

**CITY OF SANTA CRUZ WASTEWATER  
TREATMENT FACILITY**



**2006**

**Wastewater Treatment Facility  
ANNUAL REPORT**



This report is submitted in accordance with the Standard Provisions and Reporting Requirements of the National Pollutant Discharge Elimination System Permits (NPDES), General Reporting Requirements, § 16.C.

The City of Santa Cruz treats sewage from domestic and industrial sources at the Wastewater Treatment Facility near Neary Lagoon and discharges its effluent into the Pacific Ocean under the NPDES permit No CA0048194. The City also provides capacity for the City of Scotts Valley to discharge its wastewater treatment system's effluent into the Pacific Ocean. However all data contained within this report relate only to the effluent of the City's wastewater treatment plant.

Although the City continuously upgrades the treatment facility to accommodate population growth, and to respond to regulatory and environmental challenges, the most recent upgrades included the addition of a trickling filter/solids contact secondary plant in 1998, the rebuilding of the primary treatment plant completed in 1991, and the commissioning of a new ocean outfall in 1989.

The design treatment capacity of the Plant is 81 million gallons per day (MGD). The NPDES mandatory limit for the average dry weather (ADW) flow is 17 MGD. The ADW flow for the year 2006 was 10.46 MGD (from mid-April through mid-October, 2006).

The Plant processed an average daily flow of 11.82 MGD for a total of 4,314.83 million gallons during the year 2006.

Plant efficiencies for conventional pollutants for the period were as follows:

- TSS removal averaged 97.2%
- BOD removal averaged 90.6%;
- TOC removal averaged 84.6% for the year.

Plant efficiencies for removing compounds of emerging concern (CEC) within the California Ocean Plan Table B compounds varied from 94% for 1-Methylnaphthalene removal to 45% for Pyrene removal, among those CECs that are currently amenable to reliable measurement.

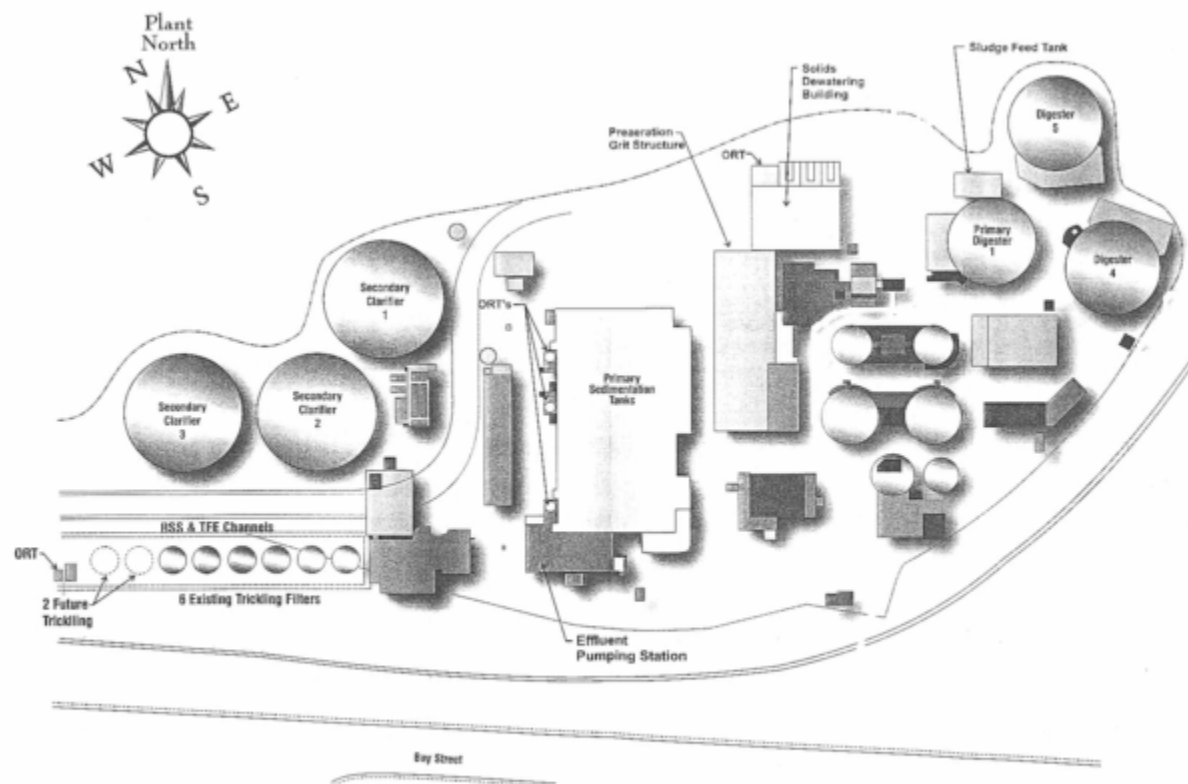
The area served includes the Cities of Santa Cruz and Capitola, the areas of Live Oak, Soquel, and Aptos, and the University of California at Santa Cruz.

The estimated population served is approximately 125,000 people.

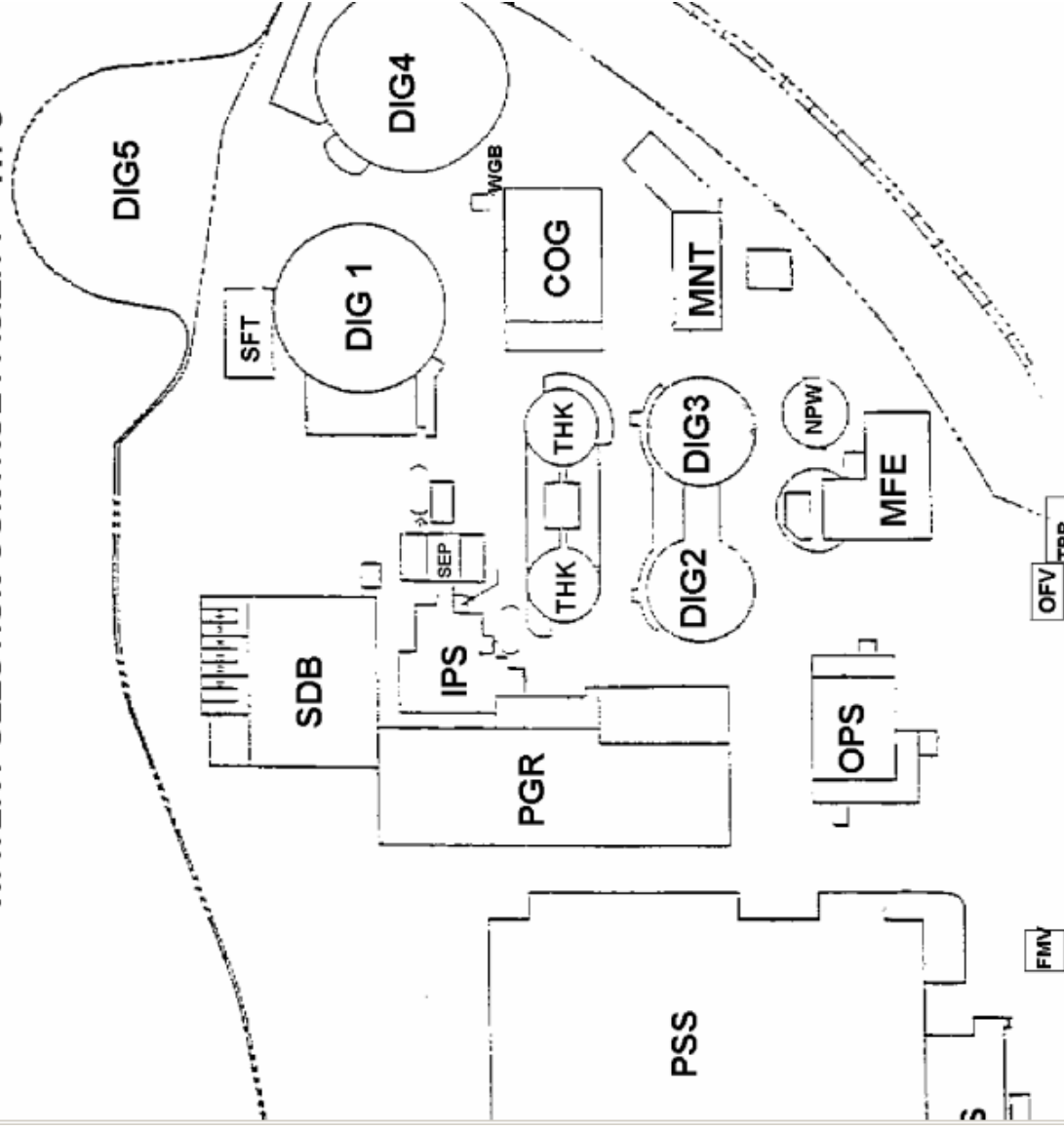
Following are screenshots of:

1. An aerial view of the processes of the current facility
2. A schematic of the Primary treatment processes of the facility; and
3. SCADA view of the treatment processes.



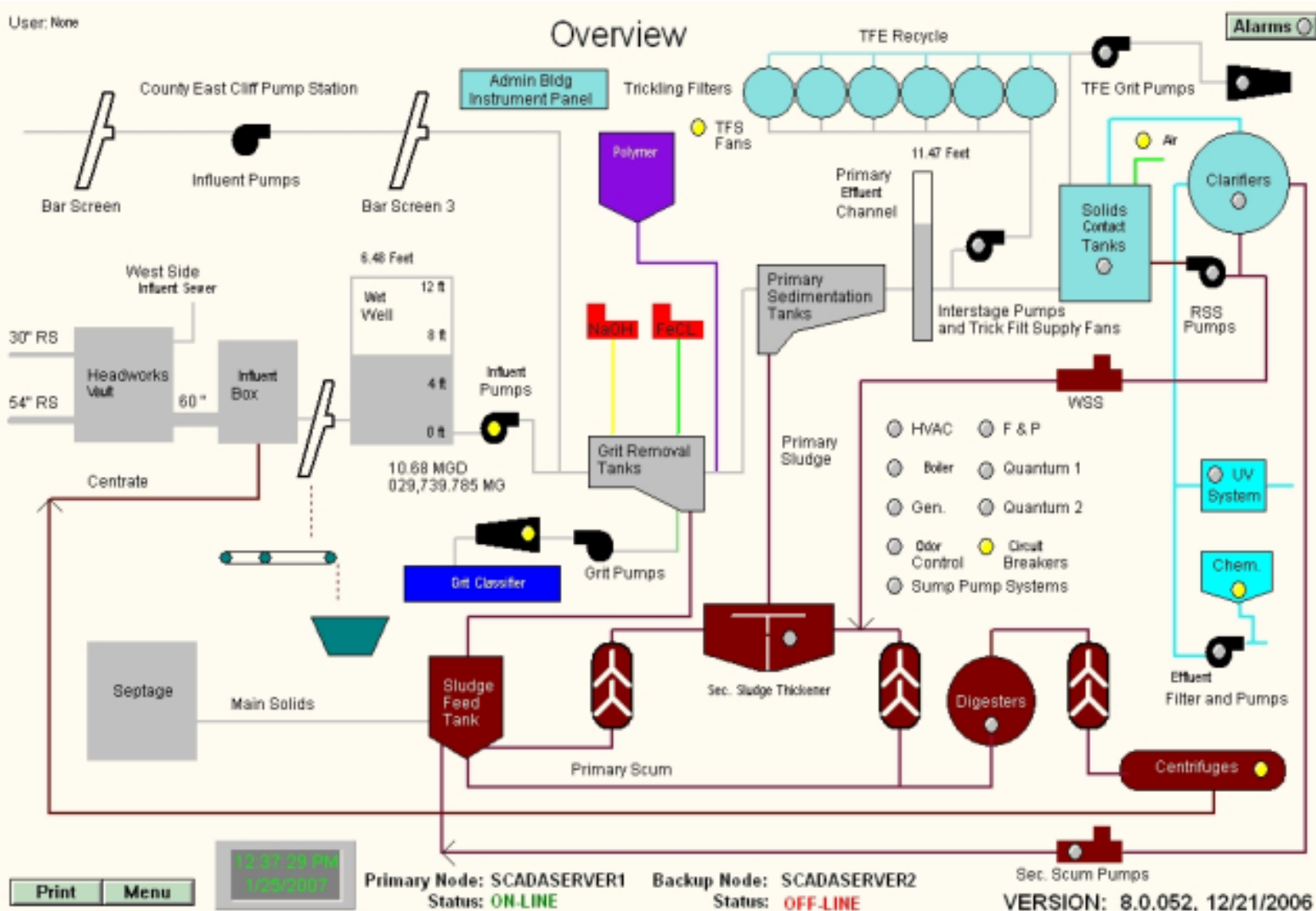


# WATER POLLUTION CONTROL FACILITY = WPC



User: None

## Overview



# **CITY OF SANTA CRUZ POTW ANNUAL REPORT**

**2006**

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## **Section I**

## **Summary of Monitoring Data – Tables**

This section contains summary tables of compliance monitoring data compiled by the City's laboratory, contract laboratories, and treatment staff for compliance monitoring purposes in 2006.

It is organized as follows:

1. Monthly averages for Plant performance data on conventional and priority pollutants;
2. Averages for Plant performance data on priority pollutants, metals and trace organics derived from Semi-Annual Effluent and Annual Influent requirements of the NPDES permit CA0048194;
3. Biosolids monitoring data for metals and select pollutants and
4. Nearshore bacteria monitoring at 30 foot contour depth.

Section 1: Monitoring Data – Monthly averages for Plant performance data on conventional and priority pollutants

Monthly Averages	Influent Flow	Effluent Flow	City Influent Flow	County Influent Flow
Units	MG	MG	MG	MG
January	14.2	13.6	8.6	5.6
February	11.9	11.8	7.6	4.3
March	17.5	18.8	10.9	6.6
April	15.8	16.4	9.4	6.4
May	11.3	12.0	6.8	4.6
June	9.0	10.8	4.5	4.5
July	9.4	10.1	4.7	4.6
August	8.4	9.1	3.9	4.5
September	8.2	9.4	3.8	4.4
October	8.5	9.3	4.2	4.3
November	8.8	10.0	4.4	4.4
December	9.4	10.6	4.8	4.6
Annual Average	11.0	11.8	6.1	4.9
Annual High	17.5	18.8	10.9	6.6

Section 1: Monitoring Data – Monthly averages for Plant performance data on conventional and priority pollutants

Monthly Averages	Influent TSS	Effluent TSS	Effluent TSS	Effluent TSS	TSS Removal
Units	mg/l	mg/l	lb/day	kg/day	%
January	153.4	4.1	537.2	243.7	97.2%
February	204.3	3.2	321.5	145.8	98.3%
March	143.8	4.4	813.8	369.1	97.0%
April	162.3	3.3	508.8	230.8	97.8%
May	189.2	2.8	276.9	125.6	98.5%
June	215.9	3.1	277.9	126.0	98.5%
July	236.3	3.5	293.5	133.1	98.5%
August	241.8	3.9	297.1	134.8	98.4%
September	278.7	3.6	285.9	129.7	98.7%
October	339.8	4.4	338.7	153.6	98.7%
November	325.9	4.8	399.3	181.1	98.5%
December	296.0	5.1	460.3	208.8	98.3%
Annual Average	232.3	3.8	400.9	181.9	98.2%
Annual High	339.8	5.1	813.8	369.1	98.7%

**Section 1: Monitoring Data – Monthly averages for Plant performance data on conventional and priority pollutants**

<b>Monthly Averages</b>	<b>Influent TOC</b>	<b>Effluent TOC</b>	<b>Effluent TOC</b>	<b>Effluent TOC</b>	<b>TOC Removal</b>
<b>Units</b>	<b>mg/l</b>	<b>mg/l</b>	<b>lb/day</b>	<b>kg/day</b>	<b>%</b>
<b>January</b>	51.4	9.6	4,944.7	2,242.9	79.6%
<b>February</b>	77.9	9.9	7,978.1	3,618.8	87.2%
<b>March</b>	58.9	9.4	8,759.3	3,973.2	83.7%
<b>April</b>	54.6	10.1	6,557.7	2,974.5	79.7%
<b>May</b>	74.3	9.8	1,017.5	461.5	86.4%
<b>June</b>	83.4	10.4	963.3	437.0	87.1%
<b>July</b>	87.6	12.1	1,033.0	468.6	85.9%
<b>August</b>	81.0	12.2	945.1	428.7	83.9%
<b>September</b>	81.3	12.0	959.8	435.4	85.2%
<b>October</b>	124.4	11.7	895.9	406.4	90.6%
<b>November</b>	113.3	11.8	989.2	448.7	89.6%
<b>December</b>	107.1	12.5	1,163.1	527.6	87.1%
<b>Annual Average</b>	82.9	11.0	3,017.2	1,368.6	85.5%
<b>Annual High</b>	124.4	12.5	8,759.3	3,973.2	90.6%



Section 1: Monitoring Data – Monthly averages for Plant performance data on conventional and priority pollutants

Monthly Averages	Influent BOD	Effluent BOD	Effluent BOD	Effluent BOD	BOD Removal
Units	mg/l	mg/l	lb/day	kg/day	%
January	130.6	14.4	1,407.7	638.5	88.6%
February	169.8	13.8	1,433.8	650.4	91.6%
March	128.6	9.6	1,465.4	664.7	92.1%
April	126.2	12.6	1,736.8	787.8	88.3%
May	159.6	24.8	2,583.3	1,171.8	84.04%
June	169.2	13.6	1,215.2	551.2	92.0%
July	195.0	15.6	1,318.1	597.9	92.0%
August	219.5	16.8	1,089.1	494.0	92.4%
September	197.4	13.2	1,008.3	457.3	93.3%
October	269.2	17.6	1,285.9	583.3	93.3%
November	259.5	18.5	1,601.5	726.4	92.9%
December	ND	ND	ND	ND	ND
Annual Average	184.1	15.5	1,467.7	665.8	91.0%
Annual High	269.2	24.8	2,583.3	1,171.8	93.3%

Section 1: Monitoring Data – Monthly averages for Plant performance data on conventional and priority pollutants

Monthly Averages	Influent pH	Effluent pH	Influent Settleable Solids	Effluent Settleable Solids	Influent Oil & Grease	Effluent Oil & Grease	Effluent Oil & Grease	Effluent Oil & Grease
Units	SI	SI	ml/l	ml/l	mg/l	mg/l	lb/day	kg/day
January	7.1	6.8	11.5	<0.05	24.4	<5	<408.7	<185.4
February	7.2	6.9	11.8	<0.05	16.0	<5	<50.2	<22.8
March	7.0	6.8	8.2	<0.05	14.8	5.2	1,177.4	534.1
April	7.2	6.8	9.1	<0.05	42.0	<5	<1,015.0	<460.4
May	7.4	6.9	13.7	<0.05	19.6	<5	<479.6	<217.5
June	7.3	7.0	11.2	<0.05	25.0	<5	<487.9	<221.3
July	7.4	6.9	15.8	<0.05	20.5	<5	<433.7	<196.7
August	7.4	7.0	16.1	<0.05	18.0	<5	<386.1	<175.2
September	7.2	7.0	13.9	<0.05	18.5	<5	<384.1	<174.2
October	7.4	6.9	20.9	<0.05	35.1	<5	<379.4	<172.1
November	7.4	7.0	17.6	<0.05	39.8	<5	<386.6	<175.5
December	7.3	7.0	15.7	<0.05	31.5	<5	<429.5	<195.0
Average	7.3	6.9	13.8	<0.05	25.4	<5.0	<1,177.4	<534.1
High	7.4	7.0	20.9	<0.05	42.0	5.20	1,177.4	534.1

Section 1: Monitoring Data – Monthly averages for Plant performance data on conventional and priority pollutants

Monthly Averages	Effluent Turbidity	Effluent Temperature	Effluent Ammonia-N	Sludge Quantity	Sludge Reuse
Units	NTU	°C	ug/l	Tons	Tons
January	2.0	18.7	7,750.0	36.9	36.9
February	2.1	18.6	11,600.0	41.0	41.0
March	3.6	17.9	8,000.0	43.6	43.6
April	2.5	19.1	8,000.0	42.2	42.2
May	2.0	21.9	31,100.0	44.08	44.08
June	2.4	23.9	24,381.8	41.58	41.58
July	2.4	25.2	27,481.8	38.8	38.8
August	2.7	25.5	24,723.1	43.0	43.0
September	2.5	24.8	18,600.0	40.0	40.0
October	2.8	23.3	43,800.0	43.7	43.7
November	2.1	22.0	23,941.7	45.1	45.1
December	2.7	19.6	27,800.0	39.5	39.5
Annual Average	2.5	21.7	21,688.9	41.6	41.6
Annual High	3.6	25.5	43,800.0	45.1	45.1

Section 1: Monitoring Data – Monthly averages for Plant performance data on conventional and priority pollutants

Monthly Averages	Effluent Nitrate	Effluent Silicate	Effluent Acute Toxicity (Quarterly)	Effluent Chronic Toxicity (Quarterly)	Effluent Phenols (Quarterly)
Units	mg/l	mg/l	TUa	TUc	mg/L
January	4.9	6.2			<0.001
February	0.02	28.0			
March	7.6	31.0	<1.0	4.0	
April	2.3	24.0			<0.001
May	8.2	32.0			
June	3.7	32.0			
July	8.3	36.0	1.9	16.0	<0.001
August	7.7	37.0			
September	8.1	41.0			
October	5.5	38.0	1.7	4.0	0.001
November	9.6	39.0			
December	10.0	34.0			
Annual Average	6.0	31.5	<1.8	8.0	<0.001
Annual High	10	41.0	1.9	16.0	0.001

Section 1: Monitoring Data – Monthly averages for Plant performance data on conventional and priority pollutants

Monthly Averages	Daily Maximum Chlorine Residual	Instantaneous Maximum Chlorine Residual	Urea (Monthly)	Effluent Total Sulfides
Units	ug/l	ug/l	mg/L	mg/l
January	0.03	0.1	0.21	<0.1
February	0.10	0.2	0.22	
March	0.08	0.2	0.19	<0.1
April	0.1	0.1	0.09	<0.1
May	0.10	0.4	0.19	
June	0.00	0.0	0.21	
July	0.00	0.0	0.22	<0.1
August	0.00	0.0	0.26	
September	0.01	0.0	0.22	
October	0.10	0.1	0.20	<0.1
November	0.00	0.1	0.29	
December	0.05	0.2	0.18	
Annual Average	0.05	0.1	0.21	<0.1
Annual High	0.10	0.4	0.29	<0.1

Section 1: Monitoring Data – Annual and Semi-Annual averages for Plant performance data on priority pollutants, metals and trace organics

Sample Composite dates		12/28/05 through 01/26/06	02/28/06 through 03/30/06	Removal Efficiency (%)
Pollutants		Influent (mg/L)	Effluent (mg/L)	
Acenaphthene		0.11	0.017	84.5
Acenaphthylene		<0.10	<0.10	
Anthracene		<0.10	0.01	90 (estimate)
Benzo(a)anthracene		<0.10	0.028	72 (estimate)
Benzo(b)fluoranthene		<0.10	<0.10	
Benzo(k)fluoranthene		<0.10	<0.10	
Benzo(g,h,i)perylene		<0.10	<0.10	
Benzo(a)pyrene		<0.10	<0.10	
Chrysene		<0.10	0.036	63 (estimate)
Dibenzo(a,h)anthracene		<0.10	<0.10	
Fluoranthene		0.24	0.12	50
Fluorene		0.12	0.019	53
Indeno (1,2,3-cd) pyrene		<0.10	<0.10	
1-Methylnaphthalene		0.19	0.011	94
2-Methylnaphthalene		0.15	0.025	83
Naphthalene		<0.10	<0.10	
Phenanthrene		0.47	0.06	87
Pyrene		0.29	0.16	45

Section 1: Monitoring Data – Annual and Semi-Annual averages for Plant performance data on priority pollutants, metals and trace organics

Metals	Influent	Effluent	Reporting Limit	Removal Efficiency (%)
Cadmium (ug/L)	<10	<10	10	17 89 (estimate) 89
Chromium (ug/L)	29	24	10	
Copper (ug/L)	98	<10	10	
Iron (ug/L)	1270	132	20	
Lead (ug/L)	<20	<20	20	
Nickel (ug/L)	<10	<10	10	70
Silver (ug/L)	<3	<3	3	
Zinc (ug/L)	248	74	10	
Total Phosphorus (mg/L)	6.4		2.5	
Kjeldahl Nitrogen (TKN) (mg/L)	44		1.0	
Nitrate (mg/L)	<0.20		0.2	95 (estimate) 21.3
Phenol (mg/L)	0.021	<0.001	0.001	
Silicates (mg/L)	40	31.5	5.0	

Section 1: Monitoring Data – Annual and Semi-Annual averages for Plant performance data on priority pollutants, metals and trace organics

Dry Weather Semi-Annual Effluent –TCDD and equivalents				
Sample Composite dates: 09-21-2006 through 10-21-2006				WHO TEQ: 0.000565
Compound	Concentration Units: pg/L	Detection Limit Units: pg/L	Summation of Congeners	Concentration Units: pg/L
2,3,7,8-TCDD	< 0.383	0.383		
1,2,3,7,8-PeCDD	< 1.89	1.89		
1,2,3,4,7,8-HxCDD	< 1.27	1.27	Total TCDD	131
1,2,3,6,7,8-HxCDD	< 1.59	1.59	Total PeCDD	5.43
1,2,3,7,8,9-HxCDD	< 1.65	1.65	Total HxCDD	<1.65
1,2,3,4,6,7,8-HpCDD	< 2.05	2.05	Total HpCDD	< 2.05
OCDD	5.65			
2,3,7,8-TCDF	< 0.644	0.644		
1,2,3,7,8-PeCDF	< 0.731	0.731		
2,3,4,7,8-PeCDF	< 0.681	0.681		
1,2,3,4,7,8-HxCDF	< 1.28	1.28		
1,2,3,6,7,8-HxCDF	< 1.22	1.22		
2,3,4,6,7,8-HxCDF	< 1.49	1.49		
1,2,3J,8,9-HxCDF	< 1.48	1.48	Total PeCDF	14.10
1,2,3,4,6,7,8-HpCDF	< 1.17	1.17	Total HxCDF	< 1.49
1,2,3,4,7,8,9:HpCDF	< 1.06	1.06	Total HpCDF	< 1.17
OCDF	< 2.85	2.85		



Section 1: Monitoring Data – Annual and Semi-Annual averages for Plant performance data on priority pollutants, metals and trace organics

Annual Influent – TCDD and equivalents				
Matrix: Solvent	Sample Composite Dates: 09/21/2006 through 10/21/2006			
Compound	Concentration Units: pg/L	Detection Limit Units: pg/L	Summation of Congeners	Concentration Units: pg/L
2,3,7,8-TCDD	<1.36	1.36		
1,2,3,7,8-PeCDD	2.54			
1,2,3,4,7,8-HxCDD	<1.83	1.83	Total TCDD	20.2
1,2,3,6,7,8-HxCDD	<2.4	2.4	Total PeCDD	11.3
1,2,3,7,8,9-HxCDD	<2.53	2.53	Total HxCDD	5.67
1,2,3,4,6,7,8-HpCDD	18.4		Total HpCDD	31.0
OCDD	60.7			
2,3,7,8-TCDF	2.48			
1,2,3,7,8-PeCDF	<1.13	1.13		
2,3,4,7,8-PeCDF	<1.09	1.09		
1,2,3,4,7,8-HxCDF	<0.972	0.972		
1,2,3,6,7,8-HxCDF	<0.909	0.909		
2,3,4,6,7,8-HxCDF	<1.11	1.11	Total TCDF	25.1
1,2,3,7,8,9-HxCDF	<1.02	1.02	Total PeCDF	13.3
1,2,3,4,6,7,8-HpCDF	8.03		Total HxCDF	9.13
1,2,3,4,7,8,9-HpCDF	<0.48	0.48	Total HpCDF	13.9
OCDF	12.8			

## Section 1: Monitoring Data – Biosolids monitoring data for metals and select pollutants

Biosolids Monitoring Data 2006									Land App. (Max Allowable)
2006	January	March	May	July	September	December	Average	Units	Limits
Arsenic	15	18	19	21	19	13	17.5	mg/kg Dry	75 mg/kg Dry
Cadmium	3.0	2.7	3.4	2.8	3.3	2.6	2.97	mg/kg Dry	85 mg/kg Dry
Chromium	59	37	41	36	41	31	41	mg/kg Dry	
Cobalt	5.3	4.9	5.4	4.0	5.5	5.3	5	mg/kg Dry	
Copper	700	640	670	670	690	670	673	mg/kg Dry	4300 mg/kg Dry
Lead	33	26	29	23	28	26	27.5	mg/kg Dry	840 mg/kg Dry
Mercury	3.6	1.5	1.8	4.3	2.5	1.4	2.52	mg/kg Dry	57 mg/kg Dry
Moisture	80.3%	79.1%	76.8%	77.9%	80.0%	78.8%	78.8%	%	
Molybdenum	13	10	10	11	14	10	11.3	mg/kg Dry	75 mg/kg Dry
Nickel	23	21	27	22	25	20	23.0	mg/kg Dry	420 mg/kg Dry
Nitrate-N	11	28	16	<8.9	4.9	2.3	12.44	mg/kg Dry	
Nitrogen-Organic	38,000	7,900	33,000	39,000	38,000	9,300	27,533	mg/kg Dry	
Nitrogen-Total Kjeldahl	47,000	40,000	43,000	49,000	49,000	21,000	41,500	mg/kg Dry	
Nitrogen-Ammonia	9,200	9,100	10,000	10,000	11,000	11,000	10,050	mg/kg Dry	
Selenium	7.1	6.5	8.0	7.0	7.9	6.4	7.2	mg/kg Dry	100 mg/kg Dry
Vanadium	21	21	27	29	38	34	28.3	mg/kg Dry	
Zinc	1,300	1,200	1,200	1,200	1,500	1,300	1,283	mg/kg Dry	2800 mg/kg Dry

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

DATE: 1-17-2006					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	9:50	N 36°56'48.4" W 122°01'45.1"	46	2	1
Sea State	W swell 3-8 ft	RW(C)-30'	9:55	N 36°56'57.8" W 122°02'25.3"	52	3	2
Weather	partly cloudy	RW(E)-30'	10:00	N 36°56'48.8" W 122°02'49.2"	47	4	5
Wind	SE @ 5 kts	RW(F)-30'	10:05	N 36°56'46.6" W 122°03'31.3"	49	3	3
Water Temp.	53.4° F	RW(G)-30'	10:15	N 36°56'44.4" W 122°03'57.8"	42	3	5
Low Tide	2.8 @ 05:38	RW(H)-30'	10:20	N 36°56'55.7" W 122°04'59.9"	78	16	26
High Tide	5.1 @ 11:22	RW(I)-30'	10:25	N 36°56'58.4" W 122°05'18.0"	50	14	22
Rain in past 24 hr	NO	RW(Leak)@70'	10:40	N 36°56'19.9" W 122°03'35.2"	22	2	3
DATE: 1-24-2006					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:00	N 36°56'48.5" W 122°01'44.9"	42	2	4
Sea State	NW swell 2-6 ft	RW(C)-30'	10:05	N 36°56'58.4" W 122°02'25.8"	18	2	<1
Weather	clear and cold	RW(E)-30'	10:10	N 36°56'48.9" W 122°02'49.8"	7	<1	<1
Wind	E @ 3 kts	RW(F)-30'	10:15	N 36°56'46.4" W 122°03'32.0"	5	1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>Water Temp.</b>	53.0° F	RW(G)-30'	10:20	N 36°56'44.2" W 122°03'57.8"	7	4	<1
<b>Low Tide</b>	3.0 @ 11:01	RW(H)-30'	10:30	N 36°56'55.6" W 122°05'00.4"	7	1	1
<b>High Tide</b>	5.4 @ 05:08	RW(I)-30'	10:35	N 36°56'58.1" W 122°05'17.4"	1	<1	2
<b>Rain in past 24 hr</b>	NO	RW(Leak)@70'	10:55	N 36°56'20.0" W 122°03'35.3"	1	<1	<1
<b>DATE: 1-31-2006</b>					<b>CFU / 100-ml</b>		
<b>CONDITIONS</b>		<b>Sampling Point</b>	<b>Sampling Time AM</b>	<b>GPS LOCATIONS</b>	<b>Total Coliform</b>	<b>Fecal Coliform</b>	<b>Enterococcus</b>
<b>Current</b>	N - S	RW(A)-30'	9:55	N 36°56'48.5" W 122°01'45.2"	19	3	3
<b>Sea State</b>	NW swell 5-10 ft	RW(C)-30'	10:00	N 36°56'57.9" W 122°02'25.1"	5	1	1
<b>Weather</b>	cloudy & cold	RW(E)-30'	10:05	N 36°56'49.1" W 122°02'49.6"	27	10	5
<b>Wind</b>	N @ 5 kts	RW(F)-30'	10:10	N 36°56'46.4" W 122°03'31.9"	18	1	<1
<b>Water Temp.</b>	53.3°F	RW(G)-30'	10:15	N 36°56'44.2" W 122°03'57.9"	19	2	5
<b>Low Tide</b>	2.0 @ 05:07	RW(H)-30'	10:25	N 36°56'56.0" W 122°04'59.4"	31	3	5
<b>High Tide</b>	6.1 @ 11:06	RW(I)-30'	10:30	N 36°56'58.3" W 122°05'17.8"	19	<1	2
<b>Rain in past 24 hr</b>	NO	RW(Leak)@70'	10:45	N 36°56'20.3" W 122°03'34.9"	2	<1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Sampling Month: February

<b>DATE: 2-6-2006</b>							
Sampling canceled due to inclement weather conditions							
<b>DATE: 2-13-2006</b>							
				CFU / 100-ml			
CONDITIONS	Sampling Point		Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:05	N 36°56'48.5" W 122°01'45.1"	4	<1	<1
Sea State	NW swell 8-10 ft	RW(C)-30'	10:15	N 36°56'58.0" W 122°02'25.1"	3	<1	<1
Weather	dense fog	RW(E)-30'	10:25	N 36°56'49.3" W 122°02'49.0"	7	<1	<1
Wind	E @ 5 kts	RW(F)-30'	10:35	N 36°56'46.3" W 122°03'31.4"	6	1	<1
Water Temp.	53.7° F	RW(G)-30'	10:45	N 36°56'44.3" W 122°03'57.6"	2	<1	1
Low Tide	2.2 @ 04:43	RW(H)-30'	11:00	N 36°56'55.8" W 122°04'59.9"	2	<1	<1
High Tide	5.2 @ 10:35	RW(I)-30'	11:05	N 36°56'58.3" W 122°05'17.6"	3	<1	<1
Rain in past 24 hr	NO	RW(Leak)@70'	11:25	N 36°56'20.1" W 122°03'34.8"	<1	<1	<1
<b>DATE: 2-20-2006</b>							
				CFU / 100-ml			
CONDITIONS	Sampling Point		Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:10	N 36°56'48.3" W 122°01'45.6"	6	<1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Sea State	W swell to 3-6ft	RW(C)-30'	10:15	N 36°56'57.9" W 122°02'25.8"	5	<1	<1
Weather	clear & cold	RW(E)-30'	10:20	N 36°56'48.8" W 122°02'49.6"	3	<1	<1
Wind	NE @ 5 kts	RW(F)-30'	10:25	N 36°56'46.0" W 122°03'32.5"	14	1	<1
Water Temp.	50.6° F	RW(G)-30'	10:30	N 36°56'44.0" W 122°03'58.6"	8	<1	<1
Low Tide	0.71 @ 10:49	RW(H)-30'	10:45	N 36°56'55.9" W 122°05'00.1"	26	2	3
High Tide	5.18 @ 03:02	RW(I)-30'	10:50	N 36°56'58.2" W 122°05'17.5"	11	1	<1
Rain in past 24 hr	NO	RW(Leak)@70'	11:10	N 36°56'20.1" W 122°03'34.4"	1	<1	<1
DATE: 2-27-2006					CFU / 100-ml		
Not sampled due to inclement weather							

Sampling Month: March. Only (1) sample taken due to unsafe sampling conditions during this month

DATE: 3-28-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:35	N 36°56'48.7" W 122°01'45.2"	dozen seals on rock	29	4	3
Sea State	W swell 2-7 ft	RW(C)-30'	10:45	N 36°56'57.8" W 122°02'25.1"	1 bird and kelp	42	2	1
Weather	cloudy	RW(E)-30'	10:53	N 36°56'49.2" W 122°02'49.3"	1 seal, kelp, bird	29	<1	<1
Wind	S @ 20 kts	RW(F)-30'		(not done due				
Water Temp.	not done	RW(G)-30'		to strong winds				

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Low Tide	-0.64 @ 14:43	RW(H)-30'		and increasing wave				
High Tide	5.21 @ 08:20	RW(I)-30'		heights)				
Rain in past 24 hr	NO	RW(Leak)@70'						

Sampling Month: April

DATE: 4-4-2006		Sampling Time (AM)			CFU / 100-ml		
CONDITIONS	Sampling Point		GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	RW(A)-30'		Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week
Sea State	RW(C)-30'						
Weather	RW(E)-30'						
Wind	RW(F)-30'						
Water Temp.	RW(G)-30'						
Low Tide	RW(H)-30'						
High Tide	RW(I)-30'						
Rain in past 24 hr	RW(Leak)@70'						
DATE: 4-11-2006		Sampling Time (AM)			CFU / 100-ml		
CONDITIONS	Sampling point		GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	RW(A)-30'		Weather and small crafts advisories prevented	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories	Weather and small crafts advisories prevented	Weather and small crafts advisories prevented
Sea State	RW(C)-30'						
Weather	RW(E)-30'						

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Wind		RW(F)-30'		sampling this week		prevented sampling this week	sampling this week	sampling this week
Water Temp.		RW(G)-30'						
Low Tide		RW(H)-30'						
High Tide		RW(I)-30'						
Rain in past 24 hr		RW(Leak)@70'						
DATE: 4-18-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N -> S	RW(A)-30'	10:20	N 36°56'48.6" W 122°01'45.3"	kelp; seals on rock	13	<1	<1
Sea State	NW swell 4-9 ft	RW(C)-30'	10:30	N 36°56'57.9" W 122°02'25.3"	no comments	7	<1	<1
Weather	partly cloudy	RW(E)-30'	10:35	N 36°56'49.4" W 122°02'48.7"	no comments	8	<1	<1
Wind	SW @ 6 kts	RW(F)-30'	10:40	N 36°56'45.8" W 122°03'33.1"	kelp & otters; 1 boat	2	<1	<1
Water Temp.	55.8° F	RW(G)-30'	10:45	N 36°56'44.4" W 122°03'56.8"	in kelp	7	<1	1
Low Tide	-0.35 @ 08:17	RW(H)-30'	10:55	N 36°56'55.9" W 122°04'59.7"	in kelp	3	<1	<1
High Tide	3.45 @ 16:39	RW(I)-30'	11:00	N 36°56'58.0" W 122°05'17.4"	kelp with birds	6	<1	1
Rain in past 24 hr	NO	RW(Leak)@70'	11:20	N 36°56'20.0" W 122°03'34.0"	some birds in area	10	<1	<1
DATE: 4-25-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus



## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>Current</b>	N - S	RW(A)-30'	10:15	N 36°56'48.5" W 122°01'44.3"	boat, dolphin, birds, seals	21	<1	<1
<b>Sea State</b>	NW swell 3-5 ft	RW(C)-30'	10:25	N 36°56'57.9" W 122°02'25.5"	kelp	19	<1	1
<b>Weather</b>	chance of showers	RW(E)-30'	10:30	N 36°56'49.4" W 122°02'48.9"	in kelp w/group of whales	10	<1	1
<b>Wind</b>	W @ 5 kts	RW(F)-30'	10:35	N 36°56'46.2" W 122°03'31.5"	kelp, some whales	9	<1	1
<b>Water Temp.</b>	56.2° F	RW(G)-30'	10:40	N 36°56'44.4" W 122°03'57.1"	kelp, some whales	4	<1	<1
<b>Low Tide</b>	4.5 @ 09:19	RW(H)-30'	10:55	N 36°56'55.4" W 122°04'59.9"	kelp, whales, 1 seal	3	<1	1
<b>High Tide</b>	0.5 @ 15:16	RW(I)-30'	11:00	N 36°56'58.0" W 122°05'17.1"	some whales & birds	7	<1	1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@70'	11:20	N 36°56'20.0" W 122°03'34.2"	no comments	52	1	<1

Sampling Month: May

DATE: 5-2-2006			Sampling Time (AM)			CFU / 100-ml		
CONDITIONS		Sampling Point		GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
<b>Current</b>	N - S	RW(A)-30'	10:15	N 36°56'48.4" W 122°01'45.3"	birds in water/on rock	59	26	<1
<b>Sea State</b>	NW swell 5-9 ft	RW(C)-30'	10:20	N 36°56'57.9" W 122°02'25.2"	kelp, boat, birds	10	<1	<1
<b>Weather</b>	foggy	RW(E)-30'	10:30	N 36°56'49.3" W 122°02'49.2"	near kelp bed	11	<1	1
<b>Wind</b>	S @ 4 kts	RW(F)-30'	10:35	N 36°56'46.4" W 122°03'31.5"	in kelp bed w/otters	5	<1	<1
<b>Water Temp.</b>	57.3° F	RW(G)-30'	10:40	N 36°56'44.6" W 122°03'57.2"	near kelp bed	3	1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>Low Tide</b>	-0.42 @ 08:46	RW(H)-30'	10:50	N 36°56'55.4" W 122°04'59.4"	in kelp bed	4	<1	1
<b>High Tide</b>	3.92 @ 17:17	RW(I)-30'	10:55	N 36°56'58.0" W 122°05'18.2"	1 dolphin, kelp	4	<1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@70'	11:15	N 36°56'19.4" W 122°03'33.4"	no comments	29	1	<1
<b>DATE: 5-9-2006</b>			<b>Sampling Time (AM)</b>			<b>CFU / 100-ml</b>		
<b>CONDITIONS</b>		<b>Sampling Point</b>				<b>Total Coliform</b>	<b>Fecal Coliform</b>	<b>Enterococcus</b>
<b>Current</b>	N - S	RW(A)-30'	10:25	N 36°56'48.4" W 122°01'45.0"	seals on rock	8	<1	<1
<b>Sea State</b>	NW Swell 5-9 ft	RW(C)-30'	10:30	N 36°56'58.0" W 122°02'25.2"	birds	4	1	<1
<b>Weather</b>	very foggy	RW(E)-30'	10:40	N 36°56'49.1" W 122°02'49.4"	no comments	1	<1	<1
<b>Wind</b>	E @ 1 kts	RW(F)-30'	10:45	N 36°56'46.3" W 122°03'31.6"	in kelp bed	7	1	<1
<b>Water Temp.</b>	56.8° F	RW(G)-30'	10:50	N 36°56'44.6" W 122°03'58.3"	in kelp bed w/otters	3	<1	<1
<b>Low Tide</b>	0.99 @ 14:02	RW(H)-30'	11:00	N 36°57'56.0" W 122°04'49.6"	in kelp bed	<1	<1	<1
<b>High Tide</b>	3.30 @ 08:09	RW(I)-30'	11:05	N 36°56'58.2" W 122°05'17.6"	in kelp bed	<1	<1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@70'	11:25	N 36°56'19.8" W 122°03'35.0"	no comments	<1	<1	<1
<b>DATE: 5-16-2006</b>			<b>Sampling Time (AM)</b>			<b>CFU / 100-ml</b>		
<b>CONDITIONS</b>		<b>Sampling Point</b>				<b>Total Coliform</b>	<b>Fecal Coliform</b>	<b>Enterococcus</b>
<b>Current</b>	N - S	RW(A)-30'	10:50	N 36°56'48.7"	1boat; birds & seals on	9	5	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

				W 122°01'46.4"	rock			
<b>Sea State</b>	NW swell 3-6 ft	RW(C)-30'	10:45	N 36°56'57.3" W 122°02'27.3"	no comments	6	<1	1
<b>Weather</b>	thick fog	RW(E)-30'	10:35	N 36°56'48.9" W 122°02'50.1"	no comments	<1	<1	<1
<b>Wind</b>	E @ 5 kts	RW(F)-30'	10:30	N 36°56'45.8" W 122°03'33.0"	in kelp with otters	2	<1	<1
<b>Water Temp.</b>	57.1° F	RW(G)-30'	10:25	N 36°56'44.8" W 122°03'57.4"	in kelp with otters/birds	2	<1	<1
<b>Low Tide</b>	-1.03 @ 07:13	RW(H)-30'	10:15	N 36°56'55.9" W 122°05'01.2"	in kelp with otters	7	<1	<1
<b>High Tide</b>	3.78 @ 15:20	RW(I)-30'	10:10	N 36°56'57.6" W 122°05'15.5"	kelp nearby	1	2	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@70'	9:55	N 36°56'21.1" W 122°03'33.0"	no comments	2	<1	1
<b>DATE: 5-23-2006</b>			<b>Sampling Time (AM)</b>			<b>CFU / 100-ml</b>		
<b>CONDITIONS</b>		<b>Sampling Point</b>		<b>GPS LOCATIONS</b>	<b>OBSERVATIONS</b>	<b>Total Coliform</b>	<b>Fecal Coliform</b>	<b>Enterococcus</b>
<b>Current</b>	N - S	RW(A)-30'	10:05	N 36°56'48.6" W 122°01'49.2"	seals on rock	20	4	<1
<b>Sea State</b>	SW swell 2- 4 ft	RW(C)-30'	10:10	N 36°56'57.8" W 122°02'25.0"	near kelp bed	2	<1	<1
<b>Weather</b>	part cloudy	RW(E)-30'	10:15	N 36°56'49.7" W 122°02'50.3"	near kelp bed	7	<1	<1
<b>Wind</b>	E @ 4 kts	RW(F)-30'	10:20	N 36°56'46.2" W 122°03'34.4"	in kelp	2	1	<1
<b>Water Temp.</b>	57.7° F	RW(G)-30'	10:25	N 36°56'44.1" W 122°03'58.4"	floating trash, foam, kelp	4	2	<1
<b>Low Tide</b>	1.05 @ 13:41	RW(H)-30'	10:35	N 36°56'56.0" W 122°05'00.7"	no comments	3	3	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>High Tide</b>	3.57 @ 08:27	RW(I)-30'	10:40	N 36°56'58.4" W 122°05'17.7"	floating feathers, scum	3	1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@70'	11:00	N 36°56'19.5" W 122°03'34.0"	no comments	2	<1	<1
<b>DATE: 5-30-2006</b>			<b>Sampling Time (AM)</b>			<b>CFU / 100-ml</b>		
<b>CONDITIONS</b>		<b>Sampling Point</b>				<b>Total Coliform</b>	<b>Fecal Coliform</b>	<b>Enterococcus</b>
<b>Current</b>	N - S	RW(A)-30'	10:05	N 36°56'46.7" W 122°01'45.4"	no comments	4	2	<1
<b>Sea State</b>	NW swell 1-3 ft	RW(C)-30'	10:10	N 36°56'58.2" W 122°02'25.4"	near kelp	3	<1	<1
<b>Weather</b>	clear	RW(E)-30'	10:15	N 36°56'49.6" W 122°02'48.7"	near kelp	2	1	<1
<b>Wind</b>	E @ 5 kts	RW(F)-30'	10:20	N 36°56'46.1" W 122°03'31.4"	in kelp	<1	<1	<1
<b>Water Temp.</b>	58.4°F	RW(G)-30'	10:25	N 36°56'44.0" W 122°03'56.8"	in kelp with otters	<1	<1	<1
<b>Low Tide</b>	-0.86 @ 07:29	RW(H)-30'	10:35	N 36°56'55.5" W 122°04'58.9"	in kelp	<1	<1	<1
<b>High Tide</b>	4.08 @ 15:38	RW(I)-30'	10:40	N 36°56'58.8" W 122°05'16.9"	in kelp	<1	<1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@70'	11:00	N 36°56'20.6" W 122°03'35.1"	no comments	<1	<1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Sampling Month: June

DATE: 6-6-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	10:25	N 36°56'49.2" W 122°01'44.3"	seals & birds on rock	<1	<1	<1
Sea State	NW swell 2-5 ft	RW(C)-30'	10:30	N 36°56'57.7" W 122°02'25.0"	kelp,otters,2 surfers	1	1	<1
Weather	patchy fog	RW(E)-30'	10:35	N 36°56'49.6" W 122°02'49.5"	in kelp bed	1	1	<1
Wind	SE @ 5 kts	RW(F)-30'	10:40	N 36°56'46.6" W 122°03'30.9"	in large kelp bed	<1	<1	<1
Water Temp.	59.9° F	RW(G)-30'	10:50	N 36°56'44.3" W 122°03'56.6"	in kelp, otter @ 5 ft	3	1	<1
Low Tide	1.79 @ 12:53	RW(H)-30'	11:00	N 36°56'55.8" W 122°04'58.9"	in kelp	1	<1	<1
High Tide	2.82 @ 07:52	RW(I)-30'	11:05	N 36°56'57.6" W 122°05'18.1"	no observations	<1	<1	<1
Rain in past 24 hr	NO	RW(Leak)@70'	11:25	N 36°56'20.2" W 122°03'34.4"	no observations	1	<1	<1
DATE: 6-14-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	11:20	N 36°56'48.9" W 122°01'44.2"	near kelp	5	7	<1
Sea State	W swell 2-4 ft w/1-3 ft wind waves	RW(C)-30'	11:15	N 36°56'58.3" W 122°02'24.1"	near kelp	2	1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>Weather</b>	clear & warm	RW(E)-30'	11:10	N 36°56'49.4" W 122°02'48.4"	kelp bed	1	8	<1
<b>Wind</b>	S @ 5 kts	RW(F)-30'	11:05	N 36°56'46.4" W 122°03'31.2"	lg kelp bed	<1	<1	<1
<b>Water Temp.</b>	57.8° F	RW(G)-30'	10:55	N 36°56'44.2" W 122°03'57.1"	in kelp	<1	<1	<1
<b>Low Tide</b>	-1.39 @ 07:02	RW(H)-30'	10:50	N 36°56'56.2" W 122°05'02.1"	in kelp w/otters	1	<1	<1
<b>High Tide</b>	4.13 @ 14:52	RW(I)-30'	10:45	N 36°56'57.9" W 122°05'17.5"	in lg kelp bed	<1	<1	1
<b>Rain in past 24 hr</b>	YES	RW(Leak)@70'	10:20	N 36°56'20.1" W 122°03'35.1"	no observations	<1	<1	<1
<b>DATE: 6-20-2006</b>						<b>CFU / 100-ml</b>		
<b>CONDITIONS</b>		<b>Sampling Point</b>	<b>Sampling Time (AM)</b>	<b>GPS LOCATIONS</b>	<b>OBSERVATIONS</b>	<b>Total Coliform</b>	<b>Fecal Coliform</b>	<b>Enterococcus</b>
<b>Current</b>	N -> S	RW(A)-30'	11:10	N 36°56'48.6" W 122°01'44.8"	private boat; kelp	6	2	<1
<b>Sea State</b>	NW swell 4-9 ft	RW(C)-30'	11:05	N 36°56'57.9" W 122°02'25.0"	near large kelp bed; otters	3	1	<1
<b>Weather</b>	foggy	RW(E)-30'	11:00	N 36°56'49.3" W 122°02'48.9"	near lg kelp bed	4	3	<1
<b>Wind</b>	S @ 6 kts	RW(F)-30'	10:55	N 36°56'46.2" W 122°03'31.8"	in kelp bed	2	1	<1
<b>Water Temp.</b>	57.7° F	RW(G)-30'	10:50	N 36°56'44.2" W 122°03'57.1"	in kelp w/otters	<1	<1	<1
<b>Low Tide</b>	1.59 @ 12:10	RW(H)-30'	10:40	N 36°56'56.7" W 122°05'00.8"	no comments	1	2	<1
<b>High Tide</b>	3.18 @ 07:16	RW(I)-30'	10:30	N 36°56'58.3" W 122°05'17.4"	kelp around	1	<1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@70'	10:10	N 36°56'20.6" W 122°03'35.0"	no comments	3	1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

DATE: 6-27-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:05	N 36°56'48.4" W 122°01'45.2"	birds on rock and water	40	15	<1
Sea State	mixed swell NW@3-5 ft,SW@1-3 ft	RW(C)-30'	10:15	N 36°56'58.2" W 122°02'25.5"	kelp; 1 fishing boat	1	2	<1
Weather	fog	RW(E)-30'	10:20	N 36°56'49.5" W 122°02'49.4"	large kelp bed	8	5	<1
Wind	S @ 0 kts	RW(F)-30'	10:30	N 36°56'46.3" W 122°03'31.5"	in huge kelp bed	10	1	<1
Water Temp.	56.2° F	RW(G)-30'	10:35	N 36°56'44.8" W 122°03'57.4"	in kelp with otters	11	<1	<1
Low Tide	-0.96 @ 06:27	RW(H)-30'	10:45	N 36°56'56.2" W 122°05'00.3"	in kelp	6	1	<1
High Tide	4.24 @ 14:17	RW(I)-30'	10:50	N 36°56'58.5" W 122°05'17.8"	some kelp around	7	3	<1
Rain in past 24 hr	NO	RW(Leak) @70'	11:10	N 36°56'19.7" W 122°03'34.9"	fish boat @ 50 yds	1	<1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Sampling Month: July

DATE: 7-5-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	10:10	N 36°56'48.8" W 122°01'44.9"	dozens of birds, kelp	3	<1	<1
Sea State	NW swell 3-7 ft	RW(C)-30'	10:15	N 36°56'58.2" W 122°02'25.2"	kelp	4	<1	2
Weather	fog	RW(E)-30'	10:20	N 36°56'49.2" W 122°02'48.9"	near kelp,1 fish boat	1	<1	<1
Wind	SE @ 5 kts	RW(F)-30'	10:30	N 36°56'46.7" W 122°03'32.1"	in huge kelp bed, boat	2	<1	<1
Water Temp.	60.3° F	RW(G)-30'	10:35	N 36°56'44.6" W 122°03'57.5"	in kelp with otters	1	<1	<1
Low Tide	2.5 @ 12:00	RW(H)-30'	10:45	N 36°56'55.7" W 122°04'59.9"	in kelp w/several otters	3	1	1
High Tide	2.7 @ 07:23	RW(I)-30'	10:50	N 36°56'58.1" W 122°05'16.8"	no observations	<1	1	1
Rain in past 24 hr		RW(Leak)@7 0'		N 36°56'19.7" W 122°03'35.2"				
	NO		11:05		no observations	2	1	<1
DATE: 7-11-2006				CFU / 100-ml				
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	10:30	N 36°56'48.7" W 122°01'45.2"	in kelp, birds, fishboats	<1	16	8
Sea State	NW swell 3-6 ft	RW(C)-30'	10:40	N 36°56'57.9" W 122°02'25.2"	no observations	6	8	2



## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>Weather</b>	foggy	RW(E)-30'	10:45	N 36°56'49.1" W 122°02'49.3"	5 fishing boats, kelp	11	1	<1
<b>Wind</b>	E @ 4 kts	RW(F)-30'	10:50	N 36°56'46.4" W 122°03'32.1"	in kelp w/otters, fishboats nearby	4	2	<1
<b>Water Temp.</b>	57.5° F	RW(G)-30'	10:55	N 36°56'44.4" W 122°04'00.5"	in kelp with dive boat	4	3	<1
<b>Low Tide</b>	-1.5 @ 05:32	RW(H)-30'	11:05	N 36°56'56.2" W 122°05'00.9"	in kelp ,fishboats nearby	3	<1	<1
<b>High Tide</b>	4.2 @ 12:42	RW(I)-30'	11:20	N 36°56'58.2" W 122°05'17.2"	in kelp ,fishboats nearby	4	<1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@7 0'	11:35	N 36°56'19.8" W 122°03'35.3"	no observations	2	<1	<1
<b>DATE: 7-18-2006</b>								
						<b>CFU / 100-ml</b>		
<b>CONDITION S</b>		<b>Sampling Point</b>	<b>Sampling Time (AM)</b>	<b>GPS LOCATIONS</b>	<b>OBSERVATIONS</b>	<b>Total Coliform</b>	<b>Fecal Coliform</b>	<b>Enterococcus</b>
<b>Current</b>	N -> S	RW(A)-30'	10:05	N 36°56'48.6" W 122°01'44.8"	numerous birds & boats	<1	<1	<1
<b>Sea State</b>	NW swell 3-8 ft	RW(C)-30'	10:15	N 36°56'57.8" W 122°02'25.1"	no comments	3	2	<1
<b>Weather</b>	clear & warm	RW(E)-30'	10:20	N 36°56'49.3" W 122°02'49.0"	no comments	<1	<1	<1
<b>Wind</b>	SW @ 5 kts	RW(F)-30'	10:30	N 36°56'46.4" W 122°03'31.4"	in large kelp bed; birds	1	1	<1
<b>Water Temp.</b>	58.2° F	RW(G)-30'	10:35	N 36°56'44.2" W 122°03'57.1"	in kelp bed; seal	1	<1	<1
<b>Low Tide</b>	1.8 @ 10:45	RW(H)-30'	10:45	N 36°56'55.7" W 122°04'59.4"	near kelp bed; boat	<1	<1	<1
<b>High Tide</b>	5.8 @ 17:40	RW(I)-30'	10:50	N 36°56'58.2" W 122°05'17.2"	no comments	1	<1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@7 0'	11:10	N 36°56'20.6" W 122°03'35.0"	boat	<1	<1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

DATE: 7-25-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	11:15	N 36°56'48.7" W 122°01'44.2"	2 small fishing boats	<1	<1	<1
Sea State	NW swell 2-5 ft	RW(C)-30'	11:10	N 36°56'58.5" W 122°02'24.8"	some kelp, a few birds	1	1	<1
Weather	dense fog	RW(E)-30'	11:05	N 36°56'49.5" W 122°02'48.8"	no comments	<1	<1	<1
Wind	E @ 3 kts	RW(F)-30'	11:00	N 36°56'46.3" W 122°03'30.2"	in kelp bed	1	<1	<1
Water Temp.	63.0° F	RW(G)-30'	10:55	N 36°56'44.1" W 122°03'57.1"	in kelp w/lots of birds	<1	<1	<1
Low Tide	-0.76 @ 05:31	RW(H)-30'	10:45	N 36°56'55.7" W 122°04'58.7"	in kelp bed	2	1	<1
High Tide	4.36 @ 13:02	RW(I)-30'	10:40	N 36°56'58.5" W 122°05'17.7"	kelp nearby	<1	<1	<1
Rain in past 24 hr	NO	RW(Leak)@70'	10:20	N 36°56'20.1" W 122°03'35.8"	no comments	<1	<1	<1

# Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Sampling Month: August

DATE: 8-1-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	11:20	N 36°56'48.6" W 122°01'44.3"	seals on rock; boats	2	1	<1
Sea State	NW swell 4-8 ft	RW(C)-30'	11:10	N 36°56'58.5" W 122°02'24.7"	no comments	1	<1	<1
Weather	fog & clouds	RW(E)-30'	11:05	N 36°56'48.5" W 122°02'48.2"	no comments	1	1	<1
Wind	SW @ 8 kts	RW(F)-30'	11:00	N 36°56'46.3" W 122°03'30.8"	in kelp bed	<1	<1	<1
Water Temperature	62.5° F	RW(G)-30'	10:55	N 36°56'44.1" W 122°03'56.7"	kelp	<1	<1	<1
Low Tide	2.13 @ 08:22	RW(H)-30'	10:45	N 36°56'55.8" W 122°04'59.0"	in kelp with otters	<1	<1	<1
High Tide	4.88 @ 15:53	RW(I)-30'	10:40	N 36°56'58.2" W 122°05'17.5"	kelp	<1	<1	<1
Rain in past 24 hr	NO	RW(Leak)@ 70'	10:15	N 36°56'20.3" W 122°03'35.5"	several boats	<1	<1	<1

# Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

DATE: 8-9-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	11:20	N 36°56'48.3" W 122°01'44.6"	no comments	2	<1	<1
Sea State	mixed swell 2-4 ft	RW(C)-30'	11:15	N 36°56'58.5" W 122°02'24.5"	near kelp	<1	<1	<1
Weather	clear & warm	RW(E)-30'	11:05	N 36°56'49.6" W 122°02'48.6"	no comments	<1	<1	<1
Wind	W @ 5 kts	RW(F)-30'	11:00	N 36°56'46.5" W 122°03'31.5"	in kelp with birds	3	<1	<1
Water Temperature	62.5° F	RW(G)-30'	10:55	N 36°56'44.2" W 122°03'57.1"	in large kelp bed	<1	1	<1
Low Tide	-1.32 @ 04:58	RW(H)-30'	10:45	N 36°57'55.9" W 122°04'59.3"	in large kelp bed	9	<1	<1
High Tide	4.48 @ 12:11	RW(I)-30'	10:40	N 36°56'58.0" W 122°05'16.9"	birds in area	2	<1	<1
Rain in past 24 hr	NO	RW(Leak)@70'	10:15	N 36°56'20.0" W 122°03'35.0"	no comments	<1	<1	<1

# Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

DATE: 8-15-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:10	N 36°56'48.5" W 122°01'44.9"	seals on rock; kelp	8	2	<1
Sea State	NW swell 2-5 ft	RW(C)-30'	10:20	N 36°56'58.0" W 122°02'25.2"	kelp, birds	3	2	1
Weather	overcast	RW(E)-30'	10:25	N 36°56'49.1" W 122°02'49.0"	no comments	3	3	<1
Wind	calm	RW(F)-30'	10:30	N 36°56'46.2" W 122°03'31.1"	kelp, boat	<1	5	<1
Water Temperature	60.9° F	RW(G)-30'	10:35	N 36°56'45.3" W 122°04'00.6"	in kelp w/birds, boats	1	1	<1
Low Tide	2.22 @ 09:04	RW(H)-30'	10:45	N 36°56'55.7" W 122°05'00.2"	in kelp w/birds, otters	3	2	<1
High Tide	5.69 @ 15:51	RW(I)-30'	10:50	N 36°56'58.2" W 122°05'17.0"	kelp, birds	11	4	<1
Rain in past 24 hr	NO	RW(Leak) @70'	11:10	N 36°56'20.3" W 122°03'35.1"	several boats	4	<1	<1

# Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

DATE: 8-22-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:10	N 36°56'48.5" W 122°01'44.8"	Lots of birds, boats, & kelp	33	7	1
Sea State	NW swell 2-4 ft	RW(C)-30'	10:15	N 36°56'58.1" W 122°02'25.6"	a lot of birds & kelp	14	3	<1
Weather	foggy	RW(E)-30'	10:20	N 36°56'49.2" W 122°02'49.0"	a lot of birds & kelp	6	<1	<1
Wind	E @ 1 kts	RW(F)-30'	10:25	N 36°56'46.5" W 122°03'31.3"	a lot of birds & kelp	<1	<1	<1
Water Temperature	59.8° F	RW(G)-30'	10:30	N 36°56'44.3" W 122°03'57.6"	boat, in kelp w/seal	<1	1	<1
Low Tide	-0.38 @ 04:34	RW(H)-30'	10:40	N 36°56'55.7" W 122°04'59.8"	kelp	2	2	<1
High Tide	4.47 @ 11:47	RW(I)-30'	10:45	N 36°56'58.1" W 122°05'18.4"	kelp	5	1	<1
Rain in past 24 hr	NO	RW(Leak) @70'	11:05	N 36°56'19.9" W 122°03'35.3"	no comments	<1	<1	<1
DATE: 8-29-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>Current</b>	N - S	RW(A)-30'	10:15	N 36°56'46.7" W 122°01'44.7"	no comments	5	1	1
<b>Sea State</b>	mixed swell	RW(C)-30'	10:20	N 36°56'57.6" W 122°02'24.5"	lots of birds all around	<1	<1	<1
<b>Weather</b>	fog	RW(E)-30'	11:00	N 36°56'49.6" W 122°02'48.6"	lots of birds all around	5	2	<1
<b>Wind</b>	E @ 5 kts	RW(F)-30'	10:25	N 36°56'46.7" W 122°03'31.6"	boat, in kelp w/birds	<1	1	<1
<b>Water Temperature</b>	58.4°F	RW(G)-30'	10:30	N 36°56'43.3" W 122°03'52.4"	kelp, 4 divers, 2 boats	3	<1	<1
<b>Low Tide</b>	2.2 @ 07:43	RW(H)-30'	10:40	N 36°56'54.0" W 122°04'55.8"	kelp, several boats	1	<1	<1
<b>High Tide</b>	4.9 @ 14:20	RW(I)-30'	10:45	N 36°56'57.8" W 122°05'17.0"	birds & boats all around	15	9	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak) @70'	11:10	N 36°56'20.1" W 122°03'35.5"	birds in air and water	2	<1	<1

Sampling Month: September

DATE: 9-5-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
<b>Current</b>	N - S	RW(A)-30'	10:20	N 36°56'48.6" W 122°01'45.1"	birds in air & water	5	1	2
<b>Sea State</b>	NW swell 4-6 ft	RW(C)-30'	10:25	N 36°56'58.2" W 122°02'25.3"	birds, in huge kelp bed	2	<1	<1
<b>Weather</b>	dense fog	RW(E)-30'	10:30	N 36°56'49.2" W 122°02'49.1"	birds, kelp nearby	<1	<1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Wind	NW @ 1 kt	RW(F)-30'	10:40	N 36°56'46.7" W 122°03'32.0"	in kelp, birds, otter	<1	<1	<1
Water Temp.	60.0° F	RW(G)-30'	10:45	N 36°56'44.2" W 122°03'57.1"	in kelp, birds	<1	<1	<1
Low Tide	2.50 @ 15:01	RW(H)-30'	10:55	N 36°56'56.2" W 122°05'00.6"	in kelp bed, boats	4	<1	<1
High Tide	4.37 @ 10:25	RW(I)-30'	11:00	N 36°56'59.4" W 122°05'17.2"	no comments	3	1	<1
Rain in past 24 hr	NO	RW(Leak)@7 0'	9:20	N 36°56'19.2" W 122°03'33.4"	boat, birds	1	<1	1
DATE: 9-12-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:10	N 36°56'48.6" W 122°01'45.0"	seals on rock	22	3	1
Sea State	NW swell 3-6 ft	RW(C)-30'	10:20	N 36°56'57.7" W 122°02'24.9"	huge kelp bed nearby	101	3	1
Weather	clear & warm	RW(E)-30'	10:25	N 36°56'49.5" W 122°02'49.1"	huge kelp bed nearby	15	<1	<1
Wind	SW @ 6 kts	RW(F)-30'	10:30	N 36°56'46.3" W 122°03'32.0"	in kelp, seals, birds	2	1	<1
Water Temp.	59.8° F	RW(G)-30'	10:40	N 36°56'44.3" W 122°03'57.7"	in kelp, 1 boat	<1	1	<1
Low Tide	2.44 @ 07:44	RW(H)-30'	10:55	N 36°57'54.2" W 122°04'56.1"	in kelp, birds	13	15	8
High Tide	5.74 @ 14:15	RW(I)-30'	11:00	N 36°56'58.3" W 122°05'17.8"	in kelp	3	<1	<1
Rain in past 24 hr	NO	RW(Leak)@7 0'	11:20	N 36°56'20.1" W 122°03'34.1"	no comments	1	<1	<1



## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

DATE: 9-19-2006						CFU / 100ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:45	N 36°56'48.6" W 122°01'44.6"	seals & birds on rock	5	3	1
Sea State	NW swell 3-7 ft	RW(C)-30'	10:40	N 36°56'58.5" W 122°02'25.0"	kelp, birds	21	10	6
Weather	foggy	RW(E)-30'	10:30	N 36°56'49.3" W 122°02'48.9"	no comments	2	1	<1
Wind	S @ 6 kts	RW(F)-30'	10:25	N 36°56'46.2" W 122°03'29.8"	kelp, birds	11	1	2
Water Temp.	60.7° F	RW(G)-30'	10:20	N 36°56'44.6" W 122°03'56.3"	in kelp, birds	2	<1	<1
Low Tide	2.07 @ 15:36	RW(H)-30'	10:10	N 36°56'56.0" W 122°04'58.4"	in kelp, otters 1 boat	1	<1	<1
High Tide	4.58 @ 10:31	RW(I)-30'	10:05	N 36°56'58.1" W 122°05'17.7"	kelp, 3 boats	5	<1	<1
Rain in past 24 hr	NO	RW(Leak)@7 0'	9:50	N 36°56'19.9" W 122°03'35.2"	no comments	6	2	<1
DATE: 9-26-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time (AM)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:25	N 36°56'48.4" W 122°01'45.3"	birds, boats at distance	25	5	<1
Sea State	mixed swell 2-4'	RW(C)-30'	10:30	N 36°56'58.2" W 122°02'25.2"	lots of birds in water	5	1	<1
Weather	foggy	RW(E)-30'	10:40	N 36°56'49.1" W 122°02'50.3"	no comment	<1	<1	<1
Wind	calm	RW(F)-30'	10:45	N 36°56'46.5" W 122°03'31.3"	in kelp w/sealions, birds	8	2	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>Water Temp.</b>	58.5° F	RW(G)-30'	10:50	N 36°56'44.3" W 122°03'57.5"	in kelp, boat ~ 60 ft	6	1	<1
<b>Low Tide</b>	2.57 @ 06:00	RW(H)-30'	11:00	N 36°56'54.7" W 122°04'57.7"	in kelp	1	<1	<1
<b>High Tide</b>	5.10 @ 12:41	RW(I)-30'	11:05	N 36°56'58.3" W 122°05'17.3"	in kelp, fish jumping	1	1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak)@7 0'	11:25	N 36°56'20.1" W 122°03'34.3"	no comment	1	<1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Sampling Month: October

DATE: 10-3-2006						CFU/100mls		
CONDITIONS		Sampling Point	Sampling Time (A.M.)	GPS Locations	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	11:10	N 36°56'48.4" W 122°01'44.3"	seals on rock	102	3	1
Sea State	calm	RW(C)-30'	11:05	N 36°56'58.0" W 122°02'25.3"	many birds in air & water	5	<1	1
Weather	clear	RW(E)-30'	11:00	N 36°56'49.8" W 122°02'48.5"	kelp, birds	14	11	<1
Wind	S @ 4 kts	RW(F)-30'	10:50	N 36°56'46.3" W 122°03'30.8"	in kelp bed	<1	1	<1
Water Temp.	58.9° F	RW(G)-30'	10:40	N 36°56'44.1" W 122°03'56.5"	kelp	2	<1	1
Low Tide	2.36 @ 14:06	RW(H)-30'	10:35	N 36°56'55.9" W 122°04'59.4"	kelp, birds, otter	2	<1	<1
High Tide	4.44 @ 09:05	RW(I)-30'	10:30	N 36°56'57.9" W 122°05'17.5"	some kelp	<1	<1	<1
Rain in past 24 hr	NO	RW(Leak) @70'	10:05	N 36°56'19.9" W 122°03'36.0"	birds	<1	<1	1
DATE: 10-10-2006						CFU/100mls		
CONDITIONS		Sampling Point	Sampling Time (A.M.)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	11:05	N 36°56'49.7" W 122°01'44.6"	in kelp	<1	<1	<1
Sea State	NW Swell 2-4 ft	RW(C)-30'	11:00	N 36°56'57.9" W 122°02'25.0"	no comments	46	17	4

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>Weather</b>	cloudy	RW(E)-30'	10:55	N 36°56'49.2" W 122°02'48.9"	no comments	3	2	1
<b>Wind</b>	SE @ 4 kts	RW(F)-30'	10:45	N 36°56'46.2" W 122°03'31.7"	in kelp, birds	<1	<1	<1
<b>Water Temp.</b>	59.2° F	RW(G)-30'	10:40	N 36°56'44.8" W 122°03'57.1"	in kelp	1	<1	<1
<b>Low Tide</b>	2.5 @ 06:36	RW(H)-30'	10:30	N 36°57'56.0" W 122°04'59.2"	in kelp bed	1	<1	<1
<b>High Tide</b>	6.1 @ 12:48	RW(I)-30'	10:25	N 36°56'58.2" W 122°05'17.3"	kelp, 1 bird @ 10 feet	<1	<1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak) @70'	10:05	N 36°56'20.3" W 122°03'35.2"	no comments	<1	<1	<1
<b>DATE: 10-17-2006</b>						<b>CFU/100mls</b>		
<b>CONDITIONS</b>		<b>Sampling Point</b>	<b>Sampling Time (A.M.)</b>	<b>GPS LOCATIONS</b>	<b>OBSERVATIONS</b>	<b>Total Coliform</b>	<b>Fecal Coliform</b>	<b>Enterococcus</b>
<b>Current</b>	N - S	RW(A)-30'	11:10	N 36°56'48.6" W 122°01'44.2"	seals on rock	11	2	<1
<b>Sea State</b>	NW swell 3-7 ft	RW(C)-30'	11:05	N 36°56'58.1" W 122°02'24.8"	no comments	<1	<1	<1
<b>Weather</b>	clear	RW(E)-30'	11:00	N 36°56'49.6" W 122°02'46.7"	no comments	1	<1	<1
<b>Wind</b>	SE @ 7 kts	RW(F)-30'	10:55	N 36°56'45.9" W 122°03'28.5"	4 porpoise, in kelp	<1	<1	<1
<b>Water Temp.</b>	58.7° F	RW(G)-30'	14:50	N 36°56'44.2" W 122°03'56.6"	in kelp, birds	<1	<1	1
<b>Low Tide</b>	1.90 @ 14:41	RW(H)-30'	10:40	N 36°56'55.8" W 122°04'58.9"	some floating kelp, foam	3	1	<1
<b>High Tide</b>	4.66 @ 09:13	RW(I)-30'	10:35	N 36°56'57.9" W 122°05'17.4"	in kelp	2	<1	<1
<b>Rain in past</b>	NO	RW(Leak)	10:15	N 36°56'20.2" W	no comments	<1	<1	1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

24 hr		@70'		122°03'34.9"				
DATE: 10-24-2006						CFU/100Mls		
CONDITIONS		Sampling Point	Sampling Time (A.M.)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	11:05	N 36°56'48.6" W 122°01'49.2"	no comments	3	<1	<1
Sea State	mixed swell	RW(C)-30'	11:00	N 36°56'57.8" W 122°02'25.0"	no comments	1	<1	<1
Weather	clear	RW(E)-30'	10:55	N 36°56'49.7" W 122°02'50.3"	in kelp, 1 otter @ 8 ft	<1	<1	<1
Wind	NE @ 2 kts	RW(F)-30'	10:50	N 36°56'46.2" W 122°03'34.4"	in kelp w/birds	2	<1	1
Water Temp.	60.0° F	RW(G)-30'	10:45	N 36°56'44.1" W 122°03'58.4"	kelp, floating scum	<1	<1	<1
Low Tide	2.92 @ 05:06	RW(H)-30'	10:35	N 36°56'56.0" W 122°05'00.7"	kelp, birds	<1	<1	<1
High Tide	5.39 @ 11:28	RW(I)-30'	10:30	N 36°56'58.4" W 122°05'17.7"	no comments	<1	<1	<1
Rain in past 24 hr	NO	RW(Leak) @70'	10:10	N 36°56'19.5" W 122°03'34.0"	no comments	<1	<1	<1
DATE: 10-31-2006						CFU/100Mls		
CONDITIONS		Sampling Point	Sampling Time (A.M.)	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	11:00	N 36°56'48.7" W 122°01'44.1"	kelp, seals	<1	1	<1
Sea State	NW swell 3-6 ft	RW(C)-30'	10:55	N 36°56'58.0" W 122°02'25.2"	no comments	4	3	3
Weather	partly cloudy	RW(E)-30'	10:50	N 36°56'49.6" W 122°02'48.8"	no comments	2	1	<1
Wind	SW @ 5 kts	RW(F)-30'	10:45	N 36°56'46.2" W	kelp	5	1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

				122°03'30.3"				
<b>Water Temp.</b>	57.0°F	RW(G)-30'	10:40	N 36°56'44.0" W 122°03'56.4"	kelp, birds	4	<1	2
<b>Low Tide</b>	2.44 @ 12:05	RW(H)-30'	10:35	N 36°56'55.4" W 122°04'57.9"	kelp	15	1	<1
<b>High Tide</b>	4.54 @ 06:39	RW(I)-30'	10:30	N 36°56'58.1" W 122°05'17.9"	kelp, foam	13	3	1
<b>Rain in past 24 hr</b>	NO	RW(Leak) @70'	10:15	N 36°56'20.3" W 122°03'35.8"	no comments	7	1	2

Sampling Month: November

DATE: 11-7-2006						CFU / 100-mls		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
<b>Current</b>	N --> S	RW(A)-30'	11:10	N 36°56'48.7" W 122°01'44.1"	no comments	18	5	<1
<b>Sea State</b>	W swell 4-7 ft	RW(C)-30'	11:00	N 36°56'59.0" W 122°02'22.7"	no comments	7	<1	<1
<b>Weather</b>	clear & warm	RW(E)-30'	10:55	N 36°56'49.5" W 122°02'48.6"	no comments	12	<1	<1
<b>Wind</b>	E @ 3 kts	RW(F)-30'	10:50	N 36°56'46.3" W 122°03'29.6"	near kelp	5	<1	<1
<b>Water Temp.</b>	59.3° F	RW(G)-30'	10:45	N 36°56'45.6" W 122°03'56.2"	birds & otters	8	<1	<1
<b>Low Tide</b>	2.92 @ 04:26	RW(H)-30'	10:35	N 36°56'56.0" W 122°04'57.2"	no comments	4	<1	<1
<b>High Tide</b>	6.25 @ 10:32	RW(I)-30'	10:30	N 36°56'58.6" W 122°05'18.0"	scum & kelp	6	<1	<1
<b>Rain in past 24 hr</b>	NO	RW(Leak) @70'	10:15	N 36°56'19.8" W 122°03'35.7"	no comments	1	<1	<1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

DATE: 11-14-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	11:15	N 36°56'48.7" W 122°01'44.7"	lots of seals on rock	65	25	38
Sea State	W swell 4-8 ft	RW(C)-30'	11:10	N 36°56'57.6" W 122°02'25.7"	no comments	104	31	31
Weather	partly cloudy	RW(E)-30'	11:05	N 36°56'49.4" W 122°02'47.3"	birds in sea & sky	61	4	9
Wind	N @ 5 kts	RW(F)-30'	11:00	N 36°56'46.2" W 122°03'31.3"	kelp	14	1	<1
Water Temp.	59.1° F	RW(G)-30'	10:55	N 36°56'44.4" W 122°03'56.2"	kelp, otters, birds	34	1	<1
Low Tide	2.11 @ 12:36	RW(H)-30'	10:45	N 36°56'54.2" W 122°04'53.9"	no comments	54	1	6
High Tide	4.63 @ 06:47	RW(I)-30'	10:40	N 36°56'58.4" W 122°05'23.7"	a lot of scum	47	2	1
Rain in past 7 days	1.6 inches	RW(Leak) @70'	10:20	N 36°56'21.5" W 122°03'35.3"	fishing boat	14	<1	1
DATE: 11-21-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N -> S	RW(A)-30'	10:10	N 36°56'48.3" W 122°01'45.5"	no comments	8	2	<1
Sea State	NW swell 3-8 ft	RW(C)-30'	10:15	N 36°56'58.0" W 122°02'25.4"	flock of birds in water; sampled in patch of foam	7	4	<1
Weather	cloudy	RW(E)-30'	10:20	N 36°56'49.0" W	a few otters	12	10	1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

				122°02'49.5"				
<b>Wind</b>	SW @ 4 kts	RW(F)-30'	10:25	N 36°56'46.5" W 122°03'32.1"	seal in area	25	4	<1
<b>Water Temp.</b>	57.3° F	RW(G)-30'	10:30	N 36°56'44.1" W 122°03'57.7"	no comments	13	4	<1
<b>Low Tide</b>	-0.61 @ 16:33	RW(H)-30'	10:40	N 36°56'55.7" W 122°04'59.8"	no comments	3	1	<1
<b>High Tide</b>	5.73 @ 09:26	RW(I)-30'	10:45	N 36°56'58.3" W 122°05'17.9"	no comments	5	1	<1
<b>Rain in past 7 days</b>	NO	RW(Leak) @70'	11:05	N 36°56'19.9" W 122°03'34.5"	no comments	2	<1	<1
<b>DATE: 11-28-2006</b>						<b>CFU / 100-ml</b>		
<b>CONDITIONS</b>		<b>Sampling Point</b>	<b>Sampling Time AM</b>	<b>GPS LOCATIONS</b>	<b>OBSERVATIONS</b>	<b>Total Coliform</b>	<b>Fecal Coliform</b>	<b>Enterococcus</b>
<b>Current</b>	N - S	RW(A)-30'	10:25	N 36°56'48.3" W 122°01'45.0"	seals on rock & water	31	18	5
<b>Sea State</b>	NW swell 4-9 ft	RW(C)-30'	10:35	N 36°56'57.9" W 122°02'24.9"	floating scum & kelp	21	3	<1
<b>Weather</b>	partly cloudy	RW(E)-30'	10:40	N 36°56'48.8" W 122°02'49.1"	no comments	25	4	<1
<b>Wind</b>	N @ 8 kts	RW(F)-30'	10:45	N 36°56'46.4" W 122°03'31.9"	floating scum & kelp; ~ 30 kids on beach	11	6	<1
<b>Water Temp.</b>	54.5° F	RW(G)-30'	10:50	N 36°56'44.1" W 122°03'57.4"	no comments	8	7	1



## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

<b>Low Tide</b>	2.61 @ 10:45	RW(H)-30'	10:55	N 36°56'55.8" W 122°04'59.4"	some kelp in area	13	6	2
<b>High Tide</b>	4.65 @ 05:00	RW(I)-30'	11:00	N 36°56'58.0" W 122°05'17.0"	scum & kelp floating	13	2	<1
<b>Rain in past 7 days</b>	1.32 inches	RW(Leak)@70'	11:20	N 36°56'20.1" W 122°03'34.9"	no comments	18	1	1

## Section I: Monitoring Data – Nearshore bacteria monitoring at 30 ft contour depth

Sampling Month: December Sample taken only on 12/05/06.

Only one sampling event undertaken due to inclement weather at the ocean in December 2006.

