

CITY OF SCOTTS VALLEY WASTEWATER TREATMENT FACILITY ANNUAL REPORT 2010

Plant Summary and Compliance

We are proud to report that for the second straight year, as with 10 of the past 11 years, the City did not record a single discharge violation. For the year 2010, effluent suspended solids averaged 8.0 mg/L (a 97% removal rate), effluent cBOD's averaged 3 mg/L (a 98.6% removal rate), and effluent BOD's averaged 4 mg/L (a 98.6% removal rate). Many thanks to a very knowledgeable and dedicated treatment plant staff. Without them, the continued high standards the City has become accustomed to would not be possible. For their efforts the City was awarded the 2009 Plant of the Year Award for the Monterey Bay Section of the California Water Environment Association.

2010 was a year of significant change for the Scotts Valley Wastewater Treatment Plant. After 35 years of service, Chief Plant Operator Paul Rieth retired. Paul began his career with the City in July of 1973 (Nixon was President and Willie Mays retired from baseball). In 1977 Paul left Scotts Valley and went to work in South Lake Tahoe. After a year of working the graveyard shift at the South Tahoe plant, Paul decided to move back to Santa Cruz. Paul returned to work at the Scotts Valley plant in 1978 as Chief Plant Operator. During his tenure Paul saw the City grow from a population of 5,000 to its current population of 11,600 and the treatment plant grow from treating 150,000 gallons per day to near one million gallons per day. We wish Paul and his wife Arlene all the best in retirement!

With Paul's retirement we are pleased to report that Mark Cattera (Operator II) has been promoted to Chief Plant Operator. Mark has 30 years of experience at the Scotts Valley plant and has made a seamless transition into the position. Congratulations Mark!

The plant's laboratory had an eventful year as well. Senior Laboratory Analyst Kati King worked closely with the California Department of Public Health (DPH) as the laboratory passed its rigorous biennial Environmental Laboratory Accreditation Program (ELAP) inspection. Kati then took the initiative to contact DPH to gain certification to perform two additional types of analysis. Kati worked with State officials once again and now the plant's laboratory is certified to run Nitrate and Nitrite analyses. Nitrate and Nitrite are analyzed weekly as the plant and the recycled water program has strict Nitrogen requirements. Getting ELAP's stamp of approval to certify the lab for additional constituents is no small task and Kati was recognized for her efforts by earning the City of Scotts Valley's Employee of the Year Award for 2010!

Recycled water usage increased to 49.35 million gallons. The Scotts Valley Water District continues to pursue additional recycled water users so we anticipate that we will continue to see increased recycled water usage.

Laboratory

The laboratory participated for its second year in the Discharge Monitoring Reporting Quality Assurance (DMR-QA) Study 30. DMR-QA covers major and some selected minor permit holders under the Clean Water Act's National Pollutant Discharge Elimination System (NPDES), and plays a key role in monitoring the quality of data used to ensure the safety of the nation's waters. The lab passed all laboratory performance tests for both the DMR QA Study 30 and for the Environmental Laboratory Accreditation Program (ELAP).

The lab added Nitrate and Low Level Nitrite Analyses to its list of accredited fields of testing. Nitrate and Nitrite analyses no longer need to be subcontracted out to other labs to do.

Laboratories used during 2010 were:

Inorganic Chemistry and Microbiology:
City of Scotts Valley WWTP
700 Lundy Lane
Scotts Valley, CA 95066
ELAP Certificate No. 1062

Metals/ Inorganic and Organic chemistry:
BC Laboratories, Inc.
4100 Atlas Ct.
Bakersfield, CA 93308
ELAP Certificate No. 1186

Annual HVWS:
Frontier Analytical Laboratory
5172 Hillside Circle
El Dorado Hills, CA 95762
NELAP Certification No. CA02113

Bioassay Testing:
Toxscan Inc. Bioassay
42 Hangar Way
Watsonville, CA 95076
NPDES Certificate No. CA0048828

Lift Stations

The City of Scotts Valley owns and operates seven lift stations at various locations throughout the City. All stations are inspected three times each week. During these routine inspections, hour readings are taken to verify normal running times and flow throughput. Each pump is individually started and stopped to ensure proper operation, and wet-wells are visually inspected to confirm water levels with digital level reading on automatic pump controllers. Once each week, stations equipped with permanent emergency generators are tested on emergency power to ensure proper operation. Five stations are equipped with permanent emergency stand-by power. At this time, no other stations require permanent on-site emergency power, as limited flows allow ample time for City staff to respond to alarm conditions and provide portable generator power prior to overflows occurring.

All of the City's seven stations have back-up pumps and alarm systems that automatically call 24-hour emergency personnel in case of a power outage or high-level conditions.

Collection System

After reporting zero overflows in 2009, the City is reporting three collection system overflows in 2010.

- June 22 - Plugged line caused spill of less than 50 gallons to occur at 240 San Augustine Way. Flow escaped through private cleanout in driveway area. SSO Event ID 753822.
- August 20 - Partially plugged line caused estimated 1,000 gallons to spill from line at 300 El Pueblo Drive. SSO Event ID 756378.
- November 24 - Plugged line at 102 Christel Oaks Drive caused spill of 50 gallons. SSO Event ID 758909.

The City's sanitary sewer collection system is made up of approximately 40 miles of pipeline. City crews spend an average of two days each week performing preventative maintenance using a combination vacuum/hydro-jet truck to clean the lines.

Source Control Program

Industrial:

There is one remaining significant industrial user (SIU) in the City of Scotts Valley: ThermoFisher, a categorical metal finishing industry (40 CFR 433.15). AVIZA Technology, Inc., previously also an SIU, is no longer discharging any industrial process wastewater. They are only discharging domestic wastewater; therefore they are no longer permitted as an industrial discharger. ThermoFisher reported one very slight violation of nickel in their self-monitoring report. Upon re-sampling, there were no continued violations of their wastewater discharge permit in 2010.

Groundwater Remediation: There is a groundwater pump and treat site discharging to the sewer in the City of Scotts Valley, under a permit. The responsible parties for the site are Shell Oil Products US and ConocoPhillips, and the treatment system and reporting was managed by Delta Consultants, but is now managed by Conestoga-Rovers & Associates (CRA). Discharge began on March 7, 2008. The site has met all permit conditions to date.

All categorical industries and the groundwater pump and treat site in the City were monitored and permitted through the pretreatment program in 2010.

The City began strictly enforcing stormwater regulations at light industries such as auto repair shops and restaurants. As a result, there were several exterior washing and exterior storage operations that were eliminated.

Grease Trap Installation and Maintenance:

The fats, oils, and greases (FOG) program is in place with most facilities operating in compliance with local ordinances. Source Control continues to routinely inspect and monitor the conditions of the grease interceptors operating in Scotts Valley. A Best Environmental Management Practices pamphlet is being used as a training tool for local restaurant managers and owners.

Maintenance and Repairs

- Rebuilt grinder at for the belt filter press
- Painted floor of belt press building with non-slip epoxy coating
- Constructed new roof over UV disinfection system at the recycled water facility
- Overhauled and re-certified all plant jib cranes
- Installed new backwash valves on flow equalization basin
- Installed new WAS pump (P-8)
- Installed new jet aeration pump
- Installed new Panel-vision PLC for UV disinfection system
- Repaired aeration panels
- Installed 18-inch magnetic flow meter for recycled water system
- New belts were installed on belt filter press
- Other plant maintenance and repairs were perform as required

O & M Manual

The plant's main operations and maintenance manual (O&M) was not changed during 2010; however, the plant's O&M manual library was updated to include new equipment that was placed into service over the past year. Updating the plant's O&M manual takes place on an ongoing basis. We have one O&M manual that is used for operational guidelines and minor service to plant equipment. We also catalog individual O&M's for every piece of equipment in place at the treatment plant, collection system, and lift stations.

Training

- All staff was retrained in the plant's annual Red Cross Adult CPR and Standard First Aid Certification Program.
- All staff participates in the plant's in-house safety/training meetings that are conducted every other Wednesday throughout the year.
- All Operations and Laboratory staff participated in several one-day training classes and seminars related to wastewater treatment, laboratory and maintenance.

Public Outreach/Education

The Monterey Bay Area Green Business Program continues to thrive. Goals of the Green Business Program include promoting pollution prevention, waste minimization, and implementing best management practices that go above and beyond the regulatory standards. A Task Force consisting of multimedia regulators (stormwater, air, hazardous materials, as well as wastewater) and several non-profit organizations continue to meet every quarter to coordinate the program. Since its launch in July, 2004, the program has developed to certification capability in nineteen different business sectors, including: restaurants, plumbers, office/retail facilities, hotels/hospitality services, custodial companies, beauty salons, laundromats, wineries, painters, landscapers, property management/multi-family dwellings, schools, medical facilities, garment cleaners, vehicle service facilities, auto body shops, printers, contractors/remodelers, and pharmacies. A significant portion of the program for restaurants, hotels, and plumbers is dedicated to minimizing discharges of fats, oils, and greases (FOG) into the sanitary sewer. Eighteen businesses have been certified in Scotts Valley, up from fifteen in 2009. These businesses have been advertised in a local paper and will be advertised again in the spring.

