

## NOVATO SANITARY DISTRICT

Meeting Date: July 21, 2014

The Wastewater Operations Committee of the Novato Sanitary District will hold a meeting at 2:00 PM, Monday, July 21, 2014 at the District offices, 500 Davidson Street, Novato.

### AGENDA

**1. AGENDA APPROVAL:**

**2. PUBLIC COMMENT (PLEASE OBSERVE A THREE-MINUTE TIME LIMIT):**

This item is to allow anyone present to comment on any subject not on the agenda, or to request consideration to place an item on a future agenda. Individuals will be limited to a three-minute presentation. No action will be taken by the Committee at this time as a result of any public comments made.

**3. CONSIDER APPROVAL OF MINUTES OF THE JUNE 16, 2014 MEETING**

**4. WASTEWATER TREATMENT FACILITIES OPERATIONS AND MAINTENANCE REPORT FOR JUNE 2014:**

- a. Treatment Plant Performance Report
- b. Maintenance Report
- c. Safety and training
- d. Odor control and landscaping report

**5. WASTEWATER TREATMENT FACILITIES 2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT:**

- a. Receive Final 2013 Annual Operations and Maintenance Report.

**6. COLLECTION SYSTEM OPERATIONS AND MAINTENANCE REPORT FOR JUNE 2014:**

- a. Collection System Maintenance
- b. Pump Station Maintenance
- c. Collection System Performance
- d. Safety and Training

**7. RECLAMATION FACILITY REPORT FOR JUNE 2014**

- a. Ranch Operations
- b. Irrigation Parcels
- c. Irrigation Pump Station

**8. ADJOURNMENT:**

***In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the District at (415) 892-1694 at least 24 hours prior to the meeting. Notification prior to the meeting will enable the District to make reasonable accommodation to help ensure accessibility to this meeting.***

***Materials that are public records and that relate to an open session agenda item will be made available for public inspection at the District office, 500 Davidson Street, Novato, during normal business hours.***

June 16, 2014

A regular meeting of the Wastewater Operations Committee of Novato Sanitary District was held at 2:00 p.m., Monday, June 16, 2014, at the District Office, 500 Davidson Street, Novato.

**MEMBERS PRESENT:** NSD Board Members Jean Mariani and Jerry Peters.

**STAFF PRESENT:** Sandeep Karkal, Manager-Engineer  
Steve Krauthem, Field Services Superintendent  
Tim O'Connor, Collections System Supervisor  
John Bailey, Project Manager, Veolia  
Laura Creamer, Finance Officer  
June Brown, Administrative Services Specialist

**ALSO PRESENT:** John O'Hare, Pretreatment Programs Manager, Veolia

**AGENDA APPROVAL:** Approved as presented

**PUBLIC COMMENT:** John Bailey, Veolia Project Manager, commented that Veolia's final 2013 annual report will be presented at the next Wastewater Operations Committee meeting.

**APPROVAL OF MEETING MINUTES FOR MAY 19, 2014:** Manager-Engineer Sandeep Karkal noted that the committee composition has changed since the last meeting; therefore, only one member from the prior meeting is present to vote on approval of the minutes. The May 19, 2014 meeting minutes were accepted by Chairman Pro-Tem Jerry Peters and approved as written.

**WASTEWATER TREATMENT FACILITIES OPERATIONS AND MAINTENANCE REPORT FOR MAY 2014:**

**- Treatment Plant Performance Report, Maintenance Report and Safety & Training:**  
John Bailey, Plant Manager, Veolia Water, gave an overview of the treatment plant operations for the month of May. He stated that May was another good month with no permit exceedances, violations or excursions. He noted that sometimes all of the data is not available at the time of the report but no data is coming in that would cause any numbers to change. Average flow was 3.74 mgd (million/gallons/day). Mr. Bailey stated that the recycled water facility produced 16.25 million gallons of recycled water in May.

Mr. Bailey stated that routine rounds, readings and maintenance were performed at the Novato Treatment Facility, the Ignacio Transfer Pump Station, the Recycled Water Plant and the Sludge Lagoons. He reviewed the treatment facilities charts and graphs and reported that Veolia employees have been accident free for a total of 1,458 days/66,484 hours. In response to a question by committee member Jerry Peters, Mr. Bailey stated that Jerome Meter (H2S) readings continue to be taken within the treatment plant as well as in the Lea Drive neighborhood area and no odor notifications were received in May.

- Odor control, noise, and landscaping report: Manager-Engineer Sandeep Karkal stated that noise is no longer an issue and has been eliminated from the Odor Control and Landscaping Report. David McEwen, odor control consultant with Brown & Caldwell, has been scheduled to conduct evaluation testing the last week of June and first week of July. District staff continues to work with Cagwin & Dorward, landscape contractors, to monitor landscaping in the northeast corner of the plant property. Some vegetation that had died back because of frost is coming back. Committee Member Mariani expressed appreciation for the proactive approach being taken by staff.

### **COLLECTION SYSTEMS OPERATION AND MAINTENANCE REPORT FOR MAY 2014:**

Tim O'Connor, Collections System Superintendent discussed the Collection Systems Monthly Report for May 2014. He reported that the Collection Systems crew cleaned a total of 62,826 feet of sewer pipeline and that the department completed 313 maintenance work orders which were generated in May. He stated that the District's CCTV van (Closed Circuit TV) televised 159 line segments for 27,555 feet of production. No significant defects were detected.

The Collections System Superintendent stated that there were two sanitary sewer overflows in the month of May, one at Rae Lane (20 gallons), and one at Topaz/Albatross Drives (30 gallons). Full recovery was accomplished for both incidents and all reporting requirements were met. In response to a question by Committee Member Peters, the Collections System Superintendent explained why the response time to the incident at Rae Lane was longer than average. Committee Members commented that performance numbers are improved from the previous year and expressed appreciation to staff.

The Collections System Superintendent noted that as of May 31<sup>st</sup>, the Collections Department and the District have worked accident free for a total of 1,173 days. He stated that departmental staff continues to work on generating Standard Operating Procedures (SOP's) and Emergency Operating Procedures (EOP's).

### **RECLAMATION FACILITY REPORT FOR MAY 2014:**

Field Services Superintendent Steve Krautheim presented the Reclamation Facilities report for May. Irrigation started on May 19<sup>th</sup> on Site 3 and on May 22<sup>nd</sup> for Site 7. The Field Services Superintendent has recorded all vital statistics (hours of pump operation, pond levels, etc.) which will be presented at the next meeting.

**OPERATING BUDGET, FY 14-15:** Manager-Engineer Sandeep Karkal suggested that the Committee review the Operating Budget for fiscal year 2014-15 and recommend the Preliminary Budget for adoption by the full Board. After review and brief comments about the reduced budget amount for Permits and Fees in account no. 60201, it was moved by Member Mariani and seconded by Member Peters to recommend adoption of the Preliminary Budget to the full Board.

**ADJOURNMENT:** There being no further business to come before the Committee, the meeting adjourned at 2:55 p.m. The next Wastewater Operations Committee meeting will be held on Monday, July 21, 2014.

Respectfully submitted,

Sandeep Karkal  
Manager-Engineer

June Brown, Recording

DRAFT



July 15, 2014

Mr. Sandeep Karkal  
Manager - Engineer  
Novato Sanitary District  
500 Davidson Street  
Novato, CA 94545

**Subject: Veolia Water Operations Report – June 2014**

Dear Mr. Karkal:

I am pleased to provide the Monthly Operation Report for June 2014.

As always, please give me a call at 707-208-4491 should you have any questions.

Best regards,

A handwritten signature in black ink, appearing to read "John Bailey". The signature is written in a cursive style with a large, looping initial "J".

John Bailey  
Project Manager, Veolia



**MONTHLY OPERATIONS REPORT  
June 2014**

Prepared for

**NOVATO SANITARY DISTRICT (NSD)  
WASTEWATER TREATMENT PLANT  
500 Davidson Street  
Novato, CA 94545**

Prepared by

**Veolia Water West Operating Services, Inc. (VWWOS)**

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• Process Control Data / Graphs	
• Recycled Water Report (June 2014)	
• Maintenance Report (KPI)	
• Customer Notifications (Odor)	
• Annual NPDES Compliance Inspection	

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TREATMENT PLANT PERFORMANCE SUMMARY: June 2014:

Reclamation / Storage – Waste Discharge Requirements (WDR)

Parameter	Value		Limit	
	Ave	Max	#1	#2
Flow, MGD (monthly ave/max)	3.56	4.19	N/A	N/A
Max Peak Hour, MGD – Dry Weather Flow	N/A	N/A	N/A	N/A
Influent BOD <sub>5</sub> , lb/day (month ave/max)	7,566	9,287	N/A	N/A
Influent TSS, lb/day (monthly ave/max)	11,219	13,649	N/A	N/A
Effluent BOD <sub>5</sub> , mg/L (monthly ave/weekly max)	<8	9	40	N/A
Effluent TSS, mg/L (monthly ave/weekly max)	<3	3	N/A	N/A
Effluent BOD <sub>5</sub> - % Removal, Minimum	97	N/A	N/A	N/A
Effluent TSS - % Removal, Minimum	99	N/A	N/A	N/A
Ammonia, mg/L – (monthly ave/daily max)	0.20	0.20	N/A	N/A
pH, su (min / max)	6.9	7.4	6.0	9.0
Enterococcus, mpn (30 day geo mean)	N/A	N/A	N/A	N/A
Fecal Coliform, mpn (30 day median)	N/A	N/A	N/A	N/A
Fecal Coliform, mpn (90 <sup>th</sup> percentile)	N/A	N/A	N/A	N/A
Total Coliform, mpn (5 Sample Median / Max)	50	170	240	10,000
<b>Total Permit Exceedances (NPDES)</b>	0			

NA – Not Applicable

Discussion of Violations / Excursions: NONE

Title 22 - Recycled Water Production and Quality

Description	Units	Value	Limit
Volume Produced	Million Gallons	16.34	N/A
Average Turbidity	NTU	1.3	2.0
Turbidity > 5 NTU (in 24 hour)	Minutes	0	72
Minimum CT (disinfection)	ml-min/L	>450	>450
Minimum Dissolved Oxygen (DO)	mg/L	7.9	1.0
Maximum Total Coliform	mpn/100 ml	<2	2

Total Rainfall. – 0.00

Daily Max – N/A

**SAFETY AND TRAINING:**

- Monthly plant safety inspections for Novato WWTP and Ignacio Pump Station completed
- Five Minute Tailgate training is held daily with all staff.
- No safety incidents for the month of June 2014
- Accident Free: 6/1/10 – 6/30/14: 1,488 days / 67,853 hours
- Bloodborne Pathogens Refresher Training
- Good Housekeeping Training
- Celebrated 4 Year Anniversary - No Incidents

**OPERATIONS & MAINTENANCE STATUS / REVIEW:****Key events for the period:****Novato**

- Switched from Bay Discharge to Reclamation / Storage
- Routine rounds, readings and maintenance
- Replaced defective mechanical seal on compactor
- Replaced gear box and drive on compactor
- Plant wide service / survey on LEL sensors
- Assisted Contractor with New Emergency Generator Day Tank change out
- Assisted Contractor with Voltage Regulators for Emergency Generators
- Operators truck air conditioner recharged
- Replaced batteries on Wet Weather Pumps
- Annual Service on Wet Weather Pumps
- Changed out power supply in Blower #2 Variable Drive Panel
- Replaced fan & UPS in Blower #3 Variable Drive Panel
- Replaced UPS batteries on #2 Gravity Belt Thickener (GBT)
- Performed annual service on GBT #1
- Repaired discharge line on Hypochlorite Pump #2
- Replaced fuses on GBT UPS
- Walk thru with Mosquito and Vector control – completed recommendations
- Installed sound barrier to front of Aeration Basin Odor Fan enclosure – neighborhood noise reduction

**Equipment Out of Service – Due to Planned Servicing, Maintenance, or Replacement**

- Primary Clarifier #1 (not needed at current flows)
- Secondary Clarifier #1 (not needed at current flows)
- Aeration Basins 1 & 2 (not needed at current flows)

**Ignacio Transfer Pump Station**

- Routine rounds, readings and maintenance
- Assisted with removal of Transfer Pump #2 – Impeller Retrofit
- Serviced High Pressure Wash Down Pump

**Equipment Out of Service – Due to Planned Servicing, Maintenance, or Replacement**

- None

**Recycled Water Plant (RWP)**

- Performed plant rounds and maintenance
- Repaired Distribution Pump amp reading feed back loop (output to SCADA)

**Equipment Out of Service – Due to Planned Servicing, Maintenance, or Replacement**

- None

**Sludge Lagoons**

- Performed routine rounds and inspection

**ADMINISTRATION:**

- May Electronic Self Monitoring Report submitted on June 30, 2014
- May DMR and Semi Annual Report submitted on June 30, 2014
- Annual NPDES Compliance Inspection conducted June 18, 2014. Inspectors from California State Water Resources Control Board (SWRCB) reviewed records, procedures, compliance history, laboratory data, etc. The SWRCB inspectors toured the facility in the afternoon. Comments at the end-of-day debriefing were positive and complimentary.

**ODORS:**

- Jerome Meter (H2S) readings performed in neighborhood and within treatment plant.

**MISCELLANEOUS**

- Process Control Management Plan (PCMP) meetings held weekly.
- Criticality Update (Asset Management Group)

**Veolia Support Staff On/Off Site (Various Times)**

John O'Hare	Technical Support
Chris McAuliffe	District Manager
Robert Coffman	Asset Management

Novato Sanitary District  
BOD/TSS Report



June, 2014

Date	Flow MGD	Influent				Effluent				BOD % Removal PERCENT	TSS % Removal PERCENT
		BOD		TSS		BOD		TSS			
		mg/l	lb/d	mg/l	lb/d	mg/l	lb/d	mg/l	lb/d		
06/01/14	4.19										
06/02/14	3.36	229	6,417	316	8,855	<5	<140	<3	<84	97.8	99.1
06/03/14	3.37										
06/04/14	3.44	232	6,656	408	11,705	14	402	<3	<86	94.0	99.3
06/05/14	3.35										
06/06/14	3.34	239	6,657	490	13,649	9	251	3	84	96.2	99.4
06/07/14	3.26										
06/08/14	3.29	274	7,518	433	11,881	<5	<137	3	82	98.2	99.3
06/09/14	3.81										
06/10/14	3.91	280	9,131	339	11,055	13	424	<3	<98	95.4	99.1
06/11/14	3.81										
06/12/14	3.84	290	9,287	330	10,568	8	256	4	128	97.2	98.8
06/13/14	3.89										
06/14/14	3.75										
06/15/14	3.90										
06/16/14	4.00	250	8,340	363	12,110	<5	<167	4	133	98.0	98.9
06/17/14	3.40										
06/18/14	3.31	241	6,653	396	10,932	8	221	<3	<83	96.7	99.2
06/19/14	3.35										
06/20/14	3.10			345	8,920			<3	<78		99.1
06/21/14	3.22										
06/22/14	3.19										
06/23/14	3.78	275	8,669	395	12,452	6	189	<3	<95	97.8	99.2
06/24/14	3.80										
06/25/14	3.98	216	7,170	341	11,319	7	232	<3	<100	96.8	99.1
06/26/14	4.02										
06/27/14	3.49	231	6,724	384	11,177	<5	<146	<3	<87	97.8	99.2
06/28/14	3.15										
06/29/14	3.21										
06/30/14	3.19										
<b>Weekly Averages</b>											
06/07/14	Week 1	233	2,983	405	5,172	9	120	3	38		
06/14/14	Week 2	281	3,921	367	5,066	9	124	3	47		
06/21/14	Week 3	246	3,400	368	4,832	7	88	3	44		
06/28/14	Week 4	241	3,411	373	5,284	6	86	3	43		
	Week 5										
<b>Monthly</b>											
Minimum	3.10	216	6,417	316	8,855	<5	<62	<3	<35	94	99
Maximum	4.19	290	9,287	490	13,649	14	192	4	61	98	99
Total	106.70										
Average	3.56	251	7,566	378	11,219	<8	<106	<3	<43	97	99



## TOTAL COLIFORM (RECLAMATION)

Jun-14

(1) 5 Sample Median not to exceed 240 mpn/100 mL

(2) Maximum not to exceed 10,000

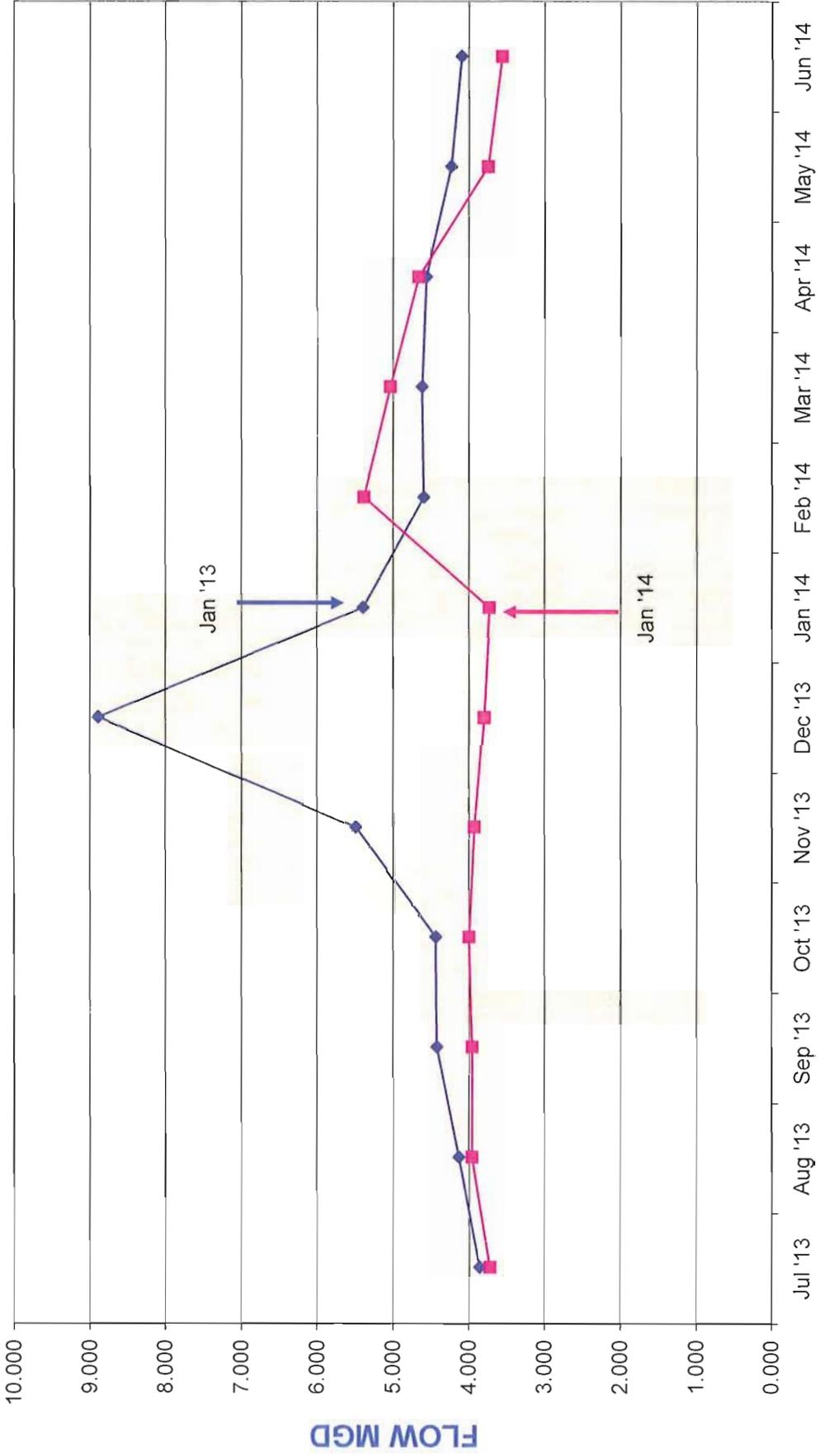
Note (2):

Maximum must be confirmed by a follow-up sample taken within 24 hours

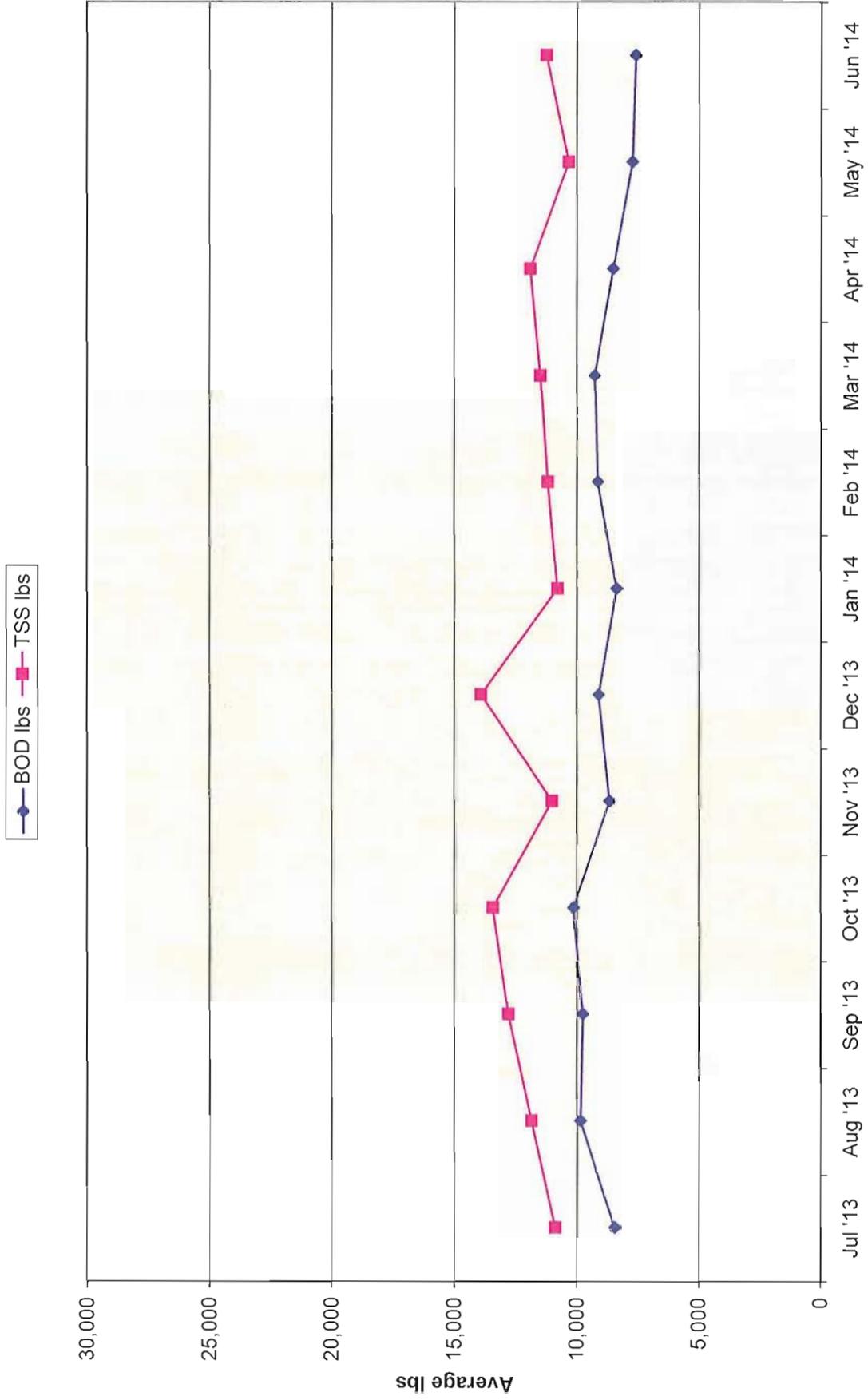
Date	Value	Median
February 3, 2013	2	
February 5, 2013	17	
February 7, 2013	4	
February 9, 2013	4	
June 1, 2014		
June 2, 2014	50	4
June 3, 2014		
June 4, 2014	170	17
June 5, 2014		
June 6, 2014	4	4
June 7, 2014		
June 8, 2014	30	30
June 9, 2014		
June 10, 2014	23	30
June 11, 2014		
June 12, 2014	4	23
June 13, 2014		
June 14, 2014		
June 15, 2014		
June 16, 2014	70	23
June 17, 2014		
June 18, 2014	23	23
June 19, 2014		
June 20, 2014	30	23
June 21, 2014		
June 22, 2014		
June 23, 2014	50	30
June 24, 2014		
June 25, 2014	80	50
June 26, 2014		
June 27, 2014	30	30
June 28, 2014		
June 29, 2014		
June 30, 2014		
Maximum	170	50

# FLOW COMPARISON

—◆— 2012 / 13    —■— 2013 / 14



# Influent Load BOD / TSS lbs



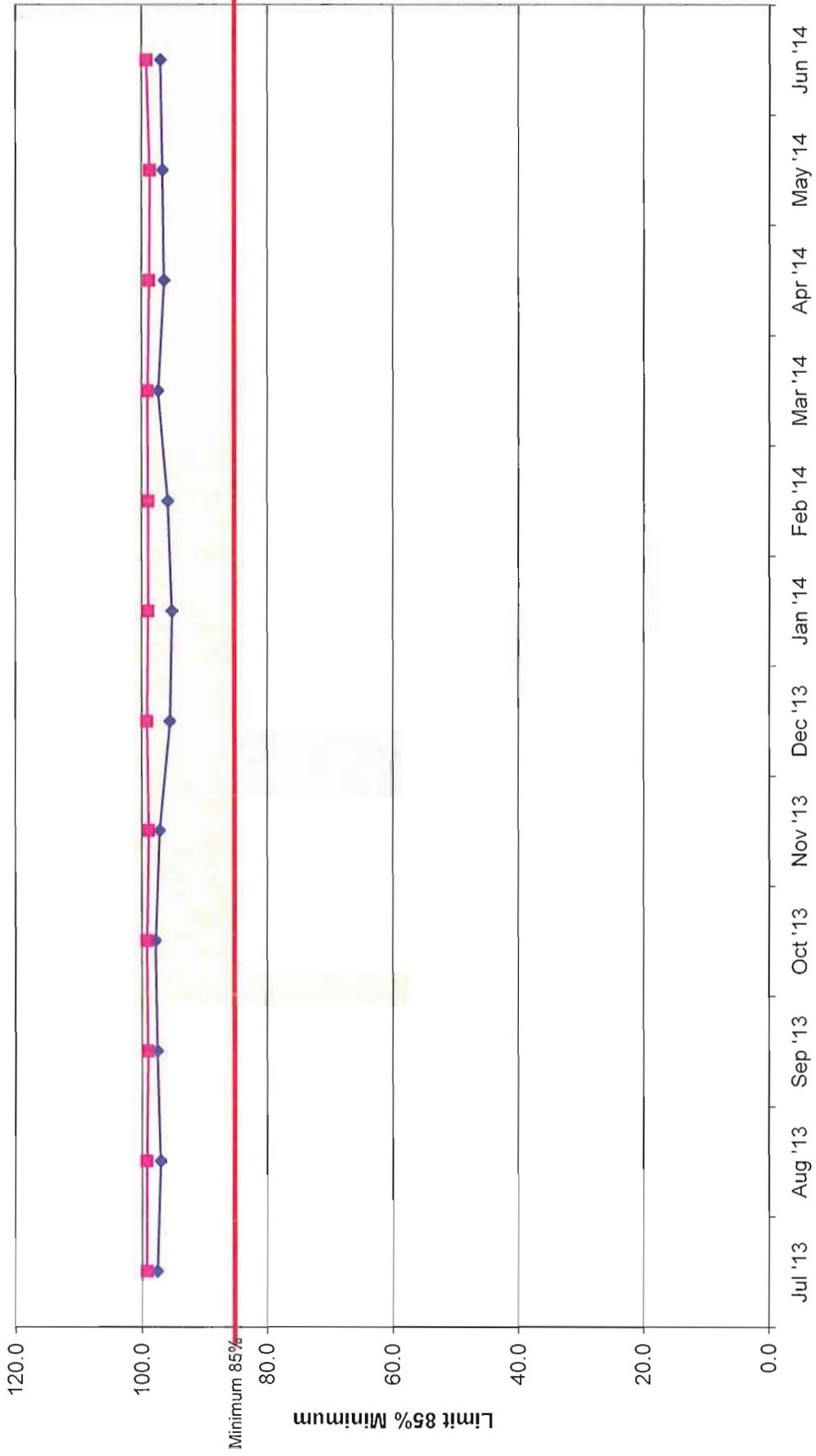
# Effluent BOD / TSS Concentration

NPDES LIMITS WET SEASON  
 BOD & TSS - 30 mg/L Monthly Ave, 45 mg/L Weekly Ave  
 NPDES LIMITS DRY SEASON  
 BOD - 15 mg/L Monthly Ave, 30 mg/L Weekly Ave  
 TSS - 10 mg/L Monthly Ave, 20 mg/L Weekly Ave  
**WDR (Waste Discharge Requirements) RECLAMATION**  
**BOD - 40 mg/L**