DATE: 12-05-2006						CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATION S	OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N - S	RW(A)-30'	10:25	N 36°56'48.3" W 122°01'45.0"	dozens of seals on rock	3	<1	1
Sea State	NW swell 4-9 ft	RW(C)-30'	10:35	N 36°56'57.9" W 122°02'24.9"	6 people and 7 dogs on beach	4	<1	<1
Weather	partly cloudy	RW(E)-30'	10:40	N 36°56'48.8" W 122°02'49.1"	no comments	3	1	<1
Wind	N ---> S	RW(F)-30'	10:45	N 36°56'46.4" W 122°03'31.9"	no comments	11	6	<1
Water Temp.	53.6° F	RW(G)-30'	10:50	N 36°56'44.1" W 122°03'57.4"	no comments	8	7	1
Low Tide	-1.43 @ 16:39	RW(H)-30'	10:55	N 36°56'55.8" W 122°04'59.4"	no comments	13	6	2
High Tide	6.47 @ 09:28	RW(I)-30'	11:00	N 36°56'58.0" W 122°05'17.0"	No comments	13	2	<1
Rain in past 7 days	0.0 inches	RW(Leak)@70'	11:20	N 36°56'20.1" W 122°03'34.9"	no comments	18	1	1

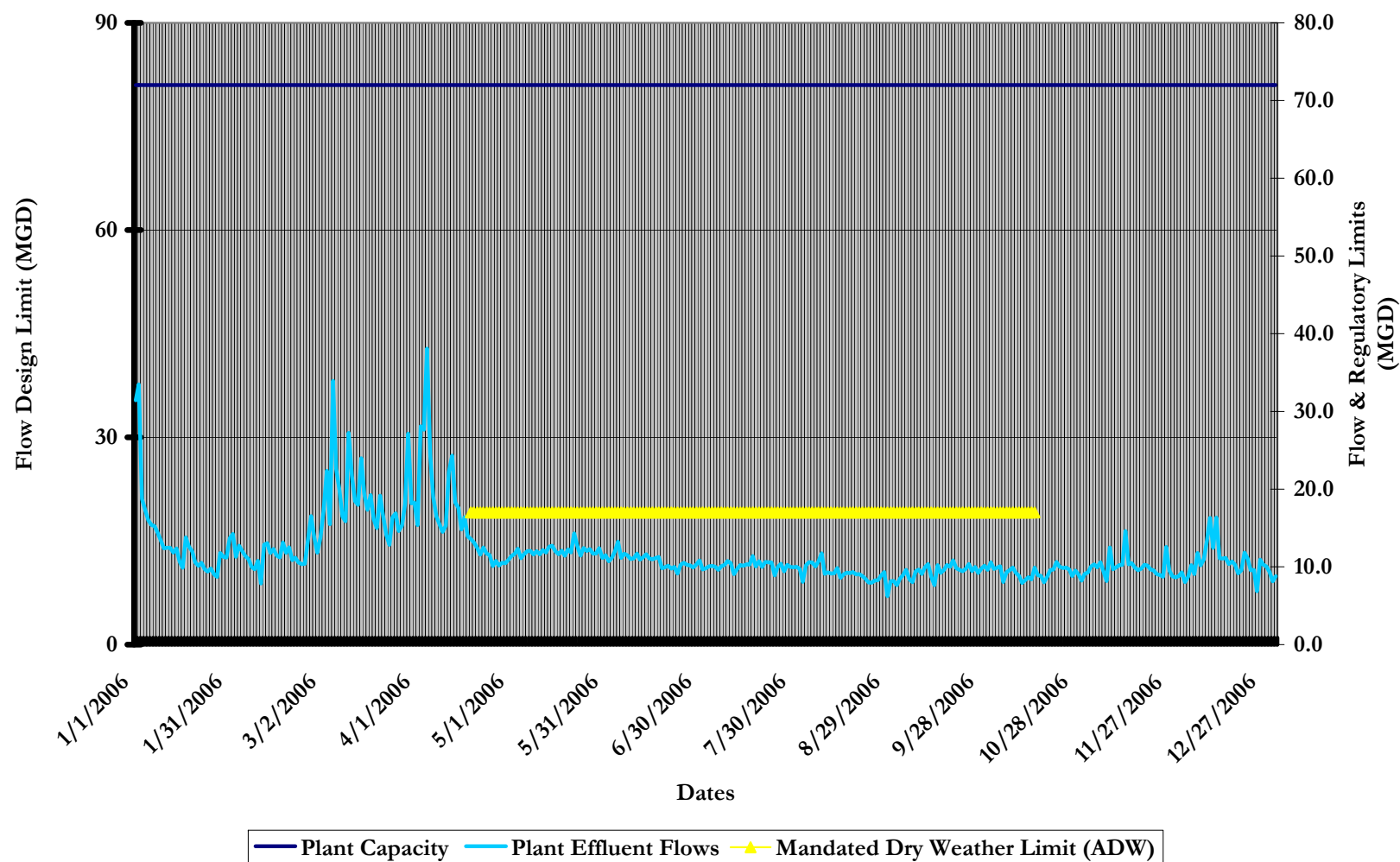
## **Section II      Summary of Monitoring Data – Graphs**

## II. Summary of Monitoring Data- Graphs

The following pages contain a sequence of graphs arranged in the following order:

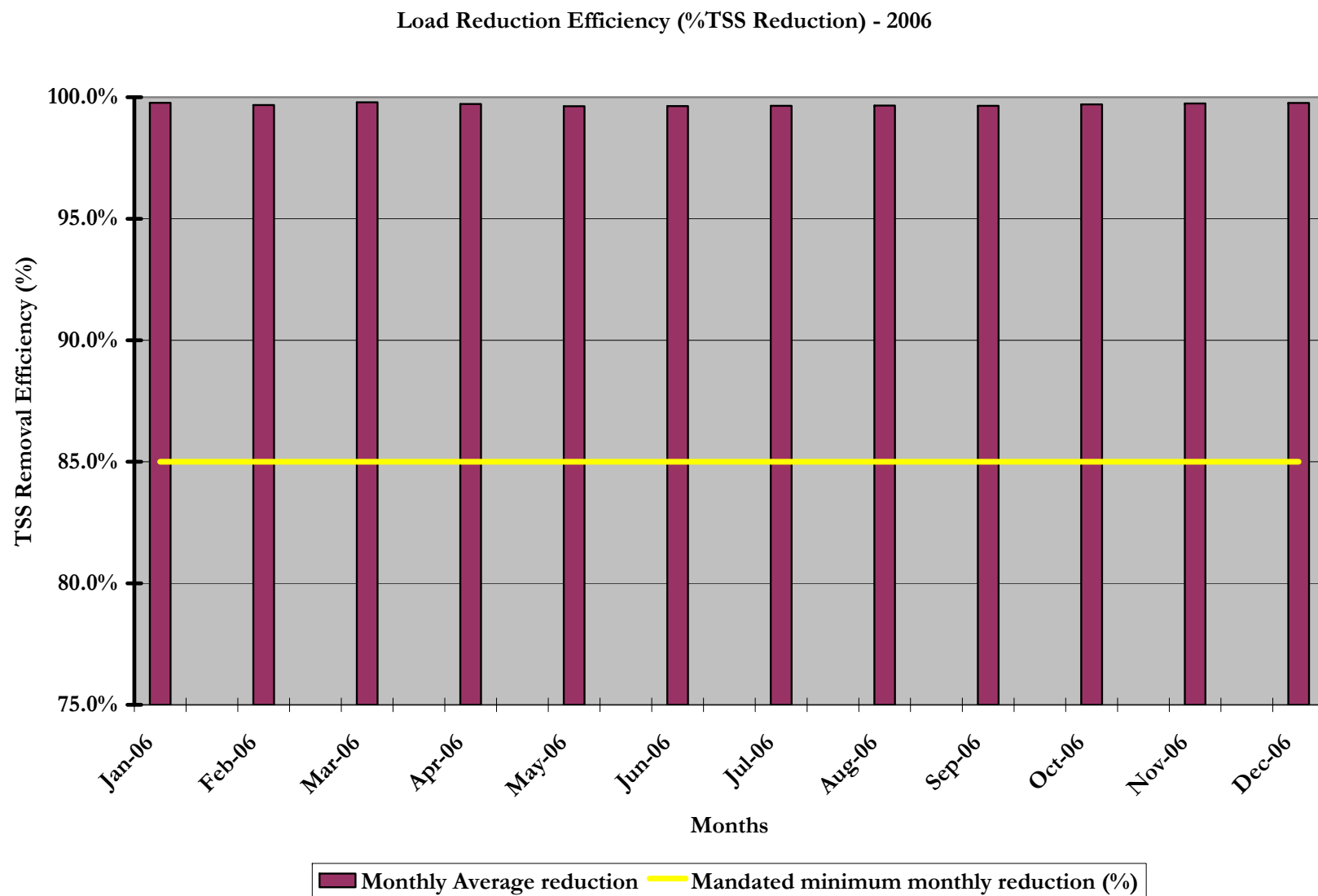
1. Daily Effluent flows
2. (Wasteload) Load reduction -TSS
3. TOC load reduction and
4. BOD load reduction

Daily Effluent Flows (2006)



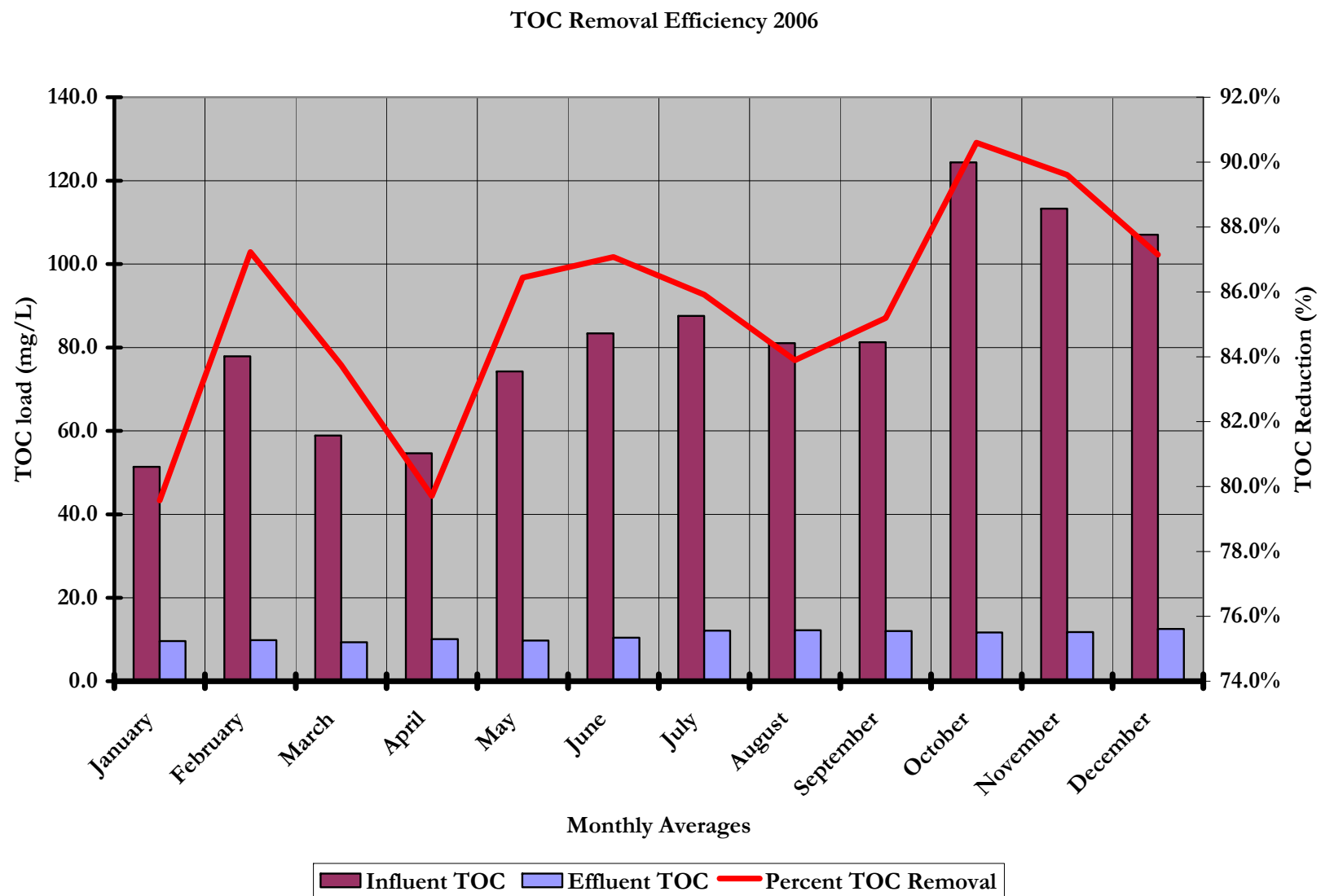
## Section II.

## Summary of Monitoring Data- Graphs

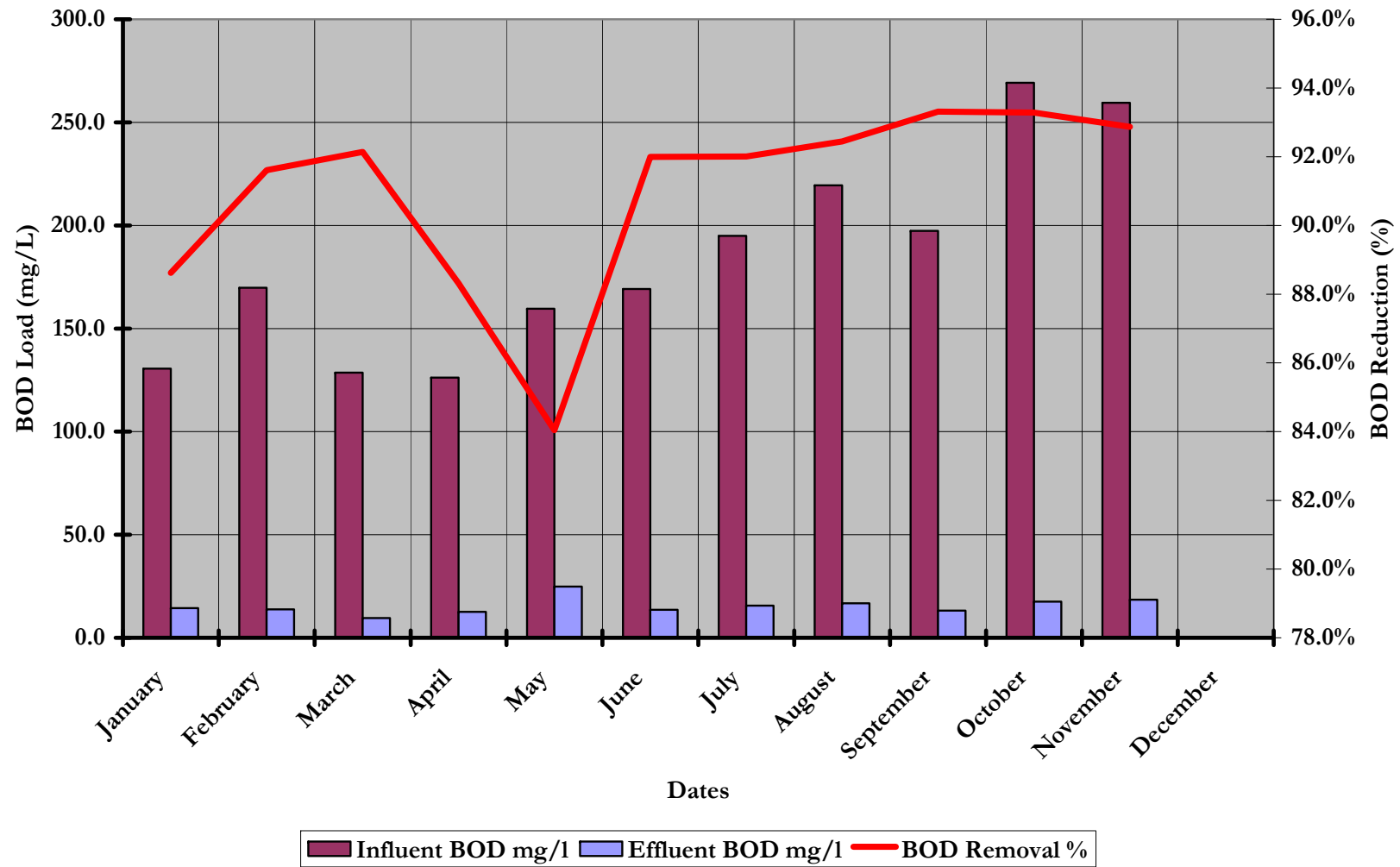


## Section II.

## Summary of Monitoring Data- Graphs



BOD Removal Efficiency 2006





**Section III.**

**The Compliance Record and Corrective  
Actions**

### Section III

### The Compliance Record and Corrective Actions

This section contains narratives and figures relating to the compliance record in 2006 and all associated corrective actions with identifiable violations.

Although there was one incident of performance failure in 2006, the compliance record indicates that the operations and maintenance of the facility are consistent with the requirements of the NPDES permit.

The compliance record provides several highlights of an improved monitoring program including the following highlights in 2006:

1. The annual outfall report including a dye test and a dive inspection were concluded in October 2006. The results of the inspection are contained in this section.
2. The City successfully concluded a long-term study according to the requirements of 40CFR part 133.104(b) and Regional Board Order # R3-2005-0003, which led to the acceptance of TOC limits for compliance monitoring in lieu of BOD at the facility. The letter confirming this replacement was received in November 2006. Thus the facility is able to provide analytical data for compliance purposes using measurement techniques that facilitate treatment process management;
3. Bacterial monitoring at the 30 foot contour was sustained throughout 2006, with data indicating compliance with all beneficial use standards throughout the year. And
4. The City concluded its first integrative sampling and monitoring for compounds in the California Ocean Plan Table B list, that have become amenable to sampling and analytical techniques from the processes of integrative sampling. The data will allow the City and the Regional Board to develop monitoring and management strategies for these compounds.

As stated earlier in this section, there was one failure to meet the secondary effluent standard in 2006. The monthly average BOD removal efficiency of 84.04% was recorded in May 2006. The secondary standard for BOD removal, and the erstwhile limit for the facility was 85% BOD removal.

Finally, it is noteworthy that the responsibility for all self monitoring reports (SMR) was transferred from the USEPA offices in San Francisco to the State Water Resources Control Board effective January 2006. Along with the transfer of responsibility, the State Board has attempted to institute an electronic reporting system formally known as California Integrated Water Quality System (CIWQS ). As municipal dischargers begin to use CIWQS, a number of erroneous error reports have been generated, and one or more of these reports erroneously included the facility before the Regional Water Quality Control Board could redact the information. However, the City continues to support the State's efforts with streamlining the reporting system, including CIWQS.

In conclusion, the data indicate that compliance with the WDR and MRP requirements has been good, and no problems are anticipated for 2007.

The remainder of this section contains tables, narratives, and a photograph of the outfall monitoring exercise.

**ANNUAL OUTFALL REPORT**

The City has conducted its annual Outfall and Diffuser Monitoring as required by MRP No.R3-2005-0003 of May 13, 2005. This year's monitoring consisted of a dye test with an over flight along the entire outfall (attached) and an underwater video survey conducted by a live diver along the diffuser section (attached). The dive inspection was conducted on October 17, 2006 by North Coast Divers, Inc. The dye study was conducted by Full Tilt Design on October 3, 2006.

The monitoring effort showed that the open diffuser ports are unobstructed and flowing as designed and originally constructed. The dye test did detect the intermittent leak that was previously detected in 1992, 1994, 2002 and 2004.

That leak that had been previously detected at an approximate depth of 70 feet below sea level and 7000 feet from the beach vault as measured along the outfall. The diffuser section of the City's outfall starts at a depth of 90 feet below sea level and 10,000 feet from the beach vault. The intermittent nature of observing the leak is probably due to the small size of the leak as described below.

Kinnetic Laboratories did an extensive investigation of the leak in 1994 and concluded that the leak was small in volume and had an initial dilution exceeding 1000:1 and that the risks and cost to fix such a leak outweighed the benefits. The precise location of the leak was not determined due to the small size of the leak and the fact that the outfall is in a trench covered with ballast rock.

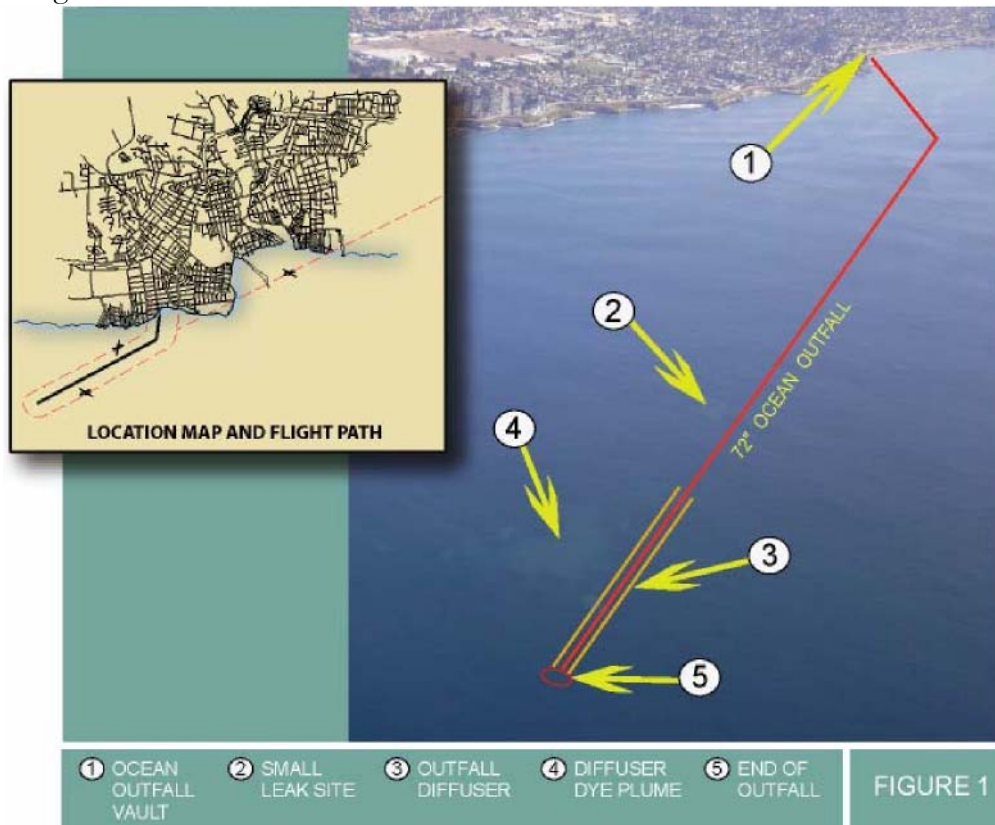
Beginning in 2005, weekly grab samples are taken from the GIS location identified as the leak at the 70 foot contour, along with the monitoring of the near shore bacteria at 30 foot contour depth. Previous grab samples were taken quarterly at the leak site from 1995 through 1998. In April 1997, elevated bacteria levels indicated that the intermittent leak was still active at times. All samples were tested, and continue to be tested for total coliform, fecal coliform and enterococci. Bacteria data from the site has shown intermittent levels of elevated indicators. This is consistent with the limited and intermittent nature of the leak. No additional impact from the leak has been documented. Details of all the test data have been included in both the annual and quarterly Ocean Outfall reports submitted to the RWCQB from 1995 through 1998.

Finally, the City uses the annual report to provide updates on observations relating to the leak.

Steve Wolfman, P.E.  
Associate Civil Engineer  
City of Santa Cruz

**Part I: Dye Study****Wastewater Treatment Effluent Ocean Outfall Overflight**

On Tuesday October 3, 2006 the City of Santa Cruz conducted a dye test of the Wastewater Treatment effluent ocean outfall to visually search for leaks. An overflight was performed between 8:35am and 10:15am using the aerial survey services of pilot Aaron Becker and Mitch Robinson. An on-board differential-ready GPS (which simultaneously tracks and uses up to 12 satellites) with an accuracy of 1-5 meters (3-15 feet) was used for navigation and positioning.



At 8:35am 40 gallons of yellow liquid dye were added at the beach outfall vault **(1)** on West Cliff Dr. The weather was clear and the sea surface was calm. At around 9:10 am a dye plume was observed and photographed with a digital camera in the diffuser section area. The visible dye was very faint, but appeared similar to previous years' observations.

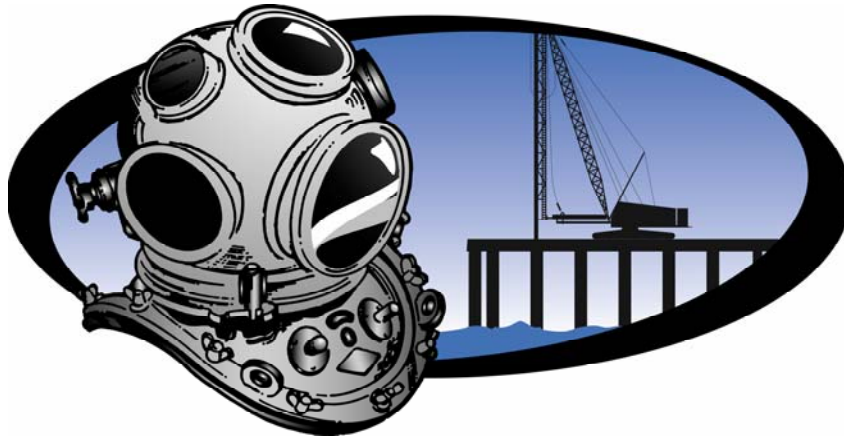
**Figure 1** shows the location of the previous small leak site **(2)** located roughly 7,000 L.F. along the pipeline from the beach outfall vault. A small amount of dye was observed at this location. Along the diffuser section **(3)** a large long plume **(4)** was located before the end of the pipeline **(5)**.

After the dye plume was sighted, further inspection of the entire ocean outfall revealed that the surrounding ocean surface remained unchanged. No leaks or visual dye plumes were evident. The overflight of the ocean outfall concluded at 10:15 am.

Report submitted by Aaron Becker.

Part II: Outfall Inspection

# **SANTA CRUZ OUTFALL INSPECTION**



Prepared for  
City of Santa Cruz  
Public Works Department

October, 2006

### 1.0 INTRODUCTION

The annual underwater video survey of the Santa Cruz Marine Outfall diffuser section was carried out this year on October 17<sup>th</sup>, 2006. The five man dive team worked from the deck of the R/V Shauna Rae, using “live Boat” techniques and surface decompression.

A DVD recording of the survey was made available to the City.

### 2.0 INSPECTION SUMMARY

The inspection did not reveal any changes from conditions reported previous surveys. With the exception of diffuser numbers 46 and 74, the conditions found are essentially those outlined in the “as built” plans. Minor deviations such as stainless steel bands left in place from the original construction are noted in the paragraph below. For ease of review, the diffusers that were found to contain deviations are highlighted in bold.

Diffuser number 174 was covered over the lower third of the rubber flapper by bedding rock, however, since the diffuser port is in the closed position there is no impairment of operation. All other diffusers were unobstructed by rip rap, bedding rock, or other debris. Effluent flow is strong and balanced through the open diffuser ports throughout the diffuser section.

### 3.0 INSPECTION DETAILS

DIFFUSER	POSITION	COMMENTS
End Gate Vault	Open	Strong flow/Unable to access for video.
1 South	Open	Flowing
2 North	Closed	
3 South	Closed	
4 North	Open	Flowing
5 South	Closed	
6 North	Closed	
7 South	Open	Flowing
8 North	Open	Flowing
9 South	Closed	
10 North	Closed	
11 South	Open	Flowing
12 North	Closed	
13 South	Closed	
14 North	Open	Flowing
15 South	Closed	
16 North	Closed	
17 South	Open	Flowing
18 North	Open	Flowing
19 South	Closed	
20 North	Closed	
21 South	Open	Flowing

### Section III

### The Compliance Record and Corrective Actions

DIFFUSER	POSITION	COMMENTS
22 North	Closed	
23 South	Closed	
24 North	Open	Flowing
25 South	Closed	
26 North	Closed	
27 South	Open	Flowing
28 North	Open	Flowing
29 South	Closed	
30 North	Closed	
31 South	Open	Flowing
32 North	Closed	
33 South	Closed	
34 North	Open	Flowing
35 South	Closed	
36 North	Closed	
37 South	Open	Flowing
38 North	Open	Flowing
39 South	Closed	
40 North	Closed	
41 South	Open	Flowing
42 North	Closed	
43 South	Closed	
44 North	Open	Flowing
45 South	Closed	
46 North	Closed	The diffuser flapper is covered by a protective rubber pad that was left banded over the port. GPS Co-ord 36° 56'04.3 122° 04'17.3
47 South	Open	Flowing
48 North	Open	Flowing
49 South	Closed	
50 North	Closed	Stainless steel band left in place over the flapper.
51 South	Closed	
52 North	Closed	
53 South	Open	Flowing
54 North	Open	Flowing
55 South	Closed	
56 North	Closed	
57 South	Open	Flowing
58 North	Open	Flowing
59 South	Closed	
60 North	Closed	
61 South	Closed	
62 North	Closed	
63 South	Open	Flowing

### Section III

### The Compliance Record and Corrective Actions

DIFFUSER	POSITION	COMMENTS
64 North	Open	Flowing
65 South	Closed	
66 North	Closed	
67 South	Open	Flowing
68 North	Open	Flowing
69 South	Closed	
70 North	Closed	
71 South	Closed	
72 North	Closed	
73 South	Open	Flowing
74 North	Open	Flapper installed in open position, but rubber is held down by two stainless steel bands not removed after installation. Flow rate is somewhat degraded. GPS Co-ord 36° 56'09.3 122° 04' 14.5
75 South	Closed	
76 North	Closed	
77 South	Open	Flowing
78 North	Open	Flowing
79 South	Closed	
80 North	Closed	
81 South	Closed	
82 North	Closed	
83 South	Open	Flowing
84 North	Closed	
85 South	Closed	
86 North	Open	Flowing
87 South	Open	Flowing
88 North	Closed	
89 South	Closed	
90 North	Closed	
91 South	Open	Flowing
92 North	Open	Flowing
93 South	Closed	
94 North	Closed	
95 South	Closed	Rip rap just above springline on pipe.
96 North	Closed	
97 South	Open	Flowing
98 North	Open	Flowing
99 South	Closed	
100 North	Closed	
101 South	Open	Flowing
102 North	Open	Flowing
103 South	Closed	
104 North	Closed	
105 South	Closed	



### Section III

### The Compliance Record and Corrective Actions

DIFFUSER	POSITION	COMMENTS
106 North	Closed	Small rip rap at lower end of closed flap.
107 South	Open	Flowing
108 North	Open	Flowing
109 South	Closed	
110 North	Closed	Stainless steel band left in place over the flapper.
111 South	Open	Flowing
112 North	Open	Flowing
113 South	Closed	Closed
114 North	Closed	
115 South	Closed	
116 North	Closed	
117 South	Open	Flowing
118 North	Open	Flowing
119 South	Closed	
120 North	Closed	
121 South	Open	Flowing
122 North	Open	Flowing
123 South	Closed	
124 North	Closed	
125 South	Closed	
126 North	Closed	
127 South	Open	Flowing
128 North	Open	Flowing
129 South	Closed	
130 North	Closed	
131 South	Open	Flowing
132 North	Open	Flowing
133 South	Closed	
134 North	Closed	
135 South	Closed	
136 North	Closed	
137 South	Open	Flowing
138 North	Open	Flowing
139 South	Closed	
140 North	Closed	
141 South	Open	Flowing
142 North	Open	Flowing
143 South	Closed	
144 North	Closed	
145 South	Closed	
146 North	Closed	
147 South	Open	Flowing
148 North	Open	Flowing
149 South	Closed	

### Section III

### The Compliance Record and Corrective Actions

DIFFUSER	POSITION	COMMENTS
150 North	Closed	
151 South	Open	Flowing
152 North	Open	Flowing
153 South	Closed	
154 North	Closed	
155 South	Closed	
156 North	Closed	
157 South	Open	Flowing
158 North	Open	Flowing
159 South	Closed	
160 North	Closed	
161 South	Open	Flowing
162 North	Open	Flowing
163 South	Closed	
164 North	Closed	
165 South	Closed	
166 North	Closed	
167 South	Open	Flowing
168 North	Open	Flowing
169 South	Open	Flowing
170 North	Closed	
171 South	Open	Flowing
172 North	Open	Flowing
173 South	Open	No rubber diffuser flap in place. Semi-flexible plastic cover is secured at its top half over the port. The material is torn at the lower half. One of the lower bolt holes on the pipe contains a broken stud. No clamping bar is in place. Effluent is flowing through the port.
174 North	Closed	Bottom 1/2 of diffuser port is covered with bedding rock.

## **Section IV.**

## **The Operating Staff**

**IV. The Operating Staff.**

The following section summarizes the credentials and designations of staff employed at the Wastewater Treatment facility and the City's compliance with the California Water Code, the California Code of Regulations, in maintaining appropriate staffing.

The Waste Discharge Requirements, and the NPDES Permit require operators and their supervisors at municipal wastewater treatment plants to be certified at specific minimum levels of certification based upon the wastewater treatment plant processes and design flows. All of the operations personnel of the City of Santa Cruz Wastewater Treatment Facility are certified by the California State Water Resources Control Board at or above the required levels. In addition, the Superintendent of the facility maintains a wastewater operators certificate at the level of the plant rating.

The Operations and Maintenance division of the facility is staffed as follows:

- 1 (one) Wastewater Treatment Facility Operations Manager;
- 4 (four) Senior Wastewater Plant Operators;
- 7 (seven) Wastewater Plant Operator
- 2 (two) Operators-In-Training

The maintenance unit consists of seven mechanics and three electricians as follows:

- 1 (one) Senior Plant Mechanic;
- 1 (one) Senior Electrician;
- 5 (five) Plant Maintenance Mechanic II;
- 1 (one) Plant Maintenance Mechanic I and
- 2 (two) Electrical Technicians.

Additional management, engineering, laboratory and clerical support services are provided by:

- The Director of Public Works;
- 1 Associate Civil Engineer; and 1 Assistant Civil Engineer;
- 1 Laboratory/Pretreatment Manager; 3 Laboratory Chemists; and 3 Environmental Compliance Inspectors;
- 1 Administrative Assistant and
- 1 Network Administrator.

Following are tables of all personnel involved in the daily operation and maintenance of the Wastewater treatment facility, their credentials, classifications and certification levels.

## Section IV

## The Operating Staff

ADMINISTRATION		
NAME /	DESIGNATION CREDENTIALS	GRADE CERT; EXPIRY DATE
Seidel, Dan	Superintendent of Wastewater Collection and Treatment Facility	WW Operator IV 4055; 6/30/07
Warren, Filipina	Administrative Assistant II	AAII
Savadkahi, Shawn	Network Administrator	BA (Phys)
Babatola, Akin	Laboratory/Industrial Waste Manager	MS (Mol. Biol); BS (Micro)
Sanders, Michael	Wastewater Treatment Facility Operations Manager	WW Operator IV 4753; 12/31/08

OPERATIONS			
NAME	DESIGNATION CREDENTIALS/	GRADE CERTIFICATE	EXPIRY DATE
Sanders, Michael	Wastewater Treatment Facility Operations Manager	WW Operator IV 4753	12/31/08
Culbertson, Michael	Senior Operator	WW Operator III 532	12/31/08
Lorenson, Arthur	Senior Operator	WW Operator III 4867	12/31/07
Gorton, Gerald	Senior Operator	WW Operator IV 6344	6/30/07
Sandretti, Mark	Senior Operator	WW Operator III 4409	6/30/08
Brown, Bob	Operator	WW Operator II 7217	6/30/07
Frazier, Ron	Operator	WW Operator II 7436	12/31/08
Lineham, Grant	Operator; Dewatering/Septage	WW Operator II 8320	12/31/07
Quintana, Everest	Operator	WW Operator II 4837	6/30/08
Barnes, John	Operator	WW Operator II 5734	6/30/07
Blume, Robert	Operator	WW Operator V 4776	6/30/08
Meyers, David	Operator	WW Operator II 10986	6/30/08
Gilbert, John	Operator-In-Training		6/30/08
Seifert, Brian	Operator-In-Training		6/30/08

LABORATORY/ENVIRONMENTAL COMPLIANCE		
NAME	TITLE	CREDENTIALS
Babatola, Akin	Laboratory/Industrial Waste Manager	MS (Mol. Biol); BS (Microbiology)
Xu, Tianfei	Chemist II/Principal Analyst	Graduate Degree (Chemistry) [Fudhan, China] CWEA Lab Analyst II 378; 7/31/08
Birch, Anne	Chemist II/Principal Analyst	BS (Biology) Lab Analyst I 342; 1/31/08

## Section IV

## The Operating Staff

<b>Tantingco, Erlinda</b>	Lab Chemist	BS (Chem. Eng)
<b>Sasscer, David</b>	Environmental Compliance Inspector	BS (Micro) <b>Ind. Waste Insp. III 114; 1/31/08</b>
<b>Tomlinson, Monica</b>	Environmental Compliance Inspector	BS (Env. Science) <b>Ind. Waste Insp. I 381; 7/31/06</b> <b>Lab Analyst I 1017; 1/31/07</b>
<b>Baker, Fred</b>	Environmental Compliance Inspector	<b>Ind. Waste Insp. I 314; 7/31/06</b>

## MAINTENANCE

Personnel	Title
<b>MECHANICAL</b>	
<b>Wisler, Larry</b>	Senior Mechanic
<b>Stevens, Fred</b>	Mechanic II
<b>Locatelli, Albert</b>	Mechanic II
<b>Pretzer, Tom</b>	Mechanic II
<b>Locatelli, Forrest</b>	Mechanic II
<b>Sheehan, Sean</b>	Mechanic II
<b>Carlson, Ron</b>	Mechanic I
<b>ELECTRICAL</b>	
<b>Gorny, Ken</b>	Senior Electrician
<b>Sturdivant Jim</b>	Electrical Technician
<b>Miller Bud</b>	Electrical Technician

## **Section V. The Operation & Maintenance Manual and Contingency Plans**

## **Section V. The Operation & Maintenance Manual and Contingency Plans**

### **V. The Operation & Maintenance Manual and Contingency Plans.**

The operation and maintenance manual was last reviewed in November 2000 and found to be complete and valid for the current facility. The facility's written Standard Operating Procedures are periodically reviewed and frequently updated to maintain documentation and direction on the operation of the facility.

The maintenance division provides routine preventative maintenance for all plant equipment. This ensures that equipment receives routine lubrication and relevant maintenance, and that standby equipment is ready for service.

Safeguards to minimize accidental discharge from the wastewater treatment plant are built into the design and operation of facility and equipment. These are also tested periodically to ensure their integrity. Scenarios for accidental discharge have been reviewed and concluded to be minimal. However, the location most vulnerable to an accidental discharge was identified as the Bar Screening room. This room is located proximate to the Pump house. A long-term power outage at peak flow may cause an overflow into the Pump house if the main sewage pumps were disabled. However, the two engines capable of driving all six main sewage pumps are diesel driven, and would provide power in case of such an outage. These diesel engines are tested for performance on a monthly schedule, and for a minimum of 1 hour each time. These engines and all equipment in the pump house are maintained with the highest priority.

Additional standby equipment has also been installed with the Plant upgrade to advanced secondary in 1998. These include power to the Sodium Hypochlorite disinfection system, which is the back up to the UV disinfection system.



## **Section VI**

## **Laboratories used to Monitor Compliance**

## Section VI

## Laboratories used to Monitor Compliance

The following section contains current information on all analytical laboratories whose services were required to maintain the compliance monitoring effort in 2006.

During the year 2006, the City of Santa Cruz operated the Wastewater Treatment Facility Laboratory certified under the CA Department of Health Services ELAP (Environmental Laboratory Accreditation Program). The Laboratory certificate number is CA 1176. A copy of the Laboratory certificate and the approved Fields of Testing are attached herewith. The Laboratory updated its QAPP (Quality Assurance Performance Plan), and received provisional approval for monitoring Total Organic Carbon (TOC) in wastewater for compliance monitoring programs in 2006.

However, the laboratory discontinued the exploration of interlaboratory quality control (qc) and analytical arrangements (ILAs) with Federal, municipal and other certified laboratories. The intent of the ILAs was to improve the quality of monitoring and analyses reported from the facility, while increasing the range of services for effective compliance monitoring. Most analytical determinations performed for Plant treatment and the NPDES permit were accomplished through the Laboratory. Staffing at the WWTF Laboratory includes:

- 1 Laboratory/Pretreatment Manager; and
- 3 (three) Laboratory Chemists, two of whom also function as Principal Analysts in accordance with CCR Title 22.

The following contract laboratories provided other analytical services:

**1. McCampbell Analytical Inc.**

110 2nd Avenue South, #D7  
Pacheco, CA 94553-1622

**2. Alpha Analytical Laboratories Inc**

860 Waugh Lane, H-1,  
Ukiah, CA 95482

**3. Frontier Analytical Laboratory**

5172 Hillsdale Circle  
El Dorado Hills, CA 95762

**4. City of Watsonville Utilities Department Laboratory**

P O Box 50000  
Watsonville, CA 95077

**5. ES Babcock & Sons, Inc. (sub-contractors to Alpha Analytical)**

6100 Quail Valley Court Riverside  
CA 92507-0704

**6. Toxscan Inc.**

42 Hanger Way  
Watsonville, CA 95076

All the laboratories are required to maintain current NELAC/ELAP, and these are verified

## **Section VI**

### **Laboratories used to Monitor Compliance**

by the WWTF Laboratory Manager during the monitoring period.

Additional specialized extraction and GPC clean up of integratively sampled effluents and influents were processed through:

#### **Environmental Sampling Technologies (EST)**

502 S. Fifth Street

St. Joseph, MO. 64501

**Section VII. Summary of Performance Relative to Section B,  
General Monitoring Requirements.**

## **VII. Summary of Performance Relative To Section B, General Monitoring Requirements.**

1. Monitoring location, minimum sampling frequency and sampling methods for each parameter complies with the Monitoring and Reporting program of the NPDES permit as stipulated in the MRP No 00-044, and as superseded by Board order R3-2005-0003.
2. Although occasionally, due to errors or equipment failure, a monitoring and analytical event may be missed, none has been documented here in the last twelve months. These omissions are infrequent and not thought to significantly affect the weekly or monthly averages. Test procedures used are those approved under 40 CFR 136 and RWQCB order number R3-2005-0003.
3. Monitoring frequency may be increased as needed to verify apparent noncompliance. Additional monitoring to optimize plant performance or validate performance and/or analytical questions is performed routinely.
4. Laboratories used for the monitoring of compliance with the permit meet the standard of accreditation by the California State Department of Health Services. (See Section VI of this report for more information on the laboratories.) Bioassays are conducted in accordance with the guidelines approved by the State Department of Fish and Game and the State Water Resources Control Board.
5. Samples and measurements taken for the purpose of monitoring are collected consistent with the activity and performance being evaluated. Grab samples are collected at peak loading times. Influent samples include all incoming waste streams and exclude recycle flows. Effluent samples are collected downstream of the last treatment process and upstream of the receiving waters. Integrative samples are collected during the specified monitoring periods, and with validated sampling technologies.
6. When the pollutants are monitored more frequently than required under the permit, the data is reported with the monthly monitoring reports and is included in appropriate calculations.
7. Monitoring instruments and devices used to fulfill requirements of the monitoring program are maintained and calibrated. Documentation of the maintenance and calibration is maintained.
8. Records of all monitoring information are maintained for at least three years.

Section VIII

Lift Station and Collection System  
Overflow Report

## Section VIII Lift Station and Collection System Overflow Report

The City's Infiltration/Inflow and Spill Prevention Program continues to address the objectives set out in WDR No. 00-044. The City has completed major improvements to its collection system over the last several years and has not had a sanitary sewer overflow caused by infiltration/inflow since January 2, 2002.

In 2002 the City line approximately 7000 feet of large diameter sanitary (16 to 24 inch) located along the San Lorenzo River. In 2003 two major improvements completed was the Grant Street Sewer project and the Clean Beach Sewer project. These projects cost approximately \$200,000 and \$800,000 respectively and improved over 6,000 linear feet of sewer pipe and reconstructed over 100 service laterals. The City also completed the cleaning of three sewer siphons at a cost of over \$100,000. In 2004 the City televised the three sewer siphons and found that one had a separated joint that allowed continuous infiltration into the pipe at a rate of 50 gallons per minute. The leak has been sealed. The cost for this work was over \$100,000. In 2005 the City cleaned and televised approximately 3,000 feet of 30 inch and 3,000 feet of 54 inch sewer main. This work restored full capacity in the trunk pipelines and showed that the 30 inch should be rehabilitated. This work is currently budgeted for \$600,000. The table below lists the projects that specifically address known overflow locations.

**Table 1: Overflows caused by rain events in 2002 or before where overflow has not occurred since City project was completed**

	Location Address		Pipe Size	Project completed	Project Cost	Schedule & comments
1	Cleveland Ave.	315	6	Reduced I/I by repairing 5000 feet of main & fixing 102 private lower laterals.	\$425,000	Construction complete. No overflow since project completed in 2001.
2	Forest Avenue	158	6	Manhole at overflow location has been eliminated by replacing with pipe.	\$5,000	No overflows during 2001 or 2002. Still monitoring flow.
3a	California Street	Near Walnut	8	California Street sewer capacity has been increased. Project #1 above also reduced flow to this area.	\$750,000	Project was completed 12/01. There have been no overflows since project was completed.
3b	Walti St.	Laurel	6			
4c	Felix St.	Laurel	6			
5a	Carl Avenue	109 & 147	6	Increase size of Parkway pipe from 6 & 8 inch to 10 & 12 inch	\$300,000	Construction completed 8/00. No overflows since.
5b	Parkway	358	6			
6	San Lorenzo Blvd.	At Jessie Street	18	Completed lining of parallel pipelines in 1/03. Siphon repaired in 8/04.	\$600,000	No overflows in 2003 or 2004. Reduce additional upstream I/I next year.
7	Broadway	133	18	Lateral hooked up to main near River siphon.	\$100,000	Cleaning and repair of downstream siphon and has been completed.
8	1129 Mission	At Laurel	6	Cleared blockage. Upgraded pipe to 8 inch	\$60,000	Project completed 2/02 No overflows since.
9	Morrissey Blvd.	723	6, 8 & 10	Upgraded over 3500 feet of pipe in 2005	\$500,000	No overflows since project completed.

## Section VIII Lift Station and Collection System Overflow Report

**Table 2: Overflows caused by rain events in 2002 or before, that have not reoccurred but the City has not completed improvement.**

1	High Street	High-land	6	Determine need for increased pipe size.		TV crossing under freeway.
2	Mott Avenue	At East Cliff and Logan	10 & 12	Investigate downstream 12-inch liner pipe for upgrade.	Unkno wn	New overflow. Still unclear of cause. TV 2005.
3	322 Highland		6	Modify Manhole and TV		Overflow locations that only occurred on 1/2/2002
4	401 Dufour		6	Unknown. May need backflow devise for house.		Overflow locations that only occurred on 1/2/2002

A summary of the last 12 months of sewage spills is attached for your information.

The City of Santa Cruz has implemented an improved spill response as detailed in the "Sewer System Management Plan". This response includes vacuuming up the spill and collecting all the wash down water used to clean the spill area. In most cases the spill has no contact with a waterway. The City has also updated the report form and the handout given to home owners who have lateral overflows. The new reporting form and handout are attached.

The Sewer System Management Plan has been updated and forwarded to the RWQCB.



**Section VIII Lift Station and Collection System Overflow Report****TABLE 3. SUMMARY OF SEWAGE SPILLS WITHIN SANTA CRUZ CITY IN 2006.**

<b>House Number</b>	<b>Street</b>	<b>Date:</b>	<b>City Main Spill (gallons)</b>	<b>Private Lateral Spill (gallons)</b>	<b>Weather</b>	<b>Notes</b>
311	Laurent St	1/2/06	20		Clear	
575	Dimeo Ln	1/11/06	200		Clear	
405	Second St	1/11/06		10	Clear	
217	Laguna St	1/12/06	100		Clear	
533	Broadway	1/11/06		5	Clear	
1823	Soquel Ave	1/14/06		5	Clear	
126	Campbell	1/17/06		60	Clear	
509	Leibrant St	1/17/06		10	Clear	
	Lechate Valve#8454	1/17/06	50		Clear	
125	Felix St	1/27/06	40		Clear	
519	Seabright Ave	2/3/06		5	Clear	
125	Pearl St	2/13/06		25	Clear	
575	Dimeo Lane	2/14/06	15		Clear	
117	Towne Terrace	2/13/06		5	Clear	
41	Grandview	2/24/06		350	Clear	
519	Seabright Ave	2/24/06		10	Clear	
716	Ocean St	2/23/06	15		Clear	
313	Jessie St	3/6/06	100		Clear	
124	Coloma	3/20/06	5		Clear	
	Lechate Valve#8454	3/30/06	75		Rain	
938	Bay St.	3/31/06		1	Rain	
316	Clinton St	4/13/06		5	Clear	
343	Frederick St	4/10/06		1	Clear	
810	Third St	4/12/06		5	Rain	
106	Kaye St	4/18/06		5	Clear	
2018	Mission St	4/23/06		25	Clear	
1453	Laurel St	4/26/06		25	Clear	
809	Center St	4/26/06		5	Clear	
125	Pearl St	5/1/06		10	Clear	
704	Laurent St	5/3/06		5	Clear	
352	Washington St	5/3/06		10	Clear	
809	River St	5/19/06		5	Clear	

**Section VIII Lift Station and Collection System Overflow Report****TABLE 3. SUMMARY OF SEWAGE SPILLS WITHIN SANTA CRUZ CITY IN 2006.**

<b>House Number</b>	<b>Street</b>	<b>Date:</b>	<b>City Main Spill (gallons)</b>	<b>Private Lateral Spill (gallons)</b>	<b>Weather</b>	<b>Notes</b>
311	Laurent St	1/2/06	20		Clear	
575	Dimeo Ln	1/11/06	200		Clear	
405	Second St	1/11/06		10	Clear	
217	Laguna St	1/12/06	100		Clear	
533	Broadway	1/11/06		5	Clear	
1823	Soquel Ave	1/14/06		5	Clear	
126	Campbell	1/17/06		60	Clear	
509	Leibrant St	1/17/06		10	Clear	
	Lechate Valve#8454	1/17/06	50		Clear	
125	Felix St	1/27/06	40		Clear	
519	Seabright Ave	2/3/06		5	Clear	
125	Pearl St	2/13/06		25	Clear	
575	Dimeo Lane	2/14/06	15		Clear	
117	Towne Terrace	2/13/06		5	Clear	
41	Grandview	2/24/06		350	Clear	
519	Seabright Ave	2/24/06		10	Clear	
716	Ocean St	2/23/06	15		Clear	
313	Jessie St	3/6/06	100		Clear	
124	Coloma	3/20/06	5		Clear	
	Lechate Valve#8454	3/30/06	75		Rain	
938	Bay St.	3/31/06		1	Rain	
316	Clinton St	4/13/06		5	Clear	
343	Frederick St	4/10/06		1	Clear	
810	Third St	4/12/06		5	Rain	
106	Kaye St	4/18/06		5	Clear	
2018	Mission St	4/23/06		25	Clear	
1453	Laurel St	4/26/06		25	Clear	
809	Center St	4/26/06		5	Clear	
125	Pearl St	5/1/06		10	Clear	
704	Laurent St	5/3/06		5	Clear	
352	Washington St	5/3/06		10	Clear	
809	River St	5/19/06		5	Clear	

## Section VIII Lift Station and Collection System Overflow Report

House Number	Street	Date:	City Main Spill (gallons)	Private Lateral Spill (gallons)	Weather	Notes
133	Washburn	5/22/06		10	Clear	
1602	Ocean St	5/22/06		5	Clear	
2200	Delaware	6/5/06		50	Clear	
214	Grant St	6/14/06		5	Clear	
1143	E. Cliff Dr.	6/13/06		2	Clear	
310	Stanford Ave	6/30/06		20	Clear	
423	Rigg St	6/30/06		5	Clear	
1022	Broadway	7/6/06		5	Clear	
147	Cail Ave	7/7/06	10		Clear	
147	Cail Ave	7/9/06	10		Clear	
101	Main St	7/21/06		50	Clear	
101	Main St	7/22/06		15	Clear	
1123	E. Cliff Dr	7/22/06		20	Clear	
231	S. Branciforte Dr	8/2/06		1	Clear	
125	Pearl St	8/2/06		1	Clear	
501	Highland Ave	8/9/06	100		Clear	
120	Continental Ave	8/29/06	500		Clear	
80	Hageman Ave	8/29/06	500		Clear	
153	Pryce St	9/1/06	50		Clear	
1039	Laurent St	9/7/06	200		Clear	
111	Coral St	9/17/06		10	Clear	
231	Chilverton Ave	9/16/06		5	Clear	
350	Ocean St	9/20/06		10	Clear	
424	W. Cliff Dr.	9/23/06	25		Clear	
	High St	10/3/06		5	Clear	
510	Barson St	10/8/06		1	Clear	
820	Third St	10/7/06		5	Clear	
404	Ocean St	10/8/06		5	Clear	
501	Highland Ave	10/9/06	5		Clear	
202	Forrest Ave	10/3/06		15	Clear	
234	High St	10/14/06	500		Clear	
144	Hunolt St	11/11/06		15	Overcast/Foggy	
155	Surfside St	11/10/06	25		Clear	
722	Walnut Ave	11/9/06		5	Clear	
317	Highland Ave	11/17/06	700		Clear	
404	Soquel Ave	11/17/06		5	Clear	
822	Parkway Ave	11/20/06	5		Clear	
320	Center St	12/18/06		20	Clear	
1580	E. Cliff Dr.	12/22/06		10	Clear	
404	Soquel Ave	12/27/06		10	Clear	
519	Seabright Ave	12/30/06		5	Clear	
<b>Total of 2006 spills (gallons)</b>			<b>4,197</b>			
<b>Number of 2006 spills</b>			<b>73</b>			

**THIS IS THE END PAGE OF THE ANNUAL REPORT FOR 2006.**

**WATER POLLUTION CONTROL FACILITY**  
**ANNUAL REPORT**



**2007**

# WATER POLLUTION CONTROL FACILITY



This report is submitted in accordance with the Standard Provisions and Reporting Requirements of the National Pollutant Discharge Elimination System Permits, General Reporting Requirements, § 16.C.

The City of Santa Cruz treats sewage from domestic and industrial sources at the Wastewater Treatment Facility near Neary's Lagoon and discharges its effluent under the NPDES permit No CA0048194 into the Pacific Ocean. The treatment facility has been upgraded several times to accommodate population growth and service area changes since 1928 when the Plant began operations. The City of Santa Cruz also provides capacity for the City of Scotts Valley to discharge its wastewater treatment system's effluent into the Pacific Ocean. However, all data and narratives contained within this report relate only to the effluent and treatment facility of the City of Santa Cruz.

Although the City continuously upgrades the treatment facility to accommodate population growth, respond to regulatory and environmental challenges, as well as security reasons, the most recent structural upgrades to the facility were completed in 1998. These included a new ocean outfall in 1989; the rebuilding of the primary treatment plant completed in 1991; and the addition of a trickling filter/solids contact secondary plant in 1998.

Although the Plant is rated for wet weather flows of 81 million gallons per day MGD, its average dry weather (ADW) limit is 17 MGD.

The ADW flow for the year 2007 was 10.35 MGD (from April 15 through October 15, 2007). The Plant processed an average daily flow of 10.43 MGD for a total of 3,805.89 million gallons during the year 2007.

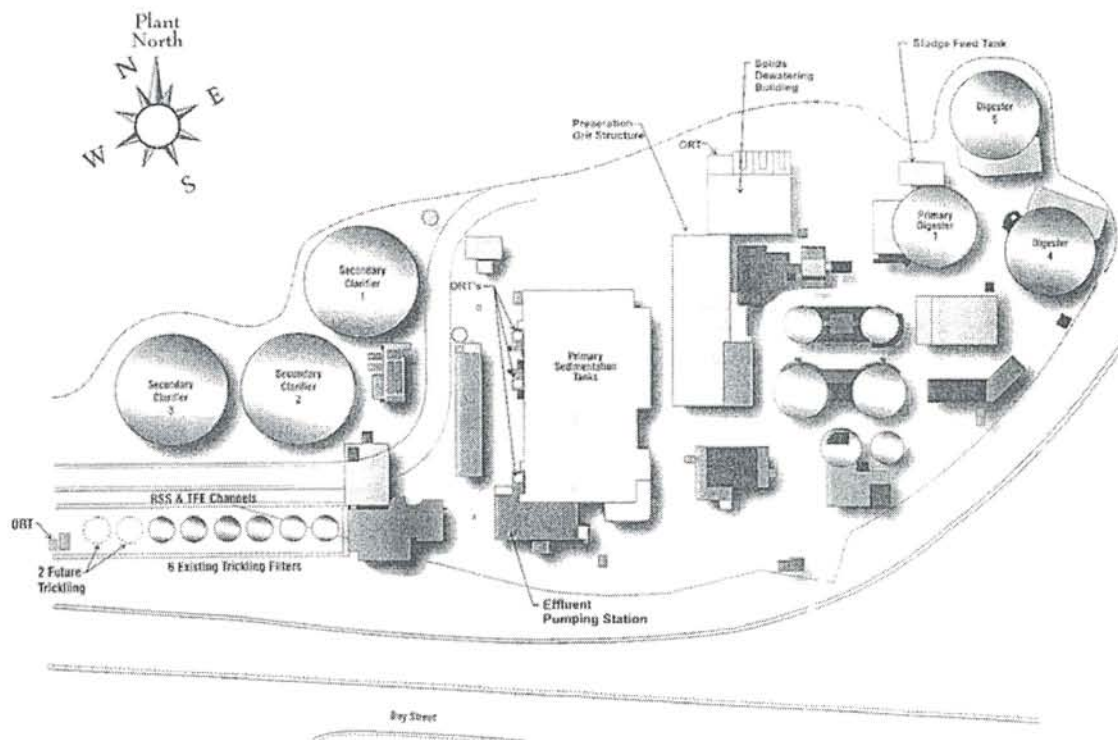
Plant efficiencies for conventional pollutants were as follows in 2007:

- TSS removal averaged 98.7%;
- TOC removal averaged 88.8%; which translates to an approximate value of 93.1% for calculated BOD removal.

The area served includes the Cities of Santa Cruz and Capitola, the areas of Live Oak, Soquel, and Aptos, and the University of California at Santa Cruz.

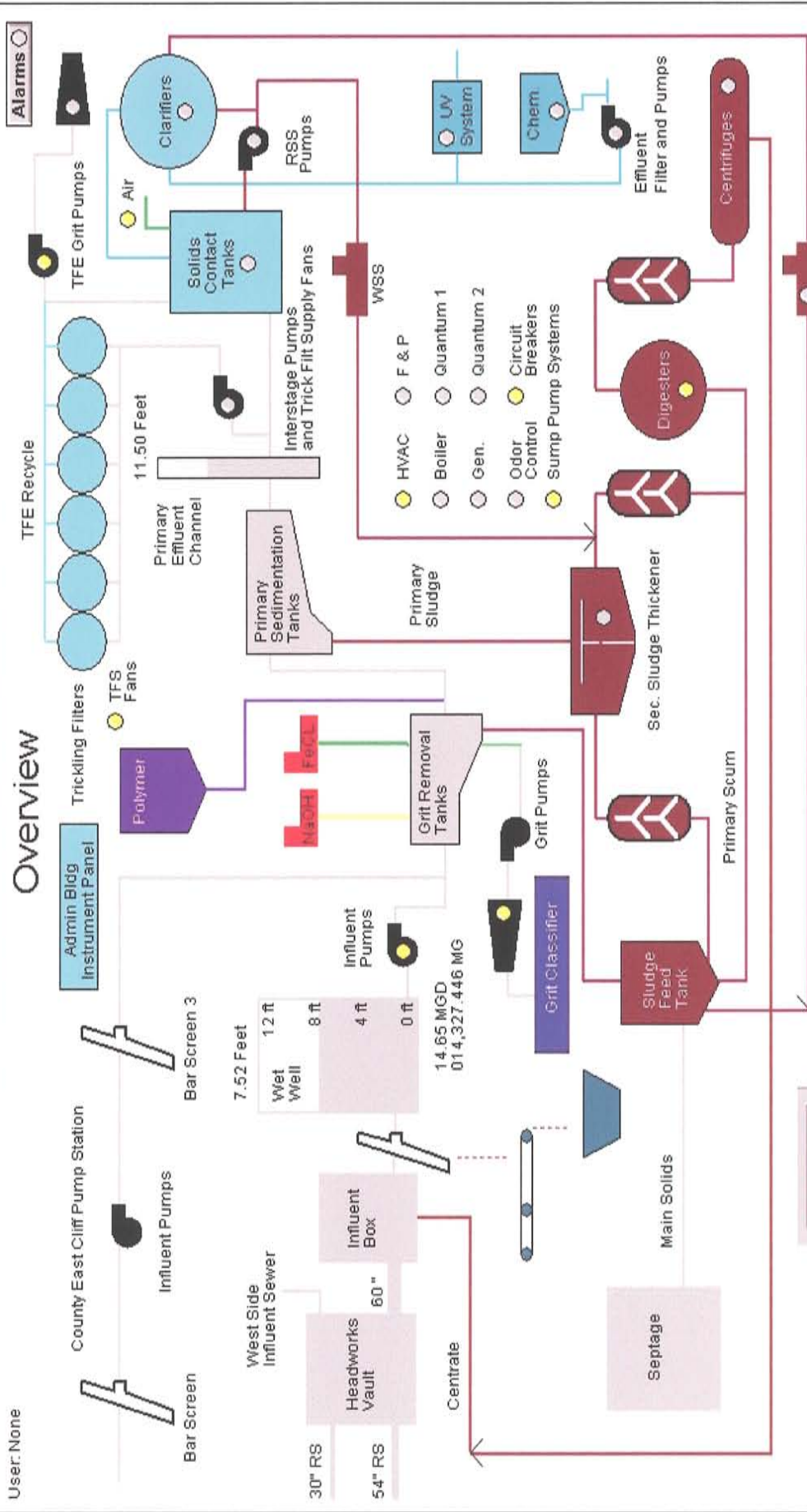
The estimated population served is approximately 135,000 people.

Following are a diagram of the current facility, and a screenshot of its operational segments.





# Overview



# **CITY OF SANTA CRUZ 2007 POTW ANNUAL REPORT**

## **CONTENTS**

Section I	Summary of Monitoring Data – Tables
Section II	Summary of Monitoring Data – Graphs
Section III	The Compliance Record and Corrective Actions
Section IV	Outfall and Diffuser Monitoring
Section V	Biosolids and Sludge report
Section VI	The Operating Staff
Section VII	The Operation and Maintenance Manual and Contingency Plans
Section VIII	Laboratories used to Monitor Compliance
Section IX	Summary of Performance Relative to Section B, General; Monitoring Requirements
Section X	Lift Station and Collection System Overflow Report

## **I      Summary of Monitoring Data - Tables**

## **Section I    Summary of Monitoring Data – Tables**

This section contains summary tables of compliance monitoring data compiled by the City's laboratory, contract laboratories, and treatment staff for compliance monitoring purposes in 2007.

It is organized as follows:

1. Monthly averages for Plant Flows; Plant performance data on conventional pollutants with emphasis on nutrient, chronic and acute toxicity;
2. Averages for Plant performance data on priority pollutants, metals and trace organics derived from Semi-Annual Effluent and Annual Influent requirements of the NPDES permit CA0048194, including commercial laboratory reports; and
3. Nearshore bacteria monitoring at 30 foot contour depth.

Finally, included in the CD version of this annual report are detailed analytical reports from contract laboratories involved in the resolution of trace and ultra-trace compounds sampled with SPMD and POCIS. The hardcopy report only includes highlights of the same reports.

This mode of documentation reduces the paper used in the production of the annual report.



# **TOTAL WASTEWATER PLANT FLOWS**

Monthly Averages	Influent Flow MGD	Effluent Flow MGD	City Influent Flow MGD	County Influent Flow MGD
Units				
January	9.3	10.9	5.0	4.3
February	11.1	12.2	6.0	5.0
March	8.8	9.7	4.4	4.4
April	9.1	10.5	4.7	4.4
May	8.6	9.3	4.3	4.3
June	8.4	9.9	4.0	4.4
July	8.5	10.4	4.0	4.5
August	8.4	9.7	4.0	4.4
September	9.0	10.4	4.7	4.3
October	9.3	10.9	5.0	4.3
November	8.9	9.7	4.5	4.3
December	9.1	10.1	4.7	4.4
Annual Average	9.0	10.3	4.6	4.4
Annual High	11.1	12.2	6.0	5.0

# TOTAL SUSPENDED SOLIDS (TSS)

Monthly Averages	Influent TSS mg/l	Effluent TSS mg/l	Effluent TSS lb/day	Effluent TSS kg/day	TSS Removal %
Units					
January	277.2	4.9	444.9	201.8	98.2%
February	255.6	3.5	363.4	164.8	98.6%
March	277.2	3.0	235.6	106.9	99.0%
April	352.0	4.0	427.0	193.7	97.8%
May	267.7	3.4	263.2	119.4	98.7%
June	472.0	6.0	533.9	242.2	99.4%
July	377.1	3.3	286.8	130.1	99.1%
August	320.5	3.1	253.2	114.9	99.0%
September	369.3	4.1	356.7	161.8	98.9%
October	343.7	4.9	447.8	203.1	98.6%
November	335.8	5.4	437.0	198.2	98.4%
December	305.6	5.5	461.2	209.2	98.2%
Annual Average	329.5	4.3	375.9	170.5	98.7%
Annual High	472.0	6.0	533.9	242.2	99.4%



# TOTAL ORGANIC CARBON (TOC)

Monthly Averages	Influent TOC mg/l	Effluent TOC mg/l	Effluent TOC lb/day	Effluent TOC kg/day	TOC Removal %
Units					
January	109.3	12.8	1,145.9	548.8	87.9%
February	139.0	11.5	1,180.6	535.5	90.6%
March	103.1	9.5	506.6	229.8	87.8%
April	103.3	10.6	947.0	429.5	89.5%
May	107.7	11.0	843.8	359.0	89.8%
June	111.6	12.4	1,054.1	478.1	88.2%
July	125.6	11.6	1,039.2	471.4	90.6%
August	106.7	12.3	1,000.8	453.9	88.5%
September	102.3	12.6	1,099.2	498.6	87.7%
October	120.9	13.8	1,231.1	558.4	88.6%
November	124.1	11.9	971.6	440.7	90.4%
December	86.1	12.3	1,038.4	471.0	86.2%
Annual Average	111.6	11.9	1,004.8	456.2	88.8%
Annual High	139.0	13.8	1,231.1	558.4	90.6%

**TABLE 1. - SELECT CONVENTIONAL POLLUTANTS**

Monthly Averages	Influent PH		Effluent PH		Influent Settleable Solids		Effluent Settleable Solids		Influent Oil and Grease		Effluent Oil and Grease	
	SI		SI		ml/L		ml/L		mg/L		mg/L	
Units												
January	7.4		7.2		14.3		<0.05		24.5		<5	
February	7.3		7.2		14.5		<0.05		27.0		<5	
March	7.4		7.1		16.1		<0.05		40.1		<5	
April	7.4		7.1		14.1		<0.05		44.3		<5	
May	7.4		7.1		10.2		<0.05		24.9		<5	
June	7.4		7.2		10.9		<0.05		41.1		<5	
July	7.3		7.1		19.8		<0.05		31.6		<5	
August	7.4		7.1		14.7		<0.05		39.4		<5	
September	7.4		7.0		12.4		<0.05		31.6		<5	
October	7.3		7.0		18.4		<0.05		25.1		<5	
November	7.4		7.1		15.2		<0.05		29.0		<5	
December	7.5		7.1		16.1		<0.05		31.7		<5	
Annual Average	7.4		7.1		14.7		<0.05		32.5		<5	
Annual High	7.5		7.2		19.8		<0.05		44.3		<5	



TABLE 2. - SELECT CONVENTIONAL POLLUTANTS

Monthly Averages	Effluent Turbidity	Effluent Temperature	Effluent Ammonia-N	Effluent Urea-N	Effluent Nitrate	Effluent Silicate
Units	NTU	°C	ug/L	ug/L	mg/L	mg/L
January	3.8	18.3	29,738.5	205.0	9.1	34.0
February	3.2	18.6	29,166.7	540.0	4.6	60.0
March	2.4	19.6	28,879.3	112.0	5.2	33.0
April	1.8	21.1	28,505.6	118.0	4.7	35.0
May	3.1	22.7	26,578.6	150.0	NA	33.0
June	2.8	24.0	26,114.3	130.0	6.1	37.0
July	2.3	25.3	26,325.0	130.0	11.0	36.0
August	2.1	24.9	24,480.0	140.0	1.5	36.0
September	1.9	25.0	9,450.0	120.0	8.8	37.0
October	2.1	23.7	43,200.0	110.0	6.0	43.0
November	3.6	22.4	21,433.3	93.0	12.0	37.0
December	3.6	19.8	19,125.0	90.0	12.0	40.0
Annual Average	2.7	22.1	26,083.0	161.5	7.4	38.4
Annual High	3.8	25.3	43,200.0	540.0	12.0	60.0

**TABLE OF 3. - TOXICITIES; CHLORINE; PHENOLS AND SULFIDES**

Monthly Averages	Effluent Acute Toxicity (Quarterly)	Effluent Chronic Toxicity (Quarterly)	Daily Maximum Chlorine Residual	Instantaneous Maximum Chlorine Residual	Effluent Phenols (Quarterly)	Effluent Total Sulfides (Quarterly)
	Tua	Tuc	ug/L	ug/L	mg/L	mg/L
Units						
January	2.1	6.0	8.0	196.7	<0.001	<0.1
February	NA	NA	0.3	0.5	NA	NA
March	NA	NA	3.6	62.3	NA	NA
April	2.4	16.0	9.9	45.1	<0.001	<0.1
May	NA	NA	1.0	0.1	NA	NA
June	NA	NA	10.0	183.2	NA	NA
July	1.6	16.0	9.6	65.5	<0.001	<0.1
August	NA	NA	0.1	0.0	<0.001	NA
September	NA	NA	0.1	0.0	NA	NA
October	1.3	6.0	10.2	74.3	<1.0	<0.1
November	NA	NA	6.4	218.8	NA	NA
December	NA	NA	2.7	141.4	NA	NA
Annual Average	1.9	11.0	5.2	82.3	<0.001	<0.1
Annual High	10.2	74.3	10.2	218.8	<0.1	<0.1



# ANNUAL INFLUENT AND EFFLUENT METALS/INORGANICS - 2007

Metals/Inorganics	Influent		Effluent		Reporting Limit
	March	September	March	September	
Cadmium		<10	<10	<10	10 ug/L
Chromium		80	24	50	10 ug/L
Copper		110	<10	12	10 ug/L
Iron		5,580	108	146	20 ug/L
Lead		<20	<20	<20	20 ug/L
Nickel		<20	<20	<20	10 ug/L
Silver		<4	<4	<4	4 ug/L
Zinc		230	24	33	10 ug/L
Chromium VI	<10		<10		10 ug/L
Radioactivity (Gross $\alpha$ and $\beta$ )		18.4			1 pCi/L

Wet Weather Semi-Annual Effluent 2007 – TCDD and equivalents				
Sample Composite dates: 03/02/07 through 03/30/07				WHO TEQ: 0.000611
Compound	Concentration Units: pg/L	Method Detection Limit Units: pg/L	Summation of Congeners	Concentration (pg/L)
2,3,7,8-TCDD	< 0.194	0.337		
1,2,3,7,8-PeCDD	< 1.07	0.338		
1,2,3,4,7,8-HxCDD	< 2.26	0.738		
1,2,3,6,7,8-HxCDD	< 2.45	0.801	Total TCDD	560
1,2,3,7,8,9-HxCDD	< 2.67	0.729	Total PeCDD	8.49
1,2,3,4,6,7,8-HpCDD	< 4.17	0.642	Total HxCDD	<.267
OCDD	6.11 <sup>l</sup>	1.34	Total HpCDD	4.17
2,3,7,8-TCDF	< 1.23	0.346		
1,2,3,7,8-PeCDF	< 1.91	0.454		
2,3,4,7,8-PeCDF	< 1.86	0.488		
1,2,3,4,7,8-HxCDF	< 1.09	0.268		
1,2,3,6,7,8-HxCDF	< 1.16	0.26		
2,3,4,6,7,8-HxCDF	< 1.24	0.327		

1,2,3,7,8,9-HxCDF	< 1.76	0.276	Total TCDF	167
1,2,3,4,6,7,8-HpCDF	< 2.21	0.332	Total PeCDF	24.7
1,2,3,4,7,8,9:HpCDF	< 2.61	0.398	Total HxCDF	2.11
OCDF	< 3.04	1.19	Total HpCDF	< 2.61
J Flags denote concentration values derived below calibration range; and reported for informational values only.				



Dry Weather Semi-Annual Effluent 2007 – TCDD and equivalents				
Sample Composite dates: 09/04/07 through 10/04/07				WHO TEQ: 5.76
Compound	Concentration Units: pg/L	Method Detection Limit Units: pg/L	Summation of Congeners	Concentration (pg/L)
2,3,7,8-TCDD	3.64 <sup>j</sup>	0.337		
1,2,3,7,8-PeCDD	1.56 <sup>j</sup>	0.338		
1,2,3,4,7,8-HxCDD	< 1.68	0.738		
1,2,3,6,7,8-HxCDD	< 1.95	0.801	Total TCDD	795
1,2,3,7,8,9-HxCDD	< 2.06	0.729	Total PeCDD	31.4
1,2,3,4,6,7,8-HpCDD	7.48 <sup>j</sup>	0.642	Total HxCDD	7.79 <sup>j</sup>
OCDD	19.9 <sup>j</sup>	1.34	Total HpCDD	16.2 <sup>j</sup>
2,3,7,8-TCDF	1.95 <sup>j</sup>	0.346		
1,2,3,7,8-PeCDF	< 1.34	0.454		
2,3,4,7,8-PeCDF	< 1.37	0.488		
1,2,3,4,7,8-HxCDF	0.665 <sup>j</sup>	0.268		
1,2,3,6,7,8-HxCDF	0.817 <sup>j</sup>	0.26		
2,3,4,6,7,8-HxCDF	0.997 <sup>j</sup>	0.327		

1,2,3,7,8,9-HxCDF	< 0.582	0.276	Total TCDF	747
1,2,3,4,6,7,8-HpCDF	3.74 <sup>J</sup>	0.332	Total PeCDF	81.3
1,2,3,4,7,8,9-HpCDF	< 0.898	0.398	Total HxCDF	11.1 <sup>J</sup>
OCDF	< 4.33	1.19	Total HpCDF	6.76 <sup>J</sup>
J Flags denote concentration values derived below calibration range; and reported for informational values only.				



Annual Influent 2007 –TCDD and equivalents				
Sample Composite dates: 09/04/07 through 10/04/07				WHO TEQ: 1.06
Compound	Concentration Units: pg/L	Method Detection Limit Units: pg/L	Summation of Congeners	Concentration (pg/L)
2,3,7,8-TCDD	<0.927	0.337		
1,2,3,7,8-PeCDD	0.953 <sup>j</sup>	0.338		
1,2,3,4,7,8-HxCDD	< 1.52	0.738		
1,2,3,6,7,8-HxCDD	< 1.62	0.801	Total TCDD	10.3
1,2,3,7,8,9-HxCDD	< 1.71	0.729	Total PeCDD	4.29 <sup>l,m</sup>
1,2,3,4,6,7,8-HpCDD	7.15 <sup>j</sup>	0.642	Total HxCDD	<1.71
OCDD	31.7 <sup>j</sup>	1.34	Total HpCDD	13.6 <sup>j</sup>
2,3,7,8-TCDF	< 0.699	0.346		
1,2,3,7,8-PeCDF	< 1.80	0.454		
2,3,4,7,8-PeCDF	< 2.00	0.488		
1,2,3,4,7,8-HxCDF	<0.499	0.268		
1,2,3,6,7,8-HxCDF	0.512	0.26		
2,3,4,6,7,8-HxCDF	0.580	0.327		



1,2,3,7,8,9-HxCDF	< 0.789	0.276	Total TCDF	11.6
1,2,3,4,6,7,8-HpCDF	3.35 <sup>J</sup>	0.332	Total PeCDF	2.70 <sup>J</sup>
1,2,3,4,7,8,9:HpCDF	< 0.671	0.398	Total HxCDF	4.53 <sup>J</sup>
OCDF	5.72 <sup>J</sup>	1.19	Total HpCDF	5.98 <sup>J</sup>
<p>J Flags denote concentration values derived below calibration range; and reported for informational values only.</p> <p>M Flags denote Maximum possible concentration.</p>				

Sampled 03/02/07  
to 03/30/07

CITY OF SANTA CRUZ ANNUAL INFLUENT/EFFLUENT  
PESTICIDES

	MDL	RL	Sampling Quality Control		Influent	Effluent
			Solvent Blank	Day 0 Matrix Blank	L-472-07	L-472-07
	ng/mL (ppb)	ng/mL (ppb)	ng/mL (ppb)	ng/mL (ppb)	ng/mL (ppb)	ng/mL (ppb)
Aldrin	0.50	1.00	< mdl	< mdl	< mdl	< mdl
Chlordane, cis	0.50	1.00	< mdl	< mdl	2.90	5.97
Chlordane, trans	0.50	1.00	< mdl	< mdl	2.68	4.74
Chlorpyrifos	1.50	3.00	< mdl	< mdl	7.63	23.5
Dacthal	0.50	1.00	< mdl	< mdl	< mdl	< mdl
DDD, o,p'	1.00	2.00	< mdl	< mdl	< mdl	< mdl
DDD, p,p'	1.00	2.00	< mdl	< mdl	< mdl	< mdl
DDE, o,p'	1.00	2.00	< mdl	< mdl	< mdl	< mdl
DDE, p,p'	1.00	2.00	< mdl	< mdl	2.31	2.77
DDMU, p,p'	2.00	4.00	< mdl	< mdl	< mdl	< mdl
DDT, o,p'	1.00	2.00	< mdl	< mdl	< mdl	< mdl
DDT, p,p'	1.00	2.00	< mdl	< mdl	1.03	1.34
Diazinon	10.0	20.0	< mdl	< mdl	< mdl	< mdl
Dieldrin	0.50	1.00	< mdl	< mdl	< mdl	< mdl
Endosulfan I	1.00	2.00	< mdl	< mdl	< mdl	< mdl
Endrin	0.50	1.00	< mdl	< mdl	< mdl	< mdl
HCB	0.50	1.00	< mdl	< mdl	1.97	4.22
HCH, alpha	0.25	0.50	< mdl	< mdl	< mdl	< mdl
HCH, beta	0.50	1.00	< mdl	< mdl	< mdl	< mdl
HCH, gamma	0.25	0.50	< mdl	< mdl	1.46	0.763
Heptachlor	0.50	1.00	< mdl	< mdl	< mdl	< mdl
Heptachlor epoxide	0.50	1.00	< mdl	< mdl	0.82	1.70
Methoxychlor	2.50	5.00	< mdl	< mdl	< mdl	< mdl
Mirex	1.50	3.00	< mdl	< mdl	< mdl	< mdl
Nonachlor, cis	0.50	1.00	< mdl	< mdl	< mdl	< mdl
Nonachlor, trans	0.50	1.00	< mdl	< mdl	1.29	2.37

Oxadiazon	1.50	3.00	< mdl	< mdl	< mdl	< mdl	< mdl
Oxychlordan	0.50	1.00	< mdl	< mdl	< mdl	< mdl	< mdl
Paathion, methyl	1.50	3.00	< mdl	< mdl	< mdl	< mdl	< mdl
Parathion, ethyl	2.00	4.00	< mdl	< mdl	< mdl	< mdl	< mdl
Tedion	1.00	2.00	< mdl	< mdl	< mdl	< mdl	< mdl

Sampled 03/02/07 to 03/30/07	CITY OF SANTA CRUZ ANNUAL INFLUENT/EFFLUENT PCBs				
	MDL	RL	Sampling Quality Control		Influent
			Solvent Blank	Matrix Blank / Day 0	
PCBs	ng/uL (ppb)	ng/uL (ppb)	ng/uL (ppb)	ng/uL (ppb)	ng/uL (ppb)
8	0.25	0.50	< mdl	< mdl	0.711
18	0.25	0.50	< mdl	< mdl	0.834
27	0.25	0.50	< mdl	< mdl	< mdl
28	0.25	0.50	< mdl	< mdl	1.35
29	0.25	0.50	< mdl	< mdl	< mdl
30	0.25	0.50	< mdl	< mdl	< mdl
31	0.25	0.50	< mdl	< mdl	1.12
33	0.25	0.50	< mdl	< mdl	0.856
44	0.25	0.50	< mdl	< mdl	0.836
49	0.25	0.50	< mdl	< mdl	0.685
52	0.25	0.50	< mdl	< mdl	1.00
56	0.25	0.50	< mdl	< mdl	< mdl
60	0.25	0.50	< mdl	< mdl	< mdl
66	0.25	0.50	< mdl	< mdl	0.631
70	0.25	0.50	< mdl	< mdl	0.900
74	0.25	0.50	< mdl	< mdl	0.304
87	0.25	0.50	< mdl	< mdl	0.477
95	0.25	0.50	< mdl	< mdl	0.572
97	0.25	0.50	< mdl	< mdl	< mdl
99	0.25	0.50	< mdl	< mdl	< mdl
101	0.25	0.50	< mdl	< mdl	0.617
105	0.25	0.50	< mdl	< mdl	< mdl
110	0.25	0.50	< mdl	< mdl	0.672
					ng/uL (ppb)
					0.929
					1.38
					< mdl
					1.96
					< mdl
					< mdl
					1.81
					1.10
					1.11
					1.04
					1.69
					3.56
					0.215
					0.761
					1.45
					0.441
					0.576
					1.06
					0.290
					0.442
					1.13
					< mdl
					1.07



114	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
118	0.25	0.50	< mdl	< mdl	< mdl	<b>0.411</b>	< mdl	<b>0.744</b>
128	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
137	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
138	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	<b>0.487</b>
141	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	<b>0.282</b>
149	0.25	0.50	< mdl	< mdl	< mdl	<b>0.431</b>	< mdl	<b>0.590</b>
151	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
153	0.25	0.50	< mdl	< mdl	< mdl	<b>0.437</b>	< mdl	<b>0.515</b>
156	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
157	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
158	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
169	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
170	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
174	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
177	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
180	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
183	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
187	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	<b>0.288</b>
189	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
194	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
195	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
200	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
201	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
203	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
206	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl
209	0.25	0.50	< mdl	< mdl	< mdl	< mdl	< mdl	< mdl

Sampled 03/02/07 to 03/30/07	CITY OF SANTA CRUZ ANNUAL INFLUENT/EFFLUENT VOCs					
	Lab Number:	L-472-07-1	L-472-07-2	L-472-07-3		
	Sample Name:	Day Zero	Influent	Effluent		
		Sampling QC				
Compound Name	Reporting Limits (ug/mL)	ug/mL [ppm]	ug/mL [ppm]	ug/mL [ppm]		
Phenol	5	< mdl	< mdl	< mdl		
Bis(2-chloroethyl) ether	5	< mdl	< mdl	< mdl		
2-Chlorophenol	5	< mdl	< mdl	< mdl		
1,3-Dichlorobenzene	5	< mdl	< mdl	< mdl		
1,4-Dichlorobenzene	5	< mdl	< mdl	< mdl		
1,2-Dichlorobenzene	5	< mdl	< mdl	< mdl		
Bis(2-chloroisopropyl) ether	5	< mdl	< mdl	< mdl		
2-Methylphenol	5	< mdl	< mdl	< mdl		
N-Nitrosodi-n-propylamine	5	< mdl	< mdl	< mdl		
Hexachloroethane	5	< mdl	< mdl	< mdl		
4-Methylphenol	5	< mdl	< mdl	< mdl		
Nitrobenzene	5	< mdl	< mdl	< mdl		
Isophorone	5	< mdl	< mdl	< mdl		
2-Nitrophenol	5	< mdl	< mdl	< mdl		
2,4-Dimethylphenol	5	< mdl	< mdl	< mdl		
Bis(2-chloroethoxy)methane	5	< mdl	< mdl	< mdl		
2,4-Dichlorophenol	5	< mdl	< mdl	< mdl		
1,2,4-Trichlorobenzene	5	< mdl	< mdl	< mdl		
Naphthalene	5	< mdl	< mdl	< mdl		
4-Chloroaniline	5	< mdl	< mdl	< mdl		
Hexachlorobutadiene	5	< mdl	< mdl	< mdl		

4-Chloro-3-methylphenol	5	< mdl	< mdl	< mdl
2-Methylnaphthalene	5	< mdl	< mdl	< mdl
Hexachlorocyclopentadiene	15	< mdl	< mdl	< mdl
2,4,6-Trichlorophenol	5	< mdl	< mdl	< mdl
2,4,5-Trichlorophenol	5	< mdl	< mdl	< mdl
2-Chloronaphthalene	5	< mdl	< mdl	< mdl
2-Nitroaniline	5	< mdl	< mdl	< mdl
2,6-Dinitrotoluene	5	< mdl	< mdl	< mdl
Dimethyl phthalate	5	< mdl	< mdl	< mdl
Acenaphthylene	5	< mdl	< mdl	< mdl
3-Nitroaniline	15	< mdl	< mdl	< mdl
Acenaphthene	5	< mdl	< mdl	< mdl
2,4-Dinitrophenol	5	< mdl	< mdl	< mdl
2,4-Dinitrotoluene	5	< mdl	< mdl	< mdl
Dibenzofuran	5	< mdl	< mdl	< mdl
4-Nitrophenol	5	< mdl	< mdl	< mdl
Diethyl phthalate	5	< mdl	< mdl	< mdl
Fluorene	5	< mdl	< mdl	< mdl
4-Chlorophenyl phenyl ether	5	< mdl	< mdl	< mdl
4,6-Dinitro-2-methylphenol	5	< mdl	< mdl	< mdl
Carbazole	5	< mdl	< mdl	< mdl
4-Bromophenyl phenyl ether	5	< mdl	< mdl	< mdl
Hexachlorobenzene	5	< mdl	< mdl	< mdl
Pentachlorophenol	5	< mdl	< mdl	< mdl
4-Nitroaniline	15	< mdl	< mdl	< mdl
Phenanthrene	5	< mdl	< mdl	< mdl
Anthracene	5	< mdl	< mdl	< mdl
Di-n-butyl phthalate	5	< mdl	< mdl	< mdl
Fluoranthene	5	< mdl	< mdl	< mdl

Pyrene		5	< mdl	< mdl	< mdl
Butyl benzyl phthalate		5	< mdl	< mdl	< mdl
Benz[a]anthracene		5	< mdl	< mdl	< mdl
Chrysene		5	< mdl	< mdl	< mdl
Bis(2-ethylhexyl) phthalate		30	< mdl	< mdl	< mdl
Di-n-octyl phthalate		5	< mdl	< mdl	< mdl
Benzo[b]fluoranthene		5	< mdl	< mdl	< mdl
Benzo[k]fluoranthene		5	< mdl	< mdl	< mdl
Benzo[a]pyrene		5	< mdl	< mdl	< mdl
Indeno[1,2,3-cd]pyrene		5	< mdl	< mdl	< mdl
Dibenz[a,h]anthracene		5	< mdl	< mdl	< mdl
Benzo[g,h,i]perylene		5	< mdl	< mdl	< mdl

< mdl = below method detection limit





Alpha Analytical Laboratories Inc.

