



## **City of Sunnyvale**

# **2009 Recycled Water Annual Report**

**March 15, 2010**

Prepared by:





March 15, 2010

Mr. Bruce Wolfe  
Executive Officer  
San Francisco Bay Regional Water Quality Control Board  
1515 Clay Street, Suite 1400  
Oakland, CA 94612

Attn: Water Reuse Program Manager

Subject: **Transmittal of 2009 Annual Self Monitoring Report  
for City of Sunnyvale Water Recycling Program**

Dear Mr. Wolfe:

The attached annual Self Monitoring Report for the City of Sunnyvale's Water Recycling Program is submitted in accordance with Order No. 94-069, with revised Self-Monitoring Program consisting of Attachments C and D from Order 96-011.

I certify under penalty of perjury that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Very truly yours,

Lorie Gervin  
Environmental Division Manager

cc: Marvin Rose, Director of Public Works  
Jim Craig, Superintendent of Field Services

**ADDRESS ALL MAIL TO: P.O. BOX 3707 SUNNYVALE, CALIFORNIA 94088-3707  
TDD (408) 730-7501**

Printed on Recycled Paper

## TABLE OF CONTENTS

Introduction .....	1
1.0 Recycled Water Program Overview .....	1
1.1 Recycled Water Production System.....	1
1.2 Distribution System .....	2
1.3 Recycled Water Use Site Retrofit and Permitting .....	3
1.4 Program Administration.....	3
2.0 Reporting Requirements - Order 94-069.....	4
2.1 Certification (C.2).....	4
2.2 Tabulation of SMP Recycled Water Analysis (C.2.a) .....	4
2.3 Tabular Summary of Recycled Water Use (C.2.b) .....	5
2.4 List of New Authorized Recycled Water Users (C.2.c).....	5
2.5 Summary of Total Daily Recycled Water Delivered by the Producer (C.2.d) .....	5
2.6 Tabulation of User Site Inspections Conducted by the Producer (C.2.e) .....	6
2.7 Summary of Effluent Violations Related to Water Recycled Water Use, Violations Found During Inspection of Reuse Sites, Corrective Actions Taken, and any Changes to, or Revoking of User Authorizations by the Producer. (C.2.f).....	6
2.7.1 Production & Distribution .....	6
2.7.2 Use Sites .....	6
2.8 Update Regarding Current and Future Development of the Recycled Water Program (C.2.g) .....	6
2.8.1 Facilities Completed During 2009.....	6
2.8.2 Current Facilities Construction.....	7
2.8.3 Recycled Water Hook-ups Planned for Year 2010 .....	7
2.8.4 Required Reports and Technical Documents .....	7
2.9 Progress and Evaluation of Any Special Studies or Projects Being Undertaken Related to the Program (C.2.h) .....	7

## LIST OF FIGURES

Figure 1.	Sunnyvale WPCP - Overall Plant Flow Schematic
Figure 2.	Sunnyvale WPCP - Recycled Water Production Schematic
Figure 3.	Recycled Water Distribution System

## ATTACHMENTS

Attachment A	Recycled Water Quality Report
Attachment B-1	List of Recycled Water Use Sites and Water Usage
Attachment B-2	Summary of Recycled Water Use by Reuse Application Category
Attachment C-1	Tabulation of Producer's Daily Recycled Water Deliveries
Attachment C-2	Summary of Recycled Water Deliveries and Use at WPCP
Attachment D	List of City Inspections of Use Areas



# City of Sunnyvale 2009 Recycled Water Annual Report

## Introduction

This report is submitted pursuant to the annual reporting requirements of Order 94-069, “Water Reclamation Requirements for the City of Sunnyvale Water Pollution Control Plant”. The report is prepared in accordance with the requirements of the Order’s Self Monitoring Program (revised December 28, 1999 to consist of the Self-Monitoring Program from the General Water Reuse Order 96-011).

## 1.0 Recycled Water Program Overview

This section provides an overview of Sunnyvale’s Water Reclamation Program, with information on production, distribution, user permitting, and program administration.

### 1.1 Recycled Water Production System

Wastewater treatment facilities at the Sunnyvale Water Pollution Control Plant (WPCP) include influent grinders, preaeration/grit removal, primary sedimentation, oxidation ponds, fixed growth reactor nitrification, dissolved air flotation with coagulation, dual media filtration, chlorination and dechlorination. An overall flow schematic of the treatment process is presented in Figure 1. Recycled water produced at the WPCP for external delivery meets California Department of Health Services criteria for disinfected tertiary recycled water, as specified the California Code of Regulations (CCR) Title 22 and Order 94-069. The applicable water quality requirements are:

- CBOD (5-day, 20°C): 20 mg/L daily maximum, 10 mg/L monthly average
- Dissolved Oxygen: 1.0 mg/L minimum
- Dissolved Sulfide: 0.1 mg/L maximum
- Turbidity: <2 NTU daily average, <5 NTU 95% of the time, <10 NTU at all times
- C\*T: 450 mg/L-min., with T ≥ 90 minutes (modal basis)
- Total Coliform: < 2.2 MPN/100 ml (7-day median);  
<23 MPN/100 ml (may be exceeded by one sample in 30 day period)  
<240 MPN/100 ml (single sample maximum)

Figure 2 is a more detailed view of facilities for recycled water production at the chlorine contact tanks (CCTs). During periods of recycled water production, the entire WPCP tertiary plant flow is treated to produce a filtered effluent containing less than 2 NTU turbidity, and is chlorinated to a level needed to ensure compliance with the total coliform and C\*T limits. In the current operating mode (Mode 3), recycled water that has met turbidity and C\*T requirements is drawn from CCT #1 and CCT #2 into the recycled water pump station (RWPS), where it is partially dechlorinated using sodium bisulfite, metered, and pumped into the distribution system. The balance of the WPCP tertiary plant flow, if any, passes through CCT #3 or CCT #4 and overflows into the chlorine contact tank effluent channel. This flow is fully dechlorinated with sulfur dioxide (SO<sub>2</sub>) and

discharged to Moffett Channel under the City's NPDES permit. Under current operational procedures, the tertiary plant flow is reduced during periods of recycled water production to match recycled water demand, so that the flow discharged to Moffett Channel is at or near zero.

Compliance with recycled water turbidity and C\*T limits is ensured by an automatic control system that continuously monitors turbidity (pre- and post-filtration), chlorine residual, flow through the chlorine contact tanks and equipment status. All of these conditions must be met in order to initiate deliveries into the recycled water distribution system. This is indicated by a "Ready" status at the Supervisory Control and Data Acquisition (SCADA) system operator's terminal. If, during recycled water production, turbidity requirements are not met, the control system prevents the water from entering the recycled water chlorine contact tanks by automatically closing influent gate(s). The control system's response to a failure to meet C\*T depends on the operating mode. In Mode 1, the control system will prevent the water from overflowing into CCT #2 (which serves as a storage basin and pump station wet well), by automatically closing the overflow weir between the two tanks. In Modes 2 or 3, the control system closes the valves on the RWPS intake line, and water overflows into the CCT effluent channel.<sup>1</sup> If these, or any of several other conditions related to equipment status are not met, the control system generates a "Fail" condition, issues an alarm, and prevents delivery of water to the Recycled Water Pump Station. Full compliance with all turbidity, C\*T and equipment status conditions and operator intervention is required to re-establish a "Ready" condition.

As indicated above, the entire WPCP tertiary plant flow is treated to a turbidity of less than 2 NTU during periods of recycled water production. The elevated polymer dose applied to the AFTs to achieve this level of treatment increases WPCP operating costs. In addition, much higher chlorine dosage rates are required to meet Title 22 C\*T requirements than for normal (NPDES) discharge. For these reasons, recycled water is produced on an "as needed" basis to meet instantaneous demand and/or to fill the 2 million gallon San Lucar storage tank. The storage tank is then used as the source of supply to the distribution system. During periods of low demand or when conditions constrain recycled water production (and the storage tank is empty), potable water may be used to supplement the recycled water supply as described below.

Recycled water used internally at the WPCP is either disinfected tertiary quality as described above or disinfected secondary-2.2 MPN drawn from the end of the second channel of the CCT.

## 1.2 Distribution System

The RWPS is located immediately adjacent to the CCTs. The RWPS has six pumps that operate on the basis of distribution system demand, as determined by pressure in the distribution line. The nominal maximum pumping capacity is approximately 8 mgd (5600 gpm). Actual maximum pumping rates are limited by the pressure sustaining valve at the San Lucar storage tank to

---

<sup>1</sup> In Mode 1, compliance with C\*T requirements are met in CCT#1, with CCT#2 is used for storage (up to 200,000 gallons when full). The remaining modes utilize both CCT #1 and CCT #2 for production, with no local (WPCP) storage. In Mode 2, the two tanks are operated in series at flows up to 6.7 mgd. Compliance is measured at the end of CCT #2. In Mode 3, the two tanks are operated in parallel at flows up to 4 mgd each, with compliance measured at the end of both tanks. The plant currently operates in Mode 3 only.

approximately 4500 gpm. (The valve's pressure setting is remotely adjustable). In Mode 3, water is drawn from the ends of CCT #1 and CCT#2 through automatic valves on the 24-inch intake line. The flow is metered, and sodium bisulfite is added to reduce chlorine residual from 5-10 mg/L to 2-3 mg/L into the distribution system. Potable water can be introduced into the RWPS intake line through an air gap at the potable water box, as shown in Figure 2. When activated, a level switch in the potable water box opens an automatic valve on the potable supply line.

The recycled water distribution system consists of approximately 43,300 feet of 12-inch through 36-inch transmission mains and 34,000 feet of 8-inch distribution lines. Areas served by the system are shown in Figure 3.

The San Lucar Recycled Water Pumping and Storage facilities are located at the southern terminus of the "east main" near Wolfe Road and Kifer Road (see Fig 3). The facility provides about 1.5 million gallons of "working" storage capacity, and a nominal maximum pumping capacity (from the tank) of approximately 8 mgd (5600 gpm). The facility can serve as the sole source of recycled water during periods of low to moderate demand, or can be operated in parallel with the WPCP during periods of peak demand. Potable water can also be added to the storage tank via an air gap.

The Department of Public Works Field Services Division is responsible for operation and maintenance of the City's potable water and recycled water distribution systems. The Field Services Division has several AWWA-certified Cross Connection Control Specialists on staff.

### **1.3 Recycled Water Use Site Retrofit and Permitting**

The Field Services Division is responsible for overseeing site retrofits, cross-connection testing, customer permitting, and site inspections.<sup>2</sup> A Recycled Water Permit database is available to track both current and prospective use sites. The database includes site information (name, address, contact person(s), designated recycled water supervisor, projected water use, etc), and a system for tracking the progress of the retrofit/permitting effort and for generating summary reports. A separate database is available to record detailed information regarding facility retrofit requirements. Paper forms are also available to provide all recordkeeping functions of both databases. Upon completion of all retrofit requirements and cross-connection testing, Field Services staff provide a connection to the system and issue a Permit to Use Recycled Water.

The City's *Administrative Procedures for Program Staff* contains forms to document the process and for ongoing inspections of use areas by users or City staff. Site records are maintained as hard copies in the individual site files and/or electronically in the two database applications.

### **1.4 Program Administration**

The Recycled Water Program is administered through the City's Department of Public Works. The WPCP is responsible for recycled water treatment, water quality analysis, and operation of the

---

<sup>2</sup> At the start of the Recycled Water program, a majority of the reuse sites involved conversion (retrofit) of existing facilities for recycled water use, rather than construction of new facilities, and the permitting process was initially tailored to retrofit applications. In recent years, the trend has been toward permitting of newly constructed sites.

WPCP's recycled water pump station. The Field Services Division is responsible for distribution, operation of the San Lucar facilities, user permitting/monitoring, and overall program coordination. EOA, Inc. provides technical support to the program for operational and regulatory issues.

Written guidance for the Program is provided in the City's *Recycled Water Program Manual*, which includes the City's *Rules and Regulations for Recycled Water Users* and *Administrative Procedures for Program Staff*.

## 2.0 Reporting Requirements - Order 94-069

This section provides the specific information called for under the annual reporting requirements of Reuse Order 94-069. (Since December 1999, Section C of the General Reuse Order 96-011 Self Monitoring Program constitutes the Self Monitoring Program for Order 94-069). The applicable paragraph numbers from the SMP are indicated in parenthesis.

### 2.1 Certification (C.2)

A transmittal letter with certification is bound into the front of this report.

### 2.2 Tabulation of SMP Recycled Water Analysis (C.2.a)

Sampling and analyses specified in Order 96-001 Table 1 are as follows:

- Flow Rate (gallons/day): continuous monitoring, daily reporting. Measured at the Recycled Water Pump Station flow meter (must be corrected for potable water – see Section 2.5).
- Flow Rate (gallons/day): at reuse areas, calculated from water billing records
- Total coliform (MPN/100 ml): grab samples, daily, or at frequency specified in NPDES permit (3x/week).
- Turbidity (NTU): continuous monitoring, daily reporting; collected at the WPCP's filtered water sump immediately prior to chlorination.
- Dissolved Oxygen (mg/L): 3x/week grab samples
- Dissolved Sulfides (mg/L): 3x/week grab samples (if DO<1 mg/L)

Data for RWPS flow and pressure, potable water flow, turbidity, chlorine residual, and C\*T are recorded continuously by the WPCP's Supervisory Control and Data Acquisition (SCADA) system. A similar SCADA system at the SLPS monitors recycled and potable water flows, pressure, and tank level. The SLPS SCADA system can be controlled locally, from the WPCP, or from the Field Services office. Trend plots of "real time" and historic data can be viewed at the SCADA terminal.<sup>3</sup> The SCADA system also generates daily and monthly compliance summary reports that list the daily average values for flow, turbidity and chlorine residual for periods of recycled water production.

---

<sup>3</sup> Turbidity measurements from analyzers located before and after the dual media filters are also recorded on circular charts in the Tertiary Control Room.

During periods of recycled water production, samples for total coliform and dissolved oxygen were collected from the recycled water sample point for analysis at the WPCP laboratory.<sup>4</sup> Samples were not analyzed for sulfides, because the dissolved oxygen never dropped below 1 mg/L. Turbidity values are tracked in the WPCP's SCADA system, and reported on daily and monthly "Title 22" SCADA reports. A review of the sample data shows that all recycled water delivered met the water quality requirements listed in Section 1.1. In accordance with the Water Board's January 2005 letter to General Water Reuse Order Permittees (File No. 2170.00 (RJC)), tabulations of daily recycled water quality data are not submitted with this report, but maintained on-site at the WPCP.

Attachment A is a summary of recycled water quality data not required under the SMP, but which may be of interest to recycled water users.

### **2.3 Tabular Summary of Recycled Water Use (C.2.b)**

Attachment B-1 is a listing of recycled water use sites, with water usage shown for each site by billing period and total for the year. The customer billing data indicates an annual total usage of 283.6 million gallons for all sites.<sup>5</sup> Flow records indicate that 30% of this total was potable water added to the distribution system at the WPCP or the San Lucar Storage Tank.<sup>6</sup> Thus, the net recycled water usage for 2008 based on billing data is approximately 198 million gallons.<sup>7</sup> The volume delivered is also determined based on measurements of flows into the distribution system (i.e. recycled water production at the WPCP plus potable water flows) as described in Section 2.5.

Attachment B-2 summarizes recycled water usage data from Attachment B-1. The data in Attachment B-2 is organized in accordance with the format specified in the above-referenced Water Board letter to General Water Reuse Order Permittees.

### **2.4 List of New Authorized Recycled Water Users (C.2.c)**

Six new recycled water use sites were connected and permitted 2009, including the Moffett Golf Course. Twenty five existing sites had permits renewed in 2009. The sites are listed in Attachment B-1 and D.

### **2.5 Summary of Total Daily Recycled Water Delivered by the Producer (C.2.d)**

A listing of daily recycled water deliveries is presented in Attachment C-1. Monthly totals are shown at the bottom of each column and are summarized in Attachment C-2. Attachment C-1 is

---

<sup>4</sup> Recycled water sample are collected at the end of the chlorine contact tank #1, where the water either overflows into CCT #2 for storage (Mode 1) or is drawn into the Recycled Water Pump Station (Mode 3).

<sup>5</sup> Because of late rainfall in the spring of 2009 and a cooler summer, water usage was lower than in 2008, when the total usage was 312 million gallons

<sup>6</sup> Potable water may be added for a variety of reasons, such as when production of recycled water is not possible or practical, or during periods of very low demand.

<sup>7</sup> This value does not include recycled water used internally at the WPCP for process purposes. See Section 2.5

derived from the daily cumulative flow measured at the RWPS as recorded by the SCADA system. Since the RWPS flow meter is located downstream from the WPCP's potable water addition point, its readings include potable water (if any) added at that location. Since potable water additions are also metered, these readings are subtracted from the RWPS flowmeter readings to determine the net recycled water deliveries listed in Attachment C-1.

Potable water can also be added at the San Lucar Storage Tank. These volumes are listed in Attachment C-2, along with monthly summary data from Table C-1. A review of Attachment C-2 shows a total of 197 million gallons of recycled water plus 85 million gallons of potable water were delivered, based on WPCP and San Lucar Pump Station flowmeter readings for water entering the distribution system. The resulting total of 282 million gallons agrees very closely with the 284 million gallons in deliveries as determined from customer billing data as reported in Section 2.3.<sup>8</sup>

Recycled water deliveries listed in Attachment C-1 do not include recycled water used for process purposes at the WPCP (Plant No. 3 water). This usage is tabulated in final column in Attachment C-2. During 2008, a total of 290 million gallons was used internally at the WPCP for process purposes.

## **2.6 Tabulation of User Site Inspections Conducted by the Producer (C.2.e)**

Results from user site inspections conducted by the Field Services staff are documented on the *City Inspectors Monitoring Report*. A listing of site inspections conducted in 2008 is included in Attachment D.

## **2.7 Summary of Effluent Violations Related to Water Recycled Water Use, Violations Found During Inspection of Reuse Sites, Corrective Actions Taken, and any Changes to, or Revoking of User Authorizations by the Producer. (C.2.f)**

### **2.7.1 Production & Distribution**

No violations related to production of recycled water were observed during the year.

### **2.7.2 Use Sites**

No violations related to use of recycled water were observed during the year.

## **2.8 Update Regarding Current and Future Development of the Recycled Water Program (C.2.g)**

### **2.8.1 Facilities Completed During 2009**

No recycled water production or distribution facilities were completed in 2009.

---

<sup>8</sup> Some difference between the two totals is expected, since different types of flow meters are used, and user billing periods do not exactly match the calendar months.

## **2.8.2 Current Facilities Construction**

No recycled water production or distribution facilities are currently under construction.

## **2.8.3 Recycled Water Hook-ups Planned for Year 2010**

Based on historic experience, the program expects there will be approximately five additional recycled water hook-ups in 2010.

## **2.8.4 Required Reports and Technical Documents**

The City submitted the 2008 Recycled Water Annual Report on March 15, 2009.

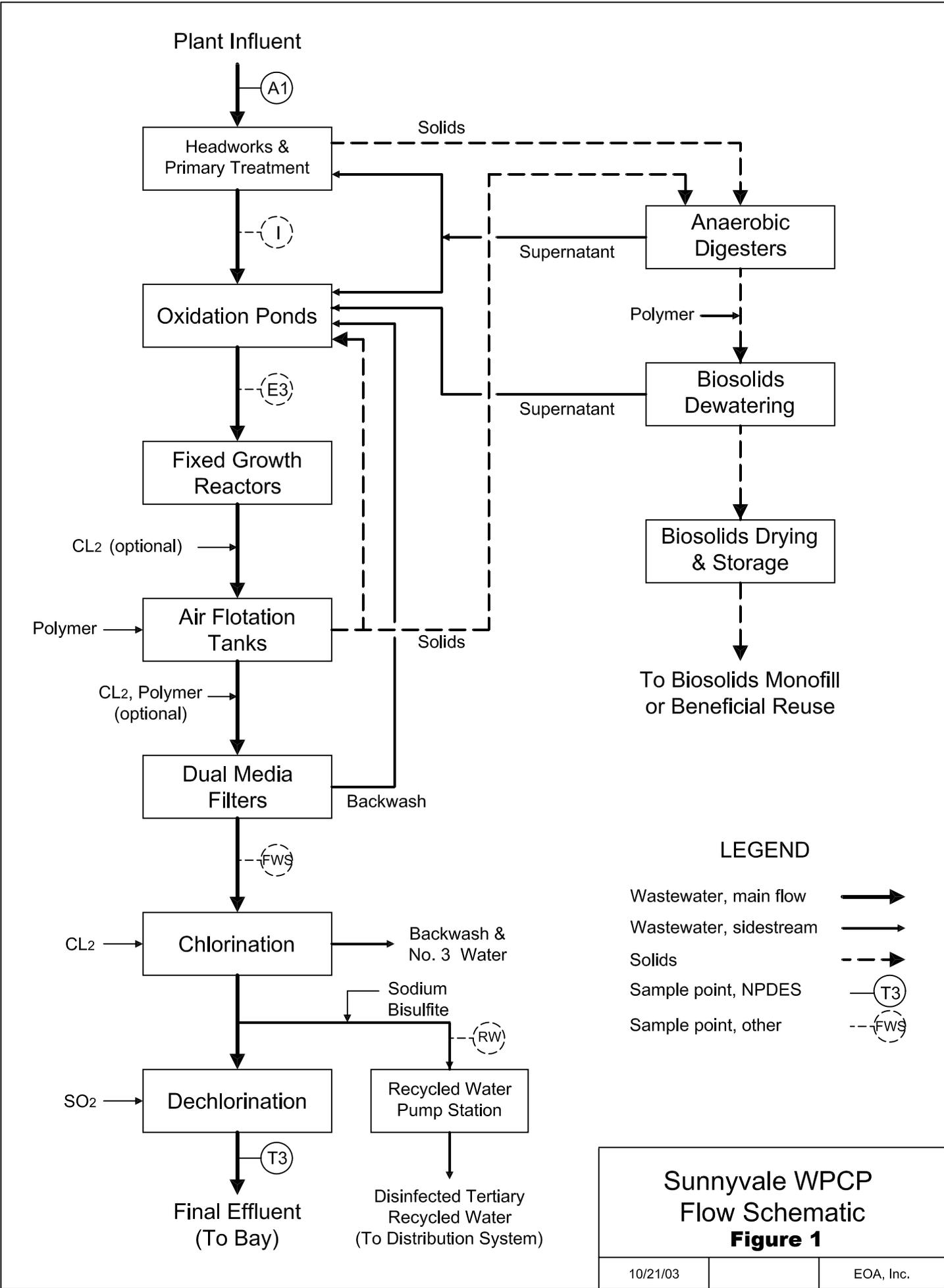
## **2.9 Progress and Evaluation of Any Special Studies or Projects Being Undertaken Related to the Program (C.2.h)**

The City is current developing a hydraulic model of the recycled water system for use in evaluating system performance under current and possible future conditions. In addition, the City continues to track State and regional developments and participates in regional and national water recycling associations. The following potential opportunities for expanding the City's recycled water program have been identified:

SCVWD Partnering The City and SCVWD have had an agreement since 1997 whereby SCVWD provides to the City an annual financial incentive payment of \$115 per acre-foot of eligible recycled water delivered to local users. City and SCVWD staff have agreed to explore long-term, mutually beneficial partnerships that may take the form of more progressive and active forms of collaboration than passive financial reimbursements.

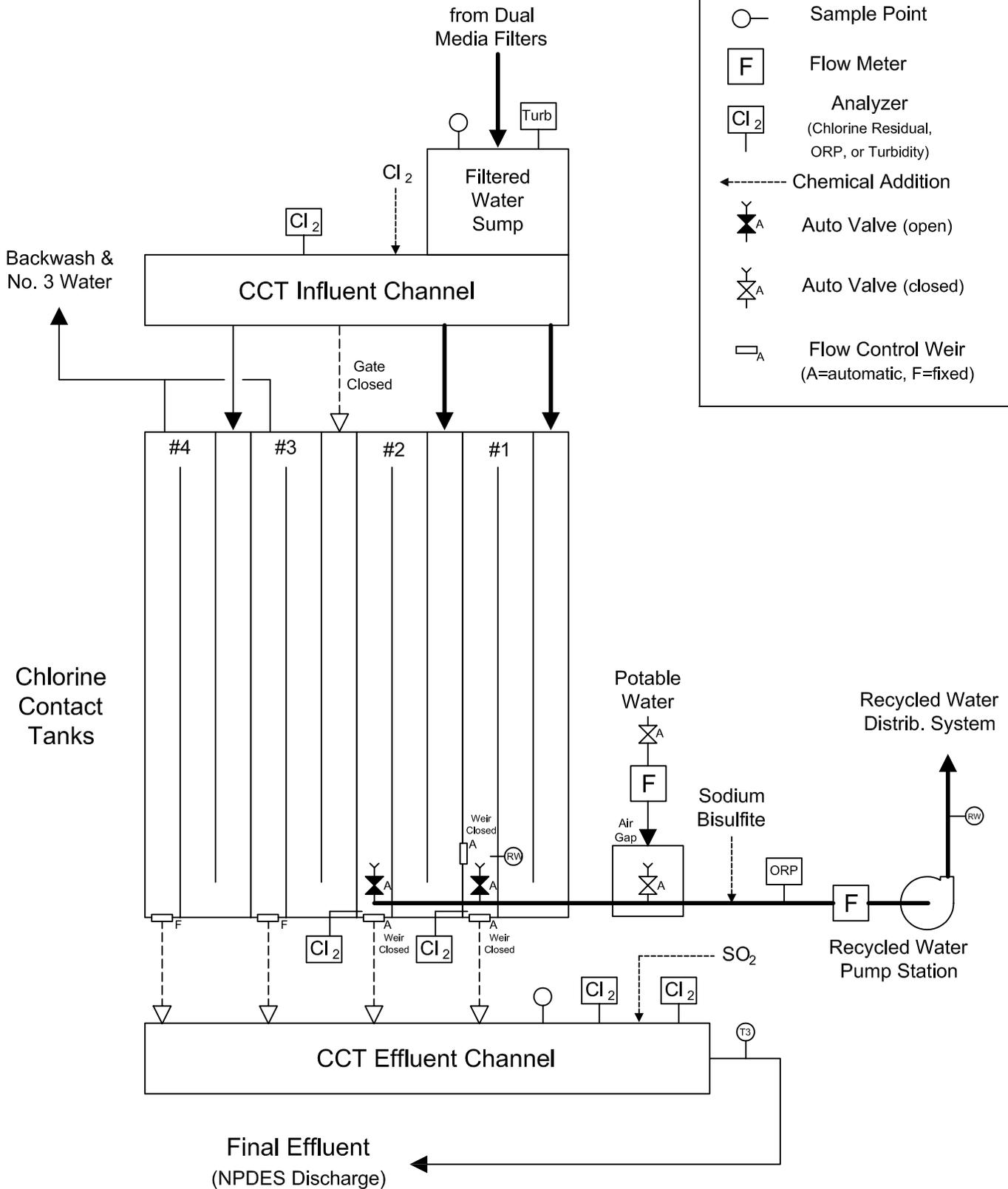
NASA Ames Proposed Development New development is proposed to be constructed at NASA Ames. Palo Alto/Mountain View may provide recycled water service to the westerly portion of that development. The City could potentially provide service to the easterly portion.