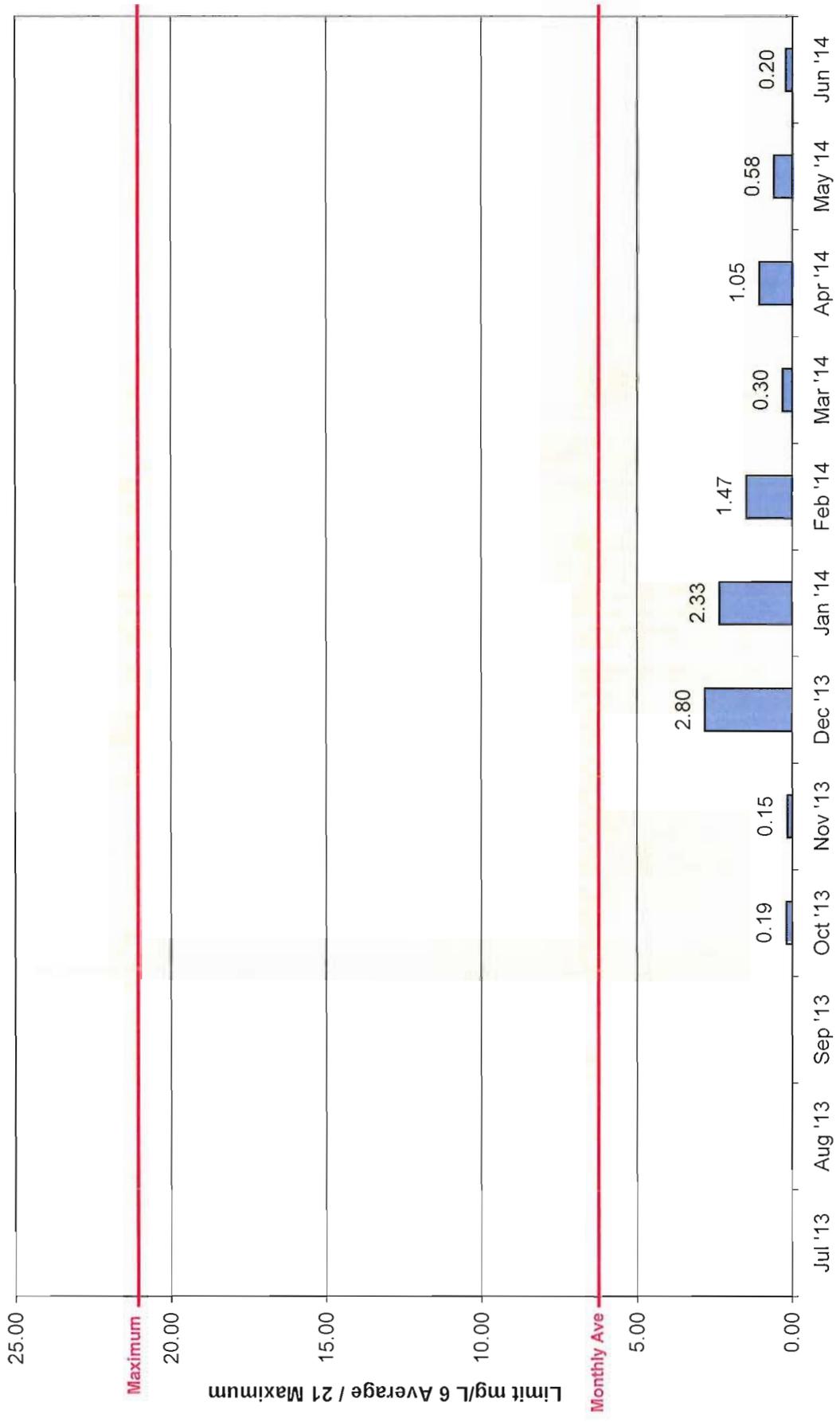
# BOD / TSS Percent Removal

Legend: BOD (blue diamonds), TSS (pink squares)



# Effluent Ammonia

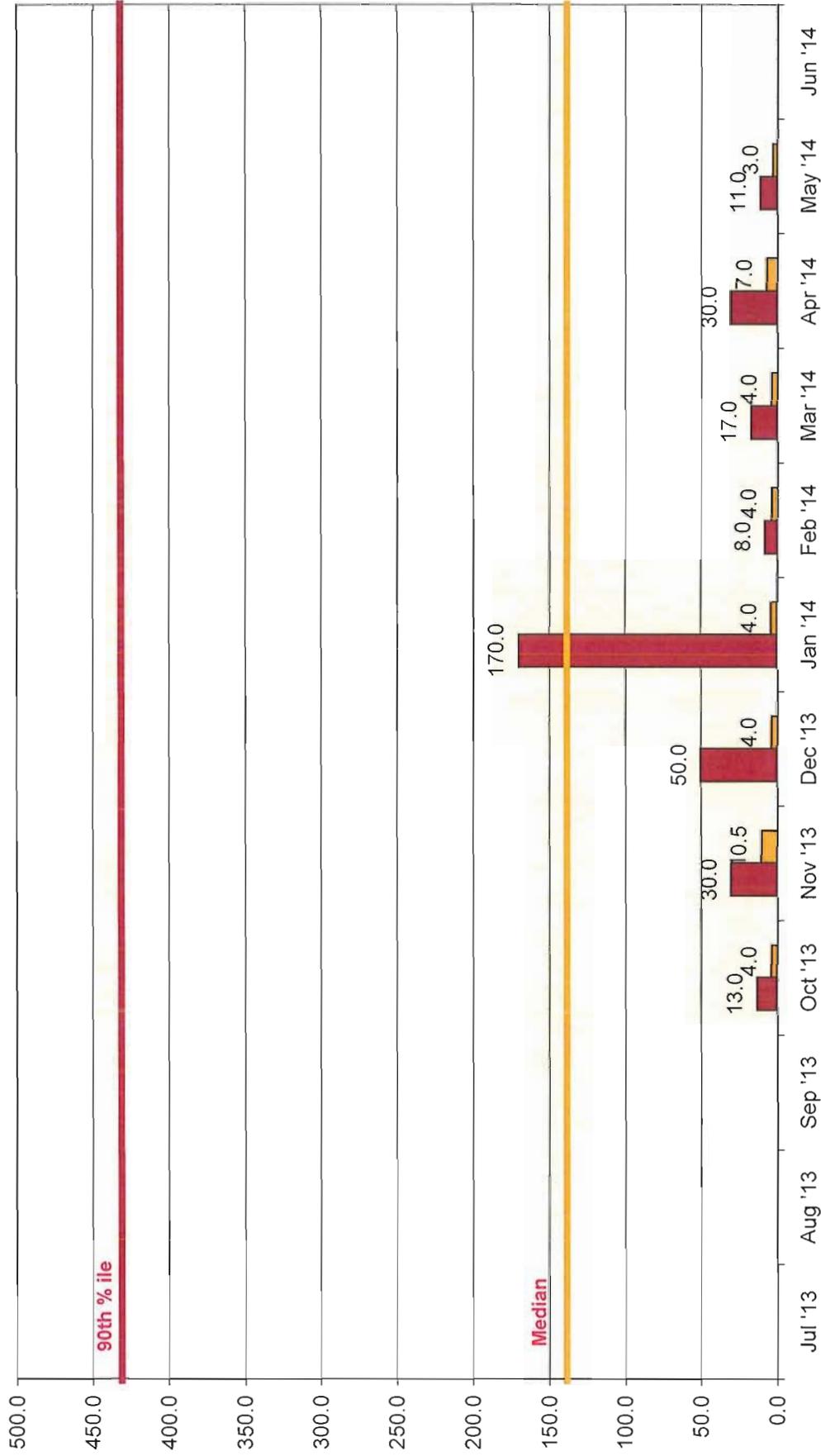
No Ammonia Limits During Reclamation, Jun - Sep



# Disinfection

**LIMITS - NPDES**  
 Fecal 140 mpn monthly median  
 Fecal 430 mpn 90th percentile 30 day

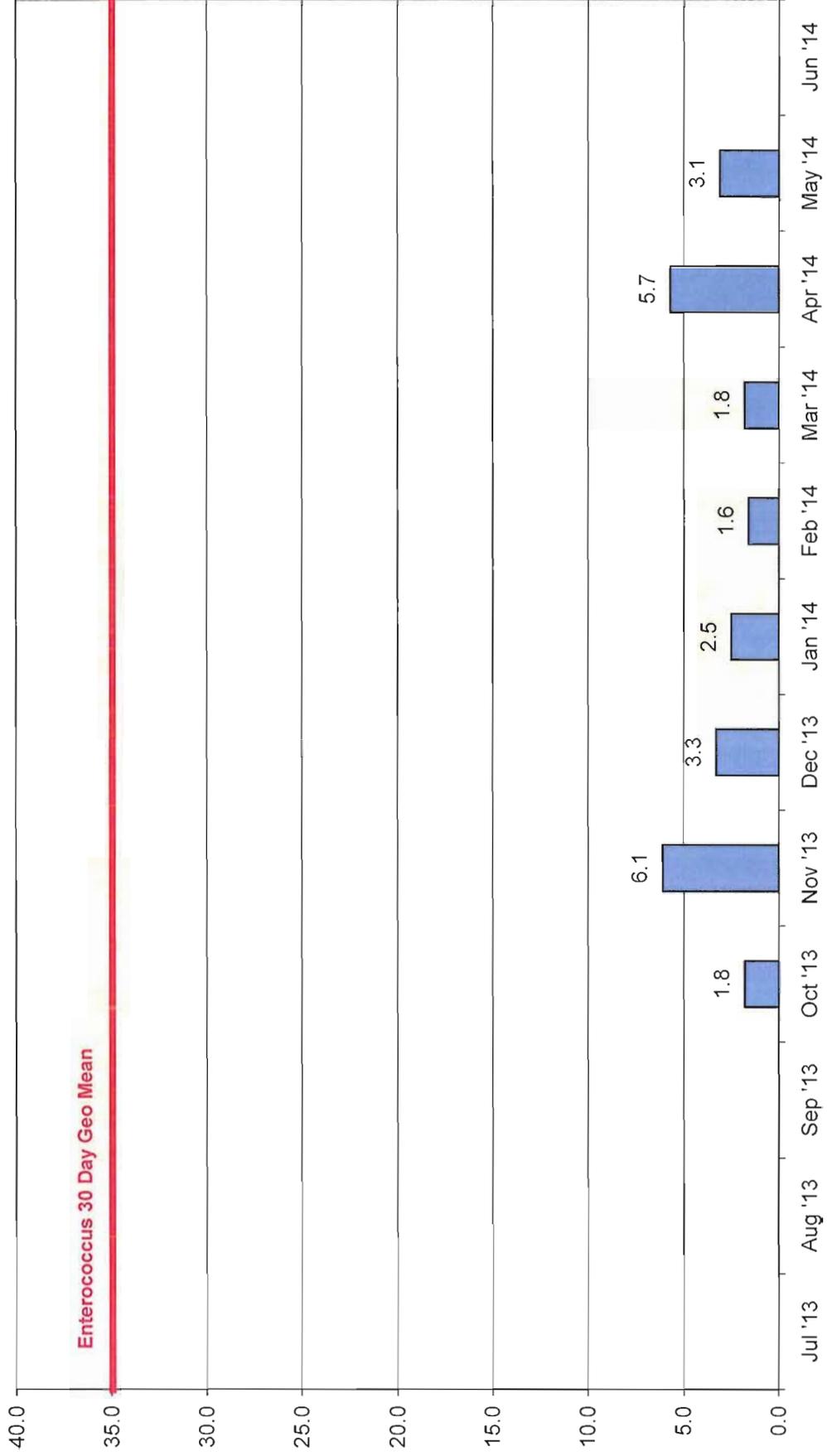
■ 90th % ile ■ 30 day med



# Disinfection

LIMITS - NPDES  
Enterococcus 30 day geo mean 35 mpn /100ml

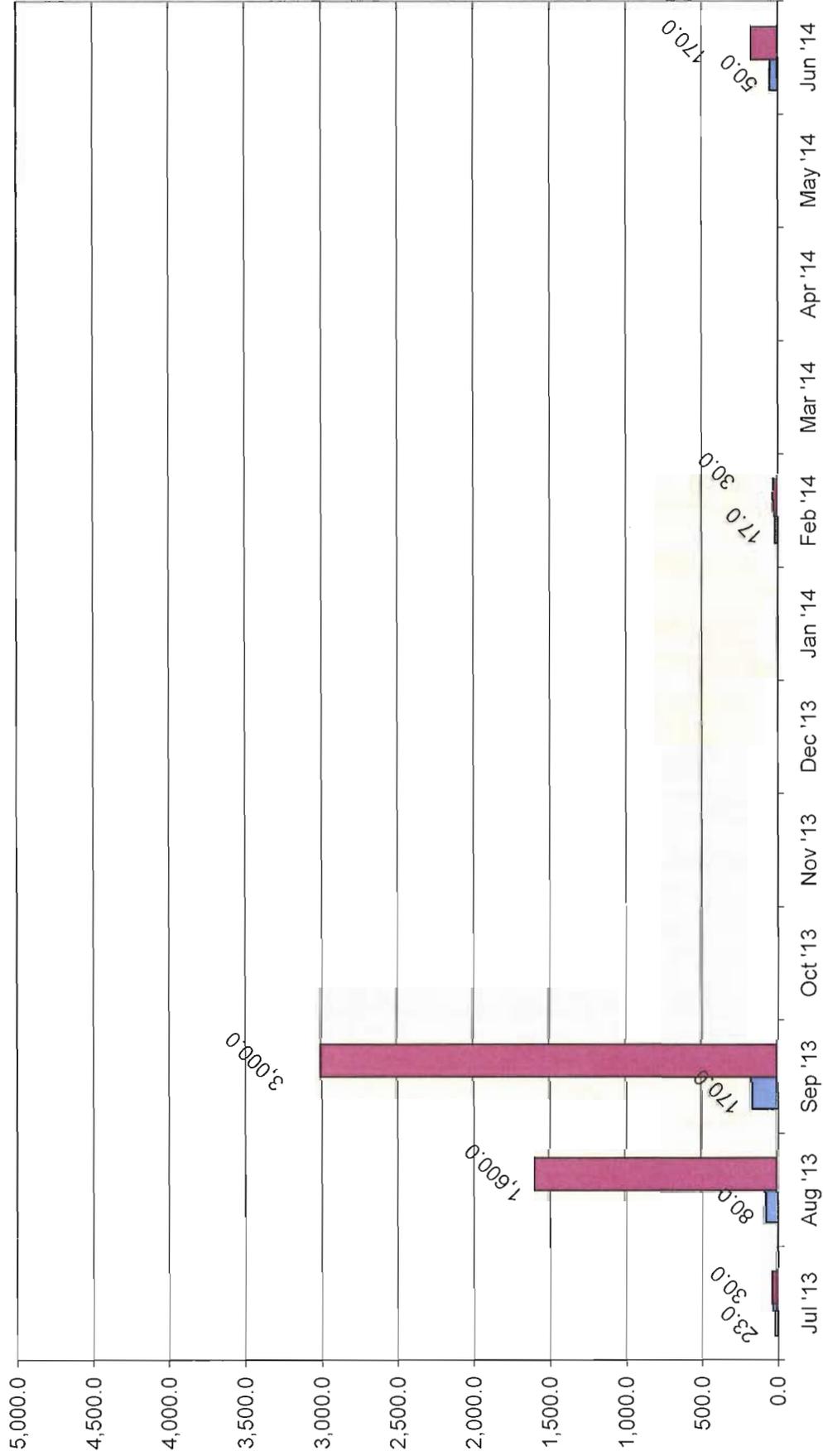
Geo Mean



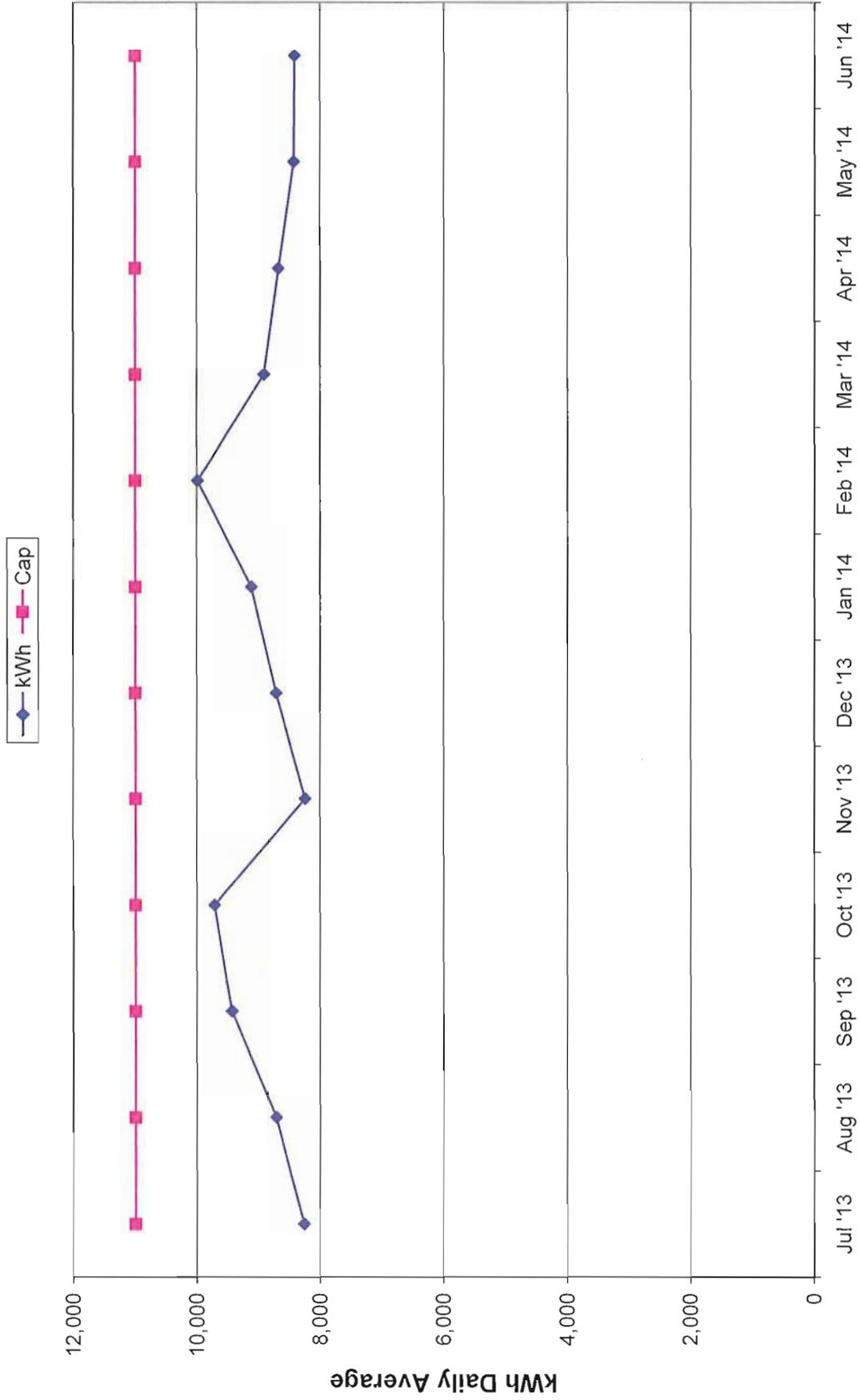
# Disinfection

**TOTAL COLIFORM LIMITS - WDR**  
 5 Sample Median - 240 mpn /100 ml  
 Maximum - 10,000 mpn/100 ml

5 Sampl Med Monthly Max

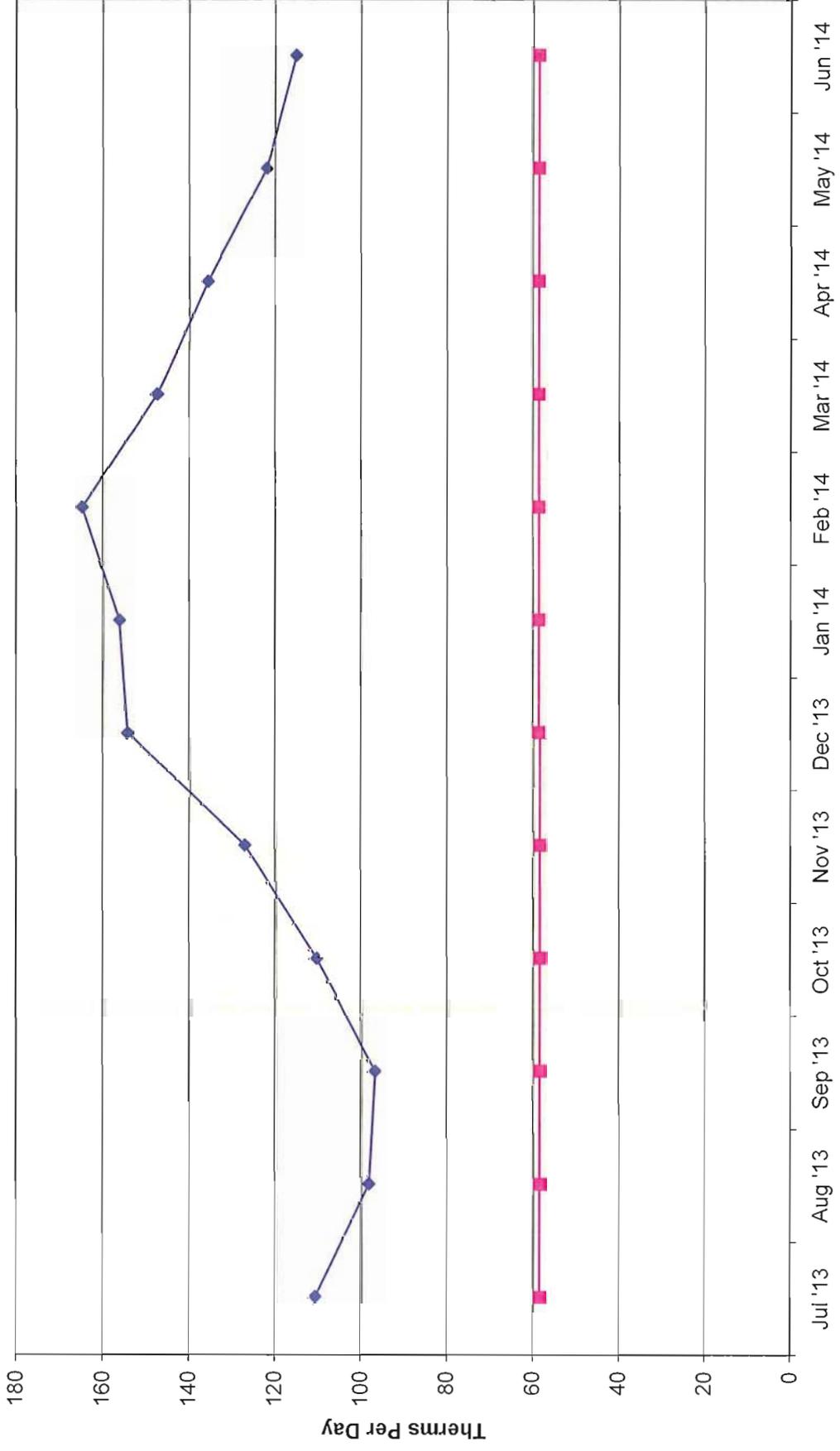


# Energy kWh



# Natural Gas Use

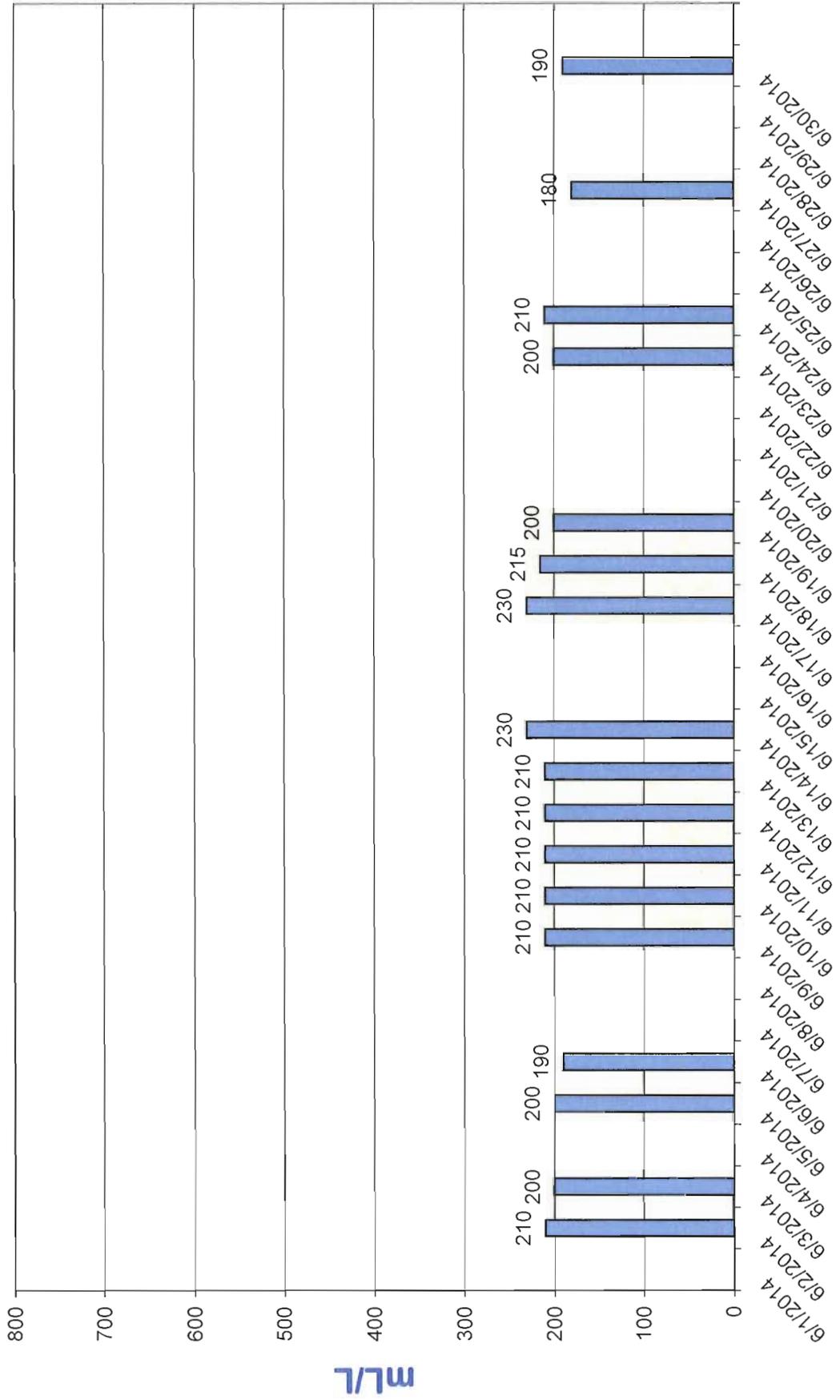
◆ Natural Gas    ■ Cap



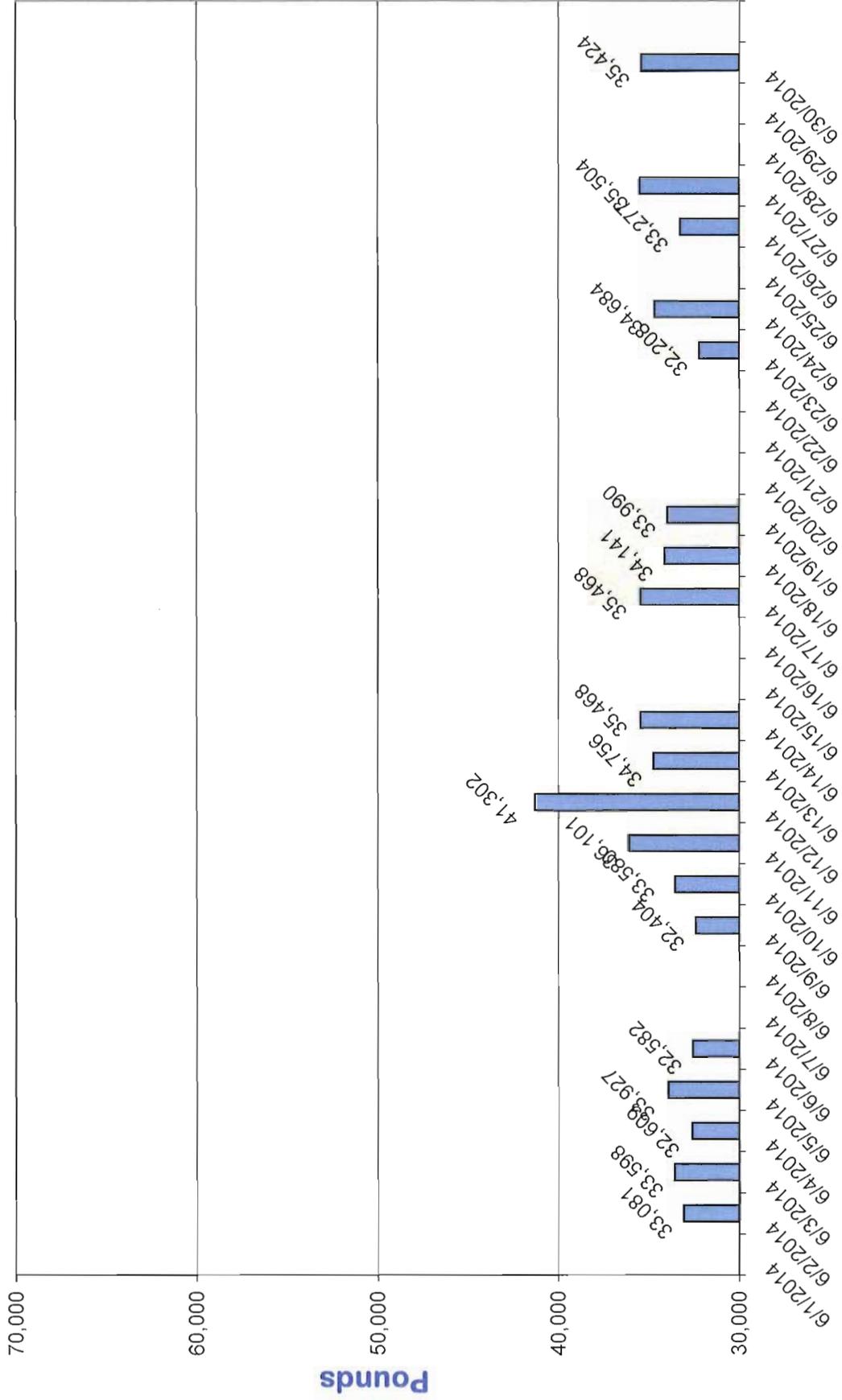
## Process Control Data

	Influent Flow	Settleability	MLSS Concentration	MLSS Inventory	F:M Ratio	MCRT	SVI
6/1/2014	4.19						
6/2/2014	3.36	210	1,857	33,081	0.12	7.1	113
6/3/2014	3.37	200	1,886	33,598		6.4	106
6/4/2014	3.44		1,831	32,609	0.18	6.8	
6/5/2014	3.35	200	1,905	33,927		6.9	105
6/6/2014	3.34	190	1,829	32,582	0.19	6.2	104
6/7/2014	3.26						
6/8/2014	3.29						
6/9/2014	3.81	210	1,819	32,404		8.6	116
6/10/2014	3.91	210	1,885	33,580		6.5	112
6/11/2014	3.81	210	2,027	36,101		7.0	104
6/12/2014	3.84	210	2,319	41,302	0.17	8.1	91
6/13/2014	3.89	210	1,951	34,756		6.5	108
6/14/2014	3.75	230	1,991	35,468		7.1	116
6/15/2014	3.90						
6/16/2014	4.00						
6/17/2014	3.40	230	1,991	35,468		6.9	116
6/18/2014	3.31	215	1,917	34,141	0.17	6.8	113
6/19/2014	3.35	200	1,908	33,990		6.6	105
6/20/2014	3.10						
6/21/2014	3.22						
6/22/2014	3.19						
6/23/2014	3.78	200	1,808	32,208	0.22	6.7	111
6/24/2014	3.80	210	1,947	34,684		8.1	108
6/25/2014	3.98						
6/26/2014	4.02		1,868	33,277		6.9	
6/27/2014	3.49	180	1,993	35,504	0.19	6.4	91
6/28/2014	3.15						
6/29/2014	3.21						
6/30/2014	3.19	190	1,989	35,424		7.0	96
Minimum	3.10	180.00	1,808.00	32,208	0.12	6.2	91
Maximum	4.19	230	2,319	41,302	0.22	8.6	116
Total	103.51	3,315	34,730	618,680	1.25	125.7	1,718
Average	3.57	207	1,929	34,371	0.18	7.0	107

