressed in gallons per person per day) multiplied by the total population to estimate Burlingame's 2030 average annual water purchases at 5.39 MGD. Burlingame finds the water purchase projections in the WSMP to be more suitable for planning-level projections that are not tolerant to potential underestimates of water demands. Therefore, Burlingame will continue to rely on the water purchase projections contained in the WSMP to size water system infrastructure improvements, such as pump stations and transmission mains, as part of our Water System Capital Improvements Program.

BURLINGAME 5-YEAR WATER PURCHASE PROJECTIONS

The DSS model assumed that significant additional conservation efforts would commence during 2004. However, Burlingame is budgeting additional significant water conservation programs starting in 2010. Therefore, Burlingame has adjusted associated water conservation impacts in the DSS model results accordingly. These modified water purchase demand projections are reflected in 5-year water purchase projections shown in Table 1 and Figure 2.

SUMMARY

In conclusion, we find the DSS model prediction of 4.7 MGD to be an acceptable estimate of future water purchases. Burlingame is committed to implementing current plumbing code standards and continuing conservation efforts that in order to help achieve the 4.7 MGD water purchase estimate.

However, as indicated in the Water Purchase Best Estimate, the average annual water projections provided in the Water Purchase Best Estimate and herein are subject to change. The Water Purchase Best Estimate is based upon Burlingame's and SFPUC's current best ability to forecast the actual future water demands. In no way does the Water Purchase Best Estimate modify or set expectations of future modifications of Burlingame's existing Hetch-Hetchy Supply Assurance ("HHSA") of 5.23 MGD. Additionally, as indicated above, Burlingame is continuing to utilize the water purchase projections in our WSMP for sizing infrastructure improvements.

Please contact Matt Zucca at (650) 292-9100 or Syed Murtuza at (650) 558-7230 if you have any questions.

Very truly yours,

THE CITY OF BURLINGAME

George J. Bagdon, P.E.
Director of Public Works

cc: Arthur Jensen, P.E., BAWSCA
Nicole Sandkulla, P.E., BAWSCA

Attachments:

Table 1 - Summary of Available Historical and Projected Population and Potable Water Demands

Figure 1 - Projected Average Annual Water Demands as Estimated by the City of Burlingame and San Francisco Public Utilities Commission

Figure 2 - City Of Burlingame's Modified Annual Average Water Purchase Projections Including Natural Plumbing Fixture Replacement and Delayed Additional Water Conservation Program Implementation

References:

EKI, 2004. Erler & Kalinowski, Inc., Water System Master Plan, City of Burlingame, California, dated April 2004.

MWM, 2003. Maddaus Water Management. Demand-Side Management and Least-Cost Planning Decision Support System ("DSS") Model.

URS, 2004. URS Corporation, SFPUC Wholesale Customer Demand Projection Information, Appendix C3, dated December 2004

TABLE 1
SUMMARY OF AVAILABLE HISTORICAL AND PROJECTED POPULATION AND POTABLE WATER DEMANDS
City of Burlingame, California

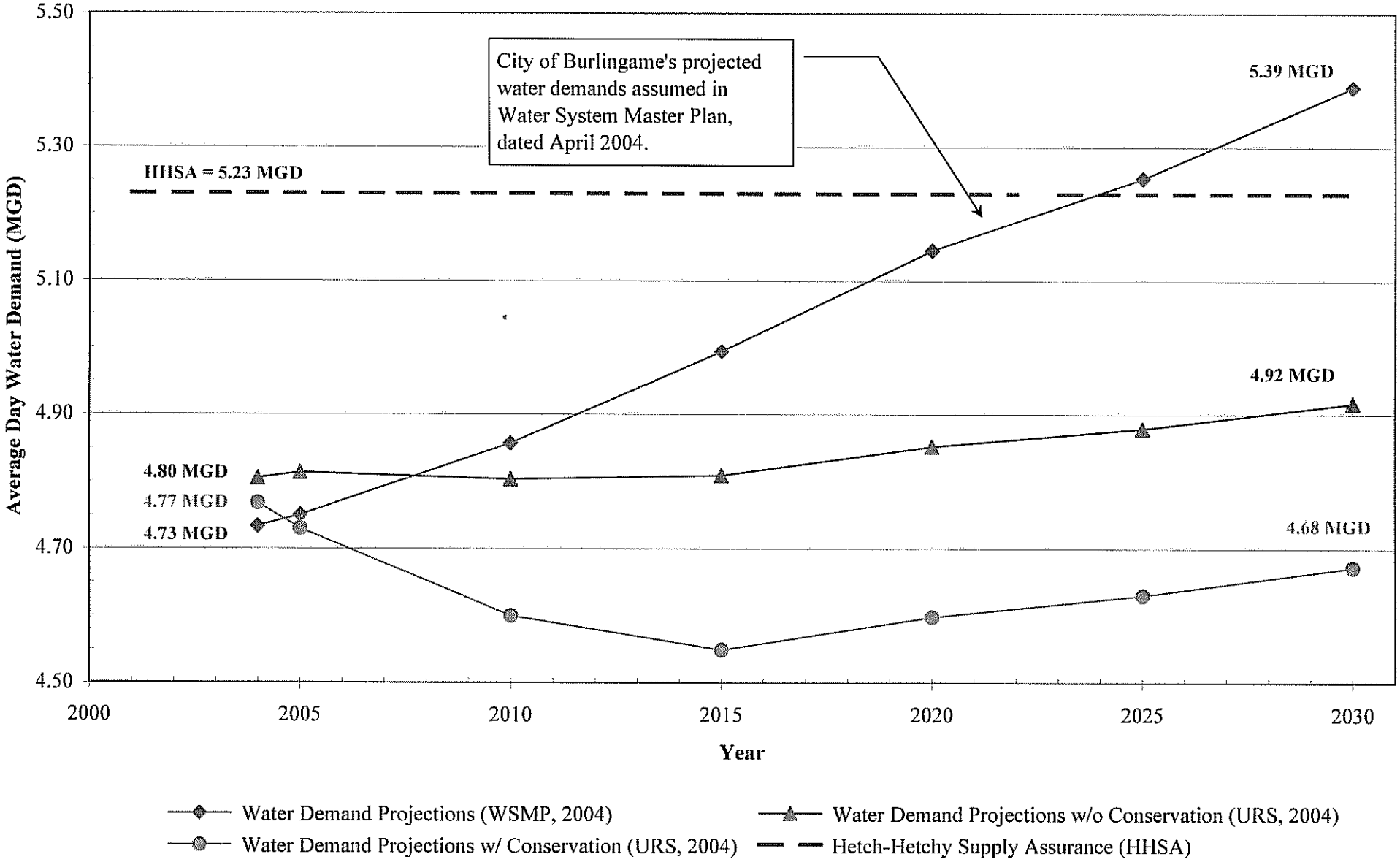
Year	Population		HHSA	WSMP, 2004				URS, 2004			Modified Average Purchased Water w/ Conservation (f)
				Historic and Projected Average Consumer Water Demand (a)		Historic and Projected Average Purchased Water (a),(b)		Average Purchased Water w/o Plumbing Code (e)	Average Purchased Water w/o Conservation (e)	Average Purchased Water w/ Conservation (e)	
	Projected (c),(d)	Percent Increase	MGD	MG/year	MGD	MG/year	MGD	MGD	MGD	MGD	MGD
2004	29,872	--	5.23	1,628	4.46	1,727	4.73	4.88	4.80	4.77	4.80
2005	30,300	1.4%	--	1,651	4.52	1,733	4.75	4.91	4.81	4.73	4.81
2010	31,000	2.3%	--	1,688	4.63	1,773	4.86	5.02	4.80	4.60	4.80
2015	31,900	2.8%	--	1,736	4.76	1,823	4.99	5.15	4.81	4.55	4.62
2020	32,900	3.0%	--	1,789	4.90	1,878	5.15	5.31	4.85	4.60	4.60
2025	33,600	2.1%	--	1,826	5.00	1,917	5.25	5.42	4.88	4.63	4.62
2030	34,500	2.6%	--	1,873	5.13	1,967	5.39	5.54	4.92	4.67	4.68

Abbreviations:
MGD = Million Gallons per Day
MG = Million Gallons
HHSA = Hetch-Hetchy Supply Assurance

Notes:
(a) Average Consumer Water Demand and Average Purchased Water information for 2004 is based upon the actual measured quantities as defined in City of Burlingame's year end fiscal reports.
(b) For 2005 and subsequent years, the Average Purchased Water is the sum of the Average Consumer Water Demand and the estimated Unaccounted For Water demand of 5 percent.
(c) Projected populations taken from City of Burlingame, General Plan Housing Element, Draft, dated November 2001 and Association of Bay Area Governments. Projections 2002, Forecast for the San Francisco Bay Area to the Year 2025, dated December 2001. Intermediate population values between 2000 and 2005 are linearly interpolated.
(d) Historical Population based upon linear interpolation of 2000 Census results and projected population.
(e) Based on URS, 2004 DSS model for Burlingame.
(f) Assumes that assumptions of savings due to plumbing code are correct, but that Burlingame will not begin implementattion of a water conservation program until 2010.

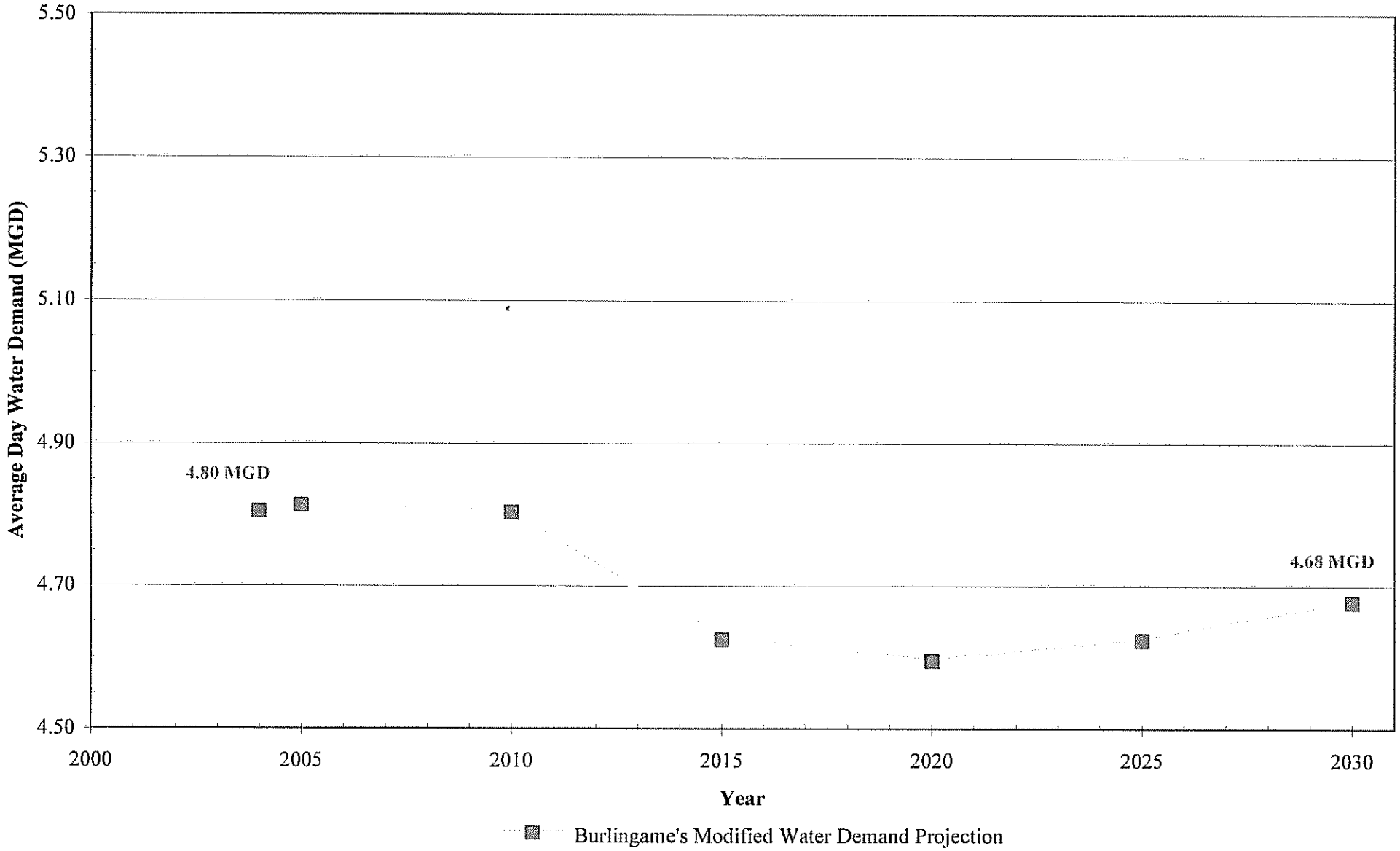
References:
URS, 2004. URS Corporation, SFPUC Wholesale Custormer DemandProjection Information, Appendix C3, dated December 2004.
WSMP, 2004. Erler & Kalinowski, Inc., Water System Master Plan, City of Burlingame, California, dated April 2004.

FIGURE 1
PROJECTED AVERAGE ANNUAL WATER DEMANDS AS ESTIMATED BY THE CITY OF BURLINGAME AND SAN FRANCISCO PUBLIC UTILITIES COMMISSION
City of Burlingame, San Mateo County, California



Erler & Kalinowski, Inc.
4/8/2005

FIGURE 2
CITY OF BURLINGAME'S MODIFIED ANNUAL AVERAGE WATER PURCHASE PROJECTIONS INCLUDING NATURAL PLUMBING FIXTURE REPLACEMENT AND DELAYED ADDITIONAL WATER CONSERVATION PROGRAM IMPLEMENTATION
City of Burlingame, California



Erler & Kalinowski, Inc.
4/8/2005

The City of Burlingame

PUBLIC WORKS DEPARTMENT
(650) 558-7230

CITY HALL - 501 PRIMROSE ROAD
BURLINGAME, CALIFORNIA 94010-3997

CORPORATION YARD
(650) 558-7670

14 June, 2005

Mr. Rich Joste
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 302
San Mateo, California 94402

VIA ELECTRONIC AND REGULAR MAIL

Subject: BAWSCA Annual Survey for the City of Burlingame

Dear Mr. Joste:

The City of Burlingame ("Burlingame") is submitting this letter in response to the Bay Area Water Supply and Conservation Agency's ("BAWSCA's") email, dated May 24, 2005, requesting Burlingame complete an annual survey. The annual survey requests information regarding water purchases, water sales, customers' accounts, population, and budget information for Fiscal Years 2002-03 and 2003-04. Additionally, the annual survey requests projected water purchases in 5-year increments for the years of 2010, 2015, 2020, 2025, and 2030 from the San Francisco Public Utilities Commission ("SFPUC") Regional Water System. The attachments to this letter contain Burlingame's completed annual survey.

As stated in the instructions for completing the annual survey, it is important that the water purchase estimate for 2030 provided in the annual survey utilize the *SFPUC Capital Improvement Program, Wholesale Customer Best Estimate of Water Purchases* ("Water Purchase Best Estimate") submitted by Burlingame on November 8, 2004. The Water Purchase Best Estimate estimates that Burlingame's 2030 water demand will average 4.9 million gallons per day ("MGD") and estimates that the 2030 water demand could be further reduced to 4.7 MGD through the implementation of additional water conservation efforts.

However, as stated in Burlingame's April 8, 2005 letter to Paula Kehoe at the San Francisco Public Utilities Commission ("SFPUC") and copied to BAWSCA (Burlingame, 2005), Burlingame finds the Water Purchase Best Estimate to be an estimate of potential future water demands that, if relied upon for planning future water supplies, does not include prudent factors of safety to ensure adequate availability of water for future years. Therefore, Burlingame views the 2030 Water Purchase Best Estimate of 4.9 MGD (4.7 MGD with conservation included) as a goal to hopefully be achieved through the continued implementation of plumbing codes and water conservation efforts. Towards that end, Burlingame is committed to implementing current plumbing code standards and continuing conservation efforts that in order to help achieve Water Purchase Best Estimate.

However, as indicated in the Water Purchase Best Estimate, the average annual water projections provided in the Water Purchase Best Estimate and included again herein are subject to change. The

Water Purchase Best Estimate is based upon SFPUC's current best ability to forecast the actual future water demands and the assumed values for the variable parameters used in the demand models. In no way does the information provided in this annual survey or the Water Purchase Best Estimate modify or set expectations of future modifications of Burlingame's existing Hetch-Hetchy Supply Assurance of 5.23 MGD.

Please contact Matt Zucca at (650) 292-9100 or Syed Murtuza at (650) 558-7230 if you have any questions.

Very truly yours,

THE CITY OF BURLINGAME

George J. Bagdon, P.E.
Director of Public Works

cc: Arthur Jensen, P.E., BAWSCA
Nicole Sandkulla, P.E., BAWSCA

Attachments:

1. Bay Area Water Supply and Conservation Agency Annual Survey - Form 1
2. Bay Area Water Supply and Conservation Agency Annual Survey - Form 2

References:

Burlingame, 2005. Letter to Ms. Paula Kehoe, San Francisco Public Utilities Commission regarding Year 2030 Water Purchase Projections for the City of Burlingame, dated April 8, 2005

Appendix E

San Francisco Public Utilities Commission Master Supply Contract, May 1984, and Interim Water Shortage Allocation Plan, 2000

This Page Intentionally Left Blank

LAW OFFICES
HANSON, BRIDGETT, MARCUS, VLAHOS & STROMBERG
333 MARKET STREET, SUITE 2300
SAN FRANCISCO, CALIFORNIA 94105
(415) 777-3200

RAYMOND L. HANSON (RET.)
GERALD D. MARCUS
ROSS E. STROMBERG
RONALD C. PETERSON
DUANE B. GARRETT
TED C. KRUMLAND
DOUGLAS H. BARTON
PAUL A. GORDON
GERALD M. HINKLEY
STEVEN V. SCHNIER
STEPHEN L. TABER
STEPHEN B. PECK
KIM T. SCHOKNECHT
HARRY SHULMAN
DIANE W. CARTER
BONNIE KATHLEEN GIBSON
JACQUELYN J. GARMAN
LAWRENCE J. NELSON
PAUL T. SMITH
MALCOLM LEADER-PICONE
MADELINE CHUN
MARK T. SCHIEBLE
MOLLY T. TAMI
DENA R. BELINKOFF

ARTHUR T. BRIDGETT (RET.)
JOHN J. VLAHOS
WILLIAM J. BUSH
DAVID J. MILLER
LAURENCE W. KESSENICK
RAY E. McDEVITT
JERROLD C. SCHAEFER
MICHAEL A. DUNCHEON
CRAIG J. CANNIZZO
THEODORE A. HELLMAN
JOAN L. CASSMAN
ALLAN D. JERGESEN
ROBERT L. RUSKY
WINSLOW CHRISTIAN
THOMAS C. GEISER
PETER N. GRANT
JOEL S. GOLDMAN
DAVID W. BAER
FLORENCE L. DiBENEDETTO
ALLEN E. BRISKIN
SHARON J. GRODIN
SUSAN C. BARTON
CYNTHIA G. McCABE

OF COUNSEL
THOMAS C. LYNCH

HAND DELIVER

August 9, 1984

RECEIVED
AUG 10 1984
CITY ENGINEER
CITY OF BURLINGAME

Mr. Ralph Kirkup
Director of Public Works
501 Primrose
Burlingame, California

Dear Ralph:

It is with a great deal of pleasure that I deliver to you the following contract documents, executed on behalf of the City and County of San Francisco:

- Settlement Agreement and Master Water Sales Contract
- Supplement to Settlement Agreement and Master Water Sales Contract
- Water Supply Contract

All contract documents have now been signed by all the suburban communities and San Francisco and the Settlement Agreement and individual Water Supply Contracts are now in effect. We anticipate that dismissals with prejudice will shortly be filed concluding the Palo Alto et al. v. City and County of San Francisco litigation.

Please note that the Exhibits B and C accompanying the enclosed Water Supply Contract do contain the corrections described in Steve Mayer's August 1 letter to you.

See executed Master Agreement att.
" Supp.

We will be sending to you, within the next few days, a memorandum describing the initial steps which you and the other suburban communities are entitled to take to implement the Settlement Agreement. In addition, Warren Mitchell, President of the Bay Area Water Users Association, will be contacting you about a very important "all hands" meeting of BAWU members in September to discuss organizational issues.

It has been an honor to have represented all of your agencies in the Palo Alto v. San Francisco litigation and in the negotiation of the Settlement Agreement.

By the way, you may be interested to know that water rates for residents of San Francisco were increased by 10% as of August 1, while suburban wholesale rates remained unchanged. This is the first time in 50 years that San Francisco's inside-City retail rates were raised while suburban rates stayed the same, and is directly attributable to the Settlement Agreement.

If you have any questions about the enclosed contracts, please feel free to call me or John Vlahos.

Very truly yours,

Ray McDevitt

RAY E. McDEVITT

REM:fd
Enclosures

WATER SUPPLY CONTRACT

This Contract, dated as of May 21, 1984, is entered into by and between the City and County of San Francisco ("City") and the City of Burlingame ("Customer").

RECITALS

The City and the Customer have entered into a Settlement Agreement and Master Water Sales Contract ("Master Agreement"), which sets forth the terms and conditions under which the City will continue to furnish water for domestic and other municipal purposes to Customer and to other suburban purchasers. The Master Agreement contemplates that the City and each individual suburban purchaser will enter into individual contracts describing the location or locations at which water will be delivered to each purchaser by the San Francisco Water Department ("SFWD"), the purchaser's service area within which water so delivered is to be sold and other similar provisions unique to the individual purchaser. This Water Supply Contract is the Individual Contract contemplated by the Master Agreement.

AGREEMENTS OF THE PARTIES

1. Incorporation of the Master Agreement

The terms and conditions of the Master Agreement are

attached hereto and with the connection size as shown on Exhibit C attached hereto.

6. Billing and Payment

The City shall compute the amounts of water delivered and bill Customer therefor on a monthly basis consistent with existing practice. Beginning July 1, 1986, the bill shall show the separate components of the charge (e.g., service, consumption, demand). Customer shall pay the amount due within thirty (30) days after receipt of the bill.

If Customer disputes the accuracy of any portion of the water bill it shall (a) notify the General Manager of the SFWD in writing of the specific nature of the dispute and (b) pay the undisputed portion of the bill within thirty (30) days after receipt. Customer shall meet with the General Manager of the SFWD or a delegate to discuss the

disputed portion of the bill.

IN WITNESS WHEREOF, the parties hereto have executed this Contract, to become effective upon the effectiveness of the Master Agreement, by their duly authorized representatives.

DATED: August 8, 1984.

Authorized by Public Utilities Commission Resolution No. 84-0144 Adopted April 10, 1984.

Romaine A. Boldridge
Romaine A. Boldridge, Secretary

CITY AND COUNTY OF SAN FRANCISCO

By
Rudolf Nothenberg
General Manager of Public Utilities

Approved by Board of Supervisors ~~Resolution~~ Ordinance No. 320-84
Adopted June 28 1984.

John L. Taylor
John L. Taylor Clerk

APPROVED AS TO FORM:
GEORGE AGNOST
CITY ATTORNEY
BY
UTILITIES GENERAL COUNSEL

DATED: _____, 1984.

CITY OF BURLINGAME

By

Its City Manager

Authorized by Resolution No. 34-84 of the Burlingame City Council

042684/2-196603Qq

Symbol on Exhibit "A"	SFWD Account No.	Location	Connections and Meter Size
B-1	805-6010-1	Ray Drive and El Camino Real	No. 1 - 6 inch No. 2 - 6 inch
B-2	805-6010-4	Easton and El Camino Real	6 inch
B-3	805-6010-3	Chapin and Pepper	8 inch
B-4	805-6030-6	Fairfield	No. 1 - 8 inch No. 2 - 8 inch
B-5	805-6050-1	Rear Peninsula Hospital	No. 2 - 8 inch
B-6	(New Connection)	Trousdale and Magnolia	(Subject to future determination)
B-7	(New Connection)	Broadway and Balboa Avenue	(Subject to future determination)

EXHIBIT "B"

I hereby certify this to be a full, true and correct copy of the document it purports to be, the original of which is on file in my office.

Dated: May 22, 1984

Judith A. Malfatti

City Clerk of the City of Burlingame

RESOLUTION NO. 34-84

RESOLUTION AUTHORIZING EXECUTION OF AGREEMENT FOR INDIVIDUAL WATER SERVICE

RESOLVED, by the CITY COUNCIL of the City of Burlingame, California and this Council does hereby FIND, ORDER and DETERMINE as follows:

1. The public interest and convenience require execution of the agreement cited in the title above.

2. The City Manager be, and he is hereby, authorized to sign said agreement for and on behalf of the City of Burlingame.

3. The City Clerk is hereby ordered and instructed to attest such signature.

Irving S. Amstrup

Mayor

I, JUDITH A. MALFATTI, City Clerk of the City of Burlingame, do hereby certify that the foregoing Resolution was introduced at a regular meeting of the City Council held on the 21st day of May, 1984, and was adopted thereafter by the following vote:

AYES: COUNCILMEN: AMSTRUP, BARTON, MANGINI, MARTIN, PAGLIARO

NOES: COUNCILMEN: NONE

ABSENT: COUNCILMEN: NONE

Judith A. Malfatti

City Clerk

SUPPLEMENT TO SETTLEMENT AGREEMENT
AND MASTER WATER SALES CONTRACT

The parties recognize that a proposed initiative measure entitled "Taxation: Initiative Constitutional Amendment" ("the initiative") has qualified for the November 1984 California General Election. The initiative would revise Article XIIIA of the California Constitution and impose new procedural and substantive requirements on taxes and fees levied by local governments in the State of California. At this juncture, the parties do not know whether the initiative will be approved by the electorate, how the initiative would be construed by the courts if approved, or whether the initiative would be held applicable to the Agreement. In light of these uncertainties and in order to protect the parties' expectations that they will receive the benefits conferred and fulfill the obligations created by the Settlement Agreement and Master Water Sales Contract ("the Agreement") as presently written, the parties hereby agree as follows:

1. In the event that a court of competent jurisdiction issues a final judgment or order, based on the initiative, which prevents the City from receiving from the suburban purchasers the full amount of the Adjusted Estimated Suburban Revenue Requirement which it would otherwise have been or be entitled to receive under the Agreement in any fiscal year, the City may, by sending a Notice of Renegotiation to each suburban purchaser, require the suburban purchasers to engage promptly in good faith negotiations to determine how the Agreement should be modified in order to provide the City with the full amount of the suburban revenue requirement. The parties hereby declare that it is their mutual intent that, in the circumstance described above, the Agreement will be modified so as to permit the City to receive the full amount of the suburban revenue requirement it would otherwise be entitled to receive under the Agreement during any fiscal year affected by the judgment or order described above and all years thereafter during the Term of the Agreement, provided that nothing contained herein shall preclude any suburban purchaser or the City from exercising any of the rights or options set forth in Section 2, below. In determining how the Agreement should be reformulated, the parties shall take into consideration any portion of the suburban revenue requirement which the City has already been prevented from receiving by virtue of the judgment or order described above.

The procedure provided for in this section may be invoked more than once if successive judicial judgments or orders prevent the City from realizing the full amount of the suburban revenue requirement it would otherwise be entitled to receive under the Agreement.

In the event that the parties are unable, despite their good faith efforts, to agree as to how the Agreement should be modified to achieve the result intended by this section, or if a voluntary modification of the Agreement is subsequently declared invalid or rendered unenforceable by a final judgment or order of a court of competent jurisdiction, the City may terminate the Agreement and its Individual Contracts with each suburban purchaser, in accordance with and subject to the limitations contained in Section 3.

2. In the event that the initiative prevents one or more of the suburban purchasers from increasing water rates to its or their customers sufficiently to cover the increased cost of water delivered by the City, and as a result of the initiative it therefore fails to pay the full amount due the City under its Individual Contract based on the City's water rates then in effect, any party to the Agreement may, by sending a Notice of Renegotiation to each other party, require all parties to engage promptly in good faith negotiations to determine what modifications to the Agreement could be made to best preserve the expectations of all parties in that circumstance. In the event that the parties are unable, despite their good faith efforts, to agree on a mutually acceptable course of action:

(a) The suburban purchaser which has been prevented by the initiative from increasing its water rates and which has failed to pay its full water bill may terminate the Agreement as between it and the City, and its Individual Contract with the City, provided it has complied with Section 5, below.

(b) In addition to whatever remedies the City may have at law or in equity as against the suburban purchaser which has failed, by reason of the initiative, to pay the full amount of its water bill, the City may also elect to terminate the Agreement and Individual Contract with respect to that suburban purchaser. However, the City may not, through the operation of the balancing account or otherwise, collect from other suburban purchasers the revenue a suburban purchaser was obligated to pay under the Agreement and Individual Contract but failed to pay because of the initiative.

(c) If suburban purchasers representing twenty percent (20%) or more of water purchased from the City (based on the volumes set out in Exhibit K-2) terminate the Agreement and their Individual Contracts under Section 2(a), or if the City terminates the Agreement and Individual Contracts under Section 2(b) with respect to twenty percent of the suburban purchasers (as defined above) for nonpayment, then any other suburban purchaser may elect, during the fiscal year following the effectiveness of the last of such terminations, to terminate the Agreement as to it and its Individual Contract.

(d) If suburban purchasers representing twenty percent (as defined above) fail to pay a water bill or bills that come due during any fiscal year in full, by the end of such year, as a result of the initiative, or if one or more suburban purchasers have failed, as a result of the initiative, to pay sums due and owing the City aggregating 7.5% of the Adjusted Estimated Suburban Revenue Requirement for that fiscal year, the City may, in addition to terminating the Agreement and Individual Contracts as to them, terminate the Agreement and Individual Contracts of all suburban purchasers, in accordance with and subject to the limitations contained in Section 3. Prior to giving any Notice of Termination under this subsection, the City shall allow a period of nine months to enable the defaulting suburban purchaser(s) or any other suburban purchaser(s) the opportunity to cure a default under this subsection; during such nine-month period, the City will make reasonable, good faith efforts to collect the amount of such default from the defaulting suburban purchasers, provided that completion of any collection remedies shall not be required in order for the City to give Notice of Termination in the event such default has not been cured by the end of the nine-month period.

(e) If the Agreement and/or Individual Contracts are terminated by the City or by any suburban purchaser(s) as to any or all suburban purchaser(s), such termination shall not preclude the City from pursuing any available remedy at law or in equity against any suburban purchaser which has not paid or does not pay its water bill or bills, arising out of the period during which the Agreement was in effect as to it, in full.

(f) Nothing contained in this Supplement, including this Section, is intended to or shall be construed to authorize or excuse the failure by any suburban purchaser to pay its water bill in conformity with its Individual Contract.

3. If the City is entitled to terminate the Agreement and the Individual Contracts as to all suburban purchasers under Sections 1 or 2 above, it may do so by sending each suburban purchaser a Notice of Termination. The Notices will become effective and the Term of the Agreement and (except as provided below) the Individual Contracts will end at the conclusion of the fiscal year during which the Notices are sent. If the Agreement and Individual Contracts are terminated pursuant to this Section, the Agreement and Individual Contracts will have no further force and effect thereafter except as expressly provided herein. In particular, and without affecting the generality expressed in the foregoing sentence, in the event the Agreement and Individual Contracts are terminated pursuant to this Section:

(a) the Stipulations for Dismissal with Prejudice provided for in Section 2.02 shall cease to operate as a bar, in

the same manner that the penultimate paragraph of that Section provides in the case the Agreement were held to be invalid;

(b) the mutual releases provided for in Sections 2.03 and 8.09 shall remain in effect notwithstanding the termination of the Agreement;

(c) the respective financial rights and obligations of the parties regarding water sold during the period the Agreement was in effect will continue to be governed by the provisions of the Agreement;

(d) the provisions of Section 5.07(e) will govern the disposition of the ending balance in the balancing account at the time the Notices of Termination become effective and the Agreement's term ends;

(e) the City shall be released from the obligations imposed by Sections 7.01 and 7.02, except for

(1) obligations to deliver specified quantities of water as presently set forth in Exhibit K-1, which shall continue, adjusted as provided therein in Footnotes 1 and 4; and

(2) obligations to supply water which have vested during the Agreement's Term pursuant to Section 7.02(b)(3)(4) and (5) before the Notices of Termination become effective.

(3) In lieu of subsections 1 and 2 herein, a suburban purchaser may elect to have the City's continuing obligation to supply water based on the quantity of water supplied by the City to that purchaser during the calendar year immediately prior to the year in which the Notice of Termination is given, but in no event shall the total amounts vested for all suburban purchasers under this subparagraph exceed the Supply Assurance.

Nothing in this Supplement, including Sections 3 and 3.5, is intended or shall be construed to authorize the City to abrogate, terminate, cancel or otherwise impair the City's existing contracts with the Estero Municipal Improvement District ("Estero") and the City of Hayward ("Hayward"). Moreover, in the event that either Estero or Hayward or both wish to exercise the option to terminate provided by Section 2 above, it or they may elect to terminate only the Agreement and to maintain their existing contracts with the City.

Nothing in this Supplement, including Sections 3 and 3.5, is intended or shall be construed to entitle either San Jose or Santa Clara to an individual supply guarantee or vested amount of residual water unless they or either of them have become permanent customers under Section 9.03.

3.5 If the City is entitled to terminate the Agreement and Individual Contracts of fewer than all of the suburban purchasers under Section 2(b), it may do so by sending each suburban purchaser whose participation in the Agreement and Individual Contract the City wishes to terminate a Notice of Termination, with copies to the remaining suburban purchasers. The Notice(s) will become effective and the Term of the Agreement and the Individual Contract(s) will end vis-a-vis the terminated suburban purchaser at the conclusion of the fiscal year during which the Notices are sent. If the Agreement and Individual Contract are terminated pursuant to this section, the Agreement and Individual Contract will have no further force and effect thereafter as between the City and the terminated suburban purchaser(s) except as expressly provided herein. In particular, and without affecting the generality expressed in the foregoing sentence, in the event the Agreement and Individual Contract are terminated as to any suburban purchaser pursuant to this Section:

(a) the Stipulation for Dismissal with Prejudice provided for in Section 2.02 shall cease to operate as a bar as against the terminated suburban purchaser, in the same manner that the penultimate paragraph of that Section provides in the case the Agreement were held to be invalid;

(b) the mutual releases provided for in Section 2.03 and 8.09 shall remain in effect notwithstanding the termination of the Agreement;

(c) the respective financial rights and obligations of the City and the terminated suburban purchaser(s) regarding water sold during the period the Agreement and Individual Contract were in effect with respect to it will continue to be governed by the provisions of the Agreement and Individual Contract;

(d) there will be no pro rata disposition of balances in the balancing account as between the City and the terminated suburban purchaser(s); and

(e) the City shall be released from the obligations imposed by Sections 7.01 and 7.02, except for

(1) obligations to deliver specified quantities of water as presently set forth in Exhibit K-1, which shall continue, adjusted as provided therein in Footnotes 1 and 4;

(2) obligations to supply water which have vested during the Agreement's Term in favor of the terminated suburban purchaser(s) pursuant to Section 7.02(b)(3)(4) and (5) before the Notices of Termination become effective;

(3) in lieu of Subsections 1 and 2 herein, a terminated suburban purchaser(s) may elect to have the City's

continuing obligation to supply water based on the quantity of water supplied by the City to the terminated suburban purchaser during the calendar year immediately prior to the year in which the Notice of Termination is given;

(4) no terminated suburban purchaser shall receive a supply guarantee under this paragraph which, when added to the vested supply guarantees of the suburban purchasers under the Agreement or this Supplement causes the aggregate of the individual supply guarantees to exceed the Supply Assurance; and

(5) the Supply Assurance as regards the remaining, non-terminated suburban purchaser(s) shall be reduced, upon termination of the Agreement and Individual Contract as to one or more suburban purchasers under this Supplement, by the amount of the individual supply guarantee vested under this subsection of this Supplement, of the terminated suburban purchaser(s).

4. If a suburban purchaser is entitled to terminate the Agreement under Section 2, it may do so by sending the City and each of the other suburban purchasers a Notice of Termination. The Notice will become effective and the Term of the Agreement as to it and its Individual Contract will end at the conclusion of the fiscal year during which the Notice is sent. If the Agreement and Individual Contract are terminated pursuant to this Section, the Agreement and Individual Contract will have no further force or effect thereafter with respect to the City and that suburban purchaser except as expressly provided herein. In particular, and without affecting the generality expressed in the foregoing sentence, in the event the Agreement and Individual Contract are terminated pursuant to this Section:

(a) the Stipulation for Dismissal with Prejudice provided for in Section 2.02 shall cease to operate as a bar, in the same manner that the penultimate paragraph of that Section provides in the case the Agreement were held to be invalid, except with respect to any suburban purchaser which elects to terminate the Agreement and/or its Individual Contract under Section 2(a), above;

(b) the mutual releases provided for in Sections 2.03 and 8.09 shall remain in effect notwithstanding the termination of the Agreement;

(c) the respective financial rights and obligations of the parties regarding water sold during the period the Agreement was in effect will continue to be governed by the provisions of the Agreement;

(d) there will be no pro rata dispositions of balances in the balancing account upon individual terminations, provided

that if all suburban purchasers elect to terminate, then the ending balance will be disposed of pursuant to Section 5.07(e);

(e) the City shall be released from the obligations imposed by Sections 7.01 and 7.02 as to the terminating suburban purchasers except as provided in Section 3(e) of this Supplement, which provisions will apply to the terminating suburban purchaser. The Supply Assurance shall be reduced, upon termination of the Agreement and Individual Contract as to one or more suburban purchasers under this Supplement, by the amount of the individual supply guarantee(s) vested under Section 3(e) of this Supplement of the terminating suburban purchaser(s).

5. If a court holds that the initiative requires the City to obtain the approval of two-thirds of its voters in order to increase water rates to the suburban purchasers under the Agreement, the City shall not be entitled to terminate the Agreement under this Supplement unless and until it has submitted a measure increasing suburban water rates to the voters of San Francisco and the voters have failed to approve it. However, the City shall not be disentitled from exercising any remedy set forth herein by reason of the failure of the voters to approve any measure, submitted as a result of a court order. If the City voluntarily and without the compulsion of a court order submits a measure increasing water rates for suburban purchasers to the voters of the City and such measure is not approved by the requisite vote, then the City shall have all the rights, remedies and options provided in Section 1 of this Supplement.

A suburban purchaser shall not be entitled to terminate the Agreement and/or its Individual Contract under Section 2(a) of this Supplement unless and until it has submitted to its voters a measure increasing its water rates and those voters have failed to approve it by the requisite vote.

6. The parties intend that the termination of the Agreement as to fewer than all of the suburban purchasers shall not affect the economic relationships of those which remain parties (i.e., to either increase or decrease the average unit cost of water to the remaining suburban purchasers). Therefore, if, as a result of either the City or any suburban purchaser exercising the options provided for in Section 2(a) and/or 2(b) above, the Agreement and Individual Contracts are terminated as between the City and fewer than all of the suburban purchasers, the final suburban revenue requirements for each year thereafter shall be adjusted in a manner so as to achieve this intent in the light of the termination. The City will, no later than three months after the beginning of the first fiscal year in which fewer than all the suburban purchasers remain as parties to the Agreement, notify the remaining suburban purchasers of the manner in which it intends to adjust the final suburban revenue requirement to achieve this intent. If one or more of the remaining

suburban purchasers believe that the method proposed by the City does not fairly achieve this intent, it or they may require the City to engage promptly in good faith negotiations to determine how the revenue requirement should be adjusted and, if necessary, the Agreement (including any Exhibit thereto) amended. If the parties are unable to agree, any party may, not later than six months after the beginning of such fiscal year, submit the matter to mandatory, binding arbitration pursuant to Section 8.02 of the Agreement.

If no Demand for Arbitration is served within this six month period, the City's proposed adjustment to prospective final suburban revenue requirements shall be deemed to have been accepted by the remaining suburban purchasers.

If, subsequent to such fiscal year, the Agreement and, if applicable, Individual Contracts with respect to additional suburban purchasers are terminated pursuant to Section 2(a) and/or 2(b) above, the procedures specified in this Section shall again become applicable.

Nothing contained in this Section shall affect, modify or limit the rights and options of the parties under Section 2(c) or (d), above.

7. Nothing in this Supplement is intended or shall be construed as an admission or concession by the parties to it that the initiative would apply to or affect the Agreement or the setting or collection of water rates by local governments.

8. In the event of the occurrence of circumstances which would make the specific provisions of this Supplement operative, and if, in such event, there is a conflict between the specific provisions of this Supplement and the Agreement, the specific provisions of this Supplement shall control.

9. If, as a result of renegotiations provided for above, the Agreement is to be amended, the effectiveness of the amendment shall be determined in accordance with Section 3.03 of the Agreement.

10. Execution of this Supplement may be accomplished by execution of separate counterparts by each signatory. The separate executed counterparts, taken together, shall constitute a single agreement. When the Agreement, as supplemented, becomes effective the City shall provide all suburban purchasers with a

counterpart original of this Supplement signed on behalf of the City.

IN WITNESS WHEREOF, the parties hereto have executed this Supplement, to become effective upon the effectiveness of the Settlement Agreement, by their duly authorized representatives.

DATED: August 8, 1984.

CITY AND COUNTY OF SAN FRANCISCO

Authorized by Public Utilities Commission Resolution No. 84-0270
Adopted May 29, 1984.

By _____
Rudolf Nothenberg
General Manager of Public Utilities

Romaine A. Boldridge
Romaine A. Boldridge, Secretary

Approved by Board of Supervisors Ordinance No. 320-84
Adopted June 28, 1984.

John L. Taylor
John L. Taylor, Clerk

APPROVED AS TO FORM:
GEORGE AGNOST
CITY ATTORNEY
BY _____
UTILITIES GENERAL COUNSEL

DATED: _____, 1984.

CITY OF BURLINGAME

By _____

Its DENNIS ARGYRES
CITY MANAGER

Approved by RESOLUTION 47-84 of the City Council

Adopted: June 18, 1984.

Judith A. Mayfatti
City Clerk/Secretary

SETTLEMENT AGREEMENT

and

MASTER WATER SALES CONTRACT

between

THE CITY AND COUNTY OF SAN FRANCISCO

and

CERTAIN SUBURBAN PURCHASERS

in

SAN MATEO COUNTY, SANTA CLARA COUNTY
AND ALAMEDA COUNTY

This Page Intentionally Left Blank

TABLE OF CONTENTS

		Page
Introduction		1

ARTICLE I

PARTIES

Section 1.01	Parties	3

ARTICLE II

EFFECTIVE DATE, DISPOSITION OF ACTION, RELEASE OF PAST MONETARY CLAIMS, RESERVATION OF "CO-GRANTEE" CLAIMS AND DISMISSAL OF CLAIM RE INTRA-CITY FUND TRANSFERS

Section 2.01	Effective Date	5
Section 2.02	Disposition of the Action	6
Section 2.03	Mutual Release of Past Monetary Claims	7
Section 2.04	Reservation of "Co-Grantee" Claims Under Raker Act	8
Section 2.05	Dismissal of Claim re Intra-City Fund Transfers	8

ARTICLE III

TERM

Section 3.01	Term	9
Section 3.02	Extension of Term	9
Section 3.03	Modifications During Term	9
Section 3.04	Deferral of Agreement's Term	10

ARTICLE IV

SUBURBAN REVENUE REQUIREMENT

Section 4.01	Scope of Article	11
Section 4.02	General Principles of Cost Allocation	11
Section 4.03	Operating and Maintenance Expenses	11
Section 4.04	Administrative and General Expenses	13
Section 4.05	Property Taxes	16
Section 4.06	Return on SFWD Rate Base	16
Section 4.07	SFWD Depreciation	19
Section 4.08	Suburban Hetch Hetchy Assessment	19

ARTICLE V

INTEGRATION OF SUBURBAN REVENUE REQUIREMENT WITH SFWD BUDGET DEVELOPMENT AND RATE ADJUSTMENTS

Section 5.01	General Purpose	25
Section 5.02	Budget Development	25
Section 5.03	Rate Adjustments	26
Section 5.04	Rate Structure	28
Section 5.05	Waiver and Reservation re Methodology for Determining Suburban Revenue Requirement	28
Section 5.06	Exclusions from Rate-Making Procedures	29
Section 5.07	Balancing Account	30

ARTICLE VI

ACCOUNTING PROCEDURES; COMPLIANCE AUDIT

		Page
Section 6.01	City Accounting Practices	35
Section 6.02	Calculation of Suburban Revenue Requirement	36
Section 6.03	Appointment of Independent Auditor	37
Section 6.04	Conduct of Compliance Audit	37
Section 6.05	Issuance of Auditor's Report	39
Section 6.06	Suburban Review	40

ARTICLE VII

WATER SUPPLY

Section 7.01	Supply Assurance	41
Section 7.02	Allocation of Supply Assurance	41
Section 7.03	Shortages	44
Section 7.04	Reservation of Claims to Additional Water; Service Area Expansion	45
Section 7.05	Restrictions on Resale	46
Section 7.06	Prohibition of Assignment	46
Section 7.07	Prohibition of Water Purchases from Others; Use of Local Sources; Minimum Annual Purchases; Adjustment of Service Areas	46

ARTICLE VIII

OTHER AGREEMENTS OF THE PARTIES

Section 8.01	Pricing of Additional Water	49
Section 8.02	Arbitration and Judicial Review	49
Section 8.03	Special Provisions re Attorneys' Fees	52
Section 8.04	Suburban Advisory Group	53
Section 8.05	Notice of Water Rights Proceedings	54
Section 8.06	Notice	54
Section 8.07	Rates Applicable to Other Resale Users	55
Section 8.08	Changes in the City's Water Delivery System	55
Section 8.09	Representations During Settlement Negotiations	56
Section 8.10	Counterparts	56
Section 8.11	SFWD Rules and Regulations	56
Section 8.12	Preservation of Water Rights	56
Section 8.13	Suburban Representatives	56
Section 8.14	Reservation of Claims Regarding Suburban Purchase of Water from In-City Retail Distribution System	57
Section 8.15	Expenses Chargeable to Individual Suburban Purchasers	57
Section 8.16	Incorporation of Exhibits	57
Section 8.17	Actions and Approvals by the City	57
Section 8.18	Filing of Notices	58
Section 8.19	Section Headings	58

ARTICLE IX

IMPLEMENTATION AND SPECIAL PROVISIONS AFFECTING CERTAIN SUBURBAN PURCHASERS

		Page
Section 9.01	General	59
Section 9.02	California Water Service Company	59
Section 9.03	City of San Jose and City of Santa Clara	60
Section 9.04	City of Hayward	62
Section 9.05	Estero Municipal Improvement District	62
Section 9.06	Alameda County Water District	62
Section 9.07	Dimond Public Utility District/City of Daly City	63
Section 9.08	Coastside County Water District	63
Section 9.09	Stanford University	63
Section 9.10	City of Brisbane, Guadalupe Valley Municipal Improvement District, Town of Hillsborough	64

This Page Intentionally Left Blank

SETTLEMENT AGREEMENT
AND MASTER WATER SALES CONTRACT

The purpose of this Settlement Agreement and Master Water Sales Contract ("Agreement") is to memorialize the understanding which the City and County of San Francisco ("the City") and certain of its suburban water purchasers have reached regarding the settlement of that certain civil action ("the action") entitled *City of Palo Alto, et al. v. City and County of San Francisco*, presently pending in the United States District Court for the Northern District of California as No. C 74 1997 RHS. This Agreement is also intended to serve as the document governing the rights and obligations of the City and these and certain other suburban water purchasers as a group, and shall be incorporated by reference into individual water supply contracts ("the Individual Contracts") between the City and each such purchaser.

The action was originally instituted in 1974, when a Complaint for Injunction and Declaratory Relief was filed, together with a Motion for Preliminary Injunction and Temporary Restraining Order. The precipitating event which caused the filing of the Complaint was the decision by the City to increase suburban water rates 20.5% while increasing in-City rates 14.5%. Plaintiffs successfully obtained a preliminary injunction barring this rate increase, which was affirmed on appeal in 1977. *City of Palo Alto v. City and County of San Francisco*, 548 F.2d 1375 (9th Cir. 1977). In 1976, Plaintiffs obtained another preliminary injunction against the City, barring the City from instituting a certain "lifeline" rate, the effect of which was disproportionately to lower rates to in-City water users.

In 1978, Plaintiffs filed an Amended and Supplemental Complaint in the action. While the prior Complaint and Motions for Preliminary Injunction had been directed specifically against certain impending rate increases, the Amended and Supplemental Complaint substantially broadened the scope of the action into an attack upon the historic method by which the City has charged suburban cities and other public entities for water. The Amended and Supplemental Complaint charged that the City's long-standing rate-setting practices violated the Raker Act, 38 Stat. 242 (1913) (hereinafter sometimes referred to as "the Act"), in a number of different respects. The Complaint sought declaratory relief regarding the rights and obligations of Plaintiffs and the City under the Act, an injunction prohibiting the City from charging unreasonable, arbitrary or discriminatory rates, and restitution by the City to Plaintiffs of any amounts charged them for water found to be in violation of the Act.

Throughout the action, the City has denied that Plaintiffs are entitled to any relief and contended that: (a) the Raker Act affords Plaintiffs no private right of action; (b) the Raker Act does not require that the City sell water to Plaintiffs at cost, but merely that the City's water rates conform to state law; and (c) the rates charged the suburban purchasers for water have been and continue to be legal under state and federal law. The City has filed a Motion for Summary Judgment based upon the first two of these claims, which is presently pending before the District Court.

During the course of the action, the parties have engaged in extensive settlement negotiations in an effort to resolve their outstanding differences amicably and provide a new framework for their future relationship. This Agreement is the product of those negotiations, and reflects the understandings which the parties hereto have reached in their efforts to settle the action. As will also be seen hereafter, this Agreement provides that certain issues as to which the parties possess conflicting views will not be resolved by this Agreement, and this Agreement shall not be construed as a concession by any signatory thereto as to any such specifically reserved issue.

The terms of the Agreement reached between the parties are as follows:

(THIS PAGE INTENTIONALLY LEFT BLANK)

ARTICLE I

PARTIES

Section 1.01. *Parties.*

The parties to this Agreement are the City and County of San Francisco and such of the following entities (all of whom purchase water from the City) as have executed this Agreement:

(a) The City of Palo Alto, City of Redwood City, City of Burlingame, City of Menlo Park, City of Hayward, City of San Bruno, City of Daly City, Alameda County Water District, Coastside County Water District, North Coast County Water District, Belmont County Water District, Skyline County Water District, Purissima Hills Water District, East Palo Alto County Waterworks District and the San Mateo County Waterworks District No. 3, all of whom shall hereafter collectively be referred to as "Plaintiffs";

(b) The Estero Municipal Improvement District, Town of Hillsborough, City of Millbrae, Westborough County Water District, City of Brisbane, Guadalupe Valley Municipal Improvement District, Los Trancos County Water District, City of Sunnyvale, Cordilleras Mutual Water Association, The Board of Trustees of The Leland Stanford Junior University ("Stanford University"), City of Mountain View, City of Milpitas, City of Santa Clara, City of San Jose, and the California Water Service Company.

The entities listed above in groups (a) and (b) which have executed this Agreement shall collectively be referred to as the "suburban purchasers".

(THIS PAGE INTENTIONALLY LEFT BLANK)

ARTICLE II

EFFECTIVE DATE, DISPOSITION OF ACTION, RELEASE OF PAST MONETARY CLAIMS, RESERVATION OF "CO-GRANTEE" CLAIMS AND DISMISSAL OF CLAIM RE INTRA-CITY FUND TRANSFERS

Section 2.01. *Effective Date.*

Except as hereinafter provided, this Agreement shall become effective only when it has been duly approved by the City and by each of the entities listed in Section 1.01(a) and (b) ("listed entities") and when the City and each of these listed entities (except for the City of Hayward and the Estero Municipal Improvement District) have entered into an Individual Contract, as provided in Section 9.01. If the City and all listed entities approve this Agreement and (except for the City of Hayward and the Estero Municipal Improvement District) an Individual Contract by May 25, 1984, the effective date shall be May 25, 1984.

If, by May 25, 1984, this Agreement has been approved by fewer than all of the listed entities and/or fewer than all of the listed entities have entered into Individual Contracts with the City, then the effectiveness of this Agreement shall be determined as follows:

(a) If suburban purchasers representing at least 80 percent in number (24) and 80 percent of the quantity of water purchased from the City by all the listed entities in calendar year 1981 (57,947,464 ccf) have approved this Agreement and (if required) their Individual Contracts, then the City shall have the option to waive its right under this section to require that all listed entities have approved this Agreement and an Individual Contract as a condition precedent to this Agreement and any Individual Contract becoming effective. The City shall have 20 days from May 25, 1984 within which to elect to waive the condition and to send notice to the listed entities which have approved this Agreement of its waiver. If the City elects to waive the condition, then those listed entities which have approved this Agreement and Individual Contracts shall be bound thereby and this Agreement and the Individual Contracts shall become effective, as of the date of the City's election, as to them. For purposes of determining whether the suburban purchasers which have approved this Agreement represent 80 percent or more of the water purchased during 1981 (i.e., 57,947,464 ccf or more), the quantity of water attributable to each listed entity shall be as set forth in Exhibit K-2.

(b) If listed entities representing less than 80 percent in number and quantity of water purchased have approved this Agreement and (if required) their Individual Contracts, then both the City and those listed entities which have signed this Agreement and Individual Contracts shall have the option to waive its and their rights under this Section to require that all listed entites have approved this Agreement and an Individual Contract as a condition precedent to this Agreement and any Individual Contract becoming effective. This option shall be exercised in the following manner. First, the City shall send notice, on or before June 1, 1984, to each listed entity which has approved this Agreement and an Individual Contract on or before May 25, 1984 of the names of all of the listed entities which have also approved this Agreement and an Individual Contract. Second, each of the listed entities which has approved this Agreement and an Individual Contract on or before May 25, 1984 shall notify the City of its decision to waive the condition by June 22, 1984. Third, if the City then elects to waive the condition, it shall notify each listed entity which has signed this Agreement and an Individual Contract of its election no later than August 7, 1984, and this Agreement and the Individual Contracts shall then become effective as to each listed entity which has elected to waive the condition, as of August 7, 1984.

(c) Notwithstanding anything in Sections 2.01(a) and (b) to the contrary, this Agreement shall not become effective unless signed by each and every Plaintiff, except as provided herein:

(1) If all Plaintiffs sign the Stipulation for Dismissal with Prejudice provided for in Section 2.02 by May 25, 1984, then the City may waive this condition by giving written notice of waiver to each listed entity no later than August 7, 1984. If this condition is thus waived,

then the effectiveness of this Agreement shall be determined under Section 2.01(a) or (b), whichever is applicable.

(2) If any Plaintiff has not signed the Stipulation for Dismissal with Prejudice provided for in Section 2.02 by May 25, 1984, then both the City and those listed entities which have signed this Agreement and an Individual Contract shall have the option to waive this condition. The option shall be exercised in the same manner as that specified in Section 2.01(b), *mutatis mutandis*. If this condition is waived pursuant to this subsection, then the effectiveness of this Agreement shall be determined under Section 2.01(a) or (b), whichever is applicable.

(d) If this Agreement becomes effective pursuant to either Section 2.01(a) or 2.01(b), then the Supply Assurance defined in Section 7.01 shall be reduced by the amount of the individual supply guarantees, set out in Exhibit K-1, of those listed entities which are not parties to the Agreement. (If the City of Hayward ("Hayward") does not become a party to this Agreement, the Supply Assurance shall be reduced by 14.53 mgd as of July 1, 1984 and shall be further reduced at three year intervals thereafter (e.g., as of July 1, 1987, July 1, 1990, etc.) by the average amount of water delivered annually by the City to Hayward in excess of 14.53 mgd during the three year period. If the Estero Municipal Improvement District ("Estero") does not become a party to this Agreement, the Supply Assurance shall be reduced by 3.95 mgd as of July 1, 1984 and shall be further reduced at three year intervals thereafter by the average amount of water delivered annually by the City to Estero in excess of 3.95 mgd during the three year period.) Corresponding reductions shall also be made in the "ultimate base rates" and in the calculation of ultimate maximum day and ultimate maximum hour rates, as defined in Exhibit J.

The parties intend that the adjustments to the Supply Assurance provided for in this subsection be made in conjunction with the adjustments required by Section 7.02(b). At such time as annual adjustments are required by Section 7.02(b)(5), the reductions in the Supply Assurance provided for herein shall also be made annually rather than triennially.

Only those listed entities which are signatories to this Agreement and an Individual Contract shall be entitled to share in "residual water" as defined in Section 7.02.

(e) No provision of Article IX which applies to fewer than all of the suburban purchasers shall become effective unless the City and the suburban purchaser(s) to which the provision refers sign this Agreement and (except for Hayward and Estero) their Individual Contracts.

(f) The time limits in subsections (a), (b) and (c) of this Section may be extended by agreement of counsel for the City and Plaintiffs, for a period not to exceed sixty (60) days.

Section 2.02. *Disposition of the Action.*

At the time each of the Plaintiffs signs the Agreement and (except the City of Hayward) an Individual Contract, each Plaintiff also shall sign a Stipulation for Dismissal with Prejudice of the action ("the Stipulation") in the form attached hereto as Exhibit N. If all Plaintiffs sign the Stipulation, or if the City and those listed entities which have signed this Agreement and an Individual Contract exercise the option provided in Section 2.01(c)(2), then forty days after the last of the notices provided for in Section 8.18 has been filed, the City is authorized to and shall file the Stipulation on behalf of it and all Plaintiffs which have signed the Stipulation with the Clerk of the United States District Court for the Northern District of California.

The Stipulation shall recite that the prior injunctions entered in the action shall be vacated. Each party shall bear its own costs, including attorneys' fees, incident to its participation in the action.

In the event that a final judgment is entered by a court of competent jurisdiction declaring this Agreement to be invalid, the Stipulation shall not bar a listed entity from filing the same or a sim-

ilar action as the action which is dismissed by the Stipulation, except that a listed entity which joins in or supports a judicial challenge which results in the judgment declaring the Agreement to be invalid shall be barred from filing the same or a similar action as that dismissed by the Stipulation. By signing this Agreement, each party hereto explicitly and knowingly waives any and all rights to commence or maintain any action or proceeding to challenge its validity.

Each entity listed in subsection 1.01(b) which becomes a signatory to this Agreement hereby agrees that the Stipulation shall have the same force and effect as applied to it that the Stipulation has with respect to the Plaintiffs which sign it and that any claim the assertion of which would be barred by the Stipulation with respect to a Plaintiff signatory shall similarly be barred if asserted by a non-Plaintiff signatory of this Agreement.

Section 2.03. *Mutual Release of Past Monetary Claims.*

In the action, Plaintiffs asserted, *inter alia*, monetary claims against the City based on alleged historical overcharges for water sold by the City to suburban purchasers. The City in the action contended, *inter alia*, that it had historically undercharged suburban purchasers for water. The parties to this Agreement desire to release each other from any liability on account of such claimed monetary overcharges or undercharges, as follows:

(a) Each listed entity which is a signatory hereto releases City of and from any and all monetary claims for overcharges arising out of sales of water by City to such entity prior to June 30, 1984. This release shall not extend to any contested water billing between City and such entity, heretofore existing or hereafter arising, on grounds unrelated to the issues raised in the action, such as (without limitation) errors in billing, errors in the rate schedule applied, and disputes over the amount of water sold during a billing period; however, each such entity hereby warrants and represents to City that it knows of no such unrelated claims as of thirty days before the date of its signature hereto which have not been disclosed to the City. This release shall include all monetary claims for overcharges on water sold by the City prior to June 30, 1984, which were raised in the action or which could have been raised in the action, whether based on federal law (including the Raker Act), state law, the Charter of the City and County of San Francisco, or any other applicable provision of law.

(b) The City releases each listed entity which is a signatory hereto of and from any and all monetary claims for undercharges arising out of sales of water by the City to such entity prior to June 30, 1984. This release shall not extend to any contested water billing between the City and such entity, heretofore existing or hereafter arising, on grounds unrelated to the issues raised in the action, such as (without limitation) errors in billing, errors in the rate schedule applied, and disputes over the amount of water sold during a billing period; however, the City warrants and represents that it knows of no such unrelated claims against any such entity as of thirty days before the date of its signature hereto which have not been disclosed to the entity affected. This release shall include all monetary claims for undercharges on water sold prior to June 30, 1984, which were asserted by City or which could have been asserted by City in the action, whether by way of defense, counterclaim or otherwise, whether based on federal law (including the Raker Act), state law, the Charter of the City and County of San Francisco, or any other applicable provision of law.

(c) Each of the signatories to this Agreement hereby acknowledges that it is familiar with the provisions of and has been advised as to the meaning and effect of waiver of the rights and benefits conferred by California Civil Code Section 1542, and hereby knowingly waives the rights and benefits conferred by that section, which provides:

> "A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor."

Section 2.04. *Reservation of "Co-Grantee" Claims Under Raker Act.*

Plaintiffs contended in the action that they and the other suburban purchasers which are municipalities or water districts are "co-grantees" within the meaning of Section 8 of the Act, and are entitled to certain rights, benefits and privileges by virtue of that status. The City has denied those claims. Nothing in this Agreement (or in the Individual Contracts which shall subsequently be entered into between the parties incorporating this Agreement) shall be construed or interpreted in any way to affect or influence the ultimate resolution of the controversy between the parties concerning whether any of the suburban purchasers are "co-grantees" under the Raker Act and, if so, what rights, benefits and privileges accrue to them by reason of that claimed status, nor shall the dismissal with prejudice filed pursuant to Section 2.02 bar the future adjudication of such claims. Notwithstanding anything in this Section, this Agreement shall determine the respective monetary rights and liabilities of the parties with respect to the water sold by the City to the suburban purchasers during the Term hereof, and such rights and liabilities shall not be affected by any judgments or orders issued by any court in any other litigation, whether or not between the parties hereto, and whether or not related to the controversy over co-grantee status, except for arbitration and/or litigation reserved by Section 8.01 or initiated pursuant to Section 8.02. The reservation of Raker Act rights in this Section is subject to the waiver of those rights in Sections 5.05(b) and 8.01(b) and (c).

Section 2.05. *Dismissal of Claim re Intra-City Fund Transfers.*

Plaintiffs contended in the action that a certain proposed transfer of funds from the San Francisco Water Department (SFWD) to the City's General Fund violated provisions of state and federal law (including the Act) as well as then-existing contracts between Plaintiffs and the City. The suburban purchasers hereby acknowledge that the filing of the Stipulation described in Section 2.02 shall dismiss with prejudice all those claims asserted in the action with respect to transfers of funds and that unless such Stipulation ceases to be a bar to the filing of the same or a subsequent action pursuant to the penultimate paragraph of Section 2.02, these claims shall be forever barred as to them. Each suburban purchaser hereby unconditionally waives and releases the City from any and all claims heretofore or hereafter arising from transfers by the City, not prohibited by its Charter, of funds from the SFWD to any other department or fund of the City, during the Term of this Agreement, and further agrees unconditionally not to contest the validity of any such transfer before any court or administrative official, tribunal or agency. However, this waiver and release shall not absolve the City from the performance of any duty or obligation imposed under this Agreement, and it shall be no defense to any proceeding, whether judicial or arbitral, brought to enforce the terms of this Agreement or for the breach thereof, that performance by the City has been rendered impossible or impracticable because of any transfers of funds from the SFWD to any other department or fund of the City. Nothing in this Section is intended or shall be construed to infringe the City's right under Section 5.03(b)(1) to raise rates on an emergency basis to cover capital expenses if the SFWD does not have sufficient unappropriated funds available for use and is unable to obtain sufficient funds, in the time necessary, through the issuance of bonds or from state or federal grants.

ARTICLE III

TERM

Section 3.01. *Term.*

The term ("Term") of this Agreement shall be twenty-five (25) years. The Term shall begin on July 1, 1984, regardless of whether the effective date is before or after that date, and shall end on June 30, 2009, provided that the City shall have no obligation to comply with the provisions of Section 5.02 and 5.03 prior to the effective date of the Agreement. Except as provided in Article IX, the Term of all Individual Contracts shall also begin on July 1, 1984 and end on June 30, 2009.

Section 3.02. *Extension of Term.*

After the expiration of the Term, this Agreement may be extended by mutual consent of the parties, subject to any modifications thereof which may be determined at that time. If fewer than all of the parties signatory hereto desire to extend this Agreement beyond its Term, with or without modifications, the City and those of the suburban purchasers who wish to extend the Agreement shall be free to do so, provided that no party to this Agreement which does not wish to become a party to such an extended Agreement shall be compelled to do so by the actions of any other party to this Agreement under this Section.

Section 3.03. *Modifications During Term.*

(a) At any time during the Term of this Agreement, or any extension thereof, the parties agree, if requested by any signatory hereto, to conduct mutual negotiations in good faith on the subject of any modifications hereof which may be desired by any signatory hereto and, pursuant to such negotiations, this Agreement may be amended by mutual consent of all parties.