Facilities Planning Grant The SWRCB Water Recycling Funding Program operates a Water Recycling Facilities Planning Grant Program. Matching grants are provided for facilities planning studies to determine the feasibility of using recycled water to offset the use of fresh/potable water from state and/or local supplies. This represents a potential funding source for the City to update its Recycled Water Master Plan and to evaluate in more detail the feasibility and cost of extending the recycled water distribution system.



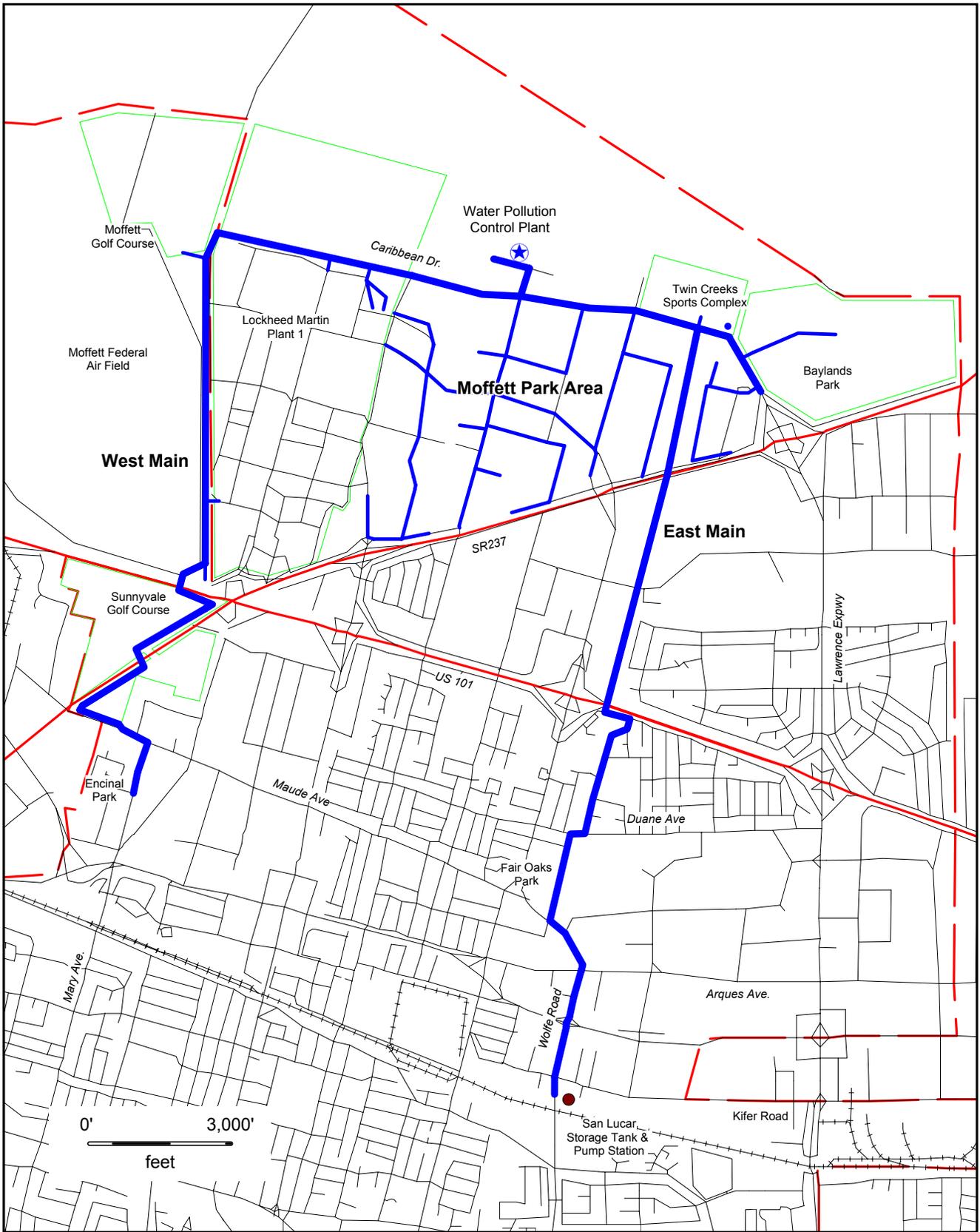
**LEGEND**

-  Sample Point
-  Flow Meter
-  Analyzer  
(Chlorine Residual, ORP, or Turbidity)
-  Chemical Addition
-  Auto Valve (open)
-  Auto Valve (closed)
-  Flow Control Weir  
(A=automatic, F=fixed)



Note: NPDES discharge is normally zero during recycled water production.

**Figure 2**  
Recycled Water Production Schematic  
Production Mode 3



	<b>Recycled Water Distribution System</b> City of Sunnyvale Water Recycling Program	<b>Legend</b> Existing Main Lines  Existing Secondary Lines 	Figure No. 3
			EOA, Inc.
			March 2001

**Attachment A**  
**Recycled Water Quality Report**

**City of Sunnyvale  
Recycled Water Quality Report**

<b>Anions</b>	<b>1/15/2009</b>	<b>3/10/09</b>	<b>4/1/2009</b>	<b>5/5/2009</b>	<b>6/3/2009</b>	<b>7/7/2009</b>	<b>8/10/2009</b>	<b>9/13/2009</b>	<b>10/21/2009</b>	<b>11/11/09</b>	<b>12/22/2009</b>
<b>Chloride (mg/L)</b>	357	295	301	350	332	329	310	329	323	321	272
(meq/L)	10.06	8.31	8.48	9.85	9.36	9.27	8.74	9.26	9.08	9.04	7.67
<b>Bicarbonate (mg/l)</b>	100	130	134	106	144	140	164	160	91	92	72
(meq/L)	1.64	2.13	2.20	1.74	2.36	2.30	2.69	2.62	1.49	1.51	1.18
<b>Sulfate (mg/L)</b>	109	95	96	101	89	78	60	78	54	79	70
(meq/L)	2.27	1.98	1.99	2.10	1.84	1.62	1.25	1.62	1.13	1.64	1.45
<b>Nitrate (mg/L)</b>	22	19	21	21	24	16	9	16	15	24	21
(meq/L)	0.35	0.31	0.34	0.34	0.38	0.25	0.15	0.25	0.25	0.39	0.34
<b>Phosphate (mg/l)</b>	3.7	4.9	3.5	4.8	5.5	5.3	5.1	5.8	4.6	5.6	3.3
(meq/l)	0.12	0.15	0.11	0.15	0.17	0.17	0.16	0.18	0.15	0.18	0.10
<b>Sum of Anions (meq/l)</b>	<b>14.3</b>	<b>12.9</b>	<b>13.0</b>	<b>14.2</b>	<b>14.0</b>	<b>13.6</b>	<b>13.0</b>	<b>13.9</b>	<b>12.1</b>	<b>12.8</b>	<b>10.7</b>
<b>Cations</b>											
<b>Calcium (mg/L)</b>	63	59	61	64	64	66	51	53	51	53	48
(meq/L)	3.13	2.93	3.05	3.21	3.20	3.29	2.57	2.65	2.55	2.65	2.40
<b>Magnesium (mg/l)</b>	45	44	41	44	39	44	38	40	42	40	33
(meq/L)	3.73	3.64	3.40	3.64	3.25	3.64	3.17	3.33	3.50	3.33	2.75
<b>Sodium (mg/L)</b>	232	174	180	225	214	198	190	176	200	208	197
(meq/L)	10.09	7.57	7.83	9.76	9.28	8.61	8.24	7.64	8.69	9.06	8.54
<b>Sum of Cations (meq/l)</b>	<b>16.9</b>	<b>14.1</b>	<b>14.3</b>	<b>16.6</b>	<b>15.7</b>	<b>15.5</b>	<b>14.0</b>	<b>13.6</b>	<b>14.7</b>	<b>15.0</b>	<b>13.7</b>
<b>Quality Parameters</b>											
TDS, mg/l	1,034	833	846	1,021	1,002	944		949		967	880
Conductivity, dS/m	1.70	1.50	1.54	1.72	1.70	1.69	1.59	1.47	1.58	1.65	1.43
Hardness, mg/l as CaCO <sub>3</sub>	340	326	320	340	320	344	284	296	300	296	256
Alkalinity, mg/l as CaCO <sub>3</sub>	100	130	134	106	144	140	164	160	91	92	72
Salinity, g/l	1.0	0.9	0.8	0.9	0.9	0.8	0.8	0.7	0.8	0.7	0.7
Boron, mg/l	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4
Ammonia, mg/l *	5.5	14.9	2.4	2.4	1.2	0.6	0.3	0.7	1.3	3.1	3.2
pH, standard units	6.81	6.74	6.80	6.86	6.89	6.99	7.40	6.97	6.99	6.98	6.61
HCO <sub>3</sub> /Ca, ratio	0.52	0.73	0.72	0.54	0.74	0.70	1.05	0.99	0.59	0.57	0.49
SAR <sub>Na</sub>	5.72	4.32	4.56	5.57	5.47	4.91	4.90	4.48	5.02	5.30	5.27
SAR	5.45	4.18	4.36	5.28	5.17	4.62	4.87	4.42	5.00	5.24	5.32

\* Monthly average

**Attachment B-1**

**Listing of Recycled Water Use Sites and Water Usage**

### Attachment B-1. List of Recycled Water Use Sites with Water Usage

Acct (CID)	LID	Site Name	Address	Use	Permit Date	Monthly Usage												Total Usage <sup>2</sup> ccf/yr	Total Usage <sup>2</sup> mgal/yr	Adjusted RW Total <sup>2</sup> mgal/yr	Usage % of Total	Approx Acres Applied
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
<b>Parks</b>																						
99313	72092	Baylands Park	999 E. Caribbean Drive	irr,imp	05-08-06	8	115	0	0	0	0	914	468	450	201	23	77	2,256	1.7	1.18	40	
112059	73516	LMSSC Bldg, 156/Lmera	1111 Lockheed Way	irr	08-15-03	9	151	2	508	1139	1153	1747	1739	1563	989	585	1	9,586	7.2	5.00	4	
1099	770	Twin Creeks	969 Caribbean Drive	irr	04-02-09	5	450	25	515	2990	2974	4770	9889	3561	1787	539	221	27,726	20.7	14.48	21	
<b>Number of Sites =</b>												<b>3</b>	<b>Category Total Use</b>				<b>39,568</b>	<b>29.6</b>	<b>20.66</b>	<b>10.4%</b>	<b>65</b>	
<b>Golf Courses</b>																						
77719	48114	S'Vale Golf Course - irr	605 Macara Avenue	irr	03-11-09	960	1430	340	1550	5900	6695	2421	184	9175	10081	5131	2398	46,265				
99621	72374	S'Vale Golf Course- lake	605 Macara Avenue	irr,imp	03-11-09	0	0	0	0	2755	2339	2076	2495	1719	1259	1002	660	14,305				
113657	71092	Moffett Field Golf Course	m/s 19-1 Moffett Field	irr	02-18-09	0	0	0	0	10629	9730	11285	15605	14978	8425	2431	0	73,083				
<b>Number of Sites =</b>												<b>3</b>	<b>Category Total Use</b>				<b>133,653</b>	<b>100.0</b>	<b>69.78</b>	<b>35.3%</b>	<b>150</b>	
<b>Green Belts</b>																						
169	906	CalTrans Dist. 4	237 & 101 @ Manila Drive	irr	11-02-04	0	0	0	0	0	0	0	0	0	0	0	0	0				
113657	71090	City of Sunnyvale	5th Ave. Macon Road	irr	04-25-06	0	0	0	0	0	0	0	0	0	0	0	0	0				
98117	71160	City of Sunnyvale	0 x372 Caribbean Avenue	irr	12-03-08	0	0	0	0	0	0	0	0	0	0	0	0	0				
169	71038	CalTrans 237/Caribbean	999 Caribbean Drive - F	irr	09-06-04	0	0	0	0	0	0	0	0	0	0	0	0	0				
785	594	City of Sunnyvale-WPCP	1444 Borregas Avenue	irr	11-29-09	98	31	0	5	3	11	45	72	62	41	15	8	390				
169	72088	CalTrans 237/Maude	0 Maude Avenue	irr	09-06-04	0	0	0	0	0	0	0	0	0	0	0	0	0				
104849	73072	VTA / City of Sunnyvale	0 LRT34 @ 232 Java Drive	irr	01-05-10	0	0	0	0	5	14	0	20	0	12	0	0	51				
104849	73074	VTA / City of Sunnyvale	0 LRT35 @ 399 Java Drive	irr	01-05-10	0	0	0	0	5	12	26	0	13	0	0	0	56				
104849	73076	VTA / City of Sunnyvale	0 LRT36 @ Mathilda Avenue	irr	01-05-10	0	0	0	0	12	38	0	56	0	32	0	0	138				
104849	73570	VTA / City of Sunnyvale	0 LRT42 @ 813 11th Avenue	irr,oth	02-10-02	0	40	0	0	11	10	0	19	0	18	0	0	97				
104849	57780	City of Sunnyvale	0000 Caribbean Drive	irr	11-06-08	0	0	0	22	0	0	0	0	131	263	30	0	446				
104849	72868	City of Sunnyvale	0 NW Java / Crossman	irr	11-13-08	0	1	0	0	1	0	2	0	3	1	1	0	9				
104849	72870	City of Sunnyvale	0 SE Java / Crossman	irr	11-13-08	0	0	0	0	10	22	17	23	13	10	6	4	105				
<b>Number of Sites =</b>												<b>13</b>	<b>Category Total Use</b>				<b>1,292</b>	<b>0.97</b>	<b>0.67</b>	<b>0.3%</b>	<b>10</b>	
<b>Number of Active Sites =</b>												<b>9</b>										
<b>Schools - none</b>																						
<b>Other (Commercial/Industrial Irrigation sites)</b>																						
148659	112	De Guigne Ventures LLC	1250 Borregas Drive	irr	11-02-06	0	7	0	23	231	209	230	24	218	186	161	185	1,474				
165	134	AMB Value Added Fund	155 E. Moffett Park Drive	irr	04-09-09	25	248	87	572	908	864	1305	1577	1248	755	504	350	8,443				
171	144	Cilker Orchards	333-385 Moffett Park Drive	irr	03-07-03	30	71	23	134	258	205	342	332	291	254	161	119	2,220				
191	154	Moffett Park	1116 N. Mathilda Avenue	irr	05-19-09	12	29	96	128	67	80	477	2	1	1	1	0	894				
221	192	Supertex, inc	1235 Bordeaux Drive	irr	03-25-09	0	0	0	0	232	120	127	164	126	73	13	15	870				
147037	198	Headlands Corp.	1215 Bordeaux Drive	irr	03-29-07	4	37	15	40	60	85	116	180	155	69	41	185	987				
107531	202	Juniper Networks	1195 Bordeaux Drive	irr	12-11-06	13	36	22	52	89	81	91	106	94	66	60	38	748				
247	218	Cogswell College	1175 Bordeaux Drive	irr	05-13-08	35	41	15	102	108	127	152	209	220	158	47	31	1,245				
257	224	Bordeaux Properties	1153 Bordeaux Drive	irr	09-04-08	15	27	4	60	85	0	0	0	0	0	0	0	191				
261	228	Professional Exhibits & Graphics	1188 Bordeaux Drive	irr	11-28-06	10	44	0	27	82	115	127	151	161	113	152	110	1,092				
128687	236	Dean Fisher Proerties LLC	1190 Bordeaux Drive	irr	11-01-06	0	0	1456	41	90	88	102	94	96	89	0	0	2,056				
145641	248	RGB Networks Inc.	390 Java Drive	irr	11-08-07	12	61	0	48	91	93	214	213	204	130	70	28	1,164				
146819	256	Java Drive LLC	350 Java Drive	irr	06-25-08	70	32	15	90	270	360	662	536	404	218	117	64	2,838				
107531	266	Juniper Networks	150-160 Gibraltar Court	irr	03-29-08	6	36	5	48	109	126	146	164	155	66	41	19	921				
78879	288	AMCC Switching & Net.	201-215 Moffett Park Drive	irr	09-28-06	0	0	0	241	623	610	873	1048	825	407	5	236	4,868				
139963	292	MCERA	1190 Borregas Avenue	irr	04-28-06	11	20	6	35	51	69	89	90	70	42	37	14	534				
150401	302	Various Inc	220 Humboldt Court	irr	04-09-08	15	58	23	51	106	116	127	133	128	88	85	39	969				
132431	310	Modified Polymer Comp.	242-252 Humboldt Court	irr	10-20-09	21	24	3	32	73	134	147	147	151	113	38	59	942				
120361	324	Cloudshield Tech.	212 Gibraltar Drive	irr	12-08-09	7	36	0	51	125	113	127	168	138	49	50	30	894				
140505	352	Hanover Properties	1213 Innsbruck Drive	irr	02-16-07	1	4	3	104	217	182	212	235	228	174	114	74	1,548				

### Attachment B-1. List of Recycled Water Use Sites with Water Usage

Acct (CID)	LID	Site Name	Address	Permit Use	Permit Date	Monthly Usage (cft)												Total Usage <sup>2</sup> ccf/yr	Total Usage <sup>2</sup> mgal/yr	Adjusted RW Total <sup>2</sup> mgal/yr	Usage % of Total	Approx Acres Applied
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
146203	358	Arden Realty LP	1221 Crossman Avenue	irr	08-04-06	314	448	263	694	1475	1357	1707	2104	1762	989	817	192	12,122				
144745	378	Moffett Plaza	250-270 Java Drive	irr	09-29-09	0	1	0	1	19	25	58	80	34	20	1	0	239				
555	396	Jo-EI Associates	1200 Crossman Avenue - A	irr	08-08-06	8	65	9	30	79	76	99	158	132	121	66	56	899				
122521	408	CTT, Inc.	241 Java Drive	irr	08-04-06	8	49	9	45	92	85	94	103	90	80	62	41	758				
143183	416	SCM Properties LLC	111 W. Java Drive	irr	02-19-09	10	154	98	77	194	248	271	403	316	173	188	135	2,267				
117281	424	Infinera	169 Java Drive	irr	05-06-09	7	18	0	18	76	94	94	107	100	40	26	15	595				
149319	430	TMG / Moffett LLC	399 Java Avenue	irr	01-22-03	0	0	0	0	0	0	0	0	0	0	0	0	0				
150609	466	California Bavarian	1380 Bordeaux Drive	irr	06-11-08	52	34	0	119	0	290	0	0	0	0	0	0	495				
118811	506	Spirent Communications	1325 Borregas Avenue - A	irr	09-29-06	80	101	80	314	502	650	902	636	266	188	164	191	4,074				
117281	518	Infinera	140 Caspian Court	irr	05-06-09	0	79	21	38	136	199	232	279	268	128	88	44	1,512				
143293	526	Hines VAF NO CAL Prop	207 Java Drive	irr	09-06-04	1	40	43	45	93	61	100	102	89	67	56	35	732				
152845	528	Morgan Hill Properties	222 Caspian Drive	irr	08-01-06	0	0	0	99	147	35	148	161	111	40	60	11	812				
143205	532	Dollinger Rock Assoc	246 Caspian Drive	irr	02-09-08	0	6	0	20	76	0	187	85	68	33	20	25	520				
101419	546	Network App/Devcon	1330 Geneva Drive	irr	02-16-07	5	129	18	207	339	688	590	563	447	197	106	55	3,344				
107717	556	ARM Physical IP	310 Caribbean Drive	irr	05-13-08	117	24	15	43	68	75	165	191	174	114	60	13	1,059				
147727	580	Arden Realty LP	1362-1370 Borregas Avenue	irr	08-19-09	2	22	46	95	121	139	142	99	184	93	90	88	1,121				
141535	590	Business Ventures	1390-1398 Borregas Avenue	irr	04-30-09	1	10	0	22	92	131	148	171	165	118	91	67	1,016				
883	622	Modular Devices	1312 Crossman Avenue	irr	03-08-08	4	36	19	172	239	233	214	244	257	164	102	14	1,698				
132065	624	Aruba Networks	1322 Crossman Avenue	irr	03-22-08	69	21	-20	75	161	188	108	171	163	94	65	-6	1,089				
147727	632	Arden Realty LP	1344 Crossman Avenue	irr	11-21-06	5	114	44	193	204	472	311	410	385	169	316	87	2,710				
101419	644	Network Appliance	1347 Crossman Avenue	irr	02-16-07	0	23	24	7	0	0	0	0	0	0	0	0	54				
101419	666	AMB Property	1299 Orleans Drive	irr	07-01-09	143	61	98	90	158	127	141	166	126	99	40	13	1,262				
146203	686	Arden Realty LP	1320 Orleans Drive	irr	05-09-06	36	83	40	52	134	113	125	142	137	93	141	47	1,143				
883	692	Molecular Devices	1330 Orleans Drive	irr	04-05-07	0	0	0	0	203	59	136	170	135	102	9	814					
101419	702	Network Appliance	603-641 Baltic Way	irr	01-20-09	6	70	28	159	443	226	395	560	455	291	179	67	2,879				
101419	710	Network Appliance	1366 Crossman Avenue	irr	03-11-03	8	86	14	191	418	390	373	408	355	177	146	28	2,594				
146203	720	Arden Realty LP	904-918 Caribbean Drive	irr	08-03-06	61	42	85	57	162	119	165	273	254	156	83	21	1,478				
110425	728	Finisar	1399 Moffett Park Drive	irr,C,F	05-12-06	20	226	1	237	394	498	601	688	537	260	351	134	3,947				
1073	754	LTOC Bldg. 597	1309 Moffett Park Drive	irr	03-16-09	2	58	18	50	208	181	196	229	220	141	222	74	1,599				
146203	764	Arden Realty LP	1308 Moffett Park Drive	irr	06-23-06	69	267	104	129	431	363	497	570	574	339	291	117	3,751				
141535	57068	Business Ventures	1221 Innsbruck Drive	irr	10-13-06	1	5	0	8	31	40	59	144	126	66	47	42	569				
101419	57594	Network App/Devcon *	1350 Geneva Drive	irr	Hold	0	0	0	0	0	0	0	0	0	0	0	0	0				
150693	57596	I & G Caribbean, Inc	1320-1324 Chesapeake Terr.	irr	06-14-09	54	81	47	118	300	293	343	387	339	212	184	45	2,403				
134487	57602	Country Inns & Suites	1300 Chesapeake Terrace	irr	06-14-09	77	82	79	62	90	73	46	90	73	59	75	41	847				
150693	58562	I & G Caribbean, Inc	1315-1317 Chesapeake Terr.	irr	06-14-09	0	15	5	91	240	248	301	359	290	144	80	1	1,774				
150693	58568	I & G Caribbean, Inc	1325-1327 Chesapeake Terr.	irr	06-14-09	0	14	4	52	212	236	269	284	225	129	74	0	1,499				
101419	59102	Network Appliance	495 Java Drive	irr	02-16-07	1	71	6	579	949	856	879	1005	907	501	171	76	6,001				
139855	69992	Lowe's Hardware	811 E Arques Avenue	irr	04-28-06	4	3	81	88	98	450	618	852	835	749	481	323	4,582				
101419	70008	Network Appliance	1345 Crossman Drive	irr	01-16-07	0	8	0	52	203	233	169	227	200	110	67	81	1,350				
113657	71088	Moffett Field / City of S.Vale	0 Moffett Field 1	irr	11-03-98	0	0	122	0	0	0	0	0	0	0	0	0	122				
113657	71090	Moffett Field / City of S.Vale	0 Moffett Field 2	irr	01-12-05	0	0	0	0	0	0	0	0	0	0	0	0	0				
113657	71092	Moffett Field / City of S.Vale	0 Moffett Field 3	irr	09-23-08	0	0	0	0	0	0	0	0	0	0	26	-26	0				
98989	71848	Homestead Village	1255 Orleans Drive	irr	11-22-06	145	0	0	88	270	192	214	409	272	160	111	23	1,884				
325	71952	Lockheed-Martin	151 Gibraltar Court	irr	03-05-08	0	0	0	4	64	58	36	73	76	57	51	34	453				
150261	72090	Moffett Towers Lot #1 Lsc	0 Enterprise Way	irr	08-30-04	22	97	10	113	288	203	406	420	116	333	174	60	2,242				
149319	72280	TMG / Moffett LLC	1333 Bordeaux Drive	irr	01-22-03	0	0	0	0	0	0	0	0	0	0	0	0	0				
913	72288	AMB Property	225-257 Humboldt Court	irr	02-25-09	31	113	47	87	128	145	162	168	163	87	57	35	1,223				
109459	72382	Kalil Jenab	141 Caspian Court	irr	06-03-07	24	48	8	60	80	92	115	129	127	115	79	40	917				
101419	72384	Network Appliance	1275 Crossman Drive	irr	02-16-07	28	24	1	73	337	229	319	518	455	205	66	39	2,294				
99685	72438	Lockheed-Martin #159	1st & E Street	irr	08-30-04	55	59	26	149	987	1297	1836	1772	1795	1451	726	41	10,194				
150609	72768	California Bavarian	1376 Bordeaux Drive	irr	06-11-08	8	49	0	150	0	215	0	0	0	0	0	0	422				



**Attachment B-2**

**Summary of Recycled Water Usage by Reuse Application Category**

## ATTACHMENT B-2

### CITY OF SUNNYVALE SUMMARY OF RECYCLED WATER USAGE BY REUSE APPLICATION CATEGORY

Calendar Year: 2009

Reuse Application Category <sup>(4)</sup>	No. of Active Sites	Approx. Area Applied (acres)	Amount Distributed <sup>(8)</sup> (MG)	% of Total Reuse Flow
<b>Landscape Irrigation</b>				
<b>Parks<sup>(5)</sup></b>	<b>3</b>	<b>65</b>	<b>20.7</b>	<b>10.4</b>
<b>Golf Courses</b>	<b>3</b>	<b>150</b>	<b>69.8</b>	<b>35.3</b>
<b>Green Belts<sup>(7)</sup></b>	<b>9</b>	<b>10</b>	<b>0.67</b>	<b>0.3</b>
<b>Schools</b>	-	-	-	-
<b>Other<sup>(6)</sup></b>	<b>86</b>	<b>180</b>	<b>103.5</b>	<b>52.3</b>
<b>Agriculture</b>				
<b>Vineyards</b>	-	-	-	-
<b>Other</b>	-	-	-	-
<b>Industrial<sup>(1)</sup></b>				
<b>Cooling</b>	-	-	-	-
<b>Other</b>	<b>1</b>	-	<b>2.2</b>	<b>1.1</b>
<b>Environmental Enhancement<sup>(2)</sup></b>	-	-	-	-
<b>Dual Plumbing<sup>(3)</sup></b>	<b>2</b>	-	<b>1.2</b>	<b>0.6</b>
<b>TOTAL</b>	<b>105</b>	<b>405</b>	<b>198</b>	<b>100</b>

**Notes:**

1. Industrial processes receiving recycled water include cooling, construction applications, soil compaction and dust control, etc. (Note: RW is supplied to one cooling tower site as a backup supply, but no water is actually used).
2. Environmental Enhancement includes wildlife habitat, wetland/marsh applications, etc.
3. As defined in Title 22
4. Two sites are listed under two categories because of multiple uses.
5. Parks category includes county park, large sports complex, and baseball fields.
6. Primarily comprised of landscaping at commercial/industrial office buildings. Some use in fountains.
7. Consists of freeway interchange and street median sites.
8. Based on annual total of readings from site water meters, reduced by 29.8% to account for average system-wide potable water fraction.