A significant development in 2010 was the launch of the statewide Green Business Program database. While several years in the making, it was only in the past year that it became capable of accepting local businesses entries. The database benefits the program by allowing both applicants and program staff to enroll a business or organization, to submit data, and to update and track information. Most importantly, it will allow the program to collect metrics on water and energy savings, and pollution and waste reduction, and so assess the program's impacts.

City Staff, in collaboration with the County of Santa Cruz and other City agencies, were successful in obtaining a grant from the California Integrated Waste Management Board (CIWMB) in order to implement a pharmaceutical and sharps disposal program. Since 2008, the Sharp Solutions for Home Medicines Program has provided a convenient and permanent system to dispose of used sharps and unwanted pharmaceuticals in the County of Santa Cruz. The County established 30 convenient well-publicized drop-off locations, primarily at pharmacies, throughout the region. Residents may dispose of controlled substances through Drug Enforcement Agency (DEA)-approved mail-back envelopes available at Hospice of Santa Cruz County and certain pharmacies.

In 2010, the Palo Alto Medical Foundation (PAMF), previously a non-participant, established a pilot project to dispose of pharmaceuticals at one of its clinics in Scotts Valley. The project was so successful that PAMF will start providing pharmaceutical take-back at all of its clinics in Santa Cruz County in 2011, significantly expanding the program.

From July 2008 through December 2010, over 31,000 pounds of sharps and pharmaceuticals have been collected and diverted from county landfills and water systems. The three sites in Scotts Valley alone have collected almost 5,000 pounds, thus reducing water pollution and public health risks.

Electronic Waste: On Saturday, September 25, 2010, the City of Scotts Valley conducted its 8th annual e-waste collection event. The City collected over 23,000 pounds of electronics, mostly in the form of computers, monitors and television sets, from nearly 300 participants. These items are now banned from landfill disposal because of their hazardous material content of lead, mercury, and other heavy metals.

Appliance & Tire Collection: The City of Scotts Valley held its 7th annual Appliance and Tire Collection Event on Saturday, October 9. A record number 118 participants dropped off a total of 11 water heaters, 12 washers, 17 dryers, 35 oven/stoves, 22 refrigerators, 56 misc. small appliances and 421 tires. Scrap metal from appliances was shredded, melted and made into new metal products. Collected tires were ground into small pieces and will be recycled into rubber playground surfaces and rubber floor mats.

On an annual basis, the treatment plant staff provides a number of ongoing public outreach/education services. Some of those services include:

- **Oil Recycling:** As a member of the County's regional oil recycling program, the City distributes oil recycling containers to local automotive supply stores where they are distributed to residents at no cost. The 2.5 gallon used oil containers have labels containing information on proper disposal practices and can be used throughout the county in any curbside collection program as part of the integrated regional program.
- **Christmas Tree Recycling:** Every year following the Thanksgiving Holiday on their three-times-weekly lift station rounds, operations staff delivers bundles of informational flyers to local Christmas tree vendors for distribution to residents and businesses. Flyers contain information on free tree collection and drop-off locations so that trees can be chipped and reused.
- As always, plant tours are encouraged and given upon request to any person or group wishing to learn about the treatment process. Several individual and group tours were given in 2010.

NPDES PERMIT EFFLUENT VIOLATIONS 2001-2010

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
January	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	1*	0	0
September	0	0	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	0	0	0	0
November	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0

*TCDD

TABLE 1

2010 PLANT FLOW AND RAINFALL

	Influent Total Flow Million Gallons	Effluent Daily Flow MGD	Total Plant Flow Eff.+Rec.MGD	Effluent Inst. Max. MGD (peak)	Recycled Total Flow Million Gallons	Rainfall Inches (Total)
January	36.189	30.543	30.622	3.88	0.079	11.47
February	32.441	28.580	28.580	2.87	0.000	8.33
March	34.240	28.411	28.896	3.55	0.485	4.56
April	32.360	26.732	27.342	3.50	0.610	5.23
May	31.204	20.297	25.773	2.41	5.476	1.25
June	29.349	15.757	24.197	2.12	8.440	0.00
July	28.569	14.135	24.642	3.63	10.507	0.03
August	29.916	15.491	24.642	2.07	9.151	0.04
September	31.240	15.173	23.637	2.00	8.464	0.00
October	29.134	19.494	24.614	2.45	5.120	4.62
November	29.181	24.399	24.983	3.00	0.584	5.09
December	36.698	31.806	32.236	3.52	0.430	15.17
Total	380.5202	270.82	320.17		49.35	55.79
Average	31.71	22.57	26.68	2.99	3.99	3.17
Maximum	36.698	31.81	32.24	3.88	8.52	17.43
Minimum	28.569	14.14	23.64	2.00	0.467	0.00

ADDWF, MGD	0.803
Eff + Recycle	

TABLE 2**2010 Influent & Effluent Suspended Solids**

	Influent mg/L	Effluent mg/L	Effluent lb/day	Percent Removal
January	227	7	58	97.1%
February	206	7	60	96.5%
March	259	8	68	96.8%
April	244	6	44	97.5%
May	256	8	46	96.9%
June	280	9	37	96.9%
July	241	5	19	98.0%
August	282	5	22	98.1%
September	289	10	43	96.7%
October	286	10	50	96.5%
November	255	7	45	97.3%
December	252	10	74	96.0%
Average	256	8	47	97.0%
Maximum	289	10	74	98.1%
Minimum	206	5	19	96.0%

TABLE 3**2010 Influent & Effluent BOD & cBOD**

	Influent BOD mg/L	Effluent BOD mg/L	Effluent BOD lb/day	BOD Percent Removal	Influent cBOD mg/L	Effluent cBOD mg/L	Effluent cBOD lb/day	cBOD Percent Removal
January	289	3	18	99.0%	214	2	16	98.8%
February	250	3	23	98.6%	194	3	19	98.5%
March	260	5	34	98.0%	193	4	24	98.0%
April	269	4	24	98.6%	212	3	20	98.6%
May	318	5	30	98.6%	248	4	25	98.5%
June	319	4	29	98.7%	241	3	23	98.6%
July	310	2	17	99.2%	243	2	13	99.2%
August	330	3	21	99.0%	265	3	17	99.0%
September	317	5	37	98.3%	253	3	23	98.6%
October	313	5	36	98.3%	245	5	31	98.1%
November	303	3	21	98.9%	232	2	17	98.9%
December	283	4	27	98.6%	225	3	22	98.5%
Average	297	4	26	98.6%	230	3	21	98.6%
Maximum	330	5	37	99.2%	265	5	31	99.2%
Minimum	250	2	17	98.0%	193	2	13	98.0%

TABLE 4**2010 Tertiary Effluent Nitrogen**

	Tertiary Ammonia mg/L as N	Tertiary Organic N mg/L as N	Tertiary Nitrate mg/L as N	Tertiary Nitrite mg/L as N	Influent Total N mg/L as N	Tertiary Nitrogen Removal Percent
January	< 0.28	1.2	5.2	< 0.1	55	88.4
February	0.64	1.8	5.2	< 0.1	53	86.9
March	0.28	1.6	4.3	< 0.1	53	88.7
April	< 0.29	1.3	4.4	< 0.2	62	90.9
May	0.83	1.2	4.6	< 0.2	64	90.8
June	< 0.24	1.2	3.5	< 0.2	71	93.5
July	0.04	0.5	4.0	< 0.2	63	92.9
August	0.07	0.5	2.0	< 0.2	63	96.1
September	9.32	1.1	1.7	< 0.2	66	95.8
October	0.08	0.6	1.5	< 0.2	61	96.5
November	0.08	0.6	1.7	< 0.1	69	96.6
December	0.06	0.4	3.0	< 0.1	66	94.7
Average	< 0.95	1	3	< 0.1	62	92.7
Maximum	9.32	2	5	< 0.2	71	96.6
Minimum	< 0.00	0.4	2	< 0.1	53	86.9

TABLE 5**2010 Influent & Effluent pH and Effluent Turbidity, Settleable Solids, and Oil & Grease**

	Influent pH Std Units	Effluent pH Std Units	Effluent Turbidity NTU	Effluent Settleable Solids ml/L	Effluent Oil & Grease mg/L	Effluent Oil & Grease lb/day
January	8.0	7.0	3.7	< 0.1	< 5	< 33
February	8.0	7.0	6.0	< 0.1	< 5	< 33
March	8.1	7.1	7.0	< 0.1	< 5	< 33
April	8.2	7.4	5.1	< 0.1	< 5	< 33
May	8.2	7.3	6.7	< 0.1	< 5	< 33
June	8.2	7.3	6.0	< 0.1	< 5	< 33
July	8.2	7.3	3.5	< 0.1	< 5	< 33
August	8.2	7.3	5.5	< 0.1	5	31
September	8.1	7.3	6.0	< 0.1	< 5	< 33
October	8.2	7.3	4.7	< 0.1	< 5	< 33
November	8.3	7.4	5.0	< 0.1	< 5	< 33
December	8.2	7.3	3.0	< 0.1	< 5	< 33
Average	8.1	7.2	5.2	< 0.1	< 5	< 33
Maximum	8.3	7.4	7.0	< 0.1	5.0	31
Minimum	8.0	7.0	3.0	< 0.1	< 5.0	< 33

