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March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,

Dear Sir:

RE: 2010 Year-End Biosolids Land Application Program Report for Biosolids Centralized Storage Facility (Storage for Woodstock, Tillsonburg, and Ingersoll WWTP), Thamesford WWTP, and Norwich Lagoons

Attached is the monitoring report for 2010 for Oxford County's biosolids land application program.

I trust this report fulfills the intent of Certificates of Approval #'s A800939, 3816-76HRTS, 1680-6F6QRS, 3549-6YNMKK, 5950-7XQKXS, 8943-6YGPQT, 6974-6FKKAY, 0098-5SSJT4, and 6821-5FVSUE.

If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT,
Project Engineer, Oxford County

Year-End Biosolids Land Application Program Report 2010

This monitoring report is prepared for the Ministry of the Environment as part of the requirements of several Certificates of Approval #'s A800939, 3816-76HRTS, 1680-6F6QRS, 3549-6YNMKK, 5950-7XQKXS, 8943-6YGPQT, 6974-6FKKAY, 0342-7WCKCJ and 6821-5FVSUE.

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OVERVIEW OF THE LAND APPLICATION PROGRAM

Oxford County owns and operates nine wastewater treatment plants within the County; namely, Woodstock Wastewater Treatment Plant (WWTP), Ingersoll WWTP, Tillsonburg WWTP, Thamesford WWTP, Drumbo Sequencing Batch Reactor (SBR), Norwich Lagoons, Plattsville Lagoons, Tavistock Lagoons, and the Mount Elgin Septic Tank Effluent Gravity (STEG) system with recirculating sand filters. The four larger mechanical plants generate biosolids on a daily basis while the other systems inventory the material within their treatment systems over long periods of time, or in the case of Drumbo SBR, have it transported to another facility (Woodstock) on a weekly basis for treatment.

Of the four larger mechanical plants, two plants digest material anaerobically (Woodstock and Ingersoll) and two digest biosolids aerobically (Thamesford and Tillsonburg). Woodstock WWTP produces roughly half of all the biosolids produced in the County excluding lagoons and traditionally has landfilled this material while the other plants traditionally used a combination of some land application and some landfilling of the material. This all changed with the implementation of the Biosolids Management Master Plan (BMMP) with dewatering at three of the four mechanical plants and biosolids taken for storage at the Biosolids Centralized Storage Facility (BCSF) for application to land as a nutrient.

Oxford County Biosolids program was the winner of the 2008 Biosolids Award from the Water Environment Association of Ontario for small producers. There are five main elements of the Biosolids Management Master Plan which include; more enforcement of the Oxford County Sewer use by-law, dewatering of stabilized biosolids at each of the major wastewater treatment plants, transporting thickened sludge from smaller plants to the nearest major wastewater treatment plant for processing, land application of all biosolids on approved soil conditioning sites, and centralized storage of biosolids when the material cannot be land applied.

The enforcement of the Oxford County sewer use bylaw was an important step, and to this end Oxford County hired two enforcement personnel, one staff member in 2006 and a second in 2009, also the wastewater department acquired additional sophisticated automatic sampling equipment. These changes were made with a view to improving both the quality and reducing the quantity of biosolids produced.

Ingersoll Wastewater Treatment Plant did not produce any dewatered Biosolids this year as the digesters were offline for cleaning and inspection as the County prepares to upgrade these digesters in 2011. The material was trucked daily to the Woodstock Wastewater Treatment Plant.

This is the last year for the Biosolids land application to be governed by the MOE guidelines, as of January 1st, 2011 the program transitions to the regulations governing Non-Agricultural Source Material (NASM) established under the Nutrient Management Act (NMA). The Biosolids from all facilities were compliant with the Ministry of Environment land application guidelines for 2010.

SAMPLING DESCRIPTION

A sample is collected from each bin that leaves the wastewater treatment plants and composited over each two week period. This is then sent out for analysis of eleven metals, nutrients and E.coli. The frequency would be consistent with the minimum frequency for small generators per NMA.

As a small generator, our sampling program will ensure two samples within 30 days of land application and two additional samples within 90 days for nutrients. This can be accomplished by monthly sampling of the biosolids and additional sampling during biosolids removal.

The samples are analyzed by SGS Lakefield Research Ltd. a CAEAL certified lab. The results are entered into an excel spreadsheet and checked for compliance to the regulations at the time of being entered. The analytical results of the dewatered Biosolids are also summarized on an annual spreadsheet to calculate monthly and yearly averages.