**Attachment C-1**

**Tabulation of Producer's Daily Recycled Water Deliveries**

### Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons)

Day	January			February			March		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered <sup>1</sup> (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	0	214,560	0	377,280	1,440	375,840	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	302,400	419,040	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	342,720	18,720	324,000
10	0	0	0	0	0	0	1,085,760	0	1,085,760
11	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0
14	4,320	0	4,320	0	0	0	214,560	0	214,560
15	1,252,800	0	1,252,800	0	0	0	211,680	1,440	210,240
16	260,640	1,440	259,200	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	1,520,640	0	1,520,640
20	1,147,680	0	1,147,680	0	0	0	162,720	0	162,720
21	305,280	0	305,280	0	0	0	226,080	1,440	224,640
22	213,120	1,440	211,680	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	1,326,240	0	1,326,240
26	0	0	0	0	0	0	227,520	1,440	226,080
27	0	0	0	0	0	0	475,200	2,880	472,320
28	1,196,640	0	1,196,640	0	0	0	76,320	0	76,320
29	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	216,000	1,440	214,560
31	0	0	0	0	0	0	653,760	300,960	352,800
<b>Total gal.</b>	<b>4,380,480</b>	<b>217,440</b>	<b>4,377,600</b>	<b>679,680</b>	<b>420,480</b>	<b>375,840</b>	<b>6,739,200</b>	<b>328,320</b>	<b>6,410,880</b>
<b>Average (gal/day)</b>	<b>273,780</b>	<b>13,590</b>	<b>273,600</b>	<b>21,925</b>	<b>13,564</b>	<b>12,124</b>	<b>224,640</b>	<b>10,944</b>	<b>213,696</b>

**Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons), continued**

Day	April			May			June		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	1,712,160	0	1,712,160	398,880	0	398,880	1,920,960	354,240	1,566,720
2	70,560	34,560	36,000	1,359,360	0	1,359,360	299,520	1,440	298,080
3	0	7,200	0	218,880	0	218,880	1,085,760	106,560	979,200
4	1,241,280	1,440	1,239,840	537,120	0	537,120	1,794,240	0	1,794,240
5	231,840	0	231,840	2,036,160	0	2,036,160	498,240	1,440	496,800
6	290,880	1,440	289,440	210,240	0	210,240	1,798,560	0	1,798,560
7	1,598,400	0	1,598,400	1,640,160	20,160	1,620,000	185,760	92,160	93,600
8	223,200	0	223,200	423,360	20,160	403,200	1,428,480	1,916,640	0
9	0	0	0	2,057,760	0	2,057,760	227,520	583,200	0
10	72,000	0	72,000	34,560	1,440	33,120	1,532,160	0	1,532,160
11	1,082,880	0	1,082,880	1,779,840	15,840	1,764,000	735,840	2,880	732,960
12	180,000	0	180,000	874,080	1,440	872,640	1,441,440	1,440	1,440,000
13	252,000	1,440	250,560	1,736,640	0	1,736,640	512,640	1,440	511,200
14	1,605,600	0	1,605,600	1,382,400	4,320	1,378,080	1,704,960	0	1,704,960
15	391,680	0	391,680	429,120	1,440	427,680	488,160	0	488,160
16	263,520	324,000	0	1,589,760	0	1,589,760	1,706,400	0	1,706,400
17	51,840	38,880	12,960	717,120	1,440	715,680	745,920	1,440	744,480
18	18,720	14,400	4,320	1,792,800	0	1,792,800	1,608,480	0	1,608,480
19	342,720	0	342,720	626,400	23,040	603,360	1,388,160	2,880	1,385,280
20	1,499,040	0	1,499,040	2,197,440	11,520	2,185,920	672,480	1,440	671,040
21	256,320	20,160	236,160	961,920	1,440	960,480	1,654,560	0	1,654,560
22	1,825,920	15,840	1,810,080	1,127,520	0	1,127,520	360,000	0	360,000
23	519,840	0	519,840	1,562,400	0	1,562,400	2,168,640	7,200	2,161,440
24	1,576,800	0	1,576,800	825,120	0	825,120	25,920	1,440	24,480
25	264,960	0	264,960	1,657,440	0	1,657,440	0	0	0
26	1,301,760	15,840	1,285,920	695,520	1,440	694,080	0	0	0
27	253,440	8,640	244,800	1,784,160	2,880	1,781,280	0	263,520	0
28	1,461,600	1,440	1,460,160	1,596,960	18,720	1,578,240	665,280	2,880	662,400
29	380,160	1,440	378,720	640,800	57,600	583,200	1,487,520	0	1,487,520
30	1,586,880	2,880	1,584,000	2,129,760	2,880	2,126,880	732,960	33,120	699,840
31				499,680	0	499,680			
<b>Total gal.</b>	<b>20,556,000</b>	<b>489,600</b>	<b>20,134,080</b>	<b>35,523,360</b>	<b>185,760</b>	<b>35,337,600</b>	<b>28,870,560</b>	<b>3,375,360</b>	<b>26,602,560</b>
<b>Average (gal/day)</b>	<b>663,097</b>	<b>15,794</b>	<b>649,486</b>	<b>1,145,915</b>	<b>5,992</b>	<b>1,139,923</b>	<b>931,308</b>	<b>108,883</b>	<b>858,147</b>

### Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons), continued

Day	July			August			September		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	1,556,640	0	1,556,640	1,968,480	146,880	1,821,600	482,400	155,520	326,880
2	491,040	0	491,040	668,160	0	668,160	24,480	27,360	0
3	1,837,440	0	1,837,440	1,870,560	0	1,870,560	131,040	60,480	70,560
4	673,920	1,440	672,480	168,480	0	168,480	593,280	158,400	434,880
5	1,523,520	0	1,523,520	637,920	0	637,920	1,111,680	70,560	1,041,120
6	671,040	11,520	659,520	1,657,440	0	1,657,440	668,160	437,760	230,400
7	1,761,120	1,440	1,759,680	240,480	1,440	239,040	0	0	0
8	568,800	10,080	558,720	2,054,880	0	2,054,880	0	0	0
9	2,050,560	0	2,050,560	770,400	0	770,400	142,560	201,600	0
10	93,600	0	93,600	1,748,160	0	1,748,160	31,680	249,120	0
11	0	0	0	213,120	0	213,120	136,800	23,040	113,760
12	0	0	0	720,000	0	720,000	627,840	2,880	624,960
13	0	0	0	1,638,720	0	1,638,720	1,647,360	0	1,647,360
14	0	204,480	0	851,040	0	851,040	263,520	0	263,520
15	403,200	70,560	332,640	1,624,320	0	1,624,320	250,560	17,280	233,280
16	2,016,000	0	2,016,000	259,200	4,320	254,880	1,745,280	10,080	1,735,200
17	656,640	1,440	655,200	1,805,760	0	1,805,760	763,200	1,440	761,760
18	2,188,800	0	2,188,800	620,640	17,280	603,360	1,490,400	1,440	1,488,960
19	344,160	2,880	341,280	1,893,600	1,440	1,892,160	748,800	1,440	747,360
20	2,131,200	0	2,131,200	715,680	1,440	714,240	1,797,120	0	1,797,120
21	612,000	0	612,000	1,801,440	0	1,801,440	8,640	1,440	7,200
22	1,558,080	0	1,558,080	835,200	1,440	833,760	0	0	0
23	1,758,240	1,440	1,756,800	1,765,440	1,440	1,764,000	0	0	0
24	1,620,000	2,880	1,617,120	213,120	1,440	211,680	0	0	0
25	636,480	0	636,480	0	0	0	0	0	0
26	1,969,920	0	1,969,920	0	182,880	0	131,040	0	131,040
27	633,600	36,000	597,600	0	253,440	0	1,353,600	10,080	1,343,520
28	1,634,400	0	1,634,400	714,240	162,720	551,520	165,600	0	165,600
29	194,400	0	194,400	187,200	234,720	0	1,673,280	2,880	1,670,400
30	2,033,280	0	2,033,280	1,440	1,440	0	398,880	1,440	397,440
31	881,280	1,440	879,840	8,640	12,960	0			
<b>Total gal.</b>	<b>32,499,360</b>	<b>345,600</b>	<b>32,358,240</b>	<b>27,653,760</b>	<b>1,025,280</b>	<b>27,116,640</b>	<b>16,387,200</b>	<b>1,434,240</b>	<b>15,232,320</b>
<b>Average (gal/day)</b>	<b>1,048,366</b>	<b>11,148</b>	<b>1,043,814</b>	<b>892,057</b>	<b>33,074</b>	<b>874,730</b>	<b>528,619</b>	<b>46,266</b>	<b>491,365</b>

**Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons), continued**

Day	October			November			December		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	1,542,240	12,960	1,529,280	1,195,200	0	1,195,200	351,360	437,760	0
2	299,520	1,440	298,080	30,240	0	30,240	0	0	0
3	1,658,880	5,760	1,653,120	371,520	0	371,520	0	0	0
4	468,000	4,320	463,680	947,520	0	947,520	1,049,760	1,440	1,048,320
5	1,245,600	5,760	1,239,840	390,240	0	390,240	0	0	0
6	403,200	1,440	401,760	167,040	0	167,040	230,400	0	230,400
7	570,240	1,440	568,800	799,200	0	799,200	169,920	1,440	168,480
8	1,427,040	2,880	1,424,160	0	0	0	0	0	0
9	244,800	0	244,800	361,440	1,440	360,000	89,280	0	89,280
10	1,162,080	2,880	1,159,200	260,640	0	260,640	858,240	34,560	823,680
11	495,360	328,320	167,040	865,440	0	865,440	0	0	0
12	0	0	0	315,360	0	315,360	0	0	0
13	0	0	0	97,920	0	97,920	0	0	0
14	0	0	0	11,520	0	11,520	60,480	0	60,480
15	1,036,800	37,440	999,360	1,023,840	1,440	1,022,400	336,960	2,880	334,080
16	0	0	0	87,840	0	87,840	0	0	0
17	226,080	1,440	224,640	358,560	47,520	311,040	0	0	0
18	156,960	1,440	155,520	0	279,360	0	0	0	0
19	0	0	0	0	210,240	0	0	0	0
20	348,480	0	348,480	15,840	0	15,840	0	0	0
21	620,640	1,440	619,200	957,600	0	957,600	0	0	0
22	0	0	0	0	0	0	941,760	1,440	940,320
23	169,920	0	169,920	37,440	8,640	28,800	0	0	0
24	522,720	0	522,720	325,440	0	325,440	0	0	0
25	806,400	0	806,400	0	0	0	0	0	0
26	0	1,440	0	1,440	0	1,440	0	0	0
27	388,800	0	388,800	1,193,760	0	1,193,760	194,400	0	194,400
28	60,480	0	60,480	0	0	0	208,800	0	208,800
29	960,480	0	960,480	132,480	0	132,480	0	0	0
30	254,880	0	254,880	295,200	1,440	293,760	0	4,320	0
31	331,200	0	331,200				0	0	0
<b>Total gal.</b>	<b>15,400,800</b>	<b>410,400</b>	<b>14,991,840</b>	<b>10,242,720</b>	<b>550,080</b>	<b>10,182,240</b>	<b>4,491,360</b>	<b>483,840</b>	<b>4,098,240</b>
<b>Average (gal/day)</b>	<b>496,800</b>	<b>13,239</b>	<b>483,608</b>	<b>330,410</b>	<b>17,745</b>	<b>328,459</b>	<b>144,883</b>	<b>15,608</b>	<b>132,201</b>

**Attachment C-2**

**Summary of Recycled Water Deliveries and Use at WPCP**

**Attachment C-2**  
**Summary of Recycled Water Deliveries and Use at WPCP**

<b>Month</b>	<b>Net Recycled Water Delivered from WPCP (gallons)</b>	<b>Potable Water Added at WPCP (gallons)</b>	<b>Potable Water Added at San Lucar Storage Tank (gallons)</b>	<b>WPCP Internal Usage<sup>1</sup> (gallons)</b>
Jan-08	4,377,600	217,400	2,390,400	28,729,400
Feb-08	375,800	420,500	1,775,500	27,231,800
Mar-08	6,410,900	328,300	2,597,800	32,598,700
Apr-08	20,134,100	489,600	4,537,400	19,160,600
May-08	35,337,600	185,800	815,040	25,460,600
Jun-08	26,602,600	3,375,400	12,181,000	22,713,100
Jul-08	32,358,200	345,600	12,421,440	23,379,800
Aug-08	27,116,600	1,025,300	15,891,800	23,535,400
Sep-08	15,232,300	1,434,200	20,288,200	24,000,500
Oct-08	14,991,800	410,400	1,573,900	23,603,000
Nov-08	10,182,200	550,100	1,418,400	20,315,500
Dec-08	4,098,200	483,800	0	19,633,000
<b>Total</b>	<b>197,217,900</b>	<b>9,266,400</b>	<b>75,890,880</b>	<b>290,361,400</b>

1. Diverted for WPCP process use prior to recycled water pump station. Recycled water used for irrigation at the WPCP comes from the recycled water distribution system and is included in the tabulation of user sites (Attachment B-1).

2. All values rounded to the nearest 100 gallons

## **Attachment D**

### **Tabulation of City Inspections of Use Areas**

### Attachment D: Tabulation of City Inspections of Use Areas

ACCT. #	LID #	COMPANY NAME	LOCATION	PERMIT DATE
<b>PERMITS RENEWED</b>				
98993	71856	Raisch Products	600 Caribbean Avenue	01/12/09
101419	702	Network Appliance	603-641 Baltic Way	01/20/09
77719	48114	Sunnyvale Golf Course - Irrigation	605 Macara Avenue	03/11/09
99621	72374	Sunnyvale Golf Course - Lake	605 Macara Avenue	03/11/09
913	72288	AMB Property	225-257 Humboldt Court	03/17/09
156	134	AMB Valve Added Fund	155 Moffett Park Drive	03/31/09
1099	770	Twin Creeks	969 Caribbean Drive	04/02/09
117281	424	Infinera	169 Java Drive	04/06/09
1073	754	LTOC Bldg. 597	1309 Moffett Park Drive	04/09/09
117281	518	Infinera	140 Caspian Court	05/06/09
883	692	Molecular Devices	1330 Orleans Drive	05/14/09
191	154	Moffett Park	1116 N. Mathilda Avenue	05/19/09
109459	72382	Kalil Jenab	141 Caspian Court	06/03/09
150693	58562	I & G Caribbean, Inc.	1315-1517 Chesapeake Terrace	06/14/09
150693	57596	I & G Caribbean, Inc.	1320-1324 Chesapeake Terrace	06/14/09
134487	57602	Country Inns & Suites	1300 Chesapeake Terrace	06/14/09
150609	462	California Bavarian	1376-1380 Bordeaux Drive	06/17/09
101419	666	AMB Property	1299 Orleans Drive	07/01/09
148407	70300	Green Team/Zanker	301 Carl Road	08/04/09
114763	73518	Moffett Park Drive. LLC	801-811-11TH Avenue	08/09/09
147727	580	Arden Realty LP	1362-1370 Borregas Avenue	08/19/09
144745	378	Moffett Plaza	250-270 Java Drive	09/29/09
132431	310	Modified Polymer Company	242-252 Humbolt Court	10/20/09
141535	590	Business Ventures	1444 Borregas Avenue	11/19/09
120361	324	Hanover Properties	212 Gibraltar Drive	12/08/09
<b>NEW CONNECTIONS</b>				
113657	71092	Moffett Field Golf Course	m/s 19-1 Moffett Field Golf Course	02/18/09
221	192	Supertex, Inc.	1235 Bordeaux Drive	03/25/09
191	154	Moffett Park	1116 N. Mathilda Avenue	05/19/09
112059	75344	Lockheed-Martin	1111 Lockheed Way	05/13/09
149407	75348	Moffett Towers Lot #3	1100-1180 Enterprise Way	05/13/09
112059	75140	Lockheed-Martin Bldg. 176 & 178	0 First Street	07/22/09



## **City of Sunnyvale**

# **2010 Recycled Water Annual Report**

**March 15, 2011**

Prepared by:





March 15, 2011

Mr. Bruce Wolfe  
Executive Officer  
San Francisco Bay Regional Water Quality Control Board  
1515 Clay Street, Suite 1400  
Oakland, CA 94612

Attn: Water Reuse Program Manager

Subject: Transmittal of 2010 Annual Self Monitoring Report  
for City of Sunnyvale Water Recycling Program

Dear Mr. Wolfe:

The attached annual Self Monitoring Report for the City of Sunnyvale's Water Recycling Program is submitted in accordance with Order No. 94-069, with revised Self-Monitoring Program consisting of Attachments C and D from Order 96-011.

I certify under penalty of perjury that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Lorrie B. Gervin", is written over a horizontal line.

Lorrie B. Gervin, P.E.  
Environmental Division Manager

cc: Marvin Rose, Director of Public Works  
Jim Craig, Superintendent of Field Services

**ADDRESS ALL MAIL TO: P.O. BOX 3707 SUNNYVALE, CALIFORNIA 94088-3707  
TDD (408) 730-7501**

Printed on Recycled Paper

## TABLE OF CONTENTS

Introduction .....	1
1.0 Recycled Water Program Overview .....	1
1.1 Recycled Water Production System.....	1
1.2 Distribution System .....	2
1.3 Recycled Water Use Site Retrofit and Permitting .....	3
1.4 Program Administration.....	3
2.0 Reporting Requirements - Order 94-069.....	4
2.1 Certification (C.2) .....	4
2.2 Tabulation of SMP Recycled Water Analysis (C.2.a) .....	4
2.3 Tabular Summary of Recycled Water Use (C.2.b) .....	5
2.4 List of New Authorized Recycled Water Users (C.2.c).....	5
2.5 Summary of Total Daily Recycled Water Delivered by the Producer (C.2.d) .....	5
2.6 Tabulation of User Site Inspections Conducted by the Producer (C.2.e) .....	6
2.7 Summary of Effluent Violations Related to Water Recycled Water Use, Violations Found During Inspection of Reuse Sites, Corrective Actions Taken, and any Changes to, or Revoking of User Authorizations by the Producer. (C.2.f).....	6
2.7.1 Production & Distribution .....	6
2.7.2 Use Sites .....	6
2.8 Update Regarding Current and Future Development of the Recycled Water Program (C.2.g) .....	6
2.8.1 Facilities Completed During 2010.....	6
2.8.2 Current Facilities Construction.....	6
2.8.3 Recycled Water Hook-ups Planned for Year 2011 .....	7
2.8.4 Required Reports and Technical Documents .....	7
2.9 Progress and Evaluation of Any Special Studies or Projects Being Undertaken Related to the Program (C.2.h) .....	7

## LIST OF FIGURES

Figure 1.	Sunnyvale WPCP - Overall Plant Flow Schematic
Figure 2.	Sunnyvale WPCP - Recycled Water Production Schematic
Figure 3.	Recycled Water Distribution System

## ATTACHMENTS

Attachment A	Recycled Water Quality Report
Attachment B-1	List of Recycled Water Use Sites and Water Usage
Attachment B-2	Summary of Recycled Water Use by Reuse Application Category
Attachment C-1	Tabulation of Producer's Daily Recycled Water Deliveries
Attachment C-2	Summary of Recycled Water Deliveries and Use at WPCP
Attachment D	List of City Inspections of Use Areas



# City of Sunnyvale 2010 Recycled Water Annual Report

## Introduction

This report is submitted pursuant to the annual reporting requirements of Order 94-069, “Water Reclamation Requirements for the City of Sunnyvale Water Pollution Control Plant”. The report is prepared in accordance with the requirements of the Order’s Self Monitoring Program (revised December 28, 1999 to consist of the Self-Monitoring Program from the General Water Reuse Order 96-011).

## 1.0 Recycled Water Program Overview

This section provides an overview of Sunnyvale’s Water Reclamation Program, with information on production, distribution, user permitting, and program administration.

### 1.1 Recycled Water Production System

Wastewater treatment facilities at the Sunnyvale Water Pollution Control Plant (WPCP) include influent grinders, preaeration/grit removal, primary sedimentation, oxidation ponds, fixed growth reactor nitrification, dissolved air flotation with coagulation, dual media filtration, chlorination and dechlorination. An overall flow schematic of the treatment process is presented in Figure 1. Recycled water produced at the WPCP for external delivery meets California Department of Public Health criteria for disinfected tertiary recycled water, as specified the California Code of Regulations (CCR) Title 22 and Order 94-069. The applicable water quality requirements are:

- CBOD (5-day, 20°C): 20 mg/L daily maximum, 10 mg/L monthly average
- Dissolved Oxygen: 1.0 mg/L minimum
- Dissolved Sulfide: 0.1 mg/L maximum
- Turbidity: <2 NTU daily average, <5 NTU 95% of the time, <10 NTU at all times
- C\*T: 450 mg/L-min., with T ≥ 90 minutes (modal basis)
- Total Coliform: < 2.2 MPN/100 ml (7-day median);  
<23 MPN/100 ml (may be exceeded by one sample in 30 day period)  
<240 MPN/100 ml (single sample maximum)

Figure 2 is a more detailed view of facilities for recycled water production at the chlorine contact tanks (CCTs). During periods of recycled water production, the entire WPCP tertiary plant flow is treated to produce a filtered effluent containing less than 2 NTU turbidity, and is chlorinated to a level needed to ensure compliance with the total coliform and C\*T limits. In the current operating mode (Mode 3), recycled water that has met turbidity and C\*T requirements is drawn from CCT #1 and CCT #2 into the recycled water pump station (RWPS), where it is partially dechlorinated using sodium bisulfite, metered, and pumped into the distribution system. The balance of the WPCP tertiary plant flow, if any, passes through CCT #3 or CCT #4 and overflows into the chlorine contact tank effluent channel. This surplus flow is fully dechlorinated with sulfur dioxide (SO<sub>2</sub>) and

discharged to Moffett Channel under the City's NPDES permit. Under current operational procedures, the tertiary plant flow is reduced during periods of recycled water production to match recycled water demand, so that the flow discharged to Moffett Channel is at or near zero.

Compliance with recycled water turbidity and C\*T limits is ensured by an automatic control system that continuously monitors turbidity (pre- and post-filtration), chlorine residual, flow through the chlorine contact tanks and equipment status. All of these conditions must be met in order to initiate deliveries into the recycled water distribution system. This is indicated by a "Ready" status at the Supervisory Control and Data Acquisition (SCADA) system operator's terminal. If, during recycled water production, turbidity requirements are not met, the control system prevents the water from entering the recycled water chlorine contact tanks by automatically closing influent gate(s). The control system responds to a failure to meet C\*T by closing the valves on the RWPS intake line, causing water to overflow into the CCT effluent channel and be discharged through the NPDES outfall.<sup>1</sup> If these conditions, or other conditions related to equipment status are not met, the control system generates a "Fail", issues an alarm, and prevents delivery of water to the Recycled Water Pump Station. Full compliance with all turbidity, C\*T and equipment status conditions and operator intervention is required to re-establish a "Ready" condition.

As indicated above, the entire WPCP tertiary plant flow is treated to a turbidity of less than 2 NTU during periods of recycled water production. The elevated polymer dose applied to the AFTs that is needed to achieve this level of treatment increases WPCP operating costs. In addition, much higher chlorine dosage rates are required to meet Title 22 C\*T requirements than for normal (NPDES) discharge. For these reasons, recycled water is produced on an "as needed" basis to meet instantaneous demand and/or to fill the San Lucar storage tank. The storage tank is then used as the source of supply to the distribution system. During periods of low demand or when conditions constrain recycled water production (and the storage tank is empty), potable water may be used to supplement the recycled water supply as described below.

Recycled water used internally at the WPCP is either disinfected tertiary quality as described above or disinfected secondary-2.2 MPN drawn from the end of the second channel of the CCT.

## 1.2 Distribution System

The RWPS is located immediately adjacent to the CCTs. The RWPS has six pumps that operate on the basis of distribution system demand, as determined by pressure in the distribution line. The RWPS's nominal maximum pumping capacity is approximately 8 mgd (5600 gpm). Actual maximum pumping rates are limited by the pressure sustaining valve at the San Lucar storage tank to approximately 4500 gpm. In operating Mode 3, recycled water is drawn from the ends of CCT #1 and CCT#2 through automatic valves on the 24-inch RWPS intake line. The flow is metered, and sodium bisulfite is added to reduce chlorine residual from 5-10 mg/L to 2-3 mg/L into the distribution system. Potable water can be introduced into the RWPS intake line through an air gap at the potable water box, as shown in Figure 2. When activated, a level switch in the potable water box opens an automatic valve on the potable supply line. Because this potable water addition

---

<sup>1</sup> The control system's response to a C\*T failure in Mode 1 (no longer used) is different than described here.

point is upstream from the RWPS flowmeter, the RWPS flowmeter readings are later adjusted when calculating net recycled water production.

The recycled water distribution system consists of approximately 43,300 feet of 12-inch through 36-inch transmission mains and 34,000 feet of 8-inch distribution lines. Areas served by the system are shown in Figure 3.

The San Lucar Recycled Water Pumping and Storage facilities are located at the southern terminus of the “east main” near Wolfe Road and Kifer Road (see Fig 3). The facility provides about 1.5 million gallons of “working” storage capacity, and a nominal maximum pumping capacity (from the tank) of approximately 8 mgd (5600 gpm). The facility can serve as the sole source of recycled water during periods of low to moderate demand, or can be operated in parallel with the WPCP during periods of peak demand. Potable water can also be added to the storage tank via an air gap. Potable water added to the San Lucar storage Tank is also metered.

The Department of Public Works Field Services Division is responsible for operation and maintenance of the City’s potable water and recycled water distribution systems. The Field Services Division has several AWWA-certified Cross Connection Control Specialists on staff.

### **1.3 Recycled Water Use Site Retrofit and Permitting**

The Field Services Division is responsible for overseeing site retrofits, cross-connection testing, customer permitting, and site inspections.<sup>2</sup> A Recycled Water Permit database is available to track both current and prospective use sites. The database includes site information (name, address, contact person(s), designated recycled water supervisor, projected water use, etc), and a system for tracking the progress of the retrofit/permitting effort and for generating summary reports. A separate database can be used to record detailed information regarding facility retrofit requirements. Paper forms are also available to provide all recordkeeping functions of both databases. Upon completion of all retrofit requirements and cross-connection testing, Field Services staff provide a connection to the system and issue a Permit to Use Recycled Water.

The City’s *Administrative Procedures for Program Staff* contains forms to document the process and for ongoing inspections of use areas by users or City staff. Site records are maintained as hard copies in the individual site files and/or electronically in the two database applications.