(b) This Agreement may also be amended with the consent of the City and of suburban purchasers representing at least 95 percent of the quantity of water delivered by the City to all suburban purchasers during the preceding fiscal year, provided that no amendment substantially and adversely affecting a fundamental right of a suburban purchaser under this Agreement may be made without the consent of that purchaser. Fundamental rights of suburban purchasers include, but are not limited to, their status as parties to this Agreement, their allocation of water as provided in Sections 7.02 and 7.03, and any specific rights conferred in Article IX. No amendment to Article IV or Section 5.04 which has the effect of discriminating against any individual suburban purchaser or any group of fewer than all of the suburban purchasers shall become effective without the consent of the suburban purchaser(s) thereby adversely affected. Amendments to Article IV which merely affect the allocation of expenses between direct City water users, on the one hand, and the suburban purchasers collectively, on the other, and amendments to Sections 5.02, 5.03, 5.06 and 5.07(a) through (d) and Article VI which merely alter the budgetary, rate-making, balancing account, accounting and auditing procedures described therein, shall become effective if approved by the City and suburban purchasers representing at least 95 percent of the quantity of water delivered by the City to all suburban purchasers during the preceding fiscal year.

(c) When an amendment has been approved by the City and 95 percent of the suburban purchasers (as herein defined) pursuant to subsection (b), the City shall give notice of the amendment's adoption to the suburban purchasers. Notwithstanding any other provision of law or this Agreement, any suburban purchaser which claims that an amendment to this Agreement that has been approved pursuant to subsection (b) violates its rights under that subsection shall have thirty days from the date the City sends the notice of the amendment's adoption in which to challenge the amendment's validity through appropriate judicial action. If no such action is filed within said thirty day period, the amendment shall be finally and conclusively deemed to have been adopted in compliance with this Article.

(d) If this Agreement becomes effective pursuant to either Sections 2.01(a) or 2.01(b), then it may be amended to admit additional listed entities as parties, until August 7, 1984, with the consent of the City and suburban purchasers representing 66.7 percent of the 1981 water usage of those listed entities that have already become parties. After August 7, 1984, the admission of new listed entities as parties shall require 95 percent approval and the admission of new parties who are not listed entities shall require the consent of the City and all suburban purchasers.

(e) Notwithstanding the provisions of subsections (a) and (b), any provision of Article IX which applies only to an individual suburban purchaser may be amended with the concurrence of the City and the suburban purchaser to which it applies; provided that the amendment will not, directly or indirectly, adversely affect either the quantity of water available to other suburban purchasers or the cost of that water to other suburban purchasers. (An example of provisions in Article IX whose amendment is not permissible under this subsection is the maximum water delivery levels and service areas for San Jose and Santa Clara provided for in Section 9.03.)

Before making any such amendment effective, the City shall give notice, with a copy of the text of the proposed amendment, to all other suburban purchasers. The suburban purchasers shall have sixty (60) days in which to object to the amendment on the ground that it is not permissible under this subsection. If no such objection is received by the City, the proposed amendment may become effective. If one or more suburban purchasers object to the amendment, the City, the individual suburban purchaser with which the City intends to effect the amendment, and the suburban purchaser(s) which lodged the objection shall meet to discuss the matter.

If the dispute cannot be resolved and the City and the suburban purchaser involved elect to proceed with the amendment, either the City or the suburban purchaser shall give written notice of such election to each suburban purchaser which has objected. Any suburban purchaser which has objected to such amendment shall have sixty (60) days from receipt of this notice within which to commence an action challenging the validity of such amendment, and such amendment shall be deemed effective as of the end of this 60-day period unless restrained by order of court.

(f) Notwithstanding the foregoing provisions of this Section, the City may amend Exhibit J with the consent of the Suburban Representatives to reflect changes in the inputs into the SFWD wholesale system, changes in service connections, additions or retirement of assets, or any other change that would affect the calculation of the usage rates and ratios described in Exhibit J. The Suburban Representatives shall not unreasonably withhold consent to amendments proposed by the City. If the Suburban Representatives do not consent to an amendment proposed by the City, the City may implement the amendment and perform the calculations described in Exhibit J in accordance with the terms of the amendment, unless and until an arbitrator orders otherwise.

(g) Notwithstanding the foregoing provisions of this Section, the City may amend Exhibit E as provided therein, subject to the provisions concerning notice and arbitration contained therein.

Section 3.04. *Deferral of Agreement's Term.*

The Term of the Agreement referred to in Section 3.01 was originally contemplated to commence on July 1, 1983, and it now has been agreed that the Term will commence on July 1, 1984. Because of the deferral of the commencement date of the Term, the Ciy hereby agrees that: (1) there shall be no rate increases for fiscal year 1984/85 applicable to suburban purchasers, provided that this provision shall not preclude an emergency rate increase if permitted under Section 5.03(b); (2) it will not, because of the execution of this Agreement, defer to fiscal year 1984/85 the incurring or accrual of any item of operating, maintenance, or administrative and general expense which otherwise would have been incurred or accrued during fiscal year 1983/84; and (3) it will not, because of the execution of this Agreement, delay beyond June 30, 1984, the completion or placement into service of revenue-funded assets under construction in fiscal year 1983/84 which otherwise would have been completed or placed into service during said fiscal year.

ARTICLE IV

SUBURBAN REVENUE REQUIREMENT

Section 4.01. *Scope of Article.*

This Article shall be applicable only to the rates charged by the City to the suburban purchasers for water delivered pursuant hereto. Nothing contained in this Agreement (with the exception of Section 8.07) shall be interpreted or construed so as to limit, constrain or in any way affect the rates which San Francisco may charge for water sold to water users within the City's geographical boundaries, water sold to City departments or agencies located outside of the City's geographical limits, water sold to the City's other water purchasers located outside of the City's geographical limits (including those listed entities which do not execute this Agreement) or the methodology by which any or all of such rates are determined. These three categories of water users are referred to herein as "direct City water users." Suburban purchasers, as defined in Article I, and direct City water users, as defined in this Section, represent all existing users of water supplied by the San Francisco Water Department.

Section 4.02. *General Principles of Cost Allocation.*

The purpose of this Article is to set forth the method by which the suburban purchasers' collective share of the San Francisco Water Department's (SFWD's) total revenue requirements will be determined. This collective share shall be termed the "suburban revenue requirement." The suburban revenue requirement will consist of the sum of the suburban purchasers' allocated shares of the operating and capital costs, determined on the utility basis as hereinafter set forth, incurred by the SFWD in providing water to the suburban purchasers. Specifically, the suburban revenue requirement will consist of and be limited to the following six categories:

- operating and maintenance expenses
- administrative and general expenses
- property taxes
- return on rate base
- depreciation on utility plant
- the Suburban Hetch Hetchy Assessment

In each of these categories, costs related only to providing water to direct City water users ("direct City costs") will be allocated entirely to such users. Costs related only to providing water to suburban purchasers ("direct suburban costs") will be allocated entirely to such users. Costs related to providing water to both direct City water users and to suburban purchasers ("joint costs") will be allocated between the City and the suburban purchasers in accordance with the following methodology. "Wholesale" costs shall include both joint costs and direct suburban costs.

Section 4.03. *Operating and Maintenance Expenses.*

There are five categories of Operating and Maintenance expenses:

(a) *Source of Supply.*

Description: This category includes operating and maintenance expenses attributable to collecting and impounding reservoirs, lakes, tunnels, wells, and supply mains operated by the SFWD. Outside-City joint expenses in this category are presently assigned to the SFWD accounts listed in Exhibit A-1.

Allocation: Source of supply expenses attributable to operation and maintenance of components of the system benefitting only direct City water users, which are identified as in-City expenses in the SFWD cost ledgers (i.e., expenses posted to accounts beginning with "4" or "64"), will be allocated

to the City. Source of supply expenses attributable to operation and maintenance of components of the system benefitting both direct City water users and suburban purchasers, which are identified in the City's cost ledgers as outside-City expenses (i.e., expenses posted to accounts beginning with "5" or "65"), will be jointly allocated between the City and the suburban purchasers on the basis of annual proportional usage of water, i.e., at the "current base rates" as defined in Exhibit J.

(b) *Pumping.*

Description: This category includes labor, fuel and power purchased for pumping water, and the operation and maintenance of pumping equipment. Outside-City joint pumping expenses are presently assigned to the SFWD accounts listed in Exhibit A-2. (In determining pumping charges the City shall be entitled to have the Hetch Hetchy Water and Power Department (HHWPD) bill SFWD for power supplied to SFWD by HHWPD at rates which shall not exceed the rates which would be charged by the Pacific Gas & Electric Company for providing like classes of electric service under its then-current rate schedules.)

Allocation: Pumping expenses shall be allocated on the basis of the City's cost ledger location codes (in the same manner as source of supply expenses) with in-City expenses allocated entirely to the City and outside-City expenses allocated jointly between the City and the suburban purchasers. Outside-City joint pumping expenses shall be allocated at the current base rates.

(c) *Purification.*

Description: This category includes labor, purchase of supplies, and the operation and maintenance of facilities used for water treatment. Outside-City joint purification expenses are presently assigned to the SFWD accounts listed in Exhibit A-3.

Allocation: Purification expenses will be allocated on the basis of the City's cost ledger location codes (in the same manner as source of supply expenses), with in-City expenses allocated entirely to the City and outside-City expenses allocated jointly between the City and the suburban purchasers. Outside-City joint purification expenses shall be allocated at the current base rates.

(d) *Transmission and Distribution Expenses.*

Description: The wholesale portion of this category includes operating and maintenance expenses attributable to the storage and distribution reservoirs and appurtenant mains, suburban meters and services, and certain related miscellaneous expenses. Direct suburban and joint transmission and distribution expenses are presently assigned to the SFWD accounts listed in Exhibit A-4.

Allocation: Transmission and distribution expenses shall first be divided between in-City expenses and outside-City expenses on the basis of the City's cost ledger location codes (in the same manner as source of supply expenses), with in-City expenses allocated entirely to the City and outside-City expenses allocated jointly between the City and the suburban purchasers. This general rule is subject to two exceptions.

First, the transmission and distribution expenses related to Sunset Reservoir (Account No. 467760), University Mound Reservoir (Account No. 468760), and Merced Manor Reservoir (Account No. 469760) shall be allocated as outside-City joint expenses, despite their in-City categorization in the SFWD cost ledger location codes.

Second, the following outside-City expenses related to the Palo Alto Pipeline shall be allocated entirely to the suburban purchasers without further allocation:

539753 Transmission & Distribution Lines Expense

539761 Maintenance of Transmissions & Canals

After these modifications have been made, outside-City joint transmission and distribution expenses shall be allocated between the City and the suburban purchasers at the current base rates.

(e) *Customer Accounts.*

Description: This category includes meter reading, customer record keeping and collection costs. It presently consists of the line items in the SFWD cost ledgers listed in Exhibit A-5.

Allocation: Customer accounts expenses will be allocated 98% to the City and 2% to the suburban purchasers.

Section 4.04. *Administrative and General Expenses.*

Description: This category consists of expenses associated with the administration of the SFWD and other general expenses, including City overhead and the San Francisco Public Utilites Commission charges. While the majority of these expenses are identified as in-City expenses in the City's cost ledger location codes, most in fact benefit both wholesale and in-City water users. Accordingly, they are not allocated on the basis of location code identification.

There are three subcategories of Administrative and General Expenses, which are to be calculated and allocated as follows.

(a) *City Overhead.*

This subcategory consists of support services provided by the City's central service departments which have not been directly billed to SFWD or other operating departments. All operating departments of the City are assigned a prorated share of these unbilled costs, although only those City departments which are not supported by ad valorem taxes actually reimburse the City's general fund for their share. The SFWD's share of these costs is presently identified in the SFWD cost ledgers as Account No. 649000-0920.

The parties have agreed in principle that the bases on which these costs are allocated to the SFPUC, the SFWD and the HHWPD should fairly reflect the proportional benefit which each receives (along with other City departments and agencies) from the central service department whose costs are being allocated. The parties have also agreed that costs of central service departments allocated by the City in accordance with a "Countywide Cost Allocation Plan" ("COWCAP") prepared annually by the City and submitted to and approved by the Bureau of Cost Plans in the State Controller's office (or its successor) should be entitled to a rebuttable presumption that they have been fairly allocated for purposes of this Agreement. However, the parties have not been able to agree on specific limits or allocational bases for costs of central service departments not reimbursable by the federal government and hence not included in the annual COWCAP. Accordingly, for purposes of this Agreement, City overhead allocable to direct City water users and suburban purchasers shall be determined in the following manner.

For FY 1984/85, the City overhead charge shall be deemed to equal $600,000 for the SFWD and $240,000 for the SFPUC. For the next four succeeding fiscal years (e.g., FY 1985/86 through 1988/89), the City overhead charge shall be deemed to equal the deemed City overhead charge for FY 1984/85, adjusted to reflect changes in the San Francisco-Oakland Metropolitan Area Consumer Price Index (All Urban Consumers, 1967=100). (This index level is 307.3 as of December 1983.) The index level as of June 1984 shall be the Base Index. The deemed City overhead charge for (e.g., FY 1985/86) shall be adjusted based on the percentage change from the Base Index to the index as of June 1985. The deemed City overhead charge as so computed shall be in lieu of all other City overhead charges whether or not included in the annual COWCAP. In addition, the deemed City overhead charge will be reduced if costs of central service departments included in the COWCAP prepared for FY 1983/84 and certified by the City's Controller on February 18, 1983 are thereafter billed directly to the operating departments rather than allocated, via COWCAP or otherwise, and increased if costs of central service departments directly billed to the operating departments as of FY 1983/84 are thereafter allocated to the SFWD, via COWCAP or otherwise, rather than billed directly.

Before the close of fiscal year 1988/89, the City and the Suburban Representatives shall meet to discuss how City overhead shall be allocated to the suburban purchasers in fiscal years after FY 1988/89. As the result of these negotiations, the City and the Suburban Representatives may agree either on a methodology for actually allocating City overhead to the SFWD, the SFPUC and the HHWPD or. in the alternative, on a procedure for determining a "deemed City overhead charge" (such as that described in the preceding paragraph for FY 1984/85 through 1988/89) to be annually substituted for purposes of this Agreement for the actual City overhead annually charged to the SFWD, the SFPUC and the HHWPD.

If the City and the Suburban Representatives are unable to reach either of the agreements specified in the preceding paragraph after negotiations. the City or any of the suburban purchasers may invoke arbitration pursuant to Section 8.02. The arbitrator shall have no power to direct the City's actual allocation of City overhead to the SFWD, the SFPUC, or the HHWPD, but shall have power to specify a "deemed City overhead charge" (or procedure for determining such charge) which fairly allocates the costs of central service departments in accordance with the principle set forth above. The "deemed City overhead charge" specified by the arbitrator or determined through the procedure specified by the arbitrator shall then be annually substituted for the actual City overhead annually charged to the SFWD, the SFPUC and the HHWPD. No "deemed City overhead charge" nor procedure specified by an arbitrator for determining the annual "deemed City overhead charge" shall last longer than five fiscal years. During the last year of that period, the City and the Suburban Representatives shall again attempt to negotiate an agreement in accordance with the preceding paragraphs. If these negotiations are unsuccessful, the matter will be referred to arbitration again for the determination of another "deemed City overhead charge" or procedure for determining such charge to be used during the next succeeding five-year period.

(b) *San Francisco Public Utilities Commission Charges.*

This subcategory consists of support services provided by the San Francisco Public Utilities Commission (SFPUC) and its constituent bureaus to the SFWD and the other operating departments under the jurisdiction of the SFPUC. It is presently identified in the SFWD cost ledgers as Accounts No. 649014 and 649000-3600.

The bases by which these costs are allocated among the operating departments shall fairly reflect the proportional benefit which each department receives from the SFPUC support services and bureaus whose costs are being allocated.

In order to implement the foregoing principle, the City will allocate those costs of SFPUC support services and bureaus which are reimbursable by the federal government under federal grant guidelines (hereafter called "federally allowable PUC costs") in accordance with the allocational bases included in the annual "PUC Indirect Cost Allocation Plan" for the fiscal year in question prepared by the City and submitted to the Division of Cost Allocation of the United States Department of Health and Human Services, or its successor, provided that the costs of leasing SFWD revenue-producing properties, now accounted for in the Real Estate Department within the Bureau of Administration, shall not be allocated to the suburban purchasers.

Costs of SFPUC support services and bureaus allocated in accordance with the allocational bases prescribed for them in a "PUC Indirect Cost Allocation Plan" submitted by the City to the Division of Cost Allocation of the United States Department of Health and Human Services and approved by said Division (or its successor) shall (with the exception of the leasing costs noted above) be entitled to a rebuttable presumption that they have been fairly allocated for purposes of this Agreement.

Costs of SFPUC support services and bureaus which are not reimbursable by the federal government under federal grant guidelines (i.e., which are not federally allowable PUC costs) may

nevertheless be allocated to the suburban purchasers. Such costs shall be allocated to the SFWD on the bases set out in Exhibit A-6.

The allocational bases set out in Exhibit A-6 may be changed by the City to correspond with changes in the allocational bases for federally allowable SFPUC costs which are approved or required by the federal government (or its delegate), to reflect changes in organization within the SFPUC or its departments, or changes in the functions performed by the departments whose costs are being allocated, or to increase the accuracy and/or equity of the SFPUC cost allocation process. Any changed allocational bases must similarly comply with the principle stated above.

The City overhead costs allocated to the SFPUC under the Countywide Cost Allocation Plan (COWCAP) described in paragraph (a) above, or other allocational procedure, shall not be charged to the suburban purchasers since those costs are to be replaced by the "deemed City overhead charge" determined under that paragraph. The deemed City overhead charge so determined shall, however, be allocated among MUNI, SFWD and HHWPD in the same proportion that the COWCAP costs allocated to the SFPUC are reallocated to the operating departments by the PUC Indirect Cost Allocation Plan for each fiscal year. This allocation of the deemed City overhead charge shall be entitled to the same rebuttable presumption described above for other costs so allocated.

(c) *Other.*

The remaining administrative and general expenses which are partially allocable to the suburban purchasers presently consist of the line items in the SFWD cost ledgers listed on Exhibit A-7; provided that the maximum amount which may be allocated in any year to the suburban purchasers as the result of payments by the City for claims arising out of breaks occurring in water transmission lines and mains and in-City reservoirs which are not included in the SFWD wholesale utility plant shall be $100,000. Claims expenses covered by this annual aggregate limitation are presently identified in the SFWD cost ledgers as Account No. 649031. The $100,000 limitation shall be automatically adjusted every year in accordance with changes in the Consumer Price Index for the San Francisco-Oakland Metropolitan Area, provided that in no event will it be reduced below $100,000.

Allocation: Except as provided in the following paragraph, City overhead, SFPUC charges, and other administrative and general expenses shall be allocated between the City and the suburban purchasers on the basis of the composite of the allocated expenses in the five Operating and Maintenance categories. The suburban share of these expenses shall be equal to the total of such expenses (determined as set out above) times the following fraction:

$$\frac{\text{Suburban share of SFWD source of supply, pumping, transmission and distribution, purification, and customer accounts expenses}}{\text{Total SFWD source of supply, pumping, transmission and distribution, purification, and customer accounts expenses}}$$

Administrative and general costs incurred by the SFPUC and SFWD in connection with the implementation and administration of this Agreement (which are presently assigned to Account No. 649024) shall be allocated equally between the City and the suburban purchasers. The intent of this paragraph is that the expense of new operations and procedures incurred as a result of the City's obligations under this Agreement (including but not limited to preparation of the estimated suburban revenue requirement under Section 5.03 and the interim and final suburban revenue requirements under Section 6.02) will be allocated equally to the City and the suburban purchasers but that expenses associated with administrative operations and procedures which existed prior to the effective date of this Agreement or which are not incurred as a result of the City's obligations under this Agreement will be allocated as provided above and will not be transferred to this account.

Expenses in this account in excess of $200,000 in any fiscal year shall be allocated pursuant to the formula in the preceding paragraph. Costs of the compliance audit allocated to the City under Section 6.03(b) and costs allocated to the City under Section 6.06 regarding the Suburban Review shall not be chargeable against this $200,000 limit. This $200,000 limit shall be automatically adjusted every year in accordance with changes in the Consumer Price Index for the San Francisco-Oakland Metropolitan Area, provided that in no event will it be reduced below $200,000.

Section 4.05. *Property Taxes.*

Description: This category consists of ad valorem property taxes levied against SFWD properties located in San Mateo, Santa Clara and Alameda Counties. It presently consists of the costs recorded in Account No. 659019 in the SFWD cost ledgers.

Allocation: All property tax expenses will be allocated between the City and the suburban purchasers at current base rates; provided, however, that the total property taxes allocable will first be reduced by the amount of said taxes which are passed through to tenants or users of SFWD property and reimbursed to the City by such tenants or users.

Section 4.06. *Return on SFWD Rate Base.*

(a) *Description:* Return on the SFWD rate base consists of the SFWD's return on that portion of its wholesale net utility plant and wholesale working capital allowance allocable to the suburban purchasers. The return on the SFWD rate base is the product of (1) the portion of the total SFWD rate base allocable to the suburban purchasers times (2) the overall rate of return. Each component shall be calculated as set forth below.

(b) *Calculation of Rate Base.*

The portion of the total SFWD rate base on which a return is to be paid is the suburban purchasers' share of the wholesale rate base. The wholesale portion of the total SFWD rate base must first be determined. Thereafter, the wholesale rate base must be allocated between the City and the suburban purchasers.

(i) *SFWD Wholesale Rate Base.*

The wholesale portion of the total SFWD rate base shall be the sum of (1) the average of the wholesale portion of SFWD net utility plant in service at the beginning of the year and the wholesale portion of SFWD net utility plant in service at the end of the year (i.e., the beginning wholesale net utility plant plus capital additions less depreciation, retirements and other dispositions removing an asset from utility plant in service) and (2) a wholesale working capital allowance (calculated as shown in Exhibit B-3) equal to one-sixth (⅙) of the annual wholesale SFWD operating and maintenance expenses and wholesale SFWD administrative and general expenses. As used in the previous sentence, "wholesale SFWD administrative and general expenses" shall be equal to the product of total SFWD administrative and general expenses times the following fraction:

$$\frac{\text{Wholesale SFWD source of supply, pumping, purification, transmission and distribution, and customer-accounts expenses}}{\text{Total SFWD source of supply, pumping, purification, transmission and distribution, and customer-accounts expenses}}$$

(For purposes of computing this ratio, wholesale customer accounts expense shall be deemed to be two (2) percent of total customer accounts expense.)

The wholesale portion of the SFWD net utility plant in service shall be the sum of the net book values, determined on the basis of depreciated original cost, of (1) all bond-funded SFWD

assets or portions thereof except those used to serve only direct City water users, as defined above, included in net utility plant as of June 30, 1984; and (2) all assets or portions thereof, however funded, added to net utility plant in service after June 30, 1984 except: (a) assets used to serve only direct City water users; and (b) assets, or portions thereof, funded from federal or state grants or direct user contributions. Thus, assets added to utility plant during fiscal year 1983/84 and funded from revenue shall not be included in the wholesale rate base for purposes of this Agreement. (A list of the revenue-funded assets which the City expects to add to the SFWD utility plant during fiscal year 1983/84 is shown in Exhibit B-4; these assets will not be included in the SFWD wholesale rate base for purposes of this Agreement regardless of whether they are actually placed into service during FY 1983/84 or thereafter.)

If the City finances the acquisition of new assets for the SFWD by means other than from revenues or through bonded debt (e.g., by means of leases), the capitalization of those assets, the treatment of related expenses and related debt, and all other aspects of their accounting treatment, for purposes of this Agreement, shall be in accordance with Generally Accepted Accounting Principles, as amended from time to time.

The net book value of all debt-funded assets included in net utility plant in service as of June 30, 1983 and their categorization as direct City, direct suburban or joint (which includes the eight subcategories of joint equipment assets described below) is shown in Exhibit B. The City will furnish the Suburban Representatives a list of all debt funded assets, together with the asset number, category, net book value, service life and annual depreciation for each, added to the SFWD utility plant during FY 1983/84. This list shall be delivered on or before December 31, 1984.

Interest on new debt-funded assets shall be capitalized in accordance with applicable Generally Accepted Accounting Principles, as amended from time to time.

(ii) *Suburban Share of SFWD Wholesale Rate Base.*

The suburban purchasers' share of the SFWD wholesale rate base shall consist of (1) a share of the wholesale working capital allowance defined above and (2) a share of the SFWD wholesale net utility plant in service.

The suburban purchasers' share of the wholesale working capital allowance is equal to one-sixth (1/6) of their share of wholesale SFWD operating and maintenance and administrative and general expenses, as determined pursuant to Sections 4.03 and 4.04 and as illustrated in Exhibit B-3.

The suburban purchasers' share of the SFWD wholesale net utility plant in service shall be the sum of the suburban share of each asset included therein. Each asset in the SFWD wholesale net utility plant shall be assigned to a category, based upon its characterization, and each category will be allocated between the City and suburban purchasers based on their respective use of assets within that category. The categories into which the assets in the SFWD wholesale net utility plant are segregated are as follows:

Land

Direct suburban

Joint

Equipment

Direct suburban

Joint

Joint equipment assets are further subdivided ino the following subcategories:

Current base
Ultimate base
Current maximum day
Ultimate maximum day
Current maximum hour
Ultimate maximum hour
Standby
Composite

The definitions of each of these categories and subcategories and the allocational basis or formula by which each is to be allocated between the City and the suburban purchasers are contained in Exhibit C. The categorization of each asset included in the SFWD net utility plant in service as of June 30, 1983 is listed in Exhibits B-1 and B-2. The categorization of assets (and thus their subsequent allocation) added to the SFWD net utility plant in service after June 30, 1983 shall be as agreed upon by the parties and, in the event they are unable to agree, by arbitration as provided in Section 8.02. Debt funded assets scheduled to be added during FY 1983/84 shall be categorized as shown in Exhibit B-5.

(c) *Calculation of Overall Rate of Return.*

The overall rate of return on the SFWD wholesale rate base is equal to the sum of (1) the product of the cost of SFWD wholesale debt times the SFWD wholesale debt percentage and (2) the product of the return on SFWD wholesale equity times the SFWD wholesale equity percentage.

Each of these terms shall be defined and/or derived as follows:

(i) The cost of SFWD wholesale debt is the wholesale debt interest expense for the year divided by the average outstanding balance of SFWD wholesale debt. At any given date, SFWD wholesale debt outstanding is that portion of total SFWD debt outstanding the proceeds of which have been used to finance the construction or acquisition of assets included in the SFWD wholesale utility plant in service as of that date. The average outstanding balance of SFWD wholesale debt is the beginning of the year balance plus the end of the year balance, divided by 2. The cost of SFWD wholesale debt for FY 1983/84 is estimated to be 5.1355%, as shown in Exhibit D-1.

(ii) The SFWD wholesale debt percentage is the percentage obtained by dividing the average outstanding balance of SFWD wholesale debt by the sum of (a) the average SFWD wholesale net utility plant in service plus (b) the wholesale working capital allowance defined in Section 4.06(b)(i).

The SFWD wholesale debt percentage for FY 1983/84 is estimated to be 26.16%. In subsequent years, SFWD wholesale debt shall include all outstanding City debt, the proceeds of which are used to construct or acquire SFWD wholesale assets. The wholesale portion of any debt issued in the future, some or all of which is used to construct or acquire SFWD assets, will be equal to a fraction, the numerator of which shall be the original cost of wholesale utility plant assets financed by the proceeds of such debt, and the denominator of which shall be the total proceeds of such debt.

The wholesale share of currently outstanding debt shall be as shown in Exhibit D-1.

(iii) The return on SFWD wholesale equity shall be calculated by determining the arithmetic average of the rates of return authorized by the California Public Utilities Commission (CPUC) on common equity for Class A water utilities during the last full calendar year immediately preceding the fiscal year for which the SFWD rate is to be developed. All water utilities presently

classified as Class A by the CPUC are listed on Exhibit E. In determining the average rate of return authorized by the CPUC, decisions authorizing the same rate of return on common equity to different districts or divisions of the same utility will be counted as one decision. The CPUC average rate of return shall then be multiplied by 85% to determine the rate of return on SFWD wholesale equity.

(iv) The SFWD wholesale equity percentage is equal to 100% minus the SFWD wholesale debt percentage.

The methodology for calculating the overall rate of return on SFWD wholesale rate base is shown on Exhibit F-1.

Section 4.07. *SFWD Depreciation.*

SFWD depreciation is the annual depreciation expense on the original cost of assets in the wholesale portion of SFWD utility plant in service. The "original cost" of each asset used for calculating depreciation for purposes of this Agreement shall be equal to the original cost of the asset minus any revenue-funded portions thereof (including capitalized interest funded from revenue) added to the rate base prior to June 30, 1984 and any portion of the asset financed from federal or state grants or direct user contributions.

The original cost, salvage value, service lives and annual depreciation expense of all debt-funded assets included in the wholesale portion of SFWD utility plant in service as of June 30, 1983 shall be as shown in Exhibit B-1. (No depreciation expense will continue for any asset once that asset has no remaining service life; however, such assets will continue to be included in the rate base at their salvage value, if any.) Assets added to the wholesale portion of SFWD utility plant after June 30, 1983 shall be assigned reasonable service lives and salvage values consistent with waterworks industry standards and practices. Debt-funded assets scheduled to be added during FY 1983/84 shall be assigned service lives as shown in Exhibit B-5.

Depreciation shall be calculated on a straight line basis.

The suburban purchasers' share of depreciation on each asset in the SFWD wholesale utility plant shall be equal to the total annual depreciation on each such asset times the suburban share of such asset (i.e., the percentage of each asset which has been allocated to the suburban purchasers for return on rate base purposes, as provided above). The total annual SFWD depreciation charge shall be equal to the sum of the suburban depreciation of each asset in the SFWD wholesale utility plant.

Section 4.08. *Suburban Hetch Hetchy Assessment.*

Description:

The Suburban Hetch Hetchy Assessment ("Assessment") is the charge assessed by the City to the suburban purchasers for the delivery of water by the Hetch Hetchy Water and Power Department ("HHWPD") from the Sierra watersheds to the SFWD's Alameda East Portal in Alameda County.

The Assessment consists of the suburban purchasers' share of

- the water-related portion of HHWPD operating expenses;
- the water-related portion of HHWPD maintenance expenses;
- the water-related portion of HHWPD property taxes;
- return on the water-related HHWPD rate base;
- depreciation on the water-related HHWPD utility plant.

Calculation:

Calculation of the Assessment entails two steps.

First, the water-related share of HHWPD operating and maintenance expenses and property taxes, the return on water-related rate base and depreciation on water-related utility plant must be determined.

Second, the suburban purchasers' share of these items must be determined.

(a) *Calculation of Water-Related Portion of HHWPD Expenses, Property Taxes, Return and Depreciation.*

(1) *Operating Expenses.*

Description: This category consists of expenses incurred in operating physical facilities within the HHWPD jurisdiction and related administrative and general expenses. Expenses associated exclusively with the production and distribution of hydroelectric power (e.g., purchased power, wheeling charges, rental of power lines and operation of SF Municipal Railway (MUNI) overhead lines) are categorized as power-specific and are not allocated to water. In addition, expenses associated with operating power facilities such as generating plants and transmission lines are also categorized as power-specific and are not allocated to water. Expenses associated with the operation of facilities which serve both the water and power functions (such as dams) are categorized as "joint" and are allocated to each function as described below. Expenses associated exclusively with the operation of facilities which serve only the water function (such as water transmission pipelines) are categorized as water-specific and are allocated entirely to water.

Allocation: Water-specific operating expenses presently consist of the line items in the HHWPD cost ledgers so designated on Exhibit G-1. These expenses shall be allocated entirely to water.

Power-specific operating expenses presently consist of the line items in the HHWPD cost ledgers so designated on Exhibit G-1. These expenses shall be allocated entirely to power.

Joint operating expenses presently consist of the line items in the HHWPD cost ledgers so designated on Exhibit G-1. These expenses shall be allocated 55% to power and 45% to water, except for City overhead and SFPUC charges, which shall be allocated as follows:

(A) *City Overhead.*

Description: This category consists of support services provided by the City's central service departments which have not been directly billed to HHWPD or other operating departments, as described in Section 4.04(a). The HHWPD's share of these costs is presently identified in the HHWPD cost ledgers as account No. 840920-0920.

Allocation: For purposes of this Agreement, the City overhead allocable to the HHWPD shall be "deemed" in the same manner and be subject to the same restrictions as City overhead is "deemed" to the SFWD and the SFPUC pursuant to Section 4.04(a). For FY 1984/85, the City overhead allocable to the HHWPD shall be deemed to equal $250,000. Thereafter, the HHWPD share of City overhead shall increase or decrease to reflect changes in the San Francisco-Oakland Metropolitan Area Consumer Price Index through FY 1988/89. After FY 1988/89, the HHWPD share of City overhead shall be determined through the negotiation/arbitration process set forth in Section 4.04(a).

City overhead costs allocated to the HHWPD in accordance with Section 4.04(a) and (b) and the preceding paragraph shall in turn be reallocated to water on the basis of a percentage derived from a fraction, the numerator of which is the sum of all HHWPD water-related operating and maintenance expenses as defined herein for the fiscal year in question, including 45% of joint operating and maintenance expenses but excluding City overhead and SFPUC charges, and the denominator of which is the total HHWPD operating and maintenance expenses, including all water-specific, joint and power-specific expenses, but excluding purchased power charges, wheeling charges,

rental of power lines, City overhead and SFPUC charges. The formula for allocation of City overhead costs is shown in Exhibit G-2.

(B) *Public Utilities Commission Charges.*

Description: This category consists of support services provided by the San Francisco Public Utilities Commission and its constituent bureaus to the HHWPD and the other operating departments under the jurisdiction of the SFPUC. For purposes of this Agreement, the expenses of such services shall be divided into two categories, "Class A" and "Class B." Class A services are those the costs of which are either assigned among departments based on a direct identification of use or on the basis of an allocation statistic other than the department's total expenditures, including all operating and capital expenditures. Examples of costs in this category presently include safety, training and claims processing expenses of the Bureau of Administration and the computer support from the Bureau of Management Information Systems. Class B services are those the costs of which are allocated on the basis of the departments' total expenditures, including all operating and capital expenditures. Examples of costs in this category presently include accounting and budget and analysis functions of the Bureau of Finance. The SFPUC charge, both Class A and Class B, is presently identified in the HHWPD cost ledgers as Account No. 840920-3600.

SFPUC charges shall be allocated to HHWPD in the same manner and subject to the same restrictions as such charges are allocated to SFWD, as described in Section 4.04(b).

Allocation: SFPUC charges allocated to HHWPD shall be reallocated between water and power as follows:

(i) Class A charges: Class A SFPUC charges allocated to HHWPD shall be reallocated to water on the basis of a percentage derived from a fraction the numerator of which is the sum of all water-related HHWPD operating and maintenance expenses, as defined herein, for the fiscal year in question, including 45% of joint operating and maintenance expenses, but excluding City overhead and SFPUC charges, and the denominator of which is total HHWPD operating and maintenance expenses but excluding purchased power, wheeling charges, rentals of power lines, maintenance of MUNI overhead lines expenses, City overhead and SFPUC charges.

The formula for allocation of Class A SFPUC costs is shown in Exhibit G-2.

(ii) Class B charges: Class B SFPUC charges allocated to HHWPD shall be reallocated to water on the basis of a percentage derived from a fraction the numerator of which is the sum of all HHWPD water-related operating and maintenance expenses, as defined herein, for the year in question, including 45% of joint operating and maintenance expenses (but excluding City overhead and SFPUC charges) plus water-related capital outlays, however funded, including 45% of capital outlays on joint facilities, and the denominator of which is total HHWPD operating and maintenance expenses, including all water-specific, joint and power-specific expenses (except City overhead and SFPUC charges), plus total HHWPD capital outlays, however funded.

Total HHWPD operating and maintenance expenses shall, for purposes of this subsection (ii), include purchased power, wheeling and rentals of power lines expenses of HHWPD, if each is included in the HHWPD's total expenditures for purposes of allocating SFPUC expenses to it. If one or more of such expenses are excluded from the definition of total budget for purposes of the initial allocation to the operating departments, it or they shall similarly be excluded in this formula for allocation of Class B SFPUC charges between water and power.

The formula for allocation of Class B SFPUC costs is shown on Exhibit G-2.

(2) *Maintenance Expenses.*

Description: This category consists of expenses incurred in maintaining physical facilities within the HHWPD jurisdiction and related administrative and general expenses. Expenses associated exclu-

sively with maintaining power facilities such as generating plants, transmission lines and MUNI overhead lines are categorized as power-specific and are not allocated to water. Expenses associated with maintaining facilities which serve both the water and power functions (such as dams) are categorized as "joint" and are allocated to each function as described below. Expenses associated exclusively with the maintenance of facilities which serve only the water function (such as water transmission lines) are categorized as water-specific and are allocated entirely to water.

Allocation: Water-specific maintenance expenses presently consist of the line items in the HHWPD cost ledgers so designated on Exhibit G-3. These expenses shall be allocated entirely to water.

Power-specific maintenance expenses presently consist of the line items in the HHWPD cost ledgers so designated on Exhibit G-3. These expenses shall be allocated entirely to power.

Joint maintenance expenses presently consist of the line items in the HHWPD cost ledgers so designated on Exhibit G-3. These expenses shall be allocated 55% to power and 45% to water.

(3) *Property Taxes.*

Description: This category consists of ad valorem property taxes levied against HHWPD properties located in Tuolumne, Stanislaus, San Joaquin and Alameda Counties. These are presently identified in the HHWPD cost ledgers as Account No. 840928-1425.

Allocation: All property taxes paid by HHWPD shall be deemed a joint expense and shall be allocated to water on the basis of a "utility plant percentage" derived from a fraction, the numerator of which is the average-for-the-year net book value of all HHWPD water-related assets located outside the City's geographical limits, however funded (including 45% of all HHWPD joint assets located outside the City's geographical limits, however funded) and the denominator of which is the average-for-the-year net book value of all HHWPD assets located outside the City's geographical limits, however funded. An illustration of the formula for allocation of property taxes is shown on Exhibit G-4.

(4) *Calculation of Return on Water-Related Portion of HHWPD Rate Base.*

The return on the water-related portion of the HHWPD rate base is the product of (1) the water-related portion of the total HHWPD rate base times (2) the overall rate of return. Each component shall be calculated as set forth below.

(i) *Calculation of Water-Related Portion of HHWPD Rate Base.*

The water-related portion of HHWPD rate base used for calculating return shall be the sum of (1) the average of the water-related portion of HHWPD net utility plant in service at the beginning of the year and the water-related portion of HHWPD net utility plant in service at the end of the year (i.e., the beginning water-related portion of HHWPD net utility plant in service plus capital additions less depreciation, retirements and other dispositions removing an asset from utility plant in service) and (2) a water-related HHWPD working capital allowance equal to one-sixth (1/6) of the HHWPD water-related operating expenses and maintenance expenses, as defined above, which do not include property taxes.

The water-related portion of HHWPD net utility plant shall be the sum of the net book values, determined on the basis of depreciated original cost, of: (1) all bond-funded, water-specific HHWPD assets included in net utility plant in service as of June 30, 1984; (2) 45% of the net book value of all bond-funded, joint HHWPD assets included in net utility plant in service as of June 30, 1984; and (3) all water-specific and a portion of all joint HHWPD assets, however funded, added to net utility plant in service after June 30, 1984, except for assets, or portions thereof, funded from federal or state grants or direct user contributions. Thus, assets added to utility plant during fiscal year 1983/84 and funded from revenue shall not be included in the HHWPD water-related rate base for

purposes of this Agreement. (A list of the revenue-funded assets which the City expects to add to the HHWPD utility plant during fiscal year 1983/84 is shown in Exhibit H-3; these assets will not be included in the HHWPD water-related rate base for purposes of this Agreement regardless of whether they are actually placed into service during FY 1983/84 or thereafter.)

If the City finances the acquisition of new assets for the HHWPD by means other than from revenues or through bonded debt (e.g., by means of leases), the capitalization of those assets, the treatment of related expenses and related debt, and all other aspects of their accounting treatment, for purposes of this Agreement, shall be in accordance with Generally Accepted Accounting Principles, as amended from time to time.

The net book value of all debt-funded assets included in net utility plant in service as of June 30, 1983 and their categorization as power-specific, water-specific or joint is shown in Exhibits H-1 and H-2. The City will furnish the Suburban Representatives a list of all debt-funded assets, together with the asset number, category, net book value, service life and annual depreciation for each, added to the HHWPD water-related utility plant during FY 1983/84. This list will be delivered on or before December 31, 1984.

The categorization of new assets as water-specific, power-specific or joint and the portion of new joint assets to be allocated to water-related net utility plant in service after June 30, 1983 shall be as agreed upon by the parties and, in the event they are unable to agree, by arbitration as provided in Section 8.02. The arbitrator shall be directed to resolve the dispute by reference to accepted cost-allocation methodologies (or modifications thereof) and in a way which fairly allocates the cost of a new facility to or between the function(s) which it will serve. Debt-funded assets scheduled to be added during FY 1983/84 shall be categorized as shown in Exhibit H-4.

Interest on new debt-funded assets shall be capitalized in accordance with applicable Generally Accepted Accounting Principles, as amended from time to time.

(ii) *Calculation of Overall Rate of Return.*

The overall rate of return on the water-related portion of HHWPD rate base is equal to the sum of (1) the product of the cost of HHWPD water-related debt times the HHWPD water-related debt percentage and (2) the product of the return on HHWPD water-related equity times the HHWPD water-related equity percentage.

Each of these terms shall be defined and/or derived as follows:

(1) The cost of HHWPD water-related debt is the water-related debt interest expense for the year divided by the average outstanding balance of water-related debt. At any given date, water-related debt outstanding is that portion of total debt outstanding, the proceeds of which have been used to finance the construction or acquisition of water-related assets included in HHWPD net utility plant in service, as of that date. The average outstanding balance of HHWPD water-related debt is the beginning of the year balance plus the end of the year balance, divided by 2. The cost of HHWPD water-related debt for FY 1983/84 is estimated to be 3.8936%, as shown in Exhibit D-2.

(2) The HHWPD water-related debt percentage is the percentage obtained by dividing the average outstanding balance of HHWPD water-related debt by the sum of (a) the average-for-the-year net book value of water-related assets, as defined above, plus (b) the water-related HHWPD working capital allowance, as defined above.

The HHWPD water-related debt percentage for FY 1983/84 is estimated at 14.27%. In subsequent years, water-related HHWPD debt shall include all outstanding City debt the proceeds of which are used to construct or acquire water-specific HHWPD assets and a portion of all outstanding City debt the proceeds of which are used to construct or acquire joint HHWPD assets. The water-related portion of any debt issued in the future, some or all of which is used

to construct or acquire HHWPD assets, shall be equal to a fraction, the numerator of which shall be the original cost of water-related utility plant assets financed by the proceeds of such debt (determined as provided in Section 4.08(a)(4)(i)) and the denominator of which shall be the total proceeds of such debt.

The water-related share of currently outstanding debt shall be as shown in Exhibit D-2.

(3) The return on HHWPD water-related equity shall be equal to the return on SFWD wholesale equity defined in Section 4.06(c)(iii).

(4) The HHWPD water-related equity percentage is equal to 100% minus the HHWPD water-related debt percentage.

The methodology for calculating the overall rate of return on HHWPD water-related rate base is shown on Exhibit F-2.

(5) *Calculation of HHWPD Water-Related Depreciation.* Water-related depreciation is the annual depreciation expense on the original cost of assets in the water-related portion of HHWPD utility plant in service. The "original cost" of each asset used for calculating depreciation for purposes of this Agreement shall be equal to the original cost of each asset in the water-related portion of HHWPD utility plant in service minus any revenue-funded portions thereof (including capitalized interest funded from revenue) added to the rate base prior to June 30, 1984 and any portion of the asset financed from federal or state grants or direct user contributions.

The original cost, salvage value, service lives and annual depreciation expense of all debt-funded water-related assets included in HHWPD utility plant in service as of June 30, 1983 shall be as shown in Exhibit H-1. (No depreciation expense will continue for any asset once that asset has no remaining service life; however, such assets will continue to be included in the rate base at their salvage value, if any.) Water-related assets added to utility plant after June 30, 1983 shall be assigned reasonable service lives and salvage values consistent with waterworks industry standards and practices. Debt-funded assets scheduled to be added during FY 1983/84 shall be assigned service lives as shown in Exhibit H-4.

Depreciation shall be calculated on a straight line basis.

(b) *Calculation of Suburban Purchasers' Share of Suburban Hetch Hetchy Assessment.*

The suburban purchasers' share of the Assessment shall be calculated as follows:

(i) The suburban purchasers' share of HHWPD water-related operating expenses, maintenance expenses and property taxes shall be derived by multiplying the total of such expenses times the suburban current base rate, times a fraction, the numerator of which is the amount of water delivered to the SFWD by HHWPD during the fiscal year and the denominator of which is the amount of water delivered by the HHWPD to all users who receive water from it, during that year.

(ii) The suburban purchasers' share of return on HHWPD water-related rate base and water-related depreciation shall be derived by multiplying each times the suburban ultimate base rate (64.56%), times a fraction the numerator of which is the amount of water delivered to the SFWD by HHWPD during the fiscal year and the denominator of which is the amount of water delivered by the HHWPD to all users who receive water from it, during that year.

ARTICLE V

INTEGRATION OF SUBURBAN REVENUE REQUIREMENT WITH SFWD BUDGET DEVELOPMENT AND RATE ADJUSTMENTS

Section 5.01. *General Purpose.*

The purpose of the allocational formulas set forth in Article IV is to determine the suburban revenue requirement for each fiscal year. The suburban revenue requirement can only be estimated in advance, based upon projected costs and water usage. These projections will be used to establish rates applicable to the suburban purchasers, which rates will be designed to produce the estimated suburban revenue requirement.

After the close of each fiscal year, the procedures described in Article VI will be conducted to determine the actual suburban revenue requirement, based on actual costs incurred, allocated according to the formulas agreed upon, and utilizing actual water usage data. The amount properly allocable to the suburban purchasers pursuant to this Agreement shall be compared with the actual revenues received from the suburban purchasers during the fiscal year under review, as shown in the official accounting records of the SFWD. If the actual payment by the suburban purchasers is less than or more than the amount properly allocable to them under this Agreement (i.e., the actual suburban revenue requirement), the amount of the excess or deficit shall be entered in a "balancing account" (as described in Section 5.07) to be charged or credited to the suburban purchasers, as the case may be.

The amount of such charge or credit shall then be taken into account in determining the necessity for rate increases or decreases in the next ensuing fiscal year (e.g., FY 1986/87 for the amount posted to the balancing account for FY 1984/85) in the manner described in Section 5.07(b). Rates for the suburban purchasers will be increased or decreased as necessary to reflect the amount in the balancing account and the estimated suburban revenue requirement for that year, in accordance with the provisions of Section 5.07(b).

Section 5.02. *Budget Development.*

Two weeks before the submission of the annual SFWD and HHWPD budgets to the City's Public Utilities Commission, the General Manager of the SFWD and the General Manager of the HHWPD shall meet with the suburban purchasers to review and explain the proposed budgets of each Department for the ensuing fiscal year. The General Manager of the SFWD and the General Manager of the HHWPD may each designate an appropriate official of their respective departments to attend this meeting in his or her place, if, because of illness or other reasons beyond their control, he or she is unable to attend. Each suburban purchaser may nominate no more than one representative to attend this meeting and the City shall not be obligated to hold more than one such budget review meeting with the suburban purchasers in each fiscal year.

At least two weeks before this meeting, the City shall mail copies of the following documents to the Suburban Representatives appointed pursuant to Section 8.13:

1. Proposed SFWD operating and capital budgets for the ensuing fiscal year.
2. The SFWD's and HHWPD's most recent update of the current year's expenditures (the organization management performance report) and the balance sheet and income statement for the most recent fiscal year, if available.
3. Proposed HHWPD operating and capital budgets for the ensuing fiscal year.
4. Detailed calculation of the proposed Suburban Hetch Hetchy Assessment.
5. Projected bond sales, if any, for SFWD and HHWPD for the ensuing fiscal year.
6. Estimated City and Suburban consumption for the ensuing fiscal year.

Thereafter, the budget request of the General Manager of Utilities shall be sent to the Suburban Representatives at the same time it is sent to the SFPUC. Except for changes authorized by Section 5.03(b), any proposed changes in the structure of the rate schedule(s) applicable to the suburban purchasers for the ensuing fiscal year shall similarly be sent to the Suburban Representatives by five months prior to the start of the fiscal year or whenever they are available, whichever is sooner. All suburban purchasers shall be notified at least five days in advance of the date on which the SFPUC will hold hearings on the budget request.

The City will use its best efforts to provide the documents and hold the meetings in accordance with the foregoing schedule. However, the failure of the City to comply with the requirements set forth in this Section shall not invalidate any action taken by the City (including, but not limited to, any rate increase or decrease adopted by the City). In the event of such failure, the suburban purchasers may either invoke arbitration, as set forth in Section 8.02, or seek injunctive relief, to compel the City to remedy the failure as soon as is reasonably practical, and the City shall be free to oppose issuance of the requested judicial or arbitral relief on any applicable legal or equitable basis. The existence of this right to resort to arbitration shall not be deemed to preclude the right to seek injunctive relief.

The provisions of this Section requiring a meeting with the General Managers are not intended to preclude the suburban purchasers from appearing before the SFPUC or the City Board of Supervisors concerning the SFWD budget and/or suburban water rates.

Section 5.03. *Rate Adjustments.*

(a) *Budget-Coordinated Rate Adjustments.* Adjustments to the SFWD rate schedules that affect the suburban purchasers shall be coordinated with the budget development process in the manner set forth in this Section except to the extent that Section 5.03(b) authorizes emergency rate adjustments.

Should the City desire to increase the rates applicable to the suburban purchasers during the ensuing fiscal year in conjunction with the budget development process, the General Manager of Utilities shall prepare and distribute to the Suburban Representatives at the same time and in addition to the information required to be sent to the Suburban Representatives by Section 5.02, a tabulation based on the most recent budget which shows the following data:

(i) Projected revenue from the suburban purchasers for the ensuing fiscal year based on existing rates and estimated suburban consumption.

(ii) An estimate of how projected SFWD operating and maintenance expenses and property taxes for the ensuing fiscal year will be allocated between direct City, joint, and direct suburban categories pursuant to the methodology set forth in this Agreement and an estimate of how the joint operating and maintenance expenses and property taxes will be allocated between the suburban purchasers and the City pursuant to the methodology set forth in this Agreement.

(iii) Calculation of projected SFWD administrative and general expenses (including an estimate of how projected City overhead and the SFPUC charges will be allocated to the SFWD pursuant to the methodology set forth in this Agreement) and an estimate of how these administrative and general expenses will be allocated between the City and the suburban purchasers pursuant to the methodology set forth in this Agreement.

(iv) The projected Hetch Hetchy Assessment (including an estimate of how projected City overhead and the SFPUC charges will be allocated to HHWPD pursuant to the methodology set forth in this Agreement), and an estimate of how HHWPD expenses (including City overhead and SFPUC charges) will be allocated between water and power pursuant to the methodology set forth in this Agreement.

(v) Description of the assets to be added to the SFWD wholesale rate base and the HHWPD water-related rate base in the next fiscal year, including the proposed assignment of such assets into the categories described in Article IV and the resulting allocation of such assets between the City and the suburban purchasers; computation of the projected effective interest rate on

outstanding SFWD wholesale debt and outstanding HHWPD water-related debt; and the projected rate of return on equity for the SFWD wholesale rate base and the HHWPD water-related rate base.

In addition to the foregoing, the City shall distribute to the Suburban Representatives (i) copies of any proposed changes in the rate schedules, together with supporting documentation, at the time such materials are forwarded from the General Manager of the SFWD to the General Manager of Utilities; and (ii) copies of any proposed resolution submitted to the SFPUC calling a hearing on the proposed changes to the rate schedules, at the time such proposed resolution is submitted to or adopted by the SFPUC, whichever is earlier. At the time the material in (i), *supra*, is furnished to the Suburban Representatives, the Suburban Representatives shall also be sent the calculations required to be performed by Section 5.07(b) of the Estimated Suburban Revenue Requirement for the fiscal year for which rates are being set, the Revenue Discrepancy to be used for that fiscal year, and the Estimated Suburban Payment for that year.

The City will use its best efforts to provide the suburban purchasers with the information described above. However, the failure of the City to comply with the requirements set forth in this Section shall not invalidate any action taken by the City (including, but not limited to, any rate increase or decrease adopted by the City). In the event of such failure, the suburban purchasers may either invoke arbitration, as set forth in Section 8.02, or seek injunctive relief, to compel the City to remedy the failure as soon as is reasonably practical, and the City shall be free to oppose the issuance of the requested judicial or arbitral relief on any applicable legal or equitable basis. The existence of this right to resort to arbitration shall not be deemed to preclude the right to seek injunctive relief.

Because delays in the budget process or other events may cause the City to defer the effective date of rate adjustments applicable to the suburban purchasers until after the beginning of the City's fiscal year, nothing contained in this Agreement shall require the City to make any changes in the water rates charged to the suburban purchasers effective at the start of the City's fiscal year or at any other specific date. Nothing in the preceding sentence shall excuse non-compliance with the provisions of Section 5.02 and this Section.

(b) *Emergency Rate Increases.*

(1) The City may increase the water rates applicable to the suburban purchasers without complying with Section 5.03(a) if a drought, earthquake, other act of God, malfunctioning of the City's water delivery system or other emergency requires an increase in rates, prior to the date by which a rate increase adopted in conjunction with the next budget-coordinated rate review would become effective, to meet the SFWD's wholesale or the HHWPD's water-related estimated operating and capital expenses (i.e., debt service and capital outlays) in light of the emergency. Rates may be increased under this subsection to cover capital expenses only if the SFWD does not have sufficient unappropriated funds available for use and is unable to obtain sufficient funds, in the time necessary, through the issuance of bonds or from State or federal grants. Rates may be increased under this subsection to cover operating expenses (including Operating and Maintenance expenses and Administrative and General expenses) without regard to the existence of alternative means of financing such expenses. Any such emergency rate increase shall be accompanied by a rate increase for direct City water users of at least an equal percentage. Any such emergency rate increase need not be spread uniformly within the two classes (i.e., the class of direct City water users and the class of suburban purchasers) as long as the overall percentage increase for the suburban purchasers is no greater than the overall percentage increase for the direct City water users.

(2) The City may increase the water rates applicable to the suburban purchasers without complying with Section 5.03(a) to implement a water allocation plan imposed during times of water shortage pursuant to Section 7.03, as long as such changed rates impose no greater burdens on the suburban purchasers than on direct City water users for failure to abide by the allocation plan.

(3). The City will give the Suburban Representatives no less than ten days notice of the hearing before the SFPUC on a proposed emergency rate increase under Section 5.03(b)(1) or 5.03(b)(2); however, the failure of the City to provide such notice shall not invalidate any action taken by the City (including, but not limited to, any rate increase adopted by the City) unless the City has failed to substantially comply with this notice requirement. Any revenue derived from rates increased pursuant to Section 5.03(b)(1) or 5.03(b)(2) shall be subject to the balancing account described in Section 5.07. No rate increase authorized by Section 5.03(b)(1) or 5.03(b)(2) shall remain in effect for longer than eighteen months.

Section 5.04. *Rate Structure.*

Prior to August 1, 1983, the City determined water bills for individual suburban purchasers by reference to Schedule W-25 (Resale Use with Long Term Contract) contained in the Rate Schedules for Water Service as established by Resolution 79-0474 of the SFPUC on November 27, 1979. The City has amended this rate schedule, effective August 1, 1983 and expects to amend the rate schedule(s) applicable to the suburban purchasers additionally as needed during the Term of this Agreement to generate the estimated suburban revenue requirement for each fiscal year. This Agreement is not intended and shall not be construed to limit the City's right to adjust the structure of the rate schedule applicable to the suburban purchasers (i.e., the relationship among the several charges set out therein) nor shall anything in this Agreement be construed to limit the City's freedom to add, delete, or change the various charges which make up the rate schedule, provided that neither such charges nor the structure of the rate schedule(s) applicable to the suburban purchasers shall be arbitrary, unreasonable, or unjustly discriminatory as among said purchasers. (Nothing in the preceding sentence shall be construed or interpreted in derogation of the waiver in Section 5.05 of any claim by the suburban purchasers that the suburban revenue requirement, as determined by the provisions of and the methodology provided by this Agreement, is illegal, unreasonable, arbitrary or discriminatory in any manner.) The City will give careful consideration to proposals for changes in the rate schedule made jointly by the suburban purchasers but, subject to the limitations set out above, shall retain the sole and exclusive right to determine the structure of the rate schedule. The City will not change the structure of Schedule W-25 for three years (i.e., until the rates applicable to FY 1987/88) in order to allow time for the suburban purchasers to complete and submit a study of the rate schedule's structure now underway and for the SFPUC to consider it. Notwithstanding the preceding sentence, the City shall be free to make changes in the structure of the rate schedule within the three-year period to implement a water allocation plan imposed during times of water shortage pursuant to Section 7.03, provided that any such changed rate schedule shall impose no greater burdens on the suburban purchasers than on direct City users for failure to abide by the allocation plan. The City will endeavor insofar as it is reasonably practical to set forth the rates applicable to the suburban purchasers on a single rate schedule.

Section 5.05. *Waiver and Reservation re Methodology for Determining Suburban Revenue Requirement.*

(a) The suburban purchasers have heretofore asserted a right to water at cost by reason, among others, of rights claimed to be conferred by the Raker Act, and City has heretofore denied such assertions and claims. The purpose of this Agreement is to settle and compromise the different positions of the parties hereto as to said assertions and claims for the Term of this Agreement and nothing contained herein shall constitute an admission by any party hereto affecting, modifying, abrogating, limiting, or conceding its position as regards such assertions and claims, or as a waiver of its position, either in whole or in part. In particular, and without limitation, the suburban purchasers do not waive, and specifically reserve, their claim that the methodology employed under this Agreement for determination of the suburban revenue requirement (the "utility enterprise method") is not proper or valid under state and federal law (including, but not limited to, the Raker Act) and th

City does not waive, and specifically reserves, its claims that said methodology is proper and valid and does not violate state or federal law (including, but not limited to, the Raker Act), and that the rates generated by said methodology will produce less revenue to the City than would be justified by the full cost of the water delivered or is otherwise proper under state or federal law (including, but not limited to, the Raker Act.)

(b) Notwithstanding subsection (a), *supra*, in order to effect the settlement and compromise of the disputes of the parties during the Term of this Agreement, each suburban purchaser hereby covenants and agrees on its own behalf, and on behalf of all persons and entities to which it sells water, that it will not contend, during the Term of this Agreement, before any court or administrative tribunal or official, that the suburban revenue requirement, as determined by the provisions of and the methodology provided by this Agreement violates any provision of federal law (including, but not limited to, the Raker Act), state laws or the Charter of the City and County of San Francisco, or is unfair, illegal, unreasonable, arbitrary or discriminatory in any manner, except that the suburban purchasers expressly reserve, as provided in Section 8.01, the right to so contend as to any attempt by the City to include a charge for reduced net power revenues in the price of additional water over the amount specified in the Supply Assurance set forth in Section 7.01.

(c) Nothing contained in this Section shall prevent any suburban purchaser from pursuing any remedy provided by this Agreement for breach or violation of this Agreement or from seeking to enforce performance of the Agreement's terms and conditions.

Section 5.06. *Exclusions from Rate-Making Procedures.*

(A) The suburban purchasers shall not be charged with any of the following:

(1) any expense associated with the City's furnishing free water to its municipal departments (sometimes heretofore identified in the SFWD accounts as "Municipal Tax-Comparison");

(2) any expense associated with the City's accruals or allowances for uncollectible water accounts;

(3) any expense incurred by the City in hiring outside counsel to assist in arbitration and/or litigation concerning the respective rights and obligations of the City and the suburban purchasers under this Agreement;

(4) attorneys' fees incurred by the suburban purchasers which a court of competent jurisdiction orders the City to pay as part of a final, binding judgment against the City;

(5)(a) any expenses associated with creating or maintaining any reserves (other than the working capital component included in the SFWD and HHWPD rate bases, depreciation, and reserves for accounts payable expenses accrued and expected to be paid within one year, all as provided in Article IV);

(b) any expenses accrued in respect to pending or threatened litigation, damage or personal injury claims and other loss contingencies, accruals of which are required by the Financial Accounting Standard Board Statement No. 5 (March 1975) as amended; such expenses will, to the extent provided in Article IV, be charged to the suburban purchasers when they are actually paid;

(6) any expenses of installing, relocating, enlarging, removing, or modifying meters and service connections that are directly chargeable to and payable by the individual suburban purchaser for which the service is rendered pursuant to Section 8.15; or

(7) any expenses associated with the provision by the SFWD or the HHWPD to a suburban purchaser of any good or service other than the sale of water.

(B) The suburban purchasers shall not receive any credit for either of the following:

(1) any SFWD or HHWPD non-operating revenue or interest earned on SFWD or HHWPD funds;

(2) any HHWPD income derived from water sales to persons or entities other tha the SFWD.

Section 5.07. *Balancing Account.*

(a) *Operation.* After the close of each fiscal year, the City will compute the amount properly allocable to the suburban purchasers for that fiscal year pursuant to this Agreement based upon the actual costs incurred by the SFWD and HHWPD during the year in the categories described in Article IV and the actual suburban water usage rates, based upon the records of water deliveries maintained by the SFWD and HHWPD. This amount ("the final suburban revenue requirement" described in Section 6.02) will be compared to the actual revenues received from the suburban purchasers during the fiscal year under review, as shown in the official accounting records of the SFWD.

If the actual revenues received from the suburban purchasers for sales of water are more than the final suburban revenue requirement, the amount of the excess shall be posted to a "balancing account" to the credit of the suburban purchasers. If the actual revenues received from the suburban purchasers for sales of water are less than the final suburban revenue requirement, the amount of the deficit shall be posted to the balancing account as a charge against the suburban purchasers. There shall also be posted to the balancing account interest for the fiscal year under review equal to the product of the opening cumulative balance in the balancing account at the beginning of such year times the interest rate received by the City during such year on its invested pooled funds (as shown in the City Treasurer's Annual Report for that year). Interest, when posted, shall carry the same mathematical sign, whether positive or negative, as was carried by the opening cumulative balance for that year. The amount posted to the balancing account in each year shall be added to or subtracted from, as the case may be, the balance in the account from prior years to obtain the cumulative balance in the balancing account.

The parties recognize that a proposed amendment to the City Charter will be submitted to the voters of the City in June 1984 which would require that the Treasurer maintain all gross revenues of the SFWD in a separate fund whenever certain SFWD revenue bonds are outstanding. If this or a similar provision becomes effective and the City Treasurer is required to establish a "water department revenue fund" separate and apart from the funds of other City departments, the applicable interest rate for purposes of computing interest under this Section shall be the interest rate received by the SFWD on its invested funds and shall be calculated in the same manner as the Controller calculates the interest rate received by the City on its invested pooled funds.

There shall be no interest posted to the balancing account until the amount for the fiscal year ending June 30, 1988 has been posted to the balancing account. The first opening balance to which interest shall be added shall be the opening balance for fiscal year 1988/89.

(b) *Methodology for Utilizing Balancing Account in Budget Coordinated Rate Adjustment Process.* The purpose of this subsection is to establish a procedure which attempts to clear cumulative balances in the balancing account by taking previously posted overcharges or undercharges by the City into account for prospective rate making purposes, in accordance with the methodology described in this subsection. However, this methodology shall have no effect whatsoever upon the amount actually posted to the balancing account for any particular fiscal year or upon the cumulative balance in the balancing account. These matters shall in all cases be determined in accordance with Section 5.07(a), based upon the actual revenues received from the suburban purchasers in that year and the Final Suburban Revenue Requirement for that year, as audited in accordance with Article VI.

For prospective rate making purposes, whether rates applicable to the suburban purchasers are to be increased or reduced for a particular fiscal year shall be determined by a comparison between the Estimated Suburban Payment and the Adjusted Estimated Suburban Revenue Requirement for that year, in accordance with the following methodology:

In conjunction with the budget development process described in Sections 5.02 and 5.03, the City shall estimate, without regard to the amount in the balancing account, (1) the suburban revenue requirement for the fiscal year for which the budget is being developed (the "Estimated Suburban Revenue Requirement"), and (2) the total suburban payments which would be made during that fiscal year at existing rates and projected levels of water consumption, (the "Estimated Suburban Payment").

The Estimated Suburban Revenue Requirement shall then be adjusted by subtracting therefrom the Revenue Discrepancy (as defined in the next paragraph) to produce the "Adjusted Estimated Suburban Revenue Requirement." (For example, in setting rates for the fiscal year 1990/91, the City shall, in the fiscal year 1989/90, estimate the Estimated Suburban Revenue Requirement for 1990/91, and then shall subtract therefrom the Revenue Discrepancy to produce the 1990/91 Adjusted Estimated Suburban Revenue Requirement.)

The Revenue Discrepancy to be used for the fiscal year for which rates are being set (e.g., 1990/91) shall be determined as follows:

(1) In the fiscal year during which the rates are being set (e.g., 1989/90), the ending balance in the balancing account for the prior completed fiscal year (e.g., 1988/89) shall be determined. This procedure is described in Steps A and B of Exhibit O.