Biosolids analysis is provided to the contractor and farmer for their use at the time of land application by directly providing the sample analysis to the biosolids contracted land applier in PDF format when received electronically from the external lab.

DISCUSSION OF RESULTS

Table 1 highlights the analytical results for metals versus the Ministry of The Environment's (MOE) guideline criteria. All sources were compliant with the guideline and were acceptable to be used as a nutrient for the land application program. More information can be found in Exhibit 1 for analytical results for different sources of biosolids.

The biosolids were resampled at the farm at the time of application and those results may be found in Exhibit 2, these samples provide a further check on the quality of the material and all samples complied with the MOE's criteria as well.

The Biosolids contractor provides Nutrient reports to individual farmer on each application to aid in the beneficial use of the product as a nutrient. The contractor's table of permitted sites indicating spreading applications on MOE approved sites complete with permit numbers is also included. The farm nutrient reports are on file at the Oxford County Administration Building (OCAB) and are available upon request.

In summary, Oxford County's land application program provided for the effective production, transport, storage and eventual reuse as a nutrient for all the biosolids generated under the program. All operation and maintenance activities were performed

by the staff in the wastewater treatment plants. The transportation of the biosolids from the facilities to the storage building was done through a contractor working on our behalf. The land application itself was completed by WESSUC Inc. There were no notable upsets or spills during the year of operation and no complaints were received to date.

Comparison of Generated Biosolids to MOE Criteria for Metals in mg/kg Dry Solids

Table 1

Parameter	Woodstock WWTP	Tillsonburg WWTP	Thamesford WWTP	MOE Metals Criteria
Metals **mg/kg dry solids**	2010 Annual Average	2010 Annual Average	2010 Annual Average	Guideline Maximum
Arsenic	4	3	8	170
Cadmium	3	1	1	34
Cobalt	8	2	1	340
Chromium	71	32	9	2800
Copper	778	645	200	1700
Mercury	1	2	0.1	11
Molybdenum	14	8	3	94
Nickel	133	35	6	420
Lead	48	22	4	1100
Selenium	4	4	8	34
Zinc	1406	777	347	4200

BIOSOLIDS CENTRALIZED STORAGE FACILITY (BCSF) OPERATION

The Biosolids Centralized Storage Facility (BCSF) was built for the dewatered biosolids for periods when the dewatered product cannot be directly land applied. The storage building is designed to provide a minimum of 240 days storage. It is also designed with segregated storage areas so that should material be determined to be non-compliant, it can be removed to landfill and not mixed with compliant Biosolids destined for land application. Please see in Table 2 below the Biosolids production rate, type, and destination.

The BCSF is located near Salford Ontario adjacent to the Oxford County Landfill and behind the compost area. This location was arrived at after public consultation through a class environmental assessment process and involvement of the local landfill liaison committee. It is operated in such a way as to minimize the impact to neighbours as all the loading and unloading activities take place inside the building. The location is far enough back and surrounded by Oxford County buffer lands as to prevent nuisance dust or noise from impacting neighbours. Trees have also been planted to help with the visual impact of the large building.

The building has sufficient room to house 7000 m^3 of material and would be built in two phases. The existing phase includes 12 bays; and a future phase 2 would add an additional four. The facility has sufficient space to accommodate the 240-day storage requirements for the plants although not all systems will dewater and store at first. Thamesford WWTP will stay with a liquid land application program for the time being and phased in to dewatering at a later time. The individual bays are slightly inclined with cement walls to allow for easy piling of the material. The incoming material is segregated by system and month and is deposited in the appropriate bay, after which our staff push the biosolids into higher piles at the back of the bay using the existing loader. There are large ventilation panels in the walls to allow for good ventilation and light into the building. The building is not connected to hydro. While there are lights, they will be powered by a portable generator only if needed during times of biosolids removal. The daily transport of the material into the storage facility will be done during daylight hours.