TABLE 6**2010 Effluent Chlorine Residual and Bacteriological Quality**

	Chlorine Residual mg/L @ Santa Cruz	Total Coliform MPN/100mL	Fecal Coliform MPN/100mL	Enterococcus MPN/100mL
January	< 0.01	3080	2480	< 100
February	< 0.01	2425	50	< 125
March	< 0.01	15883	15317	< 117
April	< 0.01	< 200	< 200	< 10
May	< 0.01	920	< 200	< 10
June	< 0.01	980	< 240	10
July	< 0.01	680	440	< 100
August	< 0.01	6680	1940	120
September	< 0.01	1750	< 200	< 100
October	< 0.01	3860	< 320	< 100
November	0.06	2990	340	162
December	0.01	10440	360	100
Geometric	< 0.01	2,287	< 472	< 61
Maximum	0.06	15,883	15,317	162
Minimum	< 0.01	< 200	< 200	< 10

TABLE 7**2010 Sludge Wasting**

	WAS Flow MG/mnth	WAS Percent Solids	WAS Metric Tons per month (dry wt)	Hours Pressed per/mnth	Sludge Cake % Solids	Sludge Hauled Tons/mnth (dry wt)
January	0.5718	0.80	16.2	122	15.7	24.7
February	0.6131	0.87	19.3	131	16.0	29.8
March	0.7255	0.86	19.2	156	15.9	32.8
April	0.6519	0.93	21.3	139	16.4	31.4
May	0.9261	0.79	15.8	131	16.1	24.1
June	0.6317	0.95	21.6	132	15.6	25.6
July	0.6948	0.92	22.3	132	15.7	26.4
August	0.7079	0.83	18.6	136	15.5	25.7
September	0.5859	0.87	16.8	118	15.3	23.9
October	0.6356	0.81	16.6	115	14.9	22.6
November	0.6004	0.89	20.6	110	14.1	23.7
December	0.7843	0.87	21.3	151	14.5	31.9
Total	8.129		229.7	1,573		322.6
Average	0.677	0.87	19.1	131	15.5	26.9
Maximum	0.926	0.95	22.3	156	16.4	32.8
Minimum	0.572	0.79	15.8	110	14.1	22.6

2010 Plant Operating Parameters

	Aerator lbs	Clarifier lbs	Total lbs	RAS mg/L	MLSS mg/L	Clar. SS mg/L	MCRT 7-day	F/M 7-day	SVI Ratio
January	12944	9383	22,327	9217	5146	2217.3	10.9	0.24	184
February	14081	10399	24,481	9585	5598	2457.5	11.6	0.22	169
March	12384	8243	20,627	9308	4923	1948.0	9.3	0.24	184
April	13134	7383	20,517	10229	5221	1744.7	9.2	0.22	174
May	11739	5035	16,774	8692	4667	1189.9	9.0	0.24	173
June	12637	5491	18,127	8854	5024	1297.5	8.0	0.23	174
July	13158	6662	19,820	8569	5231	1574.3	8.3	0.19	180
August	12752	7410	20,162	8131	5070	1751.1	9.1	0.21	188
September	11595	5342	16,937	8275	4610	1262.4	9.6	0.25	174
October	11694	6902	18,596	7833	4649	1631.0	9.4	0.23	181
November	13811	9605	23,416	9111	5491	2269.7	10.4	0.19	173
December	12863	13054	25,916	8588	5114	3084.7	10.7	0.24	189
Average	12,733	7,909	20,642	8,866	5,062	1,869	9.6	0.23	179
Maximum	14,081	13,054	25,916	10,229	5,598	3,085	11.6	0.25	189
Minimum	11,595	5,035	16,774	7,833	4,610	1,190	8.0	0.19	169