### **1.4 Program Administration**

The Recycled Water Program is administered through the City’s Department of Public Works. The WPCP is responsible for recycled water production, water quality analysis, and operation of the WPCP’s recycled water pump station. The Field Services Division is responsible for distribution, operation of the San Lucar facilities, user permitting/monitoring, and overall program coordination. EOA, Inc. provides technical support to the program for operational and regulatory issues.

---

<sup>2</sup> At the start of the Recycled Water program, a majority of the reuse sites involved conversion (retrofit) of existing facilities for recycled water use, rather than construction of new facilities, and the permitting process was initially tailored to retrofit applications. In recent years, the trend has been toward permitting of newly constructed sites.

Written guidance for the Program is provided in the City's *Recycled Water Program Manual*, which includes the City's *Rules and Regulations for Recycled Water Users* and *Administrative Procedures for Program Staff*.

## 2.0 Reporting Requirements - Order 94-069

This section provides the specific information called for under the annual reporting requirements of Reuse Order 94-069. (Since December 1999, Section C of the Regional Water Board's General Reuse Order 96-011 Self Monitoring Program constitutes the Self Monitoring Program for Order 94-069). The applicable paragraph numbers from the SMP are indicated in parenthesis.

### 2.1 Certification (C.2)

A transmittal letter with certification is bound into the front of this report.

### 2.2 Tabulation of SMP Recycled Water Analysis (C.2.a)

Sampling and analyses specified in Order 96-001 Table 1 are as follows:

- Flow Rate (gallons/day): continuous monitoring, daily reporting. Measured at the Recycled Water Pump Station flow meter (must be corrected for potable water – see Section 2.5).
- Flow Rate (gallons/day): at reuse areas, calculated from water billing records
- Total coliform (MPN/100 ml): grab samples, daily, or at frequency specified in NPDES permit (3x/week).
- Turbidity (NTU): continuous monitoring, daily reporting; collected at the WPCP's filtered water sump immediately prior to chlorination.
- Dissolved Oxygen (mg/L): 3x/week grab samples
- Dissolved Sulfides (mg/L): 3x/week grab samples (if DO<1 mg/L)

Data for RWPS flow and pressure, potable water flow, turbidity, chlorine residual, and C\*T are recorded continuously by the WPCP's SCADA system. A similar SCADA system at the SLPS monitors recycled and potable water flows, pressure, and tank level. The SLPS SCADA system can be controlled locally, from the WPCP, or from the Field Services Division office. Trend plots of "real time" and historic data can be viewed at the SCADA terminal.<sup>3</sup> The SCADA system also generates daily and monthly compliance summary reports that list the daily average values for flow, turbidity and chlorine residual for periods of recycled water production.

During periods of recycled water production, samples for total coliform and dissolved oxygen were collected from the recycled water sample point for analysis at the WPCP laboratory.<sup>4</sup> Samples were not analyzed for sulfides, because the dissolved oxygen never dropped below 1 mg/L. Turbidity values are tracked in the WPCP's SCADA system, and reported on daily and monthly "Title 22"

<sup>3</sup> Turbidity measurements from analyzers located before and after the dual media filters are also recorded on circular charts in the Tertiary Control Room.

<sup>4</sup> The sample point is located on the Recycled Water Pump Station piping.

SCADA reports. A review of the sample data shows that all recycled water delivered met the water quality requirements listed in Section 1.1. In accordance with the Water Board's January 2005 letter to General Water Reuse Order Permittees (File No. 2170.00 (RJC)), tabulations of daily recycled water quality data are not submitted with this report, but maintained on-site at the WPCP.

Attachment A is a summary of recycled water quality data not required under the SMP, but which may be of interest to recycled water users. The water quality data in Attachment A does not reflect the addition of potable water (typically 15%-20% on an average annual basis, see Table C-2). Thus levels of certain constituents (e.g. TDS) are somewhat lower than indicated in Attachment A.

### **2.3 Tabular Summary of Recycled Water Use (C.2.b)**

Attachment B-1 is a listing of recycled water use sites, with water usage shown for each site by billing period and total for the year. The customer billing data indicates an annual total usage of 293 million gallons for all sites. Flow records indicate that in 2010, 13.8% of this total was potable water added to the distribution system at the WPCP or the San Lucar Storage Tank.<sup>5</sup> Thus, the net recycled water usage for 2010 based on billing data is approximately 253 million gallons.<sup>6</sup> An independent measurement of recycled water usage can be made on the basis of flows delivered into the system, as described in Section 2.5.

Attachment B-2 summarizes recycled water usage data from Attachment B-1. The data in Attachment B-2 is organized in accordance with the format specified in the above-referenced January 2005 Water Board letter to General Water Reuse Order Permittees.

### **2.4 List of New Authorized Recycled Water Users (C.2.c)**

Two new recycled water use sites were connected and permitted 2010. Twenty-four existing sites had permits renewed in 2010. The sites are listed in Attachment B-1 and D.

### **2.5 Summary of Total Daily Recycled Water Delivered by the Producer (C.2.d)**

A listing of daily recycled water deliveries is presented in Attachment C-1. Monthly totals are shown at the bottom of each column, and are summarized in Attachment C-2. Attachment C-1 is derived from the daily cumulative flow measured at the RWPS as recorded by the SCADA system. Since the RWPS flow meter is located downstream from the WPCP's potable water addition point, its readings include potable water (if any) added at that location. Since potable water additions are also metered, these readings are subtracted from the RWPS flowmeter readings to determine the net recycled water deliveries listed in Attachment C-1.

Potable water can also be added at the San Lucar Storage Tank. These volumes are listed in Attachment C-2, along with monthly summary data from Table C-1. A review of Attachment C-2

---

<sup>5</sup> Potable water may be added for a variety of reasons, such as when production of recycled water is not possible or practical, or during periods of very low demand.

<sup>6</sup> This value does not include recycled water used internally at the WPCP for process purposes. See Section 2.5

shows a total of 283 million gallons of recycled water plus 45 million gallons of potable water were delivered, based on RWPS and San Lucar Pump Station flowmeter readings for water entering the distribution system. The resulting total of 328 million gallons agrees reasonably well with the 293 million gallons in deliveries as determined from customer billing data as reported in Section 2.3.<sup>7</sup>

Recycled water deliveries listed in Attachment C-1 do not include recycled water used for process purposes at the WPCP (i.e. Plant No. 3 water). This usage is tabulated in final column in Attachment C-2. During 2010, a total of 214 million gallons was used internally at the WPCP for process purposes.

## **2.6 Tabulation of User Site Inspections Conducted by the Producer (C.2.e)**

Results from user site inspections conducted by the Field Services staff are documented on the *City Inspectors Monitoring Report*. A listing of site inspections conducted in 2010 is included in Attachment D.

## **2.7 Summary of Effluent Violations Related to Water Recycled Water Use, Violations Found During Inspection of Reuse Sites, Corrective Actions Taken, and any Changes to, or Revoking of User Authorizations by the Producer. (C.2.f)**

### **2.7.1 Production & Distribution**

No violations related to production of recycled water were observed during the year.

### **2.7.2 Use Sites**

No violations related to use of recycled water were observed during the year.

## **2.8 Update Regarding Current and Future Development of the Recycled Water Program (C.2.g)**

### **2.8.1 Facilities Completed During 2010**

No recycled water production or distribution facilities were completed in 2010.

### **2.8.2 Current Facilities Construction**

No recycled water production or distribution facilities are currently under construction.

---

<sup>7</sup> Some difference between the two totals is expected, since different types of flow meters are used and user billing periods do not exactly match the calendar months.

### **2.8.3 Recycled Water Hook-ups Planned for Year 2011**

Based on historic experience, the program expects there will be between two and five new recycled water hook-ups in 2011.

### **2.8.4 Required Reports and Technical Documents**

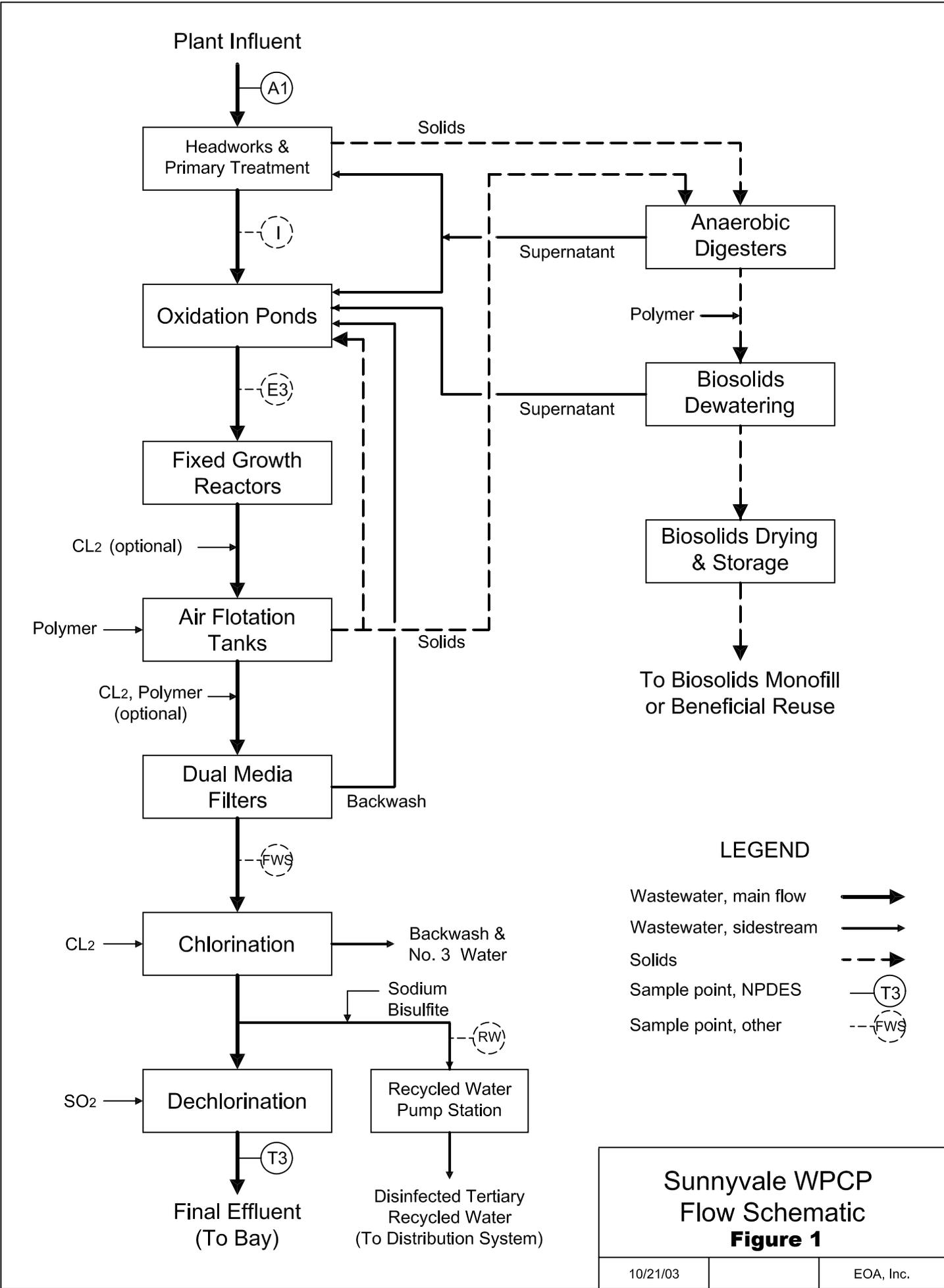
The City submitted the 2009 Recycled Water Annual Report on March 15, 2010.

## **2.9 Progress and Evaluation of Any Special Studies or Projects Being Undertaken Related to the Program (C.2.h)**

Hydraulic Model In 2010, the City completed the development of a hydraulic model of the recycled water system for use in evaluating system performance under current and possible future conditions.

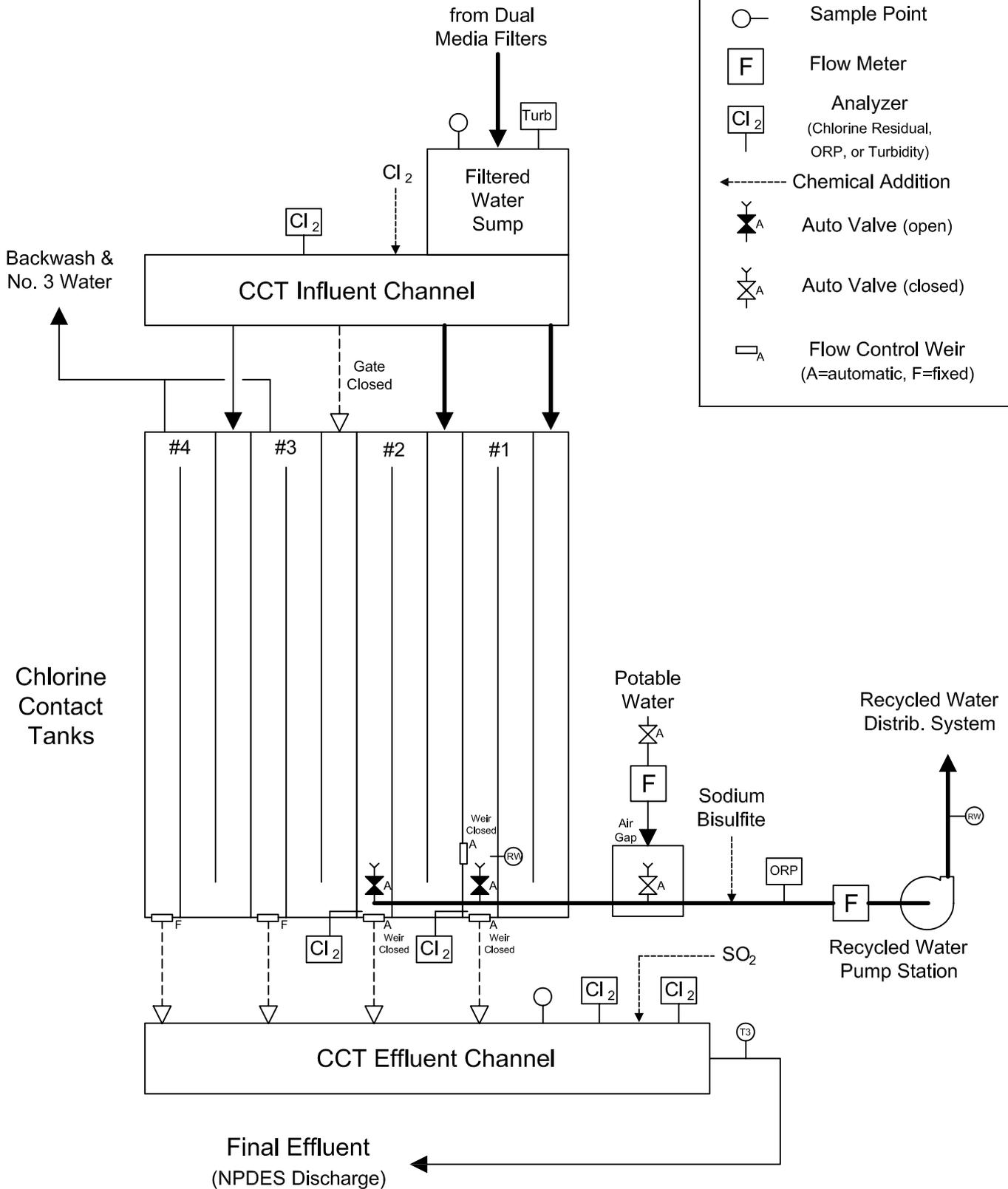
Recycled Water Master Plan Update In 2011, the City expects to initiate a project to update its 2000 Recycled Water Master Plan. The project will explore the potential for expanded use of recycled water within the City (for both irrigation and other approved uses) and the associated water quality requirements. It will also examine storage options, engineering standards, marketing issues, potential for interconnects with other recycled water agencies, and other related issues.

Regional Developments The City continues to track State and regional developments and participates in regional and national water recycling associations.



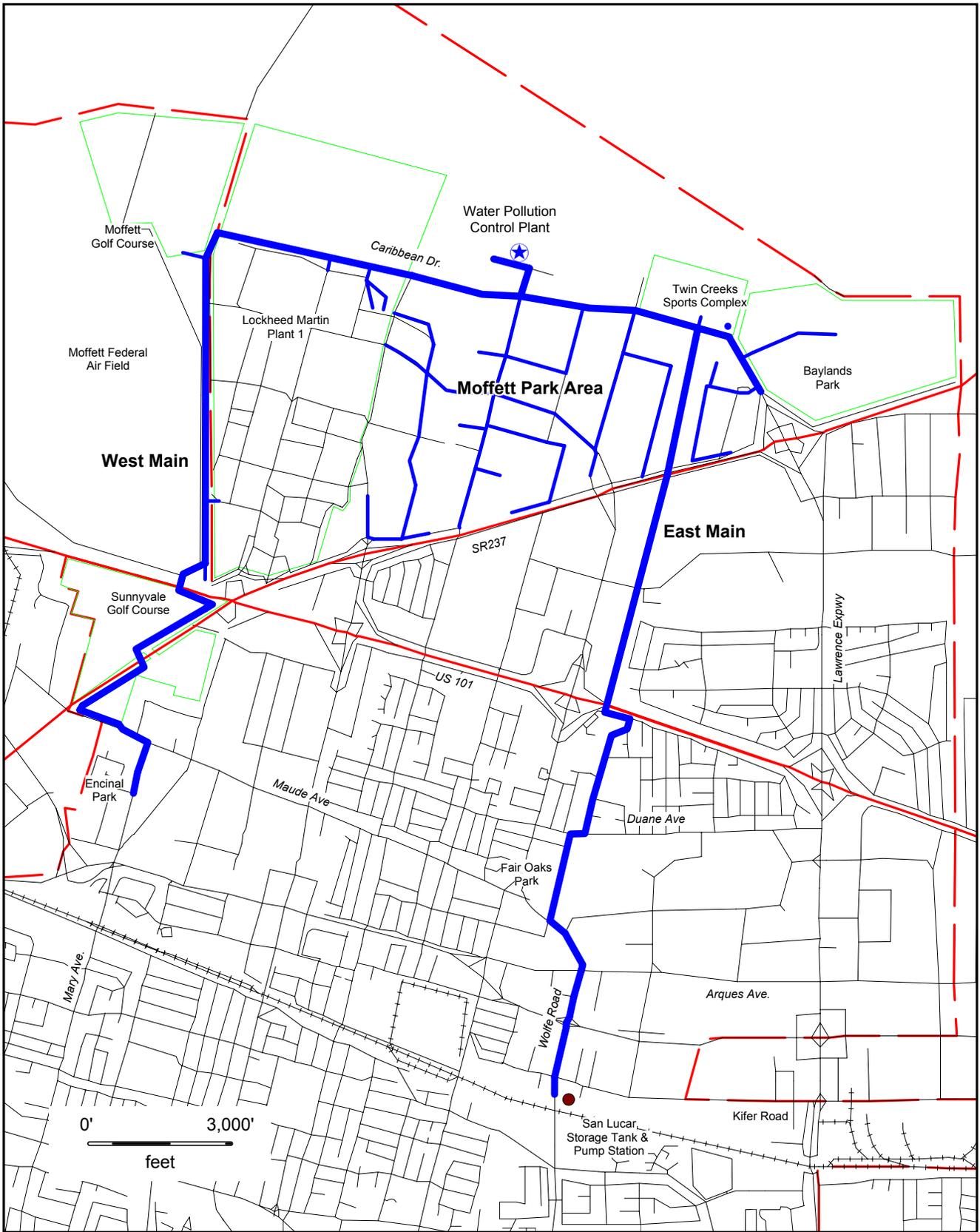
**LEGEND**

-  Sample Point
-  Flow Meter
-  Analyzer  
(Chlorine Residual, ORP, or Turbidity)
-  Chemical Addition
-  Auto Valve (open)
-  Auto Valve (closed)
-  Flow Control Weir  
(A=automatic, F=fixed)



Note: NPDES discharge is normally zero during recycled water production.

**Figure 2**  
Recycled Water Production Schematic  
Production Mode 3



	<b>Recycled Water Distribution System</b> City of Sunnyvale Water Recycling Program	<b>Legend</b> Existing Main Lines  Existing Secondary Lines 	Figure No. 3
			EOA, Inc.
			March 2001

**Attachment A**  
**Recycled Water Quality Report**

**City of Sunnyvale  
Recycled Water Quality Report**

<b>Anions</b>	1/9/2010	2/10/10	3/6/2010	4/10/10	5/3/2010	6/21/2010	7/18/2010	8/8/10	9/1/10	10/10/2010	11/26/2010	12/9/2010
<b>Chloride (mg/L)</b>	279	314	285	262	280	308	320	304	255	246	212	222
(meq/L)	7.85	8.86	8.03	7.38	7.89	8.68	9.01	8.56	7.18	6.93	5.97	6.25
<b>Bicarbonate (mg/l)</b>	78	106	116	118	164	176	228	170	157	166	146	124
(meq/L)	1.28	1.74	1.90	1.93	2.69	2.89	3.74	2.79	2.57	2.72	2.39	2.03
<b>Sulfate (mg/L)</b>	76	107	96	89	89	93	95	80	84	87	86	81
(meq/L)	1.59	2.23	1.99	1.85	1.86	1.95	1.98	1.67	1.74	1.81	1.79	1.69
<b>Nitrate (mg/L)</b>	20	24	19	16	10	8	14	12	9	9	11	21
(meq/L)	0.32	0.38	0.31	0.26	0.15	0.13	0.22	0.20	0.14	0.14	0.18	0.33
<b>Phosphate (mg/l)</b>	3.9	4.4	3.1	3.4	2.8	2.6	2.6	5.5	4.8	4.4	4.7	3.6
(meq/l)	0.12	0.14	0.10	0.11	0.09	0.08	0.08	0.17	0.15	0.14	0.15	0.11
<b>Sum of Anions (meq/l)</b>	<b>11.2</b>	<b>13.3</b>	<b>12.2</b>	<b>11.5</b>	<b>12.6</b>	<b>13.7</b>	<b>15.0</b>	<b>13.4</b>	<b>11.8</b>	<b>11.7</b>	<b>10.5</b>	<b>10.4</b>

**Cations**

<b>Calcium (mg/L)</b>	48	58	54	79	64	54	51	48	50	50	53	48
(meq/L)	2.41	2.90	2.72	3.93	3.21	2.72	2.55	2.42	2.49	2.49	2.65	2.41
<b>Magnesium (mg/l)</b>	36	16	43	30	31	39	44	37	35	35	31	33
(meq/L)	3.00	1.33	3.57	2.51	2.59	3.25	3.64	3.08	2.92	2.92	2.59	2.75
<b>Sodium (mg/L)</b>	189	182	179	184	187	208	199	207	188	171	156	155
(meq/L)	8.20	7.90	7.78	8.00	8.11	9.04	8.65	9.00	8.17	7.43	6.78	6.74
<b>Sum of Cations (meq/l)</b>	<b>13.6</b>	<b>12.1</b>	<b>14.1</b>	<b>14.4</b>	<b>13.9</b>	<b>15.0</b>	<b>14.8</b>	<b>14.5</b>	<b>13.6</b>	<b>12.8</b>	<b>12.0</b>	<b>11.9</b>

**Quality Parameters**

TDS, mg/l	811	867	844	913	900	974	1,038	874	839	869	588	709
Conductivity, dS/m	1.45	1.48	1.53	1.45	1.39	1.58	1.13	1.47	1.37	1.41	1.26	1.25
Hardness, mg/l as CaCO <sub>3</sub>	268	208	324	320	340	295	308	272	268	268	260	256
Alkalinity, mg/l as CaCO <sub>3</sub>	78	106	116	118	164	176	228	170	157	166	146	124
Salinity, g/l	0.7	0.7	0.8	0.7	0.7	0.8	0.6	0.7	0.7	0.7	0.6	0.6
Boron, mg/l	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Ammonia, mg/l *	2.6	1.5	1.3	1.3	0.2	0.4	0.2	0.2	0.1	0.1	0.8	1.1
pH, standard units	6.64	6.83	6.97	6.88	7.08	7.21	7.16	7.2	7.24	6.94	7.22	7.00
HCO <sub>3</sub> /Ca, ratio	0.53	0.60	0.70	0.49	0.84	1.06	1.47	1.15	1.04	1.10	0.90	0.85
SAR <sub>Na</sub>	4.95	5.71	4.47	5.06	5.08	5.33	4.94	5.39	4.97	4.52	4.25	4.16
SAR	4.99	5.43	4.39	4.46	4.77	5.23	4.92	5.43	4.97	4.52	4.19	4.20

\* Monthly average

Note: Values listed are for recycled water "as produced", and do not reflect effects of potable water addition, which typically constitutes 10% - 20% of delivered water on an annual average basis.