Table 2

FACILITY	2010 BIOSOLIDS PRODUCTION RATE (wet tonnes or m3)	2010 BIOSOLIDS PRODUCTION RATE (dry tonnes)	BIOSOLIDS TYPE	2010 DESTINATION
Woodstock WWTP	4447 tonnes	1111	Anaerobic dewatered	Storage Facility & Land Application
Ingersoll WWTP	10,057 m3	--	Co-thickened Primary Sludge	Woodstock WWTP
Tillsonburg WWTP	1330 tonnes	301	Aerobic dewatered	Storage facility & Land Application
Thamesford WWTP	5332 m3	115	Aerobic liquid	Land Application
Drumbo SBR	1529 m3	--	Co-thickened Primary Sludge	Woodstock WWTP

EXHIBIT 1

Woodstock WWTP Biosolids Rolling 2010

Biosolids Utilization Primary Liquid Quality	January 2010	February 2010	March 2010	April 2010	May 2010	June 2010	July 2010	August 2010	September 2010	October 2010	November 2010	December 2010	Annual Average
Nitrite-N (mg/L)	0.45	0.3	1.2	0.3	0.6	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.42
NH3+NH4+-N (mg/L)	393	438.5	467	230	233	2.9	333	468	394	412	460	493.5	360.41
Nitrate-N (mg/L)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.03	0.28
Total P (mg/L)	625	585	600	650	680	680	380	855	740	580	685	545	633.75
TS (mg/L)	22450	22550	21200	23300	28300	28100	17100	32000	27750	18550	23500	18500	23608.33
pH	7.10	7.045	7.18	6.64	6.78	6.82	7.00	7.16	7.265	7.195	7.4	7.135	7.06