(2) To the ending balance in the balancing account for the prior completed fiscal year (e.g., 1988/89), there shall be added (a) estimated interest for the current fiscal year (i.e., the fiscal year in which the budget is being developed (e.g., 1989/90)), as shown in Step C-1 of Exhibit O, and (b) the Estimated Revenue Differential for the current fiscal year. The Estimated Revenue Differential shall be determined by subtracting from the Current Expected Suburban Payment (as defined below) for the current fiscal year (e.g., 1989/90), the Estimated Suburban Revenue Requirement (as defined hereinabove) for the current fiscal year (e.g., 1989/90). (The calculation of the Estimated Revenue Differential is described in Step C-2 of Exhibit O.) The sum resulting from the operations described in this sub-paragraph shall be called the Required Revenue Adjustment. (See Step C-3 of Exhibit O.)

(3) To the Required Revenue Adjustment there shall be added estimated interest for the fiscal year for which the budget is being developed (e.g., 1990/91). This procedure is described in Step C-4 of Exhibit O.

(4) The sum resulting from the additions described in sub-paragraphs (1) through (3) above is the Revenue Discrepancy to be used for the fiscal year for which rates are being set (e.g., 1990/91).

If the Adjusted Estimated Suburban Revenue Requirement for the fiscal year for which the rates are being set (e.g., 1990/91) exceeds the Estimated Suburban Payment for such fiscal year, then rates applicable to the suburban purchasers may be increased to generate the Adjusted Estimated Suburban Revenue Requirement ± $50,000, at projected levels of water consumption.

If the Estimated Suburban Payment for such fiscal year (e.g., 1990/91) exceeds the Adjusted Estimated Suburban Revenue Requirement for such year by more than two percent (2%), then rates applicable to the suburban purchasers shall be reduced to generate the Adjusted Estimated Suburban Revenue Requirement ± $50,000, provided that nothing contained in this Agreement shall either prohibit or compel a rate reduction if such excess is two percent (2%) or less.

The Current Expected Suburban Payment for any given fiscal year shall mean the amount of revenue expected to be received by the City in that fiscal year based on the rates which it adopted for that fiscal year and the levels of water consumption projected for that fiscal year when that fiscal year's rates were set.

In performing the algebraic operations required by the foregoing methodology, the proper signs, whether negative or positive, of the numbers to be added or subtracted shall be taken into account.

In ascertaining the Revenue Discrepancy pursuant to this subsection for any given fiscal year, final audited figures shall be used as that fiscal year's opening balance in the balancing account, the Actual Suburban Revenues Received in that fiscal year, the Final Suburban Revenue Requirement for that fiscal year, and that fiscal year's ending balance in the balancing account. If final audited figures are not available, unaudited figures shall be used, but only for the purposes of carrying out the methodology described in this subsection.

In applying the methodology described above, the interest rate used to calculate the estimated interest for the current fiscal year and the next fiscal year shall be equal to the interest rate which was applied to the opening balance in the balancing account for the immediately preceding completed fiscal year pursuant to Section 5.07(a). (For example, when setting rates for the fiscal year 1990/91, the interest rate used for calculating the estimated interest for fiscal year 1989/90 and fiscal year 1990/91 shall be equal to the interest rate specified in Section 5.07(a) for fiscal year 1988/89.)

In implementing the methodology described in this subsection, the following qualifications shall apply:

This subsection shall not apply to rate-making for the fiscal year 1985/86. This subsection shall apply to rate-making for the fiscal year 1986/87, but: (1) the opening balance for fiscal year 1984/85 shall be equal to zero; (2) the Estimated Revenue Differential for the fiscal year 1985/86 shall be deemed equal to zero; and (3) no interest charges, either actual or estimated, shall be used in applying the foregoing methodology to rate-making for that fiscal year. This subsection shall apply to rate-making for the fiscal year 1987/88, but no interest charges, either actual or estimated, shall be used in applying the foregoing methodology to rate-making for that fiscal year. This subsection shall apply to rate-making for the fiscal year 1988/89, but no interest charges shall be added pursuant to Steps B-2 (e.g., for fiscal year 1986/87) and C-1 (e.g., for fiscal year 1987/88) in Exhibit O in applying the methodology to rate-making for that year; the estimated interest rate to be applied for the fiscal year 1988/89 under Step C-4 of Exhibit O shall be the interest rate specified in subsection 5.07(a) which would have been applied to the cumulative balance in the balancing account for the fiscal year 1986/87 but for the moratorium on interest specified in subsection 5.07(a). This subsection 5.07(b) shall apply to rate-making for the fiscal year 1989/90, but: (1) no interest charges shall be added pursuant to Step B-2 in Exhibit O (i.e., interest for the fiscal year 1987/88); and (2) the estimated interest rate to be applied for the fiscal year 1988/89 (under Step C-1 of Exhibit O) and for the fiscal year 1989/90 (under Step C-4 of Exhibit O) shall be the interest rate specified in subsection 5.07(a) which would have been applied to the cumulative balance in the balancing account for the fiscal year 1987/88 but for the moratorium on interest specified in subsection 5.07(a).

In setting rates for each fiscal year thereafter during the Term of this Agreement, commencing with setting rates for the fiscal year 1990/91, the methodology described in this subsection shall apply without qualification.

(c) *Exclusions from Revenue.* For purposes of this Section, "actual revenues received from the suburban purchasers for sales of water" shall not include: (1) amounts, if any, paid by any suburban purchaser, pursuant to Section 8.14, for water delivered through the SFWD's in-City water distribution system, in excess of the average charge per ccf. of water it and the other suburban purchasers pay for water not delivered through the SFWD's in-City water distribution system; (2) any amount directly paid by a suburban purchaser for the installation, relocation, or removal of meters and service pursuant to Section 8.15, the City's W-41 rate schedule, and Section E(8) and (9) of the SFWD's Rules and Regulations Governing Water Service to Consumers, as they may be amended from time to time; or (3) any other amounts received by the SFWD from a suburban purchaser for goods or services other than the sale of water.

(d) *Arbitration.* The City's implementation of Section 5.07(a) and (b) is subject to the arbitration remedy provided in Section 8.02, in accordance with the limitations on that remedy provided for herein. In the event that the methods that the City has used to estimate suburban revenue requirements and/or suburban payments have caused a persistent cumulative credit to the suburban purchasers in the balancing account resulting in a cumulative balance of seven and one-half percent of the annual suburban revenue requirement for any individual fiscal year, the suburban purchasers may invoke the arbitration remedy set forth in Section 8.02 and the arbitrator shall have discretion to enter either or both of the following orders:

(1) If the arbitrator finds that the existence of such persistent, cumulative credit demonstrates that the procedures set forth above in Section 5.07(b) are not functioning to clear the balancing account, the arbitrator may enter an order that the City refund to the suburban purchasers the cumulative credit in the balancing account. This refund shall take the form of a credit divided into twelve equal monthly installments to be offset against the monthly water bills sent to the suburban purchasers during the fiscal year in which rates adopted in conjunction with the next budget-coordinated rate review following the arbitration award would become effective, provided that in no event will the refund be commenced later than 18 months from the arbitration award. The credit shall be allocated among the suburban purchasers in accordance with their pro rata share of all water purchased by the suburban purchasers from the City during the fiscal year immediately prior to the year in which the demand for arbitration was served.

(2) If the arbitrator finds that such an order is necessary to prevent a repetition of the persistent cumulative credit, the arbitrator may enter an order that the City cease using the method of estimating suburban revenue requirements and/or suburban payments that have caused the persistent cumulative credit to the suburban purchasers in the balancing account.

The arbitration remedy shall be the exclusive remedy for any claimed violation by the City of Section 5.07(a) and (b).

(e) *Disposition of Ending Balance.* After the expiration of the Term, the audit procedures described in Article VI will be performed for the final year of the Term and the cumulative ending balance in the balancing account (including the results of that year's operations) will be determined.

The ending balance, if a credit in favor of the suburban purchasers, will be refunded to the suburban purchasers and, if a charge against them, shall be collected from them. The refund or collection shall take the form of a credit or surcharge divided into twelve equal monthly installments to be offset against or added to the monthly water bills sent to the suburban purchasers during the fiscal year immediately following the determination of the ending balance (i.e., FY 2010/11). The credit or surcharge shall be allocated among the suburban purchasers receiving or subject to it (i.e., those purchasing water from the City during FY 2010/11) in accordance with their pro rata share of all water purchased by all suburban purchasers likewise receiving or subject to the credit or surcharge from the City during the last fiscal year of the Term (i.e., FY 2008/09). No suburban purchaser which is not purchasing water from the City during the year in which the credit or surcharge shall be subtracted from or added to the water bills (i.e., FY 2010/11) shall be entitled or subject to any portion of the credit or surcharge.

If this Agreement is extended beyond its present Term, or if the City and some or all of the suburban purchasers enter into a new contract, the parties to the extended Agreement or new contract may postpone their pro rata portion of the refund or surcharge described in this subsection until the end of the term of the extended Agreement or new contract.

(THIS PAGE INTENTIONALLY LEFT BLANK)

ARTICLE VI

ACCOUNTING PROCEDURES; COMPLIANCE AUDIT

Section 6.01. *City Accounting Practices.*

(a) *General Rule.* The City will maintain the accounting records of the SFPUC, the SFWD and the HHWPD in a format and level of detail sufficient to allow it to determine the annual suburban revenue requirement and to allow its determination of the suburban revenue requirement to be audited as provided in this Article.

(b) *SFWD.* The City will continue to maintain the accounting records of the SFWD in accordance with the Uniform System of Accounts for Class A Water Utilities as adopted and prescribed by the CPUC from time to time, insofar as it is applicable to publicly owned and operated utilities. In addition, the SFWD will maintain an account structure which segregates SFWD operating and maintenance expenses (and any administrative and general expenses as to which the location in which they are incurred is relevant) and utility plant by geographic location into in-City and wholesale categories.

(c) *HHWPD.* The City will continue to maintain the accounting records of the HHWPD in accordance with the Uniform System of Accounts for Class A Electric Utilities as adopted and prescribed by the CPUC from time to time, insofar as it is applicable to publicly owned and operated utilities. In addition, the HHWPD will maintain an account structure which segregates HHWPD expenses and utility plant into water-specific, power-specific and joint categories.

(d) *Utility Plant Ledgers.* Both the SFWD and the HHWPD will maintain a subsidiary utility plant ledger that contains unique identification numbers for all assets added to the rate base after June 30, 1983 and identifies the original cost, accumulated depreciation, and annual depreciation expense for each asset so capitalized.

(e) *Supporting Documentation.* The SFWD, the HHWPD and the SFPUC, as appropriate, will maintain documentation identifying and supporting

(1) the division of the SFPUC charge into "Class A" and "Class B" categories, as defined in Section 4.08(a)(1)(B);

(2) the portion of total interest expense related to each series of each bond issue;

(3) the portion of total bonded debt outstanding related to each series of each bond issue;

(4) the use of the proceeds of each bond issue in sufficient detail to permit the calculation of the SFWD and HHWPD debt/equity ratios, and the average outstanding balance and cost of SFWD wholesale debt and HHWPD water-related debt.

(f) *Accounting Principles.* The City shall record transactions of the SFPUC, SFWD and HHWPD in conformity with applicable generally accepted accounting principles, as amended from time to time, except if those principles are inconsistent with an explicit provision of this Agreement.

(g) *Changes in Accounts or Accounting Practices.* Subject to the foregoing provisions of this Section, the City, the SFPUC, the SFWD or the HHWPD may change their accounting systems, charts of accounts or account to which individual expenses are posted, provided that the allocation of any expense to the suburban purchasers pursuant to the methodology set forth in this Agreement shall not be changed in whole or in part merely because of a change in: (1) the account to which such expense is posted; (2) the accounting system or chart of accounts used by the City, the SFPUC, the SFWD or the HHWPD; or (3) the organizational structure of the SFPUC, SFWD or HHWPD. The SFPUC, SFWD, and HHWPD will make available to the Auditor appointed pursuant to Section 6.03 a copy of their charts of accounts for the beginning of the fiscal year in question and a copy of their charts of accounts for the end of the fiscal year so that the Auditor can identify all changes in the account structure. At the time the interim suburban revenue requirement is delivered to the Auditor, the City also will notify the Auditor in writing of any changes made during the fiscal year

in the City's policies for assigning assets and expenses to particular SFPUC, SFWD or HHWPD accounts, including changes in the allocational bases for assigning SFPUC costs to the SFWD and HHWPD. A copy of this notice will be sent to the Suburban Representatives.

(h) *Unavailability of Financial Data.* The parties recognize that financial data required for the calculation of the final suburban revenue requirement occasionally may be unavailable. In that event, the City shall substitute an estimate for the data which are unavailable.

The estimate shall: (1) be reasonable; (2) result in a fair allocation of the costs affected by the estimate; and (3) be derived through the use of a suitable estimating technique. Estimating techniques employed shall be consistently applied to comparable instances of unavailable data.

In any case in which estimated, rather than actual, data are used to calculate the final suburban revenue requirement, the City shall notify the Suburban Representatives thereof at the time the final suburban revenue requirement is furnished to the Auditor. The notice shall contain: (1) a description of the unavailable data and the estimate used in place thereof; (2) an explanation of the cause of the data's unavailability; (3) the assumptions underlying the City's estimate; and (4) a statement of whether the event which caused the unavailability is capable of being avoided in the future and, if so, how.

In addition, if, while preparing the interim suburban revenue requirement, the City discovers that data are likely to be unavailable and that an estimate will likely be required to prepare the final suburban revenue requirement, it shall notify the Suburban Representatives and the Auditor as soon as possible thereafter.

The City shall, upon request, meet with the Suburban Representatives to discuss the unavailability of data and the City's estimate therefor. The parties may agree to engage an independent accountant or consultant (other than the Auditor or the Suburban Auditor) to recommend a mutually acceptable estimate for the unavailable data.

If actual data for which an estimate is used become available within eighteen months after the receipt (as defined in Section 8.02) of the Auditor's Report for the fiscal year in which the estimated data were used in calculating the final suburban revenue requirement, then the difference between the suburban revenue requirement calculated using the estimated data and that calculated using the actual data shall be determined. If that difference is greater than one-half of 1 percent of the final suburban revenue requirement for the fiscal year in which estimated data were used, then the difference shall be taken into account as an adjustment to the suburban revenue requirement for the year in which the data become available.

In order to minimize the likelihood that necessary financial data will be unavailable, the City will maintain two sets of data which are stored in either microfiche form or in some form of electronic storage (e.g., on magnetic tape), one set of which will be kept in the vault at 425 Mason Street, or at some other secure location. Data for a given fiscal year shall be maintained for at least three years from the fiscal year's close.

This Section is not applicable to Exhibit J, Section D of which defines the procedures governing the unavailability of water use data necessary to perform the calculations set forth therein.

Section 6.02. *Calculation of Suburban Revenue Requirement.*

Within three months after the close of each fiscal year (commencing with fiscal year 1984/85) the City will prepare a document, substantially in the form of Exhibit I, showing the calculation of an interim suburban revenue requirement for the preceding fiscal year based upon recorded expenses and recorded water usage.

The interim suburban revenue requirement may be revised by the City during the course of the compliance audit described in Section 6.04 and shall be revised to reflect any changes in recorded expenses required as a result of the audit of the SFWD and HHWPD conducted pursuant to the

City Charter and any corrections in the recorded water usage data to reflect actual usage. At the close of the audit, the City shall prepare a document, substantially in the form of Exhibit I, showing the calculation of a final suburban revenue requirement, which shall be submitted to the Auditor as the basis for its report in accordance with Section 6.05.

The City will furnish these calculations of the interim and final suburban revenue requirements to the Suburban Representatives, and shall make available to the Suburban Representatives, upon their request, supporting documentation which contains the data, identification of the sources of the data, and calculations made by the City in deriving the interim and final suburban revenue requirements. Upon request, the City will provide the Suburban Representatives with an explanation of the calculation of the interim suburban revenue requirement. The Suburban Representatives shall be given access to and shall be permitted to copy, at their own expense, all data and worksheets relevant to the calculation of the interim and final suburban revenue requirements.

Section 6.03. *Appointment of Independent Auditor.*

(a) *Purpose.* The purpose of this section is to provide for an annual audit by an independent certified public accountant of the procedures followed and the underlying data used by the City in calculating the interim and final suburban revenue requirements for the preceding fiscal year, to determine whether the interim and final suburban revenue requirements have been calculated in accordance with the terms of this Agreement and whether amounts paid by the suburban purchasers in excess of or less than the final suburban revenue requirement have been posted to the balancing account, together with interest as provided in Section 5.07(a).

(b) *Method of Appointment.* The City's Controller shall select an independent certified public accountant ("the Auditor") to conduct the compliance audit described below. Subject to approval by the Controller and the General Manager of the SFWD, the Auditor shall have the authority to hire such consultants as it deems necessary or appropriate to assist in the audit. The Auditor may be the same independent certified public accountant as is hired by the Controller to audit the books and records of the SFWD and/or the HHWPD.

The costs of the compliance audit shall be segregated from the cost of other auditing work, if any, performed by the Auditor for the City and allocated one-half to the City and one-half to the suburban purchasers. The terms of this Article shall be incorporated into the contract between the City and the Auditor, and the suburban purchasers shall be deemed to be third-party beneficiaries of said contract. The City shall use its best efforts to see to it that the Auditor complies with the provisions of Sections 6.04 and 6.05, but shall not be liable to the suburban purchasers for any failure by the Auditor to comply with the said sections or to conduct the audit in compliance with generally accepted accounting standards.

Section 6.04. *Conduct of Compliance Audit.*

(a) *Standards.* The Auditor shall perform the compliance audit in accordance with Generally Accepted Auditing Standards. In particular, its review shall be governed by the standards contained in Section AU 621.09 through AU 621.13 (Reports on Specified Elements, Accounts or Items of a Financial Statement) of the AICPA, *Professional Standards,* as amended from time to time.

(b) *Preliminary Meeting; Periodic Status Reports; Access to Data.* Prior to commencing the audit, the Auditor shall meet with the City and the Suburban Representatives to discuss the scope of work, the procedures to be employed and the schedule to be followed. No change in the level of precision, confidence level or audit procedures defined in Section 6.04(c), however, may be made without the consent of both the City and the Suburban Representatives. During the course of the audit, the Auditor shall keep the City and Suburban Representatives informed of any unforeseen problems or circumstances which could cause a delay in the audit or a significant expansion of the audit's scope. The Auditor shall be given full access to all records of the SFWD, HHWPD and other City departments that the Auditor deems necessary for the audit.

(c) *Level of Precision and Audit Procedures.* The Auditor shall perform the audit based on a precision level of ±1 percent of the City's computation of the suburban revenue requirement for the fiscal year under audit, using a confidence level of 99 percent, for the compliance audits covering fiscal years 1984/85 through 1986/87 and a precision level of ± one-half of 1 percent (with the same confidence level) thereafter. The Auditor shall review the City's calculation of the interim and final suburban revenue requirements and the underlying data in order to carry out the purpose of the audit described in Section 6.03(a) and to issue the report prescribed by Section 6.05. At a minimum the Auditor shall perform the following procedures:

(1) *SFWD Operating and Maintenance Expenses.* The Auditor shall review the SFWD cost ledgers to determine whether the recorded operating and maintenance expenses fairly reflect the costs incurred, reasonably reflect the geographic location at which the costs were incurred and are recorded on a basis consistent with applicable generally accepted accounting principles, as amended from time to time. The Auditor also shall determine whether the amount of operating and maintenance expenses incurred in the wholesale division or allocated as outside-City expenses pursuant to this Agreement were allocated to the suburban purchasers in accordance with the methodology set forth in this Agreement.

(2) *Administrative and General Expenses.* The Auditor shall review the SFWD cost ledgers and other appropriate financial documents, including those of the SFPUC, to determine whether the recorded administrative and general expenses fairly reflect the costs incurred by or allocated to the SFWD and whether they are recorded on a basis consistent with applicable generally accepted accounting principles, as amended from time to time.

The Auditor also shall determine (a) whether the City overhead expenses and SFPUC charges were allocated to the SFWD in accordance with this Agreement and (b) whether the amount of administrative and general expenses allocated to the suburban purchasers was determined as provided by this Agreement.

(3) *Property Taxes.* The Auditor shall review the SFWD cost ledgers to determine whether the amount of property taxes recorded therein fairly reflects the property tax expense incurred by the City on behalf of SFWD property and whether there has been deducted from the amount to be allocated all taxes actually reimbursed to the City by tenants of SFWD property under leases that require such reimbursement.

The Auditor also shall determine whether the amount of property taxes to be allocated to the suburban purchasers was based on the methodology set forth in this Agreement.

(4) *Return on Rate Base.* The Auditor shall review such supporting documentation and utility plant ledgers as it deems necessary to determine whether: (1) changes in the rate base have been fairly reflected; (2) the cost of each asset has been assigned in accordance with Section 4.06 and/or Exhibit B of this Agreement; and (3) the debt percentage, the equity percentage, the return on debt, the return on equity, the overall rate of return and the suburban purchasers' share of return on rate base have been calculated in accordance with the methodology set forth in this Agreement.

(5) *Depreciation.* The Auditor shall review such supporting documentation and utility plant ledgers as it deems necessary to determine whether the total SFWD depreciation expense and the depreciation expense allocated to suburban purchasers were calculated in accordance with the methodology set forth in this Agreement.

(6) *Suburban Hetch Hetchy Assessment.* The Auditor shall determine whether the SFWD calculated the Suburban Hetch Hetchy Assessment in accordance with the principles set forth in this Agreement.

(A) *Operating and Maintenance Expenses, Administrative and General Expenses, Property Taxes.* The Auditor shall review the cost ledgers of the HHWPD and other appropriate

financial documents, including those of the SFPUC, to determine whether the expenses recorded fairly reflect the expenses incurred by or allocated to the HHWPD; whether expenses have been allocated among water-specific, joint, and power-specific categories in accordance with the methodology set forth in this Agreement; whether joint expenses have been reallocated to water and power in accordance with the methodology set forth in this Agreement; and whether water-related HHWPD expenses have been allocated to the suburban purchasers in accordance with the principles set forth herein.

(B) *Return on Rate Base.* The Auditor shall review such supporting documentation and utility plant ledgers as it deems necessary to determine whether (1) changes in the rate base have been fairly reflected, (2) the cost of each asset has been assigned in accordance with Section 4.08(a)(4)(i) and/or Exhibit H of this Agreement; and (3) the debt percentage, the equity percentage, the return on equity, the overall rate of return and the suburban purchasers' share of return on rate base have been calculated in accordance with the methodology set forth in this Agreement.

(C) *Depreciation.* The Auditor shall review such supporting documentation and utility plant ledgers as it deems necessary to determine whether the total HHWPD water related depreciation expense and the depreciation expense allocated to suburban purchasers were calculated in accordance with the methodology set forth in this Agreement.

(7) *Review of Contract Administration Costs.* The Auditor shall perform (1) a review of the supporting documentation used to determine the CPI adjustments provided for in Section 4.04 and (2) a review of the expenses charged to Account No. 6-49024 (Implementation and Administration of Suburban Settlement Agreement) to determine if these expenses were connected to the implementation or administration of this Agreement, taking into account the provisions of Section 4.04(c).

(8) *Review of Water Usage Rate Calculations.* The Auditor shall verify the mathematical accuracy of the calculations used by the City to derive the water usage rates defined in Exhibit J.

(d) *Use of and Reliance on Audited Financial Statements and Water Use Data.*

(1) In performing the audit, the Auditor shall incorporate any adjustments to the cost ledgers recommended by the independent accountant who has audited the financial statements of the SFPUC, SFWD and HHWPD as required by the Charter of the City. The Auditor may rely upon the work performed by that independent auditor if the Auditor reviews the work and is willing to take responsibility for it as part of the Auditor's audit.

(2) In performing the audit and issuing its report, the Auditor may rely on water use data furnished it by the SFWD, regardless of whether the suburban purchasers contest the accuracy of such data. The Auditor shall have no obligation to independently verify the accuracy of the water use data provided to it by the City; however, the Auditor shall disclose in its report any information in its possession which indicates that the water use data provided it by the City are inaccurate in any significant respect. Any error which would affect the City's calculation of the final surburban revenue requirement by one-half of 1 percent or more shall be deemed significant.

Section 6.05. *Issuance of Auditor's Report.*

The City will require the Auditor to issue its report no later than six months after the close of the fiscal year under audit.

The Auditor's report shall be addressed and delivered to the City and the Suburban Representatives and shall contain the following:

(1) An indentification of the material audited.

(2) A statement that the examination was made in accordance with generally accepted auditing standards.

(3) A description of the scope of the Auditor's work.

(4) An identification and description of the basis on which the material audited was prepared and of any variations between the basis on which it was prepared and the basis on which it should have been prepared.

(5) A description of any significant interpretations or assumptions regarding this Agreement made by the City in calculating the final suburban revenue requirement or by the Auditor in performing the audit.

(6) A statement whether or not in the Auditor's opinion (subject to the provisions of Section 6.04(d)(2)) the final suburban revenue requirement is fairly stated and has been calculated by the City in accordance with this Agreement and whether the amount posted by the City to the balancing account as a credit or charge to the suburban purchasers properly reflects the difference between the actual amounts paid by the suburban purchasers and the final suburban revenue requirement together with interest as provided for in Section 5.07(a). The Auditor shall also calculate the cumulative balance in the balancing account, after giving effect to the amount posted for the fiscal year under audit.

(7) A description of any significant changes in the City's accounting practices from the preceding year. Any change which would affect the City's calculation of the final suburban revenue requirement by one-half of 1 percent or more will be deemed significant.

(8) A statement whether or not, in the Auditor's opinion, the final suburban revenue requirement (for years after FY 1984/85) was prepared on a basis consistent with the preceding year.

(9) A statement whether, if the City has used estimated data in calculating the final suburban revenue requirement, the estimate was made in accordance with the requirements of Section 6.01(h).

Section 6.06. *Suburban Review.*

If the Suburban Representatives are not satisfied with the compliance audit conducted by the Auditor, the suburban purchasers shall have the right, at their own expense, to designate an auditor of their own ("the Suburban Auditor") to conduct a review ("the Suburban Review") of the Auditor's Report. The suburban purchasers shall reimburse the City for half of any overtime wages and related expenses paid by the City to its employees for time spent assisting or cooperating with the Suburban Auditor in connection with the suburban review.

The scope of the suburban review shall be limited to those portions of the Auditor's compliance report as are designated by the Suburban Representatives in a letter submitted by them or on their behalf to the General Manager of the SFWD, with copies to the Controller, the General Manager of the HHWPD, and the Auditor, within three months after receipt by the Suburban Representatives of the Auditor's compliance report. This designation shall be complete upon the receipt of said letter by the General Manager of the SFWD within the time indicated. If the Suburban Representatives designate only a portion of the Auditor's compliance report for review by the Suburban Auditor, and the Suburban Auditor's review of that portion causes the Suburban Auditor to believe that other portions of the Auditor's compliance report should be reviewed as well, the Suburban Representatives shall promptly designate such additional portions for further review by the Suburban Auditor by serving notice of such designation upon the General Manager of the SFWD and the Auditor. The Suburban Auditor shall have the right to review those portions of the City's records and the Auditor's working papers that are pertinent to the portions of the Auditor's compliance report that have been designated in accordance with this paragraph.

At the conclusion of the Suburban Auditor's review, representatives of the City and the Suburban Representatives shall meet to discuss any differences between them concerning the City's compliance with this Agreement during the previous year or the calculation of the previous year's final suburban revenue requirement. If such differences cannot be amicably resolved, the dispute shall be submitted to arbitration in accordance with Section 8.02 of this Agreement.

ARTICLE VII

WATER SUPPLY

Section 7.01. *Supply Assurance.*

The City agrees to supply water to the suburban purchasers as required, subject to a maximum annual average metered supply of water ("the Supply Assurance") equal to 184 million gallons per day (mgd), unless said amount is modified pursuant to the provisions of Section 2.01(d). This Supply Assurance shall be for the benefit of the suburban purchasers only, and no water sold by the City to any other person or entity (including, without limitation, any City departments or other entities associated with the City, wherever located, or any other water customer of City) shall be included within the Supply Assurance.

Notwithstanding the Supply Assurance established by this Section and the individual supply guarantees established by the presently-existing or recently-expired contracts between the City and the suburban purchasers and Section 7.02, the amount of water made available by the City to the suburban purchasers is subject to reductions, in accordance with Section 7.03, made necessary by reason of water shortage, drought, earthquakes, other acts of God, or rehabilitation or malfunctioning of the City's water delivery system, to the extent that and for the period that such events or circumstances prevent the City from fulfilling the Supply Assurance (including the individual guarantees) and the needs of the direct City water users. In the event of such a reduction, the City will restore its ability to fulfill the Supply Assurance (including the individual guarantees) and to meet the needs of direct City water users as soon as is reasonably practical.

The City agrees to use its best efforts to keep the SFWD and HHWPD water delivery system in good working order and repair. The City further agrees not to sell water to any resale or non-resale purchaser which is located outside the City's geographical limits and which was not purchasing water from the City on June 30, 1983, deliveries to which, either individually or in the aggregate, would impair the City's ability to fulfill the Supply Assurance. Tenants, lessees, and purchasers (and their successors in interest) of City property and City departments and agencies shall not be considered new purchasers within the meaning of this paragraph.

The Supply Assurance shall survive the termination of this Agreement and the Individual Contracts entered into pursuant hereto.

The parties acknowledge that the Supply Assurance is expressed in terms of daily deliveries on an annual average basis and does not itself constitute a guarantee by the City to meet peak daily or hourly demands of the suburban purchasers at the time their annual usage equals the Supply Assurance, irrespective of what those peak demands may be. The parties acknowledge, however, that the existing system has been designed and constructed to meet peak daily and hourly demands and that its capacity to do so has not yet been reached. The City agrees to operate the existing system to meet peak requirements of the suburban purchasers to the extent possible without adversely affecting its ability to meet peak demands of in-City customers. This Agreement is not intended to preclude the City from undertaking to meet specific peak demand requirements of individual suburban purchasers in the Individual Contracts.

Section 7.02. *Allocation of Supply Assurance.*

(a) The parties recognize that all the suburban purchasers have presently existing or recently-expired water supply contracts with the City and that certain, although not all, of these contracts contain provisions requiring the City to continue to supply the particular suburban purchaser with a specified amount of water after the expiration thereof unless and until a new contract between the City and the suburban purchaser is signed. The parties further recognize that two of these contracts (those between the City and the Alameda County Water District and between the City and the Dimond Public Utility District) contain supply guarantee provisions which fix the amount

of water guaranteed by the City by reference to water used during a calendar year (1984) not completed until after the effective date of this Agreement. Finally, the parties recognize that the contract between the City and the Estero Municipal Improvement District ("Estero") contains a supply guarantee provision which fixes the amount of water to be guaranteed by the City by reference to a year (2011) beyond the Term of this Agreement and that the contract between the City and the City of Hayward ("Hayward") does not contain an expiration date.

The intention of the parties to this Agreement is to preserve the entitlement of each suburban purchaser to the amount of water which it is or will be guaranteed by its presently existing or recently expired contract, that such guarantees shall continue to exist subsequent to the signing of this Agreement and the Individual Contracts, and that such guarantees (as they may be enlarged pursuant to Section 7.02(b)(3)) shall survive the expiration of this Agreement and the Individual Contracts.

Exhibit K-1, attached hereto, is a list which identifies the suburban purchasers (except Estero and Hayward) which shall be entitled to a specified quantity of water pursuant to this Section, by virtue of their existing contracts or this Agreement, and the quantity of water presently guaranteed to each. (The quantities set forth in Exhibit K-1 shall fix the present supply guarantee to each listed entity which becomes a party to this Agreement. However, neither those quantities nor the quantities set forth in Exhibit K-2 shall fix the present supply guarantee of any listed entity which does not become a party to this Agreement. The City and any such entity shall be free to use any relevant data (not including Exhibits K-1 and K-2) in determining the quantity of water to which such entity may be entitled under its existing or expired contract with the City.)

(b) The water entitlements guaranteed by the presently existing or recently expired contracts shall be included in the Supply Assurance. The Supply Assurance shall be allocated in the following manner:

First, the water used by Estero and Hayward shall, if each is a party to this Agreement, be subtracted from the Supply Assurance; the remainder shall be called the "suburban allocable water." (If Estero and/or Hayward is not a party to this Agreement, the Supply Assurance itself shall be periodically reduced as provided in Section 2.01(d); and the usage of whichever entity is not a party will not be subtracted from the Supply Assurance as so reduced.)

Second, the total amount of water presently set forth in Exhibit K-1 (127.55 mgd, subject to adjustment based on actual 1984 usage by Alameda County Water District and in the Dimond Public Utility District service area as described in Exhibit K-1) shall be subtracted from either (1) the suburban allocable water as defined by the preceding paragraph or (2) the Supply Assurance as adjusted in accordance with Section 2.01(d), whichever is applicable; the remainder produced by this subtraction shall be deemed "residual water". The residual water shall then be allocated as follows:

(1) If the suburban purchasers (other than Estero and Hayward) duly approve an allocation of some or all of the residual water, either unanimously or pursuant to a decision-making process previously ratified by the suburban purchasers, the City shall, upon reasonable notice of any such allocation, make reasonable efforts to apportion the residual water among the suburban purchasers in conformity therewith. The suburban purchasers shall notify the City of any allocation so approved by June 30 of each year, to be effective during the following fiscal year.

(2) If the suburban purchasers (other than Estero and Hayward) fail to notify the City by June 30, the City shall be entitled to assume that they have failed to approve an allocation (or further allocation) of residual water for the ensuing fiscal year. In any year as to which no allocation approved by suburban purchasers is in effect, the City shall deliver unallocated residual water to each individual suburban purchaser as it requires, (subject to the Supply Assurance) in accordance with its needs and then-existing service area. In delivering water to a suburban purchaser in accordance with this subsection, the City will incur no liability of any kind or character to any other suburban purchaser.

(3) If for three consecutive years the suburban purchasers fail to approve an allocation of some or all of the residual water, then the supply guarantees set forth in Exhibit K-1 will be deemed to be enlarged to the average amount of water used annually by each suburban purchaser during the three-year period (i.e., the sum of the usage in each year divided by 3). Each consecutive three-year period will be considered separately; the first such period will commence July 1, 1984 and end on June 30, 1987. In no event will the individual supply guarantees be reduced below the quantities presently set forth in Exhibit K-1.

(4) If both Estero and Hayward are parties to this Agreement and if the average use by suburban purchasers other than Estero and Hayward for one of the three-year periods defined in subsection (3), *supra*, exceeds the suburban allocable water, the enlarged individual supply guarantees of suburban purchasers other than Estero and Hayward will be reduced pro rata so that the total individual supply guarantees, as increased pursuant to subsection (3), *supra*, do not exceed the suburban allocable water. The pro rata reductions will be in accordance with the procedure set forth in Exhibit K-3.

If neither Estero nor Hayward is a party to this Agreement and if the average use by suburban purchasers for one of the three-year periods defined in subsection (3), *supra*, exceeds the Supply Assurance, as adjusted in accordance with Section 2.01(d), then the enlarged individual supply guarantees of suburban purchasers will be reduced pro rata so that the total individual supply guarantees, as increased pursuant to subsection (3), *supra*, do not exceed the adjusted Supply Assurance. The pro rata reductions will be in accordance with the procedure set forth in Exhibit K-3.

If either Estero or Hayward, but not both, is a party to this Agreement, the procedure described in this subsection 7.02(b) will apply *mutatis mutandis*.

The provisions of this subsection (4) are not in derogation of the reservation of claims to water in excess of the Supply Assurance contained in Section 7.04. Nor do they constitute an acknowledgment by suburban purchasers other than Estero and Hayward that the City is obligated or entitled to reduce their individual supply guarantees in the circumstance described herein. The provisions of this subsection (4) shall, however, govern the "vesting" procedure described in subsection (3), *supra*, unless and until a court determines that such provisions violate rights of the suburban purchasers derived independently of this Agreement. This paragraph is not intended to and shall not constitute a contractual commitment on the part of the City to furnish more than the Supply Assurance to the suburban purchasers or a concession by the City that the provisions of this subsection violate any rights of the suburban purchasers.

(5) At such time as the aggregate water usage of the suburban purchasers during a fiscal year is within 4 mgd of the Supply Assurance, the calculations described in subsections (3) and (4) shall be made as of the end of that fiscal year, and each year thereafter, rather than triennially and on an annual, rather than a three-year average, basis.

(c) It shall be the responsibility of each suburban purchaser to limit its water purchases from the City so as to comply with any allocation of the residual water made pursuant to this Section, regardless of whether such allocation has been approved by all the suburban purchasers (other than Estero and Hayward) pursuant to subsection (b)(1), established in accordance with subsection (b)(2), or derived through the procedure set forth in subsection (b)(3). The City shall in no event either be liable to any suburban purchaser or be obligated to supply more water to any suburban purchaser individually or to the suburban purchasers collectively than the amount otherwise allocated to it or them under this Agreement due to the use by any suburban purchaser of more water than the suburban purchaser is entitled to under this Agreement.

(d) The City shall install such new connections between the SFWD water system and that of any suburban purchaser that are necessary to deliver the quantities of water to which the suburban

purchaser is entitled under this Agreement. The City shall have the right to determine the location of such connections, in light of the need to maintain the structural integrity of the SFWD system and, where applicable, the need to limit peaking directly off the SFWD pipelines by individual suburban retail users of water, the need to ensure that suburban retail users of water have access to sufficient storage capacities in the appropriate suburban water system, the need to ensure that the suburban retail users of water have access to alternate sources of water in the event of a reduction in the City's ability to provide them with water, and other similar factors which may affect the desirability or undesirability of a particular location. The City's decisions regarding the location of new connections and the location, size and type of any new meters shall not be reviewable except for abuse of discretion or failure to provide the suburban purchasers with connections and meters adequate to deliver the quantities of water to which they are entitled under this Agreement.

Section 7.03. *Shortages.*

(a) Within six months after the effective date of this Agreement, the City and the suburban purchasers (who may act through the Suburban Representatives or other delegates) shall begin good faith negotiations to develop a "water conservation plan," which shall prescribe the steps which the City and the suburban purchasers shall take to encourage and require water conservation and to develop alternative sources of water in the event of a drought or other water shortage. The City and the suburban purchasers may agree to fund such studies as may be necessary to assist in the development of such plan, the expenses of which shall be borne one-half by the City and one-half by the suburban purchasers. The purpose of the negotiations shall be to arrive at a water conservation plan which allocates water between the City and the suburban purchasers and their retail customers in time of shortage. If a water conservation plan is adopted and approved by the City and by each of the suburban purchasers, the plan will supercede this provision and the provisions of subsection 7.03(b). The plan described in this subsection is not intended to be the urban water management plan required to be adopted by urban water suppliers under Sections 10610 *et seq.* of the Water Code unless all parties hereto subsequently agree as a part of the negotiations described herein.

(b) In the event that at any time during the Term of this Agreement there is not available in the SFWD and HHWPD water system sufficient water to supply the requirements of the suburban purchasers and the direct City water users, each suburban purchaser shall receive no more than that quantity of water which bears the same ratio to the total quantity of water then available in the City's water system, as the amount delivered to the suburban purchaser in the last preceding calendar year prior to the condition of shortage bears to the total amount delivered to all users supplied by the system during that calendar year.

(c) Nothing in this Agreement, including subsection (b), *supra*, shall be understood or construed as a concession by the City that it is required to allocate water between the suburban purchasers and the direct City water users during a water shortage on a pro rata basis, nor shall anything in this Agreement, including subsection (b), *supra*, waive or compromise the City's specifically-reserved claims that: (1) it is not required to allocate water between the suburban purchasers and the direct City water users in time of water shortage on a pro rata basis; (2) water used by the suburban purchasers in excess of the Supply Assurance may be disregarded in allocating water during times of water shortage; and (3) allocational methods other than pro rata reductions would allocate water between the suburban purchasers and the direct City water users during a water shortage more fairly and equitably than would pro rata reductions. Nothing in this Agreement, including subsection (b), *supra*, shall waive or compromise the suburban purchasers' denial of these claims or their specifically-reserved claim that the City has an obligation, derived independently from this Agreement, to allocate water between the suburban purchasers and the direct City water users in times of water shortage on a pro rata basis. In the event that an allocation of water is required at a time when the City and each suburban purchaser have not agreed on a water conservation plan pursuant to subsection (a), *supra*, the City shall allocate the available water

in the first instance and the suburban purchasers shall be free to challenge the allocation on any applicable legal or equitable basis.

(d) *Localized Water Reductions.* Notwithstanding the foregoing provisions of this Article, the City may reduce the amount of water available in or interrupt water deliveries to specific geographical areas within the SFWD's total service area to the extent that such reductions are necessary due to system emergencies, or in order to install, repair, rehabilitate, replace, investigate or inspect equipment in, or perform other maintenance work on, the SFWD and HHWPD water system. Such reductions or interruptions may be imposed by the City without corresponding reductions or interruptions in the amount of water available to SFWD water users outside the specific geographical area where reductions or interruptions are necessary, if the system's ability to supply water outside the specific geographical area has not been impaired. In the event of such a reduction or interruption, the City will restore the supply of water to the specific geographical area as soon as is reasonably practical. Except in cases of emergencies (during which oral notice shall be sufficient), the City will give the affected suburban purchaser(s) reasonable written notice of such localized reductions or interruptions, the reasons therefor, and the probable duration thereof. When the reduction or interruption is attributable to the scheduled installation, repair, rehabilitation, replacement, investigation or inspection of water delivery facilities, the City will use reasonable efforts to limit any such reduction or interruption in the delivery of water to the months of November through April.

Section 7.04. *Reservation of Claims to Additional Water; Service Area Expansion.*

(a) Nothing in this Agreement (including the Supply Assurance contained in Section 7.01 and the shortage allocation provisions contained in Section 7.03) is intended to or shall be construed to waive or compromise the potential or actual claim by any or all of the suburban purchasers that the City is obligated under federal or state law to supply it or them with water in addition to that guaranteed by Section 7.01 and allocated by Section 7.02 and/or to expand the City's existing water delivery system in order to furnish such additional water; nor shall anything in this Agreement (including Section 7.01) be construed to compromise or waive the City's denial of these claims.

(b) The suburban purchasers recognize that each Individual Contract does or will contain, as an exhibit, a map of their respective service areas. Any suburban purchaser which wishes to expand its service area shall notify the City, request the City's consent to the expansion, and provide information reasonably requested by the City regarding present and projected water demand within the area proposed to be added to the suburban purchaser's service area.

The foregoing provision is not intended to and shall not be construed to waive or compromise the potential or actual claim of any suburban purchaser (other than San Jose and Santa Clara whose service areas are fixed pursuant to Section 9.03) that the City is obligated under federal or state law to furnish water, included within the Supply Assurance, to them for delivery to customers outside their presently existing service areas and that they are entitled to enlarge their service areas to supply those customers with such water.

In order to assert any claims reserved by this subsection, however, a suburban purchaser must first have complied with the first paragraph hereof and its request must have either been refused by the City or not acted upon for six months after its submission to the City.

This section will not prevent the City and any suburban purchaser (other than San Jose and Santa Clara) from (1) agreeing in their Individual Contract or any amendment thereto that the suburban purchaser may expand its service area without subsequent City approval to a definite size but no larger and (2) waiving the provisions of this section with respect to any additional expansion. Nor shall this section prevent any suburban purchaser from (1) agreeing with the City in its Individual Contract or any amendments thereto that it will not expand its service area beyond

its present limits without City approval and (2) waiving the provisions of this section with respect to any additional expansion.

Section 7.05. *Restrictions on Resale.*

Each suburban purchaser agrees not to sell any water purchased from the City to any private party for resale by such private party to others, and further agrees not to sell any water from any source whatsoever to any private party for resale to others by substituting therefor water purchased from the City, without the City's prior written approval.

Each suburban purchaser also agrees that no water furnished by the City to it shall be delivered by it outside the service area described in an exhibit to its Individual Contract, and further agrees not to deliver any water outside the boundary of its service area by substituting therefor water purchased from the City, unless permitted by stipulation between the City and the suburban purchaser, or unless written consent for such delivery is entered into by the City and the suburban purchaser. The preceding sentence shall not apply to sales of water to another suburban purchaser on a temporary basis if the purchases of such water are authorized as emergency purchases under Section 7.07(a).

The City acknowledges that it has heretofore consented in writing to deliveries of water by individual suburban purchasers outside their service area boundaries and agrees that nothing in this Agreement is intended to affect such prior authorizations, which remain in full force and effect according to their terms. Such authorizations shall be identified in appropriate Individual Contracts. The City also agrees that it will not unreasonably withhold its consent to future requests by any suburban purchaser to deliver water to another suburban purchaser for resale.

Section 7.06. *Prohibition of Assignment.*

This Agreement is not for the benefit of any person, corporation, or other entity, other than the parties hereto, and no person, corporation or other entity except the parties hereto shall have rights or interests in or under this Agreement, except as expressly provided herein.

This Agreement shall be binding on, and shall inure to the benefit of, the parties to it and their respective successors and permitted assigns. Each suburban purchaser signing this Agreement agrees that it will not transfer or assign any rights or privileges under this Agreement, either in whole or in part, or make any transfer of all or any part of its water system or allow the use thereof in any manner whereby any provision of this Agreement will not continue to be binding on it, its assignee or transferee, or such user of the system. Any assignment or transfer in violation of this covenant, and any assignment or transfer that would result in the supply of water in violation of the Act, shall be void.

Nothing in this Section shall prevent any suburban purchaser (except the California Water Service Company, Cordilleras Mutual Water Association, and Stanford) from entering into a joint powers agreement or a municipal or multi-party water district with any other suburban purchaser (except those three listed above) to exercise the rights and obligations granted to and imposed upon the suburban purchasers hereunder, nor shall this Section prevent any suburban purchaser (except those three listed above) from succeeding to the rights and obligations of another suburban purchaser hereunder as long as the total service area served by the surburban purchasers involved in the succession is not thereby enlarged.

Section 7.07. *Prohibition of Water Purchases from Others; Use of Local Sources; Minimum Annual Purchases; Adjustment of Service Areas.*

(a) Each suburban purchaser, except for Alameda County Water District, and the Cities of Palo Alto, Sunnyvale, Mountain View, Milpitas, San Jose and Santa Clara, agrees that it will not, unless permitted by stipulation between it and the City, or unless given prior written approval of

such transaction by the City, contract for, purchase, or receive, with or without compensation either directly or indirectly, any water for delivery or use in each suburban purchaser's service area, from any person, corporation, or any entity whatsoever, whether public or private, including any governmental entity unless and until the suburban purchaser has demanded water from the City in accordance with the terms and conditions set forth herein and the City has refused to supply said additional water after due notice. In the event of such a request by any suburban purchaser and such a refusal by the City, the suburban purchaser(s) shall be free to purchase water from other entities, but only to the extent the City is unable and/or unwilling to supply the water needs of each such suburban purchaser. Nothing contained herein shall require any suburban purchaser to purchase water from the City over and above the water covered by the Supply Assurance, if the City is successful in its contention that the price for such additional water may legally include compensation to the City for decreased net power sale revenues resulting from the sale of such additional water. Nor shall anything contained herein prevent any suburban purchaser from purchasing water from sources other than the City, to the extent that such purchases are necessary to provide the suburban purchaser with water on an emergency and temporary basis. Each suburban purchaser who buys emergency water from any source other than the City shall give the City prompt notice of the nature of the emergency requiring such emergency purchases, the amount of water which is to be or has been purchased, and the duration of such purchases. The provisions of this subsection shall not apply to purchases of reclaimed wastewater in quantities up to twenty (20) percent of the amount of water which the suburban purchaser received from the City in calendar year 1981, as shown in Exhibit K-2. Purchases of reclaimed wastewater in any year in excess of that amount shall require approval by the City.

(b) The suburban purchasers shall use their best efforts to use all sources and supplies of water now owned or controlled by them, including all surface and ground water owned by the suburban purchasers within their respective service areas, to augment any supply demanded from the San Francisco Water Department, provided that water from such sources complies or can reasonably be made to comply with applicable state and federal drinking water quality standards or the water quality requirements of the suburban purchaser's commercial and industrial customers. Water which does not comply with applicable state and federal drinking water quality standards or meet the water quality requirements of commercial and industrial customers shall be used for other purposes by each suburban purchaser to the extent such use is economically and environmentally feasible. The suburban purchasers may acquire or develop wells, pumping plants or other sources of supply as necessary to supply water to their customers. (As used in the preceding sentence, "other sources of supply" does not include water purchased from suppliers other than the City.) The term "ground water" shall include all water available from aquifers within their respective service areas, whether such aquifers are recharged naturally or through artificial recharge facilities.

(c) Alameda County Water District and the Cities of Palo Alto, Sunnyvale, Mountain View, Milpitas, San Jose and Santa Clara shall be entitled to purchase water from sources other than the City; provided that the City may, in the case of San Jose and Santa Clara, and shall, in the case of each of the other entities, require that each purchase a minimum quantity of water from the City as a condition to this authorization. (If a suburban purchaser listed herein does not wish to have the right to purchase water from other sources without prior approval of the City, no minimum purchase requirements will be included in its Individual Contract.) These minimum required quantities will be contained in the Individual Contracts between the City and each suburban purchaser and will be expressed as minimum annual quantities which shall be no less than 80 percent and no more than 100 percent of the amount of water that particular suburban purchaser received from the City during calendar year 1981. Each of these Individual Contracts may also contain mutually acceptable monthly minimum and daily and hourly maximum water delivery levels; provided, however, that such maximum levels shall not be construed as allocations of residual water on an annual average basis and that, in the event of any conflict between the maximum daily and hourly levels and the

allocations of water provided for in Section 7.02 and 7.03 of this Agreement, the allocations shall control. Notwithstanding the preceding sentence, no water use which, taken on an annual basis, exceeds the amount obtained by multiplying the daily maximum by 365 shall vest for purposes of determining individual supply guarantees under the existing Individual Contracts or Section 7.02(b)(3).

The minimum purchase requirements in Individual Contracts will be waived during a drought or other period of water shortage if the water made available to the suburban purchaser is less than the minimum purchase quantity.

(d) If two or more suburban purchasers adjust the boundaries of their respective service areas so that one assumes an obligation to serve customers in an area that was previously within the service area of another suburban purchaser, they may also correspondingly adjust their Supply Guaranties as set out in Exhibit K-1 and the allocations of residual water under Section 7.02 between or among them.

Such adjustments shall require only the consent of the City and the suburban purchasers involved, so long as the Supply Assurance, the allocation of water to all other suburban purchasers, and the total service area of all suburban purchasers are not affected.

Any adjustment of service area boundaries that would result in the supply of water in violation of this Agreement or the Act shall be void.

ARTICLE VIII

OTHER AGREEMENTS OF THE PARTIES

Section 8.01. *Pricing of Additional Water.*

(a) The amounts to be paid by the suburban purchasers for water furnished to them within the Supply Assurance shall be governed by the rate-setting methodology described in Article IV. Should the City sell the suburban purchasers water in excess of the Supply Assurance, for whatever reason, pricing of that water ("additional water") will similarly be governed by the rate-setting methodology set forth in Article IV, subject to the City's explicitly reserved intention to add to such rates a surcharge that would reimburse the City for any decrease in the City's net power revenues which may directly or indirectly result from the sale of additional water to the suburban purchasers. As used in this Section, the term "net power revenues" means the revenues received by the City from the sale of electric power generated by facilities in the Hetch Hetchy system, less (1) the cost of generating the power and (2) the net revenues received by the City from the suburban purchasers for the additional water the sale of which allegedly gave rise to the decrease in power revenues. The suburban purchasers reserve the right to contest under any applicable provision of law both (1) the legality or propriety of any attempt by the City to include in the suburban revenue requirement a charge for decreased net power revenues allegedly resulting from the sale of additional water and (2) the amount of such decreased net power revenues, if any, in fact caused by the sale of additional water, and the methodology by which that amount is to be calculated. The suburban purchasers further reserve the right to contend that any surcharge which the City would otherwise be entitled to add to the rates charged for additional water pursuant to this Section may be partially or totally offset by a reduction in the rate paid for additional water if the City continues to contend that it has no obligation to provide such water to the suburban purchasers and such water is delivered to the suburban purchasers on an interruptible basis.

(b) Notwithstanding subsection (a), *supra,* no suburban purchaser shall contend that the rates charged for additional water should be less than those charged for water included within the Supply Assurance.

(c) With the exception of the issues explicitly reserved by subsection (a), no suburban purchaser shall contend, during the Term of this Agreement, that the suburban revenue requirements that result from the provision of such additional water as determined by this Section and Article IV violate any provision of federal law (including the Raker Act), state law, the Charter of the City and County of San Francisco, or any other provision of law. No resolution, judicial or otherwise, of any of the issues explicitly reserved by this Agreement (including the issues specifically reserved by this Section) shall affect in any way the suburban revenue requirements to be charged by the City for the provision of water covered by the Supply Assurance, as such suburban revenue requirements shall in all events be determined solely and exclusively by the rate-making methodology set forth in Article IV.

(d) The furnishing of additional water by the City to the suburban purchasers shall not be deemed or construed to be a waiver by the City of its claim that it has no obligation under any provision of law to supply such water to the suburban purchasers, nor shall it constitute a dedication by the City to the suburban purchasers of such additional water.

Section 8.02. *Arbitration and Judicial Review.*

(a) *Matters to be Arbitrated.* All questions or disputes arising under the following provisions of this Agreement shall be subject to mandatory, binding arbitration pursuant to the terms of this Section and shall not be subject to judicial determination:

(1) Section 3.04;

(2) All of Article IV;

(3) Sections 5.01, 5.06, and 5.07;

(4) All of Article VI;

(5) Section 8.03;

(6) Section 8.08 to the extent specified therein;

(7) Section 8.14(b); and

(8) Exhibits C, E and J.

All questions or disputes arising under Sections 5.02 and 5.03(a) shall be subject to either binding arbitration or judicial determination, as provided therein. Except as expressly provided to the contrary, all other questions or disputes arising under this Agreement (including, without limitation, those arising under Section 5.04) shall be subject to judicial determination.

(b) *Venue.* Any judicial action or proceeding arising under this Agreement shall be brought in the United States District Court for the Northern District of California or in the state courts of the State of California.

(1) If the action or proceeding ("action") is brought in state court, unless the parties to the action otherwise agree, the venue of such action shall be in the Superior Court in and for the County of Marin or any Municipal Court in the County of Marin, whichever court may have subject matter jurisdiction.

(2) If at the time the action is commenced in state court, or thereafter, the County of Marin or any public entity located therein is an actual or potential, direct or indirect, purchaser of water from the City, the following venue procedures shall apply instead of those set forth above in subparagraph (b)(1):

(A) If the action is one in which a jury is not of right, or trial by jury is waived, the action may be filed or maintained in the Superior Court or the Municipal Court for the County of Marin, but any party to the action may request the court to request the chairperson of the Judicial Council to assign a disinterested judge from a neutral county to hear the action and all proceedings in connection therewith pursuant to California Code of Civil Procedure Section 394(1).

(B) If the action is not one described in subparagraph (A), or if the chairperson of the Judicial Council does not assign a disinterested judge from a neutral county, then the action shall be commenced in, or if the action or proceeding has already been commenced in the Superior Court or any Municipal Court in the County of Marin it shall, on motion of any party, be transferred to, any court in the State of California, mutually agreed upon by the parties, having subject matter jurisdiction and located in any county other than Alameda, San Mateo, San Francisco, or Santa Clara counties. In the absence of such agreement, any such state court action or proceeding shall be commenced in or transferred on motion of any party to any court in the State of California having subject matter jurisdiction and located in any county other than Alameda, San Mateo, San Francisco, or Santa Clara counties.

(c) *Demand For Arbitration.* If any arbitrable question or dispute should arise, any suburban purchaser or the City may commence arbitration proceedings hereunder by service of a written Demand for Arbitration. All Demands shall set forth the issues to be arbitrated and the general contentions relating to those issues of the party serving the Demand. Within 45 days after service of a Demand upon it, any suburban purchaser or the City may serve a Notice of Election to become a party to the arbitration and a Response to the Demand, setting forth its position and general contentions with respect to the issues set forth in the demand. If a timely Notice of Election and Response is not filed by any such entity, it shall not be a party to the arbitration, but shall nonetheless be bound by the award of the arbitrator pursuant to Section 8.02(g)(10). If no party to this Agreement serves a timely Notice of Election and Response, the party seeking arbitration

shall be entitled to the relief sought in its Demand for Arbitration without the necessity of further proceedings.

If a Demand or Notice of Election is made by the City, it shall be served by personal delivery or certified mail to each suburban purchaser at the address of such purchaser as set forth in the billing records of the San Francisco Water Department at such time. If a Demand or Notice of Election is made by a suburban purchaser, service shall be by certified mail or personal delivery to the General Manager, San Francisco Water Department, 425 Mason Street, San Francisco, California 94102, and to each of the other suburban purchasers. If arbitration is commenced, the suburban purchasers shall use their best efforts to formulate a single, joint position with respect thereto. In any event, with respect to the appointment of arbitrators, as hereinafter provided, all suburban purchasers that take the same position as to the issues to be arbitrated shall jointly and collectively be deemed to be a single party.

(d) *Limitations Period.* All Demands For Arbitration shall be served within four years of the date on which the cause of action arose, provided that no amount posted to the balancing account by the City pursuant to Section 5.07 for any individual fiscal year shall be adjusted thereafter in any respect (except by agreement of the City and the Suburban Representatives) unless a Demand seeking such relief is served within eighteen months of receipt by the Suburban Representatives of the Auditor's Report for that year as provided in Section 6.05. (If the Suburban Representatives receive the Report on different days, then the date of receipt for purposes of this subsection shall be the date the Report is received by the Suburban Representative which purchased the largest quantity of water from the City during the fiscal year which the Report concerns.) If no such Demand is served within the eighteen month period specified above, the amount posted to the balancing account for that year shall be deemed final and conclusive.

An adjustment in the balancing account resulting in an award based on a timely Demand shall not be precluded merely because the cumulative balance in the balancing account to which the adjustment is to be made is comprised in whole or in part of amounts posted to the balancing account that have become final in accordance with this subsection, provided, however, that in no event shall there be any adjustment of amounts so posted which have become final in accordance with this subsection.

The Arbitrator may order the alteration or recalculation of underlying SFWD and/or HHWPD accounts or asset classifications that will be used to determine future suburban revenue requirements, even though the existing entries in such accounts or the asset classifications, in whole or in part, predate the four-year and eighteen-month periods described above, so long as a timely arbitration demand has been filed in accordance with this subsection.

(e) *Number And Appointment Of Arbitrators.* All arbitration proceedings under this Section shall be conducted by a single arbitrator, selected by the City and a designated representative of the suburban purchasers or each group of suburban purchasers that take the same position with respect to the arbitration within 75 days after service of the demand for arbitration. If the parties to the arbitration cannot agree on an arbitrator within 75 days, any party may petition the Superior Court in and for the County specified in Section 8.02(b), for the appointment of an arbitrator.

(f) *Guidelines For Qualifications Of Arbitrators.* The suburban purchasers and the City acknowledge that the qualifications of the arbitrator will vary with the nature of the matter arbitrated, but, in general, agree that such qualifications may include expertise in one or more of the following fields: water utility rate setting, water system and hydraulic engineering, utility accounting methods and practices, and water system operation and management. The parties to the arbitration shall use their best efforts to agree in advance upon the qualifications of any arbitrator to be appointed by the Superior Court.

(g) *Powers of Arbitrator; Conduct of Proceedings.*

(1) Except as hereinafter provided, arbitrations under this Section 8.02 shall be conducted under and be governed by the provisions of California Code of Civil Procedure, Sections 1282.2 through 1284.2 (hereinafter, collectively, "Code sections"), and arbitrators appointed hereunder shall have the powers and duties specified by the Code sections.

(2) Within the meaning of the Code sections, the term "neutral arbitrator" shall mean the single arbitrator selected by the parties to the arbitration.

(3) Unless waived in writing by the parties to the arbitration, the notice of hearing served by the arbitrator shall not be less than 90 days.

(4) The lists of witnesses (including expert witnesses), and the lists of documents (including the reports of expert witnesses) referred to in Code of Civil Procedure Section 1282.2 shall be mutually exchanged, without necessity of demand therefor, no later than 60 days prior to the date of the hearing, unless otherwise agreed in writing by the parties to the arbitration.

(5) The time for making the award shall be no later than 18 months after service of the initial demand for arbitration, provided that such time may be waived or extended as provided in Code of Civil Procedure Section 1283.8.

(6) The arbitrator shall not base his or her award on information not obtained at the hearing.

(7) The provisions for discovery set forth in Code of Civil Procedure Section 1283.05 are incorporated into and made part of this Agreement, except that: (a) leave of the arbitrator need not be obtained for the taking of depositions, including the depositions of expert witnesses; (b) the provisions of Code of Civil Procedure Section 2037 *et seq.*, relating to discovery of expert witnesses, shall also be applicable to arbitration proceedings arising under this Agreement, except that the time period set forth in Section 2037(a) shall be deemed to be not later than 60 days prior to the date for the hearing; and (c) all reports, documents, and other materials prepared or reviewed by any expert designated to testify at the arbitration shall be discoverable. In appropriate circumstances, the arbitrator may order any party to this Agreement that is not a party to the arbitration to comply with any discovery request.

(8) For the purposes of allocation of expenses and fees, as provided in Code of Civil Procedure Section 1284.2, if any two or more suburban purchasers join together in a single, joint position in the arbitration, those suburban purchasers shall be deemed to be a single party. If any suburban purchaser or purchasers join together with the City in a single joint position in the arbitration, those suburban purchasers and the City together shall be deemed to be a single party.

(9) The arbitrator shall have the power to issue orders mandating compliance with the terms of this Agreement or enjoining violations of this Agreement subject to the limitations contained herein and in Section 8.02(d). The powers of the arbitrator, with respect to any arbitration brought to redress a claimed suburban overpayment to the City, shall be limited to entering an order requiring that an adjustment be made in the amount posted to the balancing account (if not prohibited by Section 8.02(d)) or either or both of the orders described in Section 5.07(d), if appropriate under Section 5.07(d).

(10) All awards of the arbitrator shall be binding on the City and the suburban purchasers regardless of the participation or lack thereof by any suburban purchaser or the City as a party to the arbitration proceeding.

Section 8.03. *Special Provisions re Attorneys' Fees.*

(a) Each party will bear its own costs, including attorneys' fees, incurred in any arbitration or litigation arising under this Agreement or the Individual Contracts between the City and the

suburban purchasers. Notwithstanding the foregoing, the City may partly allocate to the suburban purchasers as an allowable expense under Article IV (utilizing the composite rate used for allocating other SFWD administrative and general expenses) any costs or fees incurred by the City in connection with arbitration and/or litigation arising under this Agreement and/or the Individual Contracts, except that any and all costs incurred by the City through the use of attorneys other than the San Francisco City Attorney's Office in arbitration and/or litigation arising under this Agreement and/or the Individual Contracts shall not be allocable to the suburban purchasers.

(b) If, in any litigation and/or arbitration between the parties not arising under this Agreement or the Individual Contracts but involving the respective rights and obligations of the parties *vis-a-vis* the City's Hetch Hetchy system, or water delivered therefrom (including, without limitation, litigation and/or arbitration concerning the issues specifically reserved by Sections 2.04, 5.05, 7.04, 8.01, 8.08 and 9.03(c) of this Agreement), the costs, including attorneys' fees, are awarded to the suburban purchasers, the payment of those costs and fees by the City will not be deemed an allowable expense under Article IV. If no such award is made, the City's costs and/or fees shall be allocated between the City and the suburban purchasers pursuant to this Agreement, utilizing the composite rate used for allocating other SFWD administrative and general costs. Any award to the City of fees and costs incurred in connection with such an action shall be reduced to offset the amount of the City's fees, if any, which have already been borne by the suburban purchasers pursuant to the allocation procedures set forth herein.

(c) Nothing contained in this Agreement shall require the City to change retroactively its allocation of the action's litigation costs and attorneys' fees incurred prior to the beginning of the Agreement's Term.

(d) Except as provided in subparagraphs (a) and (b), *supra*, all attorneys' fees and costs incurred by the City in connection with the operation and maintenance of the City's water supply system shall be allocated between the City and the suburban purchasers utilizing the applicable rate under Section 4.04(c).

Section 8.04. *Suburban Advisory Group.*

The parties wish to insure that the suburban purchasers may, in an orderly way, be informed of matters affecting the SFWD water system, including matters affecting the continuity and adequacy of their water supply from the City. To that end, each suburban purchaser may nominate one representative to a Suburban Advisory Group ("Group"). The City shall, through the General Manager of the SFWD and the General Manager of the HHWPD, meet with the Group (or with a subcommittee selected by the Group) semiannually, at mutually convenient times. The General Manager of the SFWD and the General Manager of the HHWPD may designate an appropriate official of their respective departments if, for illness or other reasons beyond their control, they are unable to attend. The first such meeting shall be held, if requested, no later than three months after the effective date of this Agreement. The City shall, at such meetings, provide the Group or its representatives with information on the following topics, to the extent such information is available to the City:

(a) Any capital additions being considered or planned for the SFWD and HHWPD, including the status of planning studies, financing plans, permit applications, environmental reviews, etc.;

(b) Water supply and usage trends and projections for the City, direct City water users, and the suburban purchasers, including the Commercial Division monthly reports which have been prepared by the City since the last meeting held pursuant to this Section;

(c) The status of administrative proceedings and litigation affecting the water rights to the HHWPD and SFWD sources of supply; and

(d) Existing or anticipated problems with the maintenance and repair of the water delivery system and water quality.