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Corporate: 208 Mason St., Ukiah, CA 95482 • Phone: (707) 468-0401 • Fax: (707) 468-5267  
Service Center: 6398 Dougherty Rd., Suite 3, Dublin, CA 94568 • Phone: (925) 828-6226 • Fax: (925) 828-6309

18 September 2007

Santa Cruz, City of - WW

Attn: Akin Babatola

110 California Street

Santa Cruz, CA 95060-4212

RE: Effluent Semi Annual

Work Order: 07I0196

Enclosed are the results of analyses for samples received by the laboratory on 09/06/07 10:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Chelsea L. Sandelin For Sheri L. Speaks  
Project Manager



Alpha Analytical Laboratories Inc.

208 Mason Street, Ukiah, California 95482

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CHEMICAL EXAMINATION REPORT

Page 1 of 6

Santa Cruz, City of - WW  
110 California Street  
Santa Cruz, CA 95060-4212  
Attn: Akin Babatola

Report Date: 09/18/07 14:30  
Project No: 65-08059  
Project ID: Effluent Semi Annual

Order Number  
07I0196

Receipt Date/Time  
09/06/2007 10:00

Client Code  
COSC

Client PO/Reference

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AA 18033 Plant Eff.	07I0196-01	Water	09/05/07 10:10	09/06/07 10:00
AA 18009 Plant Eff.	07I0196-02	Water	09/05/07 00:00	09/06/07 10:00

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Bruce Gove  
Laboratory Director

9/18/2007



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CHEMICAL EXAMINATION REPORT

Page 2 of 6

Santa Cruz, City of - WW  
110 California Street  
Santa Cruz, CA 95060-4212  
Attn: Akin Babatola

Report Date: 09/18/07 14:30  
Project No: 65-08059  
Project ID: Effluent Semi Annual

Order Number  
07I0196

Receipt Date/Time  
09/06/2007 10:00

Client Code  
COSC

Client PO/Reference

Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
AA 18033 Plant Eff. (07I0196-01)			Sample Type: Water		Sampled: 09/05/07 10:10			
Conventional Chemistry Parameters by APHA/EPA Methods								
Phenol	EPA 420.1	AI71330	09/13/07	09/13/07	1	ND mg/l	0.0010	
Silica (SiO2), dissolved	SM4500-SiO2 D	AI71209	09/12/07	09/12/07	10	37 "	10	
Anions by EPA Method 300.0								
Nitrate as N	EPA 300.0	AI70616	09/06/07	09/07/07	5	8.8 mg/l	1.0	
AA 18009 Plant Eff. (07I0196-02)			Sample Type: Water		Sampled: 09/05/07 00:00			
Conventional Chemistry Parameters by APHA/EPA Methods								
Phosphorus, Total	SM4500-P E	AI70605	09/10/07	09/10/07	5	1.5 mg/l	0.50	
Total Kjeldahl Nitrogen	SM4500-Norg B	AI71110	09/11/07	09/11/07	1	32 "	1.0	

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Laboratory Director

9/18/2007



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CHEMICAL EXAMINATION REPORT

Page 3 of 6

Santa Cruz, City of - WW  
110 California Street  
Santa Cruz, CA 95060-4212  
Attn: Akin Babatola

Report Date: 09/18/07 14:30  
Project No: 65-08059  
Project ID: Effluent Semi Annual

<u>Order Number</u>	<u>Receipt Date/Time</u>	<u>Client Code</u>	<u>Client PO/Reference</u>
0710196	09/06/2007 10:00	COSC	

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
<b>Batch AI70605 - General Prep</b>										
<b>Blank (AI70605-BLK1)</b>				Prepared & Analyzed: 09/10/07						
Phosphorus, Total	ND	0.10	mg/l							
<b>LCS (AI70605-BS1)</b>				Prepared & Analyzed: 09/10/07						
Phosphorus, Total	0.206	0.10	mg/l	0.200		103	85-115			
<b>Duplicate (AI70605-DUP1)</b>				<b>Source: 0710131-01</b>		Prepared & Analyzed: 09/10/07				
Phosphorus, Total	0.975	0.55	mg/l		1.0			2.53	20	
<b>Matrix Spike (AI70605-MS1)</b>				<b>Source: 0710131-01</b>		Prepared & Analyzed: 09/10/07				
Phosphorus, Total	1.27	0.55	mg/l	0.200	1.0	135	70-130			QM-4X
<b>Matrix Spike (AI70605-MS2)</b>				<b>Source: 0710195-02</b>		Prepared & Analyzed: 09/10/07				
Phosphorus, Total	7.18	2.0	mg/l	0.200	6.7	240	70-130			QM-4X
<b>Matrix Spike Dup (AI70605-MSD1)</b>				<b>Source: 0710131-01</b>		Prepared & Analyzed: 09/10/07				
Phosphorus, Total	1.30	0.55	mg/l	0.200	1.0	150	70-130	2.33	20	QM-4X
<b>Batch AI71110 - General Prep</b>										
<b>LCS (AI71110-BS1)</b>				Prepared & Analyzed: 09/12/07						
Total Kjeldahl Nitrogen	62.1	1.0	mg/l	56.6		110	80-120			
<b>LCS Dup (AI71110-BSD1)</b>				Prepared & Analyzed: 09/12/07						
Total Kjeldahl Nitrogen	63.5	1.0	mg/l	56.6		112	80-120	2.23	20	
<b>Batch AI71209 - General Preparation</b>										
<b>Blank (AI71209-BLK1)</b>				Prepared & Analyzed: 09/12/07						
Silica (SiO <sub>2</sub> ), dissolved	ND	1.0	mg/l							

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Bruce Gove  
Laboratory Director

9/18/2007



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CHEMICAL EXAMINATION REPORT

Page 4 of 6

Santa Cruz, City of - WW  
110 California Street  
Santa Cruz, CA 95060-4212  
Attn: Akin Babatola

Report Date: 09/18/07 14:30  
Project No: 65-08059  
Project ID: Effluent Semi Annual

Order Number  
0710196

Receipt Date/Time  
09/06/2007 10:00

Client Code  
COSC

Client PO/Reference

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
<b>Batch AI71209 - General Preparation</b>										
<b>LCS (AI71209-BS1)</b>				Prepared & Analyzed: 09/12/07						
Silica (SiO <sub>2</sub> ), dissolved	7.07	1.0	mg/l	6.98		101	85-115			
<b>LCS Dup (AI71209-BSD1)</b>				Prepared & Analyzed: 09/12/07						
Silica (SiO <sub>2</sub> ), dissolved	7.15	1.0	mg/l	6.98		102	85-115	1.13	15	
<b>Matrix Spike (AI71209-MS1)</b>				<b>Source: 0710377-01</b>		Prepared & Analyzed: 09/12/07				
Silica (SiO <sub>2</sub> ), dissolved	5.00	1.0	mg/l	1.99	3.0	101	85-115			
<b>Matrix Spike Dup (AI71209-MSD1)</b>				<b>Source: 0710377-01</b>		Prepared & Analyzed: 09/12/07				
Silica (SiO <sub>2</sub> ), dissolved	4.92	1.0	mg/l	1.99	3.0	96.5	85-115	1.61	15	
<b>Batch AI71330 - General Preparation</b>										
<b>Blank (AI71330-BLK1)</b>				Prepared & Analyzed: 09/13/07						
Phenol	ND	0.0010	mg/l							
<b>LCS (AI71330-BS1)</b>				Prepared & Analyzed: 09/13/07						
Phenol	0.0184	0.0010	mg/l	0.0200		92.0	85-115			
<b>LCS Dup (AI71330-BSD1)</b>				Prepared & Analyzed: 09/13/07						
Phenol	0.0181	0.0010	mg/l	0.0200		90.5	85-115	1.64	15	

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9/18/2007





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CHEMICAL EXAMINATION REPORT

Page 5 of 6

Santa Cruz, City of - WW  
110 California Street  
Santa Cruz, CA 95060-4212  
Attn: Akin Babatola

Report Date: 09/18/07 14:30  
Project No: 65-08059  
Project ID: Effluent Semi Annual

Order Number  
0710196

Receipt Date/Time  
09/06/2007 10:00

Client Code  
COSC

Client PO/Reference

Anions by EPA Method 300.0 - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
<b>Batch AI70616 - General Preparation</b>										
<b>Blank (AI70616-BLK1)</b>				Prepared & Analyzed: 09/06/07						
Nitrate as N	ND	0.20	mg/l							
<b>LCS (AI70616-BS1)</b>				Prepared & Analyzed: 09/06/07						
Nitrate as N	3.1	0.20	mg/l	3.00		103	90-110			
<b>Duplicate (AI70616-DUP1)</b>				Source: 0710192-04 Prepared: 09/06/07 Analyzed: 09/07/07						
Nitrate as N	0.78	0.20	mg/l		0.79			1.27	20	
<b>Matrix Spike (AI70616-MS1)</b>				Source: 0710192-04 Prepared: 09/06/07 Analyzed: 09/07/07						
Nitrate as N	4.1	1.0	mg/l	3.33	ND	99.4	80-120			
<b>Matrix Spike (AI70616-MS2)</b>				Source: 0710194-03 Prepared: 09/06/07 Analyzed: 09/07/07						
Nitrate as N	3.4	0.40	mg/l	3.33	ND	99.6	80-120			
<b>Matrix Spike Dup (AI70616-MSD1)</b>				Source: 0710192-04 Prepared: 09/06/07 Analyzed: 09/07/07						
Nitrate as N	4.1	1.0	mg/l	3.33	ND	99.4	80-120	0.00	20	

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Bruce Gove  
Laboratory Director

9/18/2007



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## CHEMICAL EXAMINATION REPORT

Page 6 of 6

Santa Cruz, City of - WW  
110 California Street  
Santa Cruz, CA 95060-4212  
Attn: Akin Babatola

Report Date: 09/18/07 14:30  
Project No: 65-08059  
Project ID: Effluent Semi Annual

Order Number  
07I0196

Receipt Date/Time  
09/06/2007 10:00

Client Code  
COSC

Client PO/Reference

### Notes and Definitions

QM-4X The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

PQL Practical Quantitation Limit

ELAP #1176

0710194

CLIENT: City of Santa Cruz, WWTFF

**BILL TO:**

REPORT TO: Akin Babatola, MANAGER

**PHONE: (831) 420-6045**

**TURNAROUND TIME:**

**PHONE: (831) 420-6045**

FAX: (831) 420-6489

ADDRESS: 110 California St, Santa Cruz CA 95060

8	24	48	5	72	10	15
HR	HR	HR	DAY	HR	DAY	DAY

e-mail: [wvlabc@ci.santa-cruz.ca.us](mailto:wvlabc@ci.santa-cruz.ca.us)

PROJECT NAME/SITE: Effluent Semi-annual

PO#/BILLING REFERENCE:

65-08059

**SAMPLER:**

DATE:

ANALYSIS REQUESTED

SAMPLE ID#/STATION	SAMPLE DESC.	#	TYPE	SAMPLING DATE/TIME	Nitrate-N	Dissolved Silica	Total Sulfide	Total Phenolics	TKN, Total phosphorus						ADDITIONAL COMMENTS
A# 18033	Plant site	1	0.5Lp	9.5.07/1010	x										
		1	0.5Lp			x									
		1	Lsp				x								Pres w/NaOH, ZnAc <sub>2</sub>
		1	LSp					x							Colorimetric, Pres w/H <sub>2</sub> SO <sub>4</sub>
A# 18009	V	1	LSp	9.4.07/24K					x						Pres w/H <sub>2</sub> SO <sub>4</sub>
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	TRAVEL TIME:	ON SITE TIME:	OTHER:	WERE SAMPLES PRESERVED?	YES	NO						
Trautwein	9.5.07		Fed Ey												
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	TRAVEL TIME:	ON SITE TIME:	OTHER:	WERE SAMPLES PRESERVED?	YES	NO						
	9/6/07	10:00	[Signature]												
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	TRAVEL TIME:	ON SITE TIME:	OTHER:	WERE SAMPLES PRESERVED?	YES	NO						



The following pages are reporting sheets on the nearshore bacteria sampling as included in the monthly self-monitoring report through 2007.



**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE: January 30, 2007**

**CURRENT** N ----> S  
**SEA STATE** W swell 2-5 ft  
**WEATHER** Clear  
**WIND** SW @ 10 mph  
**WATER TEMP**  
**LOW TIDE** -0.83 ft @ 14:58  
**HIGH TIDE** 6.07 ft @ 07:36  
**RAIN (past 7 days)** 0.75 in

(all results are CFU / 100-ml)

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	TOTAL		
				COLIFORM	FECAL	ENTEROCOCCUS

RW(A)@30 FT		N 36°56'48.5" W 122°01'45.3"				
RW(C)@30 FT		N 36°56'57.9" W 122°02'25.8"				
RW(E)@30 FT		N 36°56'49.1" W 122°02'49.1"	Not able to sample this week.			
RW(F)@30 FT		N 36°56'46.4" W 122°03'32.2"	Motor in for Repairs			
RW(G)@30 FT		N 36°56'43.6" W 122°03'57.7"				
RW(H)@30 FT		N 36°56'56.0" W 122°04'59.9"				
RW(I)@30 FT		N 36°56'58.3" W 122°05'17.7"				
RW(L)@70 FT		N 36°56'19.9" W 122°03'35.4"				

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_



**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE:** January 23, 2007

**CURRENT** N ----> S  
**SEA STATE** W swell 3-5 ft  
**WEATHER** Clear  
**WIND** NE @ 7 mph  
**WATER TEMP**  
**LOW TIDE** 1.40 ft @ 08:25  
**HIGH TIDE** 3.76 ft @ 14:15  
**RAIN (past 7 days)** 0.06 in

(all results are CFU / 100-ml)

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT		N 36°56'48.5" W 122°01'45.3"				
RW(C)@30 FT		N 36°56'57.9" W 122°02'25.8"				
RW(E)@30 FT		N 36°56'49.1" W 122°02'49.1"				
RW(F)@30 FT		N 36°56'46.4" W 122°03'32.2"				
RW(G)@30 FT		N 36°56'43.6" W 122°03'57.7"				
RW(H)@30 FT		N 36°56'56.0" W 122°04'59.9"				
RW(I)@30 FT		N 36°56'58.3" W 122°05'17.7"				
RW(L)@70 FT		N 36°56'19.9" W 122°03'35.4"				

Not able to sample this week.  
Motor in for Repairs

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_



**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE: January 16, 2007**

**CURRENT** N ----> S  
**SEA STATE** NW swell 2-6 ft  
**WEATHER** clear and freezing  
**WIND** E @ 3 kts  
**WATER TEMP**  
**LOW TIDE** -0.60 @ 14:52  
**HIGH TIDE** 5.89 @ 07:21  
**RAIN (past 7 days)** 0.0 in

(all results are CFU / 100-ml)

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
----------------	---------------	--------------	--------------	----------------	----------------	--------------

RW(A)@30 FT		N 36°56'48.5" W 122°01'45.3"				
RW(C)@30 FT		N 36°56'57.9" W 122°02'25.8"				
RW(E)@30 FT		N 36°56'49.1" W 122°02'49.1"	Not able to sample this week.			
RW(F)@30 FT		N 36°56'46.4" W 122°03'32.2"	Motor in for Repairs			
RW(G)@30 FT		N 36°56'43.6" W 122°03'57.7"				
RW(H)@30 FT		N 36°56'56.0" W 122°04'59.9"				
RW(I)@30 FT		N 36°56'58.3" W 122°05'17.7"				
RW(L)@70 FT		N 36°56'19.9" W 122°03'35.4"				

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: January 9, 2007

CURRENT N ----> S  
SEA STATE Small Craft Advisory  
WEATHER cold  
WIND W @ 10 kts  
WATER TEMP  
LOW TIDE 2.5 @ 08:47  
HIGH TIDE 3.7 @ 13:49  
RAIN (past 7 days) 0.25 in

(all results are CFU / 100-ml)

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT		N 36°56'48.5" W 122°01'45.3"				
RW(C)@30 FT		N 36°56'57.9" W 122°02'25.8"				
RW(E)@30 FT		N 36°56'49.1" W 122°02'49.1"	Not able to sample this week.			
RW(F)@30 FT		N 36°56'46.4" W 122°03'32.2"	Small Craft Advisory			
RW(G)@30 FT		N 36°56'43.6" W 122°03'57.7"				
RW(H)@30 FT		N 36°56'56.0" W 122°04'59.9"				
RW(I)@30 FT		N 36°56'58.3" W 122°05'17.7"				
RW(L)@70 FT		N 36°56'19.9" W 122°03'35.4"				

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: January 2, 2007

CURRENT N ----> S  
SEA STATE NW swell 3-7 ft  
WEATHER cloudy  
WIND SW @ 0  
WATER TEMP n/a  
LOW TIDE -1.4 @ 16:09  
HIGH TIDE 6.5 @ 08:30  
RAIN (past 7 days) 1.06 in

(all results are CFU / 100-ml)

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT		N 36°56'48.5" W 122°01'45.3"				
RW(C)@30 FT		N 36°56'57.9" W 122°02'25.8"				
RW(E)@30 FT		N 36°56'49.1" W 122°02'49.1"				
RW(F)@30 FT		N 36°56'46.4" W 122°03'32.2"				
RW(G)@30 FT		N 36°56'43.6" W 122°03'57.7"				
RW(H)@30 FT		N 36°56'56.0" W 122°04'59.9"				
RW(I)@30 FT		N 36°56'58.3" W 122°05'17.7"				
RW(L)@70 FT		N 36°56'19.9" W 122°03'35.4"				

Not able to sample this week.  
City-Wide Holiday Closure

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: February 27, 2007

CURRENT N ----> S  
SEA STATE NW swell 9-14 ft  
WEATHER showers  
WIND SW @ 4 kts  
WATER TEMP 53.6° C  
LOW TIDE -0.39 ft @ 13:56  
HIGH TIDE 5.46 ft @ 06:31  
RAIN (past 7 days) 1.59 inches

(all results are CFU / 100-ml)

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	10:05	N 36°56'48.5" W 122°01'45.3"	no comments	81	33	133
RW(C)@30 FT	10:10	N 36°56'57.9" W 122°02'25.8"	floating scum and 2 birds	22	1	7
RW(E)@30 FT	10:15	N 36°56'49.1" W 122°02'49.1"	no comments	24	5	25
RW(F)@30 FT	10:20	N 36°56'46.4" W 122°03'32.2"	no comments	15	1	5
RW(G)@30 FT	10:25	N 36°56'43.6" W 122°03'57.7"	no comments	3	1	6
RW(H)@30 FT	10:35	N 36°56'56.0" W 122°04'59.9"	no comments	33	9	15
RW(I)@30 FT	10:40	N 36°56'58.3" W 122°05'17.7"	no comments	38	<1	8
RW(L)@70 FT	11:00	N 36°56'19.9" W 122°03'35.4"	no comments	23	6	42

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_





# **CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE:** February 20, 2007

**CURRENT** N ----> S  
**SEA STATE** NW swell 5-9 ft  
**WEATHER** cloudy  
**WIND** NW @ 5 kts  
**WATER TEMP** 55.4° C  
**LOW TIDE** 0.75 ft @ 05:55  
**HIGH TIDE** 4.67 ft @ 12:09  
**RAIN (past 7 days)** 0.02 in

*(all results are CFU / 100-ml)*

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:55	N 36°56'48.5" W 122°01'45.4"	no comments	5	1	<1
RW(C)@30 FT	10:00	N 36°56'57.7" W 122°02'25.8"	2 birds within 15 ft of boat	5	<1	<1
RW(E)@30 FT	10:05	N 36°56'49.1" W 122°02'49.1"	no comments	3	<1	1
RW(F)@30 FT	10:10	N 36°56'46.4" W 122°03'32.2"	no comments	1	1	<1
RW(G)@30 FT	10:15	N 36°56'43.6" W 122°03'57.9"	no comments	1	<1	<1
RW(H)@30 FT	10:30	N 36°56'56.1" W 122°04'59.8"	no comments	<1	1	1
RW(I)@30 FT	10:35	N 36°56'58.4" W 122°05'17.4"	no comments	5	2	4
RW(L)@70 FT	10:50	N 36°56'19.9" W 122°03'35.4"	no comments	<1	<1	<1

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_





**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE:** March 6, 2007

**CURRENT** N ----> S  
**SEA STATE** W swell 2-4 ft  
**WEATHER** partly cloudy  
**WIND** SE @ 1 kt  
**WATER TEMP** 54.8° C  
**LOW TIDE** 1.08 ft @ 05:33  
**HIGH TIDE** 3.93 ft @ 11:38  
**RAIN (past 7 days)** 0 inches

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)	
				TOTAL COLIFORM	FECAL TEROCOCUS
RW(A)@30 FT	10:05	N 36°56'48.4" W 122°01'45.5"	hundreds of birds	10	1
RW(C)@30 FT	10:10	N 36°56'58.0" W 122°02'25.3"	1 canoe	1	<1
RW(E)@30 FT	10:15	N 36°56'49.2" W 122°02'49.6"	no comments	<1	<1
RW(F)@30 FT	10:20	N 36°56'46.4" W 122°03'32.2"	no comments	<1	<1
RW(G)@30 FT	10:25	N 36°56'44.0" W 122°03'57.3"	no comments	5	<1
RW(H)@30 FT	10:35	N 36°56'55.7" W 122°04'59.8"	no comments	1	<1
RW(I)@30 FT	10:40	N 36°56'58.1" W 122°05'17.4"	no comments	4	<1
RW(L)@70 FT	11:00	N 36°56'20.2" W 122°03'34.7"	no comments	3	1

Lab Manager \_\_\_\_\_

Date: 03/12/07 \_\_\_\_\_



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: March 13, 2007

CURRENT N ----> S  
SEA STATE NW swell 2-5 ft  
WEATHER clear  
WIND NW @ 0 kt  
WATER TEMP 56.3° C  
LOW TIDE 0.18 ft @ 13:12  
HIGH TIDE 4.89 ft @ 05:18  
RAIN (past 7 days) 0 inches

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)	
				TOTAL COLIFORM	FECAL ENTEROCOCCI
RW(A)@30 FT	10:00	N 36°56'48.5" W 122°01'44.6"	birds in air and water	1	<1
RW(C)@30 FT	10:05	N 36°56'57.9" W 122°02'25.0"	no comments	1	<1
RW(E)@30 FT	10:10	N 36°56'49.3" W 122°02'48.9"	a few birds	1	<1
RW(F)@30 FT	10:15	N 36°56'46.2" W 122°03'30.8"	a few birds	1	<1
RW(G)@30 FT	10:20	N 36°56'44.2" W 122°03'57.0"	dolphin	<1	<1
RW(H)@30 FT	10:35	N 36°56'55.5" W 122°04'59.6"	kelp and 5 otters	<1	<1
RW(I)@30 FT	10:40	N 36°56'58.2" W 122°05'17.0"	no comments	1	1
RW(L)@70 FT	11:00	N 36°56'20.1" W 122°03'34.8"	flock of birds in water nearby	<1	<1

Lab Manager

Date:03/19/07



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: March 27, 2007

CURRENT N ----> S  
SEA STATE N swell 7-12 ft  
WEATHER partly cloudy  
WIND NW @ 15-25 kt  
WATER TEMP  
LOW TIDE -0.06 ft @ 13:32  
HIGH TIDE 4.78 ft @ 06:03  
RAIN (past 7 days) 0.34 inches

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)	
				TOTAL COLIFORM	FECAL ENTEROCOCCUS

RW(A)@30 FT					
RW(C)@30 FT					
RW(E)@30 FT					
RW(F)@30 FT					
RW(G)@30 FT					
RW(H)@30 FT					
RW(I)@30 FT					
RW(L)@70 FT					

not sampled due to small craft advisory  
for rough seas and high winds

Lab Manager \_\_\_\_\_ Date: 03/29/07 \_\_\_\_\_



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: March 21, 2007

CURRENT N ----> S  
SEA STATE NW swell 4-9 ft  
WEATHER partly cloudy  
WIND SW @ 4 kt  
WATER TEMP 55.1° C  
LOW TIDE -0.57 ft @ 06:40  
HIGH TIDE 4.27 ft @ 13:23  
RAIN (past 7 days) 0.07 inches

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	10:10	N 36°56'48.2" W 122°01'44.7"	birds on rock & in water	22	1	2
RW(C)@30 FT	10:15	N 36°56'57.9" W 122°02'24.9"	no comments	9	4	<1
RW(E)@30 FT	10:20	N 36°56'49.1" W 122°02'49.2"	birds in area	6	2	<1
RW(F)@30 FT	10:25	N 36°56'46.0" W 122°03'31.0"	1 otter and a few birds	3	4	<1
RW(G)@30 FT	10:30	N 36°56'43.9" W 122°03'56.7"	no comments	7	2	<1
RW(H)@30 FT	10:45	N 36°56'55.8" W 122°04'59.7"	no comments	3	2	3
RW(I)@30 FT	10:50	N 36°56'58.5" W 122°05'17.0"	1 otter	3	<1	<1
RW(L)@70 FT	11:10	N 36°56'19.5" W 122°03'35.0"	no comments	<1	<1	<1

Lab Manager

Date: 03/28/07



**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE:** April 3, 2007

**CURRENT** N ----> S  
**SEA STATE** mixed swell: NW @ 2-4 ft, SW @ 2-3 ft  
**WEATHER** a few clouds  
**WIND** NE @ 4 kt  
**WATER TEMP** 56.0° C  
**LOW TIDE** 0.26 ft @ 05:36  
**HIGH TIDE** 3.76 ft @ 12:07  
**RAIN (past 7 days)** 0.01 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	10:05	N 36°56'48.4" W 122°01'44.9"	seals on rock	1	1	1
RW(C)@30 FT	10:10	N 36°56'57.7" W 122°02'25.0"	2 birds & some kelp	1	<1	<1
RW(E)@30 FT	10:15	N 36°56'49.3" W 122°02'49.5"	no comments	<1	<1	<1
RW(F)@30 FT	10:20	N 36°56'46.5" W 122°03'31.4"	kelp	1	<1	<1
RW(G)@30 FT	10:25	N 36°56'44.1" W 122°03'57.1"	kelp and birds	<1	<1	<1
RW(H)@30 FT	10:35	N 36°56'55.8" W 122°04'59.5"	kelp, otters, birds	<1	<1	<1
RW(I)@30 FT	10:40	N 36°56'58.6" W 122°05'17.1"	1 whale	<1	<1	<1
RW(L)@70 FT	11:00	N 36°56'19.6" W 122°03'33.9"	scum floating	<1	<1	<1

Lab Manager \_\_\_\_\_

Date 5/11/2007



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: April 10, 2007

CURRENT N ----> S  
SEA STATE W swell 5-10 ft  
WEATHER partly cloudy  
WIND SW @ 7 kt  
WATER TEMP 54.5° C  
LOW TIDE 0.15 ft @ 11:11  
HIGH TIDE 4.60 ft @ 03:26  
RAIN (past 7 days) zero inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	10:10	N 36°56'48.4" W 122°01'44.9"	no comments	<1	<1	<1
RW(C)@30 FT	10:15	N 36°56'57.7" W 122°02'25.0"	kelp w/ harbor seal, surfers	2	<1	<1
RW(E)@30 FT	10:20	N 36°56'49.3" W 122°02'49.5"	kelp	<1	<1	<1
RW(F)@30 FT	10:25	N 36°56'46.5" W 122°03'31.4"	kelp, surfers	1	<1	<1
RW(G)@30 FT	10:30	N 36°56'44.1" W 122°03'57.1"	floating scum	1	<1	<1
RW(H)@30 FT	10:40	N 36°56'55.8" W 122°04'59.5"	in kelp, scum nearby	1	<1	<1
RW(I)@30 FT	10:45	N 36°56'58.6" W 122°05'17.1"	3 otters, gulls, kelp, scum	1	<1	<1
RW(L)@70 FT	11:05	N 36°56'19.6" W 122°03'33.9"	no comments	<1	<1	<1

Lab Manager \_\_\_\_\_

Date 5/11/2007





**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE:** April 17, 2007

**CURRENT** N ----> S  
**SEA STATE** NW swell 5-10 ft  
**WEATHER** some clouds  
**WIND** W @ 10 kt  
**WATER TEMP** not done  
**LOW TIDE** -1.02 ft @ 04:49  
**HIGH TIDE** 4.38 ft @ 11:35  
**RAIN (past 7 days)** 0.30 inches

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	(all results are CFU/100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	10:10	N 36°56'48.5" W 122°01'44.8"	1 sail boat with crew of 2	5	<1	1
RW(C)@30 FT						
RW(E)@30 FT						
RW(F)@30 FT						
RW(G)@30 FT						
RW(H)@30 FT						
RW(I)@30 FT						
RW(L)@70 FT						

SAMPLING DISCONTINUED DUE TO BOAT FAILURE

Lab Manager \_\_\_\_\_

Date 5/11/2007





**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE:** April 18, 2007

**CURRENT** N ----> S  
**SEA STATE** NW swell 5-10 ft  
**WEATHER** partly cloudy  
**WIND** W @ 15 kt  
**WATER TEMP @ RW(F)** 52.0° C  
**LOW TIDE** -1.38 ft @ 05:36  
**HIGH TIDE** 4.26 ft @ 12:37  
**RAIN (past 7 days)** 0.14 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU/100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	8:20	N 36°56'48.6" W 122°01'44.7"	no comments	13	7	2
RW(C)@30 FT	8:25	N 36°56'57.9" W 122°02'25.0"	near kelp bed	8	1	<1
RW(E)@30 FT	8:30	N 36°56'49.5" W 122°02'48.7"	near kelp bed	2	1	1
RW(F)@30 FT	8:35	N 36°56'46.6" W 122°03'31.7"	in kelp with otters	1	<1	<1
RW(G)@30 FT	8:40	N 36°56'44.5" W 122°03'57.4"	kelp and birds	2	<1	<1
RW(H)@30 FT	8:55	N 36°56'46.3" W 122°04'08.8"	many birds (*)	3	<1	1
RW(I)@30 FT	Sampling discontinued due to choppy waters and personnel safety			NA	NA	NA
RW(L)@70 FT	9:15	N 36°56'21.4" W 122°03'34.4"	a few birds	1	<1	<1

Lab Manager \_\_\_\_\_

Date 5/11/2007



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: April 24, 2007

CURRENT N ----> S  
SEA STATE mixed swell: W@4-8' & SW@2'  
WEATHER clear  
WIND E @ 8 kt  
WATER TEMP 52.4° C  
LOW TIDE 4.43 ft @ 04:15  
HIGH TIDE -0.01 ft @ 11:45  
RAIN (past 7 days) 1.05 inches

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	(all results are CFU/100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:20	N 36°56'48.5" W 122°01'44.0"	near kelp & otters, seals on rock	9	3	<1
RW(C)@30 FT	9:15	N 36°56'58.0" W 122°02'25.1"	1 otter	6	<1	2
RW(E)@30 FT	9:10	N 36°56'49.3" W 122°02'48.3"	in huge kelp bed	4	1	1
RW(F)@30 FT	9:05	N 36°56'46.1" W 122°03'30.9"	in kelp bed with otters & birds	5	<1	<1
RW(G)@30 FT	9:00	N 36°56'44.0" W 122°03'55.6"	in kelp bed	<1	<1	<1
RW(H)@30 FT	8:50	N 36°56'55.6" W 122°04'58.8"	in kelp bed with otters	4	1	1
RW(I)@30 FT	8:45	N 36°56'58.1" W 122°05'17.3"	kelp and scum nearby	3	1	<1
RW(L)@70 FT	8:30	N 36°56'19.7" W 122°03'35.4"	a few birds nearby	15	3	<1

Lab Manager

Date 5/11/2007



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: May 1, 2007

CURRENT N ----> S  
SEA STATE NW swell 5-6 ft  
WEATHER clear  
WIND E @ 5 kts  
WATER TEMP 52.9° C  
LOW TIDE -0.26 @ 04:45  
HIGH TIDE 3.57 @ 11:41  
RAIN (past 7 days) no

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	10:05	N 36°56'48.3" W 122°01'45.3"	near kelp & fishing boats	8	1	<1
RW(C)@30 FT	10:10	N 36°56'57.9" W 122°02'25.2"	in kelp	3	<1	<1
RW(E)@30 FT	10:15	N 36°56'49.4" W 122°02'49.3"	kelp, birds & fishing boats	3	<1	1
RW(F)@30 FT	10:20	N 36°56'46.4" W 122°03'31.7"	in kelp w/otters, birds, fish boats	2	<1	<1
RW(G)@30 FT	10:25	N 36°56'43.8" W 122°03'59.2"	kelp	3	<1	<1
RW(H)@30 FT	10:35	N 36°56'55.9" W 122°04'59.8"	in kelp w/otters & fishing boats	2	<1	<1
RW(I)@30 FT	10:40	N 36°56'57.7" W 122°05'17.9"	kelp & fishing boats	<1	<1	<1
RW(L)@70 FT	11:00	N 36°56'20.1" W 122°03'34.8"	fishing boat w/in 100 ft	4	1	1

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: May 7, 2007

CURRENT N ----> S  
SEA STATE glassy  
WEATHER clear & warm  
WIND SW @ 4 kts  
WATER TEMP 52.9° C  
LOW TIDE -0.30 @ 09:21  
HIGH TIDE 3.70 @ 17:51  
RAIN (past 7 days)

SAMPLING POINT	SAMPLING TIME (A.M.)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:20	N 36°56'48.5" W 122°01'45.1"	groups of harbor seals, kelp	<1	<1	<1
RW(C)@30 FT	9:25	N 36°56'57.8" W 122°02'25.0"	kelp, otters, harbor seals	2	1	<1
RW(E)@30 FT	9:30	N 36°56'48.5" W 122°02'50.1"	kelp & birds	1	<1	<1
RW(F)@30 FT	9:40	N 36°56'46.3" W 122°03'32.1"	in kelp bed with otters	2	1	<1
RW(G)@30 FT	9:45	N 36°56'44.7" W 122°03'57.5"	in kelp bed	<1	<1	<1
RW(H)@30 FT	9:55	N 36°56'56.2" W 122°05'01.9"	in kelp with otters and scum	<1	<1	<1
RW(I)@30 FT	10:00	N 36°56'57.8" W 122°05'17.0"	kelp and birds	<1	<1	<1
RW(L)@70 FT	10:20	N 36°56'20.0" W 122°03'34.5"	group of dolphin, professional fishing boats; birds.	<1	<1	<1

Lab Manager

Date



**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE:** May 15, 2007

**CURRENT** N ----> S  
**SEA STATE** NW swell 2-6 ft  
**WEATHER** foggy  
**WIND** NW @ 5 kts  
**WATER TEMP** 56.7° C  
**LOW TIDE** -1.21 @ 03:51  
**HIGH TIDE** 3.99 @ 10:50  
**RAIN (past 7 days)** no

SAMPLING POINT	SAMPLING TIME	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:15	N 36°56'48.6" W 122°01'45.0"	2 seals & fish.boat nearby	<1	<1	<1
RW(C)@30 FT	9:20	N 36°56'57.7" W 122°02'25.1"	1 otter & kayak in nearby kelpbed	3	<1	1
RW(E)@30 FT	9:25	N 36°56'49.1" W 122°02'49.4"	1 fish.boat and kelp nearby	1	<1	<1
RW(F)@30 FT	9:30	N 36°56'46.6" W 122°03'32.0"	in kelp bed with birds	2	2	<1
RW(G)@30 FT	9:35	N 36°56'44.3" W 122°03'57.0"	in kelp bed	4	1	<1
RW(H)@30 FT	9:45	N 36°56'55.8" W 122°04'57.6"	in kelp bed w/ 1 otter & fish.boat	1	<1	<1
RW(I)@30 FT	9:50	N 36°56'58.1" W 122°05'17.0"	no comments	2	<1	<1
RW(L)@70 FT	10:10	N 36°56'19.7" W 122°03'35.1"	professional fishing boat nearby	<1	<1	<1

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_





CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: June 26, 2007

CURRENT N ----> S

SEA STATE NW swell 2-4 ft

WEATHER foggy

WIND SW @ 7 kts

WATER TEMP 57.2° C

LOW TIDE 0.10 @ 02:52

HIGH TIDE 3.44 @ 10:44

RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING TIME (A.M.)	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORMS	FECAL COLIFORMS	ENTEROCOCCUS
RW(A)@30 FT	8:50	N 36°56'48.4" W 122°01'45.1"	1 fishing boat & kelp bed nearby	<1	1	<1
RW(C)@30 FT	8:55	N 36°56'58.2" W 122°02'25.2"	birds & kelp bed nearby	2	<1	<1
RW(E)@30 FT	9:00	N 36°56'48.9" W 122°02'50.1"	kelp bed nearby	<1	<1	<1
RW(F)@30 FT	9:05	N 36°56'46.1" W 122°03'31.2"	in kelp bed with birds	1	<1	<1
RW(G)@30 FT	9:10	N 36°56'44.6" W 122°03'58.9"	in kelp bed	<1	<1	<1
RW(H)@30 FT	9:20	N 36°56'53.5" W 122°04'55.5"	in kelp bed	<1	<1	<1
RW(I)@30 FT	9:25	N 36°56'58.2" W 122°05'16.9"	kelp bed nearby	<1	1	1
RW(L)@70 FT	9:50	N 36°56'19.7" W 122°03'34.9"	no comments	<1	<1	<1

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: June 19, 2007

CURRENT N ----> S  
SEA STATE mixed swell: NW @ 3-7 ft & SW @ 2 ft  
WEATHER fog  
WIND SW @ 7 kts  
WATER TEMP 57.2° C  
LOW TIDE -0.54 ft @ 08:21  
HIGH TIDE 4.34 ft @ 16:02  
RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING TIME (A.M.)	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORMS	FECAL COLIFORMS	ENTEROCOCCUS
RW(A)@30 FT	9:00	N 36°56'48.6" W 122°01'44.5"	kelp harvesting boat nearby	2	1	<1
RW(C)@30 FT	9:05	N 36°56'57.7" W 122°02'25.2"	kelp bed nearby	9	6	2
RW(E)@30 FT	9:10	N 36°56'49.1" W 122°02'49.1"	kelp bed nearby	2	4	<1
RW(F)@30 FT	9:15	N 36°56'46.0" W 122°03'32.5"	in kelp bed	1	<1	<1
RW(G)@30 FT	9:20	N 36°56'44.5" W 122°03'58.0"	in kelp bed	1	2	<1
RW(H)@30 FT	9:30	N 36°56'58.1" W 122°04'58.9"	no comments	<1	<1	<1
RW(I)@30 FT	9:35	N 36°56'58.1" W 122°05'16.9"	1 boat in area	2	<1	<1
RW(L)@70 FT	9:50	N 36°56'20.0" W 122°03'35.0"	no comments	<1	<1	<1

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_





CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: June 12, 2007

CURRENT N ----> S  
SEA STATE NW swell 5-9ft w/wind waves 1-3ft  
WEATHER clear  
WIND S @ 7 kts  
WATER TEMP 58.2° C  
LOW TIDE -0.91 ft @ 02:53  
HIGH TIDE 3.68 ft @ 10:07  
RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING TIME (A.M.)	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORMS	FECAL COLIFORMS	ENTEROCOCCUS
RW(A)@30 FT	8:55	N 36°56'48.4" W 122°01'45.3"	1 boat in kelp bed nearby	4	1	<1
RW(C)@30 FT	9:00	N 36°56'58.2" W 122°02'25.4"	kelp bed nearby	5	2	3
RW(E)@30 FT	9:05	N 36°56'49.3" W 122°02'49.6"	kelp bed nearby	1	<1	<1
RW(F)@30 FT	9:10	N 36°56'46.2" W 122°03'31.3"	in kelp bed	<1	<1	1
RW(G)@30 FT	9:15	N 36°56'42.0" W 122°03'58.0"	in kelp bed	<1	<1	1
RW(H)@30 FT	9:30	N 36°56'55.6" W 122°04'57.4"	in large kelp bed with otters & seals	1	<1	<1
RW(I)@30 FT	9:35	N 36°56'58.0" W 122°05'17.0"	in kelp bed with seals	<1	<1	<1
RW(L)@70 FT	9:55	N 36°56'19.6" W 122°03'34.9"	no comments	<1	1	<1

Lab Manager \_\_\_\_\_

Date \_\_\_\_\_



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: June 5, 2007

CURRENT N ----> S  
SEA STATE W swell 3-6 ft w/wind waves 1-2 ft  
WEATHER partly cloudy  
WIND NNW @ 8 kts  
WATER TEMP 55.6° C  
LOW TIDE -0.76 @ 08:02  
HIGH TIDE 3.96 @ 16:00  
RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING TIME (A.M.)	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORMS	FECAL COLIFORMS	ENTEROCOCCUS
RW(A)@30 FT	9:30	N 36°56'48.8" W 122°01'46.2"	2 professional fishing boats and kelp bed	2	<1	<1
RW(C)@30 FT	9:25	N 36°56'57.6" W 122°02'26.1"	no comments	3	2	<1
RW(E)@30 FT	9:20	N 36°56'48.9" W 122°02'48.9"	no comments	1	<1	<1
RW(F)@30 FT	9:15	N 36°56'44.6" W 122°03'34.1"	in kelp bed with seals	11	3	<1
RW(G)@30 FT	9:10	N 36°56'44.2" W 122°03'57.6"	in kelp bed	4	<1	<1
RW(H)@30 FT	9:00	N 36°56'52.6" W 122°05'02.7"	in kelp bed with otters	<1	<1	<1
RW(I)@30 FT	8:55	N 36°56'57.6" W 122°05'16.9"	kelp bed with otters nearby	3	1	1
RW(L)@70 FT	8:40	N 36°56'19.3" W 122°03'37.3"	no comments	<1	<1	1

Lab Manager

Date



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: July 31, 2007

CURRENT N ----> S  
SEA STATE mixed swell: NW @ 3-6ft & SW @ 2ft  
WEATHER foggy  
WIND NE @ 3 kts  
WATER TEMP 60.4° C  
LOW TIDE -0.94 @ 05:55  
HIGH TIDE 4.45 @ 13:07  
RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING TIME A.M.	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	8:50	N 36°56'48.3" W 122°01'46.0"	3 fishing boats	4	1	<1
RW(C)@30 FT	8:55	N 36°56'57.7" W 122°02'26.2"	1 boat, kelp, floating algae	6	2	<1
RW(E)@30 FT	9:00	N 36°56'49.1" W 122°02'49.3"	kelp bed nearby, foam floating	2	2	1
RW(F)@30 FT	9:05	N 36°56'45.5" W 122°03'32.6"	in kelp	<1	<1	<1
RW(G)@30 FT	9:10	N 36°56'44.4" W 122°03'58.1"	in kelp	<1	<1	<1
RW(H)@30 FT	9:20	N 36°56'55.8" W 122°05'01.9"	large kelp bed	<1	1	<1
RW(I)@30 FT	9:25	N 36°56'58.0" W 122°05'17.2"	kelp nearby	1	1	<1
RW(L)@70 FT	9:45	N 36°56'18.9" W 122°03'35.6"	no comments	<1	<1	<1

Lab Manager

Date 8/29/2007



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: July 24, 2007

CURRENT N ----> S  
SEA STATE NW swell 4-7 ft  
WEATHER foggy  
WIND SE @ 5 kts  
WATER TEMP 61.5° C  
LOW TIDE 0.74 @ 01:34  
HIGH TIDE 3.46 @ 10:22  
RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING TIME A.M.	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:35	N 36°56'48.3" W 122°01'46.0"	near 3 fishing boats and kelp	<1	<1	<1
RW(C)@30 FT	9:30	N 36°56'57.7" W 122°02'26.2"	kelp	1	<1	1
RW(E)@30 FT	9:25	N 36°56'49.1" W 122°02'49.3"	kelp and birds nearby	2	1	<1
RW(F)@30 FT	9:20	N 36°56'45.5" W 122°03'32.6"	1 boat, in kelp	1	1	<1
RW(G)@30 FT	9:15	N 36°56'44.4" W 122°03'58.1"	in kelp bed	1	1	<1
RW(H)@30 FT	9:05	N 36°56'55.8" W 122°05'01.9"	in kelp bed with otters	1	<1	<1
RW(I)@30 FT	9:00	N 36°56'58.0" W 122°05'17.2"	in kelp bed	<1	<1	<1
RW(L)@70 FT	8:50	N 36°56'18.9" W 122°03'35.6"	3 fishing boats	1	<1	<1

Lab Manager

Date 8/29/2007



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: July 17, 2007

CURRENT N ----> S  
SEA STATE W swell 1-3 ft  
WEATHER patchy fog  
WIND E @ 6 kts  
WATER TEMP 61.5° C  
LOW TIDE -0.56 @ 07:05  
HIGH TIDE 4.43 @ 14:26  
RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING TIME A.M.	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:35	N 36°56'48.5" W 122°01'44.8"	1 boat and kelp in the area	6	<1	<1
RW(C)@30 FT	9:30	N 36°56'57.6" W 122°02'25.1"	bird and kelp	<1	<1	<1
RW(E)@30 FT	9:25	N 36°56'49.0" W 122°02'49.3"	near kelp bed, 1 boat	<1	<1	<1
RW(F)@30 FT	9:20	N 36°56'45.6" W 122°03'31.0"	in kelp bed	<1	1	<1
RW(G)@30 FT	9:15	N 36°56'41.6" W 122°03'59.0"	in large kelp bed	<1	<1	<1
RW(H)@30 FT	8:55	N 36°56'53.7" W 122°04'55.3"	in large kelp bed with otters	1	<1	<1
RW(I)@30 FT	8:50	N 36°56'58.5" W 122°05'18.7"	near large kelp bed	<1	<1	<1
RW(L)@70 FT	8:40	N 36°56'19.0" W 122°03'34.9"	birds in area	<1	<1	<1

Lab Manager

Date 8/29/2007



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: July 10, 2007

CURRENT N ----> S  
SEA STATE NW swell 3-6 ft  
WEATHER foggy  
WIND SW @ 3 kts  
WATER TEMP 57.2° C  
LOW TIDE -0.36 @ 01:51  
HIGH TIDE 3.56 @ 09:22  
RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING TIME A.M.	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	8:50	N 36°56'48.5" W 122°01'44.8"	9 private fishing boats nearby	<1	<1	<1
RW(C)@30 FT	8:55	N 36°56'57.6" W 122°02'25.1"	no comments	<1	<1	<1
RW(E)@30 FT	9:00	N 36°56'49.0" W 122°02'49.3"	huge kelp bed, jelly fish	<1	<1	<1
RW(F)@30 FT	9:05	N 36°56'45.6" W 122°03'31.0"	in huge kelp bed	<1	<1	<1
RW(G)@30 FT	9:10	N 36°56'41.6" W 122°03'59.0"	near kelp bed	6	1	<1
RW(H)@30 FT	9:20	N 36°56'53.7" W 122°04'55.3"	in huge kelp bed	<1	1	<1
RW(I)@30 FT	9:25	N 36°56'58.5" W 122°05'18.7"	kelp & 1 boat nearby	<1	<1	<1
RW(L)@70 FT	9:45	N 36°56'19.0" W 122°03'34.9"	2 whales	<1	<1	<1

Lab Manager

Date 8/29/2007





# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: July 3, 2007

CURRENT N ----> S  
SEA STATE NW swell 2-5 ft  
WEATHER patchy fog  
WIND E @ 6 kts  
WATER TEMP 57.2° C  
LOW TIDE -0.99 @ 06:57  
HIGH TIDE 4.23 @ 14:31  
RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING TIME A.M.	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:50	N 36°56'48.6" W 122°01'43.4"	near kelp bed	3	1	1
RW(C)@30 FT	9:45	N 36°56'57.9" W 122°02'24.5"	no comments	Confluent Growth	5	2
RW(E)@30 FT	9:40	N 36°56'50.2" W 122°02'48.9"	in kelp bed w/ scuba divers	Confluent Growth	42	68
RW(F)@30 FT	9:35	N 36°56'46.2" W 122°03'30.4"	in kelp bed	5	4	<1
RW(G)@30 FT	9:30	N 36°56'44.1" W 122°03'57.5"	in kelp; flock of birds; 5 fishing boats	3	1	<1
RW(H)@30 FT	9:20	N 36°56'52.7" W 122°05'02.7"	in kelp bed w/ dozens of otters	1	6	2
RW(I)@30 FT	9:15	N 36°56'58.0" W 122°05'17.6"	in kelp bed, scum floating nearby	2	1	<1
RW(L)@70 FT	8:50	N 36°56'19.7" W 122°03'36.4"	no comments	<1	1	<1

Lab Manager

Date 8/29/2007





# **CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE: August 7, 2007**

**CURRENT** N ----> S  
**SEA STATE** NW swell 2-4 ft  
**WEATHER** cloudy  
**WIND** SW @ 4 knots  
**WATER TEMP** 59.7° C  
**LOW TIDE** 3.24 @ 11:30  
**HIGH TIDE** 3.60 @ 08:25  
**RAIN (past 7 days)** zero

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORMS	FECAL COLIFORMS	ENTEROCOCCUS
RW(A)@30 FT	9:40	N 36°56'48.6" W 122°01'45.5"	seals on rock	7	4	1
RW(C)@30 FT	9:35	N 36°56'58.2" W 122°02'26.0"	no comments	9	7	<1
RW(E)@30 FT	9:30	N 36°56'49.1" W 122°02'49.3"	no comments	4	3	1
RW(F)@30 FT	9:25	N 36°56'45.4" W 122°03'32.9"	in kelp bed	3	2	<1
RW(G)@30 FT	9:20	N 36°56'44.1" W 122°03'58.2"	in kelp bed	4	<1	<1
RW(H)@30 FT	9:15	N 36°56'56.2" W 122°05'02.8"	in kelp bed w/seal, otters	2	<1	<1
RW(I)@30 FT	9:10	N 36°56'58.2" W 122°05'17.1"	kelp bed nearby	9	<1	1
RW(L)@70 FT	8:55	N 36°56'20.1" W 122°03'34.8"	kelp, boat, birds	<1	<1	<1

Lab Manager \_\_\_\_\_

Date 9/7/2007



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: August 14, 2007

CURRENT N ---> S  
SEA STATE NW swell 2-5 ft  
WEATHER dense fog - visibility ~200 ft  
WIND calm  
WATER TEMP 59.5° C  
LOW TIDE 1.2 ft @ 00:16  
HIGH TIDE 4.9 ft @ 17:04  
RAIN (past 7 days) zero

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORMS	FECAL COLIFORMS	ENTEROCOCCUS
RW(A)@30 FT	9:00	N 36°56'48.7" W 122°01'45.0"	birds in area, kelp bed nearby	2	1	<1
RW(C)@30 FT	9:05	N 36°56'57.9" W 122°02'25.5"	birds in area, kelp bed nearby	4	<1	<1
RW(E)@30 FT	9:10	N 36°56'49.1" W 122°02'48.7"	dozens of birds in area, kelp bed nearby	2	2	<1
RW(F)@30 FT	9:15	N 36°56'46.5" W 122°03'31.9"	in kelp bed with birds	1	<1	<1
RW(G)@30 FT	9:20	N 36°56'44.2" W 122°03'57.2"	in kelp bed with a few birds	1	1	<1
RW(H)@30 FT	9:35	N 36°56'55.9" W 122°05'02.3"	in big kelp bed with birds	1	<1	<1
RW(I)@30 FT	9:40	N 36°56'58.1" W 122°05'17.3"	birds in area	1	1	<1
RW(L)@70 FT	10:00	N 36°56'19.9" W 122°03'35.3"	no comments	1	<1	<1

Lab Manager

Date 9/7/2007



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: August 21, 2007

CURRENT N ----> S  
SEA STATE NW/ swell 2-5 ft  
WEATHER dense fog - visibility ~200 ft  
WIND calm  
WATER TEMP 59.5° F  
LOW TIDE 1.2 ft @ 00:16  
HIGH TIDE 4.9 ft @ 17:04  
RAIN (past 7 days) 0.0"

SAMPLING POINT	SAMPLING POINT (AM)	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:00	N 36°56'48.7" W 122°01'45.0"	birds in area, kelp bed nearby	2	1	<1
RW(C)@30 FT	9:05	N 36°56'57.9" W 122°02'25.5"	birds in area, kelp bed nearby	4	<1	<1
RW(E)@30 FT	9:10	N 36°56'49.1" W 122°02'48.7"	dozens of birds in area, kelp bed nearby	2	2	<1
RW(F)@30 FT	9:15	N 36°56'46.5" W 122°03'31.9"	in kelp bed with birds	1	<1	<1
RW(G)@30 FT	9:20	N 36°56'44.2" W 122°03'57.2"	in kelp bed with a few birds	1	1	<1
RW(H)@30 FT	9:35	N 36°56'55.9" W 122°05'02.3"	in big kelp bed with birds	1	<1	<1
RW(I)@30 FT	9:40	N 36°56'58.1" W 122°05'17.3"	birds in area	1	1	<1
RW(L)@70 FT	10:00	N 36°56'19.9" W 122°03'35.3"	no comments	1	<1	<1

Lab Manager

Date 9/7/2007



# CITY OF SANTA CRUZ WWTP RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: August 28, 2007

CURRENT N ----> S  
SEA STATE NW swell 1-4ft  
WEATHER patchy fog  
WIND calm  
WATER TEMP 59° F  
LOW TIDE -0.3 ft @ 05:01  
HIGH TIDE 4.6 ft @ 11:31  
RAIN (past 7 days) zero

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATIONS	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORMS	FECAL COLIFORMS	ENTEROCOCCUS
RW(A)@30 FT	8:35	N 36°56'48.5" W 122°01'45.1"	no comments	<1	<1	<1
RW(C)@30 FT	8:45	N 36°56'58.0" W 122°02'25.5"	calm	<50	<1	<1
RW(E)@30 FT	8:55	N 36°56'49.2" W 122°02'50.5"	calm	13	<1	<1
RW(F)@30 FT	9:05	N 36°56'46.0" W 122°03'32.1"	kelp bed with cormorants	38	<1	<1
RW(G)@30 FT	9:15	N 36°56'42.3" W 122°03'56.6"	no comments	7	<1	<1
RW(H)@30 FT	9:25	N 36°56'54.0" W 122°04'55.9"	kelp bed with sea otters	11	<1	<1
RW(I)@30 FT	9:35	N 36°56'58.0" W 122°05'17.1"	no comments	6	<1	<1
RW(L)@70 FT	10:00	N 36°56'20.0" W 122°03'34.7"	no comments	2	<1	<1

Lab Manager \_\_\_\_\_

Date 9/7/2007



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: September 4, 2007

CURRENT N ----> S  
SEA STATE mixed swell: NW @ 1-4 ft, SW @ 1-3 ft  
WEATHER patchy fog  
WIND SE @ 5 kts  
WATER TEMP 63.5° F  
LOW TIDE 3.74 ft @ 07:00  
HIGH TIDE 3.44 ft @ 10:12  
RAIN (past 7 days) 0.0 inches

SAMPLING POINT	SAMPLING TIME (am)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	8:55	N 36°56'48.6" W 122°01'45.0"	no comments	<1	1	<1
RW(C)@30 FT	9:00	N 36°56'58.1" W 122°02'25.6"	some kelp nearby	4	2	1
RW(E)@30 FT	9:05	N 36°56'49.5" W 122°02'49.2"	near large kelp bed	3	2	<1
RW(F)@30 FT	9:10	N 36°56'46.4" W 122°03'32.0"	in large kelp bed	2	<1	<1
RW(G)@30 FT	9:15	N 36°56'44.4" W 122°03'57.7"	in large kelp bed	2	<1	<1
RW(H)@30 FT	9:30	N 36°56'55.9" W 122°05'01.9"	in large kelp bed with otters	1	<1	<1
RW(I)@30 FT	9:35	N 36°56'57.9" W 122°05'17.5"	near large kelp bed	2	<1	<1
RW(L)@70 FT	9:55	N 36°56'20.1" W 122°03'34.6"	no comments	<1	<1	<1

Lab Manager

Date





CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: September 11, 2007

CURRENT N ----> S  
SEA STATE NW swell </= 2 ft  
WEATHER patchy fog  
WIND calm  
WATER TEMP 60.6° F  
LOW TIDE 0.17 ft @ 04:52  
HIGH TIDE 4.68 ft @ 11:39  
RAIN (past 7 days) 0.0 inches

SAMPLING POINT	SAMPLING TIME (am)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:05	N 36°56'48.4" W 122°01'45.8"	large kelp bed nearby	2	<1	1
RW(C)@30 FT	9:10	N 36°56'58.1" W 122°02'25.2"	a few birds in the area	1	<1	<1
RW(E)@30 FT	9:15	N 36°56'49.3" W 122°02'49.2"	close to a huge kelp bed	<1	<1	1
RW(F)@30 FT	9:20	N 36°56'46.1" W 122°03'32.5"	in huge kelp bed with birds	<1	<1	<1
RW(G)@30 FT	9:25	N 36°56'45.2" W 122°04'00.7"	in kelp bed	<1	<1	<1
RW(H)@30 FT	9:35	N 36°56'55.1" W 122°04'57.4"	in kelp bed	5	1	1
RW(I)@30 FT	9:40	N 36°56'58.2" W 122°05'17.5"	in some kelp	1	<1	<1
RW(L)@70 FT	10:00	N 36°56'19.8" W 122°03'34.5"	birds in the area	10	7	<1

Lab Manager

Date



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: September 18, 2007

CURRENT N ----> S  
SEA STATE mixed: NW@2-6 ft, SW@1-3 ft  
WEATHER fog  
WIND SW @ 4 kts  
WATER TEMP 63.1° F  
LOW TIDE 3.5 ft @ 08:50  
HIGH TIDE 4.6 ft @ 15:02  
RAIN (past 7 days) 0.0 inches

SAMPLING POINT	SAMPLING TIME (am)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	10:05	N 36°56'48.8" W 122°01'45.3"	kelp nearby	2	2	<1
RW(C)@30 FT	10:00	N 36°56'57.7" W 122°02'26.3"	in a large mixed flock of birds	1	<1	<1
RW(E)@30 FT	9:55	N 36°56'49.1" W 122°02'49.9"	no comments	1	1	<1
RW(F)@30 FT	9:50	N 36°56'45.6" W 122°03'32.0"	in kelp bed with birds	3	<1	<1
RW(G)@30 FT	9:45	N 36°56'44.4" W 122°03'58.3"	in kelp bed	<1	<1	<1
RW(H)@30 FT	9:35	N 36°56'55.6" W 122°05'00.2"	in kelp bed, 1 boat nearby	<1	<1	1
RW(I)@30 FT	9:30	N 36°56'57.5" W 122°05'16.8"	kelp nearby	1	1	<1
RW(L)@70 FT	9:15	N 36°56'20.3" W 122°03'34.4"	no comments	<1	<1	<1

Lab Manager

Date





CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: September 25, 2007

CURRENT N ----> S  
SEA STATE NW swell 1-4 ft  
WEATHER clear  
WIND SW @ 5 kts  
WATER TEMP 58.6° F  
LOW TIDE -0.13 ft @ 03:35  
HIGH TIDE 4.83 ft @ 10:20  
RAIN (past 7 days) 0.39 inches

SAMPLING POINT	SAMPLING TIME (am)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:15	N 36°56'48.6" W 122°01'45.6"	1 feeding otter and 3 birds	2	1	<1
RW(C)@30 FT	9:20	N 36°56'57.9" W 122°02'25.4"	birds and kelp	<1	<1	<1
RW(E)@30 FT	9:25	N 36°56'49.0" W 122°02'49.1"	near large kelp bed	1	<1	<1
RW(F)@30 FT	9:30	N 36°56'45.6" W 122°03'32.3"	in lg kelp bed	8	2	<1
RW(G)@30 FT	9:35	N 36°56'42.2" W 122°03'58.5"	lg kelp bed nearby	3	3	2
RW(H)@30 FT	9:50	N 36°56'53.6" W 122°04'55.2"	in lg kelp bed	<1	<1	<1
RW(I)@30 FT	9:55	N 36°56'58.0" W 122°05'17.5"	in kelp bed	<1	<1	<1
RW(L)@70 FT	10:15	N 36°56'20.3" W 122°03'34.9"	no comments	1	2	<1

Lab Manager

Date



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: October 2, 2007

CURRENT N ----> S  
SEA STATE NW swell 4 - 9 ft  
WEATHER clear  
WIND W @ 3 kts  
WATER TEMP 60.3° F  
LOW TIDE 3.53 ft @ 08:47  
HIGH TIDE 3.98 ft @ 05:14  
RAIN (past 7 days) 0.0 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	10:10	N 36°56'48.3" W 122°01'45.4"	floating kelp, seals on rock	2	<1	<1
RW(C)@30 FT	10:05	N 36°56'57.8" W 122°02'26.2"	birds and kelp in area	11	7	<1
RW(E)@30 FT	10:00	N 36°56'49.1" W 122°02'49.3"	near huge kelp bed, 1 fish boat	1	<1	<1
RW(F)@30 FT	9:55	N 36°56'45.5" W 122°03'32.0"	in kelp bed w/ 1 UCSC dive boat	1	<1	<1
RW(G)@30 FT	9:50	N 36°56'44.3" W 122°03'57.9"	in kelp bed w/ seals and birds	10	1	<1
RW(H)@30 FT	9:40	N 36°56'56.4" W 122°05'01.8"	in kelp bed w/ otters	10	5	1
RW(I)@30 FT	9:35	N 36°56'58.2" W 122°05'17.5"	in kelp w/ seals	8	2	<1
RW(L)@70 FT	9:15	N 36°56'20.1" W 122°03'35.1"	floating kelp	2	<1	1

Lab Manager

Date 11/6/2007



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: October 9, 2007

CURRENT N ----> S  
SEA STATE NW swell 2 - 5 ft  
WEATHER cloudy  
WIND S @ 2 kts  
WATER TEMP 56.4° F  
LOW TIDE 0.73 ft @ 03:44  
HIGH TIDE 4.89 ft @ 10:23  
RAIN (past 7 days) 0.0 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:45	N 36°56'48.4" W 122°01'45.5"	no comments	4	1	1
RW(C)@30 FT	9:50	N 36°56'57.9" W 122°02'25.4"	kelp bed nearby	2	<1	1
RW(E)@30 FT	9:55	N 36°56'48.3" W 122°02'49.2"	in kelp bed w/otters	<1	<1	<1
RW(F)@30 FT	10:00	N 36°56'46.1" W 122°03'32.5"	in kelp bed w/1 UCSC dive boat*	10	1	<1
RW(G)@30 FT	10:05	N 36°56'44.9" W 122°04'01.3"	in kelp bed w/birds & otters	4	1	<1
RW(H)@30 FT	10:15	N 36°56'57.1" W 122°05'02.3"	kelp bed nearby	1	<1	<1
RW(I)@30 FT	10:20	N 36°56'58.2" W 122°05'17.2"	no comments	<1	<1	<1
RW(L)@70 FT	10:40	N 36°56'19.7" W 122°03'34.5"	no comments	<1	<1	<1

\* sample location altered slightly due to scuba divers in the area

Lab Manager

Date 11/6/2007



**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE:** October 16, 2007

**CURRENT** N ----> S  
**SEA STATE** NW swell 2 - 6 ft  
**WEATHER** cloudy  
**WIND** S @ 6 kts  
**WATER TEMP** 56.9° F  
**LOW TIDE** 3.56 ft @ 05:25  
**HIGH TIDE** 5.04 ft @ 13:08  
**RAIN (past 7 days)** 1.02 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:00	N 36°56'48.5" W 122°01'44.9"	no comments	21	3	1
RW(C)@30 FT	9:05	N 36°56'57.7" W 122°02'25.2"	flock of birds	<1	1	<1
RW(E)@30 FT	9:10	N 36°56'49.4" W 122°02'49.3"	floating scum	5	2	1
RW(F)@30 FT	9:15	N 36°56'45.5" W 122°03'30.8"	in kelp bed w/1 UCSC dive boat	4	1	<1
RW(G)@30 FT	9:20	N 36°56'42.1" W 122°03'56.0"	in kelp bed	7	<1	<1
RW(H)@30 FT	9:35	N 36°56'53.5" W 122°04'54.9"	in huge kelp bed with otters	5	2	<1
RW(I)@30 FT	9:40	N 36°56'58.4" W 122°05'17.0"	kelp and scum	3	1	<1
RW(L)@70 FT	10:00	N 36°56'19.6" W 122°03'34.7"	no comments	2	<1	<1

Lab Manager \_\_\_\_\_

Date 11/6/2007



**CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT**

**SAMPLE DATE:** October 23, 2007

**CURRENT** N ----> S  
**SEA STATE** NW swell 7-10 ft  
**WEATHER** clear & warm  
**WIND** SW @ 7 kts  
**WATER TEMP** 57.1° F  
**LOW TIDE** 0.72 ft @ 14:57  
**HIGH TIDE** 5.03 ft @ 08:56  
**RAIN (past 7 days)** 0.87 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:05	N 36°56'48.5" W 122°01'45.2"	no comments	14	4	<1
RW(C)@30 FT	9:10	N 36°56'57.9" W 122°02'25.5"	kelp bed nearby with birds, scum	37	2	1
RW(E)@30 FT	9:15	N 36°56'49.1" W 122°02'49.0"	2 boats motoring by	5	1	<1
RW(F)@30 FT	9:20	N 36°56'46.6" W 122°03'31.9"	in kelp bed w/ 1 UCSC dive boat	3	<1	1
RW(G)@30 FT	9:25	N 36°56'42.0" W 122°03'58.2"	in kelp bed	3	2	<1
RW(H)@30 FT	9:40	N 36°56'53.8" W 122°04'55.7"	in kelp bed with otters, boat, foam	4	3	<1
RW(I)@30 FT	9:45	N 36°56'58.5" W 122°05'17.4"	in kelp bed with seals, scum, boat	3	<1	<1
RW(L)@70 FT	10:05	N 36°56'20.0" W 122°03'35.0"	no comments	2	1	<1

Lab Manager \_\_\_\_\_

Date 11/6/2007



CITY OF SANTA CRUZ WWTP  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: October 30, 2007

CURRENT N ----> S  
SEA STATE NW swell 2-5 ft  
WEATHER cloudy  
WIND S @ 6 kts  
WATER TEMP 56.7° F  
LOW TIDE 3.51 ft @ 07:29  
HIGH TIDE 5.85 ft @ 13:30  
RAIN (past 7 days) 0.02 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:05	N 36°56'48.4" W 122°01'44.7"	no comments	10	7	<1
RW(C)@30 FT	9:10	N 36°56'58.0" W 122°02'24.9"	birds and kelp nearby	11	3	4
RW(E)@30 FT	9:15	N 36°56'49.3" W 122°02'49.6"	kelp bed nearby	17	12	3
RW(F)@30 FT	9:20	N 36°56'45.6" W 122°03'30.8"	in kelp bed w/1 UCSC dive boat	7	1	2
RW(G)@30 FT	9:25	N 36°56'41.7" W 122°03'56.3"	in kelp bed with birds	10	1	1
RW(H)@30 FT	9:40	N 36°56'56.3" W 122°04'54.4"	in kelp bed with birds	11	8	2
RW(I)@30 FT	9:45	N 36°56'58.4" W 122°05'17.5"	floating kelp	51	4	2
RW(L)@70 FT	10:05	N 36°56'20.1" W 122°03'34.8"	no comments	3	1	1

Lab Manager \_\_\_\_\_

Date 11/6/2007





CITY OF SANTA CRUZ WWTF  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: November 6, 2007

CURRENT N ----> S  
SEA STATE mixed swell: SW @ 2-4 ft & NW @ 2-4 ft  
WEATHER foggy  
WIND SW @ 5 kts  
WATER TEMP 55.0° F  
LOW TIDE 0.53 ft @ 14:28  
HIGH TIDE 5.08 ft @ 08:05  
RAIN (past 7 days) 0.01 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS*	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:05	N 36°56'48.5" W 122°01'45.1"	a lot of floating scum / foam	17	8	7
RW(C)@30 FT	9:10	N 36°56'58.1" W 122°02'25.2"	foul odor, hundreds of birds, scum	10	5	3
RW(E)@30 FT	9:15	N 36°56'48.9" W 122°02'49.2"	otters, birds, scum	10	6	5
RW(F)@30 FT	9:20	N 36°56'45.6" W 122°03'30.6"	water looks red; in kelp,otters,birds,scum	4	5	2
RW(G)@30 FT	9:25	N 36°56'43.3" W 122°03'47.8"	in kelp bed with several otters	4	4	3
RW(H)@30 FT	9:40	N 36°56'54.4" W 122°04'56.6"	in kelp bed with seals, scum	5	3	1
RW(I)@30 FT	9:45	N 36°56'58.4" W 122°05'17.4"	in kelp bed with scum	13	11	22
RW(L)@70 FT	10:05	N 36°56'19.9" W 122°03'34.5"	no comments	<1	<1	<1

FOOTNOTE: \* Observable progression of red tide; though analyses via MF was unaffected this week.

Lab Manager \_\_\_\_\_

Date 12/5/2007





CITY OF SANTA CRUZ WWTF  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: November 13, 2007

CURRENT N ----> S  
SEA STATE NW @ 7-12 ft  
WEATHER clear  
WIND SW @ 5 kts  
WATER TEMP 55.5° F  
LOW TIDE 3.71 ft @ 04:29  
HIGH TIDE 5.34 ft @ 10:59  
RAIN (past 7 days) 0.56 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS*	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:40	N 36°56'48.6" W 122°01'45.2"	near kelp; seals on rock	26	5	2
RW(C)@30 FT	9:35	N 36°56'58.2" W 122°02'25.5"	in scum	22	8	2
RW(E)@30 FT	9:30	N 36°56'49.4" W 122°02'49.5"	High incidence of scum/foam	38	7	1
RW(F)@30 FT	9:25	N 36°56'46.7" W 122°03'31.8"	in kelp bed with birds	19	6	<1
RW(G)@30 FT	9:20	N 36°56'44.5" W 122°03'57.4"	in kelp bed with otters	34	4	3
RW(H)@30 FT	9:10	N 36°56'55.3" W 122°05'00.1"	in kelp bed	39	1	<1
RW(I)@30 FT	9:05	N 36°56'58.3" W 122°05'16.1"	birds and kelp	12	4	<1
RW(L)@70 FT	8:50	N 36°56'22.3" W 122°03'35.6"	bullwhip kelp and scum floating	43	8	1

FOOTNOTE: \*Significant "red-tide" at all sampling stations. Analyses by MF was affected. More filters were needed to process samples from all stations.

Lab Manager \_\_\_\_\_

Date 12/5/2007



CITY OF SANTA CRUZ WWTF  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: November 20, 2007

CURRENT N ----> S  
SEA STATE NW swell 5-8 ft  
WEATHER clear  
WIND SW @ 3 kts  
WATER TEMP 55.9° F  
LOW TIDE 0.86 ft @ 06:28  
HIGH TIDE 5.19 ft @ 12:56  
RAIN (past 7 days) 0.02 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	10:00	N 36°56'48.9" W 122°01'46.2"	no comments	<1	<1	<1
RW(C)@30 FT	9:55	N 36°56'57.9" W 122°02'24.7"	kelp bed nearby	1	4	<1
RW(E)@30 FT	9:50	N 36°56'49.8" W 122°02'47.4"	in kelp bed	2	<1	2
RW(F)@30 FT	9:45	N 36°56'46.7" W 122°03'31.0"	in kelp bed	1	2	1
RW(G)@30 FT	9:40	N 36°56'43.1" W 122°03'56.9"	in kelp bed	2	1	2
RW(H)@30 FT	9:30	N 36°56'55.8" W 122°04'57.2"	in kelp bed	1	1	<1
RW(I)@30 FT	9:25	N 36°56'57.9" W 122°05'17.2"	birds in air and water	<1	<1	<1
RW(L)@70 FT	9:10	N 36°56'18.9" W 122°03'35.3"	no comments	3	<1	<1

Lab Manager \_\_\_\_\_

Date 12/5/2007



CITY OF SANTA CRUZ WWTF  
RECEIVING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: November 27, 2007

CURRENT N ----> S  
SEA STATE W swell 2-5 ft  
WEATHER partly cloudy  
WIND E @ 4 kts  
WATER TEMP 63.3° F  
LOW TIDE 3.40 ft @ 05:20  
HIGH TIDE 6.23 ft @ 11:19  
RAIN (past 7 days) 0.0 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	8:55	N 36°56'48.1" W 122°01'45.1"	a few birds	25	6	2
RW(C)@30 FT	9:00	N 36°56'58.2" W 122°02'25.1"	birds and kelp nearby	1	2	2
RW(E)@30 FT	9:05	N 36°56'49.2" W 122°02'48.7"	kelp bed nearby	13	3	3
RW(F)@30 FT	9:10	N 36°56'46.5" W 122°03'31.9"	in kelp bed	10	5	1
RW(G)@30 FT	9:15	N 36°56'42.0" W 122°03'58.1"	in kelp bed	9	3	<1
RW(H)@30 FT	9:30	N 36°56'54.8" W 122°04'57.0"	in kelp bed, otters, 1 fishing boat	11	9	10
RW(I)@30 FT	9:35	N 36°56'58.0" W 122°05'17.4"	kelp and birds	6	<1	1
RW(L)@70 FT	9:50	N 36°56'20.1" W 122°03'35.2"	no comments	13	2	2

Lab Manager

Date 12/5/2007



CITY OF SANTA CRUZ WWTP  
WING WATER BACTERIA MONITORING REPORT

SAMPLE DATE: December 11, 2007

CURRENT N ----> S  
SEA STATE NW swell 3-6 feet  
WEATHER clear  
WIND S @ 4 kts  
WATER TEMP 51.9°F  
LOW TIDE 3.69 ft @ 04:10  
HIGH TIDE 5.66 ft @ 10:08  
RAIN (past 7 days) 0.82 inches

SAMPLING POINT	SAMPLING TIME (AM)	GPS LOCATION	OBSERVATIONS	(all results are CFU / 100-ml)		
				TOTAL COLIFORM	FECAL COLIFORM	ENTEROCOCCUS
RW(A)@30 FT	9:05	N 36°56'48.3" W 122°01'45.2"	no comments	7	<1	1
RW(C)@30 FT	9:10	N 36°56'57.8" W 122°02'25.5"	dozens of birds	4	3	<1
RW(E)@30 FT	9:20	N 36°56'48.9" W 122°02'49.3"	no comments	2	<1	<1
RW(F)@30 FT	9:25	N 36°56'46.1" W 122°03'31.2"	kelp and birds	4	<1	1
RW(G)@30 FT	9:30	N 36°56'43.3" W 122°03'58.7"	kelp, otters and birds	5	1	4
RW(H)@30 FT	9:45	N 36°56'55.8" W 122°04'59.8"	kelp, otters and birds	19	2	6
RW(I)@30 FT	9:50	N 36°56'58.4" W 122°05'17.6"	kelp	21	10	4
RW(L)@70 FT	10:10	N 36°56'19.9" W 122°03'34.9"	no comments	1	<1	<1

Lab Manager

Date

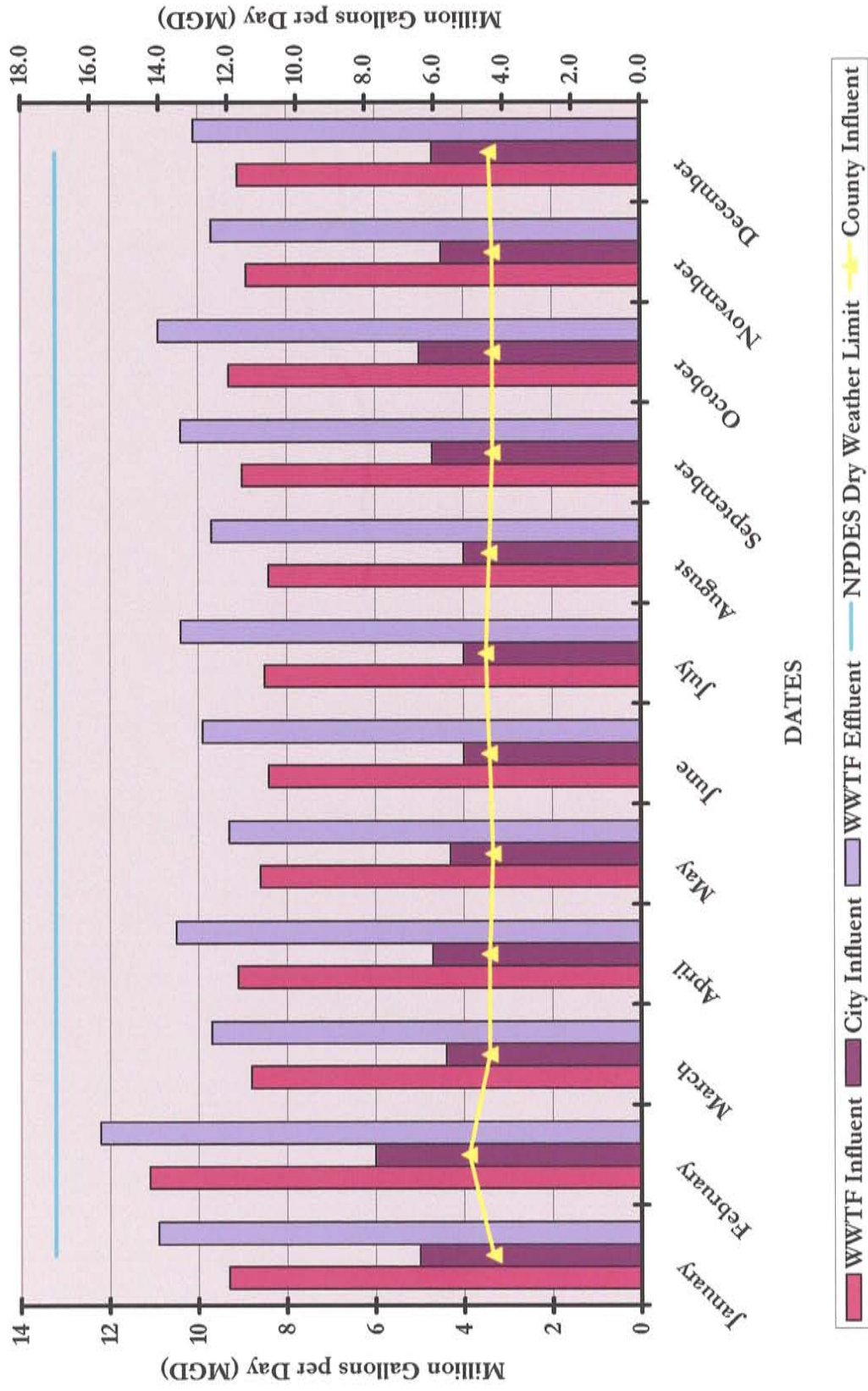
1/15/2008

## **I. Summary of Monitoring Data – Graphs**

The following three graphical presentations of plant performance data summarize plant efficiencies in hydraulic and pollutant loadings and removal of conventional pollutants from the influent before discharge into the ocean.

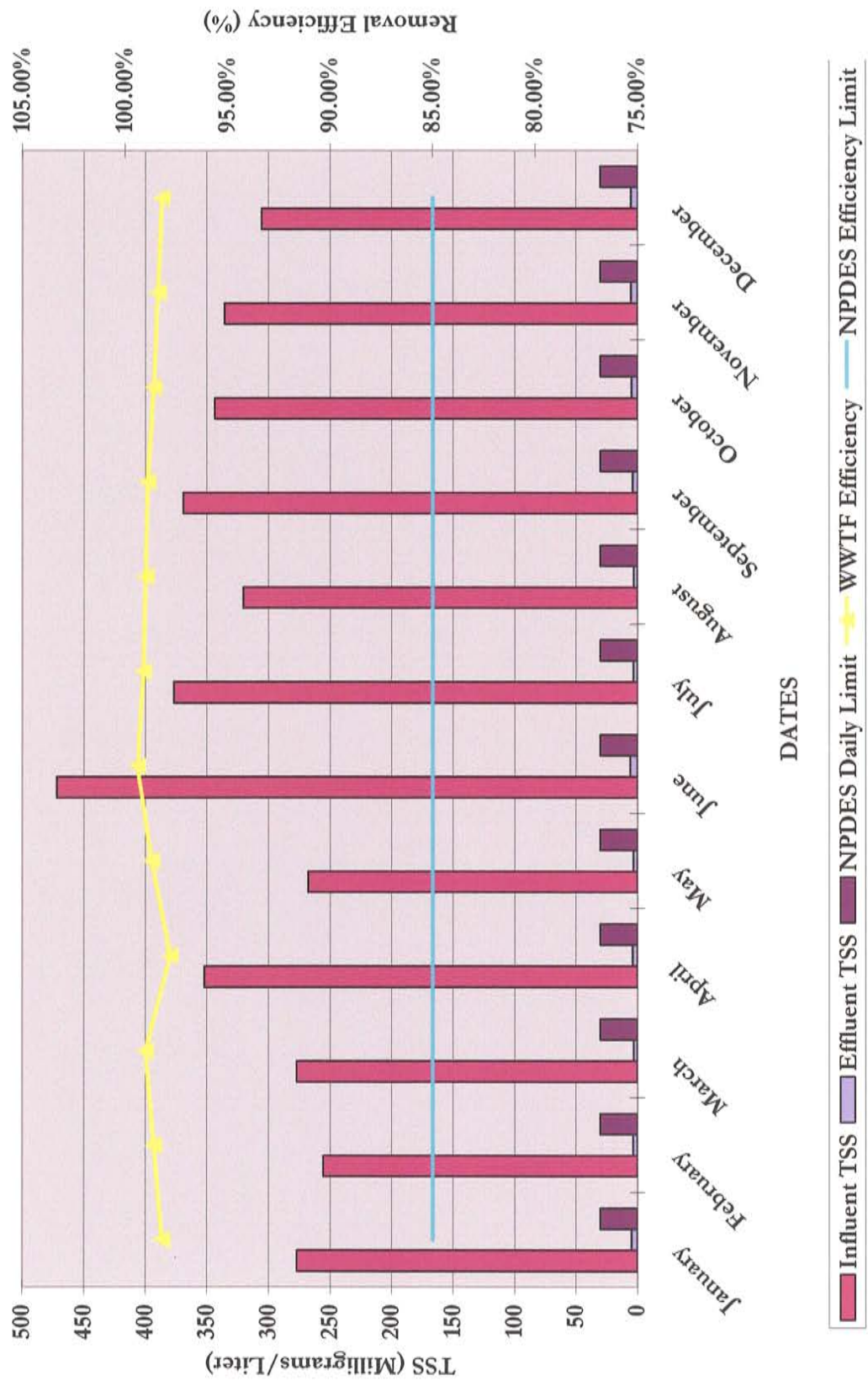
These graphs were developed from the data summaries preceding this section.