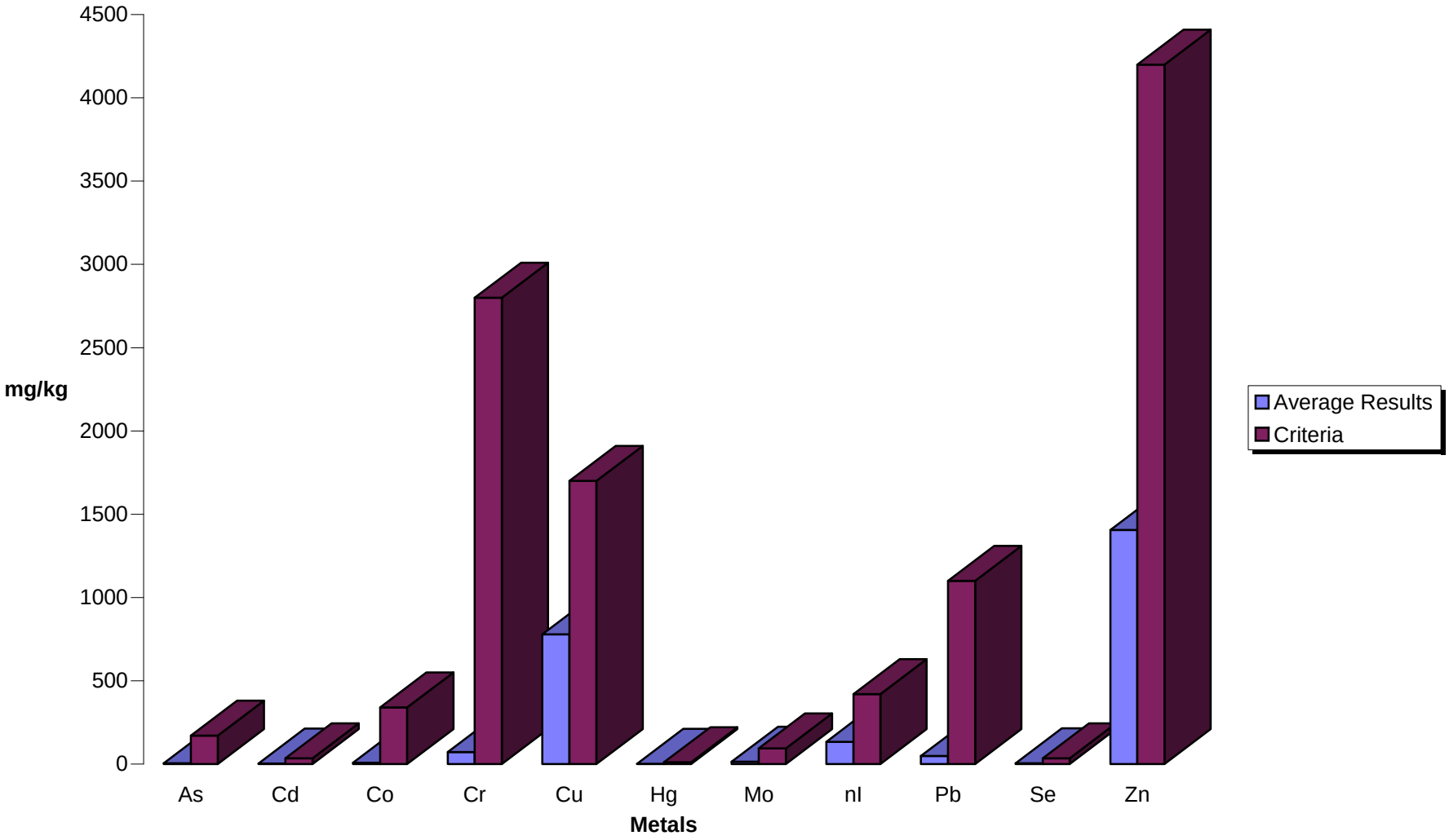
Biosolids Utilization Secondary Liquid Quality	January	February	March	April	May	June	July	August	September	October	November	December	Annual Average	
Nitrite-N (mg/L)	0.3	0.5	0.35	2.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
NH3+NH4+-N (mg/L)	568	426	722.5	239	387	343	353	435	445	515	437	552	**451.88**	
Nitrate-N (mg/L)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	**0.30**	
Total P (mg/L)	1100	940	5300	1000	1000	970	1000	1200	920	1210	760	720	**1343.33**	
TS (mg/L)	39060	39644	38822	33906	39178.95	35852.38	41790	46984.21	40785.7143	40325	34176.19	42820	**39445.40**	
pH	7.33	7.19	7.44	7.75	6.93	6.96	7.07	7.19	7.31	7.38	7.41	7.24	**7.27**	
Metals														
Arsenic, AS (mg/L)	0.3	0.3	0.65	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	**0.3**	
Cadmium, Cd (mg/L)	0.12	0.1	0.495	0.09	0.09	0.1	0.09	0.12	0.06	0.14	0.09	0.03	**0.1**	
Cobalt, Co (mg/L)	0.25	0.19	1.175	0.22	0.22	0.21	0.21	0.27	0.18	0.29	0.18	0.05	**0.3**	
Chromium, Cr (mg/L)	2.4	2.1	11.4	2.4	2.3	2.1	2.3	2.9	2.5	2.9	1.7	1.2	**3.0**	
Copper, Cu (mg/L)	28	23	107.5	21	23	21	23	30	22	31	18	14	**30.1**	
Mercury, Hg (mg/L)	0.036	0.035	0.1735	0.047	0.042	0.026	0.028	0.042	0.017	0.037	0.011	0.01	**0.0**	
Molybdenum, Mo (mg/L)	0.5	0.4	1.4	0.4	0.4	0.4	0.4	0.6	0.4	0.6	0.3	0.3	**0.5**	
Nickel, Ni (mg/L)	3.8	3.2	18.6	5	4.4	3.5	4.2	4.9	3.4	5.2	3.6	2.9	**5.2**	
Lead, Pb (mg/L)	2.4	1.4	7.3	1.3	1.4	1.7	1.9	2.5	1.4	2	0.8	0.4	**2.0**	Prev. Guide
Selenium, Se (mg/L)	0.3	0.3	0.65	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	**0.3**	Minimum
Zinc, Zn (mg/L)	46	40	191.5	40	39	37	42	52	38	49	29	27	**52.5**	Ammonia
Ammonia to Metal Ratio														Ratio
Nh3+NH4+-N (mg/L), As	1893	1420	1112	797	1290	1143	1177	1450	1483	1717	1457	1840	**1398**	100
Nh3+NH4+-N (mg/L), Cd	4733	4260	1460	2656	4300	3430	3922	3625	7417	3679	4856	18400	**5228**	500
Nh3+NH4+-N (mg/L), Co	2272	2242	615	1086	1759	1633	1681	1611	2472	1776	2428	11040	**2551**	50
Nh3+NH4+-N (mg/L), Cr	237	203	63	100	168	163	153	150	178	178	257	460	**193**	6
Nh3+NH4+-N (mg/L), Cu	20	19	7	11	17	16	15	15	20	17	24	39	**18**	10
Nh3+NH4+-N (mg/L), Hg	15778	12171	4164	5085	9214	13192	12607	10357	26176	13919	39727	55200	**18133**	1500
Nh3+NH4+-N (mg/L), Mo	1136	1065	516	598	968	858	883	725	1113	858	1457	1840	**1001**	180
Nh3+NH4+-N (mg/L), Ni	149	133	39	48	88	98	84	89	131	99	121	190	**106**	40
Nh3+NH4+-N (mg/L), Pb	237	304	99	184	276	202	186	174	318	258	546	1380	**347**	15
Nh3+NH4+-N (mg/L), Se	1893	1420	1112	797	1290	1143	1177	1450	1483	1717	1457	1840	**1398**	500
Nh3+NH4+-N (mg/L), Zn	12	11	4	6	10	9	8	8	12	11	15	20	**11**	4