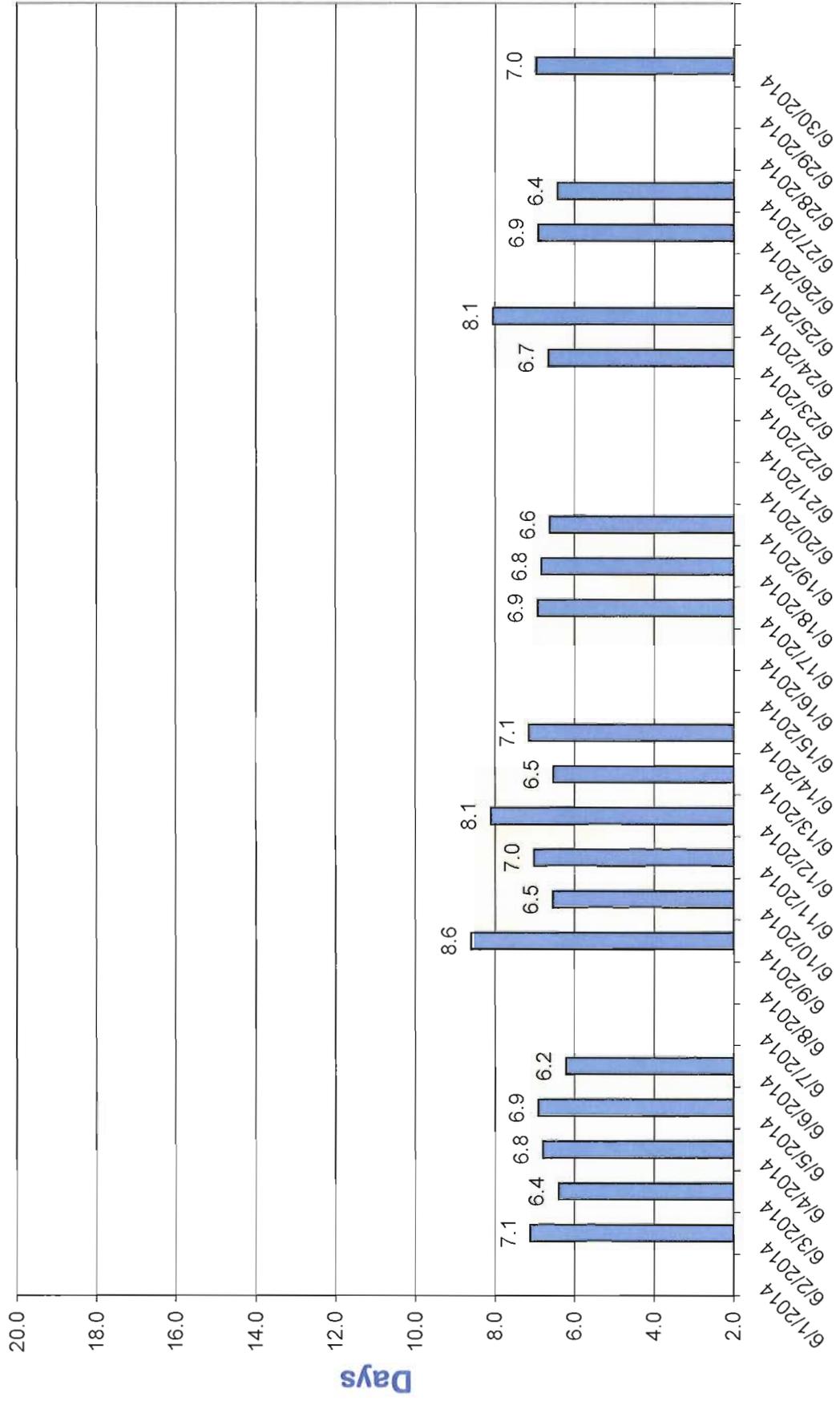
# Settleability



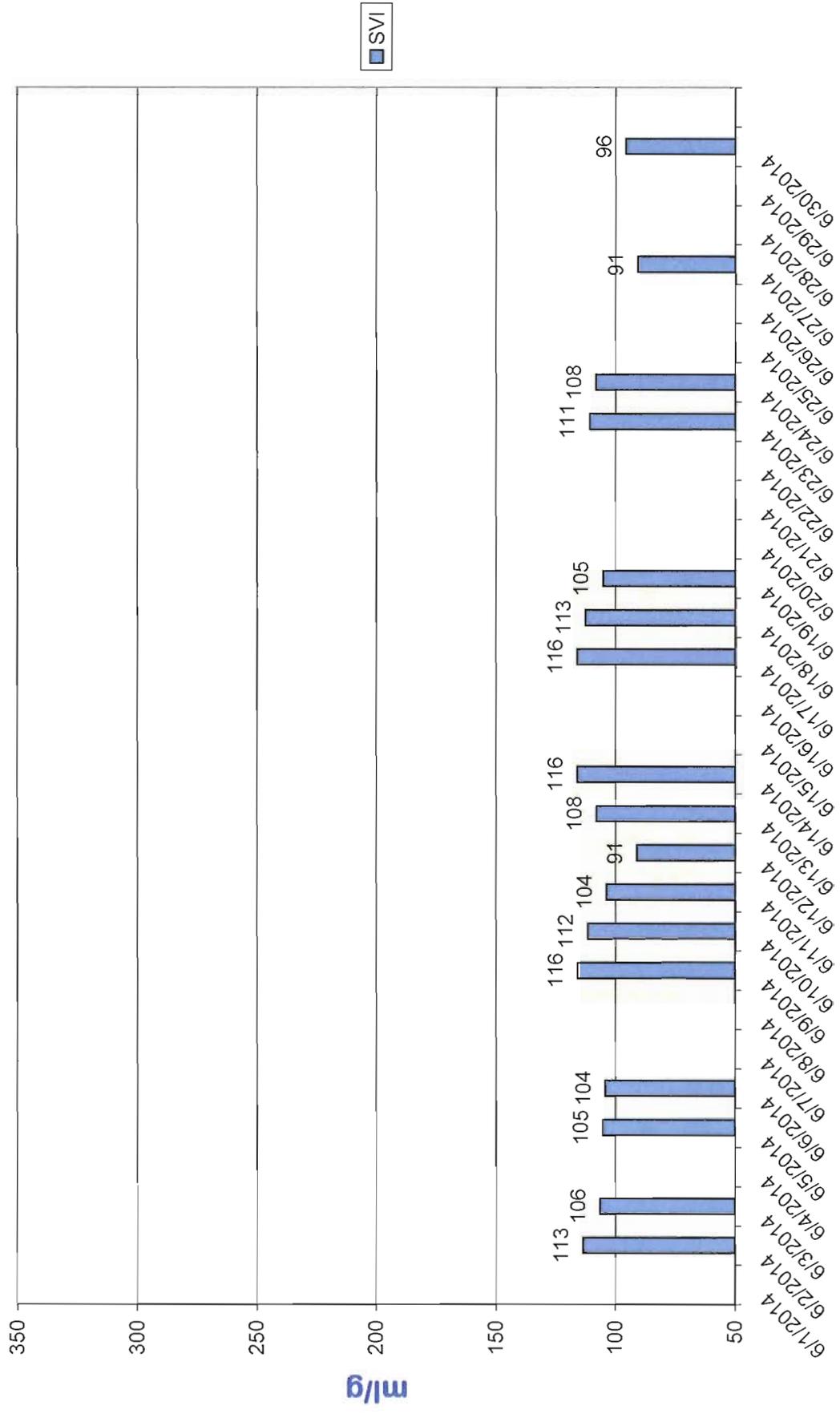
# MLSS Inventory



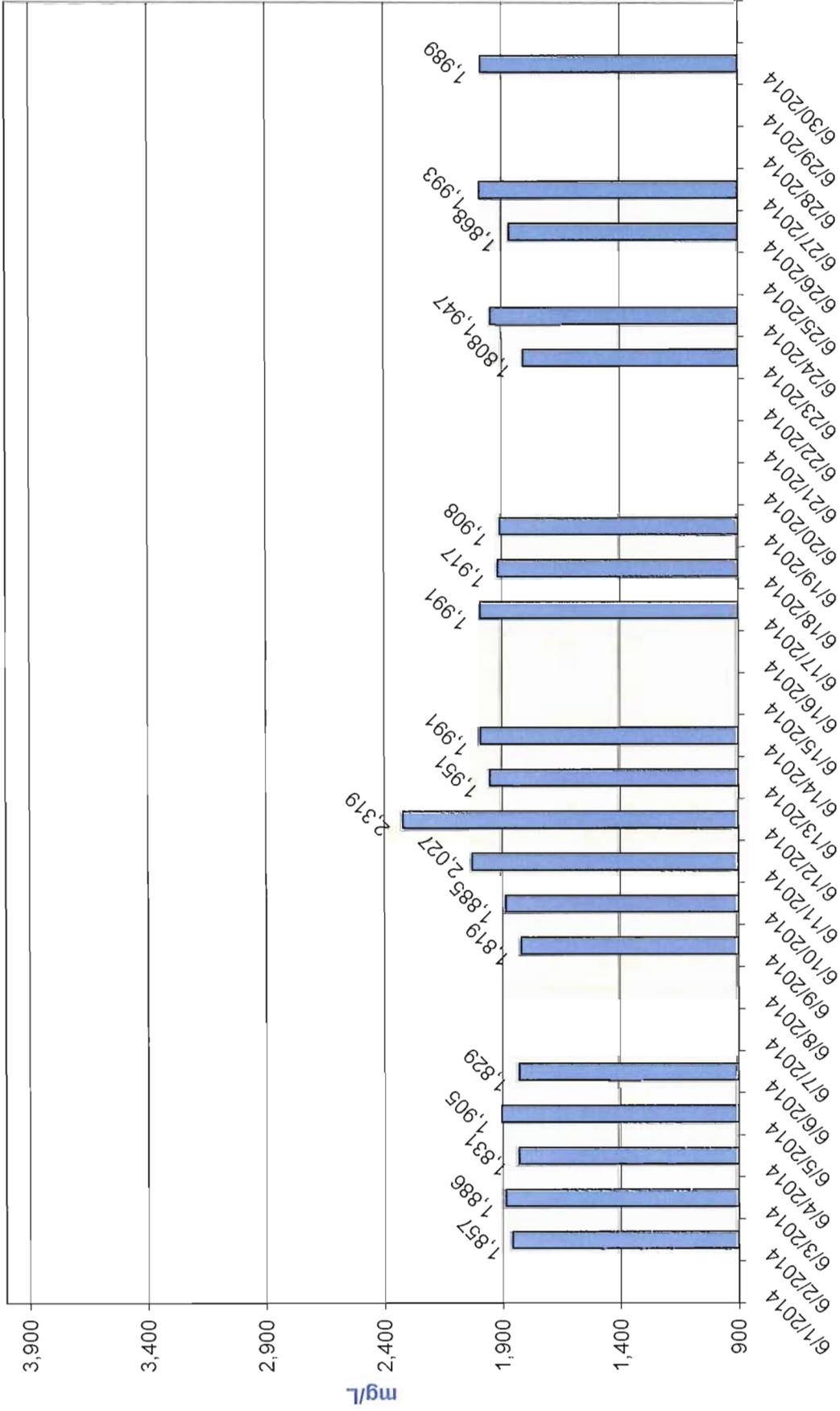
# Mean Cell Residence Time



# Sludge Volume Index



# MLSS Concentration



**NOVATO SANITARY DISTRICT  
WATER RECLAMATION 2014  
COMPLIANCE SUMMARY REPORT**

June	Fil Inf Q	Million Gallons Delivered			Influent Turbidity		Effluent Turbidity		Cl <sup>2</sup> Dose mg/L		DO	Coliform	CT
		Rec	Bank	Pot	Max	Ave	Min +5	Ave	Min	Ave	mg/L	mpn	Min
June 1			0.340										> 450
June 2	1.630	0.938				3.1	0	1.4			8.6		> 450
June 3	1.080	0.670				2.6	0	1.3			8.9		> 450
June 4	0.760	0.630				3.4	0	1.3			8.4		> 450
June 5	0.680	0.701				3.0	0	1.8					> 450
June 6	0.770	0.653				3.5	0	1.6					> 450
June 7	0.720	0.631				3.7	0	1.4					> 450
June 8	0.730	0.737				3.1	0	0.9					> 450
June 9	0.710	0.631				1.6	0	1.3			8.3		> 450
June 10	0.730	0.719				2.4	0	1.8			8.2		> 450
June 11	0.720	0.643				3.0	0	1.6			8.0		> 450
June 12	0.990	0.670				2.6	0	1.3					> 450
June 13	0.680	0.301				2.5	0	0.7					> 450
June 14	0.290	0.130				3.5	0	0.7					> 450
June 15	0.000		0.237										
June 16	0.800	0.654				3.5	0	1.2			8.2		> 450
June 17	0.860	0.686				2.5	0	1.2			8.3		> 450
June 18	0.870	0.672				2.0	0	0.6			8.4		> 450
June 19	0.250	0.546				1.7	0	0.7					> 450
June 20	1.040	0.518				1.8	0	1.1					> 450
June 21	0.240	0.131				1.2	0	1.1					> 450
June 22	0.000		0.267										
June 23	0.860	0.652				1.3	0	1.6			7.9		> 450
June 24	0.700	0.702				1.8	0	1.8			8.1		> 450
June 25	0.830	0.684				2.4	0	1.7			8.1		> 450
June 26	0.960	0.762				3.0	0	1.7					> 450
June 27	0.990	0.214				3.5	0	1.4					> 450
June 28	0.740		0.212										
June 29	1.080	0.394					0	1.4					> 450
June 30	1.320	0.616		0.37		2.2	0	1.5			8.4		> 450
Total	22.03	15.29	1.06	0.37									450
Min	0.00	0.13	0.21	0.37	0		< 0.0	< 0.6	0.0	0.0	7.9	< 0	> 450
Max	1.63	0.94	0.34	0.37	0		< 0.0	< 1.8	0.0	0.0	8.9	< 0	> 450
Ave	0.76	0.59	0.26			NA	< 0.0	< 1.3			8.3	<	> 450
Count	29	26	4	1	0	NA	26	26	0	0		0	27



<b>Total Banked + Title 22</b>	<b>16.34</b>
<b>Potable Water Delivered</b>	<b>0.37</b>
<b>Total Water Delivered</b>	<b>16.71</b>



**WORK ORDER STATISTICS**

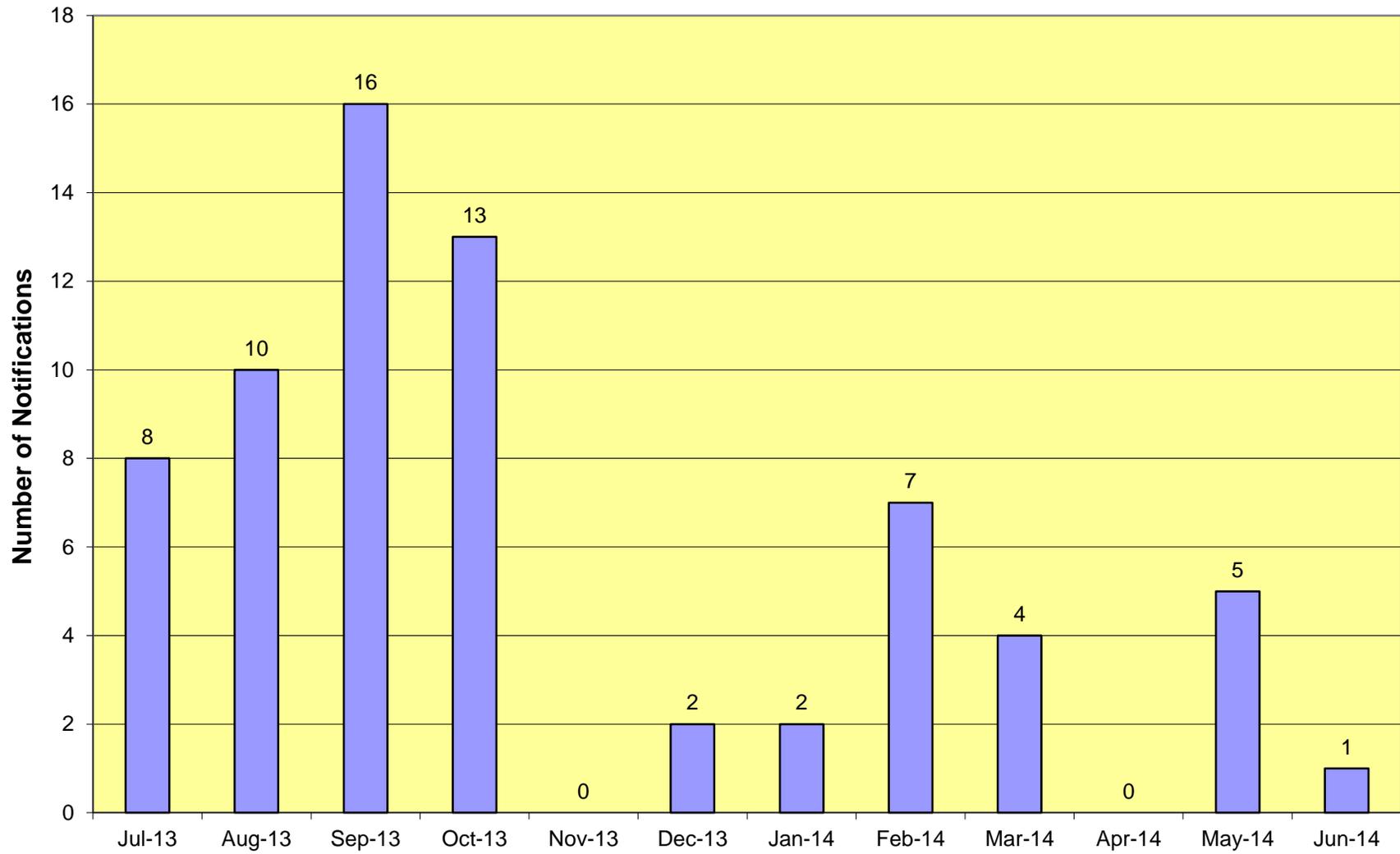
**June 1, 2014 - June 30, 2014**

	<b>Open Work Orders Due Prior to 6/1/14</b>	<b>Open Work Orders 6/1/14 - 6/30/14</b>	<b>Total Open Work Orders</b>
Preventative	0	503	503
Corrective	0	18	18
Total	0	521	521

	<b>Closed Work Orders 6/1/14 - 6/30/14</b>
Preventative	496
Corrective	17
Total	513

<b>Total Outstanding Work Orders as of July 1, 2014</b>	<b>8</b>
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## Complaints / Contacts Received



## ANNUAL NPDES COMPLIANCE INSPECTION – JUNE 18, 2014

Many hours of preparation compiling reports, rounds sheets, log books, data, procedures, etc.



**Top Left** - John O'Hare gathered and organized the materials needed for the inspection

**Top Right & Bottom Left** – Some of the records assembled and ready for review

**Bottom Right** – Dasse De longh and Tim O'Connor prepare collections system information for inspection.

During the end-of-day debriefing session Inspectors were complimentary. They especially noted the preparation that went into the inspection as well as the condition of the plant.

**NOVATO SANITARY DISTRICT**  
**Wastewater Operations Committee Meeting**  
**Odor Control and Landscaping Report**  
**June 2014**

**Background:**

Staff and the District's consultant continue to work to address issues of odor control and landscaping, specifically in the Lea Drive neighborhood, and at the northeast corner of the Novato Treatment Plant (NTP) site.

As previously explained, the District has already expended significant amounts beyond the substantial investment for odor control and landscaping from the original WWTP Upgrade, Contract B - Novato Treatment Plant (NTP), Project No. 72609. These additional costs have included operational changes, measures related to further odor control measures, noise abatement, visual screening, wind shielding, and daily monitoring. The District also retained Brown and Caldwell (B&C) and their project manager, Mr. David McEwen, to further study the issue of potential odor emissions from the aeration basins, and any other potential sources not previously considered.

**Odor control:**

Earlier this year, Mr. McEwen issued odor control recommendations at the aeration basins, and made detailed presentations to neighborhood representatives and to the District's Wastewater Operations Committee. As mentioned in prior reports, Mr. McEwen's most significant recommendation, i.e. converting anoxic zones B and C at the aeration basins to aerobic zones has been implemented. Results to date have been good, and operations staff continues to monitor performance.

Also, earlier in the process, staff had anticipated further testing and validation of Mr. McEwen's recommendations at the aeration basins, and that he would submit a draft technical memorandum of the results of his work. It was recommended that the next stage of testing and validation be carried out in summer, since testing during warm weather conditions would present a more appropriate "worst-case" testing scenario. Subsequently, this testing has been carried out (in late June), and results are expected to be available by August.

In addition, another of Mr. McEwen's odor control recommendations (adding sodium hypochlorite to the influent flow during warm weather periods) was considered in June, but not implemented to prevent interferences with the testing and validation process at the aeration basins; it was subsequently implemented in early July, and will be discussed further in the July report.

**Landscaping:**

Staff continues to work with the District's landscaping contractor Cagwin and Dorward (C&D), on the landscaping installed at the District's fence-line on Lea Drive at the northeast corner area of the NTP. C&D continues to provide services on an as-needed basis to care for the landscaping in this area. As mentioned in prior reports, staff also anticipates bringing further landscaping improvements to this area for the Committee's consideration, at a future meeting.

\*\*\*\*\*

# **2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT FOR THE NOVATO SANITARY DISTRICT**



**Prepared by:**

**Veolia Water Operating Services**

Draft – March 2014

Final – June 2014

**ANNUAL OPERATIONS REPORT**  
**2013**  
**Veolia Water West Operating Services Novato**

**SECTION**

- 1 Summary
  - a. Overview
  - b. Process Descriptions & Loading Summary
- 2 Treatment Plant Performance & Compliance Summary
3. Asset Management
4. Safety and Training
- 5 Staffing and Organization
- 6 Budget

**ATTACHMENTS**

- 1 Data and Graphs
- 2 Criticality Report
- 3 Electronic Operation and Maintenance (eO&M) Manual, Example

## 2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT

### Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

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#### Overview:

The top priorities for 2013 were to meet the goals of zero lost time accidents or OSHA recordable incidents and no environmental excursions or treatment plant violations. This is a year in and year out objective plainly stated and firmly established throughout Veolia Water. A term we apply to this end is “Zero Harm”. We are very happy and proud to report that both goals were met. We celebrate that success with and offer congratulations to the Novato Sanitary District on its vision and commitment to water quality.

Key areas of focus throughout the year include:

- Safety Training
- Regulatory Compliance
- Third Party Facility Reviews
- Reporting (internal and external)
- Records Keeping and Data Base
- No Safety Incidents (recordable, lost time, or medical)
- Participation in Company *Near Miss* Reporting Program (focused on prevention)
- Employee Education and Certification / Professional Advancement
- Community Outreach and Participation
- Utilization of Job Cal Plus (CMMS) for Maintenance Tracking and Scheduling

Due to dry weather throughout 2013 no peak flow challenges were experienced. Peak flows of approximately 9 mgd were experienced in January, February, March, and April. This compared to 32 mgd on December 23, 2012. To date the December 2012 flows were the highest experienced since commissioning the new facility in April 2010.

## 2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT

### Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

#### Plant Operations and Process Summaries:

Wastewater is collected throughout the Novato Sanitary District service area and conveyed by gravity as well as mechanical means (pump stations) to the Davidson Street site.

#### Preliminary Treatment - Influent Pump Station and Headworks

When the wastewater arrives at the Treatment Plant it is pumped from the Influent Pump Station to the Headworks. The Headworks provides screening of course materials and removal of grit which consists of heavy matter such as sand, silt, and gravel.



Top Left – Influent Pump Station

Top Right – Parkson Aqua Guard Screen™

Bottom Left – Grit Conveyance and Pumping

Bottom Right – Screenings Washer / Compactor, Compacted Screenings Being Discharged to Dumpster

## 2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT

### Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

#### Flow and Loading Measurement

Flow at the Novato Wastewater Treatment Plant is measured using a Parshall Flume and Hydro Ranger™ ultra sonic level meter in combination. This pairing is considered very reliable and provides a high degree of accuracy.

Composite samples for biochemical oxygen demand (BOD) and total suspended solids (TSS) are collected downstream of screening and grit removal. Composite samples are flow proportioned throughout the sampling period (normally 24 hours). Flow proportioning provides the most representative sample.



Above Left – Hydro Ranger level meter, hourglass shaped plating over Parshall Flume  
 Above Right – Hach Model 3540 SDR Composite Sampler

#### Rated Capacities

DESIGN CRITERIA			
Condition	Value	Unit	Notes
Average Dry Weather Flow	7.0	MGD	
Peak Wet Weather Flow (Max Day)	30.7	MGD	
Max Peak Wet Weather (1-3 Hour)	47.0	MGD	
Average BOD Loading	14,600	Lbs/D	
Average TSS Loading	17,600	Lbs/D	

#### Actual 2013

2013 FLOWS AND LOADS SUMMARY			
Condition	Value	Unit	Notes
Average Dry Weather Flow	3.93	MGD	June / July / August
Peak Wet Weather Flow (Max Day)	6.51	MGD	1/15/2013
Max Peak Wet Weather (1-3 Hour)	9.00	MGD	1/3/2013, 10:00 am
Average BOD Loading	9,747	Lbs/D	
Average TSS Loading	13,142	Lbs/D	

As noted earlier no significant Peak Wet Weather events occurred.

## 2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT

### Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

### Primary Treatment – Primary Clarifiers

Primary clarifiers typically remove approximately 60 – 70% of the solids from raw wastewater. Clarifiers are large tanks that slow the flow of water down and allow the force of gravity to remove solids. Heavier solids referred to as “sludge” settles to the bottom. Lighter material such as fat, oil, grease and plastic referred to as “scum” rises to the surface. Both sludge and scum are removed from the waste stream and pumped to a digester for additional treatment.



Above Left – Primary Clarifier #2, Superstructure supports the cover.  
 Above Right – Sludge and Scum Pumping

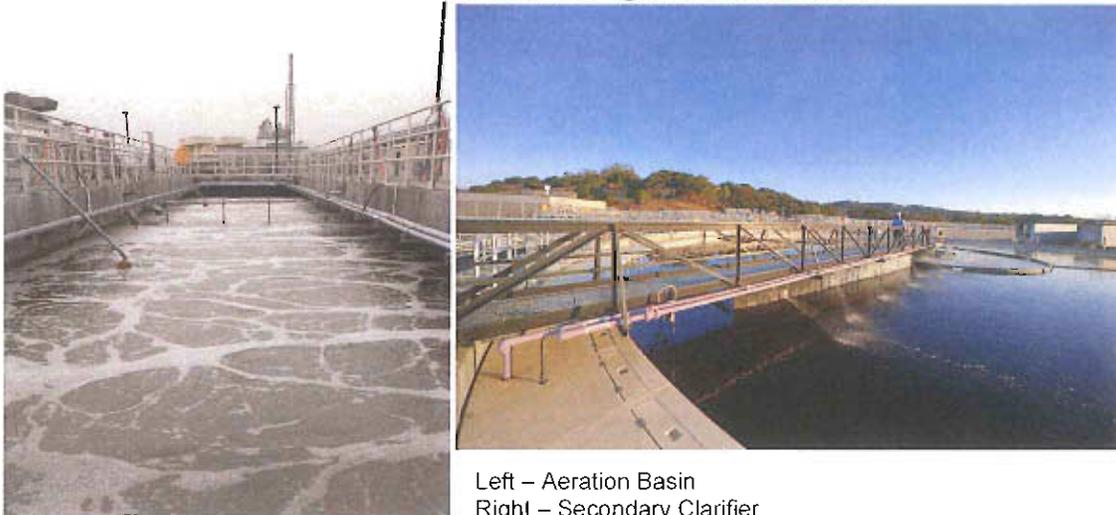
PRIMARY CLARIFIERS			
	Value	Unit	Notes
Number	2		
Diameter	100	Ft	Each
Sidewall Depth	12	Ft	Each
Capacity (Volume)	880,770	Gallons	Each
BOD Removal	32	%	2013 Results
TSS Removal	68	%	2013 Results

Novato’s primary clarifiers are covered to contain foul air associated with raw sewage. The foul air is removed and discharged to odor scrubbing biofilters by large fans. Like much of the wastewater process the biofilters are living processes. Various life forms including fungi, worms, and microbial populations convert odorous compounds to other gases, primarily carbon dioxide.

**Secondary Treatment – Aeration Basins & Secondary Clarifiers**

After screening, grit removal, and primary solids removal, all wastewater receives full secondary treatment. Large rectangular tanks with baffle walls, mechanical mixers, air diffusers, and recirculation pumps make up the aeration basins. The Novato facility was designed with both flexibility and reliability in mind. Four aeration basins, each with a capacity of more than 850,000 gallons provides complete secondary treatment under all flow conditions.

Each aeration basin has three anoxic (no dissolved oxygen) zones accounting for almost 25% of the tank volume. The anoxic zones convert nitrate and nitrite to nitrogen gas to reduce the level of total nitrogen in the effluent.



Solids, primarily biological cell mass, are produced during the process of removing dissolved pollutants (BOD) in the aeration basins. A combination of wastewater and bio-mass, known as mixed liquor, typically contains between 1,500 mg/L and 2,500 mg/L (0.15% to 0.25%) of solids. The aeration basins are well mixed and as a result a continuous stream of solids leaves the aeration basins. Solids are captured in the secondary clarifiers and the majority returned to the head end of the aeration basins to maintain the proper biomass concentration for treatment. Excess solids are sent to the gravity belt thickener (GBT) where they are concentrated to between 4% and 6% and then pumped to a digester for additional treatment. Effluent from the secondary clarifiers is then ready for disinfection.