FIGURE 1

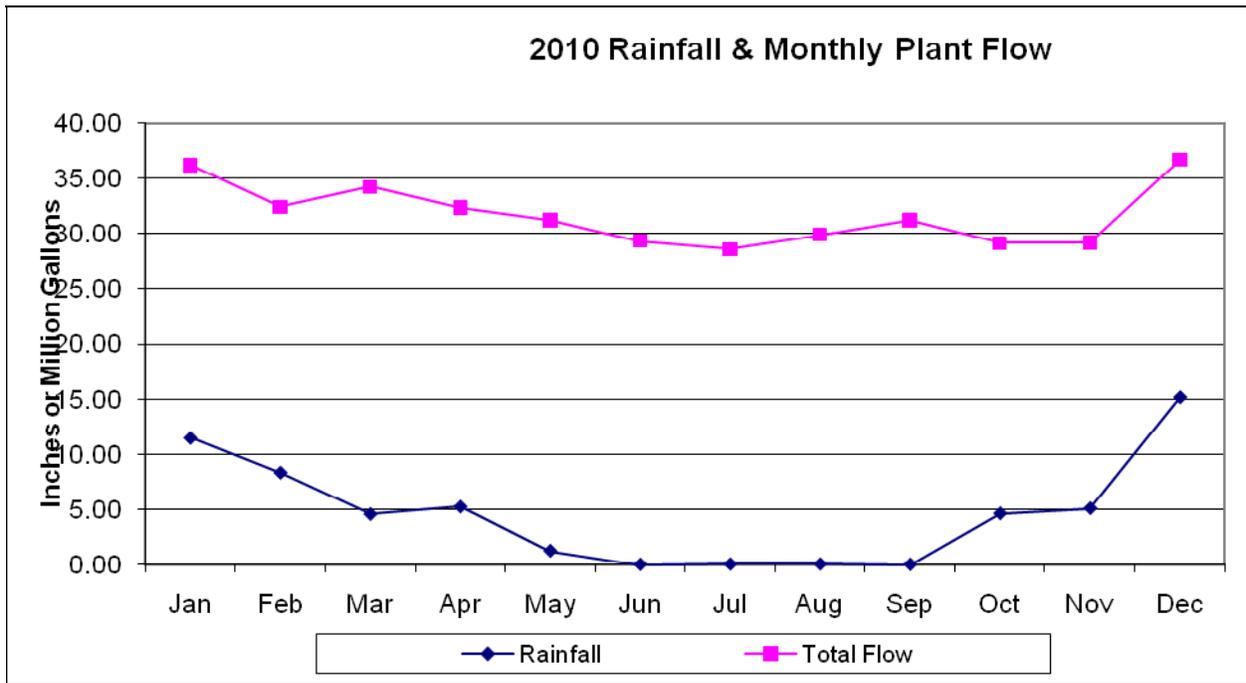


FIGURE 2

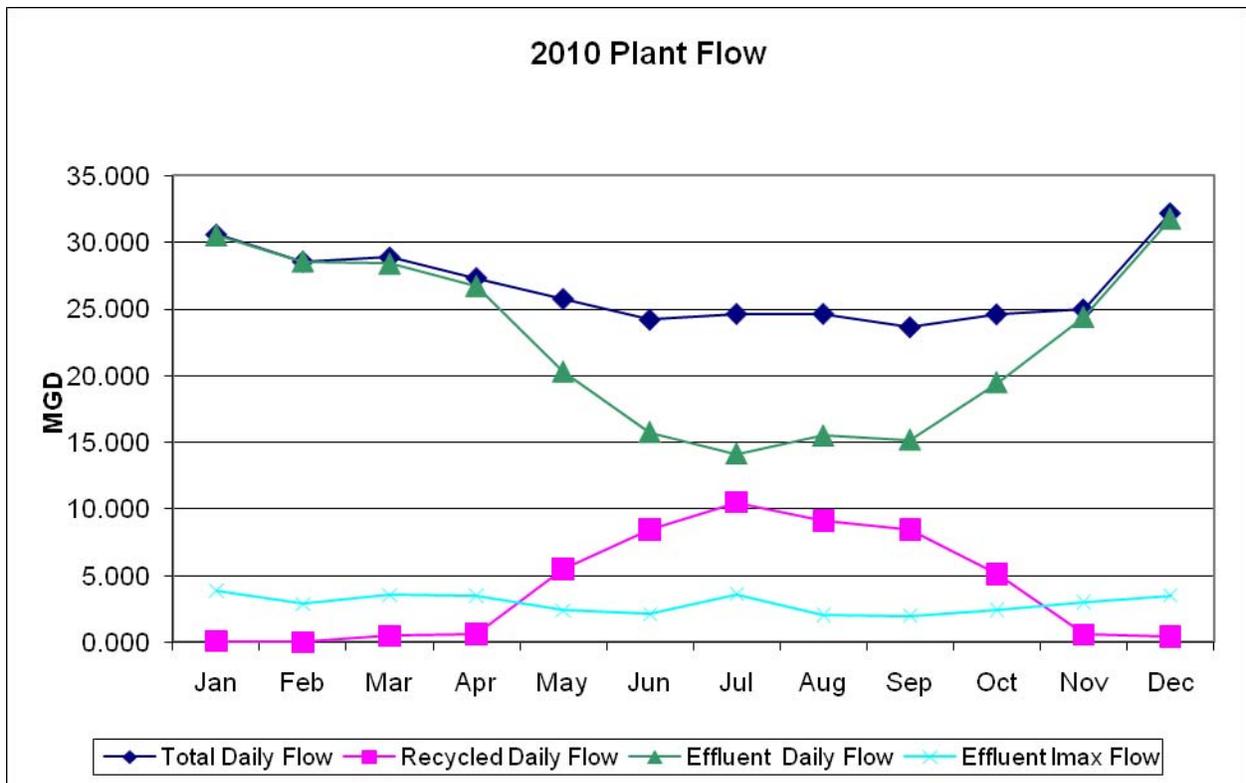


FIGURE 3

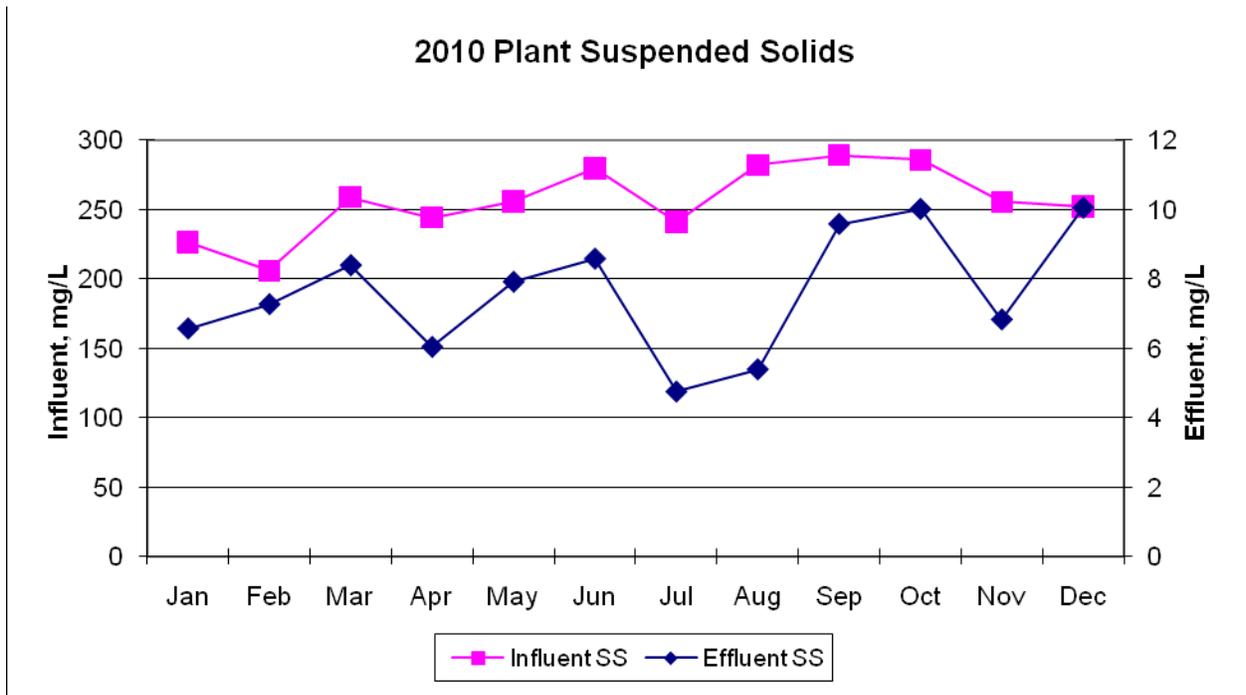


FIGURE 4

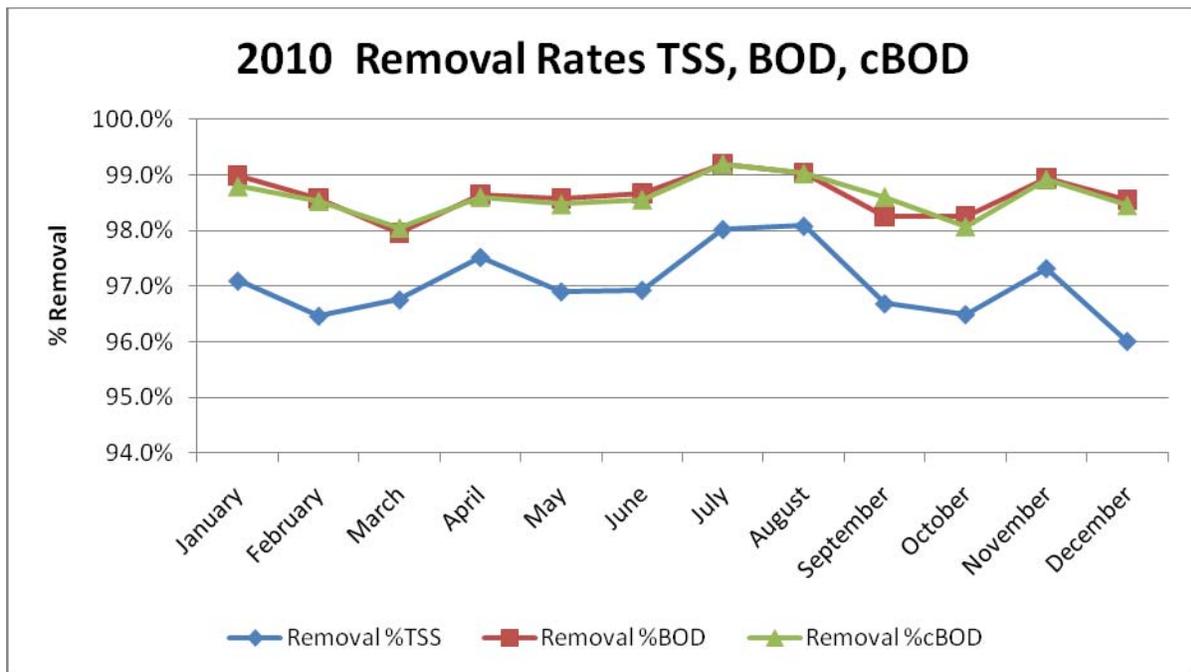