Liquid Biosolids Metals Expressed in mg/kg Solids	January	February	March	April	May	June	July	August	September	October	November	December	Annual Average	Bio Guide Max Criteria
Arsenic, AS (mg/kg)	8	8	17	9	8	8	7	6	7	7	9	7	**8**	170
Cadmium, Cd (mg/kg)	3.1	2.5	12.8	2.7	2.3	2.8	2.2	2.6	1.5	3.5	2.6	0.7	**3**	34
Cobalt, Co (mg/kg)	6	5	30	6	6	6	5	6	4	7	5	1	**7**	340
Chromium, Cr (mg/kg)	61	53	294	71	59	59	55	62	61	72	50	28	**77**	2800
Copper, Cu (mg/kg)	717	580	2769	619	587	586	550	639	539	769	527	327	**767**	1700
Mercury, Hg (mg/kg)	1	1	4	1	1	1	1	1	0	1	0	0	**1**	11
Molybdenum, Mo (mg/kg)	13	10	36	12	10	11	10	13	10	15	9	7	**13**	94
Nickel, Ni (mg/kg)	97	81	479	147	112	98	101	104	83	129	105	68	**134**	420
Lead, Pb (mg/kg)	61	35	188	38	36	47	45	53	34	50	23	9	**52**	1100
Selenium, Se (mg/kg)	8	8	17	9	8	8	7	6	7	7	9	7	**8**	34
Zinc, Zn (mg/kg)	1178	1009	4933	1180	995	1032	1005	1107	932	1215	849	631	**1339**	4200