Additional topics shall be included on the agenda of a meeting at the request of the Suburban Representatives, provided that the City is notified of the topic no less than ten days in advance of the meeting. If the Suburban Representatives wish to inspect any documents relating to any topic on the agenda of a meeting, they shall request the City to produce such documents at the meeting no less than ten days in advance thereof. The City shall make reasonable efforts to comply with such requests for documents.

The meetings provided for by this Section are in addition to the meeting addressed to the SFWD and HHWPD budget provided for by Section 5.02, but the budget meeting and one of the meetings provided for herein may be held *seriatim*, if that is mutually convenient.

Additional meetings between the Group and the City may be held upon the request of either the City or a majority of the Group's members, provided that the General Managers of the SFWD and HHWPD shall not be obligated to attend such meetings.

Section 8.05. *Notice of Water Rights Proceedings.*

The City shall use its best efforts to give prompt notice to the suburban purchasers of any litigation or administrative proceedings to which the City is a party involving water rights to the SFWD and HHWPD sources of supply. The City's failure to provide notice as required by this Section, for whatever reason, shall not give rise to any monetary liability.

Section 8.06. *Notice.*

Except for (1) the materials which the City is required to mail to the Suburban Representatives pursuant to Sections 5.02, 5.03(a), 6.01, 6.04 and 8.11 and (2) the counterpart of this Agreement which the City is required to mail to the San Francisco Bay Area Water Users Association ("BAWUA") pursuant to Section 8.10, all notices and other documents which the City is required or permitted to send to the suburban purchasers under this Agreement shall be sent to each and all of the suburban purchasers by United States mail, first class postage prepaid, addressed to each suburban purchaser at the address to which monthly water bills are mailed by the SFWD.

All notices or other documents which the suburban purchasers or the Suburban Representatives are required or permitted to send to the City under this Agreement shall be sent by United States mail, first class postage prepaid, addressed as follows:

General Manager
San Francisco Water Department
425 Mason Street
San Francisco, CA 94102

Each suburban purchaser is a member of BAWUA, a California unincorporated association. The City shall send a copy of each notice or other document which it is required to send to all suburban purchasers or to the Suburban Representatives to BAWUA addressed as follows:

San Francisco Bay Area Water Users Association
c/o Belmont County Water District
P.O. Box 129
Belmont, CA 94002

The failure of the City to send a copy of such notices or documents to BAWUA shall not invalidate any rate set or other action taken by the City.

Any party (or BAWUA) may change the address to which notice is to be sent to it under this Agreement by notice to the City (in the case of a change desired by a suburban purchaser or BAWUA) and to the suburban purchasers and BAWUA (in the case of a change desired by the City).

The requirements of notice set forth in Section 8.02 concerning arbitration shall prevail over this Section, when they are applicable.

Section 8.07. *Rates Applicable to Other Resale Users.*

Notwithstanding any other provision of this Agreement, the City will not voluntarily provide water to any resale customer which is located west of Irvington Portal and which is not a party hereto at rates which are lower than those determined under Article IV and Section 8.01 without making such rates applicable to the suburban purchasers.

Nothing in this Section shall require the City to lower its rates to the suburban purchasers if the rate differential between the rates charged the suburban purchasers and the rates charged to resale customer(s) which are located west of Irvington Portal and which are not parties to this Agreement results (a) from a court order resulting from litigation between the City and the resale customer or the settlement of such litigation; (b) from a court order resulting from litigation between the City and another resale customer who is similarly situated or the settlement of such litigation; (c) from a court order resulting from litigation between the City and the United States (or any department or official thereof) or the settlement of such litigation; or (d) from rate structure(s) for the suburban purchaser(s) which are based upon the quantity of water used and which are designed either to discourage the use by the suburban purhasers of, or to allocate a surcharge under Section 8.01 imposed on, additional water. Nothing in this Section shall be construed as or is intended to be a concession by the suburban purchasers that the City is entitled to adopt such a rate structure or impose such a surcharge.

Section 8.08. *Changes in the City's Water Delivery System.*

The parties contemplate that, over the Term of this Agreement, the City may expand the capacity of its existing water delivery system through additions to the system and/or the replacement of existing assets. In the event such an expansion of capacity occurs, or in the event that new assets are added to the system without expanding the system's capacity, questions may arise concerning the proper classification of such new assets within the categories into which the SFWD and HHWPD rate bases are divided by this Agreement.

The parties also contemplate that, in connection with such expansion of system capacity, the City may offer to increase the Supply Assurance to the suburban purchasers set out in Section 7.01. In the event that the City offers to provide the suburban purchasers with such an increased guarantee and the suburban purchasers accept the offer, questions may arise concerning the respective City and suburban shares in the ultimate capacity of the system.

The parties shall have an obligation as to all such questions to negotiate in good faith, and if agreement between the parties is not reached, the matter shall be referred to arbitration pursuant to Section 8.02. As part of such negotiations, the parties may agree to fund studies of system capacity and usage and/or new assets by consultants selected jointly by the City and the Suburban Representatives. The expenses of any such study shall be borne one-half by the City and one-half by the suburban purchasers. Nothing in this Section shall prevent the City from unilaterally initiating studies of system capacity and usage and/or new assets by consultants of its choice and allocating the cost of such studies in accordance with the other provisions of this Agreement.

Nothing in this Agreement shall be construed to impose any obligation on the City to expand its existing water delivery system for the benefit of the suburban purchasers or to deliver to the suburban purchasers more water than that contained in the Supply Assurance set out in Section 7.01 nor shall anything herein be deemed to be a waiver of any claims by the suburban purchasers that the City has an obligation, independent of this Agreement, to do so.

Section 8.09. *Representations During Settlement Negotiations.*

During the course of settlement negotiations, the parties have exchanged various computer printouts and other materials which contain projections of the likely effect of this settlement on the suburban revenue requirement. The parties acknowledge that these projections are merely predictions by their consultants as to future events and that such projections are necessarily uncertain. Each party signing this Agreement therefore releases all other parties to this Agreement, and each other party's lawyers and expert accounting and engineering consultants, from any and all liability arising from the sharing of projections, computer printouts, or any other representations as to the likely effect of this Agreement. Each party signing this Agreement has been fully advised by its attorneys, and their accounting and engineering experts, on the contents of this Agreement and its legal effects.

Section 8.10. *Counterparts.*

Execution of this Agreement may be accomplished by execution of separate counterparts by each signatory. The City shall deliver its executed counterpart to the Bay Area Water Users Association and the counterpart which each suburban purchaser executes shall be delivered to the City. The separate executed counterparts, taken together, shall constitute a single agreement. When this Agreement becomes effective pursuant to Section 2.01, the City shall provide any suburban purchaser that so requests a counterpart original of this Agreement signed on behalf of the City.

Section 8.11. *SFWD Rules and Regulations.*

The sale and delivery of all water hereunder shall be subject to such of the "Rules and Regulations Governing Water Service to Customers" of the SFWD adopted by the SFPUC, as those Rules and Regulations may be amended from time to time, as are (1) applicable to the sale and delivery of water to the suburban purchasers, (2) reasonable, and (3) not inconsistent with either this Agreement or with an Individual Contract.

The City will give the Suburban Representatives notice of any proposal to amend the Rules and Regulations in a manner which would affect the suburban purchasers. The notice will be delivered at least thirty days in advance of the date on which the proposal is to be considered by the SFPUC and will be accompanied by the text of the proposed amendment.

Section 8.12. *Preservation of Water Rights.*

It is the intention of the City to preserve all of its water rights, whether or not the water to which the City presently holds water rights is allocated under this Agreement. Nothing in this Agreement shall be construed as an abandonment by the City, or an intention by the City to abandon, any of the water rights that it presently possesses.

Section 8.13. *Suburban Representatives.*

As used in this Agreement, the term "Suburban Representatives" shall mean the five suburban purchasers selected by the suburban purchasers as a group to exercise the rights granted to and fulfill the obligations imposed upon the Suburban Representatives by this Agreement. If the suburban purchasers fail to select Suburban Representatives, the Suburban Representatives shall be the five suburban purchasers which purchased the largest quantity of water during the prior fiscal year. The suburban purchasers shall promptly notify the City of any changes in the Suburban Representatives whom they have selected and the City shall be entitled to assume that the Suburban Representative(s), once selected by the suburban purchasers or chosen pursuant to this Section, shall continue in that role, until the City receives information of any such change.

Section 8.14. *Reservation of Claims Regarding Suburban Purchase of Water From In-City Retail Distribution System.*

(a) Nothing in this Agreement shall prevent the City and any suburban purchaser from providing by contract that the City may charge rates which are higher than those which would otherwise be proper under this Agreement for water delivered by the City to the suburban purchaser through transmission and distribution lines and mains in the in-City retail distribution system (i.e., transmission mains and distribution lines located within the City's geographical limits other than those which deliver water from Hetch Hetchy and local sources to Sunset, University Mound, and Merced Manor Reservoirs). Nothing in this Agreement shall be construed to waive or compromise the City's claim that it is entitled to charge such higher rates for water delivered through the in-City retail distribution system or the suburban purchasers' denial of such claim. Nothing in this Agreement shall obligate the City to supply any suburban purchaser with water delivered through the in-City retail distribution system.

(b) Any water delivered by the City to any suburban purchaser through the in-City retail distribution system and paid for at rates which are greater than those which would otherwise be proper under this Agreement shall be counted as City usage for the purpose of determining the ratios used to allocate assets and expenses pursuant to this Agreement.

The City has, prior to the Term of this Agreement, provided a portion of the water it delivers to Daly City through two connections to its in-City retail distribution system located within the City's boundaries. The parties hereto recognize that the Individual Contract between the City and Daly City will provide for the continuation of this arrangement under the mutually acceptable terms, conditions and limits set forth therein. This Individual Contract will also provide that water delivered by the City to Daly City through these two connections shall be billed at the same rates as water delivered to the other suburban purchasers. No party hereto will contend that the continuation of this arrangement as provided in the City-Daly City Individual Contract is a precedent for or otherwise obligates the City to furnish it water through the in-City retail distribution system or, if water is so furnished, to charge for such water only at rates otherwise proper under this Agreement. The provisions of the preceding sentence shall apply to Daly City insofar as additional in-City connections, or enlargements of the existing meters and services, are concerned.

Section 8.15. *Expenses Chargeable to Individual Suburban Purchasers.*

The expenses associated with the following services shall be directly chargeable to and payable by the individual suburban purchaser for which the service is rendered and shall not be chargeable to the suburban purchasers generally under Article IV:

(a) installation of meters and service connections;

(b) relocation of meters and service connections;

(c) enlargement of meters and service connections;

(d) removal of meters and service connections; and

(e) modification of meters and service connections as requested by an individual suburban purchaser.

Section 8.16. *Incorporation of Exhibits.*

Exhibits A through O, referred to herein, are incorporated in and made a part of this Agreement.

Section 8.17. *Actions and Approvals by the City.*

Whenever City action or approval is required or contemplated by this Agreement, authority to act or approve shall be exercised by the SFPUC or its designee, except if such action or approval is required by law to be taken or given by the City's Board of Supervisors.

Section 8.18. *Filing of Notices.*

Within five days after the effective date of this Agreement, the City shall file a Notice of Exemption, in the form provided for by 14 Cal. Admin. Code Section 15062, with the County Clerks of the City and County of San Francisco and the Counties of San Mateo, Santa Clara and Alameda. If the City fails to file the notices in the time and manner provided for herein, then the Plaintiffs, or any of them, are authorized to do so on behalf of the City. In the event any action or proceeding is filed against any party to this Agreement attacking the validity of the determination underlying the Notice, any other party to this Agreement may be joined as a defendant or respondent therein by motion of the party named in the action or proceeding and agrees not to oppose such joinder.

Section 8.19. *Section Headings.*

The marginal headings and titles to the sections and paragraphs of this Agreement are not a part of this Agreement and shall have no effect upon the construction or interpretation of any part hereof.

ARTICLE IX

IMPLEMENTATION AND SPECIAL PROVISIONS AFFECTING CERTAIN SUBURBAN PURCHASERS

Section 9.01. *General.*

As described in Section 7.02, the City previously entered into water supply contracts with each of the suburban purchasers, typically for terms of 20 years. The initial terms of the majority of those contracts have now expired and, except as provided below, the suburban purchasers will execute new water supply contracts with the City concurrently with their approval of this Agreement. These Individual Contracts will describe the service areas of each suburban purchaser, identify the size and location of connections between the SFWD transmission system and the suburban purchaser's distribution system, provide for periodic rendering and payment of bills for water usage, and in some instances, contain additional specialized provisions unique to each purchaser and not of general concern or applicability. A sample of the Individual Contract to be entered into is attached as Exhibit L. The Individual Contracts between the City and the suburban purchasers will not contain any provisions inconsistent with Articles I through VIII of this Agreement, except: (1) as provided below in this Article; or (2) to the extent that such provisions are not in derogation of the rights that other suburban purchasers have under this Agreement and their Individual Contracts. Any provisions in an Individual Contract which are in violation of this Section shall be void.

Section 9.02. *California Water Service Company.*

The parties recognize that the California Water Service Company, one of the suburban purchasers, is a private, for-profit corporation and, as such, has no claim to co-grantee status under the Act, which specifically bars private parties from receiving for resale any water produced by the City's Hetch Hetchy system or otherwise subject to the Raker Act. The parties also recognize that the California Water Service Company is a member of the Bay Area Water Users Association, the entity which has coordinated Plaintiffs' maintenance of the action, and that the suburban purchasers have insisted upon the inclusion of the California Water Service Company as a party to this Agreement as a precondition for their own acquiescence hereto. Accordingly, the following provisions shall apply to the California Water Service Company, anything to the contrary elsewhere in this Agreement notwithstanding:

(a) The total quantity of water delivered by the City to the California Water Service Company shall not in any calendar year exceed 47,400 acre feet, unless through improvements in the City's local production facilities in Santa Clara, Alameda, San Mateo, or San Francisco Counties, made after August 21, 1961 (the date of the previous contract between the City and California Water Service Company) the City develops or has developed additional local sources in those counties, in which event the maximum stated herein may be increased by the City, upon determination by it of the need by California Water Service Company for water service in excess of the maximum stated herein. Such an increase shall automatically increase the Supply Assurance commitment to the suburban purchasers collectively (including the California Water Service Company) by an equivalent amount, but only if it is based on development of additional local sources after the effective date of this Agreement. It is agreed that the City has no obligation to deliver water to California Water Service Company in excess of the maximum stated herein, except as such maximum may be increased by the City pursuant to this subsection. Nothing in this Agreement shall preclude the City from selling water to any county, city, town, district, political subdivision, or other public agency for resale to customers within the service area of the California Water Service Company. The maximum annual quantity set forth in this subsection is intended to be a limitation on the total quantity of water that may be allocated to California Water Service Company; it is not itself intended to serve as an allocation of water under Section 7.02.

(b) Nothing in this Agreement shall require or contemplate any delivery of water to California Water Service Company in violation of the Act, which statute imposes certain obligations upon the City as a grantee from the United States in regard to the disposal of water and electricity from the Hetch Hetchy project.

(c) Nothing in this Agreement shall alter, amend or modify the Findings of Fact and Conclusions of Law and the Judgment dated May 25, 1961, in that certain action entitled *City and County of San Francisco v. California Water Service Company* in the Superior Court of the State of California in and for the County of Marin, No. 23286, as modified by the Quitclaim Deed from California Water Service Company to the City dated August 22, 1961. The rights and obligations of the City and California Water Service Company under these documents shall continue as therein set forth.

(d) Notwithstanding anything in Section 7.06 to the contrary, California Water Service Company shall have the right to assign to a public agency having the power of eminent domain all or a portion of the rights of California Water Service Company under any contract between it and the City applicable to any individual district of California Water Service Company in connection with the acquisition by such public agency of all or a portion of the water system of California Water Service Company in such district. In the event of any such assignment of all the rights, privileges and obligations of California Water Service Company under such contract, California Water Service Company shall be relieved of all further obligations under such contract provided that the assignee public agency expressly assumes the obligations of California Water Service Company thereunder. In the event of such an assignment of a portion of the rights, privileges and obligations of California Water Service Company under such contract, California Water Service Company shall be relieved of such portion of such obligations so assigned thereunder provided that the assignee public agency shall expressly assume such obligations so assigned to it.

Section 9.03. *City of San Jose and City of Santa Clara.*

The suburban purchasers recognize that the City has in the past provided water to the City of San Jose ("San Jose") and the City of Santa Clara ("Santa Clara") on a temporary and limited basis. In light of this fact, certain provisions of this Agreement shall be inapplicable to San Jose and Santa Clara, in the following respects:

(a) *City of San Jose.* The City's last agreement with San Jose expired on June 30, 1982. Water delivered to San Jose by the City between July 1, 1982 and July 31, 1983 shall be charged by the City and paid for by San Jose at the City's water rates which were in effect prior to July 31, 1983. From August 1, 1983 through June 30, 1985, the City will furnish water to San Jose at the same rates as those applicable to other suburban purchasers pursuant to this Agreement. On or before July 1, 1985, the City will exercise one of the following options with respect to its continuing water service to San Jose after that date.

(i) The City may elect to take on San Jose as a permanent customer, subject to minimum and maximum water delivery levels to be negotiated between the City and San Jose, provided that San Jose's service area and maximum annual usage during the balance of the Term of this Agreement shall not exceed those shown in Exhibit M. If the City so elects and San Jose accepts this offer: (1) San Jose will pay for water in accordance with the methodology set forth in this Agreement, such rates to be identical to those charged the other suburban purchasers; (2) water delivered to San Jose shall be included within the Supply Assurance; (3) San Jose will be entitled to a supply guarantee (to be included within the Supply Assurance) based on its usage during calendar year 1981 (500,239,960 gallons); and (4) its share of residual water will be determined in accordance with Section 7.02.

(ii) Alternatively, the City may continue to sell water to San Jose on a temporary and, after June 30, 1987, interruptible basis, but at rates identical to those charged other suburban

purchasers. If the City continues to provide water to San Jose on a temporary and, after June 30, 1987, interruptible basis, the amount of water furnished to San Jose shall not be included within the Supply Assurance. The City will provide at least two years notice to San Jose prior to termination of service, and the water delivered to San Jose after June 30, 1987, shall be limited by the City's ability to meet the full needs of all its other water customers (including in-City residents and other direct City water users). Delivery of water to San Jose may be subject to minimum and maximum water delivery levels, which will be negotiated between the City and San Jose, provided that San Jose's service area and maximum annual usage shall not exceed that set forth in Exhibit M.

(iii) Finally, the City may elect to terminate its water service to San Jose. If the City elects to exercise this option, it shall notify San Jose of its intention to do so no later than July 1, 1985, and the termination of service shall occur no earlier than July 1, 1987.

(b) *City of Santa Clara.* The City's existing contract with Santa Clara expires on June 30, 1984. From July 1, 1984 through June 30, 1985, the City shall furnish water to Santa Clara on the same rates as those applicable to other suburban purchasers pursuant to this Agreement. On or before July 1, 1985, the City will exercise one of the following options with respect to its continuing water service to Santa Clara after that date.

(i) The City may elect to take on Santa Clara as a permanent customer, subject to maximum and minimum water delivery levels to be negotiated between the City and Santa Clara, provided that Santa Clara's service area and maximum annual usage during the balance of the Term of this Agreement shall not exceed those shown in Exhibit M. If the City so elects and Santa Clara accepts this offer: (1) Santa Clara will continue to pay for water in accordance with the methodology set forth in this Agreement, such rates to be identical to those charged the other suburban purchasers; (2) water delivered to Santa Clara shall be included within the Supply Assurance; (3) Santa Clara will be entitled to a supply guarantee (to be included within the Supply Assurance) based on its usage during calendar year 1981 (633,810,320 gallons); and (4) its share of residual water will be determined in accordance with Section 7.02.

(ii) Alternatively, the City may continue to sell water to Santa Clara on a temporary and, after June 30, 1987, interruptible basis, but at rates identical to those charged other suburban purchasers. If the City continues to provide water to Santa Clara on a temporary and, after June 30, 1987, interruptible basis, the amount of water furnished to Santa Clara shall not be included within the Supply Assurance. The City will provide at least two years notice to Santa Clara prior to termination of service, and the water delivered to Santa Clara after June 30, 1987, shall be limited by the City's ability to meet the full needs of all its other water customers (including in-City residents and other direct City water users). Delivery of water to Santa Clara may be subject to minimum and maximum water delivery levels, which will be negotiated between the City and Santa Clara, provided that Santa Clara's service area and maximum annual usage shall not exceed that set forth in Exhibit M.

(iii) Finally, the City may elect to terminate its water service to Santa Clara. If the City elects to exercise this option, it shall notify Santa Clara of its intention to do so no later than July 1, 1985, and the termination of service shall occur no earlier than July 1, 1987.

(c) In signing this Agreement, neither San Jose nor Santa Clara waives any of its rights to contend, in the event the City does not elect to take it on as a permanent customer in 1987, that it is entitled to that status and to be charged rates identical to those charged other suburban purchasers under this Agreement, pursuant to the Raker Act or any other federal or state law. In signing this Agreement, the City does not waive its right to deny any or all of such contentions.

If, as the result of litigation between San Jose and/or Santa Clara, on the one hand, and the City, on the other, a court of competent jurisdiction enters a final judgment declaring that San Jose and/or Santa Clara are entitled to become permanent water customers of the City and/or compelling the City to provide water to San Jose and/or Santa Clara on a permanent basis, water provided to San Jose and Santa Clara thereafter shall be included within the Supply Assurance.

(d) If the City initially elects to sell water to San Jose and/or Santa Clara on a temporary and interruptible basis pursuant to subsections (a)(ii) and/or (b)(ii), *supra*, it may thereafter elect to take on San Jose and/or Santa Clara as permanent customers, pursuant to subsections (a)(i) and/or (b)(i), *supra*, provided that it so elects on or before June 30, 1988.

Section 9.04. *City of Hayward.*

The City and the City of Hayward ("Hayward") entered into a water supply contract on February 9, 1962 (the 1962 contract) which provides, *inter alia*, that the City will supply Hayward with all water supplemental to sources and supplies of water owned or controlled by Hayward as of that date, in sufficient quantity to supply the total water needs of the service area described on an exhibit to the 1962 contract "on a permanent basis."

The intention of the parties is to continue the 1962 contract in effect, as the individual water supply contract between the City and Hayward. Accordingly, it shall not be necessary for the City and Hayward to enter into a new Individual Contract pursuant to this Article and approval of this Agreement by Hayward shall constitute approval of both this Agreement and an Individual Contract for purposes of Section 2.01. The 1962 contract will continue to describe the service area of Hayward, while rates for water delivered to Hayward during the Term of this Agreement shall be governed by Article IV hereof. The 1962 contract will continue in force after the expiration of the Term of this Agreement.

Section 9.05. *Estero Municipal Improvement District.*

The City and the Estero Municipal Improvement District ("Estero") entered into a water supply contract on August 24, 1961, the term of which continues until August 24, 2011 (the 1961 contract). The 1961 contract provides, *inter alia*, that the City will supply Estero with all water supplemental to sources and supplies of water owned or controlled by Estero as of that date, in sufficient quantity to supply the total water needs of the service area described on an exhibit to the 1961 contract.

The intention of the parties is to continue the 1961 contract in effect, as the Individual Contract between the City and Estero. Accordingly, it shall not be necessary for the City and Estero to enter into a new Individual Contract pursuant to this Article and approval of this Agreement by Estero shall constitute approval of both this Agreement and an Individual Contract for purposes of Section 2.01. The 1961 Contract shall continue to describe the service area of Estero, rates for water delivered to Estero during the Term of this Agreement shall be governed by Article IV hereof, and the 1961 contract will continue in force after the expiration of the Term of this Agreement for the balance of its Term (i.e., until August 24, 2011). The supply guarantee applicable to Estero shall be determined by reference to the 1961 contract, as of the calendar year prior to its expiration (i.e., 2010).

Section 9.06. *Alameda County Water District.*

The City and the Alameda County Water District ("Alameda") entered into a water supply contract on November 30, 1965, the term of which continues until November 30, 1985 (the 1965 contract). The 1965 contract provides, *inter alia*, that the City will supply Alameda with specified quantities of water during its term in accordance with a schedule of deliveries, for use in the service area described in an exhibit to the 1965 contract. The schedule of deliveries specifies that from Fiscal Year 1981/82 until the expiration date of the 1965 contract, the deliveries will range from a

minimum of 5.36 mgd on a monthly basis to a maximum of 16.08 mgd on a daily basis and that the City is not obligated to furnish water at an instantaneous rate of delivery (i.e., during a maximum hour) at more than 120% of the rate of the 16.08 mgd maximum day rate.

The parties intend to continue the 1965 contract for the balance of its term (i.e., until November 30, 1985), during which the minimum monthly and maximum daily and hourly deliveries will continue as provided in the 1965 contract. The parties also intend to determine Alameda's supply guarantee for purposes of Section 7.02 by reference to Alameda's actual water usage during calendar year 1984. (Exhibit K-1, which contains an estimate of that usage, will be automatically amended when the actual usage data for 1984 become available.) The parties further intend, however, to enter into a new water supply contract prior to May 25, 1984 concurrently with their approval of this Agreement, which will serve as the Individual Contract for the balance of the Term of this Agreement. This new contract will contain minimum water delivery levels and may contain maximum water delivery levels, as provided in Section 7.07.

Section 9.07. *Dimond Public Utility District/City of Daly City.*

The City and the City of Daly City ("Daly City") entered into a water supply contract on December 22, 1960, the term of which ended on January 3, 1981. The City and the Dimond Public Utility District ("Dimond") entered into a water supply contract on December 1, 1960, the term of which continues until November 30, 1985 (the 1960 Dimond contract). Dimond subsequently has merged its water distribution system with Daly City. The parties intend to terminate the 1960 Dimond contract concurrently with the execution of this Agreement and the approval of a new Individual Contract with Daly City with a term of 25 years commencing July 1, 1984. In doing so, however, the parties also intend to determine Daly City's supply guarantee for purposes of Section 7.02 by reference to Daly City's water usage during calendar year 1981, as provided for by the 1960 Daly City contract, and by reference to water usage in the former Dimond service area during calendar year 1984, as provided for by the 1960 Dimond contract. The Daly City guarantee for purposes of Section 7.02 shall be the sum of Daly City's calendar year 1981 usage and the calendar year 1984 usage in the former Dimond service area. (Exhibit K-1, which contains actual 1981 Daly City usage and an estimate of 1984 Dimond usage will be automatically amended when the actual usage data for the Dimond service area in 1984 become available.)

Section 9.08. *Coastside County Water District.*

The City and the Coastside County Water District ("Coastside") entered into a water supply contract on January 12, 1971, the term of which continues until January 11, 1991 (the 1971 contract).

The parties intend to terminate the 1971 contract concurrently with the execution of this Agreement and the approval of a new Individual Contract with a term of 25 years commencing July 1, 1984. The new Individual Contract will modify the 1971 contract in certain respects including the following:

(a) The schedule of estimated deliveries during 1985 and 1990 (7.6 mgd and 10.0 mgd, respectively) will be eliminated, and Coastside will receive water from the City pursuant to the terms of Sections 7.01, 7.02 and 7.03 of this Agreement.

(b) Coastside's supply assurance for purposes of Section 7.02 will be determined by reference to its water usage during calendar year 1981, as provided in Section 7.02 and Exhibit K-1 of this Agreement. Water delivered to Coastside will be included within the Supply Assurance contained in Section 7.01.

Section 9.09. *Stanford University.*

The parties recognize that The Board of Trustees of The Leland Stanford Junior University ("Stanford") operates a non-profit university, and purchases water from the City for redistribution to

the academic and related facilities and activities of the university and to residents of Stanford, the majority of whom are either employed by or students of Stanford. Consistent with its prior contract with the City dated August 18, 1960, Stanford agrees that all water furnished by the City shall be used by Stanford only for domestic purposes and those directly connected with the academic and related facilities and activities of Stanford, and no water furnished by the City shall be used in any area now or hereafter leased or otherwise used for commercial or industrial purposes. Stanford further agrees not to use any water from any source whatsoever not in accordance with the foregoing provisions of this Section by substituting therefor water purchased from the City, without obtaining the prior written approval of the General Manager of the SFWD.

Nothing in this Agreement shall preclude the City from selling water to any county, city, town, political subdivision or other public agency for resale to Stanford or to customers within the service area of Stanford.

Notwithstanding anything in Section 7.06 to the contrary, Stanford shall have the right to assign to a public agency having the power of eminent domain all or a portion of the rights of Stanford under this Agreement or the individual contract between it and the City in connection with the acquisition by such public agency of all or a portion of Stanford's water system. In the event of any such assignment of all the rights, privileges, and obligations of Stanford under such contract, Stanford shall be relieved of all further obligations under such contract, provided that the assignee public agency expressly assumes Stanford's obligations thereunder. In the event of such an assignment of a portion of the rights, privileges, and obligations of Stanford under such contract, Stanford shall be relieved of such portion of such obligations so assigned thereunder, provided that the assignee public agency shall expressly assume such obligations so assigned to it.

Nothing in this Agreement shall require or contemplate any delivery of water to Stanford in violation of the Raker Act, which statute imposes certain obligations upon the City as a grantee from the United States in regard to the disposal of water and electricity from the Hetch Hetchy project.

Section 9.10. *City of Brisbane, Guadalupe Valley Municipal Improvement District, Town of Hillsborough.*

The parties acknowledge that the City has heretofore provided certain quantities of water to the City of Brisbane ("Brisbane"), Guadalupe Valley Municipal Improvement District ("Guadalupe") and the Town of Hillsborough ("Hillsborough") at specified rates or without charge pursuant to obligations arising out of agreements between the predecessors of the City and these parties, which agreements are referred to in judicial orders, resolutions of the SFPUC and/or the 1960 contracts between the City and Brisbane, Guadalupe and Hillsborough. The parties intend to continue those arrangements and accordingly agree as follows:

(a) Nothing in this Agreement is intended to alter, amend or modify the terms of Resolution No. 74-0653 of the SFPUC or the indenture of July 18, 1908 between the Guadalupe Development Company and the Spring Valley Water Company.

(b) Nothing in this Agreement is intended to alter, amend or modify the Findings of Fact and Conclusions of Law and Judgment dated May 25, 1961 in that certain action entitled *City and County of San Francisco v. Town of Hillsborough* in the Superior Court of the State of California in and for the County of Marin, No. 23282, as modified by the Satisfaction of Judgment filed October 23, 1961 and the Compromise and Release between Hillsborough and the City dated August 22, 1961. The rights and obligations of the City of Hillsborough under these documents shall continue as therein set forth.

(c) Nothing in this Agreement is intended to affect or prejudice any claims, rights or remedies of Guadalupe or of Crocker Estate Company, a corporation, or of Crocker Land Company, a corporation, or of the City, or of their successors and assigns, respectively, with respect to or

arising out of that certain deed dated May 22, 1884, from Charles Crocker to Spring Valley Water Works, a corporation, recorded on May 24, 1884, in Book 37 of Deeds at page 356, Records of San Mateo County, California, as amended by that certain Deed of Exchange of Easements in Real Property and Agreement for Trade in Connection Therewith, dated July 29, 1954, recorded on August 4, 1954, in Book 2628, at page 298, Official Records of said San Mateo County, or with respect to or arising out of that certain action involving the validity or enforceability of certain provisions of said deed entitled *City and County of San Francisco v. Crocker Estate Company*, in the Superior Court of the State of California in and for the County of Marin, No. 23281.

CITY AND COUNTY OF SAN FRANCISCO

DATED: _____

By _____
Rudolph Nothenberg, General Manager
of Public Utilities

Authorized by Public Utilities Commission

Resolution No. _____

Adopted _____

_____
Romaine A. Boldridge, Secretary

Approved as to form:

GEORGE AGNOST
City Attorney

By _____
McMorris M. Dow, Utilities General Counsel

Approved by Board of Supervisors

Resolution No. _____

Adopted _____

_____
John L. Taylor, Clerk

This Page Intentionally Left Blank

Interim Water Shortage Allocation Plan

This Interim Water Shortage Allocation Plan ("Plan") describes the method for allocating water between the San Francisco Public Utilities Commission ("SFPUC") and the Suburban Purchasers collectively during shortages caused by drought. The Plan implements a method for allocating water among the individual Suburban Purchasers which has been adopted by the Suburban Purchasers. The Plan includes provisions for transfers, banking, and excess use charges. The Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, and all references to "shortages" and "water shortages" are to be so understood. This Plan is adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract ("Master Contract").

Section 1. Shortage Conditions

1.1. Projected Available SFPUC Water Supply. The SFPUC shall make an annual determination as to whether or not a shortage condition exists. The determination of projected available water supply shall consider, among other things, stored water, projected runoff, water acquired by the SFPUC from non-SFPUC sources, inactive storage, reservoir losses, allowance for carryover storage, and water bank balances, if any, described in Section 3..

1.2 Projected SFPUC Purchases. The SFPUC will utilize purchase data, including volumes of water purchased by the Suburban Purchasers and by Direct City Water Users (as those terms are used in the Master Contract) in the year immediately prior to the drought, along with other available relevant information, as a basis for determining projected system-wide water purchases from the SFPUC for the upcoming year.

1.3. Shortage Conditions. The SFPUC will compare the available water supply (Section 1.1) with projected system-wide water purchases (Section 1.2). A shortage condition exists if the SFPUC determines that the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year (defined as the period from July 1 through June 30). When a shortage condition exists, SFPUC will determine whether voluntary or mandatory actions will be required to reduce purchases of SFPUC water to required levels.

1.3.1 Voluntary Response. If the SFPUC determines that voluntary actions will be sufficient to accomplish the necessary reduction in water use throughout its service area, the SFPUC and the Suburban Purchasers will make good faith efforts to reduce their water purchases to stay within their annual shortage allocations and associated monthly water use budgets. The SFPUC will not impose excess use charges during periods of voluntary rationing, but may suspend the prospective accumulation of water bank credits, or impose a ceiling on further accumulation of bank credits, consistent with Section 3.2.1 of this Plan.

1.3.2 Mandatory Response. If the SFPUC determines that mandatory actions will be required to accomplish the necessary reduction in water use in the SFPUC service area, the SFPUC may implement excess use charges as set forth in Section 4 of this Plan.

1.4. Period of Shortage. A shortage period commences when the SFPUC determines that a water shortage exists, as set forth in a declaration of water shortage emergency issued by the SFPUC pursuant to California Water Code Sections 350 et seq. Termination of the water shortage emergency will be declared by resolution of the SFPUC.

1. **Section 2. Shortage allocations**

2.1. Annual Allocations between the SFPUC and the Suburban Purchasers. The annual water supply available during shortages will be allocated between the SFPUC and the collective Suburban Purchasers as follows:

Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Suburban Purchasers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The water allocated to the SFPUC shall correspond to the total allocation for all Direct City Water Users as defined in Section 4.01 of the Master Contract.

2.2 Annual Allocations among the Suburban Purchasers. The annual water supply allocated to the Suburban Purchasers collectively during system wide shortages of 20 percent or less will be apportioned among them based on a methodology adopted by all of the Suburban Purchasers, which shall supersede the provisions of Section 7.03(b) of the Master Contract, as contemplated in Section 7.03(a) of the Master Contract. In any year for which the methodology must be applied, the Bay Area Water Users Association ("BAWUA") will calculate each Suburban Purchaser's individual percentage share of the amount of water allocated to the Suburban Purchasers collectively pursuant to Section 2.1. Following the declaration or reconfirmation of a water shortage emergency by the SFPUC, BAWUA will deliver to the SFPUC General Manager a list, signed by the President of BAWUA's Board of Directors and its General Manager, showing each Suburban Purchaser together with its percentage share and stating that the list has been prepared in accordance with the methodology adopted by the Suburban Purchasers. The SFPUC shall allocate water to each Suburban

Purchaser, as specified in the list. The shortage allocations so established may be transferred as provided in Section 2.5 of this Plan.

The methodology adopted by the Suburban Purchasers utilizes the rolling average of each individual Suburban Purchaser's purchases from the SFPUC during the three immediately preceding Supply Years. The SFPUC agrees to provide BAWUA by November 1 of each year a list showing the amount of water purchased by each Suburban Purchaser during the immediately preceding Supply Year. The list will be prepared using Customer Service Bureau report MGT440 (or comparable official record in use at the time), adjusted as required for any reporting errors or omissions, and will be transmitted by the SFPUC General Manager or his designee.

2.3. Limited Applicability of Plan to System Wide Shortages Greater Than Twenty Percent. The allocations of water between the SFPUC and the Suburban Purchasers collectively, provided for in Section 2.1, apply only to shortages of 20 percent or less. The SFPUC and Suburban Purchasers recognize the possibility of a drought occurring which could create system-wide shortages greater than 20 percent despite actions taken by the SFPUC aimed at reducing the probability and severity of water shortages in the SFPUC service area. If the SFPUC determines that a system wide water shortage greater than 20 percent exists, the SFPUC and the Suburban Purchasers agree to meet within 10 days and discuss whether a change is required to the allocation set forth in Section 2.1 in order to mitigate undue hardships that might otherwise be experienced by individual Suburban Purchasers or Direct City Water Users. Following these discussions, the water allocation set forth in Section 2.1 of this Plan, or a modified version thereof, may be adopted by mutual written consent of the SFPUC and the Suburban Purchasers. If the SFPUC and Suburban Purchasers meet and cannot agree on an appropriate allocation within 30 days of the SFPUC's determination of water shortage greater than 20 percent, then (1) the provisions of Section 7.03(b) of the Master Contract will apply, unless (2) all of the Suburban Purchasers direct in writing that an allocation methodology agreed to by them be used to apportion the water to be made available to the Suburban Purchasers collectively, in lieu of the provisions of Section 7.03(b).

The provisions of this Plan relating to transfers (in Section 2.5), banking (in Section 3), and excess use charges (in Section 4) shall continue to apply during system-wide shortages greater than 20 percent.

2.4. Monthly Water Budgets. Within 10 days after adopting a declaration of water shortage emergency, the SFPUC will determine the amount of water allocated to the Suburban Purchasers collectively pursuant to Section 2.1. The SFPUC General Manager, using the percentages shown on the list delivered by BAWUA pursuant to Section 2.2, will calculate each Suburban Purchaser's individual annual allocation. The SFPUC General Manager, or his designee, will then provide each Suburban Purchaser with a proposed schedule of monthly water

budgets based on the pattern of monthly water purchases during the Supply Year immediately preceding the declaration of shortage (the "Default Schedule"). Each Suburban Purchaser may, within two weeks of receiving its Default Schedule, provide the SFPUC with an alternative monthly water budget that reschedules its annual shortage allocation over the course of the succeeding Supply Year. If a Suburban Purchaser does not deliver an alternative monthly water budget to the SFPUC within two weeks of its receipt of the Default Schedule, then its monthly budget for the ensuing Supply Year shall be the Default Schedule proposed by the SFPUC.

Monthly water budgets will be derived from annual allocations for purposes of accounting for excess use. Monthly water budgets shall be adjusted during the year to account for transfers of shortage allocation under Section 2.5 and transfers of banked water under Section 3.4.

2.5. Transfers of Shortage Allocations. Voluntary transfers of shortage allocations between the SFPUC and any Suburban Purchasers, and between any Suburban Purchasers, will be permitted using the same procedure as that for transfers of banked water set forth in Section 3.4. The SFPUC and the Bay Area Water Users Association (BAWUA) shall be notified of each transfer. Transfers of shortage allocations shall be deemed to be emergency transfers described in Sections 7.05 and 7.07(a) of the Master Contract and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC. Transfers of shortage allocations shall be in compliance with Section 7.05 of the Master Contract. The transferring parties will meet with the SFPUC, if requested, to discuss any effect the transfer may have on its operations.

2. **Section 3. SHORTAGE WATER Banking**

3.1. Water Bank Accounts. The SFPUC shall create a water bank account for itself and each Suburban Purchaser during shortages in conjunction with its resale customer billing process. Bank accounts will account for amounts of water that are either saved or used in excess of the shortage allocation for each agency; the accounts are not used for tracking billings and payments. When a shortage period is in effect (as defined in Section 1.4), the following provisions for bank credits, debits, and transfers shall be in force. A statement of bank balance for each Suburban Purchaser will be included with the SFPUC's monthly water bills.

3.2. Bank Account Credits. Each month, monthly purchases will be compared to the monthly budget for that month. Any unused shortage allocation by an agency will be credited to that agency's water bank account. Credits will accumulate during the entire shortage period, subject to potential restrictions imposed pursuant to Section 3.2.1. Credits remaining at the end of the shortage period will be zeroed out; no financial or other credit shall be granted for banked water.

3.2.1. Maximum Balances. The SFPUC may suspend the prospective accumulation of credits in all accounts. Alternatively, the SFPUC may impose a ceiling on further accumulation of credits in water bank balances based on a uniform ratio of the bank balance to the annual water allocation. In making a decision to suspend the prospective accumulation of water bank credits, the SFPUC shall consider the available water supply as set forth in Section 1.1 of this Plan and other reasonable, relevant factors.

3.3. Account Debits. Each month, monthly purchases will be compared to the budget for that month. Purchases in excess of monthly budgets will be debited against an agency's water bank account. Bank debits remaining at the end of the fiscal year will be subject to excess use charges (see Section 4).

3.4. Transfers of Banked Water. In addition to the transfers of shortage allocations provided for in Section 2.5, voluntary transfers of banked water will also be permitted between the SFPUC and any Suburban Purchaser, and among the Suburban Purchasers. The volume of transferred water will be credited to the transferee's water bank account and debited against the transferor's water bank account. The transferring parties must notify the SFPUC and BAWUA of each transfer in writing (so that adjustments can be made to bank accounts), and will meet with the SFPUC, if requested, to discuss any affect the transfer may have on SFPUC operations. Transfers of banked water shall be deemed to be emergency transfers described in Sections 7.05 and 7.07(a) of the Master Contract and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC. If the SFPUC incurs extraordinary costs in implementing transfers, it will give written notice to the transferring parties within ten (10) business days after receipt of notice of the transfer. Extraordinary costs means additional costs directly attributable to accommodating transfers and which are not incurred in non-drought years nor simply as a result of the shortage condition itself. Extraordinary costs shall be calculated in accordance with the procedures in the Master Contract and shall be subject to the disclosure and auditing requirements in the Master Contract. In the case of transfers between Suburban Purchasers, such extraordinary costs shall be considered to be expenses chargeable solely to individual Suburban Purchasers and shall be borne equally by the parties to the transfer. In the case of transfers between the SFPUC and a Suburban Purchaser, the SFPUC's share of any extraordinary transfer costs shall not be added to the Suburban Revenue Requirement.

3.4.1. Transfer Limitations. The agency transferring banked water will be allowed to transfer no more than the accumulated balance in its bank. Transfers of estimated prospective banked credits and the "overdrafting" of accounts shall not be permitted. The price of transfer water originally derived from the SFPUC system is to be determined by the transferring parties and is not specified herein. Transfers of banked water shall be in compliance with Section 7.05 of the Master Contract.

3. **Section 4. Wholesale Excess Use Charges**

4.1. Amount of Excess Use Charges. Monthly excess use charges shall be determined by the SFPUC at the time of the declared water shortage consistent with the calendar in Section 6 and in accordance with Section 5.03 of the Master Contract. The excess use charges will be in the form of multipliers applied to the rate in effect at the time the excess use occurs.

The same excess use charge multipliers shall apply to the Suburban Purchasers and all Direct City Water Users. The excess use charge multipliers apply only to the charges for water delivered at the rate in effect at the time the excess use occurred.

4.2 Monitoring Suburban Water Use. During periods of voluntary rationing, water usage greater than a customer's allocation (as determined in Section 2) will be indicated on each SFPUC monthly water bill. During periods of mandatory rationing, monthly and cumulative water usage greater than a Suburban Purchaser's shortage allocation and the associated excess use charges will be indicated on each SFPUC monthly water bill.

4.3. Suburban Excess Use Charge Payments. An annual reconciliation will be made of monthly excess use charges according to the calendar in Section 6. Annual excess use charges will be calculated by comparing total annual purchases for each Suburban Purchaser with its annual shortage allocation (as adjusted for transfers of shortage allocations and banked water, if any). Excess use charge payments by those Suburban Purchasers with net excess use will be paid according to the calendar in Section 6. The SFPUC and the Suburban Purchasers have discussed the possibility of dedicating excess use charges paid by Suburban Purchasers toward the purchase of water from the State Drought Water Bank or other willing sellers in order to provide additional water to the Suburban Purchasers. The parties may continue discussions of this concept in order to develop the accounting and operational details of such a program. However, unless and until the SFPUC and the Suburban Purchasers agree in writing to an amendment of the Plan to implement such a program, excess use charges paid by the Suburban Purchasers constitute "revenues received from the Suburban Purchasers for the sale of water" for purposes of Section 5.07 of the Master Contract.

SECTION 5. GENERAL PROVISIONS GOVERNING WATER SHORTAGE ALLOCATION PLAN

5.1. Construction of Terms. This Plan is for the sole benefit of the parties and shall not be construed as granting rights to any person other than the parties or imposing obligations on a party to any person other than another party.

5.2. Governing Law. This Plan is made under and shall be governed by the laws of the State of California.

5.3. Effect on Master Contract. This Plan describes the method for allocating water between the SFPUC and the collective Suburban Purchasers during system-wide water shortages of 20 percent or less. This Plan also provides for the SFPUC to allocate water among the Suburban Purchasers in accordance with directions provided by the Suburban Purchasers through BAWUA under Section 2.2, and to implement a program by which such allocations may be voluntarily transferred among the Suburban Purchasers. The provisions of this Plan are intended to implement Section 7.03(a) of the Master Contract and do not affect, change or modify any other section, term or condition of the Master Contract.

5.4. Role of Suburban Advisory Group. Section 8.04 of the Master Contract identifies the Suburban Advisory Group as a forum for ensuring that the Suburban Purchasers are informed of matters affecting the SFPUC water system. Regularly scheduled meetings of the Suburban Advisory Group will be used to ensure that the important information concerning potential water shortages is provided to the Suburban Purchasers for consideration and examination. The parties agree to meet upon request up to two times per month in order to keep the SFPUC and the Suburban Advisory Group (or a subset of that group) informed of the status of the available water supply and measures under consideration to alleviate shortage conditions affecting the SFPUC water system.

5.5. Inapplicability of Plan to Allocation of SFPUC System Water During Non-Shortage Periods and to Water Wheeling. The SFPUC's agreement in this Plan to a respective share of SFPUC system water during years of shortage shall not be construed to provide a basis for the allocation of water between the SFPUC and the Suburban Purchasers when no water shortage emergency exists. Nor shall this Plan provide any precedent for the transfer, banking, determination of available capacity, or rate to be charged for water proposed to be wheeled through the SFPUC system from non-SFPUC sources by any person or entity under Water Code Section 1810 et seq.

5.6. Termination. This Plan shall expire on June 30, 2009. The SFPUC and the Suburban Purchasers can mutually agree to revise or terminate this Plan prior to that date due to changes in the water delivery capability of the SFPUC system, the acquisition of new water supplies, and other factors affecting the availability of water from the SFPUC system during times of shortage.

4. **Section 6. Allocation Calendar**

6.1. Annual Schedule. The annual schedule for the shortage allocation process is shown below. This schedule may be changed by the SFPUC to facilitate implementation.

6.1.1

In All Years Target Dates

1. SFPUC delivers list of annual purchases by each Suburban Purchaser during the immediately preceding Supply Year	November 1
• SFPUC meets with the Suburban Advisory Group and presents water supply forecast for the following Supply Year	January 1-30
• SFPUC issues initial estimate of available water supply	February 1
• SFPUC announces potential first year of drought (if applicable)	February 1
• SFPUC and Suburban Advisory Group meet upon request to exchange information concerning water availability and projected system-wide purchases	February 1-May 31
• SFPUC issues revised estimate of available water supply, and confirms continued potential shortage conditions, if applicable	March 1
• SFPUC issues final estimate of available water supply	March 15
• SFPUC determines amount of water available to Suburban Purchasers collectively	March 15

In Drought Years Target Dates

• SFPUC formally declares the existence of water shortage emergency (or end of water shortage emergency, if applicable) under Water Code Sections 350 et. seq.	March 15-31
• SFPUC declares the need for a voluntary or mandatory response	March 15-31
• BAWUA submits calculation to SFPUC of individual Suburban Purchasers' percentage shares of water allocated to Suburban Purchasers collectively	March 15- 31
• SFPUC determines individual shortage allocations, based on BAWUA's submittal of individual agency percentage shares to	March 25—April 10

SFPUC, and monthly water budgets (Default Schedule)

• Suburban Purchasers submit alternative monthly water budgets (optional)	April 8-April 24
• Final drought shortage allocations are issued for the Supply Year beginning July 1 through June 30	May 1
• Monthly water budgets become effective	July 1
• Excess use charges indicated on monthly Suburban bills	July 1 (of the beginning year) through June 30 (of the succeeding year)
• Excess use charges paid by Suburban Purchasers for prior year	July of the succeeding year

Return to RTC# 01-083

This Page Intentionally Left Blank

Interim Water Shorrtage Allocation Plan Among Suburban Purchasers

This Interim Water Shortage Allocation Plan ("Tier Two Plan") describes the method for allocating the water made available by the San Francisco Public Utilities Commission ("SFPUC"), during shortages caused by drought, among the Suburban Purchasers. This Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, and all references to "shortages" and "water shortages" are to be so understood. This Plan is adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract between the City and County of San Francisco and the Suburban Purchasers ("Master Contract").

1. **Applicability and Integration**
   1. **Applicability**

      . This Tier Two Plan applies when, and only when, the SFPUC determines that a system-wide water shortage of 20 percent or less exists, as set forth in a declaration of water shortage emergency adopted by the SFPUC pursuant to California Water Code Sections 350 *et seq.* This Tier Two Plan applies only to water acquired and distributed by the SFPUC to the Suburban Purchasers and has no effect on water obtained by a Suburban Purchaser from any source other than the SFPUC.

   2. **Integration with SFPUC Interim Water Shortage Allocation Plan (Tier One Plan)**

      . The SFPUC has adopted an Interim Water Shortage Allocation Plan (Tier One Plan) which, among other things, (a) provides for the allocation by the SFPUC of water between Direct City Water Users (e.g., retail water customers within the City and County of San Francisco) and the Suburban Purchasers collectively during system-wide water shortages of 20 percent or less, (b) contemplates the adoption by the Suburban Purchasers of this Tier Two Plan for allocation of the water made available to Suburban Purchasers collectively among the 29 individual Suburban Purchasers, (c) commits the SFPUC to implement this Tier Two Plan, and (d) provides for the transfer of both "banked" water and shortage allocations between and among the Suburban Purchasers and commits the SFPUC to implement such transfers.

This Tier Two Plan is intended to be integrated with the Tier One Plan described in this Section 1.2. Both Plans becoming operative only if both have been approved by all 29 Suburban Purchasers. Terms used in this Tier Two Plan are intended to have the same meaning as such terms have in the Tier One Plan.

2. **Allocation of water among suburban purchasers**
    1. **<u>Annual Allocations Among the Suburban Purchasers</u>**

        . The annual water supply allocated by the SFPUC to the Suburban Purchasers collectively during system-wide shortages of 20 percent or less shall be apportioned among them based on the methodology described in this Section 2.

    2. **<u>Methodology for Allocating Water Among Suburban Purchasers</u>**

        . The water made available to the Suburban Purchasers collectively will be allocated among them in proportion to each Suburban Purchaser's allocation factor, adjusted as described in Section 2.2.4 below.

        1. **<u>Step One: Determination of Allocation Basis for Each Suburban Purchaser</u>**

            . Each Suburban Purchaser's Allocation Basis is an amount, expressed in millions of gallons per day (mgd), which in turn is the arithmetic average of three components. Two of these components are fixed as of the date this Tier Two Plan is adopted; the third component is variable and will be determined when a shortage has been declared by the SFPUC.

            The first component is (i) the greater of a Suburban Purchaser's Supply Assurance provided for in the Master Contract or its average purchases from SFPUC during three fiscal years 19967-987, 19987-998, and 19998-0099, or (ii) in the case of Hayward and Estero Municipal Improvement District, their projected purchases from SFPUC in FY 2010-11 as reported in the 1998-99 Annual Survey published by BAWUA, or (iii) in the case of San Jose and Santa Clara, the limits on purchases from SFPUC set forth on Exhibit M to the Master Contract. The amount of this first component for each Suburban Purchaser is shown on Attachment A-1.

            The second component is the average of each Suburban Purchaser's purchases from SFPUC during the fiscal years 19976-987, 19987-998, and 19998-0099. The amount of this second component for each Suburban Purchaser is shown on Attachment A-2.

            The third component is the average of each Suburban Purchaser's purchases from SFPUC during the three fiscal years immediately preceding the declaration of water shortage emergency by the SFPUC.

2. **Step Two: Determination of Allocation Factor for Each Suburban Purchaser**

. Each Suburban Purchaser's Allocation Factor is a percentage derived from a fraction, the numerator of which is the particular Suburban Purchaser's Allocation Basis (in mgd) as calculated in Step One and the denominator of which is the sum (in mgd) of all Suburban Purchasers' Allocation Bases.

3. **Step Three: Determination of Initial Shortage Allocation for Each Suburban Purchaser**

. The initial shortage allocation for each Suburban Purchaser is determined by multiplying the amount of water available to the Suburban Purchasers collectively (determined pursuant to Section 2.1 of the Tier One Plan) by the Suburban Purchaser's Allocation Factor (i.e., the percentage calculated pursuant to Section 2.2.2).

4. **Step Four: Determination of Final Shortage Allocation for Each Suburban Purchaser**

. Once the initial shortage allocations are determined, the percentage reductions from each Suburban Purchaser's purchases from the SFPUC in the fiscal year immediately preceding the declaration of water shortage emergency will be calculated as a fraction, the numerator of which is the Suburban Purchaser's initial shortage allocation (determined pursuant to Section 2.2.3), and the denominator of which is the amount purchased from the SFPUC during such fiscal year. The result, as a percentage carried to two places to the right of the decimal, will be subtracted from 100%; the result is the Suburban Purchaser's percentage reduction.

The percentage reductions for San Jose and Santa Clara will be compared to the highest percentage reduction of the other Suburban Purchasers. If both San Jose's and Santa Clara's percentage reduction is larger than the highest percentage reduction among other Suburban Purchasers, the initial shortage allocations established under Section 2.2.3 will become the final shortage allocations. If either San Jose's percentage reduction or Santa Clara's percentage reduction, or both, is smaller than the highest percentage reduction of other Suburban Purchasers, the shortage allocation (in mgd) of San Jose or Santa Clara, or both, will be reduced so that the percentage reduction of each is no smaller than that of the otherwise highest percentage reduction.

The amount of shortage allocation (in mgd) removed from San Jose and/or Santa Clara will be reallocated among the remaining Suburban Purchasers in proportion to the initial shortage allocation of each calculated as a fraction the numerator of which is the individual initial shortage allocation and the denominator of which is the sum of the initial shortage allocation for the remaining Suburban Purchasers (not including San Jose and Santa Clara).

After such reallocation, the resulting amounts will be the final shortage allocation for each Suburban Purchaser.

5. **Example Calculation**

. Attachment A-3 presents a sample of the calculations involved in Steps One through Four, using the values from Attachments A-1 and A-2 and recent water use data for the other values. It is presented for illustrative purposes only and does not supersede the foregoing provisions of this Section 2.2. In the event of any inconsistency between this Section 2.2 and Attachment A-3, the text of this section will govern.

3. **Calculation of Individual Suburban Purchaser's Allocations: Directions to SFPUC**

. The Tier One Plan contemplates that in any year in which the methodology described above must be applied, the Bay Area Water Users Association ("BAWUA") will calculate each Suburban Purchaser's individual percentage share of the amount of water made available to the Suburban Purchasers collectively, following the methodology described above. The Tier One Plan requires SFPUC to allocate water to each Suburban Purchaser in accordance with calculations delivered to it by BAWUA.

The Tier One Plan requires that each year, the SFPUC will provide to BAWUA by November 1 a list showing the amount of water purchased by each Suburban Purchaser during the immediately preceding Supply Year. The list will be prepared using Customer Service Bureau report MGT 440 (or comparable official record in use at the time), adjusted as required for any reporting errors or omissions, and will be signed by the SFPUC General Manager.

Each Suburban Purchaser authorizes BAWUA to perform the calculations required, using water sales data furnished to it by the General Manager of the SFPUC, and to deliver a list of individual Suburban Purchasers' percentage shares so calculated to SFPUC as contemplated by the SFPUC Plan. Neither BAWUA nor any officer or employee of BAWUA shall be liable to any Suburban Purchaser for any such calculations made in good faith, even if incorrect.

3. **General provisions**

1. **Construction of Terms**

. This Tier Two Plan is for the sole benefit of the parties and shall not be construed as granting rights to any person other than the parties or imposing obligations on a party to any person other than another party.

2. **Governing Law**

. This Tier Two Plan is made under and shall be governed by the laws of the State of California.

3. **Effect on Master Contract**

. This Tier Two Plan describes the method for allocating water from the SFPUC among the Suburban Purchasers during system-wide water shortages of 20 percent or less declared by the SFPUC. The provisions of this Tier Two Plan, and the SFPUC Tier One Plan with which it is intended to be integrated, are intended to implement Section 7.03(a) of the Master Contract. Both the Tier One and Tier Two Plans constitute the water conservation plan contemplated by Section 7.03(a) and supersede the provisions of Section 7.03(b). The Plans do not affect, change or modify any other section, term or condition of the Master Contract.

4. **Amendment**

. This Tier Two Plan may be amended only by written agreement of all Suburban Purchasers.

5. **Termination**

. This Tier Two Plan shall expire on June 30, 2009. It may be terminated prior to that date only by the written agreement of all Suburban Purchasers.

ATTACHMENT A-1

The amount of the first component for each Suburban Purchaser is shown below.

Suburban Purchasers	First Fixed Component (mgd)
ACWD	13.76
Belmont	3.89

Brisbane	0.46
Burlingame	5.23
Coastside	2.18
Cordilleras	0.01
CWS Total	35.39
Daly City	4.49
East Palo Alto	2.18
Estero	7.23
Guadalupe	0.52
Hayward	24.00
Hillsborough	4.09
Los Trancos	0.11
Menlo Park	4.24
Millbrae	3.15
Milpitas	9.23
Mountain View	13.46
North Coast	3.84
Palo Alto	17.07

Purissima Hills	1.85
Redwood City	10.93
San Bruno	3.25
Skyline	0.18
Stanford	3.03
Sunnyvale	12.58
Westborough	1.32
San José	2.68
Santa Clara	6.5

ATTACHMENT A-2

The amount of the second component for each Suburban Purchaser is shown below.

Suburban Purchasers	Second Fixed Component (mgd)
ACWD	11.95
Belmont	3.26
Brisbane	0.30
Burlingame	4.68
Coastside	1.35
Cordilleras	0.01
CWS Total	33.42
Daly City	4.49
East Palo Alto	2.10
Estero	5.45

Guadalupe	0.27
Hayward	17.56
Hillsborough	3.60
Los Trancos	0.10
Menlo Park	3.43
Millbrae	2.64
Milpitas	6.80
Mountain View	10.36
North Coast	3.29
Palo Alto	12.96
Purissima Hills	1.85
Redwood City	10.92
San Bruno	2.01
Skyline	0.16
Stanford	2.58
Sunnyvale	10.73
Westborough	0.98
San José	4.10
Santa Clara	4.72

Return to RTC# 01-083

Appendix F

Westside Partners Proposed Groundwater Management Plan, March 1999

This Page Intentionally Left Blank

WESTSIDE BASIN PROPOSED GROUNDWATER MANAGEMENT PLAN

PREPARED FOR

WESTSIDE BASIN PARTNERS

PREPARED BY

BOOKMAN-EDMONSTON
ENGINEERING, INC.

AND

HYDROFOCUS, INC.

IN ASSOCIATION WITH

PUBLIC AFFAIRS MANAGEMENT

Unpublished Work © March 1999

This Page Intentionally Left Blank

WESTSIDE BASIN PROPOSED GROUNDWATER MANAGEMENT PLAN

PREPARED FOR

WESTSIDE BASIN PARTNERS

PREPARED BY

BOOKMAN-EDMONSTON ENGINEERING, INC.

AND

HYDROFOCUS, INC.

IN ASSOCIATION WITH

PUBLIC AFFAIRS MANAGEMENT

Unpublished Work © March 1999

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1
GROUNDWATER STORAGE AND QUALITY MONITORING 1
SALINE WATER INTRUSION 1
CONJUNCTIVE USE 1
RECYCLED WATER 1
SOURCE WATER AND WELLHEAD PROTECTION 2
TIERED IMPLEMENTATION 2

INTRODUCTION 3

ISSUES OF CONCERN 5
ADJUDICATION 5
CONJUNCTIVE USE 5
COST OF WATER 5
ENVIRONMENT AND NATURAL SYSTEMS 6
GENERAL WATER SUPPLY INFORMATION AND EDUCATION 6
COMPREHENSIVE GROUNDWATER DATA 6
GROUNDWATER RIGHTS AND MANAGEMENT 6
LAKE MERCED 6
RECYCLED WATER 7
WATER QUALITY 7

PHYSICAL CONDITIONS 8
MONITORING OF GROUNDWATER STORAGE AND GROUNDWATER QUALITY 8
IDENTIFICATION OF SALTWATER INTRUSION 8
CONJUNCTIVE USE OF SURFACE AND GROUNDWATER SUPPLIES 8
RECYCLED WATER 9
SOURCE WATER ASSESSMENT AND WELLHEAD PROTECTION 9

TIERED APPROACH 11

PLAN ELEMENTS 12
GROUNDWATER STORAGE AND QUALITY MONITORING 12
Tier I Activities 13
Technical 13
Data Collection, Compilation, and Storage 13
Data Analysis 15
Reporting 15
Public Outreach 16
Communication with Private Well Owners 16
Presentation Package and Speaker's Bureau Coordination 17

Costs 17
Tier II Activities 17
Technical 17
Expand Monitoring Activities 18
Groundwater Investigation 18
Public Outreach 18
Private Well Owner Cooperation 18
Education on the Need and Value of a Monitoring Program 19
CONTROL OF SALTWATER INTRUSION 20
Tier I Activities 20
Technical 20
Tier II Activities 20
Technical 20
Public Outreach 21
CONJUNCTIVE USE 22
Tier I Activities 22
Technical 22
Public Outreach 23
Tier II Activities 23
Technical 23
Public Outreach 24
RECYCLED WATER 25
Tier I Activities 25
Technical 25
Public Outreach 26
Tier II Activities 26
Technical 26
Public Outreach 26
SOURCE WATER PROTECTION 27
Tier I Activities 27
Technical 27
Public Outreach 27
Tier II Activities 28
Technical 28
Public Outreach 28

TIER I TASKS 29

TECHNICAL TASKS 29
Groundwater Storage and Quality Monitoring 29
Saline Water Intrusion 30
Conjunctive Use 30
Recycled Water 30
Source Water Protection 31
PUBLIC OUTREACH TASKS 31
Groundwater Storage and Quality Monitoring 31
Conjunctive Use 32
Recycled Water 32
Source Water Protection 32

TIER II TASKS 33
TECHNICAL TASKS 33
Groundwater Storage and Quality Monitoring 33
Saline Water Intrusion 33
Conjunctive Use 33
Recycled Water 33
Source Water Protection 34
PUBLIC OUTREACH TASKS 34
Groundwater Storage and Quality Monitoring 34
Saline Water Intrusion 34
Conjunctive Use 34
Recycled Water 34
Source Water Protection 35

COST ESTIMATE 36

FIGURE 1 Location of Westside Basin 4

APPENDIX A Technical Memorandum No. 1, *Westside Basin Groundwater Management Plan: Stakeholder Issues of Concern*

APPENDIX B Technical Memorandum No. 2, *Westside Basin Groundwater Management Plan: Hydrologic Conditions in the Westside Basin Relating to Stakeholder Issues of Concern*

APPENDIX C Basin-wide Monitoring Program

EXECUTIVE SUMMARY

The Westside Groundwater Basin (Westside Basin), which extends from Golden Gate Park southeastward to the San Francisco Airport, provides essential water supply to several municipalities and numerous private water users. Working in partnership, the cities of Daly City and San Bruno, the San Francisco Public Utilities Commission (SFPUC), and the California Water Service Company have developed this plan for managing groundwater resources in the Westside Basin, following guidelines set forth in the Groundwater Management Act of 1992 (California Water Code Section 10750 et seq.). The goals of the plan are to protect water quality and to enhance water supply reliability in the Westside Basin. Five plan elements, consistent with existing law, have been developed for meeting these management goals:

GROUNDWATER STORAGE AND QUALITY MONITORING

Changes in the quantity and quality of groundwater will be measured using a basin-wide monitoring program. The key implementation activities include (1) data collection, compilation and storage, (2) data analysis, and (3) data reporting and public dissemination.

SALINE WATER INTRUSION

Basin-wide groundwater storage and quality monitoring will be used to indicate any occurrence of saltwater intrusion into the groundwater basin from the Pacific Ocean or San Francisco Bay. Monitoring data will provide the technical information needed to develop the appropriate management response if intrusion is occurring.

CONJUNCTIVE USE

Conjunctive use of surface water and groundwater supplies provides an approach to increase the reliability of water supply, particularly during droughts. Conjunctive use activities will be most effective with cooperation among many water users in the basin. The key implementation efforts in the plan include (1) development of a model conjunctive use agreement among cooperating agencies, (2) development of plans for joint facilities needed to implement the conjunctive use agreement, and (3) implementation of the groundwater-monitoring program.