SECONDARY CLARIFIERS			
	Value	Unit	Notes
Number	2		
Diameter	125	Ft	Each
Sidewall Depth	16	Ft	Each
Capacity (Volume)	1.468	MG	Each

# 2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT

## Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

### Ultra Violet (UV) Disinfection

Prior to discharge wastewater must be disinfected. Ultra violet light disrupts the DNA of pathogens and other life forms leaving them incapable of reproduction. UV unlike other methods of disinfection uses no chemicals, produces no harmful byproducts (trihalomethanes for example), and leaves no toxic residual.



Left – UV Rack Removed for Cleaning  
Below – Preparing UV Rack for Removal



### Effluent Disposal – Bay Discharge / Reclamation / Storage

There are several options for disposal of treated effluent. During wet weather the majority of Novato's effluent is discharged to San Pablo Bay. Seasonal NPDES permit restrictions combined with a responsible approach to water conservation drive effluent disposal options. Discharge to the San Pablo Bay during the months of June, July, and August is prohibited. Restrictive discharge limits during the months of May, September, and October are also considerations



**2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT**  
**Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station**

**Performance Summary**

The following summary provides an overview of plant performance and activities for the period January 1, 2013 through December 31, 2013.

Total Volume of Water Processed	1,551 Million Gallons
Total Volume of Water Reclaimed	512 Million Gallons
Total Volume of Water Discharged	1,034 Million Gallons
Average Daily Dry Weather Flow	3.93 MGD
Maximum Daily Flow	6.51 MGD
Pounds of BOD Treated	3,557,655
Pounds of BOD Removed	3,459,835
Percent BOD Removal Efficiency	97
Pounds of TSS Treated	4,796,830
Pounds of TSS Removed	4,734,050
Percent of TSS Removal Efficiency	99
Pounds of Bio-solids Treated	2,283,499
Cubic Feet of Biogas Produced	24,898,082
Total Number of Violations / Excursions	0
NPDES (Bay Discharge)	0
WDR (Reclamation)	0

**Maintenance**

Total Number of Work Orders Issued	4,269
Total Number of Work Orders Closed	4,213
Percentage Preventive Maintenance	91%
Average Completion	6.16 Days

**Consumables**

Electricity – kWh / Year	3,365,946
Electricity – kWh / MG	2,170
*Natural Gas – Therms / Year	45,496
Natural Gas – Therms / MG	29
Diesel Fuel – Gallons / Year	1,965
Diesel Fuel – Gallons / MGD	1.27

\*Excludes Administration Building and Flare Pilot.

**2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT**  
**Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station**

**Treatment Plant  
Compliance Summary**

No treatment plant violations were experienced in 2013. The compliance summary table (below) is broken down by constituent and discharge season.

Waste Discharge Limits / Reclamation				
Parameter	Limit	Units	Analysis	Violations
BOD Monthly Average	40	mg/L	4	0
Total Coliform – 5 Sample Median	240	mpn/100 ml	51	0
Total Coliform - Maximum	10,000	mpn/100 ml	51	0
pH – High	9.0	s.u.	86	0
pH – Low	6.0	s.u.	86	0

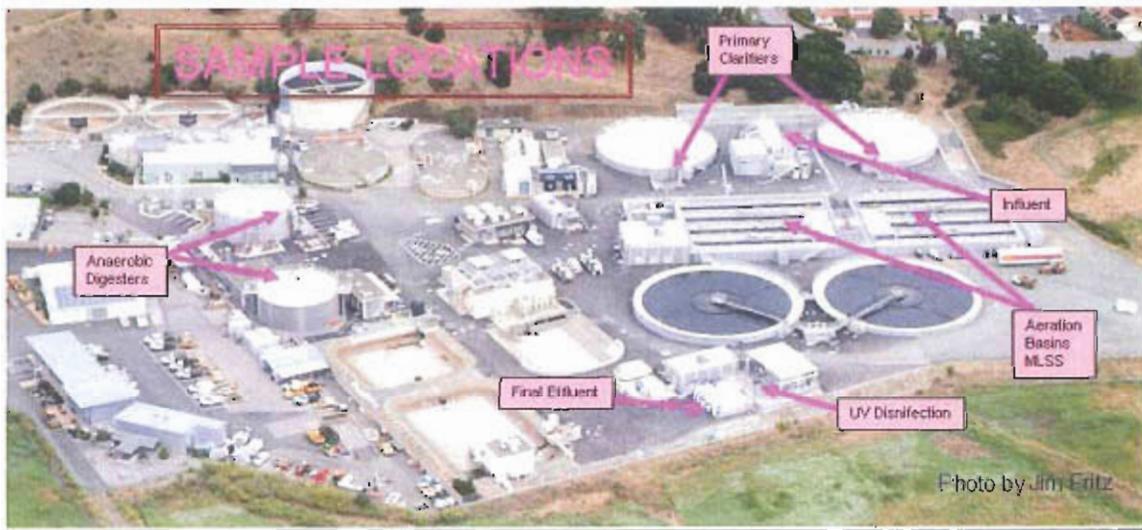
NPDES Wet Season Limits - November – April				
Parameter	Limit	Units	Analysis	Violations
BOD Weekly	45	mg/L	26	0
BOD Monthly	30	mg/L	6	0
TSS Weekly	45	mg/L	26	0
TSS Monthly	30	mg/L	6	0
BOD Removal (minimum)	85	%	6	0
TSS Removal (minimum)	85	%	6	0
Enterococcus - 30 Day Geo Mean	35	Col/100 ml	6	0
Fecal Coliform - Median	140	mpn/100 ml	6	0
Fecal Coliform - 90 <sup>th</sup> Percentile	430	mpn/100 ml	6	0
Ammonia – Daily Maximum	21	mg/L	65	0
Ammonia - Monthly Average	6	mg/L	5	0
pH – High	8.5	s.u.	129	0
pH – Low	6.5	s.u.	129	0
Oil & Grease - Daily Maximum	15	mg/L	6	0
Oil & Grease - Monthly Average	5	mg/L	6	0

**2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT**  
**Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station**

**Compliance Summary**  
**(Continued)**

NPDES Dry Season Limits - May, September, & October				
Parameter	Limit	Units	Analysis	Violations
BOD Weekly	30	mg/L	8	0
BOD Monthly	15	mg/L	2	0
TSS Weekly	20	mg/L	8	0
TSS Monthly	10	mg/L	2	0
BOD Removal (minimum)	85	%	2	0
TSS Removal (minimum)	85	%	2	0
Enterococcus - 30 Day Geo Mean	35	Col/100 ml	2	0
Fecal Coliform - Median	140	mpn/100 ml	2	0
Fecal Coliform - 90th Percentile	430	mpn/100 ml	2	0
Ammonia – Daily Maximum	21	mg/L	11	0
Ammonia - Monthly Average	6	mg/L	2	0
pH – High	8.5	s.u.	46	0
pH – Low	6.5	s.u.	46	0
Oil & Grease - Daily Maximum	15	mg/L	2	0
Oil & Grease - Monthly Average	5	mg/L	2	0

Sample Locations



## **Asset Management**

Key components of an Asset Management Program include:

- Computerized Maintenance Management System (CMMS)
- Preventive, Predictive, and Corrective Maintenance
- Equipment Inventory
- Reliability / Criticality Assessment (Hierarchy of Equipment Priority)

### Computerized Maintenance Management System

Veolia uses *Job Cal Plus™* (Job Plus) as the basis for scheduling and tracking maintenance and repairs at Novato. Job Plus is an off-the-shelf, non proprietary software program available from Hach Company, Loveland, Colorado. Job Plus uses the Microsoft Access™ data base platform to store information. A description of Job Plus can be found at the end of this section.

### Preventive, Predictive, and Corrective Maintenance

Preventive maintenance (PM) is a scheduled maintenance activity generally tied to equipment run time (x hours) or period schedule (weekly / quarterly). Routines such as lubrication, oil change, filter change fall into the category of PM.

Predictive maintenance (PdM) is performed to determine when maintenance might be required and or to assess condition. Tasks such as vibration, temperature, and oil analysis are types of PdM. Corrective maintenance is initiated when a deficiency is found.

### Equipment Inventory

An accurate equipment inventory is crucial to all phases of Asset Management. Equipment at the Novato facility has been entered into the Job Plus data base. The equipment inventory is a dynamic process with additions and deletions over time. An accurate equipment inventory is an essential component when planning for equipment replacement.

### Reliability / Criticality Assessment (Hierarchy of Equipment Priority)

A Criticality Assessment was performed at the Novato facility in August 2010. The assessment evaluates processes and equipment and rates the relative importance. The evaluation process looks at consequences and likelihood of failure. The product helps the user prioritize replacement and maintenance. A portion of the Criticality Assessment is included as Attachment Section 2.

**2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT**  
**Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station**

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## Maintenance Activities Under \$10,000.00\*

<b>January</b>	Sludge Lagoon	Repair valve riser
	Digested Sludge Transfer Pumps	Replaced seal water
	Primary Clarifier #2, Odor Fan #2	Replaced belts, repaired guard and sheave
	Administration Building Emergency Generator	Replaced block heater
	Digester Sludge Recirculation Pump #2	Replaced belts
	Digester Sludge Transfer Pump #1	reinstalled drive and replaced seal water float
	Primary Clarifier #2 - Odor Fan	Temporary noise enclosure repair
		Annual PM
		Service/Inspection/Test/Certification of overhead cranes
	Overhead Cranes	
<b>February</b>	Digested Sludge Pump #2	Replaced sight glass
	Boiler	Replaced leaking section
	Digested Sludge Pump Drives	Replaced two speed reducers on pumps
<b>March</b>	Screenings Washer/Compactor	Replaced auger brushes
	Main Electrical Building	Rooftop A/C - Heater Repair
<b>April</b>	Laboratory Dishwasher	Replaced waterline
		Replaced headlight, side mirror, fan belt and oil change
	Dodge Truck - PM	Sent in for repair, returned and reinstalled
	Aeration Basin Mixed Liquor Pump 3F	Installed GFI for UV Pump and hardwire sampler
	UVT Analyzer	Pumped out pit
	Digested Sludge Pit	Installation of District purchased valve
	Wet Weather Overflow Pressure Relief Valve	Replaced Motor
	Grit Vortex Blower	Oil change, filter, lube & check
Annual Forklift Service	Sent in for repair, returned and reinstalled	
<b>May</b>	Aeration Basin Mixer 1C	Troubleshoot – determined replacement of cutter cartridge is needed
	Grinder - Ignacio	

## 2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT

### Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

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<b>May</b>	Aeration Basin Mixer 1C	Sent in for repair, returned and reinstalled
	Grinder - Ignacio	Troubleshoot – determined replacement of cutter cartridge is needed
	Diesel Fuel Tanks	Annual Sample/Inspect/Clean & Filter Diesel Fuel in Bulk Tanks at NovatoWWTP & Ignacio Pump Station
	Flow Meters	Annual Calibration of all Flow Meters - Novato WWTP
	Emergency Generators @ Novato WWTP & Ignacio Pump Station	Annual PM Service / Inspection
	Wet Weather Pumps	Annual PM Service / Inspection
<b>June</b>	#1 Water Line	Leak repair
	Aeration Basins	PODZ odor control experiment
	Reclamation	Cleaned wet well
	Aeration Basins	Installed GFI for odor mister
	TWAS Flow Meter	Replaced
	Novato Grinder	Troubleshoot motor problem
	Main UPS unit in Administration Building	Replaced batteries
	Digester #1 Mixing Pump	Troubleshoot and replace peckerhead
	Weed Abatement	Ignacio, Ponds & Novato
	Ignacio Influent Pumps 1 & 2	Pulled - removed blockage - reinstallation of Influent Pumps #1 & #2
<b>July</b>	Ignacio - Old Cutter Cartridge from Channel Grinder	Power washed, packed and shipped unit back to JWC
	Blower/Electrical Building Rooftop AC/Heater	Troubleshoot and repair
	Aeration Basins	PODZ odor control experiment
	Ignacio Channel Grinder	Removed old and installed new cutter cartridge
	Ignacio Pump Station Influent Pumps	Pulled all 3 pumps and cleared debris
	Flygt Pumps - Ignacio Pump Station and Novato WWTP	Annual Inspection of all Flygt pumps at Ignacio Pump Station and Novato WWTP

## 2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT

### Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

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<b>July (cont)</b>	<p>Flygt Mixers and Mixed Liquor Pumps at Novato WWTP</p> <p>Aeration Basin Mixer AB-MX-1211-3</p> <p>Blower #3</p>	<p>Annual inspection of all Flygt Mixers and Mixed Liquor Pumps at Novato WWTP</p> <p>Pulled - repaired - reinstallation of mixer</p> <p>Troubleshoot and replace VFD Fan and Ultrasonic Transducer on Blower #3</p>
<b>August</b>	<p>#3 Water Line</p> <p>Wet Weather Effluent Pump #1</p> <p>Chevy Truck - Operators</p> <p>Blower #1</p> <p>Blower #1</p> <p>Blower #2</p> <p>Blower #3</p> <p>Hypochlorite Tank Fill Port</p> <p>Screenings</p> <p>Washer/Compactor</p> <p>Blower Room Rooftop</p> <p>AC/Heater</p> <p>Aeration Basins</p> <p>Odor Mister</p>	<p>Repair</p> <p>Replaced block heater</p> <p>Replaced water pump, battery and oil change</p> <p>Replaced inlet filter</p> <p>Replaced UPS Units</p> <p>Replaced UPS Units</p> <p>Replaced UPS Units</p> <p>Rebuilt fill port</p> <p>Replaced auger</p> <p>Repaired condensate leak</p> <p>PODZ odor control experiment</p> <p>Aeration Basin/odor beds odor control</p>
<b>September</b>	<p>Dodge Truck - Maintenance</p> <p>Blower Room Rooftop</p> <p>AC/Heater</p> <p>2 Influent Pumps</p>	<p>Replaced master brake cylinder and oil change</p> <p>Troubleshoot and repair</p> <p>Re-installation of Rehabilitated Influent Pumps at Novato WWTP</p>
<b>October</b>	<p>Boiler</p> <p>Dodge Truck - Operations</p> <p>Ferric Chloride Pumps</p> <p>Influent Pump Installation</p> <p>GBT #1 - Grit Vortex</p> <p>Blower #1</p> <p>GBT #2</p> <p>Primary Clarifier Drive #2</p>	<p>Purchased Spare Section - replacement for spare used in Feb.</p> <p>Replaced hub bearing, wheel hub assembly and battery</p> <p>Replaced tubing</p> <p>Repair and installation of influent pump.</p> <p>Replaced motor &amp; bearings</p> <p>Replaced pressure switch</p> <p>Assisted Westech with drive refurbishment after coating project</p>

**2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT**  
**Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station**

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	Sludge Lagoon #1	Repair sludge discharge line
	Ignacio Fencing	Repaired hole in perimeter fencing
	Hyster forklift	Replaced fuse for power switch
	Mixed Liquor Pump AB-P-1213-4	Removed Pump, sent in for repair, re-installed
<b>November</b>	Boiler	Troubleshoot fault codes – repair
	Primary Clarifier #2	Adjusted drive arm
	Blower #3	Troubleshoot and repair overheating VFD
	Mixed Liquor Pump AB-MX-1211-3	Removed Pump, sent in for repair, re-installed
<b>December</b>	Dodge Truck - Operations Ignacio Hard Drive/Operator Interface	Replaced electrical systems cluster
	Ignacio - Wet Well	Replaced
	Reclamation - Lagoon #1	Replaced oxygen sensor
	GBT #1 & #2	Replaced Valve
	Digester #1	Replaced high pressure pump
	Freeze damage throughout plant	Emergency installation of bypass line
	Blower #3	Repair and replace numerous items damaged from freeze
	High Pressure Water Pump #1	Assisted with installation of new cooling fan
	Digester #1 Heat Exchanger	Troubleshoot and repair
	TWAS Pump	Removed gasket material and resealed
	Noise Control Structure - PC #2 Odor bed fans	Discharge pipe leak repair
		Outside Contractor - Erected noise control structure

### Maintenance Activities Over \$10,000.00\*

<b>May</b>	Grinder – Ignacio	Rep out to troubleshoot - determined replacement of cutter cartridge is needed
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* Limit Set by Section 3.0 of the Service Agreement between Veolia and NSD.
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## Safety

It's a Culture. Not a Campaign



Veolia Water North America (VWNA) recognizes the importance of an effective health and safety program to the well being of each employee, the general public, clients/facility owners, and to the overall success of our company. VWNA is committed to providing its employees a healthful and safe place of employment. To that end, VWNA will provide proper training, materials, and equipment so that work can be performed safely and in compliance with the Occupational Safety and Health Administration Regulations (OSHA) and other applicable standards. In turn, each employee is responsible to participate in a cooperative effort to maintain an effective health and safety program. Adherence to company policies and work practice guidelines is an essential part of this responsibility. By maintaining an effective program, we reduce the risk of personal injury, operational interruptions, regulatory fines, and maintain the company's reputation as a world leader in environmental management.

Our highest duty - to ensure health, safety and security for all. It is our highest duty, essential business priority, and the individual responsibility of each of us to ensure that at all time and in all of our operations, the health, safety and security of the general public, our customers, subcontractors and our fellow employees are protected. We allow for no compromise in this matter, and we strive to proactively identify potential risks and take diligent corrective and preventative actions to reduce and eliminate them. In the same spirit, we support, advise and encourage our fellow employees to maintain good personal health, as well as to develop positive practices and behaviors in that respect.

VWNA Novato has obtained a zero harm safety record from reinstatement of the Operations Contract. We have had no incidents from June 1, 2010 to present. This reporting period from January 1, 2013 through December 31, 2013 resulting in 1,308 days - accident/incident free. In recognition of this achievement - staff celebrated at a luncheon with gifts of appreciation. Each employee received a cash incentive reward from the Company for 3 years no loss time incidents as a group and also as individual achievements

**2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT**  
**Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station**

WVNA Novato provides job specific safety training for employees. The following training was provided during 2013.

<b>2013 Safety Training</b>	
<b>Date</b>	<b>Topic</b>
January	Hazard Communication
February	Personal Protective Equipment Asbestos Awareness
March	General Electrical Safety LOTO - Control of Hazardous Energy
April	Confined Space Training Office Safety
May	Fire Extinguisher Use Preventing Heat Stress Overexertion - Sprains and Strains
June	Bloodborne Pathogens Housekeeping
July	Emergency Action Plan Hot Work - Welding Cutting and Brazing
August	GHS for Hazard Classification and Labeling
September	Ergonomics
October	Hearing Protection
November	Fall Protection
December	SPCC Plans - Novato and Ignacio

# 2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT

## Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

### Confined Space Training Exercise

A mix of classroom reinforced by hands-on participation made this two day class interesting and successful.



Left - Safety coordinator Lynda Rodefer checks her harness before making the entry. Trainer / Environmental, Health, Safety, and Security (EHS&S) Manager, Jeremiah Danielson in background.

Right - Veolia Water EHS&S Manager Jeremiah Danielson provides hands-on instruction to staff at the Novato site. Topics included rigging, rescue, hazards, job site security, communication, personal protective equipment, as well as duties and responsibilities of entrant, attendant, and entry supervisor.



Left – Jeffrey Hendricks, Ed Mann, and Ralph Loveless prepare for confined space entry at headworks.

Below – Ralph Loveless assists Christian Williams prior to confined space entry.



## **Staffing and Organization**

### **STAFFING & CERTIFICATION STATUS**

John Bailey – Project Manager

Grade V California Wastewater Treatment Plant Operator #4123, December 31, 2014

Grade T2 Water Treatment Operator #18030, June 1, 2014

Edward M. Mann – Assistant Project Manager / Operations Manager

Grade V California Wastewater Treatment Plant Operator #V-4850, **Retired**

Brian N. Exberger – Assistant Project Manager / Operations Manager

Grade V California Wastewater Treatment Plant Operator #10424, June 30, 2015

Lynda Rodefer – Administrative Assistant/Planner/Scheduler/Safety Coordinator

Anthony M. Silva – Operator III

Grade V California Wastewater Treatment Plant Operator #10973, December 31, 2015

Grade II Collection System Maintenance Technician, 354, January 31, 2015

Dean B. Heffelfinger – Operator III

Grade III California Wastewater Treatment Plant Operator #III-27610, June 30, 2015

Christian R. Williams – Operator III

Grade IV California Wastewater Treatment Plant Operator #28555, June 30, 2014

Grade II Plant Maintenance Technologist, 080151005, January 31, 2013

WHY Included?

Preston Ingram – Operator III

Grade IV California Wastewater Treatment Plant Operator #10277, June 30, 2015

Jeffrey D. Hendricks – Operator II

California Wastewater Treatment Plant Operator #II-28377, December 31, 2015

Grade I Collection System Maintenance Technician, 0801210049, January 31, 2015

Grade I Plant Maintenance Technologist, 070750011, July 31, 2014

Ralph Loveless – Maintenance Technician

**2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT**  
**Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station**

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**Additional Support**

John Herron – Area Manager

Christopher McAuliffe – District Manager, Grade V Wastewater Treatment Plant Operator

John O'Hare – Technical Director

Grade V, Wastewater Treatment Plant Operator, California, # 10669 (2005)

Grade IV, Wastewater Treatment Plant Operator, Association of Boards of Certification, # S40011R (2004)

Grade IV, Collection Systems, Massachusetts, #866 (1986)

Grade VII, Wastewater Treatment Plant Operator, Massachusetts, # 977 (1977)

Grade I, Environmental Compliance Inspection, California, CWEA # 04074112 (2004)

Grade I, Laboratory Analyst, California, CWEA # 05013114 (2005)

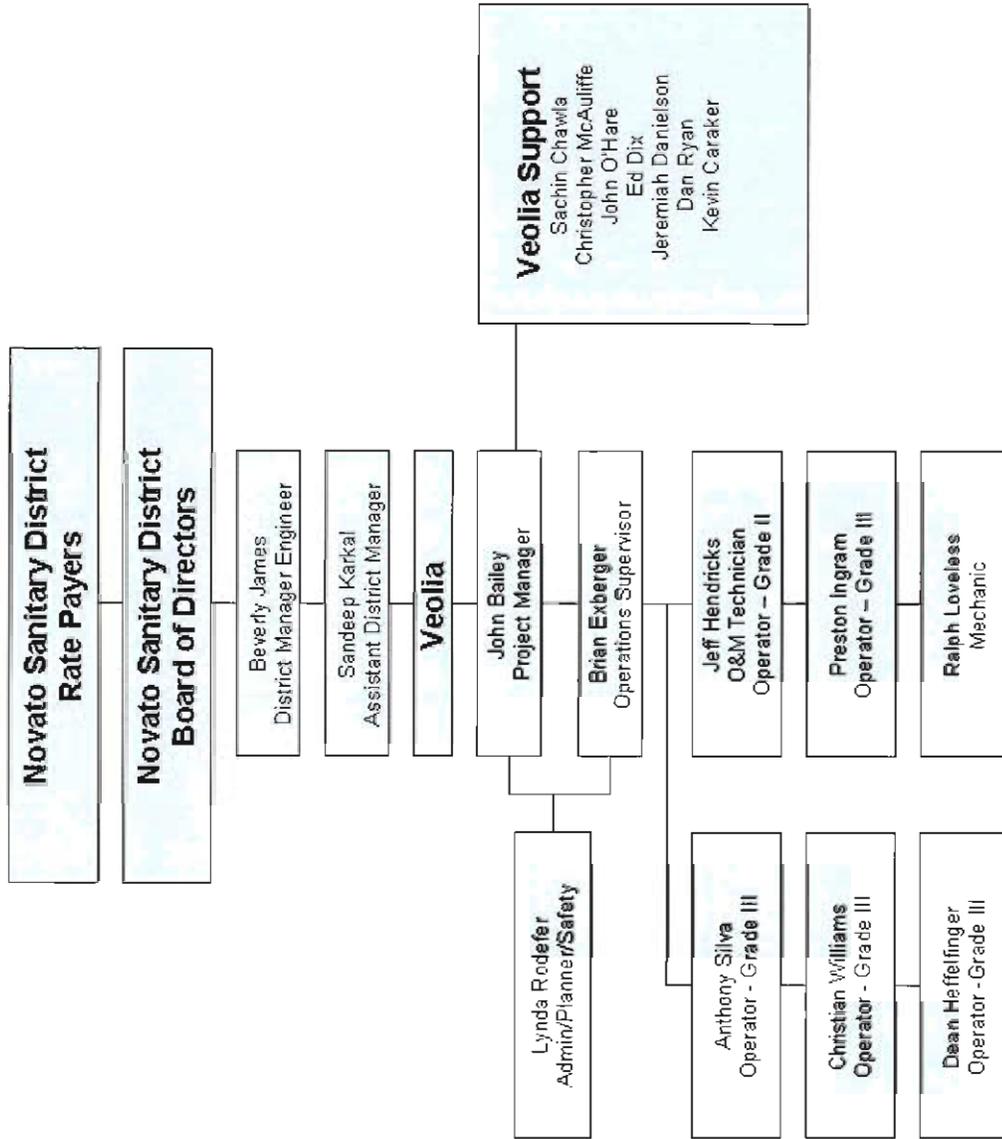
Grade I, Plant Maintenance Technologist, California, CWEA # 05075101 (2005)

Grade I, Collection System Maintenance, California, CWEA # 070121088 (2007)

Grade I, Water Distribution Operator, California Department of Public Health, #34234 (2008)

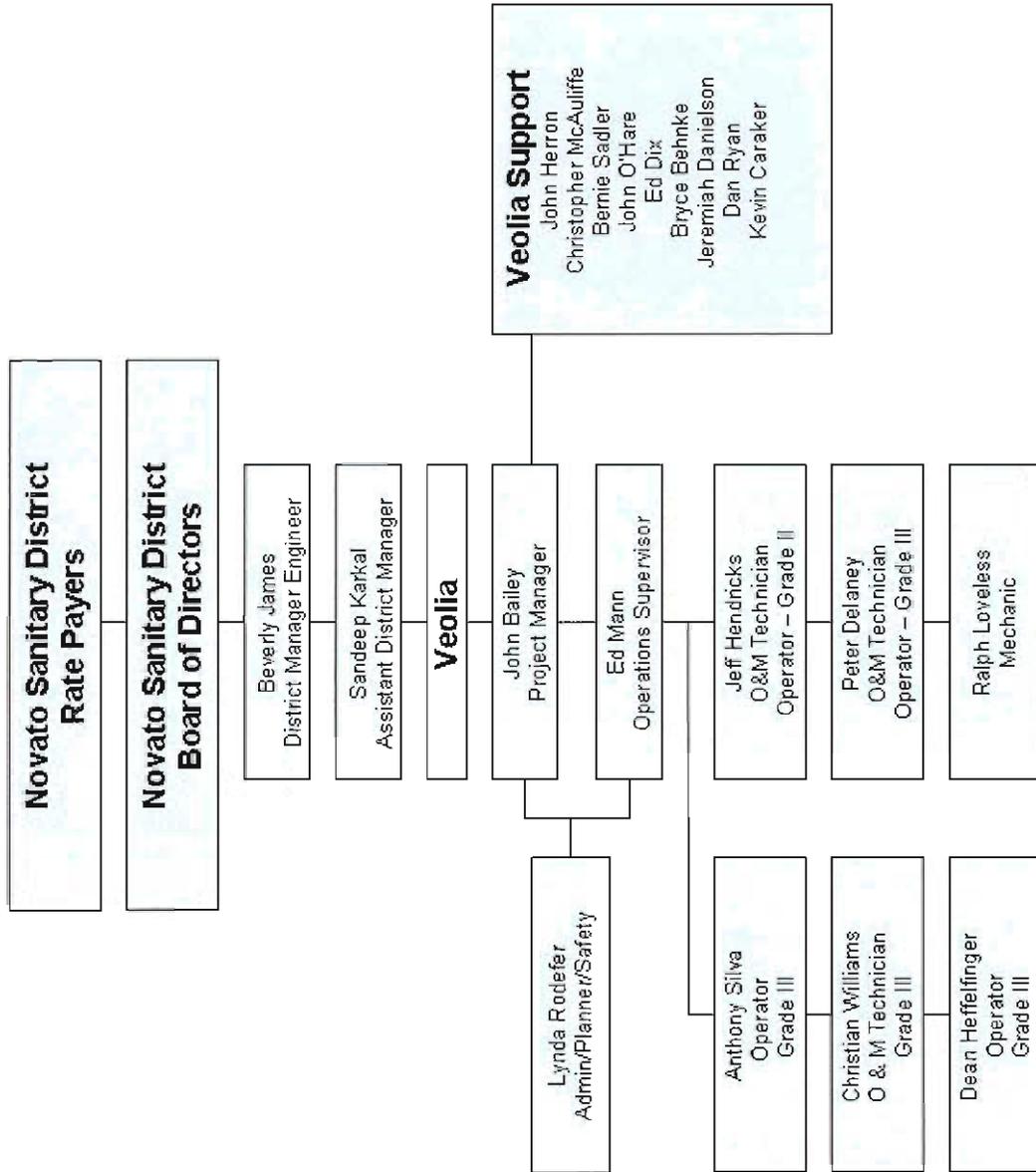
**2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT**  
**Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station**

Organization Chart  
 Veolia Water/Novato Sanitary District



**2013 ANNUAL OPERATIONS AND MAINTENANCE REPORT**  
**Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station**

Organization Chart  
 Veolia Water/Novato Sanitary District



## **Budget**

### **ADJUSTMENTS OCCUR ON A “CONTRACT YEAR CYCLE”, AUGUST - JULY**

The Novato Operations and Maintenance Service Agreement dated September 24, 2009 is a fixed price contract. Normal operations, maintenance, and management are included in the contract price. Variables to the fixed price include:

Schedule 7 & Schedule 13 – Pass Through Costs

- Performance Bond
- Insurance Cost

Schedule 8 – Cost Adjustment and Escalation Indices

Schedule 8 – Flow and Loading Adjustments

Schedule 11 – Utility Caps

- Electrical
- Natural Gas
- Diesel Fuel
  - Cap A – With Ignacio Wastewater Treatment Plant in service
  - Cap B – Ignacio Wastewater Treatment Plant decommissioned

Equipment Repairs in excess of \$10,000.