**Attachment B-1**

**Listing of Recycled Water Use Sites and Water Usage**

### Attachment B-1. List of Recycled Water Use Sites with Water Usage - 2010

Acct (CID)	LID	Site Name	Address	Use	Original Permit	Current Permit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Usage <sup>2</sup> ccf/yr	Total Usage <sup>2</sup> mgal/yr	RW Total <sup>2</sup> mgal/yr	Usage % of Total	Approx Acres Applied		
<b>Parks</b>																									
99313	72092	Baylands Park	999 E. Caribbean Drive	irr,imp	05-08-06		0	1	1	5	241	401	385	314	319	88	54	1	1,810	1.4	1.17		40		
112059	73516	LMSSC Bldg. 156/Lmera	1111 Lockheed Way	irr	08-15-03	08-04-10	0	0	0	310	85	1123	1860	1546	1775	1152	570	374	8,795	6.6	5.67		4		
1099	770	Twin Creeks	969 Caribbean Drive	irr	07-17-03	04-02-09	4	139	-126	20	1183	3009	4569	3474	3597	1917	312	427	18,525	13.9	11.94		21		
<b>Number of Sites =</b>																		<b>3</b>	<b>Category Total Use</b>		<b>29,130</b>	<b>21.8</b>	<b>18.78</b>	<b>7.4%</b>	<b>65</b>
<b>Golf Courses</b>																									
77719	48114	S'Vale Golf Course - irr	605 Macara Avenue	irr	03-05-03	03-11-09	33	30	1364	1236	4210	12461	11116	10472	9326	4734	870	0	55,852	41.8	36.01		115		
99621	72374	S'Vale Golf Course- lake	605 Macara Avenue	irr,imp	03-05-03	03-11-09	853	616	760	871	1397	1049	1035	357	1113	0	926	246	9,223	6.9	5.95				
113657	71092	Moffett Field Golf Coruse	m/s 19-1 Moffett Field	irr	02-18-09	02-18-09	0	0	0	0	17930	18124	26009	9677	7021	2519	1824	1119	84,223	63.0	54.30		80		
<b>Number of Sites =</b>																		<b>3</b>	<b>Category Total Use</b>		<b>149,298</b>	<b>111.7</b>	<b>96.26</b>	<b>38.1%</b>	<b>195</b>
<b>Green Belts</b>																									
169	906	CalTrans Dist. 4	237 & 101 @ Manila Drive	irr	11-02-04	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00				
113657	71090	City of Sunnyvale	5th Ave. Macon Road	irr	04-25-06	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00				
98117	71160	City of Sunnyvale	0 x372 Caribbean Avenue	irr	12-10-01	12-03-08	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00				
169	71038	CalTrans 237/Caribbean	999 Caribbean Drive - F	irr	09-06-04	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00				
785	594	City of Sunnyvale-WPCP	1444 Borregas Avenue	irr	04-18-03	11-29-09	0	0	0	0	0	13	0	22	0	0	17	0	52	0.0	0.03				
169	72088	CalTrans 237/Maude	0 Maude Avenue	irr	09-06-04	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00				
104849	73072	VTA / City of Sunnyvale	0 LRT34 @ 232 Java Drive	irr	11-04-04	01-05-10	0	0	0	0	13	22	17	1	0	0	0	0	53	0.0	0.03				
104849	73074	VTA / City of Sunnyvale	0 LRT35 @ 399 Java Drive	irr	11-04-04	01-05-10	0	0	0	0	0	15	9	21	1	0	0	0	46	0.0	0.03				
104849	73076	VTA / City of Sunnyvale	0 LRT36 @ Mathilda Avenue	irr	11-04-04	01-05-10	0	0	0	0	0	61	92	0	0	0	0	0	153	0.1	0.10				
104849	73570	VTA / City of Sunnyvale	0 LRT42 @ 813 11th Avenue	irr,oth	02-10-02	04-22-10	0	1	0	1	4	25	18	14	0	0	0	0	63	0.0	0.04				
104849	57780	City of Sunnyvale	0000 Caribbean Drive	irr	06-10-99	11-06-08	22	-1	0	0	0	62	70	74	76	62	25	0	390	0.3	0.25				
104849	72868	City of Sunnyvale	0 NW Java / Crossman	irr	11-04-04	11-13-08	0	0	0	0	0	1	2	2	3	2	1	0	11	0.0	0.01				
104849	72870	City of Sunnyvale	0 SE Java / Crossman	irr	11-04-04	11-13-08	0	0	3	1	8	6	7	10	28	13	0	0	76	0.1	0.05				
<b>Number of Sites =</b>																		<b>13</b>	<b>Category Total Use</b>		<b>844</b>	<b>0.63</b>	<b>0.54</b>	<b>0.2%</b>	<b>10</b>
<b>Schools - None</b>																									
<b>Other (Commercial/Industrial Irrigation sites)</b>																									
148659	112	De Guigne Ventures LLC	1250 Borregas Drive	irr	11-02-06		2	0	0	74	86	155	314	264	225	180	73	26	1,399	1.0	0.90				
165	134	AMB Value Added Fund	155 E. Moffett Park Drive	irr	04-18-03	04-09-09	41	77	5	523	443	900	1187	989	1534	1198	935	279	8,111	6.1	5.23				
171	144	Cilker Orchards	333-385 Moffett Park Drive	irr	03-07-03		0	1	6	123	121	333	351	272	288	239	125	36	1,895	1.4	1.22				
191	154	Moffett Park	1116 N. Mathilda Avenue	irr	03-22-99	05-19-09	1	0	0	1	1	3	2	2	3	1	1	1	16	0.0	0.01				
221	192	Supertex, inc	1235 Bordeaux Drive	irr	03-25-09	03-25-09	3	0	1	10	48	109	154	126	156	120	28	0	755	0.6	0.49				
145017	194	Oepic Semiconductor	1231 Bordeaux Drive	irr	11-18-10	11-18-10	0	0	0	0	0	0	0	0	0	0	0	2	2	0.0	0.00				
147037	198	Headlands Corp.	1215 Bordeaux Drive	irr	03-29-07		1	0	0	25	41	68	93	111	139	90	33	9	610	0.5	0.39				
107531	202	Juniper Networks	1195 Bordeaux Drive	irr	12-11-06	05-26-10	24	14	9	49	129	64	57	95	120	96	60	36	753	0.6	0.49				
247	218	Cogswell College	1175 Bordeaux Drive	irr	10-20-01	05-13-08	1	1	0	55	101	235	299	236	304	170	47	28	1,477	1.1	0.95				
257	224	Bordeaux Properties	1153 Bordeaux Drive	irr	09-04-08		10	0	10	75	92	130	213	160	191	157	44	48	1,130	0.8	0.73				
261	228	Professional Exhibits & Grap	1188 Bordeaux Drive	irr	11-28-06	05-06-10	37	0	1	65	98	160	217	199	226	189	95	101	1,388	1.0	0.89				
128687	236	Dean Fisher Proerties LLC	1190 Bordeaux Drive	irr	11-01-06	05-06-10	0	0	0	4	148	101	147	116	103	68	3	0	690	0.5	0.44				
145641	248	RGB Networks Inc.	390 Java Drive	irr	11-08-07	03-27-08	1	1	0	82	82	196	211	168	205	160	77	46	1,229	0.9	0.79				
146819	256	Java Drive LLC	350 Java Drive	irr	12-23-98	06-25-08	10	0	89	131	305	528	32	375	329	315	125	77	2,316	1.7	1.49				
107531	266	Juniper Networks	150-160 Gibraltar Court	irr	12-23-98	03-29-08	1	3	8	32	47	117	203	167	137	112	70	18	915	0.7	0.59				
78879	288	AMCC Switching & Net.	201-215 Moffett Park Drive	irr	09-28-06	06-22-10	170	186	0	126	296	621	1361	722	944	766	470	579	6,241	4.7	4.02				
139963	292	MCERA	1190 Borregas Avenue	irr	04-28-06	07-22-10	37	40	0	37	75	90	102	66	68	43	10	7	575	0.4	0.37				
150401	302	Various Inc	220 Humboldt Court	irr	01-28-99	04-09-08	0	4	0	48	90	123	138	168	186	105	63	111	1,036	0.8	0.67				
132431	310	Modified Polymer Comp.	242-252 Humboldt Court	irr	03-25-04	10-20-09	16	15	34	77	60	140	148	119	138	108	81	0	936	0.7	0.60				
120361	324	Cloudshield Tech.	212 Gibraltar Drive	irr	10-25-04	12-08-09	4	1	5	35	83	85	191	180	203	99	36	18	940	0.7	0.61				



**Attachment B-1. List of Recycled Water Use Sites with Water Usage - 2010**

Acct (CID)	LID	Site Name	Address	Use	Original Permit	Current Permit													Total Usage <sup>2</sup> ccf/yr	Total Usage <sup>2</sup> mgal/yr	RW Total <sup>2</sup> mgal/yr	Usage % of Total	Approx Acres Applied
							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
140505	352	Hanover Properties	1213 Innsbruck Drive	irr	12-10-98	02-16-07	1	7	29	48	47	211	265	216	215	209	45	62	1,355	1.0	0.87		
146203	358	Arden Realty LP	1221 Crossman Avenue	irr	01-10-98	08-04-06	83	0	98	521	342	1594	1902	1333	1632	877	975	375	9,732	7.3	6.27		
144745	378	Moffett Plaza	250-270 Java Drive	irr	08-05-03	09-29-09	0	0	0	1	0	20	24	18	21	1	0	0	85	0.1	0.05		
555	396	Jo-EI Associates	1200 Crossman Avenue - A	irr	08-08-06	07-14-10	43	13	0	101	115	56	122	106	97	67	19	19	758	0.6	0.49		
122521	408	CTT, Inc.	241 Java Drive	irr	08-04-06	12-18-10	0	0	0	44	75	113	114	97	120	96	25	0	684	0.5	0.44		
143183	414	SCM Properties LLC	111 W. Java Drive	irr	08-25-08	02-19-09	0	0	0	78	153	153	297	246	293	236	24	0	1,480	1.1	0.95		
117281	424	Infinera	169 Java Drive	irr	04-01-04	05-06-09	0	0	0	24	38	60	68	54	66	51	35	10	406	0.3	0.26		
149319	430	TMG / Moffett LLC	399 Java Avenue	irr	01-22-03	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
154989	466	California Bavarian	1380 Bordeaux Drive	irr	06-11-08		1	4	2	148	81	205	315	272	287	177	49	25	1,566	1.2	1.01		
118811	506	Spirent Communications	1325 Borregas Avenue - A	irr	09-29-06	08-02-10	192	101	151	237	248	307	288	152	208	247	161	164	2,456	1.8	1.58		
117281	518	Infinera	140 Caspian Court	irr	05-08-01	05-06-09	2	1	5	2	58	166	204	167	193	122	62	3	985	0.7	0.64		
143293	526	Hines VAF NO CAL Prop	207 Java Drive	irr	07-01-03	09-06-04	25	7	0	34	63	97	112	78	97	63	25	16	617	0.5	0.40		
152845	528	Morgan Hill Properties	222 Caspian Drive	irr	08-01-06	07-28-10	39	3	1	26	29	94	148	129	123	82	57	0	731	0.5	0.47		
143205	532	Dollinger Rock Assoc	246 Caspian Drive	irr	02-09-08		0	0	0	0	4	54	73	86	96	61	18	6	398	0.3	0.26		
101419	546	Network App/Devcon	1330 Geneva Drive	irr	11-05-03	02-16-07	3	0	1	67	120	379	586	437	420	250	119	35	2,417	1.8	1.56		
107717	556	ARM Physical IP	310 Caribbean Drive	irr	01-24-03	05-13-08	0	0	0	38	55	95	174	146	173	171	104	41	997	0.7	0.64		
147727	578	Arden Realty LP	1362-1370 Borregas Avenue	irr	12-23-98	08-19-09	0	0	1	98	117	125	282	180	258	143	93	3	1,300	1.0	0.84		
141535	590	Business Ventures	1390-1398 Borregas Avenue	irr	10-07-02	04-30-09	0	0	0	33	85	115	160	125	142	121	59	36	876	0.7	0.56		
883	622	Modular Devices	1312 Crossman Avenue	irr	03-01-99	03-08-08	17	4	4	91	188	174	237	283	286	137	84	14	1,519	1.1	0.98		
132065	624	Aruba Networks	1322 Crossman Avenue	irr	05-30-03	03-22-08	25	13	5	21	62	75	138	168	95	92	74	3	771	0.6	0.50		
147727	632	Arden Realty LP	1344 Crossman Avenue	irr	11-21-06	11-04-10	115	266	493	307	443	390	152	29	11	18	12	134	2,370	1.8	1.53		
101419	644	Network Appliance	1347 Crossman Avenue	irr	06-26-98	02-16-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
101419	668	AMB Property	1299 Orleans Drive	irr	03-24-04	07-01-09	14	18	14	33	71	105	175	196	253	104	40	13	1,036	0.8	0.67		
146203	686	Arden Realty LP	1320 Orleans Drive	irr	05-09-06	07-27-10	0	0	1	77	78	95	247	112	202	191	108	110	1,221	0.9	0.79		
883	692	Molecular Devices	1330 Orleans Drive	irr	04-05-07	05-14-09	48	0	0	55	141	167	172	137	187	127	62	53	1,149	0.9	0.74		
101419	702	Network Appliance	603-641 Baltic Way	irr	03-11-03	01-20-09	77	17	4	192	217.5	114.5	106	304	375	432	316	445	2,600	1.9	1.68		
101419	710	Network Appliance	1366 Crossman Avenue	irr	03-11-03		3	20	21	99	235	106	25	333	338	565	452	636	2,833	2.1	1.83		
146203	720	Arden Realty LP	904-918 Caribbean Drive	irr	08-03-06	12-18-10	0	0	0	69	75	164	375	244	234	144	99	82	1,486	1.1	0.96		
110425	728	Finisar	1399 Moffett Park Drive	irr,C,F	05-12-06	11-02-10	198	0	0	182	386	529	551	480	566	447	180	157	3,676	2.7	2.37		
1073	754	LTOC Bldg. 597	1309 Moffett Park Drive	irr	05-18-04	03-16-09	5	6	4	170	191	202	395	208	310	205	139	102	1,937	1.4	1.25		
146203	764	Arden Realty LP	1308 Moffett Park Drive	irr	06-23-06	11-02-10	53	64	43	300	367	372	822	286	561	338	238	145	3,589	2.7	2.31		
141535	57068	Business Ventures	1221 Innsbruck Drive	irr	10-13-06		0	0	0	29	79	95	99	84	107	64	43	28	628	0.5	0.40		
101419	57594	Network App/Devcon	1350 Geneva Drive	irr	11-17-98	Hold	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
150693	57596	I & G Caribbean, Inc	1320-1324 Chesapeake Terr.	irr	07-24-03	06-14-09	62	47	8	87	163	266	435	417	445	351	164	78	2,523	1.9	1.63		
134487	57602	Country Inns & Suites	1300 Chesapeake Terrace	irr	04-29-03	06-14-09	48	61	53	54	84	230	119	99	124	101	87	117	1,177	0.9	0.76		
150693	58562	I & G Caribbean, Inc	1315-1317 Chesapeake Terr.	irr	07-24-03	06-14-09	0	1	0	51	120	208	361	315	295	288	97	42	1,758	1.3	1.13		
150693	58568	I & G Caribbean, Inc	1325-1327 Chesapeake Terr.	irr	07-24-03	06-14-09	0	1	0	51	120	208	361	315	295	288	97	42	1,758	1.3	1.13		
101419	59102	Network Appliance	495 Java Drive	irr	06-18-01	02-16-07	1	6	1	205	400	806	788	1097	742	525	323	104	4,998	3.7	3.22		
139855	69992	Lowe's Hardware	811 E Arques Avenue	irr	04-28-06		637.6	346	122	34	180	1149	909	547	930	526	123	126	5,630	4.2	3.63		
101419	70008	Network Appliance	1345 Crossman Drive	irr	01-16-07		0.9	2	1	61	100	206	255	218	186	54	21	14	1,119	0.8	0.72		
113657	71088	Moffett Field / City of S.Vale	0 Moffett Field 1	irr	11-03-98	No Use	0	41	40	0	-81	0	0	0	0	0	0	0	0	0.0	0.00		
98989	71848	Homestead Village	1255 Orleans Drive	irr	11-22-06		0	0	0	23	116	184	232	191	245	157	100	131	1,379	1.0	0.89		
325	71952	Lockheed-Martin	151 Gibraltar Court	irr	05-01-02	03-05-08	3	2	3	47	60	67	64	79	102	81	70	28	606	0.5	0.39		
150261	72090	Moffett Towers Lot #1 Lsc	0 Enterprise Way	irr	08-30-04		17	17	18	36	107	198	271	213	395	337	108	94	1,811	1.4	1.17		
149319	72280	TMG / Moffett LLC	1333 Bordeaux Drive	irr	01-22-03	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
913	72288	AMB Property	225-257 Humboldt Court	irr	03-29-04	02-25-09	42	51	0	37	82	125	221	132	153	83	45	74	1,045	0.8	0.67		
109459	72382	Kalli Jenab	141 Caspian Court	irr	11-06-04	06-03-07	0	1	2	58	75	138	129	92	168	163	100	43	969	0.7	0.62		
101419	72384	Network Appliance	1275 Crossman Drive	irr	06-18-01	02-16-07	1	3	6	102	223	315	431	393	307	141	83	18	2,023	1.5	1.30		
99685	72438	Lockheed-Martin #159	1st & E Street	irr	08-30-04	06-03-10	45	41	103	306	396	878	1180	1430	1273	1059	305	132	7,148	5.3	4.61		
150609	72768	California Bavarian	1376 Bordeaux Drive	irr	06-11-08		0	6	5	113	106	191	199	260	312	171	67	33	1,463	1.1	0.94		

**Attachment B-1. List of Recycled Water Use Sites with Water Usage - 2010**

Acct (CID)	LID	Site Name	Address	Use	Original Permit	Current Permit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Usage <sup>2</sup> ccf/yr	Total Usage <sup>2</sup> mgal/yr	RW Total <sup>2</sup> mgal/yr	Usage % of Total	Approx Acres Applied			
137683	72954	Innopath Software, Inc.	400 Caribbean Avenue	irr	04-25-01	05-21-08	42	27	0	17	109	170	107	120	109	142	112	62	1,017	0.8	0.66					
101419	73154	Network Appliance	1260 Crossman Drive	irr	04-24-01	02-16-07	43	81	3	83	147	315	422	335	368	181	91	57	2,126	1.6	1.37					
101419	73238	Network Appliance	475 Java Drive	irr,imp	06-18-01	02-16-07	9	3	3	61	171	231	374	313	560	189	91	71	2,076	1.6	1.34					
126897	73270	BMC Software	1030 W. Maude Avenue	irr	09-28-01	09-06-08	3	3	2	230	514	442	736	593	732	425	177	52	3,909	2.9	2.52					
140719	73434	Gibraltar SVL Holdings LLC	165 Gibraltar Court	irr	05-17-02	08-21-08	0	0	0	31	70	57	51	92	134	133	76	62	706	0.5	0.46					
112065	73508	Yahoo	701 & 781 1st Avenue	irr	06-05-06	12-18-10	17	18	21	108	126	588	728	436	718	441	256	538	3,995	3.0	2.58					
112065	73512	Yahoo	721 & 741 1st Avenue	irr	06-05-06	12-18-10	13	20	25	189	196	604	769	615	859	520	289	131	4,230	3.2	2.73					
114763	73518	Moffett Park Dr. LLC	801-811 11th Avenue	irr,imp,F	06-01-01	08-09-09	20	827	0	0	0	0	1982	4430	2065	1411	634	555	11,924	8.9	7.69					
114763	73548	Moffett Park Dr. LLC	801 11th Avenue	irr	02-19-02	08-09-09	-0.7	1	0	127	266	256	177	128	148	116	92	140	1,450	1.1	0.94					
115969	73610	Borregas Associates	1277 Borregas Avenue	irr	05-15-02	07-30-08	79	79	51	93	148	148	139	119	121	83	66	54	1,180	0.9	0.76					
112065	73642	Yahoo / Marvell Semi	700 1st Avenue	irr	06-05-06	12-18-10	1	1	1	228	309	510	904	483	677	430	352	299	4,195	3.1	2.70					
107531	75152	Juniper Network	0 11 th Avenue	irr	06-17-10	06-17-10	103	102	-221	61	57	1842	984	816	1237	736	207	320	6,244	4.7	4.03					
112065	73684	Yahoo	589 Java Drive	irr	06-05-06	12-18-10	0	0	0	0	0	0	0	0	0	0	2212	80	2,292	1.7	1.48					
149407	75180	Moffett Towers Lot #3	1120 Enterprise Way	irr	05-20-09	05-20-09	8	3	1	654	953	1150	1723	1250	1155	842	348	125	8,212	6.1	5.29					
149407	75184	Moffett Towers Lot #3	1160 Enterprise Way	irr	05-20-09	05-20-09	5	1	2	526	1332	1024	1339	1132	1193	936	301	335	8,126	6.1	5.24					
150261	75216	Moffett Towers Lot #1	1000 H St. / 11th Avenue	irr	11-26-07	05-13-09	7	3	2	485	696	582	1633	1920	3201	1567	485	768	11,349	8.5	7.32					
101419	75338	Network Appliance	1375 Crossman Avenue	irr	03-25-08		11	4	10	426	625	916	2301	1299	1554	532	373	117	8,168	6.1	5.27					
112059	75344	Lockheed-Martin	1111 Lockheed Way	irr	09-12-07		93	80	92	184	428	606	784	372	440	408	-8	56	3,535	2.6	2.28					
149407	75348	Moffett Towers # 3	1100-1180 Enterprise Way	irr	09-12-07	10-27-09	0	0	0	47	111	171	308	230	195	212	124	88	1,486	1.1	0.96					
<b>Number of Sites =</b>																		<b>89</b>	<b>Category Total Use</b>			<b>205,699</b>	<b>153.86</b>	<b>132.63</b>	<b>52.5%</b>	<b>160</b>

**Agriculture - None**

**Industrial - Cooling**

110425	728	Finisar <sup>2</sup>	1399 Moffett Park Drive	irr,C,F	11-25-97	11-02-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.00				
<b>Number of Sites =</b>																		<b>1</b>	<b>Category Total Use</b>			<b>0</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0%</b>	

**Industrial - Other (Non-Irrigation)**

98993	71856	Raisch Products	600 Caribbean Avenue	other	12-10-01	01-12-09	87	185	252	357	575	421	580	401	364	370	548	29	4,169	3.1	2.69					
	N/A	Permit RW tanker usage from WPCP		irr,oth	01-01-04	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.00				
<b>Number of Sites =</b>																		<b>1</b>	<b>Category Total Use</b>			<b>4,169</b>	<b>3.12</b>	<b>2.69</b>	<b>1.1%</b>	

**Environmental Enhancement - None**

**Dual Plumbing**

112059	75140	Lockheed Martin # 176-178	0 First Avenue Lsc	irr,oth	07-22-09	07-22-09	24	16	21	48	90	280	429	232	233	136	59	63	1,631	1.2	1.05					
148407	70298	Green Team/Zanker	301 Carl Road	irr,oth	01-09-01	08-04-09	31	38	29	56	308	255	197	130	125	53	68	50	1,340	1.0	0.86					
<b>Number of Sites =</b>																		<b>2</b>	<b>Category Total Use</b>			<b>2,971</b>	<b>2.22</b>	<b>1.92</b>	<b>0.76%</b>	

<b>Total</b>																		<b>112</b>	<b>Grand Total Use</b>			<b>392,111</b>	<b>293</b>	<b>253</b>	<b>100.0%</b>	<b>430</b>
--------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	------------	------------------------	--	--	----------------	------------	------------	---------------	------------

Notes:

Includes inactive sites.

1. Use Type: Irr=irrigation, Imp= impoundment, F=fountain, C=cooling tower (used as backup source only), Oth=other.
2. Total usage includes potable water delivered through the Recycled Water system. Adjusted RW total is 86.2% of total usage, to account for the potable water fraction.
3. 40 ccf deducted from each month's reading and assigned to dual plumbing use below.
4. Billing period does not correspond exactly to calendar month, and not all meters are read each billing period. 1 ccf=748 gallons.

## **Attachment B-2**

### **Summary of Recycled Water Usage by Reuse Application Category**

## ATTACHMENT B-2

### CITY OF SUNNYVALE SUMMARY OF RECYCLED WATER USAGE BY REUSE APPLICATION CATEGORY

Calendar Year: 2010

Reuse Application Category <sup>(4)</sup>	No. of Active Sites	Approx. Area Applied (acres)	Amount Distributed <sup>(8)</sup> (MG)	% of Total Reuse Flow
<b>Landscape Irrigation</b>				
<b>Parks<sup>(5)</sup></b>	<b>3</b>	<b>65</b>	<b>18.8</b>	<b>7.4</b>
<b>Golf Courses</b>	<b>3</b>	<b>195</b>	<b>96.3</b>	<b>38.1</b>
<b>Green Belts<sup>(7)</sup></b>	<b>9</b>	<b>10</b>	<b>0.54</b>	<b>0.2</b>
<b>Schools</b>	-	-	-	-
<b>Other<sup>(6)</sup></b>	<b>85</b>	<b>180</b>	<b>132.7</b>	<b>52.5</b>
<b>Agriculture</b>				
<b>Vineyards</b>	-	-	-	-
<b>Other</b>	-	-	-	-
<b>Industrial<sup>(1)</sup></b>				
<b>Cooling</b>	<b>1<sup>1</sup></b>	-	-	-
<b>Other</b>	<b>1</b>	-	<b>2.7</b>	<b>1.1</b>
<b>Environmental Enhancement<sup>(2)</sup></b>	-	-	-	-
<b>Dual Plumbing<sup>(3)</sup></b>	<b>2</b>	-	<b>1.9</b>	<b>0.7</b>
<b>TOTAL</b>	<b>104</b>	<b>430</b>	<b>253</b>	<b>100</b>

**Notes:**

1. Industrial processes receiving recycled water include cooling, construction applications, soil compaction and dust control, etc. (Note: RW is supplied to one cooling tower site as a backup supply, but no water is actually used).
2. Environmental Enhancement includes wildlife habitat, wetland/marsh applications, etc.
3. As defined in Title 22
4. Two sites are listed under two categories because of multiple uses.
5. Parks category includes County park, large sports complex, and baseball fields.
6. Primarily comprised of landscaping at commercial/industrial office buildings. Some use in fountains.
7. Consists of freeway interchange and street median sites.
8. Based on annual total of readings from site water meters, adjusted to account for average system-wide potable water fraction (see text).