FIGURE 5

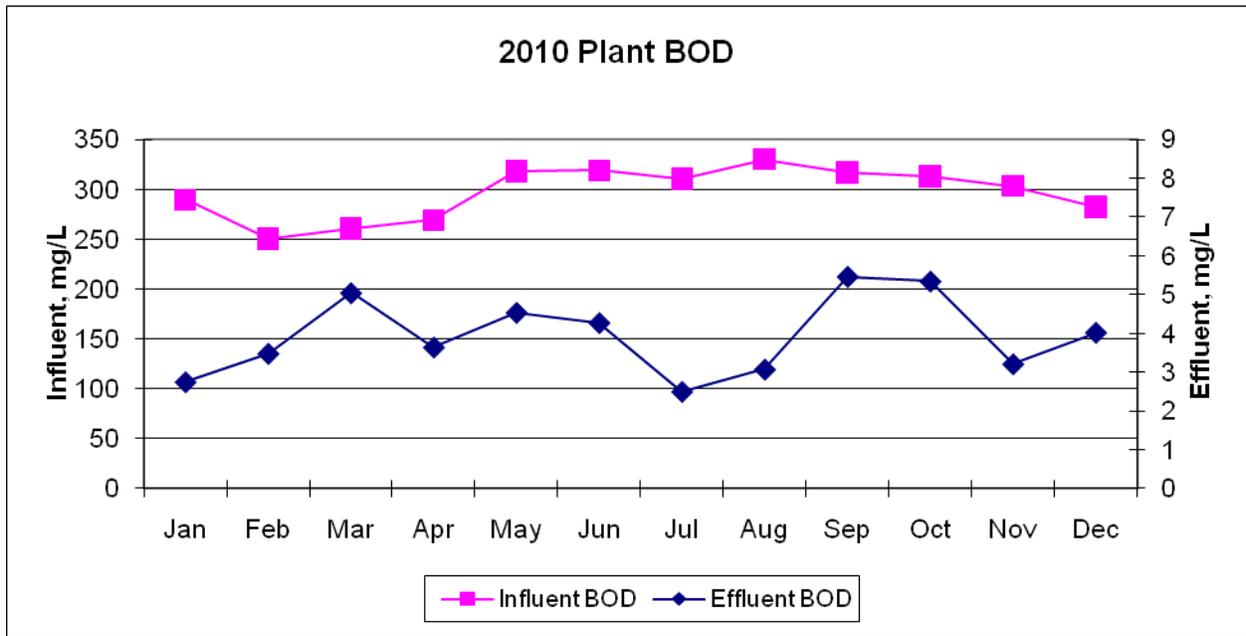


FIGURE 6

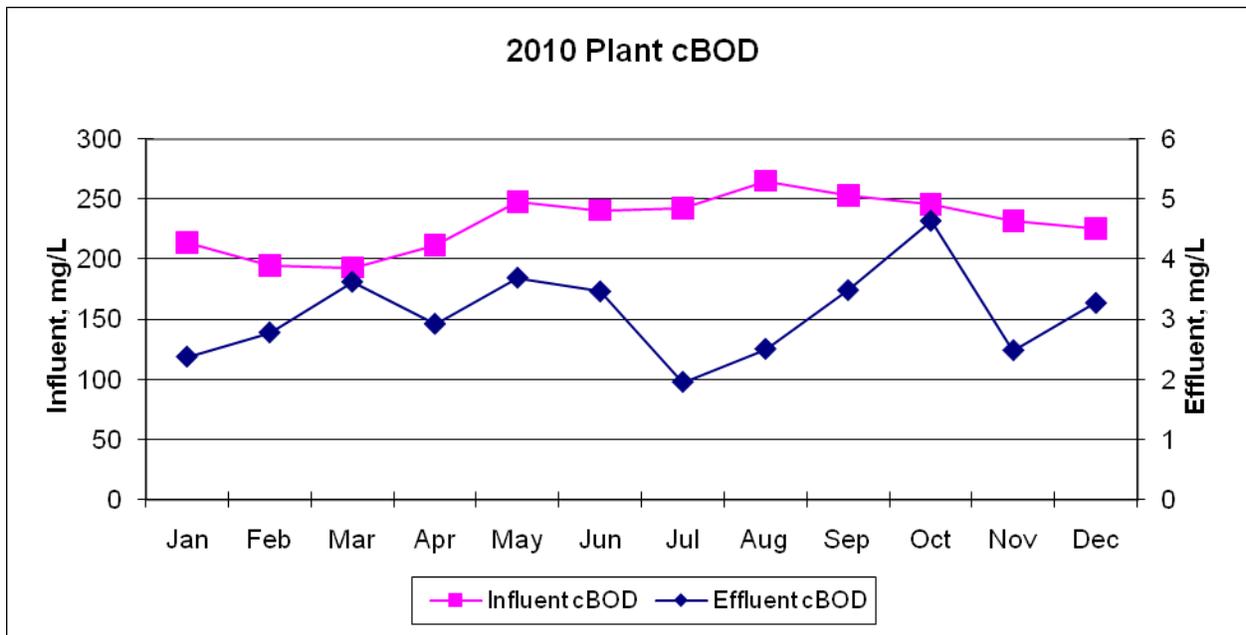


FIGURE 7

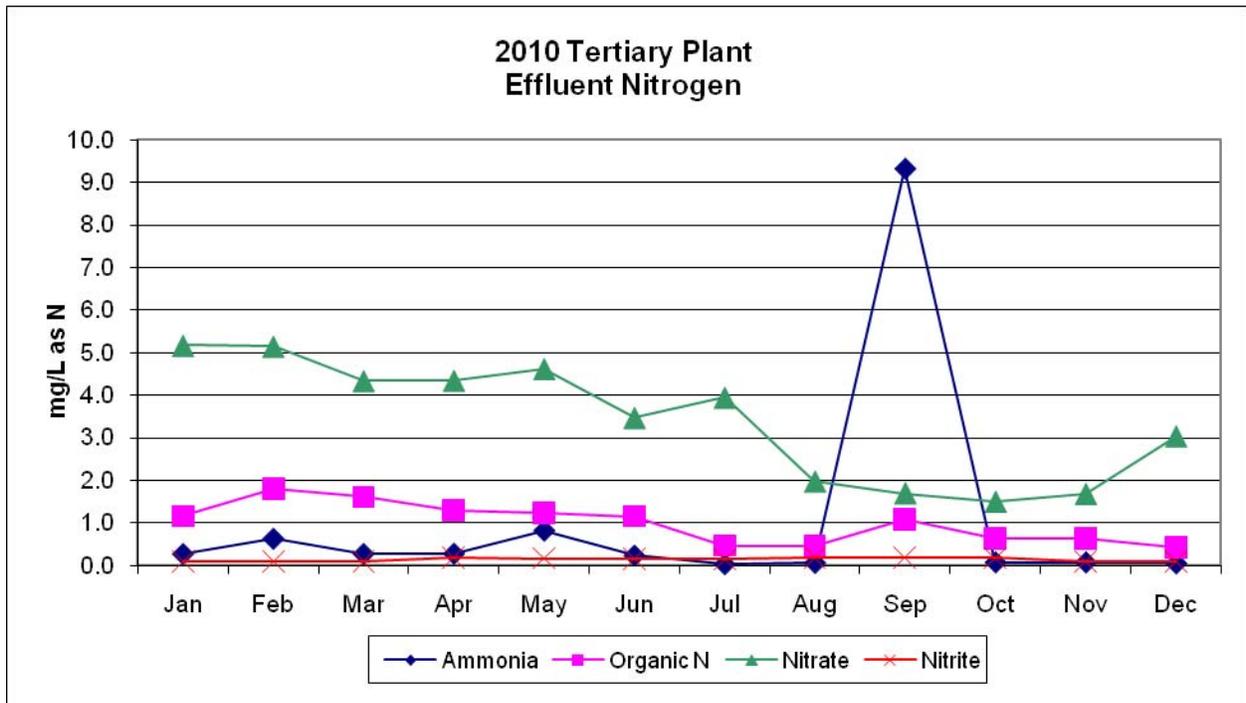


FIGURE 8

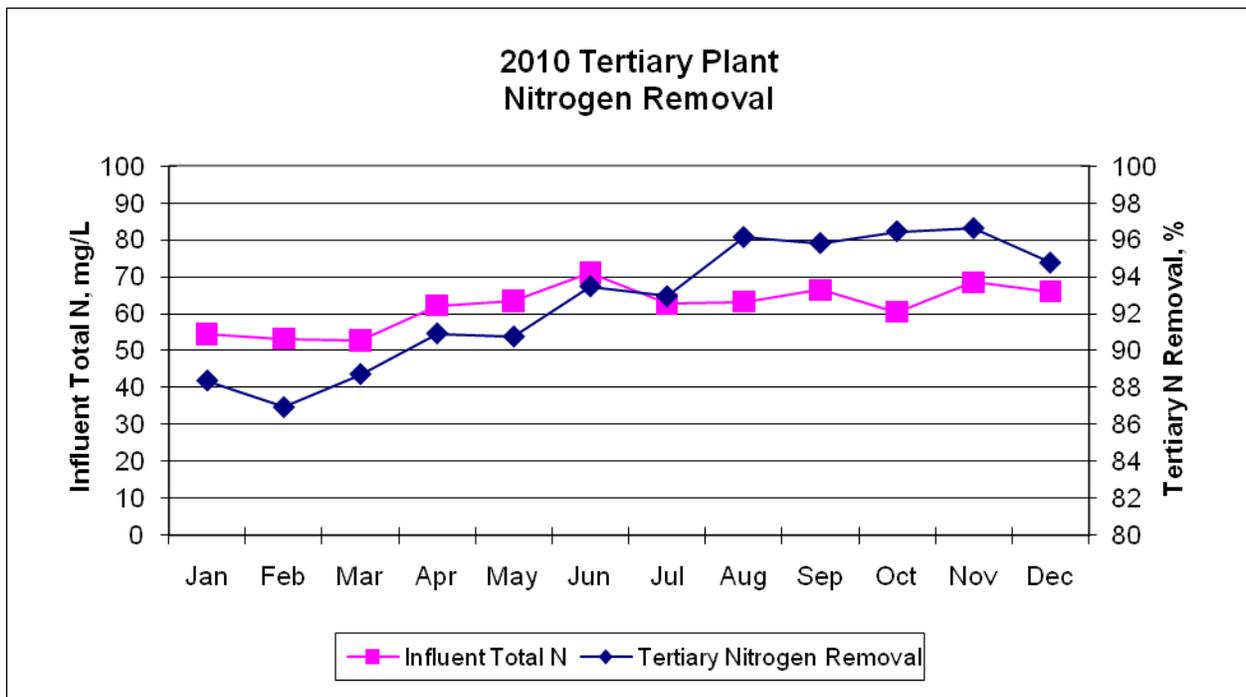