**NOVATO SANITARY DISTRICT - VEOLIA  
PLANT FLOW**

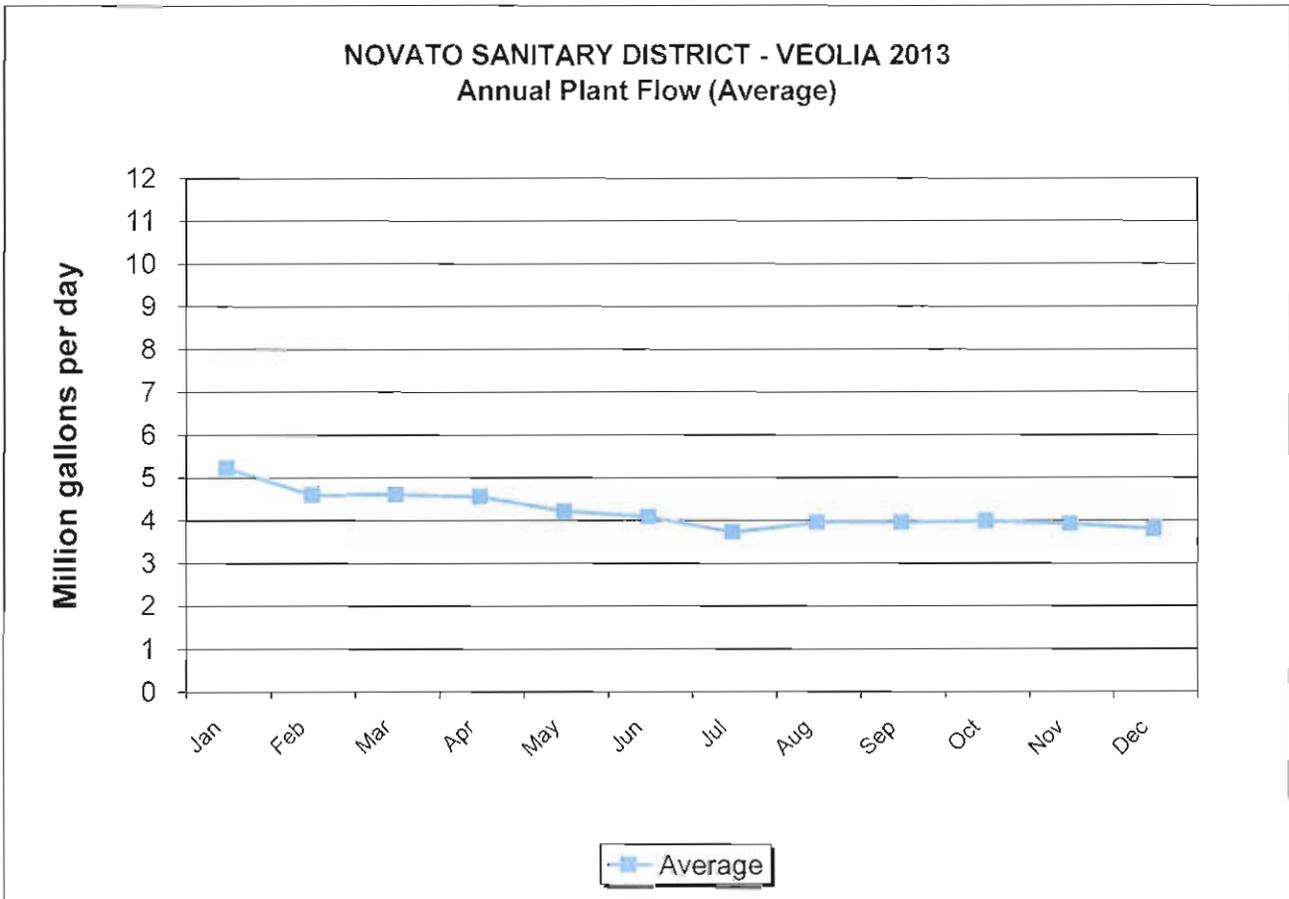
Annual Waste Characteristics & Loading Summary

(IN GALLONS TIMES 1,000,000)

YEAR: 2013

PRINT DATE: 20-Feb-2013

	Total Flow	High	Low	Average	
January	162.49	6.51	1.00	5.24	Three month dry weather averages:  4.09 3.73 3.96
February	134.11	5.54	4.29	4.62	
March	142.98	5.44	4.22	4.61	
April	136.78	6.12	3.90	4.56	
May	131.08	4.81	3.97	4.23	
June	122.70	4.46	3.88	4.09	
July	115.50	4.36	3.28	3.73	
August	122.77	4.64	3.71	3.96	
September	118.80	4.39	3.65	3.96	
October	123.89	4.46	3.49	4.00	
November	117.87	4.74	3.28	3.93	
December	118.00	4.40	3.37	3.81	
ANNUAL TOTAL	1546.97				
ANNUAL MAX.	162.49	6.51			Max. 4.09
ANNUAL MIN.	115.50		1.00		Min. 3.73
ANNUAL AVG.	128.91			4.23	Avg. Dry Weather Flow 3.93



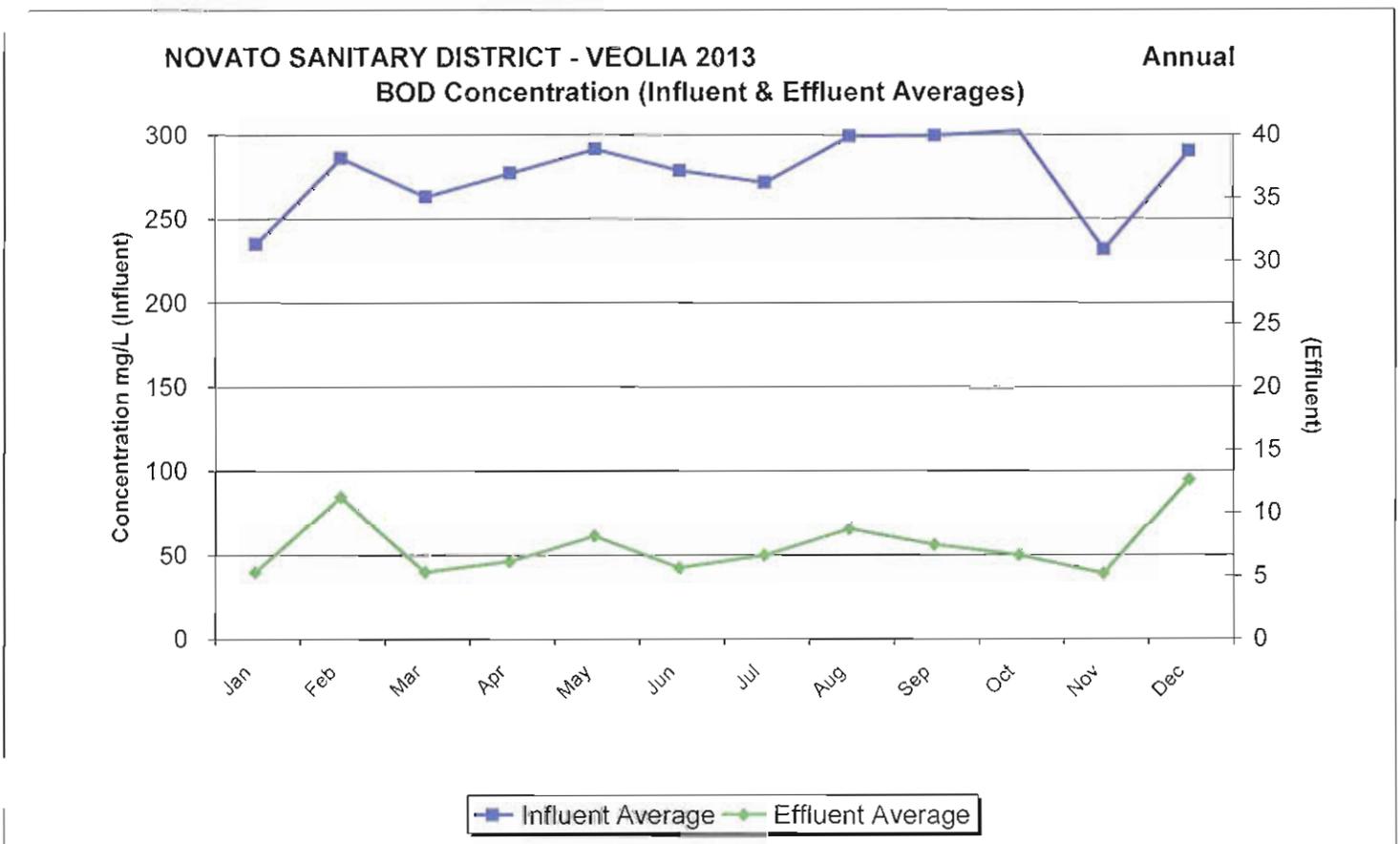
**NOVATO SANITARY DISTRICT - VEOLIA  
BOD (Influent & Effluent)**

Annual Waste Characteristics & Loading Summary

YEAR: 2013

PRINT DATE: 20-Feb-2013

	INFLUENT							EFFLUENT						
	Concentration (mg/L)			No. of Samples	Loading (kg/day)			Concentration (mg/L)			No. of Samples	Loading (kg/day)		
	High	Low	Average		High	Low	Average	High	Low	Average		High	Low	Average
January	478	165	235	15	20012	8324	10409	8	5	5	15	342	197	238
February	353	250	286	13	14354	9194	11235	15	7	11	13	587	323	441
March	338	198	263	15	13277	7002	10326	8	5	5	15	635	177	299
April	375	205	277	11	13855	7027	10544	17	5	6	11	600	167	231
May	642	134	292	16	21845	4593	10096	21	5	8	16	702	168	282
June	352	110	279	12	12447	3798	9546	8	5	6	12	274	163	194
July	302	190	272	15	9621	6909	8434	10	5	7	15	324	143	208
August	350	245	299	12	11151	8509	9866	23	5	9	12	731	156	289
September	356	265	300	12	10926	8067	9769	10	5	8	12	304	163	244
October	376	214	303	15	12669	7193	10138	16	5	7	15	527	158	223
November	478	165	232	14	16106	5518	7498	8	5	5	14	255	141	168
December	367	196	291	15	11926	5509	9102	21	5	13	15	673	153	396
ANNUAL HIGH	642	265	303	16	21845	9194	11235	23	7	13	16	731	323	441
ANNUAL LOW	302	110	232	11	9621	3798	7498	8	5	5	11	255	141	168
ANNUAL AVG.	397	195	277	14	14016	6803	9747	14	5	7	14	496	176	268



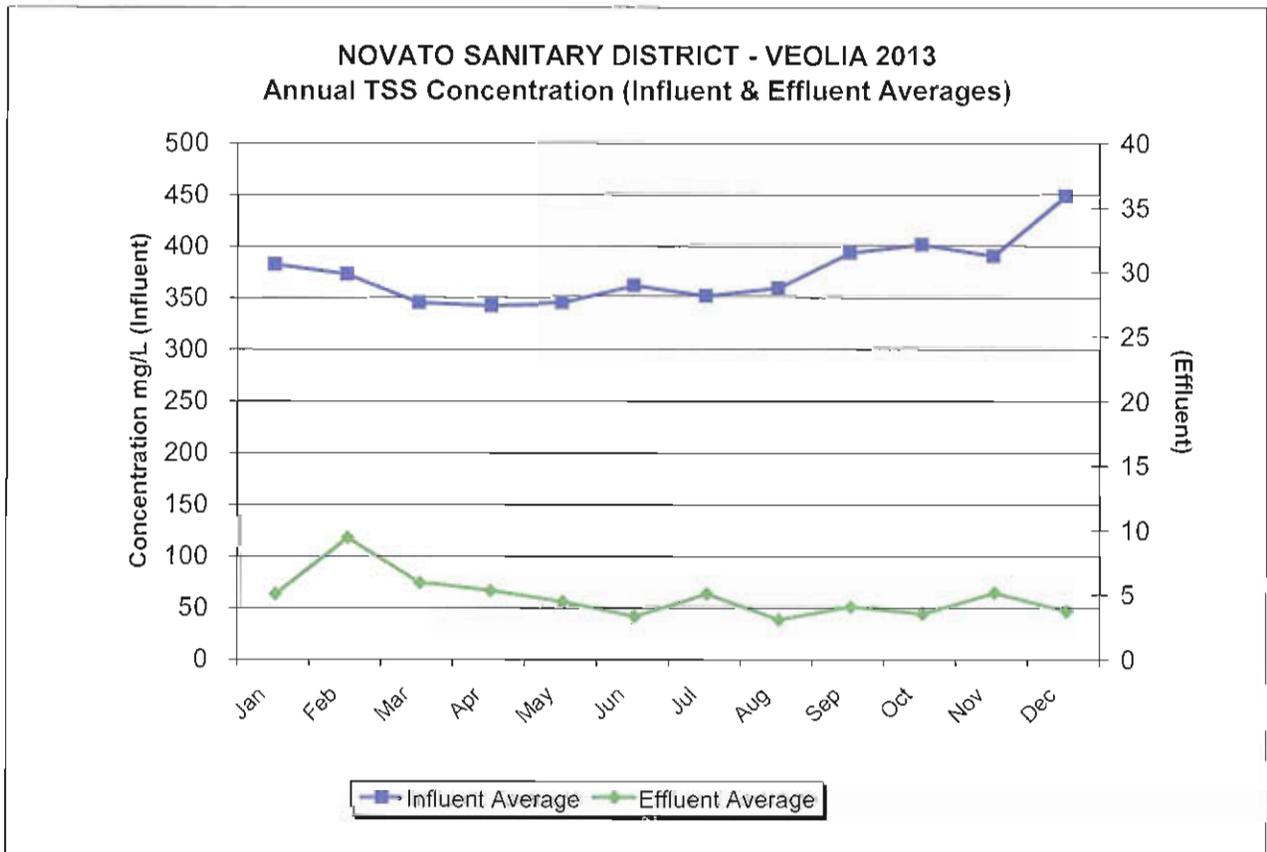
**NOVATO SANITARY DISTRICT - VEOLIA  
SUSPENDED SOLIDS (Influent & Effluent)**

Annual Waste Characteristics & Loading Summary

YEAR: 2013

PRINT DATE: 20-Feb-2013

	INFLUENT							EFFLUENT						
	Concentration (mg/L)			No. of Samples	Loading (kg/day)			Concentration (mg/L)			No. of Samples	Loading (kg/day)		
	High	Low	Average		High	Low	Average	High	Low	Average		High	Low	Average
January	696	251	381	14	28009	10627	16890	6	5	5	14	271	192	227
February	545	268	372	14	20999	10388	14550	18	4	9	14	694	151	364
March	496	254	345	12	18243	8982	13534	16	3	6	12	726	106	236
April	565	278	343	12	18896	9632	12955	12	3	5	12	410	103	199
May	421	95	344	15	14941	3256	11893	7	3	4	15	248	101	152
June	401	319	361	12	14180	11114	12362	5	3	3	12	177	98	112
July	436	285	351	15	12616	9175	10887	33	3	5	15	999	82	154
August	422	320	358	12	14606	9901	11849	3	3	3	12	116	93	99
September	483	321	393	12	15952	10441	12799	6	3	4	12	192	91	131
October	532	286	401	15	17969	9613	13428	4	3	3	15	135	95	116
November	696	251	389	13	23567	7583	12637	6	5	5	13	188	141	163
December	1085	332	448	15	33390	9774	13917	5	3	4	15	158	84	114
ANNUAL HIGH	1085	332	448	15	33390	11114	16890	33	5	9	15	999	192	364
ANNUAL LOW	401	95	343	12	12616	3256	10887	3	3	3	12	116	82	99
ANNUAL AVG.	565	272	374	13	19447	9207	13142	10	3	5	13	359	111	172



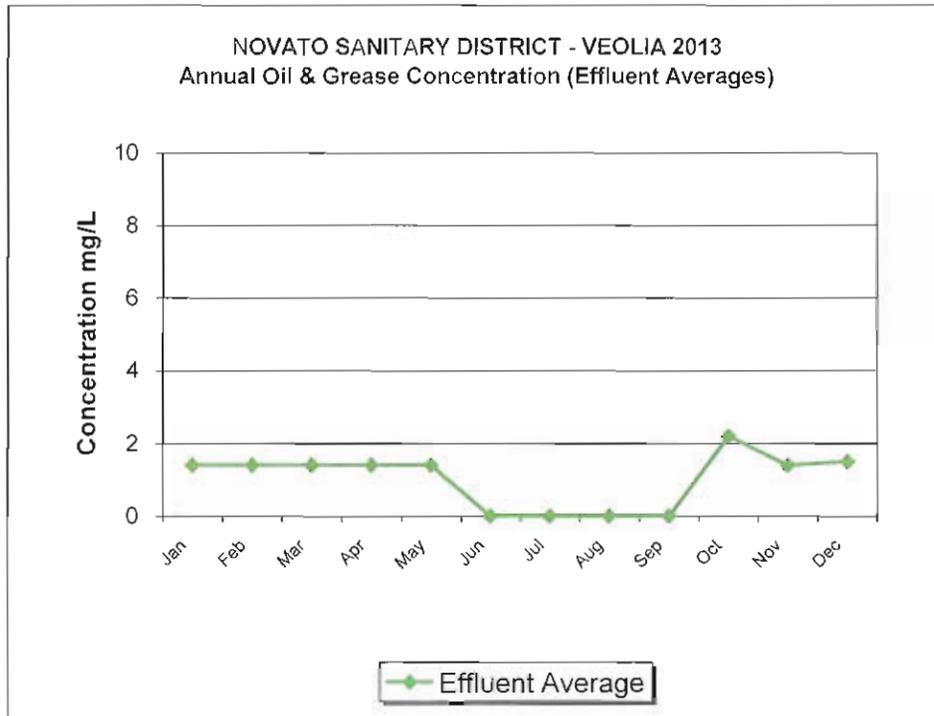
**NOVATO SANITARY DISTRICT - VEOLIA  
OIL & GREASE (Effluent)**

Annual Waste Characteristics & Loading Summary

YEAR: 2013

PRINT DATE: 20-Feb-2013

	EFFLUENT						
	Concentration (mg/L)			No. of Samples	Loading (kg/day)		
	High	Low	Average		High	Low	Average
January	1	1	1	1	66	66	66
February	1	1	1	1	57	57	57
March	1	1	1	1	64	64	64
April	1	1	1	1	62	62	62
May	1	1	1	1	49	49	49
June	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0
October	2	2	2	1	82	82	82
November	1	1	1	1	41	41	41
December	2	2	2	1	46	46	46
ANNUAL HIGH	2	2	2	1	82	82	82
ANNUAL LOW	0	0	0	0	0	0	0
ANNUAL AVG.	1	1	1	1	39	39	39



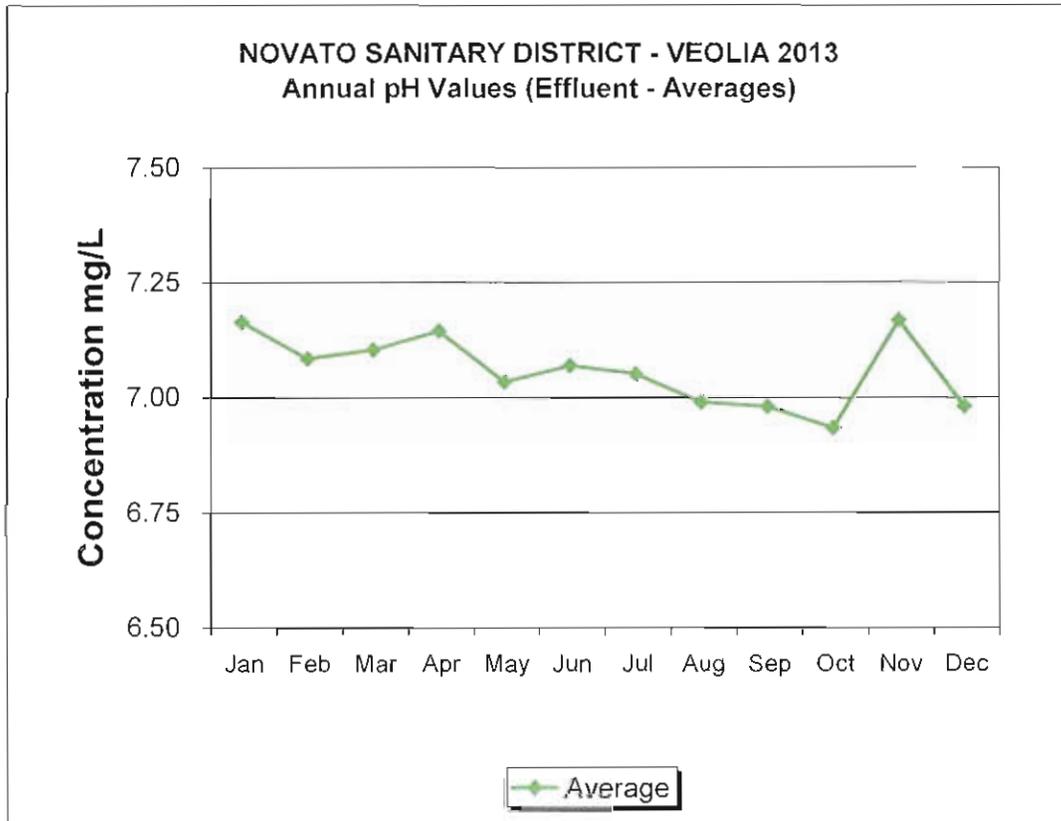
**NOVATO SANITARY DISTRICT - VEOLIA  
pH (Effluent)**

Annual Waste Characteristics & Loading Summary

YEAR: 2013

PRINT DATE: 20-Feb-2013

	High	Low	Average	Number of Samples			
January	7.2	7.1	7.2	23			
February	7.2	7.0	7.1	21			
March	7.3	7.0	7.1	21			
April	7.3	7.0	7.1	22			
May	7.1	6.9	7.0	23			
June	7.2	6.9	7.1	20			
July	7.3	7.0	7.1	23			
August	7.0	6.9	7.0	22			
September	7.1	6.9	7.0	21			
October	7.0	6.9	6.9	23			
November	7.2	7.1	7.2	22			
December	7.0	6.9	7.0	22			
				Number of Samples Total = 263			
ANNUAL MAX.	7.30	7.10	7.17	1st Qtr.	65	2nd Qtr.	65
ANNUAL MIN.	7.00	6.90	6.93	3rd Qtr.	66	4th Qtr.	67
ANNUAL AVG.	7.16	6.97	7.06				



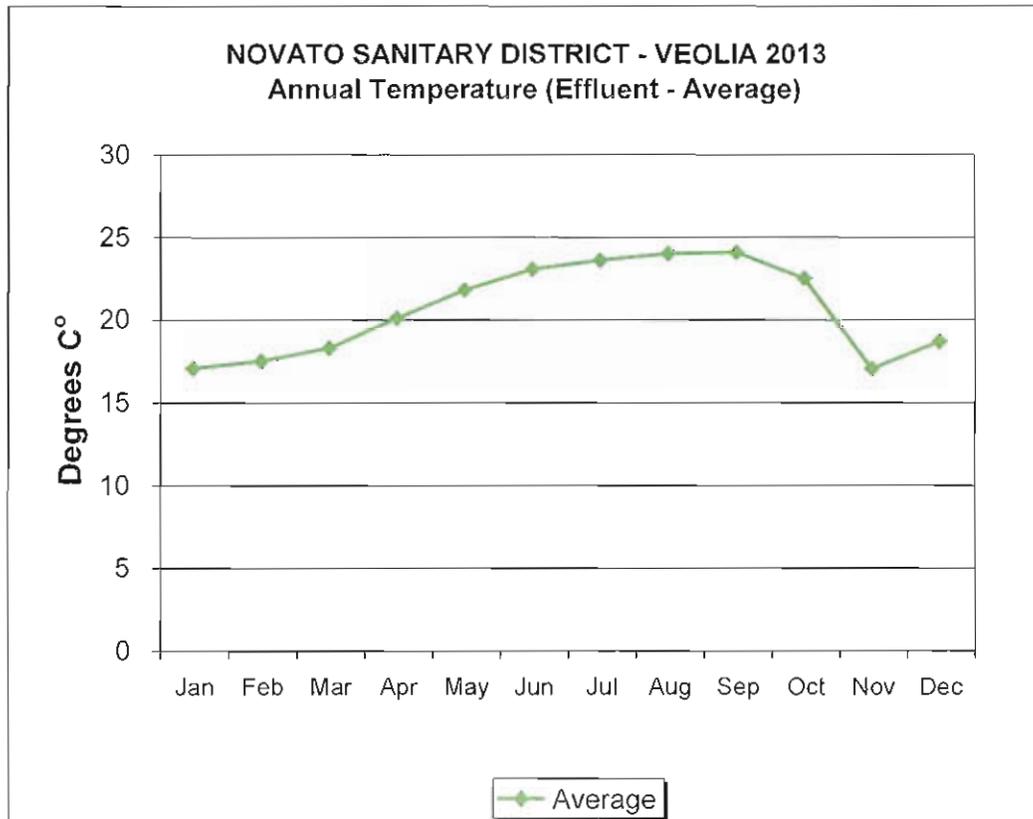
**NOVATO SANITARY DISTRICT - VEOLIA  
TEMPERATURE (Effluent)**

Annual Waste Characteristics & Loading Summary

YEAR: 2013

PRINT DATE: 20-Feb-2013

	High	Low	Average	Number of Samples					
January	17.8	16.4	17.1	23.0					
February	19.3	16.7	17.5	21.0					
March	19.5	16.9	18.3	21.0					
April	23.0	18.7	20.1	22.0					
May	22.9	20.8	21.8	23.0					
June	24.2	21.9	23.1	20.0					
July	24.7	23.1	23.6	23.0					
August	24.7	23.4	24.0	22.0					
September	24.7	23.1	24.1	21.0					
October	23.6	21.5	22.5	23.0					
November	17.8	16.4	17.1	22.0					
December	20.9	17.6	18.7	21.0					
ANNUAL MAX.			24.7	23.4	24.1	Number of Samples Total =		262	
ANNUAL MIN.			17.8	16.4	17.1	1st Qtr.	65	2nd Qtr.	65
ANNUAL AVG.			21.9	19.7	20.7	3rd Qtr.	66	4th Qtr.	66



NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: JANUARY 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 H.R.C. INFLUENT Mg/l	SUSPEND MATTER 24 H.R.C. INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 H.R.C. EFFLUENT Mg/l	SUSPEND MATTER 24 H.R.C. EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL % REMOVAL	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	PH EFFLUENT	TEMP C° EFFLUENT
1	6.45																7.10	17.1
2	6.50	165	8945	97	5.00	271	251	13607	98	5	271						7.20	16.9
3	6.37	220	11688	98	5.00	266	489	28510	99	5	266						7.20	16.9
4	5.81	209	10127	98	5.00	242	298	14440	98	5	242						7.20	17.0
5	6.51																	
6	6.48																	
7	6.05	215	10848	98	5.00	252	269	13573	98	5	252						7.20	17.3
8	5.88																	
9	5.67	220	10403	98	5.00	236	397	18773	99	5	236	1.4	66.2				7.20	17.4
10	5.71																	
11	5.49	196	8974	97	5.00	229	328	15018	98	5	229						7.20	17.1
12	5.47																	
13	1.00																	
14	5.13	203	8665	96	8.00	342	257	10896	98	5	214						7.10	16.5
15	5.02	478	20012	99	5.00	209	669	28009	99	5	209						7.20	17.0
16	4.98	219	8785	98	5.00	201	458	18373	99	5	201						7.20	17.4
17	4.84																	
18	4.81	219	8785	98	5.00	201	458	18373	99	5	201						7.20	17.2
19	4.84																	
20	4.84																	
21	4.87																	
22	5.04	267	11223	98	5.00	210	372	15636	99	5	210						7.20	17.3
23	5.40	197	8872	97	5.00	225	274	12340	98	5	225						7.20	17.2
24	5.20																	
25	4.82	245	9849	98	5.00	201	295	11859	98	6	241						7.10	17.3
26	5.10																	
27	5.19	200	8657	98	5.00	216											7.10	17.8
28	4.93																	
29	4.73	211	8324	98	5.00	197	696	26701	99	5	192						7.10	16.7
30	4.60	260	10742	98	7.00	269	277	10627	98	5	192						7.10	17.0
31	4.60	260	10742	98	7.00	269	277	10627	98	5	192						7.10	17.4
31	4.60	260	10742	98	7.00	269	277	10627	98	5	192						7.10	17.6
TOTAL FLOW	162.49																	
MAXIMUM	6.51	478	20012	99	8	342	696	28009	99	6	271	1	66		1	66	7.20	18
MINIMUM	1.00	165	8324	96	5	197	251	10627	98	5	192	1	66		1	66	7.10	16
AVERAGE	5.24	235	10409	98	5	238	381	16890	99	5	227	1	66		1	66	7.17	17
COUNT	31	15	15	15	15	15	14	14	14	14	14	1	1		1	1	23	23