Woodstock WWTP Biosolids 2009

		January	February	March	April	May	June	July	August	September	October	November	December	Annual	Total
Biosolids Utilization Dewatered Quality		2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010		Average	
# of loads		23	23	33	28	31	40	27	31	40	32	41	35	32	384
Hauled Mass (kg) Wet Weight		273290	277330	364330	308300	371070	450,630	272580	377690	450150	563250	397130	341700	370621	4447450
Hour Counter															
Transfer Flow m3 to press		1812	1801	2562	2217	2631	3247	2167	2324	2869	2496	3269	3350		
Filtrate TSS %		0.223	0.341	0.251	0.228	0.378	0.28381	0.573	0.21%	0.20%	0.23%	0.24%	0.23%	0.19%	
Cake TS %		23.43%	23.30%	24.20%	24.96%	25.05%	23.98%	25.72%	25.87%	26.42%	26.87%	23.94%	24.51%	25%	
NH3+NH4+-N (mg/L)		935	1400	850	725	325	1600	1600	710	1367	985	1180	1800	1123.06	
Nitrate-N (mg/L)		0.35	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.30	
Nitrite-N (mg/L)		1.05	6.15	0.3	0.3	0.3	0.3	0.35	0.3	0.3	0.3	0.3	0.30		
Total P (mg/L)		10050	8400	8150	8300	8650	7950	10350	9700	9200	9150	7850	7067	8734.72	
pH		7.555	7.225	7.61	7.45	7.33	7.105	7.735	7.59	7.65	7.08	7.73	7.74	7.48	
Metals															
[As] in sludge (mg/L)		1	1	1	1	1	1	1	1.5	1	1.5	1	1.0		
[Cd] in sludge (mg/L)		0.93	0.74	0.67	0.755	0.765	0.645	0.72	0.985	0.68	0.945	0.855	0.2		
[Co] in sludge (mg/L)		2.25	1.9	1.65	1.8	2.2	1.65	2	2.2	1.37	2.55	1.85	1.0		
[Cr] in sludge (mg/L)		19	17	17	18	18.5	16.5	21	21	22.67	21	8.55	12.5		
[Cu] in sludge (mg/L)		235	180	170	170	180	170	215	225	226.67	220	190	141.3		
[Hg] in sludge (mg/L)		0.2	0.55	0.4	0.2	0.3	0.3	0.4	0.25	0.3	0.3	0.2	0.2		
[Mo] in sludge (mg/L)		3.95	2.85	2.85	3.15	3.1	3.1	3.9	4.05	4.1	5	3.5	2.5		
[Ni] in sludge (mg/L)		31	25.5	28	37.5	35.5	30.5	40	38.5	35.3	37	33.5	26.3		
[Pb] in sludge (mg/L)		18	11.5	9.55	10.5	10.5	12.5	11.5	18	14	14	9.05	5.2		
[Se] in sludge (mg/L)		1	1	1	1	1	1	1	1	1	1	1	1.0		
[Zn] in sludge (mg/L)		405	325	310	305	325	315	410	430	390	370	330	280.0		
Metals	Metals													Average Results	Criteria
[As] in sludge (mg/kg)	As	4	4	4	4	4	4	4	6	4	6	4	4	4	170
[Cd] in sludge (mg/kg)	Cd	4	3	3	3	3	3	3	4	3	4	4	1	3	34
[Co] in sludge (mg/kg)	Co	10	8	7	7	9	7	8	9	5	9	8	4	8	340
[Cr] in sludge (mg/kg)	Cr	81	73	70	72	74	69	82	81	86	78	36	51	71	2800
[Cu] in sludge (mg/kg)	Cu	1003	773	702	681	718	709	836	870	858	819	794	577	778	1700
[Hg] in sludge (mg/kg)	Hg	1	2	2	1	1	1	2	1	1	1	1	1	1	11
[Mo] in sludge (mg/kg)	Mo	17	12	12	13	12	13	15	16	16	19	15	10	14	94
[Ni] in sludge (mg/kg)	nI	132	109	116	150	142	127	156	149	134	138	140	107	133	420
[Pb] in sludge (mg/kg)	Pb	77	49	39	42	42	52	45	70	53	52	38	21	48	1100
[Se] in sludge (mg/kg)	Se	4	4	4	4	4	4	4	4	4	4	4	4	4	34
[Zn] in sludge (mg/kg)	Zn	1729	1395	1281	1222	1297	1314	1594	1662	1476	1377	1379	1142	1406	4200
E. Coli		206059	88648	53271	50498	10706	4505	41270	94309	135052	181798	564659	209898	136723	
Sample count		2	2	2	2	2	2	1	2	3	2	2	3		

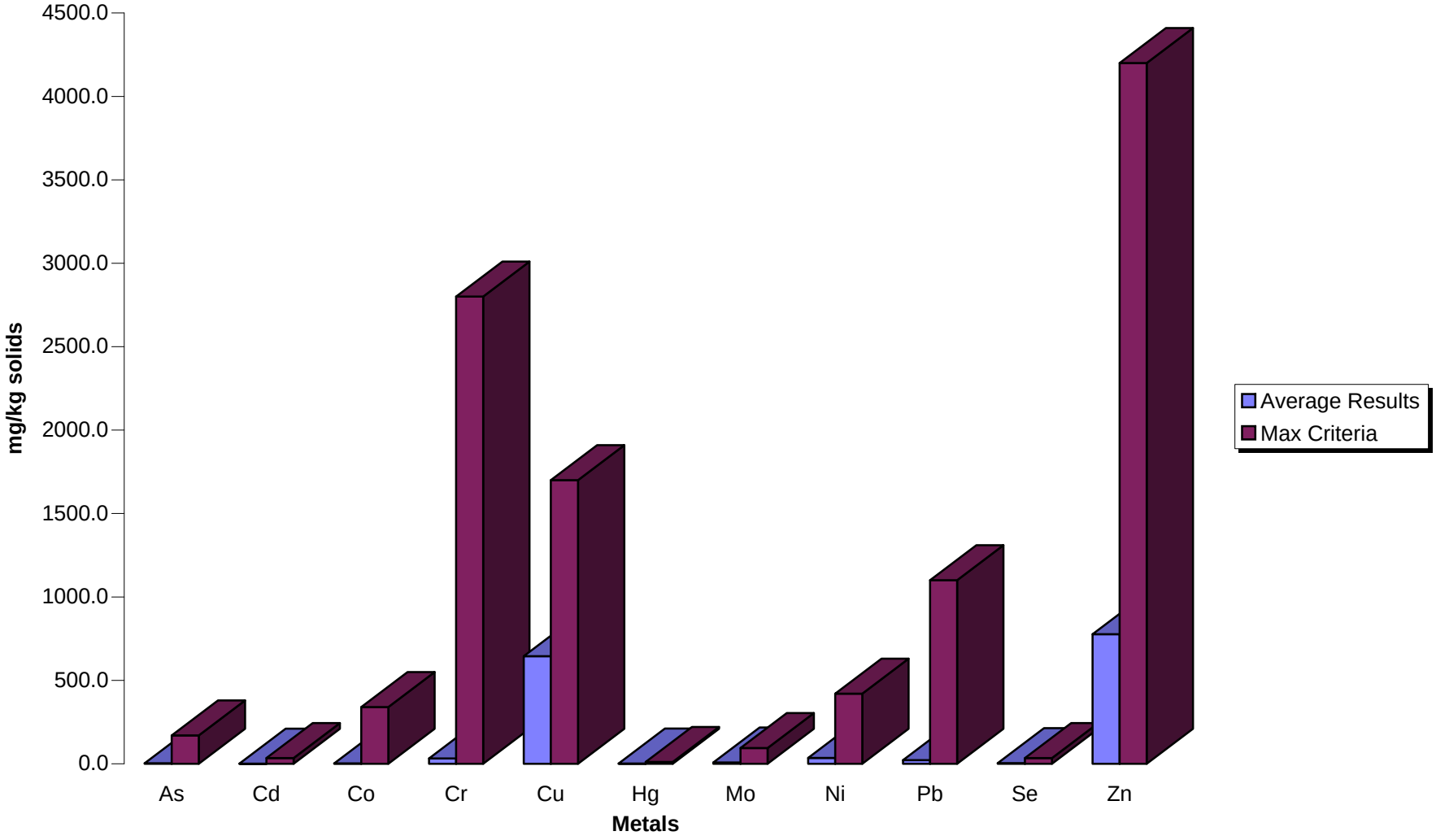
Metal Results Woodstock WWTP Biosolids 2010 vs Criteria