WWTF Flows - 2007



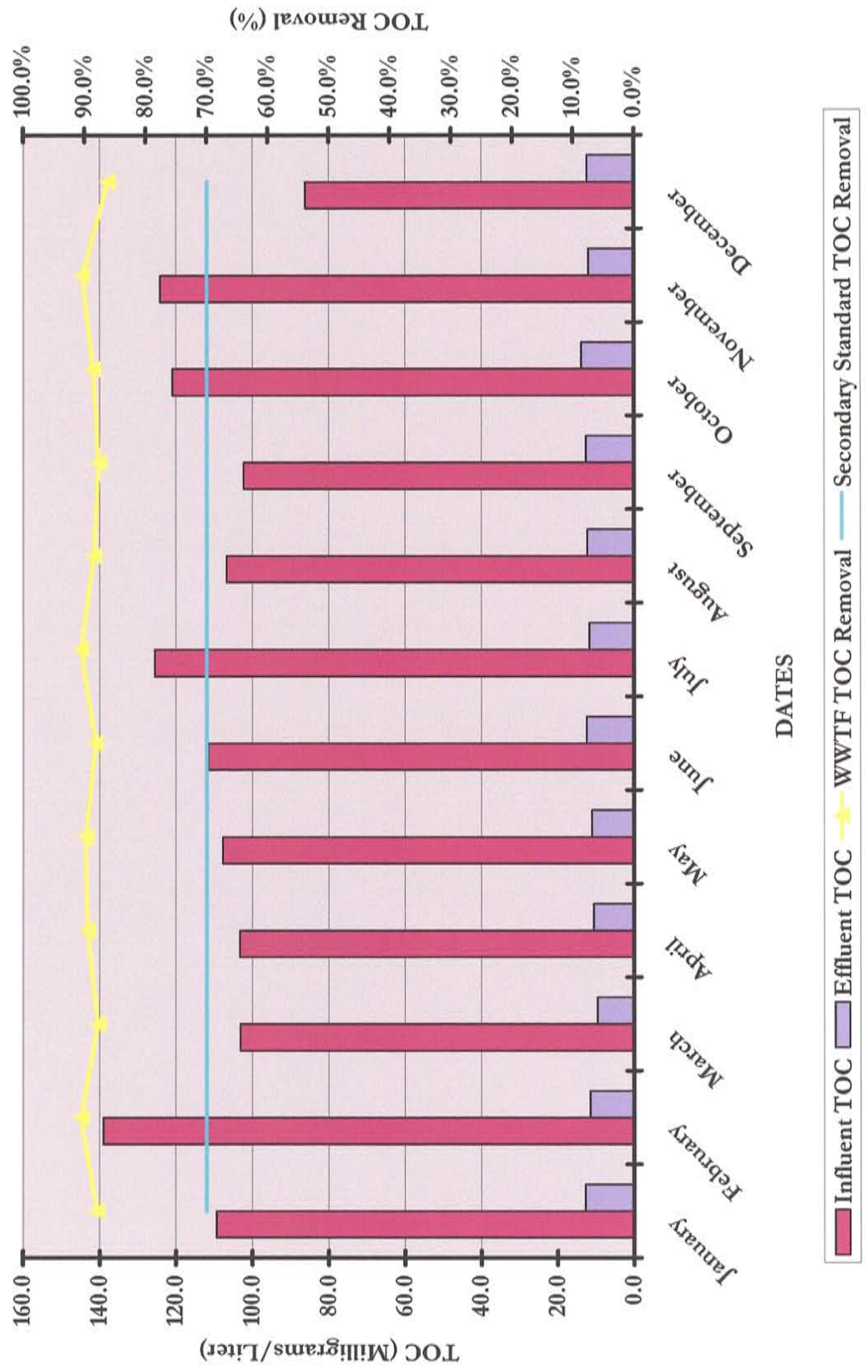


# SUSPENDED SOLIDS - 2007





WWTF TOC - 2007



### **III            The Compliance Record and Corrective Actions**

### III The Compliance Record and Corrective Actions

The Plant did not record a single episode of exceedance of any of the NPDES limits in 2007. All monitored effluent limits for all analytes were within NPDES discharge limits or below certified Method Detection Limits.

The City has conducted its annual Outfall and Diffuser Monitoring as required by MRP No.R3-2005-0003 of May 13, 2005. This year's monitoring consisted of a dye test with an over flight along the entire outfall and an underwater video survey conducted by a remotely operated vehicle (ROV) along the diffuser section and approximately 800 to 1000 feet inshore of the diffuser. The dye study was conducted by Full Tilt Design on November 3, 2007. All three of these reports are contained within the Outfall and Diffuser monitoring section of the Annual Report. Scheduling the dive inspection was impacted by unseasonable storms and the availability of a sufficiently large vessel required for a live dive. Finally, the ROV was successfully deployed to conduct the underwater inspection on January 2, 2008 by North Coast Divers, Inc.

The underwater survey showed that the open diffuser ports are unobstructed and flowing as designed and originally constructed. The dye test may have detected the intermittent leak that was previously detected in 1992, 1994, 2002, 2004 and 2006.

That leak had been previously detected at an approximate depth of 70 feet below sea level and 7000 feet from the beach vault as measured along the outfall. Dye seemed visible this year at approximately 5000 feet from the beach vault, as measured along the outfall, and at an approximate depth of 60 feet below sea level. The diffuser section of the City's outfall starts at a depth of 90 feet below sea level and 10,000 feet from the beach vault. The intermittence of observation and the difficulty in observing the leak may be attributable to the small size of the leak as described below. Therefore there is no persuasive evidence that the location or size of the leak may have changed.

To improve the possibility of locating the actual location of any leak the City will coordinate the dye study and underwater survey next year at the same time and utilize additional dye and an expanded underwater survey so that the ballast rock can be observed for evidence of any leak.

Kinnetic Laboratories had performed an extensive investigation of the leak in 1994 and concluded that the leak was small in volume and had an initial dilution exceeding 1000:1 and that the risks and cost to fix such a leak outweighed the benefits. The precise location of the leak was not determined due to the small size of the leak and the fact that the outfall is in a trench covered with ballast rock.

Beginning in 2005, weekly grab samples are taken from the GIS location identified as the leak at the 70 foot contour, along with the monitoring of the near shore bacteria at 30 foot contour depth. Previous grab samples were taken quarterly at the leak site from 1995 through 1998. In April 1997, elevated bacteria levels indicated that the intermittent leak was still active at times. All samples continue to be tested for total coliform, fecal coliform and enterococci. Bacteria data from the site continue to indicate intermittent levels of elevated indicators. This is consistent with the limited and intermittent nature of the leak. No additional impact from the leak has been documented. Details of all the test data have been included in both the annual reports submitted to the RWCQB from 1995 through 1998.

Finally, the City uses the annual report to provide updates on observations relating to the leak.

Steve Wolfman, P.E.

Associate Civil Engineer, City of Santa Cruz

#### **IV Outfall and Diffuser Report**

## **IV        Outfall and Diffuser Report**

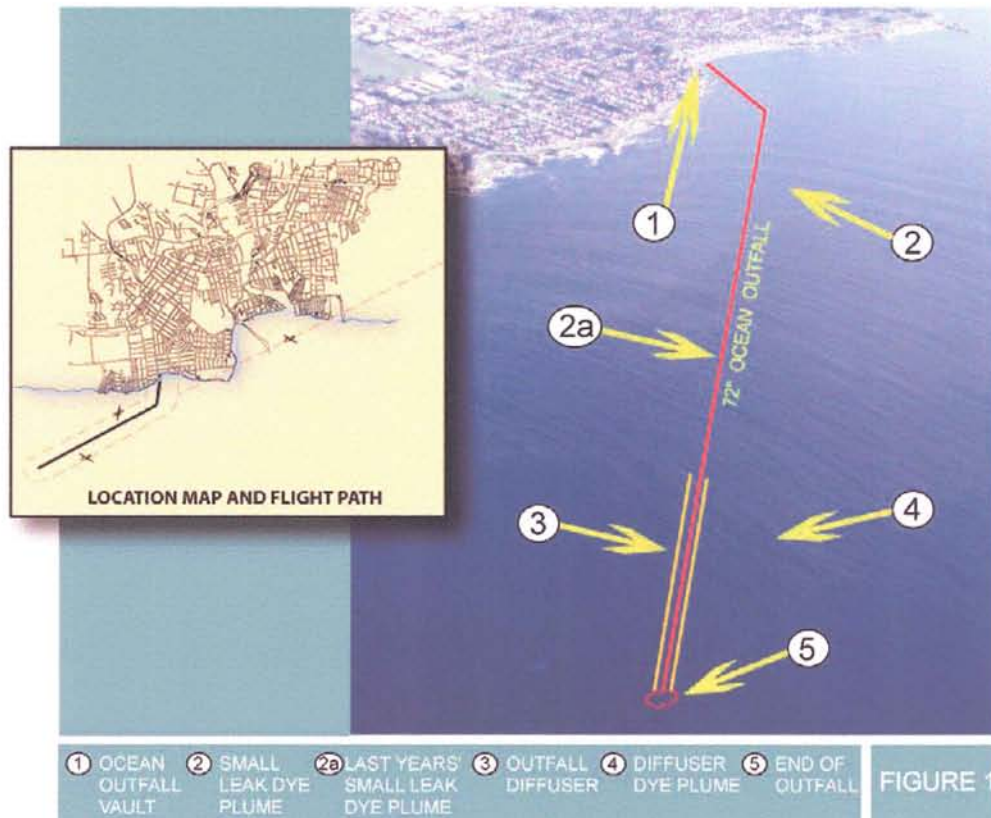
The integrity and status of the Plant Outfall and Diffuser segments are derived from data culled from weekly bacterial monitoring at the nearshore and an annual dye study as well as a professional divers report. Although all analytical data including the bacterial monitoring have been included in sections I and II of this report, the dye study and the divers' report are only included here.

The remainder of this section consists of the narratives and table comprising the dye study and the divers' report.



## DYE STUDY OF THE WASTEWATER TREATMENT EFFLUENT AND ASSOCIATED OCEAN OUTFALL OVERFLIGHT - 2007

On Thursday November 3<sup>rd</sup>, 2007 the City of Santa Cruz conducted a dye test of the Wastewater Treatment effluent ocean outfall to visually search for leaks. An overflight was performed between 8:00am and 9:30am using the aerial survey services of pilot Aaron Becker. An on-board differential-ready GPS (which simultaneously tracks and uses up to 12 satellites) with an accuracy of 1-5 meters (3-15 feet) was used for navigation and positioning.



**Figure 1** shows a different location of the dye plume from the previous years' small leak site (2) located roughly 5,000 L.F. along the pipeline from the beach outfall vault which is at a nominal depth of 60 feet. In previous years the plume from the small leak site was located at roughly near (2a). The new visible location of the dye on the surface may be due to currents and the red tide. Along the diffuser section (3) a large long plume (4) was located before the end of the pipeline (5).

At 8:00 a.m. 60 gallons of yellow liquid dye were added at the Wastewater Treatment facility. In prior years 40 gallons of dye were used and added at the beach outfall vault (1). The weather was clear and the sea surface was calm. At around 8:35 am a dye plume was observed and photographed with a digital camera in the diffuser section area. The visible dye was very faint, due to the lingering presence of a red tide this year. The coverage area of the dye appeared similar to previous years' observations.

After the dye plume was sighted, further inspection of the entire ocean outfall revealed that the surrounding ocean surface remained unchanged.

No leaks or visual dye plumes were evident. The overflight of the ocean outfall concluded at 9:30.a.m. on November 3, 2007.

## SANTA CRUZ OUTFALL INSPECTION REPORT:

Inspection was performed under contract by North Coast Divers, Incorporated on January 2, 2008.

Report submitted by: *Rick Heaslet*, President NCD. CA License A660428 1320

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Member, International Association of Diving Contractors

### 1.0 Introduction

The inspection survey for 2007, normally carried out in the late fall, was interrupted this year by a series of unseasonable storms. These multiple weather systems created a scheduling conflict with the large vessel that routinely served as the leased diving platform. No other suitable vessels capable of handling a decompression chamber and other heavy equipment, as well as the ability to conduct "live boat" diving operations safely was available on a call out basis.

It was determined that in order to maintain the mobilization flexibility necessary as the season moved into the winter weather patterns, this year's inspection would be carried out by ROV, or remotely operated vehicle. North Coast Divers (NCD) performed a series of upgrades to their ROV thruster, sonar, and telemetry packages to better deal with the strong currents and swell conditions present on the pipeline.

### 2.0 Inspection Summary

The ROV inspection provided excellent results. Visibility on bottom was quite good, and the upgraded vehicle was able to navigate the pipeline with little difficulty. The overall perspective of the diffuser section was in some ways superior to that provided by the dive surveys, although the dive survey is more detailed in regard to each individual diffuser port. The ROV video clearly shows the entire exposed pipe joint as well as the elevation and extent of ballast rock cover. Combined with the dive surveys conducted in prior years, a more complete perspective of the conditions is obtained. The recommendations section at the end of this report provides more detail on the advantages and benefit of using both inspection protocols.

The diffuser section was found to be in excellent condition. No damage, displacement of pipe joints, or signs of effluent discharge from locations other than the diffuser ports was observed. Ballast rock is in place as reported in previous inspections, and no scouring or undercutting of the diffuser pipe sections was noted. The ROV inspection was continued inshore of the diffuser section approximately 800-1000 feet. The pipe is completely covered with ballast rock, but no indications of effluent discharge or other damage was seen.

The following table details the diffuser section ballast rock elevation above springline (ASL) in relation to the pipe joint (primarily at the diffuser port) as documented in the attached DVD inspection video.

Pipe Section	Ballast Rock South Side of Pipe	Ballast Rock North Side of Pipe	Comments
1	1' ASL	2' ASL	
2	1' ASL	2' ASL	
3	1' ASL	2' ASL	
4	1' ASL	2' ASL	Diffuser band remnants



Pipe Section	Ballast Rock South Side of Pipe	Ballast Rock North Side of Pipe	Comments
5	1' ASL	2' ASL	
6	1' ASL	2' ASL	
7	1' ASL	2' ASL	
8	1' ASL	2' ASL	
9	1' ASL	2' ASL	
10	1' ASL	2' ASL	
11	1' ASL	2' ASL	
12	1' ASL	2' ASL	
13	1' ASL	2' ASL	
14	1' ASL	2' ASL	Diffuser band remnants
15	1' ASL	2' ASL	
16	1' ASL	2' ASL	Diffuser band remnants
17	1' ASL	2' ASL	
18	1' ASL	2' ASL	
19	1' ASL	2' ASL	
20	1' ASL	2' ASL	
21	2' ASL	2' ASL	
22	2' ASL	2' ASL	
23	2' ASL	2' ASL	
24	2' ASL	2' ASL	
25	2' ASL	2' ASL	
26	2' ASL	2' ASL	
27	2' ASL	2' ASL	Ballast rock at crown in middle of pipe section. Port clear.
28	1' ASL	2' ASL	

Pipe Section	Ballast Rock South Side of Pipe	Ballast Rock North Side of Pipe	Comments
29	1' ASL	2' ASL	
30	1' ASL	2' ASL	
31	1' ASL	1' ASL	
32	1' ASL	2' ASL	
33	1' ASL	1' ASL	
34	1' ASL	1' ASL	
35	1' ASL	1' ASL	Ballast rock at crown in middle of pipe section. Port clear.
36	2' ASL	2' ASL	
37	1' ASL	1' ASL	
38	1' ASL	1' ASL	
39	1' ASL	1' ASL	Pipe joint installed with slight CCW twist.
40	2' ASL	2' ASL	Diffuser band remnants
41	1' ASL	2' ASL	Diffuser band remnants
42	2' ASL	2' ASL	
43	2' ASL	2' ASL	Diffuser band remnants
44	2' ASL	2' ASL	
45	2' ASL	2' ASL	
46	1' ASL	2' ASL	
47	2' ASL	2' ASL	
48	2' ASL	2' ASL	
49	1' ASL	2' ASL	Ballast rock at crown in middle of pipe section. Port clear.
50	1' ASL	2' ASL	Ballast rock at crown in middle of pipe section. Port clear.
51	1' ASL	2' ASL	Ballast rock at crown in middle of pipe section. Port clear.
52	1' ASL	2' ASL	Ballast rock at crown in middle of pipe section. Port clear.

Pipe Section	Ballast Rock South Side of Pipe	Ballast Rock North Side of Pipe	Comments
53	1' ASL	2' ASL	
54	1' ASL	2' ASL	
55	1' ASL	2' ASL	
56	1' ASL	2' ASL	Diffuser band remnants
57	1' ASL	2' ASL	
58	1' ASL	1' ASL	Diffuser band remnants
59	1' ASL	1' ASL	Diffuser band remnants
60	2' ASL	2' ASL	
61	2' ASL	2' ASL	
62	2' ASL	2' ASL	
63	2' ASL	2' ASL	
64	2' ASL	2' ASL	
65	2' ASL	1' ASL	
66	1' ASL	1' ASL	
67	1' ASL	2' ASL	
68	1' ASL	2' ASL	
69	1' ASL	2' ASL	
70	1' ASL	2' ASL	
71	1' ASL	2' ASL	Ballast rock at crown in middle of pipe section. Port clear.
72	2' ASL	2' ASL	
73	1' ASL	2' ASL	
74	2' ASL	2' ASL	
75	2' ASL	2' ASL	
76	2' ASL	2' ASL	Diffuser band remnants



Pipe Section	Ballast Rock South Side of Pipe	Ballast Rock North Side of Pipe	Comments
77	2' ASL	2' ASL	Diffuser band remnants
78	2' ASL	2' ASL	
79	2'ASL	2'ASL	
80	2' ASL	2' ASL	
81	2' ASL	2' ASL	
82	2' ASL	2' ASL	
83	2' ASL	2' ASL	
84	2' ASL	2' ASL	
85	2' ASL	2' ASL	
86	2' ASL	2' ASL	Ballast rock at crown in middle of pipe section. Port clear.
87	2' ASL	2' ASL	Ballast rock at crown in middle of pipe section. Port clear.

### 3.0 Recommendations

ROV inspections of the Santa Cruz outfall have been attempted or performed on two occasions in the past 20 years. The first, by another contractor, resulted in the vehicle damaged beyond repair. The second, performed by NCD in 2001 was acceptable, but showed the need for a more powerful vehicle to navigate in the conditions present on the pipeline.

The upgraded vehicle used in the current inspection performed quite well, and we believe should be considered for future inspections. In the +16 years that NCD has been carrying out this inspection with divers, we have not found any appreciable change in regard to the diffuser ports or general conditions on the pipe. A dive survey is more detailed, particularly at each diffuser port, but the helmet camera presents a narrow perspective. This is important, particularly when detailed damage reports and measurements are required, but in the case of the Santa Cruz Outfall diffuser section no such damage has ever been noted. In contrast, the ROV inspection gives a much larger overview of the pipeline, which is very useful for surveying the ballast rock cover and individual pipe joints. It is also a less costly inspection.

We recommend that SCPWD consider changing the inspection protocol to alternate Level I (diver) inspections with Level II (ROV) surveys. ROV surveys could be performed on alternate years, particularly in the absence of any change noticed in the dive surveys. This would offer the most comprehensive documentation of the pipeline.

This report was prepared and submitted to the City of Santa Cruz Public Works Department by North Coast Divers Incorporated.

Signed by: *Rick Heaslet* President NCD. CA License A660428 1320

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[norcodiv@aol.com](mailto:norcodiv@aol.com) International Association of Diving Contractors

## **V       Biosolids and Sludge Report.**

## **Biosolids, Sludge and Liquid Waste Haulage Report.**

This section of the annual report contains the narratives and data summaries for the solids content of the treatment plant influent and discourse on the final solids inventory of the facility in 2007.

In May 2007, Plant management instituted a change in data objectives for assessing the quality of the Class B Biosolids generated at the facility in 2007, with reference to the Hazardous waste levels of its constituents per California Title 22. The previous frame of reference for analyzing the biosolids quality was the land application limits only.

The summary data presented in this section of the report is focused on the biosolids quality with regards to the table listing the Inorganic and Bioaccumulative Toxic substances and their threshold Limit Concentrations in California Water at Code Title 22.

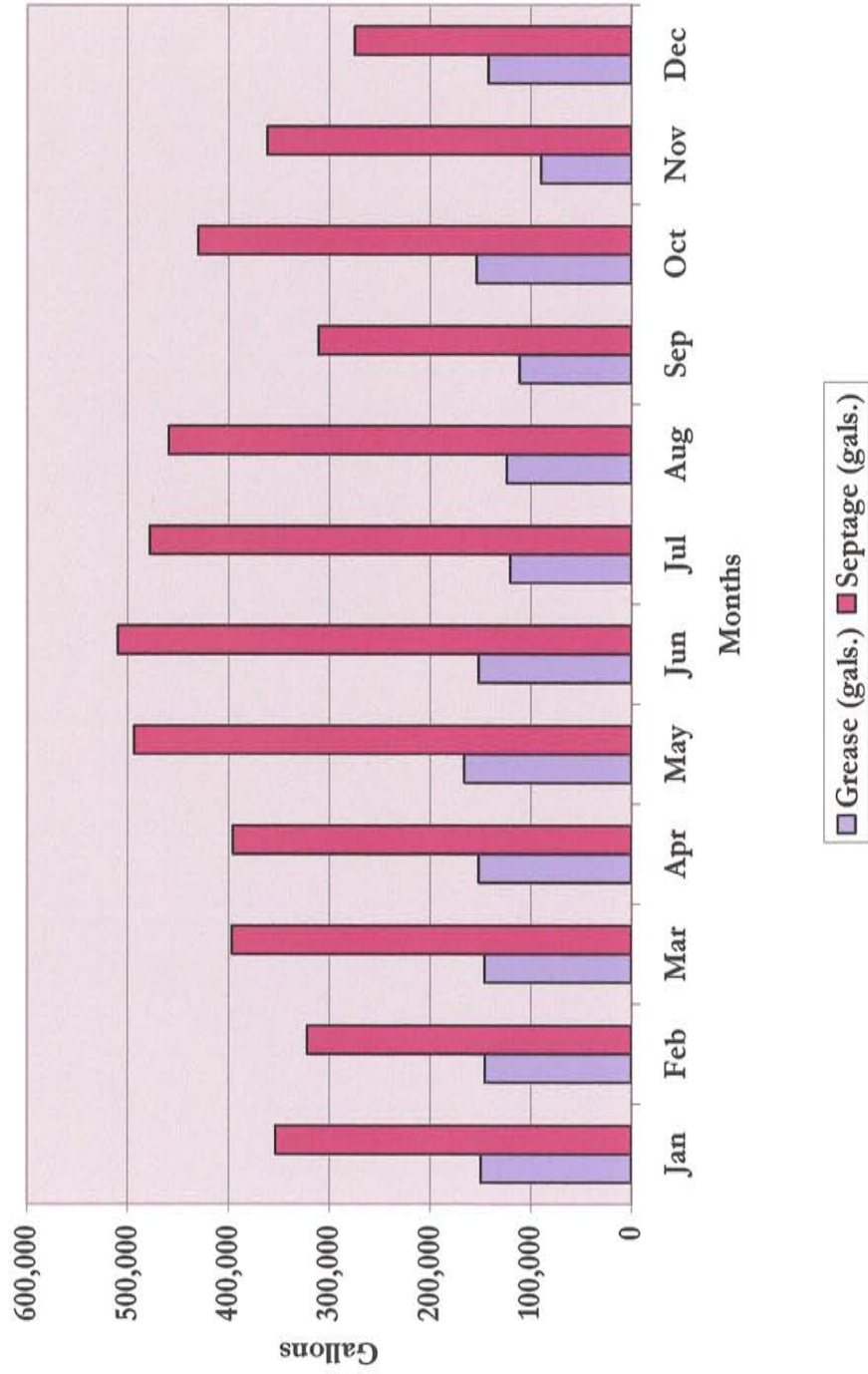
The remainder of this section is an inventory of the liquid wastes hauled into the facility on a monthly basis throughout 2007.



Bi-Monthly Sludge Monitoring	2007	ANALYTICAL RESULTS IN WET WEIGHT ONLY						Hazardous Waste Limits (Max Allowable) mg/Kg Wet Weight TTLC
		1-May-07	4-Jun-07	1-Aug-07	1-Oct-07	3-Dec-07	Units	
Antimony		0.7	0.7	0.8	0.7	0.6	mg/kg	500.0
Arsenic		3.1	2.8	3.3	3.0	2.3	mg/kg	500.0
Asbestos		<1%	<1%	<1%	<1%	<1%	mg/kg	<1%
Barium		100	100	110	110	92	mg/kg	10,000.0
Beryllium		<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	75.0
Cadmium		0.6	0.55	0.6	0.6	0.5	mg/kg	100.0
Chromium		7.7	6.7	10	13	7.2	mg/kg	500.0
Cobalt		1.1	1.1	1.3	1.4	1.1	mg/kg	8,000.0
Copper		150	66	160	120	140	mg/kg	2,500.0
Fluoride		2.3	1.8	4.9	2.3	4.6	mg/kg	18,000.0
Lead		9.0	6.4	6.5	5.4	4.9	mg/kg	1,000.0
Mercury		0.27	0.28	0.4	0.3	0.2	mg/kg	20.0
Moisture		77.1%	80.0%	77.7%	75.6%	76.1%	%	
Molybdenum		2.3	2.6	2.4	2.5	2.0	mg/kg	35,000.0
Nickel		4.7	4.1	4.9	4.9	3.9	mg/kg	2,000.0
Nitrate-N		4.6	<1.0	3.3	7.0	4.4	mg/kg	
Nitrogen-Organic		9,000	8,900	9,000	9,400	9,000	mg/kg	
Nitrogen-Total Kjeldahl		11,000	11,000	11,000	12,000	11,000	mg/kg	
Nitrogen-Ammonia		2,300	2,500	2,400	2,200	2,200	mg/kg	
Selenium		1.5	1.4	1.5	1.6	1.3	mg/kg	100.0
Silver		4.4	5.0	4.5	6.5	6.2	mg/kg	500.0
Thallium		<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	700.0
Vanadium		7.0	5.8	7	8	7.4	mg/kg	2,400.0
Zinc		290	260	300	310	260	mg/kg	5,000.0

Liquid Waste Inventory Report - 2007			
Month	Grease (gallons)	Septage (gallons)	
January	149,927	353,587	
February	145,708	321,850	
March	145,935	396,829	
April	151,941	395,872	
May	166,191	493,561	
June	151,905	510,010	
July	120,428	478,116	
August	123,865	459,332	
September	111,145	310,689	
October	153,751	430,088	
November	89,628	361,375	
December	142,151	274,632	
Totals	1,652,575	4,785,941	

2007 Transported Liquid Septage/Grease Waste Totals  
 Annual Grease Total: 1,652,575 Gals.  
 Annual Septage Total: 4,785,941 Gals.



## **VI      Operating Staff**

## VI Operating Staff

The California Water Code, the California Code of Regulations, the Waste Discharge Requirements, and the NPDES Permit require supervisors and operators of municipal wastewater treatment plants to be certified at specific minimum levels of certification based upon the wastewater treatment plant processes and design flows. All of the operations personnel of the City of Santa Cruz Wastewater Treatment Facility are certified by the California State Water Resources Control Board at or above the required levels.

The operations and maintenance staff consists of:

1 Superintendent of the Wastewater Collection and Treatment Facility; 1 Wastewater Treatment Facility Operations Manager; 4 Senior Wastewater Plant Operators; 9 Wastewater Plant Operators; 1 Senior Plant Maintenance Mechanic; 5 Plant Maintenance Mechanic II; 2 Plant Maintenance Mechanic I; 1 Senior Electrician; and 2 Electrical Technicians.

Additional technical/management, engineering, laboratory and clerical support are provided by the Director of Public Works; 2 Associate Civil Engineers; 1 Assistant Civil Engineer; 1 Laboratory/Environmental Compliance Manager; 3 Laboratory Chemists; 3 Environmental Compliance Inspectors; and 1 Administrative Assistant.

Following is a table of all personnel involved in the daily operation and maintenance of the Wastewater treatment facility, their designations, credentials and expiration dates, when applicable.



NAME		CREDENTIALS	DESIGNATION
Seidel, Dan	SWRCB Operator IV-4055 (06/29/09)	SUPERINTENDENT OF THE WASTEWATER COLLECTION AND TREATMENT FACILITY.	
Warren, Filipina	BA, Philosophy	ADMINISTRATIVE ASSISTANT II	
Savadkohi, Shawn	BA, Physics	IT NETWORK ADMINISTRATOR	
LAB/ENVIRONMENTAL COMPLIANCE			
Babatola, Akin	MS, Mol. Bio. BS, Micro	LABORATORY/ENVIRONMENTAL COMPLIANCE MANAGER	
Xu, Tianfei	Graduate Degree (China) CWEA Lab Analyst II-378 (7/31/09)	CHEMIST II	
Birch, Anne	BS Chemistry BS Cult. Anthr. CWEA Lab Analyst I-342 (01/31/09)		
Tantingco, Erlinda	BS Chem Eng. CWEA Lab Analyst I - 060731019 (07/31/09)	CHEMIST I	
Sasscer, David	BS, Micro. CWEA Environmental Compliance Inspector III - 114 (1/31/09)	ENVIRONMENTAL COMPLIANCE INSPECTOR	
Tomlinson, Monica	BS, Env Studies CWEA Environmental Compliance Inspector I-381 (07/31/08) & CWEA Lab Analyst I-1017 (01/31/09)		
Baker, Fred	CWEA Environmental Compliance Inspector I-I-314 (07/31/09) AS (Const and Management)		
OPERATIONS AND MAINTENANCE			
Sanders, Michael	SWRCB Operator IV-4753 (12/31/08)	WASTEWATER TREATMENT FACILITY OPERATIONS MANAGER	
Culbertson, Michael	SWRCB Operator III-532 (12/31/08)	SENIOR PLANT OPERATORS	
Lorenson, Arthur	SWRCB Operator III-4867 (12/31/09)		
Gorton, Gerald	SWRCB Operator IV-6344 (06/30/09)		
Sandretti, Mark	SWRCB Operator III-4409 (06/30/08)		



Meyers, David	SWRCB Operator III -10986 (06/30/09)	OPERATORS
Brown, Bob	SWRCB Operator II-7217 (06/30/09)	
Frazier, Ron	SWRCB Operator II-7436 (12/31/08)	
Quintana, Everest	SWRCB Operator II-4837 (06/30/08)	
Barnes, John	SWRCB Operator II-5734 (06/30/09)	
Blume, Robert	SWRCB Operator V-4776 (06/30/08)	
Lineham, Grant	SWRCB Operator II-8320 (12/31/07)	
Brian Seifert	SWRCB Operator II-28071 (06/30/09)	
John Gilbert	SWRCB Operator II-28079 (06/30/09)	
MAINTENANCE		
Wisler, Larry	CWEA #358 (01/31/08)	SENIOR PLANT MAINTENANCE MECHANIC
Stevens, Fred	CWEA #76242 (07/31/08)	PLANT MAINTENANCE MECHANIC II
Locatelli, Albert		
Pretzer, Tom	CWEA #599 (01/31/08)	
Sheehan, Sean		
Locatelli, Forrest		
Carlson, Ron		MECHANIC I
Fambrini, Steve		
ELECTRICAL		
Gorny, Ken		SENIOR ELECTRICIAN
Sturdivant, Jim		ELECTRICAL TECHNICIAN
Miller, Bud		

## **VII     The Operation & Maintenance Manual and Contingency Plans**

## **VII The Operation & Maintenance Manual and Contingency Plans**

The operation and maintenance manual was last reviewed in November 2000 and found to be complete and valid for the current facility. The facility's written Standard Operating Procedures are periodically reviewed and frequently updated to maintain documentation and direction on the operation of the facility.

The maintenance division provides routine preventative maintenance for all plant equipment. This ensures that equipment receives routine lubrication and relevant maintenance, and that standby equipment is ready for service.

Safeguards to minimize accidental discharge from the wastewater treatment plant are built into the design and operation of facility and equipment. These are also tested periodically to ensure their integrity. Scenarios for accidental discharge have been reviewed and concluded to be minimal.

However, the location most vulnerable to an accidental discharge was identified as the Bar Screening room. This room is located proximate to the Pump house. A long-term power outage at peak flow may cause an overflow into the Pump house if the main sewage pumps were disabled. However, the two engines capable of driving all six main sewage pumps are diesel driven, and would provide power in case of such an outage. These diesel engines are tested for performance on a monthly schedule, and for a minimum duration each time. These engines and all equipment in the pump house are maintained with the highest priority.

Additional standby equipment has also been installed with the Plant upgrade to advanced secondary in 1998. These include power to the Sodium Hypochlorite disinfection system, which is the back up to the UV disinfection system.

## **VIII Laboratories Used to Monitor Compliance**

## **VIII Laboratories Used to Monitor Compliance**

During the year 2007, the City of Santa Cruz operated the Wastewater Treatment Facility Laboratory certified under the CA Department of Health Services ELAP (Environmental Laboratory Accreditation Program). The Laboratory certificate number is CA 1176. The Laboratory updated its QAPP (Quality Assurance Performance Plan), and submitted the same to the Department of Health Services, ELAP program.

Laboratory staffing includes 1 Laboratory/Environmental Compliance Manager; and 3 Laboratory Chemists, two of whom functions as Principal Analysts in accordance with CCR Title 22.

Most analytical determinations performed for Plant treatment and the NPDES permit were accomplished through the Laboratory.

The following contract laboratories provided other analytical services:

### **Alpha Analytical Laboratories Inc**

860 Waugh Lane, H-1,

Ukiah, CA 95482

<http://www.alpha-labs.com/>

### **Frontier Analytical Laboratory**

5172 Hillsdale Circle

El Dorado Hills, CA 95762

<http://www.frontieranalytical.com/>

### **Toxscan Inc.**

Bioassay Division

42 Hanger Way

Watsonville, CA 95076

### **California Department of Fish and Game**

Water Pollution Control Laboratory

2005 Nimbus Road

Rancho Cordova

CA 95670

**McC Campbell Analytical Inc.**

110 2<sup>nd</sup> Avenue South, #D7

Pacheco, CA 94553-1622

<http://www.mcccampbell.com/>

**City of Watsonville Utilities Department Laboratory**

P O Box 50000

Watsonville, CA 95077

All the laboratories are required to maintain current NELAC/ELAP certification. Copies of the respective ELAP /NELAP certificates of these laboratories are maintained in the Laboratory for reference.



**IX Summary of Performance Relative to Section B, General Monitoring Requirements.**

## **IX Summary of Performance Relative to Section B, General Monitoring Requirements.**

The contents of this section of the report address the standard summaries of the provisions of the general requirements of the National Pollutant Discharge Elimination Scheme (NPDES), as applied at the wastewater treatment facility of the City of Santa Cruz, California.

## **IX Summary of Performance Relative to Section B, General Monitoring Requirements.**

1. Monitoring location, minimum sampling frequency and sampling methods for each parameter complies with the Monitoring and Reporting program of the NPDES permit as stipulated in the MRP No 00-044. Occasionally, due to errors or equipment failure, a monitoring and analytical event may be missed. These omissions are infrequent and not thought to significantly affect the weekly or monthly averages. Test procedures used are those approved under 40 CFR 136.
2. Monitoring frequency may be increased as needed to verify apparent non-compliance. Additional monitoring to optimize plant performance or validate performance and/or analytical questions is performed routinely.
3. Laboratories used for the monitoring of compliance with the permit meet the standard of accreditation by the California State Department of Health Services. (See Section VI of this report for more information on the laboratories.) Bioassays are conducted in accordance with the guidelines approved by the State Department of Fish and Game and the State Water Resources Control Board.
4. Samples and measurements taken for monitoring purposes are collected consistent with the activity, impacts, and performance being assessed. Grab samples are collected at peak loading times. Influent samples include all incoming waste streams and exclude recycle flows. Effluent samples are collected downstream of the last treatment process and upstream of the receiving waters.
5. When the pollutants are monitored more frequently than required under the permit, the data is reported with the monthly monitoring reports and is included in appropriate calculations.
6. Monitoring instruments and devices used to fulfill requirements of the monitoring program are maintained and calibrated. Documentation of the maintenance and calibration is maintained.
7. Records of all monitoring information are maintained for at least three years.

## **X     Lift Station and Collection System Overflow Report**

## **X. Lift Station and Collection System Overflow Report**

The City's Infiltration/Inflow and Spill Prevention Program continues to address the objectives set out in WDR No. 00-044. The City has completed major improvements to its collection system over the last several years and has not had a sanitary sewer overflow caused by infiltration/inflow since January 2, 2002.

In 2002, the City lined approximately 7000 feet of large diameter sanitary (16 to 24 inch) located along the San Lorenzo River.

In 2003, two major improvements completed included the Grant Street Sewer project and the Clean Beach Sewer project. These projects cost approximately \$200,000 and \$800,000 respectively and improved over 6,000 linear feet of sewer pipe and reconstructed over 100 service laterals. The City also completed the cleaning of three sewer siphons at a cost of over \$100,000.

In 2004, the City televised the three sewer siphons and found that one had a separated joint that allowed continuous infiltration into the pipe at a rate of 50 gallons per minute. The leak has been sealed. The cost for this work was over \$100,000.

In 2005, the City cleaned and televised approximately 3,000 feet of 30 inch and 3,000 feet of 54 inch sewer main. This work restored full capacity in the trunk pipelines and showed that the 30 inch should be rehabilitated. This 30 inch pipeline was rehabilitated in 2006 at a cost of \$700,000.

The table below lists the projects that specifically address known overflow locations.

**Table 1: Overflows caused by rain events during 2002 or before where overflow has not occurred since City project was completed**

	Location	Address	Pipe Size	Project completed	Project Cost	Schedule & comments
1	Cleveland Ave.	315	6	Reduced I/I by repairing 5000 feet of main & fixing 102 private lower laterals.	\$425,000	Construction complete. No overflow since project completed in 2001.
2	Forest Avenue	158	6	Manhole at overflow location has been eliminated by replacing with pipe.	\$5,000	No overflows during 2001 or 2002. Still monitoring flow.
3a	California Street	Near Walnut	8	California Street sewer capacity has been increased. Project #1 above also reduced flow to this area.	\$750,000	Project was completed 12/01. There have been no overflows since project was completed.
3b	Walti St.	Laurel	6			
4c	Felix St.	Laurel	6			
5a	Carl Avenue	109 & 147	6	Increase size of Parkway pipe from 6 & 8 inch to 10 & 12 inch	\$300,000	Construction completed 8/00. No overflows since.
5b	Parkway	358	6			



6	San Lorenzo Blvd.	At Jessie Street	18	Completed lining of parallel pipelines in 1/03. Siphon repaired in 8/04.	\$600,000	No overflows in 2003 or 2004. Reduce additional upstream I/I next year.
7	Broadway	133	18	Lateral hooked up to main near River siphon.	\$100,000	Cleaning and repair of downstream siphon and has been completed.
8	1129 Mission	At Laurel	6	Cleared blockage. Upgraded pipe to 8 inch	\$60,000	Project completed 2/02 No overflows since.
9	Morrissey Blvd.	723	6, 8 & 10	Upgraded over 3500 feet of pipe in 2005	\$500,000	No overflows since project completed.
10	High Street	High-land		Replaced damaged pipes and pipe with root issues.	\$25,000	Completed in 2007. No overflows since project completed

**Table 2: Overflows caused by rain events in 2002 or before that have not reoccurred but the City has not completed improvement.**

	Location Address	Pipe Size	Project completed	Project Cost	Schedule & comments
1	Mott Avenue At East Cliff and Logan	10 & 12	Investigate downstream 12-inch liner pipe for upgrade.	Unknown	New overflow. Still unclear of cause.
2	322 Highland	6	Modify Manhole and TV		Overflow locations that only occurred on 1/2/2002
3	401 Dufour	6	Unknown. May need backflow devise for house.		Overflow locations that only occurred on 1/2/2002

#### SPILL REPORT SUMMARY:

The City of Santa Cruz has implemented an improved spill response as detailed in the "Sewer System Management Plan". This response includes vacuuming up the spill and collecting all the wash down water used to clean the spill area. In most cases the spill has no contact with a waterway. The City also has updated the report form and the handout given to home owners who have lateral overflows.

A summary of the last 12 months of sewage spills is presented in tabular form on the following pages of this section.

**Table 3: Summary of Sewage Spills within Santa Cruz City in 2007.**

House Number	Street	Date	City Main Spill (gallons)	Private Lateral Spill (gallons)	Weather	Notes
519	Seabright Ave	1/5/07		5	Clear	
1310	Mission Street	1/14/07		15	Clear	
615	Ocean Street	1/17/07		20	Clear	
201	West Avenue	2/14/07		5	Clear	



House Number	Street	Date:	City Main Spill (gallons)	Private Lateral Spill (gallons)	Weather	Notes
404	Soquel Avenue	2/15/07		10	Clear	
254	Alta Vista Ave	2/18/07	300		Clear	
200	Sheldon Ave	2/19/07	200		Clear	
130	Bixby Street	3/05/07		5	Clear	
216	Ocean Street	3/09/07		5	Clear	
327	Union Street	3/18/07	20		Clear	
158	Forrest Ave	3/20/07	100		Clear	
1011	Pacific Ave	3/25/07		25	Clear	
409	Second Street	4/01/07		5	Clear	
151	Pryce Street	4/03/07		10	Clear	
814	North Branciforte Ave	4/19/07		5	Clear	
352	Washington Street	4/20/07		10	Clear	
315	Cleveland Avenue	4/26/07		20	Clear	
145	Canfield Street	4/26/07		10	Clear	
1156	East Cliff Drive	4/28/07		10	Clear	
221	Riverside Drive	4/29/07	50		Clear	
126	Ocean Street	4/29/07		10	Clear	
591	Market Street	5/03/07	325		Clear	
400	Soquel Ave	5/04/07		1	Rain	
1141	East Cliff Drive	5/04/07	20		Clear	
910	Soquel Ave	6/05/07		5	Clear	
630	Water Street	6/13/07		1	Clear	
1220	Soquel Avenue	6/27/07		25	Clear	
404	Soquel Avenue	7/02/07		5	Clear	
435	Market Street	7/11/07		5	Clear	

822	Canfield Avenue	8/22/07		25	Clear	
145	Canfield Avenue	8/24/07		50	Clear	
744	River Street	9/02/07	400		Clear	
259	Water Street	9/09/07	450		Clear	
2050	Soquel Avenue	9/13/07		50	Clear	
111	Ocean Street	9/16/07		100	Clear	
316	Tanner Heights Drive	10/15/07	400		Clear	
HWY 1	¼ Mile north of Wilder Ranch State Park Entrance	11/05/07	3,000		Clear	Contractor
Total of 2007 spills (gallons)		5,265		427		
Number of 2007 spills		10		26		

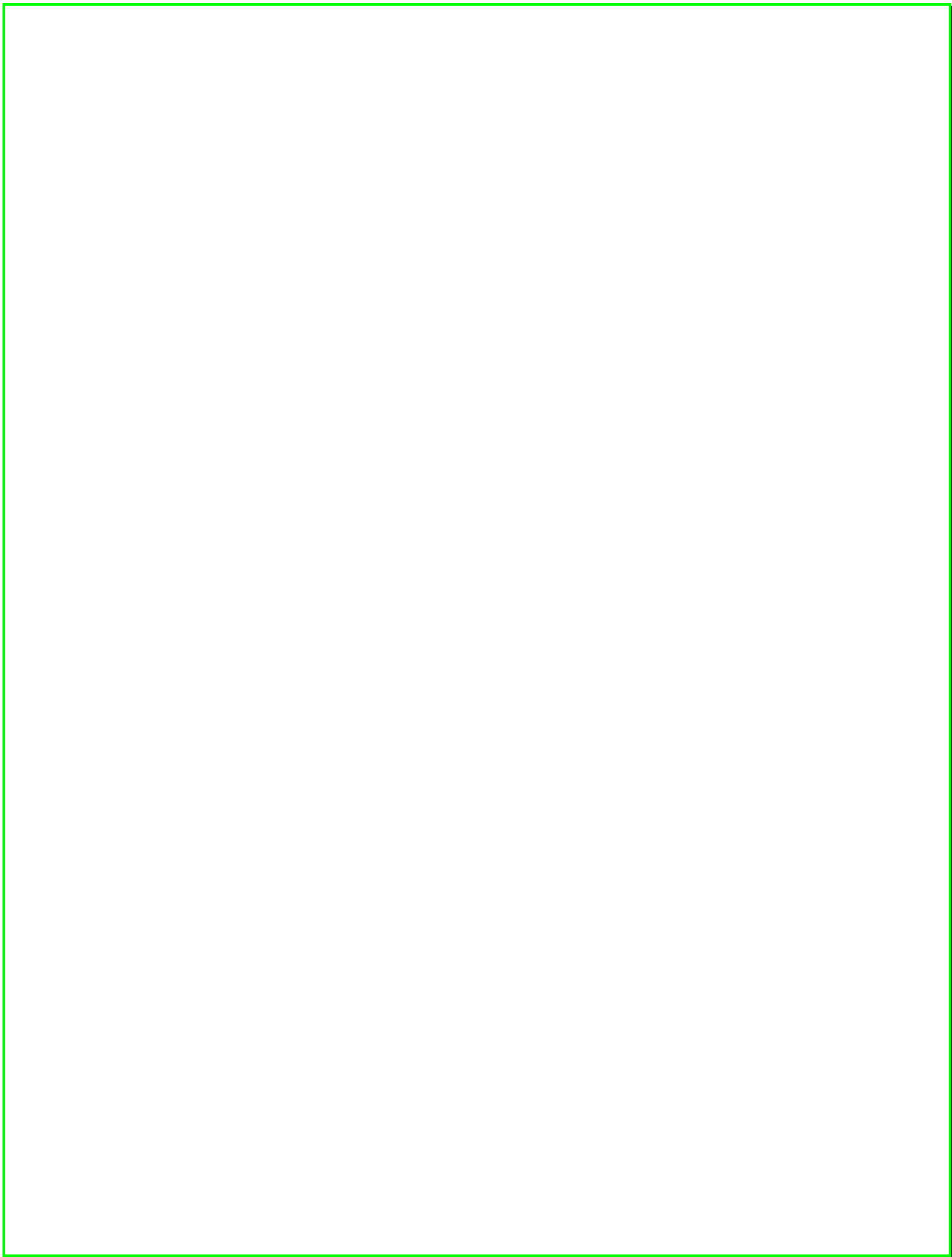
**CITY OF SANTA CRUZ WASTEWATER  
TREATMENT FACILITY**



**2008**

Wastewater Treatment Facility  
ANNUAL REPORT





# **CITY OF SANTA CRUZ POTW ANNUAL REPORT**

**2008**

## **CONTENTS**

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Section II	Summary of Monitoring Data – Tables
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## **Section I. Introduction**

This document is the Annual Report of the water pollution control activities of the City of Santa Cruz Wastewater Treatment Facility for 2008. It is submitted in accordance with the Standard Provisions and Reporting Requirements of the National Pollutant Discharge Elimination System Permits (NPDES), General Reporting Requirements, § 16.C.

The City of Santa Cruz treats sewage from domestic and industrial sources at the Wastewater Treatment Facility near Neary Lagoon and discharges its effluent into the Pacific Ocean under the NPDES permit No CA0048194. The area served includes the Cities of Santa Cruz and Capitola, the areas of Live Oak, Soquel, and Aptos, and the University of California at Santa Cruz. The City also provides capacity for the City of Scotts Valley to discharge its wastewater treatment system's effluent into the Pacific Ocean. However all data contained within this report relate only to the effluent of the City's wastewater treatment plant.

The estimated population served is approximately 125,000 people.

Although the City continuously upgrades the treatment facility to accommodate population growth, and to respond to regulatory and environmental challenges, the most recent structural upgrades were the addition of a trickling filter/solids contact secondary plant in 1998, the rebuilding of the primary treatment plant completed in 1991, and the commissioning of a new ocean outfall in 1989.

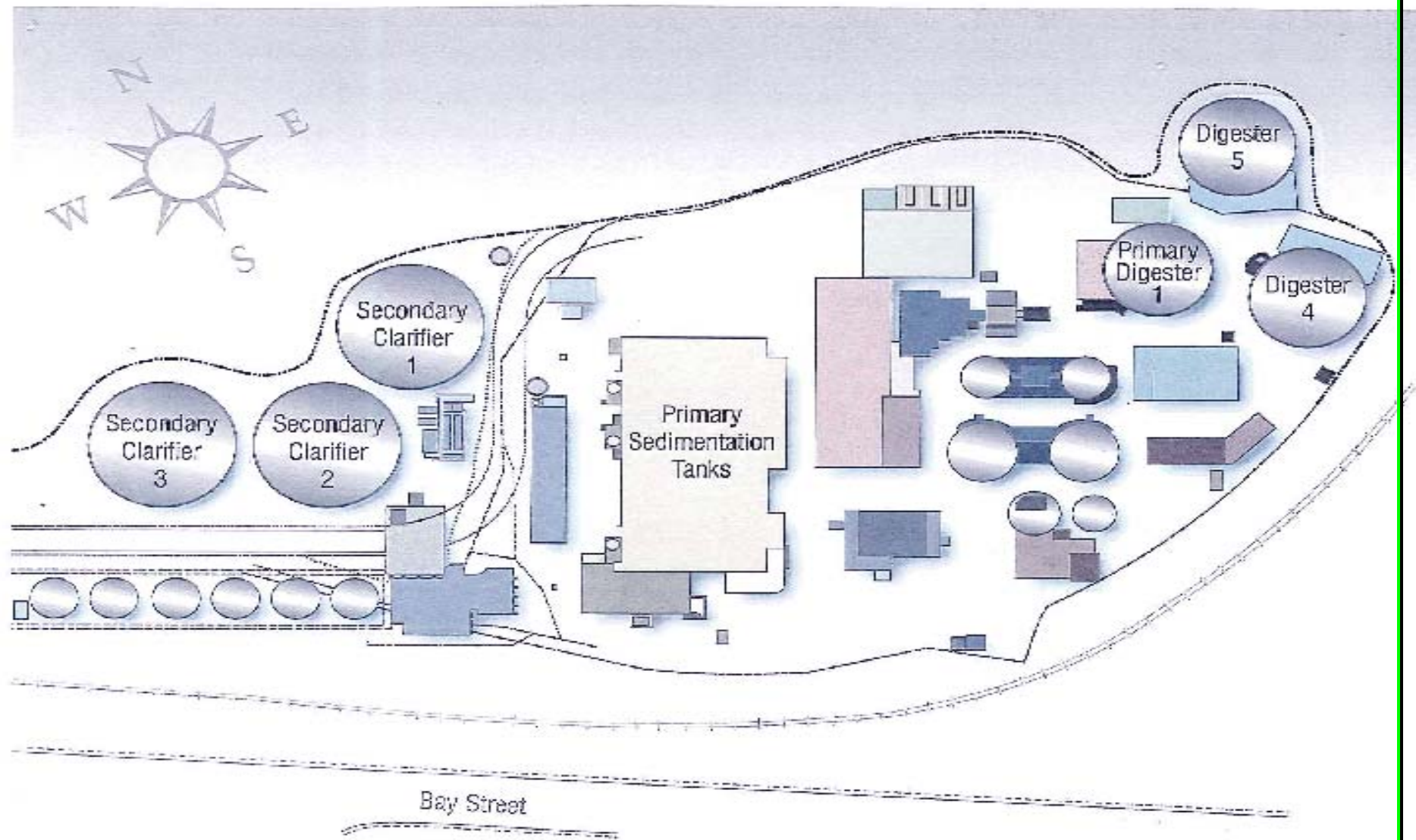
The design treatment capacity of the Plant is 81 million gallons per day (MGD). The NPDES mandatory limit for the average dry weather (ADW) flow is 17 MGD.

Plant performance highlights and removal efficiencies for conventional pollutants for 2008 were as follows:

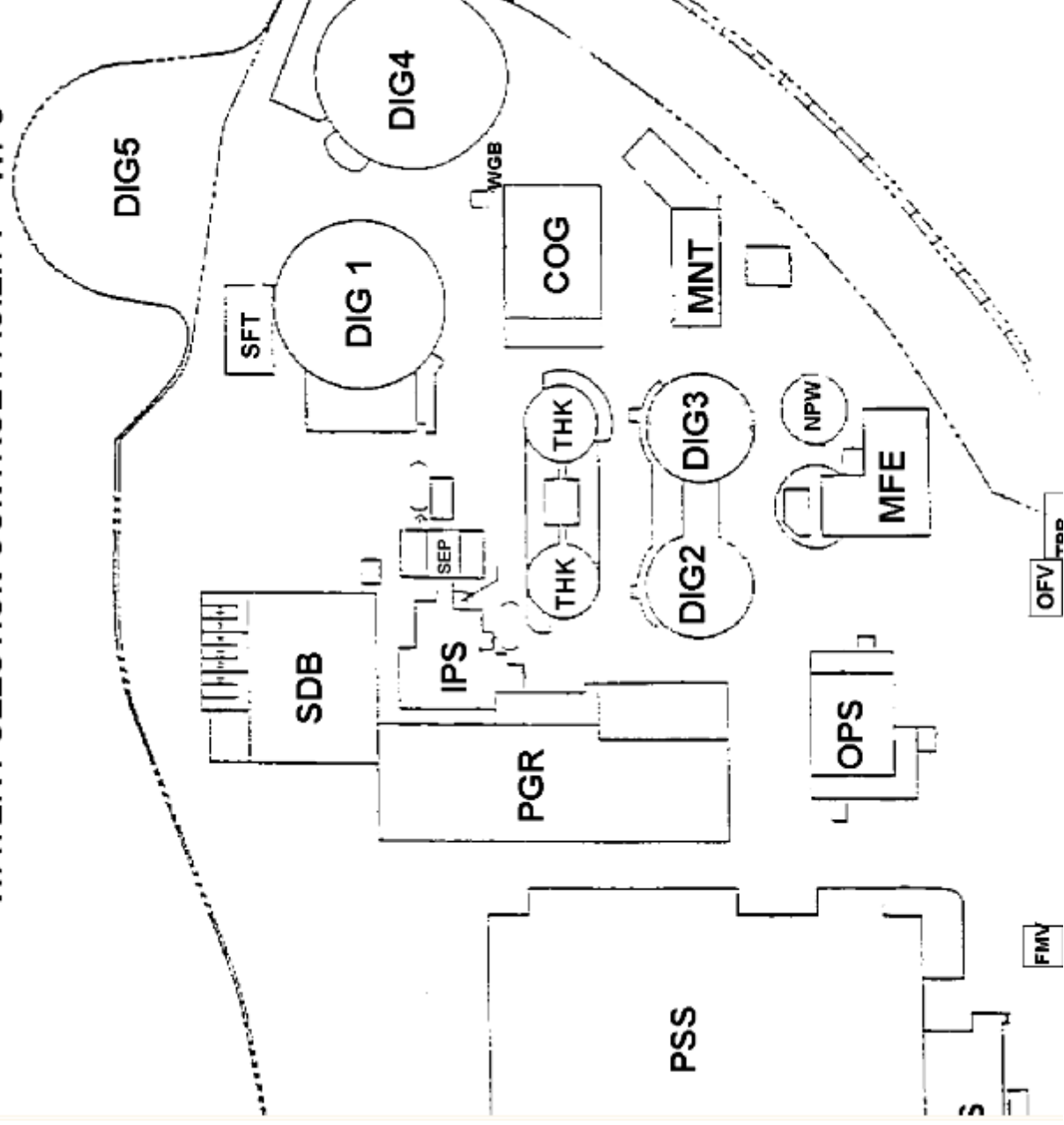
- More than three billion gallons of treated wastewater effluent was discharged from the Plant at an average daily rate of 8.7 MGD; Average Dry Weather Flow was 7.7 MGD (mid-April through mid-October, 2008);
- TSS removal averaged 98.4% throughout the year;
- TOC (Total Organic Carbon) removal averaged 87.1% throughout the year, equivalent to the removal of Biochemical Oxygen Demand (BOD) removal at an average rate of 91.2%;
- Commonly Analyzed Metals (CAM) removal varied from a high of approximately 87% for Iron to 0% for Boron removal; and
- Compounds of emerging concern (CEC) included in the California Ocean Plan Table B in the influent and effluent as measured by integrative sampling techniques, were too low and could not be assessed for removal efficiency in 2008.

Following this page are:

1. An aerial view of the current facility and its major treatment processes;
2. A schematic of the Primary treatment processes of the facility; and
3. A screenshot of the Supervisory Control And Data Acquisition (SCADA) view of the treatment processes.

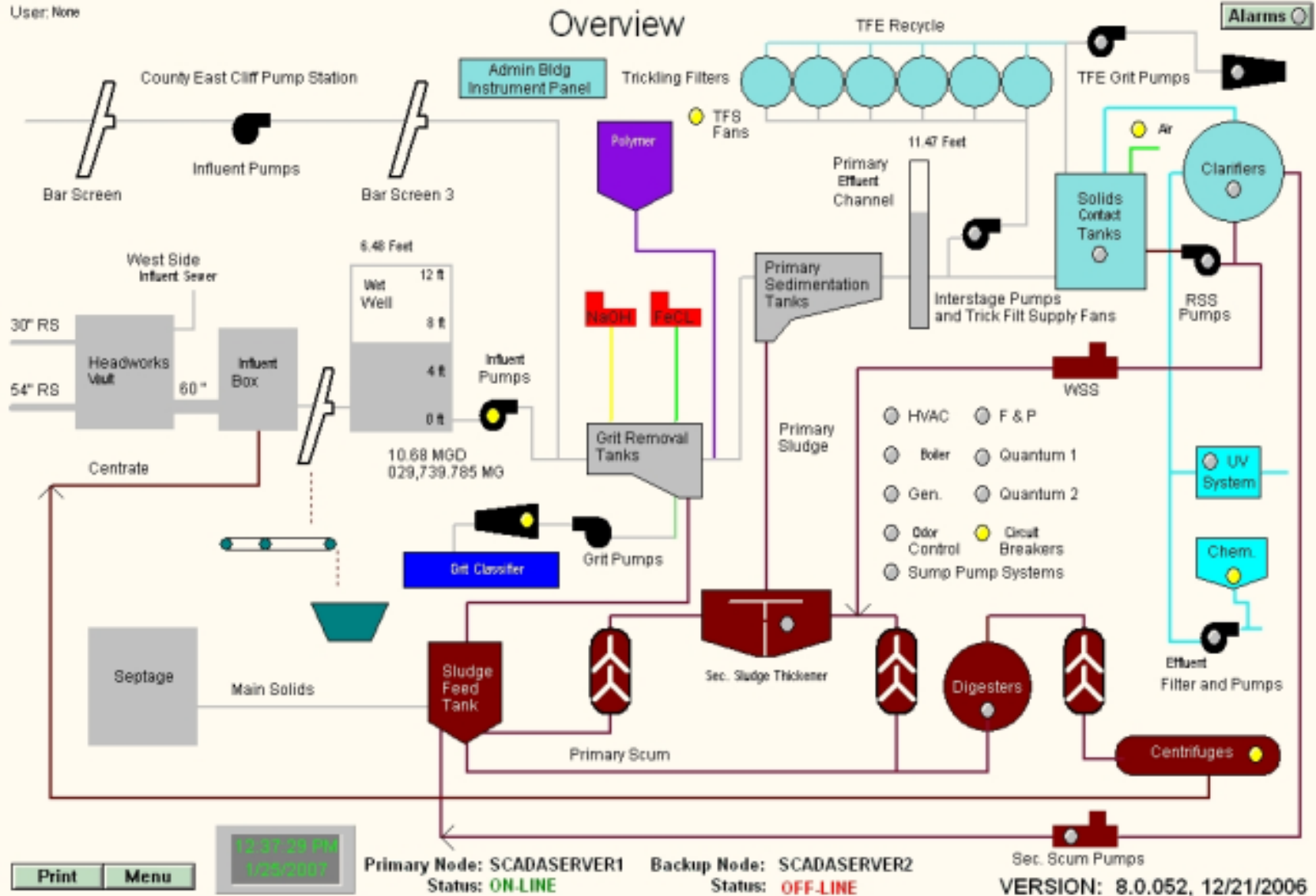


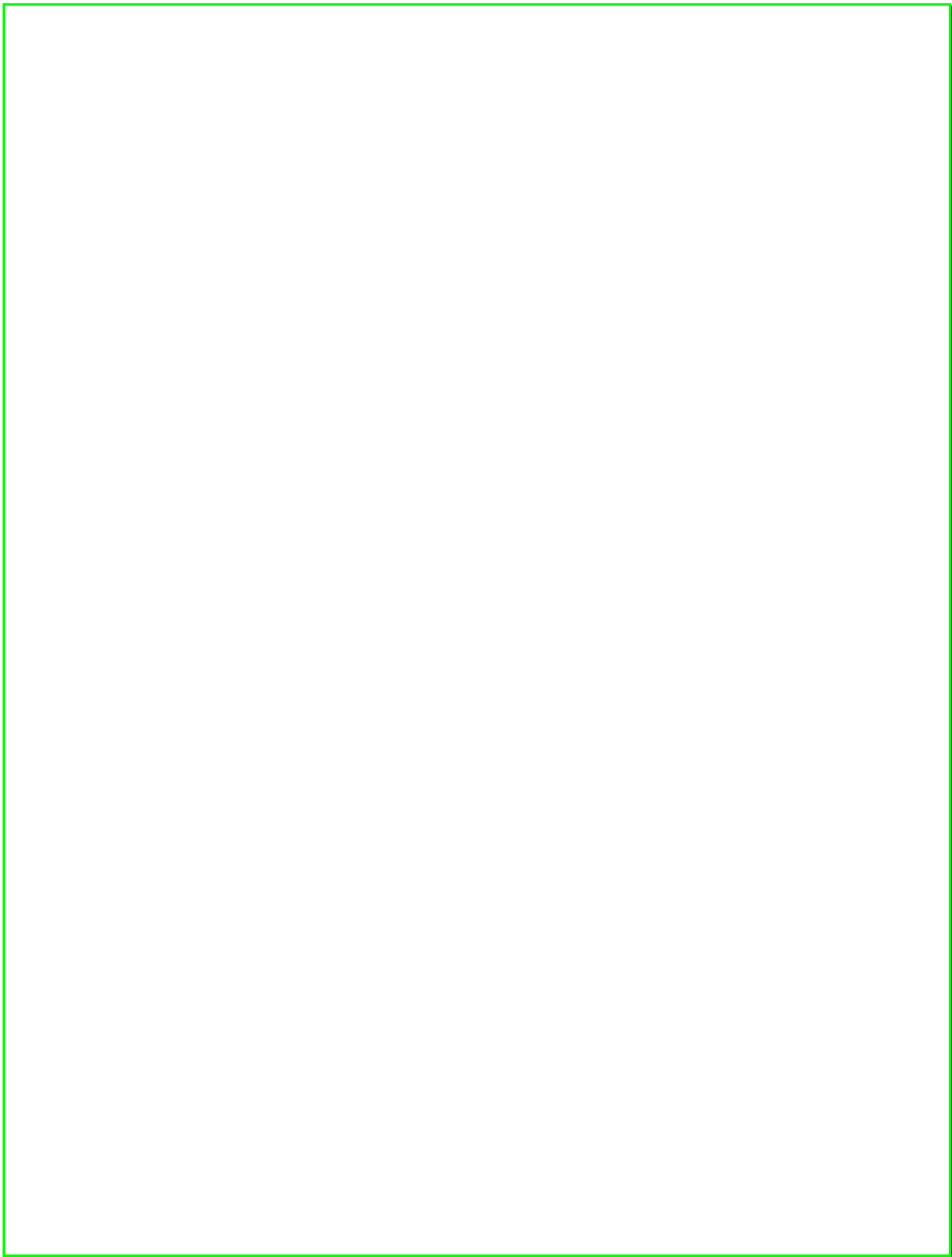
# WATER POLLUTION CONTROL FACILITY = WPC



User: None

## Overview







## **Section II. Summary of Monitoring Data – Tables**

This section contains summary tables of compliance monitoring data compiled by the City's laboratory, contract laboratories, and treatment staff for compliance monitoring purposes in 2008.

Outlined below is the sequence of the presentation:

1. Monthly averages for Plant performance data on conventional and priority pollutants;
2. Averages for Plant performance data on priority pollutants, metals and trace organics derived from Semi-Annual Effluent and Annual Influent requirements of the NPDES permit CA0048194;
3. Biosolids monitoring data for metals and select pollutants; and
4. Nearshore bacteria monitoring at 30 foot contour depth.

## Section II: Tables of Plant performance on Priority Pollutants

Monthly Averages	Influent Flow	Influent Instantaneous Maximum Flow	City Influent Flow	County Influent Flow	Effluent Flow	Effluent Instantaneous Maximum Flow
	MGD	MG	MG	MG	MGD	MG
January	14.7	29.4	8.7	6.0	14.4	29.5
February	13.0	25.2	7.7	5.3	12.6	25.3
March	9.4	22.8	5.0	4.3	8.3	16.9
April	9.1	23.7	4.8	4.3	7.8	17.1
May	9.3	22.3	5.1	4.2	7.8	17.3
June	8.8	20.9	4.5	4.3	7.5	16.3
July	8.8	20.7	4.4	4.4	7.6	15.0
August	8.8	19.7	4.5	4.3	7.5	13.8
September	8.6	19.2	4.4	4.2	7.7	14.0
October	9.1	20.6	5.0	4.2	8.3	16.7
November	8.8	21.2	4.6	4.3	7.6	17.3
December	8.4	22.1	4.1	4.3	7.0	16.6
Average	9.7	22.3	5.2	4.5	8.7	18.0
Minimum	8.4	19.2	4.1	4.2	7.0	13.8
Maximum	14.7	29.4	8.7	6.0	14.4	29.5
NPDES (Dry Weather Flow Limit)					≤ 17.0	

Section II: Tables of Plant performance on Priority Pollutants

Monthly Averages	Influent TSS	Effluent TSS	Effluent TSS	Effluent TSS	TSS Removal
	mg/l	mg/l	lb/day	kg/day	%
January	210.6	6.5	906.5	411.2	96.2%
February	268.0	6.0	675.6	306.4	97.1%
March	323.3	5.5	384.6	174.5	98.2%
April	377.9	3.9	254.8	115.6	98.9%
May	391.4	4.2	280.1	127.0	98.9%
June	395.5	4.0	247.8	112.4	99.0%
July	400.6	3.6	231.4	105.0	99.1%
August	368.6	3.8	240.6	109.1	99.0%
September	425.5	4.4	285.5	129.5	99.0%
October	450.1	4.9	343.1	155.6	98.9%
November	335.3	5.9	370.0	167.8	98.2%
December	316.4	5.8	336.6	152.7	98.2%
Average	355.3	4.9	379.7	172.2	98.4%
Minimum	210.6	3.6	231.4	105.0	96.2%
Maximum	450.1	6.5	906.5	411.2	99.1%
NPDES Limit 1 (Monthly Average)		≤ 30			≥ 85%
NPDES Limit 2 (Weekly Average)		≤ 45			

## Section II: Tables of Plant performance on Priority Pollutants

Monthly Averages	Influent TOC	Effluent TOC	WWTF TOC Removal
	mg/l	mg/l	%
January	74.5	12.6	78.8%
February	80.3	13.5	82.7%
March	116.1	13.6	88.1%
April	98.5	12.4	87.6%
May	104.4	12.8	87.6%
June	110.3	12.9	87.6%
July	109.9	13.0	87.9%
August	113.9	12.3	88.7%
September	109.8	12.7	88.4%
October	135.8	13.4	90.2%
November	123.1	12.9	89.5%
December	116.7	13.3	87.9%
Average	107.8	13.0	87.1%
Minimum	74.5	12.3	78.8%
Maximum	135.8	13.6	90.2%
NPDES Effluent TOC Monthly Average Limit		≤ 15.5	
NPDES Effluent TOC Weekly Average Limit		≤ 25	
NPDES (Monthly TOC Removal Efficiency %)			≥ 70%

Section II: Tables of Plant performance on Priority Pollutants

Monthly Averages	Influent BOD (Calculated)	Effluent BOD (Calculated)	Calculated BOD% Removal
	mg/l	mg/l	%
January	169.2	19.7	85.9%
February	183.3	22.0	87.8%
March	269.8	22.3	91.7%
April	227.3	19.4	91.8%
May	241.5	20.2	91.5%
June	255.6	20.7	91.4%
July	254.7	20.7	91.7%
August	264.3	19.1	92.4%
September	254.4	20.0	92.2%
October	317.4	21.7	93.3%
November	286.6	20.5	92.8%
December	271.3	21.6	91.4%
Average	249.6	20.7	91.2%
Minimum	169.2	19.1	85.9%
Maximum	317.4	22.3	93.3%
<b>NPDES Limit 1 (30-Day Average)</b>		<b>25</b>	<b>85%</b>
<b>NPDES Limit 2 (Weekly Average)</b>		<b>40</b>	

Section II: Tables of Plant performance on Priority Pollutants

Monthly Averages	Effluent Acute Toxicity (Quarterly)	Effluent Chronic Toxicity (Quarterly)
	TUa	TUc
January		
February		
March	1.3	2.0
April		
May	3.0	16.0
June		
July		
August		
September	1.3	4.0
October		
November		
December	1.4	8.0
Average	1.8	7.5
Minimum	1.3	2.0
Maximum	3.0	16.0
<b>NPDES Effluent Toxicity Maximum Limits</b>	<b>4.47</b>	<b>140</b>



## Section II: Tables of Plant performance on Priority Pollutants

Months	Influent pH	Effluent pH	Influent Settleable Solids	Effluent Settleable Solids	Influent Oil and Grease Monthly	Effluent Oil and Grease Monthly
	SI	SI	ml/l	ml/l	mg/l	mg/l
January	7.2	7.0	10.2	<0.05	26.0	<5
February	7.2	7.0	10.8	<0.05	28.9	<5
March	7.3	7.1	14.4	<0.05	46.2	<5
April	7.4	7.2	19.0	<0.05	26.6	<5
May	7.3	7.2	16.9	<0.05	44.7	<5
June	7.3	7.1	18.3	<0.05	34.4	<5
July	7.3	7.1	14.8	<0.05	38.3	<5
August	7.3	7.1	18.5	<0.05	46.3	<5
September	7.3	7.1	17.8	<0.1	40.0	<5
October	7.3	7.1	19.0	0.07	35.3	<5
November	7.4	7.0	18.9	0.06	43.5	<5
December	7.4	7.0	14.9	<0.05	44.0	<5
Average	7.3	7.1	16.1	<0.06	37.9	<5
Minimum	7.2	7.0	10.2	<0.05	26.0	<5
Maximum	7.4	7.2	19.0	0.07	46.3	<5
NPDES Limit 1		6.0		1.0		25
NPDES Limit 2		9.0		1.5		40
NPDES Limit 3				3.0		75

## Section II: Tables of Plant performance on Priority Pollutants

Monthly Averages	Daily Maximum Chlorine Residual	Instantaneous Maximum Chlorine Residual	Effluent Turbidity (Monthly)	Effluent Temperature
	ug/1	ug/1	NTU	°C
January	47.3	378.2	3.7	17.6
February	15.2	84.1	3.7	17.8
March	0.00	0.33	3.7	20.1
April	8.6	102.7	4.1	21.2
May	26.6	139.4	3.9	22.7
June	2.4	141.3	3.6	24.2
July	12.5	195.5	2.1	25.1
August	0.00	21.8	2.1	25.4
September	4.5	95.8	2.7	24.4
October	14.9	140.9	2.8	24.0
November	2.5	53.1	3.7	22.4
December	1.5	7.9	3.1	20.4
Average	11.3	113.4	3.3	22.1
Minimum	0.0	0.3	2.1	17.6
Maximum	47.3	378.2	4.1	25.4
<b>NPDES Monthly Average Limit</b>	<b>280</b>	<b>8,400</b>	<b>75</b>	
<b>NPDES Weekly Average Limit</b>	<b>8,400</b>		<b>100</b>	
<b>NPDES Daily Maximum Limit</b>	<b>1,120</b>		<b>225</b>	

Section II: Tables of Plant performance on Priority Pollutants

Monthly Averages	Sludge Quantity	Sludge Reuse	Sludge Disposed	Effluent Nitrate	Effluent Silicate
	Tons	Tons	mg/l	mg/l	mg/l
January	34.6	34.6	0.0	4.4	28.0
February	36.2	36.2	0.0	1.1	33.0
March	35.0	35.0	0.0	5.2	33.0
April	37.1	37.1	0.0	5.5	33.0
May	38.6	38.6	0.0	0.3	32.0
June	43.3	43.3	0.0	1.2	35.0
July	40.5	40.5	0.0	1.7	37.0
August	39.7	39.7	0.0	5.0	35.0
September	39.0	39.0	0.0	11.0	35.0
October	43.6	43.6	0.0	1.0	36.0
November	38.9	38.9	0.0	4.8	0.2
December	37.8	37.8	0.0	8.6	33.0
Average	38.7	38.7	0.0	4.1	30.9
Minimum	34.6	34.6	0.0	0.3	0.2
Maximum	43.6	43.6	0.0	11.0	37.0

## Section II: Tables of Plant performance on Priority Pollutants

Monthly Averages	Effluent Ammonia (NH <sub>3</sub> -N)	Effluent Phenols (Quarterly)	Urea	Effluent Total Sulfides (Quarterly)
	ug/l	mg/l	mg/l	mg/l
January	39,600.0	<0.2	0.11	<1.0
February	24,900.0	<0.001	0.08	<0.01
March	28,477.8		0.10	
April	32,660.0	<0.001	0.10	<0.1
May	34,533.3		0.13	
June	28,800.0		0.10	
July	30,033.3	<0.1	0.08	<0.1
August	26,242.9		0.10	
September	8,250.0		0.13	
October	41,200.0	<1.0	0.21	0.5
November	23,200.0		0.09	
December	21,480.0		0.11	
Average	28,281.4	<0.1	0.11	<0.1
Minimum	8,250.0	<0.001	0.08	<0.01
Maximum	41,200.0	<0.2	0.21	0.5
Ocean Plan Limit 1	84,000.0	4,200		
Ocean Plan Limit 2	336,000.0	16,800		
Ocean Plan Limit 3	840,000.0	420,000		

Section II: Plant performance data – Trace Organics; CECs; Metals and Biosolids

Sample Composite date: 09/09/08	
Pollutants	Effluent (ug/L)
Acenaphthene	<2.0
Acenaphthylene	<2.0
Anthracene	<2.0
Benzo(a)anthracene	<2.0
Benzo(b)fluoranthene	<2.0
Benzo(k)fluoranthene	<2.0
Benzo(g,h,i)perylene	<2.0
Benzo(a)pyrene	<2.0
Chrysene	<2.0
Dibenzo(a,h)anthracene	<2.0
Fluoranthene	<2.0
Fluorene	<2.0
Indeno (1,2,3-cd) pyrene	<2.0
1-Methylnaphthalene	0.011
2-Methylnaphthalene	0.025
Naphthalene	<0.10
Phenanthrene	0.06
Pyrene	0.16

Section II: Plant performance data – Trace Organics; CECs; Metals and Biosolids

Pesticides and PBDEs from Integrative High Volume Water Sampling				
	Day Zero/Dialysis Blank	Net Influent	Net Effluent	Percent Removal
	ng/ml (ppb in solution)	ng/ml (ppb in solution)	ng/ml (ppb in solution)	%
Aldrin	ND	ND	ND	
Chlordane, cis	ND	4.61	8.89	
Chlordane, trans	ND	4.2	10.4	
Chlorpyrifos	ND	14.4	64.1	
Dacthal	ND	ND	ND	
DDD, o,p'	ND	0.587	0.243	59%
DDD, p,p'	ND	0.629	0.551	12%
DDE, o,p'	ND	ND	0.168	
DDE, p,p'	ND	3.05	1.15	62%
DDMU, p,p'	0.001	ND	ND	
DDT, o,p'	ND	ND	ND	
DDT, p,p'	0.062	0.913	1.575	
Diazinon	ND	ND	ND	
Dieldrin	ND	5.44	5.36	1%
Endosulfan I	ND	ND	ND	



Section II: Plant performance data – Trace Organics; CECs; Metals and Biosolids

<b>Endosulfan II</b>	ND	ND	ND	
<b>Endosulfan sulfate</b>	ND	ND	ND	
<b>Endrin</b>	ND	ND	ND	
<b>HCH, alpha</b>	0.132	0.295	ND	
<b>HCH, beta</b>	0.22	ND	ND	
<b>HCH, gamma</b>	1.11	ND	ND	
<b>Heptachlor</b>	0.031	0.473	1.196	
<b>Heptachlor epoxide</b>	1.02	ND	1.1	
<b>Hexachlorobenzene</b>	0.293	0.837	0.58	31%
<b>Methoxychlor</b>	ND	1.52	6.9	
<b>Mirex</b>	ND	ND	ND	
<b>Nonachlor, cis</b>	ND	ND	1.49	
<b>nonachlor, trans</b>	ND	2.63	7.57	
<b>Oxadiazon</b>	ND	ND	ND	
<b>Oxychlordan</b>	ND	ND	2.13	
<b>Parathion, ethyl</b>	ND	ND	ND	
<b>Parathion, methyl</b>	ND	ND	ND	
<b>Tedion</b>	ND	ND	ND	
<b>PBDE 17</b>	ND	1.26	5.58	

## Section II: Plant performance data – Trace Organics; CECs; Metals and Biosolids

<b>PBDE 28</b>	0.268	4.002	15.43	
<b>PBDE 47</b>	<b>2.52</b>	118.48	134	
<b>PBDE 66</b>	0.506	1.904	2.24	
<b>PBDE 85</b>	0.888	2.132	0.44	79%
<b>PBDE 99</b>	1.18	63.52	22.2	65%
<b>PBDE 100</b>	0.68	11.42	3.7	68%

Key: ND= Not Detected

## Section II: Plant performance data – Trace Organics; CECs; Metals and Biosolids

Metals/Inorganics	Influent	Effluent	Removal Efficiency (%)
Aluminum (ug/L)	2,700	<50	>98% (estimate)
Antimony (ug/L)	1.1	<0.5	>55% (estimate)
Arsenic (ug/L)	2.6	1.6	38%
Beryllium (ug/L)	ND	ND	
Boron (ug/L)	310	310	0.0%
Cadmium (ug/L)	<10	<10	
Chromium (ug/L)	40	32	20%
Copper (ug/L)	55	<10	>84% (estimate)
Iron (ug/L)	1,030	132	87%
Lead (ug/L)	36	30	17%
Mercury (ug/L)	0.048	0.016	67%
Molybdenum (ug/L)	3.0	3.8	
Nickel (ug/L)	<20	2.7	
Potassium (ug/L)	21,000	28,000	
Selenium (ug/L)	1.2	<0.5	>59% (estimate)
Silver (ug/L)	<4	<4	
Thallium (ug/L)	ND	ND	
Vanadium (ug/L)	2.5	1.2	52%
Zinc (ug/L)	173	30	83%
Total Phosphorus (mg/L)	6.1	2.6	57%
Kjeldahl Nitrogen (TKN) (mg/L)	43	22	49%
Nitrate (mg/L)	<1.0	5.0	
Phenol (mg/L)	0.021	<0.001	>99 (estimate)
Silicates (mg/L)	40	35	21.3

Section II: Plant performance data – Trace Organics; CECs; Metals and Biosolids

Dry Weather Semi-Annual Effluent –TCDD and equivalents Sample Composite dates: 08-19-2008 through 09-19-2008			
Compound	Influent (pg/L)	Effluent (pg/L)	Method Detection Limit (pg/L)
2,3,7,8-TCDD	< 0.87	< 0.87	0.383
1,2,3,7,8-PeCDD	< 2.47	< 2.39	1.89
1,2,3,4,7,8-HxCDD	< 2.36	< 1.51	1.27
1,2,3,6,7,8-HxCDD	< 3.33	< 2.19	1.59
1,2,3,7,8,9-HxCDD	< 3.16	< 2.04	1.65
1,2,3,4,6,7,8-HpCDD	7.30	7.89	2.05
OCDD	26.0	35.6	2.39
2,3,7,8-TCDF	< 1.19	< 1.43	0.644
1,2,3,7,8-PeCDF	< 1.33	< 1.22	0.731
2,3,4,7,8-PeCDF	< 1.78	< 1.48	0.681
1,2,3,4,7,8-HxCDF	< 0.33	< 0.54	1.28
1,2,3,6,7,8-HxCDF	< 0.354	< 0.59	1.22
2,3,4,6,7,8-HxCDF	< 0.321	< 0.53	1.49
1,2,3J,8,9-HxCDF	< 0.486	< 0.32	1.48
1,2,3,4,6,7,8-HpCDF	2.63	3.37	1.17
1,2,3,4,7,8,9:HpCDF	< 0.46	< 0.53	1.06
OCDF	3.81	6.43	2.85

## Section II: Plant performance data – Trace Organics; CECs; Metals and Biosolids

Biosolids Quality Monitoring Program 2008							
Analyte	8-Feb-08	15-Apr-08	2-Jun-08	18-Aug-08	6-Oct-08	2-Dec-08	Average
Antimony (mg/kg)	0.8	0.9	0.6	2.4	0.6	0.5	1.0
Arsenic (mg/kg)	3.3	3.8	2.5	10.0	3.3	2.8	4.3
Asbestos (mg/kg)	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Barium (mg/kg)	120	140	90	360	92	82	147
Beryllium (mg/kg)	<0.5	<0.5	<0.5	<2.2	<0.5	<0.5	<0.5
Cadmium (mg/kg)	0.7	0.87	0.6	2.4	0.6	0.5	0.9
Chromium (mg/kg)	8.8	9.1	6.7	30.0	9.1	6.7	11.7
Cobalt (mg/kg)	1.3	1.6	1.1	3.4	2.1	1.6	1.9
Copper (mg/kg)	140	180	150	580	140	130	220
Fluoride (mg/kg)	<1.0	9.5	11.0	29.0	<5.0	17	17
Lead (mg/kg)	6.1	7.4	4.7	21.0	5.1	4.2	8.1
Mercury (mg/kg)	0.26	0.34	0.26	1.30	0.22	0.2	0.4
Moisture (%)	75.7%	76.2%	76.8%	77.3%	76.9%	77.5%	76.7%
Molybdenum (mg/kg)	2.6	3.0	2.4	9.5	2.5	2.2	3.7
Nickel (mg/kg)	5.9	3.0	3.9	16.0	4.4	4.2	6.2
Nitrate-N (mg/kg)	<2.0	4.6	<2.0	<2.0	<2.0	<2	4.6
Nitrogen-Organic (mg/kg)	9,600	9,300	9,100	8,900	8,700	8,500	9,017
Nitrogen-Total Kjeldahl (mg/kg)	12,000	12,000	11,000	11,000	11,000	11,000	11,333
Nitrogen-Ammonia (mg/kg)	2,100	2,400	2,300	2,200	2,200	2,300	2,250
Selenium (mg/kg)	2.1	2.2	1.7	6.4	1.7	1.5	2.6
Silver (mg/kg)	5.1	5.5	4.4	15.0	2.8	2.7	5.9
Thallium (mg/kg)	<0.5	<0.5	<0.5	<2.2	<0.5	<0.5	<0.5
Vanadium (mg/kg)	6.9	5.9	3.7	18.0	5	4	7
Zinc (mg/kg)	320	390	260	1,100	280	220	428

## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: January

DATE: 01-09-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:05	N 36°56'48.4" W 122°01'44.4"	29	21	50
Sea State	NW swell 4-8 ft	RW(C)-30'	9:10	N 36°56'58.0" W 122°02'25.9"	29	15	83
Weather	rain likely	RW(E)-30'	9:15	N 36°56'48.9" W 122°02'49.5"	22	3	39
Wind	S @ 3 kts	RW(F)-30'	9:20	N 36°56'46.5" W 122°03'31.3"	38	20	56
Water Temp.	51.9°F	RW(G)-30'	9:25	N 36°56'44.1" W 122°03'57.2"	37	16	56
Low Tide	3.25 ft @ 04:05	RW(H)-30'	9:35	N 36°56'55.1" W 122°04'58.1"	24	26	52
High Tide	5.76 ft @ 09:59	RW(I)-30'	9:40	N 36°56'58.3" W 122°05'17.2"	33	11	47
Rain in past 24 hr	7.40 inches	RW(Leak)@7 0'	10:00	N 36°56'20.3" W 122°03'35.0"	38	8	54

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 01-15-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	8:55	N 36°56'48.6" W 122°01'44.9"	8	1	2
Sea State	W swell 1-4 ft	RW(C)-30'	9:00	N 36°56'57.8" W 122°02'24.8"	6	<1	2
Weather	clear	RW(E)-30'	9:05	N 36°56'49.0" W 122°02'49.7"	5	1	3
Wind	calm	RW(F)-30'	9:10	N 36°56'46.5" W 122°03'31.8"	17	4	18
Water Temp.	52.6°F	RW(G)-30'	9:15	N 36°56'44.3" W 122°03'57.0"	10	4	15
Low Tide	1.31 ft @ 09:55	RW(H)-30'	9:30	N 36°56'55.4" W 122°05'00.7"	18	10	31
High Tide	5.36 ft @ 03:07	RW(I)-30'	9:35	N 36°56'58.2" W 122°05'17.1"	22	18	21
Rain in past 24 hr	1.57 inches	RW(Leak)@7 0'	9:50	N 36°56'19.8" W 122°03'35.0"	2	1	2



## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: February

DATE: 02-05-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	8:55	N 36°56'48.4" W 122°01'45.1"	52	19	18
Sea State	NW swell 8-12 ft	RW(C)-30'	9:00	N 36°56'58.0" W 122°02'25.1"	31	11	4
Weather	clear and cold	RW(E)-30'	9:05	N 36°56'49.4" W 122°02'49.0"	14	1	5
Wind	SE @ 5 kts	RW(F)-30'	9:10	N 36°56'46.2" W 122°03'31.9"	13	6	6
Water Temp.	50.8°F	RW(G)-30'	9:15	N 36°56'44.4" W 122°03'57.4"	22	6	7
Low Tide	-0.67 ft @ 15:37	RW(H)-30'	9:30	N 36°56'55.5" W 122°04'59.8"	24	6	4
High Tide	5.69 ft @ 08:27	RW(I)-30'	9:35	N 36°56'58.0" W 122°05'17.0"	36	9	9
Rain in past 24 hr	1.73 inches	RW(Leak)@7 0'	9:55	N 36°56'20.3" W 122°03'34.9"	32	1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 02-12-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:00	N 36°56'48.3" W 122°01'45.4"	13	5	3
Sea State	NW swell 3-6 ft	RW(C)-30'	9:05	N 36°56'57.9" W 122°02'25.3"	13	2	10
Weather	clear	RW(E)-30'	9:10	N 36°56'48.9" W 122°02'48.4"	11	9	4
Wind	SW @ 5 kts	RW(F)-30'	9:15	N 36°56'46.4" W 122°03'31.9"	8	3	4
Water Temp.	52.5°F	RW(G)-30'	9:20	N 36°56'44.2" W 122°03'57.3"	7	1	3
Low Tide	0.84 ft @ 08:08	RW(H)-30'	9:40	N 36°56'55.5" W 122°04'59.6"	11	4	5
High Tide	3.44 ft @ 14:29	RW(I)-30'	9:45	N 36°56'58.3" W 122°05'16.8"	2	1	2
Rain in past 24 hr	0.0 inches	RW(Leak)@7 0'	10:05	N 36°56'19.6" W 122°03'34.2"	11	<1	4

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 02-19-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	10:05	N 36°56'48.9" W 122°01'46.2"	21	9	4
Sea State	NW swell 2-5 ft	RW(C)-30'	10:00	N 36°56'57.8" W 122°02'26.3"	11	2	4
Weather	raining	RW(E)-30'	9:55	N 36°56'49.9" W 122°02'49.9"	13	5	<1
Wind	E @ 2 kts	RW(F)-30'	9:50	N 36°56'46.7" W 122°03'31.5"	5	3	1
Water Temp.	51.1°F	RW(G)-30'	9:45	N 36°56'44.6" W 122°03'58.2"	11	2	2
Low Tide	-0.91 ft @ 15:27	RW(H)-30'	9:35	N 36°56'55.4" W 122°04'59.4"	27	11	13
High Tide	5.86 ft @ 08:25	RW(I)-30'	9:30	N 36°56'58.1" W 122°05'16.8"	25	13	16
Rain in past 24 hr	0.76 inches	RW(Leak)@7 0'	9:15	N 36°56'18.9" W 122°03'35.1"	5	6	1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 02-26-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	8:55	N 36°56'48.6" W 122°01'44.5"	34	5	7
Sea State	W swell 3-6 ft	RW(C)-30'	9:00	N 36°56'58.3" W 122°02'25.3"	22	7	6
Weather	partly cloudy	RW(E)-30'	9:05	N 36°56'48.9" W 122°02'51.8"	22	6	8
Wind	NE @ 10 kts	RW(F)-30'	9:10	N 36°56'46.4" W 122°03'31.5"	24	27	53
Water Temp.	52.7°F	RW(G)-30'	9:15	N 36°56'44.1" W 122°03'57.7"	69	30	63
Low Tide	1.11 ft @ 07:52	RW(H)-30'	9:25	N 36°56'55.7" W 122°04'59.7"	16	6	2
High Tide	3.14 ft @ 14:16	RW(I)-30'	9:30	N 36°56'58.1" W 122°05'18.1"	15	2	4
Rain in past 24 hr	2.7 inches	RW(Leak)@70'	9:45	N 36°56'20.1" W 122°03'34.8"	42	4	11

## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: March.