8.34  
lb/day

Enter Kg/day or lbs/day in B56



NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: MARCH 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 HRC INFLUENT Mg/l	SUSPEND MATTER 24 HRC INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 HRC EFFLUENT Mg/l	SUSPEND MATTER 24 HRC EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	pH	TEMP
1	4.81															7.10	18.5
2	4.22																
3	4.30																
4	4.34	270	9773	94	16	579	420	15202	97	14	507					7.20	17.8
5	5.11																
6	5.44	258	11705	95	14	635	381	17286	96	16	726	1.4	64			7.30	17.5
7	5.05																
8	4.74	283	11187	96	12	474	298	11780	96	11	435					7.10	17.7
9	4.45																
10	4.65	266	10316	98	6	233	424	16443	99	4	155					7.10	16.9
11	4.38																
12	4.41	259	9526	98	5	184	496	18243	99	3	110					7.20	18.1
13	4.97																
14	4.82	199	8000	97	6	241	285	11457	99	3	121					7.20	17.9
15	4.35																
16	4.47																
17	4.48																
18	4.52	308	11611	98	7	264	288	10857	99	3	113					7.10	18.5
19	4.70																
20	4.96	212	8770	98	5	207	316	13072	99	3	124					7.10	18.8
21	5.04																
22	4.24	198	7002	97	5	177	254	8982	99	3	106					7.10	18.4
23	4.28																
24	4.42																
25	4.79	245	9787	98	5	200	278	11106	99	4	160					7.10	18.7
26	4.27																
27	4.71	338	13277	99	5	196	360	14141	99	4	157					7.00	18.0
28	4.29																
29	4.81	323	12957	98	5	201	345	13940	99	3	120					7.00	18.8
30	4.36																
31	4.60																
TOTAL FLOW	142.98																
MAXIMUM	5.41	338	13277	99	16	635	496	18243	99	10	726	1	64	1	64	7.30	20
MINIMUM	4.22	198	7002	94	5	177	254	8982	96	3	106	1	64	1	64	7.00	17
AVERAGE	4.61	263	10326	97	8	299	345	13534	98	6	236	1	64	1	64	7.10	18
COUNT	31	12	12	12	12	12	12	12	12	12	12	1	1	1	1	21	21

lb/day  
Enter Kg/day or lbs/day in B56

NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: APRIL 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 HR.C INFLUENT Mg/l	SUSPEND MATTER 24 HR.C INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 HR.C EFFLUENT Mg/l	SUSPEND MATTER 24 HR.C EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL EFFLUENT % REMOVAL	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	pH	TEMP	
1	5.02	312	13062	98	5	209	332	13900	98	5	209						7.00	19.4	
2	4.81																7.00	19.5	
3	5.27	313	13757	98	5	220	386	16965	99	4	176	1.4	62		1.4	62	7.10	19.6	
4	6.12																7.10	19.3	
5	5.14	248	10631	98	5	214	280	12003	98	6	257						7.20	19.3	
6	5.17																		
7	4.90																		
8	4.82						278	11175	99	3	121						7.20	18.8	
9	4.65																7.30	19.4	
10	4.39	245	8970	98	5	183	291	10554	99	4	146						7.20	20.0	
11	4.11																7.20	20.1	
12	4.23	284	10019	94	17	600	292	10301	99	3	106						7.10	20.0	
13	4.21																		
14	4.39																		
15	4.55	258	9790	98	5	190	296	11232	98	5	190						7.10	18.7	
16	4.47																7.20	18.9	
17	4.66	284	11037	98	5	194	302	11737	97	9	350						7.20	19.3	
18	4.29																7.20	20.3	
19	4.10	236	8070	98	5	171	323	11045	96	12	410						7.10	20.3	
20	4.42																		
21	4.43	375	13855	99	5	185	485	17919	99	4	148						7.00	21.6	
22	4.22																7.10	21.5	
23	4.01	292	9765	98	5	167	565	18996	99	5	167						7.20	21.2	
24	5.10																7.20	20.1	
25	4.11	205	7027	97	6	206	281	9532	99	3	103						7.20	20.8	
26	4.00																		
27	3.90																		
28	4.86																		
29	4.34																7.20	23.0	
30	4.29																7.10	21.9	
31																			
TOTAL FLOW	136.78																		
MAXIMUM	6.12	375	13855	99	17	600	565	18996	99	12	410				1	62	7.30	23	
MINIMUM	3.90	205	7027	94	5	167	278	9632	96	3	103				1	62	7.00	19	
AVERAGE	4.56	277	10544	98	6	231	343	12955	98	5	199				1	62	7.15	20	
COUNT	30	11	11	11	11	11	12	12	12	12	12				1	1	22	22	

lb/day 6.34  
Enter Kg/day or lbs/day in 656

NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: MAY 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 H.R.C INFLUENT Mg/l	SUSPEND MATTER 24 H.R.C INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 H.R.C EFFLUENT Mg/l	SUSPEND MATTER 24 H.R.C EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL EFFLUENT % REMOVAL	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	pH	TEMP
1	4.11	134	4593	94	8	274	95	3256	93	7	240						7.00	21.6
2	3.97	255	8443	96	9	298	400	13244	99	4	132						7.00	22.0
3	4.06	642	21845	98	15	510	321	10923	98	6	204						7.00	22.0
4	4.48																	
5	4.81																	
6	4.25	265	9393	98	5	177	256	9074	97	7	248						7.00	21.8
7	4.46																7.00	21.8
8	4.21	188	6601	97	6	211	319	11201	98	7	246	1.4	49				7.00	20.8
9	4.20																7.10	21.4
10	4.01	314	10501	93	21	702	384	12842	99	4	134						7.00	21.5
11	4.14																	
12	4.20	246	8617	98	5	175	374	13100	99	3	105						7.10	22.7
13	4.23																7.10	22.3
14	4.17	360	12520	98	6	209	362	12590	99	3	104						7.10	21.8
15	4.27																7.10	21.4
16	4.05	282	9525	98	5	169	390	13173	99	4	135						7.10	21.7
17	4.35	264	9578	97	9	327											7.10	21.7
18	4.16																	
19	4.25																	
20	4.01	264	8829	97	7	234	368	12307	98	4	134						7.00	22.9
21	4.27																7.00	22.1
22	4.49	281	10522	98	6	225	399	14941	99	4	150						7.00	21.0
23	4.46																7.00	21.6
24	4.13	318	10953	98	6	207	347	11952	99	4	138						7.00	21.8
25	4.17																	
26	4.15																	
27	4.39																7.10	21.6
28	4.25	236	8365	98	5	177	374	13256	99	3	106						7.10	22.0
29	4.16	364	12629	96	13	451	421	14606	99	3	104						7.00	21.7
30	4.16																7.10	22.3
31	4.04	256	8626	98	5	168	354	11928	99	3	101						6.90	22.6
TOTAL FLOW	131.08																	
MAXIMUM	4.81	642	21845	98	21	702	421	14941	99	7	248	1	49		1	49	7.10	23
MINIMUM	3.97	134	4593	93	5	168	95	3256	93	3	101						6.90	21
AVERAGE	4.23	292	10096	97	8	282	344	11893	96	4	152	1	49		1	49	7.03	22
COUNT	31	16	16	16	16	16	15	15	15	15	15	1	1		1	1	23	23

lb/day 8.34  
Enter kg/day or lbs/day in 856

NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: JUNE 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 HRC INFLUENT Mg/l	SUSPEND MATTER 24 HRC INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 HRC EFFLUENT Mg/l	SUSPEND MATTER 24 HRC EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL % REMOVAL	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	pH	TEMP
1	4.02																	
2	4.18																	
3	4.14	110	3798	95	5	173	369	12741	99	3	104						7.10	22.4
4	4.20																	
5	4.24	352	12447	99	5	177	401	14180	99	3	106						7.10	22.7
6	3.93																	
7	3.97	309	10231	98	5	166	372	12317	99	3	99						7.00	22.7
8	3.95																	
9	4.15	327	11318	98	5	173	379	13118	99	3	104						7.10	22.5
10	4.24																	
11	4.11	238	8168	97	8	274	354	12134	99	4	137						7.10	22.8
12	4.22																	
13	3.98	301	9991	98	7	232	355	11784	99	3	100						7.10	23.4
14	3.93																	
15	3.95																	
16	4.15																	
17	4.25	267	9464	98	5	177	321	11378	98	5	177						7.10	23.1
18	4.46																	
19	4.14	332	11463	98	5	173	382	13190	99	3	104						7.10	22.9
20	4.04																	
21	3.99	298	9916	98	6	200	334	11114	99	3	100						7.10	23.1
22	3.95																	
23	3.98																	
24	4.29	241	8623	97	7	250	319	11413	99	3	107						7.10	22.9
25	4.34																	
26	4.15	271	9380	98	5	173	389	13464	99	3	104						7.10	23.1
27	3.88																	
28	3.90	300	9758	98	5	163	354	11514	99	3	98						7.20	24.0
29	3.88																	
30	4.07																	
31																		
TOTAL FLOW	122.70																	
MAXIMUM	4.46	352	12447	99	8	274	401	14180	99	5	177				0	0	7.20	24
MINIMUM	3.88	110	3798	95	5	163	319	11114	98	3	98				0	0	6.90	22
AVERAGE	4.09	279	9546	98	6	194	361	12362	99	3	112						7.07	23
COUNT	30	12	12	12	12	12	12	12	12	12	12				0	0	20	20

lb/day  
Enter Kg/day or lbs/day in B56

NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: JULY 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 HRC INFLUENT Mg/l	SUSPEND MATTER 24 HRC INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 HRC EFFLUENT Mg/l	SUSPEND MATTER 24 HRC EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL % REMOVAL	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	pH	TEMP		
1	3.93	254	8325	97	7	229	344	11275	99	3	98						7.30	24.1		
2	3.88																7.20	24.7		
3	3.62	302	9621	98	5	159	396	12616	99	3	96						7.20	23.9		
4	3.75																7.10	24.3		
5	3.72	294	9121	97	8	248	356	11045	99	3	93						7.10	23.1		
6	3.79																			
7	3.96																			
8	3.40	268	7599	97	7	198	346	9811	99	3	85						7.10	23.3		
9	3.50																7.00	23.7		
10	3.64	243	7377	98	5	152	306	9289	99	3	91						7.00	23.8		
11	3.53																7.00	23.4		
12	3.42	282	8043	98	5	143	436	12435	99	3	86						7.00	23.1		
13	3.49																			
14	3.53	302	8891	98	5	147	400	11776	99	3	88									
15	3.54																			
16	3.63	299	9052	97	8	242	331	10021	90	33	999						7.00	23.4		
17	3.63																7.00	23.1		
18	3.53	288	8479	98	6	177	421	12394	99	3	88						7.00	23.2		
19	3.47																7.00	23.1		
20	3.45																7.00	23.7		
21	3.58																			
22	3.81	294	9342	98	5	159	329	10454	99	3	95						7.00	23.9		
23	4.01																7.10	24.0		
24	3.89	279	9051	97	9	292	297	9635	99	3	97						7.10	23.5		
25	3.93																7.00	23.9		
26	3.66	265	8531	98	5	161	285	9175	99	3	97						7.00	24.1		
27	3.84																			
28	4.00																			
29	3.28	285	7796	96	10	274	378	10340	99	3	82						7.00	23.4		
30	4.36	190	6909	97	6	218	333	12109	99	3	109						7.00	23.1		
31	4.31	233	8375	96	9	324	304	10927	99	3	108						7.00	23.5		
TOTAL FLOW	115.50																			
MAXIMUM	4.36	302	9621	98	10	324	436	12616	99	33	999				0	0	7.30	25		
MINIMUM	3.28	190	6909	96	5	143	285	9175	90	3	82				0	0	7.00	23		
AVERAGE	3.73	272	8434	98	7	208	351	10687	99	5	154						7.05	24		
COUNT	31	15	15	15	15	15	15	15	15	15	15				0	0	23	23		

lb/day 8.34  
Enter Kg/day or lbs/day in B56

NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: AUGUST 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 HR.C INFLUENT Mg/l	SUSPEND MATTER 24 HR.C INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 HR.C EFFLUENT Mg/l	SUSPEND MATTER 24 HR.C EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL % REMOVAL	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	pH	TEMP
1	4.01																7.00	23.5
2	3.85																7.00	24.1
3	3.85																	
4	3.99																	
5	3.93	318.00	10456	97	9	295	324	10619	99	3	98						7.00	23.4
6	4.01																	
7	4.14	295.00	10186	94	18	621	390	13466	99	3	104						7.00	23.6
8	4.02																	
9	3.82	350.00	11151	99	5	159	376	11979	99	3	96						6.90	24.1
10	3.90																	
11	4.15	317.00	10972	98	5	173	422	14606	99	3	104						7.00	23.9
12	3.87																	
13	4.64	245.00	9481	98	6	232	342	13235	99	3	116						7.00	23.9
14	4.07																	
15	3.95	296.00	9776	98	5	165	339	11196	99	3	99						7.00	24.3
16	3.84																	
17	3.87																	
18	4.04																	
19	3.94	302.00	9924	97	9	296	358	11764	99	3	99						7.00	23.9
20	4.04																	
21	3.91	294.00	9587	97	8	261	365	11902	99	3	98						7.00	23.9
22	4.12																	
23	3.79	281.00	8882	98	5	158	344	10873	99	3	95						7.00	23.8
24	3.99																	
25	4.26																	
26	3.81	271.00	8611	92	23	731	330	10486	99	3	95						7.00	24.2
27	3.84																	
28	3.74	348.00	10856	99	5	156	390	12165	99	3	94						7.00	24.6
29	3.93																	
30	3.71	275.00	8509	97	7	217	320	9901	99	3	93						7.00	24.5
31	3.74																	
TOTAL FLOW	122.77																	
MAXIMUM	4.64	350	11151	99	23	731	422	14606	99	3	116				0	0	7.00	25
MINIMUM	3.71	245	8509	92	5	156	320	9901	99	3	93				0	0	6.90	23
AVERAGE	3.95	299	9666	97	9	289	358	11849	99	3	99						6.99	24
COUNT	31	12	12	12	12	12	12	12	12	12	12				0	0	22	22

lb/day 8.34  
Enter Kg/day or lbs/day in B56

NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: SEPTEMBER 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 HR.C INFLUENT Mg/l	SUSPEND MATTER 24 HR.C INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 HR.C EFFLUENT Mg/l	SUSPEND MATTER 24 HR.C EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL % REMOVAL	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	pH	TEMP
1	3.69																7.00	24.4
2	4.16																7.10	24.7
3	3.86																7.00	24.3
4	3.96	276.00	9115	97	7	231	483	15952	99	3	99						7.00	24.1
5	3.90	281.00	9140	98	5	163	321	10441	99	3	98						7.00	24.4
6	3.65	265.00	8067	96	10	304	385	11720	99	3	91						7.00	24.4
7	3.74																	
8	4.17																	
9	3.68	356.00	10926	97	9	276	397	12184	99	3	92						7.00	24.2
10	4.02																7.00	24.6
11	3.78	317.00	9993	97	8	252	379	11948	99	5	158						7.00	24.3
12	3.94																7.00	24.3
13	3.83	299.00	9551	97	9	287	394	12585	98	6	192						6.90	24.3
14	3.85																	
15	4.15	274.00	9483	97	8	277	397	13741	99	5	173							
16	3.86																7.00	24.4
17	4.05	323.00	10910	98	8	270	351	11856	99	5	169						7.00	23.9
18	4.03																7.00	24.3
19	3.80	299.00	9476	98	7	222	432	13691	99	4	127						6.90	23.9
20	3.77																7.00	24.0
21	4.36																	
22	4.39																	
23	4.01	281.00	9398	98	6	201	400	13377	99	5	167						7.00	23.9
24	4.03																7.00	24.2
25	4.09	301.00	10267	97	8	273	368	12553	99	3	102						6.90	23.1
26	3.96																6.90	23.3
27	4.01	326.00	10903	98	5	167	405	13545	99	3	100						6.90	23.8
28	3.94																	
29	4.18																	
30	3.94																7.00	24.0
31																		
TOTAL FLOW	118.80																	
MAXIMUM	4.39	356	10926	98	10	304	483	15952	99	6	192				0	0	7.10	25
MINIMUM	3.65	265	8067	96	5	163	321	10441	98	3	91				0	0	6.90	23
AVERAGE	3.96	300	9769	97	8	244	393	12799	99	4	131						6.98	24
COUNT	30	12	12	12	12	12	12	12	12	12	12				0	0	21	21

lb/day 8.34

Enter Kg/day or lbs/day in B56

NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: OCTOBER 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 HRC INFLUENT Mg/l	SUSPEND MATTER 24 HRC INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 HRC EFFLUENT Mg/l	SUSPEND MATTER 24 HRC EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	pH	TEMP
1	4.04	376.00	12669	98	6	202	430	14488	99	4	135					6.90	23.5
2	4.03	332.00	11159	98	5	168	427	14352	99	3	101					7.00	23.6
3	4.18	246.00	8576	98	5	174	394	13735	99	3	105					6.90	22.9
4	3.49															7.00	23.2
5	3.89																
6	4.14																
7	3.92	356.00	11639	99	5	163	432	14123	99	3	98					6.90	23.4
8	4.21																
9	4.46	313.00	11642	98	7	260	396	14730	99	3	112	2.2	82			6.90	22.9
10	3.84																
11	3.95	318.00	10476	95	16	527	347	11431	99	4	132					6.90	22.7
12	4.00																
13	4.01	286.00	8996	97	7	234	334	11170	99	3	100						
14	3.94																
15	3.97	296.00	9801	98	6	199	412	13641	99	3	99					6.90	23.0
16	4.17																
17	3.79	295.00	9325	98	5	158	383	12106	99	3	95					6.90	22.8
18	3.85																
19	3.86																
20	4.27																
21	3.92	287.00	9383	98	7	229	410	13404	99	3	98					7.00	22.1
22	4.05																
23	3.98	313.00	10389	98	6	199	411	13642	99	4	133					6.90	22.0
24	4.06																
25	3.92	368.00	10102	98	5	163	414	13535	99	4	131					6.90	21.9
26	3.94																
27	4.11																
28	4.03	286.00	9613	97	9	302	401	13478	99	4	134					7.00	21.7
29	4.05	332.00	11214	98	6	203	532	17969	99	4	135					6.90	21.5
30	4.03	214.00	7193	98	5	168	286	9613	99	4	134					6.90	21.7
31	3.79																
TOTAL FLOW	123.89																
MAXIMUM	4.46	376	12669	99	16	527	532	17969	99	4	135			2	82	7.00	24
MINIMUM	3.49	214	7193	95	5	158	286	9613	99	3	95			2	82	6.90	22
AVERAGE	4.00	303	10138	98	7	223	401	13428	99	3	116			2	82	6.93	23
COUNT	31	15	15	15	15	15	15	15	15	15	15			1	1	23	23

lb/day  
Enter Kg/day or lbs/day in B56

NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: NOVEMBER 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 HR.C INFLUENT Mg/l	SUSPEND MATTER 24 HR.C INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 HR.C EFFLUENT Mg/l	SUSPEND MATTER 24 HR.C EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL % REMOVAL	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	pH	TEMP	
1	3.76																7.10	17.1	
2	4.01	165	5518	97	5	167	251	8394	98	5	167						7.20	16.9	
3	4.30	220	7890	98	5	179	499	17895	99	5	179						7.20	16.9	
4	3.97	209	6920	98	5	166	298	9867	98	5	166						7.20	17.0	
5	3.71																		
6	3.61																		
7	3.38	215	6061	98	5	141	269	7583	98	5	141						7.20	17.3	
8	3.28																7.20	17.4	
9	3.50	220	6422	98	5	146	397	11588	99	5	146				1.4	41	7.20	17.0	
10	3.59																7.20	17.1	
11	3.98	196	6506	97	5	166	328	10687	98	5	166						7.20	16.4	
12	3.69																		
13	3.97																		
14	3.82	203	6467	96	8	255	257	8188	98	5	159						7.10	16.5	
15	3.79																7.20	17.0	
16	4.04	478	16106	99	5	168	669	22541	99	5	168						7.20	16.6	
17	4.40																7.20	17.4	
18	3.76	219	6904	98	5	158	458	14439	99	5	158						7.20	17.2	
19	4.74																		
20	4.49																		
21	4.01																		
22	3.69	267	8217	98	5	154	372	11448	99	5	154						7.20	17.3	
23	3.79	197	6227	97	5	158	274	8661	98	5	158						7.20	17.2	
24	3.85																7.20	16.9	
25	3.75	245	7662	98	5	156	295	9226	98	6	188						7.10	17.3	
26	4.12																7.10	17.8	
27	4.25	200	7059	98	5	177													
28	4.37																7.10	16.7	
29	3.97	211	6986	98	5	166	696	23567	99	5	169						7.10	17.0	
30	4.06																7.10	17.4	
31																			
TOTAL FLOW	117.87																		
MAXIMUM	4.74	478	16106	99	8	255	696	23567	99	6	188				1	41	7.20	18	
MINIMUM	3.26	165	5518	96	5	141	251	7583	98	5	141				1	41	7.10	16	
AVERAGE	3.93	232	7498	98	5	168	389	12637	99	5	163				1	41	7.17	17	
COUNT	30	14	14	14	14	14	13	13	13	13	13				1	1	22	22	

TOTAL FLOW	117.87
MAXIMUM	4.74
MINIMUM	3.26
AVERAGE	3.93
COUNT	30

lb/day  
Enter Kg/day or lbs/day in B56

8.34

NOVATO SANITARY DISTRICT - VEOLIA  
Wastewater Treatment Plant

INFLUENT & EFFLUENT DATA

MONTH: DECEMBER 2013  
PRINT DATE: 2/20/2013

DATE	TOTAL PLANT FLOW x 1,000,000	BOD INFLUENT Mg/l	BOD INFLUENT lb/day	BOD % REMOVAL	BOD EFFLUENT Mg/l	BOD EFFLUENT lb/day	SUSPEND MATTER 24 HR C INFLUENT Mg/l	SUSPEND MATTER 24 HR C INFLUENT lb/day	TSS % REMOVAL	SUSPEND MATTER 24 HR C EFFLUENT Mg/l	SUSPEND MATTER 24 HR C EFFLUENT lb/day	GREASE & OIL INFLUENT Mg/l	GREASE & OIL INFLUENT lb/day	GREASE & OIL % REMOVAL	GREASE & OIL EFFLUENT Mg/l	GREASE & OIL EFFLUENT lb/day	PH	TEMP
1	4.24																	
2	4.13	346	11918	98	6	207	410	14122	99	4	138						7.00	20.9
3	4.15																7.00	19.8
4	3.67	255	7805	98	5	153	358	10958	99	4	122			1.5	46	7.00	19.0	
5	3.59																7.00	19.2
6	4.4	325	11926	98	7	257	403	14788	99	3	110					7.00	18.7	
7	4.21																	
8	4.17																	
9	3.93																7.00	18.1
10	3.57	322	9587	97	9	268	405	12058	99	4	119					7.00	17.6	
11	3.78	315	9830	96	13	410	338	10656	99	4	126					7.00	18.3	
12	3.96																6.90	18.5
13	3.37	196	5509	93	13	365	409	11495	99	3	84					6.90	18.7	
14	3.9																	
15	4.04																	
16	3.63	281	8507	97	8	242	366	11080	99	4	121					7.00	19.0	
17	3.59																7.00	19.2
18	3.79	305	9841	94	17	537	353	11158	99	5	158					7.00	18.9	
19	3.73																7.00	18.7
20	3.55	227	6721	91	21	622	333	9859	98	5	148					7.00	18.5	
21	3.7																	
22	3.73																	
23	3.69	263	8094	96	10	308	1085	33390	100	3	92					7.00	18.6	
24	3.87																7.00	18.7
25	3.56																6.90	18.7
26	3.79	367	11600	95	20	632	431	13623	99	3	95					7.00	18.4	
27	3.62	342	10325	96	15	453	728	21979	100	3	91					6.90	18.0	
28	3.63																	
29	3.64	263	7884	93	18	546	432	13114	99	3	91						7.00	18.1
30	3.53	270	7949	97	9	265	332	9774	99	3	88						7.00	18.1
31	3.84	282	9031	93	21	673	384	10697	99	4	128						7.00	17.8
TOTAL FLOW	118.00																	
MAXIMUM	4.40	367	11326	98	21	673	1005	33390	100	5	158				2	46	7.00	21
MINIMUM	3.37	196	5509	91	5	153	332	9774	96	3	84				2	46	6.90	18
AVERAGE	3.81	291	9102	95	13	396	448	13917	99	4	114				2	46	6.98	19
COUNT	31	15	15	15	15	15	15	15	15	15	15				1	1	22	21

lb/day 8.34  
Enter Kg/day or lbs/day in B56

# Relative Criticality Ranking Report of Novato's Treatment Plant Systems



Performed by:

Veolia Novato Staff &  
WLLC Asset Management Team

August 16<sup>th</sup> – 18<sup>th</sup>, 2010



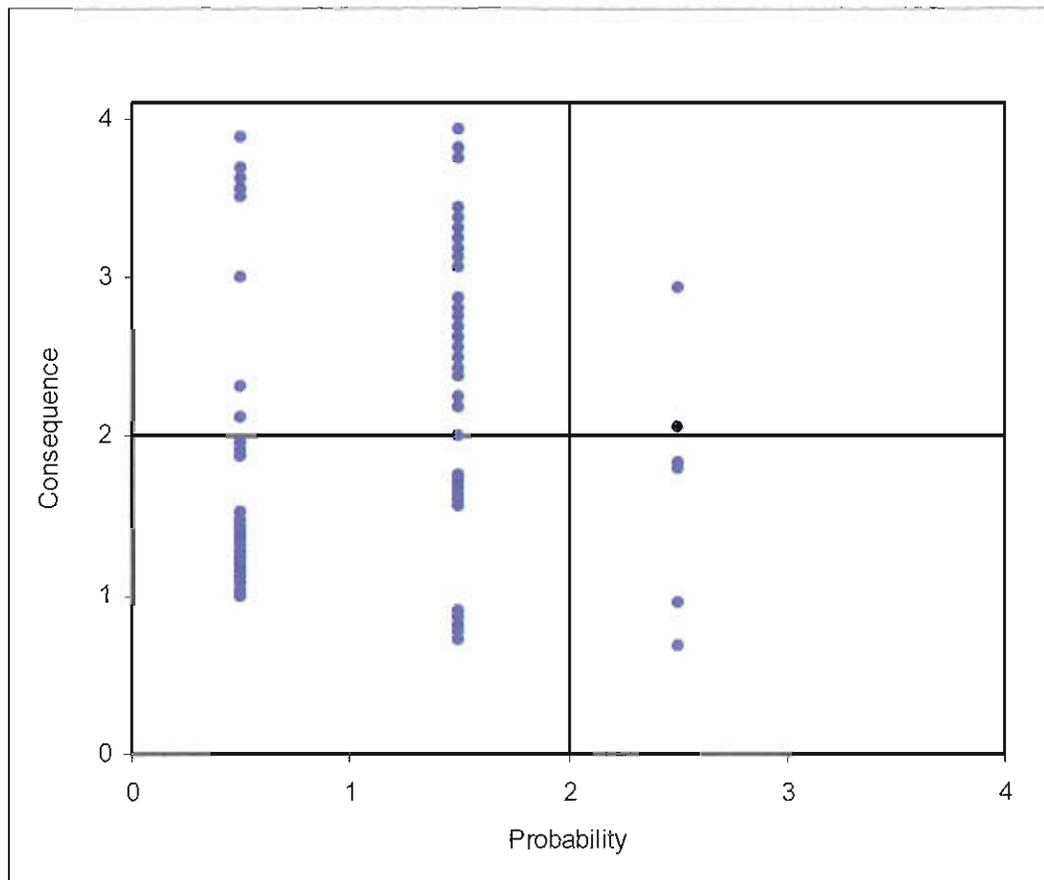
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## 1. Criticality Process Overview:

A systematic relative criticality review was completed for the Novato Treatment Facility. A criticality ranking process allows identification and prioritization of assets based on rankings from a standardized scale for consequence and likelihood of worst case failure scenarios. The ranking is useful in selecting between preventative and condition based services, prioritization of corrective work orders, and prioritization for condition assessment of assets. Additional benefits include increased understanding of causes and effects of failures, staff training on plant failure scenarios, and documentation of tribal knowledge. Further in-depth Reliability Centered Maintenance (RCM) studies can be prioritized based on critical systems. Graph 1 pictorially demonstrates the relationship between consequence and likelihood of failure. Systems that fall to the upper right of the graph are high priority systems and systems that fall to the lower left of the graph are low priority systems.

**Graph 1. Criticality System Ranking Results**



In a workshop with the plant staff and the Asset Management group, key criteria for each system were evaluated: Safety, Capacity, Environmental, Operating Cost, Stakeholder Impact, and Collateral Impact. Appendix A defines the criteria and the ratings for each key criteria. Using a VVNA proprietary tool, each system was ranked relative to the rest of the systems.

## 2. Criticality Ranking Results:

The results of the ranking are presented in Table 1 below. The criticality ranking has both a numeric and an alpha portion.

The numeric portion is listed as X:X:X:X and describes the severity of failures. The left most number is the summary number of key criteria that fall in the unacceptable category, the second number is criteria in the major category, the third number is criteria in the undesirable category, and the fourth number is criteria in the minor category. The higher the number rankings further to the left, the more critical the system.

The alpha portion is listed as A, B, C, or D and describes the frequency of failures. A stands for Common, B for Probable, C for Uncommon, and D for Rare. The higher the frequency of failure, then the more critical the system.

The combination of the numeric and alpha portions creates the final criticality ranking. This criticality ranking is then utilized to prioritize work orders, condition assessment and RCM studies. A complete listing of the failure scenarios identified for each system can be found in Appendix B.