Project Name: Tillsonburg Wastewater Treatment Plant		Works Number: 110000757														
		2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010			
Biosolids Utilization Liquid		January	February	March	April	May	June	July	August	September	October	November	December	Total	Average	
Hauled Vol. (m3) to other plants														0	#DIV/0!	
Liquid Vol. (m3) to dewatering press														0	#DIV/0!	
Hauled Vol. (m3) direct to Land Application														0	#DIV/0!	
TS (mg/L)		14500	12500	12600	14600	12200	14100	9380	10900	10300	11200	13100	12700		12340.00	
VS (mg/L)		9310	8270	8600	9330	8240	8900	5860	6810	6500	7200	8400	8260		7973.33	
NH3+NH4+-N (mg/L)		7.8	7.7	6.7	6.9	11.6	76.5	7	14.1	12.2	14.2	18.9	14.2		16.48	
Nitrate-N (mg/L)		62	0.5	0.15	2.7	0.15	15	9	0.5	0.8	0.5	107	92		24.19	
Nitrite-N (mg/L)		0.3	0.3	0.15	1.2	0.6	0.7	0.6	0.15	0.15	0.15	4.8	0.15		0.77	
Total P (mg/L)		540	500	440	560	400	470	370	360	330	330	560	490		445.83	
pH		6.9	7.01	7.09	7.45	6.94	7.05	7.17	7.19	7.22	6.82	6.35	6.49		6.97	
Metals																
Arsenic, AS (mg/L)		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15		0.15	
Cadmium, Cd (mg/L)		0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015		0.02	
Cobalt, Co (mg/L)		0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025		0.03	
Chromium, Cr (mg/L)		0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.40	0.20		0.36	
Copper, Cu (mg/L)		7.9	7.5	6.1	7.9	6	6.9	6.1	6	6.5	6	9.80	7.80		7.04	
Mercury, Hg (mg/L)		0.011	0.023	0.015	0.014	0.011	0.01	0.016	0.009	0.009	0.007	0.012	0.012		0.01	
Molybdenum, Mo (mg/L)		0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.05	0.05	0.05	0.10	0.10		0.08	
Nickel, Ni (mg/L)		0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.60	0.40		0.42	
Lead, Pb (mg/L)		0.4	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.2	0.30	0.05		0.25	
Selenium, Se (mg/L)		0.15	0.2	0.15	0.15	0.15	0.15	0.15	0.15	0.3	0.15	0.15	0.15		0.16	
Zinc, Zn (mg/L)		11	9.7	7.8	9.7	6.9	8.5	7.4	8.7	7.6	7.5	12.00	10.00		8.90	
	Metals															**Max**
																Criteria
[As] in sludge (mg/kg)	As	10.3	12.0	11.9	10.3	12.3	10.6	16.0	13.8	14.6	13.4	11.5	11.8		12.4	170
[Cd] in sludge (mg/kg)	Cd	1.0	1.2	1.2	1.0	1.2	1.06	1.6	1.4	1.5	1.3	1.1	1.2		1.2	34
[Co] in sludge (mg/kg)	Co	1.7	2.0	2.0	1.7	2.0	1.8	2.7	2.3	2.4	2.2	1.9	2.0		2.1	340
[Cr] in sludge (mg/kg)	Cr	27.6	32.0	31.7	34.2	32.8	28.4	32.0	27.5	29.1	26.8	30.5	15.7		29.0	2800
[Cu] in sludge (mg/kg)	Cu	544.8	600.0	484.1	541.1	491.8	489.4	650.3	550.5	631.1	535.7	748.1	614.2		573	1700
[Hg] in sludge (mg/kg)	Hg	0.8	1.8	1.2	1.0	0.9	0.7	1.7	0.8	0.9	0.6	0.9	0.9		1.0	11
[Mo] in sludge (mg/kg)	Mo	6.9	8.0	7.9	6.8	4.1	7.1	10.7	4.6	4.9	4.5	7.6	7.9		6.7	94
[Ni] in sludge (mg/kg)	Ni	34.5	40.0	31.7	27.4	24.6	28.4	42.6	36.7	29.1	35.7	45.8	31.5		34.0	420
[Pb] in sludge (mg/kg)	Pb	27.6	24.0	23.8	20.5	16.4	21.3	21.3	27.5	19.4	17.9	22.9	3.9		20.5	1100
[Se] in sludge (mg/kg)	Se	10.3	12.0	11.9	10.3	12.3	10.6	16.0	13.8	29.1	13.4	11.5	11.8		13.6	34
[Zn] in sludge (mg/kg)	Zn	758.6	776.0	619.0	664.4	565.6	602.8	788.9	798.2	737.9	669.6	916.0	787.4		724	4200