DATE: 03-04-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	8:55	N 36°56'48.5" W 122°01'45.0"	18	<1	1
Sea State	W swell 3-7 ft	RW(C)-30'	9:00	N 36°56'58.1" W 122°02'25.6"	9	2	1
Weather	clear	RW(E)-30'	9:05	N 36°56'49.3" W 122°02'49.2"	10	<1	<1
Wind	S @ 8 kts	RW(F)-30'	9:10	N 36°56'46.4" W 122°03'31.8"	12	<1	3
Water Temp.	51.7°F	RW(G)-30'	9:15	N 36°56'44.0" W 122°03'58.0"	3	<1	<1
Low Tide	-0.34 ft @ 14:29	RW(H)-30'	9:30	N 36°56'55.7" W 122°04'59.8"	2	<1	1
High Tide	5.12 ft @ 07:21	RW(I)-30'	9:35	N 36°56'58.0" W 122°05'17.2"	6	<1	<1
Rain in past 24 hr	0.06 inches	RW(Leak)@70'	9:55	N 36°56'20.0" W 122°03'35.5"	8	1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 03-11-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:00	N 36°56'48.3" W 122°01'45.4"	3	3	1
Sea State	N swell 4-7 ft	RW(C)-30'	9:05	N 36°56'57.9" W 122°02'25.4"	4	<1	<1
Weather	partly cloudy	RW(E)-30'	9:10	N 36°56'49.2" W 122°02'49.3"	3	<1	<1
Wind	variable and light ~2 kts	RW(F)-30'	9:15	N 36°56'46.5" W 122°03'32.0"	8	1	<1
Water Temp.	54.2°F	RW(G)-30'	9:20	N 36°56'44.3" W 122°03'57.6"	3	3	<1
Low Tide	-0.12 ft @ 07:44	RW(H)-30'	9:30	N 36°56'55.8" W 122°04'59.7"	7	3	1
High Tide	3.77 ft @ 14:33	RW(I)-30'	9:35	N 36°56'57.7" W 122°05'17.2"	8	3	6
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	9:55	N 36°56'19.9" W 122°03'35.2"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 03-18-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:10	N 36°56'48.2" W 122°01'45.4"	5	<1	1
Sea State	NW swell 5-9 ft	RW(C)-30'	9:15	N 36°56'58.0" W 122°02'25.4"	11	1	1
Weather	foggy	RW(E)-30'	9:20	N 36°56'49.2" W 122°02'49.5"	<1	<1	<1
Wind	WSW @ 5 kts	RW(F)-30'	9:25	N 36°56'46.3" W 122°03'32.0"	8	3	1
Water Temp.	51.8°F	RW(G)-30'	9:30	N 36°56'43.4" W 122°03'59.4"	8	3	2
Low Tide	-0.40 ft @ 15:21	RW(H)-30'	9:45	N 36°56'55.7" W 122°04'59.9"	2	3	<1
High Tide	5.09 ft @ 08:39	RW(I)-30'	9:50	N 36°56'58.1" W 122°05'17.4"	2	<1	1
Rain in past 24 hr	0.25 inches	RW(Leak)@ 70'	10:10	N 36°56'20.2" W 122°03'34.9"	7	1	2



## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 03-25-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:00	N 36°56'48.3" W 122°01'45.4"	16	4	<1
Sea State	NW swell 4-7 ft	RW(C)-30'	9:05	N 36°56'57.8" W 122°02'25.9"	5	<1	<1
Weather	patchy fog	RW(E)-30'	9:10	N 36°56'49.2" W 122°02'49.3"	5	<1	<1
Wind	E @ 4 kts	RW(F)-30'	9:15	N 36°56'46.1" W 122°03'31.7"	2	1	<1
Water Temp.	54.0°F	RW(G)-30'	9:20	N 36°56'44.0" W 122°03'56.9"	4	<1	1
Low Tide	0.31 ft @ 07:20	RW(H)-30'	9:40	N 36°56'55.0" W 122°04'59.5"	14	1	1
High Tide	3.40 ft @ 14:19	RW(I)-30'	9:45	N 36°56'57.9" W 122°05'17.4"	22	4	1
Rain in past 24 hr	0.25 inches	RW(Leak)@ 70'	10:05	N 36°56'19.4" W 122°03'33.4"	<1	<1	<1

Section II: Monitoring Data – Nearshore bacterial monitoring data					
Sampling Month: April					
LOCATIONS	OBSERVATIONS	Sampling		Sampling Time (AM)	GPS Enterococcus
		Total Coliform	Fecal Coliform		
Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	
OBSERVATIONS	Total Coliform	CFU / 100-ml Fecal Coliform	Enterococcus		
Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	

Section II: Monitoring Data – Nearshore bacterial monitoring data					
Sampling Month: April					
LOCATIONS	OBSERVATIONS	Sampling		Sampling Time (AM)	GPS Enterococcus
		Total Coliform	Fecal Coliform		
Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	
OBSERVATIONS	Total Coliform	CFU / 100-ml Fecal Coliform	Enterococcus		
Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	

Section II: Monitoring Data – Nearshore bacterial monitoring data					
Sampling Month: April					
LOCATIONS	OBSERVATIONS	Sampling		Sampling Time (AM)	GPS Enterococcus
		Total Coliform	Fecal Coliform		
Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	
OBSERVATIONS	Total Coliform	CFU / 100-ml Fecal Coliform	Enterococcus		
Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	Weather and small crafts advisories prevented sampling this week	

## Section II: Monitoring Data – Nearshore bacterial monitoring data

GPS			CFU / 100-ml	
OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus	
36o56'48.6" W 122o01'45.3"	kelp; seals on rock	13	<1	<1
36o56'57.9" W 122o02'25.3"	no comments	7	<1	<1
36o56'49.4" W 122o02'48.7"	no comments	8	<1	<1
36o56'45.8" W 122o03'33.1"	kelp & otters; 1 boat	2	<1	<1
36o56'44.4" W 122o03'56.8"	in kelp	7	<1	1
36o56'55.9" W 122o04'59.7"	in kelp	3	<1	<1
36o56'58.0" W 122o05'17.4"	kelp with birds	6	<1	1
36o56'20.0" W 122o03'34.0"	some birds in area	10	<1	<1

GPS			CFU / 100-ml	
OBSERVATIONS	Total Coliform	Fecal Coliform	Enterococcus	
36o56'48.5" W 122o01'44.3"	boat,dolphin,birds,seals	21	<1	<1
36o56'57.9" W 122o02'25.5"	kelp	19	<1	1
36o56'49.4" W 122o02'48.9"	in kelp w/group of whales	10	<1	1
36o56'46.2" W 122o03'31.5"	kelp, some whales	9	<1	1
36o56'44.4" W 122o03'57.1"	kelp, some whales	4	<1	<1
36o56'55.4" W 122o04'59.9"	kelp, whales, 1 seal	3	<1	1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

36°56'58.0" W 122°05'17.1" some whales & birds 7 <1 1  
 36°56'20.0" W 122°03'34.2" no comments 52 1 <1

Sampling Month: May

DATE: 05-06-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:05	N 36°56'48.5" W 122°01'45.0"	10	1	<1
Sea State	NW swell 4-7 ft	RW(C)-30'	9:10	N 36°56'58.1" W 122°02'25.3"	7	2	5
Weather	overcast	RW(E)-30'	9:15	N 36°56'49.3" W 122°02'49.0"	1	1	<1
Wind	WSW @ 4 kts	RW(F)-30'	9:20	N 36°56'46.3" W 122°03'32.4"	21	3	<1
Water Temp.	53.8°F	RW(G)-30'	9:25	N 36°56'43.7" W 122°03'58.6"	10	4	<1
Low Tide	-1.77 ft @ 05:35	RW(H)-30'	9:40	N 36°56'54.8" W 122°04'56.6"	5	4	<1
High Tide	4.41 ft @ 12:59	RW(I)-30'	9:45	N 36°56'58.0" W 122°05'17.4"	5	2	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:05	N 36°56'19.9" W 122°03'34.9"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 05-13-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:05	N 36°56'48.6" W 122°01'44.7"	7	2	<1
Sea State	NW swell 4-8 ft	RW(C)-30'	9:10	N 36°56'57.9" W 122°02'25.1"	2	1	<1
Weather	clear	RW(E)-30'	9:15	N 36°56'49.4" W 122°02'48.8"	2	1	<1
Wind	SW @ 4 kts	RW(F)-30'	9:20	N 36°56'45.8" W 122°03'30.7"	1	1	<1
Water Temp.	53.1°F	RW(G)-30'	9:25	N 36°56'42.0" W 122°03'58.8"	<1	<1	<1
Low Tide	0.37 ft @ 12:21	RW(H)-30'	9:40	N 36°56'53.7" W 122°04'53.8"	1	<1	<1
High Tide	3.70 ft @ 05:55	RW(I)-30'	9:45	N 36°56'58.3" W 122°05'16.8"	2	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:05	N 36°56'19.8" W 122°03'34.3"	2	1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 05-20-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:20	N 36°56'48.6" W 122°01'44.9"	2	<1	<1
Sea State	mixed swell 2-3 ft	RW(C)-30'	9:25	N 36°56'58.1" W 122°02'25.4"	10	3	<1
Weather	cloudy	RW(E)-30'	9:30	N 36°56'49.0" W 122°02'49.3"	11	<1	<1
Wind	SE @ 4 kts	RW(F)-30'	9:35	N 36°56'46.3" W 122°03'32.6"	8	1	<1
Water Temp.	55.6°F	RW(G)-30'	9:40	N 36°56'45.3" W 122°03'59.8"	2	1	<1
Low Tide	-0.71 ft @ 05:28	RW(H)-30'	9:55	N 36°56'54.9" W 122°04'52.9"	3	<1	<1
High Tide	3.76 ft @ 13:18	RW(I)-30'	10:00	N 36°56'58.5" W 122°05'18.9"	4	1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:20	N 36°56'20.2" W 122°03'34.2"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 05-28-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	10:00	N 36°56'48.4" W 122°01'45.1"	3	2	<1
Sea State	mixed swell 2-3 ft	RW(C)-30'	9:55	N 36°56'57.8" W 122°02'25.1"	<1	<1	<1
Weather	partly cloudy	RW(E)-30'	9:50	N 36°56'49.5" W 122°02'48.6"	<1	<1	<1
Wind	SW @ 4 kts	RW(F)-30'	9:45	N 36°56'46.1" W 122°03'30.9"	1	1	<1
Water Temp.	53.1°F	RW(G)-30'	9:40	N 36°56'44.5" W 122°03'58.6"	1	<1	<1
Low Tide	0.19 ft @ 10:04	RW(H)-30'	9:30	N 36°56'54.7" W 122°04'56.5"	1	<1	<1
High Tide	3.86 ft @ 03:08	RW(I)-30'	9:25	N 36°56'58.2" W 122°05'16.9"	<1	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	9:10	N 36°56'19.9" W 122°03'35.5"	<1	<1	<1



## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: June

DATE: 06-03-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:10	N 36°56'48.6" W 122°01'44.9"	15	1	<1
Sea State	NW swell @ 3-4 ft	RW(C)-30'	9:15	N 36°56'57.7" W 122°02'24.9"	3	3	<1
Weather	cloudy	RW(E)-30'	9:20	N 36°56'49.1" W 122°02'49.0"	<1	<1	<1
Wind	SW @ 5 kts	RW(F)-30'	9:25	N 36°56'45.6" W 122°03'31.3"	4	<1	<1
Water Temp.	53.1°F	RW(G)-30'	9:30	N 36°56'44.7" W 122°03'44.2"	2	1	<1
Low Tide	-1.88 ft @ 04:37	RW(H)-30'	9:40	N 36°56'54.0" W 122°04'55.9"	8	<1	<1
High Tide	4.16 ft @ 12:11	RW(I)-30'	9:45	N 36°56'58.1" W 122°05'18.2"	<1	1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:00	N 36°56'19.5" W 122°03'33.9"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 06-10-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:40	N 36°56'48.6" W 122°01'45.4"	<1	<1	<1
Sea State	NW swell @ 3-4 ft	RW(C)-30'	9:35	N 36°56'58.0" W 122°02'25.2"	5	3	1
Weather	cloudy	RW(E)-30'	9:30	N 36°56'49.1" W 122°02'49.0"	1	1	<1
Wind	SW @ 5 kts	RW(F)-30'	9:25	N 36°56'46.4" W 122°03'29.9"	1	<1	<1
Water Temp.	53.1°F	RW(G)-30'	9:20	N 36°56'44.3" W 122°03'57.5"	1	<1	<1
Low Tide	-1.88 ft @ 04:37	RW(H)-30'	9:10	N 36°56'55.7" W 122°04'59.3"	<1	<1	<1
High Tide	4.16 ft @ 12:11	RW(I)-30'	9:05	N 36°56'58.3" W 122°05'16.8"	<1	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	8:50	N 36°56'20.5" W 122°03'35.3"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 06-17-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:10	N 36°56'48.3" W 122°01'43.9"	3	5	1
Sea State	NW swell 4-7 ft	RW(C)-30'	9:15	N 36°56'57.9" W 122°02'24.9"	8	1	<1
Weather	foggy	RW(E)-30'	9:20	N 36°56'48.2" W 122°02'49.7"	4	<1	<1
Wind	SW @ 5 kts	RW(F)-30'	9:25	N 36°56'45.9" W 122°03'31.7"	12	<1	<1
Water Temp.	55.6°F	RW(G)-30'	9:30	N 36°56'44.2" W 122°04'02.4"	13	1	<1
Low Tide	-0.66 ft @ 04:41	RW(H)-30'	9:40	N 36°56'53.6" W 122°04'54.7"	5	<1	<1
High Tide	3.95 ft @ 12:36	RW(I)-30'	9:45	N 36°56'58.0" W 122°05'17.6"	2	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:00	N 36°56'19.6" W 122°03'34.7"	1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 06-24-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N ----> S	RW(A)-30'	9:00	N 36°56'48.4" W 122°01'45.2"	5	2	<1
Sea State	NW swell 5-6 feet	RW(C)-30'	9:05	N 36°56'57.8" W 122°02'25.2"	6	3	<1
Weather	foggy	RW(E)-30'	9:10	N 36°56'49.1" W 122°02'49.4"	4	<1	<1
Wind	SE @ 4 knots	RW(F)-30'	9:15	N 36°56'46.0" W 122°03'32.1"	2	1	<1
Water Temp.	55.6°F	RW(G)-30'	9:20	N 36°56'43.3" W 122°03'52.3"	2	<1	<1
Low Tide	0.04 ft @ 08:29	RW(H)-30'	9:35	N 36°56'53.4" W 122°04'55.5"	4	<1	<1
High Tide	4.41 ft @ 15:59	RW(I)-30'	9:40	N 36°56'58.2" W 122°05'17.3"	1	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	9:55	N 36°56'19.8" W 122°03'34.6"	1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: July

DATE: 07-01-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.4" W 122°01'45.0"	4	<1	<1
Sea State	NW swell @ 2 ft	RW(C)-30'	9:15	N 36°56'57.9" W 122°02'25.1"	12	2	<1
Weather	wet fog	RW(E)-30'	9:20	N 36°56'49.1" W 122°02'49.0"	1	<1	<1
Wind	SE @ 4 kts	RW(F)-30'	9:25	N 36°56'46.1" W 122°03'32.2"	41	1	<1
Water Temp.	55.8°F	RW(G)-30'	9:30	N 36°56'42.1" W 122°03'56.6"	1	<1	<1
Low Tide	-1.49 ft @ 03:40	RW(H)-30'	9:40	N 36°56'54.1" W 122°04'55.5"	2	<1	<1
High Tide	4.14 ft @ 11:20	RW(I)-30'	9:45	N 36°56'58.1" W 122°05'17.2"	1	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:00	N 36°56'19.8" W 122°03'34.4"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 07-08-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:05	N 36°56'48.5" W 122°01'44.9"	4	<1	<1
Sea State	NW swell 3-8 ft	RW(C)-30'	9:10	N 36°56'58.1" W 122°02'25.3"	<1	<1	<1
Weather	hazy sun	RW(E)-30'	9:15	N 36°56'49.2" W 122°02'48.9"	2	<1	<1
Wind	S/SE @ 2 kts	RW(F)-30'	9:20	N 36°56'46.6" W 122°03'33.8"	5	<1	<1
Water Temp.	57.6°F	RW(G)-30'	9:25	N 36°56'42.8" W 122°03'53.3"	2	<1	<1
Low Tide	0.47 ft @ 08:56	RW(H)-30'	9:35	N 36°56'56.5" W 122°05'01.3"	<1	<1	<1
High Tide	4.87 ft @ 16:05	RW(I)-30'	9:40	N 36°56'58.8" W 122°05'18.0"	<1	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	9:55	N 36°56'20.2" W 122°03'35.1"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 07-14-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:05	N 36°56'48.0" W 122°01'44.6"	12	<1	1
Sea State	mixed swell: NW & S @ 2 ft	RW(C)-30'	9:10	N 36°56'57.8" W 122°02'25.1"	98	41	<1
Weather	foggy	RW(E)-30'	9:15	N 36°56'49.4" W 122°02'49.4"	22	15	<1
Wind	SW @ 2 kts	RW(F)-30'	9:20	N 36°56'45.7" W 122°03'31.5"	8	<1	<1
Water Temp.	58.3°F	RW(G)-30'	9:25	N 36°56'42.9" W 122°03'52.5"	2	1	<1
Low Tide	-0.06 ft @ 03:10	RW(H)-30'	9:35	N 36°56'56.0" W 122°05'00.9"	4	2	<1
High Tide	3.96 ft @ 11:08	RW(I)-30'	9:40	N 36°56'58.1" W 122°05'17.3"	2	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	9:55	N 36°56'19.6" W 122°03'35.0"	2	<1	<1



## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 07-22-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:05	N 36°56'48.3" W 122°01'44.9"	2	<1	<1
Sea State	mixed swell NW & SW @ 2-3 ft	RW(C)-30'	9:10	N 36°56'57.9" W 122°02'25.3"	8	1	<1
Weather	foggy	RW(E)-30'	9:15	N 36°56'49.2" W 122°02'49.1"	3	<1	<1
Wind	SW @ 4 kts	RW(F)-30'	9:20	N 36°56'46.2" W 122°03'32.2"	1	<1	<1
Water Temp.	58.6°F	RW(G)-30'	9:25	N 36°56'44.5" W 122°03'59.0"	5	2	<1
Low Tide	0.08 ft @ 07:15	RW(H)-30'	9:35	N 36°56'57.1" W 122°04'59.1"	4	1	<1
High Tide	4.66 ft @ 14:27	RW(I)-30'	9:40	N 36°56'58.4" W 122°05'17.1"	4	1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	9:55	N 36°56'20.0" W 122°03'34.9"	1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 07-29-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.6" W 122°01'44.9"	4	<1	<1
Sea State	NW swell 1-4 ft	RW(C)-30'	9:15	N 36°56'58.1" W 122°02'25.3"	5	1	<1
Weather	foggy	RW(E)-30'	9:20	N 36°56'49.0" W 122°02'49.1"	4	1	<1
Wind	SW @ 3 kts	RW(F)-30'	9:25	N 36°56'46.3" W 122°03'32.0"	4	<1	<1
Water Temp.	59.0°F	RW(G)-30'	9:30	N 36°56'44.4" W 122°03'57.2"	5	<1	<1
Low Tide	-0.85 ft @ 02:40	RW(H)-30'	9:40	N 36°56'57.0" W 122°05'00.3"	4	2	<1
High Tide	4.14 ft @ 10:24	RW(I)-30'	9:45	N 36°56'58.2" W 122°05'17.1"	1	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:00	N 36°56'20.3" W 122°03'33.9"	3	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: August

DATE: 08-05-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:30	N 36°56'48.6" W 122°01'44.8"	6	<1	<1
Sea State	NW swell 2 ft	RW(C)-30'	9:35	N 36°56'58.3" W 122°02'25.3"	4	<1	<1
Weather	foggy	RW(E)-30'	9:40	N 36°56'49.4" W 122°02'49.0"	3	<1	<1
Wind	W @ 5 kts	RW(F)-30'	9:45	N 36°56'45.8" W 122°03'30.6"	4	<1	<1
Water Temp.	57.4°F	RW(G)-30'	9:50	N 36°56'44.2" W 122°03'56.8"	<1	<1	1
Low Tide	0.59 ft @ 07:31	RW(H)-30'	10:00	N 36°56'56.2" W 122°05'01.0"	2	<1	<1
High Tide	4.92 ft @ 14:24	RW(I)-30'	10:05	N 36°56'58.0" W 122°05'17.0"	2	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:25	N 36°56'19.9" W 122°03'35.3"	1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 08-12-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.5" W 122°01'45.1"	<1	<1	<1
Sea State	NW swell 2-6 ft	RW(C)-30'	9:15	N 36°56'57.8" W 122°02'25.0"	4	1	1
Weather	foggy	RW(E)-30'	9:20	N 36°56'49.0" W 122°02'49.6"	3	<1	<1
Wind	S / SW @ 2 knots	RW(F)-30'	9:25	N 36°56'46.1" W 122°03'31.9"	6	4	1
Water Temp.	58.5°F	RW(G)-30'	9:30	N 36°56'44.3" W 122°03'56.6"	2	2	<1
Low Tide	0.26 ft @ 02:41	RW(H)-30'	9:40	N 36°56'54.9" W 122°04'57.7"	<1	4	12
High Tide	4.11 ft @ 10:39	RW(I)-30'	9:45	N 36°56'58.2" W 122°05'16.8"	7	1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:00	N 36°56'20.1" W 122°03'35.6"	4	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 08-19-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.4" W 122°01'45.2"	<1	<1	<1
Sea State	NW swell @ 2-4 ft	RW(C)-30'	9:15	N 36°56'57.9" W 122°02'25.0"	1	<1	<1
Weather	foggy	RW(E)-30'	9:20	N 36°56'49.5" W 122°02'47.9"	13	2	<1
Wind	calm	RW(F)-30'	9:25	N 36°56'45.8" W 122°03'31.0"	3	2	<1
Water Temp.	58.5°F	RW(G)-30'	9:30	N 36°56'42.2" W 122°03'55.9"	<1	<1	<1
Low Tide	0.34 ft @ 06:10	RW(H)-30'	9:40	N 36°56'56.2" W 122°05'01.8"	16	14	10
High Tide	4.90 ft @ 13:01	RW(I)-30'	9:45	N 36°56'58.4" W 122°05'17.0"	<1	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:05	N 36°56'19.2" W 122°03'34.3"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 08-25-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.3" W 122°01'45.0"	1	<1	<1
Sea State	NW swell 2-4 ft	RW(C)-30'	9:15	N 36°56'58.1" W 122°02'25.3"	5	<1	<1
Weather	foggy	RW(E)-30'	9:20	N 36°56'49.1" W 122°02'49.1"	<1	<1	<1
Wind	calm	RW(F)-30'	9:25	N 36°56'46.7" W 122°03'32.5"	2	<1	<1
Water Temp.	60.8°F	RW(G)-30'	9:30	N 36°56'44.3" W 122°03'57.1"	2	<1	<1
Low Tide	3.52 ft @ 11:41	RW(H)-30'	9:40	N 36°56'56.9" W 122°05'00.3"	<1	<1	<1
High Tide	3.85 ft @ 08:35	RW(I)-30'	9:45	N 36°56'58.2" W 122°05'17.4"	2	1	1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:05	N 36°56'19.6" W 122°03'35.2"	2	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: September

DATE: 09-02-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.4" W 122°01'45.1"	7	1	1
Sea State	NW swell 3-5 ft	RW(C)-30'	9:15	N 36°56'57.9" W 122°02'25.3"	9	<1	<1
Weather	clear	RW(E)-30'	9:20	N 36°56'49.2" W 122°02'48.9"	6	2	<1
Wind	WSW @ 5 knots	RW(F)-30'	9:25	N 36°56'46.1" W 122°03'31.9"	5	<1	<1
Water Temp.	59.4°F	RW(G)-30'	9:30	N 36°56'42.2" W 122°03'57.6"	<1	<1	<1
Low Tide	0.92 ft @ 06:17	RW(H)-30'	9:40	N 36°56'54.9" W 122°04'56.8"	1	<1	<1
High Tide	5.02 ft @ 12:52	RW(I)-30'	9:45	N 36°56'58.1" W 122°05'17.0"	1	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:05	N 36°56'19.9" W 122°03'34.3"	2	<1	<1



## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 09-09-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	10:15	N 36°56'48.2" W 122°01'44.1"	9	2	1
Sea State	NW swell 2-4 ft	RW(C)-30'	10:10	N 36°56'58.0" W 122°02'24.2"	17	1	3
Weather	foggy	RW(E)-30'	10:05	N 36°56'49.6" W 122°02'47.9"	14	5	1
Wind	SW @ 3 kts	RW(F)-30'	10:00	N 36°56'46.8" W 122°03'30.2"	15	1	<1
Water Temp.	60.3°F	RW(G)-30'	9:55	N 36°56'44.3" W 122°03'56.8"	8	3	3
Low Tide	3.50 ft @ 13:15	RW(H)-30'	9:45	N 36°56'55.9" W 122°04'58.8"	2	1	<1
High Tide	4.08 ft @ 09:34	RW(I)-30'	9:40	N 36°56'58.1" W 122°05'17.9"	3	1	1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	9:25	N 36°56'21.0" W 122°03'34.0"	1	<1	1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 09-16-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:50	N 36°56'48.2" W 122°01'44.4"	2	<1	2
Sea State	W swell 2-3 feet	RW(C)-30'	9:45	N 36°56'58.5" W 122°02'24.8"	<1	1	<1
Weather	fog	RW(E)-30'	9:40	N 36°56'49.5" W 122°02'48.5"	<1	<1	<1
Wind	W @ 5 knots	RW(F)-30'	9:35	N 36°56'46.8" W 122°03'31.3"	10	7	<1
Water Temp.	59.0°F	RW(G)-30'	9:30	N 36°56'44.5" W 122°03'58.3"	9	8	<1
Low Tide	0.76 ft @ 05:04	RW(H)-30'	9:20	N 36°56'56.0" W 122°04'58.2"	3	<1	<1
High Tide	5.19 ft @ 11:39	RW(I)-30'	9:15	N 36°56'57.8" W 122°05'17.2"	45	12	7
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	9:00	N 36°56'20.4" W 122°03'33.1"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 09-23-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:05	N 36°56'48.5" W 122°01'44.8"	1	<1	<1
Sea State	NW swell 2-5 feet	RW(C)-30'	9:10	N 36°56'58.0" W 122°02'25.1"	4	<1	<1
Weather	clear	RW(E)-30'	9:15	N 36°56'49.1" W 122°02'49.2"	4	<1	<1
Wind	calm	RW(F)-30'	9:20	N 36°56'46.3" W 122°03'31.9"	1	1	<1
Water Temp.	59.6°F	RW(G)-30'	9:25	N 36°56'44.2" W 122°03'57.4"	3	<1	1
Low Tide	3.35 ft @ 12:10	RW(H)-30'	9:35	N 36°56'55.9" W 122°05'01.5"	1	<1	<1
High Tide	4.24 ft @ 08:01	RW(I)-30'	9:40	N 36°56'57.9" W 122°05'17.0"	3	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:00	N 36°56'20.9" W 122°03'34.9"	2	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 09-30-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:05	N 36°56'48.5" W 122°01'45.4"	4	<1	<1
Sea State	W swell 2 feet	RW(C)-30'	9:10	N 36°56'58.2" W 122°02'25.3"	1	<1	<1
Weather	foggy	RW(E)-30'	9:15	N 36°56'49.0" W 122°02'50.0"	1	<1	<1
Wind	SE @ 3 knots	RW(F)-30'	9:20	N 36°56'45.7" W 122°03'31.2"	7	1	<1
Water Temp.	59.0°F	RW(G)-30'	9:25	N 36°56'44.1" W 122°03'57.4"	1	2	<1
Low Tide	1.40 ft @ 05:09	RW(H)-30'	9:35	N 36°56'55.9" W 122°04'58.7"	2	<1	1
High Tide	5.19 ft @ 11:31	RW(I)-30'	9:40	N 36°56'58.2" W 122°05'18.2"	6	<1	1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:00	N 36°56'19.7" W 122°03'34.8"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: October

DATE: 10-07-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	10:20	N 36°56'48.7" W 122°01'45.4"	10	5	<1
Sea State	mixed swell: SW @ 2 ft & NW @ 4 ft	RW(C)-30'	10:15	N 36°56'56.2" W 122°02'27.2"	<1	<1	<1
Weather	clear	RW(E)-30'	10:10	N 36°56'48.3" W 122°02'50.6"	3	3	<1
Wind	S @ 2 knots	RW(F)-30'	10:05	N 36°56'45.5" W 122°03'33.4"	5	<1	<1
Water Temp.	57.1°F	RW(G)-30'	10:00	N 36°56'43.7" W 122°03'59.7"	5	<1	1
Low Tide	3.90 ft @ 10:15	RW(H)-30'	9:45	N 36°56'57.1" W 122°05'02.4"	17	5	<1
High Tide	3.93 ft @ 08:33	RW(I)-30'	9:40	N 36°56'57.8" W 122°05'15.9"	10	2	<1
Rain in past 24 hr	0.23 inches	RW(Leak)@ 70'	9:20	N 36°56'22.4" W 122°03'34.7"	<1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 10-14-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.4" W 122°01'44.9"	61	2	<1
Sea State	W swell 3-5 feet	RW(C)-30'	9:15	N 36°56'58.4" W 122°02'26.0"	21	13	10
Weather	clear	RW(E)-30'	9:20	N 36°56'49.0" W 122°02'50.0"	11	1	<1
Wind	E @ 5 knots	RW(F)-30'	9:25	N 36°56'45.9" W 122°03'31.5"	1	<1	<1
Water Temp.	53.6°F	RW(G)-30'	9:30	N 36°56'44.4" W 122°03'57.5"	11	<1	<1
Low Tide	1.29 feet @ 03:54	RW(H)-30'	9:45	N 36°56'56.3" W 122°05'01.2"	9	<1	1
High Tide	5.51 feet @ 10:18	RW(I)-30'	9:50	N 36°56'58.1" W 122°05'17.8"	6	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:05	N 36°56'20.3" W 122°03'35.4"	1	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 10-21-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:15	N 36°56'48.5" W 122°01'44.7"	1	<1	1
Sea State	NW swell 1-4 feet	RW(C)-30'	9:20	N 36°56'58.0" W 122°02'24.9"	11	<1	1
Weather	clear	RW(E)-30'	9:25	N 36°56'49.5" W 122°02'47.5"	7	<1	<1
Wind	SSW @ 3 knots	RW(F)-30'	9:30	N 36°56'45.8" W 122°03'30.6"	3	1	<1
Water Temp.	55.3°F	RW(G)-30'	9:40	N 36°56'44.3" W 122°03'57.2"	1	1	<1
Low Tide	3.39 feet @ 10:51	RW(H)-30'	9:55	N 36°56'55.9" W 122°05'59.3"	12	1	1
High Tide	4.33 feet @ 06:23	RW(I)-30'	10:00	N 36°56'58.1" W 122°05'17.6"	12	2	1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:20	N 36°56'18.5" W 122°03'35.1"	<1	<1	<1



## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 10-28-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.5" W 122°01'45.1"	5	1	<1
Sea State	W swell 2-4 feet	RW(C)-30'	9:15	N 36°56'58.2" W 122°02'25.7"	4	1	<1
Weather	dense fog	RW(E)-30'	9:20	N 36°56'49.2" W 122°02'49.5"	2	1	<1
Wind	SE @ 4 knots	RW(F)-30'	9:25	N 36°56'46.7" W 122°03'32.2"	2	<1	<1
Water Temp.	56.3°F	RW(G)-30'	9:30	N 36°56'44.2" W 122°03'57.7"	3	<1	1
Low Tide	1.96 feet @ 04:04	RW(H)-30'	9:40	N 36°56'56.8" W 122°04'59.9"	<1	<1	1
High Tide	5.43 feet @ 10:18	RW(I)-30'	9:45	N 36°56'58.2" W 122°05'17.1"	<1	<1	<1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:05	N 36°56'19.8" W 122°03'35.1"	<1	<1	1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: November

DATE: 11-04-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.2" W 122°01'45.6"	108	44	48
Sea State	W swell 2-6 feet	RW(C)-30'	9:15	N 36°56'57.9" W 122°02'24.7"	77	18	22
Weather	partly cloudy	RW(E)-30'	9:20	N 36°56'49.0" W 122°02'49.3"	106	49	46
Wind	variable @ 4 knots	RW(F)-30'	9:25	N 36°56'45.7" W 122°03'31.9"	10	3	2
Water Temp.	55.9°F	RW(G)-30'	9:30	N 36°56'45.5" W 122°03'58.4"	17	4	1
Low Tide	3.88 feet @ 08:27	RW(H)-30'	9:45	N 36°56'55.4" W 122°04'59.3"	4	<1	<1
High Tide	4.53 feet @ 13:16	RW(I)-30'	9:55	N 36°56'58.7" W 122°05'16.4"	7	2	2
Rain in past 24 hr	1.08 inches	RW(Leak)@ 70'	10:10	N 36°56'19.9" W 122°03'35.2"	6	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 11-09-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:05	N 36°56'48.4" W 122°01'45.3"	26	11	3
Sea State	W swell 4-9 feet	RW(C)-30'	9:10	N 36°56'57.9" W 122°02'25.5"	<1	<1	<1
Weather	cloudy	RW(E)-30'	9:15	N 36°56'49.1" W 122°02'49.2"	<1	1	<1
Wind	SW @ 3 knots	RW(F)-30'	9:20	N 36°56'46.4" W 122°03'31.6"	10	1	<1
Water Temp.	56.3°F	RW(G)-30'	9:25	N 36°56'43.9" W 122°03'57.3"	18	<1	<1
Low Tide	0.10 feet @ 14:05	RW(H)-30'	9:35	N 36°56'55.9" W 122°04'59.1"	8	<1	1
High Tide	5.39 feet @ 07:27	RW(I)-30'	9:40	N 36°56'57.9" W 122°05'17.3"	2	<1	<1
Rain in past 24 hr	0.17 inches	RW(Leak)@ 70'	10:00	N 36°56'19.6" W 122°03'34.8"	<1	1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 11-18-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:20	N 36°56'49.1" W 122°01'45.9"	30	9	2
Sea State	W swell 2-3 feet	RW(C)-30'	9:25	N 36°56'58.1" W 122°02'25.3"	22	2	<1
Weather	clear	RW(E)-30'	9:30	N 36°56'49.0" W 122°02'48.9"	16	2	1
Wind	W @ 5 knots	RW(F)-30'	9:35	N 36°56'46.6" W 122°03'31.8"	5	5	1
Water Temp.	55.1°F	RW(G)-30'	9:40	N 36°56'44.3" W 122°03'57.5"	12	3	3
Low Tide	3.44 ft @ 06:37	RW(H)-30'	10:00	N 36°56'55.7" W 122°04'59.3"	15	9	5
High Tide	5.78 feet @ 12:31	RW(I)-30'	10:05	N 36°56'57.9" W 122°05'17.3"	10	6	1
Rain in past 24 hr	0.02 inches	RW(Leak)@ 70'	10:20	N 36°56'19.9" W 122°03'34.6"	2	3	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 11-25-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:00	N 36°56'49.4" W 122°01'45.2"	23	5	2
Sea State	W swell 5-8 feet	RW(C)-30'	9:05	N 36°56'58.2" W 122°02'25.5"	10	1	<1
Weather	cloudy	RW(E)-30'	9:10	N 36°56'49.1" W 122°02'49.5"	9	1	<1
Wind	E @ 5 knots	RW(F)-30'	9:15	N 36°56'46.6" W 122°03'31.5"	21	2	9
Water Temp.	54.6°F	RW(G)-30'	9:20	N 36°56'44.2" W 122°03'57.3"	4	1	1
Low Tide	-0.42 ft @ 15:11	RW(H)-30'	9:30	N 36°56'55.6" W 122°04'59.4"	5	3	<1
High Tide	5.62 feet @ 08:09	RW(I)-30'	9:35	N 36°56'57.9" W 122°05'17.4"	2	1	1
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	9:50	N 36°56'19.9" W 122°03'35.0"	3	<1	<1

## Section II: Monitoring Data – Nearshore bacterial monitoring data

Sampling Month: December.

DATE: 12-02-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:05	N 36°56'48.2" W 122°01'45.8"	11	3	1
Sea State	W swell 4-7 feet	RW(C)-30'	9:10	N 36°56'58.0" W 122°02'25.5"	14	1	4
Weather	cloudy	RW(E)-30'	9:15	N 36°56'49.0" W 122°02'49.6"	18	1	1
Wind	E @ 2 knots	RW(F)-30'	9:20	N 36°56'46.6" W 122°03'33.1"	19	4	1
Water Temp.	54.8°F	RW(G)-30'	9:25	N 36°56'44.2" W 122°03'57.3"	11	2	3
Low Tide	3.71 ft @ 06:13	RW(H)-30'	9:35	N 36°56'55.7" W 122°04'59.6"	13	5	5
High Tide	4.88 ft @ 11:55	RW(I)-30'	9:40	N 36°56'58.0" W 122°05'17.5"	28	8	9
Rain in past 24 hr	0.53 inches	RW(Leak)@ 70'	10:00	N 36°56'19.8" W 122°03'35.0"	5	3	4

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 12-09-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:10	N 36°56'48.7" W 122°01'45.2"	5	1	2
Sea State	W swell 2-4 feet	RW(C)-30'	9:15	N 36°56'58.0" W 122°02'25.7"	5	1	<1
Weather	clear and cold	RW(E)-30'	9:20	N 36°56'49.0" W 122°02'49.4"	2	1	<1
Wind	E @ 4 knots	RW(F)-30'	9:25	N 36°56'46.5" W 122°03'32.3"	13	10	<1
Water Temp.	53.3°F	RW(G)-30'	9:30	N 36°56'44.3" W 122°03'57.6"	5	1	<1
Low Tide	-0.37 ft 2 13:44	RW(H)-30'	9:45	N 36°56'54.8" W 122°05'00.3"	11	3	1
High Tide	5.91 feet 2 06:36	RW(I)-30'	9:50	N 36°56'58.3" W 122°05'17.9"	19	8	5
Rain in past 24 hr	0.0 inches	RW(Leak)@ 70'	10:10	N 36°56'19.7" W 122°03'35.1"	1	<1	<1



## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 12-17-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:15	N 36°56'48.0" W 122°01'45.9"	40	7	7
Sea State	NW swell 2-4 ft	RW(C)-30'	9:20	N 36°56'57.9" W 122°02'25.5"	8	1	3
Weather	clear and cold	RW(E)-30'	9:25	N 36°56'48.8" W 122°02'48.6"	24	1	5
Wind	NE @ 15 knots	RW(F)-30'	9:30	N 36°56'45.8" W 122°03'31.8"	18	12	5
Water Temp.	52.8°F	RW(G)-30'	9:35	N 36°56'43.5" W 122°03'58.0"	28	2	11
Low Tide	2.71 ft @ 07:56	RW(H)-30'	9:50	N 36°56'55.5" W 122°04'59.2"	26	5	8
High Tide	4.85 ft @ 13:21	RW(I)-30'	9:55	N 36°56'58.1" W 122°05'17.2"	33	9	8
Rain in past 24 hr	2.67 inches	RW(Leak)@ 70'	10:15	N 36°56'19.7" W 122°03'35.4"	28	10	9

## Section II: Monitoring Data – Nearshore bacterial monitoring data

DATE: 12-23-2008					CFU / 100-ml		
CONDITIONS		Sampling Point	Sampling Time AM	GPS LOCATIONS	Total Coliform	Fecal Coliform	Enterococcus
Current	N --> S	RW(A)-30'	9:25	N 36°56'48.6" W 122°01'45.1"	29	5	4
Sea State	W swell 4-8 ft	RW(C)-30'	9:30	N 36°56'58.0" W 122°02'25.4"	TNTC (Confluent Growth)	129	77
Weather	partly cloudy/chance of showers	RW(E)-30'	9:35	N 36°56'49.1" W 122°02'49.4"	8	3	10
Wind	N @ 10 knots	RW(F)-30'	9:40	N 36°56'46.4" W 122°03'31.9"	19	2	5
Water Temp.	52.8°F	RW(G)-30'	9:45	N 36°56'44.0" W 122°03'57.4"	20	3	1
Low Tide	-0.16 ft @ 1421	RW(H)-30'	10:00	N 36°56'55.9" W 122°04'59.9"	17	5	4
High Tide	5.61 ft @ 0656	RW(I)-30'	10:05	N 36°56'58.1" W 122°05'17.2"	10	1	2
Rain in past 24 hr	1.5 inches	RW(Leak) @70'	10:25	N 36°56'20.0" W 122°03'35.0"	3	<1	1

### **Section III: Graphs of Monitoring Data – Priority Pollutants**

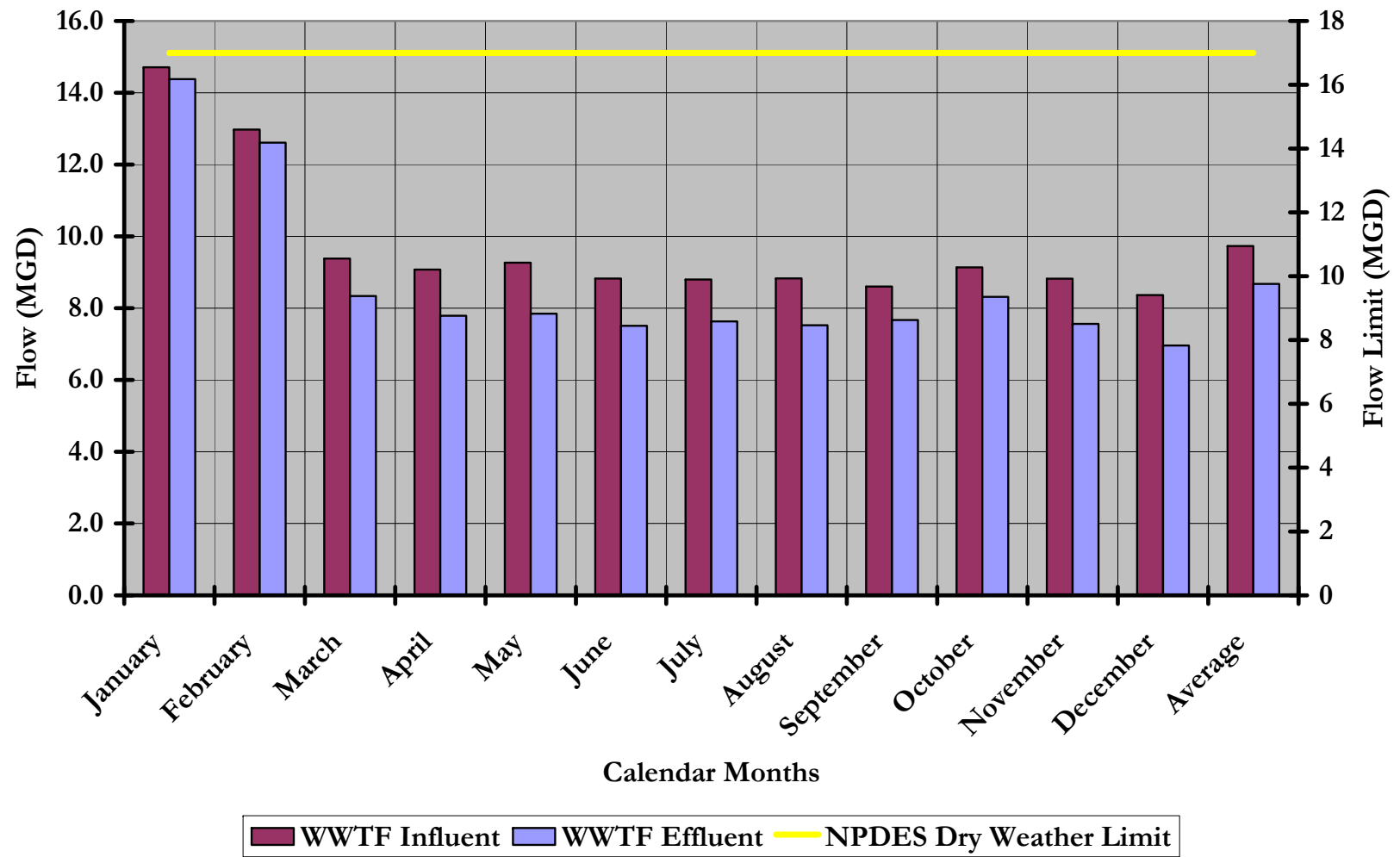
#### **Section III. Summary of Monitoring Data – Graphs**

### **III. Summary of Monitoring Data- Graphs**

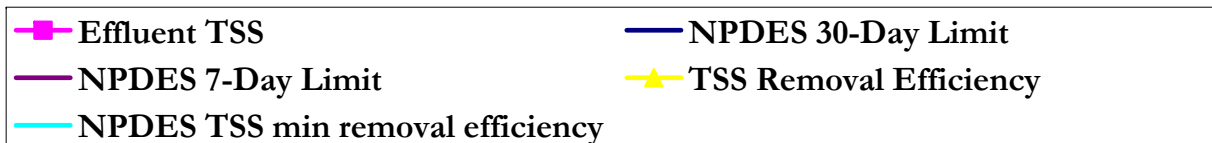
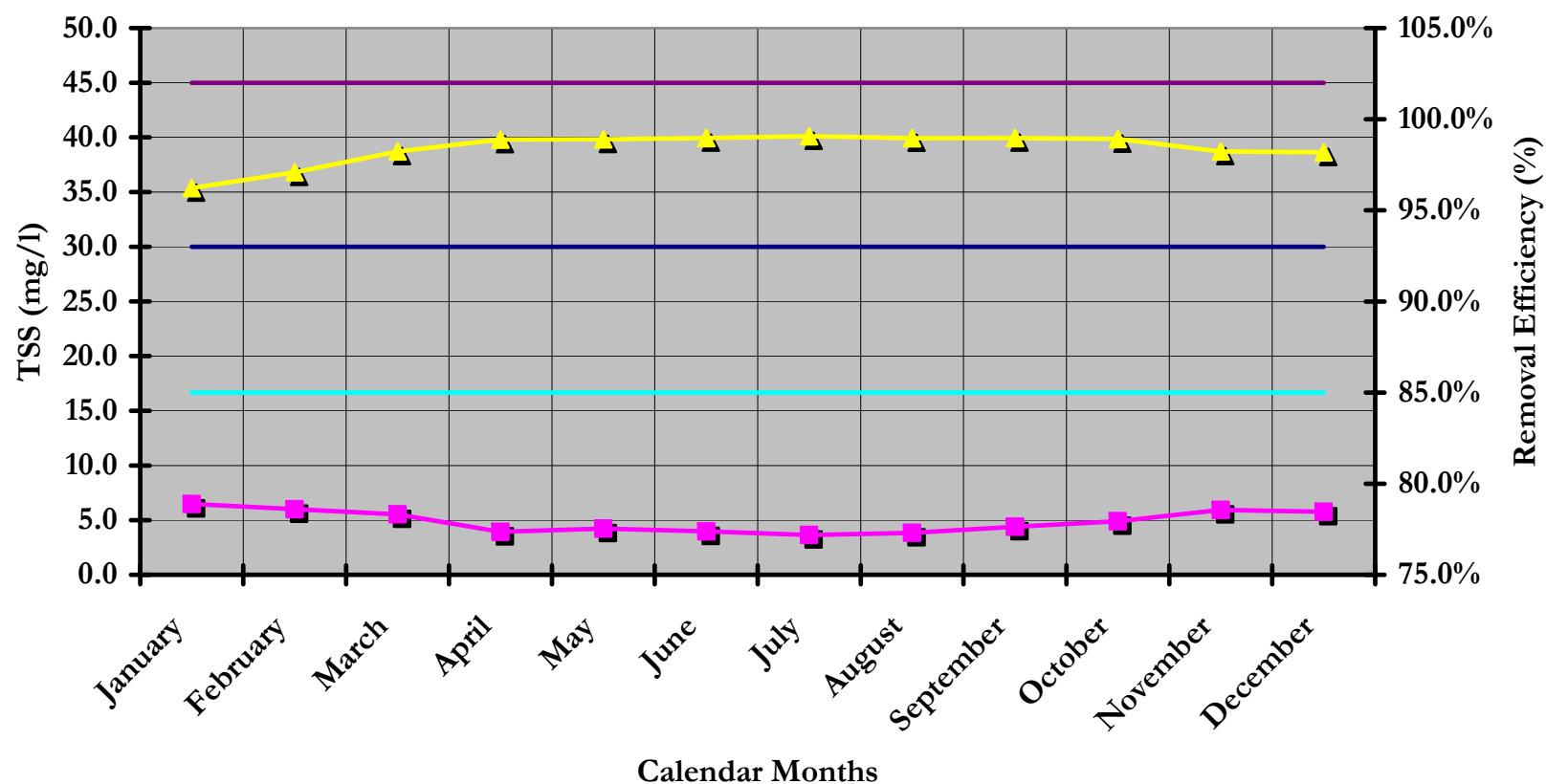
The following pages contain a sequence of graphs with a narrative arranged in the following order:

1. WWTF Flow report.
2. Total Suspended Solids (TSS) report.
3. Total Organic Carbon (TOC) removal efficiency report.
4. Biochemical Oxygen Demand (BOD) report.
5. WWTF Toxicity report. And
6. Biosolids Monitoring and Report.

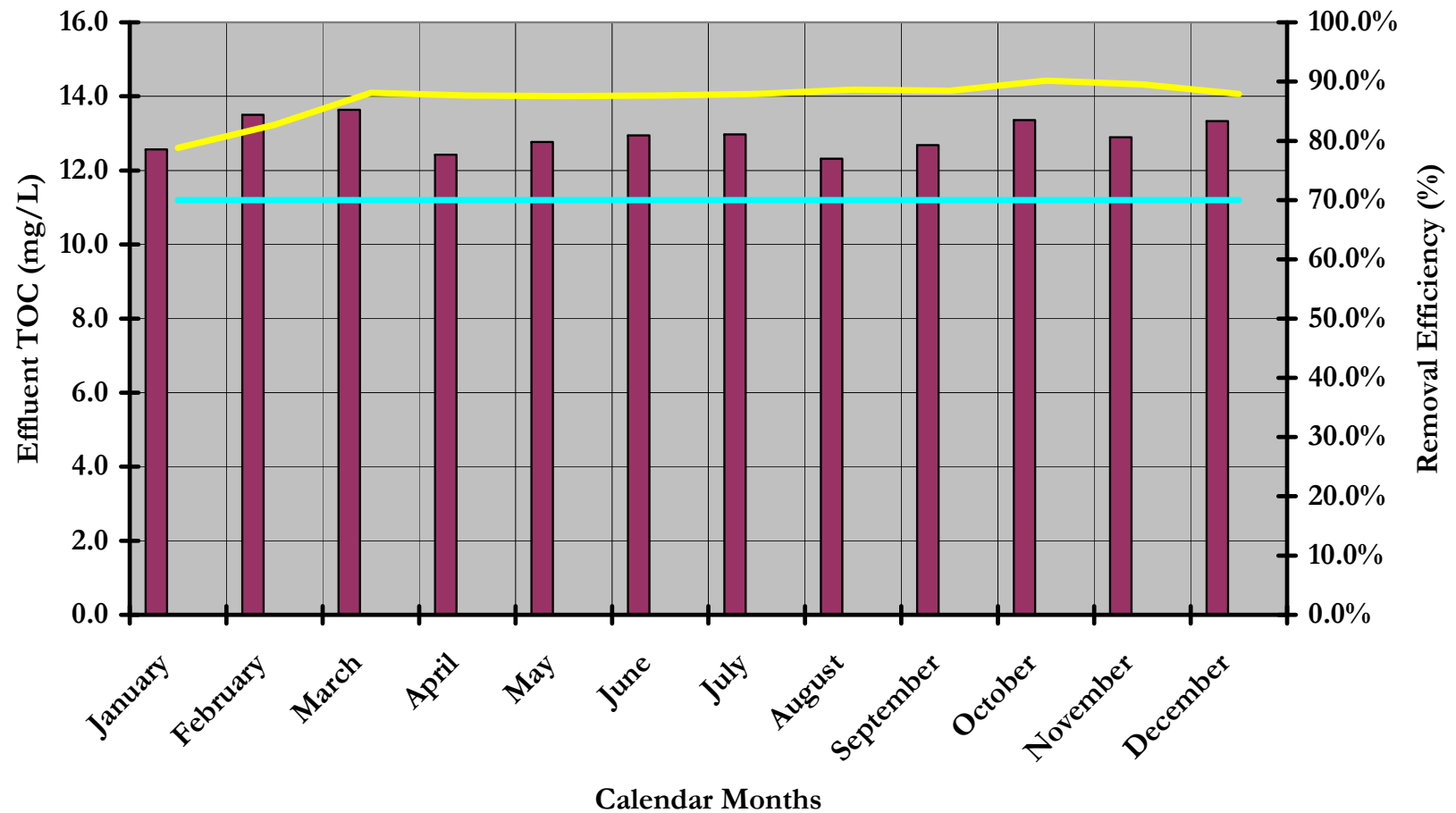
## WWTF Flow Report - 2008



### Total Suspended Solids (TSS) Report - 2008



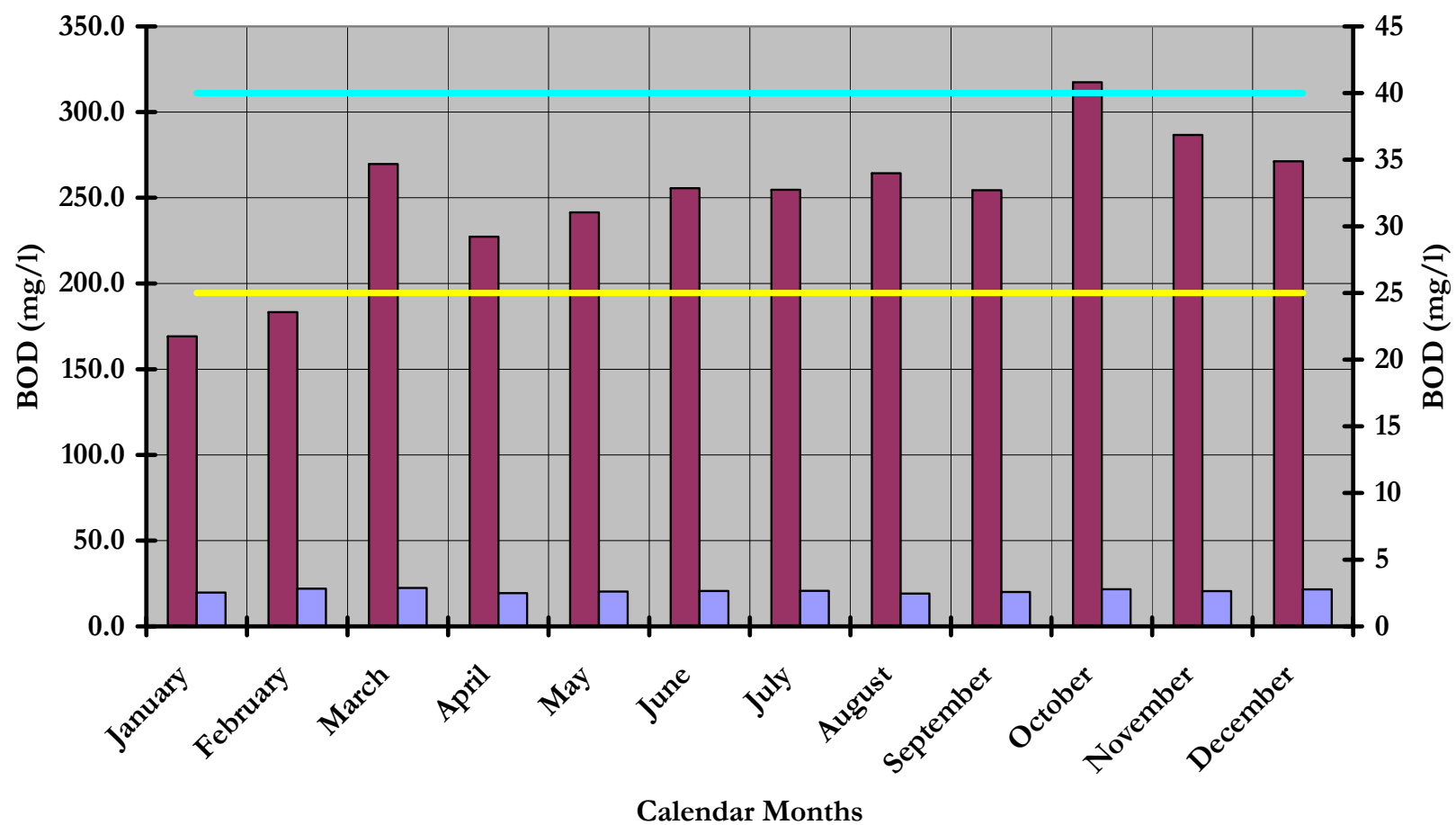
WWTF Total Organic Carbon (TOC) Removal Efficiency 2008



■ Effluent TOC    — WWTF TOC Removal Percentage    — NPDES Monthly Removal Average Limit (%)

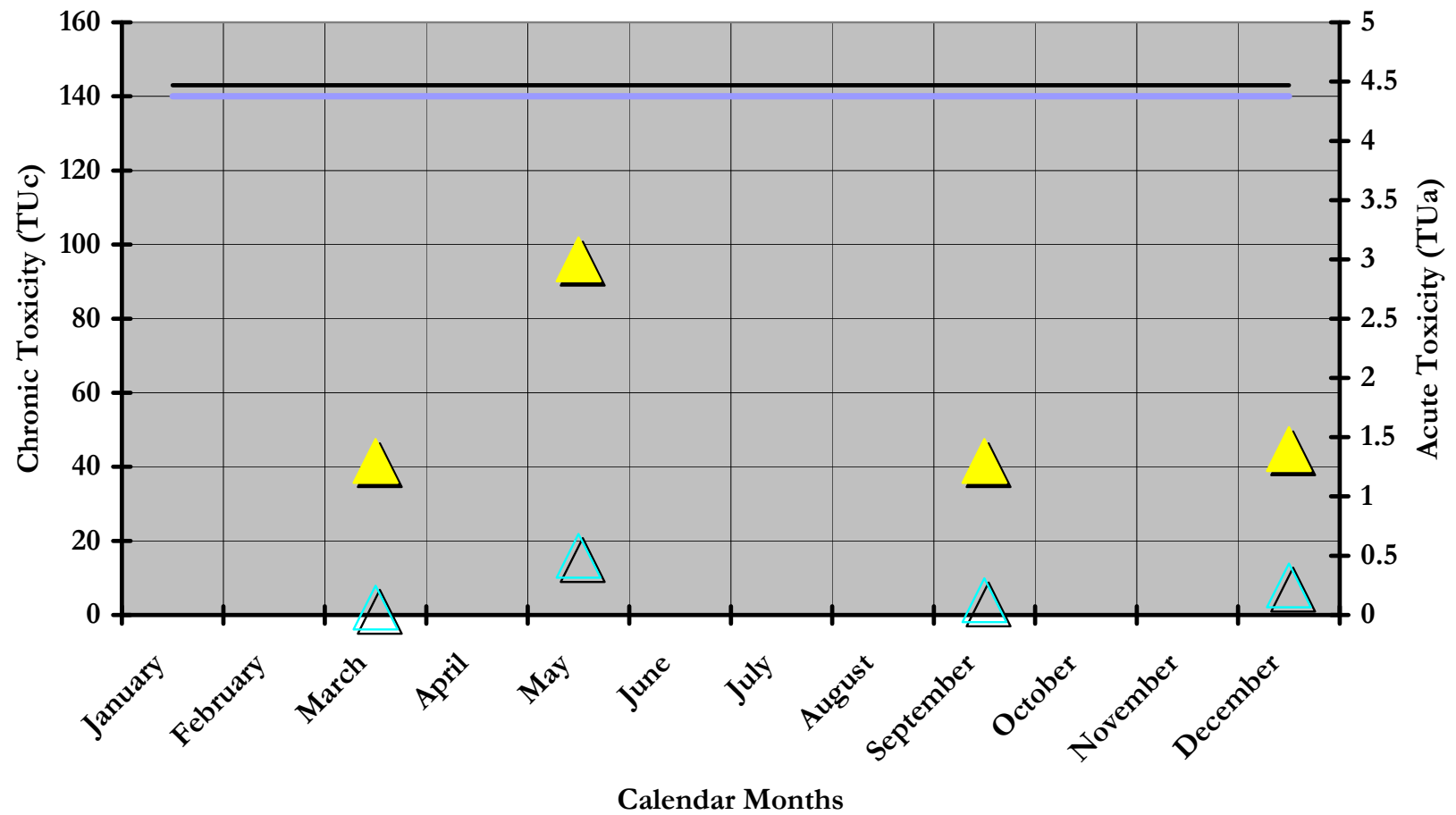


### Biochemical Oxygen Demand (BOD) report - 2008



■ Influent BOD ■ Effluent BOD — NPDES Effluent BOD 30-Day Limit — NPDES Effluent 7-Day Limit

# WWTF Toxicity Reports 2008



▲ Effluent Acute Toxicity    ▲ Effluent Chronic Toxicity    — NPDES TUa Limit    — NPDES TUc Limit

## Biosolids Monitoring and Reporting

Representative sampling and analyses of sludge biosolids from the last handling point at the facility, are performed on a bi-monthly basis to monitor the process and product quality. The Biosolids product is hauled to a third party site with contracts and facility for reuse of the commodity.

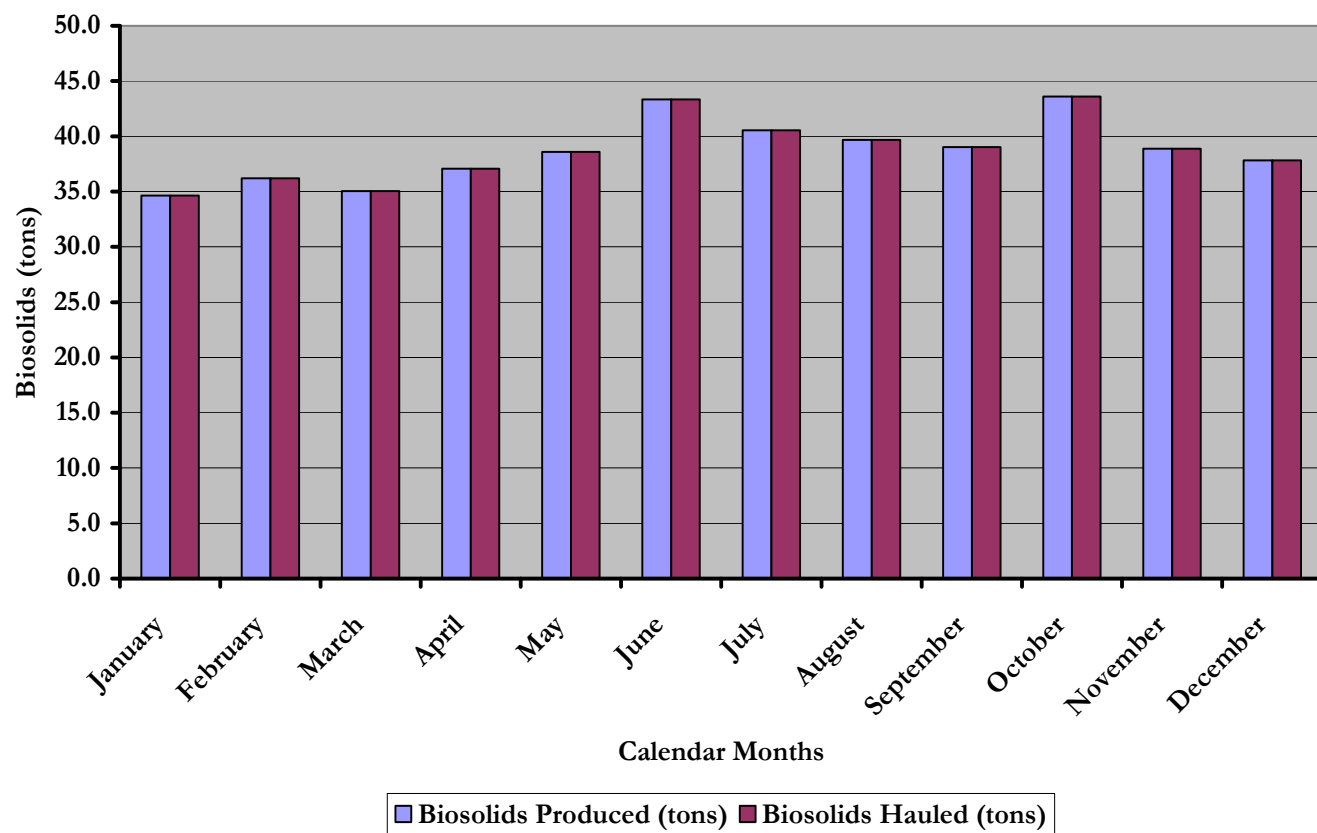
The data indicates that the process and product are both stable, and predictable. The data on biosolids quality from analyses of the composites is included in the Section II of this annual report.

Following are a tables and a graph of the biosolids product.

**Table: Biosolids Production and Disposal/Reuse**

<b>Calendar Months</b>	<b>Biosolids Produced</b>
	<b>Tons</b>
January	34.6
February	36.2
March	35.0
April	37.1
May	38.6
June	43.3
July	40.5
August	39.7
September	39.0
October	43.6
November	38.9
December	37.8
<b>Average</b>	<b>38.7</b>
<b>Maximum</b>	<b>43.6</b>
<b>Minimum</b>	<b>34.6</b>

### WWTF Biosolids Report - 2008



## **Section IV. The Compliance Record and Corrective Actions**

## **Section IV. The Compliance Record and Corrective Actions**

This section contains narratives and figures relating to the compliance record in 2008 and all associated corrective actions with identifiable violations.

There was no incident of performance failure in 2008.

As indicated by the data and summarized bullets in the introduction, there were no numerical basis to assess plant removal efficiencies for trace organic compounds in 2008. This may be attributable in significant measure to the success of the pretreatment efforts to divert pharmaceutical compounds from the sewer system as well as the continued competency of operations at the facility. All of the activities and results were consistent with the aims and requirements of the NPDES permit.

The compliance record provides several highlights of an improved monitoring program including the following highlights in 2008:

1. The annual outfall report including a dye test and a dive inspection were concluded in October 2008. The results of the inspection are contained in this section.
2. The City successfully initiated the safe and responsible disposal of unwanted pharmaceuticals to divert their continued introduction into the sewer system. The program was initiated by the City in 2007, and was broadened through a State grant to include the rest of the County by December 2007.
3. Bacterial monitoring at the 30 foot contour was sustained throughout 2008, with data indicating compliance with all beneficial use standards throughout the year. And
4. The City expanded its integrative sampling and monitoring for compounds in the California Ocean Plan Table B list, by implementing the same at the facility's influent. The data will allow the City and the Regional Board to develop monitoring and management strategies for these compounds, and to update the Local Limits for industrial users.

The monthly average BOD removal efficiency in 2008 was 91.2% 2008. The secondary standard for BOD removal; and the erstwhile limit for the facility was 85% BOD removal. The City's performance for the removal of wasteload is now measured in Total Organic Carbon (TOC) and Total Suspended Solids (TSS). The equivalent secondary standard for TOC removal is 70%, while plant performance for 2008 was 87.1%. Plant performance for TSS removal averaged 98.4% for 2008.

The Water Boards instructed dischargers including the City of Santa Cruz to submit all self monitoring reports (SMR) exclusively by electronic means during 2008. Although the CIWQS (California Integrated Water Quality System) and USEPA's electronic systems are still being optimized for these activities, the City continues to support the State's efforts with streamlining the reporting system, including CIWQS.

In conclusion, the data indicate that compliance with the WDR and MRP requirements has been good, and no problems are anticipated for 2009.

The remainder of this section beginning on the next page contains narratives, tables, and a photograph of the annual outfall monitoring exercise.



## ANNUAL OUTFALL MONITORING REPORT

The City conducted its annual Outfall and Diffuser Monitoring as required by MRP No.R3-2005-0003 of May 13, 2005. This year's monitoring consisted of a dye test with an over flight along the entire outfall (attached) and an underwater video survey conducted by a live diver along the diffuser section (attached). The dive inspection was conducted on October 17, 2008 by North Coast Divers, Inc. The dye study was conducted by Full Tilt Design on October 3, 2008.

The monitoring effort showed that the open diffuser ports are unobstructed and flowing as designed and originally constructed. The dye test did detect the intermittent leak that was previously detected in 1992, 1994, 2002 and 2004.

That leak that had been previously detected at an approximate depth of 70 feet below sea level and 7000 feet from the beach vault as measured along the outfall. The diffuser section of the City's outfall starts at a depth of 90 feet below sea level and 10,000 feet from the beach vault. The intermittent nature of observing the leak is probably due to the small size of the leak as described below.

Kinnetic Laboratories did an extensive investigation of the leak in 1994 and concluded that the leak was small in volume and had an initial dilution exceeding 1000:1 and that the risks and cost to fix such a leak outweighed the benefits. The precise location of the leak was not determined due to the small size of the leak and the fact that the outfall is in a trench covered with ballast rock.

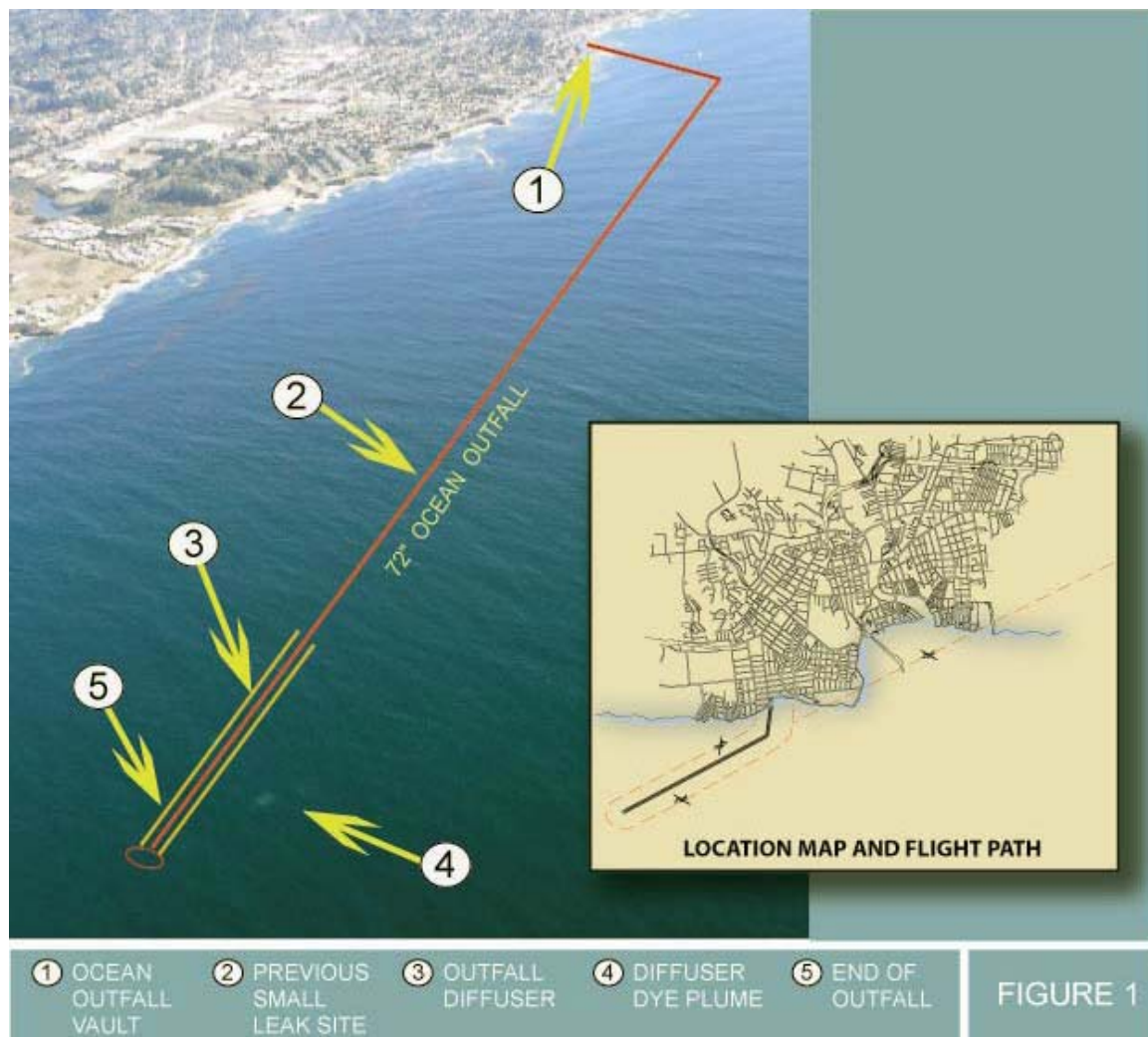
Beginning in 2005, weekly grab samples are taken from the GIS location identified as the leak at the 70 foot contour, along with the monitoring of the near shore bacteria at 30 foot contour depth. Previous grab samples were taken quarterly at the leak site from 1995 through 1998. In April 1997, elevated bacteria levels indicated that the intermittent leak was still active at times. All samples were tested, and continue to be tested for total coliform, fecal coliform and enterococci. Bacteria data from the site has shown intermittent levels of elevated indicators. This is consistent with the limited and intermittent nature of the leak. No additional impact from the leak has been documented. Details of all the test data have been included in both the annual and quarterly Ocean Outfall reports submitted to the RWCQB from 1995 through 1998. Following this page is the dye study report.

Steve Wolfman, P.E.  
Associate Civil Engineer  
City of Santa Cruz

## Dye Study Report - Wastewater Treatment Effluent Ocean Outfall Overflight

On Tuesday October 7, 2008 the City of Santa Cruz conducted a dye test of the Wastewater Treatment effluent ocean outfall to visually search for leaks. An overflight and boat inspection was performed between 9:15am and 10:00am using the aerial survey services of pilot Aaron Becker and marine support of Rick Heaslet of North Coast Divers. An on-board differential-ready GPS (which simultaneously tracks and uses up to 12 satellites) with an accuracy of 1-5 meters (3-15 feet) was used for navigation and positioning.

At 9:20 am 90 gallons of yellow liquid dye were added at the at the Wastewater Treatment facility. The weather was clear and the sea surface was calm. At around 9:40 am a dye plume was observed and photographed with a digital camera in the diffuser section area. The dye plume was very visible from the air, and appeared similar to previous years' observations.



**Figure 1** shows the location of the previous small leak site (2) located roughly 7,000 L.F. along the pipeline from the beach outfall vault. No dye was seen at this location. Along the diffuser section (3) four or five small plumes (4) were visually located before the end of the pipeline (5).

After the dye plume was sighted, further inspection of the entire ocean outfall revealed that the surrounding ocean surface remained unchanged. No leaks or visual dye plumes were evident. The overflight of the ocean outfall concluded at 10:00am.

Aaron Becker

**Section V. The Operating Staff**

## **Section V. The Operating Staff**

### **V. The Operating Staff.**

The following section summarizes the credentials and designations of staff employed at the Wastewater Treatment facility and the City's compliance with the California Water Code, the California Code of Regulations, in maintaining appropriate staffing.

The Waste Discharge Requirements, and the NPDES Permit require operators and their supervisors at municipal wastewater treatment plants to be certified at specific minimum levels of certification based upon the wastewater treatment plant processes and design flows. All of the operations personnel of the City of Santa Cruz Wastewater Treatment Facility are certified by the California State Water Resources Control Board at or above the required levels. In addition, the Superintendent of the facility maintains a wastewater operators certificate at the level of the plant rating.

The Operations and Maintenance division of the facility is staffed as follows:

- 1 (one) Wastewater Treatment Facility Operations Manager;
- 5 (five) Senior Wastewater Plant Operators;
- 8 (eight) Wastewater Plant Operators

The maintenance unit consists of seven mechanics and three electricians as follows:

- 1 (one) Senior Plant Mechanic;
- 1 (one) Senior Electrician;
- 4 (four) Plant Maintenance Mechanics II;
- 2 (two) Plant Maintenance Mechanics I; and
- 3 (three) Electrical Technicians.

Additional management, engineering, consultative, clerical and analytical support services are provided by:

- The Director of Public Works;
- 1 Associate Civil Engineer; and 1 Civil Engineering Associate
- 1 Laboratory/Pretreatment Manager; 3 Laboratory Chemists; and 3 Environmental Compliance Inspectors;
- 1 Administrative Assistant and
- 1 Network Administrator.

## Section V. The Operating Staff

Following are tables of all personnel involved in the daily operation and maintenance of the Wastewater treatment facility, their credentials, classifications and certification levels.