**Table 1. Criticality System Ranking Results**

Description	Consequence	Probability	CMMS Ranking
STP00PRE00PMP00 - Influent Raw Sewage Pumping System	2:2:1:1	C	5
STP00PEF00PMP03 - Plant Effluent Wet Weather Pumping System	2:2:1:1	D	5
SCS00PST01GNR00 - Ignacio Generator System	2:2:0:2	C	5
SCS00PST01PMP01 - Ignacio Pumping/Wetwell System	2:2:0:2	C	5
SCS00PST01ELE00 - Ignacio Electrical Systems	2:2:0:2	D	5
STP00PWR00ELE00 - Motor Control Center System	2:1:0:3	D	5
STP00PWR00GNR01 - Standby Generators 1 & 2 System	2:1:0:3	D	5
STP00PWR00GNR02 - UV Area Emergency Generator System	2:1:0:3	D	5
SCS00PST01PMP02 - Ignacio Equalization Pumping System	2:0:2:2	C	5
STP00PEF00PMP02 - Utility Water Pumping & Filtration System	2:0:2:2	C	5
STP00DGS00GAS00 - Digester Gas System	1:2:1:2	C	5
STP00BCB00STL02 - Secondary Clarification System	1:1:2:2	C	5
STP00PEF00TSP01 - UV Influent Channel System	1:1:1:3	C	5
STP00PEF00TSP02 - UV Effluent Channel System	1:1:1:3	C	5
STP00PEF00UVD00 - UV Disinfection System	1:1:1:3	C	5
STP00PWR00TNS00 - Main Utility Switchgear System	0:3:1:2	D	5

STP00CST00SCA00 - SCADA and Network System	0:2:2:2	B	3
STP00CST00CTR00 - PLC and Remote I/O System	0:2:2:2	C	3
STP00SED00STL01 - Primary Settling System	0:2:2:2	C	3
STP00BCB00TSP01 - Aeration Splitter Box System	0:2:1:3	C	3
STP00BCB00TSP02 - Secondary Clarifier Splitter Box System	0:2:1:3	C	3
STP00PRE00TSP00 - Raw Sewage Distribution Box & Metering System	0:2:1:3	C	3
STP00CST00MNT01 - Fire Safety Monitoring System	0:1:3:2	C	3
STP00SED00PMP00 - Primary Scum/Sludge Pumping System	0:1:3:2	C	3
STP00DGS00HTG00 - Hot Water Heating & Circulation System	0:1:2:3	C	3
STP00DGS00PMP02 - Digester Recirculation Pump & Heating System	0:1:2:3	C	3
STP00DGS00MBL00 - Digesters & Mixing System	0:1:2:3	D	3
STP00BCB00AER01 - Aeration Blower System	0:1:1:4	C	3
STP00BCB00PMP02 - RAS Pumping System	0:1:1:4	C	3
SCS00PST01STR00 - Ignacio Equalization Basins & Diversion Structure	0:1:1:4	D	3
STP00SPS00SAF00 - Safety Equipment System	0:1:0:5	B	3
STP00CHM00CHF04 - Generator Fuel Bulk Tank System	0:0:5:1	C	3
STP00BGR00GRN00 - Facility Site System - Grounds	0:0:4:2	D	2
STP00PEF00STR00 - Flow Equalization Pond System	0:0:4:2	D	2
STP00PWR00GNR03 - Admin Building Generator System	0:0:4:2	D	2
STP00BCB00MBL00 - Aeration Basins System	0:0:3:3	B	2
STP00SLC00PMP02 - Sludge Storage Lagoon Decant Pumping System	0:0:3:3	B	2
STP00BCB00PMP03 - WAS Pumping System	0:0:3:3	C	2
STP00DGS00PMP01 - Digested Sludge Pumping System	0:0:3:3	C	2
STP00PRE00SCR00 - Bar Screen System	0:0:3:3	C	2
STP00SLC00STR01 - Sludge Storage Lagoon System	0:0:3:3	C	2
STP00SLL00PMP02 - TWAS Pumping System	0:0:3:3	C	2
STP00SLL00PMP03 - GBT Filtrate Pumping System	0:0:3:3	C	2
SCS00PST01BLD01 - Ignacio Control Building	0:0:3:3	D	2
SCS00PST01BLD02 - Ignacio Generator Building	0:0:3:3	D	2
SCS00PST01GRN00 - Ignacio Grounds System	0:0:3:3	D	2
STP00BGR00BLD01 - Headworks/Generator Building	0:0:3:3	D	2
STP00BGR00BLD02 - Grit Bin Building	0:0:3:3	D	2
STP00BGR00BLD03 - Aeration/Electrical Building	0:0:3:3	D	2
STP00BGR00BLD04 - UV Building	0:0:3:3	D	2
STP00BGR00BLD05 - Wet Weather Pumping Building	0:0:3:3	D	2

STP00BGR00BLD06 - Main Electrical Room Building	0:0:3:3	D	2
STP00BGR00BLD07 - GBT Building	0:0:3:3	D	2
STP00BGR00BLD08 - Solids Processing Building	0:0:3:3	D	2
STP00BGR00BLD09 - Administration Building	0:0:3:3	D	2
STP00SL00THK00 - Gravity Belt Thickener System	0:0:3:3	D	2
STP00SPS00GAS00 - Natural Gas Feed System	0:0:3:3	D	2
STP00CHM00CHF03 - Polymer Dosing System	0:0:2:4	B	1
SCS00PST01FLT00 - Ignacio Odor Control System	0:0:2:4	C	1
STP00PRE00GRT00 - Grit Removal System	0:0:2:4	C	1
STP00PWR00GNR04 - Micro Turbine System	0:0:2:4	C	1
STP00SL00PMP01 - High Pressure Washwater Pumping System	0:0:2:4	C	1
STP00SPS00FLT02 - Odor Bed Odor Control System	0:0:2:4	C	1
STP00PRE00SPT00 - Septage/Vactor Disposal System	0:0:1:5	B	1
STP00SPS00SMP00 - Sampling Equipment System	0:0:1:5	B	1
SCS00PST01CTR00 - Ignacio Control Systems	0:0:1:5	C	1
SCS00PST01TSP00 - Ignacio Influent Channel/Grinder System	0:0:1:5	C	1
STP00CHM00CHF01 - Ferric Chloride Dosing System	0:0:1:5	C	1
STP00CHM00CHF02 - Sodium Hypochlorite Dosing System	0:0:1:5	C	1
STP00PEF00PMP01 - Plant Effluent Dry Weather Pumping System	0:0:1:5	D	1
STP00CST00NET00 - Administrative Computer Network	0:0:0:6	B	1
STP00SPS00HTL00 - Maintenance Handtools System	0:0:0:6	B	1
STP00BCB00AER02 - Mixed Liquor Channel Blower System	0:0:0:6	C	1
STP00BCB00PMP01 - Mixed Liquor Recycle Pumping System	0:0:0:6	C	1
STP00BCB00PMP04 - Secondary Scum Pumping System	0:0:0:6	C	1
STP00BCB00PMP05 - Secondary Drainage Pumping System	0:0:0:6	C	1
STP00CST00CMM00 - Plant Communications System	0:0:0:6	C	1
STP00PEF00AER02 - UV Channel Aeration Blower System	0:0:0:6	C	1
STP00SPS00RSK00 - Service Vehicle System	0:0:0:6	C	1

### 3. Items of Interest:

Items of interest are items that were identified as operational controls or redesign considerations that if implemented would increase the reliability of the system. Incorporation of these items could result in lowering of the criticality of the system. Table 2. identifies the operational controls recommendations and Table 3 identifies the redesign considerations.

**Table 2. Operational Controls Recommendations**

	<b>Systems</b>	<b>Criticality</b>		<b>Operational Controls Suggestions</b>
<b>Ignacio Pump Station</b>				
	SCS00PST01TSP00 - Ignacio Influent Channel/Grinder System	0:0:1:5:C	1	Recommend 5 year concrete inspection PM.
	SCS00PST01PMP01 - Ignacio Pumping/Wetwell System	2:2:0:2:C	5	Recommend 5 year concrete inspection.
	SCS00PST01CTR00 - Ignacio Control Systems	0:0:1:5:C	1	Ensure PM's for alarm verification of the back-up float system.
<b>Preliminary Treatment Process</b>				
	STP00PRE00PMP00 - Influent Raw Sewage Pumping System	2:2:1:1:C	5	Recommend 5 year concrete inspection PM.
	STP00PRE00SCR00 - Bar Screen System	0:0:3:3:C	2	Recommend 5 year PM for concrete inspection. Review spares for screw conveyor.
	STP00PRE00GRT00 - Grit Removal System	0:0:2:4:C	1	Recommend 5 year concrete inspection PM.
	STP00PRE00TSP00 - Raw Sewage Distribution Box & Metering System	0:2:1:3:C	3	Recommend 5 year concrete inspection PM.
<b>Primary Sedimentation Process</b>				
	STP00SED00STL01 - Primary Settling System	0:2:2:2:C	3	Recommend 5 year concrete inspection PM.
<b>Secondary Treatment Process</b>				
	STP00BCB00TSP01 - Aeration Splitter Box System	0:2:1:3:C	3	Recommend 5 year concrete inspection PM.
	STP00BCB00MBL00 - Aeration Basins System	0:0:3:3:B	2	Recommend 5 year concrete inspection PM.
	STP00BCB00TSP02 - Secondary Clarifier Splitter Box System	0:2:1:3:C	3	Recommend 5 year concrete inspection PM.
	STP00BCB00STL02 - Secondary Clarification System	1:1:2:2:C	5	Recommend 5 year concrete inspection PM.
	STP00BCB00PMP02 - RAS Pumping System	0:1:1:4:C	3	Recommend investigating spare RAS pump stock.
<b>Plant Effluent Process</b>				
	STP00PEF00TSP01 - UV Influent Channel System	1:1:1:3:C	5	Recommend 5 year concrete inspection PM.
	STP00PEF00TSP02 - UV Effluent Channel System	1:1:1:3:C	5	Recommend 5 year concrete inspection PM.
<b>Digestion Process</b>				

	STP00DGS00PMP01 - Digested Sludge Pumping System	0:0:3:3:C	2	Investigate contingency plan for solids hauling. Options for sludge trucking - location to open and ability to get solids into a truck and truck companies.
<b>Power Systems Process</b>				
	STP00PWR00TNS00 - Main Utility Switchgear System	0:3:1:2:D	5	Recommend review of PM's for critical electrical components.
	STP00PWR00ELE00 - Motor Control Center System	2:1:0:3:D	5	Recommend review of PM's for critical electrical components.

**Table 3. Redesign Considerations**

	<b>Systems</b>	<b>Criticality</b>		<b>Redesign Considerations</b>
<b>Sludge Storage Process</b>				
	STP00SLC00PMP02 - Sludge Storage Lagoon Decant Pumping System	0:0:3:3:B	2	'System is aged and potentially corroded from weather/H2S. Recommend condition assessment review of system and capital plan development (guide rails, pumps, valves).

## APPENDIX A – Ranking Criteria

### Introduction:

The following guidelines are provided for use when evaluating criticality of systems in preparation for RCM analysis or other purposes. Users are encouraged to review and revise these as appropriate for each site and/or use. However, use caution to ensure that these scales are of RISK, not value. In other words, it may be tempting to place dollar values on operating cost scales or seriousness of injury on safety scales, but as soon as either costs are actually increased, or injury actually occurs, unacceptable results have taken place. As a specific example, say a handrail mounting rots out. Until someone is in the specific location and leans on the rail in a way that depends on the rail, there are no measurable safety consequences. However, risk has increased considerably.

### Safety

Unacceptable	Failure virtually assures injury, fine, or citation. The danger or likelihood of injury is immediate and there is little or no way to discover and mitigate the danger following failure. Examples might include chlorine leaks or liquid polymer spills.
Major	Risk of injury, fine, or citation is very high. The danger or likelihood of injury could be significantly mitigated only if almost immediately detected and actions taken following failure. Examples might include dry polymer spills or hypochlorite, caustic, or other aggressive chemical spills.
Undesirable	Risk of injury, fine, or citation is increased. The danger or likelihood of injury can be significantly mitigated if there are secondary or indirect means or detecting and responding to the failure. Examples might include non-aggressive chemical leaks, visibly or easily observed missing or damaged protective devices such as gratings or handrails, etc.
Minor	Risk of injury, fine, or citation is not significantly affected. There is little increased safety risk due to failure

## Capacity

Unacceptable	Failure virtually assures a loss of capacity immediately with no mitigating action that will prevent consequences.
Major	Risk of a loss of capacity is very high. Mitigation is only possible if immediate detection of and response to the failure is possible.
Undesirable	Risk of a loss of capacity is high. Mitigation is possible if secondary or indirect detection of and response to the failure is possible.
Minor	Risk of a loss of capacity is increased.

## Environmental

Unacceptable	Failure virtually assures negative environmental impact, fine, or citation. Consequences occur before intervention is possible.
Major	Risk of negative environmental impact, fine, or citation is very high. Consequences occur if the failure is not detected and responded to immediately or very shortly following failure.
Undesirable	Risk of negative environmental impact, fine, or citation is high. Consequences can be significantly mitigated if the failure is detected and responded to using secondary or indirect means.
Minor	Risk of negative environmental impact, fine, or citation is affected. Consequences can be significantly mitigated if the failure is detected and responded to eventually.

## Operating Costs

Unacceptable	Failure virtually assures that “baseline” operating costs are increased immediately and cannot be controlled. Examples may include failures that cause production downtime leading to expensive alternatives.
Major	Baseline operating costs are immediately increased, but can be limited or highly mitigated if detected and responded to immediately or very shortly following the failure. Examples may include billing associated metering failures.
Undesirable	Baseline operating costs are or will be increased, but secondary or indirect means of detecting and responding to the failure, perhaps in a delayed fashion, will significantly mitigate or eliminate increased costs.
Minor	Baseline operating costs will eventually be affected by the failure.

## Stakeholder

Unacceptable	Virtually assured of negative public relations impact or degraded public perception.
Major	Risk of negative public relations impact or degradation of public perception is very high. Mitigation is only possible if immediate detection of and response to the failure is possible.
Undesirable	Risk of negative public relations impact or degradation of public perception is high. Mitigation is possible if secondary or indirect detection of and response to the failure is possible.
Minor	Risk of negative public relations impact or degradation of public perception is increased.

### Collateral Costs

Unacceptable	Failure virtually assures that significant collateral costs will be incurred immediately and cannot be controlled. Example includes: Pressure main that breaks in the middle of a park, creating a sink hole and spreading raw sewage across the park grounds during the a day when school children are present.
Major	Significant collateral costs will be incurred immediately, but can be limited or highly mitigated if detected and responded to immediately or very shortly following the failure. Examples would be the sewer main spilling into a wetland and would require mitigation.
Undesirable	Significant collateral costs are or will be incurred, but secondary or indirect means of detecting and responding to the failure, perhaps in a delayed fashion, will significantly mitigate or eliminate increased costs.
Minor	Significant collateral costs will eventually be affected by the failure.

### Probability:

<b>Common</b>	Less than 1 year chance of happening, (only the new guy has not seen it)
<b>Probable</b>	Less than 5 years (most everybody can tell you when it happened last)
<b>Uncommon</b>	Less than 20 years, (only the old guys can remember it)
<b>Rare</b>	Greater than 20 years, (nobody remembers it happening, but everybody can agree it could happen).

## eO&M Manual Introduction

### Definition

An eO&M is an electronic operations and maintenance manual. HDR's overriding concept of the eO&M Manual is to simplify the creation and upkeep of the product without compromising the value as viewed by the end user. The eO&M Manual is designed to make manual creation and updating simple and straightforward.

### Purpose

The eO&M Manual serves the following purposes:

1. Assist treatment plant personnel in accomplishing reliable and efficient treatment plant operation and maintenance.
2. Enhance and improve treatment plant administration and uniformity.
3. Assist in the familiarization of new personnel with treatment plant operation.
4. Serve as a reference guide to various equipment manuals, documents and other pertinent industry literature as appropriate.

### Scope

The eO&M Manual encompasses all aspects of treatment plant operation and maintenance and is intended for use at the treatment plant operator level and above. The eO&M Manual serves primarily as a reference document using two principal sources: equipment manuals and references from the Water Environment Federation and other nationally recognized authoritative sources.

### Format

The eO&M Manual is subdivided into folders as shown in the navigational menu on the left hand side of the monitor. Each folder is further subdivided into pages. Thus the navigational menu provides the same function for a web site as a Table of Contents provides for a paper document.

The content within each unit process folder is sub-divided into the following standard pages:

- Overview
- Process Schematics
- Figures
- Process Criteria
- Equipment Criteria
- Controls/Procedures
- Troubleshooting
- Safety
- Alarms

### System Architecture

The eO&M Manual operates in the Microsoft Active Server Page (ASP) environment using Internet Explorer as the Web page browser. An ASP is an HTML page that includes one or more scripts (small embedded programs), which are processed on a Microsoft Web server before the page is sent to the user. The web pages are stored in a SQL database. Text and tables are created in HTML using Cute Editor™ as the HTML editor.

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## Influent Pumping Overview

### Purpose

The purpose of influent pumping is to lift raw sewage, on-site stormwater, and all process drainage from the Influent Pump Station wetwell to the headworks.

### Theory of Operation

The number of influent pumps operating and the speed of the running pumps are controlled based on wetwell level.

### Components

The Influent Pump Station system includes the following components:

- Wetwell Influent Gates
- Wetwells
- Influent Pumps
- Wetwell Level Instrument
- Wetwell Float Switches
- Pump Discharge Check Valves
- Pump Discharge Isolation Valves
- Forcemain Drain Valves
- Foul Air Ducts
- Combustible Gas Detector

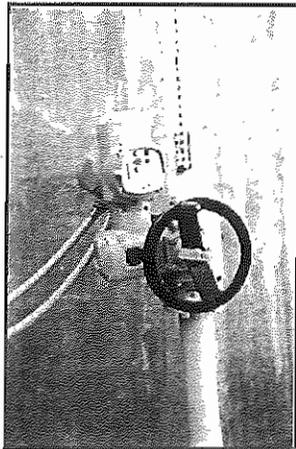
### Description

The Influent Pump Station consists of two wetwells, each with three variable speed, submersible pumps and one influent gate, as shown in Figure 0-1-1. The two wetwells operate in a lead/lag configuration. The pumps in the lead wetwell operate in a lead 1, lead 2, and lead 3 mode. The pumps in the lag wetwell operate in a lag 1, lag 2, and standby mode. During dry weather operation, one wetwell is typically in service as the lead wetwell, and one wetwell is out of service and isolated with a closed gate. Each pump has a capacity of about 10 mgd at full speed and about 3 mgd at minimum speed. One pump will normally accommodate the daily dry weather flow range of 2.5 to 10 mgd. During low flows in the early morning hours, the lead pump may cycle on and off if the actual pump minimum flow is greater than the influent flow rate.

The wetwell influent channel and the two wetwells are ventilated to the Influent Pump Station/Aeration Basin odor control system. Each influent pump station discharge forcemain can be drained by a manually-operated valve back to the wetwell.

### Wetwell Influent Gates ▾

#### G-1011-07.01, G-1012-07.01

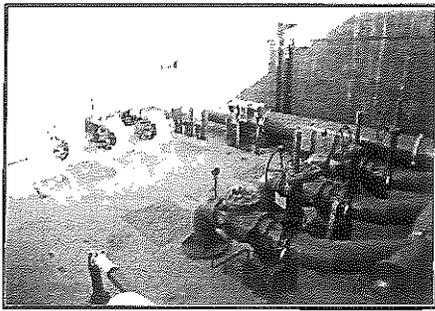


Two electrically-actuated sluice gates are provided in the wetwell influent channel. The gates control the flow of wastewater into each of the two wetwells. Normally, during dry weather operation, one gate is open and one gate is closed. During wet weather operation, both gates will be open.

### Wetwells ▾

Each wetwell is the self-cleaning, trench style type as shown in Figures P-0-1-2 and P-0-1-3. Each wetwell is normally isolated by a sluice gate. The wetwells are equipped with a vortex breaker fillet under the pump suction extensions.

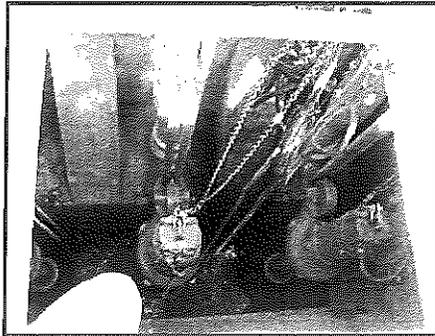
The wetwell inlet channel and each wetwell are covered and continuously exhausted for odor control. The foul air is transported through an above-ground duct to the Influent Pump Station/Aeration Basin odor control system. The submersible pumps can be removed through hatches located over each pump.



An opening in the wall between the two wetwells allows wastewater to flow into the standby wetwell if only one wetwell is in-service and the in-service pumps fail.

**Influent Pumps** ▾

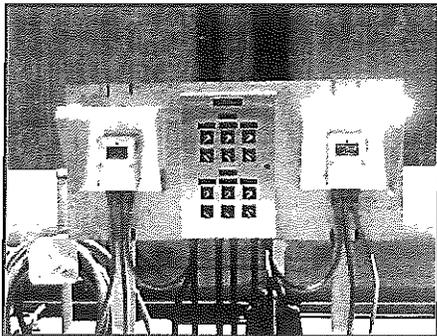
**P-1011-1, P-1011-2, P-1011-3, P-1012-1, P-1012-2, P-1012-3**



Three submersible, variable speed, non-clog centrifugal pumps are located in each wetwell. The pumps are mounted on slide rails and can be removed for maintenance. Each pump is equipped with a mechanical seal leak detector and a motor high temperature switch.

**Wetwell Level Instruments** ▾ ▾

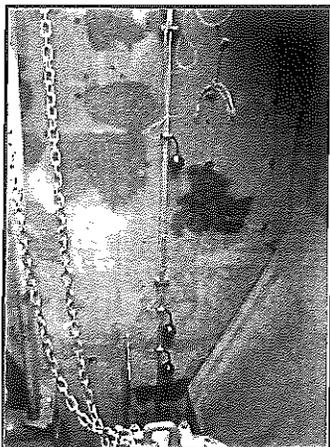
**LIT-1011-08.03, LIT-1012-08.03**



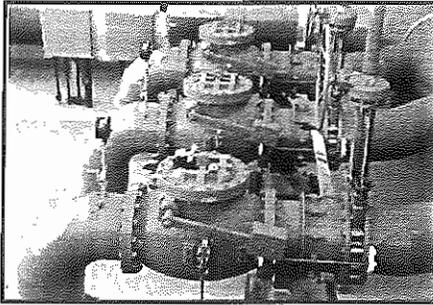
The level in each wetwell is monitored by an ultrasonic level element. Transmitters located in Control Station CS-1010 on the east side of the pump station provide local indication of the wetwell levels.

**Wetwell Float Switches** ▾

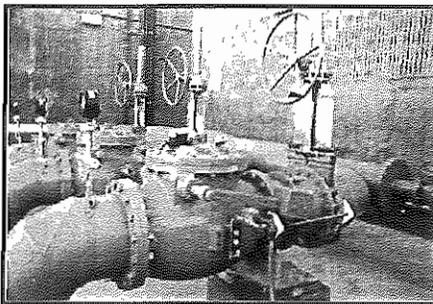
**LSLL-1011-08.02, LSL-1011-08.02, LSH-1011-08.02, LSLL-1012-08.01, LSL-1012-08.01**



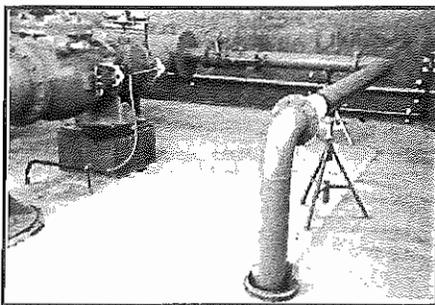
Wetwell #1 contains three float switches (L, LL, & H), Wetwell #2 contains two float switches (L & LL). The low low float switch protects the pumps from running dry. If the high high float switch is actuated by high water level in the wetwell, the hardwired backup control system will be activated. The backup control system will cycle pumps on and off between the low and high level float switches. Once the hardwired backup control system is activated, it must be reset by an operator at the local control panel to re-enable PLC control.

**Pump Discharge Check Valves** ▾**CV-1011-16.01, CV-1011-26.01, CV-1011-36.01, CV-1012-16.01, CV-1012-26.01, CV-1012-36.01**

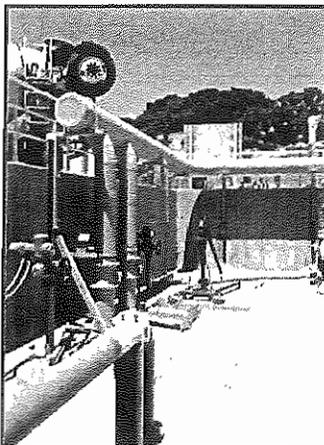
Each pump is equipped with a discharge check valve located above ground. The valve is equipped with a limit switch to indicate that the pump is pumping. A no-flow alarm will be generated if the pump is running but the check valve does not lift after a 30-second time delay.

**Pump Discharge Isolation Valves** ▾**KV-1011-16.01, KV-1011-26.01, KV-1011-36.01, KV-1012-16.01, KV-1012-26.01, KV-1012-36.01**

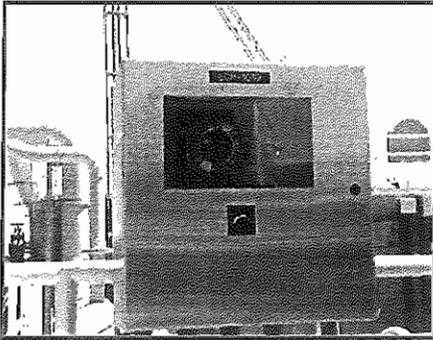
Each pump is equipped with a manually-operated discharge knife gate isolation valve. The valve is normally open but can be closed to remove a pump from the wetwell.

**Forcemain Drain Valves** ▾**PV-1011-06.01, PV-1012-06.01**

Each forcemain is equipped with a manually-operated drain valve. The valve is normally closed but can be opened to drain the forcemain back to the wetwell.

**Foul Air Ducts** ▾

The wetwell inlet channel and each wetwell are exhausted through foul air ducts to the Influent Pump Station/Aeration Basin odor control system. Each branch duct is furnished with a manual damper for airflow balancing. Once the system is properly balanced, the dampers should not be adjusted.

**Combustible Gas Detector ▾**  
**AIT-1010-08.04**

A detector is mounted in the wetwell foul air duct to monitor the wetwell for combustible gases. The gas detector transmitter is mounted in local control panel LCP-1010 located at the northeast corner of the Influent Pump Station.

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### Influent Pumping Controls and Procedures

<b>Wetwell Influent Gates/Influent Pumps</b>	
<b>Control Strategies</b>	<b>P&amp;IDs</b>
General Control Functions Influent Pumping	G-6 Process Fluid Abbreviations P1010-1 Influent Pumping Overview P1010-2 Influent Pumping P1010-3 Influent Pumping
<b>Wetwell Influent Gates</b>	
<b>Pre-Startup Checks</b>	
<ol style="list-style-type: none"> <li>1. Verify power is available at each gate.</li> <li>2. Check for any obvious misalignment of gate, missing parts, or damage.</li> <li>3. Verify influent pump discharge isolation valves are open.</li> <li>4. Do not operate if any of the checks listed above are unsatisfactory, and notify treatment plant supervisory staff.</li> <li>5. Follow all applicable safety rules, practices, and procedures.</li> </ol>	
<b>Place Unit Into Service</b>	
<ol style="list-style-type: none"> <li>1. At the gate actuators, turn the Local/Remote switch to the Remote position on both gates.</li> </ol>	
<b>SCADA Operation</b>	
<ol style="list-style-type: none"> <li>1. At the local SCADA node, select Lead and Lag Wetwell orientation.</li> </ol>	
<b>Take Unit Out of Service</b>	
<ol style="list-style-type: none"> <li>1. At the gate actuator, turn the Local/Remote switch to the Local position.</li> <li>2. Lock out gate.</li> </ol>	
<b>Influent Pumps</b>	
<b>Pre-Startup Checks</b>	
<ol style="list-style-type: none"> <li>1. Verify wetwell gates are in Remote.</li> <li>2. Verify water is available in wetwell.</li> <li>3. Verify pump VFD is powered up.</li> <li>4. Inspect pumps to be used to ensure that the units are in proper operating condition.</li> <li>5. Check for any obvious misalignment, missing parts, or damage.</li> <li>6. Check discharge piping for leakage or damage.</li> <li>7. Do not operate if any of the checks listed above are unsatisfactory, and notify treatment plant supervisory staff.</li> <li>8. Follow all applicable safety rules, practices, and procedures.</li> </ol>	
<b>Place Unit Into Service</b>	
<ol style="list-style-type: none"> <li>1. At each VFD, turn the Local/Remote switch to the Remote position.</li> </ol>	
<b>SCADA Operation</b>	
<ol style="list-style-type: none"> <li>1. At the local SCADA node, select Lead 1, Lead 2, Lead 3, Lag 1, Lag 2 and Standby pump sequence.</li> </ol>	
<b>Take Unit Out of Service</b>	
<ol style="list-style-type: none"> <li>1. At the VFD, turn the Local/Remote switch to the Local position and stop pump.</li> <li>2. Lock out pump.</li> </ol>	

## Influent Pumping Safety

### General Safety Precautions

Follow all procedures and policies as described in the the Novato Sanitary District [Safety Handbook](#).

### Atmospheric Hazards

Wastewater treatment personnel are exposed to numerous hazards on a routine basis. With good work practices and a little common sense, wastewater operations and maintenance personnel can minimize the effects of these hazards. Proper personal hygiene is the first step in minimizing these hazards.

The following atmospheric hazards must be taken into account before entering any wetwell or opening an influent pump.

- **Oxygen-deficient atmospheres:** The atmosphere in a confined space may lack sufficient oxygen. If the oxygen level is less than 19.5%, a worker must not enter the space without proper ventilation or approved self-contained breathing apparatus (SCBA).
- **Flammable atmosphere:** The Influent Pump Station is one of the first areas exposed to any flammable liquids and / or gases that may be entrained in the raw sewage. Care must be taken to eliminate all sources of ignition from the area. No smoking is allowed in this building.
- **Toxic atmosphere:** Gases and vapors may be entrained in the collection system. These gases may be released in the channels or wetwell, causing a toxic atmosphere.
- **Noise:** High levels of noise can be associated with variable frequency drive motors. If this hazard is suspected, proper ear protection is required.
- **Engulfment:** All sluice gates and valves must be locked out to eliminate an engulfment hazard.
- **Falling objects:** Keep tools, supplies, and debris away from open hatches when working in the wetwell.
- **Slick or wet surfaces:** The wetwell floor may contain slime or other slippery material. All surfaces must be hosed down completely to minimize this hazard. In addition, proper footwear must be used.

Wastewater personnel are obligated to understand and follow all confined space requirements set forth by Novato Sanitary District.

### Process-Specific Safety Precautions

1. Because the Influent Pump Station equipment can automatically start at any time, exercise caution at all times whenever working around the equipment.
2. Be careful when manually cleaning the influent wetwell or influent channel to avoid being cut by sharp objects.
3. Lock out the equipment before performing any maintenance on it.
4. If an influent wetwell is isolated by closing the inlet and outlet gates, the gate actuators must be locked out before any work is done in the channel.
5. The influent channels are confined spaces; follow the Confined Space Entry policy before entering.
6. The walkways around the Influent Pump Station can be wet and slippery; exercise caution to avoid slipping, especially when any hatch is open.
7. Beware of electrical hazards when working in local control panels.