FIGURE 9

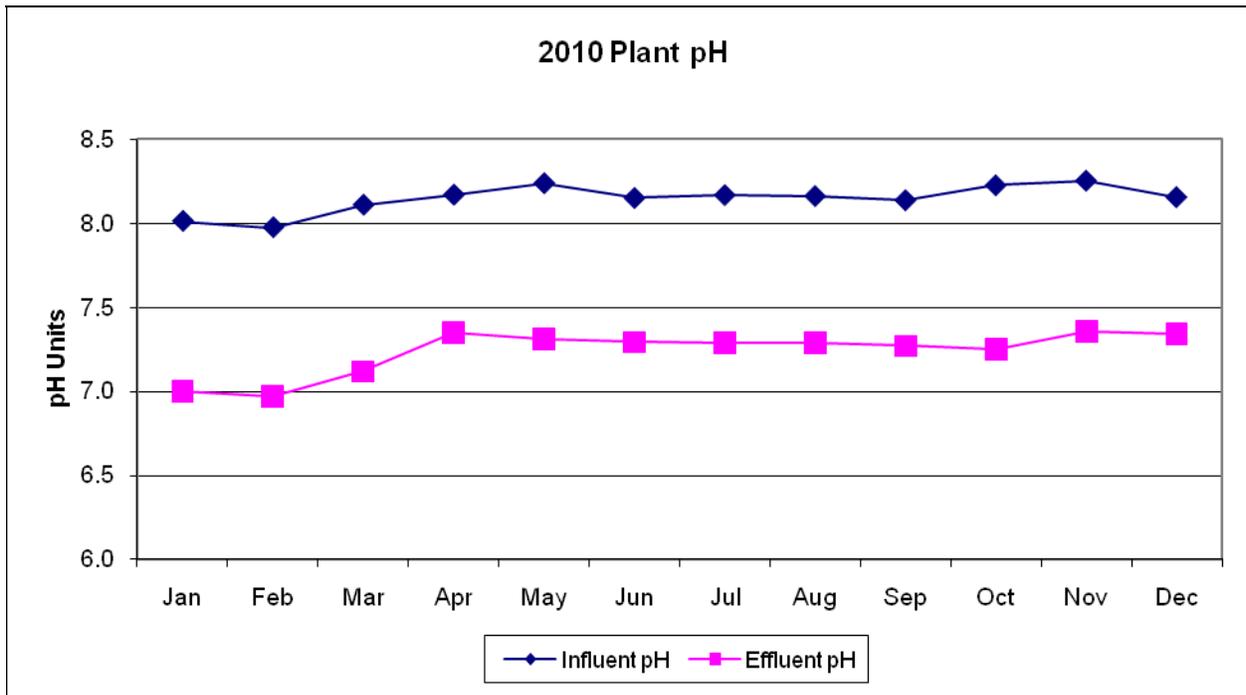


FIGURE 10

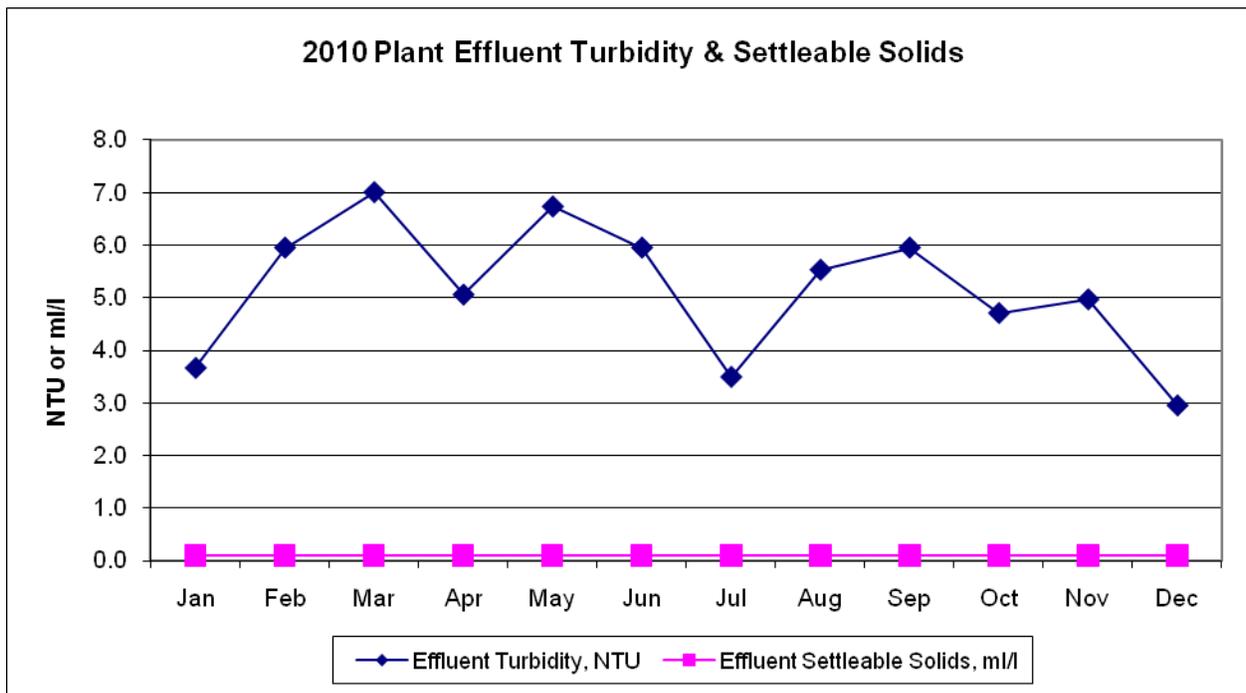


FIGURE 11

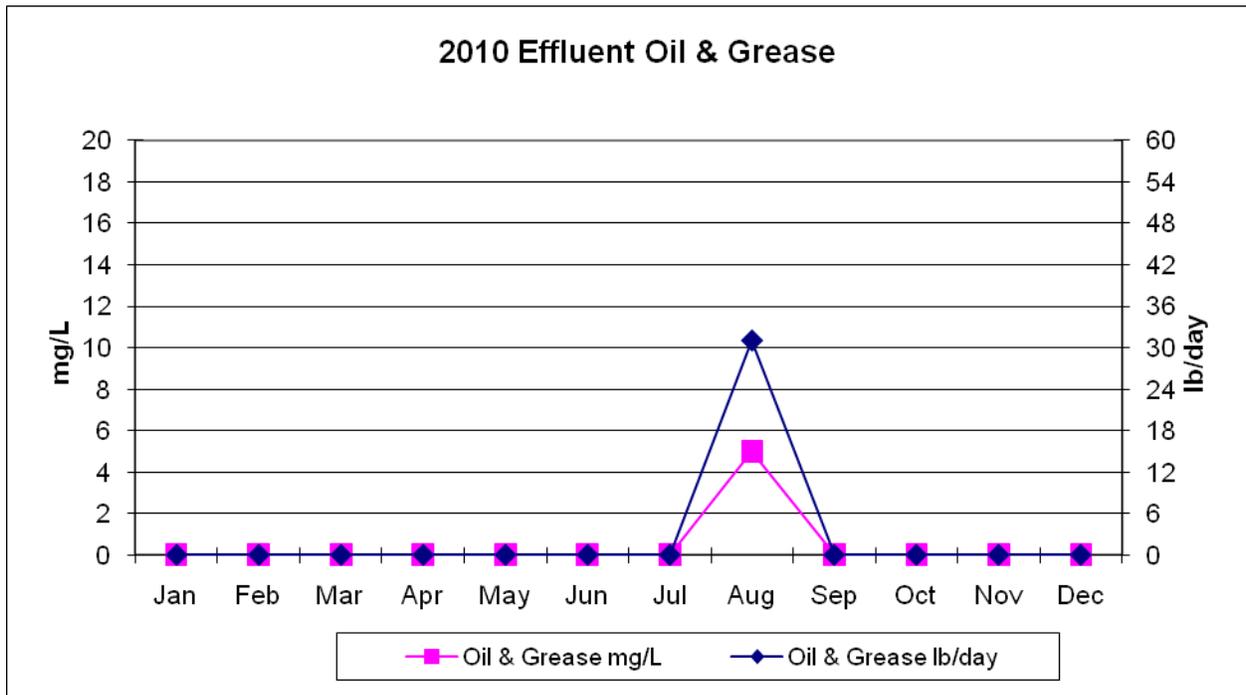


FIGURE 12