MANAGEMENT/ADMINISTRATION		
NAME	DESIGNATION	CREDENTIALS: GRADE CERT; & EXPIRY DATE
Seidel, Dan	Superintendent of Wastewater Collection and Treatment Facility	WW Operator IV 4055; 6/30/09
Warren, Filipina	Administrative Assistant II	AAII BA (Psychology)
Savadkahi, Shawn	Network Administrator	BA (Physics)
Babatola, Akin	Laboratory/Industrial Waste Manager	MS (Mol. Biol); BS (Micro)
Sanders, Michael	Wastewater Treatment Facility Operations Manager	WW Operator IV 4753; 12/31/08

OPERATIONS			
NAME	DESIGNATION	CREDENTIALS /GRADE CERTIFICATE	EXPIRY DATE
Sanders, Michael	Wastewater Treatment Facility Operations Manager	WW Operator IV 4753	12/31/10
Gorton, Gerald	Senior WW Operator	WW Operator IV 6344	06/30/09
Culbertson, Michael	Senior WW Operator	WW Operator III 532	12/31/10
Lorenson, Arthur	Senior WW Operator	WW Operator III 4867	12/31/09
Meyers, David	Senior WW Operator	WW Operator III 10986	6/30/09
Sandretti, Mark	Senior WW Operator	WW Operator III 4409	6/30/10
Blume, Robert	WW Operator III	WW Operator V 4776	6/30/10
Gilbert, John	WW Operator III	WW Operator III 28079	6/30/10
Seifert, Brian	WW Operator III	WW Operator III 28071	6/30/10
Frazier, Ron	WW Operator III	WW Operator III 7436	6/30/10

## Section V. The Operating Staff

Brown, Bob	WW Operator II	WW Operator II 7217	6/30/09
Lineham, Grant	WW Operator II	WW Operator II 8320	12/31/09
Quintana, Everest	WW Operator II	WW Operator II 4837	6/30/10
Barnes, John	WW Operator II	WW Operator II 5734	6/30/09
<b>MAINTENANCE</b>			
NAME	DESIGNATION	CREDENTIALS/ GRADE CERTIFICATE	EXPIRY DATE
Wisler, Larry	Senior Mechanic	CWEA Mechanical Tech II #358	1/31/10
Stevens, Fred	Maintenance Mechanic II	CWEA Mechanical Tech II #76242	6/31/09
Locatelli, Albert	Maintenance Mechanic II		
Pretzer, Tom	Maintenance Mechanic II	CWEA Mechanical Tech II #599	6/31/10
Locatelli, Forrest	Maintenance Mechanic II		
Carlson, Ron	Maintenance Mechanic I		
Fambrini, Steve	Maintenance Mechanic I		
<b>ELECTRICAL</b>			
NAME	DESIGNATION	CREDENTIALS/GRADE CERTIFICATE	EXPIRY DATE
Gorny, Ken	Senior Electrician	CWEA Elect/Inst #80173003	1-31-10
Sturdivant, Jim	Electrical Technician	CWEA Elect/Inst #80772002	7-31-09
Miller, Ralph	Electrical Technician	CWEA Elect/Inst #80172006	1-31-09
Karo, Marc	Electrical Technician		

## Section V. The Operating Staff

LABORATORY/ENVIRONMENTAL COMPLIANCE		
NAME	TITLE	CREDENTIALS
<b>Babatola, Akin</b>	Laboratory/Industrial Waste Manager	MS (Mol. Biol); BS (Microbiology)
<b>Xu, Tianfei</b>	Chemist II/Principal Analyst	Graduate Degree (Chemistry) [Fudhan, China] <b>CWEA Lab Analyst II 378; 7/31/10</b>
<b>Birch, Anne</b>	Chemist II/Principal Analyst	BA (Biology) BA (Cultural Anthropology) <b>Lab Analyst I 342; 1/31/10</b>
<b>Tantingco, Erlinda</b>	Lab Chemist	BS (Chem. Eng)
<b>Sasscer, David</b>	Environmental Compliance Inspector	BS (Micro) <b>Ind. Waste Insp. III 114; 1/31/08</b>
<b>Tomlinson, Monica</b>	Environmental Compliance Inspector	BS (Env. Science) <b>Ind. Waste Insp. I 381; 7/31/10</b> <b>Lab Analyst I 1017; 1/31/11</b>
<b>Baker, Fred</b>	Environmental Compliance Inspector	<b>Ind. Waste Insp. I 314; 7/31/10</b>



## **Section VI. The Operation & Maintenance Manual and Contingency Plans**

## **VI. The Operation & Maintenance Manual and Contingency Plans.**

The operation and maintenance manual was last reviewed in November 2000 and found to be complete and valid for the current facility. The facility's written Standard Operating Procedures are periodically reviewed and frequently updated to maintain documentation and direction on the operation of the facility.

The maintenance division provides routine preventative maintenance for all plant equipment. This ensures that equipment receives routine lubrication and relevant maintenance, and that standby equipment is ready for service.

Safeguards to minimize accidental discharge from the wastewater treatment plant are built into the design and operation of facility and equipment. These are also tested periodically to ensure their integrity. Scenarios for accidental discharge have been reviewed and concluded to be minimal. However, the location most vulnerable to an accidental discharge was identified as the Bar Screening room. This room is located proximate to the Pump house. A long-term power outage at peak flow may cause an overflow into the Pump house if the main sewage pumps were disabled. However, the two engines capable of driving all six main sewage pumps are diesel driven, and would provide power in case of such an outage. These diesel engines are tested for performance on a monthly schedule, and for a minimum of 1 hour each time. These engines and all equipment in the pump house are maintained with the highest priority.

Additional standby equipment has also been installed with the Plant upgrade to advanced secondary in 1998. These include power to the Sodium Hypochlorite disinfection system, which is the back up to the UV disinfection system.

## **Section VII. Laboratories used to Monitor Compliance**

## **Section VII. Laboratories used to Monitor Compliance**

### **Section VII. Laboratories used to Monitor Compliance**

The following section contains current information on all analytical laboratories whose services were required to maintain the compliance monitoring effort in 2008.

During the year 2008, the City of Santa Cruz operated the Wastewater Treatment Facility Laboratory certified under the CA Department of Health Services ELAP (Environmental Laboratory Accreditation Program). The Laboratory certificate number is CA 1176. A copy of the Laboratory certificate and the approved Fields of Testing are attached herewith.

The Laboratory updated its QAPP (Quality Assurance Performance Plan), and received final approval for monitoring Total Organic Carbon (TOC) in wastewater for compliance monitoring programs in 2008.

The laboratory discontinued the exploration of interlaboratory quality control (qc) and analytical arrangements (ILAs) with Federal, municipal and other certified laboratories, due to budgetary and other constraints. The intent of the ILAs was to improve the quality of monitoring and analyses reported from the facility, while increasing the range of services for effective compliance monitoring.

Most analytical determinations performed for Plant treatment and the NPDES permit were accomplished through the Laboratory. Staffing at the WWTF Laboratory includes:

- 1 Laboratory/Pretreatment Manager; and
- 3 (three) Laboratory Chemists, two of whom also function as Principal Analysts in accordance with CCR Title 22.

The following contract laboratories provided other analytical services:

**1. McCampbell Analytical Inc.**

110 2nd Avenue South, #D7  
Pacheco, CA 94553-1622

**2. Alpha Analytical Laboratories Inc.**

860 Waugh Lane, H-1,  
Ukiah, CA 95482

**3. Frontier Analytical Laboratory**

5172 Hillsdale Circle  
El Dorado Hills, CA 95762

## **Section VII. Laboratories used to Monitor Compliance**

### **4. City of Watsonville Utilities Department Laboratory**

P O Box 50000  
Watsonville, CA 95077

### **5. ES Babcock & Sons, Inc. (sub-contractors to Alpha Analytical)**

6100 Quail Valley Court Riverside  
CA 92507-0704

### **6. Toxscan Inc.**

42 Hanger Way  
Watsonville, CA 95076

### **7. Department of Fish and Game WPC Laboratory**

2005 Nimbus Road  
Rancho Cordova, CA 95670

All the laboratories are required to maintain current NELAC/ELAP, and these are verified by the WWTF Laboratory Manager during the monitoring period.

Additional specialized extraction and GPC clean up of integratively sampled effluents and influents were processed through:

### **Environmental Sampling Technologies (EST)**

502 S. Fifth Street  
St. Joseph, MO. 64501

**Section VIII. Summary of Performance Relative to Section B, General Monitoring Requirements**

## **Section VIII. Summary of Performance Relative to Section B, General Monitoring Requirements**

### **VIII. Summary of Performance Relative To Section B, General Monitoring Requirements.**

1. Monitoring location, minimum sampling frequency and sampling methods for each parameter complies with the Monitoring and Reporting program of the NPDES permit as stipulated in the MRP No 00-044, and as superseded by Board order R3-2005-0003.

2. Although occasionally, due to errors or equipment failure, a monitoring and analytical event may be misread, or missed entirely, these were documented with the regional board and did not interfere with the integrity of the monitoring program. Those include pH and temperature measurements of the following dates:

01/26/08    02/07/08    02/08/08    05/27/08    10/29/08  
10/30/08    12/03/08    and    12/21/08.

All of these measurements were documented with the Regional Board by the Operations Manager during 2008. These were infrequent and did not significantly affect the weekly or monthly averages of the temperature and pH readings of the effluent. All compliance testing procedures used are those approved at 40 CFR 136 and by RWQCB order number R3-2005-0003.

3. Monitoring frequency may be increased as needed to verify apparent noncompliance. Additional monitoring to optimize plant performance or validate performance and/or analytical questions is performed routinely.

4. Laboratories used for the monitoring of compliance with the permit meet the standard of accreditation by the California State Department of Health Services. (See Section VI of this report for more information on the laboratories.) Bioassays are conducted in accordance with the guidelines approved by the State Department of Fish and Game and the State Water Resources Control Board.

5. Samples and measurements taken for the purpose of monitoring are collected consistent with the activity and performance being evaluated. Grab samples are collected at peak loading times. Influent samples include all incoming waste streams and exclude recycle flows. Effluent samples are collected downstream of the last treatment process and upstream of the receiving waters. Integrative samples are collected during the specified monitoring periods, and with validated sampling technologies.

**Section VIII. Summary of Performance Relative to Section B, General Monitoring Requirements**

6. When the pollutants are monitored more frequently than required under the permit, the data is reported with the monthly monitoring reports and is included in appropriate calculations.
7. Monitoring instruments and devices used to fulfill requirements of the monitoring program are maintained and calibrated. Documentation of the maintenance and calibration is maintained.
8. Records of all monitoring information are maintained for at least three years.



**Section IX. Lift Station and Collection System Overflow Report**

**Section IX. Lift Station and Collection System Overflow Report**

The City's Infiltration/Inflow and Spill Prevention Program continues to address the objectives set out in WDR No. 00-044. The City has completed major improvements to its collection system over the last several years and has not had a sanitary sewer overflow caused by infiltration/inflow since January 2, 2002.

In 2002 the City line approximately 7000 feet of large diameter sanitary (16 to 24 inch) located along the San Lorenzo River. In 2003 two major improvements completed was the Grant Street Sewer project and the Clean Beach Sewer project. These projects cost approximately \$200,000 and \$800,000 respectively and improved over 6,000 linear feet of sewer pipe and reconstructed over 100 service laterals. The City also completed the cleaning of three sewer siphons at a cost of over \$100,000. In 2004 the City televised the three sewer siphons and found that one had a separated joint that allowed continuous infiltration into the pipe at a rate of 50 gallons per minute. The leak has been sealed. The cost for this work was over \$100,000. In 2005 the City cleaned and televised approximately 3,000 feet of 30 inch and 3,000 feet of 54 inch sewer main. This work restored full capacity in the trunk pipelines and showed that the 30 inch should be rehabilitated. This work is currently budgeted for \$600,000.

The table below lists the projects that specifically address known overflow locations.

**Table 1: Overflows caused by rain events in 2002 or before where overflow has not occurred since City project was completed**

	Location Address		Pipe Size	Project completed	Project Cost	Schedule & comments
1	Cleveland Ave.	315	6	Reduced I/I by repairing 5000 feet of main & fixing 102 private lower laterals.	\$425,000	Construction complete. No overflow since project completed in 2001.
2	Forest Avenue	158	6	Manhole at overflow location has been eliminated by replacing with pipe.	\$5,000	No overflows during 2001 or 2002. Still monitoring flow.
3a	California Street	Near Walnut	8	California Street sewer capacity has been increased. Project #1 above also reduced flow to this area.	\$750,000	Project was completed 12/01. There have been no overflows since project was completed.
3b	Walti St.	Laurel	6			
4c	Felix St.	Laurel	6			
5a	Carl Avenue	109 & 147	6	Increase size of Parkway pipe from 6 & 8 inch to 10 & 12 inch	\$300,000	Construction completed 8/00. No overflows since.
5b	Parkway	358	6			
6	San Lorenzo Blvd.	At Jessie Street	18	Completed lining of parallel pipelines in 1/03. Siphon repaired in 8/04.	\$600,000	No overflows in 2003 or 2004. Reduce additional upstream I/I next year.
7	Broadway	133	18	Lateral hooked up to main near River siphon.	\$100,000	Cleaning and repair of downstream siphon and has been completed.
8	1129 Mission	At Laurel	6	Cleared blockage. Upgraded pipe to 8 inch	\$60,000	Project completed 2/02 No overflows since.
9	Morrissey Blvd.	723	6, 8 & 10	Upgraded over 3500 feet of pipe in 2005	\$500,000	No overflows since project completed.

**Table 2: Overflows caused by rain events in 2002 or before, that have not reoccurred but the City has not completed improvement.**

	Address	Location	Pipe Diameter (inches)	Project Completed	Project Cost	Schedule and Comments
1	High Street	High-land	6	Determine need for increased pipe size.		TV crossing under freeway.
2	Mott Avenue	At East Cliff and Logan	10 & 12	Investigate downstream 12-inch liner pipe for upgrade.	Unknown	New overflow. Still unclear of cause. TV 2005.
3	322 Highland		6	Modify Manhole and TV		Overflow locations that only occurred on 1/2/2002
4	401 Dufour		6	Unknown. May need backflow devise for house.		Overflow locations that only occurred on 1/2/2002

A summary of the last 12 months of sewage spills is attached for your information. The City of Santa Cruz has implemented an improved spill response as detailed in the “Sewer System Management Plan”. This response includes vacuuming up the spill and collecting all the wash down water used to clean the spill area. In most cases the spill has no contact with a waterway. The City has also updated the report form and the handout given to home owners who have lateral overflows. The new reporting form and handout are attached. The Sewer System Management Plan has been updated and forwarded to the RWQCB.

**Table 3: Summary of Sewage Spills within Santa Cruz city in 2008.**

House Number			City Main Spill	Private Lateral Spill	
	Street	Date:	(gallons)	(gallons)	Weather
322	Woodrow Avenue	1/26/08	25		Clear
268	Calvin Place	2/20/08	100		Clear
137	Los Altos Court	2/23/08	100		Clear
708	Laurent Street	2/24/08	100		Clear
1114	Water Street	2/26/08		25	Clear
129	Felker Street	4/5/08		75	Clear
125	Pearl Street	4/8/08		20	Clear
133	Peyton Street	4/8/08		10	Clear
158	Forrest Ave	4/9/08	50		Clear
1717	Soquel Avenue	4/13/08		50	Clear
405	Ocean Street	4/13/08		30	Clear
NA	Ocean Under Municipal Wharf	5/20/08	50		Clear
632	Water Street	5/23/08	500		Clear
209	Vista Bella Ave	5/27/08	75		Clear
155	Surfside Street	6/9/08	250		Clear
591	Market Street	6/18/08	150		Clear
344	Ocean St	10/29/08		200	Clear
1154	Prospect Heights	11/7/08	50		Clear
Total Spills: 18		Main Lateral Spills: 1450 gallons		Private Lateral Spills: 410 gallons	

**THIS IS THE END PAGE OF THE 2008 ANNUAL REPORT.**



PUBLIC WORKS DEPARTMENT

809 Center Street, Room 201, Santa Cruz, CA 95060 • 831 420-5160 • Fax: 831 420-5161 • [citypw@ci.santa-cruz.ca.us](mailto:citypw@ci.santa-cruz.ca.us)

February 22, 2011

Mr. Roger Briggs, Executive Officer  
Regional Water Quality Control Board  
Central Coast Region  
895 Acrovista Place, Suite 101  
San Luis Obispo, CA 93401-7906  
[centralcoast@waterboards.ca.gov](mailto:centralcoast@waterboards.ca.gov)

**Subject: 2010 City of Santa Cruz Annual WWTF Report**

Dear Mr. Briggs:

Enclosed herewith are the data, narratives and reports that constitute the City of Santa Cruz Wastewater Treatment Facility Annual Report for 2010.

If you have questions about this report, please contact Akin Babatola, Wastewater Laboratory and Environmental Compliance Manager by e-mail at [ABabatola@cityofsantacruz.ca.com](mailto:ABabatola@cityofsantacruz.ca.com) or by phone at (831) 420-6045.

The report and its contents are submitted in accordance with the Standard Provisions and Reporting Requirements of the National Pollutant Discharge Elimination System Permits (NPDES).

In accordance with those standard provisions, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision following a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my knowledge of the person(s) who manage the system or those directly responsible for data gathering, 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.

Sincerely,

Dan Seidel  
Superintendent of Wastewater Collection and Treatment Facility

cc: U. S. EPA, Region IX  
State Water Resources Control Board at [NPDES\\_wastewater@waterboards.ca.gov](mailto:NPDES_wastewater@waterboards.ca.gov)  
Public Works Director - County of Santa Cruz via [dpw115@co.santa-cruz.ca](mailto:dpw115@co.santa-cruz.ca).  
Director of Public Works, File 950-75 via <mailto:LWaldren@cityofsantacruz.com>  
Wastewater Pretreatment Reports  
Wastewater Laboratory/Environmental Compliance Manager

**CITY OF SANTA CRUZ WASTEWATER  
TREATMENT FACILITY**



**2010**

**Wastewater Treatment Facility  
ANNUAL REPORT**



# **CITY OF SANTA CRUZ POTW ANNUAL REPORT**

**2010**

## **CONTENTS**

Section I	Introduction
Section II	Summary of Monitoring Data – Tables
Section III	Summary of Monitoring Data – Graphs
Section IV	Compliance Record and Corrective Actions
Section V	Operating Staff
Section VI	Operation and Maintenance Manual and Contingency Plans
Section VII	Laboratories used to Monitor Compliance
Section VIII	Summary of Performance Relative to Section B, General; Monitoring Requirements
Section IX	Lift Station and Collection System Overflow Report



## **Section I. Introduction**

This document is the Annual Report of the water pollution control activities of the City of Santa Cruz Wastewater Treatment Facility for 2010. It was prepared and submitted in fulfillment of the City's obligations to the Regional Water Quality Control Board (Region III), accordance with the Standard Provisions and Reporting Requirements of the National Pollutant Discharge Elimination System Permits (NPDES), General Reporting Requirements, § 16.C.

The City of Santa Cruz treats sewage from domestic and industrial sources at the Wastewater Treatment Facility near Neary Lagoon and discharges its effluent into the Pacific Ocean under the NPDES permit No CA0048194. The area served includes the Cities of Santa Cruz and Capitola, the areas of Live Oak, Soquel, and Aptos, and the University of California at Santa Cruz. The City also provides capacity for the City of Scotts Valley to discharge its wastewater treatment system's effluent into the Pacific Ocean. However all data contained within this report relate only to the effluent of the City's wastewater treatment plant.

The estimated population served is approximately 135,000 people.

The City continuously upgrades the treatment facility to accommodate population growth, to respond to regulatory and environmental challenges, and to implement improved technologies for wastewater treatment, the most recent structural upgrades were completed in 1998. These were the addition of the trickling filter/solids contact units to the primary treatment plant; which was rebuilt in 1991, and the commissioning of a new ocean outfall in 1989.

The design treatment capacity of the Plant is 81 million gallons per day (MGD). The NPDES mandatory limit for the average dry weather (ADW)



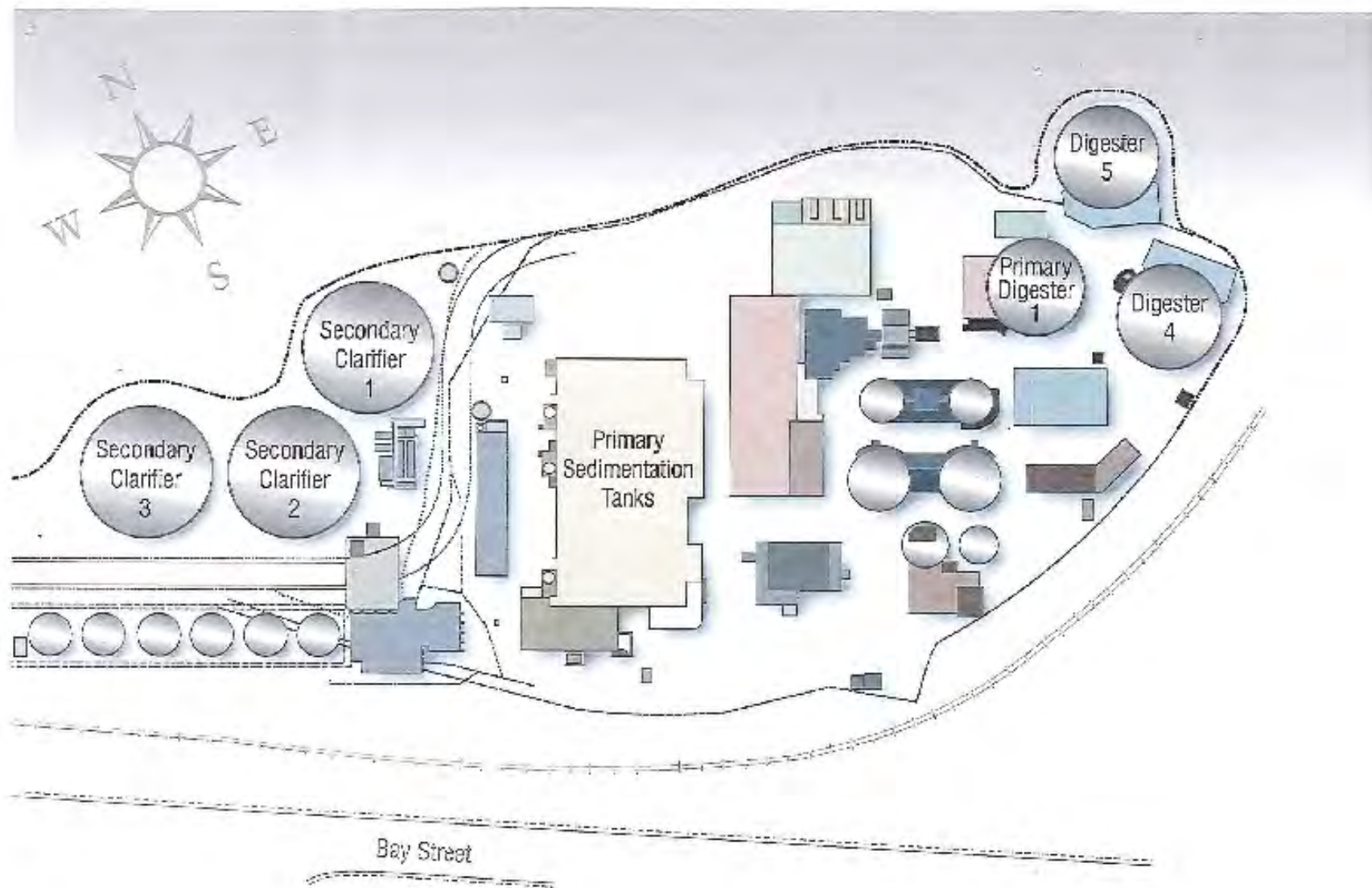
flow is 17 MGD.

Plant performance highlights and removal efficiencies for conventional pollutants for 2010 were as follows:

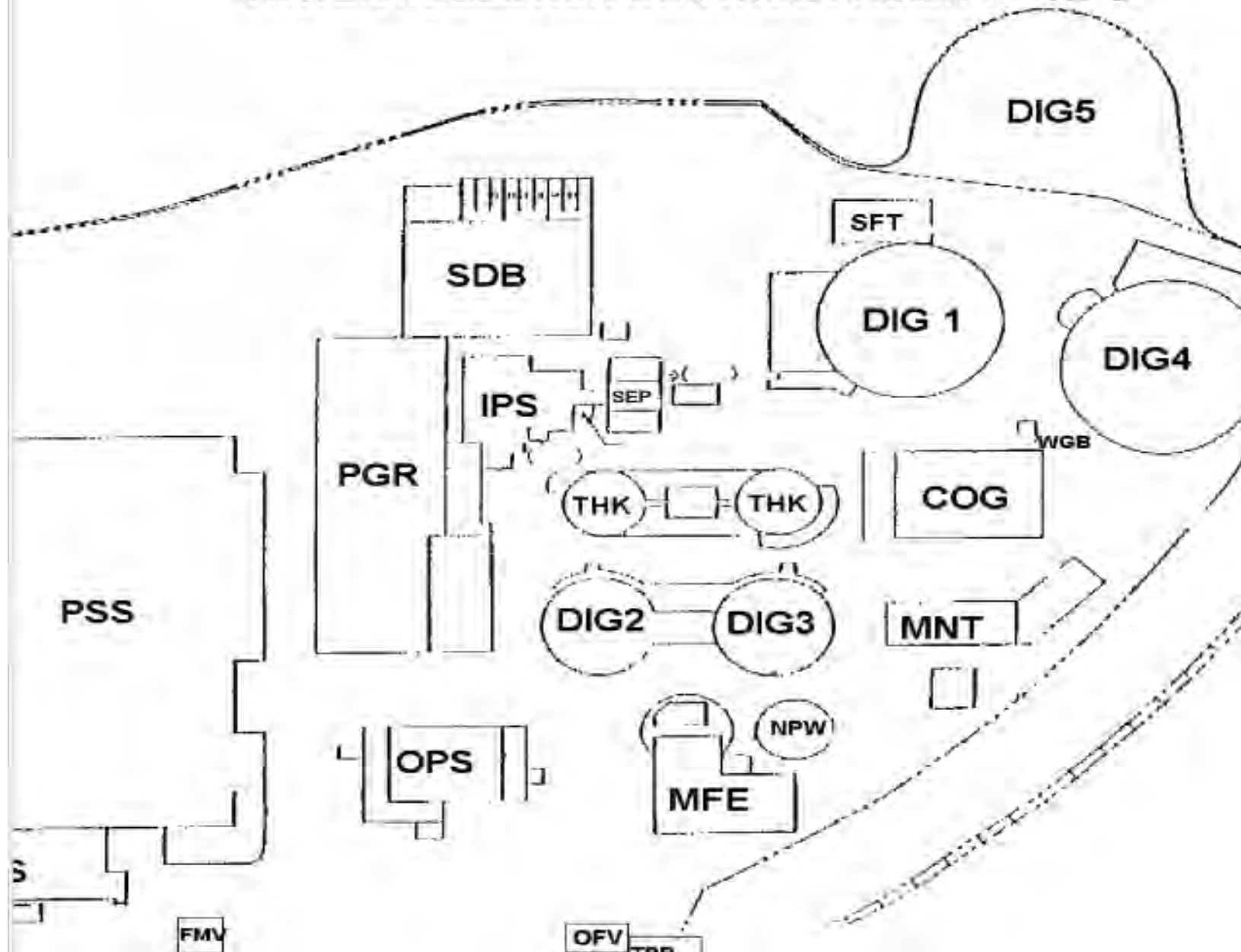
- Approximately three billion, two hundred million gallons of treated wastewater effluent (3.2 billion gallons) were discharged from the Plant at an average daily rate of 8.8 MGD;
- Total Suspended Solids (TSS) removal averaged 97.8 % throughout the year;
- Total Organic Carbon (TOC) removal averaged 86.8 % each month throughout the year, equivalent to the removal of Biochemical Oxygen Demand (BOD) at an average monthly rate approaching 92.0%;
- Reproductive, morphological and behavioral effects of CEC in the effluent were assessed on a standard test species as approved by USEPA, and the results are presented within the CCLEAN annual report for 2010.
- Compounds of emerging concern (CEC) included in the California Ocean Plan Table B in the influent and effluent as measured by integrative sampling techniques, were either bio-transformed or attenuated to various degrees before discharge into the waters of the outfall in 2010.
- Commonly Analyzed Metals (CAM) removal efficiencies were not derived for 2010 owing to the laboratory's concentrated efforts on measuring effects of compounds of emerging concern in the effluent, while maintaining a limited staff.

Following this introduction are pages showing respectively, the following:

1. An aerial view of the current facility and its major treatment processes;
2. A schematic of the Primary treatment processes of the facility; and
3. A screenshot of the Supervisory Control and Data Acquisition (SCADA) view of the treatment processes.

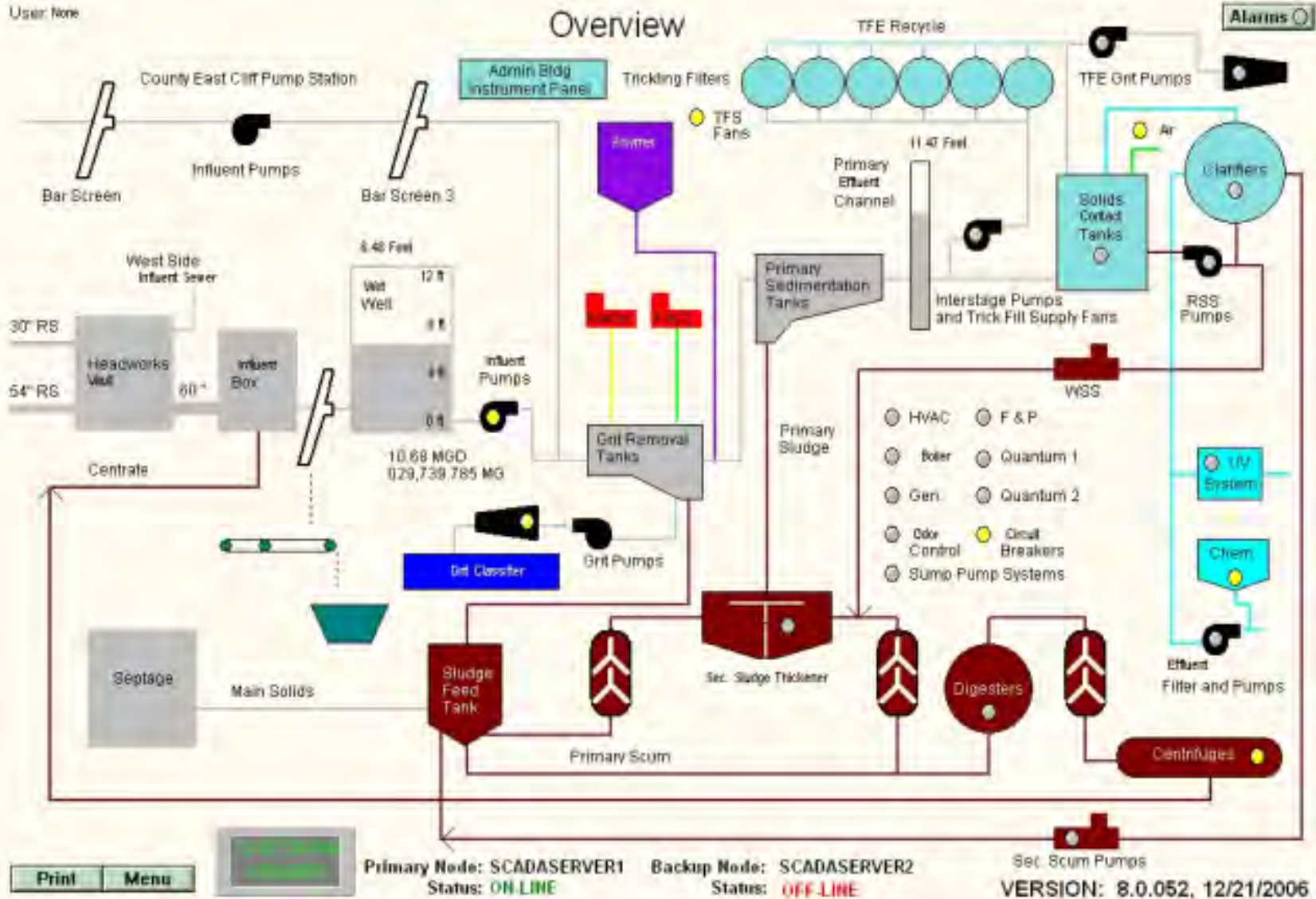


# WATER POLLUTION CONTROL FACILITY = WPC



User: None

## Overview



## **Section II. Summary of Monitoring Data – Tables**



## Section II: Tables of Plant performance on Priority Pollutants

### **Introduction to Section II.**

#### **Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual averages of conventional and priority pollutants in plant effluent, and of plant performance data in 2010.**

The following pages contain summary tables of compliance monitoring data compiled by the City's laboratory, contract laboratories, and other wastewater treatment staff for compliance monitoring purposes in 2010.

The analytical data were derived from daily and weekly laboratory analyses and/or instrumentation readings from plant effluent and process samples through 2010.

All laboratory analyses were performed using methods specified and/or approved in the plant's NPDES permit CA 0048194 and the Code of Federal Regulations at 40 CFR 136; Table 1B.

The implementation of Integrated High Volume Water Sampling mechanisms for compounds of emerging environmental concern continued in the last year. These compounds including: trace organic compounds (TOrc) such as Dioxins; Plasticizers; Pharmaceuticals and Pesticides require the implementation of developed and validated by USGS, or as approved for use by the Water Board, Region 3, under the regional monitoring program (CCLEAN) Central Coast Long-Term Environmental Assessment Network. The Laboratory and Environmental Compliance programs at the WWTF implemented the Semi-Permeable Membrane Devices (SPMD) at the Influent and Effluent of the facility, while the CCLEAN program implemented an approved sampling protocol developed by Axxys in the Effluent stream for the City of Santa Cruz and the City of Scotts Valley.

Sampling and analytical data for TOrc (also widely known as Compounds of Emerging Concern (CEC)), in the influent and effluent of wastewaters are influenced by complex matrix effects in wastewater. The matrix effects usually, make it infeasible to make comparisons of influent and effluent measurements, since pollutant sampling and analyses from the influent are significantly less accessible to the best and current sampling technologies and validated analytical techniques than in the effluent. Therefore for 2011 the SPMD sampling mechanisms will be reintroduced into the Influent and Effluent streams simultaneously.

However, it is still very instructive to evaluate the differences because, differences of magnitudes equal or greater than one log of the measurements between influent and effluent values provide useful information on the

## Section II: Tables of Plant performance on Priority Pollutants

efficiency of the pretreatment programs in place and on the status of the prevailing operational set up of the wastewater treatment facility.

Outlined below is the sequence of the presentation of the tables:

1. Monthly averages for Plant performance data on conventional and priority pollutants;
2. Averages for Plant performance data on priority pollutants, metals and trace organics derived from Semi-Annual Effluent and Annual Influent requirements of the NPDES permit CA0048194;
3. Biosolids monitoring data for metals and select pollutants; and
4. Nearshore bacteria monitoring at 30 foot contour depth.



## Section II: Tables of Plant performance on Priority Pollutants

**Table 1: WWTF WASTEWATER TREATMENT DATA - MONTHLY FLOW AVERAGES 2010**

[illegible]

Section II: Tables of Plant performance on Priority Pollutants

**Table 2: WWTF TOTAL SUSPENDED SOLIDS (TSS) TREATMENT DATA - MONTHLY AVERAGES 2010**

2010 Monthly Averages	Influent TSS	Effluent TSS	TSS Removal	Average Monthly Effluent TSS Load	Average Monthly Effluent TSS Load
	mg/l	mg/l	%	pounds/day	kilograms/day
January	381.1	5.5	98.6%	321.5	145.8
February	259.9	7.0	97.3%	925.2	419.7
March	343.5	4.6	98.7%	348.3	158.0
April	381.3	5.2	98.6%	315.2	143.0
May	395.9	4.4	98.9%	285.3	129.4
June	436.8	4.8	98.9%	300.3	136.2
July	482.9	4.6	99.0%	257.4	116.7
August	432.7	4.7	98.9%	264.4	119.9
September	349.4	4.4	98.7%	314.7	142.7
October	371.9	5.7	98.5%	432.2	196.0
November	363.1	5.7	98.4%	361.0	163.7
December	356.8	6.4	98.2%	458.9	221.9
<b>Averages</b>	<b>379.6</b>	<b>5.3</b>	<b>98.6%</b>	<b>382.0</b>	<b>174.4</b>
<b>NPDES Limit 1 (Maximum 30-Day Effluent)</b>		≤30 mg/L		4,253	1,929
<b>NPDES Limit 2 (Maximum 7-Day Effluent Limit)</b>		≤45 mg/L		6,380	2,894
<b>NPDES Limit 3 (Minimum Monthly Average Removal)</b>			85%		

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**Table 3: WWTF TOTAL ORGANIC CARBON (TOC) TREATMENT DATA - MONTHLY AVERAGES 2010**

2010 Monthly Averages	Influent TOC	Effluent TOC	TOC Removal	Average Monthly Effluent TOC Load	Average Monthly Effluent TOC Load
	mg/l	mg/l	%	pounds/day	kilograms/day
January	84.4	13.4	81.7%	1426.3	647.0
February	108.7	15.0	85.5%	1035.6	469.8
March	84.5	16.3	79.8%	1079.9	489.8
April	81.9	12.9	83.0%	997.0	452.2
May	110.0	14.3	86.1%	853.7	387.2
June	136.5	13.7	89.5%	792.8	359.6
July	156.8	14.8	90.6%	765.1	347.1
August	172.3	15.0	91.0%	891.6	404.4
September	141.5	14.4	89.6%	895.8	406.3
October	145.9	13.2	90.2%	910.1	412.8
November	107.5	12.3	88.2%	1166.2	529.0
December	96.3	12.1	86.0%	1044.8	473.9
Averages	118.9	13.9	86.8%	988.2	448.3
NPDES Limit 1 (Maximum 30-Day Effluent TOC)		≤15.6 mg/L		2,198	1,609
NPDES Limit 2 (Maximum 7-Day Effluent TOC Limit)		≤25 mg/L		3,545	2,574
NPDES Limit 3 (Site-specific TOC Equivalent Minimum Monthly Average TOC Removal)				70%	

## Section II: Tables of Plant performance on Priority Pollutants

**Table 4: WWTF BIOCHEMICAL OXYGEN DEMAND (BOD Equivalent) TREATMENT DATA - MONTHLY AVERAGES 2010**

2010 Monthly Averages	Influent BOD (calculated)	Effluent BOD (calculated)	WWTF BOD (calculated) Removal
	mg/l	mg/l	%
January	193.1	21.7	86.9%
February	252.0	25.2	89.4%
March	193.5	28.8	84.6%
April	187.0	20.4	88.2%
May	254.9	23.9	89.8%
June	318.9	22.5	92.7%
July	351.9	25.2	93.0%
August	386.6	25.7	93.1%
September	317.6	24.3	92.2%
October	327.5	21.2	93.1%
November	244.9	19.2	92.0%
December	216.1	18.7	90.5%
<b>Averages</b>	<b>289.5</b>	<b>22.4</b>	<b>91.6%</b>
<b>NPDES Limit 1: (Maximum 30-Day Calculated Effluent BOD mg/L)</b>		<b>25</b>	
<b>NPDES Limit 2: (Maximum 7-Day Calculated Effluent BOD mg/L)</b>		<b>45</b>	
<b>NPDES Limit 3: Minimum Monthly BOD (calculated) Removal Average %</b>			<b>85%</b>

Section II: Tables of Plant performance on Priority Pollutants

**Table 5: WWTF INFLUENT & EFFLUENT DATA 2010 MONTHLY AVERAGES –PH; CHLORINE; OIL & GREASE**

2010 Months	Influent pH	Effluent pH	Daily Maximum Chlorine Residual	Peak Maximum Chlorine Residual	Influent Oil and Grease Monthly	Effluent Oil and Grease Monthly
	SI	SI	ug/l	ug/l	mg/l	mg/l
January	7.3	7.0	18.3	129.3	30	<5
February	7.3	7.0	14.2	50.0	15	<5
March	7.3	7.1	0.1	15.3	20	<5
April	7.2	7.1	0.0	0.5	17	<5
May	7.3	7.2	1.8	63.6	41	<5
June	7.3	7.1	0.0	0.0	15	<5
July	7.3	7.1	0.3	0.9	39	<5
August	7.4	7.3	7.0	160.7	31	<5
September	7.3	7.2	8.0	69.8	22	<5
October	7.2	7.1	5.5	61.5	26	<5
November	7.2	7.1	0.3	33.9	29	<5
December	7.1	6.9	14.1	56.1	21.0	<5
<b>Averages</b>	<b>7.3</b>	<b>7.1</b>	<b>5.8</b>	<b>53.5</b>	<b>25.5</b>	<b>&lt;5</b>
<b>Minimum</b>	<b>7.1</b>	<b>6.9</b>	<b>0.0</b>	<b>0.0</b>	<b>15.0</b>	<b>&lt;5</b>
<b>Maximum</b>	<b>7.4</b>	<b>7.3</b>	<b>18.3</b>	<b>160.7</b>	<b>41.0</b>	<b>&lt;5</b>
<b>NPDES Limit 1</b>		<b>Maximum: 9.0</b>	<b>Daily Maximum: 1,120</b>	<b>Instantaneous Maximum: 8,400</b>		<b>Monthly Average: 25</b>
<b>NPDES Limit 2</b>		<b>Minimum: 6.0</b>	<b>6-Month Median: 280</b>			<b>Monthly Maximum: 40</b>
<b>NPDES Limit 3</b>						<b>7-Day Average: 75</b>

## Section II: Tables of Plant performance on Priority Pollutants

**Table 6: WWTF NPDES COMPOUNDS ANALYZED ON QUARTERLY FREQUENCY - EFFLUENT DATA - 2010**

2010 Quarterly Data	Effluent Acute Toxicity (Quarterly)	Effluent Chronic Toxicity (Quarterly)	Effluent Phenols (Quarterly)	Effluent Total Sulfides (Quarterly)
	TUa	TUc	mg/L	mg/L
January	1.3	8	<0.001	<0.10
February				
March				
April	1.5	16	<0.001	<0.10
May				
June				
July	1.5	16	<0.001	<0.10
August				
September				
October	1.4	6.9	0.012	<0.10
November				
December	1.4	8		
Averages	1.4	10.98	0.0046	<0.1
Maximum	1.5	16	0.012	<0.1
NPDES Maximum Effluent Limits	4.47	140		

## Section II: Tables of Plant performance on Priority Pollutants

## Section II: Tables of Plant performance on Priority Pollutants

**Table 7: WWTF NPDES NUTRIENTS; TEMPERATURE; TURBIDITY; SILICATES MONTHLY SUMMARY - 2010**

Monthly Averages	Effluent Turbidity (Monthly)	Effluent Temperature	Ammonia Nitrogen	Ortho-Phosphate	Urea	Nitrates	Dissolved Silicate
	NTU	°C	µg/L	mg/L	mg/L	mg/L	mg/L
January	4.7	17.6	38,000	6.1	0.08	40	33
February	2.8	17.7	14,000	5.1	0.08	26	31
March	3.9	17.8	27,400	5.7	0.07	7.2	34
April	3.1	17.9	27,200	4.7	0.10	21	28
May	3.6	20.0	32,600	9.1	0.17	1.2	32
June	3.0	24.1	27,410	9.6	0.11	23	34
July	3.5	23.9	34,570	8.8	0.10	17	36
August	2.8	24.1	35,080	5.3	0.08	15	36
September	3.3	24.3	36,740	6.2	0.13	28	37
October	3.0	23.3	38,800	4.7	0.11	39	37
November	3.1	20.6	19,825	5.8	0.1	51	35
December	2.6	18.8	23,850	5.8	0.10	11	33
Average	3.3	20.8	29,622.9	6.4	0.1	23.3	33.8
Minimum	2.6	17.6	14,000.0	4.7	0.1	1.2	28.0
NPDES Monthly Average Limit	75		Instantaneous Maximum: 840,000				
NPDES Weekly Average Limit	100		Daily Maximum: 336,000				
NPDES Daily Maximum Limit	225		6-Month Median: 84,000				



Section II: Monitoring Data – Ocean Plan Table B –Trace Organic Compounds; CAMetals in the Effluent and Biosolids

**Table 8: WWTF TRACE ORGANIC COMPOUNDS (TOrc or COMPOUNDS OF EMERGING CONCERN) in CALIFORNIA OCEAN PLAN TABLE B TREATMENT DATA - ANNUAL AVERAGES 2010**

COMPOUNDS	EFFLUENT (pg/L)
Aldrin	ND
chlordane, cis	16.73
chlordane, trans	12.37
chlorpyrifos	15.84
dacthal	ND
DDD, o,p'	ND
DDD, p,p'	4.13
DDE, o,p'	ND
DDE, p,p'	8.70
DDT, o,p'	ND
DDT, p,p'	ND
diazinon	3.56
dieldrin	ND
endosulfan I	26.85
endosulfan II	ND
endosulfan sulfate	ND
endrin	ND
heptachlor	ND
heptachlor epoxide	ND
hexachlorobenzene	ND
methoxychlor	ND
mirex	ND
nonachlor, cis	ND
nonachlor, trans	12.99

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oxychlordane	ND
Naphthalene	928.76
Methylnaphthalene, 2-	1,008.10
Methylnaphthalene, 1-	806.34
Dimethylnaphthalene, 2,6-	293.40
Trimethylnaphthalene, 2,3,5-	76.25
Naphthalenes, C1 -	1,989.62
Naphthalenes, C2 -	1,623.02
Naphthalenes, C3 -	1,538.86
Naphthalenes, C4 -	750.11
Biphenyl	297.04
Acenaphthylene	ND
Acenaphthene	376.53
Fluorene	581.13
Methylfluorene, 1-	168.10
Fluorenes, C1 -	562.62
Fluorenes, C2 -	720.00
Fluorenes, C3 -	536.67
Dibenzothiophene	196.00
Dibenzothiophenes, C1 -	482.10
Dibenzothiophenes, C2 -	310.77
Dibenzothiophenes, C3 -	225.41
Phenanthrene	2,007.46
Methylphenanthrene, 1-	123.92
Phenanthrene/Anthracene, C1 -	716.53
Phenanthrene/Anthracene, C2 -	959.36
Phenanthrene/Anthracene, C3 -	469.27

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Phenanthrene/Anthracene, C4 -	247.81
Anthracene	157.14
Fluoranthene	856.92
Fluoranthene/Pyrenes, C1 -	404.81
Pyrene	523.21
Benz(a)anthracene	94.01
Chrysene	90.02
Chrysenes, C1 -	75.33
Chrysenes, C2 -	43.08
Chrysenes, C3 -	ND
Benzo(b)fluoranthene	43.31
Benzo(k)fluoranthene	17.06
Benzo(e)pyrene	36.21
Benzo(a)pyrene	30.46
Indeno(1,2,3-c,d)pyrene	ND
Dibenz(a,h)anthracene	ND
Benzo(g,h,i)perylene	ND
8 - PCB	3.71
18	4.09
27	ND
28	4.59
29	17.74
31	4.43
33	ND
44	3.55
49	2.51
52	4.27

**Section II: Monitoring Data – Ocean Plan Table B –Trace Organic Compounds; CAMetals in the Effluent and Biosolids**

56	2.71
60	ND
64	ND
66	ND
70	ND
74	ND
77	ND
87	ND
95	ND
97	ND
99	ND
101	3.16
105	ND
110	3.31
114	ND
118	ND
126	ND
128	ND
137	ND
138	ND
141	ND
146	ND
149	ND
151	ND
153	ND
156	ND
157	ND

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158	ND
169	ND
170	ND
174	ND
177	ND
180	ND
183	ND
187	ND
189	ND
194	ND
195	ND
198_199	ND
200	ND
201	ND
203	ND
206	ND
209	ND
2,3,7,8-TCDD	3.88E-03
1,2,3,7,8-PeCDD	3.45E-02
1,2,3,4,7,8-HxCDD	6.84E-02
1,2,3,6,7,8-HxCDD	8.60E-02
1,2,3,7,8,9-HxCDD	7.45E-02
1,2,3,4,6,7,8-HpCDD	2.00E-01
OCDD	3.99E-01
2,3,7,8-TCDF	4.17E-03
1,2,3,7,8-PeCDF	5.56E-03

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2,3,4,7,8-PeCDF	5.75E-03
1,2,3,4,7,8-HxCDF	1.48E-02
1,2,3,6,7,8-HxCDF	1.41E-02
2,3,4,6,7,8-HxCDF	1.56E-02
1,2,3,7,8,9-HxCDF	1.34E-02
1,2,3,4,6,7,8-HpCDF	2.00E-02
1,2,3,4,7,8,9-HpCDF	0.00E+00
OCDF	1.75E-01

**Section II: Monitoring Data – Ocean Plan Table B –Trace Organic Compounds; CAMetals in the Effluent and Biosolids**

**Table 9: WWTF METALS IN WWTF EFFLUENT AND TREATMENT DATA – ANALYZED UNDER NPDES SEMI-ANNUAL MONITORING PROGRAM IN 2010**

Metals treatment data were compiled from analytical work performed by the City of Santa Cruz WWTF Laboratory ELAP Certificate no CA 1176; and McCampbell Analytical ELAP Certificate no 1644.

Section II: Monitoring Data – Ocean Plan Table B –Trace Organic Compounds; CAMetals in the Effluent and Biosolids

Metals	Effluent Metals (Annual Average) ug/l
Aluminum	<50
Antimony	<0.5
Arsenic	1.7
Barium	17.7
Beryllium	<0.5
Boron	335.0
Cadmium	<0.25
Chromium	2.0
Cobalt	1.3
Copper	2.7
Lead	<0.5
Mercury	0.0
Molybdenum	5.5
Nickel	2.9
Potassium	23,000.0
Selenium	0.7
Silver	<0.19
Thallium	<0.5
Vanadium	0.9
Zinc	19.5



Section II: Monitoring Data – Ocean Plan Table B –Trace Organic Compounds; CAMetals in the Effluent and Biosolids

**Table 10: BIOSOLIDS –BI-MONTHLY SAMPLING AND ANALYSES OF WWTF BIOSOLIDS QUALITY IN 2010**

City of Santa Cruz Wastewater Treatment Plant								
Bi-Monthly Sludge Monitoring	ANALYTICAL RESULTS IN DRY WEIGHT ONLY						Hazardous Waste Limits (Max Allowable) mg/Kg Wet Weight TTLC	Land Applied Limits (mg/Kg Dry Weight)
ANALYTES	February	April	June	August	October	Units		
Antimony	2.7	2.8	3.1	2.7	3.1	mg/kg	500.0	NA
Arsenic	14.0	15.0	14.0	11.0	14.0	mg/kg	500.0	41.0
Asbestos	<0.25%	<0.25%	<0.25%	<0.25%	<0.25%	%	<1%	NA
Barium	470	540	460	390	460	mg/kg	10,000.0	NA
Beryllium	<2.1	<0.5	<2.2	<2.2	<2.1	mg/kg	75.0	NA
Cadmium	2.9	3.2	2.8	2.4	2.6	mg/kg	100.0	39.0
Chromium	36.0	43.0	36.0	30	39	mg/kg	500.0	NA
Cobalt	5.4	7.9	7.1	5.2	5.3	mg/kg	8,000.0	NA
Copper	560	430	560	500	580	mg/kg	2,500.0	1,500.0
Fluoride	15.0	15.0	NA	9.6	<4.3	mg/kg	18,000.0	NA
Lead	24.0	24.0	22.0	17.0	20.0	mg/kg	1,000.0	300.0
Mercury	1.5	1.4	1.0	1.1	1.1	mg/kg	20.0	17.0
Moisture	76.6%	76.9%	77.1%	77.5%	76.2%	%	NA	NA
Molybdenum	10.0	10.0	14.0	10.0	12.0	mg/kg	35,000.0	NA
Nickel	24.0	23.0	20.0	19.0	22.0	mg/kg	2,000.0	420.0
Nitrate-N	16.0	16.0	NA	15.0	9.8	mg/kg	NA	NA
Nitrogen-Organic	35,000	37,000	39,000	40,000	41,000	mg/kg	NA	NA
Nitrogen-Total Kjeldahl	45,000	47,000	50,000	50,000	50,000	mg/kg	NA	NA

## Section II: Monitoring Data – Ocean Plan Table B –Trace Organic Compounds; CAMetals in the Effluent and Biosolids

Nitrogen-Ammonia	9,600	10,000	11,000	9,800	8,500	mg/kg	NA	NA
Selenium	8.3	8.9	8.1	6.5	7.9	mg/kg	100.0	100.0
Silver	11.0	9.6	7.8	6.2	6.0	mg/kg	500.0	NA
Thallium	<2.1	<0.5	<2.2	<2.2	<2.1	mg/kg	700.0	NA
Vanadium	23.0	28.0	21.0	15	18	mg/kg	2,400.0	NA
Zinc	1,300	1,400	1,300	1,200	1,500	mg/kg	5,000.0	2,800.0

Section II: Monitoring Data –Receiving Water Bacteria Monitoring Data

**Table 11a: SUMMARY DATA OF WEEKLY NEARSHORE BACTERIA – TOTAL COLIFORMS SAMPLING AND ANALYSES IN 2010**



**CITY OF SANTA CRUZ**  
**30-FOOT CONTOUR RECEIVING WATER DATA**  
**TOTAL COLIFORMS by SM 9222 B**  
**January 1, 2010 - December 31, 2010**

SAMPLING DATES	MONITORING LOCATIONS							
	RW(A)	RW(C)	RW(E)	RW(F)	RW(G)	RW(H)	RW(I)	RW(L)
1/4/2010	15	1	12	2	7	5	10	8
1/11/2010	5	7	1	1	1	5	3	1
1/27/2010	76	78	76	79	74	100	61	85
2/1/2010	13	3	6	4	7	3	1	6
2/8/2010	38	42	31	40	x	65	64	86
2/16/2010	12	31	19	11	14	8	10	5
2/22/2010	43	56	11	11	13	24	13	20
3/1/2010	49	35	32	25	45	18	21	27
3/8/2010	6	25	11	<1	10	7	2	17
3/15/2010	7	1	4	1	7	4	3	2
3/22/2010	12	18	4	1	2	<1	1	<1
3/29/2010	<1	<1	1	<1	<1	<1	<1	<1
4/5/2010	14	38	22	9	13	14	12	80

## Section II: Monitoring Data –Receiving Water Bacteria Monitoring Data

4/14/2010	107	24	26	8	9	11	6	8
4/19/2010	16	3	2	2	1	1	<1	5
4/26/2010	10	<1	<1	<1	<1	1	1	<1
5/11/2010	2	2	3	<1	1	<1	<1	17
5/17/2010	7	18	18	5	4	3	5	3
5/26/2010	<1	16	5	18	2	4	<1	3
6/1/2010	1	4	<1	3	3	<1	2	<1
6/7/2010	1	<1	<1	<1	<1	1	1	<1
6/14/2010	<1	2	<1	<1	3	1	2	<1
6/21/2010	19	11	2	4	1	<1	<1	<1
6/29/2010	<1	1	2	1	<1	<1	<1	3
7/7/2010	<1	8	10	11	5	12	1	1
7/13/2010	2	5	1	5	1	1	<1	<1
7/20/2010	<1	1	3	2	2	<1	<1	2
7/27/2010	2	4	<1	<1	<1	<1	<1	<1
8/3/2010	2	10	5	<1	2	3	3	<1
8/10/2010	<1	<1	2	1	1	3	1	<1
8/17/2010	7	6	2	7	6	3	2	<1
8/24/2010	2	12	5	3	2	1	1	13
8/31/2010	7	11	3	10	2	10	14	4
9/21/2010	4	3	2	2	10	1	10	2
9/28/2010	<1	1	<1	1	<1	<1	<1	<1
10/5/2010	3	8	1	<1	3	2	5	3
10/12/2010	10	10	6	<1	<1	2	4	<1

## Section II: Monitoring Data –Receiving Water Bacteria Monitoring Data

<b>10/19/2010</b>	68	11	6	2	6	21	13	<1
<b>11/2/2010</b>	42	20	12	23	10	40	36	10
<b>11/9/2010</b>	94	14	14	<1	1	2	5	<1
<b>11/16/2010</b>	1	20	10	3	2	7	1	4
<b>11/30/2010</b>	10	6	13	5	8	107	46	4
<b>12/7/2010</b>	37	7	15	20	12	12	12	21
<b>12/28/2010</b>	35	13	18	26	31	42	72	28

Section II: Monitoring Data –Receiving Water Bacteria Monitoring Data

**Table 11b: SUMMARY DATA OF WEEKLY NEARSHORE BACTERIA – FECAL COLIFORMS SAMPLING AND ANALYSES IN 2010**



**CITY OF SANTA CRUZ  
30-FOOT CONTOUR RECEIVING WATER DATA  
FECAL COLIFORMS by SM 9221 E  
January 1, 2010 - December 31, 2010**

SAMPLING DATES	MONITORING LOCATIONS							
	RW(A)	RW(C)	RW(E)	RW(F)	RW(G)	RW(H)	RW(I)	RW(L)
1/6/2010	5	2	5	<1	1	4	<1	4
1/13/2010	11	<1	2	<1	5	12	20	3
1/20/2010	1	3	1	5	3	7	6	<1
1/27/2010	<1	<1	4	8	9	10	3	3
2/3/2010	2	1	1	1	10	5	4	<1
2/10/2010	1	<1	2	4	<1	8	11	1
2/24/2010	129	67	93	52	89	87	60	99
2/25/2010	1	na	1	na	na	<1	na	<1
3/4/2010	11	8	5	6	7	6	5	3
3/10/2010	<1	<1	<1	<1	<1	<1	<1	<1
3/17/2010	1	18	5	<1	<1	<1	<1	<1
3/24/2010	3	<1	1	2	<1	1	<1	2

## Section II: Monitoring Data –Receiving Water Bacteria Monitoring Data

3/31/2010	2	<1	2	1	<1	1	<1	<1
4/7/2010	1	<1	1	5	3	2	<1	<1
4/14/2010	<1	4	<1	3	1	2	<1	<1
4/21/2010	8	<1	<1	1	<1	<1	<1	3
4/28/2010	7	1	8	<1	1	<1	2	<1
5/6/2010	8	2	<1	2	2	1	<1	<1
5/12/2010	<1	<1	<1	<1	<1	<1	<1	<1
5/19/2010	1	3	1	<1	2	<1	<1	2
5/26/2010	1	2	1	1	<1	<1	<1	<1
6/2/2010	4	<1	<1	<1	1	<1	<1	<1
6/9/2010	<1	1	2	<1	3	1	3	<1
6/16/2010	<1	<1	3	<1	<1	<1	<1	<1
6/23/2010	1	2	<1	<1	<1	<1	<1	<1
6/30/2010	4	7	2	2	<1	<1	<1	<1
7/7/2010	1	1	5	5	3	5	<1	1
7/13/2010	1	4	2	<1	<1	<1	1	<1
7/20/2010	<1	<1	2	1	<1	1	<1	<1
7/27/2010	3	3	<1	<1	2	<1	<1	<1
8/3/2010	<1	3	3	<1	1	1	1	<1
8/10/2010	<1	<1	<1	<1	<1	1	<1	<1
8/17/2010	2	1	<1	1	2	<1	<1	<1
8/24/2010	3	6	1	<1	<1	<1	1	3
8/31/2010	2	<1	<1	1	1	2	3	<1
9/21/2010	1	<1	<1	2	1	<1	4	<1

**Section II: Monitoring Data –Receiving Water Bacteria Monitoring Data**

<b>9/28/2010</b>	<1	1	<1	<1	<1	<1	<1	<1
<b>10/5/2010</b>	<1	1	<1	1	<1	<1	<1	<1
<b>10/12/2010</b>	2	1	1	1	<1	2	1	<1
<b>10/19/2010</b>	6	1	6	1	2	16	12	<1
<b>11/2/2010</b>	5	10	2	1	1	7	5	2
<b>11/9/2010</b>	5	4	2	<1	<1	2	<1	<1
<b>11/16/2010</b>	1	3	1	1	1	<1	<1	1
<b>11/30/2010</b>	3	<1	1	<1	2	63	19	<1
<b>12/7/2010</b>	14	5	6	4	2	2	4	<1
<b>12/28/2010</b>	4	4	2	2	10	11	15	2



## Section II: Monitoring Data –Receiving Water Bacteria Monitoring Data

**Table 11c: SUMMARY DATA OF WEEKLY NEARSHORE BACTERIA – ENTEROCOCCUS SAMPLING AND ANALYSES  
IN 2010**



### CITY OF SANTA CRUZ

### 30-FOOT CONTOUR RECEIVING WATER DATA

### ENTEROCOCCUS by EPA 1600

January 1, 2010 - December 31, 2010

SAMPLING DATES	MONITORING LOCATIONS							
	RW(A)	RW(C)	RW(E)	RW(F)	RW(G)	RW(H)	RW(I)	RW(L)
1/6/2010	1	3	4	2	1	16	<1	<1
1/13/2010	5	<1	1	1	1	9	10	1
1/20/2010	1	2	2	3	1	3	6	<1
1/27/2010	2	1	2	4	1	5	1	6
2/3/2010	1	<1	<1	1	18	10	1	1
2/10/2010	1	<1	<1	<1	2	1	5	<1
2/24/2010	129	67	121	36	97	138	88	138
2/25/2010	2	na	2	na	na	<1	na	2
3/4/2010	12	47	31	20	19	29	18	20
3/10/2010	1	<1	<1	<1	<1	<1	<1	<1
3/17/2010	<1	1	<1	<1	1	3	<1	<1
3/24/2010	2	4	3	<1	2	3	6	<1

## Section II: Monitoring Data –Receiving Water Bacteria Monitoring Data

3/31/2010	2	3	1	1	2	3	<1	2
4/7/2010	2	<1	<1	<1	4	<1	<1	<1
4/14/2010	<1	<1	<1	<1	<1	<1	<1	<1
4/21/2010	<1	<1	<1	<1	<1	1	1	2
4/28/2010	4	6	4	1	3	1	3	2
5/6/2010	2	2	<1	1	3	6	3	<1
5/12/2010	<1	2	1	1	<1	1	<1	<1
5/19/2010	<1	<1	1	1	<1	<1	1	<1
5/26/2010	<1	1	1	<1	<1	<1	<1	1
6/2/2010	1	<1	<1	1	<1	<1	1	<1
6/9/2010	<1	1	1	<1	<1	<1	<1	<1
6/16/2010	<1	<1	<1	<1	<1	<1	<1	<1
6/23/2010	<1	<1	<1	<1	<1	<1	<1	<1
6/30/2010	1	3	<1	<1	<1	<1	<1	<1
7/7/2010	<1	3	3	<1	<1	1	<1	<1
7/13/2010	<1	<1	<1	<1	<1	<1	<1	<1
7/20/2010	<1	<1	<1	<1	<1	<1	<1	<1
7/27/2010	<1	<1	<1	<1	<1	<1	<1	<1
8/3/2010	<1	<1	<1	<1	<1	<1	<1	<1
8/10/2010	<1	<1	<1	<1	<1	<1	<1	<1
8/17/2010	<1	<1	<1	<1	<1	<1	<1	<1
8/24/2010	2	<1	1	<1	<2	<1	<1	3
8/31/2010	<1	<1	<1	<1	<1	1	<1	<1
9/21/2010	<1	<1	<1	1	<1	<1	<1	<1

## Section II: Monitoring Data –Receiving Water Bacteria Monitoring Data

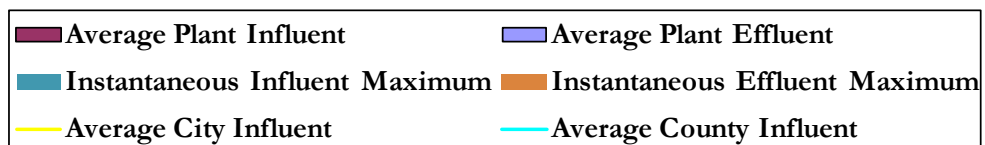
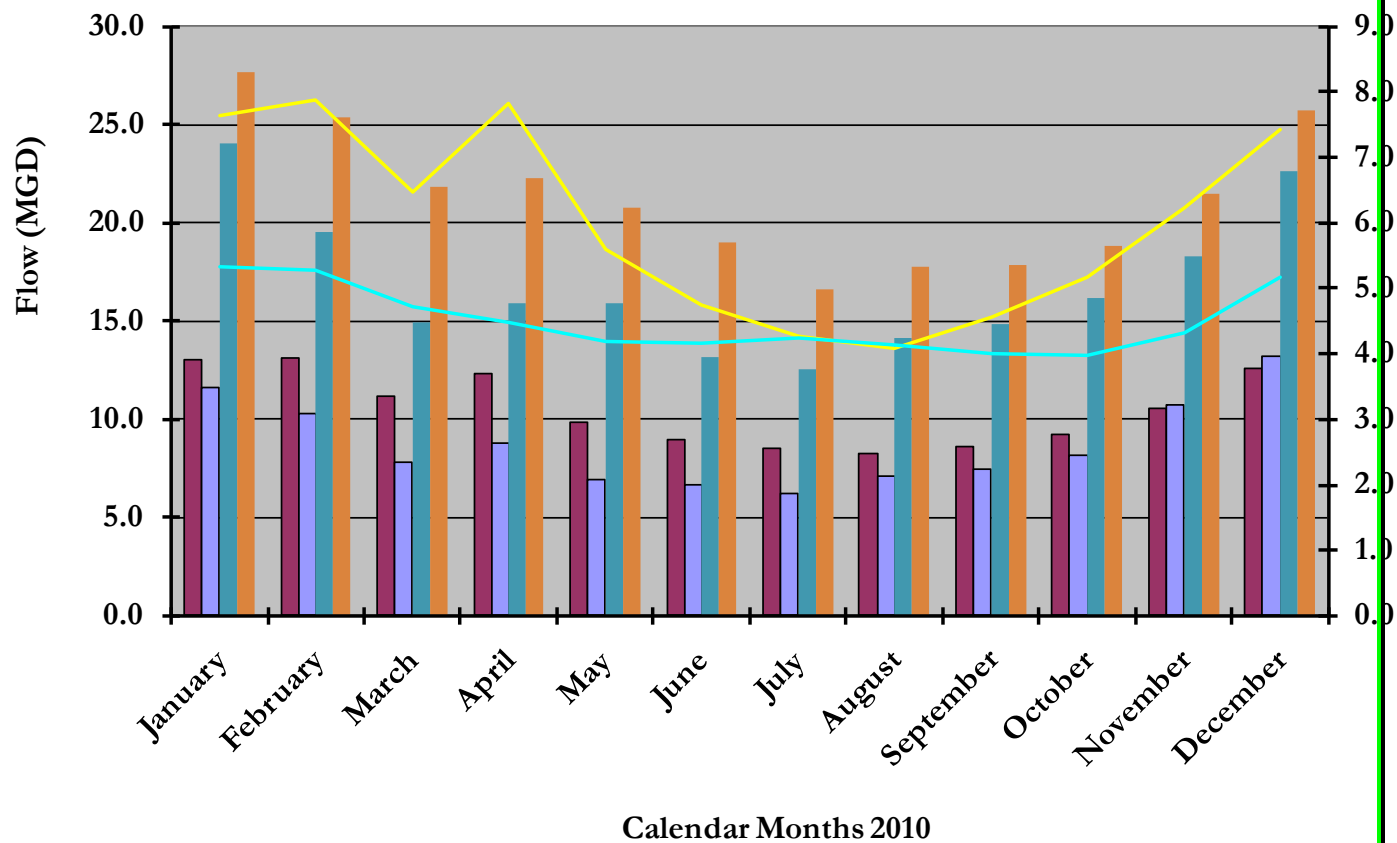
<b>9/28/2010</b>	<1	<1	<1	<1	<1	<1	<1	<1
<b>10/5/2010</b>	<1	<1	<1	<1	<1	<1	1	<1
<b>10/12/2010</b>	3	2	2	<1	<1	5	<1	<1
<b>10/19/2010</b>	<1	<1	1	<1	<1	<1	2	<1
<b>11/2/2010</b>	6	2	<1	1	1	7	6	4
<b>11/9/2010</b>	<1	1	<1	<1	<1	<1	<1	<1
<b>11/16/2010</b>	<1	<1	<1	<1	<1	<1	<1	<1
<b>11/30/2010</b>	1	<1	1	1	<1	26	8	<1
<b>12/7/2010</b>	21	<1	8	4	5	2	2	<1
<b>12/28/2010</b>	1	1	<1	3	5	12	17	<1

### **III. Summary of Monitoring Data- Graphs**

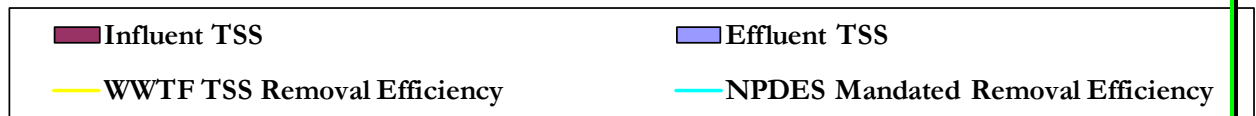
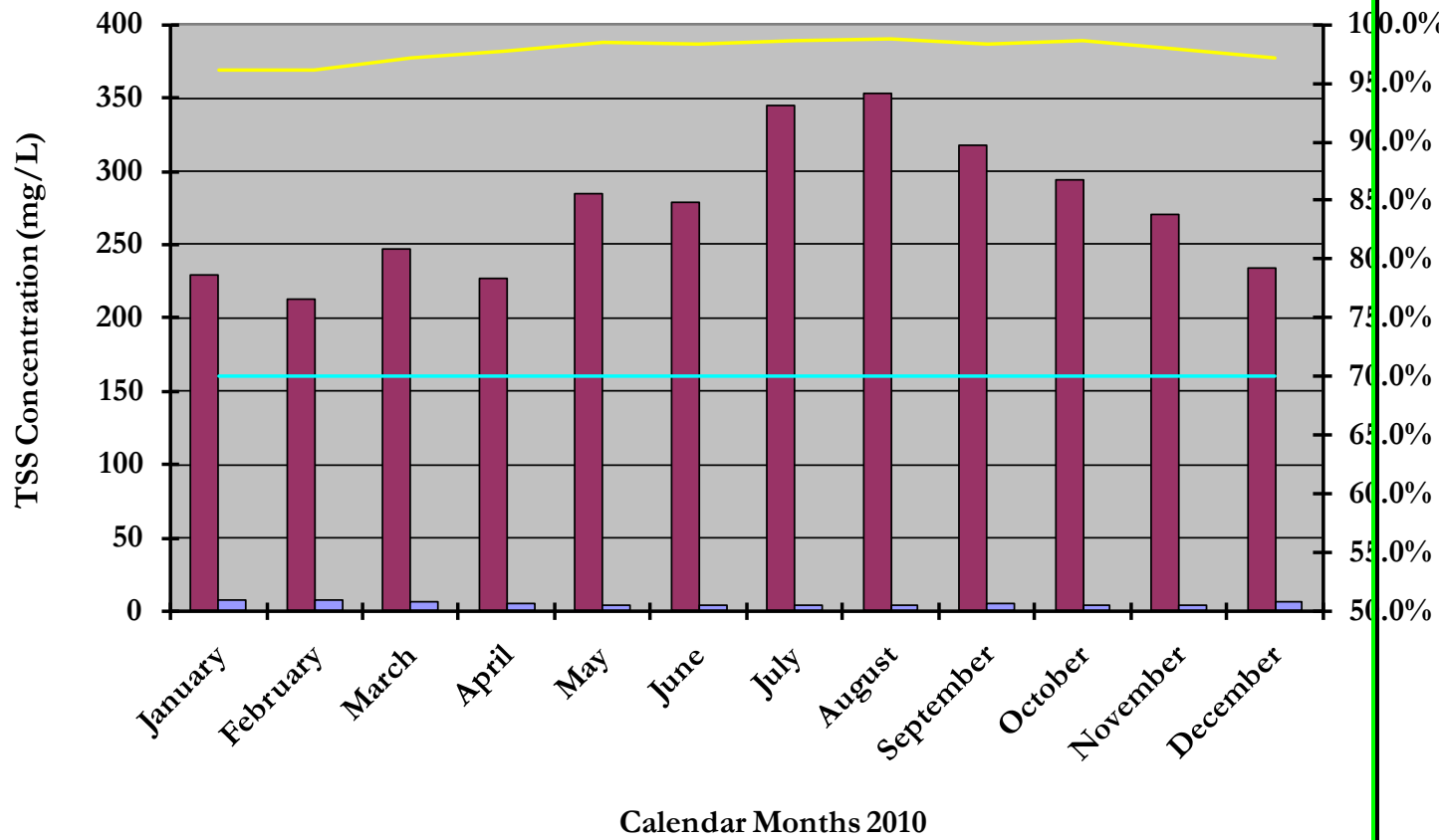
The following pages contain a sequence of graphs, and a map with brief narrative arranged in the following order:

1. WWTF Flow reports.
2. Total Suspended Solids (TSS) Report.
3. Total Organic Carbon (TOC) Report.
4. Calculated BOD Report.
5. Contour Map of Nearshore Bacterial Sampling Stations, and
6. Biosolids Monitoring and Report.

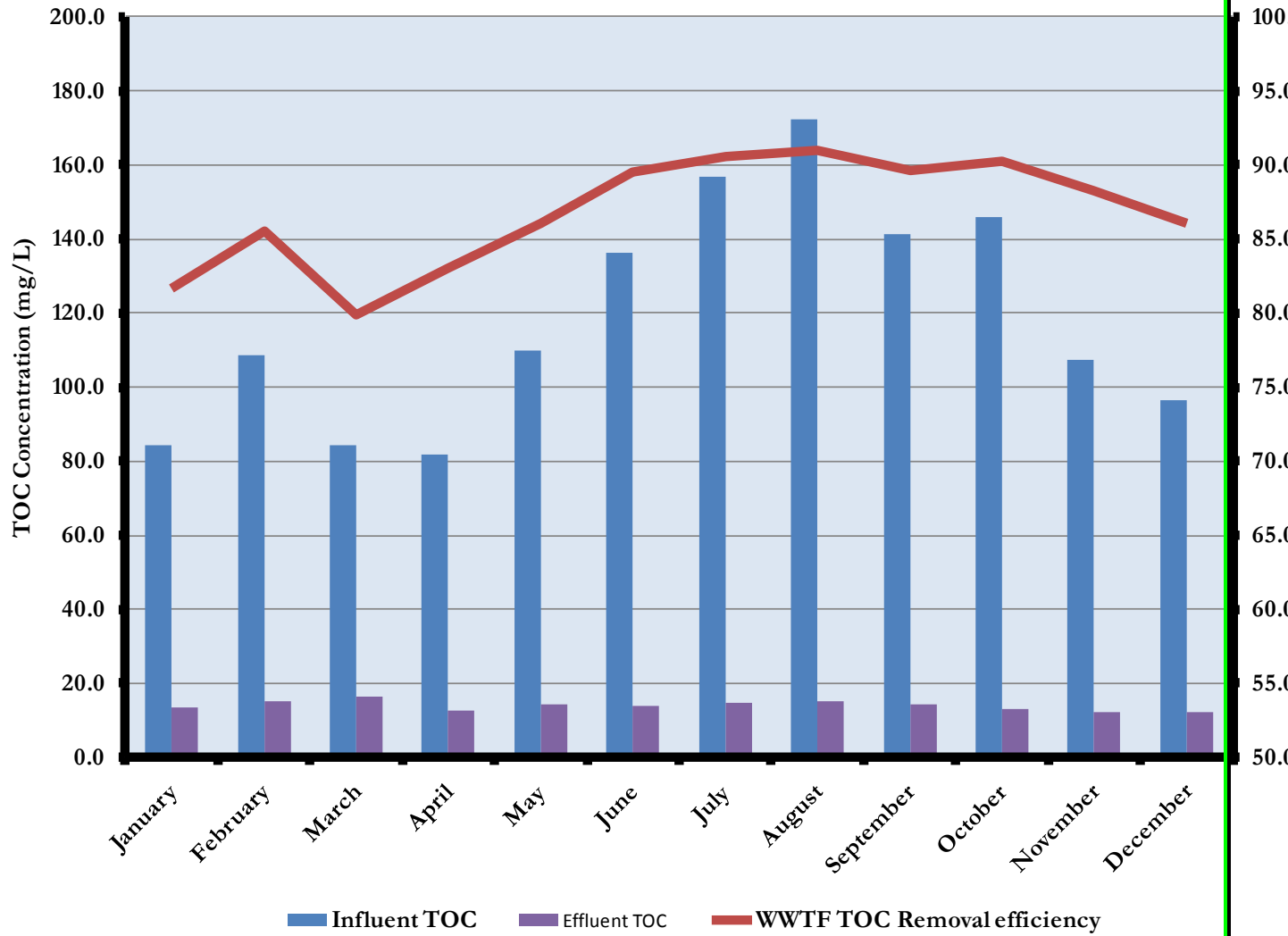
## WWTF Flow Report 2010



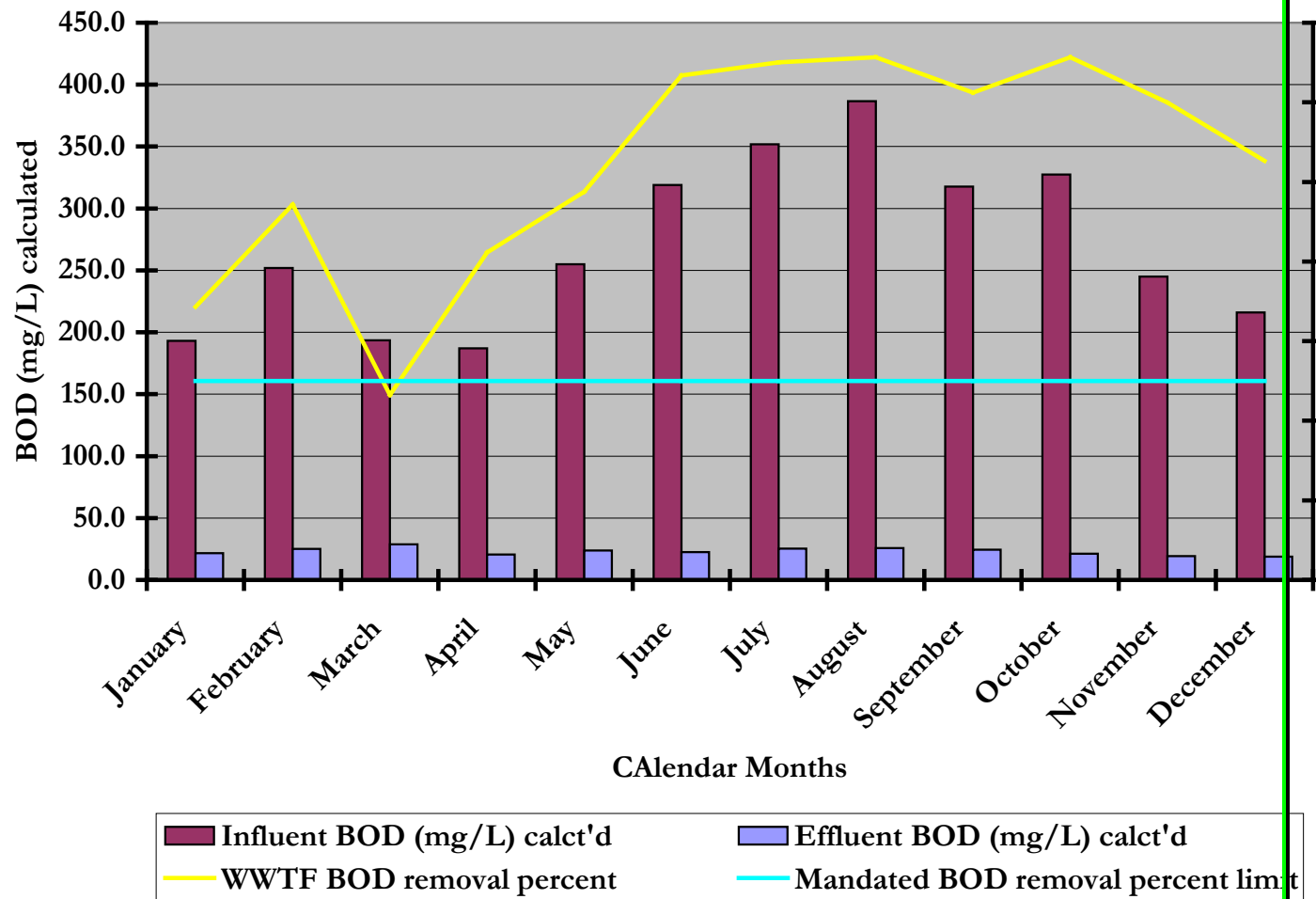
## WWTF Total Suspended Solids Report 2010



## WWTF Total Organic Carbon (TOC) Report 2010



# WWTF Calculated BOD Report 2010





**Figure 1.** Location of Santa Cruz predischage monitoring stations (5, 6, 7, and 8), outfall shoreline bacterial monitoring stations (A, C, E, F, G, H, and I), 30-foot depth contour stations (J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, and BZ), quarterly receiving water monitoring stations (1, 2, 3, 4, 5, and LEAK), benthic infauna and sediment stations locations (1, 2, 3, 4 and 5), April 1989 substrate epibenthic biota monitoring stations (Wilder Reef: 1 and 2; and Terrace Point Reef: 3 and 4).

## **Biosolids Monitoring and Reporting**

Representative sampling and analyses of sludge biosolids from the last handling point at the facility, are performed on a bi-monthly basis to monitor the process and product quality. The biosolids product is hauled to a third party site under a multi-year contract between the City and the hauler. The hauler has ultimate responsibility for the appropriate reuse of the commodity.

The data generated through the City's biosolids monitoring program indicate that the processes of biosolids generation at the facility and the quality of the biosolids product remain both stable, and predictable. Additional data generated by the City's contractors provided an additional layer of confirmation that the biosolids product meets and exceeds the limits for hazardous waste disposal or for land application purposes for biosolids uses in California.

Following this introductory paragraph are:

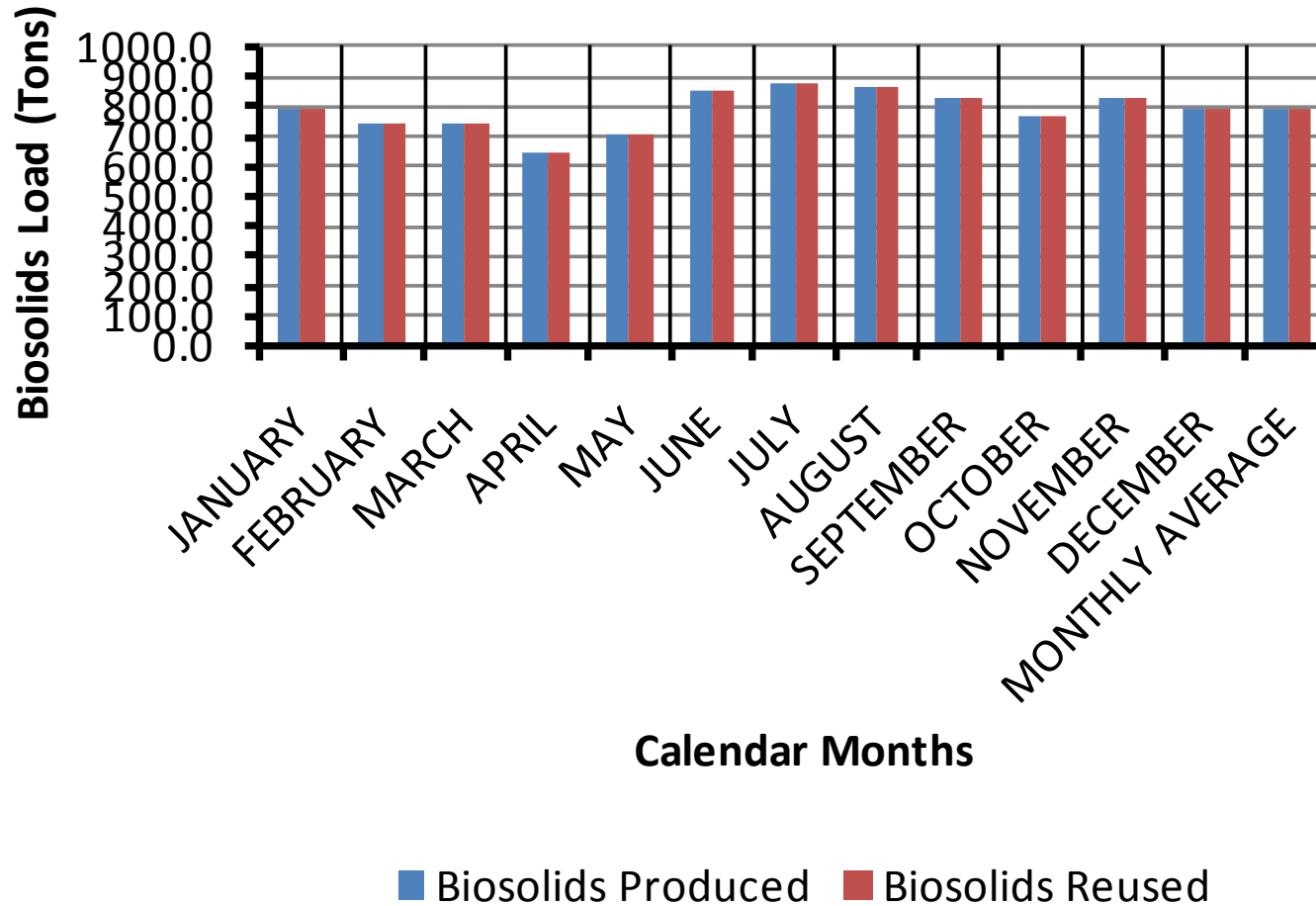
1. A table and a graph of the City's biosolids production in 2010.
2. Data on biosolids quality from analyses of the composite samples taken for the Bi-Monthly Sludge monitoring process in 2010.