RECYCLED WATER

Wastewater that is currently discharged to the ocean or the bay provides an opportunity for a recycled water program where wastewater would be treated and recycled for turf and

landscape irrigation and other non-potable uses. By providing a substitute for water that is otherwise consumed by non-potable uses, a recycled water program will increase the availability of potable supplies and enhance supply reliability for the entire region. The key implementation activities include development of (1) a model recycled water agreement, (2) market mechanisms to encourage golf courses and cemeteries to participate in a recycled water program, and (3) plans for the facilities and infrastructure needed to implement the program.

SOURCE WATER AND WELLHEAD PROTECTION

A wellhead protection program will protect the quality of groundwater sources in the basin from potential contamination by methyl tertiary butyl ether (MTBE) and other contaminants. A key implementation activity is the completion of a source water assessment for the Westside Basin using statewide source water assessment methodologies, modified to account for specific hydrologic conditions in the basin.

TIERED IMPLEMENTATION

The plan elements are structured in a tiered approach. Tier I activities are those that can be implemented individually by local agencies at moderate or no cost. Tier I activities will, however, require agreements among participating agencies on consistent methods, protocols, and reporting. Examples of Tier I components include data collection, data analysis, preparation of summary reports, and public education programs to build support for the management plan. Agencies that coordinate and combine their individual efforts will minimize implementation costs and prevent the duplication of work. Implementation of Tier I activities will provide a basis for more challenging and longer-term efforts.

The Tier II activities of each plan element are long-term planning and implementation efforts that require more financial and institutional resources to execute. These activities require collaboration between local, county, state, and federal agencies and stakeholders to achieve successful implementation. The Tier II elements require higher levels of commitment in both time and funding. Examples of Tier II elements include constructing new wells for monitoring basin-wide groundwater-storage and quality, reconnaissance and mapping of contamination sites, developing a joint approach for market mechanisms to implement water recycling programs, and developing agreements for the storage, extraction, and marketing of surface water in the basin as part of a conjunctive use program.

INTRODUCTION

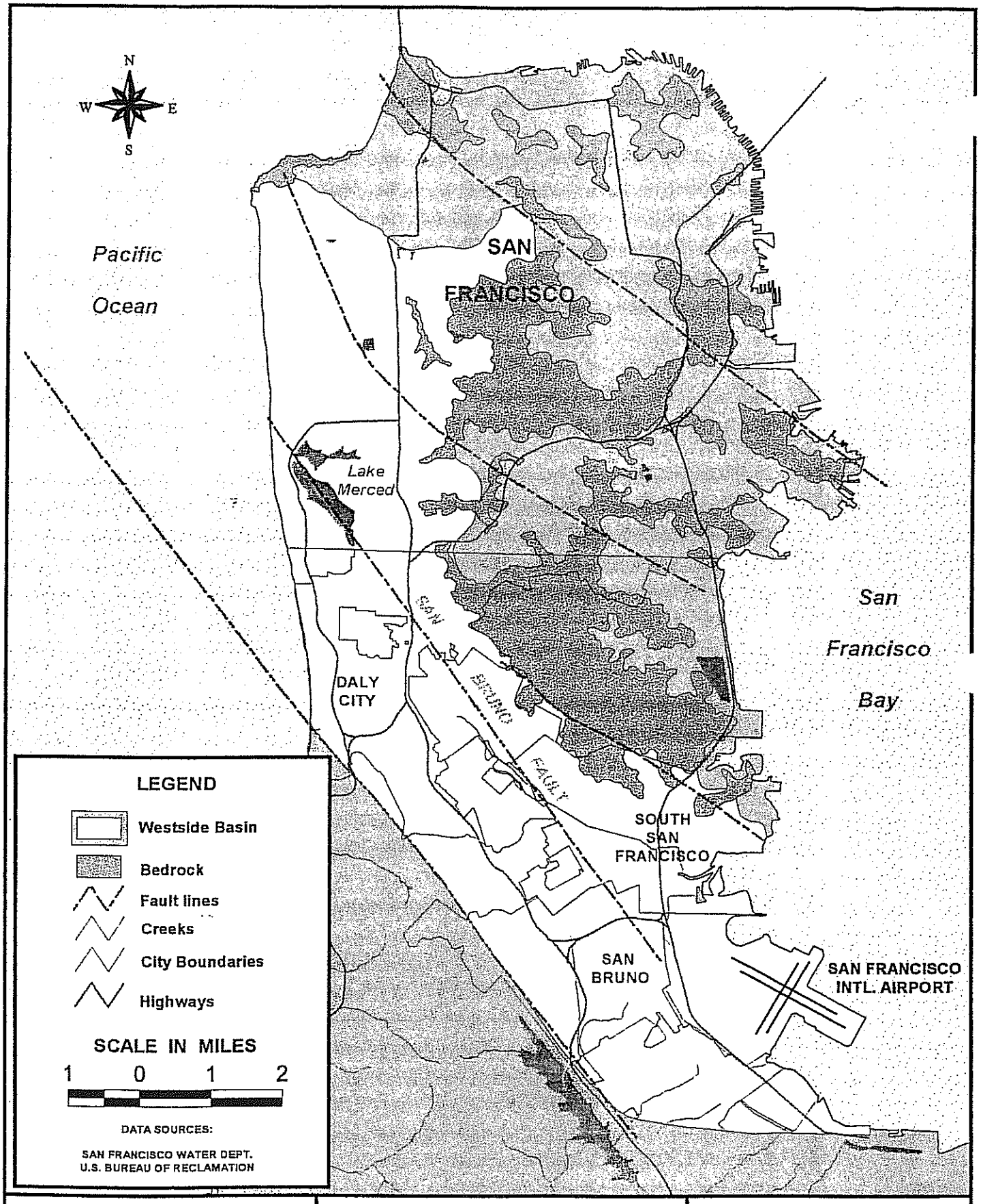
The Westside Basin has provided a reliable source of water for municipal and irrigation uses for more than a century. The Westside Basin underlies parts of San Francisco and northern San Mateo Counties and extends from Golden Gate Park in the north and past the San Francisco International Airport in the south (Figure 1). The cities of San Francisco, Daly City, South San Francisco, Colma, San Bruno, and Millbrae and parts of Burlingame and Hillsborough lie on top of the basin.

Groundwater is a valuable natural resource and should be managed to ensure both its safe production and its quality. Stakeholders and the basin itself will benefit from monitoring to track groundwater storage, protect groundwater quality, and improve the overall supply and reliability of water resources in the Westside Basin. The cities of Daly City and San Bruno, the San Francisco Public Utilities Commission (SFPUC), and the California Water Service Company have developed this plan for managing groundwater resources in the Westside Basin, following guidelines set forth in the Groundwater Management Act of 1992 (California Water Code Section 10750 et seq.), commonly referred to as AB 3030. The Groundwater Management Act authorizes local agencies and water service providers to adopt and implement by ordinance or resolution a groundwater management plan.

The primary goals of this plan are to protect water quality and ensure water supply reliability. Of the 12 potential plan elements described in the law, five plan elements were identified for meeting these management goals:

- Monitoring of groundwater storage and groundwater quality;
- Identification of saline water intrusion;
- Conjunctive use of surface and groundwater supplies;
- Recycled water projects; and,
- Identification and management of wellhead protection areas.

These five plan elements provide the framework for coordinating management efforts in the Westside Basin. Stakeholder interviews, workshops, and hydrogeological analyses completed during plan development identified the public and technical opportunities and constraints associated with each plan element. The purposes of this document are to briefly summarize the key findings from the Public Outreach and Technical Analysis and to provide a scoped work plan of activities for implementing a groundwater management plan. The activities are structured in tiered approach based on the level of effort and cost required to successfully implement each plan element.



D:\WESTSIDE\BASINMAP.PRT

BOOKMAN-EDMONSTON
ENGINEERING, INC.

WESTSIDE BASIN
GROUNDWATER MANAGEMENT PLAN

LOCATION OF WESTSIDE BASIN

WESTSIDE BASIN PARTNERS

FIGURE 1

A key component of the Westside Basin Groundwater Management Plan is the involvement of area elected officials, stakeholders, municipalities, and other interested parties. A public outreach effort was conducted during plan development to identify stakeholders and their key issues and to determine opportunities and constraints associated with each of the five plan elements. The public outreach effort included interviews with representatives of Daly City, the City of San Bruno, California Water Service Company, and the SFPUC, and other stakeholders in the basin. The public outreach effort also included five public workshops. A detailed description of the stakeholder interviews and the first workshop is reported in Technical Memorandum No. 1, *Westside Basin Groundwater Management Plan: Stakeholder Issues of Concern,* which is attached as Appendix A to this document.

The public outreach effort identified nine areas of concern for consideration in the plan. Most of these concerns are general and do not exclusively fall under any single plan element. Rather, there is considerable overlap between the areas of concern and two or more of the plan elements. The areas of concern identified for consideration in the management plan are summarized in alphabetical order below.

ADJUDICATION

In adjudicated basins, the landowners or other parties turn to the courts to allocate how much groundwater each party can rightfully extract. This is not a course of action the partners or the public wish to engage in. It is recognized, however, that some of the procedural actions within adjudicated basins may be useful for application within the AB 3030 Management Plan for the Westside Basin. As part of this effort, the actions that take place in an adjudicated basin were examined to determine their viability and applicability.

CONJUNCTIVE USE

The coordinated use of surface and groundwater (conjunctive use) is a strategy for using water efficiently. Concerns were expressed about the feasibility and economics of storing surface water in the basin for extraction during dry years. There is also the need for assurances that water stored in the basin will be available when needed, so that local investments are protected and benefits derived.

COST OF WATER

All parties want to ensure that water remains affordable and that management costs are apportioned among users according to the benefits derived.

ENVIRONMENT AND NATURAL SYSTEMS

Some stakeholders were concerned that environmental issues are not addressed adequately in the five plan elements. There was concern that how the plan interacts with natural systems (e.g., lakes, parks) within the basin's boundaries is not sufficiently emphasized, or that an environmental representative was afforded an opportunity to directly participate in the management structure of the project.

GENERAL WATER SUPPLY INFORMATION AND EDUCATION

Stakeholders requested more information about the local water supply, including the yield of the SFPUC system, the responsibility for treating drinking water, and the opportunities and constraints affecting future water supply and use. The general public lacks education on how the groundwater system works and how it interacts with other natural and engineered water systems.

COMPREHENSIVE GROUNDWATER DATA

Routine, basin-wide data collection and analysis are also needed. Stakeholders need more information about the Westside Basin hydrology including its operational yield, storage volume, groundwater levels, and water quality. Easily understandable, fact-based information is needed that assesses the effect of groundwater pumping on groundwater storage and surface water bodies such as Lake Merced. Basin-wide data will also be needed to judge the effectiveness of future management actions.

GROUNDWATER RIGHTS AND MANAGEMENT

There is a concern that a groundwater management plan may affect stakeholders' ability to extract and use groundwater. There are questions regarding who pays and shares in the benefits of managing the basin. There was also concern about the possible land use and development implications of wellhead and recharge area protection.

LAKE MERCED

Stakeholders expressed concern over water level declines in Lake Merced. The partners agree on the need for a regional commitment to data collection and monitoring efforts to manage the basin, identify changes in groundwater quality, and clarify the relationship between deep well pumping and water levels in Lake Merced. Stakeholders also asked whether recycled water is a potential source of additional recharge to Lake Merced.

RECYCLED WATER

Stakeholders are familiar with the use of recycled water in southern California and many are interested in exploring the possibilities of using recycled water to supplement Bay Area water supplies. However, some potential users have concerns about its quality, particularly about high sodium levels and the public perception of recycled water representing a human health hazard. Other concerns are the expense to treat and deliver recycled water, which may limit its current marketability.

WATER QUALITY

Stakeholders want to protect groundwater quality and recognize that saltwater and other contaminants represent potential water quality problems in the basin.

Continued public outreach and educational efforts can address most of the concerns expressed by the stakeholders and summarized above. A work plan for continuing these efforts is included as public outreach activities in each element of the Groundwater Management Plan.

A technical analysis was conducted that merged the issues of concern identified by the Public Outreach effort with the technical considerations of each plan element. An important aspect of this analysis was the identification of gaps in the available data and the uncertainties these data limitations impose on water management decisions. A detailed description of these efforts and their results is reported in Technical Memorandum No. 2, *Westside Basin Groundwater Management Plan: Hydrologic Conditions in the Westside Basin Relating to Stakeholder Issues of Concern,* which is attached as Appendix B to this document.

MONITORING OF GROUNDWATER STORAGE AND GROUNDWATER QUALITY

A considerable amount of data is collected, compiled, and analyzed for public supply wells in the Westside Basin. Data are lacking, however, for upslope portions of the basin that can be important locations of groundwater recharge, for areas served by private wells (or where wells are currently absent), and for critical boundaries like the Pacific Ocean and south San Francisco Bay. Data limitations can be addressed with the addition of new monitoring locations, improved coordination between data collection agencies, and uniform and accessible data storage and reporting protocols. A basin-wide monitoring program is needed and can be implemented by integrating local data collection activities and expanding efforts to improve the distribution of data points across the basin. This information is needed to understand groundwater flow rates and directions, the sources of water extracted by pumping wells, and changes in groundwater storage and groundwater quality over time.

IDENTIFICATION OF SALTWATER INTRUSION

Saltwater intrusion is a potential concern in the Westside Basin because the Pacific Ocean and south San Francisco Bay are located at the western and southeastern boundaries of the basin. Chemical data for samples from most municipal supply wells in the Westside Basin do not show clear trends indicating saltwater contamination. Because groundwater moves slowly in the basin, decades may be required for salt-affected groundwater to reach pumping wells in the Westside Basin. Continued monitoring of groundwater levels and groundwater quality is needed to ensure that saltwater intrusion does not become a problem in the future.

CONJUNCTIVE USE OF SURFACE AND GROUNDWATER SUPPLIES

Physical conditions in the Westside Basin provide opportunities for conjunctive use, which is the coordinated use of surface water and groundwater to ensure a reliable water supply.

For example, during wet years, when surface supplies are plentiful, surface water would be delivered to water users that otherwise rely on groundwater, allowing the aquifers to naturally recharge. During dry years, when runoff is reduced and surface water supplies are scarce, greater reliance would be placed on groundwater storage.

The aquifers within the Westside Basin represent a potential means for storing imported surface water and, therefore, could be used to increase the reliability of water supply within the basin. Conjunctive use can also be used to increase the long-term yield of the SFPUC system. Groundwater storage monitoring must be continued, yield analyses conducted, cooperative agreements established, and facilities developed for resource storage, recovery, and delivery.

RECYCLED WATER

Under a water recycling program, water that is otherwise discharged to the Pacific Ocean or south San Francisco Bay would be used for turf and landscape irrigation and other non-potable uses. The groundwater that would have been used to irrigate these areas would become available for municipal and industrial use or remain within the basin for future use. Recycled water thereby would become an additional supply of water that would enhance the long-term water reliability for the basin. The potential supply of recycled water from just four cities (Daly City, City of San Bruno, City of South San Francisco and Colma) could be used as a substitute for the annual groundwater pumpage used to irrigate parks, golf courses, schools, and cemeteries in the Westside Basin. The necessary hydrologic conditions, therefore, exist to develop a recycled water program in the basin. To implement and use this potential source of water, specific projects must be identified, market mechanisms developed, and project facilities designed and constructed.

SOURCE WATER ASSESSMENT AND WELLHEAD PROTECTION

Wellhead protection programs are designed to reduce or eliminate contamination, provide for alternative sources of emergency drinking water, and plan for new wells and their protection areas. Changes in land use may be necessary to minimize the risk of contamination to water supply wells in the basin. Public education is needed to communicate the results of these analyses and explain the implications for land use decisions and drinking water quality. A wellhead protection program will, therefore, require both public support and technical input. Components of a program may include a source water assessment, determination of recharge areas and groundwater flow paths to extraction wells, and continuation of efforts to identify and map potential contaminant sources.

MTBE (methyl tertiary-butyl ether) is an oxygenate added to gasoline with the intent of reducing air pollution. Of concern is the impact of MTBE on groundwater supplies where its contamination has forced cities to shut down impacted water supply wells. At this writing, Cal EPA is holding two public hearings on research conducted by the University of California to study the health and environmental effects of MTBE. After completion of the public hearings, the Governor must issue a written certification as to the human health and environmental risks of using MTBE as a gasoline additive in California.

The plan elements are structured in a tiered approach. The two tiers are labeled Tier I and Tier II.

Plan elements that can be completed individually by local agencies are designated as Tier I plan elements. The agencies are encouraged to coordinate and combine their individual efforts to minimize implementation costs and prevent the duplication of work. In general, the Tier I elements can be readily implemented at moderate cost, but will require agreements on consistent methods, protocols, and reporting. Examples of Tier I components include data collection, data analysis, preparation of summary reports, and public education programs to build support for the management plan. Implementation of the Tier I components provides a basis for more challenging and longer-term efforts.

The Tier II elements are long-term planning and implementation efforts that require more financial and institutional resources to execute. These elements require collaboration between local, county, state, and federal agencies and stakeholders to achieve successful implementation. The Tier II elements require higher levels of commitment in both time and funding. Examples of Tier II elements include constructing new wells for monitoring basin-wide groundwater storage and quality, reconnaissance and mapping of contamination sites, developing a joint approach for financial incentives to implement water recycling programs, and developing agreements for the storage, extraction, and marketing of surface water in the basin as part of a conjunctive use program.

This section summarizes the objectives and goals of the five plan elements and describes their proposed Tier I and Tier II implementation activities. The implementation activities provide the work plan for decision-makers, municipalities, and other stakeholders to manage groundwater resources in the Westside Basin. The implementation actions are separated into Tier I and Tier II levels for both Public Outreach and Technical categories, and include potential work tasks, possible timeframes, and estimated costs.

GROUNDWATER STORAGE AND QUALITY MONITORING

Changes in the quantity and quality of groundwater stored within the Westside Basin will be tracked using a basin-wide monitoring program, as set forth in Appendix C. The monitoring program will record changes in water levels in wells, dissolved constituents in well water, weather conditions, and water use. The program can be implemented at the Tier I level by coordinating existing data collection activities; existing gaps in the location and types of data being collected can be addressed by expanding data collection activities as part of the Tier II implementation activities. Public outreach activities are, therefore, recommended to educate water users in the basin on the need for monitoring and soliciting their cooperation and support for a basin-wide data collection program.

Daly City, City of San Bruno, and California Water Service Company routinely measure water levels in production wells to estimate changes in groundwater storage, collect water samples from wells for the analysis of chemical constituents in the groundwater, and record groundwater production and water use information. The SFPUC Groundwater Master Plan has preliminary plans to collect similar data in the portion of the Westside Basin located within the City and County of San Francisco, and the draft Lake Merced Comprehensive Management Plan recommends the installation of lake level gages to further the understanding of the relationship between Lake Merced and the Westside Basin. Coordinating these existing and planned data collection activities will provide information for a substantial portion of the Westside Basin. Additional data will be needed from areas where existing data collection activities do not exist. These include areas where private wells are located or other key areas where data are needed but wells are currently absent. Public outreach activities will be needed to obtain the participation of private well owners and develop support for constructing monitoring wells in areas where wells currently do not exist.

TIER I ACTIVITIES

Technical

Semiannual groundwater storage and quality monitoring will be conducted. The implementation activities include (1) data collection, compilation and storage, (2) data analysis, and (3) data reporting. The Tier 1 activities will coordinate existing monitoring activities. A significant effort will be needed initially, but in the long run, this approach should be the most efficient and cost-effective means of collecting basin-wide data.

Data Collection, Compilation, and Storage

Summarized below are key data needs and a brief description of data collection and archiving protocols. Additional information can be found in Groundwater Monitoring Plan for the Westside Basin – Draft Annotated Outline (attached as Appendix C to this planning document) and several other useful references:

- City and County of San Francisco Groundwater Monitoring Program - Technical Memorandum 19 for the San Francisco Groundwater Master Plan.
- Guidelines and Techniques for Obtaining Water Samples that Accurately Represent the Water Chemistry of an Aquifer (U.S. Geological Survey Open-File Report 82-1024).

The key data needs and archiving protocols are as follows:

- Monthly deliveries of surface water and groundwater pumping will be reported to provide semiannual inflow and outflow data for the basin. Groundwater pumping rates will be measured or estimated for public wells and accessible private wells. Monthly outflows from wastewater treatment plants will also be reported. These data are already collected by various entities and, therefore, are available for no new net cost. Some staff time will be necessary initially to identify the sources of these data, develop protocols for obtaining it, and routinely compile the collected data.
- A groundwater monitoring well network will be established. The network will use existing shallow (less than 100 feet deep) and deeper wells (greater than 200 feet deep); additional wells will be needed to improve the geographic distribution of data points in the Westside Groundwater Basin and are discussed in the Tier II implementation activities. The existing wells that are monitored will be located using a Global Positioning System (GPS), and a map will be produced that shows the well identification number and responsible reporting agency. Some of this work has already been completed by San Francisco State University, and most of the

mapping information is available electronically from the SFPUC Groundwater Master Plan, the U.S. Geological Survey, San Mateo County, and various state agencies.

- Static water levels will be collected semiannually. The water level measurements should be collected by the participating agencies on the same day and will require temporary shutdown of all production wells before measurement. The effort will be coordinated between the SFPUC, Daly City, San Bruno, and California Water Service Company. A standard field sheet and reporting protocol will be used by all agencies. Example field sheets and data collection protocols can be found in Technical Memorandum 19 for the San Francisco Groundwater Master Plan, *City and County of San Francisco Groundwater Monitoring Program*. Some effort will be needed coordinating activities and ensuring uniform protocols, but the collection of semiannual water levels should result in no significant new costs because most of the participating agencies already collect the data.

- Monitoring wells will be sampled semiannually, and at a minimum, the water samples will be analyzed for pH, dissolved solids, alkalinity, chloride, sulfate, calcium, magnesium, sodium, iodide, bromide, nitrate, iron, and manganese. Standardized data collection procedures, laboratory methods, and reporting protocols will be used. Example field sheets and data collection protocols can be found in Technical Memorandum 19 for the San Francisco Groundwater Master Plan, *City and County of San Francisco Groundwater Monitoring Program*. Well-water samples are generally collected and analyzed for most of these constituents by the participating agencies on an annual basis. The collection of this data semiannually should approximately double current agency costs.

- Monitoring activities will be integrated with data collection efforts to preserve the integrity of Lake Merced and understand its relationship with the underlying shallow aquifer. This includes support for the installation of lake level gages on North and Impound Lakes and monitoring of groundwater conditions in the shallow and deeper aquifers in areas next to Lake Merced. This data will be included in the analysis and reporting of basin-wide conditions.

- Participating agencies will organize and archive their own data. Water use, groundwater level, and analytical results will be stored using commercially available software. Some effort will be needed to develop a system for efficiently archiving the data that is easily accommodated by all the participating agencies. After the format of the system has been completed, the data entry, quality assurance, and quality control efforts should not result in significant new costs.

Portions of the data collection, compilation, and storage activities will result in a significant work effort that will be distributed between participating agencies. The total combined increase in effort is approximately 0.5 FTE the first year and 0.3 FTE in subsequent years.

Data Analysis

The data should be collated and summarized as follows:

- Compile and compute monthly water inflows and outflows to and from the basin (precipitation, surface water deliveries, pumping, potential evapotranspiration, measured and estimated runoff in creeks, and wastewater discharge).
- Time-series plots showing historical water levels in wells.
- Maps showing lines of equal groundwater elevations in the water table and deep aquifer system.
- Maps showing the change in groundwater elevations from the previous monitoring event.
- Time-series plot showing historical changes in groundwater storage and pumpage.
- Time-series plots showing historical chloride ion concentrations in well-water samples.
- Maps showing chloride ion concentrations in well-water samples in the water table and deep aquifer system.
- Time-series plots showing historical chloride-to-boron and chloride-to-bromide ratios in well-water samples.

Completing the above analysis will result in a significant new work effort by the participating agencies. It would be most efficient to have one entity assume the responsibility of acquiring the data from each agency and compiling it for a basin-wide analysis. A staff member from one of the participating agencies, a staff member for San Mateo County, or a private contractor could perform the work. The estimated cost for staff time to conduct this analysis twice a year is approximately 0.15 FTE the first year and 0.10 FTE during subsequent years.

Reporting

Understandable text and graphics that describe the above analysis will be needed and made available to all stakeholders in the basin. Copies of this report should be distributed

semiannually to all of the participating agencies, local libraries, San Mateo County, and other interested stakeholders. The effort to complete the reports and coordinate their distribution twice a year is approximately equivalent to 0.20 FTE. The production and mailing costs for 60 reports per annum (30 reports for each semiannual event) is about $1,000 per year.

Public Outreach

The recommended action steps in Tier I include two main components: (1) communication with the private well owners derived from permits on file with San Francisco and San Mateo Counties and (2) development of a presentation package and a coordinated speaker's bureau schedule. The primary objective of this outreach effort is to educate well owners on the need to monitor all wells to ensure a clean reliable supply of water. This work can be done internally by existing city or agency staff and should be coordinated by the partners. Alternatively, a regional agency like San Mateo County could act as the lead or a contractor could be retained to assist in coordinating these efforts.

Communication with Private Well Owners

Soliciting the participation of private well owners is important to the ultimate success of a monitoring program. The partners will conduct a joint basin-wide education effort to explain the need to routinely collect data from wells. The education efforts will also help solicit the participation of private well owners in the monitoring program. Activities will include:

- Development of a database listing all private well owners within the basin. This can be accomplished by working with the respective planning departments and San Mateo County.

- Development of a mailer for distribution to well owners alerting them of the importance and need to monitor wells. The material available to develop the mailer includes the Westside Basin Groundwater Management Plan fact sheet and information gathered during the five Westside Basin workshops.

- Telephone calls and/or visits depending on the size and/or annual water usage of the well owner may be conducted to follow up on potential measures and actions to ensure proper management and monitoring. There are more than 25 known active private wells in the basin and a similar number of privately owned wells believed to be currently inactive.

- A second mailer may be prepared discussing some of the positive measures various well owners have taken or are taking to influence those who are not participating.

Presentation Package and Speaker's Bureau Coordination

Developing a joint-use presentation package for local talks on the basin will help obtain stakeholder input. The package would include information on the hydrology of the basin and the need for a monitoring program. Representatives of the participating agencies will conduct presentations on a regular basis.

- Provide education on the basin hydrology, including its relationship to water bodies.
- Integrate with existing City and agency speaker's bureau programs and maintain a rotating schedule of presentations on the basin.
- Use existing mailer text for publication in City and local agency newsletters to explain the basin and the groundwater storage and monitoring program.
- Include an insert to water bills that reports the relative quantity of groundwater and surface water comprising the local drinking water supply.

Costs

The cost to complete the Tier I education program is approximately 0.20 full-time equivalent (FTE) of mid-level staff time and approximately $4,000 in mailing, telephone, printing, and design costs. The time commitment includes developing the database, designing and writing the mailer and newsletter articles, developing a presentation package, and coordinating speaking engagements.

TIER II ACTIVITIES

Technical

The Tier II implementation activities are designed to expand monitoring into areas having private wells and key areas where data are needed but wells are currently absent. Tier II activities will also include a groundwater investigation with the objective of developing a better understanding of groundwater flow directions, sources and rates of groundwater recharge, and the sources of water extracted by wells using specialized analyses of well-water samples. The installation of new wells for monitoring purposes will require a significant capital investment, and the expansion of data collection activities into new areas will increase work levels for each participating agency proportional to the number of new monitoring sites they undertake. The groundwater investigation will require a one-time investment in time and resources to collect the samples, contract with a specialized laboratory to conduct the analyses, and analyze and interpret the results.

Expand Monitoring Activities

- Identify specific locations and install dedicated wells in key areas of the Westside Basin to monitor groundwater levels and groundwater quality where wells and data are currently lacking. Initial target areas are near the Pacific Ocean and south San Francisco Bay, near upland areas next to the surrounding foothills, and in other general areas where data are lacking. A combination of shallow (less than 100 feet) and deep (greater than 200 feet) wells are needed. Approximately 10 new monitoring wells are recommended for the Daly City area (7 shallow and 3 deep), five new monitoring wells are recommended for the San Bruno area (3 shallow and 2 deep), and four monitoring wells are recommended in California Water Service Company service area (1 shallow and 3 deep). The typical capital investment for new wells of this type are approximately $6,500 for each shallow well and about $18,000 for each deep well.

- Establish a formal program and protocol for the monitoring of private wells and inclusion in the semiannual analysis and reports.

Groundwater Investigation

Production and monitoring wells will be sampled and the water used for specialized isotopic and age-dating analyses. The results will be evaluated to characterize recharge rates, map recharge areas, and estimate the sources of water produced by pumping wells in the basin. Sampling costs will be about 0.10 FTE of technician time. The laboratory analyses will cost from $15,000 to $20,000. Analysis and interpretation of the results and completing a summary report will be equivalent to about 0.15 FTE of senior-level staff time. The sampling can be completed by agency staff members and analyses conducted by a contracted laboratory that provides these types of specialized analyses. The analysis and interpretation of the data will most likely need to be completed by a trained individual at a government agency, college, or university or by a private consultant.

Public Outreach

The Tier II implementation activities are designed to increase cooperation from private well owners and solicit their participation in the monitoring program. The Tier II activities are also designed to educate elected officials, business leaders, and voters on the need for investing resources in the expansion of the monitoring program.

Private Well Owner Cooperation

A task force of domestic and business well owners could be established to act as a liaison between the participating agencies and private well owners in the basin. The task force

could assume the lead for collecting data for private wells. Alternatively, the task force could provide education to well owners on data collection protocols, provide instrumentation and training for collecting data, and integrate data collection activities into the regional monitoring program. At a minimum, the task force would help the participating agencies obtain access to private wells for inclusion in their monitoring efforts. This activity would include the following:

- Use the existing private well owner database to hold a targeted briefing to identify stakeholders and develop the well owner's task force. This could include a centrally located meeting to discuss the need and value of a well owner task force to establish a leadership role in monitoring private wells. Well owner task force members should include representatives from cemeteries, nurseries, and golf courses.

- Meet with communities like Colma (cemeteries) and South San Francisco (nurseries) to obtain support for the program.

- The task force could assume responsibility for collecting and compiling water level, water quality, and well production data for inclusion in the semiannual reports.

Education on the Need and Value of a Monitoring Program

Gaining consensus from public agencies, the business community, and voters is necessary to obtain the needed resources for expanding data collection and reporting efforts. This could include:

- Writing and disseminating feature articles that target the need and value of the monitoring program by sharing successful efforts in other parts of the basin. This could include efforts to obtain press coverage and sample stories.

- Providing educational mailers for City and agency water bills.

- Targeting speaking engagements to educate constituents and obtain feedback for an expanded monitoring program.

CONTROL OF SALTWATER INTRUSION

Saltwater intrusion is a potential concern in the Westside Basin because the Pacific Ocean and San Francisco Bay are located at the western and southeastern boundaries of the basin. Saltwater intrusion can increase the salinity of water produced by pumping wells. Historical data suggest landward flow from beneath the ocean and bay, but most pumping wells do not show substantial increases in the salinity of the well water. Basin-wide groundwater storage and quality monitoring are needed to identify saltwater intrusion and provide the technical information needed to develop the appropriate response if intrusion is occurring.

TIER I ACTIVITIES

Technical

The Tier I implementation activities are related to groundwater storage and quality monitoring:

- Establish a groundwater storage and quality-monitoring network.
- Prepare semiannual summary reports for the basin.
- Determine sites needed for salt-water monitoring wells.

These activities will not create significant new costs other than those identified as part of the groundwater storage and quality monitoring planning element.

TIER II ACTIVITIES

Technical

The Tier II implementation activities are related to groundwater storage and quality monitoring:

- Install dedicated monitoring wells in key areas near the Pacific Ocean and south San Francisco Bay where data are needed and wells are currently absent.
- Include private wells into the monitoring network.

If monitoring activities identify a saltwater intrusion problem, efforts will be needed to identify the problem scope and alternative responses.

Public Outreach

Communication on monitoring efforts to detect saltwater intrusion is useful information but not a high priority. It becomes a priority and a required action when and if an actual saltwater intrusion problem occurs. At that time, the following actions may occur.

- Compile research on saltwater intrusion monitoring efforts in the basin and other saltwater intrusion problems within the state.
- Communicate directly with large property well owners on the potential for problems and the importance of proactive management.
- Develop newsletter articles and press contingency statements outlining the monitoring efforts, previous and current remediation work in the state and the efforts currently under way to remediate problems in the basin.
- Develop a media relations plan to work with press during remediation efforts.

CONJUNCTIVE USE

Conjunctive use is a water management technique that is gaining recognition throughout California as a cost-effective alternative for increasing reliability of the water supply, particularly during droughts. Conjunctive use in the Westside Basin can provide water supply benefits to all users in the basin who participate in an agreement to coordinate the use of groundwater and surface water supplies.

While the operational details have yet to be developed by the participating parties, the principles of a conjunctive use plan can be stated here. During wet years, imported water and local runoff can be stored in the Westside Basin using passive methods to increase groundwater replenishment. Passive groundwater replenishment, or "in-lieu recharge," occurs when increased surface water use replaces groundwater extraction. Reduced pumpage and greater deep percolation of imported surface water causes groundwater storage to increase.

The water stored in the groundwater basin is then available for use during dry years, when imported water and local runoff are reduced. Increased reliance on groundwater during droughts reduces demand on the available surface water supply, which can be redistributed to users with limited access to groundwater facilities. All users enjoy higher supply reliability during droughts.

Approximately 30 percent of total water use in the basin is currently from local groundwater. Therefore, in-lieu recharge can be used to store 30 percent of annual water demand in the basin, although facility upgrades may be needed to integrate this storage into an operational conjunctive use system. In addition, since groundwater must be blended with a minimum amount of surface water to meet water quality criteria for municipal treatment systems, the practical rate of in-lieu recharge will be somewhat less than 30 percent of annual water use. Nevertheless, the potential for conjunctive use to increase water supply reliability during droughts is substantial. The following activities are designed to transform that potential into a reality.

TIER I ACTIVITIES

Technical

The following activities will comprise Tier I.

- Develop a model conjunctive use agreement. A model agreement will describe operational concepts, including the voluntary nature of the agreement, identification of participants, recharge and extraction mechanisms, and the distribution of water supply benefits. Numerical values, such as caps on water use

and cost sharing for new facilities, will be negotiated among the participants outside of the model agreement.

- Pursue agreements with participating agencies and other groundwater users to enhance in-lieu recharge. Examples include routing of storm water into Lake Merced and water conservation efforts that enhance recharge from deep percolation and seepage from creeks.

- Implement the groundwater storage and quality monitoring element in this plan.

- Using data from the monitoring program, conduct an analysis to determine the operational storage capacity of the Westside Basin.

Public Outreach

Public outreach for conjunctive use includes developing a public education and outreach program that targets messages to policy makers, public agencies, and the public. This task would include education to familiarize all audiences with conjunctive use efforts currently under way and its value to preserve existing water resources. The education and outreach task include the following:

- Meet with other potential partners (jurisdictions) to discuss opportunities (Burlingame, Colma, Millbrae, and South San Francisco).

- Develop educational materials that focus on the need to protect the water supply through conjunctive use. Materials may include a quarterly newsletter, a speaker's bureau presentation (adult and children), and educational posters.

- Explore the availability of funds to implement or supplement public outreach programs on conjunctive use.

TIER II ACTIVITIES

Technical

The following activities will comprise Tier II.

- Complete a conjunctive use agreement. The agreement will include establishment of a joint cooperative venture that qualifies for funding from outside sources.

- Explore funding sources for joint collaborative projects. Potential sources include CalFed and individual federal and state programs.

- Develop joint facilities needed to implement the conjunctive use agreement.
- Develop a system for an ongoing audit of storage and yield of the basin.

Public Outreach

Tier II public outreach activities include a targeted outreach program to promote the value of a joint collaborative conjunctive use program among the partners. This work includes the following:

- Developing talking points and issues papers outlining the value to jurisdictions of a joint collaborative program. These tools will be used to obtain support from elected officials and policy makers for a collaborative conjunctive use program.
- Continue outreach and education on the costs and benefits of a conjunctive use program given a possible bond measure or water user rate increase for elected officials, policy makers, and the public. This can include one-on-one meetings with policy makers, continued presentations to businesses and community groups, media briefings, and question and answer sheets on the topic.

RECYCLED WATER

Recycled water is another water management technique for increasing the reliability of the regional water supply. Like conjunctive use, recycled water can provide water supply benefits to all users in the basin who participate in an agreement to integrate recycled water into the regional water supply.

Under a recycled water program, wastewater from one or more of the treatment plants in the Westside Basin would undergo tertiary treatment and then be distributed for turf and landscape irrigation. The groundwater that would have otherwise been used for irrigation becomes available for municipal and industrial use or can be stored in the groundwater basin for future droughts. By utilizing water that otherwise would be discharged to the Pacific Ocean or San Francisco Bay, a recycled water program would create a new supply that enhances water supply reliability for the region.

TIER I ACTIVITIES

Technical

The following activities will comprise Tier I.

- Develop a model recycled water agreement. The model agreement will describe operational and financial concepts, but will not specify numerical values on water usage or prices.

- Develop financial incentives to encourage golf courses and cemeteries to participate in a recycled water program. Potential financial incentives will include funding from the U.S. Bureau of Reclamation, the California State Water Resources Control Board, and the CalFed program for the Bay-Delta. The incentives will recognize that a diversification of financing sources (e.g., loans and grants, recycled water sales revenues, fixed revenues such as standby charges) is the key to developing a fiscally sound recycled water project.

- Develop a model agreement for the use of recycled water in Lake Merced.

- Upon completion of the draft plan for the Bay Area Regional Recycling Program, identify opportunities for integration with recycled water projects in the Westside Basin.

Public Outreach

Developing a public education and outreach program that targets messages to policy makers, public agencies, and the general public is key to acceptance of a recycled water program. The Tier I tasks include educating audiences on recycled water use to help preserve existing water sources. This effort will include:

- Education on the value of a recycled use program, existing programs, and possible uses of recycled water.
- Targeted messages for policy makers, elected officials, public agencies, and the general public are recommended. The messages should address concerns about health and safety, the need to replenish existing sources, and future projected water shortfalls.
- Education on the need for a recycled use program given the projected future shortfalls and the need to manage the Westside Basin.
- Investigations into the availability of funds to implement public outreach programs and piggyback on existing outreach efforts.

TIER II ACTIVITIES

Technical

The following activities will comprise Tier II.

- Complete a water recycling agreement. The agreement will include establishment of a joint cooperative venture that qualifies for funding from outside sources.
- Develop facilities and infrastructure needed to implement the program described in the agreement.

Public Outreach

The public outreach efforts in Tier II include a targeted outreach program to promote the value of a joint collaborative recycled water program. This includes continued outreach and education on the costs and water supply gains of a recycled use program, given a possible bond measure or water rate increase.

SOURCE WATER PROTECTION

Stakeholders have expressed concern about potential contamination of the groundwater supply by methyl tertiary butyl ether (MTBE). Wellhead protection programs can reduce potential groundwater contamination by MTBE as well as other constituents of concern in the Westside Basin.

TIER I ACTIVITIES

Technical

The following activities will comprise Tier I.

- Complete a source water assessment for the Westside Basin using statewide source water assessment methodologies, modified to account for specific hydrologic conditions in the basin. The modifications will include explicit recognition of the depth to well screens and the associated vertical travel times for potential contaminants. The assessment will include identification of potential contamination sites and determination of recharge areas and approximate groundwater-flow paths to the well screens.

- Establish protocols for remediation efforts in conjunction with County offices.

- Develop an agreement with the San Mateo County Department of Health to maintain source water assessment data.

Public Outreach

Public outreach at the Tier I level includes collaboration with other agencies moving toward the start of source water protection education and outreach program. This includes:

- Targeted education and outreach on the need for a program and the potential impacts on businesses and individuals because of land use and zoning restrictions. Targeted education can include information dissemination through existing city and county storm water programs.

- Collaborative education efforts with existing storm water and hazardous waste protection programs. This includes collaboration with existing programs in each city and with County efforts.

- Work with statewide source water assessment program to provide education and outreach.

TIER II ACTIVITIES

Technical

The following activities will comprise Tier II.

- Complete a one-time sampling and analysis of water samples from monitoring and production wells using age-dating and isotopic techniques. The information will be used to determine recharge rates and potential contaminant travel times to production wells.

- Implement a source water protection program. The program will include developing land use and zoning recommendations for various planning authorities, and establishing mitigation programs to protect source water sites.

Public Outreach

Tier II work tasks include starting a source water education program. It could begin up to one year before the start of a source water protection program. It can include:

- Posters on source water protection for distribution at public sites within the basin (schools, offices)

- Public service announcements explaining the value and need for source water protection programs.

- Targeted outreach to decision makers and business leaders on the need for a source water program. This includes developing talking points and presentations for individual presentations.

- Develop outreach program that includes speaker's bureau presentations outlining the need for the program and its potential affects on businesses and individual in the source water protection zones.

The following list summarizes the Tier I tasks for each plan element.

TECHNICAL TASKS

GROUNDWATER STORAGE AND QUALITY MONITORING

- Data Collection
  - Collect data on monthly deliveries of surface water and groundwater.
  - Establish a groundwater monitoring well network, using existing shallow and deep wells.
  - Collect static water levels semiannually, using a standard field sheet and data collection protocols.
  - Sample monitoring wells semiannually for pH, dissolved solids, alkalinity, chloride, sulfate, calcium, magnesium, sodium, iodide, bromide, nitrate, iron, and manganese.
  - Integrate monitoring activities with data collection efforts to preserve the integrity of Lake Merced and understand its relationship with the underlying shallow aquifer. Support the installation of lake level gauges on North and Impound Lakes and monitoring of groundwater conditions in the shallow and deeper aquifers in areas next to Lake Merced.
- Data Analysis
  - Compile and compute monthly water inflows and outflows to and from the basin (precipitation, surface water deliveries, pumping, potential evapotranspiration, measured and estimate runoff in creeks, and wastewater discharge).
  - Construct time-series plots showing historical water levels in wells.
  - Develop maps showing lines of equal groundwater elevations in the water table and deep aquifer system.
  - Develop maps showing the change in groundwater elevations from the previous monitoring event.

- Construct time-series plot showing historical changes in groundwater storage and pumpage.
- Construct time-series plots showing historical chloride ion concentrations in well-water samples.
- Develop maps showing chloride ion concentrations in well-water samples in the water table and deep aquifer system.
- Construct time-series plots showing historical chloride-to-boron and chloride-to-bromide ratios in well-water samples.

- Data Reporting
  - Develop brief data reports in the form of understandable text and graphics that describe the above analysis.
  - Distribute report copies semiannually to all of the participating agencies, local libraries, San Mateo County, and other interested stakeholders.

SALINE WATER INTRUSION

- Establish a groundwater storage and quality monitoring network.
- Prepare semiannual summary reports for the basin.
- Determine sites needed for saltwater monitoring wells.

CONJUNCTIVE USE

- Develop a model conjunctive use agreement.
- Pursue agreements with participating agencies and other groundwater users to enhance in-lieu recharge.
- Implement the groundwater storage and quality monitoring element in this plan.
- Using data from the monitoring program, conduct an analysis to determine the operational storage capacity of the Westside Basin.

RECYCLED WATER

- Develop a model recycled water agreement.

- Develop financial incentives to encourage golf courses and cemeteries to participate in a recycled water program.
- Develop a model agreement for the use of recycled water in Lake Merced.
- Upon completion of the draft plan for the Bay Area Regional Recycling Program, identify opportunities for integration with recycled water projects in the Westside Basin.

SOURCE WATER PROTECTION

- Complete a source water assessment for the Westside Basin using statewide source water assessment methodologies, modified to account for specific hydrologic conditions in the basin.
- Establish protocols for remediation efforts in conjunction with County offices.
- Develop an agreement with the San Mateo County Department of Health to maintain source water assessment data.

PUBLIC OUTREACH TASKS

GROUNDWATER STORAGE AND QUALITY MONITORING

- Communicate with private well owners
- Develop a database listing of all private well owners within the basin.
- Develop a mailer for distribution to well owners, alerting them of the importance and need to monitor wells.
- Conduct telephone calls or visits, depending on the water usage of the well owner to follow up on potential monitoring activities.
- Prepare a second mailer that discusses some of the positive measures various well owners have taken or are taking to influence those who are not participating.
- Develop presentation package for speakers bureau.
- Provide education on hydrology of the basin, including its relationship to surface water bodies and the need for monitoring.

- Integrate with existing agency speaker's bureau programs and actively maintain a rotating schedule of presentations.

- Use existing mailer text for publication in local agency newsletters to explain the basin and the groundwater storage and monitoring program.

- Include an insert to water bills that reports the relative quantity of groundwater and surface water comprising the local drinking water supply.

CONJUNCTIVE USE

- Meet with other potential partners (jurisdictions) to discuss opportunities (Burlingame, Colma, Millbrae and South San Francisco).

- Conduct an education effort on the value of a conjunctive use program and actions currently in progress.

- Explore the availability of funds to implement or supplement public outreach programs on conjunctive use.

RECYCLED WATER

- Develop educational materials, such as a newsletter, a speaker's bureau presentation, and educational posters, on the value of a recycled use program. Borrow information from the statewide WateReuse program and other successful efforts in southern California and in Santa Clara County.

- Explore the availability of funds to implement public outreach programs and piggyback on existing outreach efforts.

SOURCE WATER PROTECTION

- Develop targeted education and outreach on the need for a program and the potential impacts on businesses and individuals because of land-use and zoning restrictions. Targeted education can include information dissemination through existing city and county storm water programs.

- Collaborate education efforts with existing storm water and hazardous waste protection programs. This includes collaboration with existing programs in each city and with County efforts.

- Work with statewide source water assessment program to provide education and outreach.

The following list summarizes the Tier II tasks for each plan element.

TECHNICAL TASKS

GROUNDWATER STORAGE AND QUALITY MONITORING

- Expand Monitoring Activities
  - Install new monitoring wells.
  - Establish program and protocol for monitoring private wells.
- Groundwater Investigation
  - Sample monitoring wells for isotopic and age-dating analysis
  - Characterize recharge rates and sources.

SALINE WATER INTRUSION

- Install dedicated monitoring wells in key areas.
- Include private wells into monitoring network.

CONJUNCTIVE USE

- Complete a conjunctive use agreement.
- Explore funding sources for joint projects.
- Develop joint facilities needed for conjunctive use.
- Develop an ongoing audit system.

RECYCLED WATER

- Complete a recycled water agreement.
- Develop facilities and infrastructure.

SOURCE WATER PROTECTION

- Complete a one-time sampling of monitoring wells to determine potential contaminant travel times to production wells.
- Implement a source water protection program, including recommendations for land use and zoning.

PUBLIC OUTREACH TASKS

GROUNDWATER STORAGE AND QUALITY MONITORING

- Establish a task force to coordinate activities with private well owners.
  - Use private well owner database to develop task force.
  - Meet with affected communities.
  - Evaluate responsibilities of task force.
- Develop educational materials on monitoring program.
  - Write feature articles.
  - Provide educational mailers for water bills.
  - Arrange for speaking engagements.

SALINE WATER INTRUSION

- If saltwater intrusion is detected by the monitoring program, develop informational materials for public determination.

CONJUNCTIVE USE

- Develop talking points and issue papers on joint collaboration efforts.
- Continue outreach and education.

RECYCLED WATER

- Continue outreach and education collaborative efforts.

SOURCE WATER PROTECTION

- Develop a source water education program, including posters, public service announcements, and public presentations.

The following table provides estimates of staff resources and monetary costs needed to implement the Tier I and Tier II tasks for groundwater storage and quality monitoring. Estimates are preliminary at this time.

Resources Needed to Implement Groundwater Storage and Quality Monitoring			
	Full-Time Equivalent Staff		Direct Costs ($)
	Year 1	Subsequent Years	
Tier I			
Technical			
Data Collection	0.50	0.30	
Data Analysis	0.15	0.10	
Semi-Annual Reporting	0.20	0.20	1,000
Public Outreach	0.20	0.20	4,000
Subtotal	1.05	0.80	5,000
Tier II			
Technical			
New Wells for Expanded Monitoring	N/A	N/A	216,000
Groundwater Investigation	0.25	N/A	20,000
Public Outreach	0.25	0.10	2,000
Subtotal	0.50	0.10	238,000

TECHNICAL MEMORANDUM NO. 2

HYDROLOGIC CONDITIONS IN THE WESTSIDE BASIN RELATING TO STAKEHOLDER ISSUES OF CONCERN

PREPARED FOR

WESTSIDE BASIN PARTNERS

PREPARED BY

BOOKMAN-EDMONSTON
ENGINEERING, INC.

AND

HYDROFOCUS, INC.

IN ASSOCIATION WITH

PUBLIC AFFAIRS MANAGEMENT

November 1998

TABLE OF CONTENTS

SECTION 1 INTRODUCTION 1-1

SECTION 2 HYDROLOGY OF THE WESTSIDE BASIN 2-1

WATER USE 2-1
VOLUMETRIC GROUNDWATER BUDGET 2-1
GROUNDWATER LEVELS IN WELLS 2-5

SECTION 3 PUMPING EFFECTS ON THE HYDROLOGY OF THE WESTSIDE BASIN 3-1

GENERAL PRINCIPLES 3-1
LAKE MERCED 3-3
SALTWATER INTRUSION 3-5
WELLHEAD PROTECTION 3-8

SECTION 4 RECYCLED WATER 4-1

SECTION 5 CONJUNCTIVE USE 5-1

SECTION 6 DATA LIMITATIONS 6-1

SECTION 7 REPORTS, MAPS, AND DATA CONSIDERED IN THIS MEMORANDUM 7-1

LIST OF TABLES

TABLE 2.1 ANNUAL WATER USE IN THE WESTSIDE BASIN (1991-95) 2-3

TABLE 5.1 TOTAL WATER DEMAND, GROUNDWATER USE, AND REPORTED PUMPING CAPACITY IN 1996 5-2

LIST OF FIGURES

FIGURE 2.1 LOCATION OF THE WESTSIDE BASIN 2-2

FIGURE 2.2 AVERAGE ANNUAL PUMPING RATES (1991-1995) 2-4

FIGURE 2.3 LINES OF EQUAL GROUNDWATER ELEVATION (SPRING 1996) 2-6

FIGURE 2.4A GROUNDWATER LEVELS IN DEEP WELLS LOCATED IN DALY CITY (1937-1997) 2-7

FIGURE 2.4B GROUNDWATER LEVELS IN DEEP WELLS LOCATED IN SAN BRUNO (1937-1997) 2-7

FIGURE 2.4C STATIC DEPTH TO WATER IN DEEP WELLS LOCATED IN SOUTH SAN FRANCISCO (CALIFORNIA WATER SERVICE COMPANY) (1937-1997) 2-8

FIGURE 3.1 SOURCES OF WATER TO A PUMPING WELL UNDER UNCONFINED AND CONFINED CONDITIONS 3-2

FIGURE 3.2 HYDRAULIC INTERFERENCE BETWEEN PUMPING WELLS 3-2

FIGURE 3.3A LAKE MERCED WATER LEVELS AND ANNUAL PRECIPITATION (1987-1998) 3-4

FIGURE 3.3B WATER LEVELS, ANNUAL BASIN-WIDE PUMPAGE, AND SURFACE WATER ADDITIONS TO LAKE MERCED (1987-1998) 3-4

FIGURE 3.4A CHLORIDE ION CONCENTRATIONS IN SAMPLES FROM WATER SUPPLY WELLS IN DALY CITY 3-6

FIGURE 3.4B CHLORIDE ION CONCENTRATIONS IN SAMPLES FROM WATER SUPPLY WELLS IN SAN BRUNO 3-6

FIGURE 3.4C CHLORIDE ION CONCENTRATIONS IN SAMPLES FROM WATER SUPPLY WELLS IN SOUTH SAN FRANCISCO (CALIFORNIA WATER SERVICE COMPANY) 3-7

FIGURE 4-1 ANNUAL WASTEWATER DISCHARGE AND WATER DELIVERIES FOR DALY CITY, SAN BRUNO, AND SOUTH SAN FRANCISCO (1986-1995) 4-2

FIGURE 6-1 WELLS USED TO MEASURE GROUNDWATER LEVELS 6-2

FIGURE 6-2 WELLS USED TO MEASURE GROUNDWATER QUALITY 6-3

SECTION 1 INTRODUCTION

In July 1996, the cities of Daly City and San Bruno, the San Francisco Public Utilities Commission, and the California Water Service Company agreed to develop a groundwater management plan for the Westside Groundwater Basin following AB 3030 guidelines. The partnership agreed that groundwater users in the basin would benefit from a management plan aimed at protecting water quality and improving water supply reliability. Consultants were hired to assist in the development of the plan by conducting two simultaneous processes: public involvement to identify stakeholder concerns and technical analysis of the physical conditions in the Westside Groundwater Basin (herein referred to as the "Westside Basin"). This memorandum describes the results of the technical analysis.

The analysis merges the results of the public involvement effort and the available technical information for the Westside Basin. Results are presented that address important stakeholder concerns and provide the technical information needed on key elements of the groundwater management plan. The memorandum also identifies gaps in the available technical data and the associated uncertainties created for water management decisions. Strategies for filling the data gaps and increasing our understanding of physical conditions in the basin will be key elements of the groundwater management plan.

The plan document will incorporate information and analyses presented in this memorandum and will contain recommendations for implementing each element of the groundwater management plan. Recommendations will be based, in part, on the technical information presented here.

The information summarized in this memorandum is based on existing data and reports that have been developed as part of other on-going activities in the basin. A complete bibliography of the sources of data, electronic databases, published and unpublished reports, and maps used for this analysis is provided at the end of this memorandum.

SECTION 2 HYDROLOGY OF THE WESTSIDE BASIN

The Westside Basin underlies parts of San Francisco and northern San Mateo counties (Figure 2.1). The basin extends from Golden Gate Park in the north and past the San Francisco International Airport in the south. The basin extends to the west beneath the Pacific Ocean at least as far as the San Andreas fault and to the east an unknown distance beneath south San Francisco Bay. The cities of San Francisco, Daly City, South San Francisco, Colma, San Bruno, Millbrae, and parts of Burlingame and Hillsborough lie on top of the basin.

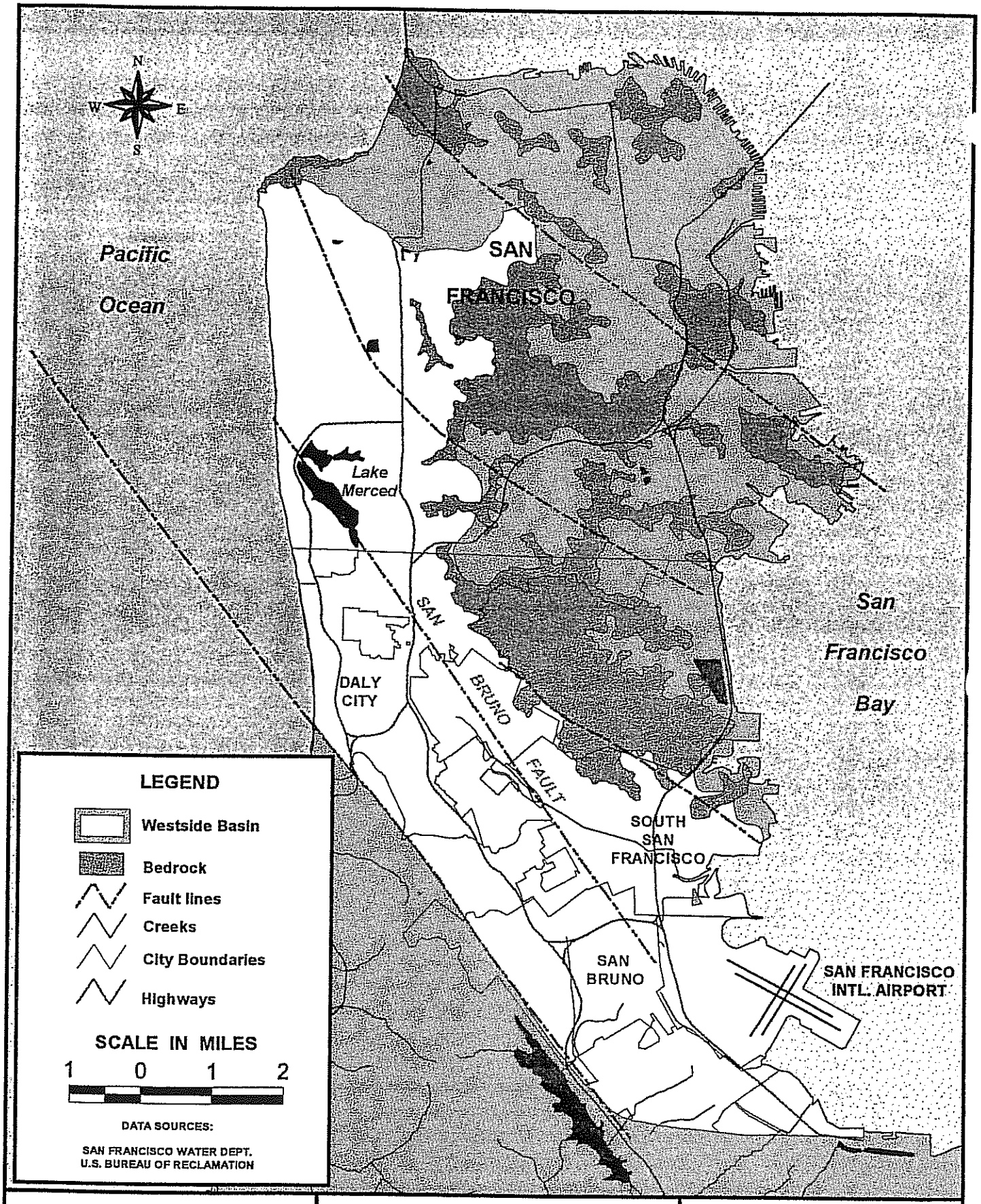
The Westside Basin can be conceptualized as a buried valley, where the walls and floor of the valley are formed by rock. This rock-bordered valley is filled with a mixture of coarse- and fine-grained sediments that can be as much as 3,700 feet thick in parts of the basin. The coarse-grained sediments consist of sand and gravel, and the fine-grained sediments consist of silt and clay. Sand and gravel can transmit substantial quantities of water to wells; whereas, silt and clay impede the movement of groundwater. Where silt and clay deposits form semi-continuous beds, they can effectively isolate the water table from underlying aquifers. Groundwater in the shallow water table aquifer is referred to as "unconfined", and the underlying aquifers separated from the water table by continuous and semi-continuous fine-grained beds is referred to as "confined." Both unconfined and confined conditions are found in the Westside Basin.

WATER USE

Groundwater pumping in the Westside Basin has provided a reliable water supply for municipal and irrigation uses for more than a century. Approximately 30 percent of the total water use in the basin is currently met by groundwater pumping (Table 2.1). Most of the pumpage in the basin occurs in San Mateo County (Figure 2.2), where groundwater is used to meet municipal demands for water. Pumped groundwater can supply as much as 50 percent of the drinking water to residents of some cities in the basin.

VOLUMETRIC GROUNDWATER BUDGET

A volumetric groundwater budget is an accounting of water additions and subtractions to the groundwater basin. The difference between the water added and subtracted is balanced by a change in groundwater storage. CH2M Hill (1997) estimated the water inflows, outflows, and storage changes in the Westside Basin during the period 1976-1995. The primary sources of inflow were precipitation and irrigation water moving downwards from the land surface into the groundwater system. Precipitation and irrigation contributed an average recharge of 8,600 and 4,300 acre-feet per year (ac-ft/yr), respectively. Additional sources of water added to the basin include leakage from Lake Merced and small lakes, streams, pipes, sewers, and subsurface inflows from upslope areas and the Pacific Ocean.



BOOKMAN-EDMONSTON
ENGINEERING, INC.

WESTSIDE BASIN
GROUNDWATER MANAGEMENT PLAN

LOCATION OF WESTSIDE BASIN

WESTSIDE BASIN PARTNERS

FIGURE 2.1

D:\WESTSIDE\BASINMAP.PRT

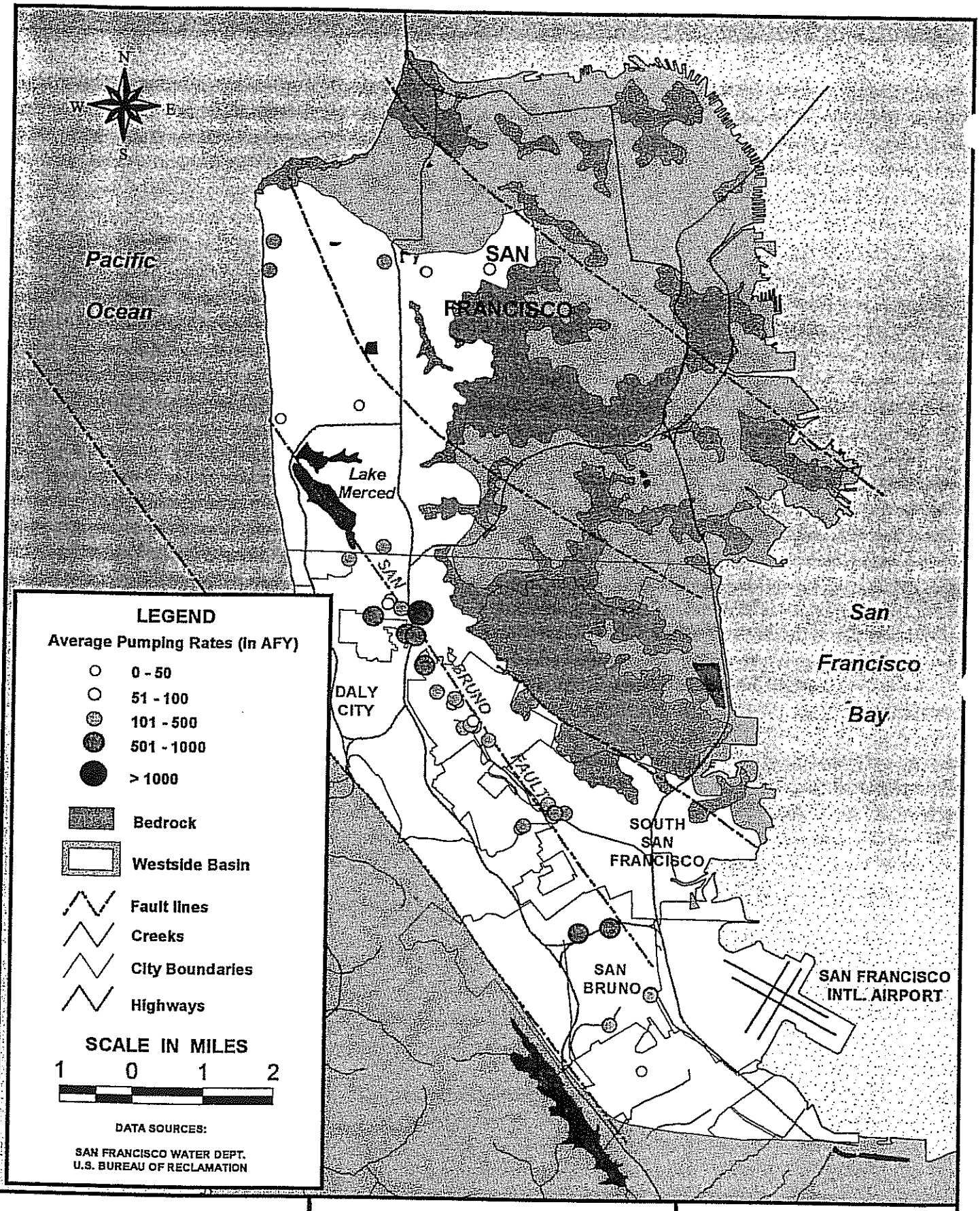
Table 2.1
Annual Water Use in the Westside Basin (1991-95)
(Acre-Feet per Year)

Well Owner	Groundwater	Surface Water	Total
Municipal			
California Water Service Company	1,375	6,270	7,645
Daly City	4,045	3,977	8,022
San Bruno	1,914	2,253	4,167
San Francisco		15,065	15,065
Subtotal	**7,334**	**27,565**	**34,899**
Irrigation and Parks			
Alvord Park	70		70
California Golf Club	264		264
Cypress Lawn	316		316
Edgewood School	10		10
Elk Glen	365		365
Eternal Home	90		90
Golden Gate Park	881		881
Green Hills	48		48
Hills of Eternity	115		115
Holy Cross	268		268
Home of Peace	96		96
Italian Cem.	76		76
Lake Merced Golf Club	454		454
Olivet	191		191
Olympic Club	401		401
Fleishacker Zoo	18		18
San Francisco Golf Club	192		192
Woodlawn	182		182
Subtotal	**4,036**		**4,036**
TOTAL	**11,370**	**27,565**	**38,935**

Sources: San Francisco Water Department (1996); California Water Service Company, Daly City, and City of San Bruno (written communication).

Pumpage is the primary outflow from the Westside Basin, averaging 11,100 ac-ft/yr during the period 1976-1995. Water subtractions also include seepage to lakes and streams and subsurface outflow to the Pacific Ocean and south San Francisco Bay.