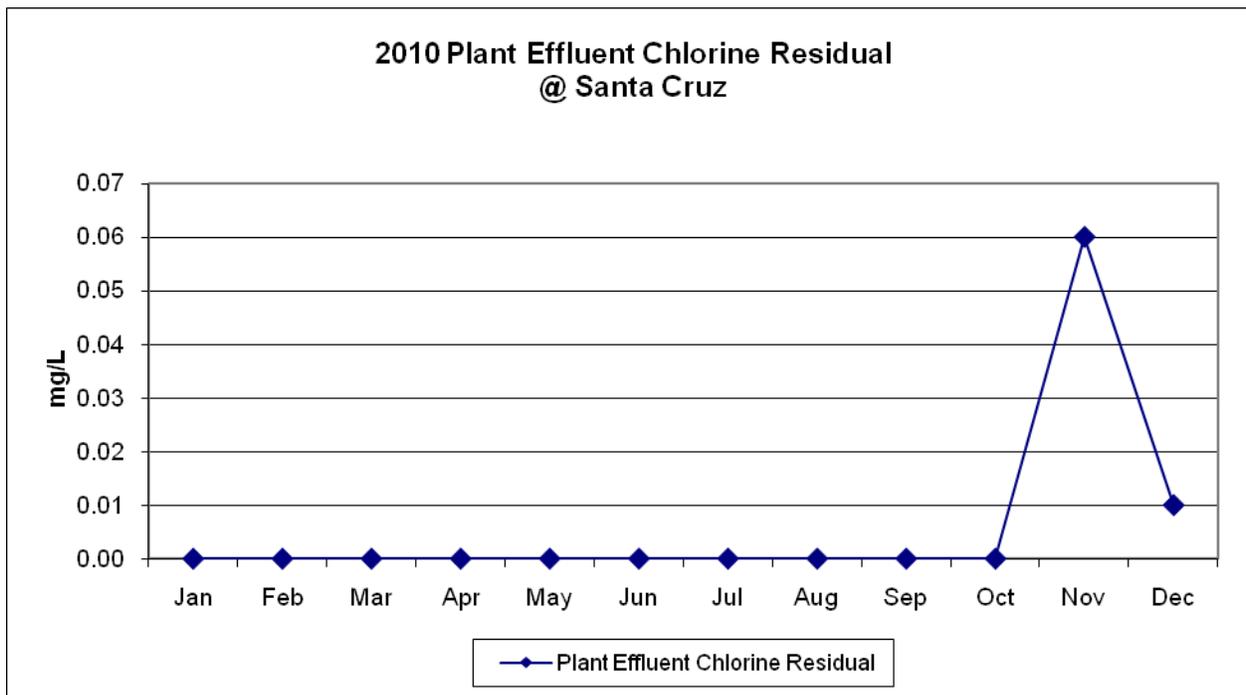


FIGURE 13

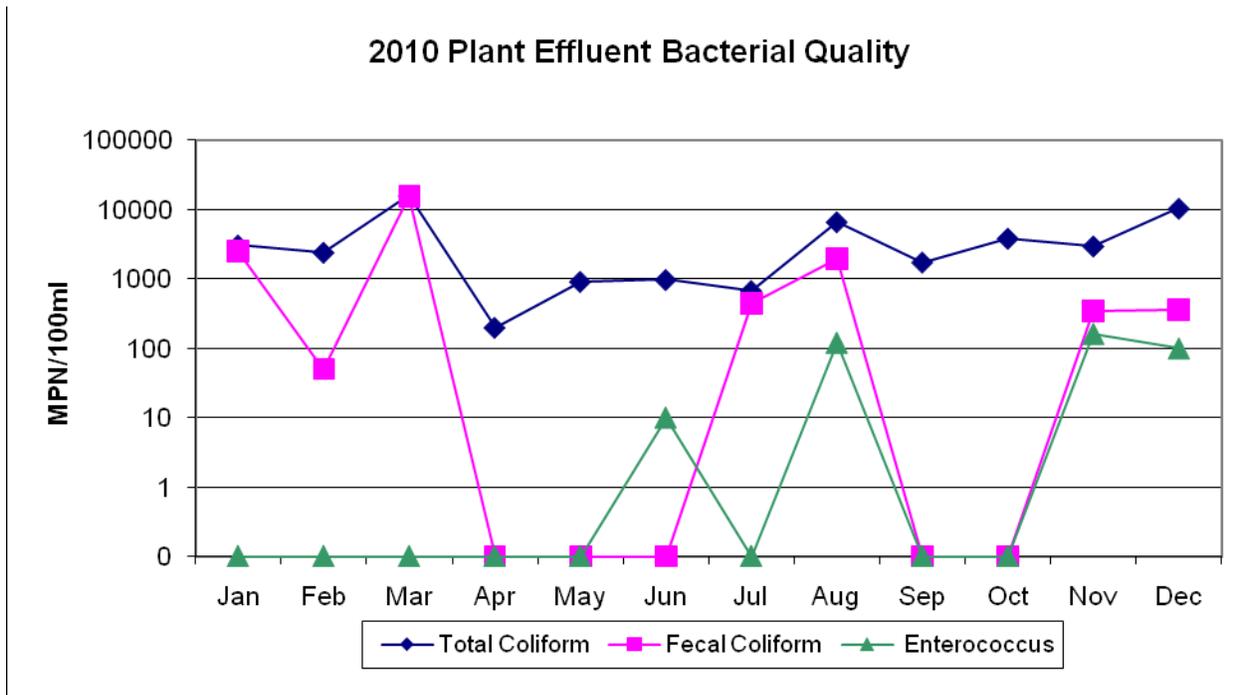


FIGURE 14

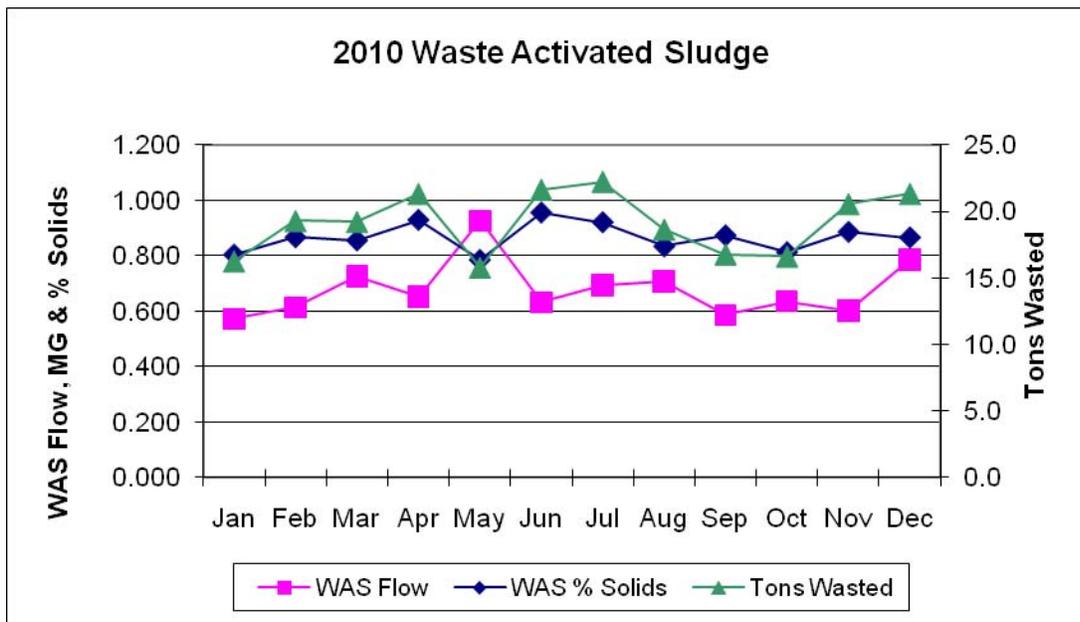


FIGURE 15

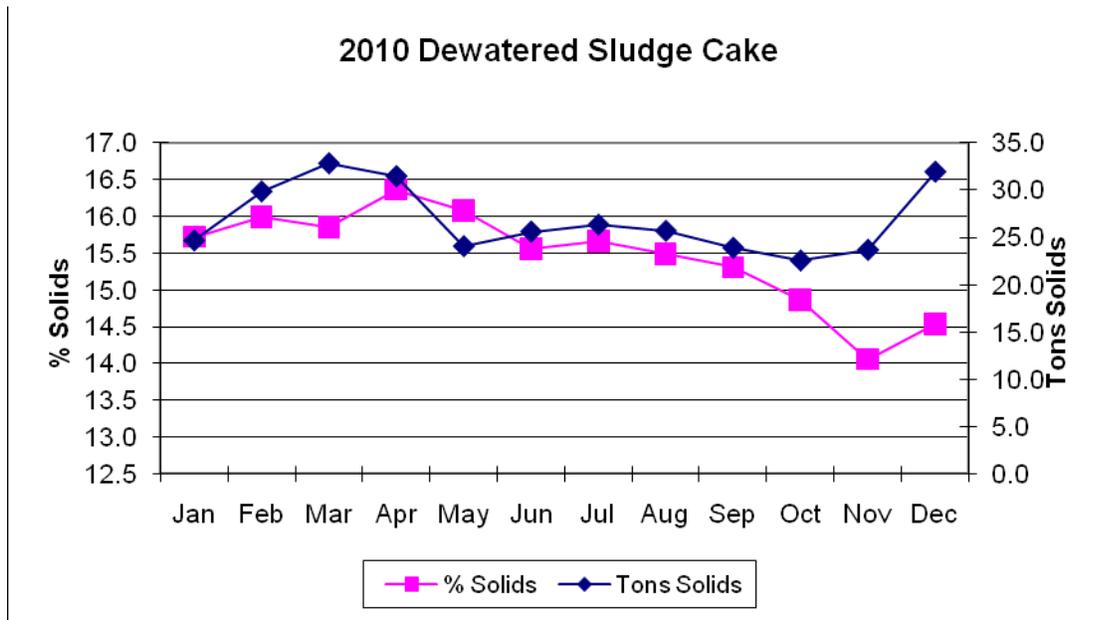


FIGURE 16