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**Table: 2010 Monthly Totals - Biosolids Production and Disposal/Reuse**

2010 MONTHS	Sludge Quantity	Sludge Reuse
	Tons	Tons
JANUARY	792.1	792.1
FEBRUARY	746.8	746.8
MARCH	744.3	744.3
APRIL	642.7	642.7
MAY	708.5	708.5
JUNE	851.4	851.4
JULY	879.4	879.4
AUGUST	871.0	871.0
SEPTEMBER	828.5	828.5
OCTOBER	768.3	768.3
NOVEMBER	832.2	832.2
DECEMBER	792.1	792.1
MONTHLY AVERAGE	788.1	788.1
MONTHLY MINIMUM	642.7	642.7
MONTHLY MAXIMUM	879.4	879.4
ANNUAL TOTAL	9457.1	9457.1

## WWTF Biosolids Report 2010



Bi-Monthly Sludge Monitoring	ANALYTICAL RESULTS IN DRY WEIGHT ONLY (MG/KG)							Hazardous Waste Limits (Max Allowable) mg/Kg Wet Weight TTLC	Land Applied Limits (mg/Kg Dry Weight)
ANALYTES	2-Feb-09	6-Apr-09	8-Jun-09	3-Aug-09	5-Oct-09	7-Dec-09	Average		
Antimony	4.0	2.6	3.8	2.9	2.8	2.4	3.1	500.0	NA
Arsenic	11.0	12.0	13.0	12.0	12.0	11.0	11.8	500.0	41.0
Asbestos	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	NA
Barium	380	410	510	450	440	410	433	10,000.0	NA
Beryllium	<2.1	<2.2	<2.3	<2.2	<2.2	<2.2	<2.2	75.0	NA
Cadmium	2.2	2.8	3.0	2.7	2.5	2.6	2.6	100.0	39.0
Chromium	32.0	42.0	44.0	36	32	30	36.0	500.0	NA
Cobalt	6.5	6.8	6.1	3.9	3.9	4.4	5.3	8,000.0	NA
Copper	610	650	790	520	590	550	618	2,500.0	1,500.0
Fluoride	<5.0	7.5	44.0	26.0	13	23.0	22.7	18,000.0	NA
Lead	20.0	22.0	27.0	21.0	22.0	20.0	22.0	1,000.0	300.0
Mercury	1.7	1.10	1.50	1.4	1.2	1.5	1.4	20.0	17.0
Moisture	77.4%	77.6%	74.9%	77.7%	77.1%	77.3%	77.0%	NA	NA
Molybdenum	9.5	9.8	12.0	11.0	11.0	12.0	10.9	35,000.0	NA
Nickel	17.0	18.0	26.0	21.0	21.0	18.0	20.2	2,000.0	420.0
Nitrate-N	2.3	<2.0	<2.0	<9.0	23.0	29.0	18.1	NA	NA
Nitrogen-Organic	9,300	9,600	9,200	42,000	38,000	38,000	24,350	NA	NA
Nitrogen-Total Kjeldahl	11,000	12,000	12,000	52,000	47,000	47,000	30,167	NA	NA
Nitrogen-Ammonia	2,100	2,400	2,500	9,900	9,200	8,700	5,800	NA	NA
Selenium	6.7	7.8	10.0	7.8	7.9	7.3	7.9	100.0	100.0
Silver	15.0	13.0	13.0	17.0	10.0	9.9	13.0	500.0	NA
Thallium	<2.1	<2.2	<2.3	<2.2	<2.2	<2.2	<2.2	700.0	NA
Vanadium	19.0	24.0	23.0	18	17	16	19.5	2,400.0	NA
Zinc	1,200	1,200	1,400	1,300	1,300	1,300	1,283	5,000.0	2,800.0



## **Section IV. The Compliance Record and Corrective Actions**

## **Section IV. The Compliance Record and Corrective Actions**

This section contains narratives and figures relating to the compliance record in 2010 and all associated corrective actions with identifiable violations.

There was one (1) incident of performance failure in 2010.

The compliance failure recorded in 2010 was in March 2010 when the monthly average for TOC in the effluent exceeded the permit limit of 15.6 mg/L. Additionally, the calculated BOD removal percentage was below 85%. The numbers recorded for both indices of plant performance in March were 16.3 mg/L and 84.6% respectively.

This failure was analyzed from process microbiology and solids handling rate. There has been no other failure since March 2010.

As indicated by the data and summarized bullets in the introduction, there were no numerical basis to assess plant removal efficiencies for metals in 2010. This is attributable in significant measure to the focus on assessing the effects of Trace Organic Compounds in the effluent at the City and within the regional monitoring program CCLEAN in 2010. The analyses of influent and effluent metals loading for removal efficiency will resume in 2011.

The compliance record provides several highlights of an improved monitoring program including the following highlights in 2010:

1. The annual outfall report including a dye test and a dive inspection were concluded in October 2010. The results of the inspection are contained in this section.
2. The City integrated its program for the safe and responsible disposal of unwanted pharmaceuticals into the County run program called Sharp Solutions in 2010. The program was initiated by the City in 2008, and was broadened through a State grant to include the rest of the County by December 2008.
3. Bacterial monitoring at the 30 foot contour was sustained throughout 2010, with data indicating compliance with all beneficial use standards throughout the year. And
4. The City developed Local Limits for trace organic compounds by use of data from its integrative sampling and monitoring for compounds in the California Ocean Plan Table B list, which was simultaneously implemented at the same at the facility's influent and effluent troughs.



The monthly average BOD removal efficiency in 2010 was 92.6% 2010. The secondary standard for BOD removal; and the erstwhile limit for the facility was 85% BOD removal. The City's performance for the removal of wasteload is now measured in Total Organic Carbon (TOC) and Total Suspended Solids (TSS). The equivalent secondary standard for TOC removal is 70%, while plant performance for 2010 was 89.4%. Plant performance for TSS removal averaged 97.8% for 2010.

The Water Boards instructed dischargers including the City of Santa Cruz to submit all self monitoring reports (SMR) exclusively by electronic means during 2010. Although the CIWQS (California Integrated Water Quality System) and USEPA's electronic systems are still being optimized for these activities, the City continues to support the State's efforts with streamlining the reporting system, including CIWQS.

In conclusion, the data indicate that compliance with the WDR and MRP requirements has been good, and no problems are anticipated for 2011.

The remainder of this section beginning on the next page contains narratives, tables, and a photograph of the annual outfall monitoring exercise.

## ANNUAL OUTFALL MONITORING REPORT

The City has conducted its annual Outfall and Diffuser Monitoring as required by MRP No.R3-2005-0003 of May 13, 2005. This year's monitoring consisted of a dye test with an over flight along the entire outfall (report attached) and an underwater video survey conducted by a remotely operated vehicle (ROV) along the diffuser section (report attached). The dye study was conducted by Full Tilt Design on December 9, 2010. The ROV inspection was conducted on September 2, 2010 by North Coast Divers, Inc.

The underwater survey showed that the open diffuser ports are unobstructed and flowing as designed and originally constructed. The dye test did not detect any leaks and did not detect the intermittent leak that was previously detected in 1992, 1994, 2002, 2004 and 2006.

That leak had been previously detected at an approximate depth of 70 feet below sea level and 7000 feet from the beach vault as measured along the outfall. The dye test was performed after the weather change and provided excellent visibility of dye. Dye was only observed at the diffuser location.

Kinnetic Laboratories had performed an extensive investigation of the intermittent leak in 1994 and concluded that the leak was small in volume and had an initial dilution exceeding 1000:1 and that the risks and cost to fix such a leak outweighed the benefits. The precise location of the leak was not determined due to the small size of the leak and the fact that the outfall is in a trench covered with ballast rock.

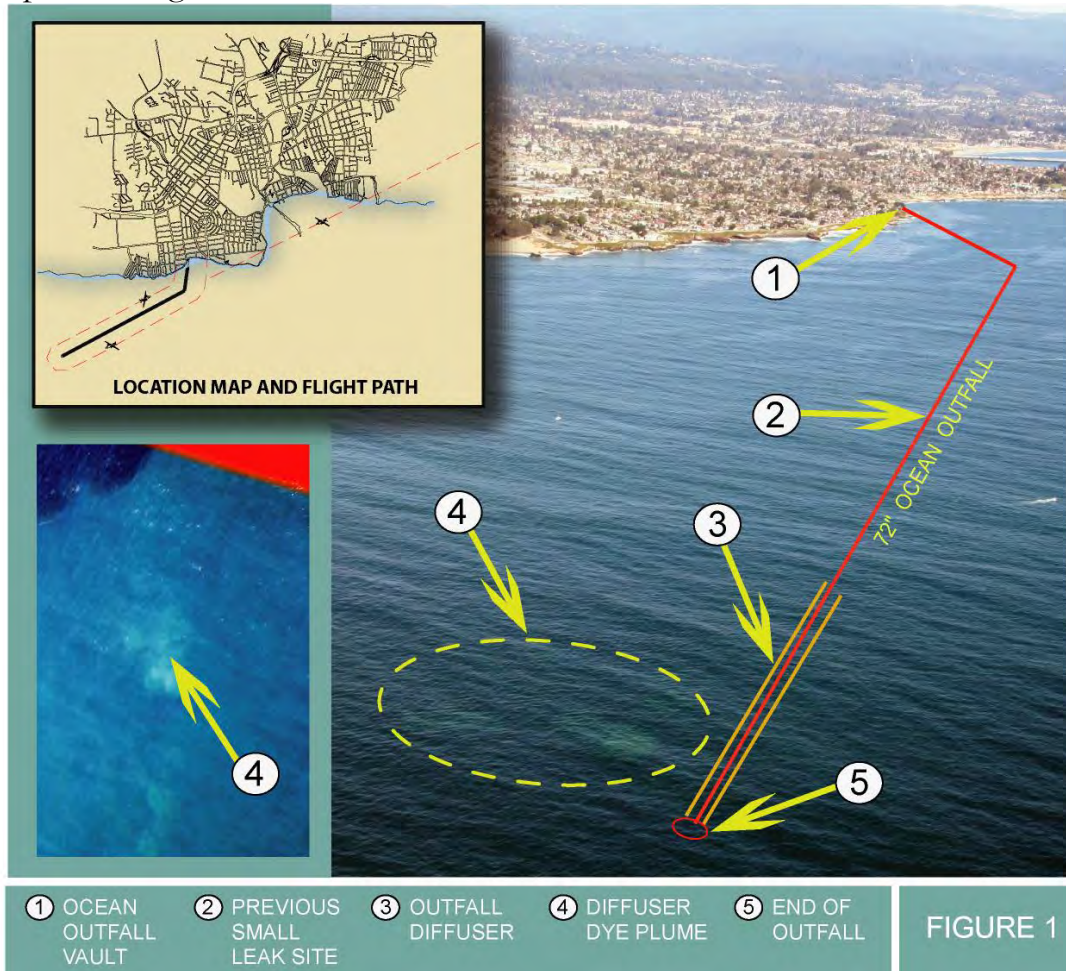
Beginning in 2005, weekly grab samples are taken from the GIS location identified as the leak at the 70 foot contour, along with the monitoring of the near shore bacteria at 30 foot contour depth. Previous grab samples were taken quarterly at the leak site from 1995 through 1998. In April 1997, elevated bacteria levels indicated that the intermittent leak was still active at times. All samples were tested, and continue to be tested for total coliform, fecal coliform and enterococci. Bacteria data from the site has shown intermittent levels of elevated indicators. This is consistent with the limited and intermittent nature of the leak. No additional impact from the leak has been documented. Details of all the test data have been included in both the annual and quarterly Ocean Outfall reports submitted to the RWCQB from 1995 through 1998.

Finally, the City uses the annual report to provide updates on observations relating to the leak. Following this page is the dye study report.

Steve Wolfman, P.E.  
Associate Civil Engineer

## Dye Study Report - Wastewater Treatment Effluent Ocean Outfall Overflight

On Thursday November 11<sup>th</sup>, 2010 the City of Santa Cruz conducted a dye test of the Wastewater Treatment effluent ocean outfall to visually search for leaks. An overflight was performed between 12:00pm and 12:45pm using the aerial survey services of pilot Aaron Becker and Chris English. An on-board differential-ready GPS (which simultaneously tracks and uses up to 12 satellites) with an accuracy of 1-5 meters (3-15 feet) was used for navigation and positioning.



*Figure 1 shows the location of the previous small leak site (2) located roughly 7,000 L.F. along the pipeline from the beach outfall vault. No dye was seen at this location. Along the diffuser section (3) many large plumes (4) were visually located before the end of the pipeline (5).*

At 11:55 pm 90 gallons of yellow liquid dye were added at the at the Wastewater Treatment facility. The weather was partly cloudy and the sea surface was calm. At around 12:15 pm a dye plume was observed and photographed with a digital camera in the diffuser section area. The dye plume was very visible from the air, and appeared similar to previous years' observations.

After the dye plume was sighted, further inspection of the entire ocean outfall revealed that the surrounding ocean surface remained unchanged. No leaks or visual dye plumes were evident. The overflight of the ocean outfall concluded at 12:45 pm.

Report contributed by Aaron Becker.

# **CITY OF SANTA CRUZ OUTFALL DIFFUSER INSPECTION PREPARED FOR THE CITY OF SANTACRUZ**

**December 11, 2010**

Submitted to: Steve Wolfman

RE: 2010 video survey of Outfall Diffusers

Project site: City of Santa Cruz Outfall

Date of work: December 11 , 2010

## **INTRODUCTION**

DRS MARINE, Inc. conducted an underwater inspection of the diffuser section of the Santa Cruz Outfall Pipe. The inspection was to provide a clear view of each diffuser port in order to determine if the port is open or closed and if open, is the flow unobstructed or obstructed. The inspection was conducted by the use of an ROV (Remotely Operated Vehicle)

## **HIGHLIGHTED CONDITIONS AS FOUND:**

1. All open diffusers appear to be functioning properly.
2. Each flapper is intact and allowing effluent to flow unobstructed.
3. All closed diffusers were intact and properly sealing the flow of any effluent.
4. At two locations the Rip Rap was partially covering the diffusers, #100 & #105, as noted in the table below. In both locations, the diffusers are closed.
5. Diffuser #46 is completely covered with a patch, which is fastened down by banding around the pipe.
6. Due to the rapid underwater current and the high flow of effluent, the end structure could not be inspected.

**TABLE A Diffuser location and as found condition**

### **DIFFUSER OPEN / CLOSED OBSTRUCTED/ TIME LOG**

#### **LOCATION POSITION UNOBSTRUCTED HR : MIN : SEC COMMENTS**

1 South	OPEN UNOBSTRUCTED :01
2 North	OPEN UNOBSTRUCTED 1:05
3 South	CLOSED 1:48
4 North	OPEN UNOBSTRUCTED 2:33
5 South	CLOSED 5:27
6 North	CLOSED 6:00
7 South	OPEN UNOBSTRUCTED 7:25
8 North	OPEN UNOBSTRUCTED 7:58
9 South	CLOSED 9:11
10 North	CLOSED 10:10
11 South	OPEN UNOBSTRUCTED 10:4 3
12 North	CLOSED 11 :54
13 South	CLOSED 12:25
14 North	OPEN UNOBSTRUCTED 12:50
15 South	CLOSED 13:35
16 North	CLOSED 14:27
17 South	OPEN UNOBSTRUCTED 15:00

18 North	OPEN UNOBSTRUCTED 16:35
19 South	CLOSED 17:43
20 North	CLOSED 18:24
21 South	OPEN UNOBSTRUCTED 19:45
22 North	CLOSED 20 :45
23 South	CLOSED 21 :13
24 North	OPEN UNOBSTRUCTED 21 :45
25 South	CLOSED 22:35
26 North	CLOSED 23:05
27 South	OPEN UNOBSTRUCTED :24:00
28 North	OPEN UNOBSTRUCTED :24:30
29 South	CLOSED :2 5:45
30 North	CLOSED :27:05
31 South	OPEN UNOBSTRUCTED :28:31
32 North	CLOSED :29:19
33 South	CLOSED :29:51
34 North	OPEN UNOBSTRUCTED :30:19
35 South	CLOSED :30:55
36 North	CLOSED :31 :27
37 South	OPEN UNOBSTRUCTED :32 :08
38 North	OPEN UNOBSTRUCTED :33:22
39 South	CLOSED :33:58
40 North	CLOSED :34:20
41 South	OPEN UNOBSTRUCTED :35 :00
42 North	CLOSED :36:29
43 South	CLOSED :37:09
44 North	OPEN UNOBSTRUCTED :37:30
45 South	CLOSED :38:35
46 North	:39:15 Diffuser is covered with a large patch which is secured to pipe with banding
<b>DIFFUSER OPEN / CLOSED OBSTRUCTED/ TIME LOG</b>	
<b>LOCATION POSITION UNOBSTRUCTED HR : MIN : SEC COMMENTS</b>	
47 South	OPEN UNOBSTRUCTED :40:15
48 North	OPEN UNOBSTRUCTED :40:45
49 South	CLOSED :41 :27
50 North	CLOSED :42:00
51 South	CLOSED :42:45
52 North	CLOSED :43:19
53 South	OPEN UNOBSTRUCTED :43:45
54 North	OPEN UNOBSTRUCTED :44:10
55 South	CLOSED :44:38
56 North	CLOSED :45:00
57 South	OPEN UNOBSTRUCTED :45:43



58 North	OPEN UNOBSTRUCTED 46:: 11
59 South	CLOSED :46:30
60 North	CLOSED :47:10
61 South	CLOSED :47:45
62 North	CLOSED :48:10
63 South	OPEN UNOBSTRUCTED :48:48
64 North	OPEN UNOBSTRUCTED :52 :30
65 South	CLOSED :52 :50
66 North	CLOSED :53:12
67 South	OPEN UNOBSTRUCTED :53 :55
68 North	OPEN UNOBSTRUCTED :54:43
69 South	CLOSED :55:35
70 North	CLOSED :56:10
71 South	CLOSED :57:10
72 North	CLOSED :57:30
73 South	OPEN UNOBSTRUCTED :57:50
74 North	OPEN UNOBSTRUCTED :58:15
75 South	CLOSED :58:40
76 North	CLOSED :59:00
77 South	OPEN UNOBSTRUCTED :59:40
78 North	OPEN UNOBSTRUCTED 1:00:31
79 South	CLOSED 1:00:58
80 North	CLOSED 1:01 :22
81 South	CLOSED 1:01 :45
82 North	CLOSED 1:02:01
83 South	OPEN UNOBSTRUCTED 1:02:25
84 North	CLOSED 1:02:45
85 South	CLOSED 1:03:10
86 North	OPEN UNOBSTRUCTED 1:03:37
87 South	OPEN UNOBSTRUCTED 1:04:00
88 North	CLOSED 1:04:20
89 South	CLOSED 1:04:47
90 North	CLOSED 1:05:08
91 South	OPEN UNOBSTRUCTED 1:05:33
92 North	OPEN UNOBSTRUCTED 1:06:00
93 South	CLOSED 1:06:30
94 North	CLOSED 1:06:54
95 South	CLOSED 1:07:13
96 North	CLOSED 1:07:36
<b>DIFFUSER -OPEN / CLOSED OBSTRUCTED/ TIME LOG</b>	
<b>LOCATION. POSITION UNOBSTRUCTED HR : MIN : SEC COMMENTS</b>	

97 South	OPEN UNOBSTRUCTED 1:09:22
98 North	OPEN UNOBSTRUCTED 1:09:45
99 South	CLOSED 1:10:46 The rip rap is above the crown of pipe and partially covering the diffuser flap
100 North	CLOSED 1:12:45
101 South	OPEN UNOBSTRUCTED 1:14:20
102 North	OPEN UNOBSTRUCTED 1:15:30
103 South	CLOSED 1:16:30
104 North	CLOSED 1:16:59 The rip rap is above the crown of pipe and partially covering the diffuser flap
105 South	CLOSED 1:17:23
106 North	CLOSED 1:17:36
107 South	OPEN UNOBSTRUCTED 1:18:07
108 North	OPEN UNOBSTRUCTED 1:18:30
109 South	CLOSED 1:19:15
110 North	CLOSED 1:19:39
111 South	OPEN UNOBSTRUCTED 1:20:18
112 North	OPEN UNOBSTRUCTED 1:20:38
113 South	CLOSED 1:21 :03
114 North	CLOSED 1:21 :28
115 South	CLOSED 1:21 :56
116 North	CLOSED 1:22:12
117 South	OPEN UNOBSTRUCTED 1:22:35
118 North	OPEN UNOBSTRUCTED 1:22:55
119 South	CLOSED 1:23:26
120 North	CLOSED 1:23:45
121 South	OPEN UNOBSTRUCTED 1:24:13
122 North	OPEN UNOBSTRUCTED 1:24:33
123 South	CLOSED 1:25:03
124 North	CLOSED 1:25:30
125 South	CLOSED 1:25:48
126 North	CLOSED 1:26:45
127 South	OPEN UNOBSTRUCTED 1:27:24
128 North	OPEN UNOBSTRUCTED 1:27:45
129 South	CLOSED 1:28:00
130 North	CLOSED 1:28:32
131 South	OPEN UNOBSTRUCTED 1:29:16
132 North	OPEN UNOBSTRUCTED 1:29:30
133 South	CLOSED 1:29:45
134 North	CLOSED 1:30:12
135 South	CLOSED 1:31 :43
136 North	CLOSED 1:32:05
137 South	OPEN UNOBSTRUCTED 1:32:22

138 North	OPEN UNOBSTRUCTED 1:32:43
139 South	CLOSED 1:33:49
140 North	CLOSED 1:34:09
141 South	OPEN UNOBSTRUCTED 1:34:28
142 North	OPEN UNOBSTRUCTED 1:34:47
143 South	CLOSED 1:35:30
144 North	CLOSED 1:35:45
<b>DIFFUSER OPEN / CLOSED OBSTRUCTED/ TIME LOG</b>	
<b>LOCATION POSITION UNOBSTRUCTED HR : MIN : SEC COMMENTS</b>	
145 South	CLOSED 1:36:12
146 North	CLOSED 1:36:30
147 South	OPEN UNOBSTRUCTED 1:36:59
148 North	OPEN UNOBSTRUCTED 1:37:20
149 South	CLOSED 1:37:36
150 North	CLOSED 1:37:55
151 South	OPEN UNOBSTRUCTED 1:38:27
152 North	OPEN UNOBSTRUCTED 1:38:55
153 South	CLOSED 1:39:13
154 North	CLOSED 1:39:39
155 South	CLOSED 1:39:50
156 North	CLOSED 1:41:33
157 South	OPEN UNOBSTRUCTED 1:42:03
158 North	OPEN UNOBSTRUCTED 1:42:23
159 South	CLOSED 1:42:40
160 North	CLOSED 1:43:17
161 South	OPEN UNOBSTRUCTED 1:43:51
162 North	OPEN UNOBSTRUCTED 1:44:13
163 South	CLOSED 1:44:35
164 North	CLOSED 1:44:56
165 South	CLOSED 1:45:57
166 North	CLOSED 1:46:19
167 South	OPEN UNOBSTRUCTED 1:46:41
168 North	OPEN UNOBSTRUCTED 1:47:00
169 South	OPEN UNOBSTRUCTED 1:47:30
170 North	CLOSED 1:47:56
171 South	OPEN UNOBSTRUCTED 1:48:19
172 North	OPEN UNOBSTRUCTED 1:48:43
173 South	OPEN UNOBSTRUCTED 1:49:20
174 North	CLOSED 1:50:05

**Report prepared by DRS MARINE INC.**  
525 CHESTNUT STREET  
VALLEJO, CA 94590



BUS: 707-648-3483  
FAX: 707-648-2006  
drsmarine@aol.com

## Section V. The Operating Staff

## **Section V. The Operating Staff**

### **V. The Operating Staff.**

The following section summarizes the credentials and designations of staff employed at the Wastewater Treatment facility and the City's compliance with the California Water Code, the California Code of Regulations, in maintaining appropriate staffing.

The Waste Discharge Requirements, and the NPDES Permit require operators and their supervisors at municipal wastewater treatment plants to be certified at specific minimum levels of certification based upon the wastewater treatment plant processes and design flows. All of the operations personnel of the City of Santa Cruz Wastewater Treatment Facility are certified by the California State Water Resources Control Board at or above the required levels. In addition, the Superintendent of the facility maintains a wastewater operators certificate at the level of the plant rating.

The Operations and Maintenance division of the facility is staffed as follows:

- 1 (one) Wastewater Treatment Facility Operations Manager;
- 4 (four) Senior Wastewater Plant Operators;
- 8 (eight) Wastewater Plant Operators
- 1 (One) Operators-in-Training (OIT)

The maintenance unit consists of seven mechanics and two electricians as follows:

- 1 (one) Senior Plant Mechanic;
- 4 (four) Plant Maintenance Mechanics II;
- 2 (two) Plant Maintenance Mechanics I; and
- 2 (two) Electrical Technicians.

Additional management, engineering, consultative, clerical and analytical support services are provided by:

- The Director of Public Works;
- 1 Associate Civil Engineer; and 1 Civil Engineering Associate
- 1 Laboratory/Environmental Compliance Manager; 2 Laboratory Chemists; 1 Laboratory Technician; and 3 Environmental Compliance Inspectors;
- 1 Administrative Assistant and
- 1 Network Administrator.

## Section V. The Operating Staff

Following are tables of all personnel involved in the daily operation and maintenance of the Wastewater treatment facility, their credentials, classifications and certification levels.

MANAGEMENT/ADMINISTRATION		
NAME	DESIGNATION	CREDENTIALS: GRADE CERT; & EXPIRY DATE
Seidel, Dan	Superintendent of Wastewater Collection and Treatment Facility	SCWRCB Wastewater Operator IV 4055; 6/30/11
Warren, Filipina	Administrative Assistant II	AAII BA (Psychology)
Woodhouse, Mike	Network Administrator	
Babatola, Akin	Laboratory/Environmental Compliance Manager	MS (Mol. Biol); BS (Micro)
Sanders, Michael	Wastewater Treatment Facility Operations Manager	SCWRCB Wastewater Operator IV 4753; 12/31/10

OPERATIONS			
NAME	DESIGNATION	CREDENTIALS GRADE CERTIFICATE	EXPIRY DATE
Sanders, Michael	Wastewater Treatment Facility Operations Manager	WW Operator IV 4753	12/31/12
Culbertson, Michael	Senior WW Operator	WW Operator III 532	12/31/12
Lorenson, Arthur	Senior WW Operator	WW Operator III 4867	12/31/11
Meyers, David	Senior WW Operator	WW Operator III 10986	6/30/11
Ron Frazier	Senior WW Operator	WW Operator III 7436	6/30/12
Blume, Robert	WW Operator III	WW Operator V 4776	6/30/12
Gilbert, John	WW Operator III	WW Operator III 28079	6/30/12
Seifert, Brian	WW Operator III	WW Operator III 28071	6/30/12
Brown, Bob	WW Operator II	WW Operator II 7217	6/30/11
Lineham, Grant	WW Operator II	WW Operator II 8320	12/31/11

## Section V. The Operating Staff

Quintana, Everest	WW Operator II	WW Operator II 4837	6/30/12
Barnes, John	WW Operator II	WW Operator II 5734	6/30/11
Bontrager, John	OIT		
MAINTENANCE			
NAME	DESIGNATION	CREDENTIALS GRADE CERTIFICATE	EXPIRY DATE
Wisler, Larry	Senior Mechanic	CWEA Mechanical Tech III #090363007	1/31/12
Stevens, Fred	Maintenance Mechanic III	CWEA Mechanical Tech III #090363008	3/31/12
Locatelli, Albert	Maintenance Mechanic II		
Pretzer, Tom	Maintenance Mechanic II	CWEA Mechanical Tech II #599	6/31/12
Locatelli, Forrest	Maintenance Mechanic II		
Carlson, Ron	Maintenance Mechanic I		
Fambrini, Steve	Maintenance Mechanic I	CWEA Mechanical Tech I #090951004	9/30/12
ELECTRICAL			
NAME	DESIGNATION	CREDENTIALS GRADE CERTIFICATE	EXPIRY DATE
Sturdivant, Jim	Electrical Technician	CWEA Elect/Inst #80772002	7/31/12
Miller, Ralph	Electrical Technician	CWEA Elect/Inst #80172006	1/31/12

LABORATORY/ENVIRONMENTAL COMPLIANCE		
NAME	TITLE	CREDENTIALS
Babatola, Akin	Laboratory/Environmental Compliance Manager	MS (Mol. Biol); BS (Microbiology)
Birch, Anne	Chemist II/Principal Analyst	BA (Biology) BA (Cultural Anthropology) <b>Lab Analyst I 342; 1/31/10</b>
Munster, Jennie	Chemist I/ II	Ph.D (GeoChemistry)
Courtroul, Michelle	Lab Technician	BS (Chem) <b>Lab Analyst I</b>
Martin, Dave	Environmental Compliance Inspector	Ph.D (Geochemistry) <b>Env. Comp. Insp. I</b>

## Section V. The Operating Staff

<b>Tomlinson, Monica</b>	Environmental Compliance Inspector	BS (Env. Science) <b>Env. Comp Insp. I 381; 7/31/10</b> <b>Lab Analyst I 1017; 1/31/11</b>
<b>Baker, Fred</b>	Environmental Compliance Inspector	<b>Env. Comp Insp. I 314; 7/31/10</b>

## **Section VI. The Operation & Maintenance Manual and Contingency Plans**

## **VI. The Operation & Maintenance Manual and Contingency Plans.**

The operation and maintenance manual was last reviewed in November 2000 and found to be complete and valid for the current facility. The facility's written Standard Operating Procedures are periodically reviewed and frequently updated to maintain documentation and direction on the operation of the facility.

The maintenance division provides routine preventative maintenance for all plant equipment. This ensures that equipment receives routine lubrication and relevant maintenance, and that standby equipment is ready for service.

Safeguards to minimize accidental discharge from the wastewater treatment plant are built into the design and operation of facility and equipment. These are also tested periodically to ensure their integrity. Scenarios for accidental discharge have been reviewed and concluded to be minimal. However, the location most vulnerable to an accidental discharge was identified as the Bar Screening room. This room is located proximate to the Pump house. A long-term power outage at peak flow may cause an overflow into the Pump house if the main sewage pumps were disabled. However, the two engines capable of driving all six main sewage pumps are diesel driven, and would provide power in case of such an outage. These diesel engines are tested for performance on a monthly schedule, and for a minimum of 1 hour each time. These engines and all equipment in the pump house are maintained with the highest priority.

Additional standby equipment has also been installed with the Plant upgrade to advanced secondary in 1998. These include power to the Sodium Hypochlorite disinfection system, which is the back up to the UV disinfection system.



## **Section VII. Laboratories used to Monitor Compliance**

## **Section VII. Laboratories used to Monitor Compliance**

The following section contains current information on all analytical laboratories whose services were required to maintain the compliance monitoring effort in 2010.

During the year 2010, the City of Santa Cruz operated the Wastewater Treatment Facility Laboratory certified under the CA Department of Health Services ELAP (Environmental Laboratory Accreditation Program). The Laboratory certificate number is CA 1176. A copy of the Laboratory certificate and the approved Fields of Testing are attached herewith.

The Laboratory updated its QAPP (Quality Assurance Performance Plan), and received final approval for monitoring Total Organic Carbon (TOC) in wastewater for compliance monitoring programs in 2010.

Most analytical determinations performed for Plant treatment and the NPDES permit were accomplished through the Laboratory. Staffing at the WWTF Laboratory includes:

- 1 Laboratory/Environmental Compliance Manager;
- 2 (two) Laboratory Chemists, both of whom also function as Principal Analysts in accordance with CCR Title 22; and
- 1 Laboratory Technician.

The following six (6) contract laboratories provided other analytical services:

**1. McCampbell Analytical Inc.**

110 2nd Avenue South, #D7  
Pacheco, CA 94553-1622

**2. Alpha Analytical Laboratories Inc.**

860 Waugh Lane, H-1,  
Ukiah, CA 95482

**3. Frontier Analytical Laboratory**

5172 Hillsdale Circle  
El Dorado Hills, CA 95762

**4. City of Watsonville Utilities Department Laboratory**

P O Box 50000  
Watsonville, CA 95077

**5. Toxscan Inc.**

42 Hanger Way  
Watsonville, CA 95076

**6. Department of Fish and Game WPC Laboratory**

2005 Nimbus Road  
Rancho Cordova, CA 95670

All the laboratories are required to maintain current NELAC/ELAP, and these are verified by the WWTF Laboratory Manager during the monitoring period.

Additional specialized extraction and GPC clean up of integratively sampled effluents and influents were processed through:

**Environmental Sampling Technologies (EST)**

502 S. Fifth Street

St. Joseph, MO. 64501

1. McC Campbell Analytical Certificate:



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF ENVIRONMENTAL ACCREDITATION**

Is hereby granted to

**McCAMPBELL ANALYTICAL, INC.**

1534 WILLOW PASS ROAD

PITTSBURG, CA 94565

Scope of the certificate is limited to the  
"Fields of Testing"  
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,  
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1644**

Expiration Date: **10/31/2011**

Effective Date: **11/1/2009**

A handwritten signature in cursive script, reading "George C. Kulasingam".

Richmond, California  
subject to forfeiture or revocation

George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch

2. Alpha Analytical Laboratories



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF ENVIRONMENTAL ACCREDITATION**

Is hereby granted to

**ALPHA ANALYTICAL LABORATORIES, INC.**

208 MASON STREET

UKIAH, CA 95482

Scope of the certificate is limited to the  
"Fields of Testing"  
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,  
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1551**

Expiration Date: **06/30/2011**

Effective Date: **07/01/2009**

Richmond, California  
subject to forfeiture or revocation

George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch

3. Frontier Analytical



NELAP - RECOGNIZED



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF NELAP ACCREDITATION**

Is hereby granted to

**FRONTIER ANALYTICAL LABORATORY**

5172 HILLSDALE CIRCLE  
EL DORADO HILLS, CA 95762

Scope of the Certificate is limited to the  
"NELAP Fields of Accreditation"  
which accompany this Certificate.

Continued accredited status depends on successful  
ongoing participation in the program.

This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **02113CA**  
Expiration Date: **08/31/2010**  
Effective Date: **09/01/2009**

Richmond, California  
subject to forfeiture or revocation

A handwritten signature in cursive script, appearing to read "George C. Kulasingam".

George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch



4. Department of Fish and Game WPC Laboratory



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF ENVIRONMENTAL ACCREDITATION**

Is hereby granted to

**CALIFORNIA DEPT OF FISH & GAME, FISH & WILDLIFE WATER POLLUTION  
CONTROL LABORATORY**

**OFFICE OF SPILL PREVENTION & RESPONSE SCIENTIFIC DIVISION**

2005 NIMBUS ROAD

RANCHO CORDOVA, CA 95670

Scope of the certificate is limited to the  
"Fields of Testing"  
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,  
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1622**

Expiration Date: **09/30/2011**

Effective Date: **10/01/2009**

Richmond, California  
subject to forfeiture or revocation

George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch

WWTF Laboratory  
Certificate:



CALIFORNIA STATE  
ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF ENVIRONMENTAL ACCREDITATION**

Is hereby granted to

**CITY OF SANTA CRUZ WWTF LABORATORY**

**PUBLIC WORKS DEPARTMENT**

110 CALIFORNIA STREET

SANTA CRUZ, CA 95060

Scope of the certificate is limited to the  
"Fields of Testing"  
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,  
proficiency testing studies, and payment of applicable fees.

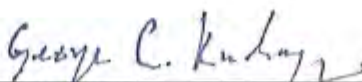
This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1176**

Expiration Date: **5/31/2010**

Effective Date: **5/1/2008**

Richmond, California  
subject to forfeiture or revocation

  
\_\_\_\_\_  
George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch



**Section VIII. Summary of Performance Relative to Section B, General Monitoring Requirements**

## **Section VIII. Summary of Performance Relative to Section B, General Monitoring Requirements**

### **VIII. Summary of Performance Relative To Section B, General Monitoring Requirements.**

1. Monitoring location, minimum sampling frequency and sampling methods for each parameter complies with the Monitoring and Reporting program of the NPDES permit as stipulated in the MRP No 00-044, and as superseded by Board order R3-2005-0003.
2. Although occasionally, due to errors or equipment failure, a monitoring and analytical event may be misread, or missed entirely, these were documented with the regional board and did not interfere with the integrity of the monitoring program.
3. Monitoring frequency may be increased as needed to verify apparent noncompliance. Additional monitoring to optimize plant performance or validate performance and/or analytical questions is performed routinely.
4. Laboratories used for the monitoring of compliance with the permit meet the standard of accreditation by the California State Department of Health Services. (See Section VI of this report for more information on the laboratories.) Bioassays are conducted in accordance with the guidelines approved by the State Department of Fish and Game and the State Water Resources Control Board.
5. Samples and measurements taken for the purpose of monitoring are collected consistent with the activity and performance being evaluated. Grab samples are collected at peak loading times. Influent samples include all incoming waste streams and exclude recycle flows. Effluent samples are collected downstream of the last treatment process and upstream of the receiving waters. Integrative samples are collected during the specified monitoring periods, and with validated sampling technologies, to optimize the opportunities available to quantify trace and ultra-trace organic compounds in the Influent and Effluent of the facility.
6. When the pollutants are monitored more frequently than required under the permit, the data are reported with the monthly monitoring reports and are included in appropriate calculations.
7. Monitoring instruments and devices used to fulfill requirements of the monitoring program are maintained and calibrated. Documentation of the

**Section VIII. Summary of Performance Relative to Section B, General Monitoring Requirements**

maintenance and calibration is maintained.

8. Hardcopy records of all monitoring information are maintained for at least three (3) years, and electronic copies are retained for at least five (5) years.

**Section IX. Lift Station and Collection System Overflow Report**

**Section IX. Lift Station and Collection System Overflow Report**

The City's Infiltration/Inflow and Spill Prevention Program continues to address the objectives set out in WDR No. R3-2010-043. The City has completed major improvements to its collection system over the last several years and has not had a sanitary sewer overflow caused by infiltration/inflow since January 2, 2002.

The City of Santa Cruz has implemented an improved spill response as detailed in the "Sewer System Management Plan". This response includes vacuuming up the spill and collecting all the wash down water used to clean the spill area. In most cases the spill has no contact with a waterway.

The City's Infiltration/Inflow and Spill Prevention Program continues to address the objectives set out in WDR No. R3-2010-043. The City continues to complete major annual improvements to its collection system and has not had a sanitary sewer overflow caused by infiltration/inflow or capacity deficiency since January 2, 2002.

The following paragraphs contain a brief narrative of some of the major program activities undertaken by the City to improve the collection system since 2002.

In 2002, the City rehabilitated approximately 7000 feet of large diameter sanitary (16 to 24 inch) located along the San Lorenzo River. In 2003 two major improvements completed was the Grant Street Sewer project and the Clean Beach Sewer project. These projects cost approximately \$200,000 and \$800,000 respectively and improved over 6,000 linear feet of sewer pipe and reconstructed over 100 service laterals. The City also completed the cleaning of three sewer siphons at a cost of over \$100,000.

In 2004, the City televised the three sewer siphons and found that one had a separated joint that allowed continuous infiltration into the pipe at a rate of 50 gallons per minute. The leak has been sealed. The cost for this work was over \$100,000.

In 2005, the City cleaned and televised approximately 3,000 feet of 30 inch and 3,000 feet of 54 inch sewer main. This work restored full capacity in the trunk pipelines and showed that the 30 inch should be rehabilitated. Consequently, the 30 inch line was lined in 2007 at a cost of \$600,000.

In 2009, the City lined over 9000 feet of 10 and 12 inch diameter sanitary located on King and Pine Streets and along the Arroyo Seco drainage corridor. The City also replaced 350 feet of 10 inch sewer and 8 private laterals on Laurent Street. In addition the City completed the reconstruction of the Delaware Pump Station and numerous smaller improvement projects with the intent of making the collection system more reliable.

In 2010 the City lined approximately 50 feet of 15 inch and 800 feet of 6 inch diameter sanitary sewers located on Ocean and Water Streets and near Pacific Avenue. The City also replaced approximately 2200 feet of 8 and 10 inch sewers on May and Water Streets with new inch 12 and 14 inch sanitary sewers. The City also realigned approximately 100 feet of 15 inch sewer that was deteriorated and adjacent to a small creek. The City also replaced 6 private laterals on Water and May Streets.

Following this brief introduction is a series of tables that provide a summary of the City's efforts undertaken since 2002 to improve the management of the Collection System

including the rehabilitation of lines and concluding with a table of the spills that were recorded in 2010.

The table of spills reported within City limits indicates that there is a downward trend in the number of spills and in their ability to reach the waters of the State.

Here is the listing of the tables:

Table 1: Shows a listing of overflows caused by rain events in 2002 or before, where overflow has not occurred since City project was completed.

Table 2: Shows a listing of overflows caused by rain events in 2002 or before, that have not reoccurred although the City has not completed improvement.

And finally,

Table 3: Shows a summary of sewage spills during the last 12 months of sewage spills within the City of Santa Cruz.

**Table 1: Overflows caused by rain events in 2002 or before where overflow has not occurred since City project was completed**

	Location Address		Pipe Size	Project completed	Project Cost	Schedule & comments
1	Cleveland Ave.	315	6	Reduced I/I by repairing 5000 feet of main & fixing 102 private lower laterals.	\$425,000	Construction complete. No overflow since project completed in 2001.
2	Forest Avenue	158	6	Manhole at overflow location has been eliminated by replacing with pipe.	\$5,000	No overflows during 2001 or 2002. Still monitoring flow.
3a	California Street	Near Walnut	8	California Street sewer capacity has been increased. Project #1 above also reduced flow to this area.	\$750,000	Project was completed 12/01. There have been no overflows since project was completed.
3b	Walti St.	Laurel	6			
4c	Felix St.	Laurel	6			
5a	Carl Avenue	109 & 147	6	Increase size of Parkway pipe from 6 & 8 inch to 10 & 12 inch	\$300,000	Construction completed 8/00. No overflows since.
5b	Parkway	358	6			
6	San Lorenzo Blvd.	At Jessie Street	18	Completed lining of parallel pipelines in 1/03. Siphon repaired in 8/04.	\$600,000	No overflows in 2003 or 2004. Plans for I/I reduction projects upstream during next 3 years. Installed smart cover in 2010 to detect high flows.
7	Broadway	133	18	Lateral hooked up to main near River siphon.	\$100,000	Cleaning and repair of downstream siphon and has been completed.
8	1129 Mission	At Laurel	6	Cleared blockage. Upgraded pipe to 8 inch	\$60,000	Project completed 2/02 No overflows since.
9	Morrissey Blvd.	723	6, 8 & 10	Upgraded over 3500 feet of pipe in 2005	\$500,000	No overflows since project completed.

**Table 2: Overflows caused by rain events in 2002 or before, that have not reoccurred but the City has not completed improvement.**

	Address	Location	Pipe Diameter (inches)	Project Completed	Project Cost	Schedule and Comments
1	High Street	Highland	6	Determine need for increased pipe size.		Investigate in 2011 installing overflow pipe connecting manholes N7-SM314 and N7-SM312.
2	Mott Avenue	At East Cliff and Logan	10 & 12	Investigate downstream 12-inch liner pipe for upgrade.	Unknown	New overflow. Still unclear of cause. TV 2005.
3	322 Highland		6	Modify Manhole and TV		Overflow locations that only occurred on 1/2/2002
4	401 Dufour		6	Unknown. May need backflow devise for house.		Overflow locations that only occurred on 1/2/2002

**Table 3: Summary of Sewage Spills within Santa Cruz City in 2010.**

House Number	Street	Date:	City Main Spill (gallons)	Private Lateral Spill (gallons)	Weather
304	Cliff Street	3/30/10		60	Clear
841	Almar Ave	4/8/10		20	Clear
841	Almar Ave	4/9/10		25	Clear
648	Western Drive	6/27/10	30		Clear
1110	Morrissey Blvd	9/19/10	75		Clear
1048	Morrissey Blvd	9/19/10	50		Clear
353	Soquel Ave	9/27/10		50	Clear
100	Pioneer Street	11/10/10	75		Clear
317	Ocean Street	11/16/10		30	Clear
<b>Total Spills: 9</b>			<b>Main Lateral Spills: 230 gallons</b>	<b>Private Lateral Spills: 185 gallons</b>	

Detailed information for all spills is entered into the California Integrated Water Quality System (CIWQS) and can be viewed at <http://ciwqs.waterboards.ca.gov/>.

Finally, the City of Santa Cruz has implemented a Computerized Maintenance Management System (CMMS) which helps the City track and schedule the maintenance of the collection system. In addition, the City utilizes a hydraulic model of the entire collection system as required by “Elements of the Sewer System Management Plan, Item IX(A). This model was implemented in 2008, and is used to determine the pipeline most susceptible to overflows caused by capacity or infiltration and inflow. The City has installed at 3 locations “smart covers” which monitoring water elevation at 3 critical locations including two remote locations to enable the City to respond to rising levels in a manhole prior to an SSO.

**THIS IS THE END PAGE OF THE 2010 ANNUAL REPORT.**



**CITY OF SANTA CRUZ WASTEWATER  
TREATMENT FACILITY**



**2009**

**Wastewater Treatment Facility  
ANNUAL REPORT**



# **CITY OF SANTA CRUZ POTW ANNUAL REPORT**

**2009**

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Section II	Summary of Monitoring Data – Tables
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Section VIII	Summary of Performance Relative to Section B, General; Monitoring Requirements
Section IX	Lift Station and Collection System Overflow Report

## **Section I. Introduction**

This document is the Annual Report of the water pollution control activities of the City of Santa Cruz Wastewater Treatment Facility for 2009. It was prepared and submitted in fulfillment of the City's obligations to the Regional Water Quality Control Board (Region III), accordance with the Standard Provisions and Reporting Requirements of the National Pollutant Discharge Elimination System Permits (NPDES), General Reporting Requirements, § 16.C.

The City of Santa Cruz treats sewage from domestic and industrial sources at the Wastewater Treatment Facility near Neary Lagoon and discharges its effluent into the Pacific Ocean under the NPDES permit No CA0048194. The area served includes the Cities of Santa Cruz and Capitola, the areas of Live Oak, Soquel, and Aptos, and the University of California at Santa Cruz. The City also provides capacity for the City of Scotts Valley to discharge its wastewater treatment system's effluent into the Pacific Ocean. However all data contained within this report relate only to the effluent of the City's wastewater treatment plant.

The estimated population served is approximately 135,000 people.

The City continuously upgrades the treatment facility to accommodate population growth, to respond to regulatory and environmental challenges, and to implement improved technologies for wastewater treatment, the most recent structural upgrades were completed in 1998. These were the addition of the trickling filter/solids contact units to the primary treatment plant; which was rebuilt in 1991, and the commissioning of a new ocean outfall in 1989.

The design treatment capacity of the Plant is 81 million gallons per day (MGD). The NPDES mandatory limit for the average dry weather (ADW)

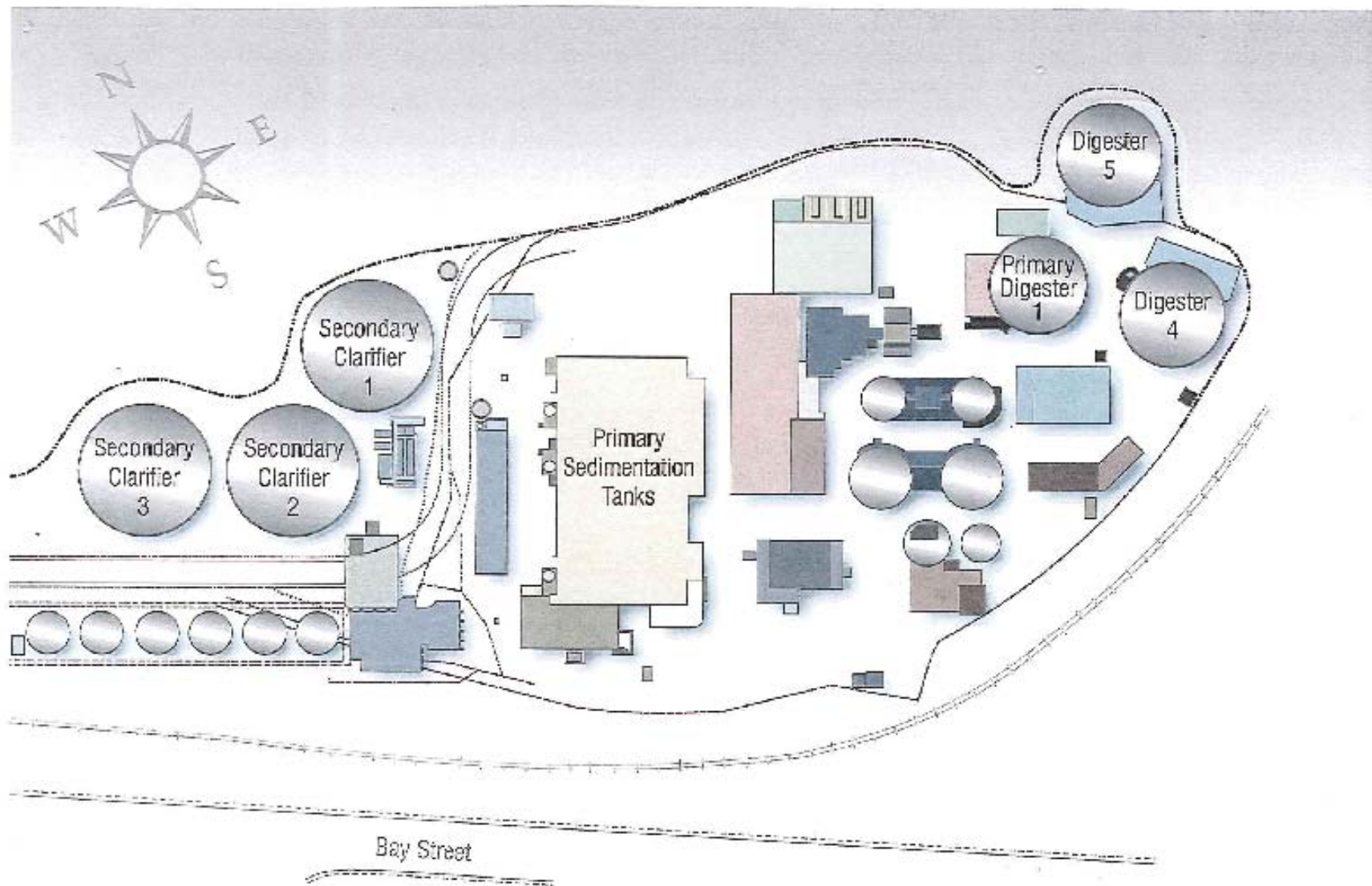
flow is 17 MGD.

Plant performance highlights and removal efficiencies for conventional pollutants for 2009 were as follows:

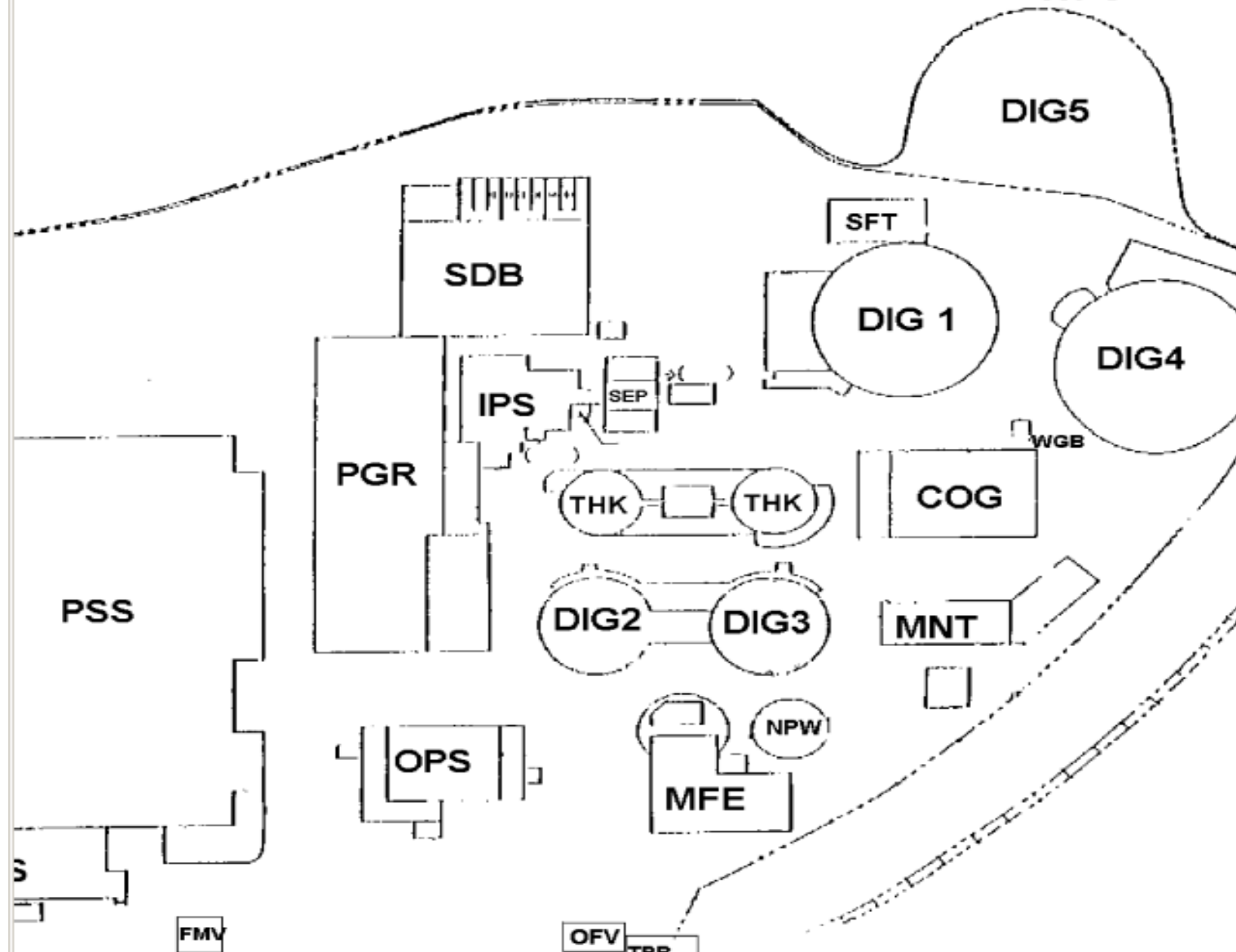
- Almost three billion gallons of treated wastewater effluent (2.84 billion gallons) was discharged from the Plant at an average daily rate of 7.8 MGD;
- Total Suspended Solids (TSS ) removal averaged 98.5% throughout the year;
- Total Organic Carbon (TOC) removal averaged 87.8% throughout the year, equivalent to the removal of Biochemical Oxygen Demand (BOD) removal at an average rate of 91.7%;
- Commonly Analyzed Metals (CAM) removal varied from a high of approximately 99% for Aluminum to <5% for Potassium and Boron; and
- Compounds of emerging concern (CEC) included in the California Ocean Plan Table B in the influent and effluent as measured by integrative sampling techniques, were either bio-transformed or attenuated to various degrees before discharge into the waters of the outfall in 2009.

Following this introduction are pages showing respectively, the following:

1. An aerial view of the current facility and its major treatment processes;
2. A schematic of the Primary treatment processes of the facility; and
3. A screenshot of the Supervisory Control and Data Acquisition (SCADA) view of the treatment processes.

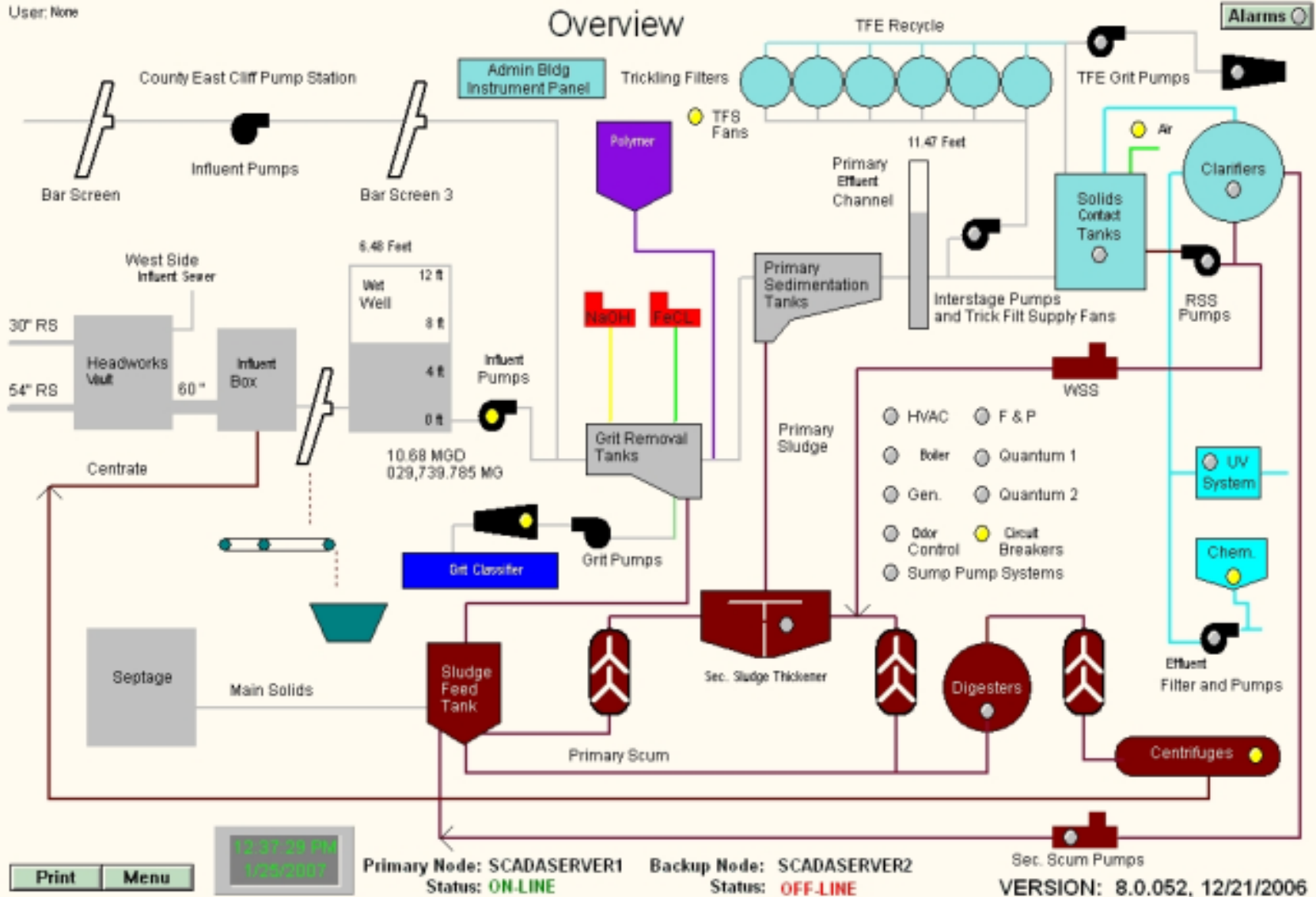


# WATER POLLUTION CONTROL FACILITY = WPC



User: None

## Overview





**Section II. Summary of Monitoring Data – Tables**

## **Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual 2009**

### **Introduction to Section II.**

#### **Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual averages of conventional and priority pollutants in plant effluent, and of plant performance data in 2009.**

The following pages contain summary tables of compliance monitoring data compiled by the City's laboratory, contract laboratories, and other wastewater treatment staff for compliance monitoring purposes in 2009.

The analytical data were derived from daily and weekly laboratory analyses and/or instrumentation readings from plant effluent and process samples through 2009.

All laboratory analyses were performed using methods specified and/or approved in the plant's NPDES permit CA 0048194 and the Code of Federal Regulations at 40 CFR 136; Table 1B.

Sampling for Trace Organic Compounds (TOrC) including Dioxins; Plasticizers; Pharmaceuticals and Pesticides required the implementation of Integrated High Volume Water Sampling mechanisms developed and validated by USGS, or as approved for use by the Water Board, Region 3, under the regional monitoring program (CCLEAN) Central Coast Long-Term Environmental Assessment Network. The Laboratory and Environmental Compliance programs at the WWTF implemented the Semi-Permeable Membrane Devices (SPMD) at the Influent and Effluent of the facility, while the CCLEAN program implemented an approved sampling protocol developed by Axxys in the Effluent stream for the City of Santa Cruz and the City of Scotts Valley.

Sampling and analytical data for TOrC (also widely known as Compounds of Emerging Concern (CEC)), in the influent and effluent of wastewaters are influenced by complex matrix effects in wastewater. The matrix effects usually, make it infeasible to make comparisons of influent and effluent measurements, since pollutant sampling and analyses from the influent are significantly less accessible to the best and current sampling technologies and validated analytical techniques than in the effluent.

However, it is still very instructive to evaluate the differences because, differences of magnitudes equal or greater than one log of the measurements between influent and effluent values provide useful information on the efficiency of the pretreatment programs in place and on the status of the prevailing operational set up of the wastewater treatment facility.

## **Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual 2009**

Outlined below is the sequence of the presentation of the tables:

1. Monthly averages for Plant performance data on conventional and priority pollutants;
2. Averages for Plant performance data on priority pollutants, metals and trace organics derived from Semi-Annual Effluent and Annual Influent requirements of the NPDES permit CA0048194;
3. Biosolids monitoring data for metals and select pollutants; and
4. Nearshore bacteria monitoring at 30 foot contour depth.

## Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual 2009

**Table 1: WWTF WASTEWATER TREATMENT DATA - MONTHLY FLOW AVERAGES 2009**

[illegible]

# Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual 2009

**Table 2: WWTF TOTAL SUSPENDED SOLIDS (TSS) TREATMENT DATA - MONTHLY AVERAGES 2009**

2009 Monthly Averages	Influent TSS	Effluent TSS	TSS Removal	Average Monthly Effluent TSS Load	Average Monthly Effluent TSS Load
	mg/l	mg/l	%	pounds/day	kilograms/day
January	381.1	5.5	98.6%	321.5	145.8
February	259.9	7.0	97.3%	925.2	419.7
March	343.5	4.6	98.7%	348.3	158.0
April	381.3	5.2	98.6%	315.2	143.0
May	395.9	4.4	98.9%	285.3	129.4
June	436.8	4.8	98.9%	300.3	136.2
July	482.9	4.6	99.0%	257.4	116.7
August	432.7	4.7	98.9%	264.4	119.9
September	349.4	4.4	98.7%	314.7	142.7
October	371.9	5.7	98.5%	432.2	196.0
November	363.1	5.7	98.4%	361.0	163.7
December	356.8	6.4	98.2%	458.9	221.9
<b>Averages</b>	<b>379.6</b>	<b>5.3</b>	<b>98.6%</b>	<b>382.0</b>	<b>174.4</b>
<b>NPDES Limit 1 (Maximum 30-Day Effluent)</b>		<b>≤30 mg/L</b>		<b>4,253</b>	<b>1,929</b>
<b>NPDES Limit 2 (Maximum 7-Day Effluent Limit)</b>		<b>≤45 mg/L</b>		<b>6,380</b>	<b>2,894</b>
<b>NPDES Limit 3 (Minimum Monthly Average Removal)</b>			<b>85%</b>		

# Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual 2009

**Table 3: WWTF TOTAL ORGANIC CARBON (TOC) TREATMENT DATA - MONTHLY AVERAGES 2009**

2009 Monthly Averages	Influent TOC	Effluent TOC	TOC Removal	Average Monthly Effluent TOC Load	Average Monthly Effluent TOC Load
	mg/l	mg/l	%	pounds/day	kilograms/day
January	154.0	14.3	90.3%	838.6	387.9
February	79.7	12.3	77.2%	1,215.5	551.3
March	102.4	13.6	86.0%	1,025.9	465.3
April	134.4	13.9	88.7%	837.4	379.8
May	128.4	12.9	90.1%	844.6	383.1
June	125.8	13.1	88.9%	796.8	361.4
July	210.9	14.2	92.5%	785.0	356.1
August	177.5	12.8	92.4%	685.6	311.0
September	123.3	12.8	89.1%	856.0	388.3
October	99.2	12.8	86.5%	909.4	412.5
November	137.8	14.1	89.1%	914.0	414.6
December	111.9	13.0	87.3%	926.5	420.3
<b>Averages</b>	<b>138.8</b>	<b>13.3</b>	<b>89.4%</b>	<b>886.3</b>	<b>402.6</b>
<b>NPDES Limit 1 (Maximum 30-Day Effluent TOC)</b>		<b>≤15.6 mg/L</b>		<b>2,198</b>	<b>1,609</b>
<b>NPDES Limit 2 (Maximum 7-Day Effluent TOC Limit)</b>		<b>≤25 mg/L</b>		<b>3,545</b>	<b>2,574</b>
<b>NPDES Limit 3 (Site-specific TOC Equivalent Minimum Monthly Average TOC Removal)</b>			<b>70%</b>		

**Table 4: WWTF BIOCHEMICAL OXYGEN DEMAND (BOD Equivalent) TREATMENT DATA - MONTHLY AVERAGES 2009**

2009 Monthly Averages	Influent BOD (calculated)	Effluent BOD (calculated)	WWTF BOD (calculated) Removal
	mg/l	mg/l	%
January	361.2	23.9	93.4%
February	181.8	19.5	89.3%
March	236.6	22.3	90.6%
April	313.9	22.9	92.7%
May	299.4	20.6	93.1%
June	293.2	21.0	92.8%
July	498.7	23.6	95.3%
August	432.7	20.3	98.9%
September	287.2	20.4	92.9%
October	228.9	20.2	91.2%
November	322.2	23.4	92.7%
December	111.9	20.9	88.4%
<b>Averages</b>	<b>297.3</b>	<b>21.6</b>	<b>92.6%</b>
<b>NPDES Limit 1: (Maximum 30-Day Calculated Effluent BOD mg/L)</b>		<b>25</b>	
<b>NPDES Limit 2: (Maximum 7-Day Calculated Effluent BOD mg/L)</b>		<b>45</b>	
<b>NPDES Limit 3: Minimum Monthly BOD (calculated) Removal Average %</b>			<b>85%</b>

## Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual 2009

**Table 5: WWTF INFLUENT & EFFLUENT DATA 2009 MONTHLY AVERAGES –PH; CHLORINE; OIL & GREASE**

2009 Months	Influent pH	Effluent pH	Daily Maximum Chlorine Residual	Peak Maximum Chlorine Residual	Influent Oil and Grease Monthly	Effluent Oil and Grease Monthly
	SI	SI	ug/1	ug/1	mg/1	mg/1
January	7.3	7.1	9.7	1945.0	50.6	<5
February	7.2	7.0	42.7	2705.0	17.1	<5
March	7.2	7.0	0.0	0.0	28.6	<5
April	7.3	7.1	7.9	1951.0	29.5	<5
May	7.3	7.1	20.5	3720.0	31.8	<5
June	7.3	7.0	6.9	1254.0	36.9	<5
July	7.3	7.1	0.0	0.0	44.6	<5
August	7.3	7.2	1.3	556.0	41.9	<5
September	7.4	7.2	0.0	0.0	48.6	<5
October	7.4	7.2	6.8	1218.0	36.3	<5
November	7.4	7.1	0.0	7.0	48.4	<5
December	7.5	7.0	4.3	59.6	37.0	<5
Averages	7.3	7.1	8.3	1118.0	37.6	<5
Minimum	7.2	7.0	0.0	0.0	17.1	<5
Maximum	7.5	7.2	42.7	3720.0	50.6	<5
NPDES Limit 1		Maximum: 9.0	Daily Maximum: 1,120	Instantaneous Maximum: 8,400		Monthly Average: 25
NPDES Limit 2		Minimum: 6.0	6-Month Median: 280			Monthly Maximum: 40
NPDES Limit 3						7-Day Average: 75



## Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual 2009

**Table 6: WWTF NPDES COMPOUNDS ANALYZED ON QUARTERLY FREQUENCY - EFFLUENT DATA - 2009**

2009 Quarterly Data	Effluent Acute Toxicity (Quarterly)	Effluent Chronic Toxicity (Quarterly)	Effluent Phenols (Quarterly)	Effluent Total Sulfides (Quarterly)
	TUa	TUc	mg/L	mg/L
January			0.017	<0.01
February				
March	2.80	16.0	<0.0010	
April			0.0018	0.8
May	1.42	8.0		
June				
July			<0.10	<0.10
August	1.35	8.0	<0.0010	0.3
September				
October	1.36	16.0	<0.10	<0.10
November				
December	1.40	8.0		
<b>Averages</b>	<b>1.7</b>	<b>11.2</b>	<b>&lt;0.17</b>	<b>&lt;0.1</b>
<b>Maximum</b>	<b>2.8</b>	<b>16</b>	<b>0.017</b>	<b>0.8</b>
<b>NPDES Maximum Effluent Limits</b>	<b>4.47</b>	<b>140</b>		

# Summary of Monitoring Data – Tables of Monthly; Quarterly and Semi-Annual 2009

**Table 7: WWTF NPDES NUTRIENTS; TEMPERATURE; TURBIDITY; SILICATES MONTHLY SUMMARY - 2009**

Monthly Averages	Effluent Turbidity (Monthly)	Effluent Temperature	Ammonia Nitrogen	Ortho-Phosphate	Urea	Nitrates	Dissolved Silicate
	NTU	°C	µg/L	mg/L	mg/L	mg/L	mg/L
January	3.6	19.4	45,800	11.2	0.13	8.1	36
February	4.0	18.4	47,800	10.4	0.12	8.5	36
March	2.7	19.5	37,600	8.0	0.07	1.5	34
April	3.6	21.3	46,600	7.8	0.12	1.7	34
May	3.2	22.6	30,400	7.6	0.24	0.86	32
June	3.7	24.0	46,600	9.8	0.09	6.8	35
July	2.7	25.3	47,800	7.4	0.09	5.8	34
August	3.7	25.4	42,600	8.5	0.11	4.8	36
September	3.3	25.3	40,400	6.7	0.09	8.9	42
October	2.9	23.5	40,000	6.1	0.11	6.6	35
November	4.8	22.0	44,800	NA	0.09	12	36
December	5.7	20.1	26,200	8.9	0.09	11	33
Average	3.7	22.2	41,383.3	8.4	0.1	6.4	35.3
Minimum	2.7	18.4	26,200.0	6.1	0.1	0.9	32.0
NPDES Monthly Average Limit	75		Instantaneous Maximum: 840,000				
NPDES Weekly Average Limit	100		Daily Maximum: 336,000				
NPDES Daily Maximum Limit	225		6-Month Median: 84,000				

**Table 8: WWTF TRACE ORGANIC COMPOUNDS (TOxC or COMPOUNDS OF EMERGING CONCERN) in CALIFORNIA OCEAN PLAN TABLE B TREATMENT DATA - ANNUAL AVERAGES 2009**

COMPOUNDS	WET SEASON MARCH 2009		
	INFLUENT (pg/L)	EFFLUENT (pg/L)	PERCEIVED* CHANGE (%)
Aldrin	ND	ND	Perceived change values are represented in this column, only for compounds where a measurable difference (%) exists, and is not excessively confounded by the onerous challenge of measurements in the Influent.
chlordane, cis	21.63	57.73	
chlordane, trans	21.32	46.63	
chlorpyrifos	131.36	154.54	
dacthal	ND	ND	
DDD, o,p'	2.71	5.65	
DDD, p,p'	1.49	3.78	
DDE, o,p'	0.29	0.42	
DDE, p,p'	14.41	21.35	
DDT, o,p'	2.20	2.43	
DDT, p,p'	4.88	7.08	
diazinon	ND	ND	
dieldrin	40.42	153.32	
endosulfan I	ND	ND	
endosulfan II	ND	ND	
endosulfan sulfate	ND	ND	
endrin	ND	ND	
heptachlor	2.36	2.66	
heptachlor epoxide	9.96	32.67	
hexachlorobenzene	4.85	17.88	
methoxychlor	3.15	2.76	13
mirex	0.14	0.09	38
nonachlor, cis	2.04	4.40	

nonachlor, trans	7.94	19.64	
oxychlordane	0.76	4.00	
Naphthalene	31,625.34	9,171.45	71
Methylnaphthalene, 2-	12,898.15	4,531.69	65
Methylnaphthalene, 1-	5,992.65	1,995.78	67
Dimethylnaphthalene, 2,6-	1,788.88	466.30	74
Trimethylnaphthalene, 2,3,5-	425.45	215.49	49
Naphthalenes, C1 -	20,488.62	7,177.23	65
Naphthalenes, C2 -	7,276.05	2,260.26	69
Naphthalenes, C3 -	4,907.36	2,572.75	48
Naphthalenes, C4 -	1,736.72	2,030.55	
Biphenyl	2,588.78	952.57	63
Acenaphthylene	202.70	110.21	46
Acenaphthene	1,730.12	707.48	59
Fluorene	1,590.19	795.61	50
Methylfluorene, 1-	428.75	317.48	26
Fluorenes, C1 -	1,236.01	1,190.44	4
Fluorenes, C2 -	1,927.09	2,704.40	
Fluorenes, C3 -	1,784.70	2,120.26	
Dibenzothiophene	596.55	300.04	50
Dibenzothiophenes, C1 -	1,651.22	2,079.94	
Dibenzothiophenes, C2 -	625.25	949.79	
Dibenzothiophenes, C3 -	491.16	753.62	
Phenanthrene	5,414.56	1,879.05	65
Methylphenanthrene, 1-	294.01	181.44	38
Phenanthrene/Anthracene, C1 -	1,513.72	1,277.94	16

Phenanthrene/Anthracene, C2 -	1,332.68	2,332.22	
Phenanthrene/Anthracene, C3 -	578.56	977.31	
Phenanthrene/Anthracene, C4 -	291.44	519.71	
Anthracene	877.65	396.10	55
Fluoranthene	1,372.28	1,993.22	
Fluoranthene/Pyrenes, C1 -	780.00	1,193.97	
Pyrene	1,111.39	1,848.04	
Benz(a)anthracene	168.19	271.38	
Chrysene	169.33	250.45	
Chrysenes, C1 -	100.32	155.28	
Chrysenes, C2 -	61.74	73.31	
Chrysenes, C3 -	ND	29.98	
Benzo(b)fluoranthene	74.97	106.47	
Benzo(k)fluoranthene	ND	34.20	
Benzo(e)pyrene	55.20	72.95	
Benzo(a)pyrene	52.71	59.54	
Indeno(1,2,3-c,d)pyrene	ND	ND	
Dibenz(a,h)anthracene	ND	ND	
Benzo(g,h,i)perylene	ND	28.45	
8 - PCB	4.16	4.77	
18	5.48	7.65	
27	ND	0.46	
28	7.56	8.08	
29	ND	10.81	
31	6.68	7.97	
33	5.17	4.65	10

44	5.24	5.79	
49	3.61	4.45	
52	6.45	9.10	
56	2.09	2.04	3
60	1.12	1.06	6
64	1.30	1.24	5
66	3.79	4.00	
70	5.21	6.98	
74	2.31	2.64	
77	0.76	0.99	
87	2.33	2.89	
95	4.20	5.68	
97	1.35	1.95	
99	1.97	2.46	
101	4.46	6.72	
105	2.15	1.98	8
110	5.98	6.72	
114	ND	ND	
118	4.69	5.15	
126	0.43	0.20	54
128	0.54	0.58	
137	0.48	0.31	35
138	2.85	2.67	6
141	0.55	0.73	
146	ND	ND	
149	2.76	3.03	

151	0.66	0.94	
153	3.11	3.72	
156	0.80	0.52	35
157	0.50	0.24	52
158	0.57	0.49	13
169	ND	ND	
170	0.43	0.11	76
174	0.21	0.53	
177	0.41	0.17	59
180	0.82	0.76	8
183	1.16	0.63	46
187	1.50	1.10	26
189	0.87		100
194	ND	ND	
195	ND	ND	
198_199	1.59	0.72	55
200	0.14	0.14	
201	0.85	0.24	72
203	0.35	0.14	60
206	0.72	ND	
209	ND	ND	

**Table 9: WWTF TRACE ORGANIC COMPOUNDS in CALIFORNIA OCEAN PLAN TABLE B TREATMENT DATA – ANNALYZED UNDER REGIONAL MONITORING PROGRAM – CCLEAN IN 2009**

<b>Integrative High Volume Water Sampling Data Collected by CCLEAN Effluent Monitoring 2009</b>				
<b>Compounds (pg/L)</b>	<b>Sampling dates</b>		<b>Average</b>	<b>Standard Deviation</b>
	<b>March</b>	<b>September</b>		
PFBA	3,480.0	4,570.0	4,025.0	771
PFPeA	3,010.0	3,370.0	3,190.0	255
PFHxA	11,200.0	8,600.0	9,900.0	1,838
PFHpA	3,900.0	4,180.0	4,040.0	198
PFOA	20,900.0	13,300.0	17,100.0	5,374
PFNA	19,000.0	10,200.0	14,600.0	6,223
PFDA	8,630.0	2,430.0	5,530.0	4,384
PFUnA	2,390.0	< 3210		
PFDoA	< 3100	< 3210		
PFBS	< 6200	< 6420		
PFHxS	3,660.0	2,660.0	3,160.0	707
PFOS	17,100.0	4,430.0	10,765.0	8,959
PFOSA	1,940.0	< 3210		
Hexachlorobenzene	< 12.1	77.0		
HCH, alpha	< 265	62.0		
HCH, beta	< 493	125.0		



HCH, gamma	402.0	917.0	659.5	364
Heptachlor	< 146	< 150		
Aldrin	< 196	< 50		
Oxychlordane	2,430.0	2,600.0	2,515.0	120
Chlordane, gamma-	200.0	127.0	163.5	52
Chlordane, alpha-	258.0	148.0	203.	78
Nonachlor, trans-	< 13.4	78.0		
Nonachlor, cis-	< 16.2	20.0		
DDD(o,p')	< 51.5	32.0		
DDD(p,p')	< 93.5	29.0		
DDE(o,p')	< 105	< 20		
DDE(p,p')	118.0	123.0	120.5	4
DDT(o,p')	< 88.7	12.0		
DDT(p,p')	< 97	32.0		
Mirex	< 62.3	< 30		
HCH, delta	< 15.9	6.00		
Heptachlor Epoxide	< 15.9	52.0		
Endosulfan I	< 131	26.0		
Dieldrin	< 28.9	250.0		
Endrin	< 57.6	< 40		
Endosulfan II	< 89.4	36.00		
Endosulfan Sulfate	< 15.9	68.0		
Dacthal	31.0	210.0	120.5	127

Oxadiazon	245.0	348.0	296.5	73
PCB 008	13.9	24.4	19.15	7
PCB 018	15.9	25.8	20.85	7
PCB 020	16.4	21.5	18.95	4
PCB 021	8.81	9.25	9.03	0
PCB 031	16.0	17.6	16.8	1
PCB 044	17.8	18.9	18.35	1
PCB 049	6.31	6.46	6.39	0
PCB 052	19.2	18.8	19.0	0
PCB 056	4.86	4.47	4.67	0
PCB 060	2.71	3.06	2.89	0
PCB 061	24.4	23.5	23.95	1
PCB 066	8.84	9.75	9.3	1
PCB 083	10.7	11.9	11.3	1
PCB 086	15.7	18.4	17.05	2
PCB 090	20.4	22.6	21.5	2
PCB 093	15.20	17.3	16.25	1
PCB 105	5.34	7.03	6.19	1
PCB 110	23.7	25.9	24.8	2
PCB 118	14.9	20.1	17.5	4
PCB 128	2.3	2.77	2.54	0
PCB 129	17.3	19.5	18.4	2
PCB 132	5.67	5.46	5.57	0

PCB 135	4.97	5.73	5.35	1
PCB 141	2.93	3.32	3.13	0
PCB 147	12.3	13.3	12.8	1
PCB 153	15.1	14.6	14.85	0
PCB 156	1.89	2.17	2.03	0
PCB 158	1.58	1.73	1.66	0
PCB 170	2.13	2.03	2.08	0
PCB 174	2.37	2.62	2.5	0
PCB 177	1.46	1.36	1.41	0
PCB 180	6.08	6.94	6.51	1
PCB 183	1.85	2.09	1.97	0
PCB 187	3.83	4.36	4.1	0
PCB 194	1.04	1.33	1.19	0
PCB 195	< 0.109	0.46		
PCB 201	< 0.0547	0.27		
PCB 203	1.1	1.4	1.25	0
TCDD, 2,3,7,8-	< 0.00541	0.03		
PeCDD, 1,2,3,7,8-	< 0.00541	0.03		
HxCDD, 1,2,3,4,7,8-	< 0.00541	0.01		
HxCDD, 1,2,3,6,7,8-	< 0.00572	0.03		
HxCDD, 1,2,3,7,8,9-	< 0.00541	0.02		
HpCDD, 1,2,3,4,6,7,8-	< 0.00541	0.33		
OCDD, 1,2,3,4,6,7,8,9-	3.01	2.51	2.76	0

TCDF, 2,3,7,8-	< 0.00541	0.04		
TCDF, 2,3,7,8-(2C)	< 0.00795	0.02		
PeCDF, 1,2,3,7,8-	< 0.00859	0.01		
PeCDF, 2,3,4,7,8-	< 0.00827	0.01		
HxCDF, 1,2,3,4,7,8-	< 0.00541	0.01		
HxCDF, 1,2,3,6,7,8-	< 0.00541	0.01		
HxCDF, 1,2,3,7,8,9-	< 0.00668	0.00		
HxCDF, 2,3,4,6,7,8-	< 0.00541	0.02		
HpCDF, 1,2,3,4,6,7,8-	< 0.0089	0.13		
HpCDF, 1,2,3,4,7,8,9-	< 0.0121	0.02		
OCDF, 1,2,3,4,6,7,8,9-	< 0.00541	0.30		
Tetra-Dioxins, total	3.20	4.58	3.89	1
Penta-Dioxins, total	< 0.00541	0.55		
Hexa-Dioxins, total	< 0.00541	0.12		
Hepta-Dioxins, total	< 0.00541	0.66		
Tetra-Furans, total	1.00	2.05	1.53	1
Penta-Furans, total	< 0.00827	0.45		
Hexa-Furans, total	< 0.00541	0.15		
Hepta-Furans, total	< 0.00986	0.12		
PBDE 007	2.39	5.51	3.95	2
PBDE 008	3.92	4.61	4.27	0
PBDE 010	< 0.211	0.08		
PBDE 012	< 0.249	1.5		

PBDE 015	16.8	13.5	15.15	2
PBDE 017	130.0	254.0	192.0	88
PBDE 028	263.0	259.0	261.0	3
PBDE 030	< 1.54	< 1.13		
PBDE 032	< 1.33	0.84		
PBDE 035	3.05	1.39	2.22	1
PBDE 037	4.38	4.27	4.33	0
PBDE 047	3,090.0	4,400.0	3,745.0	926
PBDE 049	115.0	188.0	151.5	52
PBDE 051	10.8	15.1	12.95	3
PBDE 066	92.0	90.2	91.1	1
PBDE 071	16.2	34.4	25.3	13
PBDE 075	9.42	10.2	9.81	1
PBDE 077	< 0.211	0.37		
PBDE 079	6.77	< 0.241		
PBDE 085	111.0	112.0	111.5	1
PBDE 099	2,390.0	2,870.0	2,630.0	339
PBDE 100	614.0	679.0	646.5	46
PBDE 105	< 6.9	< 3.4		
PBDE 116	< 6.84	< 4.55		
PBDE 119	8.11	9.42	8.77	1
PBDE 126	2.53	1.85	2.19	0
PBDE 128	< 6.61	< 4.04		

PBDE 138	25.40	24.70	25.05	0
PBDE 140	< 0.321	8.04		
PBDE 153	171.0	238.0	204.5	47
PBDE 154	150.0	202.0	176.0	37
PBDE 155	9.34	15.10	12.22	4
PBDE 181	< 1	< 9.64		
PBDE 183	33.1	32.7	32.9	0
PBDE 190	3.84	< 16		
PBDE 203	17.7	42.1	29.9	17
PBDE 206	95.2	122.0	108.6	19
PBDE 207	122.0	234.0	178.0	79
PBDE 208	83.30	117.0	100.15	24
PBDE 209	1,370.0	1,450.0	1,410.0	57
Naphthalene	6,000.0	17,900.0	11,950.0	8,415
Acenaphthylene	< 118	< 1850		
Acenaphthene	1,420.0	5,400.0	3,410.0	2,814
Fluorene	1,300.0	4,330.0	2,815.0	2,143
Phenanthrene	2,110.0	9,470.0	5,790.0	5,204
Anthracene	547.0	947.0	747.0	283
Fluoranthene	2,960.0	4,520.0	3,740.0	1,103
Pyrene	3,270.0	2,940.0	3,105.0	233
Benz(a)anthracene	518.0	85.7	301.85	306
Chrysene	810.0	811.0	810.5	1

Benzo(b)fluoranthene	< 111	351.0		
Benzo(k)fluoranthene	< 121	221.0		
Benzo(e)pyrene	< 137	349.0		
Benzo(a)pyrene	< 156	106.0		
Perylene	< 159	130.0		
Dibenz(a,h)anthracene	< 70	< 207		
Indeno(1,2,3-c,d)pyrene	< 130	806.0		
Benzo(g,h,i)perylene	< 127	204.0		
Methylnaphthalene, 2-	585.0	2,400.0	1,492.5	1,283
Methylnaphthalene, 1-	662.0	6,470.0	3,566.0	4,107
Biphenyl	1,500.0	3,130.0	2,315.0	1,153
Dimethylnaphthalene, 2,6-	< 258	2,920.0		
Trimethylnaphthalene, 2,3,5-	576.00	1,700.0	1,138.0	795
Dibenzothiophene	< 82.7	1,070.0		
Methylphenanthrene, 1-	< 420	< 1050		

**Table 10: WWTF METALS IN WWTF EFFLUENT AND TREATMENT DATA – ANALYZED UNDER NPDES SEMI-ANNUAL MONITORING PROGRAM IN 2009**

Semi-Annual Influent and Effluent 24 hour composites: Analyses for Metals Treatment - 2009							
Metals	Influent Metals (March 2009 - Wet weather)	Influent Metals (August 2009 - Dry weather)	Influent Metals (Annual Average)	Effluent Metals (March 2009 - Wet weather)	Effluent Metals (August 2009 - Dry weather)	Effluent Metals (Annual Average)	Metals Removal Efficiency (Average)
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	%
Aluminum	3,300.0	4,900.0	4,100.0	<50	<50	<50	≥98.8%
Antimony	0.7	0.8	0.8	<0.5	<0.5	<0.5	34.7%
Arsenic	3.1	4.2	3.7	2.0	1.4	1.7	53.4%
Barium	74.0	86.0	80.0	34.0	1.4	17.7	77.9%
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Boron	310.0	340.0	325.0	320.0	350.0	335.0	<1%
Cadmium	0.4	0.5	0.4	<0.25	<0.25	<0.25	40.0%
Chromium	4.0	5.1	4.6	0.6	0.5	0.6	87.9%
Cobalt	3.4	1.0	2.2	2.1	<0.5	1.3	40.4%
Copper	87.0	100.0	93.5	9.8	67.0	38.4	58.9%



<b>Lead</b>	2.5	4.2	<b>3.4</b>	<0.5	<0.5	<b>&lt;0.5</b>	<b>85.4%</b>
<b>Mercury</b>	0.4	0.1	<b>0.3</b>	0.042	<0.012	<b>0.0</b>	<b>90.9%</b>
<b>Molybdenum</b>	13.0	7.4	<b>10.2</b>	7.0	4.0	<b>5.5</b>	<b>46.1%</b>
<b>Nickel</b>	4.9	6.8	<b>5.9</b>	3.1	2.7	<b>2.9</b>	<b>50.4%</b>
<b>Potassium</b>	23,000.0	25,000.0	<b>24,000.0</b>	21,000.0	25,000.0	<b>23,000.0</b>	<b>4.2%</b>
<b>Selenium</b>	2.9	1.8	<b>2.4</b>	0.8	<0.5	<b>0.7</b>	<b>72.3%</b>
<b>Silver</b>	1.6	2.5	<b>2.1</b>	<0.19	<0.19	<b>&lt;0.19</b>	<b>90.8%</b>
<b>Thallium</b>	<0.5	<0.5	<b>&lt;0.5</b>	<0.5	<0.5	<b>&lt;0.5</b>	
<b>Vanadium</b>	4.0	4.4	<b>4.2</b>	1.0	0.8	<b>0.9</b>	<b>78.2%</b>
<b>Zinc</b>	210.0	290.0	<b>250.0</b>	24.0	20.0	<b>22.0</b>	<b>91.2%</b>

Metals treatment data were compiled from analytical work performed by the City of Santa Cruz WWTF Laboratory ELAP Certificate no CA 1176; and McCampbell Analytical ELAP Certificate no 1644.