The difference between water inflows and outflows is balanced by a change in the amount of water stored in the basin. Similar to a reservoir or lake, if more water is added than is subtracted the amount of water in the lake increases. Conversely, if more water is subtracted than is added the amount of water in the lake decreases. During the period 1976-1995, groundwater storage in the Westside Basin increased in some years and



BOOKMAN-EDMONSTON
ENGINEERING, INC.

WESTSIDE BASIN
GROUNDWATER MANAGEMENT PLAN
AVERAGE ANNUAL
PUMPING RATES, 1991-1995
WESTSIDE BASIN PARTNERS

FIGURE 2.2

D:\WESTSIDE\PUMPRATE.PRT

decreased in others. On the average, storage decreased by about 250 ac-ft/yr, equal to a cumulative net storage decrease of 5,000 acre-feet over the 20-year period. CH2M Hill (1997) estimated total groundwater storage in the Westside Basin at about one million acre-feet. Thus, the cumulative net decrease in groundwater storage during the 1976-1995 period is about 0.5 percent of total storage in the basin.

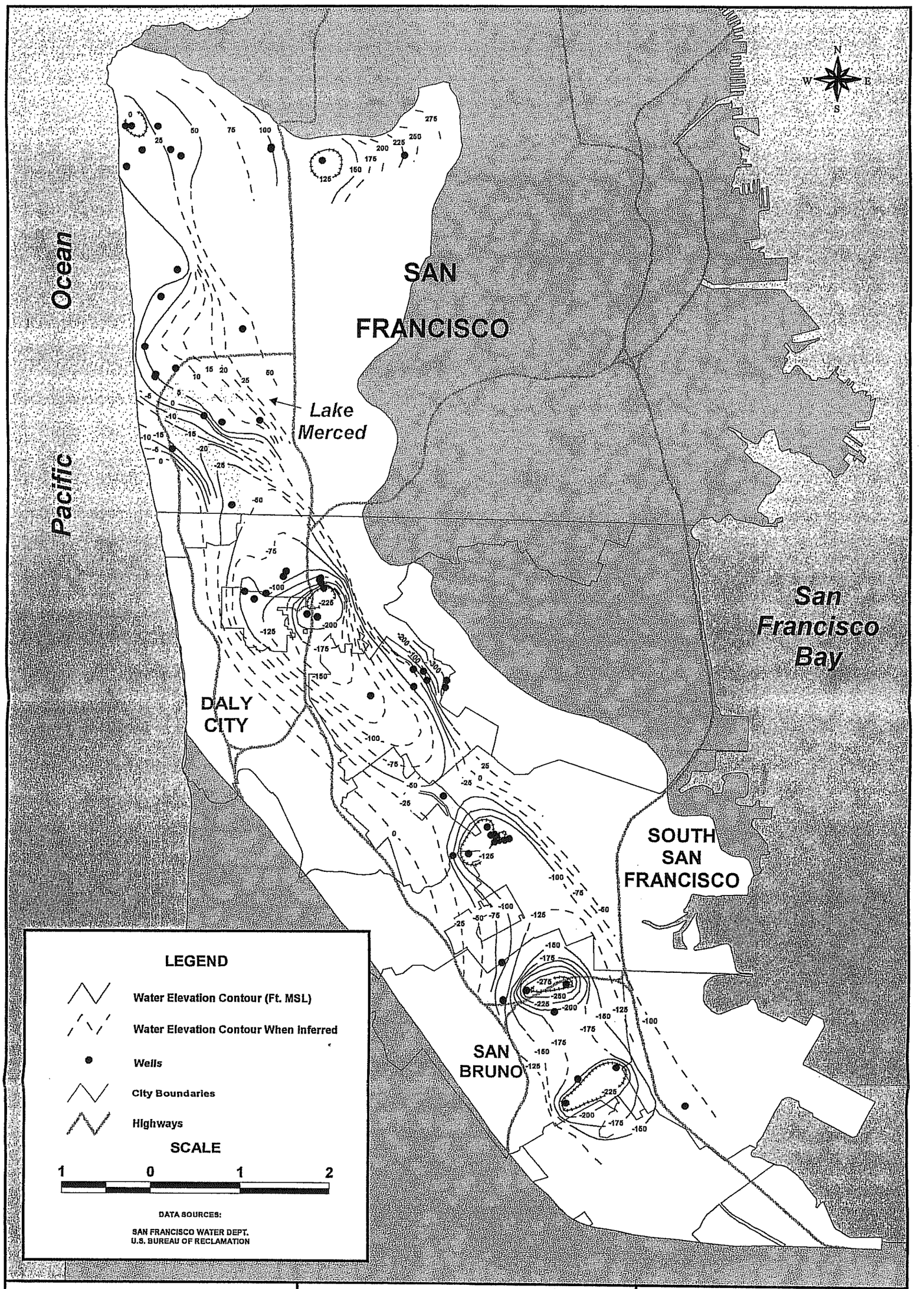
GROUNDWATER LEVELS IN WELLS

Groundwater levels in wells are used to determine groundwater flow directions and storage volumes. A change in water level from one location to another will generally induce groundwater movement from areas of high groundwater levels towards areas of lower groundwater levels. A change in groundwater levels over time is an indication of a change in groundwater storage. Increasing groundwater levels indicate increasing storage, while decreasing levels indicate decreasing storage.

Water levels measured in wells in the Westside Basin show the patterns of groundwater movement in the deep parts of the basin (Figure 2.3). In the north, groundwater moves from east to west, and most of the water added to the basin discharges to the Pacific Ocean. In the south, groundwater moves toward pumping centers within Daly City, San Bruno, and South San Francisco. The water levels also suggest that groundwater beneath the Pacific Ocean and South San Francisco Bay is moving in a landward direction. Landward flows from beneath these saltwater bodies suggest saltwater intrusion may be occurring within the Westside Basin. Chloride data from municipal supply wells, however, do not indicate any significant impact from intrusion on groundwater supply, as described in Section 3 of this report.

Water levels in the deep aquifer have been fairly steady since 1965 (Figure 2.4). The annual and seasonal variations in water levels parallel the annual and seasonal variations in weather. For example, Phillips and others (1993) reported declining trends in water levels in the City of San Francisco and the Lake Merced area during the period 1987-92. They attributed the decline in water levels to reduced groundwater recharge during the concurrent drought. Seasonal variations in water levels also reflect seasonal changes in pumping.

This Page Intentionally Left Blank



D:\WESTSIDE\GW96CON.PRT

BOOKMAN-EDMONSTON
ENGINEERING, INC.

WESTSIDE BASIN
GROUNDWATER MANAGEMENT PLAN

LINES OF EQUAL GROUNDWATER ELEVATIONS, SPRING 1996

WESTSIDE BASIN PARTNERS

FIGURE 2.3

This Page Intentionally Left Blank

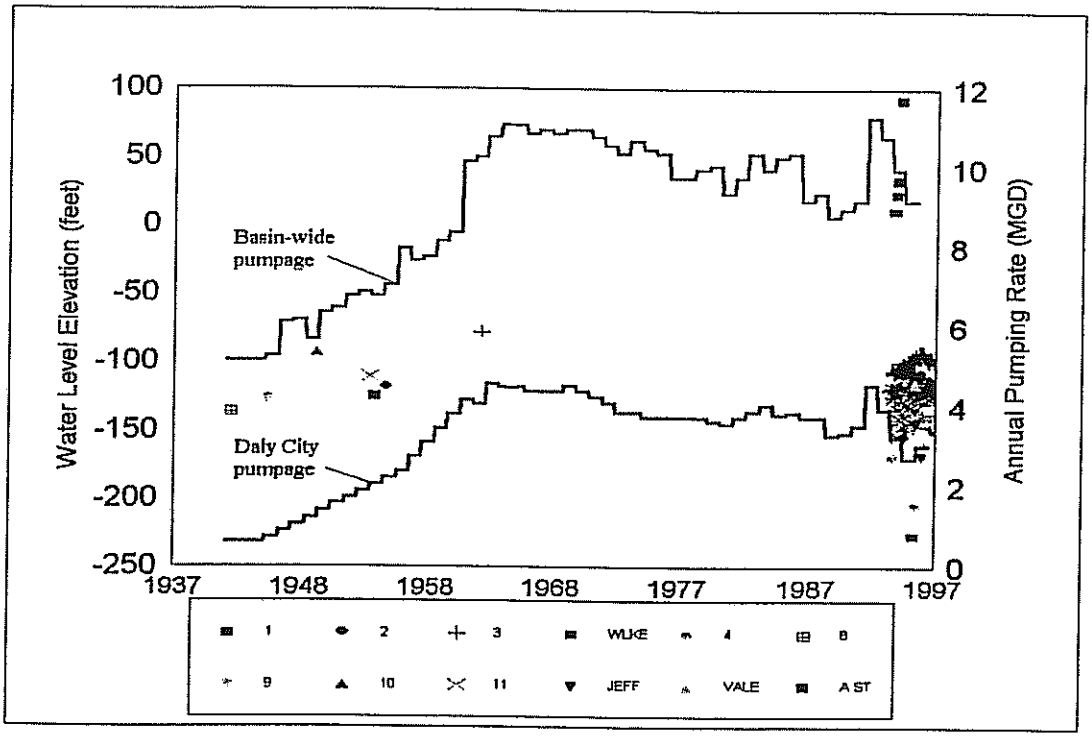


Figure 2.4a Groundwater Levels in Deep Wells Located in Daly City (1937-1997)

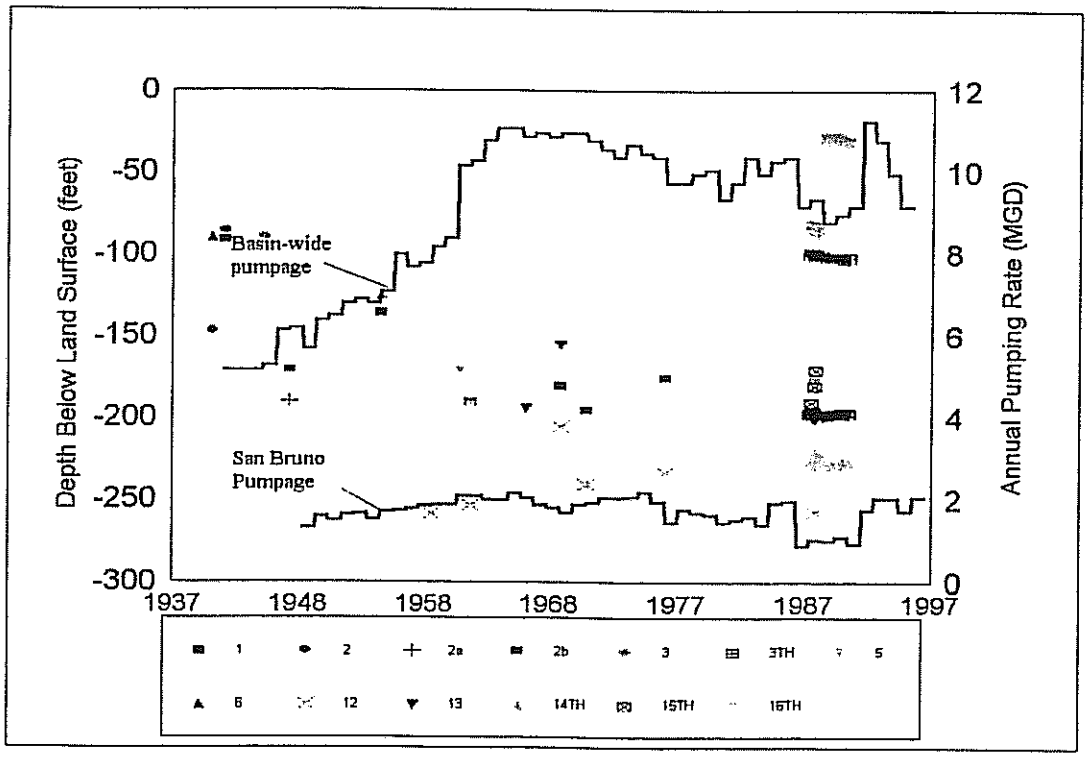


Figure 2.4b Groundwater Levels in Deep Wells Located in San Bruno (1937-1997)

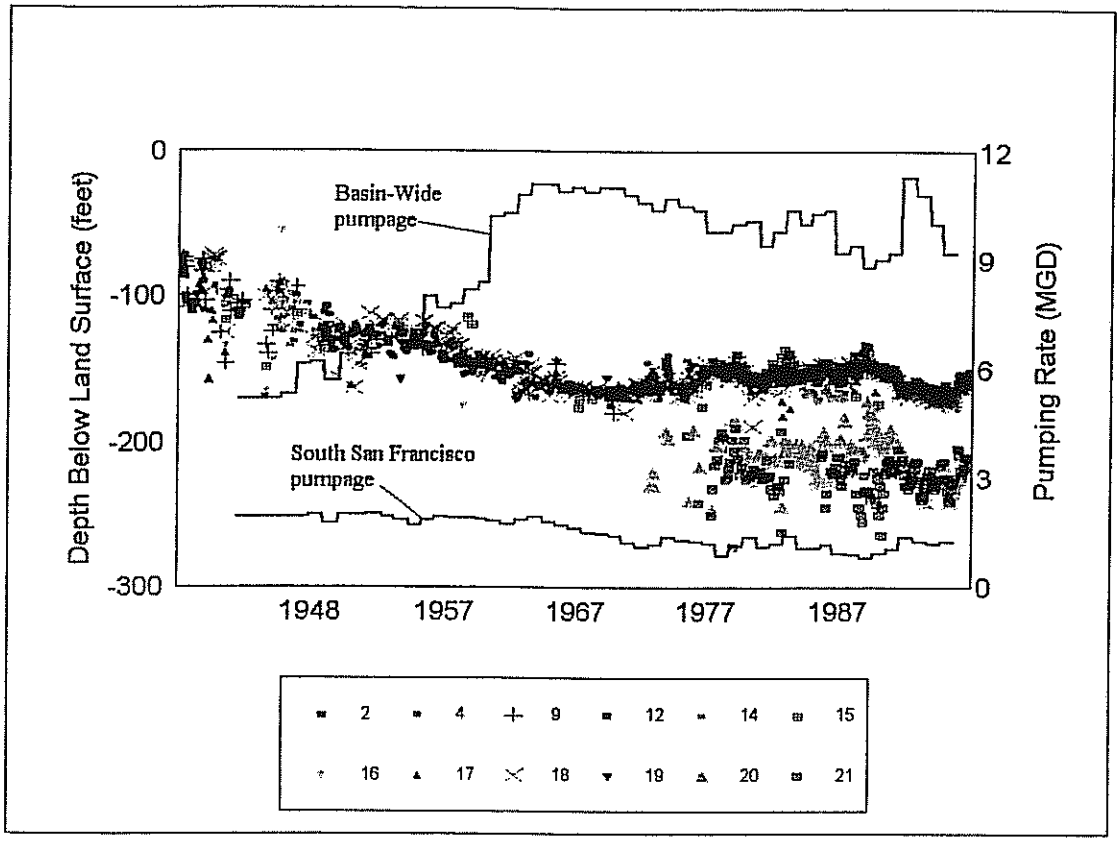


Figure 2.4c Static Depth to Water in Deep Wells Located in South San Francisco (California Water Service Company) (1937-1997)

SECTION 3 PUMPING EFFECTS ON THE HYDROLOGY OF THE WESTSIDE BASIN

GENERAL PRINCIPLES

Initially, the water in any well is in equilibrium with the groundwater in the adjacent aquifer. When the well pump is activated, water is removed from the well and the water level within the well declines. The lower water level induces the inflow of water from the adjacent aquifer, causing a reduction of water levels within the aquifer. The lowering of water levels in the well and aquifer is referred to as the cone of depression (Figure 3.1). The cone of depression can extend from a few feet to several thousand feet from the well, depending upon the pumping rate and the hydrogeologic properties of the aquifer. Where multiple wells are pumping, their pumping effects on groundwater levels are additive (Figure 3.2).

Pumping from a well perforated in an unconfined water table aquifer results in a lowering of the water table. The water extracted by the well comes from the dewatering of the aquifer (Figure 3.1a), where the void space between solid aquifer particles empties of water and fills with air. Because the pumping results in a direct lowering of the water table, wells perforated in the water table aquifer have a direct impact on the water table.

In contrast, pumping from a well perforated in a confined aquifer does not normally cause a dewatering of the aquifer (Figure 3.1b). Pumping decreases the hydraulic pressures within the aquifer near the well, inducing groundwater movement into the well. Most of the water extracted by the well is from groundwater moving horizontally toward the well. The effects of de-pressuring spread throughout the groundwater system, where the direction and the rate of the effects depend upon the pumping rate and the hydrogeologic properties of the aquifer. The effects are generally greatest in horizontal directions and smallest in vertical directions. Additionally, the effects on an overlying water table aquifer will be attenuated by the fine-grained sediments that separate the aquifers. Because the pumping does not result in a direct lowering of the water table, wells perforated in a confined aquifer have an indirect impact on the shallow water table.

In San Mateo County, groundwater elevations measured in wells show large cones of depression as a result of decades of pumping from numerous municipal and private wells (Figure 2.3). These wells are pumping from deep aquifers, which are separated from the overlying water table by beds of silt and clay. Pumping from these deep wells can increase downward leakage from the water table, but most of the extracted water comes from horizontal movement within the deep aquifers. Hence, pumping from most wells in the Westside Basin has an indirect impact on the water table.

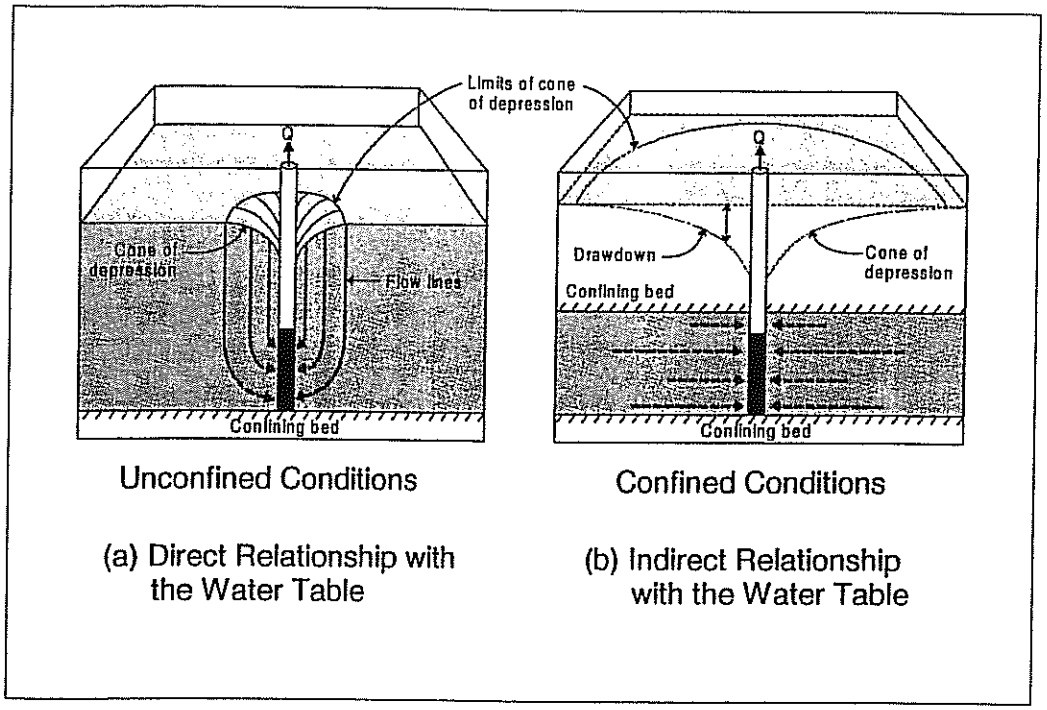


Figure 3.1 Sources of Water to a Pumping Well Under Unconfined and Confined Conditions

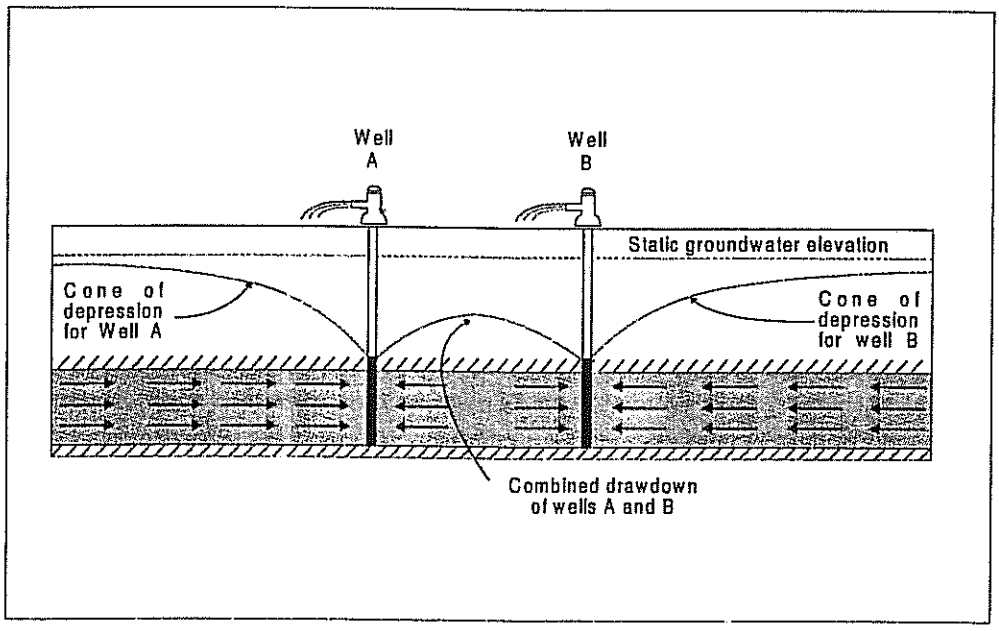


Figure 3.2 Hydraulic Interference Between Pumping Wells

LAKE MERCED

Lake Merced was originally developed as a potable water supply for San Francisco in the 1870s by the Spring Valley Water Company. Since 1950, under a memorandum of understanding between the San Francisco Public Utilities Commission and the San Francisco Recreation and Parks Department, the lake has been developed for beneficial recreational uses and has maintained its status as an emergency water supply (Geo/Resources Consultants, Inc., 1993). Lake Merced is hydraulically connected to the shallow water table system. Historically, the natural movement of groundwater in the Lake Merced area was westward and toward the Pacific Ocean (Bartel, 1913). Groundwater seeped into the lake from the east and leaked out from the west and into the Pacific Ocean.

Seasonal and annual water levels in Lake Merced have shown a net decline and recovery of about seven feet during the last decade (Figure 3.3). Long-term declines in lake levels have coincided with several droughts, the most severe occurring during 1977-78 and 1987-92 (San Francisco Water Department, 1996). Reduced surface water inflows from precipitation and diversion of stormwater runoff that formerly entered the lake have contributed to the net decline in lake levels. In contrast, during the wet period 1994-1997, greater rainfall and approximately 400 acre-feet of surface water added to the lake contributed to a net increase of more than 6 feet in lake levels (San Francisco Water Department, 1996).

Figure 3.3 shows that lake levels respond consistently to changes in precipitation and that lake levels exhibit a weak or zero response to changes in pumpage. Figure 3.3a compares lake levels to the annual precipitation change from the long-term annual average. The zero line and a wet year plots above. Figure 3.3b shows annual basin-wide pumpage and surface water additions to the lake. Lake levels declined about six feet during the period 1987-1991, when precipitation was very low. In contrast, pumpage was about average during this period. Lake levels increased during 1994-1997, when precipitation was high and pumpage was slightly above average. During 1992-1993, the lake level went up and then down, consistent with precipitation. Pumpage was high during this period.

The effect of pumping from deep wells on water levels in Lake Merced is determined by the magnitude of two distinct hydraulic connections: the connection between the deep aquifer and the shallow water table, and the connection between the water table and Lake Merced. Like water flowing through a pipe with two valves, the relationship between pumping and Lake Merced is controlled by the two distinct connections. The connection between the deep aquifer and the water table is known to be indirect, while the connection between the water table and Lake Merced is uncertain. The uncertainty derives from insufficient data. Whatever the degree of connection between the water table and Lake Merced, the effect of pumping from deep wells on water levels in Lake Merced is indirect.

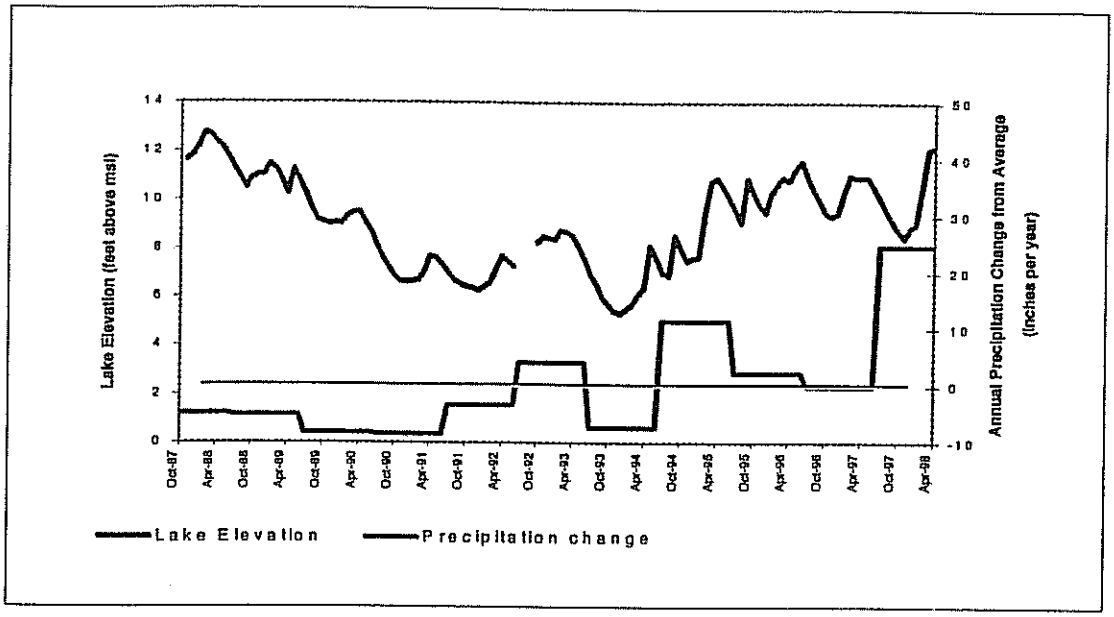


Figure 3.3a Lake Merced Water Levels and Annual Precipitation (1987-1998)

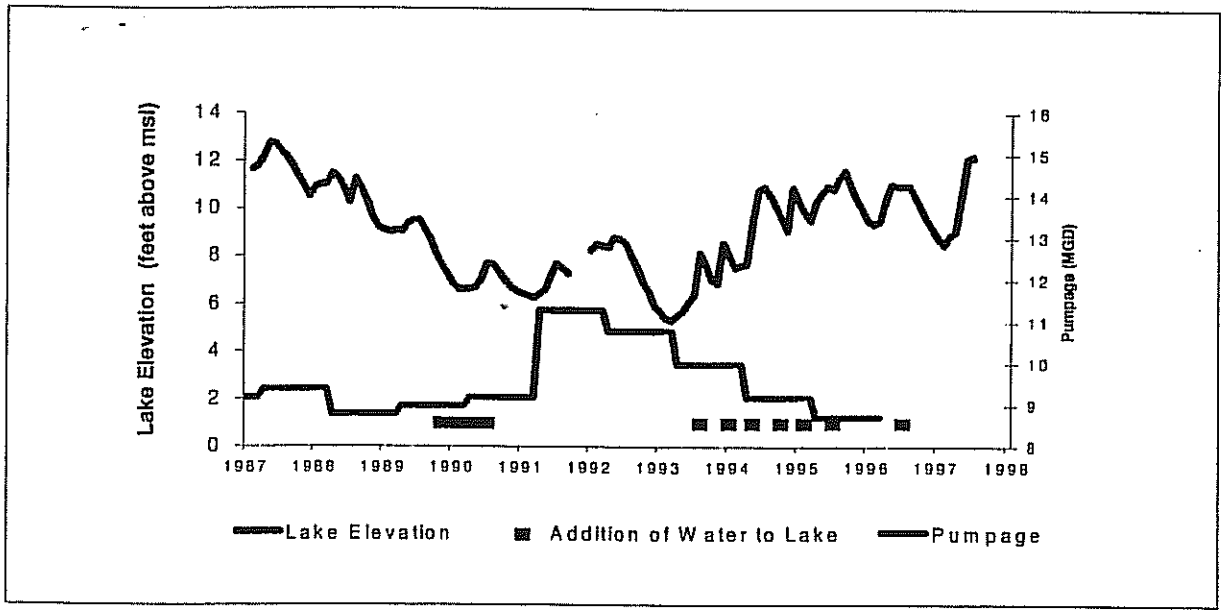


Figure 3.3b Water Levels, Annual Basin-Wide Pumpage, and Surface Water Additions to Lake Merced (1987-1998)

The indirect relationship between deep pumping wells and Lake Merced explains why leakage rates from the lake are small relative to pumpage in the Westside Basin. For example, previous studies by the U.S. Geological Survey (Yates and others, 1990) and CH2M Hill (1997) suggest that leakage from Lake Merced represents 0.2 to 3.8 percent of the pumpage in the Westside Basin. Volumetric water budgets calculated for Lake Merced conclude that evaporation is the primary water subtraction from the lake, comprising between 49 and 85 percent of the total lake outflows (Yates and others, 1990; CH2M Hill, 1997). Accordingly, increasing surface water inflows is a more effective strategy for increasing and managing lake levels than is curtailing pumpage in the Westside Basin (Geo/Resource Consultants, Inc., 1993).

SALTWATER INTRUSION

Saltwater intrusion is a potential concern in the Westside Basin because the Pacific Ocean and south San Francisco Bay are located at the western and southeastern boundaries of the basin. Drawdowns from pumping can induce the movement of saltwater into the aquifer and increase the salinity of water produced by wells. The potential for saltwater intrusion can be identified from maps showing lines of equal groundwater levels. Groundwater levels measured in wells tapping the deep aquifer suggest that groundwater beneath the Pacific Ocean is moving inland (Figure 2.3). For example, CH2M Hill (1997) reported modeling results indicating that approximately 1,300 ac-ft/yr of subsurface inflow to the basin originates in the Pacific Ocean. Similarly, groundwater levels in the deep aquifer near the San Francisco International Airport were more than 40 feet below mean sea level (Guidetti and Schaefer, 1995), suggesting that bay water is moving downward and toward inland pumping centers located northwest of the bay.

Because groundwater moves slowly, decades may be required for salt-affected groundwater to reach pumping wells in the Westside Basin. For example, Guidetti and Schaefer (1995) reported tritium data for well water samples from nine wells located in the cities of San Bruno and South San Francisco. The tritium data indicated that the water pumped by these wells entered the groundwater system more than 40 years ago. Tritium data from a deep well located at the San Francisco International Airport also indicated that the groundwater was "old" water. Trends of increasing salinity in groundwater could be gradual over time and therefore difficult to detect without relatively long-term records.

Chloride is the major anion in ocean and bay waters, and increasing chloride ion concentrations in groundwater may be the first indication of saltwater contamination. Chemical data for samples from most municipal supply wells in the Westside Basin do not show clear trends or substantial increases in chloride ion concentrations (Figure 3.4). In some wells, however, chloride ion concentrations have been increasing gradually. For example, several wells in Daly City indicate an average increase in chloride of between 0.5 and 1.0 milligrams per liter (mg/L) per year (Figure 3.4a). For example, chloride concentrations in well number 4 have increased approximately 15 mg/L over a 20-year period. Similarly, chloride ion concentrations in water produced by California Water

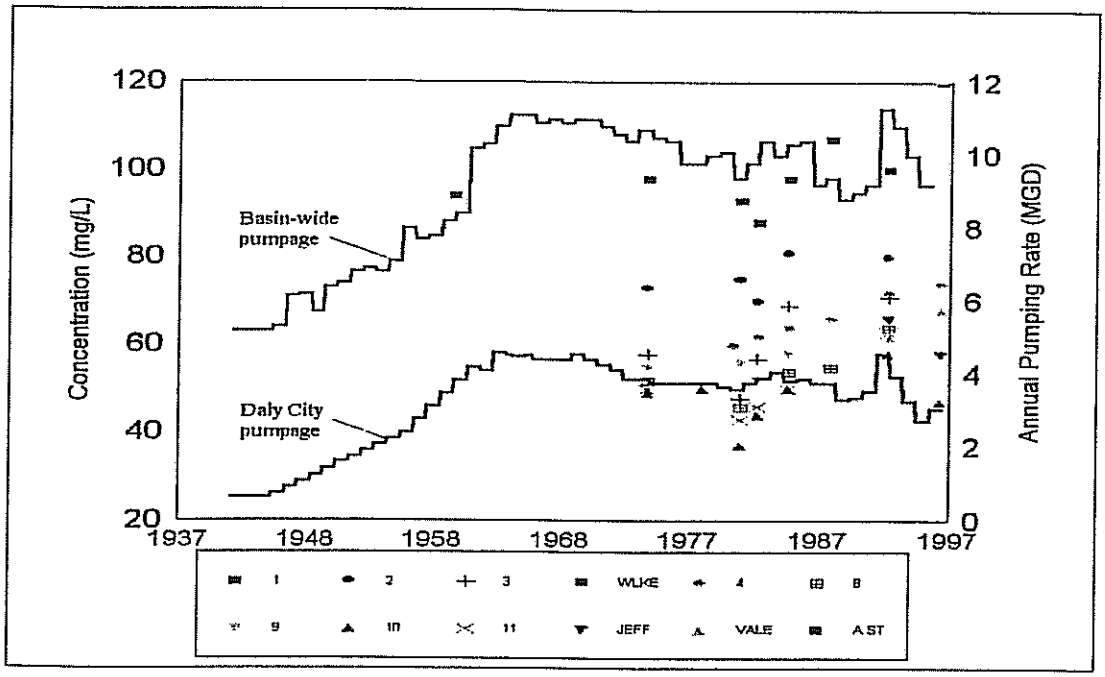


Figure 3.4a Chloride Ion Concentrations in Samples from Water Supply Wells in Daly City

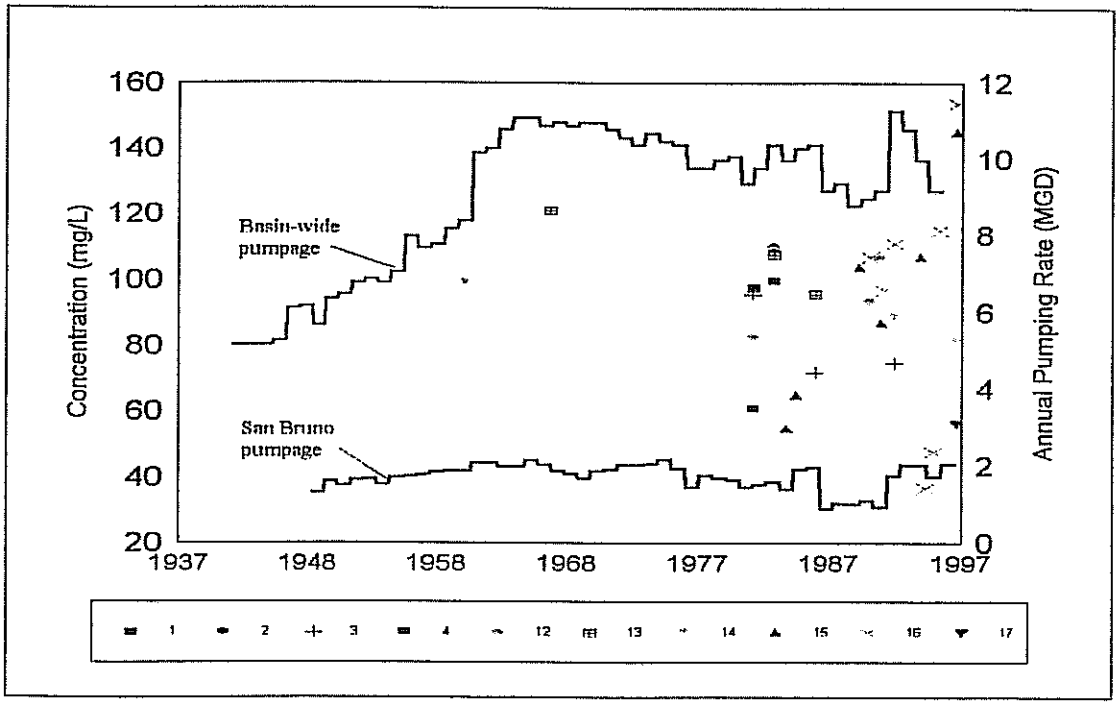


Figure 3.4b Chloride Ion Concentrations in Samples from Water Supply Wells in San Bruno

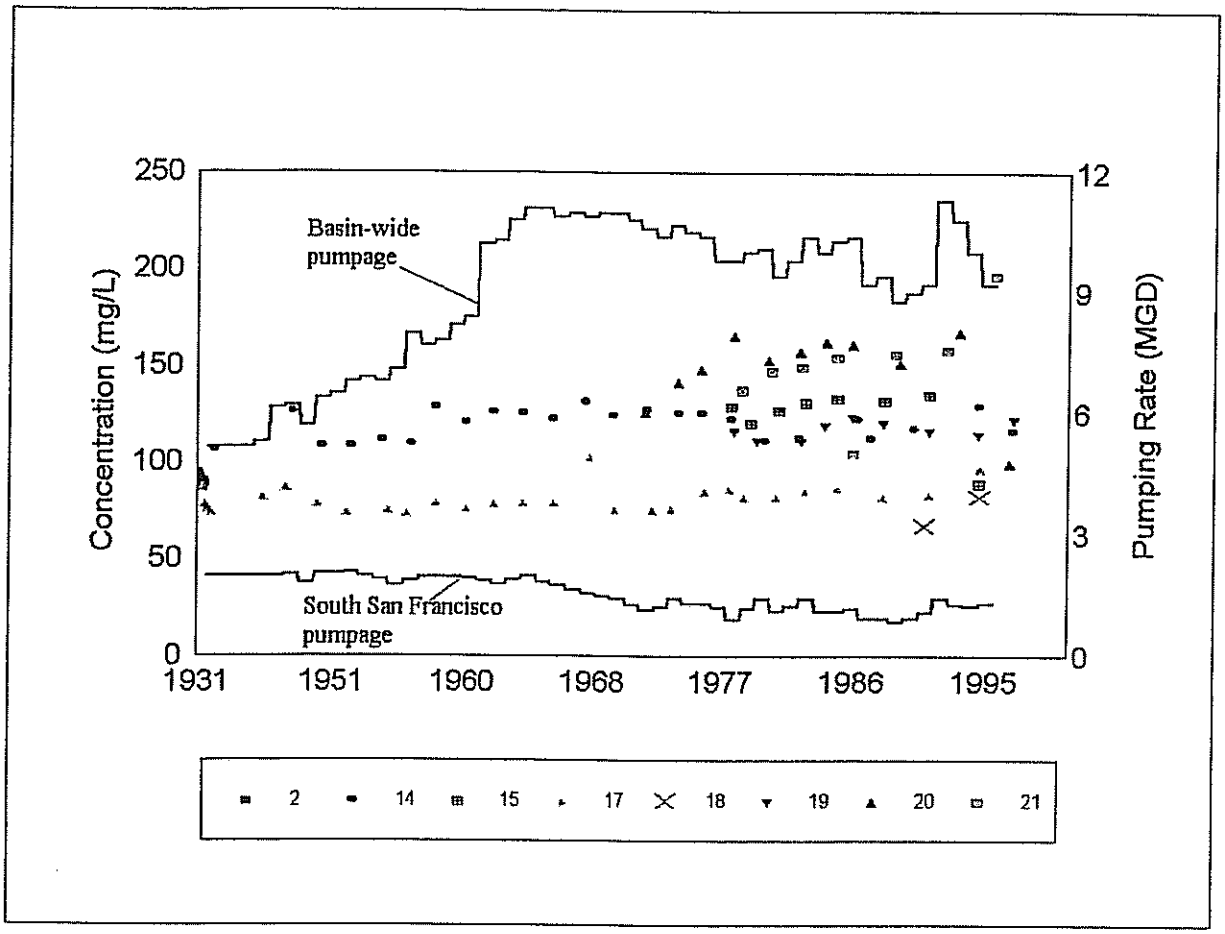


Figure 3.4c Chloride Ion Concentrations in Samples from Water Supply Wells in South San Francisco (California Water Service Company)

Service Company wells 20 and 21 have been increasing on the average by 1 to almost 3 mg/L per year (Figure 3.4c). The relatively modest increases in chloride ion in the Daly City wells could be the consequence of seawater intrusion if the forward edge of the seawater wedge was gradually mixing with relatively fresh groundwater. In south San Francisco, however, wells owned by the California Water Service Company located closer to south San Francisco Bay than wells 20 and 21 produce water with relatively constant concentrations of chloride ion. If direct intrusion of bay water were the source of chloride ion in wells 20 and 21, one would expect similar trends in the other nearby wells.

The upward movement of older, briny groundwater from underlying clays is also a plausible explanation for the increasing chloride ion concentrations in the Daly City and California Water Service Company wells (Applied Consultants, 1991; Phillips and others, 1993). The depth of these wells range from 500 to almost 600 feet beneath the land surface, and their well screens are separated from the water table and shallow aquifers beneath the ocean and bay by silt and clay deposits. These deposits impede the movement of salts and water from the shallow water table to the deep aquifers tapped by the pumping wells. Additional water level and water chemistry data are needed to identify the source of increasing chloride ion concentrations in the Westside Basin and its long-term implications for the quality of groundwater produced by pumping wells.

WELLHEAD PROTECTION

Stakeholders have expressed concern about potential contamination of the groundwater supply by methyl tertiary butyl ether (MTBE). MTBE is a chemical added to gasoline that is very soluble in water and extremely slow to biodegrade. MTBE in groundwater can originate directly from leaking underground fuel storage tanks or indirectly in percolating rainfall and stormwater runoff. Rainfall can "wash out" MTBE from the atmosphere, and runoff can gather MTBE residue from roads and parking lots. MTBE is a concern as a risk to human health and as a cause of poor odor and taste in drinking water. Due to its chemical properties, MTBE can be smelled and tasted at levels below the federal and state health advisory levels.

MTBE is less dense than water and under ideal conditions will "float" on the water table. Once it is introduced into an aquifer, MTBE can move to deeper parts of the system in response to pumping from nearby wells and recharge from water infiltrating past the soil surface. Accordingly, the potential introduction of MTBE within the regional recharge and discharge patterns shown in Figure 2.3 can impact the quality of the drinking water supply in the Westside Basin. Wellhead protection programs can reduce potential groundwater contamination by MTBE, as well as other constituents of concern in the Westside Basin.

Wellhead protection programs are designed to meet three objectives:

1. *Reduce or eliminate contamination.* Strategies can include public education, acquisition of lands, monitoring, promoting best management practices, zoning ordinances, subdivision controls, well permitting, and health regulations.

2. *Provide for alternative sources of emergency drinking water.* In the Westside Basin, potential water sources include groundwater, local runoff, and imported surface water.

3. *Plan for new wells and their protection areas.* Planning accounts for the amount and types of development surrounding potential future well sites, groundwater gradient and aquifer characteristics beneath the sites, and existing water quality in the aquifer.

In the Westside Basin, wellhead protection areas reflect the major pumping centers. Protection areas can be identified by the regional recharge and discharge patterns shown in Figure 2.3, and by the groundwater flow patterns near individual pumping wells.

The most appropriate means for delineating wellhead protection areas include a combination of hydrogeologic mapping and numerical modeling of groundwater flow and contaminant transport. An inventory of potential and confirmed soil and groundwater contamination sites located within the protection area is then completed to assess the risk of contamination to groundwater produced by the well. Previous studies have estimated the protection areas and contamination risk of municipal supply wells in Daly City and the greater San Bruno area using existing hydrogeologic data and analytical methods (Lee, 1993; Guidetti and Schaefer, 1995). These studies concluded that the areas contributing groundwater to pumping wells ranged from about 1,000 feet to more than one mile in diameter. Leaking Underground Fuel Tank (LUFT) sites within these areas were considered to represent the most serious threat to the groundwater supply because of the confirmed existence of soil and/or groundwater contamination. For example, Lee (1993) concluded that at the time of her study there were seven contamination sites within the protection areas of Daly City drinking water wells. Similarly, more than 20 LUFT sites were identified in the wellhead protection areas mapped in the greater San Bruno area by Guidetti and Schaefer (1995).

These studies confirm that land use activities within the Westside Basin can potentially impact drinking water quality produced by wells. Changes in land use may be necessary to minimize the risk of contamination to water supply wells in the basin. Implementing a wellhead protection program will therefore require both political support and technical input. Because restrictions on land use are a concern of stakeholders in the basin, reliable technical information is needed to support local and site-specific land use decisions. Additional analyses will therefore be needed to accurately represent groundwater movement to wells and quantify the relationship between contaminant mass and concentration to the magnitude and timing of impacts at the well. Public education will be needed to communicate the results of these analyses and explain their implications for land use decisions and drinking water quality.

SECTION 4 RECYCLED WATER

Recycled water is a major component of regional water use in other parts of California, particularly southern California where there are over 50 projects delivering recycled water. Use of recycled water is supported by regulatory and planning agencies and provides economic benefits to voluntary participants within a regional setting. Under a water recycling program, water that is otherwise discharged to the Pacific Ocean or San Francisco Bay would be used primarily to irrigate turf and landscaping. The groundwater that would have been used to irrigate these areas becomes available for municipal and industrial use or remains within the basin for future use. Recycled water thereby becomes a new supply of water and enhances the long-term water reliability for the basin.

Treated wastewater in the basin is discharged from the Oceanside Water Pollution Control Plant, the Daly City Water Quality Control Plant, and the South San Francisco-San Bruno Water Quality Control Plant. The Oceanside Water Pollution Control Plant was brought online in 1994 and serves the west side of the City of San Francisco. The wastewater treatment plant in Daly City serves the North San Mateo County Sanitation District comprised primarily of Daly City and the Westborough Water District. The South San Francisco–San Bruno wastewater treatment plant serves the cities of South San Francisco and San Bruno, but also discharges treated wastewater from Burlingame, Millbrae, and the San Francisco International Airport as parts of the North Bayside System Unit.

Discharge through the two plants in San Mateo County from Daly City, City of San Bruno, and City of South San Francisco is approximately 16,600 ac-ft/yr. On the average, annual wastewater discharge from the two plants represents more than 80 percent of the total municipal water supply to these three cities (Figure 4.1). More than half of the average annual discharge occurs during the months of May through November (10,600 ac-ft/yr). The potential supply of recycled water from these three cities is more than double the annual groundwater pumpage for irrigation of parks, golf courses, schools, and cemeteries in the Westside Basin (approximately 4,000 acre-ft/year). Therefore, while the necessary hydrologic conditions exist to develop a recycled water program, it will most likely require creative and innovative approaches to secure users willing to voluntarily accept this potential supply.

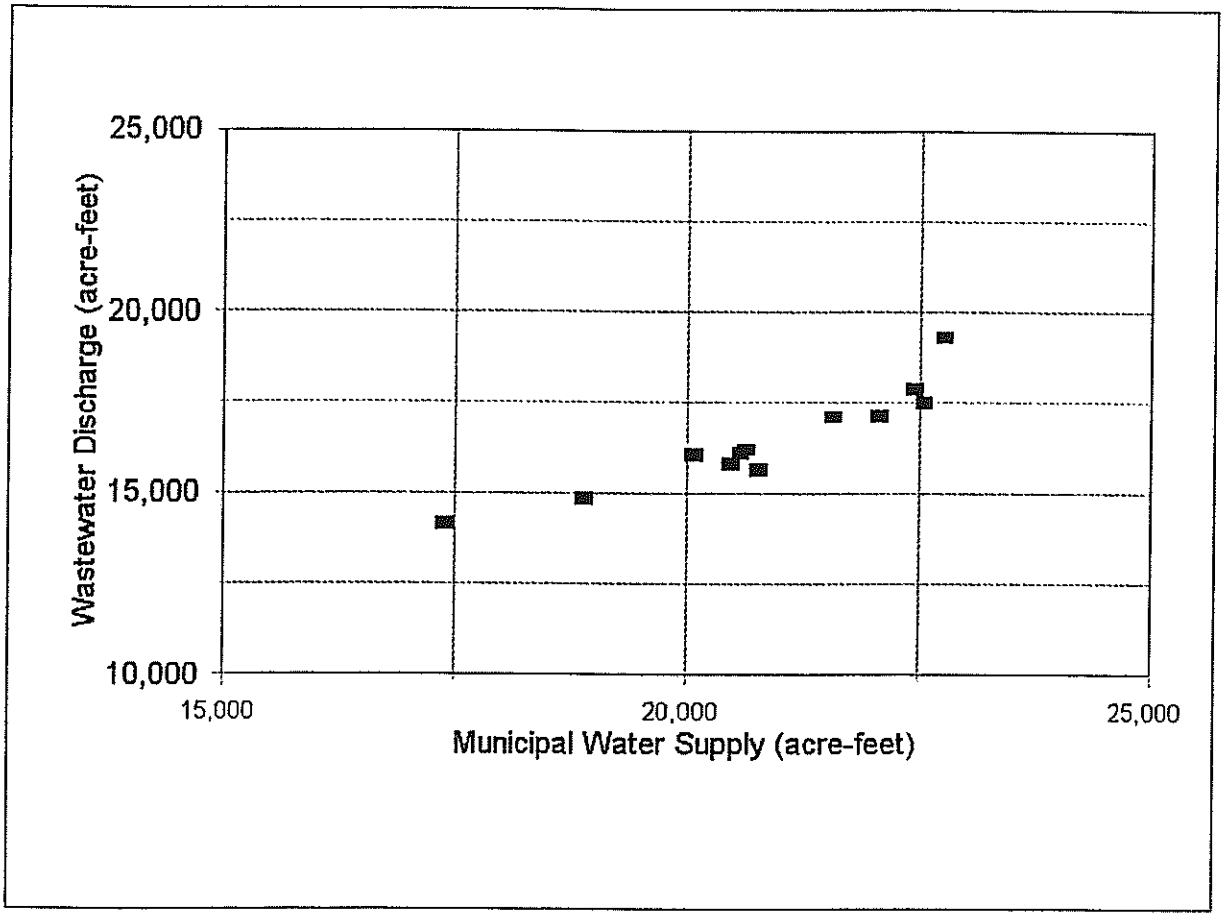


Figure 4-1 Annual Wastewater Discharge and Water Deliveries for Daly City, San Bruno, and South San Francisco (1986-1995)

SECTION 5 CONJUNCTIVE USE

Conjunctive use is the coordinated use of surface water and groundwater to ensure a reliable water supply. During wet years when surface supplies are plentiful, surface water is delivered to water users that otherwise rely on groundwater, allowing the underground reservoirs to fill with water. During dry years when runoff is reduced and surface water supplies are scarce, greater reliance is placed on groundwater storage. Conjunctive use requires a source of imported water, an underground reservoir for storing water, and a mechanism for getting the water into the ground. All of these requirements exist in the Westside Basin.

Imported surface water is delivered to retailers in the Westside Basin through the San Francisco Public Utilities Systems (PUC) system. Bookman-Edmonston (1993) conducted a study for the San Francisco Water Department that concluded additional capacity exists in the San Francisco PUC system to deliver water to the Bay Area. During years of average runoff, the system could deliver an additional 30 to 40 million gallons per day (mgd) during the winter months and an additional 20 mgd during the summer months. During dry years, the system could deliver an additional 30 mgd in several winter months and about 5 mgd during most summer months. The demand pattern and the available storage facilities restrict the capability of the San Francisco PUC system to deliver this additional water, and additional storage facilities are needed to take advantage of this extra potential yield.

The aquifers within the Westside Basin represent a potential means for storing imported surface water and therefore could be used to increase the long-term yield of the San Francisco PUC system. The basin has been used for more than a century, and wells in the basin currently provide a substantial proportion of the municipal water supply to the communities of Daly City, San Bruno, and South San Francisco. These communities rely on 75 to 90 percent of their total pumping capacity to meet between 30 to 50 percent of their municipal supply (Table 5.1).

Imported water and local runoff can be stored in the basin using either active or passive methods. Examples of active groundwater replenishment include recharge ponds, injection wells, and temporary or permanent retention facilities on local creeks. Active groundwater replenishment has been conducted in Alameda and Santa Clara Counties for decades, and their efforts have consisted of increased conservation of natural runoff and storing imported water in local aquifers. Passive groundwater replenishment, or "in-lieu recharge," increases surface water use during periods of adequate runoff. The greater use of surface water allows groundwater storage to increase as a result of reduced pumpage and greater deep percolation of imported surface water. The water stored in the groundwater basin is then available for use during periods of reduced runoff.

While many of the hydrologic and infrastructure elements of a successful conjunctive use program are already in place, complex institutional and economic issues remain to be resolved. Wet year deliveries may be currently restricted by hydropower demands on the

Hetch Hetchy system and by agreements between the San Francisco PUC and other water users in the Tuolumne Basin. Agreements between the PUC and the Bay Area Water Users Association may also require amendments to implement conjunctive use.

Table 5.1
Total Water Demand, Groundwater Use, and Reported Pumping Capacity in 1996
(MGD)

Well Owner	Total Demand (1996)	Demand Met By Groundwater	Capacity to Produce Groundwater
Municipal			
California Water Service Company	7.5	1.3	1.7
Daly City	7.9	3.1	4.0
San Bruno	4.3	2.1	2.4
San Francisco	15.1	2.0	2.0
Total	**34.8**	**8.5**	**10.1**

Notes:
1995 data is used for "Demand Met By Groundwater" for Californa Water Service Company.
Capacity to produce groundwater by San Francisco reported as estimated pumping rate.

SECTION 6 DATA LIMITATIONS

Evaluating basin-wide groundwater flow and storage is challenging because the resource is located beneath land surface and is therefore difficult to measure. Engineers and scientists conducting an assessment of the resource rely in part on the ability to extrapolate limited data over relative large areas. Figures 6.1 and 6.2 show the locations of wells where water level and water quality data have been recently collected in the Westside Basin. A considerable amount of data has been collected, compiled, and analyzed for primarily public supply wells in the Westside Basin. Consequently, data are lacking from substantial portions and key areas of the basin. These include upslope portions of the basin that can be important locations of groundwater recharge, areas served by private wells (or where wells are currently absent), and near critical boundaries like the Pacific Ocean and south San Francisco Bay.

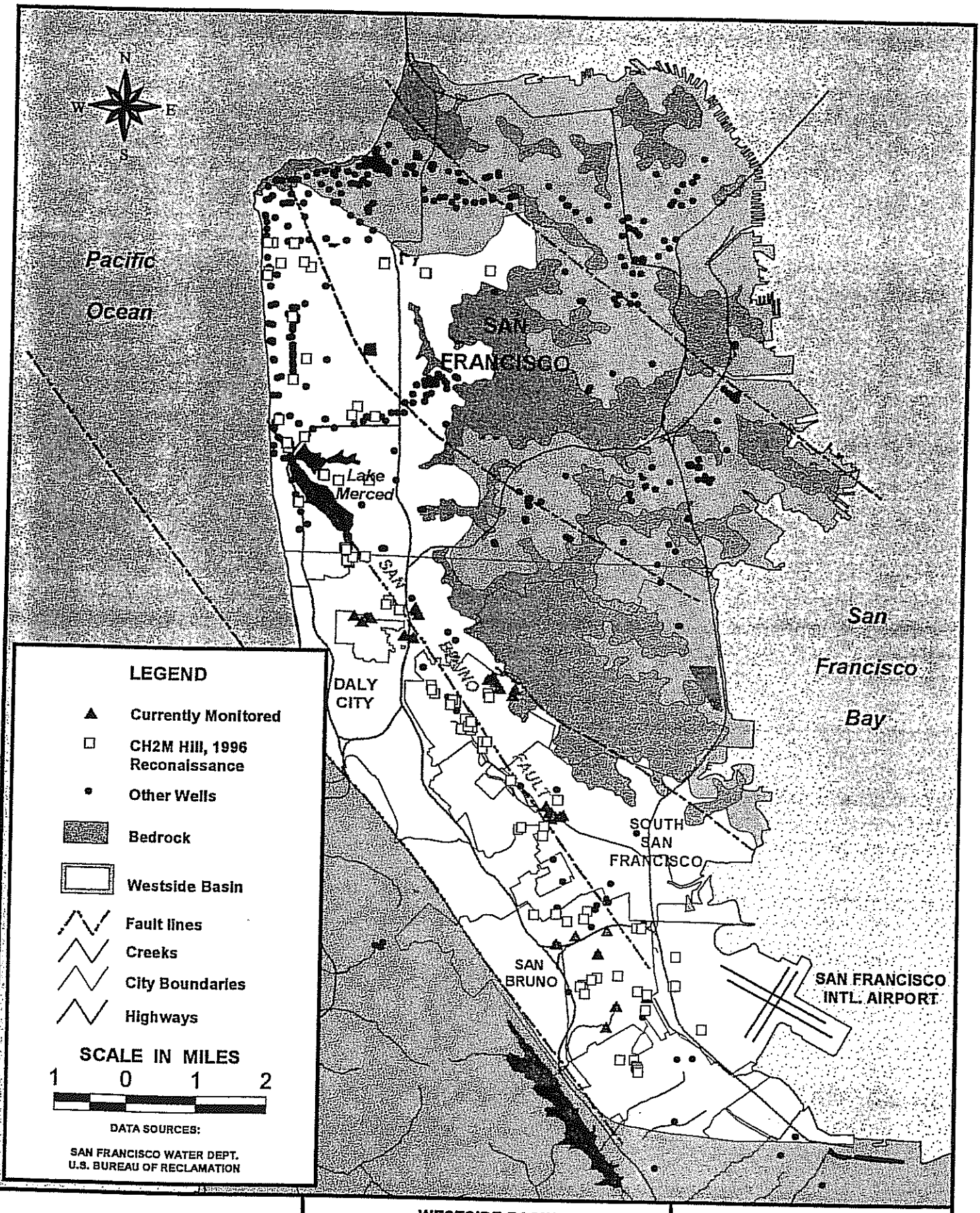
Data limitations can be addressed with the addition of new monitoring locations, improved coordination between data collection agencies, and uniform and accessible data storage and reporting protocols. A basin-wide monitoring program can be achieved by integrating local data collection activities and expanding efforts to improve the distribution of data points across the basin. This information is needed to understand groundwater flow rates and directions, sources of water to pumping wells, and changes in groundwater storage and quality over time. Additional geologic and geophysical information from boreholes, water levels from wells, and chemical, isotopic and age-dating information from well water samples are needed to help answer the following questions, which have been raised by stakeholders and will affect water management decisions in the Westside Basin.

Are there barriers to groundwater flow in the Westside Basin?

The layering of aquifers and confining beds, folding of geologic formations and faulting can create barriers to groundwater flow. These barriers can impact measured water levels and the sources of water produced by pumping wells in the Westside Basin. For example, previous studies could not confirm or refute the possibility of clay barriers between the ocean and inland pumping wells. If such barriers exist, it reduces the risk of saltwater contamination in the Daly City area. Similarly, the San Bruno Fault extends northwestward from south San Francisco Bay and passes through Lake Merced. Fine-grained materials associated with fault zones can impede the lateral movement of groundwater, and affect the vertical movement of water between shallow and deep groundwater. Pumping wells in the basin are located east and west of the San Bruno Fault, and the connection between groundwater on either side of the fault is not understood. If the fault were a partial barrier to flow, it would affect the sources of water produced by pumping wells.

What are groundwater flow directions and storage volumes in the Westside Basin?

Most of the water level data for the Westside Basin are from active production wells that pump water from the deep aquifer. Consequently, most of the water levels and resulting



D:\WESTSIDE\ELEVWELL.PRT

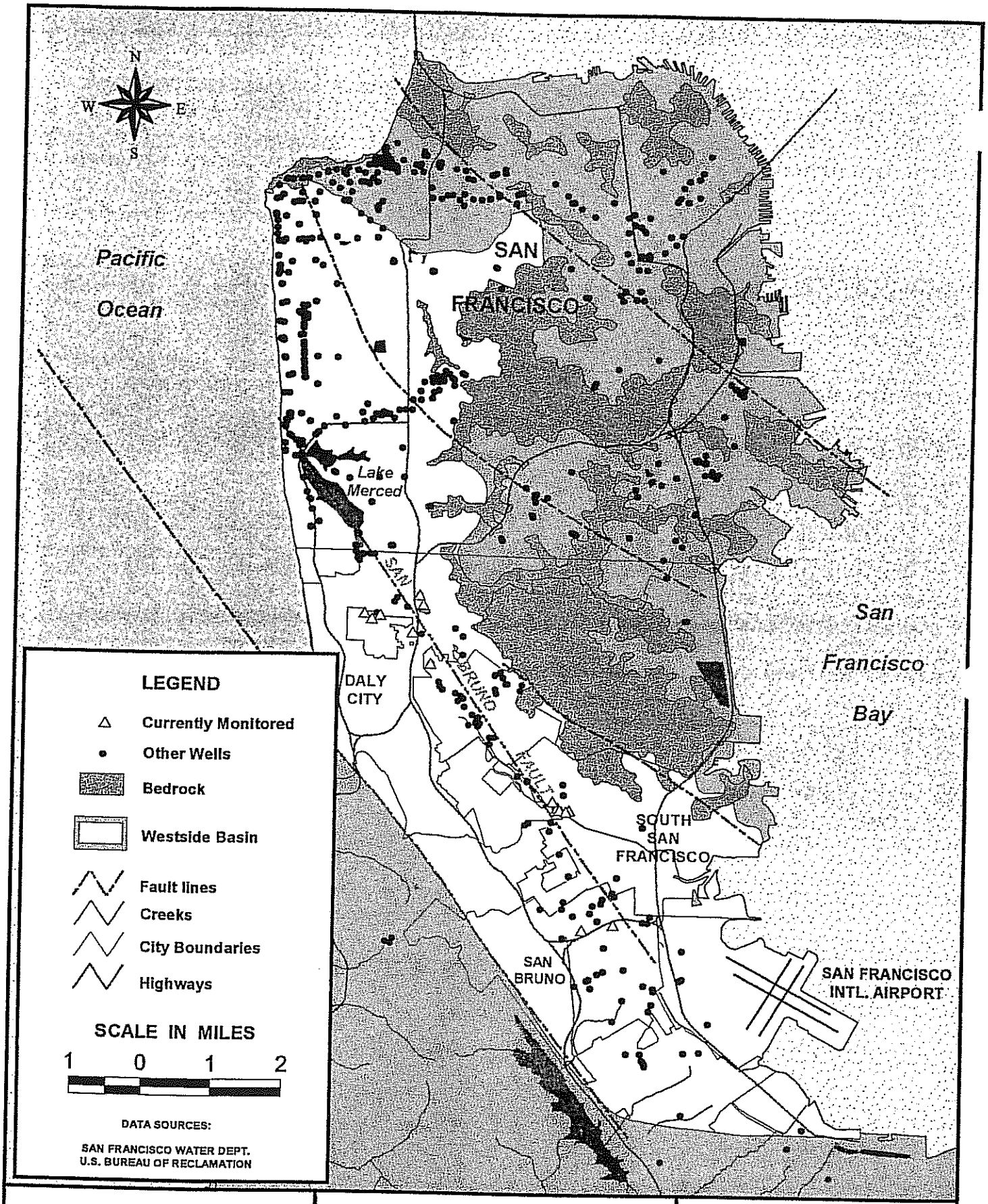
BOOKMAN-EDMONSTON
ENGINEERING, INC.

WESTSIDE BASIN
GROUNDWATER MANAGEMENT PLAN

WELLS USED TO MEASURE GROUNDWATER LEVELS

WESTSIDE BASIN PARTNERS

FIGURE 6.1



D:\WESTSIDE\QUAL\WELL.PRT

BOOKMAN-EDMONSTON
ENGINEERING, INC.

WESTSIDE BASIN
GROUNDWATER MANAGEMENT PLAN

WELLS USED TO MEASURE GROUNDWATER QUALITY

WESTSIDE BASIN PARTNERS

FIGURE 6.2

estimates of groundwater flow and storage are for deep parts of the system and are biased toward conditions near pumping wells. Water level data are needed from wells perforated in the overlying water table, in upland areas that are important for groundwater recharge, and near the Pacific Ocean and south San Francisco Bay. This additional information can be integrated with the data already being collected from production wells to develop a more reliable estimate of flow directions and storage in the entire basin.

If most wells pump from the deep aquifer, what benefits are there for measuring water levels in shallow wells?

Data from shallow wells are needed to map the configuration of the water table and improve our understanding of the relationship between percolating recharge and leakage to the deeper aquifers. The relationship between the water table and deep aquifers is important to designing conjunctive use operations, and when evaluating the timing and magnitude for contaminants introduced at the water table to reach pumping wells in the basin.

Where does the water in my well come from?

Precipitation and irrigation on the hilly areas east of Lake Merced, San Bruno Mountain, and the areas east of the San Andreas Fault can recharge the basin as subsurface inflow. This water moves horizontally toward pumping centers in the valley lowlands. Leakage from the overlying water table also recharges the deep aquifer. The primary sources of recharge to the water table are deep percolation of precipitation and applied water. Groundwater data from upland areas and the valley lowlands are needed from both shallow and deep wells to determine the sources of water to pumping wells in all areas of the basin.