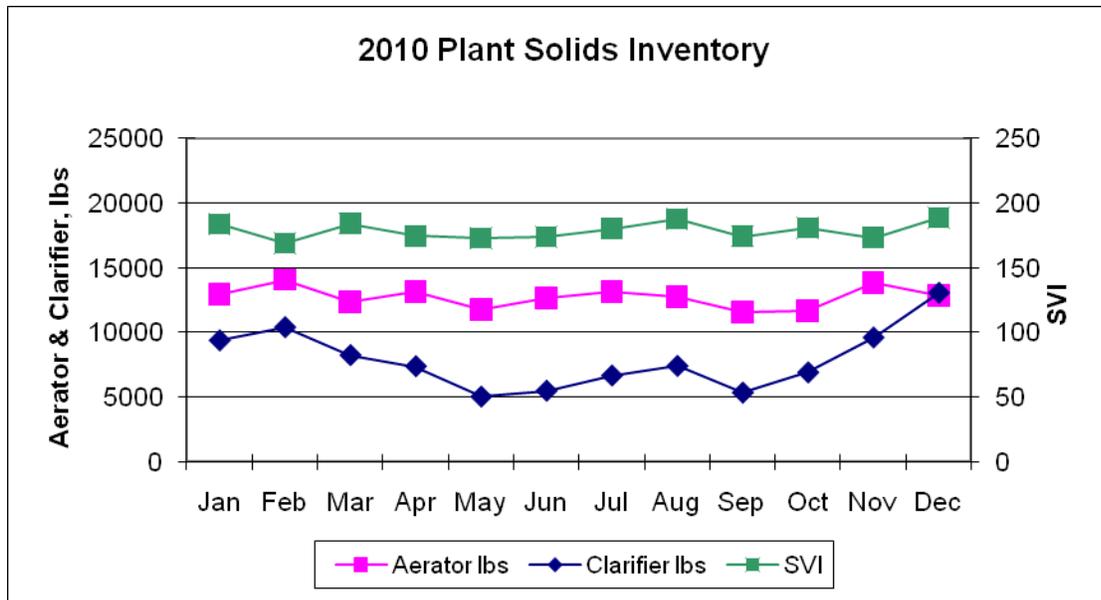


FIGURE 17

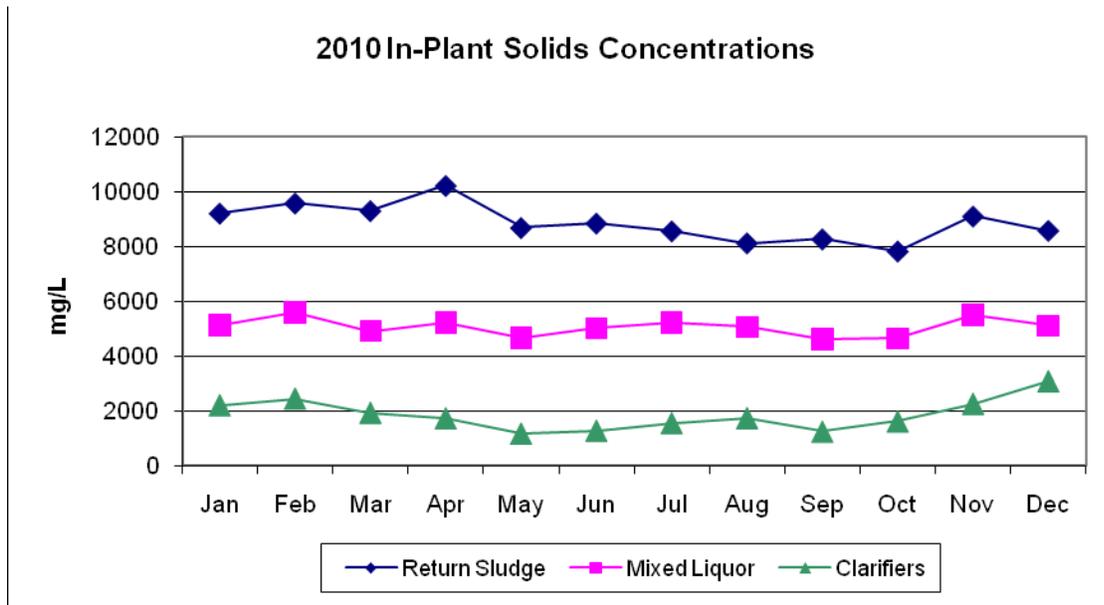


FIGURE 18

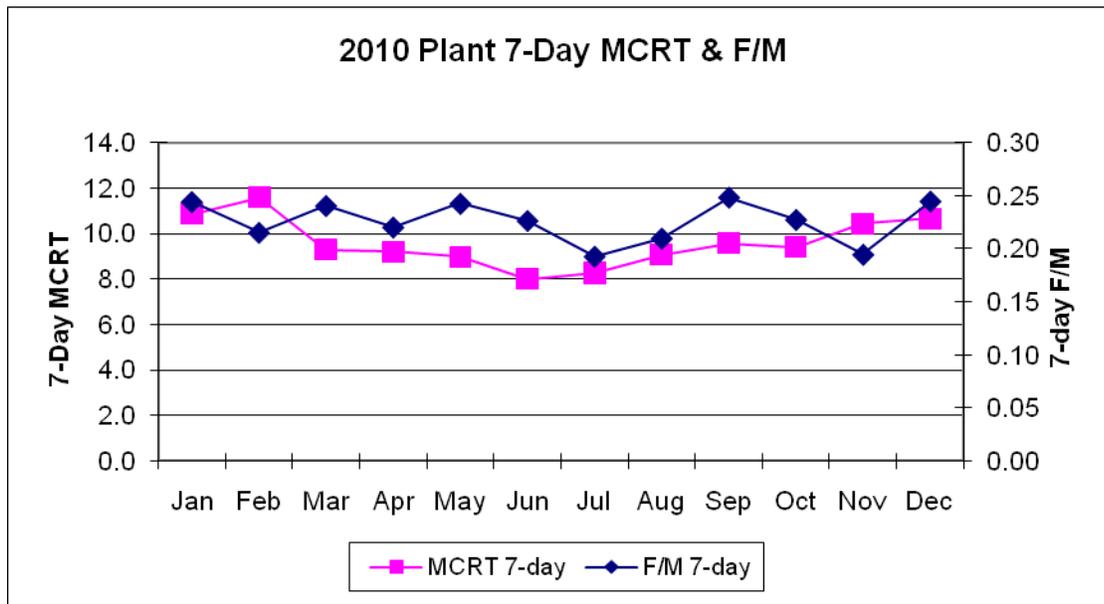


FIGURE 19

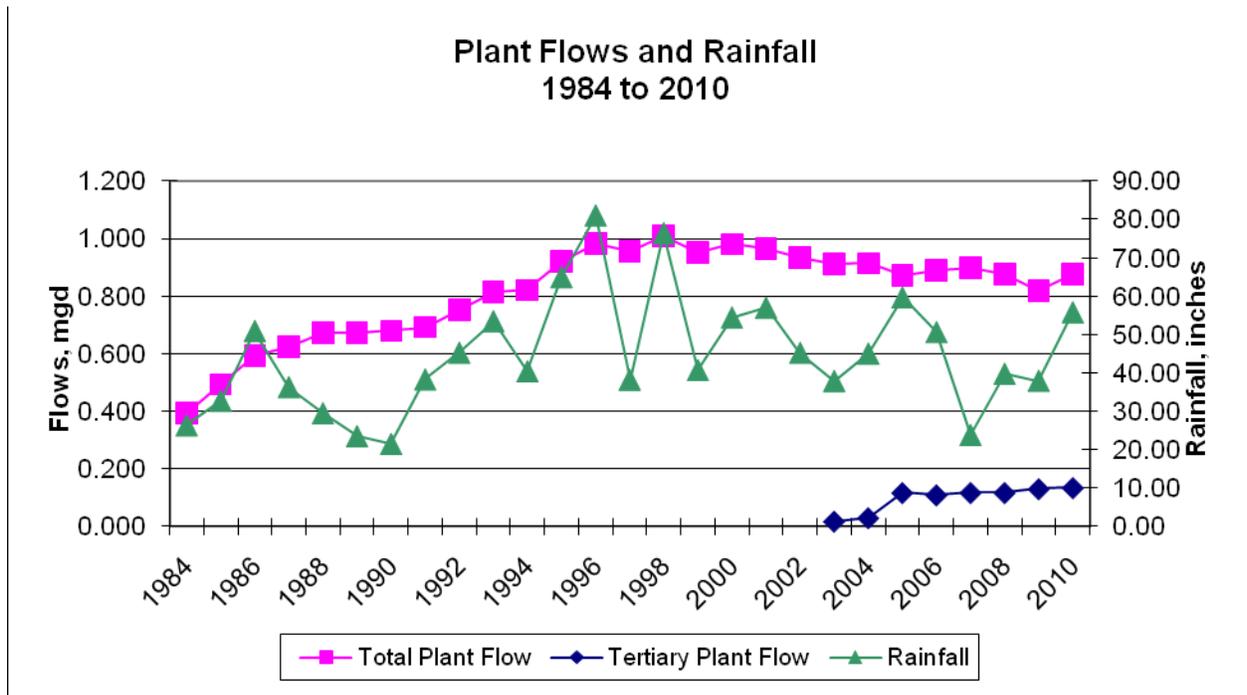


FIGURE 20