**Attachment C-1**

**Tabulation of Producer's Daily Recycled Water Deliveries**

### Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons)

Day	January			February			March		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered <sup>1</sup> (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	267,840	360,000	0	0	0	0	396,000	0	396,000
6	0	0	0	0	0	0	737,280	0	737,280
7	0	0	0	0	0	0	0	0	0
8	240,480	0	240,480	0	0	0	0	0	0
9	900,000	0	898,560	66,240	0	66,240	0	0	0
10	0	0	0	1,149,120	0	1,149,120	0	0	0
11	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0
13	224,640	0	224,640	0	0	0	0	0	0
14	182,880	1,440	181,440	0	0	0	0	0	0
15	0	0	0	0	0	0	360,000	1,440	358,560
16	0	0	0	0	0	0	1,440	1,440	0
17	0	0	0	181,440	0	181,440	0	0	0
18	0	0	0	148,320	0	148,320	0	0	0
19	0	0	0	0	0	0	46,080	21,600	24,480
20	0	0	0	0	0	0	414,720	0	414,720
21	0	0	0	0	0	0	838,080	0	838,080
22	0	0	0	0	0	0	384,480	0	384,480
23	0	0	0	0	0	0	27,360	1,440	25,920
24	0	0	0	0	0	0	577,440	0	577,440
25	0	0	0	0	0	0	967,680	0	967,680
26	0	0	0	283,680	342,720	0	725,760	374,400	351,360
27	0	0	0	0	0	0	499,680	12,960	486,720
28	295,200	367,200	0	0	0	0	961,920	0	961,920
29	0	0	0	0	0	0	381,600	0	381,600
30	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0
<b>Total gal.</b>	<b>4,380,480</b>	<b>217,440</b>	<b>4,377,600</b>	<b>679,680</b>	<b>420,480</b>	<b>375,840</b>	<b>6,739,200</b>	<b>328,320</b>	<b>6,410,880</b>
<b>Average (gal/day)</b>	<b>273,780</b>	<b>13,590</b>	<b>273,600</b>	<b>21,925</b>	<b>13,564</b>	<b>12,124</b>	<b>224,640</b>	<b>10,944</b>	<b>213,696</b>

**Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons), continued**

Day	April			May			June		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	0	0	0	316,800	1,440	315,360	653,760	8,640	645,120
2	0	0	0	1,529,280	0	1,529,280	2,226,240	10,080	2,216,160
3	0	0	0	696,960	298,080	398,880	830,880	1,440	829,440
4	0	0	0	720,000	1,440	718,560	2,187,360	0	2,187,360
5	0	0	0	1,569,600	0	1,569,600	1,258,560	24,480	1,234,080
6	0	4,320	0	563,040	0	563,040	2,275,200	0	2,275,200
7	24,480	12,960	11,520	573,120	33,120	540,000	972,000	2,880	969,120
8	0	0	0	673,920	1,440	672,480	2,501,280	0	2,501,280
9	348,480	0	348,480	2,220,480	18,720	2,201,760	525,600	1,440	524,160
10	891,360	2,880	888,480	256,320	1,440	254,880	3,034,080	1,440	3,032,640
11	309,600	0	309,600	455,040	1,440	453,600	1,035,360	2,880	1,032,480
12	228,960	1,440	227,520	1,847,520	0	1,847,520	2,577,600	2,880	2,574,720
13	0	0	0	158,400	0	158,400	812,160	0	812,160
14	407,520	0	407,520	0	0	0	1,837,440	73,440	1,764,000
15	606,240	0	606,240	0	0	0	2,507,040	0	2,507,040
16	224,640	1,440	223,200	236,160	0	236,160	1,088,640	1,440	1,087,200
17	309,600	1,440	308,160	2,092,320	8,640	2,083,680	2,725,920	0	2,725,920
18	0	0	0	362,880	0	362,880	874,080	12,960	861,120
19	0	0	0	380,160	15,840	364,320	2,779,200	10,080	2,769,120
20	0	0	0	2,412,000	1,440	2,410,560	966,240	0	966,240
21	0	616,320	0	396,000	0	396,000	2,406,240	0	2,406,240
22	108,000	0	108,000	1,897,920	0	1,897,920	1,059,840	1,440	1,058,400
23	669,600	115,200	554,400	347,040	1,440	345,600	2,911,680	0	2,911,680
24	64,800	0	64,800	1,640,160	0	1,640,160	832,320	0	832,320
25	1,261,440	0	1,261,440	718,560	300,960	417,600	2,619,360	1,440	2,617,920
26	446,400	0	446,400	102,240	0	102,240	1,092,960	0	1,092,960
27	34,560	0	34,560	1,697,760	1,440	1,696,320	2,610,720	0	2,610,720
28	0	0	0	384,480	1,440	383,040	1,103,040	0	1,103,040
29	1,438,560	0	1,438,560	2,276,640	0	2,276,640	2,822,400	95,040	2,727,360
30	155,520	0	155,520	907,200	10,080	897,120	1,091,520	1,440	1,090,080
31				1,072,800	20,160	1,052,640			
<b>Total gal.</b>	<b>20,556,000</b>	<b>489,600</b>	<b>20,134,080</b>	<b>35,523,360</b>	<b>185,760</b>	<b>35,337,600</b>	<b>28,870,560</b>	<b>3,375,360</b>	<b>26,602,560</b>
<b>Average (gal/day)</b>	<b>663,097</b>	<b>15,794</b>	<b>649,486</b>	<b>1,145,915</b>	<b>5,992</b>	<b>1,139,923</b>	<b>931,308</b>	<b>108,883</b>	<b>858,147</b>

**Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons), continued**

Day	July			August			September		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	2,903,040	11,520	2,891,520	1,121,760	0	1,121,760	796,320	0	796,320
2	1,120,320	1,440	1,118,880	2,462,400	0	2,462,400	2,518,560	0	2,518,560
3	2,786,400	0	2,786,400	843,840	8,640	835,200	2,233,440	17,280	2,216,160
4	937,440	1,440	936,000	2,622,240	1,440	2,620,800	840,960	1,440	839,520
5	2,463,840	7,200	2,456,640	1,152,000	0	1,152,000	2,380,320	0	2,380,320
6	1,284,480	1,440	1,283,040	2,659,680	0	2,659,680	348,480	286,560	61,920
7	2,295,360	0	2,295,360	1,071,360	0	1,071,360	0	0	0
8	2,606,400	0	2,606,400	2,400,480	10,080	2,390,400	0	0	0
9	960,480	1,440	959,040	1,226,880	0	1,226,880	0	0	0
10	2,868,480	0	2,868,480	2,299,680	0	2,299,680	0	0	0
11	1,222,560	7,200	1,215,360	665,280	300,960	364,320	158,400	112,320	46,080
12	2,481,120	0	2,481,120	1,123,200	0	1,123,200	0	0	0
13	1,020,960	4,320	1,016,640	2,672,640	0	2,672,640	0	0	0
14	2,586,240	0	2,586,240	780,480	1,440	779,040	1,121,760	0	1,121,760
15	1,450,080	275,040	1,175,040	2,103,840	0	2,103,840	2,069,280	0	2,069,280
16	2,818,080	0	2,818,080	1,218,240	1,440	1,216,800	2,181,600	0	2,181,600
17	918,720	1,440	917,280	2,509,920	0	2,509,920	240,480	1,440	239,040
18	2,679,840	0	2,679,840	853,920	1,440	852,480	2,619,360	0	2,619,360
19	1,916,640	1,440	1,915,200	2,460,960	0	2,460,960	167,040	0	167,040
20	1,169,280	0	1,169,280	989,280	2,880	986,400	2,351,520	0	2,351,520
21	2,406,240	2,880	2,403,360	2,373,120	1,440	2,371,680	848,160	0	848,160
22	2,050,560	7,200	2,043,360	869,760	1,440	868,320	1,114,560	0	1,114,560
23	1,029,600	0	1,029,600	2,456,640	1,440	2,455,200	2,334,240	7,200	2,327,040
24	2,721,600	17,280	2,704,320	1,018,080	1,440	1,016,640	194,400	0	194,400
25	1,166,400	1,440	1,164,960	2,856,960	0	2,856,960	2,580,480	0	2,580,480
26	2,430,720	0	2,430,720	999,360	1,440	997,920	221,760	1,440	220,320
27	1,215,360	0	1,215,360	2,374,560	1,440	2,373,120	2,479,680	34,560	2,445,120
28	2,610,720	1,440	2,609,280	1,965,600	0	1,965,600	246,240	24,480	221,760
29	2,256,480	15,840	2,240,640	848,160	1,440	846,720	2,648,160	17,280	2,630,880
30	1,140,480	10,080	1,130,400	2,043,360	0	2,043,360	302,400	0	302,400
31	3,051,360	1,440	3,049,920	31,680	0	31,680			
<b>Total gal.</b>	<b>32,499,360</b>	<b>345,600</b>	<b>32,358,240</b>	<b>27,653,760</b>	<b>1,025,280</b>	<b>27,116,640</b>	<b>16,387,200</b>	<b>1,434,240</b>	<b>15,232,320</b>
<b>Average (gal/day)</b>	<b>1,048,366</b>	<b>11,148</b>	<b>1,043,814</b>	<b>892,057</b>	<b>33,074</b>	<b>874,730</b>	<b>528,619</b>	<b>46,266</b>	<b>491,365</b>

**Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons), continued**

Day	October			November			December		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	2,481,120	1,440	2,479,680	414,720	0	414,720	0	0	0
2	436,320	1,440	434,880	34,560	0	34,560	0	0	0
3	2,617,920	299,520	2,318,400	0	0	0	0	0	0
4	498,240	0	498,240	1,643,040	0	1,643,040	0	0	0
5	2,103,840	0	2,103,840	436,320	0	436,320	0	0	0
6	449,280	0	449,280	300,960	0	300,960	0	0	0
7	1,834,560	0	1,834,560	1,422,720	0	1,422,720	0	0	0
8	406,080	0	406,080	383,040	0	383,040	312,480	0	312,480
9	1,867,680	0	1,867,680	1,455,840	1,440	1,454,400	1,260,000	2,880	1,257,120
10	282,240	1,440	280,800	0	0	0	0	0	0
11	2,020,320	0	2,020,320	514,080	1,440	512,640	118,080	0	118,080
12	276,480	1,440	275,040	0	0	0	313,920	2,880	311,040
13	95,040	60,480	34,560	443,520	7,200	436,320	0	0	0
14	555,840	146,880	408,960	1,232,640	11,520	1,221,120	0	0	0
15	1,478,880	90,720	1,388,160	367,200	0	367,200	0	0	0
16	309,600	1,440	308,160	180,000	174,240	5,760	0	0	0
17	2,564,640	0	2,564,640	0	516,960	0	0	0	0
18	259,200	0	259,200	0	253,440	0	0	0	0
19	1,820,160	0	1,820,160	0	404,640	0	0	0	0
20	351,360	1,440	349,920	0	260,640	0	0	0	0
21	188,640	0	188,640	0	155,520	0	0	0	0
22	1,352,160	0	1,352,160	0	0	0	0	0	0
23	491,040	0	491,040	0	0	0	0	0	0
24	0	0	0	151,200	0	151,200	0	0	0
25	2,880	0	2,880	1,434,240	0	1,434,240	0	0	0
26	1,706,400	0	1,706,400	0	0	0	103,680	23,040	80,640
27	0	0	0	119,520	0	119,520	1,522,080	0	1,522,080
28	516,960	1,440	515,520	319,680	0	319,680	0	0	0
29	0	0	0	0	0	0	0	0	0
30	584,640	0	584,640	300,960	290,880	10,080	0	0	0
31	1,179,360	0	1,179,360				0	0	0
<b>Total gal.</b>	<b>15,400,800</b>	<b>410,400</b>	<b>14,991,840</b>	<b>10,242,720</b>	<b>550,080</b>	<b>10,182,240</b>	<b>4,491,360</b>	<b>483,840</b>	<b>4,098,240</b>
<b>Average (gal/day)</b>	<b>496,800</b>	<b>13,239</b>	<b>483,608</b>	<b>330,410</b>	<b>17,745</b>	<b>328,459</b>	<b>144,883</b>	<b>15,608</b>	<b>132,201</b>

**Attachment C-2**

**Summary of Recycled Water Deliveries and Use at WPCP**

**Attachment C-2**  
**Summary of Recycled Water Deliveries and Use at WPCP**

<b>Month</b>	<b>Net Recycled Water Delivered from WPCP (gallons)</b>	<b>Potable Water Added at WPCP (gallons)</b>	<b>Potable Water Added at San Lucar Storage Tank (gallons)</b>	<b>WPCP Internal Usage<sup>1</sup> (gallons)</b>
Jan-10	1,546,600	728,600	234,700	15,261,100
Feb-10	1,545,100	342,700	0	16,153,900
Mar-10	6,906,200	413,300	411,800	15,396,500
Apr-10	7,394,400	756,000	7,391,500	15,923,500
May-10	27,786,200	718,600	4,079,500	18,892,800
Jun-10	51,965,300	253,400	1,527,800	18,298,100
Jul-10	60,197,800	371,500	933,100	21,787,200
Aug-10	50,737,000	338,400	3,251,500	19,327,700
Sep-10	32,493,600	504,000	14,096,200	19,905,100
Oct-10	28,123,200	607,700	2,298,200	19,615,700
Nov-10	10,667,500	2,077,900	3,234,200	16,979,000
Dec-10	3,601,400	28,800	623,500	16,555,700
<b>Total</b>	<b>282,964,300</b>	<b>7,140,900</b>	<b>38,082,000</b>	<b>214,096,300</b>

1. Diverted for WPCP process use prior to recycled water pump station. Recycled water used for irrigation at the WPCP comes from the recycled water distribution system and is included in the tabulation of user sites (Attachment B-1).

2. All values rounded to the nearest 100 gallons

## **Attachment D**

### **Tabulation of City Inspections of Use Areas**

### Attachment D: Tabulation of City Inspections of Use Areas

ACCT. #	LID #	COMPANY NAME	LOCATION	PERMIT DATE
<b>PERMITS RENEWED</b>				
104849	73072	VTA / City of Sunnyvale	0 LRT34 @ 232 Java Dr.	01/05/10
104849	73074	VTA / City of Sunnyvale	0 LRT35 @ 399 Java Dr.	01/05/10
104849	73076	VTA / City of Sunnyvale	0 LRT36 @ Mathilda Ave.	01/05/10
104849	73570	VTA / City of Sunnyvale	0 LRT42 @ 813 11th Ave	04/22/10
261	228	Professional Exhibits & Graphics	1188 Bordeaux Dr.	05/06/10
128687	236	Dean Fisher Properties LLC	1190 Bordeaux Dr.	05/06/10
107531	202	Juniper Networks	1195 Bordeaux Dr,	05/26/10
99685	72438	Lockheed-Martin # 159	1st & E Street	06/03/10
78879	288	AMCC Switching & Net.	201-215 Moffett Park Dr,	06/22/10
55-396	396	Jo-EI Associates	1200 Crossman Av	07/14/10
139963	292	MCERA	1190Borregas Ave.	07/22/10
146203	686	Arden Realty LP	1320 Orleans Dr.	07/27/10
152845	528	Morgan Hill Properties	222 Caspian Dr.	07/28/10
118811	506	Spirent Communications	1325 Borregas Ave.	08/02/10
112059	73516	LMSSC Bldg. 156/mera	1111 Lockheed Way	08/04/10
146203	760	Arden Realty LP	1308 Moffett Park Dr.	11/02/10
110425	728	Finisar	1399 Moffett Park Dr.	11/02/10
147727	632	Arden Realty LP	1344 Crossman Dr.	11/04/10
112065	73508	Yahoo	701 & 781 1st Ave.	12/18/10
112065	73512	Yahoo	721 & 741 1 st Ave.	12/18/10
112065	73642	Yahoo	700 1 st Ave.	12/18/10
112065	73684	Yahoo	589 Java Dr.	12/18/10
122521	408	CTT, Inc	241 Java Dr.	12/18/10
146203	720	Arden Realty	904 Caribbean Dr.	12/18/10
<b>NEW CONNECTIONS</b>				
107531	75152	Juniper Network	0 11 th	06/17/10
194	194	Oepic Semiconductor	1231 Bordeaux Dr.	11/18/10



## **City of Sunnyvale**

# **2011 Recycled Water Annual Report**

**March 15, 2012**

Prepared by:



## TABLE OF CONTENTS

Introduction .....	1
1.0 Recycled Water Program Overview.....	1
1.1 Program Administration.....	1
1.2 Recycled Water Production System.....	1
1.3 Distribution System .....	3
1.4 Permitting of Recycled Water Use Sites.....	3
2.0 Reporting Requirements - Order 94-069.....	4
2.1 Certification (C.2).....	4
2.2 Tabulation of SMP Recycled Water Analysis (C.2.a) .....	4
2.3 Tabular Summary of Recycled Water Use (C.2.b) .....	5
2.4 List of New Authorized Recycled Water Users (C.2.c).....	6
2.5 Summary of Total Daily Recycled Water Delivered by the Producer (C.2.d) .....	6
2.6 Tabulation of User Site Inspections Conducted by the Producer (C.2.e) .....	6
2.7 Summary of Effluent Violations Related to Water Recycled Water Use, Violations Found During Inspection of Reuse Sites, Corrective Actions Taken, and any Changes to, or Revoking of User Authorizations by the Producer. (C.2.f).....	7
2.8 Update Regarding Current and Future Development of the Recycled Water Program (C.2.g) .....	7
2.9 Progress and Evaluation of Any Special Studies or Projects Being Undertaken Related to the Program (C.2.h) .....	7

## LIST OF FIGURES

Figure 1.	Sunnyvale WPCP - Overall Plant Flow Schematic
Figure 2.	Sunnyvale WPCP - Recycled Water Production Schematic
Figure 3.	Recycled Water Distribution System

## ATTACHMENTS

Attachment A	Recycled Water Quality Report
Attachment B-1	List of Recycled Water Use Sites and Water Usage
Attachment B-2	Summary of Recycled Water Use by Reuse Application Category
Attachment C-1	Tabulation of Producer’s Daily Recycled Water Deliveries
Attachment C-2	Summary of Recycled Water Deliveries and Use at WPCP
Attachment D	List of City Inspections of Use Areas



# City of Sunnyvale 2011 Recycled Water Annual Report

## Introduction

This report is submitted pursuant to the annual reporting requirements of Order 94-069, “Water Reclamation Requirements for the City of Sunnyvale Water Pollution Control Plant”. The report is prepared in accordance with the requirements of the Order’s Self Monitoring Program (revised December 28, 1999 to consist of the Self-Monitoring Program from the General Water Reuse Order 96-011).

## 1.0 Recycled Water Program Overview

This section provides an overview of Sunnyvale’s Water Reclamation Program, with information on program administration, recycled water production, distribution, and user permitting.

### 1.1 Program Administration

The Recycled Water Program is administered through the City’s Environmental Services Department (ESD). Divisions within ESD include the Water Pollution Control Plant (WPCP), Water and Sewer Services, Regulatory Compliance, and Solid Waste. The WPCP Division is responsible for recycled water production and operation of the WPCP’s recycled water pump station. The Water and Sewer Division is responsible for recycled water distribution, operation of the San Lucar facilities, user permitting/monitoring, and overall program coordination. The Regulatory Compliance Division supports both of these Divisions, and is responsible for recycled water quality monitoring conducted at the WPCP laboratory. EOA, Inc. provides technical support to the program for operational and regulatory issues.

Written guidance for the Program is provided in the City’s *Recycled Water Program Manual*, which includes the City’s *Rules and Regulations for Recycled Water Users* and *Administrative Procedures for Program Staff*.

### 1.2 Recycled Water Production System

Wastewater treatment facilities at the WPCP include influent grinders, preaeration/grit removal, primary sedimentation, oxidation ponds, fixed growth reactor nitrification, dissolved air flotation with coagulation, dual media filtration, chlorination and dechlorination. An overall flow schematic of the treatment process is presented in Figure 1. Recycled water produced at the WPCP for external delivery meets California Department of Public Health criteria for disinfected tertiary recycled water, as specified the California Code of Regulations (CCR) Title 22 and Order 94-069. The applicable water quality requirements are:

- CBOD (5-day, 20°C): 20 mg/L daily maximum, 10 mg/L monthly average
- Dissolved Oxygen: 1.0 mg/L minimum

- Dissolved Sulfide: 0.1 mg/L maximum
- Turbidity: <2 NTU daily average, <5 NTU 95% of the time, <10 NTU at all times
- C\*T: 450 mg/L-min., with T ≥ 90 minutes (modal basis)
- Total Coliform: < 2.2 MPN/100 ml (7-day median);
  - <23 MPN/100 ml (may be exceeded by one sample in 30 day period)
  - <240 MPN/100 ml (single sample maximum)

Figure 2 is a more detailed view of facilities for recycled water production at the chlorine contact tanks (CCTs). During periods of recycled water production, the entire WPCP tertiary plant flow is treated to produce a filtered effluent containing less than 2 NTU turbidity, and is chlorinated to a level needed to ensure compliance with the total coliform and C\*T limits. In the current operating mode (Mode 3), recycled water that has met turbidity and C\*T requirements is drawn from CCT #1 and CCT #2 into the recycled water pump station (RWPS), where it is partially dechlorinated using sodium bisulfite, metered, and pumped into the distribution system. The balance of the WPCP tertiary plant flow, if any, passes through CCT #3 or CCT #4 and overflows into the chlorine contact tank effluent channel. This surplus flow is fully dechlorinated with sulfur dioxide (SO<sub>2</sub>) and discharged to Moffett Channel under the City's NPDES permit. Under current operational procedures, the tertiary plant flow is reduced during periods of recycled water production to match recycled water demand, so that the flow discharged to Moffett Channel is at or near zero.

Compliance with recycled water turbidity and C\*T limits is ensured by an automatic control system that continuously monitors turbidity (pre- and post-filtration), chlorine residual, flow through the chlorine contact tanks and equipment status. All of these conditions must be met in order to initiate deliveries into the recycled water distribution system. This is indicated by a "Ready" status at the Supervisory Control and Data Acquisition (SCADA) system operator's terminal. If, during recycled water production, turbidity requirements are not met, the control system prevents the water from entering the recycled water chlorine contact tanks by automatically closing influent gate(s). The control system responds to a failure to meet C\*T by closing the valves on the RWPS intake line, causing water to overflow into the CCT effluent channel and be discharged through the NPDES outfall.<sup>1</sup> If these conditions, or other conditions related to equipment status are not met, the control system generates a "Fail", issues an alarm, and prevents delivery of water to the Recycled Water Pump Station. Full compliance with all turbidity, C\*T and equipment status conditions and operator intervention is required to re-establish a "Ready" condition.

As indicated above, the entire WPCP tertiary plant flow is treated to a turbidity of less than 2 NTU during periods of recycled water production. The elevated polymer dose applied to the AFTs needed to achieve this level of treatment increases WPCP operating costs. In addition, much higher chlorine dosage rates are required to meet Title 22 C\*T requirements than for normal (NPDES) discharge. For these reasons, recycled water is produced on an "as needed" basis to meet instantaneous demand and/or to fill the San Lucar storage tank. The storage tank is then used as the source of supply to the distribution system. During periods of low demand

<sup>1</sup> The control system's response to a C\*T failure in RW Mode 1 (no longer used) is different than described here.

or when conditions constrain recycled water production (and the storage tank is empty), potable water may be used to supplement the recycled water supply as described below.

Recycled water used internally at the WPCP is either disinfected tertiary quality as described above or disinfected secondary-2.2 MPN drawn from the end of the second channel of the CCT.

### **1.3 Distribution System**

The RWPS is located immediately adjacent to the CCTs. The RWPS has six pumps that operate on the basis of distribution system demand, as determined by pressure in the distribution line. The RWPS's nominal maximum pumping capacity is approximately 8 mgd (5600 gpm). The actual maximum pumping rate depends on the pressure setting at San Lucar storage tank's pressure sustaining valve, and is currently about 4500 gpm. Under the current recycled water operating mode (Mode 3), recycled water is drawn from the ends of CCT #1 and CCT#2 through automatic valves on the 24-inch RWPS intake line. The flow is metered, and sodium bisulfite is added to reduce chlorine residual from 5-10 mg/L to 2-3 mg/L into the distribution system. Potable water can be introduced into the RWPS intake line through an air gap at the potable water box, as shown in Figure 2. When activated, a level switch in the potable water box opens an automatic valve on the potable supply line. Because this potable water addition point is upstream from the RWPS flowmeter, the RWPS flowmeter readings are later adjusted when calculating net recycled water production. (Note: Potable water additions are generally made at the San Lucar Storage Tank, rather than at the RWPS potable water box).

The recycled water distribution system consists of approximately 43,300 feet of 12-inch through 36-inch transmission mains and 34,000 feet of 8-inch distribution lines. Areas served by the system are shown in Figure 3.

The San Lucar Recycled Water Pumping and Storage facilities are located at the southern terminus of the "east main" near Wolfe Road and Kifer Road (see Fig 3). The facility provides about 1.5 million gallons of "working" storage capacity, and a nominal maximum pumping capacity (from the tank) of approximately 8 mgd (5600 gpm). The facility can serve as the sole source of recycled water during periods of low to moderate demand, or can be operated in parallel with the WPCP during periods of peak demand. Potable water can be added to the storage tank via an air gap. Potable water added to the San Lucar storage Tank is also metered.

### **1.4 Permitting of Recycled Water Use Sites**

The Water and Sewer Services Division is responsible for overseeing site retrofits, cross-connection testing, customer permitting, and site inspections.<sup>2</sup> A Recycled Water Permit database is available to track both current and prospective use sites. The database includes site

---

<sup>2</sup> At the start of the Recycled Water program, a majority of the reuse sites involved conversion (retrofit) of existing facilities for recycled water use, rather than construction of new facilities, and the permitting process was initially tailored to retrofit applications. In recent years, the trend has been toward permitting of newly constructed sites.

information (name, address, contact person(s), designated recycled water supervisor, projected water use, etc), and a system for tracking the progress of the retrofit/permitting effort and for generating summary reports. A separate database can be used to record detailed information regarding facility retrofit requirements. Paper forms are also available to provide all recordkeeping functions of both databases. Upon completion of all retrofit requirements and cross-connection testing, Water and Sewer Services Division staff provide a connection to the system and issue a Permit to Use Recycled Water. The Division has several AWWA-certified Cross Connection Control Specialists on staff.

The City's *Administrative Procedures for Program Staff* contains forms to document the process and for ongoing inspections of use areas by users or City staff. Site records are maintained as hard copies in the individual site files and/or electronically in the two database applications.

## **2.0 Reporting Requirements - Order 94-069**

This section provides the specific information called for under the annual reporting requirements of Reuse Order 94-069. (Since December 1999, Section C of the Regional Water Board's General Reuse Order 96-011 Self Monitoring Program constitutes the Self Monitoring Program for Order 94-069). The applicable paragraph numbers from the SMP are indicated in parenthesis.

### **2.1 Certification (C.2)**

A transmittal letter with certification is bound into the front of this report.

### **2.2 Tabulation of SMP Recycled Water Analysis (C.2.a)**

Sampling and analyses specified in Order 96-001 Table 1 are as follows:

- Flow Rate (gallons/day): continuous monitoring, daily reporting. Measured at the Recycled Water Pump Station flow meter (must be corrected for potable water – see Section 2.5).
- Flow Rate (gallons/day): at reuse areas, calculated from water billing records
- Total coliform (MPN/100 ml): grab samples, daily, or at frequency specified in NPDES permit (3x/week).
- Turbidity (NTU): continuous monitoring, daily reporting; collected at the WPCP's filtered water sump immediately prior to chlorination.
- Dissolved Oxygen (mg/L): 3x/week grab samples
- Dissolved Sulfides (mg/L): 3x/week grab samples (if DO<1 mg/L)

Data for RWPS flow and pressure, potable water flow, turbidity, chlorine residual, and C\*T are recorded continuously by the WPCP's SCADA system. A similar SCADA system at the SLPS monitors recycled and potable water flows, pressure, and tank level. The SLPS SCADA system can be controlled locally, from the WPCP, or from the Water and Sewer Services Division

office. Trend plots of “real time” and historic data can be viewed at the SCADA terminal.<sup>3</sup> The SCADA system also generates daily and monthly compliance summary reports that list the daily average values for flow, turbidity and chlorine residual for periods of recycled water production.

During periods of recycled water production, samples for total coliform and dissolved oxygen were collected from the recycled water sample point for analysis at the WPCP laboratory.<sup>4</sup> Samples were not analyzed for sulfides, because the dissolved oxygen never dropped below 1 mg/L. Turbidity values are tracked in the WPCP’s SCADA system, and reported on daily and monthly “Title 22” SCADA reports that are maintained on file at the WPCP. A review of the sample data shows that all recycled water delivered met the water quality requirements listed in Section 1.1. In accordance with the Water Board’s January 2005 letter to General Water Reuse Order permittees (File No. 2170.00 (RJC)), tabulations of daily recycled water quality data are not submitted with this report, but maintained on-site at the WPCP.

Attachment A is a summary of recycled water quality data not required under the SMP, but which may be of interest to recycled water users. The water quality data in Attachment A does not reflect the addition of potable water. Thus the actual average levels of certain constituents (e.g. TDS) in the recycled water are lower than indicated in Attachment A.

### **2.3 Tabular Summary of Recycled Water Use (C.2.b)**

Attachment B-1 is a listing of recycled water use sites, with water usage shown for each site by billing period and total for the year. The customer billing data indicates an annual total usage of 260 million gallons for all sites. WPCP SCADA system flow records indicate that in 2011, 65.4% of this total was potable water added to the distribution system at the WPCP or the San Lucar Storage Tank (see Section 2.5). This percentage was much higher than is normally the case. In most years 15-20% of the water delivered through the recycled water network is potable. Reasons for the higher potable fraction include contractual allocations under the agreements with potable water suppliers, and activities at the WPCP which conflicted with recycled water production, including the Mode 1 nitrification study, chronic toxicity testing, and issues related to operational complexity. Thus, the net recycled water usage for 2011 based on site billing data is estimated to be 90 million gallons.<sup>5</sup> An independent measurement of recycled water usage can be made on the basis of flows delivered into the system, as described in Section 2.5.