What chemical indicators of saltwater intrusion should be sampled for?

Chloride ion is the major anion in seawater, and increasing chloride ion concentrations in groundwater may be the first indication of saltwater contamination. Chloride ion concentrations alone, however, are not reliable indicators of saltwater intrusion. Additional information is needed to supplement the chloride data. For example, ratios of conservative ions like chloride-to-boron and chloride-to-bromide can be used to help identify saltwater contamination. Additional chemical and isotopic data combined with water level data can be used to confirm saltwater intrusion.

How much water is pumped from the basin?

Pumping is the primary groundwater outflow from the basin, yet more than one-third of the estimated pumpage is not recorded. Uncertainty exists in the quantity and distribution of pumping in the basin. Private wells typically do not record groundwater use.

SECTION 7 REPORTS, MAPS, AND DATA CONSIDERED IN THIS MEMORANDUM

AGS, Inc., Technical Memorandum 7, 1993: *Groundwater Data Collection and Analysis Program.* Prepared for the San Francisco Water Department.

AGS, Inc., Technical Memorandum 8, 1994: *Westside Basin Field Application* (Volume I). San Francisco Water Department Groundwater Master Plan.

AGS, Inc., Technical Memorandum 11, 1996: *Subsidence Modeling Westside and Lobos Basins* (Revised by CH2M Hill). Prepared for the San Francisco Water Department.

AGS, Inc., Technical Memorandum, 1996: *Golden Gate Park Exploratory Hole/ Monitoring Well Project.* Prepared for the San Francisco recreation and Park Department and San Francisco Department of Public Works.

AGS, Inc., Technical Memorandum 19, 1997: *Groundwater Monitoring Program.* Draft report prepared for the San Francisco Public Utilities Commission, City and County of San Francisco.

Applied Consultants, 1991: *Daly City Ground-Water Investigation and Model.*

Bachman, S., Hauge, C., Neese, K., and Saracino, A., 1997: *California Groundwater Management.* Groundwater Resources Association of California.

Bartell, M.J., 1913: *Report on the Underground Water Supply of San Francisco County.* San Francisco, California.

Barrett, Harris and Associates, Inc., 1983: *Water System Master Plan.* Prepared for the City of San Bruno.

Bookman-Edmonston, Technical Memorandum 2, 1993: *Water Supply for Groundwater Recharge.* Prepared for the San Francisco Water Department.

Brabb, E.E. and E.H. Pampayan, 1983: *Geologic Map of San Mateo County, California.* U.S. Geological Survey.

California Water Service Company, 1997: Miscellaneous records of static water level, well-water quality, pumpage, water purchases, and population data.

Carroll E. Bradberry and Associates, 1954: *Preliminary Report on Groundwater.* Water supply report to the City of San Bruno.

CH2M Hill, Technical Memorandum 1, 1993: *Climatologic, Water, and Wastewater Summary, San Francisco Groundwater Master Plan.* Prepared for the San Francisco Water Department.

_____, Technical Memorandum 4, 1996: *Groundwater Resources, San Francisco Groundwater Master Plan* (Revised). Prepared for the San Francisco Water Department.

_____, Technical Memorandum 6, 1993: *Regulatory Requirements, San Francisco Groundwater Master Plan.* Prepared for the San Francisco Water Department.

_____, Technical Memorandum 12a, 1995: *Westside Basin Facilities Design - Elk glen, San Francisco Groundwater Master Plan.* Prepared for the San Francisco Water Department.

_____, Technical Memorandum 12b, 1995: *Westside Basin Facilities Design - Sunset District Wells, San Francisco Groundwater Master Plan* (Revised). Prepared for the San Francisco Water Department.

_____, Technical Memorandum 13, 1995: *Cost Estimates for Short-term Activities, San Francisco Groundwater Master Plan* (Revised). Prepared for the San Francisco Water Department.

_____, Technical Memorandum 15, 1995: *Lake Merced Model Review, San Francisco Groundwater Master Plan.* Prepared for the San Francisco Water Department.

_____, Technical Memorandum 16, 1996: *Geographic Information System Database Design and Documentation, San Francisco Groundwater Master Plan.* San Francisco Groundwater Master Plan.

_____, Technical Memorandum 18, 1997: *Westside Basin Groundwater Model, San Francisco Groundwater Master Plan* (Draft). Prepared for the San Francisco Public Utilities Commission.

City of San Bruno Department of Public Works, 1997: Miscellaneous records of static water level, well-water quality, pumpage, water purchases, and population data.

Clark, W.O., 1924: *Groundwater in Santa Clara Valley California.* U.S. Geological Survey Water-Supply Paper 519.

Clifton, E.H. and R.E. Hunter, 1987: *The Merced Formation and Related Beds: A Mile-Thick Succesion of Late Cenozoic Coastal and Shelf Deposits in the Seacliffs of San Francisco California.* Geological Society of America Centennial Field Guide.

Daly City Department of Water and Wastewater Resources, 1997: Miscellaneous records of static water level, well-water quality, pumpage, water purchases, population, and wastewater discharge data.

Ellis, W.C., 1989: *City of San Bruno Well Site Evaluation for Future Development.*

Fio, J.L. and D.A. Leighton, 1995: *Geohydrologic Framework, Historical Development of the Ground-Water System, and General Hydrologic and Water Quality Conditions in 1990, South San Francisco Bay and Peninsula Area, California.* U.S. Geological Survey Open-File Report 94-357.

Fio, J.L. and D.A. Leighton, 1995: *Compilation of Water Inflow and Outflow Data for Calculating a Regional and Subarea Water Balance, South San Francisco bay and Peninsula Area, California.* U.S. Geological Survey (written communication).

Geo/Resource Consultants, Inc., 1993: *Lake Merced Water Resources Planning Study.*

Guidetti, J.R. and C.F. Schaefer, 1995: *Groundwater Investigation and Wellhead Protection Program for the Greater San Bruno Area.* San Mateo County Environmental Health Services Division.

Kirker, Chapman & Associates in conjunction with David K. Todd, 1972: *Daly City Ground Water Investigation.*

Kissick, Charles, Technical Memorandum 17, 1996: *Lake Merced Field Study* (Volume I). Prepared for the San Francisco Water Department.

Lee, Gail D., 1993: Evaluation *of the Impact of Chemical Contaminants Upon the Daly City Drinking Water Wells through Modeling.* Thesis in partial fulfillment of the requirements for the degree of Master of Science in Environmental Management, University of San Francisco.

Leighton, D.A., Fio, J.L., and L.F. Metzger, 1995: *Database of Well and Areal Data, South San Francisco Bay and Peninsula Area, California.* U.S. Geological Survey Water-Resources Investigations Report 94-4151.

Michel, R.L., Hamlin, S.N., and S.P. Phillips 1995: *Recharge Rates and Changes in Ground-Water Quality in a Shallow Unconfined Aquifer in Western San Francisco.* U.S. Geological Survey (written communication).

Montgomery Watson, 1996: *Draft Recycled Water Master Plan* (Revised). Prepared for the San Francisco Water Department.

Phillips, S.P., Hamlin, S.N., and E.B. Yates, 1993: *Geohydrology, Water Quality, and Estimation of Ground-Water Recharge in San Francisco, California, 1987-92.* U.S. Geological Survey Water-Resources Investigations Report 93-4019.

Ritzman, L.R., 1990: *Water Wells in San Bruno* (Revised). Report prepared for San Bruno City Council.

San Francisco Public Utilities Commission and San Francisco Recreation and Park Department, 1997: *Draft Lake Merced Comprehensive Management Plan.*

San Francisco Bay Regional Water Quality Control Board, 1996: *San Francisco and Northern San Mateo County Pilot Beneficial Use Designation Project.*

San Francisco Water Department, 1996: Draft San Francisco Groundwater Master Plan.

South San Francisco – San Bruno Water Quality Control Plant, 1997: Wastewater discharge data for the South San Francisco – San Bruno Water Quality Control Plant and the combined discharge of the North Bayshore Systems Unit.

The Hydrodynamics Group, 1997: *Impacts of Zoo Wells Model of Westside Basin*. Prepared for the San Francisco Department of Public Works.

The Pacific Group, Technical Memorandum 3, 1993: *Reclaimed Water Supply*. Prepared for the San Francisco Water Department.

The Pacific Group, Technical Memorandum 5, 1996: *Water Demand* (Revised). Prepared for the San Francisco Water Department.

Todd, D.K., 1971: *On the Location of Well No. 14 for the City of San Bruno, California*. Report to the City of San Bruno.

Wood, P.R., 1975: *Sources of Emergency Water Supplies in San Mateo County, California*. U.S. Geological Survey Open-File Report 75-43.

Yates E.B., Hamlin, S.N., and L.H. McCann, 1990: Geohydrology, Water Quality, and Water Budgets of Golden Gate Park and the Lake Merced Area in the Western Part of San Francisco, California. U.S. Geological Survey Water-Resources Investigations Report 90-4080.

This Page Intentionally Left Blank

Appendix G

San Francisco Public Utilities Commission Suburban Customers Purchase Projections, 2005

This Page Intentionally Left Blank

SFPUC

WATER
HETCH HETCHY
WATER & POWER
CLEAN WATER

SAN FRANCISCO PUBLIC UTILITIES COMMISSION
PLANNING BUREAU
1145 Market Street, Suite 401 San Francisco, CA 94103 • Tel. (415) 934-5700• Fax (415) 934-5751

GAVIN NEWSOM
MAYOR

RICHARD SKLAR
PRESIDENT

ANN MOLLER CAEN
VICE PRESIDENT

E. DENNIS NORMANDY
ADAM WERBACH
RYAN L. BROOKS

SUSAN LEAL
GENERAL MANAGER

May 27, 2005

RECEIVED
JUL 13 2005
ERLER & KALINOWSKI, INC.

City of Burlingame
George Bagdon
501 Primrose Road
Burlingame, CA 94010

Dear Mr. Bagdon:

Thank you for providing us with your agency purchase estimate from the San Francisco Public Utilities Commission (SFPUC) for the years 2010, 2015, 2020 2025 and 2030. With the information you provided, the SFPUC has assessed the water supply reliability under the following planning scenarios:

- Projected Single dry-year supply for 2005;
- Projected Multiple dry-year supply beginning 2005; and
- Projected supply reliability for years 2010, 2015, 2020, 2025 and 2030.

Table 1 summarizes your agency's deliveries for projected single dry-year supply for 2005 and projected multiple dry-year supply beginning 2005.

With regards to future demands, the SFPUC will expand their water supply portfolio by increasing the types of water supply resources. Table 2 summarizes the water supply resources assumed to be available by year through 2030. This expanded supply portfolio is consistent with the SFPUC's adopted Water Supply Master Plan (2000), adopted Capital Improvement Program (2002) and Water Supply Improvement Program.

Concerning allocation of supply during dry years, the Interim Water Shortage Allocation Plan (IWSAP) was utilized to allocate shortages (1) between the SFPUC and BAWSCA agencies as a whole and (2) among BAWSCA agencies. The IWSAP was adopted in 2000 after a multi-year process of development involving a steering committee representative of all wholesale agencies. While the IWSAP is scheduled to expire in 2009, along with the Master Contract, it represents the most reasonable basis for estimating the impacts of a 20% system-wide shortage.

Finally, the SFPUC estimated the frequency and severity of anticipated shortages given projected demands and system configurations for the period 2010 through 2030. For this analysis, we assumed that the historical hydrologic period is indicative of future events and evaluated the supply reliability assuming a repeat of the actual historic hydrological period 1920 through 2002. Again, this hydrological analysis is consistent with the planning efforts that have been adopted to date by the Commission and that are currently ongoing with the development of the Water System Improvement Program. The results of that analysis are summarized in Table 3 for years 2010, 2015, 2020, 2025 and 2030.

If you have any questions or need additional information, please do not hesitate to contact me at (415) 554-0792.

Sincerely,

Paula Kehoe
Manager of Water Resources Planning

cc: Nicole Sandkulla

RECEIVED
MAY 31 2005
DEPT. OF PUBLIC WORKS
CITY OF BURLINGAME

SFPUC

SAN FRANCISCO PUBLIC UTILITIES COMMISSION
PLANNING BUREAU
1145 Market Street, Suite 401 San Francisco, CA 94103 • Tel. (415) 934-5700• Fax (415) 934-5751

WATER
HETCH HETCHY WATER & POWER
CLEAN WATER

GAVIN NEWSOM
MAYOR

RICHARD SKLAR
PRESIDENT

ANN MOLLER CAEN
VICE PRESIDENT

E. DENNIS NORMANDY
ADAM WERBACH
RYAN L. BROOKS

SUSAN LEAL
GENERAL MANAGER

June 1, 2005

City of Burlingame
George Bagdon
501 Primrose Road
Burlingame, CA 94010

Dear Mr. Bagdon:

On May 27, 2005, the San Francisco Public Utilities Commission (SFPUC) sent you a letter with information pertaining to the SFPUC's water supply reliability to assist you with the development of your Urban Water Management Plan.

Upon review of the 2005 wholesale purchase projections used in the analysis, it was determined that there was a miscommunication on the figures used for the 2005 water purchase projections. The SFPUC used the average purchase estimate rather than the FY 03-04 purchase estimate shown in BAWSCA's *Attachment A-3 Sample Calculation*. Enclosed is the revised projection of FY 03-04 and is reflected in Table 1. 4.77 4.88

We apologize for any inconvenience this may have caused. Please do not hesitate to contact me if you have any questions or comments. I can be reached at (415) 554-0792.

Sincerely,

Paula Kehoe

Paula Kehoe
Manager of Water Resources Planning

cc: Nicole Sandkulla

RECEIVED
JUN 02 2005
DEPT. OF PUBLIC WORKS
CITY OF BURLINGAME

Attachment A-3 Sample Calculation

23.6% Average Suburban Reduction from FY 03-04 Purchases

(Units in million gallons per day unless otherwise noted)

Suburban Purchasers	(1) Allocation Basis: First Fixed Component	(2) Allocation Basis: Second Fixed Component	(3) Allocation Basis: Variable Component	(4) Allocation Basis: Average	(5) Unadjusted Allocations: Allocation Factors	(6) Unadjusted Allocations: Initial Shortage Allocation	(7) Unadjusted Allocations: FY 03-04 Purchases	(8) Unadjusted Allocations: Initial Purchase Cutback	(9) Unadjusted Allocations: Initial Purchase Cutback	(10) Allocations Adj. for Santa Clara & San José: Subtotal Allocation Factors	(11) Allocations Adj. for Santa Clara & San José: Adjusted Shortage Allocation	(12) Allocations Adj. for Santa Clara & San José: Adjusted Purchase Cutback	(13) Allocations Adj. for Santa Clara & San José: Adjusted Purchase Cutback	Final Individual Share
ACWD	13.76	11.95	12.25	12.65	7.10%	9.65	12.31	-2.66	-21.63%	7.47%	9.76	-2.55	-20.72%	7.18%
Belmont	3.89	3.26	3.44	3.53	1.98%	2.69	3.52	-0.82	-23.43%	2.08%	2.72	-0.79	-22.55%	2.00%
Brisbane	0.46	0.30	0.39	0.38	0.22%	0.29	0.39	-0.10	-25.03%	0.23%	0.30	-0.09	-24.16%	0.22%
Burlingame	5.23	4.68	4.72	4.88	2.74%	3.72	4.77	-1.05	-22.07%	2.88%	3.76	-1.01	-21.17%	2.77%
Coastside	2.18	1.35	1.78	1.77	0.99%	1.35	1.89	-0.54	-28.70%	1.04%	1.36	-0.53	-27.87%	1.00%
Cordilleras	0.01	0.01	0.00	0.01	0.00%	0.00	0.01	0.00	-24.99%	0.00%	0.00	0.00	-24.12%	0.00%
CWS Total	35.50	33.51	36.21	35.07	19.68%	26.74	38.25	-11.51	-30.08%	20.70%	27.05	-11.20	-29.27%	19.90%
Daly City	4.49	4.49	4.72	4.57	2.56%	3.48	4.94	-1.46	-29.53%	2.70%	3.52	-1.42	-28.71%	2.59%
East Palo Alto	2.18	2.10	2.09	2.12	1.19%	1.62	2.19	-0.58	-26.22%	1.25%	1.64	-0.56	-25.37%	1.20%
Estero	7.23	5.45	5.49	6.06	3.40%	4.62	5.58	-0.96	-17.17%	3.58%	4.67	-0.90	-16.21%	3.44%
Guadalupe	0.52	0.27	0.33	0.38	0.21%	0.29	0.33	-0.04	-13.01%	0.22%	0.29	-0.04	-12.00%	0.21%
Hayward	24.00	17.56	18.30	19.95	11.19%	15.22	19.59	-4.38	-22.35%	11.78%	15.39	-4.20	-21.45%	11.32%
Hillsborough	4.09	3.60	3.78	3.82	2.14%	2.92	3.91	-1.00	-25.53%	2.26%	2.95	-0.97	-24.67%	2.17%
Los Trancos*														0.00%
Menlo Park	4.24	3.43	3.58	3.75	2.10%	2.86	3.84	-0.98	-25.56%	2.21%	2.89	-0.95	-24.69%	2.13%
Millbrae	3.15	2.64	2.39	2.73	1.53%	2.08	2.58	-0.50	-19.25%	1.61%	2.11	-0.47	-18.31%	1.55%
Milpitas	9.23	6.80	6.94	7.66	4.30%	5.84	7.10	-1.27	-17.83%	4.52%	5.91	-1.20	-16.87%	4.34%
Mountain View	13.46	10.36	10.91	11.58	6.50%	8.83	10.96	-2.13	-19.42%	6.83%	8.93	-2.03	-18.49%	6.57%
North Coast	3.84	3.29	3.48	3.54	1.98%	2.70	3.59	-0.89	-24.81%	2.09%	2.73	-0.86	-23.94%	2.01%
Palo Alto	17.07	12.96	13.06	14.37	8.06%	10.95	13.33	-2.38	-17.85%	8.48%	11.08	-2.25	-16.90%	8.15%
Purissima Hills	1.85	1.85	2.19	1.96	1.10%	1.49	2.31	-0.81	-35.22%	1.16%	1.51	-0.79	-34.47%	1.11%
Redwood City	10.93	10.92	11.73	11.19	6.28%	8.53	12.16	-3.63	-29.82%	6.61%	8.63	-3.53	-29.00%	6.35%
San Bruno	3.25	2.01	2.43	2.56	1.44%	1.95	2.41	-0.46	-18.97%	1.51%	1.97	-0.43	-18.03%	1.45%
Skyline	0.18	0.16	0.17	0.17	0.10%	0.13	0.18	-0.05	-28.57%	0.10%	0.13	-0.05	-27.74%	0.10%
Stanford	3.03	2.58	2.43	2.68	1.50%	2.04	2.51	-0.47	-18.78%	1.58%	2.07	-0.45	-17.83%	1.52%
Sunnyvale	12.58	10.73	9.56	10.95	6.14%	8.35	9.84	-1.49	-15.15%	6.46%	8.45	-1.39	-14.17%	6.22%
Westborough	1.32	0.98	1.01	1.10	0.62%	0.84	0.97	-0.13	-12.98%	0.65%	0.85	-0.12	-11.97%	0.63%
Subtotal	187.67	157.23	163.38	169.43		129.20	169.48	-40.28	-23.77%	100.00%	130.70	-38.78	-22.88%	
San José	2.68	4.10	4.65	3.81	2.14%	2.91	4.84	-1.94	-40.03%		2.91	-1.94	-40.03%	2.14%
Santa Clara	6.57	4.72	3.77	5.02	2.82%	3.83	3.59	0.23	6.51%		2.33	-1.27	-35.22%	1.71%
Total	196.92	166.06	171.80	178.26	100.00%	135.93	177.92	-41.99	-23.60%		135.93	-41.99	-23.60%	100.00%

Derivation of the Santa Clara/San José adjustment:

1.	Largest permanent customer cutback:	-35.22%
2a.	Adjusted Santa Clara shortage allocation:	2.33 (Applying largest permanent customer cutback)
2b.	Santa Clara adjustment:	-1.50 (Difference between initial and adjusted alloc.)
3a.	Adjusted San José shortage allocation:	3.14 (Applying largest permanent customer cutback)
3b.	San José adjustment:	0.00 (Difference between initial and adjusted alloc.)
4.	Total Adjustment:	-1.50 (2b + 3b)

*All values associated with Los Trancos County Water District have been included within Cal Water value

Table 1
Projected Burlingame, City of Deliveries for Three Multiple Dry Years Given Year 2005 Purchase Request

	Purchase Request Year 2005 mgd	One Critical Dry Year	Current Deliveries during Multiple Dry Years in mgd		
			Year 1	Year 2	Year 3
System-Wide Shortage in Percent	0%	10%	10%	20%	20%
BAWSCA Allocation mgd	177.9	157.4	157.4	136.8	136.8
Burlingame, City of	4.77	4.36	4.36	3.79	3.79

Table 2
UWMP Studies: Water Supply Reliability
Water Supply Options for Years 2010 through 2030

	2010	2015	2020	2025	2030
Crystal Springs Reservoir (22bg)	x	x	x	x	x
Westside Basin Groundwater afa	4,500	7,000	8,100	8,100	8,100
Calaveras Reservoir Recov. (31.5 bg)		x	x	x	x
Districts' Transfer afa	23,200	23,200	28,000	29,000	29,000

SVCC'y 2.77%.

157.4 x 2.77 = 29.36

Attachment A-3. Suburban Shortage Allocations

Assumptions and Column Notes

Avg. Shortage for the Suburban Purchasers = 23.6%
Water available to the Suburban Purchasers = 135.93 mgd

Column notes:

Allocation Basis. The Allocation Basis is used for calculating Allocation Factors and is the average of the following three components:

1. First Fixed Component: The greater of either the Supply Assurance values or the three-year average of SFPUC purchases for FYs 1996-97, 1997-98, and 1998-99, with certain exceptions.
   a. Daly City's and Purissima Hill's values are based on their three-year averages, which is greater than their Supply Assurance values.
   b. Hayward's and Estero's values are based on their 2010-11 projected purchases, as reported in the BAWUA 1997-98 Annual Survey.
   c. San José's and Santa Clara's values are based on the water supply caps in their individual water supply contracts with the SFPUC.
2. Second Fixed Component: The average of SFPUC purchases for FYs 1996-97, 1997-98, and 1998-99.
3. Variable Component: The rolling three-year average, updated annually, beginning with FYs 1996-97, 1997-98, and 1998-99.
4. Average:. The average of columns 1, 2, and 3.

Unadjusted Allocations. The initial shortage allocations in column 6 are adjusted for Santa Clara and San José in columns 10 through 13.

5. Allocation Factors: The ratio of each Suburban Purchaser's column 4 average to the column 4 total.
6. Initial Shortage Allocation: The product of each Suburban Purchaser's column 5 Allocation Factor times the column 6 total, which represents the assumed available water supply.
7. FY 2003-04 Purchases: The most recent year's purchases to which the Shortage Allocation can be compared to determine the effective cutback.
8. Purchase Cutback: Column 6 minus column 7, in mgd.
9. Purchase Cutback: The ratio of column 8 to column 7, in percent.

Allocations Adjusted for Santa Clara and San José. This adjustment is made so that Santa Clara's and San José's cutbacks are at least as great as the highest cutback by the permanent customers. In this example, there is no adjustment required for San José because the formula results in an unadjusted cutback that is already greater than the highest cutback by a permanent customer.

10. Subtotal Allocation Factors: The ratio of each permanent Suburban Purchaser's column 4 average to the column 4 subtotal.
11. Adjusted Shortage Allocation: The product of each Suburban Purchaser's column 10 Subtotal Allocation Factor times the Column 11 subtotal.
    a. The column 11 subtotal is the sum of the column 6 subtotal plus the Santa Clara adjustment.
    b. The Santa Clara adjustment is the difference between its column 6 Initial Shortage Allocation and its Adjusted Shortage Allocation.
    c. Santa Clara's Adjusted Shortage Allocation is the product of its column 4 average and the largest Purchase Cutback received by the permanent Suburban Purchasers.
12. Adjusted Purchase Cutback: Column 11 minus column 7, in mgd.
13. Adjusted Purchase Cutback: The ratio of column 12 to column 7, in percent.

Attachment A-3 Sample Calculation

23.6% Average Suburban Reduction from FY 2010 Purchases

(Units in million gallons per day unless otherwise noted)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
	Allocation Basis				Unadjusted Allocations					Allocations Adj. for Santa Clara & San José				
Suburban Purchasers	First Fixed Component	Second Fixed Component	Variable Component	Average	Allocation Factors	Initial Shortage Allocation	FY 2010 Purchases	Initial Purchase Cutback		Subtotal Allocation Factors	Adjusted Shortage Allocation	Adjusted Purchase Cutback		Final Individual Share
ACWD	13.76	11.95	13.76	13.16	7.15%	10.32	13.76	-3.44	-25.00%	7.55%	10.44	-3.32	-24.15%	7.23%
Belmont	3.89	3.26	3.54	3.56	1.94%	2.80	3.54	-0.74	-21.01%	2.05%	2.83	-0.71	-20.11%	1.96%
Brisbane	0.46	0.30	0.70	0.49	0.26%	0.38	0.70	-0.32	-45.39%	0.28%	0.39	-0.31	-44.77%	0.27%
Burlingame	5.23	4.68	4.80	4.90	2.67%	3.85	4.80	-0.95	-19.85%	2.82%	3.89	-0.91	-18.94%	2.70%
Coastside	2.18	1.35	2.66	2.06	1.12%	1.62	2.66	-1.04	-39.18%	1.18%	1.64	-1.02	-38.49%	1.13%
Cordilleras	0.01	0.01	0.01	0.01	0.00%	0.00	0.01	0.00	-15.81%	0.00%	0.00	0.00	-14.85%	0.00%
CWS Total	35.50	33.51	35.78	34.93	18.99%	27.40	35.78	-8.38	-23.42%	20.05%	27.71	-8.07	-22.55%	19.21%
Daly City	4.49	4.49	7.87	5.62	3.06%	4.41	7.87	-3.46	-43.98%	3.23%	4.46	-3.41	-43.34%	3.09%
East Palo Alto	2.18	2.10	2.80	2.36	1.28%	1.85	2.80	-0.95	-33.89%	1.35%	1.87	-0.93	-33.14%	1.30%
Estero	7.23	5.45	6.20	6.30	3.42%	4.94	6.20	-1.26	-20.35%	3.61%	4.99	-1.21	-19.44%	3.46%
Guadalupe	0.52	0.27	0.55	0.45	0.24%	0.35	0.55	-0.20	-36.16%	0.26%	0.36	-0.19	-35.44%	0.25%
Hayward	24.00	17.56	21.80	21.12	11.48%	16.57	21.80	-5.23	-24.00%	12.12%	16.76	-5.04	-23.13%	11.61%
Hillsborough	4.09	3.60	3.72	3.80	2.07%	2.98	3.72	-0.74	-19.78%	2.18%	3.02	-0.70	-18.87%	2.09%
Menlo Park	4.24	3.43	4.23	3.96	2.16%	3.11	4.23	-1.12	-26.47%	2.28%	3.15	-1.08	-25.63%	2.18%
Millbrae	3.15	2.64	3.21	3.00	1.63%	2.35	3.21	-0.86	-26.65%	1.72%	2.38	-0.83	-25.81%	1.65%
Milpitas	9.23	6.80	7.20	7.74	4.21%	6.07	7.20	-1.13	-15.65%	4.44%	6.14	-1.06	-14.68%	4.26%
Mountain View	13.46	10.36	12.70	12.17	6.62%	9.55	12.70	-3.15	-24.80%	6.99%	9.66	-3.04	-23.94%	6.69%
North Coast	3.84	3.29	3.56	3.56	1.94%	2.79	3.56	-0.77	-21.49%	2.05%	2.83	-0.73	-20.60%	1.96%
Palo Alto	17.07	12.96	13.10	14.38	7.82%	11.28	13.10	-1.82	-13.90%	8.25%	11.41	-1.69	-12.91%	7.91%
Purissima Hills	1.85	1.85	2.47	2.05	1.12%	1.61	2.47	-0.86	-34.78%	1.18%	1.63	-0.84	-34.04%	1.13%
Redwood City	10.93	10.92	10.80	10.88	5.92%	8.54	10.80	-2.26	-20.96%	6.25%	8.63	-2.17	-20.06%	5.98%
San Bruno	3.25	2.01	1.70	2.32	1.26%	1.82	1.70	0.12	6.92%	1.33%	1.84	0.14	8.14%	1.27%
Skyline	0.18	0.16	0.23	0.19	0.10%	0.15	0.23	-0.08	-34.63%	0.11%	0.15	-0.08	-33.89%	0.10%
Stanford	3.03	2.58	2.66	2.76	1.50%	2.16	2.66	-0.50	-18.71%	1.58%	2.19	-0.47	-17.78%	1.52%
Sunnyvale	12.58	10.73	10.50	11.27	6.13%	8.84	10.50	-1.66	-15.82%	6.47%	8.94	-1.56	-14.86%	6.20%
Westborough	1.32	0.98	1.15	1.15	0.63%	0.90	1.15	-0.25	-21.57%	0.66%	0.91	-0.24	-20.68%	0.63%
Subtotal	187.67	157.23	177.69	174.20		136.65	177.69	-41.04	-23.10%	100.00%	138.21	-39.48	-22.22%	
			ck.	*174.20*										
San José	2.68	4.10	6.28	4.35	2.37%	3.42	6.28	-2.86	-45.62%		3.42	-2.86	-45.62%	2.37%
Santa Clara	6.57	4.72	4.90	5.40	2.93%	4.23	4.90	-0.67	-13.59%		2.68	-2.22	-45.39%	1.85%
Total	196.92	166.06	188.87	183.95	100.00%	144.30	188.87	-44.57	-23.60%		144.30	-44.57	-23.60%	100.00%
			ck.	*183.95*										

Derivation of the Santa Clara/San José adjustment:

1. Largest permanent customer cutback: -45.39%
2a. Adjusted Santa Clara shortage allocation: 2.68 (Applying largest permanent customer cutback)
2b. Santa Clara adjustment: -1.56 (Difference between initial and adjusted alloc.)
3a. Adjusted San José shortage allocation: 3.43 (Applying largest permanent customer cutback)
3b. San José adjustment: 0.00 (Difference between initial and adjusted alloc.)
4. Total Adjustment: -1.56 (2b + 3b)

Attachment A-3. Suburban Shortage Allocations

Assumptions and Column Notes

Avg. Shortage for the Suburban Purchasers = 23.6%
Water available to the Suburban Purchasers = 144.30 mgd

Column notes:

Allocation Basis. The Allocation Basis is used for calculating Allocation Factors and is the average of the following three components:

1. First Fixed Component: The greater of either the Supply Assurance values or the three-year average of SFPUC purchases for FYs 1996-97, 1997-98, and 1998-99, with certain exceptions.
   a. Daly City's and Purissima Hill's values are based on their three-year averages, which is greater than their Supply Assurance values.
   b. Hayward's and Estero's values are based on their 2010-11 projected purchases, as reported in the BAWUA 1997-98 Annual Survey.
   c. San José's and Santa Clara's values are based on the water supply caps in their individual water supply contracts with the SFPUC.
2. Second Fixed Component: The average of SFPUC purchases for FYs 1996-97, 1997-98, and 1998-99.
3. Variable Component: The rolling three-year average, updated annually, beginning with FYs 1996-97, 1997-98, and 1998-99.
4. Average: The average of columns 1, 2, and 3.

Unadjusted Allocations. The initial shortage allocations in column 6 are adjusted for Santa Clara and San José in columns 10 through 13.

5. Allocation Factors: The ratio of each Suburban Purchaser's column 4 average to the column 4 total.
6. Initial Shortage Allocation: The product of each Suburban Purchaser's column 5 Allocation Factor times the column 6 total, which represents the assumed available water supply.
7. FY 1998-99 Purchases: The most recent year's purchases to which the Shortage Allocation can be compared to determine the effective cutback.
8. Purchase Cutback: Column 6 minus column 7, in mgd.
9. Purchase Cutback: The ratio of column 8 to column 7, in percent.

Allocations Adjusted for Santa Clara and San José. This adjustment is made so that Santa Clara's and San José's cutbacks are at least as great as the highest cutback by the permanent customers. In this example, there is no adjustment required for San José because the formula results in an unadjusted cutback that is already greater than the highest cutback by a permanent customer.

10. Subtotal Allocation Factors: The ratio of each permanent Suburban Purchaser's column 4 average to the column 4 subtotal.
11. Adjusted Shortage Allocation: The product of each Suburban Purchaser's column 10 Subtotal Allocation Factor times the Column 11 subtotal.
    a. The column 11 subtotal is the sum of the column 6 subtotal plus the Santa Clara adjustment.
    b. The Santa Clara adjustment is the difference between its column 6 Initial Shortage Allocation and its Adjusted Shortage Allocation.
    c. Santa Clara's Adjusted Shortage Allocation is the product of its column 4 average and the largest Purchase Cutback received by the permanent Suburban Purchasers.
12. Adjusted Purchase Cutback: Column 11 minus column 7, in mgd.
13. Adjusted Purchase Cutback: The ratio of column 12 to column 7, in percent.

Table 3

Allocation	SFPUC Purchase: Burlingame, City of mgd					SFPUC Purchase: All Wholesale Customers mgd				
Delivery for Year beginning July 1	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
	Projected Delivery in mgd					Projected System-wide Delivery in mgd				
	2010	2015	2020	2025	2030	2010	2015	2020	2025	2030
1920	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1921	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1922	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1923	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1924	4.80	4.62	4.60	4.62	5.01	188.9	191.6	197.5	203.6	185.7
1925	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1926	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1927	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1928	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1929	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1930	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1931	4.51	4.58	4.72	4.87	4.37	167.3	169.7	175.0	180.5	161.9
1932	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1933	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1934	4.51	4.62	4.60	4.62	5.01	167.3	191.6	197.5	203.6	185.7
1935	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1936	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1937	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1938	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1939	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1940	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1941	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1942	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1943	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1944	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1945	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1946	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1947	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1948	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1949	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1950	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1951	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1952	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1953	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1954	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1955	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1956	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1957	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1958	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1959	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1960	4.80	4.62	4.60	4.62	5.01	188.9	191.6	197.5	203.6	185.7
1961	4.51	4.58	4.72	4.24	4.37	167.3	169.7	175.0	157.4	161.9
1962	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1963	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1964	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1965	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1966	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1967	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1968	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1969	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1970	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1971	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1972	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1973	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1974	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1975	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1976	4.80	4.62	4.60	4.62	5.01	188.9	191.6	197.5	203.6	185.7
1977	3.93	4.58	4.72	4.24	4.37	145.6	169.7	175.0	157.4	161.9
1978	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1979	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1980	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1981	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1982	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1983	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1984	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1985	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1986	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1987	4.80	4.62	4.60	4.62	5.01	188.9	191.6	197.5	203.6	185.7
1988	4.51	4.58	4.72	4.87	4.37	167.3	169.7	175.0	180.5	161.9
1989	4.51	4.58	4.72	4.87	5.01	167.3	169.7	175.0	180.5	185.7
1990	3.93	4.58	4.11	4.24	4.37	145.6	169.7	152.5	157.4	161.9
1991	3.93	4.58	4.72	4.24	4.37	145.6	169.7	175.0	157.4	161.9
1992	3.93	3.99	4.11	4.24	4.37	145.6	147.8	152.5	157.4	161.9
1993	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1994	4.80	4.62	4.60	4.62	5.01	188.9	191.6	197.5	203.6	185.7
1995	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1996	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1997	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1998	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
1999	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
2000	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
2001	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4
2002	4.80	4.62	4.60	4.62	4.68	188.9	191.6	197.5	203.6	209.4

Appendix H

City of Burlingame 2004 Water Quality Report

This Page Intentionally Left Blank

CITY OF BURLINGAME WATER QUALITY DATA 2004 (1)

This table shows the results of SFPUC water quality and the City of Burlingame analyses for 2004. It contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health (PHG), the amount detected, the typical sources, footnotes explaining our findings and a key to units of measurement. *See Page 4 for Abbreviation Key.*

DETECTED CONTAMINANTS	Unit	MCL	PHG (MCLG)	Range	Average (Maximum)	Typical Sources in Drinking Water
TURBIDITY (2)						
Unfiltered Hetch Hetchy Water, max 5 NTU	-	TT	NS	0.28 - 0.46 (3)	(5) (4)	Soil run-off
Filtered Water - Harry Tracy WTP, maz 1 NTU	-	TT	NS	-	(0.14)	Sooil run-off
95 percentage of time < 0.3 NTU	-	TT	NS	100% (13)	-	Soil run-off
Filtered Water - Sunol Valley WTP, man 1 NTU	-	TT	NS	-	(0.41)	Soil run-off
95 percentage of time < 0.3 NTU	-	TT	NS	99% (13)	-	Soil run-off
ORGANIC CHEMICALS (5)						
DISINFECTION BY-PRODUCTS (SFPUC transmission system)						
Total Trihalomethanes (TTHMs)	ppb	80	NS	12-48	40 (7)	By-product of drinking water chlorination
Total Haloacetic Acids (HAAs)	ppb	60	NS	6-30	9 (7)	By-product of drinking water chlorination
Total Organic Carbon (6)	ppm	NS	NS	2.6 - 3.1	2.9	Various natural and man-made sources
DISINFECTION BY-PRODUCTS (City of Burlingame Water)						
Total Trihalomethanes (TTHMs)	ppb	80	NS	38.5-47.5	73.8 (7)	By-product of drinking water chlorination
Total Haloacetic Acids (HAAs)	ppb	60	NS	18.2-32.0	28.6 (7)	By-product of drinking water chlorination
Total Organic Carbon (6)	ppm	NS	NS	2.6 - 3.1	2.9	Various natural and man-made sources
MICROBIOLOGICAL (13) (City of Burlingame Water)						
Total Coliform, percentage of positive detected in any month	%	5	(0)	0 - 2.5	2.5	Naturally present in the environment
INORGANIC CHEMICALS						
Aluminum	ppb	1000	600	3 - 40	26	Erosion of natural deposits
Barium	ppb	1000	2000	3-50	23	Erosion of natural deposits
Fluoride (8)(9)	ppm	2	1	<0.1 - 0.14	<0.1	Erosion of natural deposits
Chlorine (City of Burlingame Water)	ppm	MRDL=4	MRDLG=4	0.59 - 2.50	2.04 (7)	Drinking water disinfectant added for treatment
CONSTITUENTS WITH SECONDARY STANDARDS	**Unit**	**SMCL**	**PHG**	**Range**	**Average**	**Typical Sources in Drinking Water**
Chloride	ppm	500	NS	<3 - 44	8	Runoff / leaching from natural deposits
Color	unit	15	NS	<5 - 6	<5	Naturally-occurring organic materials
Iron	ppb	300	NS	<10 - 32	14	Leaching from natural deposits
Manganese	ppb	50	NS	<2 - 6	3	Leaching from natural deposits
Specific Conductance	µS/cm	1600	NS	24 - 440	183	Substances that form ions whenin water
Total Dissolved Solids	ppm	1000	NS	29 - 171	101	Runoff / leaching from natural deposits
Turbidity	NTU	5	NS	0.07 - 0.27	0.14	Soil runoff
LEAD AND COPPER RULE STUDY (City of Burlingame Water)	**Unit**	**AL**	**PHG**	**Range**	**90th Percentile (12)**	**Typical Sources in Drinking Water**
Copper	ppb	1300	170	4.8 - 119.8	86.0 (11)	Corrosion of household plumbing systems
Lead	ppb	15	2	<1.0 - 27.4	6.9 (12)	Corrosion of household plumbing systems

OTHER WATER QUALITY PARAMETERS	Unit	AL	Range	Average
Alkalinity (as CaCO3)	ppm	NS	10 - 138	59
Boron	ppb	1000	13 - 74	38
Calcium	ppm	NS	3 - 27	14
Hardness (as CaCO3)	ppm	NS	7 - 145	62
Fluoride	ppm	NS	0.1 - 1.2	1.0
Magnesium	ppm	NS	<0.5 - 10	5.4
pH	unit	NS	7.5 - 10	9.8
Potassium	ppm	NS	0.3 - 2	1.0
Silica	ppm	NS	5 - 8	6.0
Sodium	ppm	NS	3 - 18	12

KEY:
< = less than
TT = Treatment Technique
AL = Action Level
NS = no standard
NTU = Nephelometric Turbidity Unit
ppb = parts per billion
ppm = parts per million
µS/cm = microSiemens/centimeter

(1) All results met State and Federal drinking water regulations.
(2) Turbidity is the water clarity indicator; it also indicates the quality of the water and the treatment system efficiency.
(3) Results are based on monthly average turbidities measured at Tesla Portal.
(4) Turbidity is measured every four hours. This is a single measurement result. Higher Turbidities occured in the Hetch Hetchy system in January 2004 while returning the Hetch Hetchy water supply to service, but the water was not served to customers
(5) DHS has approved SFPUC's request for a waiver of 35 additional synthetic organic chemicals.
(6) TOC is a precursor for disinfection by-product formation. Data are obtained from effluent monitoring at Sunol Valley Water Treatment Plant.
(7) This is the highest quarterly running annual average value.
(8) These data indicate the source water fluoride levels. Fluoride was added at Harry Tracy Water Treatment Plant and Polhemus Fluoride Station to prevent dental cavities in consumers.
(9) Source water data were obtained fro the following resevoirs: Hetch Hetchy, Calaveras, San Antonio, Lower Crystal Springs, San Andreas, Stone Dam, and Pilarcitos.
(10) The 90th percentile levels of lead and copper must not be greater than the action levels.
(11) In 2004, 0 out of 30 residences were over the copper Action Level at consumer taps.
(12) In 2004, 1 out of 30 residences were over the lead Action Level at consumer taps.
(13) This is the minimum percentage of time that the filtered water turbidity is less than 0.3 NTU.
Note: Additional water quality data may be obtained by calling the City of Burlingame water system phone number.

This Page Intentionally Left Blank

Appendix I

City of Burlingame Ordinance 1476
Model Water Efficient Landscape Ordinance

This Page Intentionally Left Blank

6/15/92

Adopted 1/07/93 by the City of Burlingame as City Ordinance No. 1476

MODEL

WATER EFFICIENT

LANDSCAPE

ORDINANCE

CITY CLERK

TEXT OF PROPOSED REGULATIONS

In Division 2, Title 23, California Code of Regulations, add Chapter 2.7, Sections 490 through 495, inclusive to read as follows:

Chapter 2.7. Model Water Efficient Landscape Ordinance.

INDEX

	Page
490. Purpose	4
491. Definitions	5
492. Provisions for New or Rehabilitated Landscapes	11
a. Applicability	11
b. Landscape Documentation Package	12
c. Elements of the Landscape Documentation Package	13
1. Sample Water Conservation Concept Statement	14
2. Maximum Applied Water Allowance	16
3. Estimated Applied Water Use	17
4. Estimated Total Water Use	17
5. Landscape Design Plan	18
(A) Plant Selection and Grouping	18
(B) Water Features	18
(C) Landscape Design Plan Specifications	19
6. Irrigation Design Plan	19
(A) Irrigation Design Criteria	20
(B) Recycled Water	21
(C) Irrigation Design Plan Specifications	22
7. Irrigation Schedules	23
8. Maintenance Schedules	24
9. Landscape Irrigation Audit Schedules	24
10. Grading Design Plan	24
11. Soils	25
12. Certification	26
Sample Cert. of Substantial Completion	27
d. Public Education	29

493. Provisions for Existing Landscapes 30
a. Water Management 30
b. Water Waste Prevention 30

494. Effective Precipitation 31
Sample Effective Precipitation Disclosure Statement 32

495. Reference Evapotranspiration Rates 33

490. Purpose.

(a) The State Legislature has found:

(1) that the limited supply of state waters are subject to ever increasing demands;

(2) that California's economic prosperity depends on adequate supplies of water;

(3) that state policy promotes conservation and efficient use of water;

(4) that landscapes provide recreation areas, clean the air and water, prevent erosion, offer fire protection, and replace ecosystems displaced by development; and

(5) that landscape design, installation, and maintenance can and should be water efficient.

(b) Consistent with the legislative findings, the purpose of this model ordinance is to:

(1) promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible;

(2) establish a structure for designing, installing, and maintaining water efficient landscapes in new projects; and

(3) establish provisions for water management practices and water waste prevention for established landscapes.

Note: Authority cited: Sections 65591.5, 65594, Gov. Code. Reference: Sections 65591, 65591.5, 65597, Gov. Code.

491. Definitions.

The words used in this ordinance have the meaning set forth below:

(a) **"anti-drain valve" or "check valve"** means a valve located under a sprinkler head to hold water in the system so it minimizes drainage from the lower elevation sprinkler heads.

(b) **"application rate"** means the depth of water applied to a given area, usually measured in inches per hour.

(c) **"applied water"** means the portion of water supplied by the irrigation system to the landscape.

(d) **"automatic controller"** means a mechanical or solid state timer, capable of operating valve stations to set the days and length of time of a water application.

(e) **"backflow prevention device"** means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

(f) **"conversion factor (0.62)"** means a number that converts the maximum applied water allowance from acre-inches per acre per year to gallons per square foot per year. The conversion factor is calculated as follows:

(325,851 gallons/ 43,560 square feet)/12 inches = (0.62)
325,851 gallons = one acre foot
43,560 square feet = one acre
12 inches = one foot

To convert gallons per year to 100-cubic-feet per year, another common billing unit for water, divide gallons per year by 748. (748 gallons = 100 cubic feet.)

(g) **"ecological restoration project"** means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

(h) **"effective precipitation" or "usable rainfall"** means the portion of total precipitation that is used by the plants. Precipitation is not a reliable source of water, but can contribute to some degree toward the water needs of the landscape.

(i) **"emitter"** means drip irrigation fittings that deliver water slowly from the system to the soil.

(j) **"established landscape"** means the point at which plants in the landscape have developed roots into the soil adjacent to the root ball.

(k) **"establishment period"** means the first year after installing the plant in the landscape.

(l) **"Estimated Applied Water Use"** means the portion of the Estimated Total Water Use that is derived from applied water. The Estimated Applied Water Use shall not exceed the Maximum Applied Water Allowance. The Estimated Applied Water Use may be the sum of the water recommended through the irrigation schedule, as referenced in Section 492 (c) (3).

(m) **"Estimated Total Water Use"** means the annual total amount of water estimated to be needed to keep the plants in the landscaped area healthy. It is based upon such factors as the local evapotranspiration rate, the size of the landscaped area, the types of plants, and the efficiency of the irrigation system, as described in Section 492 (c) (4).

(n) **"ET adjustment factor"** means a factor of 0.8, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.

A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. The irrigation efficiency for purposes of the ET Adjustment Factor is 0.625.

Therefore, the ET Adjustment Factor (0.8) = (0.5/0.625).

(o) **"evapotranspiration"** means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time.

(p) **"flow rate"** means the rate at which water flows through pipes and valves (gallons per minute or cubic feet per second).

(q) **"hydrozone"** means a portion of the landscaped area having plants with similar water needs that are served by a valve or set of valves with the same schedule. A hydrozone may be irrigated or non-irrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established is a non-irrigated hydrozone.

(r) **"infiltration rate"** means the rate of water entry into the soil expressed as a depth of water per unit of time (inches per hour).

(s) **"irrigation efficiency"** means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum irrigation efficiency for purposes of this ordinance is 0.625. Greater irrigation efficiency can be expected from well designed and maintained systems.

(t) **"landscape irrigation audit"** means a process to perform site inspections, evaluate irrigation systems, and develop efficient irrigation schedules.

(u) **"landscaped area"** means the entire parcel less the building footprint, driveways, non-irrigated portions of parking lots, hardscapes- such as decks and patios, and other non-porous areas. Water features are included in the calculation of the landscaped area. Areas dedicated to edible plants, such as orchards or vegetable gardens are not included.

(v) **"lateral line"** means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

(w) **"main line"** means the pressurized pipeline that delivers water from the water source to the valve or outlet.

(x) **"Maximum Applied Water Allowance"** means, for design purposes, the upper limit of annual applied water for the established landscaped area as specified in Section 492 (c) (2). It is based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscaped area. The Estimated Applied Water Use shall not exceed the Maximum Applied Water Allowance.

(y) **"mined-land reclamation projects"** means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

(z) **"mulch"** means any material such as leaves, bark, straw or other materials left loose and applied to the soil surface for the beneficial purpose of reducing evaporation .

(aa) **"operating pressure"** means the pressure at which a system of sprinklers is designed to operate, usually indicated at the base of a sprinkler.

(bb) **"overhead sprinkler irrigation systems"** means those with high flow rates (pop-ups, impulse sprinklers, rotors, etc.)

(cc) **"overspray"** means the water which is delivered beyond the landscaped area, wetting pavements, walks, structures, or other non-landscaped areas.

(dd) **"plant factor"** means a factor that when multiplied by reference evapotranspiration, estimates the amount of water used by plants. For purposes of this ordinance, the average plant factor of low water using plants ranges from 0 to 0.3, for average water using plants the range is 0.4 to 0.6, and for high water using plants the range is 0.7 to 1.0.

(ee) **"rain sensing device"** means a system which automatically shuts off the irrigation system when it rains.

(ff) **"record drawing" or "as-builts"** means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

(gg) **"recreational area"** means areas of active play or recreation such as sports fields, school yards, picnic grounds, or other areas with intense foot traffic.

(hh) **"recycled water," "reclaimed water," or "treated sewage effluent water"** means treated or recycled waste water of a quality suitable for nonpotable uses such as landscape irrigation; not intended for human consumption.

(ii) **"reference evapotranspiration" or "ETo"** means a standard measurement of environmental parameters which affect the water use of plants. ETo is given in inches per day, month, or year as represented in Section 495, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowances so that regional differences in climate can be accommodated.

(jj) **"rehabilitated landscape"** means any relandscaping project that requires a permit.

(kk) **"run off"** means water which is not absorbed by the soil or landscape to which it is applied and flows from the area. For example, run off may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a severe slope.

(ll) **"soil moisture sensing device"** means a device that measures the amount of water in the soil.

(mm) **"soil texture"** means the classification of soil based on the percentage of sand, silt, and clay in the soil.

(nn) **"sprinkler head"** means a device which sprays water through a nozzle.

(oo) **"static water pressure"** means the pipeline or municipal water supply pressure when water is not flowing.

(pp) **"station"** means an area served by one valve or by a set of valves that operate simultaneously.

(qq) **"turf"** means a surface layer of earth containing mowed grass with its roots. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

(rr) **"valve"** means a device used to control the flow of water in the irrigation system.

(ss) **"water conservation concept statement"** means a one-page checklist and a narrative summary of the project as shown in Section 492 (c) (1).

Note: Section 65594, Gov. Code. Reference: Section 65597, Gov. Code.

492. Provisions for New or Rehabilitated Landscapes

(a) Applicability

(1) Except as provided in Section 492 (a) (3), this section shall apply to:

(A) all new and rehabilitated landscaping for public agency projects and private development projects that require a permit; and

(B) developer-installed landscaping in single-family and multi-family projects.

(2) Projects subject to this section shall conform to the provisions in Section 492.

(3) This section shall not apply to:

(A) homeowner-provided landscaping at single-family and multi-family projects;

(B) cemeteries;

(C) registered historical sites;

(D) ecological restoration projects that do not require a permanent irrigation system;

(E) mined-land reclamation projects that do not require a permanent irrigation system; or

(F) any project with a landscaped area less than *2,500* square feet.

(b) Landscape Documentation Package

(1) A copy of the landscape documentation package conforming to this chapter shall be submitted to the city or county. No permit shall be issued until the city or county reviews and approves the landscape documentation package.

(2) A copy of the approved landscape documentation package shall be provided to the property owner or site manager along with the record drawings and any other information normally forwarded to the property owner or site manager.

(3) A copy of the Water Conservation Concept Statement and the Certificate of Substantial Completion shall be sent by the project manager to the local retail water purveyor.

(4) Each landscape documentation package shall include the following elements, which are described in Section 492 (c):

- (A) Water Conservation Concept Statement
- (B) Calculation of the Maximum Applied Water Allowance
- (C) Calculation of the Estimated Applied Water Use
- (D) Calculation of the Estimated Total Water Use
- (E) Landscape Design Plan
- (F) Irrigation Design Plan
- (G) Irrigation Schedules
- (H) Maintenance Schedule
- (I) Landscape Irrigation Audit Schedule
- (J) Grading Design Plan
- (K) Soil Analysis
- (L) Certificate of Substantial Completion. (To be submitted after installation of the project.)

(5) 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.

(c) Elements of Landscape Documentation Package

(1) Water Conservation Concept Statement

Each landscape documentation package shall include a cover sheet, referred to as the Water Conservation Concept Statement similar to the following example. It serves as a check list to verify that the elements of the landscape documentation package have been completed and has a narrative summary of the project.

Sample Water Conservation Concept Statement

Project Site: Project Number:
Project Location:
Landscape Architect/ Irrigation Designer/ Contractor:

Included in this project submittal package are:
(Check to indicate completion)

___ 1. **Maximum Applied Water Allowance:**
_____gallons or cubic feet/year

___ 2. **Estimated Applied Water Use:**
_____gallons or cubic feet/year

*__ 2.(a) **Estimated Amount of Water Expected from Effective Precipitation:** _____gallons or cubic feet/year

___ 3. **Estimated Total Water Use:**
_____gallons or cubic feet/year

Note: * If the design assumes that a part of the Estimated Total Water Use will be provided by precipitation, the Effective Precipitation Disclosure Statement in Section 494 shall be completed and submitted.

___ 4. Landscape Design Plan
___ 5. Irrigation Design Plan
___ 6. Irrigation Schedules
___ 7. Maintenance Schedule
___ 8. Landscape Irrigation Audit Schedule
___ 9. Grading Design Plan
___10. Soil Analysis

(Sample Water Conservation Concept Statement, continued)

Description of Project
(Briefly describe the planning and design actions that are intended to achieve conservation and efficiency in water use.)

Date:_____ Prepared By:_____

(2) The Maximum Applied Water Allowance

(A) 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)

(B) Two example calculations of the Maximum Applied Water Allowance are:

(i) PROJECT SITE ONE: Landscaped area of 50,000 sq. ft. in Fresno

MAWA = (ETo) (.8) (LA) (.62)
= (51 inches) (.8) (50,000 square feet) (.62)
Maximum Applied Water Allowance = 1,264,800 gallons per year
(or 1,691 hundred-cubic-feet per year: 1,264,800/748=1,691)

(ii) PROJECT SITE TWO: Landscaped area of 50,000 sq. ft. in San Francisco
MAWA = (ETo) (.8) (LA) (.62)
= (35 inches) (.8) (50,000 square feet) (.62)
Maximum Applied Water Allowance = 868,000 gallons per year
(or 1,160 hundred-cubic-feet per year)

(C) Portions of landscaped areas in public and private projects such as parks, playgrounds, sports fields, golf courses, or school yards where turf provides a playing surface or serves other recreational purposes are considered recreational areas and may require water in addition to the Maximum Applied Water Allowance. A statement shall be included with the landscape design plan, designating recreational areas to be used for such purposes and specifying any needed amount of additional water above the Maximum Applied Water Allowance.

(3) Estimated Applied Water Use

(A) The Estimated Applied Water Use shall not exceed the Maximum Applied Water Allowance.

(B) A calculation of the Estimated Applied Water Use shall be submitted with the Landscape Documentation Package. It may be calculated by summing the amount of water recommended in the irrigation schedule.

(4) Estimated Total Water Use

(A) A calculation of the Estimated Total Water Use shall be submitted with the Landscape Documentation Package. The Estimated Total Water Use may be calculated by summing the amount of water recommended in the irrigation schedule and adding any amount of water expected from effective precipitation (not to exceed 25 percent of the local annual mean precipitation) or may be calculated from a formula such as the following:

The Estimated Total Water Use for the entire landscaped area equals the sum of the Estimated Water Use of all hydrozones in that landscaped area.

$$EWU\ (hydrozone) = \frac{(ETo)\ (PF)\ (HA)\ (.62)}{(IE)}$$

EWU (hydrozone) = Estimated Water Use (gallons per year)
ETo = Reference Evapotranspiration (inches per year)
PF = plant factor
HA = hydrozone area (square feet)
(.62) = conversion factor
IE = irrigation efficiency

(B) If the Estimated Total Water Use is greater than the Estimated Applied Water Use due to precipitation being included as a source of water, an Effective Precipitation Disclosure Statement such as the one in Section 494 shall be included in the Landscape Documentation Package.

(5) Landscape Design Plan

A landscape design plan meeting the following requirements shall be submitted as part of the landscape documentation package.

(A) Plant Selection and Grouping

(i) 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 (ii), (iii) and (iv).

(ii) Plants having similar water use shall be grouped together in distinct hydrozones.

(iii) 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 is encouraged. The planting of trees is encouraged wherever it is consistent with the other provisions of this ordinance.

(iv) Fire prevention needs shall be addressed in areas that are fire prone. Information about fire prone areas and appropriate landscaping for fire safety is available from local fire departments or the California Department of Forestry.

(B) Water Features

(i) Recirculating water shall be used for decorative water features.

(ii) Pool and spa covers are encouraged.

(C) Landscape Design Plan Specifications

The landscape design plan shall be drawn on project base sheets at a scale that accurately and clearly identifies:

(i) Designation of hydrozones.

(ii) Landscape materials, trees, shrubs, groundcover, turf, and other vegetation. Planting symbols shall be clearly drawn and plants labeled by botanical name, common name, container size, spacing, and quantities of each group of plants indicated.

(iii) Property lines and street names.

(iv) Streets, driveways, walkways, and other paved areas.

(v) Pools, ponds, water features, fences, and retaining walls.

(vi) Existing and proposed buildings and structures including elevation if applicable.

(vii) Natural features including but not limited to rock outcroppings, existing trees, shrubs that will remain.

(viii) Tree staking, plant installation, soil preparation details, and any other applicable planting and installation details.

(ix) A calculation of the total landscaped area.

(x) Designation of recreational areas.

(6) Irrigation Design Plan

An irrigation design plan meeting the following conditions shall be submitted as part of the Landscape Documentation Package.

(A) Irrigation Design Criteria

(i) 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, non-irrigated 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.

(ii) Irrigation Efficiency. For the purpose of determining the maximum applied 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.

(iii) 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 5,000 square feet.

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. Heads 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.

(B) Recycled Water

(i) The installation of recycled water irrigation systems (dual distribution systems) shall be required to allow for the current and future use of recycled water, unless a written exemption has been granted as described in the following section (B) (ii).

(ii) 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.

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

(C) Irrigation Design Plan Specifications

Irrigation systems shall be designed to be consistent with hydrozones.

The irrigation design plan shall be drawn on project base sheets. It 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 described in Section 492 (c) (5) (C).

The irrigation design plan shall accurately and clearly identify:

(i) Location and size of separate water meters for the landscape.

(ii) Location, type, and size of all components of the irrigation system, including automatic controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, and backflow prevention devices.

(iii) Static water pressure at the point of connection to the public water supply.

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

(v) Recycled water irrigation systems as specified in the Section 492 (c) (4) (B).

(7) 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) Whenever possible, 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.

(F) Whenever possible, landscape irrigation shall be scheduled between 2:00 a.m. and 10:00 a.m. to avoid irrigating during times of high wind or high temperature.

(8) Maintenance Schedules

A regular maintenance schedule satisfying the following conditions shall be submitted as part of the Landscape Documentation Package:

(A) Landscapes shall be maintained to ensure water efficiency. A regular maintenance schedule shall include but not be limited to checking, adjusting, and repairing irrigation equipment; resetting the automatic controller; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning, and weeding in all landscaped areas.

(B) Whenever possible, repair of irrigation equipment shall be done with the originally specified materials or their equivalents.

(9) Landscape Irrigation Audit Schedules

A schedule of landscape irrigation audits, for all but single family residences, satisfying the following conditions shall be submitted to the city or county as part of the Landscape Documentation Package.

(A) At a minimum, audits shall be in accordance with the State of California Landscape Water Management Program as described in the Landscape Irrigation Auditor Handbook, the entire document, which is hereby incorporated by reference. (See Landscape Irrigation Auditor Handbook (June 1990) version 5.5 [formerly Master Auditor Training].)

(B) The schedule shall provide for landscape irrigation audits to be conducted by certified landscape irrigation auditors at least once every five years.

(10) Grading Design Plan

Grading design plans satisfying the following conditions shall be submitted as part of the Landscape Documentation Package.

(A) A grading design plan shall be drawn on project base sheets. It shall be separate from but use the same format as the landscape design plan.

(B) The grading design plan shall indicate finished configurations and elevations of the landscaped area, including the height of graded slopes, drainage patterns, pad elevations, and finish grade.

(11) Soils

(A) A soil analysis satisfying the following conditions shall be submitted as part of the Landscape Documentation Package.

(i) Determination of soil texture, indicating the percentage of organic matter.

(ii) An approximate soil infiltration rate (either measured or derived from soil texture/infiltration rate tables.) A range of infiltration rates shall be noted where appropriate.

(iii) Measure of pH, and total soluble salts.

(B) A mulch of at least three inches shall be applied to all planting areas except turf.

(12) Certification

(A) Upon completing the installation of the landscaping and the irrigation system, an irrigation audit shall be conducted by a certified landscape irrigation auditor prior to the final field observation. (See Landscape Irrigation Auditor Handbook as referenced in Section 492 (c)(9)(A)).

(B) 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 or county. 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, along with a list of any observed deficiencies.

(C) Certification shall be accomplished by completing a Certificate of Substantial Completion and delivering it to the city or county, to the retail water supplier, and to the Owner of Record. A sample of such a form, which shall be provided by the city or county is:

SAMPLE CERTIFICATE OF SUBSTANTIAL COMPLETION

Project Site:_____ Project Number:_____
Project Location:_____

Preliminary Project Documentation Submitted: (check indicating submittal)

___ 1. **Maximum Applied Water Allowance:**
_____ **(gallons or cubic feet per year)**

___ 2. **Estimated Applied Water Use:**
_____ **(gallons or cubic feet/year)**

*__ 2a. **Estimated Amount of Water Expected from Effective Precipitation:**_____ **(gallons or cubic feet/year)**

____ 3. **Estimated Total Water Use:**
_____ **(gallons or cubic feet/year)**

Note: * If the design assumes that a part of the Estimated Total Water Use will be provided by precipitation, the Effective Precipitation Disclosure Statement in Section 495 shall be completed and submitted. The Estimated Amount of Water Expected from Effective Precipitation shall not exceed 25 percent of the local annual mean precipitation (average rainfall.)

_____ 4. Landscape Design Plan
_____ 5. Irrigation Design Plan
_____ 6. Irrigation Schedules
_____ 7. Maintenance Schedule
_____ 8. Landscape Irrigation Audit Schedule
_____ 9. Grading Design Plan
_____ 10. Soil Analysis

Post-Installation Inspection: (Check indicating substantial completion)

_____ A. Plants installed as specified
_____ B. Irrigation system installed as designed
___ dual distribution system for recycled water
___ minimal run off or overspray
_____ C. Landscape Irrigation Audit performed

(Certificate of Substantial Completion, continued)

____Project submittal package and a copy of this certification has been provided to owner/manager and local water agency

Comments:

I/we certify that work has been installed in accordance with the contract documents.

_____

Contractor Signature Date State License Number

I/we certify that based upon periodic site observations, the work has been substantially completed in accordance with the Water Efficient Landscape Ordinance and that the landscape planting and irrigation installation conform with the approved plans and specifications.

_____

Landscape Architect Signature Date State License Number
or Irrigation Designer/Consultant
or Licensed or Certified Professional in a Related Field

I/we certify that I/we have received all of the contract documents and that it is our responsibility to see that the project is maintained in accordance with the contract documents.

_____

Owner Signature Date

Note: Authority cited: Section 65594, Gov. Code. Reference: Section 65597, Gov. Code.

(d) Public Education

(1) Publications.

(A) Local agencies shall provide information to owners of all new, single family residential homes regarding the design, installation, and maintenance of water efficient landscapes.

(B) Information about the efficient use of landscape water shall be provided to water users throughout the community.

(2) Model Homes.

At least one model home that is landscaped in each project consisting of eight or more homes shall demonstrate via signs and information the principles of water efficient landscapes described in this ordinance.

(A) Signs shall be used to identify the model as an example of a water efficient landscape and featuring elements such as hydrozones, irrigation equipment and others which contribute to the overall water efficient theme.

(B) Information shall be provided about designing, installing, and maintaining water efficient landscapes.

Note: Authority cited: Section 65594, Gov. Code. Reference: Section 65597.

493. PROVISIONS FOR EXISTING LANDSCAPES.

(a) Water Management

All existing landscaped areas to which the city or county provides water that are one acre or more, including golf courses, green belts, common areas, multi-family housing, schools, businesses, parks, cemeteries, and publicly owned landscapes shall have a landscape irrigation audit at least every five years. At a minimum, the audit shall be in accordance with the California Landscape Water Management Program as described in the Landscape Irrigation Auditor Handbook, the entire document which is hereby incorporated by reference. (See Landscape Irrigation Auditor Handbook, Dept. of Water Resources, Water Conservation Office (June 1990) version 5.5.)

(1) If the project's water bills indicate that they are using less than or equal to the Maximum Applied Water Allowance for that project site, an audit shall not be required.

(2) Recognition of projects that stay within the Maximum Applied Water Allowance is encouraged.

(b) Water Waste Prevention

Cities and counties 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, non-irrigated areas, walks, roadways, or structures. Penalties for violation of these prohibitions shall be established locally.