**Table 10: SPMD –MEDIATED SAMPLING AND ANALYSES OF WWTF DIOXINS AND FURANS IN 2009**

COMPOUNDS	Influent (30-day Integrative samples March and August 2009)			Effluent (30-day Integrative samples March and August 2009)			AVERAGE REDUCTION (%)
	DRY SEASON (August 2009) INFLUENT (pg/L)	WET SEASON (March 2009) INFLUENT (pg/L)	AVERAGE INFLUENT CONCENTRATION (pg/L)	DRY SEASON (August 2009) EFFLUENT (pg/L)	WET SEASON (Mach 2009) EFFLUENT (pg/L)	AVERAGE EFFLUENT CONCENTRATION (pg/L)	
2,3,7,8-TCDD	5.36E-03	1.68E-02	1.11E-02	9.18E-03	8.56E-03	8.87E-03	19.9
1,2,3,7,8-PeCDD	4.91E-02	6.39E-02	5.65E-02	4.11E-02	2.76E-02	3.44E-02	39.2
1,2,3,4,7,8- HxCDD	5.23E-02	1.11E-01	8.15E-02	6.76E-02	5.12E-02	5.94E-02	27.1
1,2,3,6,7,8- HxCDD	7.29E-02	1.52E-01	1.12E-01	8.94E-02	7.03E-02	7.98E-02	28.9
1,2,3,7,8,9- HxCDD	6.82E-02	1.44E-01	1.06E-01	8.59E-02	6.68E-02	7.63E-02	28.1
1,2,3,4,6,7,8- HpCDD	3.33E-01	5.55E-01	4.44E-01	2.88E-01	2.65E-01	2.76E-01	37.8
OCDD	8.64E-01	1.01E+00	9.36E-01	4.41E-01	2.99E-01	3.70E-01	60.5
2,3,7,8-TCDF	4.39E-03	7.40E-03	5.89E-03	6.56E-03	1.24E-02	9.46E-03	
1,2,3,7,8-PeCDF	8.78E-03	1.30E-02	1.09E-02	6.16E-03	5.48E-03	5.82E-03	46.7
2,3,4,7,8-PeCDF	1.17E-02	1.65E-02	1.41E-02	7.67E-03	6.95E-03	7.31E-03	48.1
1,2,3,4,7,8- HxCDF	7.27E-03	1.56E-02	1.14E-02	1.73E-02	6.41E-03	1.18E-02	
1,2,3,6,7,8- HxCDF	8.02E-03	1.55E-02	1.17E-02	1.79E-02	6.23E-03	1.21E-02	
2,3,4,6,7,8- HxCDF	6.99E-03	1.47E-02	1.08E-02	1.53E-02	6.07E-03	1.07E-02	
1,2,3,7,8,9- HxCDF	1.13E-02	2.36E-02	1.74E-02	2.52E-02	9.32E-03	1.72E-02	
1,2,3,4,6,7,8- HpCDF	3.74E-02	4.56E-02	4.15E-02	3.12E-02	1.96E-02	2.54E-02	38.9
OCDF	2.12E-01	2.67E-01	2.39E-01	1.38E-01	1.06E-01	1.22E-01	49.1

**Table 11b: SUMMARY DATA OF WEEKLY NEARSHORE BACTERIA – FECAL COLIFORMS  
SAMPLING AND ANALYSES IN 2009**



**CITY OF SANTA CRUZ**  
**30-FOOT CONTOUR RECEIVING WATER DATA**  
**TOTAL COLIFORMS by SM 9222 B**  
**January 1, 2009 - December 31, 2009**

SAMPLING DATES	MONITORING LOCATIONS							
	RW(A)	RW(C)	RW(E)	RW(F)	RW(G)	RW(H)	RW(I)	RW(L)
1/6/2009	15	27	39	59	10	15	15	9
1/13/2009	27	4	6	5	12	30	61	3
1/20/2009	19	15	13	14	18	14	26	1
1/27/2009	24	5	15	27	20	21	20	8
2/3/2009	8	5	10	3	45	20	19	6
2/10/2009	21	5	8	11	10	24	40	6
2/24/2009	352	280	259	186	208	259	183	257
2/25/2009	29	na	44	na	na	28	na	33
3/4/2009	64	70	56	106	75	74	103	53
3/10/2009	14	4	6	2	5	2	2	3
3/17/2009	23	146	40	118	23	27	39	19
3/24/2009	18	4	10	5	6	8	21	8
3/31/2009	2	19	13	9	1	<1	<1	2
4/7/2009	51	3	2	15	13	1	<1	<1
4/14/2009	6	2	33	23	5	3	21	<1
4/21/2009	10	3	<1	<1	3	<1	4	17
4/28/2009	11	2	9	8	5	18	10	2
5/6/2009	25	7	<1	7	7	8	4	3
5/12/2009	<1	8	2	2	12	<1	1	<1
5/19/2009	2	4	3	2	4	6	3	9

5/26/2009	11	7	11	9	11	3	1	1
6/2/2009	14	1	<1	2	<1	<1	<1	<1
6/9/2009	<1	2	4	9	5	6	4	<1
6/16/2009	<1	1	182	<1	1	2	1	<1
6/23/2009	8	3	2	<1	2	1	2	10
6/30/2009	7	3	4	6	3	5	<1	<1
7/7/2009	<1	4	2	3	<1	<1	<1	<1
7/14/2009	<1	1	<1	2	2	<1	<1	<1
7/21/2009	<1	<1	<1	<1	<1	1	<1	<1
7/28/2009	<1	3	2	1	2	2	7	<1
8/4/2009	<1	1	1	1	<1	<1	<1	<1
8/11/2009	9	10	2	3	3	5	2	<1
8/18/2009	12	16	5	3	2	<1	1	<1
8/25/2009	2	<1	3	5	2	4	1	<1
9/1/2009	4	5	<1	<1	<1	3	<1	1
9/8/2009	1	7	2	3	43	3	3	4
9/15/2009	1	<1	<1	<1	<1	3	6	<1
9/22/2009	8	2	7	8	10	11	9	2
9/29/2009	2	4	1	2	<1	2	4	<1
10/6/2009	9	<1	<1	1	<1	2	1	2
10/20/2009	61	35	70	20	64	6	37	54
10/27/2009	26	17	11	156	7	2	3	4
11/3/2009	21	6	12	3	1	16	1	2
11/9/2009	9	4	9	<1	3	5	1	6
11/17/2009	5	1	6	1	2	12	16	<1
11/23/2009	3	3	3	3	3	<1	<1	1
11/30/2009	5	6	10	8	3	2	1	1
12/14/2009	44	36	72	92	77	64	62	61



CITY OF SANTA CRUZ  
 30-FOOT CONTOUR RECEIVING WATER DATA  
 FECAL COLIFORMS by SM 9221 E  
 January 1, 2009 - December 31, 2009

SAMPLING DATES	MONITORING LOCATIONS							
	RW(A)	RW(C)	RW(E)	RW(F)	RW(G)	RW(H)	RW(I)	RW(L)
1/6/2009	5	2	5	<1	1	4	<1	4
1/13/2009	11	<1	2	<1	5	12	20	3
1/20/2009	1	3	1	5	3	7	6	<1
1/27/2009	<1	<1	4	8	9	10	3	3
2/3/2009	2	1	1	1	10	5	4	<1
2/10/2009	1	<1	2	4	<1	8	11	1
2/24/2009	129	67	93	52	89	87	60	99
2/25/2009	1	na	1	na	na	<1	na	<1
3/4/2009	11	8	5	6	7	6	5	3
3/10/2009	<1	<1	<1	<1	<1	<1	<1	<1
3/17/2009	1	18	5	<1	<1	<1	<1	<1
3/24/2009	3	<1	1	2	<1	1	<1	2
3/31/2009	2	<1	2	1	<1	1	<1	<1
4/7/2009	1	<1	1	5	3	2	<1	<1
4/14/2009	<1	4	<1	3	1	2	<1	<1
4/21/2009	8	<1	<1	1	<1	<1	<1	3
4/28/2009	7	1	8	<1	1	<1	2	<1
5/6/2009	8	2	<1	2	2	1	<1	<1
5/12/2009	<1	<1	<1	<1	<1	<1	<1	<1
5/19/2009	1	3	1	<1	2	<1	<1	2
5/26/2009	1	2	1	1	<1	<1	<1	<1
6/2/2009	4	<1	<1	<1	1	<1	<1	<1
6/9/2009	<1	1	2	<1	3	1	3	<1
6/16/2009	<1	<1	3	<1	<1	<1	<1	<1

6/23/2009	1	2	<1	<1	<1	<1	<1	<1
6/30/2009	4	7	2	2	<1	<1	<1	<1
7/7/2009	<1	1	<1	<1	<1	<1	<1	<1
7/14/2009	<1	<1	<1	<1	<1	<1	<1	<1
7/21/2009	<1	<1	<1	<1	<1	1	<1	<1
7/28/2009	<1	1	<1	1	2	<1	3	<1
8/4/2009	<1	<1	<1	<1	<1	<1	<1	<1
8/11/2009	2	1	1	<1	<1	<1	3	<1
8/18/2009	5	10	<1	<1	<1	<1	<1	<1
8/25/2009	<1	<1	<1	<1	<1	1	<1	<1
9/1/2009	<1	2	<1	<1	<1	2	<1	<1
9/8/2009	1	3	1	3	9	3	1	<1
9/15/2009	<1	<1	<1	1	<1	1	3	<1
9/22/2009	3	2	1	1	2	2	2	<1
9/29/2009	<1	<1	2	2	<1	<1	<1	<1
10/6/2009	2	<1	<1	<1	<1	1	<1	<1
10/20/2009	42	13	39	6	10	4	15	9
10/27/2009	4	2	9	10	1	1	1	1
11/3/2009	7	3	6	1	<1	<1	<1	<1
11/9/2009	1	2	1	1	1	<1	<1	3
11/17/2009	2	<1	<1	<1	<1	4	5	<1
11/23/2009	<1	<1	<1	<1	3	3	<1	1
11/30/2009	<1	<1	<1	<1	<1	<1	<1	<1
12/14/2009	7	6	9	18	14	14	7	3

**Table 11C: SUMMARY DATA OF WEEKLY NEARSHORE BACTERIA – ENTEROCOCCUS  
SAMPLING AND ANALYSES IN 2009**



CITY OF SANTA CRUZ

30-FOOT CONTOUR RECEIVING WATER DATA

ENTEROCOCCUS by EPA 1600

January 1, 2009 - December 31, 2009

SAMPLING DATES	MONITORING LOCATIONS							
	RW(A)	RW(C)	RW(E)	RW(F)	RW(G)	RW(H)	RW(I)	RW(L)
1/6/2009	1	3	4	2	1	16	<1	<1
1/13/2009	5	<1	1	1	1	9	10	1
1/20/2009	1	2	2	3	1	3	6	<1
1/27/2009	2	1	2	4	1	5	1	6
2/3/2009	1	<1	<1	1	18	10	1	1
2/10/2009	1	<1	<1	<1	2	1	5	<1
2/24/2009	129	67	121	36	97	138	88	138
2/25/2009	2	na	2	na	na	<1	na	2
3/4/2009	12	47	31	20	19	29	18	20
3/10/2009	1	<1	<1	<1	<1	<1	<1	<1
3/17/2009	<1	1	<1	<1	1	3	<1	<1
3/24/2009	2	4	3	<1	2	3	6	<1
3/31/2009	2	3	1	1	2	3	<1	2
4/7/2009	2	<1	<1	<1	4	<1	<1	<1
4/14/2009	<1	<1	<1	<1	<1	<1	<1	<1
4/21/2009	<1	<1	<1	<1	<1	1	1	2
4/28/2009	4	6	4	1	3	1	3	2
5/6/2009	2	2	<1	1	3	6	3	<1
5/12/2009	<1	2	1	1	<1	1	<1	<1
5/19/2009	<1	<1	1	1	<1	<1	1	<1
5/26/2009	<1	1	1	<1	<1	<1	<1	1
6/2/2009	1	<1	<1	1	<1	<1	1	<1

6/9/2009	<1	1	1	<1	<1	<1	<1	<1
6/16/2009	<1	<1	<1	<1	<1	<1	<1	<1
6/23/2009	<1	<1	<1	<1	<1	<1	<1	<1
6/30/2009	1	3	<1	<1	<1	<1	<1	<1
7/7/2009	<1	1	<1	<1	<1	1	<1	<1
7/14/2009	<1	<1	<1	<1	<1	<1	<1	<1
7/21/2009	<1	1	<1	<1	<1	<1	<1	<1
7/28/2009	<1	3	<1	<1	<1	1	1	<1
8/4/2009	<1	<1	<1	<1	<1	<1	1	<1
8/11/2009	<1	8	<1	<1	<1	<1	<1	<1
8/18/2009	4	8	<1	<1	2	1	<1	<1
8/25/2009	1	<1	<1	<1	<1	<1	<1	<1
9/1/2009	<1	<1	<1	<1	<1	1	<1	<1
9/8/2009	<1	<1	1	<1	16	<1	<1	<1
9/15/2009	1	4	<1	<1	<1	<1	1	<1
9/22/2009	<1	<1	<1	<1	<1	3	<1	<1
9/29/2009	<1	<1	<1	<1	<1	<1	<1	<1
10/6/2009	1	<1	<1	<1	<1	1	<1	<1
10/20/2009	6	<1	2	4	2	<1	<1	2
10/27/2009	1	<1	<1	3	2	<1	<1	<1
11/3/2009	7	5	4	<1	1	<1	<1	<1
11/9/2009	1	1	1	<1	1	<1	1	1
11/17/2009	1	<1	<1	<1	<1	4	3	<1
11/23/2009	<1	<1	<1	<1	1	1	<1	<1
11/30/2009	<1	<1	<1	<1	<1	<1	<1	<1
12/14/2009	37	23	50	64	91	73	56	17



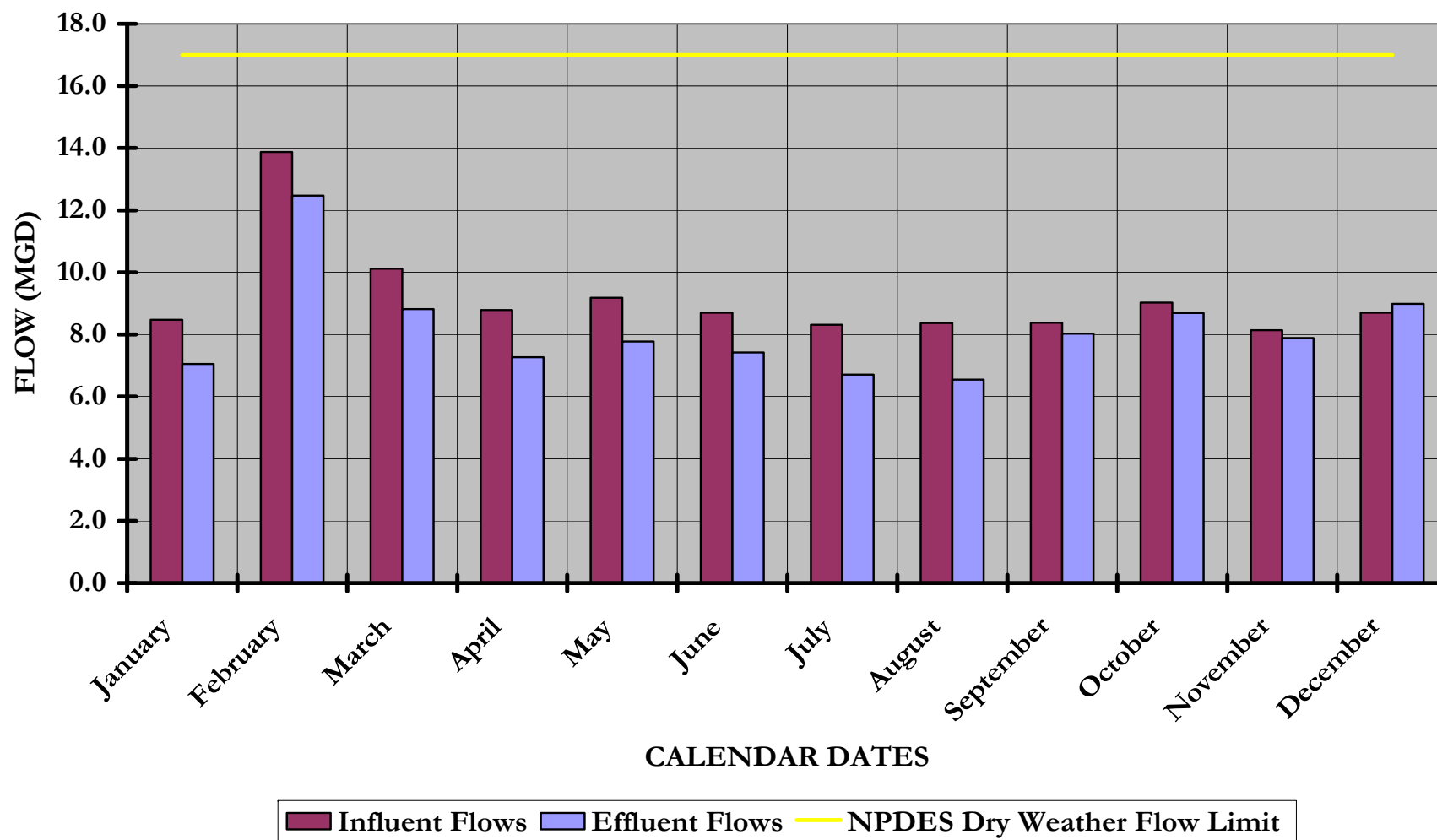
### **Section III. Summary of Monitoring Data – Graphs**

### **III. Summary of Monitoring Data- Graphs**

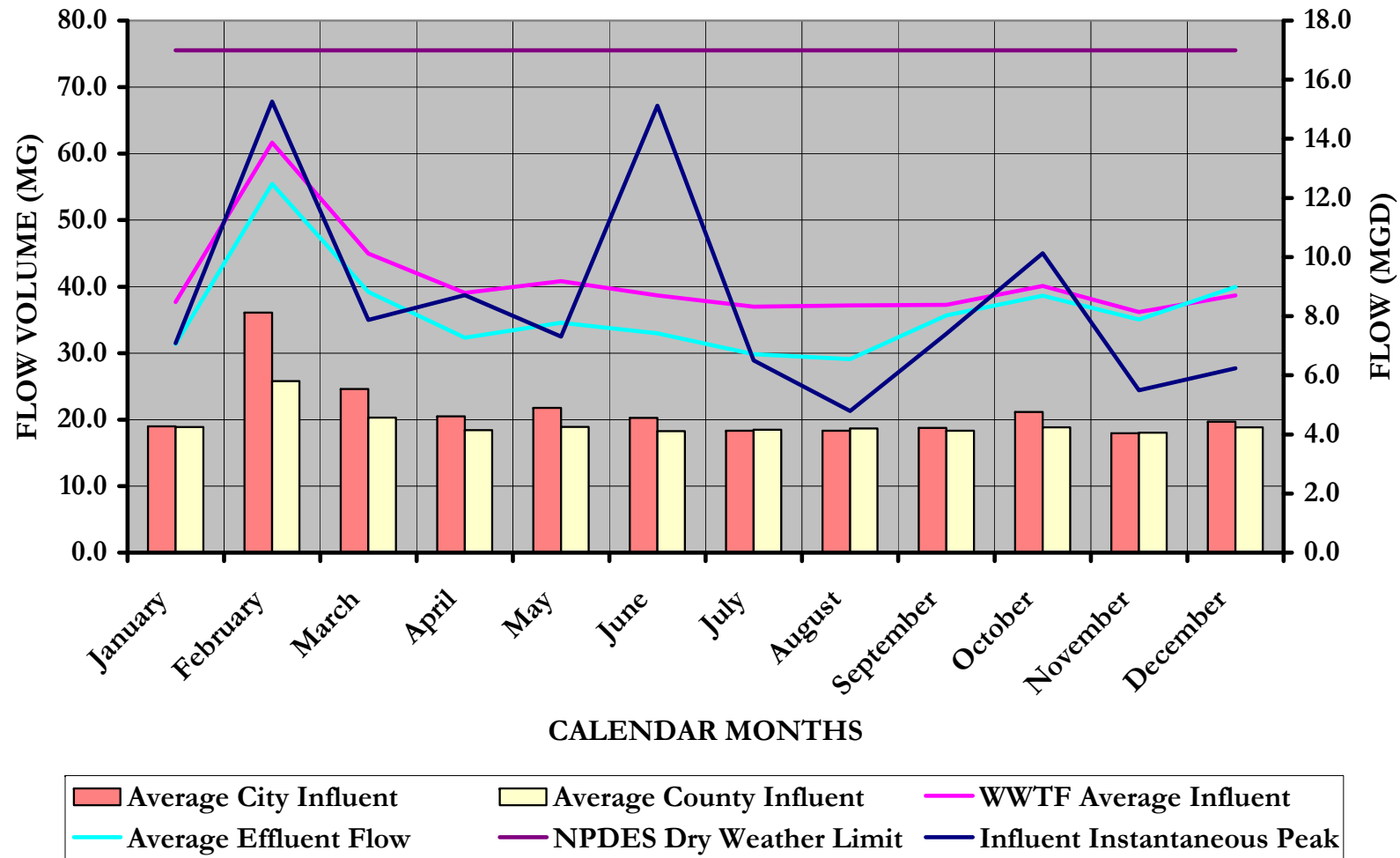
The following pages contain a sequence of graphs, and a map with brief narrative arranged in the following order:

1. WWTF Flow reports.
2. Total Suspended Solids (TSS) reports.
3. Total Organic Carbon (TOC) treatment and removal efficiency reports.
4. Biochemical Oxygen Demand (BOD) Equivalent treatment and removal reports.
5. Bacterial Monitoring Stations; And
6. The Biosolids Monitoring and Reporting.

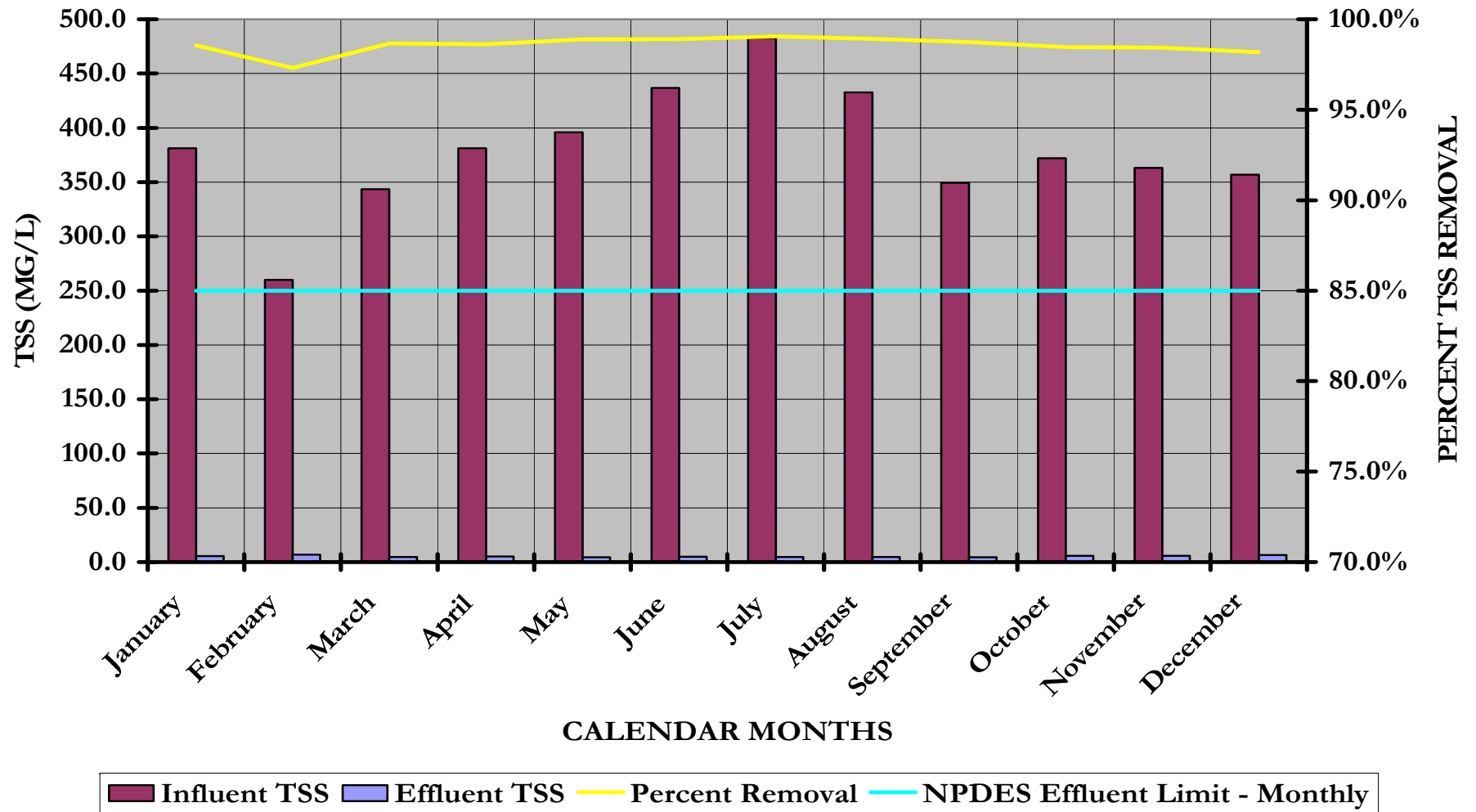
## WWTF FLOW REPORT - 2009



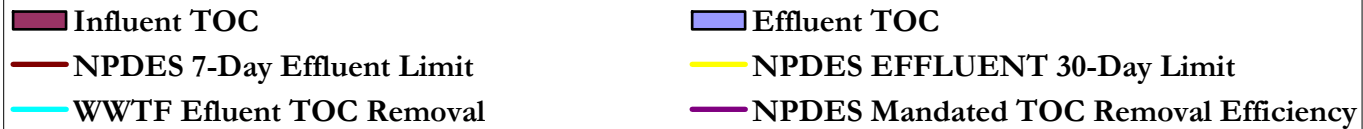
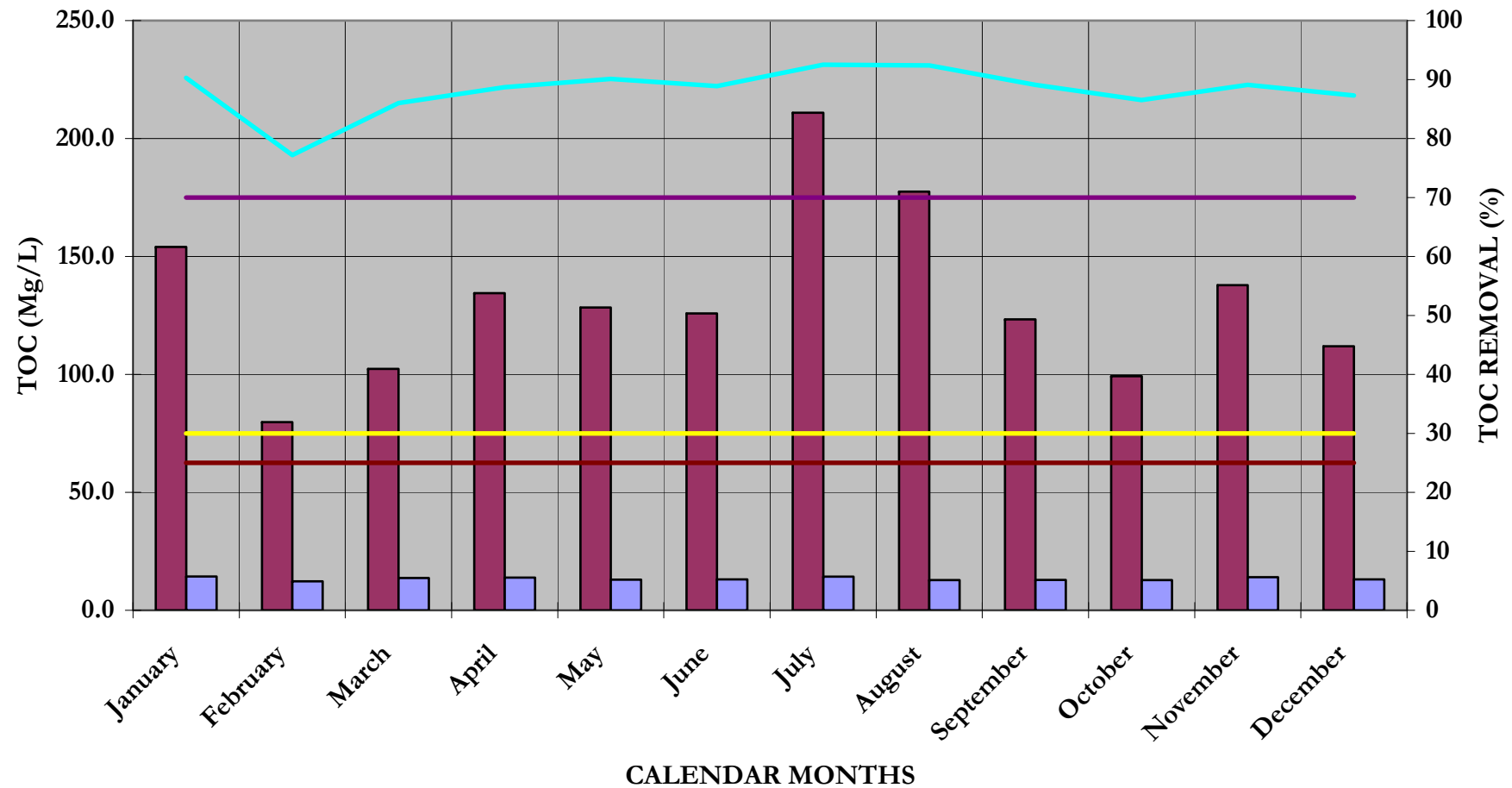
## WWTF FLOW INFLUENT REPORT - 2009



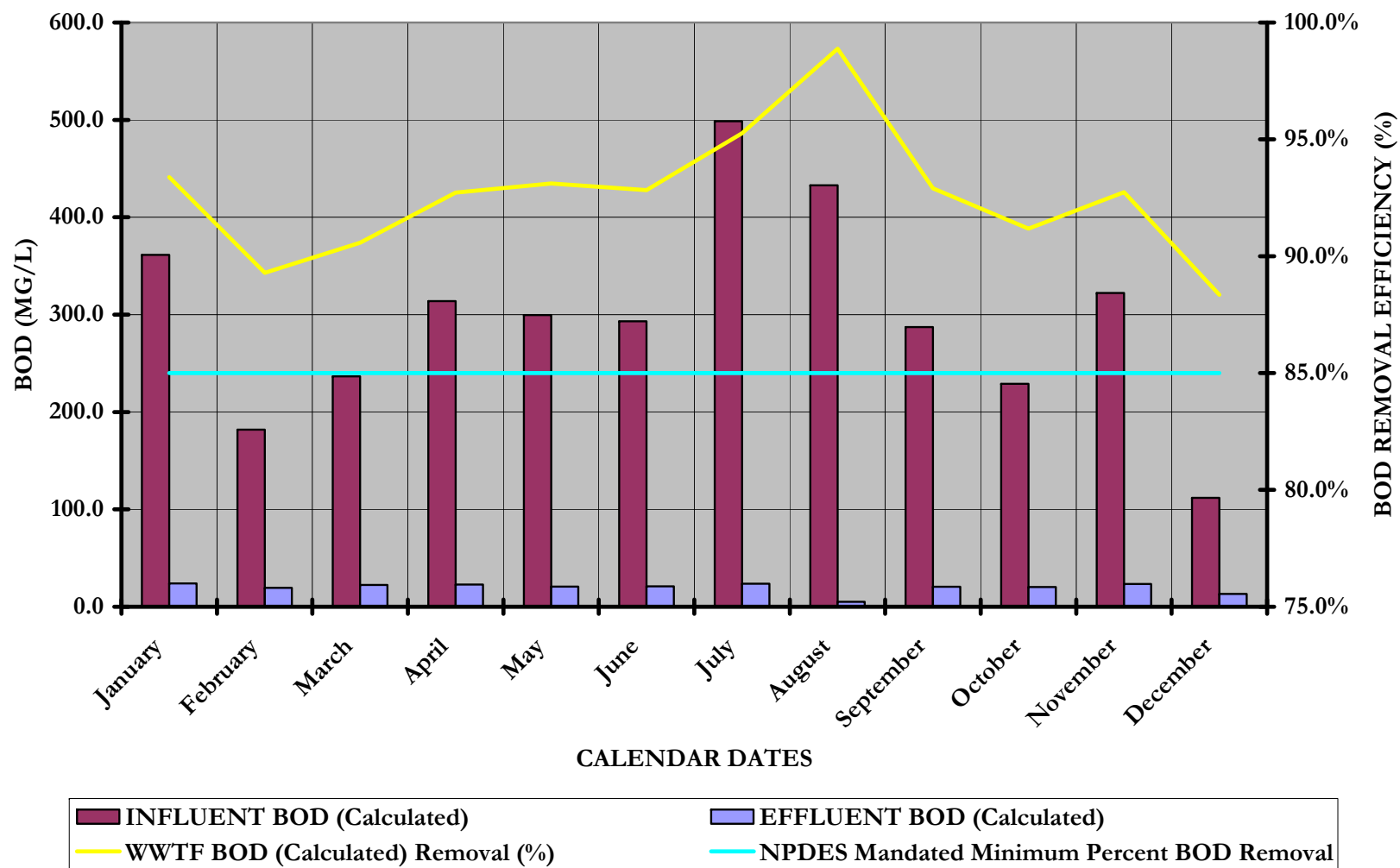
## WWTF TOTAL SUSPENDED SOLIDS (TSS) REPORT - 2009



## WWTF 2009 - TOTAL ORGANIC CARBON (TOC) TREATMENT



## WWTF BOD TREATMENT REPORT - 2009



## AERIAL VIEW OF NEARSHORE BACTERIAL SAMPLING LOCATIONS:

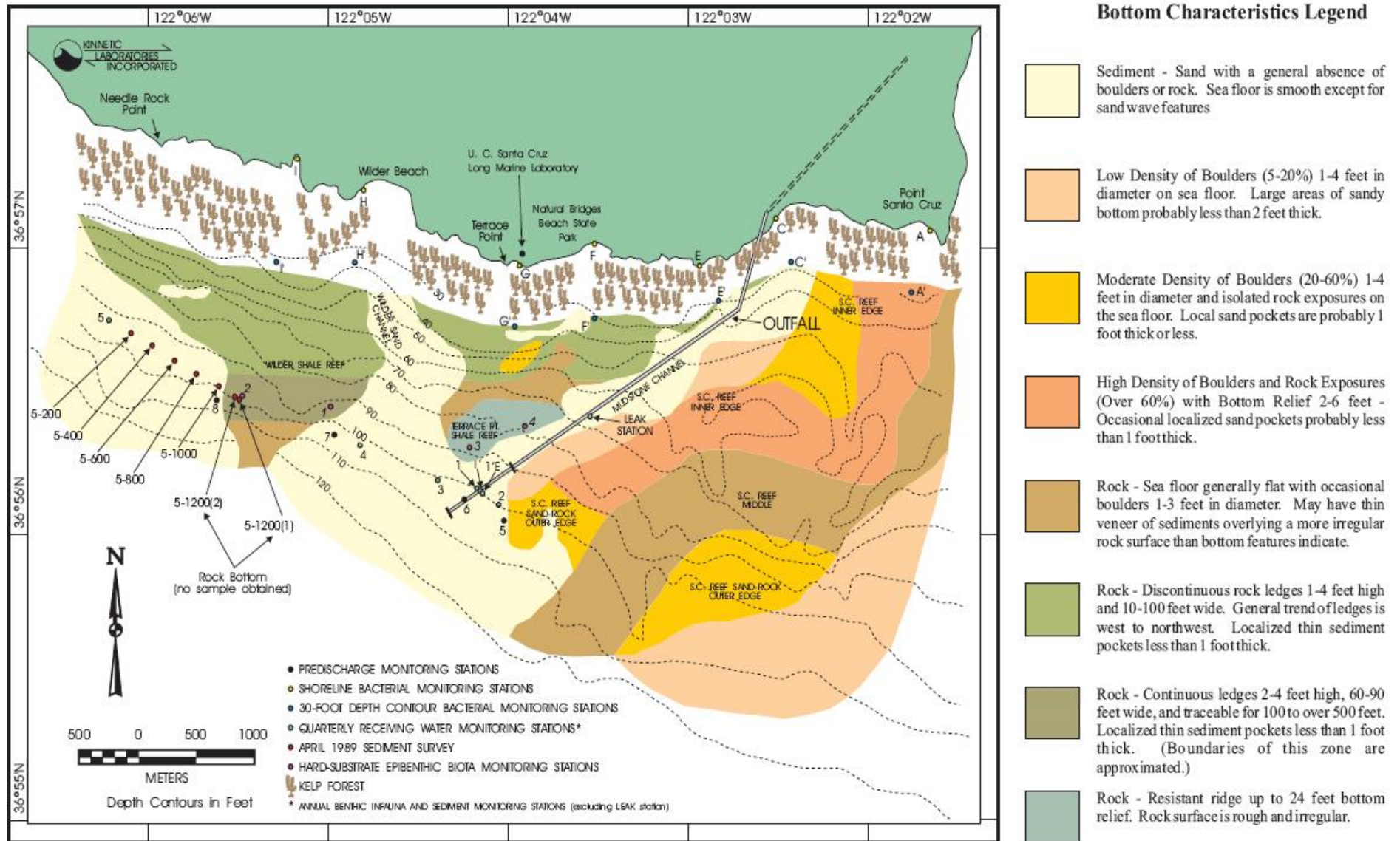


Figure 1. Location of Santa Cruz predischarge monitoring stations (5, 6, 7, and 8), outfall shoreline bacterial monitoring stations (A, C, E, F, G, H, and I), 30-foot depth contour bacterial monitoring stations (A', C', E', F', G', H', and I'), quarterly receiving water monitoring stations (1, 2, 3, 4, 5, and LEAK), benthic infauna and sediment stations locations (1, 2, 3, 4 and 5), April 1989 sediment survey (Stations 5-200 through 5-1200(2)), and hard-substrate epibenthic biota monitoring stations (Wilder Reef: 1 and 2; and Terrace Point Reef: 3 and 4).



## **Biosolids Monitoring and Reporting**

Representative sampling and analyses of sludge biosolids from the last handling point at the facility, are performed on a bi-monthly basis to monitor the process and product quality. The biosolids product is hauled to a third party site under a multi-year contract between the City and the hauler. The hauler has ultimate responsibility for the appropriate reuse of the commodity.

The data generated through the City's biosolids monitoring program indicate that the processes of biosolids generation at the facility and the quality of the biosolids product remain both stable, and predictable. Additional data generated by the City's contractors provide another layer of confirmation that the biosolids product meets and exceeds the limits for hazardous waste disposal or for land application purposes for biosolids uses in California.

Following this introductory paragraph are:

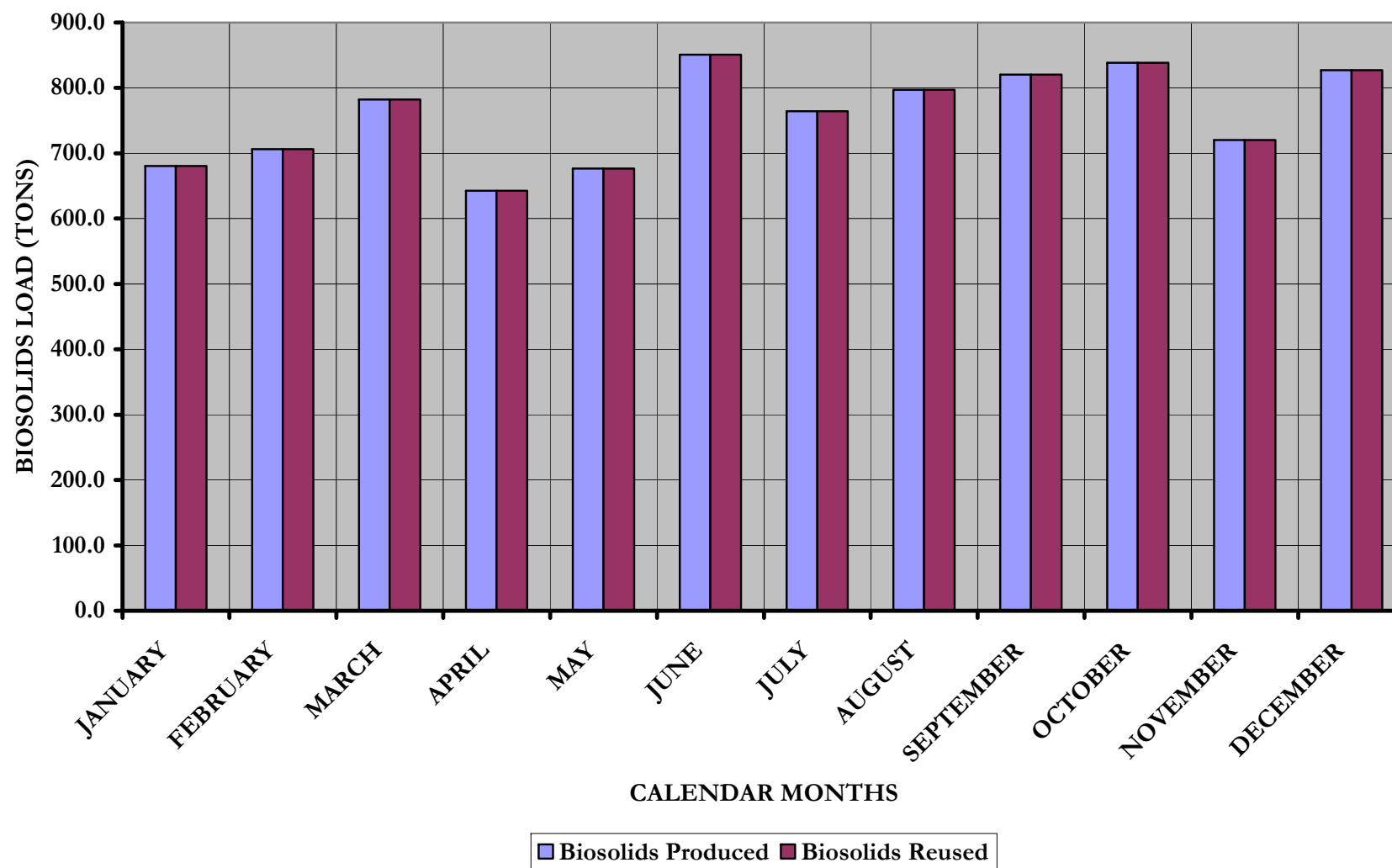
1. A table and a graph of the City's biosolids production in 2009.
2. Data on biosolids quality from analyses of the composite samples taken for the Bi-Monthly Sludge monitoring process in 2009.

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**Table: Monthly Biosolids Production and Disposal/Reuse**

2009 MONTHS	Sludge Quantity	Sludge Reuse
	Tons	Tons
January	680.4	680.4
February	706.2	706.2
March	782.1	782.1
April	642.7	642.7
May	676.4	676.4
June	851.0	851.0
July	764.3	764.3
August	797.0	797.0
September	820.3	820.3
October	838.5	838.5
November	720.3	720.3
December	827.2	827.2
Monthly Average	758.9	758.9
Monthly Minimum	642.7	642.7
Monthly Maximum	851.0	851.0
ANNUAL TOTAL	9,106.3	9,106.3

## WWTF BIOSOLIDS PRODUCTION REPORT - 2009



Bi-Monthly Sludge Monitoring	ANALYTICAL RESULTS IN DRY WEIGHT ONLY (MG/KG)							Hazardous Waste Limits (Max Allowable) mg/Kg Wet Weight TTLC	Land Applied Limits (mg/Kg Dry Weight)
	2-Feb-09	6-Apr-09	8-Jun-09	3-Aug-09	5-Oct-09	7-Dec-09	Average		
ANALYTES									
Antimony	4.0	2.6	3.8	2.9	2.8	2.4	3.1	500.0	NA
Arsenic	11.0	12.0	13.0	12.0	12.0	11.0	11.8	500.0	41.0
Asbestos	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	NA
Barium	380	410	510	450	440	410	433	10,000.0	NA
Beryllium	<2.1	<2.2	<2.3	<2.2	<2.2	<2.2	<2.2	75.0	NA
Cadmium	2.2	2.8	3.0	2.7	2.5	2.6	2.6	100.0	39.0
Chromium	32.0	42.0	44.0	36	32	30	36.0	500.0	NA
Cobalt	6.5	6.8	6.1	3.9	3.9	4.4	5.3	8,000.0	NA
Copper	610	650	790	520	590	550	618	2,500.0	1,500.0
Fluoride	<5.0	7.5	44.0	26.0	13	23.0	22.7	18,000.0	NA
Lead	20.0	22.0	27.0	21.0	22.0	20.0	22.0	1,000.0	300.0
Mercury	1.7	1.10	1.50	1.4	1.2	1.5	1.4	20.0	17.0
Moisture	77.4%	77.6%	74.9%	77.7%	77.1%	77.3%	77.0%	NA	NA
Molybdenum	9.5	9.8	12.0	11.0	11.0	12.0	10.9	35,000.0	NA
Nickel	17.0	18.0	26.0	21.0	21.0	18.0	20.2	2,000.0	420.0
Nitrate-N	2.3	<2.0	<2.0	<9.0	23.0	29.0	18.1	NA	NA
Nitrogen-Organic	9,300	9,600	9,200	42,000	38,000	38,000	24,350	NA	NA
Nitrogen-Total Kjeldahl	11,000	12,000	12,000	52,000	47,000	47,000	30,167	NA	NA
Nitrogen-Ammonia	2,100	2,400	2,500	9,900	9,200	8,700	5,800	NA	NA
Selenium	6.7	7.8	10.0	7.8	7.9	7.3	7.9	100.0	100.0
Silver	15.0	13.0	13.0	17.0	10.0	9.9	13.0	500.0	NA
Thallium	<2.1	<2.2	<2.3	<2.2	<2.2	<2.2	<2.2	700.0	NA
Vanadium	19.0	24.0	23.0	18	17	16	19.5	2,400.0	NA
Zinc	1,200	1,200	1,400	1,300	1,300	1,300	1,283	5,000.0	2,800.0

## **Section IV. The Compliance Record and Corrective Actions**

## **Section IV. The Compliance Record and Corrective Actions**

This section contains narratives and figures relating to the compliance record in 2009 and all associated corrective actions with identifiable violations.

There was no incident of performance failure in 2009.

As indicated by the data and summarized bullets in the introduction, there were no numerical basis to assess plant removal efficiencies for trace organic compounds in 2009. This may be attributable in significant measure to the success of the pretreatment efforts to divert pharmaceutical compounds from the sewer system as well as the continued competency of operations at the facility. All of the activities and results were consistent with the aims and requirements of the NPDES permit.

The compliance record provides several highlights of an improved monitoring program including the following highlights in 2009:

1. The annual outfall report including a dye test and a dive inspection were concluded in October 2009. The results of the inspection are contained in this section.
2. The City successfully initiated the safe and responsible disposal of unwanted pharmaceuticals to divert their continued introduction into the sewer system. The program was initiated by the City in 2008, and was broadened through a State grant to include the rest of the County by December 2008.
3. Bacterial monitoring at the 30 foot contour was sustained throughout 2009, with data indicating compliance with all beneficial use standards throughout the year. And
4. The City expanded its integrative sampling and monitoring for compounds in the California Ocean Plan Table B list, by implementing the same at the facility's influent. The data will allow the City and the Regional Board to develop monitoring and management strategies for these compounds, and to update the Local Limits for industrial users.

The monthly average BOD removal efficiency in 2009 was 91.2% 2009. The secondary standard for BOD removal; and the erstwhile limit for the facility was 85% BOD removal. The City's performance for the removal of wasteload is now measured in Total Organic Carbon (TOC) and Total Suspended Solids (TSS). The equivalent secondary standard for TOC removal is 70%, while plant performance for 2009 was 87.1%. Plant performance for TSS removal averaged 98.4% for 2009.

The Water Boards instructed dischargers including the City of Santa Cruz to submit all self monitoring reports (SMR) exclusively by electronic means during 2009. Although the CIWQS (California Integrated Water Quality System) and USEPA's electronic systems are still being

optimized for these activities, the City continues to support the State's efforts with streamlining the reporting system, including CIWQS.

In conclusion, the data indicate that compliance with the WDR and MRP requirements has been good, and no problems are anticipated for 2010.

The remainder of this section beginning on the next page contains narratives, tables, and a photograph of the annual outfall monitoring exercise.

## ANNUAL OUTFALL MONITORING REPORT

The City has conducted its annual Outfall and Diffuser Monitoring as required by MRP No.R3-2005-0003 of May 13, 2005. This year's monitoring consisted of a dye test with an over flight along the entire outfall (report attached) and an underwater video survey conducted by a remotely operated vehicle (ROV) along the diffuser section (report attached). The dye study was conducted by Full Tilt Design on December 9, 2009. The ROV inspection was conducted on September 2, 2009 by North Coast Divers, Inc.

The underwater survey showed that the open diffuser ports are unobstructed and flowing as designed and originally constructed. The dye test did not detect any leaks and did not detect the intermittent leak that was previously detected in 1992, 1994, 2002, 2004 and 2006.

That leak had been previously detected at an approximate depth of 70 feet below sea level and 7000 feet from the beach vault as measured along the outfall. The dye test was performed after the weather change and provided excellent visibility of dye. Dye was only observed at the diffuser location.

Kinnetic Laboratories had performed an extensive investigation of the intermittent leak in 1994 and concluded that the leak was small in volume and had an initial dilution exceeding 1000:1 and that the risks and cost to fix such a leak outweighed the benefits. The precise location of the leak was not determined due to the small size of the leak and the fact that the outfall is in a trench covered with ballast rock.

Beginning in 2005, weekly grab samples are taken from the GIS location identified as the leak at the 70 foot contour, along with the monitoring of the near shore bacteria at 30 foot contour depth. Previous grab samples were taken quarterly at the leak site from 1995 through 1998. In April 1997, elevated bacteria levels indicated that the intermittent leak was still active at times. All samples were tested, and continue to be tested for total coliform, fecal coliform and enterococci. Bacteria data from the site has shown intermittent levels of elevated indicators. This is consistent with the limited and intermittent nature of the leak. No additional impact from the leak has been documented. Details of all the test data have been included in both the annual and quarterly Ocean Outfall reports submitted to the RWCQB from 1995 through 1998.

Finally, the City uses the annual report to provide updates on observations relating to the leak. Following this page is the dye study report.

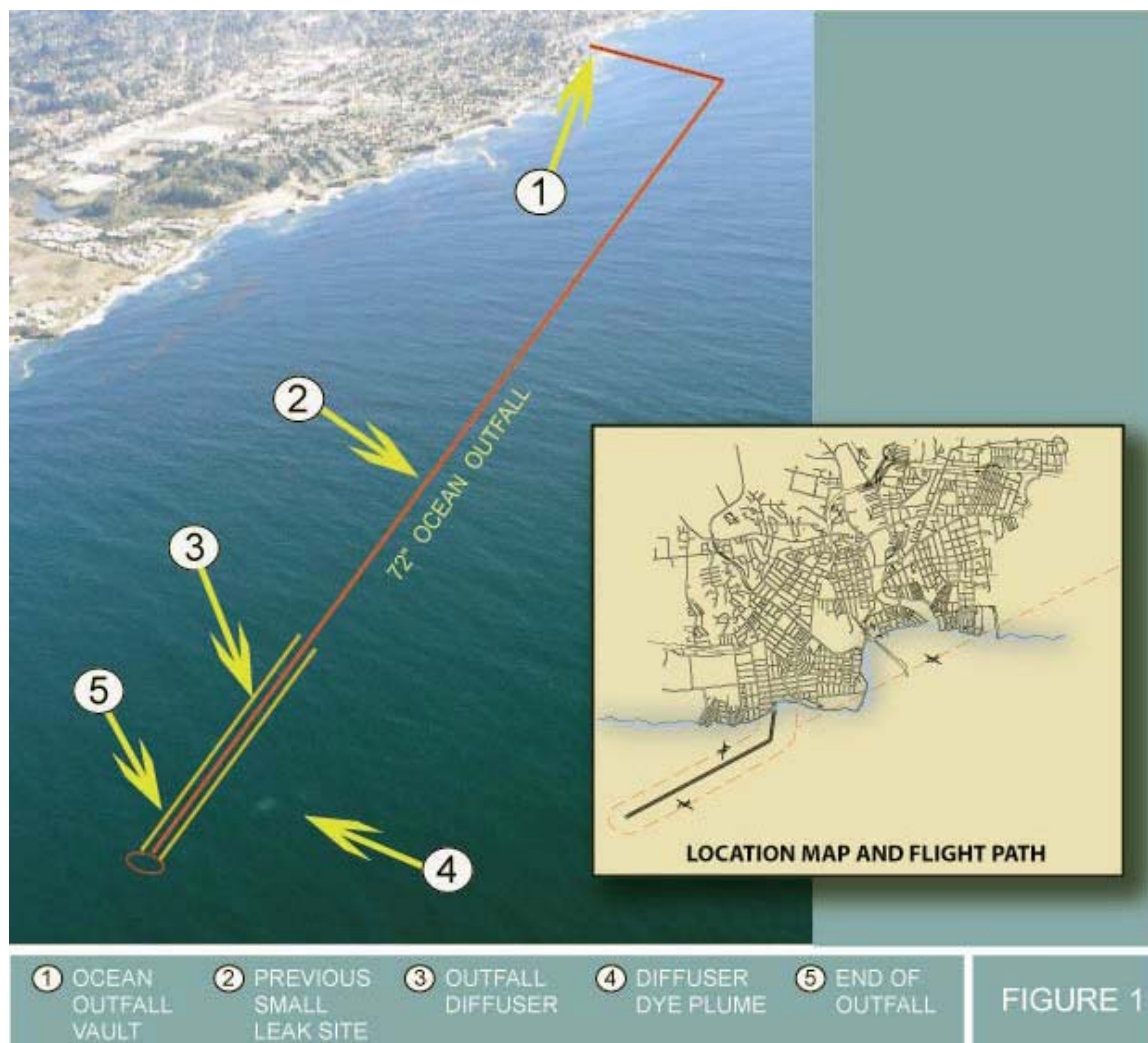
Steve Wolfman, P.E.  
Associate Civil Engineer



## Dye Study Report - Wastewater Treatment Effluent Ocean Outfall Overflight

On Tuesday October 7, 2009 the City of Santa Cruz conducted a dye test of the Wastewater Treatment effluent ocean outfall to visually search for leaks. An overflight and boat inspection was performed between 9:15am and 10:00am using the aerial survey services of pilot Aaron Becker and marine support of Rick Heaslet of North Coast Divers. An on-board differential-ready GPS (which simultaneously tracks and uses up to 12 satellites) with an accuracy of 1-5 meters (3-15 feet) was used for navigation and positioning.

At 9:20 am 90 gallons of yellow liquid dye were added at the at the Wastewater Treatment facility. The weather was clear and the sea surface was calm. At around 9:40 am a dye plume was observed and photographed with a digital camera in the diffuser section area. The dye plume was very visible from the air, and appeared similar to previous years' observations.



**Figure 1** shows the location of the previous small leak site (2) located roughly 7,000 L.F. along the pipeline from the beach outfall vault. No dye was seen at this location. Along the diffuser section (3) four or five small plumes (4) were visually located before the end of the pipeline (5).

After the dye plume was sighted, further inspection of the entire ocean outfall revealed that the surrounding ocean surface remained unchanged. No leaks or visual dye plumes were evident. The overflight of the ocean outfall concluded at 10:00am.

Aaron Becker

**Section V. The Operating Staff**

## Section V. The Operating Staff

### V. The Operating Staff.

The following section summarizes the credentials and designations of staff employed at the Wastewater Treatment facility and the City's compliance with the California Water Code, the California Code of Regulations, in maintaining appropriate staffing.

The Waste Discharge Requirements, and the NPDES Permit require operators and their supervisors at municipal wastewater treatment plants to be certified at specific minimum levels of certification based upon the wastewater treatment plant processes and design flows. All of the operations personnel of the City of Santa Cruz Wastewater Treatment Facility are certified by the California State Water Resources Control Board at or above the required levels. In addition, the Superintendent of the facility maintains a wastewater operators certificate at the level of the plant rating.

The Operations and Maintenance division of the facility is staffed as follows:

- 1 (one) Wastewater Treatment Facility Operations Manager;
- 5 (five) Senior Wastewater Plant Operators;
- 8 (eight) Wastewater Plant Operators

The maintenance unit consists of seven mechanics and three electricians as follows:

- 1 (one) Senior Plant Mechanic;
- 1 (one) Senior Electrician;
- 4 (four) Plant Maintenance Mechanics II;
- 2 (two) Plant Maintenance Mechanics I; and
- 3 (three) Electrical Technicians.

Additional management, engineering, consultative, clerical and analytical support services are provided by:

- The Director of Public Works;
- 1 Associate Civil Engineer; and 1 Civil Engineering Associate
- 1 Laboratory/Environmental Compliance Manager; 2 Laboratory Chemists; 1 Laboratory Technician; and 3 Environmental Compliance Inspectors;
- 1 Administrative Assistant and
- 1 Network Administrator.

Following are tables of all personnel involved in the daily operation and maintenance of the Wastewater treatment facility, their credentials, classifications and certification levels.

## Section V. The Operating Staff

<b>MANAGEMENT/ADMINISTRATION</b>		
<b>NAME</b>	<b>DESIGNATION</b>	<b>CREDENTIALS: GRADE CERT; &amp; EXPIRY DATE</b>
<b>Seidel, Dan</b>	Superintendent of Wastewater Collection and Treatment Facility	<b>SCWRCB Wastewater Operator IV 4055;</b> 6/30/11
<b>Warren, Filipina</b>	Administrative Assistant II	<b>AAII</b> BA (Psychology)
<b>Savadkahi, Shawn</b>	Network Administrator (ending July 2009)	BA (Physics)
<b>Woodhouse, Mike</b>	Network Administrator (since August 2009)	
<b>Babatola, Akin</b>	Laboratory/Environmental Compliance Manager	MS (Mol. Biol); BS (Micro)
<b>Sanders, Michael</b>	Wastewater Treatment Facility Operations Manager	<b>SCWRCB Wastewater Operator IV 4753;</b> 12/31/10

<b>OPERATIONS</b>			
<b>NAME</b>	<b>DESIGNATION</b>	<b>CREDENTIALS GRADE CERTIFICATE</b>	<b>EXPIRY DATE</b>
<b>Sanders, Michael</b>	Wastewater Treatment Facility Operations Manager	WW Operator IV 4753	12/31/10
<b>Mark Sandretti</b>	Senior WW Operator (through November 2009)	WW Operator III 4409	06/30/10
<b>Culbertson, Michael</b>	Senior WW Operator	WW Operator III 532	12/31/10
<b>Lorenson, Arthur</b>	Senior WW Operator	WW Operator III 4867	12/31/11
<b>Meyers, David</b>	Senior WW Operator	WW Operator III 10986	6/30/11
<b>Ron Frazier</b>	Senior WW Operator	WW Operator III 7436	6/30/10
<b>Blume, Robert</b>	WW Operator III	WW Operator V 4776	6/30/10
<b>Gilbert, John</b>	WW Operator III	WW Operator III 28079	6/30/10
<b>Seifert, Brian</b>	WW Operator III	WW Operator III 28071	6/30/10

## Section V. The Operating Staff

<b>Brown, Bob</b>	WW Operator II	WW Operator II 7217	6/30/11
<b>Lineham, Grant</b>	WW Operator II	WW Operator II 8320	12/31/11
<b>Quintana, Everest</b>	WW Operator II	WW Operator II 4837	6/30/10
<b>Barnes, John</b>	WW Operator II	WW Operator II 5734	6/30/11

### MAINTENANCE

NAME	DESIGNATION	CREDENTIALS GRADE CERTIFICATE	EXPIRY DATE
<b>Wisler, Larry</b>	Senior Mechanic	CWEA Mechanical Tech III #090363007	1/31/10
<b>Stevens, Fred</b>	Maintenance Mechanic III	CWEA Mechanical Tech III #090363008	3/31/10
<b>Locatelli, Albert</b>	Maintenance Mechanic II		
<b>Pretzer, Tom</b>	Maintenance Mechanic II	CWEA Mechanical Tech II #599	6/31/10
<b>Locatelli, Forrest</b>	Maintenance Mechanic II		
<b>Carlson, Ron</b>	Maintenance Mechanic I		
<b>Fambrini, Steve</b>	Maintenance Mechanic I	CWEA Mechanical Tech I #090951004	9/30/10

### ELECTRICAL

NAME	DESIGNATION	CREDENTIALS GRADE CERTIFICATE	EXPIRY DATE
<b>Ken Gorny</b>	Senior Electrician (through May 2009)		
<b>Karo, Marc</b>	Electrical Technician (through May 2009)		
<b>Sturdivant, Jim</b>	Electrical Technician	CWEA Elect/Inst #80772002	7/31/10
<b>Miller, Ralph</b>	Electrical Technician	CWEA Elect/Inst #80172006	1/31/10

### LABORATORY/ENVIRONMENTAL COMPLIANCE

NAME	TITLE	CREDENTIALS
<b>Babatola, Akin</b>	Laboratory/Environmental Compliance Manager	MS (Mol. Biol); BS (Microbiology)
<b>Xu, Tianfei</b>	Chemist II/Principal Analyst	Graduate Degree (Chemistry) [Fudhan, China]

## Section V. The Operating Staff

		<b>CWEA Lab Analyst II 378; 7/31/10</b>
<b>Birch, Anne</b>	Chemist II/Principal Analyst	BA (Biology) BA (Cultural Anthropology) <b>Lab Analyst I 342; 1/31/10</b>
<b>Tantingco, Erlinda</b>	Lab Technician	BS (Chem. Eng); <b>Lab Analyst I</b>
<b>Ojo, Emmanuel</b>	Environmental Compliance Inspector (August - October 09)	BS (Chem. Eng) <b>Env. Comp. Insp. II 114; 1/31/09</b> <b>CWPCA Lab Analyst I; 1/31/10</b>
<b>Tomlinson, Monica</b>	Environmental Compliance Inspector	BS (Env. Science) <b>Env. Comp Insp. I 381; 7/31/10</b> <b>Lab Analyst I 1017; 1/31/11</b>
<b>Baker, Fred</b>	Environmental Compliance Inspector	<b>Env. Comp Insp. I 314; 7/31/10</b>

## **Section VI. The Operation & Maintenance Manual and Contingency Plans**

## **VI. The Operation & Maintenance Manual and Contingency Plans.**

The operation and maintenance manual was last reviewed in November 2000 and found to be complete and valid for the current facility. The facility's written Standard Operating Procedures are periodically reviewed and frequently updated to maintain documentation and direction on the operation of the facility.

The maintenance division provides routine preventative maintenance for all plant equipment. This ensures that equipment receives routine lubrication and relevant maintenance, and that standby equipment is ready for service.

Safeguards to minimize accidental discharge from the wastewater treatment plant are built into the design and operation of facility and equipment. These are also tested periodically to ensure their integrity. Scenarios for accidental discharge have been reviewed and concluded to be minimal. However, the location most vulnerable to an accidental discharge was identified as the Bar Screening room. This room is located proximate to the Pump house. A long-term power outage at peak flow may cause an overflow into the Pump house if the main sewage pumps were disabled. However, the two engines capable of driving all six main sewage pumps are diesel driven, and would provide power in case of such an outage. These diesel engines are tested for performance on a monthly schedule, and for a minimum of 1 hour each time. These engines and all equipment in the pump house are maintained with the highest priority.

Additional standby equipment has also been installed with the Plant upgrade to advanced secondary in 1998. These include power to the Sodium Hypochlorite disinfection system, which is the back up to the UV disinfection system.



## **Section VII. Laboratories used to Monitor Compliance**

## **Section VII. Laboratories used to Monitor Compliance**

The following section contains current information on all analytical laboratories whose services were required to maintain the compliance monitoring effort in 2009.

During the year 2009, the City of Santa Cruz operated the Wastewater Treatment Facility Laboratory certified under the CA Department of Health Services ELAP (Environmental Laboratory Accreditation Program). The Laboratory certificate number is CA 1176. A copy of the Laboratory certificate and the approved Fields of Testing are attached herewith. The Laboratory updated its QAPP (Quality Assurance Performance Plan), and received final approval for monitoring Total Organic Carbon (TOC) in wastewater for compliance monitoring programs in 2009.

Most analytical determinations performed for Plant treatment and the NPDES permit were accomplished through the Laboratory. Staffing at the WWTF Laboratory includes:

- 1 Laboratory/Environmental Compliance Manager;
- 2 (two) Laboratory Chemists, both of whom also function as Principal Analysts in accordance with CCR Title 22; and
- 1 Laboratory Technician.

The following six (6) contract laboratories provided other analytical services:

**1. McCampbell Analytical Inc.**

110 2nd Avenue South, #D7  
Pacheco, CA 94553-1622

**2. Alpha Analytical Laboratories Inc.**

860 Waugh Lane, H-1,  
Ukiah, CA 95482

**3. Frontier Analytical Laboratory**

5172 Hillsdale Circle  
El Dorado Hills, CA 95762

**4. City of Watsonville Utilities Department Laboratory**

P O Box 50000  
Watsonville, CA 95077

**5. Toxscan Inc.**

42 Hanger Way  
Watsonville, CA 95076

**6. Department of Fish and Game WPC Laboratory**

2005 Nimbus Road  
Rancho Cordova, CA 95670

All the laboratories are required to maintain current NELAC/ELAP, and these are verified by the WWTF Laboratory Manager during the monitoring period.

Additional specialized extraction and GPC clean up of integratively sampled effluents and influents were processed through:

**Environmental Sampling Technologies (EST)**

502 S. Fifth Street

St. Joseph, MO. 64501

1. McC Campbell Analytical Certificate:



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF ENVIRONMENTAL ACCREDITATION**

Is hereby granted to

**McCAMPBELL ANALYTICAL, INC.**

1534 WILLOW PASS ROAD

PITTSBURG, CA 94565

Scope of the certificate is limited to the  
"Fields of Testing"  
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,  
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1644**

Expiration Date: **10/31/2011**

Effective Date: **11/1/2009**

A handwritten signature in black ink, appearing to read "George C. Kulasingam".

Richmond, California  
subject to forfeiture or revocation

George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch

## 2. Alpha Analytical Laboratories



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

### **CERTIFICATE OF ENVIRONMENTAL ACCREDITATION**

Is hereby granted to

**ALPHA ANALYTICAL LABORATORIES, INC.**

208 MASON STREET

UKIAH, CA 95482

Scope of the certificate is limited to the  
"Fields of Testing"  
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,  
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1551**

Expiration Date: **06/30/2011**

Effective Date: **07/01/2009**

Richmond, California  
subject to forfeiture or revocation

George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch

3. Frontier Analytical



NELAP - RECOGNIZED



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF NELAP ACCREDITATION**

Is hereby granted to

**FRONTIER ANALYTICAL LABORATORY**

5172 HILLSDALE CIRCLE  
EL DORADO HILLS, CA 95762

Scope of the Certificate is limited to the  
"NELAP Fields of Accreditation"  
which accompany this Certificate.

Continued accredited status depends on successful  
ongoing participation in the program.

This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **02113CA**

Expiration Date: **08/31/2010**

Effective Date: **09/01/2009**

Richmond, California  
subject to forfeiture or revocation

A handwritten signature in black ink, reading "George C. Kulasingam".

George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch



4. Department of Fish and Game WPC Laboratory



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF ENVIRONMENTAL ACCREDITATION**

Is hereby granted to

**CALIFORNIA DEPT OF FISH & GAME, FISH & WILDLIFE WATER POLLUTION  
CONTROL LABORATORY**

**OFFICE OF SPILL PREVENTION & RESPONSE SCIENTIFIC DIVISION**

2005 NIMBUS ROAD  
RANCHO CORDOVA, CA 95670

Scope of the certificate is limited to the  
"Fields of Testing"  
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,  
proficiency testing studies, and payment of applicable fees.

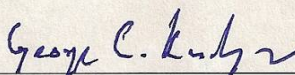
This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1622**

Expiration Date: **09/30/2011**

Effective Date: **10/01/2009**

Richmond, California  
subject to forfeiture or revocation

  
George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch

5. Toxscan Analytical Laboratory



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF ENVIRONMENTAL ACCREDITATION**

Is hereby granted to

**TOXSCAN, INC.**

**BIOASSAY**

42 HANGAR WAY

WATSONVILLE, CA 95076

Scope of the certificate is limited to the  
"Fields of Testing"  
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,  
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: **1515**

Expiration Date: **05/31/2011**

Effective Date: **05/01/2009**

Richmond, California  
subject to forfeiture or revocation

  
George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch



6. WWTF Laboratory Certificate:



CALIFORNIA STATE

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM BRANCH

**CERTIFICATE OF ENVIRONMENTAL ACCREDITATION**

Is hereby granted to

**CITY OF SANTA CRUZ WWTF LABORATORY**

**PUBLIC WORKS DEPARTMENT**

110 CALIFORNIA STREET

SANTA CRUZ, CA 95060

Scope of the certificate is limited to the  
"Fields of Testing"  
which accompany this Certificate.

Continued accredited status depends on successful completion of on-site,  
proficiency testing studies, and payment of applicable fees.

This Certificate is granted in accordance with provisions of  
Section 100825, et seq. of the Health and Safety Code.

Certificate No.: 1176

Expiration Date: 5/31/2010

Effective Date: 5/1/2008

Richmond, California  
subject to forfeiture or revocation

A handwritten signature in blue ink, reading "George C. Kulasingam".

George C. Kulasingam, Ph.D., Chief  
Environmental Laboratory Accreditation Program Branch

**Section VIII. Summary of Performance Relative to Section B, General Monitoring Requirements**

## **Section VIII. Summary of Performance Relative to Section B, General Monitoring Requirements**

### **VIII. Summary of Performance Relative To Section B, General Monitoring Requirements.**

1. Monitoring location, minimum sampling frequency and sampling methods for each parameter complies with the Monitoring and Reporting program of the NPDES permit as stipulated in the MRP No 00-044, and as superseded by Board order R3-2005-0003.
2. Although occasionally, due to errors or equipment failure, a monitoring and analytical event may be misread, or missed entirely, these were documented with the regional board and did not interfere with the integrity of the monitoring program.
3. Monitoring frequency may be increased as needed to verify apparent noncompliance. Additional monitoring to optimize plant performance or validate performance and/or analytical questions is performed routinely.
4. Laboratories used for the monitoring of compliance with the permit meet the standard of accreditation by the California State Department of Health Services. (See Section VI of this report for more information on the laboratories.) Bioassays are conducted in accordance with the guidelines approved by the State Department of Fish and Game and the State Water Resources Control Board.
5. Samples and measurements taken for the purpose of monitoring are collected consistent with the activity and performance being evaluated. Grab samples are collected at peak loading times. Influent samples include all incoming waste streams and exclude recycle flows. Effluent samples are collected downstream of the last treatment process and upstream of the receiving waters. Integrative samples are collected during the specified monitoring periods, and with validated sampling technologies, to optimize the opportunities available to quantify trace and ultra-trace organic compounds in the Influent and Effluent of the facility.
6. When the pollutants are monitored more frequently than required under the permit, the data are reported with the monthly monitoring reports and are included in appropriate calculations.
7. Monitoring instruments and devices used to fulfill requirements of the monitoring program are maintained and calibrated. Documentation of the maintenance and calibration is maintained.
8. Hardcopy records of all monitoring information are maintained for at least three (3) years, and electronic copies are retained for at least five (5) years.

**Section IX. Lift Station and Collection System Overflow Report**

**Section IX. Lift Station and Collection System Overflow Report**

The City's Infiltration/Inflow and Spill Prevention Program continues to address the objectives set out in WDR No. 00-044. The City has completed major improvements to its collection system over the last several years and has not had a sanitary sewer overflow caused by infiltration/inflow since January 2, 2002.

The City of Santa Cruz has implemented an improved spill response as detailed in the "Sewer System Management Plan". This response includes vacuuming up the spill and collecting all the wash down water used to clean the spill area. In most cases the spill has no contact with a waterway. The City has also updated the report form and the handout given to home owners who have lateral overflows.

The Sewer System Management Plan has been updated and forwarded to the RWQCB.

The City's Infiltration/Inflow and Spill Prevention Program continues to address the objectives set out in WDR No. 00-044. The City continues to complete major annual improvements to its collection system and has not had a sanitary sewer overflow caused by infiltration/inflow or capacity deficiency since January 2, 2002. The following paragraphs contain a brief narrative of some of the major program activities undertaken by the City to improve the collection system since 2002.

In 2002, the City rehabilitated approximately 7000 feet of large diameter sanitary (16 to 24 inch) located along the San Lorenzo River. In 2003 two major improvements completed was the Grant Street Sewer project and the Clean Beach Sewer project. These projects cost approximately \$200,000 and \$800,000 respectively and improved over 6,000 linear feet of sewer pipe and reconstructed over 100 service laterals. The City also completed the cleaning of three sewer siphons at a cost of over \$100,000.

In 2004, the City televised the three sewer siphons and found that one had a separated joint that allowed continuous infiltration into the pipe at a rate of 50 gallons per minute. The leak has been sealed. The cost for this work was over \$100,000.

In 2005, the City cleaned and televised approximately 3,000 feet of 30 inch and 3,000 feet of 54 inch sewer main. This work restored full capacity in the trunk pipelines and showed that the 30 inch should be rehabilitated. Consequently, the 30 inch line was lined in 2007 at a cost of \$600,000.

In 2009, the City lined over 9000 feet of 10 and 12 inch diameter sanitary located on King and Pine Streets and along the Arroyo Seco drainage corridor. The City also replaced 350 feet of 10 inch sewer and 8 private lateral on Laurent Street. In addition the City completed the reconstruction of the Delaware Pump Station and numerous smaller improvement projects with the intent of making the collection system more reliable.

Following this brief introduction is a series of tables that provide a summary of the City's efforts undertaken since 2002 to improve the management of the

Collection System including the rehabilitation of lines and concluding with a table of the spills that were recorded in 2009.

The table of spills reported within City limits indicates that there is a downward trend in the number of spills and in their ability to reach the waters of the State.

Here is the listing of the tables:

Table 1: Shows a listing of overflows caused by rain events in 2002 or before, where overflow has not occurred since City project was completed.

Table 2: Shows a listing of overflows caused by rain events in 2002 or before, that have not reoccurred although the City has not completed improvement.

And finally,

Table 3: Shows a summary of sewage spills during the last 12 months of sewage spills within the City of Santa Cruz.

**Table 1: Overflows caused by rain events in 2002 or before where overflow has not occurred since City project was completed**

	Location Address		Pipe Size	Project completed	Project Cost	Schedule & comments
1	Cleveland Ave.	315	6	Reduced I/I by repairing 5000 feet of main & fixing 102 private lower laterals.	\$425,000	Construction complete. No overflow since project completed in 2001.
2	Forest Avenue	158	6	Manhole at overflow location has been eliminated by replacing with pipe.	\$5,000	No overflows during 2001 or 2002. Still monitoring flow.
3a	California Street	Near Walnut	8	California Street sewer capacity has been increased. Project #1 above also reduced flow to this area.	\$750,000	Project was completed 12/01. There have been no overflows since project was completed.
3b	Walti St.	Laurel	6			
4c	Felix St.	Laurel	6			
5a	Carl Avenue	109 & 147	6	Increase size of Parkway pipe from 6 & 8 inch to 10 & 12 inch	\$300,000	Construction completed 8/00. No overflows since.
5b	Parkway	358	6			
6	San Lorenzo Blvd.	At Jessie Street	18	Completed lining of parallel pipelines in 1/03. Siphon repaired in 8/04.	\$600,000	No overflows in 2003 or 2004. Reduce additional upstream I/I next year.
7	Broadway	133	18	Lateral hooked up to main near River siphon.	\$100,000	Cleaning and repair of downstream siphon and has been completed.
8	1129 Mission	At Laurel	6	Cleared blockage. Upgraded pipe to 8 inch	\$60,000	Project completed 2/02 No overflows since.
9	Morrissey Blvd.	723	6, 8 & 10	Upgraded over 3500 feet of pipe in 2005	\$500,000	No overflows since project completed.

**Table 2: Overflows caused by rain events in 2002 or before, that have not reoccurred but the City has not completed improvement.**

	Address	Location	Pipe Diameter (inches)	Project Completed	Project Cost	Schedule and Comments
1	High Street	Highland	6	Determine need for increased pipe size.		TV crossing under freeway.
2	Mott Avenue	At East Cliff and Logan	10 & 12	Investigate downstream 12-inch liner pipe for upgrade.	Unknown	New overflow. Still unclear of cause. TV 2005.
3	322 Highland		6	Modify Manhole and TV		Overflow locations that only occurred on 1/2/2002
4	401 Dufour		6	Unknown. May need backflow devise for house.		Overflow locations that only occurred on 1/2/2002

**Table 3: Summary of Sewage Spills within Santa Cruz City in 2009.**

House Number			City Main Spill	Private Lateral Spill	
	Street	Date:	(gallons)	(gallons)	Weather
101	Felix Street	1/16/09	75		Clear
1401	Coast Road	1/14/09	250		Clear
236	Sheldon Street	1/25/09	50		Clear
245	High Street	2/16/09	600		Heavy Rain
802	Pacific Ave	4/20/09		150	Clear
322	Isbel Drive	6/4/09	250		Clear
100	Ocean Street	7/6/09	200		Clear
234	High Street	8/9/09	200		Clear
441	High Street	9/5/09	250		Clear
405	Second Street	9/26/09		15	Clear
363	Western Drive	9/30/09		850	Clear
131	Chestnut Street	10/07/09	40		Clear
09- SM302	Ocean Street	10/26/09	150		Clear
603	Woodrow Ave	11/6/09		20	Clear
101	Felix Street	12/1/09		125	Clear
111	Ocean Street	12/18/09		25	Clear
212	Rankin St	12/31/09	75		Clear
Total Spills: 17			Main Lateral Spills: 2140 gallons	Private Lateral Spills: 1185 gallons	

Detailed information for all spills is entered into the California Integrated Water Quality System (CIWQS) and can be viewed at <http://ciwqs.waterboards.ca.gov/>.

Although none of the spills which occurred in 2009 could have been anticipated, the City will investigate the feasibility of installing a diversion pipe improvement on High Street that could provide relief from that sewer pipe and would provide additional safety from spills to the 234

and 245 High Street locations. Additionally, the City has scheduled the piping system downstream from the overflow at O9-SM302 for improvements in 2011.

Finally, the City of Santa Cruz has implemented a Computerized Maintenance Management System (CMMS) which helps the City track and schedule the maintenance of the collection system. In addition, the City utilizes a hydraulic model of the entire collection system as required by “Elements of the Sewer System Management Plan, Item IX(A). This model was implemented in 2008, and is used to determine the pipeline most susceptible to overflows caused by capacity or infiltration and inflow.

**THIS IS THE END PAGE OF THE 2009 ANNUAL REPORT.**