Attachment B-2 summarizes recycled water usage data from Attachment B-1. The data in Attachment B-2 is organized in accordance with the format specified in the above-referenced January 2005 Water Board letter to General Water Reuse Order permittees.

---

<sup>3</sup> Turbidity measurements from analyzers located before and after the dual media filters are also recorded on circular charts in the Tertiary Control Room.

<sup>4</sup> The sample point is located on the Recycled Water Pump Station piping.

<sup>5</sup> This value does not include recycled water used internally at the WPCP for process purposes. See Section 2.5

## 2.4 List of New Authorized Recycled Water Users (C.2.c)

Three new recycled water use sites were connected and permitted 2011. Fourteen existing sites had permits renewed in 2011. The sites are listed in Attachment B-1 and D.

## 2.5 Summary of Total Daily Recycled Water Delivered by the Producer (C.2.d)

A listing of daily recycled water deliveries is presented in Attachment C-1. Monthly totals are shown at the bottom of each column, and are summarized in Attachment C-2. Attachment C-1 is derived from the daily cumulative flow measured at the RWPS as recorded by the SCADA system. Since the RWPS flow meter is located downstream from the WPCP's potable water addition point, its readings include potable water added at that location. Since potable water additions are also metered, these readings are subtracted from the RWPS flowmeter readings to determine the net recycled water deliveries listed in Attachment C-1.

The primary point of potable water addition to the recycled water system is the San Lucar Storage Tank. Volumes of potable water added at that location are listed in Attachment C-2, along with monthly summary data from Table C-1. A review of Attachment C-2 shows a total of 123 million gallons of recycled water plus 233 million gallons of potable water were delivered, based on RWPS and San Lucar Pump Station flowmeter readings for water entering the distribution system. The resulting total of 356 million gallons compares to a total delivery of 260 million gallons (recycled plus potable) as determined from customer billing data, as reported in Section 2.3 above. (The corresponding difference in estimates for the recycled water fraction only are 123 million gallon based on RWPS and San Lucar Pump Station flowmeter readings versus 90 million gallons based on customer records). The difference in total water deliveries as calculated by these two methods is much greater than the 5-10% difference typically observed. The reason for the discrepancy is unknown, but is being investigated.<sup>6</sup>

Recycled water deliveries listed in Attachment C-1 do not include recycled water used for process purposes at the WPCP (i.e. Plant No. 3 water). This usage is tabulated in final column in Attachment C-2. During 2011, a total of 214 million gallons was used internally at the WPCP for process purposes.

## 2.6 Tabulation of User Site Inspections Conducted by the Producer (C.2.e)

Results from user site inspections conducted by the Recycled Water Program staff are documented on the *City Inspectors Monitoring Report*. A listing of site inspections conducted

---

<sup>6</sup> Some difference between the two totals is expected, since different types of flow meters are used and user billing periods do not exactly match the calendar months. The unusually large difference in 2011 coincided with a year when potable water use (as a percentage of total deliveries) was also very high. This suggests the problem may lie in the accuracy of the potable meters. The volume estimate based on site usage is probably the more accurate figure, because it is based on revenue meters that are inherently more accurate.

in 2011 is included in Attachment D.

## **2.7 Summary of Effluent Violations Related to Water Recycled Water Use, Violations Found During Inspection of Reuse Sites, Corrective Actions Taken, and any Changes to, or Revoking of User Authorizations by the Producer. (C.2.f)**

### **2.7.1 Production & Distribution**

No violations related to production of recycled water were observed during the year.

### **2.7.2 Use Sites**

No violations related to use of recycled water were observed during the year.

## **2.8 Update Regarding Current and Future Development of the Recycled Water Program (C.2.g)**

### **2.8.1 Facilities Completed During 2011**

Aside from service laterals, no recycled water production or distribution facilities were completed in 2011.

### **2.8.2 Current Facilities Construction**

No recycled water production or distribution facilities are currently under construction.

### **2.8.3 Recycled Water Hook-ups Planned for Year 2012**

In 2012, the City expects to provide recycled water service to two use sites currently under construction, and to three or four additional retrofit sites..

### **2.8.4 Required Reports and Technical Documents**

The City submitted the 2010 Recycled Water Annual Report on March 15, 2011.

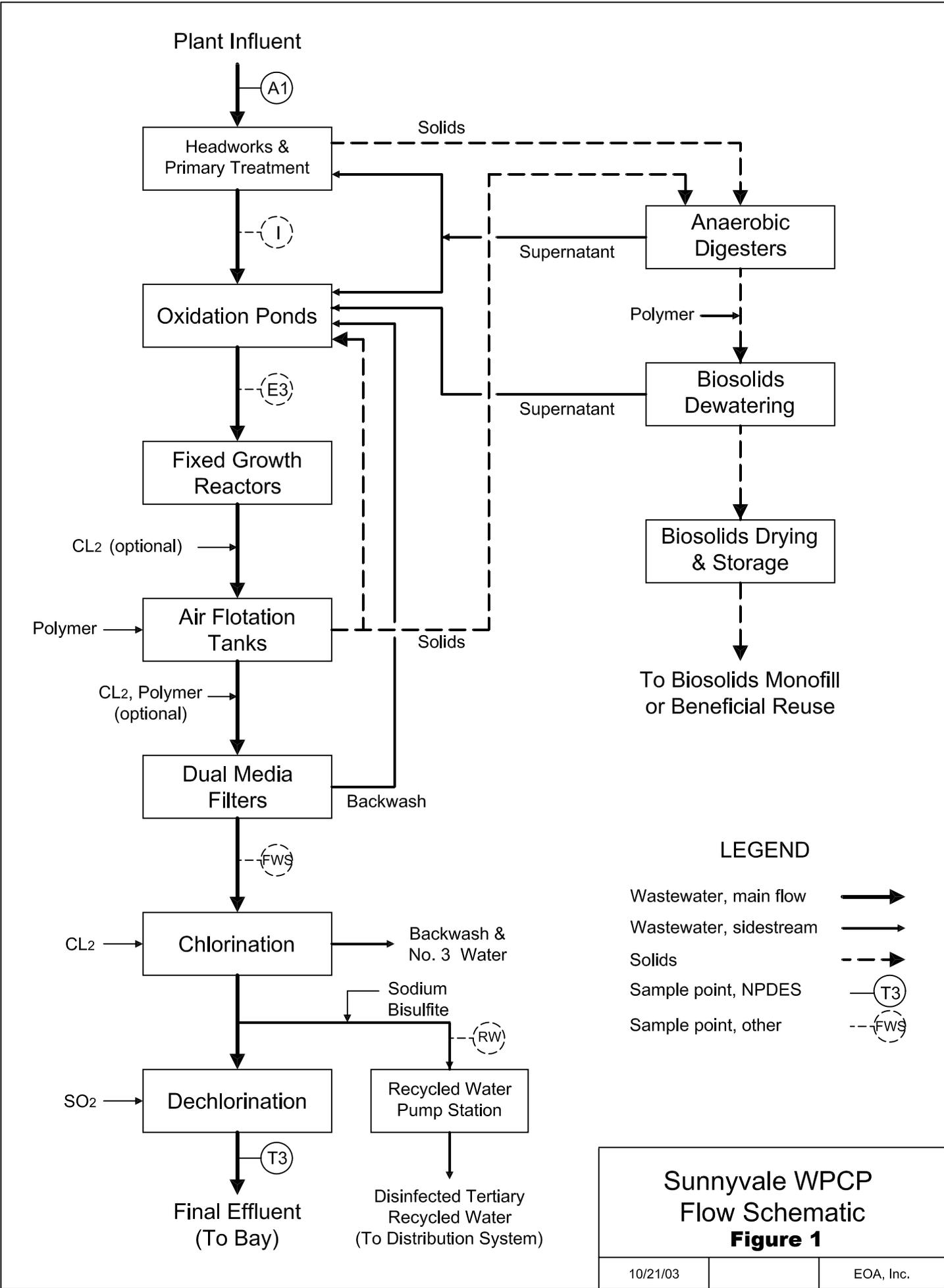
## **2.9 Progress and Evaluation of Any Special Studies or Projects Being Undertaken Related to the Program (C.2.h)**

Recycled Water Master Plan Update In 2011, the City initiated the process of updating the 2000 Recycled Water Master Plan. The project will explore the potential for expanded use of recycled water within the City (for both irrigation and other approved uses) and the associated water quality requirements. It will also examine storage options, engineering standards, marketing issues, potential for interconnects with other recycled water agencies, and other related issues. A request for proposals (RFP) from engineering consultants was released in late 2011. Consultant selection is expected to occur in spring of 2012, and the Plan will be completed in 2013.

Regional Recycled Water Intertie The City is investigating the feasibility of an intertie between the City's recycled water distribution system and the South Bay Water Recycling (SBWR) system. An intertie would enhance system reliability and provide the option of distributing lower-TDS recycled water from SBWR to new and existing customers in Sunnyvale. This would allow the design and construction of improved recycled water production facilities at the WPCP (see below) to proceed with less time pressure. Several potential intertie alignments have been identified. The intertie concept will be presented to Council in March 2012. City staff expect the concept will be further developed in 2012.

Strategic Implementation Plan The WPCP's Strategic Implementation Plan (SIP) and related initiatives are examining alternatives for physical improvements and process enhancements that will be needed to maintain the WPCP's current high level of treatment over the long term, and to meet potentially more stringent treatment requirements in the future. One of the SIP's high priority process enhancements is upgrading the WPCP's recycled water production process, from the current "batch" treatment method to a continuous process that operates in parallel with the normal (NPDES discharge) process. Efforts associated with the SIP will continue to advance in 2012.

Regional Developments The City continues to track State and regional developments and participates in regional and national water recycling associations.



**LEGEND**

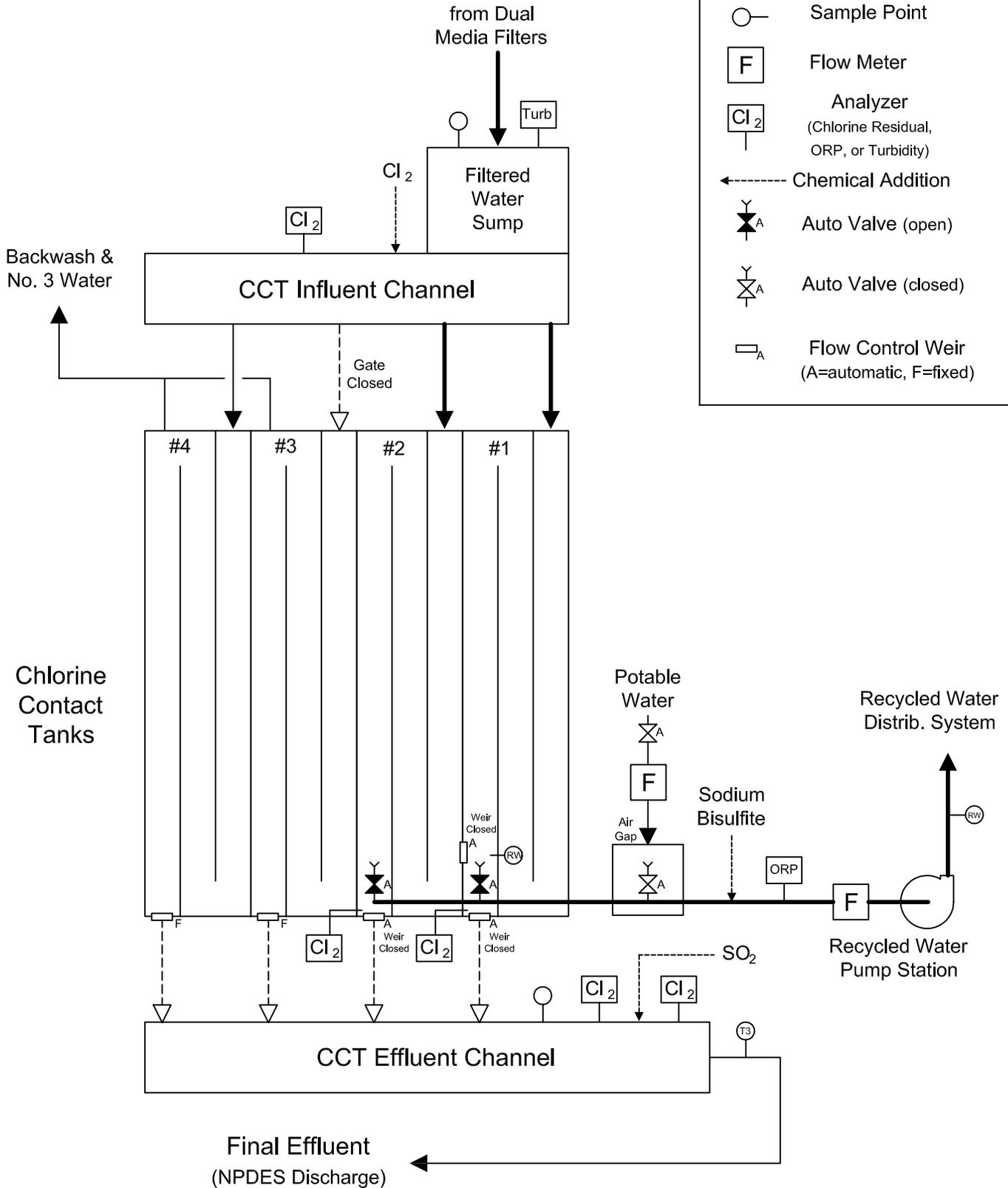
- Wastewater, main flow →
- Wastewater, sidestream →
- Solids - - - →
- Sample point, NPDES — (T3)
- Sample point, other - - - (FWS)

**Sunnyvale WPCP  
Flow Schematic  
Figure 1**

10/21/03		EOA, Inc.
----------	--	-----------

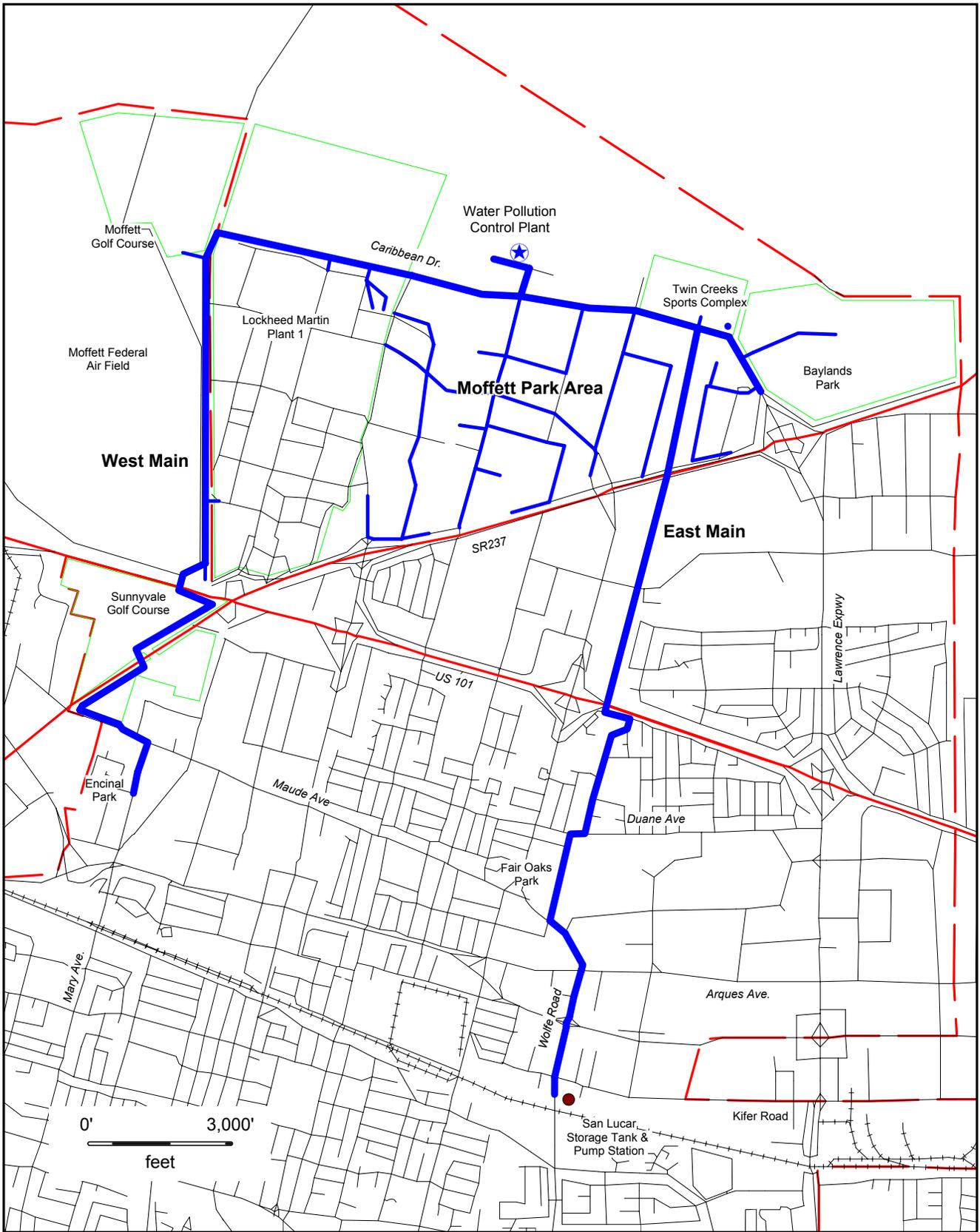
**LEGEND**

-  Sample Point
-  Flow Meter
-  Analyzer  
(Chlorine Residual, ORP, or Turbidity)
-  Chemical Addition
-  Auto Valve (open)
-  Auto Valve (closed)
-  Flow Control Weir  
(A=automatic, F=fixed)



Note: NPDES discharge is normally zero during recycled water production.

**Figure 2**  
Recycled Water Production Schematic  
Production Mode 3



	<b>Recycled Water Distribution System</b> City of Sunnyvale Water Recycling Program	<b>Legend</b> Existing Main Lines  Existing Secondary Lines 	Figure No. 3
			EOA, Inc.
			March 2001

**Attachment A**  
**Recycled Water Quality Report**

### City of Sunnyvale Recycled Water Quality Report

Anions	1/20/2011	2/28/2011	3/14/2011	5/21/2011	6/26/2011	7/26/2011	8/1/2011	9/7/2011				
<b>Chloride (mg/L)</b>	220	214	220	239	281	292	307	305				
(meq/L)	6.20	6.03	6.20	6.73	7.92	8.23	8.65	8.59	0.00	0.00	0.00	0.00
<b>Bicarbonate (mg/l)</b>	96	116	126	172	140	139	141	128				
(meq/L)	1.57	1.90	2.07	2.82	2.30	2.28	2.31	2.10	0.00	0.00	0.00	0.00
<b>Sulfate (mg/L)</b>	86	84	93	94	92	84	81	74				
(meq/L)	1.79	1.75	1.94	1.97	1.92	1.74	1.68	1.54	0.00	0.00	0.00	0.00
<b>Nitrate (mg/L)</b>	25	20	15	8	8	14	11	11				
(meq/L)	0.40	0.32	0.24	0.12	0.13	0.23	0.18	0.18	0.00	0.00	0.00	0.00
<b>Phosphate (mg/l)</b>	3.2	4.0	4.3	2.4	3.0	5.5	5.4	5.2				
(meq/l)	0.10	0.13	0.14	0.07	0.09	0.17	0.17	0.16	0.00	0.00	0.00	0.00
<b>Sum of Anions (meq/l)</b>	<b>10.1</b>	<b>10.1</b>	<b>10.4</b>	<b>11.7</b>	<b>12.3</b>	<b>12.6</b>	<b>13.0</b>	<b>12.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Cations</b>												
<b>Calcium (mg/L)</b>	55	53	56	58	50	48	55	50				
(meq/L)	2.73	2.65	2.81	2.89	2.49	2.41	2.73	2.49	0.00	0.00	0.00	0.00
<b>Magnesium (mg/l)</b>	34	23	32	40	39	42	44	39				
(meq/L)	2.83	1.94	2.68	3.33	3.24	3.48	3.64	3.24	0.00	0.00	0.00	0.00
<b>Sodium (mg/L)</b>	142	137	141	161	160	190	194	192				
(meq/L)	6.17	5.96	6.13	7.00	6.96	8.26	8.43	8.35	0.00	0.00	0.00	0.00
<b>Sum of Cations (meq/l)</b>	<b>11.7</b>	<b>10.5</b>	<b>11.6</b>	<b>13.2</b>	<b>12.7</b>	<b>14.1</b>	<b>14.8</b>	<b>14.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Quality Parameters</b>	*ortho phosphate as P		1.35		1.94	3.94	3.95	4.86				
TDS, mg/l	834	774	760	822	838	858	968	905				
Conductivity, dS/m	1.27	1.16	1.21	1.36	1.43	1.52	1.59	1.44				
Hardness, mg/l as CaCO <sub>3</sub>	276	228	272	308	284	292	316	284				
Alkalinity, mg/l as CaCO <sub>3</sub>	96	116	126	172	140	139	141	128				
Salinity, g/l	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.7				
Boron, mg/l	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4				
Ammonia, mg/l *	2.0	4.5	0.1	0.9	0.6	1.0	0.6	0.3				
pH, standard units	7.03	7.09	7.67	7.21	7.56	7.47	7.23	7.2				
HCO <sub>3</sub> /Ca, ratio	0.58	0.72	0.74	0.98	0.92	0.95	0.85	0.84				
SAR <sub>Na</sub>	3.78	4.00	3.81	4.10	4.11	4.78	4.81	4.93				
SAR	3.70	3.93	3.70	3.97	4.11	4.81	4.73	4.93				

\* Monthly average

Note: This table represents water quality "as produced". It does not reflect the effects of potable water added to the recycled water stream. See Section 2.3 of report.

**Attachment B-1**

**Listing of Recycled Water Use Sites and Water Usage**

**Attachment B-1. List of Recycled Water Use Sites with Water Usage - 2011**

Acct (CID)	LID	Site Name	Address	Use	Original Permit	Current Permit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Usage <sup>2</sup> ccf/yr	Total Usage <sup>2</sup> mgal/yr	RW Total <sup>2</sup> mgal/yr	Usage % of Total	Approx Acres Applied
145641	248	RGB Networks Inc.	390 Java Drive	irr	11-08-07	03-27-08	0	60	40	103	159	177	168	162	168	149	130	48	1,364	1.0	0.35		
162211	256	Java Drive LLC	350 Java Drive	irr	12-23-98	06-25-08	0	348	115	51	300	431	374	378	323	225	268	-256	2,316	1.7	0.60		
107531	266	Juniper Networks	150-160 Gibraltar Court	irr	12-23-98	03-29-08	0	21	7	24	99	182	154	133	135	117	54	23	949	0.7	0.25		
78879	288	AMCC Switching & Net.	201-215 Moffett Park Drive	irr	09-28-06	06-22-10	0	3	6	7	298	611	329	323	372	670	440	216	3,275	2.4	0.85		
139963	292	MCERA	1190 Borregas Avenue	irr	04-28-06	07-22-10	4	14	13	37	54	69	71	77	98	96	74	36	643	0.5	0.17		
150401	302	Various Inc	220 Humboldt Court	irr	01-28-99	04-09-08	9	25	18	33	64	158	118	92	147	183	85	64	996	0.7	0.26		
132431	310	Modified Polymer Comp.	242-252 Humboldt Court	irr	03-25-04	10-20-09	0	22	22	15	63	66	78	68	74	82	50	53	593	0.4	0.15		
120361	324	Cloudshield Tech.	212 Gibraltar Drive	irr	10-25-04	12-08-09	3	27	17	45	72	100	140	143	148	73	47	0	815	0.6	0.21		
140505	352	Hanover Properties	1213 Innsbruck Drive	irr	12-10-98	02-16-07	0	38	41	75	109	255	209	208	167	234	91	97	1,524	1.1	0.39		
157937	358	Medtronic	1221 Crossman Avenue	irr	01-10-98	05-21-11	35	263	634	931	1058	1346	1190	1227	1185	1010	590	271	9,740	7.3	2.52		
144745	378	Moffett Plaza	250-270 Java Drive	irr	08-05-03	09-29-09	0	1	0	0	0	1	2	0	1	1	1	1	8	0.0	0.00		
555	396	Jo-El Associates	1200 Crossman Avenue - A	irr	08-08-06	07-14-10	10	45	25	35	114	155	120	103	90	124	98	38	957	0.7	0.25		
122521	408	CTT, Inc.	241 Java Drive	irr	08-04-06	12-18-10	6	55		34	81	159	137	125	135	141	70	19	962	0.7	0.25		
143183	414	SCM Properties LLC	111 W. Java Drive	irr	08-25-08	02-19-09	1	67	103	107	142	257	185	222	234	235	182	187	1,922	1.4	0.50		
117281	424	Infinera	169 Java Drive	irr	04-01-04	05-06-09	32	27	26	33	38	86	54	51	58	66	38	37	546	0.4	0.14		
149319	430	TMG / Moffett LLC	399 Java Avenue	irr	01-22-03	No Use	0	1	0	0	0	1	2	0	1	1	1	1	8	0.0	0.00		
161549	466	California Bavarian	1380 Bordeaux Drive	irr	06-11-08	06-17-09	0	53	37	73	155	183	446	195	172	182	110	269	269	0.2	0.07		
160421	506	Spirent Communications	1325 Borregas Avenue - A	irr	09-29-06	08-10-10	69	57	55	124	267	347	268	306	186	271	87	97	2,134	1.6	0.55		
117281	518	Infinera	140 Caspian Court	irr	05-08-01	05-06-09	0	0	0	48	115	192	158	173	183	135	121	94	1,219	0.9	0.32		
143293	526	Hines VAF NO CAL Prop	207 Java Drive	irr	07-01-03	09-06-04	3	33	25	51	67	97	104	90	84	79	26	19	678	0.5	0.18		
152845	528	Morgan Hill Properties	222 Caspian Drive	irr	08-01-06	07-28-10	43	74	19	69	82	96	143	128	110	85	31	26	906	0.7	0.23		
143205	532	Dollinger Rock Assoc	246 Caspian Drive	irr	02-09-08	02-14-08	0	12	15	16	17	126	86	74	76	60	44	39	565	0.4	0.15		
101419	546	Network App/Devcon	1330 Geneva Drive	irr	11-05-03	11-05-11	4	57		176	371	522	557	468	540	286	250	154	3,385	2.5	0.88		
107717	556	ARM Physical IP	310 Caribbean Drive	irr	01-24-03	05-13-08	0	40	23	4	36	104	96	89	73	10	104	41	620	0.5	0.16		
147727	578	Arden Realty LP	1362-1370 Borregas Avenue	irr	12-23-98	08-19-09	0	25	55	59	63	249	184	172	187	121	50	29	1,194	0.9	0.31		
141535	590	Business Ventures	1390-1398 Borregas Avenue	irr	10-07-02	04-30-09	0	18	27	38	109	215	179	164	143	127	43	28	1,091	0.8	0.28		
883	622	Modular Devices	1312 Crossman Avenue	irr	03-01-99	03-08-08	5	88	32	107	146	301	209	174	176	189	203	89	1,719	1.3	0.44		
132065	624	Aruba Networks	1322 Crossman Avenue	irr	05-30-03	03-22-08	11	22	9	4	87	138	162	55	140	148	68	37	881	0.7	0.23		
132065	632	Arden Realty LP	1344 Crossman Avenue	irr	11-21-06	11-04-10	24	66	105	149	247	377	278	265	285	218	92	60	2,166	1.6	0.56		
101419	644	Network Appliance	1347 Crossman Avenue	irr	06-26-98	02-16-07	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
143359	668	AMB Property	1299 Orleans Drive	irr	03-24-04	07-01-09	24	66	105	149	247	377	278	265	285	218	92	60	2,166	1.6	0.56		
146203	686	Arden Realty LP	1320 Orleans Drive	irr	05-09-06	07-27-10	4	17	37	45	75	131	110	103	116	96	42	26	802	0.6	0.21		
883	692	Molecular Devices	1330 Orleans Drive	irr	04-05-07	05-14-09	0	30		44	74	68	61	17	0	0	0	0	294	0.2	0.08		
101419	702	Network Appliance	603-641 Baltic Way	irr	03-11-03	01-20-09	1	65	8	111	350	503	416	366	370	325	161	62	2,738	2.0	0.71		
101419	710	Network Appliance	1366 Crossman Avenue	irr	03-11-03	01-13-09	6	77	26	101	239	347	290	181	257	294	194	119	2,131	1.6	0.55		
146203	720	Arden Realty LP	904-918 Caribbean Drive	irr	08-03-06	12-18-10	12	10	20	48	105	218	178	165	205	103	51	21	1,136	0.8	0.29		
110425	728	Finisar	1399 Moffett Park Drive	irr,C,F	05-12-06	11-02-10	1	299	245	266	546	720	615	575	689	491	241	269	4,957	3.7	1.28		
1073	754	LTOC Bldg. 597	1309 Moffett Park Drive	irr	05-18-04	03-16-09	8	29	61	86	146	326	225	206	256	114	79	61	1,597	1.2	0.41		
146203	764	Arden Realty LP	1308 Moffett Park Drive	irr	06-23-06	11-02-10	117	149	82	185	417	267	550	523	626	392	205	191	3,704	2.8	0.96		
141535	57068	Dolinger Properties	1221 Innsbruck Drive	irr	10-13-06	06-20-11	0	26	4	3	58	120	100	95	89	67	4	5	571	0.4	0.15		
101419	57594	Network App/Devcon	1350 Geneva Drive	irr	11-17-98	Hold	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
150693	57596	I & G Caribbean, Inc	1320-1324 Chesapeake Ter	irr	07-24-03	06-14-09	1	88	33	19	218	355	288	364	321	193	63	57	2,000	1.5	0.52		
134487	57602	Country Inns & Suites	1300 Chesapeake Terrace	irr	04-29-03	06-14-09	139	108	233	115	132	100	95	94	109	101	85	92	1,403	1.0	0.36		
150693	58562	I & G Caribbean, Inc	1315-1317 Chesapeake Ter	irr	07-24-03	06-14-09	0	56	16	1	178	302	239	242	275	275	223	154	1,961	1.5	0.51		
150693	58568	I & G Caribbean, Inc	1325-1327 Chesapeake Ter	irr	07-24-03	06-14-09	0	56	16	1	178	302	239	242	275	275	223	154	1,961	1.5	0.51		
101419	59102	Network Appliance	495 Java Drive	irr	06-18-01	11-05-11	5	263	117	289	601	856	596	688	710	569	251	317	5,262	3.9	1.36		
139855	69992	Lowe's Hardware	811 E Arques Avenue	irr	04-28-06	05-17-11	168	202	165	452	703	862	863	695	904	489	453	204	6,160	4.6	1.59		