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**INFLUENT PUMP STATION ALARMS**  
**Control Panel CP-1010**

The # symbol represents multiple equipment items, the actual equipment number will be displayed on SCADA

FTR = Fail to Run

ROC = Rate of Change

Alarm	Possible Cause	Corrective Action
CP-1010 ATS-# Standby Position	ATS in the standby position	Call an electrician and verify status of switch
CP-1010 Control Power-Lost	Power failure	Contact an electrician
CP-1010 Critical Bus-Lost	Electrical failure	Contact an electrician
CP-1010 HBS Bus-Lost	Electrical failure	Contact an electrician
CP-1010 HBS-Activated	Electrical failure	Contact an electrician
CP-1010 Non-Critical Bus-Lost	Electrical failure	Contact an electrician
CP-1010 UPS Critical Bus # - Fuse Blown	Blown fuse	Contact an electrician
CP-1010 UPS-On Battery	Power lost to UPS	Contact an electrician
CP-1010 UPS-Trouble	UPS failure	Contact an electrician
Infl Ch & WetWell # - Level Switch Low Low	Faulty sensor, broken pipe	Check sensor
Infl Ch & WetWell CombGas-Conc Xmtr Alarm	Bad sensor or calibration issue	Calibrate or replace sensor
Infl Ch & WetWell CombGas-Conc Xmtr High	High combustible gas in the influent channel or wetwell	Check ventilation system
Infl Ch & WetWell CombGas-Conc Xmtr High High	High combustible gas in the influent channel or wetwell	Check ventilation system
Infl Ch & WetWell CombGas-Conc Xmtr Open Wire	Broken wire or open circuit	Test and repair system as needed
Infl Ch & WetWell CombGas-Conc Xmtr Warning	Elevated combustible gas level	Check ventilation system
Infl Ch & WetWell CombGas-Sensor Trouble	Bad sensor or calibration issue	Calibrate or replace sensor
Infl Ch & WetWell-Level Xmtr Difference High	Bad sensor or calibration issue	Calibrate or replace sensor
Infl WetWell # Gate-FTR	Unit not running when called into service	Check that unit has power and is in remote with no faults
Infl WetWell # Pump # - Bypass On	Pump running across the line	Investigate pump VFD and place into service if available
Infl WetWell # Pump # - Check Valve No Flow	Plugged pump	Clear pump of debris
Infl WetWell # Pump # - Ctrl Power Off	Blown fuse or open breaker	Energize circuit
Infl WetWell # Pump # - FTR	Unit not running when called into service	Check that unit has power and is in remote with no faults
Infl WetWell # Pump # - Low Level Bypass	Pump running under manual control	Investigate pump control, place back into automatic control
Infl WetWell # Pump # - MAS Alarm	Trouble with Flygt pump monitoring unit	Check monitoring unit for additional information
Infl WetWell # Pump # - MAS Shutdown	Trouble with Flygt pump monitoring unit	Check monitoring unit for additional information
Infl WetWell # Pump # - Speed Xmtr Open Wire	Broken wire or open circuit	Test and repair system as needed
Infl WetWell # Pump # - VFD Trouble	VFD not ready of operation	Check VFD operator interface for fault code, call electrician
Infl WetWell # - Level Switch Low Low	Low level in wetwell	Repair or replace switch if faulty
Infl WetWell # - Level Xmtr High	High level in influent wetwell	Check pump operation, bring additional pumps on line if required
Infl WetWell # - Level Xmtr High High	Very high level in influent wetwell	Check pump operation, bring additional pumps on line if required
Infl WetWell # - Level Xmtr Low	Low level in influent wetwell	Check pump operation, shut down unneeded pumps
Infl WetWell # - Level Xmtr Low Low	Extreme low level in influent wetwell	Check pump operation, shut down unneeded pumps
Infl WetWell # - Level Xmtr Open Wire	Broken wire or open circuit	Test and repair system as needed
Infl WetWell # - Level Xmtr ROC	Bad sensor or calibration issue	Calibrate or replace sensor
Infl WetWell Pumps-Lead Wet Well Pumps Failure	Influent flow or pumping problems	Check wetwell and pumping operation
IPS Elect Rm-Fire Alarm	Pump failure	Check pump for possible cause
IPS/Aeration Bsn Ex Fan # - Low Flow	Fire in IPS Electrical Rm	Verify fire and call 911
Septage/Receiving System-Fail	Fan problems	Check fan for proper operation
	Septage system problems	Check septage receiving station for proper operation

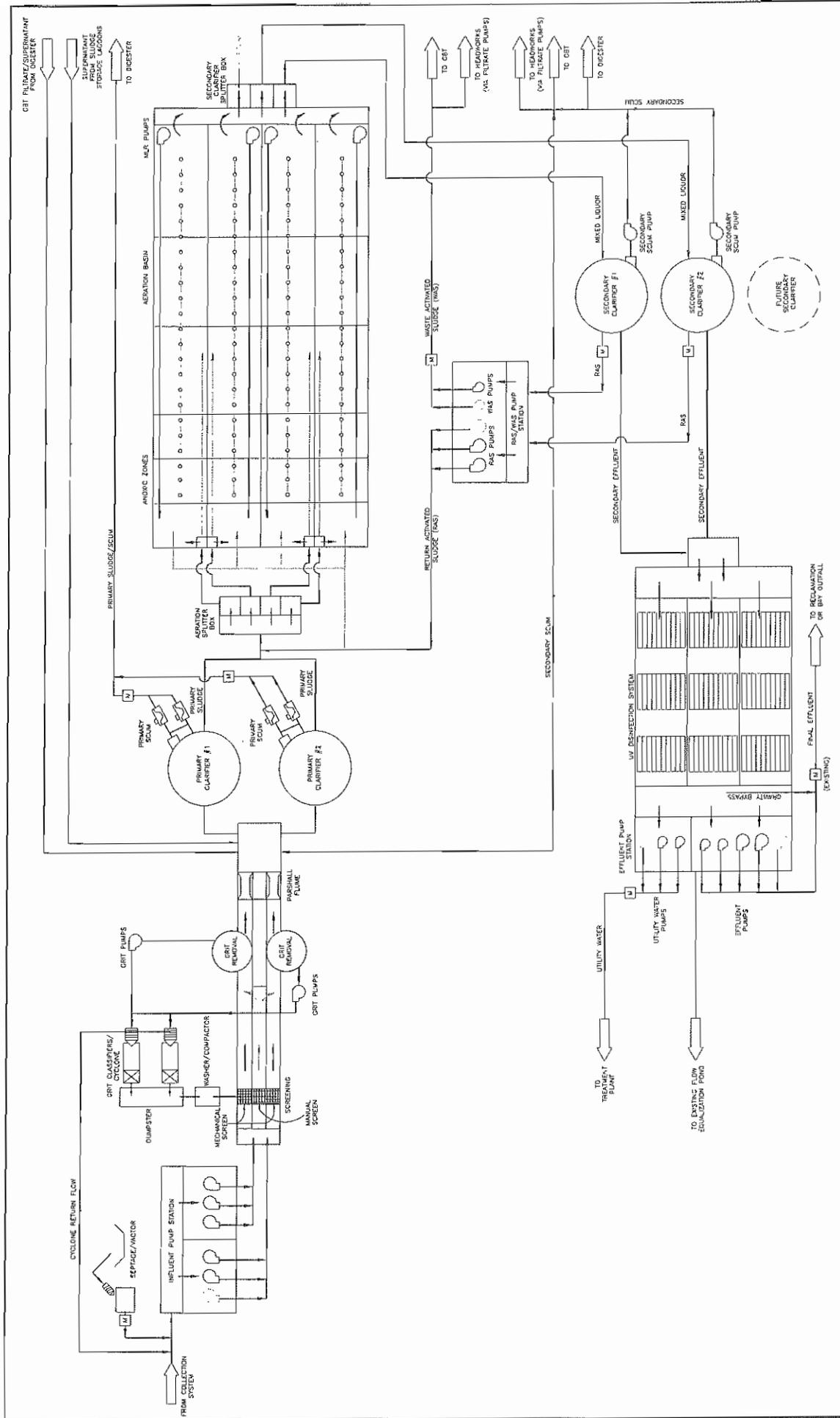


FIGURE G-2  
 12/07/08  
 LIQUID PROCESS DIAGRAM  
 NOVATO WASTEWATER FACILITY UPGRADE  
 HDR Engineering, Inc.

**Novato Sanitary District  
Wastewater Operations Committee meeting  
Collection System Operations Report  
June 2014**

**General:**

The breakdown of Collection System department staff time for June 2014, in terms of equivalent full-time employee (FTE) hours utilized, works out approximately as follows:

- 2.5 FTE field workers for Sewer Maintenance (main line cleaning)
- 1.0 FTE field workers for Pump Station Maintenance
- 0.2 FTE field workers for CCTV work
- 2.1 FTE field workers for time spent on data input, training, service calls, overflow response, or any other activity that does not directly relate to main line cleaning, CCTV work or pump station maintenance, and
- 1.2 FTE field workers Vacation/Sick Leave/Holiday.

**Collection System Maintenance:**

Performance metrics for the department are presented in the attached graphs showing the length of line cleaned/month, footage cleaned/hour worked, overflows/month, and the CCTV footage achieved. A brief discussion is also provided below.

Line Cleaning Performance: A total of 63,323 feet of sewer pipelines were cleaned this month by District staff. Staff completed 348 maintenance work orders generated by the ICOM3 CMMS system. Thirty-two (32) of these work orders are outstanding and twenty (20) of these work orders are being deferred for two to three months due to the chemical root treatment of these line segments this month. There was no cleaning activity on larger diameter mains by outside contractors this month.

Staff continues to work with ICOM/RedZone to correct apparent discrepancies between footages listed in the ICOM3 system and those listed on District maps.

A total of 67,598 feet of sewer main was treated with chemical root abatement foam in June. Collections System staff supported Duke's Chemical Application staff from June 16<sup>th</sup> through June 27<sup>th</sup>. This footage was not included in the Collection System Monthly report because this work is performed on either an as needed basis, or annually.

The Sterling hydro-flusher (Truck 3206) was out of service for 9 working days due to needed water pump repair this month. The water pump has been repaired, and the hydro-flusher is back in service.

CCTV Performance: The District's CCTV van was in the field for a total of 4 working days and televised 30 line segments for 5,560 feet of CCTV production this month. This production rate is significantly lower than the District's internally set benchmarks, and was primarily due to a combination of: (a) The van was out of service for 17 working days due to various mechanical and electrical issues (which have been since resolved), and (b) staff time had to be diverted to support root foaming activities. Field crews also

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televised 2,056 feet using the Push Cam. There was no CCTV activity on larger diameter mains by outside contractors.

CCTV Findings: The June CCTV work did not identify any significant defects in District mains televised that would require further evaluation to determine if they are eligible candidates for infrastructure repair or require a change in maintenance frequency/method.

**Collection System Projects:**

There was no sewer repair work completed under the Collections System Repair Projects (Account No. 72803) this month.

**Pump Station Maintenance:**

The Collection System Department conducted 289 lift station inspections this month. 139 of the inspection visits were generated through the JobCal Plus CMMS system\*. There are 9 outstanding work orders for the month. Lift station inspections included 27 submersible pump station visits, once per month, 6 underground style, dry well/wet well pump station visits, once per month, and 4 main pump stations that are visited daily. In addition, maintenance was performed on two air relief valves.

A Collection Systems (Pump Stations) Work Order Statistics summary is attached.

**\*Note:** The JobCal Plus program is not only used for scheduling and tracking pump station related maintenance work orders, it is also used for ladder inspections, reclamation maintenance work orders, SCADA backup scheduling, and vehicle maintenance scheduling.

**Pump Station Rehabilitation:**

Currently, there are two (2) pump stations under rehabilitation as part of the District's continuing multi-year Pump Station Rehabilitation Project (Capital Improvement Project Account No. 72403). This current phase, (Project Unit 5), includes rehabilitation of the Los Robles Pump Station and relocation and replacement of the Digital Drive Pump Station. Construction work continues on these projects with completion expected by the end of August.

**Safety and Training:**

General: The Collection System crew attended four safety tailgate meetings.

Specialized training: Collection System staff attended fire extinguisher training this month.

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Safety performance: There were no lost time accidents this month for a total of 1,203 accident-free days.

**Standard Operating Procedures (SOPs):**

Department staff continues to work on generating new SOPs, and finalizing earlier draft SOPs. Eight (8) Pump Station Energy Control SOPs were issued this month.

**Emergency Operating Procedures (EOPs) – Pump Stations:**

Staff has also been working with DKF Solutions over the past year to develop 38 Emergency Operating Procedures (EOPs) for all of the District pump stations. At this time, 34 EOP's have been through a final review by staff. The four remaining EOPs are awaiting final review by staff. Staff expects to complete the review in early July and the final EOPs should be in place (District staff has already received all relevant training.) by the end of August, 2014 not June 2014, as previously stated. Also included in DKF Solution's Proposal was an interactive training program hosted on CSRMA's website and on CD. Staff expects completion of this portion of the Contract by the end of September.

**Sanitary Sewer Overflows (SSOs):**

In June, there was one (1) SSO.

No.	Date	Location	Amount, gal	Cause
1.	6/9/2014	1545 S. Novato Blvd	235	Debris/Wipes

1. SSO at 1545 S. Novato Blvd.: This SSO was a Category III event with the estimated discharge volume of approximately 235 gallons going across a paved parking lot and into a storm drain system. There was full recovery (100%) for this discharge due to the fact it was a low volume event that remained fully contained in the parking lot and storm drain system.

This discharge was determined to be the result of unknown debris in the main line that caused wipes to accumulate. Volume estimation using Visual Estimation, Water Height above the pick-hole, and reporting party/eye witness interviews were used to estimate the duration and volume for this event.

The District initially received this report at 08:15. Tim O'Connor, Collection System Superintendent arrived on site at 08:29. Upon arrival, Tim visually estimated the manhole was overflowing at a rate of approximately 3 to 5 gallons per minute. Tim also observed the discharge water flowing into a drain inlet, located in the Post Office parking lot about 50 feet away from the discharge manhole.

This event was determined to be a Category III event due to the fact that it was less than 1,000 gallons, fully contained and completely recovered. Staff concluded this

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discharge was determined to be the result of unknown debris that collected wipes at the outlet pipe, one line segment downstream from the discharge manhole.

This line segment had been cleaned according to schedule on May 2, 2014 and again on May 14, 2014, using a hydro-flusher. This line segment is on a three (3) month cleaning frequency. CCTV inspection immediately after the discharge event showed the line segment to have several moderate to severe sags, some moderate offsets, and minor grease build-up, but was otherwise structurally functional. Staff concluded, based on line cleaning history and the unknown nature of the debris involved in this stoppage that increasing the cleaning frequency would not be an effective countermeasure to preventing future overflows at this location, but that further education of the residents and businesses in the area was warranted. Therefore, working with District administrative and engineering staff, collections crews identified potential dischargers in the tributary area for the affected line segment and conducted an immediate outreach effort. This effort resulted in 104 educational door hanger packets explaining the proper techniques for disposing of waste grease and flushable wipes being distributed to homes, apartments and businesses tributary to the affected line segment.

This event was reported into the CIWQS database on 6/15/2014 as a Category III event, SSO Event ID #807023 and was certified in CIWQS on 6/20/2014, Certification ID # 292053. All reporting requirements were met for this spill event.

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Collection System Monthly Report For June 2014 (as of June 30, 2014)

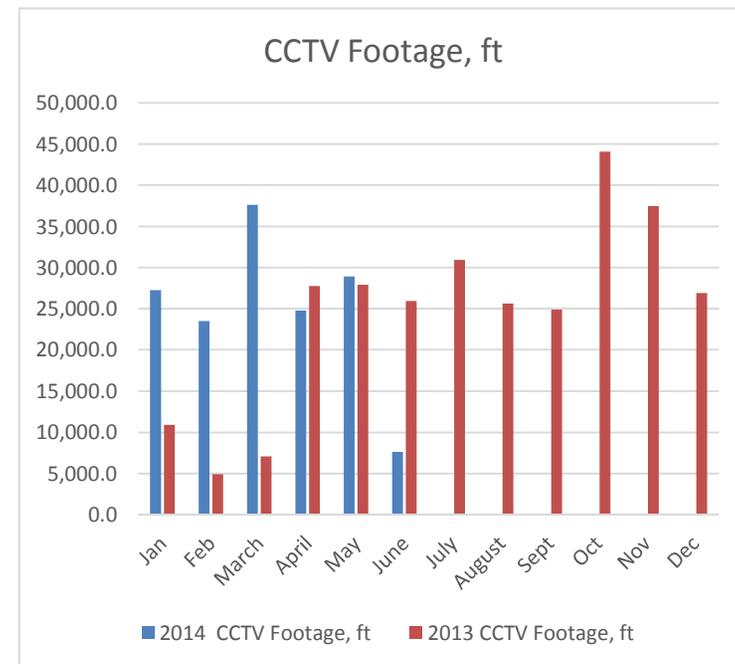
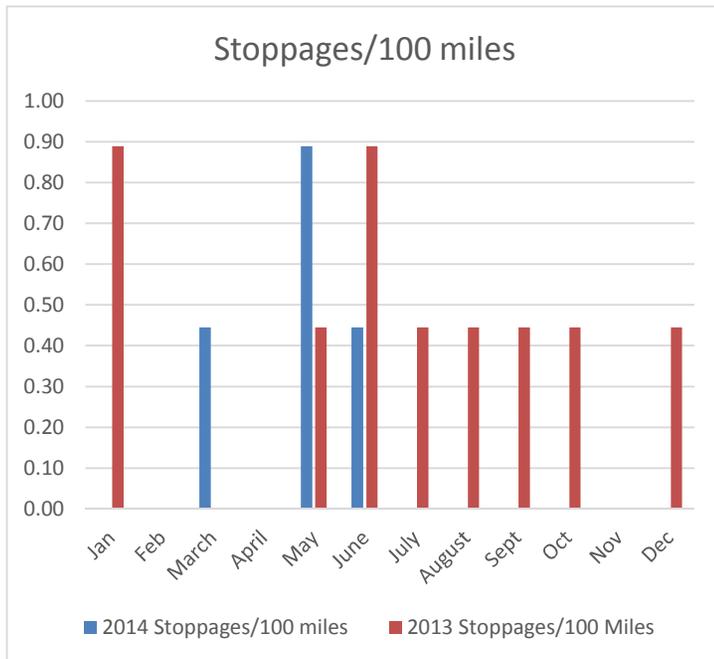
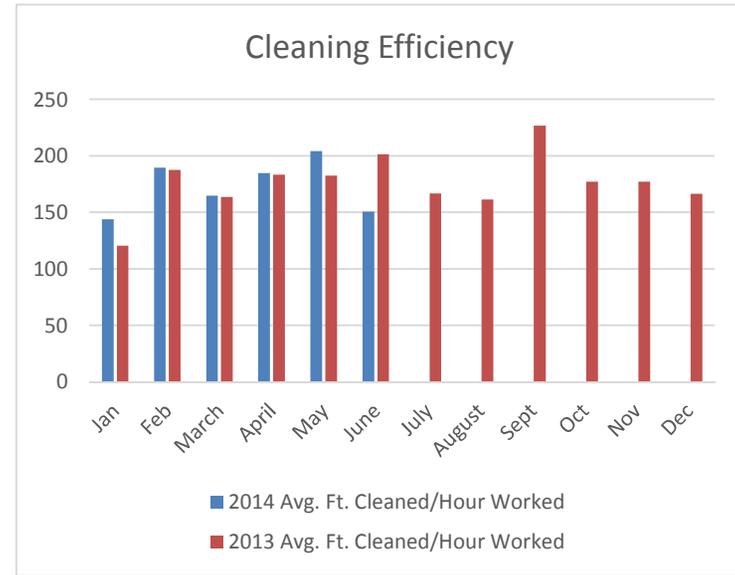
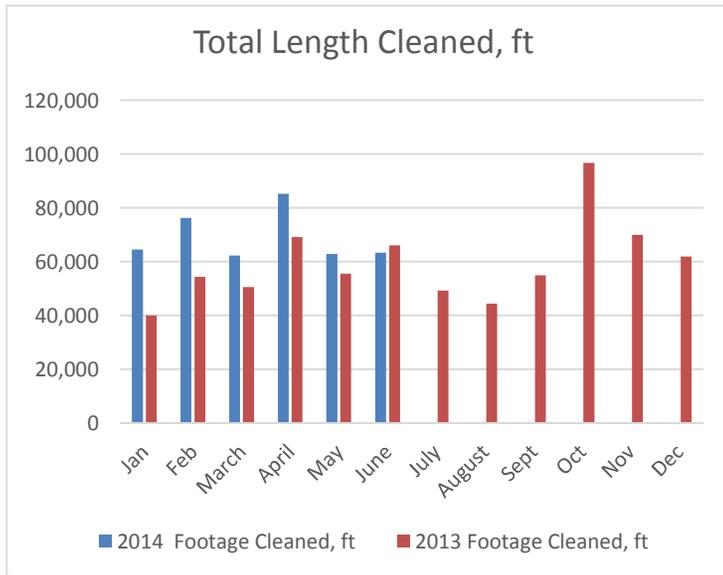
	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec	Total Year to Date	Average Year to Date
<b>A. Employee Hours Worked</b>														
Number of FTEs (main line cleaning), hrs.	2.6	2.5	2.2	2.6	1.8	2.5							NA	2.4
Number of FTEs (other)	1.7	1.6	2.1	1.8	1.7	2.1							NA	1.8
Number of FTEs (CCTV)	0.9	0.8	1.0	0.8	0.9	0.2							NA	0.8
Total, FTEs	5.2	4.9	5.3	5.1	4.4	4.8							NA	5.0
Regular Time Worked, (main line cleaning), hrs	448	402	378	461	308	420								
Regular Time Worked on Other, hrs (1)	294	262	350	313	297	362								
Regular Time Worked on CCTV (2)	158	125	172	136	164	38								
Total Regular time, worked, hrs	900	789	900	909	768	820							5,085	848
Total Vacation/Sick Leave/Holiday, hrs	285	151	101	143	220	195							1,095	183
Vacation/Sick Leave/Holiday, FTEs	1.6	0.9	0.6	0.8	1.3	1.2							6.4	1.1
Overtime Worked on Coll. Sys., hrs	2	8	3	15	0	3							31	5
Overtime Worked on Other, hrs (1)	22	17	16	31	35	26							147	24
Overtime Worked on CCTV (2)	0	0	0	3	0	0							3	1
Total Overtime , hrs	24	25	19	49	35	29	NA	NA	NA	NA	NA	NA	181	30
<b>B. Productivity</b>														
<b>1. Line Cleaning</b>														
Rodder Work Orders generated	57	30	24	78	20	72							281	47
Rodder 3203 ft. cleaned	10,989	3,337	6,378	11,933	1,388	12,770							46,795	7,799
Rodder - outside services, ft cleaned	0	0	0	0	0	0							0	0
Flusher Work Orders generated	351	352	369	532	313	308							2,225	371
Truck 3205V ft. cleaned	16,187	16,552	18,158	802	13,575	9,410							74,684	12,447
Truck 3206V ft. cleaned	37,342	56,332	37,781	72,511	47,863	41,143							292,972	48,829
Flusher - outside services, ft. cleaned	2,301	1,570	6,492	11,155	0	0							21,518	
Total Footage cleaned(3)	64,518	76,221	62,317	85,246	62,826	63,323							414,451	69,075
Work Orders completed	408	361	393	580	313	348							2,403	401
Work Orders backlog	66	21	0	30	20	32							169	28
<b>2. Closed Circuit Television (CCTV)</b>														
Camera Work Orders generated	0	0	0	0	0	0							0	
CCTV Truck 3126T, ft. videoed	24,487	21,931	31,116	19,331	27,555	5,560							129,980	21,663
CCTV (hand cam), ft. videoed	449	0	0	5,428	1,340	2,056							9,273	
CCTV Inspection - outside services, ft. videoed	2,301	1,570	6,492	0	0	0							10,363	
Total CCTV footage(3)	27,237	23,501	37,608	24,759	28,895	7,616	NA	NA	NA	NA	NA	NA	149,616	
<b>C. Sanitary Sewer Overflows (SSOs)</b>														
Minor (Category III)	0	0	0	0	2	1							4	NA
Major (Category II)	0	0	0	0	0	0							3	NA
Major (Category I)	0	0	1	0	0	0							0	NA
Overflow Gallons	0	0	180	0	50	235							1	NA
Volume Recovered	0	0	0	0	50	235							465	NA
Percent Recovered	NA	NA	0%	NA	100%	100%	NA	NA	NA	NA	NA	NA	285	NA
													61%	NA
<b>D. Service Calls (non-SSO related)</b>														
Service calls, normal hours, #	8	3	5	4	4	3							27	5
Normal hours S.C. response time, mins (avg.)	38	19	25	18	14	16							130	22
Service Callouts, after hours, #	0	1	1	1	1	1							5	1
After Hours S.C. response time, mins (avg.)	0	15	40	42	13	25							135	23
<b>E. Benchmarks</b>														
Average Ft. Cleaned/Hour Worked	144	190	165	185	204	151	NA	NA	NA	NA	NA	NA	NA	173
Total Stoppages/100 Miles	0.0	0.0	0.4	0.0	0.9	0.4							1.8	NA
Average spill response time (mins)	0	0	18	0	39	14							NA	12
Callouts/100 Miles	0.0	0.4	0.4	0.4	0.4	0.4							2.2	0.4
Overtime hours/100 Miles	1	4	1	7	0	1							13.78	2
Overflow Gallons/100 Miles	0	0	80	0	22	104							207	34

(1)This category includes time spent on: Data input, Training, Service Calls, Overflow Response, as well as any other activity that does not directly relate to main line cleaning or CCTV work.

(2)This category separates time spent on CCTV from other Collection System maintenance activities.

(3) Does not include outside services (tracked separately)

# Collection System 2013-14 Graphs





**COLLECTION SYSTEM (Pump Stations)  
WORK ORDER STATISTICS  
June 1, 2014 - June 30, 2014**

	<b>Open Work Orders Due Prior to 6/1/2014</b>	<b>Open Work Orders 6/1/2014 - 6/30/2014</b>	<b>Total Open Work Orders</b>
Preventive	5	143	148
Corrective	0	0	0
Total	5	143	148

	<b>Closed Work Orders 6/1/2014 - 6/30/2014</b>
Preventive	139
Corrective	0
Total	139

<b>Total Outstanding Work Orders as of 6/30/2014</b>	<b>9</b>
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**NOVATO SANITARY DISTRICT**  
**Wastewater Operations Committee Meeting**  
**Reclamation Facilities Report**  
**June 2014**

**Summary:**

The rancher completed all hay harvesting operations this month and cattle were moved into Site 7. A total of 65.36 MG of recycled water was applied to the irrigation pastures in June. An irrigation valve and actuator was replaced in Parcel 22 and a control system problem was found in Parcel 77. The domestic water line serving the Irrigation Pump Station was repaired.

**Ranch Operations:**

The rancher completed hay harvest operations on all Sites this month. The rancher has been selling bales of hay at a steady pace. The rancher also began moving cattle into Site 7.

**Irrigation Parcels:**

**Site 2:** During hay harvest operations on Parcel 22 the rancher found saturated areas in Zone 222. Staff found that the existing irrigation valve was partially open allowing irrigation water to flood portions of the zone through the sprinkler heads. Staff could not operate the valve so the valve and actuator were replaced by an outside contractor. A new control box and electrical wiring will be installed next month. Irrigation has not been activated on Site 2 this month.

**Site 3:** Irrigation for Parcels 34, 35, & 36 were tested and activated this month after the hay crop was removed.

**Site 7:** Irrigation for Parcels 71, 72, & 73 were tested and activated this month after the hay crop was removed. During the month, the control system shorted out and tripped the breaker. Staff isolated the problem to Parcel 77 and it was taken out of service. Staff suspects a short in the control wire which will be repaired or replaced next month.

**Irrigation Pump Station:**

Approximately 65.36 MG of recycled water was used for irrigation of the parcels during the month of June.

The domestic water line was repaired at the Irrigation Pump Station site. During the work a substantial amount of water was found in the existing trench backfill material that had a distinctive green color to it. Additional work was completed to locate the leak with no results. The area was backfilled until more evidence of a leak surfaces. This does not appear to be domestic drinking water.

**Sludge Handling & Disposal:**

There were no reclamation area related sludge handling and disposal activities in June.

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**NOVATO SANITARY DISTRICT**  
**Reclamation Facility - Monthly Statistics for Calendar Year 2014, as of June 2014**

	January	February	March	April	May	June	July	August	September	October	November	December	Total Year to Date	Annualized Monthly Average
<b>Irrigation Pump Station</b>														
Plant flow to ponds (MG)	0	59.39	0	0	0	90.36							149.75	12.48
Irrigation (MG)	17.87	0	7	0	15.57	65.36							105.8	8.82
Irrigation Pump 1 Hours	29.3	0	13.5	0	27.5	107.8							178.1	14.84
Irrigation Pump 2 Hours	0	0	2.9	0	35.3	106.6							144.8	12.07
Irrigation Pump 3 Hours	31.4	0	14.4	0	25.9	133.1							204.8	17.07
Washdown Water Pump Hours	0	0	0	0	0	0							0	0.00
Wildlife Feed Pump Hours	0	0	0	0	352.9	747.6							1100.5	91.71
Water Circulated through Wildlife Pond (MG)	0	0	0	0	22.23	47.10	0	0	0	0	0	0	69.3315	5.78
Strainer No. 1 Hours	-	-	0.9	0	10.9	44.1							55.9	4.66
Strainer No. 2 Hours	-	-	1	0	10.8	43.9							55.7	4.64
Pond 1 Gauge @ Beginning of Month	3.3	2.4	6.1	5.2	5.2	3.9	4.4							
Pond 1 Gauge @ End of Month	2.4	6.1	5.2	5.2	3.9	4.4								
Pond 1 Gallons Stored @ End of Month(MG)	15.2	45.8	37.6	37.6	27.2	31.2								
Pond 2 Gauge @ Beginning of Month	3.3	2.2	6.1	5.2	5.2	4	4.4							
Pond 2 Gauge @ End of Month	2.2	6.1	5.2	5.2	4	4.4								
Pond 2 Gallons Stored @ End of Month(MG)	17	58	49	49	36	40								
Total Irrigation Water Stored	32.2	103.8	86.6	86.6	63.2	71.2	0	0	0	0	0	0		
<b>Drainage Pump Station No. 3</b>														
Drainage Pump No. 1 Hours	0	0	0	0	0	0								
Drainage Pump No. 2 Hours	0	0	14	0	0	0								
Drainage Pump No. 3 Hours	0.7	134.5	0	31.1	0.8	0								
Total Gallons Stormwater Pumped (MG)	0.21	40.35	4.2	9.33	0.24	0	0	0	0	0	0	0	54.33	4.53
<b>Drainage Pump Station No. 7</b>														
Drainage Pump No. 1 Hours	0	24.2	13.2	3.9	0	0								
Drainage Pump No. 2 Hours	0	106.6	48.8	9.5	0	0								
Drainage Pump No. 3 Hours	0	1.7	0.9	0	0	0								
Total Gallons Stormwater Pumped (MG)	0	59.63	28.31	6.03	0	0	0	0	0	0	0	0	93.96	7.83