(Authority cited: Section 65594, Gov. Code. Reference: Section 65597, Gov. Code.)

Section 494. Effective Precipitation

If effective precipitation is included in the calculation of the Estimated Total Water Use, an Effective Precipitation Disclosure Statement (similar to the following Sample Effective Precipitation Disclosure Statement) shall be completed, signed, and submitted with the Landscape Documentation Package. No more than 25 percent of the local annual mean precipitation shall be considered effective precipitation in the calculation of the Estimated Total Water Use.

SAMPLE EFFECTIVE PRECIPITATION DISCLOSURE STATEMENT

I certify that I have informed the project owner and developer that this project depends on _____ (gallons or cubic feet) of effective precipitation per year. This represents _____ percent of the local mean precipitation of _____ inches per year.

I have based my assumptions about the amount of precipitation that is effective upon:_____

_____

_____

_____.

I certify that I have informed the project owner and developer that in times of drought, there may not be enough water available to keep the entire landscape alive.

_____

Licensed or Certified Landscape Professional

I certify that I have been informed by the licensed or certified landscape professional that this project depends upon _____ (gallons or cubic feet) of effective precipitation per year. This represents _____ percent of the local mean precipitation of _____ inches per year.

I certify that I have been informed that in times of drought, there may not be enough water available to keep the entire landscape alive.

_____ _____

Owner Developer

495.

REFERENCE EVAPOTRANSPIRATION

in inches (Historical Data, extrapolated from 12-Month Normal Year ETo Maps and U.C. publication 21426)

County	City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann. Eto
Alameda	Livermore	1.2	1.5	2.9	4.4	5.9	6.6	7.4	6.4	5.3	3.2	1.5	0.9	47.2
	Oakland	1.5	1.5	2.8	3.9	5.1	5.3	6.0	5.5	4.8	3.1	1.4	0.9	41.8
Alpine	Markleeville	0.7	0.9	2.0	3.5	5.0	6.1	7.3	6.4	4.4	2.6	1.2	0.5	40.5
Amador	Jackson	1.2	1.5	2.8	4.4	6.0	7.2	7.9	7.2	5.3	3.2	1.4	0.9	48.9
Butte	Chico	1.2	1.8	2.9	4.7	6.1	7.4	8.5	7.3	5.4	3.7	1.7	1.0	51.7
	Gridley	1.2	1.8	3.0	4.7	6.1	7.7	8.5	7.1	5.4	3.7	1.7	1.0	51.9
	Oroville	1.2	1.7	2.8	4.7	6.1	7.6	8.5	7.3	5.3	3.7	1.7	1.0	51.5
Calaveras	San Andreas	1.2	1.5	2.8	4.4	6.0	7.3	7.9	7.0	5.3	3.2	1.4	0.7	48.8
Colusa	Colusa	1.1	1.7	2.8	4.8	6.6	7.4	8.2	7.0	5.7	3.5	1.7	1.0	51.4
	Williams	1.2	1.7	2.9	4.5	6.1	7.2	8.5	7.3	5.3	3.4	1.6	1.0	50.8
Contra Costa	Benicia	1.3	1.4	2.7	3.8	4.9	5.0	6.4	5.5	4.4	2.9	1.2	0.7	40.3
	Brentwood	1.0	1.5	2.9	4.5	6.1	7.1	7.9	6.7	5.2	3.2	1.4	0.7	48.3
	Courtland	0.9	1.5	2.9	4.4	6.1	6.9	7.9	6.7	5.3	3.2	1.4	0.7	48.0
	Concord	1.1	1.4	2.4	4.0	5.5	5.9	7.0	6.0	4.8	3.2	1.3	0.7	43.4
	Martinez	1.2	1.4	2.4	3.9	5.3	5.6	6.7	5.6	4.7	3.1	1.2	0.7	41.8
	Pittsburg	1.0	1.5	2.8	4.1	5.6	6.4	7.4	6.4	5.0	3.2	1.3	0.7	45.4
Del Norte	Crescent City	0.5	0.9	2.0	3.0	3.7	3.5	4.3	3.7	3.0	2.0	0.9	0.5	27.7
El Dorado	Camino	0.9	1.7	2.5	3.9	5.9	7.2	7.8	6.8	5.1	3.1	1.5	0.9	47.3
Fresno	Clovis	1.0	1.5	3.2	4.8	6.4	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.4
	Coalinga	1.2	1.7	3.1	4.6	6.2	7.2	8.5	7.3	5.3	3.4	1.6	0.7	50.9
	Five Points	0.9	1.7	3.3	5.0	6.6	7.7	8.5	7.3	5.4	3.4	1.5	0.9	52.1
	Fresno	0.9	1.7	3.3	4.8	6.7	7.8	8.4	7.1	5.2	3.2	1.4	0.6	51.1
	Friant	1.2	1.5	3.1	4.7	6.4	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.3
	Kerman	0.9	1.5	3.2	4.8	6.6	7.7	8.4	7.2	5.3	3.4	1.4	0.7	51.2
	Kingsburg	1.0	1.5	3.4	4.8	6.6	7.7	8.4	7.2	5.3	3.4	1.4	0.7	51.6
	Reedley	1.1	1.5	3.2	4.7	6.4	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.3
Glenn	Orland	1.2	1.7	3.1	4.8	6.7	7.4	8.8	7.3	5.8	3.8	1.7	1.1	53.3
	Willows	1.2	1.7	2.9	4.7	6.1	7.2	8.5	7.3	5.3	3.6	1.7	1.0	51.3
Humboldt	Eureka	0.5	1.1	2.0	3.0	3.7	3.7	3.7	3.7	3.0	2.0	0.9	0.5	27.5
	Ferndale	0.5	1.1	2.0	3.0	3.7	3.7	3.7	3.7	3.0	2.0	0.9	0.5	27.5
	Garberville	0.6	1.2	2.2	3.1	4.5	5.0	5.5	4.9	3.8	2.4	1.0	0.7	34.9
	Hoopa	0.5	1.1	2.1	3.0	4.4	5.4	6.1	5.1	3.8	2.4	0.9	0.7	35.6
Imperial	Brawley	2.8	3.8	5.9	8.0	10.4	11.5	11.7	10.0	8.4	6.2	3.5	2.1	84.2
	Calipatria	2.9	3.9	6.1	8.3	10.5	11.8	12.0	10.4	8.6	6.5	3.8	2.3	86.9
	El Centro	2.7	3.5	5.6	7.9	10.1	11.1	11.6	9.5	8.3	6.1	3.3	2.0	81.7
	Holtville	2.8	3.8	5.9	7.9	10.4	11.6	12.0	10.0	8.6	6.2	3.5	2.1	84.7
	Yuma	3.1	4.1	6.6	8.7	11.0	12.4	12.7	11.0	8.9	6.6	4.0	2.6	91.5
Inyo	Bishop	1.7	2.7	4.8	6.7	8.2	10.9	7.4	9.6	7.4	4.8	2.5	1.6	68.3
	Death Valley	2.2	3.3	5.4	7.7	9.8	11.1	11.4	10.1	8.3	5.4	2.9	1.7	79.1
	Independence	1.7	2.7	3.4	6.6	8.5	9.5	9.8	8.5	7.1	3.9	2.0	1.5	65.2
	Lower Haiwee	1.8	2.7	4.4	7.1	8.5	9.5	9.8	8.5	7.1	4.2	2.6	1.5	67.6
	Oasis	2.7	2.8	5.9	8.0	10.4	11.7	11.6	10.0	8.4	6.2	3.4	2.1	83.1
Kern	Arvin	1.2	1.8	3.5	4.7	6.6	7.4	8.1	7.3	5.3	3.4	1.7	1.0	51.9
	Bakersfield	1.0	1.8	3.5	4.7	6.6	7.7	8.5	7.3	5.3	3.5	1.6	0.9	52.4
	Buttonwillow	1.0	1.8	3.2	4.7	6.6	7.7	8.5	7.3	5.4	3.4	1.5	0.9	52.0
	Delano	0.9	1.8	3.4	4.7	6.6	7.7	8.5	7.3	5.4	3.4	1.4	0.7	52.0
	Grapevine	1.3	1.8	3.1	4.4	5.6	6.8	7.6	6.8	5.9	3.4	1.9	1.0	49.5
	China Lake	2.1	3.2	5.3	7.7	9.2	10.0	11.0	9.8	7.3	4.9	2.7	1.7	74.8
	Inyokern	2.0	3.1	4.9	7.3	8.5	9.7	11.0	9.4	7.1	5.1	2.6	1.7	72.4
	Isabella Dam	1.2	1.4	2.8	4.4	5.8	7.3	7.9	7.0	5.0	3.2	1.7	0.9	48.4
	Lost Hills	0.6	1.1	2.6	4.4	7.0	7.7	8.5	7.1	5.0	3.9	0.8	0.4	49.0
	Shafter	1.0	1.7	3.4	5.0	6.6	7.7	8.3	7.3	5.4	3.4	1.5	0.9	52.1
	Taft	1.3	1.8	3.1	4.3	6.2	7.3	8.5	7.3	5.4	3.4	1.7	1.0	51.2
	Tehachapi	1.4	1.8	3.2	5.0	6.1	7.7	7.9	7.3	5.9	3.4	2.1	1.2	52.9

Section 495 Continued

County	City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann. Eto
Kings	Corcoran	0.9	1.5	3.3	5.2	7.2	7.9	8.4	7.3	5.8	3.4	1.4	0.7	53.1
	Hanford	0.9	1.5	3.4	5.0	6.6	7.7	8.3	7.2	5.4	3.4	1.4	0.7	51.5
	Kettleman City	1.0	1.8	3.4	5.3	7.2	7.9	8.4	7.4	5.9	3.7	1.7	1.0	54.6
	Lemoore	0.9	1.5	3.4	5.0	6.6	7.7	8.3	7.3	5.4	3.4	1.4	0.7	51.7
Lake	Lakeport	1.1	1.3	2.6	3.5	5.1	6.0	7.3	6.1	4.7	2.9	1.2	0.9	42.8
	Lower Lake	1.2	1.4	2.7	4.5	5.3	6.3	7.4	6.4	5.0	3.1	1.3	0.9	45.4
Lassen	Ravendale	0.6	1.1	2.3	4.1	5.6	6.7	7.9	7.3	4.7	2.8	1.2	0.5	44.9
	Susanville	0.7	1.0	2.2	4.1	5.6	6.5	7.8	7.0	4.6	2.8	1.2	0.5	44.0
Los Angeles	Burbank	2.1	2.8	3.7	4.7	5.1	6.0	6.6	6.7	5.4	4.0	2.6	2.0	51.7
	Glendora	2.0	2.5	3.6	4.9	5.4	6.1	7.3	6.8	5.7	4.2	2.6	2.0	53.1
	Gorman	1.6	2.2	3.4	4.6	5.5	7.4	7.7	7.1	5.9	3.6	2.4	1.1	52.4
	Lancaster	2.1	3.0	4.6	5.9	8.5	9.7	11.0	9.8	7.3	4.6	2.8	1.7	71.1
	Los Angeles	2.2	2.7	3.7	4.7	5.5	5.8	6.2	5.9	5.0	3.9	2.6	2.0	50.1
	Long Beach	2.2	2.5	3.4	3.8	4.8	5.0	5.3	4.9	4.5	3.4	2.4	2.0	44.0
	Palmdale	2.0	2.7	4.2	5.1	7.6	8.5	9.9	9.8	6.7	4.2	2.6	1.7	64.8
	Pasadena	2.1	2.7	3.7	4.7	5.1	6.0	7.1	6.7	5.6	4.2	2.6	2.0	52.3
	Pearblossom	1.7	2.4	3.7	4.7	7.3	7.7	9.9	7.9	6.4	4.0	2.6	1.6	59.9
	Redondo Beach	2.2	2.4	3.3	3.8	4.5	4.7	5.4	4.8	4.4	2.8	2.4	2.0	42.6
	San Fernando	2.0	2.7	3.5	4.6	5.5	5.9	7.3	6.7	5.3	3.9	2.6	2.0	52.0
Madera	Chowchilla	1.0	1.4	3.2	4.7	6.6	7.8	8.5	7.3	5.3	3.4	1.4	0.7	51.4
	Madera	0.9	1.4	3.2	4.8	6.6	7.8	8.5	7.3	5.3	3.4	1.4	0.7	51.5
	Raymond	1.2	1.5	3.0	4.6	6.1	7.6	8.4	7.3	5.2	3.4	1.4	0.7	50.5
Marin	Novato	1.3	1.5	2.4	3.5	4.4	6.0	5.9	5.4	4.4	2.8	1.4	0.7	39.8
	San Rafael	1.2	1.3	2.4	3.3	4.0	4.8	4.8	4.9	4.3	2.7	1.3	0.7	35.8
Mariposa	Coulterville	1.1	1.5	2.8	4.4	5.9	7.3	8.1	7.0	5.3	3.4	1.4	0.7	48.8
	Mariposa	1.1	1.5	2.8	4.4	5.9	7.4	8.2	7.1	5.0	3.4	1.4	0.7	49.0
	Yosemite Village	0.7	1.0	2.3	3.7	5.1	6.5	7.1	6.1	4.4	2.9	1.1	0.6	41.4
Mendocino	Fort Bragg	0.9	1.3	2.2	3.0	3.7	3.5	3.7	3.7	3.0	2.3	1.2	0.7	29.0
	Point Arena	1.0	1.3	2.3	3.0	3.7	3.9	3.7	3.7	3.0	2.3	1.2	0.7	29.6
	Hopland	1.1	1.3	2.6	3.4	5.0	5.9	6.5	5.7	4.5	2.8	1.3	0.7	40.9
	Ukiah	1.0	1.3	2.6	3.3	5.0	5.8	6.7	5.9	4.5	2.8	1.3	0.7	40.9
Merced	Merced	1.0	1.5	3.2	4.7	6.6	7.9	8.5	7.2	5.3	3.4	1.4	0.7	51.5
	Los Banos	1.0	1.5	3.2	4.7	6.1	7.4	8.2	7.0	5.3	3.4	1.4	0.7	50.0
Mono	Bridgeport	0.7	0.9	2.2	3.8	5.5	6.6	7.4	6.7	4.7	2.7	1.2	0.5	43.0
Monterey	Castroville	1.6	1.8	2.7	3.5	4.4	4.4	4.5	4.2	3.8	2.8	1.8	1.3	36.7
	King City	1.7	2.0	3.4	4.4	4.4	5.6	6.1	6.7	6.5	5.2	2.2	1.3	49.6
	Long Valley	1.5	1.9	3.2	4.1	5.8	6.5	7.3	6.7	5.3	3.6	2.0	1.2	49.1
	Monterey	1.7	1.8	2.7	3.5	4.0	4.1	4.3	4.2	3.5	2.8	1.9	1.5	36.0
	Salinas	1.6	1.9	2.7	3.8	4.8	4.7	5.0	4.5	4.0	2.9	1.9	1.3	39.1
	Soledad	1.7	2.0	3.4	4.4	5.5	5.4	6.5	6.2	5.2	3.7	2.2	1.5	47.7
Napa	St. Helena	1.2	1.5	2.8	3.9	5.1	6.1	7.0	6.2	4.8	3.1	1.4	0.9	44.1
	Yountville	1.3	1.7	2.8	3.9	5.1	6.0	7.1	6.1	4.8	3.1	1.5	0.9	44.3
Nevada	Grass Valley	1.1	1.5	2.6	4.0	5.7	7.1	7.9	7.1	5.3	3.2	1.5	0.9	48.0
	Nevada City	1.1	1.5	2.6	3.9	5.8	6.9	7.9	7.0	5.3	3.2	1.4	0.9	47.4
Orange	Santa Ana	2.2	2.7	3.7	4.5	4.6	5.4	6.2	6.1	4.7	3.7	2.5	2.0	48.2
	Laguna Beach	2.2	2.7	3.4	3.8	4.6	4.6	4.9	4.9	4.4	3.4	2.4	2.0	43.2
Placer	Auburn	1.2	1.7	2.8	4.4	6.1	7.4	8.3	7.3	5.4	3.4	1.6	1.0	50.6
	Blue Canyon	0.7	1.1	2.1	3.4	4.8	6.0	7.2	6.1	4.6	2.9	0.9	0.6	40.5
	Colfax	1.1	1.5	2.6	4.0	5.8	7.1	7.9	7.0	5.3	3.2	1.4	0.9	47.9
	Soda Springs	0.7	0.7	1.8	3.0	4.3	5.3	6.2	5.5	4.1	2.5	0.7	0.7	35.4
	Tahoe City	0.7	0.7	1.7	3.0	4.3	5.4	6.1	5.6	4.1	2.4	0.8	0.6	35.5
	Truckee	0.7	0.7	1.7	3.2	4.4	5.4	6.4	5.7	4.1	2.4	0.8	0.6	36.2

Section 495 Continued

County	City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann. Eto
Plumas	Quincy	0.7	0.9	2.2	3.5	4.9	5.9	7.3	5.9	4.4	2.8	1.2	0.5	40.2
	Portola	0.7	0.9	2.0	3.5	4.9	5.9	7.3	5.9	4.3	2.7	0.9	0.5	39.4
Riverside	Beaumont	2.0	2.3	3.4	4.4	6.1	7.1	7.6	7.9	6.0	3.9	2.6	1.7	55.0
	Blythe	3.2	4.2	6.7	8.9	11.1	12.4	12.8	11.1	9.1	6.7	4.0	2.7	92.9
	Coachella	2.9	4.4	6.2	8.4	10.5	11.9	12.3	10.1	8.9	6.2	3.8	2.4	88.1
	Desert Center	2.9	4.1	6.4	8.5	11.0	12.1	12.2	11.1	9.0	6.4	3.9	2.6	90.0
	Elsinore	2.1	2.8	3.9	4.4	5.9	7.1	7.6	7.0	5.8	3.9	2.6	2.0	55.0
	Indio	2.9	4.0	6.2	8.3	10.5	11.9	12.3	10.0	8.9	6.4	3.8	2.4	87.6
	Palm Desert	2.0	3.5	4.9	7.7	8.5	10.6	9.8	9.2	8.4	6.1	2.7	1.8	75.1
	Palm Springs	2.0	2.9	4.9	7.2	8.3	8.5	11.6	8.3	7.2	5.9	2.7	1.7	71.1
	Riverside	2.1	2.9	4.0	4.1	6.1	7.1	7.9	7.6	6.1	4.2	2.6	2.0	56.6
Sacramento	Roseville	1.1	1.7	3.1	4.7	6.2	7.7	8.5	7.3	5.6	3.7	1.7	1.0	52.2
	Sacramento	1.0	1.8	3.2	4.7	6.4	7.7	8.4	7.2	5.4	3.7	1.7	0.9	51.9
San Benito	Hollister	1.5	1.8	3.1	4.3	5.5	5.7	6.4	5.9	5.0	3.5	1.7	1.1	45.1
San Bernardino	Baker	2.7	3.9	6.1	8.3	10.4	11.8	12.2	11.0	8.9	6.1	3.3	2.1	86.6
	Barstow	2.6	3.6	5.7	7.9	10.1	11.6	12.0	10.4	8.6	5.7	3.3	2.1	83.6
	Chino	2.1	2.9	3.9	4.5	5.7	6.5	7.3	7.1	5.9	4.2	2.6	2.0	54.6
	Crestline	1.5	1.9	3.3	4.4	5.5	6.6	7.8	7.1	5.4	3.5	2.2	1.6	50.8
	Needles	3.2	4.2	6.6	8.9	11.0	12.4	12.8	11.0	8.9	6.6	4.0	2.7	92.1
	Lucerne Valley	2.2	2.9	5.1	6.5	9.2	11.0	11.4	9.9	7.4	5.0	3.0	1.8	75.3
	San Bernardino	2.0	2.7	3.8	4.6	5.7	6.9	7.9	7.4	5.9	4.2	2.6	2.0	55.6
	Twentynine Palms	2.6	3.6	5.9	7.9	10.1	11.2	11.2	10.3	8.6	5.9	3.4	2.2	82.9
	Victorville	2.3	3.1	4.9	6.7	9.3	10.0	11.2	9.8	7.4	5.1	2.8	1.8	74.6
San Diego	Chula Vista	2.2	2.7	3.4	3.8	4.9	4.7	5.5	4.9	4.5	3.4	2.4	2.0	44.2
	Escondido	2.1	2.8	3.8	4.7	5.6	6.7	6.8	6.5	5.4	3.8	2.5	2.0	52.6
	Oceanside	2.2	2.7	3.4	3.7	4.9	4.6	4.6	5.1	4.1	3.3	2.4	2.0	42.9
	Pine Valley	1.5	2.4	3.8	5.1	6.0	7.0	7.8	7.3	6.0	4.0	2.2	1.7	54.8
	Ramona	2.1	2.5	4.0	4.7	5.6	6.5	7.3	7.0	5.6	3.9	2.5	1.7	53.4
	San Diego	2.2	2.5	3.3	3.4	4.4	4.0	4.6	4.6	3.9	3.3	2.2	2.0	40.6
	Santee	2.1	2.7	3.7	4.5	5.5	6.1	6.6	6.2	5.4	3.8	2.6	2.0	51.1
	Warner Springs	1.6	2.7	3.7	4.7	5.7	7.6	8.3	7.7	6.3	4.0	2.5	1.3	56.0
San Francisco	San Francisco	1.5	1.3	2.4	3.0	3.7	4.6	4.9	4.8	4.1	2.8	1.3	0.7	35.1
San Joaquin	Farmington	1.5	1.5	2.9	4.7	6.2	7.6	8.1	6.8	5.3	3.3	1.4	0.7	50.0
	Lodi	0.9	1.5	2.9	5.1	6.5	7.0	7.7	7.7	5.2	3.1	1.3	0.7	49.5
	Manteca	1.5	1.5	3.0	4.7	6.4	7.6	8.1	6.8	5.3	3.3	1.4	0.6	50.1
	Stockton	0.8	1.5	2.9	4.7	6.2	7.4	8.1	6.8	5.3	3.2	1.4	0.6	49.1
	Tracy	1.0	1.5	2.9	4.5	6.1	7.3	7.9	6.7	5.3	3.2	1.3	0.7	48.5
San Luis Obispo	Arroyo Grande	2.0	2.2	3.2	3.8	4.3	4.7	4.3	4.6	3.8	3.2	2.4	1.7	40.0
	Atascadero	1.2	1.5	2.8	3.9	4.5	6.0	6.7	6.2	5.0	3.2	1.7	1.0	43.7
	Morro Bay	2.0	2.2	3.1	3.5	4.3	4.5	4.6	4.6	3.8	3.5	2.1	1.7	39.9
	Paso Robles	1.6	2.0	3.2	4.3	5.5	6.3	7.3	6.7	5.1	3.7	2.1	1.4	49.0
	San Luis Obispo	2.0	2.2	3.2	4.1	4.9	5.3	4.6	5.5	4.4	3.5	2.4	1.7	43.8
	San Miguel	1.6	2.0	3.2	4.3	5.0	6.4	7.4	6.8	5.1	3.7	2.1	1.4	49.0
	San Simeon	2.0	2.0	2.9	3.5	4.2	4.4	4.6	4.3	3.5	3.1	2.0	1.7	38.1
San Mateo	Half Moon Bay	1.5	1.7	2.4	3.0	3.9	4.3	4.3	4.2	3.5	2.8	1.3	1.0	33.7
	Redwood City	1.5	1.8	2.9	3.8	5.2	5.3	6.2	5.6	4.8	3.1	1.7	1.0	42.8
S. Barbara	Carpenteria	2.0	2.4	3.2	3.9	4.8	5.2	5.5	5.7	4.5	3.4	2.4	2.0	44.9
	Guadalupe	2.0	2.2	3.2	3.7	4.9	4.6	4.5	4.6	4.1	3.3	2.4	1.7	41.1
	Los Alamos	1.8	2.0	3.2	4.1	4.9	5.3	5.7	5.5	4.4	3.7	2.4	1.6	44.6
	Lompoc	2.0	2.2	3.2	3.7	4.8	4.6	4.9	4.8	3.9	3.2	2.4	1.7	41.1
	Santa Barbara	2.0	2.5	3.2	3.8	4.6	5.1	5.5	4.5	3.4	2.4	1.8	1.8	40.6
	Santa Maria	1.8	2.2	3.2	4.0	5.0	5.1	5.1	5.1	4.5	3.5	2.4	1.7	43.7
	Solvang	2.0	2.0	3.3	4.3	5.0	5.6	6.1	5.6	4.4	3.7	2.2	1.6	45.5

Section 495 Continued

County	City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann. Eto
Santa Clara	Gilroy	1.3	1.8	3.1	4.1	5.3	5.6	6.1	5.5	4.7	3.4	1.7	1.1	43.6
	Los Gatos	1.5	1.8	2.8	3.9	5.0	5.6	6.2	5.5	4.7	3.2	1.7	1.1	42.9
	Palo Alto	1.5	1.8	2.8	3.8	5.2	5.3	6.2	5.6	5.0	3.2	1.7	1.0	43.0
	San Jose	1.5	1.8	3.1	4.1	5.5	5.8	6.5	5.9	5.2	3.3	1.8	1.0	45.3
Santa Cruz	Santa Cruz	1.5	1.8	2.6	3.5	4.3	4.4	4.8	4.4	3.8	2.8	1.7	1.2	36.6
	Watsonville	1.5	1.8	2.7	3.7	4.6	4.5	4.9	4.2	4.0	2.9	1.8	1.2	37.7
Shasta	Burney	0.7	1.0	2.1	3.5	4.9	5.9	7.4	6.4	4.4	2.9	0.9	0.6	40.9
	Fall River Mills	0.6	1.0	2.1	3.7	5.0	6.1	7.8	6.7	4.6	2.8	0.9	0.5	41.8
	Glenburn	0.6	1.0	2.1	3.7	5.0	6.3	7.8	6.7	4.7	2.8	0.9	0.6	42.1
	Redding	1.2	1.4	2.6	4.1	5.6	7.1	8.5	7.3	5.3	3.2	1.4	0.9	48.8
Sierra	Downieville	0.7	1.0	2.3	3.5	5.0	6.0	7.4	6.2	4.7	2.8	0.9	0.6	41.3
	Sierraville	0.7	1.1	2.2	3.2	4.5	5.9	7.3	6.4	4.3	2.6	0.9	0.5	39.6
Siskiyou	Happy Camp	0.5	0.9	2.0	3.0	4.3	5.2	6.1	5.3	4.1	2.4	0.9	0.5	35.1
	Mt. Shasta	0.5	0.9	2.0	3.0	4.5	5.3	6.7	5.7	4.0	2.2	0.7	0.5	36.0
	Tulelake	0.5	0.9	2.1	3.4	5.3	5.9	7.9	6.7	4.4	2.7	0.9	0.5	41.2
	Weed	0.5	0.9	2.0	2.5	4.5	5.3	6.7	5.5	3.7	2.0	0.9	0.5	34.9
	Yreka	0.6	0.9	2.1	3.0	4.9	5.8	7.3	6.5	4.3	2.5	0.9	0.5	39.2
Solano	Fairfield	1.1	1.7	2.8	4.0	5.5	6.1	7.8	6.0	4.8	3.1	1.4	0.9	45.2
	Rio Vista	0.9	1.7	2.8	4.4	5.9	6.7	7.9	6.5	5.1	3.2	1.3	0.7	47.0
Sonoma	Cloverdale	1.1	1.4	2.6	3.4	5.0	5.9	6.2	5.6	4.5	2.8	1.4	0.7	40.7
	Fort Ross	1.2	1.4	2.2	3.0	3.7	4.5	4.2	4.3	3.4	2.4	1.2	0.5	31.9
	Healdsburg	1.2	1.5	2.4	3.5	5.0	5.9	6.1	5.6	4.5	2.8	1.4	0.7	40.8
	Lincoln	1.2	1.7	2.8	4.7	6.1	7.4	8.4	7.3	5.4	3.7	1.9	1.2	51.9
	Petaluma	1.2	1.5	2.8	3.7	4.6	5.6	4.6	5.7	4.5	2.9	1.4	0.9	39.6
	Santa Rosa	1.2	1.7	2.8	3.7	5.0	6.0	6.1	5.9	4.5	2.9	1.5	0.7	42.0
Stanislaus	La Grange	1.2	1.5	3.1	4.7	6.2	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.2
	Modesto	0.9	1.4	3.2	4.7	6.4	7.7	8.1	6.8	5.0	3.4	1.4	0.7	49.7
	Newman	1.0	1.5	3.2	4.6	6.2	7.4	8.1	6.7	5.0	3.4	1.4	0.7	49.3
	Oakdale	1.2	1.5	3.2	4.7	6.2	7.7	8.1	7.1	5.1	3.4	1.4	0.7	50.3
	Turlock	0.9	1.5	3.2	4.7	6.5	7.7	8.2	7.0	5.1	3.4	1.4	0.7	50.2
Sutter	Yuba City	1.3	2.1	2.8	4.4	5.7	7.2	7.1	6.1	4.7	3.2	1.2	0.9	46.7
Tehama	Red Bluff	1.2	1.8	2.9	4.4	5.9	7.4	8.5	7.3	5.4	3.5	1.7	1.0	51.1
	Corning	1.2	1.8	2.9	4.5	6.1	7.3	8.1	7.2	5.3	3.7	1.7	1.1	50.7
Trinity	Hay Fork	0.5	1.1	2.3	3.5	4.9	5.9	7.0	6.0	4.5	2.8	0.9	0.7	40.1
	Weaverville	0.6	1.1	2.2	3.3	4.9	5.9	7.3	6.0	4.4	2.7	0.9	0.7	40.0
Toulomme	Groveland	1.1	1.5	2.8	4.1	5.7	7.2	7.9	6.6	5.1	3.3	1.4	0.7	47.5
	Sonora	1.1	1.5	2.8	4.1	5.8	7.2	7.9	6.7	5.1	3.2	1.4	0.7	47.6
Tulare	Alpaugh	0.9	1.7	3.4	4.8	6.6	7.7	8.2	7.3	5.4	3.4	1.4	0.7	51.6
	Badger	1.0	1.3	2.7	4.1	6.0	7.3	7.7	7.0	4.8	3.3	1.4	0.7	47.3
	Dinuba	1.1	1.5	3.2	4.7	6.2	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.2
	Porterville	1.2	1.8	3.4	4.7	6.6	7.7	8.5	7.3	5.3	3.4	1.4	0.7	52.1
	Visalia	1.0	1.8	3.4	5.4	7.0	8.2	8.4	7.2	5.7	3.8	1.7	0.9	54.3
Ventura	Oxnard	2.2	2.5	3.2	3.7	4.4	4.6	5.4	4.8	4.0	3.3	2.4	2.0	42.3
	Thousand Oaks	2.2	2.7	3.4	4.5	5.4	5.9	6.7	6.4	5.4	3.9	2.6	2.0	51.0
	Ventura	2.2	2.7	3.2	3.8	4.6	4.7	5.5	4.9	4.1	3.4	2.5	2.0	43.5
Yolo	Davis	1.0	1.9	3.3	5.0	6.4	7.6	8.2	7.1	5.4	4.0	1.8	1.0	52.5
	Winters	1.7	1.7	2.9	4.4	5.8	7.1	7.9	6.7	5.3	3.3	1.6	1.0	49.4
	Woodland	1.0	1.8	3.2	4.7	6.1	7.7	8.2	7.2	5.4	3.7	1.7	1.0	51.6
Yuba	Brownsville	1.1	1.4	2.6	4.0	5.7	6.8	7.9	6.8	5.3	3.4	1.5	0.9	47.4
	Average	1.4	1.9	3.2	4.6	6.0	6.9	7.6	6.8	5.3	3.6	1.8	1.1	50.2
	Max	3.2	4.4	6.7	8.9	11.1	12.4	12.8	11.1	9.1	6.7	4.0	2.7	92.9
	Min	0.5	0.7	1.7	2.5	3.7	3.5	3.7	3.7	3.0	2.0	0.7	0.4	27.5

ORDINANCE No. 1476

ORDINANCE ADOPTING MODEL WATER EFFICIENT ORDINANCE

The CITY COUNCIL of the CITY OF BURLINGAME does hereby ordain as follows:

Section 1. Chapter 18.17 is hereby added to the Burlingame Municipal Code to read as follows:

"Chapter 18.17 LANDSCAPING

18.17.001 Adoption of Model Water Efficient Landscape Ordinance. The Model Efficient Landscape Ordinance and any amendments thereto, as adopted by the State Department of Water Resources, is hereby adopted as the water efficient landscape ordinance for the City of Burlingame."

Section 2. Upon the effective date of this ordinance Resolution 89-88, adopting water conservation guidelines for commercial and multiple-residential development, shall be of no further force or effect.

Section 3. This ordinance shall be published as required by law.

Al "Bud" Harrison

Mayor

I, JUDITH A. MALFATTI, City Clerk of the City of Burlingame, do hereby certify that the foregoing ordinance was introduced at a regular meeting of the City Council held on the 7th day of DECEMBER, 1992, and adopted thereafter at a regular

meeting of the City Council held on the 4th day of JANUARY, 1993 by the following vote:

AYES: COUNCILMEMBERS: HARRISON, KNIGHT, LEMBI, O'MAHONY, PAGLIARO

NOES: COUNCILMEMBERS: NONE

ABSENT: COUNCILMEMBERS: NONE

City Clerk

This Page Intentionally Left Blank

Appendix J

City of Burlingame Ordinance 1629
High Efficiency Plumbing Fixture Rebate Program

This Page Intentionally Left Blank

ORDINANCE N0. 1629

ORDINANCE OF THE CITY OF BURLINGAME ADOPTING A CREDIT REBATE FOR WATER SERVICE CUSTOMERS PURCHASING AND INSTALLING CERTAIN WATER CONSERVING FIXTURES AND APPLIANCES

The CITY COUNCIL of the CITY OF BURLINGAME does hereby ordain as follows:

Section 1. Ongoing water supply concerns require the City to manage its water resources and facilities well. The City's Urban Water Management Plan sets forth sixteen better management practices that will advance those water conservation goals. Two of the practices identified are rebate programs for ultra low flush toilet installation and high efficiency washing machine usage. This ordinance is intended to provide a credit against water bills for such rebate programs.

Section 2. For purposes of this ordinance, the following terms are defined as follows:

(a) "High efficiency washing machine" means a washing machine meeting the criteria established by the Consortium for Energy Efficiency for resource efficiency and a savings of twenty (20) gallons or more per load of wash.

(b) "Ultra low flush toilet" means a toilet meeting the criteria established by the California Urban Water Conservation Council for an ultra low flush toilet and a flush rate of 1.6 gallons per flush or less.

Section 3. A single-family or multifamily residential customer may apply for a fifty dollar ($50.00) credit against the customer's water billing for purchase and installation of an ultra flow flush toilet in a dwelling unit. No more than one credit shall be allowed to any single dwelling unit, regardless of ownership, control, or number of toilets installed or purchased. Both purchase and installation must have occurred on or after July 1, 2000. No credit shall be given for any toilet installed in connection with new building construction, additions, or remodeling work, unless the work consisted of remodeling or addition of a bathroom only, nor shall replacement of one ultra low flush toilet with another ultra low flush toilet qualify for any credit. The finance director or the director's designee will administer the program and adopt procedures for applying for and receiving the credit, and the director's decision with regard to any credit shall be final.

Section 4. A single-family or multifamily residential customer may apply for a seventy-five dollar ($75.00) credit against the customer's water billing for purchase and installation of high efficiency washing machine in a dwelling unit. No more than one credit shall be allowed to any single dwelling unit, regardless of ownership, control, or number of washing machines installed or purchased. Both purchase and installation must have occurred on or after July 1, 2000. Replacement of one high efficiency washing machine with another high efficiency washing machine shall not qualify for any credit. The finance director or the director's designee will administer the program and adopt procedures for applying for the credit, and the director's decision with regard to any credit shall be final.

Section 5. This ordinance shall be published as required by law.

Rosalie M. O'Mahony
Mayor

I, ANN T. MUSSO, City Clerk of the City of Burlingame, do hereby certify that the foregoing ordinance was introduced at a regular meeting of the City Council held on the 1st day of May, 2000, and adopted thereafter at a regular meeting of the City Council held on the 15th day of May, 2000, by the following vote:

AYES: COUNCILMEMBERS: COFFEY, GALLIGAN, JANNEY, O'MAHONY, SPINELLI

NOES: COUNCILMEMBERS: NONE

ABSENT: COUNCILMEMBERS: NONE

Ann T. Musso
City Clerk

C:\WP51\FILES\Water\rebateprgm.ord.wpd

Appendix K

City of Burlingame Resolution 49-92
Water Rationing Plan

This Page Intentionally Left Blank

EXHIBIT A

WATER RATIONING PLAN

RESOLUTION NO. 49-92

I. ALLOCATIONS

A. Allocations of water during the water shortage emergency will be a per capita allocation for residential accounts and a percentage reduction of 1987 usage for commercial accounts and multifamily dwellings.

Single Family and Duplex

First Person	100 gallons/day
2nd-4th Persons	70 gallons/day for each person
5 or more persons	50 gallons/day for each person

Landscape Allocation

Lot Size	Extra Allocation
Less than 10,000 Sq.Ft.	50 gallons/day
10,000+ sq. ft.	150 gallons/day
3/4 Acre +	up to 300 gal./day*

*If water conservation measures implemented

	Jun 1 - Nov 30	Dec 1 - May 31
Multi-Family	15% Reduction	7% Reduction
Food Related	20% "	10% "
Commercial, Industry & Hotels w/food	25% "	15% "
Irrigation/Parks	50% "	50% "
Government, schools, hospitals, churches	25% "	25% "

B. Allocations for new accounts will be based on the number of occupants of residential units and by considering similar use data for commercial/industrial accounts.

C. A change in use will be reason to adjust the existing allocation.

D. Limited banking is permitted. Accounts with existing unused allocation may retain up to 10,000 gallons from the 1990-91 rationing program. Beginning with meter readings on or after June 1, 1991, an additional 10,000 gallons may be banked, up to a maximum bank of 20,000 gallons.

E. Residents who have not previously notified the City regarding the number of residents in the dwelling unit will receive an allocation for one person until the information is received. All landscape allocations will be established at less than 10,000 square feet lot size for City residents and 10,000+ square feet for Burlingame Hills (unincorporated) area.

II. WATER USE REGULATIONS AND RESTRICTIONS

A. Water waste, flooding or runoff into the street or gutters is prohibited.
B. Hoses cannot be used to clean hard surface areas (sidewalks, driveways, roofs, awnings, etc.)
C. Hoses used for any purpose must have positive shutoff valves.
D. Restaurants or hotel banquets can serve water only upon request.
E. Potable water cannot be used to clean, fill or maintain levels in decorative fountains. The use of groundwater is permitted.
F. Additional water allocations will not be allowed for new landscaping or expansion of existing landscaping. Low water use landscaping designs and irrigation systems must be employed for new or renovated landscaping.
G. Water service connections for new construction will only be granted if water-saving fixtures or devices are incorporated into the plumbing system.
H. Use of potable water for consolidation of backfill, dust control or other non-essential construction purposes is prohibited. The use of groundwater and/or reclaimed water is permitted when approved by the Department of Health.
I. Verified water waste as determined by the City will serve as prima facie evidence that the allocation assigned to the water account is excessive. The allocation will then be subject to review and possible reduction, including termination of service.
J. Water used for all cooling purposes must be recycled.
K. The use of groundwater and/or reclaimed water is strongly encouraged when approved by the Department of Health for the following uses:
   1. Irrigation of turf areas.
   2. Irrigation of median strips.
   3. Street or parking lot sweepers/washers.
L. Use of reduced water flow equipment for the washing of fleet or dealer vehicles is strongly encouraged. Positive shutoff valves must be used.
M. Broken or defective plumbing, sprinklers, or irrigation systems which permit the escape or leakage of water must be immediately repaired.

III. WATER USE IN EXCESS OF ALLOCATION

A. Penalties.

1) Excess water consumption is all billing units over allocation.

2) Charges for excess water use shall be two times the regular unit charge for each unit in excess of allocation up to 110% of allocation. The charge for excess water use shall be three times the regular unit charge for each unit over 110% of allocation up to 130% of allocation. The charge for excess water use shall be five times the regular unit charge for each unit over 130% of allocation.

3) No excess use charge shall be applied to any customer using less than 7,500 gallons per month.

B. Flow Restricting Devices.

The City Manager may, direct the installation of a flow-restricting device under the following conditions:

1) The customer has been mailed or personally served at least one written warning of being fifty percent (50%) or more over allocation for a billing period or has had at least two (2) written warnings of violations of the use restrictions.

2) The restricting device shall be removed only after a minimum 3-day period has elapsed and only upon payment of the appropriate installation and removal charges.

3) After one removal of a restricting device, if the customer is again fifty percent (50%) or more over allocation for a billing period or receives another violation notice of the use restrictions, the City may install a flow-restricting device which shall remain in place until this water rationing plan shall terminate and the appropriate charge for removal is paid.

4) No restrictor shall be placed on a customer using less than 7,500 gallons per month.

5) Restriction devices may be installed or water service discontinued if a customer fails to repair broken or defective plumbing within five (5) days after receipt of notice of the need for repairs.

C. Discontinuance of Water Service.

The City Manager may direct that water service be discontinued for repeated violations of water use restrictions under the following circumstances:

1) Notice of intention to terminate service shall be delivered by certified mail or personal service. It shall state that a hearing will be held before the City Manager and shall direct the customer to show cause why his service should not be terminated. The notice shall be served at least five (5) days before said hearing.

2) At the hearing the City Manager shall determine whether or not the customer's service shall be restricted, terminated or such other remedy as may be appropriate. His decision may be appealed to the City Council which may affirm, reverse or modify his decision.

D. Charges for installation and removal of flow-restricting devices are as follows:

Meter Size	Installation Cost	Removal Cost
5/8" to 1"	$ 50.00	$25.00
1-1/2" to 2"	100.00	50.00
3" and larger	Actual Cost	Actual Cost

First installation to be a minimum of three days; second and last installation ten days minimum. Actual cost shall include all material, labor, equipment and overhead charges.

The charge for discontinuance of water services shall be twenty-five dollars ($25.00) and shall be paid prior to reactivating the service.

IV. EXCEPTIONS

A. When considering exceptions for allocations based on 1987 usage, the Director of Finance may use the Calendar Year 1986 if the water use records show that the customer clearly conserved water in 1987 compared to 1986.

B. If a customer does not have a 1987 record, then the amount of the allocation shall be established by considering similar uses and/or standard usage data for commercial usage, and a per capita standard shall be used for residential accounts.

C. For special circumstances, the Director of Finance may use comparable usage data from water records or publications.

V. IMPLEMENTATION

A. This plan shall become effective upon adoption by the City Council.

This Page Intentionally Left Blank

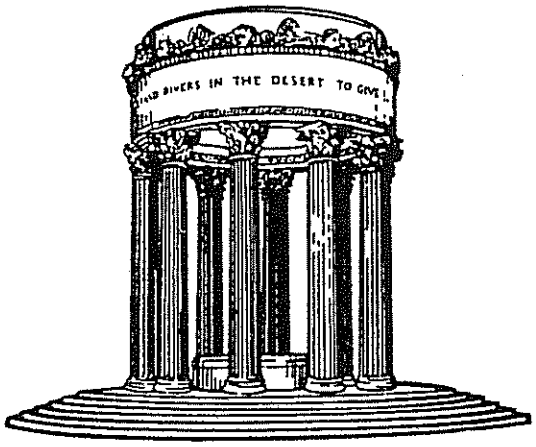
Appendix L

SFPUC – Suburban Customer Water Supply Emergency Operations and Notification Plan
Revision 5, April 2002. Attachment A: Emergency Planning Scenarios

This Page Intentionally Left Blank

SFPUC - Suburban Customer Water Supply Emergency Operations and Notification Plan

April 2002
Revision 5



Prepared for
San Francisco Public Utilities Commission

Prepared by
Olivia Chen Consultants, Inc.
& Barbara Foster Associates

This Page Intentionally Left Blank

ATTACHMENT A:
EMERGENCY PLANNING SCENARIOS

Scenario A.1

Loss of Harry Tracy WTP Under Winter Demand Conditions

SYSTEM DEMAND = 184 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS
Hetch Hetchy	155 MGD	155 MGD
Sunol WTP	40 MGD	40 MGD
Harry Tracy WTP	40 MGD	0 MGD
Total	235 MGD	195 MGD

INITIAL SHORTAGE = 0 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss or impending loss. Give information on expected system water quality without Harry Tracy WTP.

2. Start Baden Pump Station.

ADJUSTED SHORTAGE AFTER ACTIONS 1 AND 2 = 0 MGD.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

3. Observe system demand, track Balancing Reservoir storage. If demand increases significantly and storage drops, INCREASE SUNOL VALLEY WTP RATE TO 87 MGD using conventional treatment, notify customers of expected change in water quality.

Scenario A.2

Loss of Harry Tracy WTP Under Summer Demand Conditions

SYSTEM DEMAND = 325 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	230 MGD	230 MGD	230 MGD
Sunol WTP	40 MGD	40 MGD	110 MGD
Harry Tracy WTP	50 MGD	0 MGD	0 MGD
Total	320 MGD	270 MGD	340 MGD

INITIAL SHORTAGE =325-270= 55 MGD.
SHORTAGE AFTER 8 HOURS = 0 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. Give information on expected water quality without Harry Tracy WTP and with increase rate at Sunol WTP.

2. INCREASE SUNOL VALLEY WTP to 110 MGD using direct filtration. Notify DOHS.

ADJUSTED SHORTAGE AFTER ACTIONS 1 AND 2 = 0 MGD.

Storage Needed = up to 18 million gallons in first 8 hours.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

3. Observe system demands and treated water storage closely. If demand increases significantly and storage drops, INCREASE HETCH HETCHY RATE TO 300 MGD.

Scenario B.1

Loss of Sunol Valley WTP Under Winter Demand Conditions

SYSTEM DEMAND = 184 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS
Hetch Hetchy	155 MGD	155 MGD
Sunol WTP	40 MGD	0 MGD
Harry Tracy WTP	40 MGD	40 MGD
Total	235 MGD	195 MGD

INITIAL SHORTAGE = 0 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss or impending loss. Give information on expected system water quality without Sunol Valley WTP.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

2. Observe system demand, track Balancing Reservoir storage. If demand increases significantly and storage drops, INCREASE HARRY TRACY WTP RATE AS NEEDED.

Scenario B.2

Loss of Sunol Valley WTP Under Summer Demand Conditions

SYSTEM DEMAND = 325 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	230 MGD	230 MGD	230 MGD
Sunol WTP	40 MGD	0 MGD	0 MGD
Harry Tracy WTP	50 MGD	50 MGD	140 MGD
Total	320 MGD	280 MGD	370 MGD

INITIAL SHORTAGE =325-280= 45 MGD.
SHORTAGE AFTER 8 HOURS = 0 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. Give information on expected water quality without Sunol Valley WTP.

2. INCREASE HARRY TRACY WTP RATE TO 100 MGD.

ADJUSTED SHORTAGE AFTER ACTIONS 1 AND 2 = 0 MGD.

Storage Needed = up to 15 million gallons in first 8 hours.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

3. Observe system demands and treated water storage closely. If demand increases and storage drops, INCREASE HARRY TRACY WTP AS NEEDED.

Scenario C.1

Loss of Harry Tracy WTP and Sunol Valley WTP Under Winter Demand Conditions

SYSTEM DEMAND = 184 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	155 MGD	155 MGD	230 MGD
Sunol WTP	40 MGD	0 MGD	0 MGD
Harry Tracy WTP	40 MGD	0 MGD	0 MGD
Total	235 MGD	155 MGD	230 MGD

INITIAL SHORTAGE =184-155= 29 MGD.
SHORTAGE AFTER 8 HOURS = 0 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. Give information on expected water quality without Harry Tracy WTP and Sunol Valley WTP.

2. INCREASE HETCH HETCHY RATE TO 230 MGD. Start Baden Pump Station.

ADJUSTED SHORTAGE AFTER ACTIONS 1 AND 2 = 0 MGD.

Storage Needed = up to 10 million gallons in first 8 hours.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

3. Observe system demand, track total system storage. If demand increases significantly and storage drops, INCREASE HETCH HETCHY RATE TO 240 OR 300 MGD.

Scenario C.2

Loss of Harry Tracy WTP and Sunol Valley WTP Under Summer Demand Conditions

SYSTEM DEMAND = 325 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	230 MGD	230 MGD	300 MGD
Sunol WTP	40 MGD	0 MGD	0 MGD
Harry Tracy WTP	50 MGD	0 MGD	0 MGD
Total	320 MGD	230 MGD	300 MGD

INITIAL SHORTAGE =325-230= 95 MGD.
SHORTAGE AFTER 8 HOURS = 25 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss, REQUEST DRAWDOWN OF CUSTOMER STORAGE AND ACTIVATION OF ALTERNATE SUPPLIES. Give information on expected water quality from Sunol WTP.

2. INCREASE HETCH HETCHY RATE TO 300 MGD.

ADJUSTED SHORTAGE AFTER ACTIONS 1 AND 2 = 0 MGD.

Storage Needed = up to 32 million gallons in first 8 hours.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

3. Observe system demand, track total system storage. If demand increases significantly and storage drops, ISSUE PRESS RELEASE asking for conservative use of water.

Scenario D.1

Loss of Hetch Hetchy Supply Under Winter Demand Conditions

SYSTEM DEMAND = 184 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	155 MGD	0 MGD	0 MGD
Sunol WTP	40 MGD	40 MGD	87 MGD
Harry Tracy WTP	40 MGD	40 MGD	140 MGD
Total	235 MGD	80 MGD	227 MGD

INITIAL SHORTAGE =184-80= 104 MGD.
SHORTAGE AFTER 8 HOURS = 0 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. Give information on expected water quality without Hetch Hetchy supply.

2. INCREASE PLANT RATE AT SUNOL WTP TO 87 MGD using Conventional Filtration. Notify DOHS. INCREASE PLANT RATE AT HARRY TRACY WTP TO AT LEAST 110 MGD. Open Capuchino PRV.

ADJUSTED SHORTAGE AFTER ACTIONS 1 AND 2 = 0 MGD.

Storage Needed = 35 million gallons in first 8 hours.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

3. Observe system demand, track total system storage. If demand increases significantly and storage drops, INCREASE HARRY TRACY WTP RATE UP TO 140 MGD AS NEEDED.

Scenario D.2

Loss of Hetch Hetchy Supply Under Summer Demand Conditions

SYSTEM DEMAND = 325 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	230 MGD	0 MGD	0 MGD
Sunol WTP	40 MGD	40 MGD	110 MGD
Harry Tracy WTP	50 MGD	50 MGD	140 MGD
Total	320 MGD	90 MGD	250 MGD

INITIAL SHORTAGE =325-90= 235 MGD.
SHORTAGE AFTER 8 HOURS = 75 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. REQUEST CUSTOMERS TO ACTIVATTE AUXILIARY SUPPLIES. If time permits before effect of loss reaches Tesla Portal, have customers fill up storage. Give information on expected water quality when Hetch Hetchy is shut down.

2. INCREASE PLANT RATE AT SUNOL WTP to 110 MGD using Direct Filtration. Notify DOHS, INCREASE PLANT RATE AT HARRY TRACY WTP to 140 MGD. Open Capuchino PRV full. If time permits before effect of loss reaches Tesla Portal, fill CDD Reservoirs and Balancing Reservoir.

ADJUSTED SHORTAGE AFTER ACTIONS 1 AND 2 =
325-45-250 = 30 MGD.

3. Notify Customers when effect of loss reaches Tesla Portal. REQUEST DRAWDOWN OF CUSTOMER STORAGE. Shut off Lake Merced Pump Station, draw down storage in Sunset Reservoir and University Mound Reservoir.

4. Watch system demands and treated water storage closely. If storage may not last until Hetch Hetchy supply can be restored, ISSUE PRESS RELEASE asking for a 10 percent reduction in water use. Repeat press releases as necessary.

EXPECTED SHORTAGE AFTER PRESS RELEASE = 0 MGD.

Storage Needed = up to 78 million gallons in first 8 hrs if loss is immediate.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

Scenario E.1

Loss of Hetch Hetchy and Harry Tracy WTP Under Winter Demand Conditions

SYSTEM DEMAND = 184 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	155 MGD	0 MGD	0 MGD
Sunol WTP	40 MGD	40 MGD	87 MGD
Harry Tracy WTP	40 MGD	0 MGD	0 MGD
Total	235 MGD	40 MGD	87 MGD

INITIAL SHORTAGE =184-40= 144 MGD.
SHORTAGE AFTER 8 HOURS = 97 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. REQUEST CUSTOMERS TO ACTIVATE AUXILIARY SUPPLIES. If time permits before effect of Hetch Hetchy loss reaches Tesla Portal, have customers fill up storage. Give information on expected water quality from Sunol Valley WTP.

2. INCREASE PLANT RATE AT SUNOL VALLEY WTP to 87 MGD using Conventional Filtration. Notify DOHS. If time permits before effects of Hetch Hetchy loss reach Tesla Portal, fill Balancing Reservoir and CDD reservoirs.

ADJUSTED SHORTAGE AFTER ACTIONS 1 AND 2 = 184-45-87 = 52 MGD.

3. Notify customers when effects of Hetch Hetchy loss reach Tesla Portal. REQUEST DRAWDOWN OF CUSTOMER AND CDD STORAGE TO PRESERVE BALANCING RESERVOIR STORAGE AND MAINTAIN SYSTEM PRESSURE.

4. Observe system demand, track total system storage. If storage may not last until one of the supplies is restored, ISSUE PRESS RELEASE calling for 30% emergency rationing.

EXPECTED SHORTAGE AFTER EMERGENCY RATIONING = O MGD.

Storage Needed = up to 48 million gallons in first 8 hours if loss is immediate. Up to 113 million gallons if rationing take 24 hours to implement.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

Scenario E.2

Loss of Hetch Hetchy and Harry Tracy WTP Under Summer Demand Conditions

SYSTEM DEMAND = 325 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	230 MGD	0 MGD	0 MGD
Sunol WTP	40 MGD	40 MGD	110 MGD
Harry Tracy WTP	50 MGD	0 MGD	0 MGD
Total	320 MGD	40 MGD	110 MGD

INITIAL SHORTAGE =325-40= 285 MGD.
SHORTAGE AFTER 8 HOURS = 215 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. REQUEST CUSTOMERS TO ACTIVATE AUXILIARY SUPPLIES. If time permits before effects of Hetch Hetchy loss reach Tesla Portal, have customers fill up storage. Give information on expected water quality from Sunol WTP.

2. INCREASE PLANT RATE AT SUNOL VALLEY WTP to 110 MGD using Direct Filtration. Notify DOHS. If time permits, fill Balancing Reservoir and CDD storage.

ADJUSTED SHORTAGE AFTER ACTIONS 1 AND 2 =
325-45-110 = 170 MGD.

3. Notify customers when effects of Hetch Hetchy loss reach Tesla Portal. REQUEST DRAWDOWN OF CUSTOMER AND CDD STORAGE TO PRESERVE BALANCING RESERVOIR STORAGE AND MAINTAIN SYSTEM PRESSURE.

4. ISSUE PRESS RELEASE calling for 50% emergency rationing.

EXPECTED SHORTAGE AFTER EMERGENCY RATIONING = O MGD.

Storage Needed = up to 95 million gallons in first 8 hours if loss is immediate. Up to 239 million gallons if rationing takes 24 hours to implement.

NO FURTHER ACTION IS EXPECTED TO BE NEEDED.

5. Observe system demand, track total system storage. If demand continues to exceed supply, issue further press releases informing customers of additional rationing needed.

Scenario F.1

Loss of Hetch Hetchy and Sunol Valley WTP Under Winter Demand Conditions

SYSTEM DEMAND = 184 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	155 MGD	0 MGD	0 MGD
Sunol WTP	40 MGD	0 MGD	0 MGD
Harry Tracy WTP	40 MGD	40 MGD	140 MGD
Total	235 MGD	40 MGD	140 MGD

INITIAL SHORTAGE =184-40= 144 MGD.
SHORTAGE AFTER 8 HOURS = 44 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. REQUEST CUSTOMERS TO ACTIVATE AUXILIARY SUPPLIES. If time permits before effects of Hetch Hetchy loss reach Tesla Portal, have customers fill up storage. Give information on expected water quality from Harry Tracy WTP. Activate SFWD's EOC to monitor conditions, handle communications, and direct and coordinate corrective action. Notify DOHS.

2. INCREASE PLANT RATE AT HARRY TRACY WTP to 140 MGD. Fill up Balancing Reservoir and CDD storage, if time is available, to prepare for emergency.

3. Notify customers when effects of Hetch Hetchy loss reach Tesla Portal. REQUEST DRAWDOWN OF CUSTOMER AND CDD STORAGE TO PRESERVE BALANCING RESERVOIR STORAGE AND MAINTAIN SYSTEM PRESSURE.

EXPECTED SHORTAGE AFTER ABOVE ACTIONS = 0 MGD.

Storage Needed = up to 48 million gallons if loss is immediate. Up to 77 million gallons if it takes 24 hours to activate auxiliary supplies.

NO FURTHER ACTION IS LIKELY.

4. Observe system demand, track total system storage. If demand increases significantly and storage in expected to run out before supply can be restored, ISSUE PRESS RELEASE requesting conservative use of water.

Scenario F.2

Loss of Hetch Hetchy and Sunol Valley WTP Under Summer Demand Conditions

SYSTEM DEMAND = 325 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	230 MGD	0 MGD	0 MGD
Sunol WTP	50 MGD	0 MGD	0 MGD
Harry Tracy WTP	50 MGD	50 MGD	160 MGD
Total	330 MGD	50 MGD	160 MGD

INITIAL SHORTAGE =325-50= 275 MGD.
SHORTAGE AFTER 8 HOURS = 165 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. REQUEST CUSTOMERS TO ACTIVATE AUXILIARY SUPPLIES. If time permits before effects of Hetch Hetchy loss reach Tesla Portal, have customers fill up storage. Give information on expected water quality from Harry Tracy WTP. Activate SFWD's EOC to monitor conditions, handle communications, and direct and coordinate corrective actions. Notify DOHS.

2. INCREASE PLANT RATE AT HARRY TRACY WTP to 160 MGD. Open Capuchino PRV full. Open T58K, T63R and T64M as needed to utilize 160 MGD from Harry Tracy WTP. Fill up Balancing Reservoir and CDD storage, if time is available.

3. Notify customers when effects of Hetch Hetchy loss reach Tesla Portal. REQUEST DRAWDOWN OF CUSTOMER AND CDD STORAGE TO PRESERVE BALANCING RESERVOIR STORAGE AND MAINTAIN SYSTEM PRESSURE.

ADJUSTED SHORTAGE AFTER ABOVE ACTIONS = 325-160-25 =140 MGD

4. ISSUE PRESS RELEASE calling for 45% emergency rationing.

EXPECTED SHORTAGE AFTER EMERGENCY RATIONING = O MGD.

Storage Needed = up to 92 million gallons in first 8 hours if loss is immediate. Up to 202 million gallons if rationing takes 24 hours to implement.

NO FURTHER ACTION IS LIKELY.

5. Observe system demand, track total system storage. If demand continues to exceed supply, issue further press releases informing customers of additional rationing needed.

Scenario G.1

Loss of Hetch Hetchy, Harry Tracy WTP and Sunol Valley WTP Under Winter Demand Conditions

SYSTEM DEMAND = 184 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	155 MGD	0 MGD	0 MGD
Sunol WTP	40 MGD	0 MGD	0 MGD
Harry Tracy WTP	40 MGD	0 MGD	0 MGD
Total	235 MGD	0 MGD	0 MGD

INITIAL SHORTAGE =184 MGD.
SHORTAGE AFTER 8 HOURS = 184 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. REQUEST DRAWDOWN OF CUSTOMER AND CDD STORAGE TO PRESERVE BALANCING RESERVOIR STORAGE AND MAINTAIN SYSTEM PRESSURE. REQUEST CUSTOMERS TO ACTIVATE AUXILIARY SUPPLIES. Activate SFWD's EOC to monitor conditions, handle communications, and direct and coordinate corrective action. Notify DOHS.

2. ISSUE PRESS RELEASE calling for emergency rationing to essential use only (75%).

EXPECTED SHORTAGE AFTER EMERGENCY RATIONING = 184-138 = 46 MGD.

Storage Needed = up to 184 million gallons if it take 24 hours to implement rationing. Storage loss will continue at 46 MGD after 24 hours, if 75% rationing is successful, until supply is restored.

3. Observe system demand, track total system storage. If demand cannot be reduced enough and storage drops to 200 million gallons or less than 2.5 days storage, ISSUE BOIL WATER ORDER with support of DOHS and notify press that raw water will be released with just chlorine treatment if demand cannot be reduced further.

4. If demand is not reduced further and storage continues to be used up, RELEASE RAW WATER with chlorination from local reservoirs when total storage drops to 100 million gallons or 1.5 days storage.

Scenario G.2

Loss of Hetch Hetchy, Sunol Valley WTP, and Harry Tracy WTP Under Summer Demand Conditions

SYSTEM DEMAND = 325 MGD

SYSTEM SUPPLY	BEFORE LOSS	AFTER LOSS	AFTER 8 HOURS
Hetch Hetchy	230 MGD	0 MGD	0 MGD
Sunol WTP	50 MGD	0 MGD	0 MGD
Harry Tracy WTP	50 MGD	0 MGD	0 MGD
Total	330 MGD	0 MGD	0 MGD

INITIAL SHORTAGE = 325 MGD.
SHORTAGE AFTER 8 HOURS = 325 MGD.

PROPOSED CORRECTIVE ACTION

1. Notify Customers of loss. REQUEST DRAWDOWN OF CUSTOMER AND CDD STORAGE TO PRESERVE BALANCING RESERVOIR STORAGE AND MAINTAIN SYSTEM PRESSURE. REQUEST CUSTOMERS TO ACTIVATE AUXILIARY SUPPLIES. Activate SFWD's EOC to monitor conditions, handle communications, and direct and coordinate corrective actions. Notify DOHS.

2. ISSUE PRESS RELEASE calling for emergency rationing to essential use only (75%).

EXPECTED SHORTAGE AFTER EMERGENCY RATIONING = 325-243 = 82 MGD.

Storage Needed = up to 325 million gallons in 24 hours if loss is immediate at all sources. Storage loss will continue at 82 MGD, thereafter, if 75% rationing is successful, until one or more supplies are restored.

3. Observe system demand, track total system storage. If demand cannot be reduced enough and storage drops to 200 million gallons or less than 2.5 days storage, ISSUE BOIL WATER ORDER with support of DOHS and notify press that raw water will be released with just chlorine treatment if demand cannot be reduced further.

4. RELEASE CHLORINATED RAW WATER FROM LOCAL RESERVOIRS TO SYSTEM when storage drops to 100 million gallons or 1.5 days storage.

This Page Intentionally Left Blank

Appendix M

City of Burlingame Resolution 87-2005
Urban Water Management Plan, 2005 Update

This Page Intentionally Left Blank

RESOLUTION NO. 87–2005

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BURLINGAME ADOPTING CITY OF BURLINGAME 2005 URBAN WATER MANAGEMENT PLAN

RESOLVED, by the City Council of the City of Burlingame:

WHEREAS, by Resolution 105-2000, the City Council of the City of Burlingame duly adopted the City of Burlingame 2000 Urban Water Management Plan on October 16, 2000; and

WHEREAS, Water Code section 10261 requires the City, as a water supplier, to update this Plan on a regular basis but at least once every five (5) years in years ending in five and zero; and

WHEREAS, the existing Plan has been reviewed and updated to address current conditions in the City, the San Francisco Bay Area, and the State, and the City has consulted with the Bay Area Water Supply and Conservation Agency (BAWSCA), the San Francisco Public Utilities Commission, and BAWSCA member agencies on the contents and goals of the Plan; and

WHEREAS, the updated Plan will provide the outline for future improvements to the water supply system, additional water conservation measures, and a ready reference resource; and

WHEREAS, the draft 2005 Urban Water Management Plan was made available for public inspection pursuant to Water Code section 10642; and

WHEREAS, on November 21, 2005, the City Council held a duly noticed public hearing on the 2005 Urban Water Management Plan and received and considered all public testimony, both written and oral, from all interested citizens; and

WHEREAS, the City Council has considered the updated Plan, the staff report, and the responses to comments; and

WHEREAS, preparation and amendment of urban water management plans is exempt from the requirements fo the California Environmental Quality Act under Water Code section 10652; and

WHEREAS, the 2005 Urban Water Management Plan, as amended, complies with the requirements of the State Urban Water Management Planning Act,

NOW, THEREFORE, IT IS RESOLVED, DETERMINED, AND ORDERED:

1. The City of Burlingame 2005 Urban Water Management Plan, as amended, is approved.

2. The Director of Public Works is directed to file a copy of the Plan with the State Department of Water Resources and to make a copy of the Plan available for review by the public during normal business hours.

Joe Galligan
MAYOR

I, DORIS MORTENSEN, City Clerk of the City of Burlingame, do hereby certify that the foregoing resolution was introduced at a regular meeting of the City Council held on the 21st day of November, 2005, and was adopted thereafter by the following vote:

AYES: COUNCILMEMBERS: BAYLOCK, GALLIGAN, NAGEL, O'MAHONY
NOES: COUNCILMEMBERS: NONE
ABSENT: COUNCILMEMBERS: NONE

Doris J. Mortensen
CITY CLERK