**Attachment B-1. List of Recycled Water Use Sites with Water Usage - 2011**

Acct (CID)	LID	Site Name	Address	Use	Original Permit	Current Permit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Usage <sup>2</sup> ccf/yr	Total Usage <sup>2</sup> mgal/yr	RW Total <sup>2</sup> mgal/yr	Usage % of Total	Approx Acres Applied
101419	70008	Network Appliance	1345 Crossman Drive	irr	01-16-07	11-05-11	0	20	6	42	127	128	121	116	122	106	71	66	925	0.7	0.24		
113657	71088	Moffett Field / City of S.Va	0 Moffett Field 1	irr	11-03-98	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
98989	71848	Homestead Village	1255 Orleans Drive	irr	11-22-06	11-22-06	104	85	49	92	262	310	277	259	253	254	85	37	2,067	1.5	0.53		
325	71952	Lockheed-Martin	151 Gibraltar Court	irr	05-01-02	03-05-08	0	0	0	0	61	104	87	81	88	103	58	28	610	0.5	0.16		
150261	72090	Moffett Towers Lot #1 Lsc	0 Enterprise Way	irr	08-30-04	08-30-04	3	46	33	90	228	384	431	389	442	271	128	144	2,589	1.9	0.67		
149319	72280	TMG / Moffett LLC	1333 Bordeaux Drive	irr	01-22-03	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
913	72288	AMB Property	225-257 Humboldt Court	irr	03-29-04	02-25-09	0	43	57	44	158	219	112	103	103	112	94	102	1,147	0.9	0.30		
109459	72382	Kalil Jenab	141 Caspian Court	irr	11-06-04	06-03-07	0	43	36	121	104	169	117	111	141	126	88	76	1,132	0.8	0.29		
101419	72384	Network Appliance	1275 Crossman Drive	irr	06-18-01	11-05-11	3	108	92	148	187	210	268	274	332	233	126	59	2,040	1.5	0.53		
99685	72438	Lockheed-Martin #159	1st & E Street	irr	08-30-04	06-03-10	23	65	28	298	883	1007	1054	1224	1352	393	140	27	6,494	4.9	1.68		
158143	72768	California Bavarian	1376 Bordeaux Drive	irr	06-11-08	06-17-09	1	50	7	36	136	205	270	198	173	178	67	55	1,376	1.0	0.36		
159377	72954	Innopath Software, Inc.	400 Caribbean Avenue	irr	04-25-01	05-21-08	2	0	133	29	58	166	122	117	192	125	88	64	1,096	0.8	0.28		
101419	73154	Network Appliance	1260 Crossman Drive	irr	04-24-01	05-05-11	3	48	31	176	440	511	459	417	341	261	177	164	3,028	2.3	0.78		
101419	73238	Network Appliance	475 Java Drive	irr,imp	06-18-01	11-05-11	25	84	29	107	303	246	310	295	299	278	182	111	2,269	1.7	0.59		
78055	73270	BMC Software	1030 W. Maude Avenue	irr	09-28-01	09-06-08	22	147	79	170	247	545	348	347	369	305	94	10	2,683	2.0	0.69		
140719	73434	Gibraltar SVL Holdings LL	165 Gibraltar Court	irr	05-17-02	08-21-08	0	10	1	28	50	76	25	51	114	167.9	98	104	725	0.5	0.19		
112065	73508	Yahoo	701 & 781 1st Avenue	irr	06-05-06	12-18-10	48	55	37	84	201	340	454	364	513	143	130	138	2,507	1.9	0.65		
112065	73512	Yahoo	721 & 741 1st Avenue	irr	06-05-06	12-18-10	46	56	44	218	471	386	636	414	702	387	172	220	3,752	2.8	0.97		
114763	73518	Moffett Park Dr. LLC	801-811 11th Avenue	irr,imp,F	06-01-01	08-09-09	127	124	247	533	923	1309	1143	1233	2148	908	486	425	9,606	7.2	2.48		
114763	73548	Moffett Park Dr. LLC	801 11th Avenue	irr	02-19-02	08-09-09	89	0	0	261	161	92	77	415	246	64	49	6	1,460	1.1	0.38		
115969	73610	Borregas Associates	1277 Borregas Avenue	irr	05-15-02	07-30-08	35	28	26	61	92	156	115	110	102	69	36	44	874	0.7	0.23		
112065	73642	Yahoo / Marvell Semi	700 1st Avenue	irr	06-05-06	12-18-10	714	189	212	282	421	588	515	503	622	435	512	241	5,234	3.9	1.35		
107531	75152	Juniper Network	0 11 th Avenue	irr	06-17-10	06-17-10	10	413	422	582	1245	1590	1751	1685	1663	987	469	348	11,165	8.4	2.89		
112065	73684	Yahoo	589 Java Drive	irr	06-05-06	12-18-10	1	319	333	505	585	723	590	485	593	721	376	170	5,401	4.0	1.40		
159507	75180	Moffett Towers Lot #3	1120 Enterprise Way	irr	05-20-09	05-20-09	6	116	88	519	653	1071	1803	1121	1135	623	326	224	7,685	5.7	1.99		
159507	75184	Moffett Towers Lot #3	1160 Enterprise Way	irr	05-20-09	05-20-09	6	116	88	519	653	1071	1803	1121	1135	623	326	224	7,685	5.7	1.99		
150261	75216	Moffett Towers Lot #1	1000 H St. / 11th Avenue	irr	11-26-07	05-13-09	226	318	200	545	988	1541	1547	1387	1365	777	273	98	9,265	6.9	2.40		
101419	75338	Network Appliance	1375 Crossman Avenue	irr	03-25-08	03-25-08	294	31.7	252	343	1331	1299	1049	908.4	750.3	592.2	295	749	7,895	5.9	2.04		
112059	75344	Lockheed-Martin	1111 Lockheed Way	irr	09-12-07	08-04-10	6	8	4	107	274	324	472	497	488	209	188	68	2,645	2.0	0.68		
149407	75348	Moffett Towers # 3	1100-1180 Enterprise Way	irr	09-12-07	10-27-09	8	5	9	127	164	236	247	257	295	165	65	69	1,647	1.2	0.43		
<b>Number of Sites =</b>														<b>89</b>	<b>Category Total Use</b>				<b>203,544</b>	<b>152.25</b>	<b>52.63</b>	<b>58.5%</b>	<b>160</b>

**Agriculture - None**

**Industrial - Cooling**

110425	728	Finisar <sup>5</sup>	1399 Moffett Park Drive	irr,C,F	11-25-97	11-02-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
<b>Number of Sites =</b>														<b>1</b>	<b>Category Total Use</b>				<b>0</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0%</b>	

**Industrial - Other (Non-Irrigation)**

98993	71856	Raisch Products	600 Caribbean Avenue	other	12-10-01	01-12-09	0	69	306	397	854	965	718	574	562	578	282	309	5,614	4.2	1.45		
164825	75952	Synago	1444 Borregas Ave	other	10-31-11	10-31-11	0	0	0	0	0	0	0	0	6	7	70	230	313	0.2	0.08		
	N/A	Permit RW tanker usage from WPCP		irr,oth	01-01-04	No Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.00		
<b>Number of Sites =</b>														<b>3</b>	<b>Category Total Use</b>				<b>5,927</b>	<b>4.43</b>	<b>1.53</b>	<b>1.7%</b>	

**Environmental Enhancement - None**

**Dual Plumbing**

112059	75140	Lockheed Martin # 176-1	0 First Avenue Lsc	irr,oth	07-22-09	07-22-09	8	9	6	8	124	195	189	178	213	129	49	6	1,114	0.8	0.29		
148407	70298	Green Team/Zanker	301 Carl Road	irr,oth	01-09-01	08-04-09	47	39	59	39	146	266	228	162	47	450	123	38	1,644	1.2	0.43		

### Attachment B-1. List of Recycled Water Use Sites with Water Usage - 2011

Acct (CID)	LID	Site Name	Address	Use	Original Permit	Current Permit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Usage <sup>2</sup> ccf/yr	Total Usage <sup>2</sup> mgal/yr	RW Total <sup>2</sup> mgal/yr	Usage % of Total	Approx Acres Applied
---------------	-----	-----------	---------	-----	--------------------	-------------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	---------------------------------------	--	-------------------------------------	------------------------	----------------------------

Number of Sites =																		2	Category Total Use		2,758	2.06	0.71	0.79%	
-------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---	--------------------	--	-------	------	------	-------	--

Total	118	Grand Total Use	348,128	260.4	90.0	100.0%	430
-------	-----	-----------------	---------	-------	------	--------	-----

Includes inactive sites.

**Notes:**

1. Use Type: Irr=irrigation, Imp= impoundment, F=fountain, C=cooling tower (used as backup source only), Oth=other.
2. Total usage includes potable water delivered through the Recycled Water system. Adjusted RW total is 34.6% of total usage, to account for the potable water fraction.
3. 40 ccf deducted from each month's reading and assigned to dual plumbing use below.
4. Billing period does not correspond exactly to calendar month, and not all meters are read each billing period. 1 ccf = 748 gallons.



## **Attachment B-2**

### **Summary of Recycled Water Usage by Reuse Application Category**

## ATTACHMENT B-2

### CITY OF SUNNYVALE SUMMARY OF RECYCLED WATER USAGE BY REUSE APPLICATION CATEGORY

Calendar Year: 2011

Reuse Application Category <sup>(4)</sup>	No. of Active Sites	Approx. Area Applied (acres)	Amount Distributed <sup>(8)</sup> (MG)	% of Total Reuse Flow
<b>Landscape Irrigation</b>				
<b>Parks<sup>(5)</sup></b>	<b>3</b>	<b>65</b>	<b>9.5</b>	<b>10.6</b>
<b>Golf Courses</b>	<b>3</b>	<b>195</b>	<b>25.4</b>	<b>28.2</b>
<b>Green Belts<sup>(7)</sup></b>	<b>9</b>	<b>10</b>	<b>0.24</b>	<b>0.3</b>
<b>Schools</b>	-	-	-	-
<b>Other<sup>(6)</sup></b>	<b>85</b>	<b>180</b>	<b>52.6</b>	<b>58.5</b>
<b>Agriculture</b>				
<b>Vineyards</b>	-	-	-	-
<b>Other</b>	-	-	-	-
<b>Industrial<sup>(1)</sup></b>				
<b>Cooling</b>	<b>1<sup>1</sup></b>	-	-	-
<b>Other</b>	<b>1</b>	-	<b>1.5</b>	<b>1.7</b>
<b>Environmental Enhancement<sup>(2)</sup></b>	-	-	-	-
<b>Dual Plumbing<sup>(3)</sup></b>	<b>2</b>	-	<b>0.7</b>	<b>0.8</b>
<b>TOTAL</b>	<b>104</b>	<b>430</b>	<b>90</b>	<b>100</b>

**Notes:**

1. Industrial processes receiving recycled water include cooling, construction applications, soil compaction and dust control, etc. (Note: RW is supplied to one cooling tower site as a backup supply, but no water is actually used).
2. Environmental Enhancement includes wildlife habitat, wetland/marsh applications, etc.
3. As defined in Title 22
4. Two sites are listed under two categories because of multiple uses.
5. Parks category includes county park, large sports complex, and baseball fields.
6. Primarily comprised of landscaping at commercial/industrial office buildings. Some use in fountains.
7. Consists of freeway interchange and street median sites.
8. Based on annual total of readings from site water meters, adjusted to account for average system-wide potable water fraction (see text). Amounts listed are recycled water portion only.

**Attachment C-1**

**Tabulation of Producer's Daily Recycled Water Deliveries**

### Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons)

Day	January			February			March		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered <sup>1</sup> (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	0	0	0	0	0	0	0	0	0
2	109,440	1,440	108,000	679,680	0	679,680	0	0	0
3	290,880	0	290,880	927,360	8,640	918,720	309,600	83,520	226,080
4	1,440	0	1,440	0	0	0	227,520	1,440	226,080
5	0	0	0	264,960	0	264,960	0	0	0
6	305,280	298,080	7,200	175,680	1,440	174,240	0	0	0
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
11	0	0	0	326,880	319,680	7,200	0	0	0
12	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	57,600	2,880	54,720
14	0	0	0	594,720	1,440	593,280	1,671,840	50,400	1,621,440
15	0	0	0	1,082,880	0	1,082,880	0	0	0
16	0	0	0	0	0	0	0	0	0
17	0	0	0	236,160	0	236,160	254,880	0	254,880
18	0	0	0	211,680	1,440	210,240	203,040	0	203,040
19	0	0	0	0	0	0	0	0	0
20	1,581,120	0	1,581,120	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0
22	0	167,040	0	0	0	0	0	0	0
23	211,680	8,640	203,040	0	0	0	0	0	0
24	12,960	1,440	11,520	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0
27	0	0	0	508,320	0	508,320	0	0	0
28	0	0	0	1,144,800	0	1,144,800	0	0	0
29	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0
<b>Total gal.</b>	<b>2,512,800</b>	<b>476,640</b>	<b>2,203,200</b>	<b>6,153,120</b>	<b>332,640</b>	<b>5,820,480</b>	<b>2,724,480</b>	<b>138,240</b>	<b>2,586,240</b>
<b>Average (gal/day)</b>	<b>157,050</b>	<b>29,790</b>	<b>137,700</b>	<b>198,488</b>	<b>10,730</b>	<b>187,757</b>	<b>90,816</b>	<b>4,608</b>	<b>86,208</b>

**Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons), continued**

Day	April			May			June		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	321,120	2,880	318,240
4	0	0	0	0	0	0	87,840	5,760	82,080
5	0	0	0	0	0	0	0	0	0
6	0	0	0	2,064,960	0	2,064,960	1,440	0	1,440
7	11,520	2,880	8,640	132,480	1,440	131,040	433,440	0	433,440
8	0	1,440	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0
12	0	0	0	129,600	118,080	11,520	0	0	0
13	0	0	0	0	0	0	305,280	299,520	5,760
14	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	411,840	40,320	371,520
18	306,720	299,520	7,200	0	0	0	2,266,560	0	2,266,560
19	0	0	0	0	0	0	394,560	0	394,560
20	0	0	0	4,320	0	4,320	0	0	0
21	0	0	0	2,459,520	0	2,459,520	0	0	0
22	0	0	0	162,720	0	162,720	0	0	0
23	0	0	0	273,600	0	273,600	0	0	0
24	0	0	0	0	0	0	400,320	4,320	396,000
25	0	0	0	0	0	0	2,606,400	102,240	2,504,160
26	0	0	0	0	0	0	1,350,720	921,600	429,120
27	0	0	0	0	0	0	155,520	0	155,520
28	0	0	0	381,600	0	381,600	0	0	0
29	0	0	0	2,108,160	0	2,108,160	0	0	0
30	180,000	155,520	24,480	276,480	0	276,480	0	0	0
31				185,760	0	185,760			
<b>Total gal.</b>	<b>20,556,000</b>	<b>489,600</b>	<b>20,134,080</b>	<b>35,523,360</b>	<b>185,760</b>	<b>35,337,600</b>	<b>28,870,560</b>	<b>3,375,360</b>	<b>26,602,560</b>
<b>Average (gal/day)</b>	<b>663,097</b>	<b>15,794</b>	<b>649,486</b>	<b>1,145,915</b>	<b>5,992</b>	<b>1,139,923</b>	<b>931,308</b>	<b>108,883</b>	<b>858,147</b>

**Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons), continued**

Day	July			August			September		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	747,360	0	747,360	2,089,440	0	2,089,440	0	0	0
2	2,979,360	0	2,979,360	1,199,520	1,440	1,198,080	0	0	0
3	1,056,960	0	1,056,960	1,897,920	0	1,897,920	0	0	0
4	2,609,280	0	2,609,280	1,045,440	31,680	1,013,760	535,680	0	535,680
5	1,198,080	0	1,198,080	2,489,760	0	2,489,760	2,063,520	0	2,063,520
6	2,118,240	2,880	2,115,360	1,352,160	1,440	1,350,720	989,280	1,440	987,840
7	2,155,680	1,440	2,154,240	2,471,040	18,720	2,452,320	2,134,080	11,520	2,122,560
8	1,532,160	1,440	1,530,720	1,288,800	1,440	1,287,360	1,226,880	21,600	1,205,280
9	1,859,040	10,080	1,848,960	1,909,440	0	1,909,440	2,052,000	0	2,052,000
10	246,240	1,440	244,800	1,199,520	1,440	1,198,080	1,376,640	1,440	1,375,200
11	0	0	0	3,224,160	2,880	3,221,280	1,411,200	0	1,411,200
12	0	0	0	1,300,320	1,440	1,298,880	155,520	1,440	154,080
13	0	0	0	1,977,120	1,440	1,975,680	0	0	0
14	5,760	0	5,760	283,680	67,680	216,000	0	0	0
15	0	0	0	207,360	151,200	56,160	0	0	0
16	0	0	0	273,600	270,720	2,880	0	0	0
17	829,440	2,880	826,560	0	0	0	0	0	0
18	2,381,760	2,880	2,378,880	0	0	0	617,760	0	617,760
19	997,920	11,520	986,400	1,440	0	1,440	2,460,960	11,520	2,449,440
20	2,138,400	0	2,138,400	0	0	0	269,280	83,520	185,760
21	1,033,920	2,880	1,031,040	1,658,880	0	1,658,880	0	0	0
22	2,147,040	0	2,147,040	1,497,600	0	1,497,600	0	207,360	0
23	1,042,560	1,440	1,041,120	214,560	1,440	213,120	0	181,440	0
24	2,266,560	0	2,266,560	0	0	0	2,246,400	0	2,246,400
25	1,046,880	1,440	1,045,440	95,040	67,680	27,360	233,280	1,440	231,840
26	2,324,160	12,960	2,311,200	0	0	0	2,344,320	0	2,344,320
27	1,157,760	4,320	1,153,440	0	0	0	983,520	14,400	969,120
28	3,104,640	5,760	3,098,880	0	0	0	1,571,040	0	1,571,040
29	1,249,920	1,440	1,248,480	0	0	0	1,169,280	2,880	1,166,400
30	2,579,040	2,880	2,576,160	0	0	0	1,843,200	0	1,843,200
31	999,360	0	999,360	0	0	0			
<b>Total gal.</b>	<b>32,499,360</b>	<b>345,600</b>	<b>32,358,240</b>	<b>27,653,760</b>	<b>1,025,280</b>	<b>27,116,640</b>	<b>16,387,200</b>	<b>1,434,240</b>	<b>15,232,320</b>
<b>Average (gal/day)</b>	<b>1,048,366</b>	<b>11,148</b>	<b>1,043,814</b>	<b>892,057</b>	<b>33,074</b>	<b>874,730</b>	<b>528,619</b>	<b>46,266</b>	<b>491,365</b>

**Attachment C-1. Listing of Recycled Water Delivered by Producer (gallons), continued**

Day	October			November			December		
	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)	RWPS Meter (gal/day)	Potable Meter (gal/day)	Net RW Delivered (gal/day)
1	836,640	1,440	835,200	0	0	0	0	0	0
2	1,899,360	0	1,899,360	0	0	0	0	0	0
3	201,600	0	201,600	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	309,600	312,480	0
6	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	260,640	263,520	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0
18	0	0	0	0	122,400	0	0	0	0
19	0	0	0	0	105,120	0	0	0	0
20	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0
24	0	241,920	0	0	0	0	0	0	0
25	0	213,120	0	0	0	0	0	0	0
26	0	348,480	0	0	0	0	0	0	0
27	0	324,000	0	0	0	0	0	0	0
28	0	20,160	0	0	0	0	0	0	0
29	0	5,760	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0
31	0	380,160	0	0	0	0	0	0	0
<b>Total gal.</b>	<b>15,400,800</b>	<b>410,400</b>	<b>14,991,840</b>	<b>10,242,720</b>	<b>550,080</b>	<b>10,182,240</b>	<b>4,491,360</b>	<b>483,840</b>	<b>4,098,240</b>
<b>Average (gal/day)</b>	<b>496,800</b>	<b>13,239</b>	<b>483,608</b>	<b>330,410</b>	<b>17,745</b>	<b>328,459</b>	<b>144,883</b>	<b>15,608</b>	<b>132,201</b>

**Attachment C-2**

**Summary of Recycled Water Deliveries and Use at WPCP**

**Attachment C-2**  
**Summary of Recycled Water Deliveries and Use at WPCP**

<b>Month</b>	<b>Net Recycled Water Delivered from WPCP (gallons)</b>	<b>Potable Water Added at WPCP (gallons)</b>	<b>Potable Water Added at San Lucar Storage Tank (gallons)</b>	<b>WPCP Internal Usage<sup>1</sup> (gallons)</b>
Jan-11	2,203,200	476,600	1,634,400	15,825,600
Feb-11	5,820,500	332,600	2,842,600	14,990,400
Mar-11	2,586,200	138,200	3,746,900	16,809,100
Apr-11	40,300	459,400	26,246,900	18,015,800
May-11	8,059,700	119,500	37,306,100	18,275,000
Jun-11	7,358,400	1,376,600	36,224,600	18,489,600
Jul-11	41,739,800	67,700	15,959,500	19,798,600
Aug-11	27,056,200	620,600	30,805,900	18,864,000
Sep-11	25,532,600	540,000	21,555,400	19,905,100
Oct-11	2,936,200	1,798,600	20,550,200	19,615,700
Nov-11	0	227,500	14,768,600	16,979,000
Dec-11	0	312,500	15,338,900	16,555,700
<b>Total</b>	<b>123,333,100</b>	<b>6,469,800</b>	<b>226,980,000</b>	<b>214,123,600</b>

1. Diverted for WPCP process use prior to recycled water pump station. Recycled water used for irrigation at the WPCP comes from the recycled water distribution system and is included in the tabulation of user sites (Attachment B-1).

2. All values rounded to the nearest 100 gallons

**Attachment D**

**Tabulation of City Inspections of Use Areas**

### Attachment D: Tabulation of City Inspections of Use Areas

ACCT. #	LID #	COMPANY NAME	LOCATION	PERMIT DATE
<b>PERMITS RENEWED</b>				
171	144	Cilker Orchard	333-385 Moffett Park Drive	04/20/11
101419	73154	Network Appliance	1260 Crossman Ave	05/05/11
139855	69992	Lowes	811 Arques Ave	05/17/11
148659	112	Dollinger Properties	1250 Borregas Ave	06/20/11
141535	57068	Dollinger Properties	1221 Innsbruck Drive	06/20/11
148659	112	Dollinger Properties	1250 Borregas Ave	06/20/11
141535	57068	Dollinger Properties	1221 Innsbruck Drive	06/20/11
99313	72092	City of Sunnyvale	999 Caribbean Drive	08/04/11
146203	358	Manzant	1215 Bordeaux Drive	09/08/11
101419	73238	Network Appliance	475 E Java Drive	11/05/11
101419	59102	Network Appliance	495 E Java Drive	11/05/11
101419	72384	Network Appliance	1275 Crossman Ave	11/05/11
101419	546	Network Appliance	1330 Geneva Drive	11/05/11
101419	70008	Network Appliance	1345 Crossman Ave	11/05/11
<b>NEW CONNECTIONS</b>				
2481	52164	City of Sunnyvale	540 N Fair Oaks Ave	06/27/11
2481	73348	City of Sunnyvale	445 Macara	06/29/11
164825	75952	Synagro	1444 Borregas Ave	10/31/11