Tillsonburg WWTP Biosolids 2008																
Biosolids Utilization Dewatered		January	February	March	April	May	June	July	August	September	October	November	December	Total	Average	
Hauled weight (kg) to BCSF		132400	121040	141080	164910	32930	127800	141960	66680	91870	73900	67050	168340	1329960	110830	
# of loads		13	12	15	18	4	14	20	9	10	7	6	15			
Hauled Vol. (m3) to Landfill																
TS (mg/L)		192500	209500	208500	230500	238000	226000	251000	259000	254000	218500	230000	195000		226041.667	22.60%
VS (mg/L)		135500	145500	144000	154500	159500	168500	164000	171000	168500	141500	156000	133500			
NH3+NH4+-N (mg/L)		785	110	102.5	52.5	55	52.5	200	170	280	225	285	53		197.5	
Nitrate-N (mg/L)		33	31.7	13.075	166	64	148.5	154	386	105	151	258	60		130.785417	
Nitrite-N (mg/L)		41	36.575	51.2	3.4	70	1.05	144	119	73	77	84	40			
Total P (mg/L)		7600	6750	7400	8700	9300	8750	9200	9800	9300	9250	9400	7950		8616.66667	
pH		6.62	6.86	7.21	6.62	6.84	6.70	6.82	6.71	6.71	6	6	7			
Metals													#DIV/0!			
Arsenic, AS (mg/L)		1	0.5	0.5	0.5	0.75	0.75	0.5	1	1	1	1	1			
Cadmium, Cd (mg/L)		0	0.115	0.0825	0.18	0.15	0.145	0.0925	0	0	0	0	0			
Cobalt, Co (mg/L)		1	0.5	0.275	0.65	0.65	0.65	0.5	1	0	1	1	0			
Chromium, Cr (mg/L)		6	5.35	6.05	8.1	8.75	7.75	9.55	8	9	8	7	4			
Copper, Cu (mg/L)		115	101.5	120	125	140	135	155	235	175	170	160	130			
Mercury, Hg (mg/L)		0	0.6	0.3	0.65	0.25	0.2	0.35	1	0	0	0	0			
Molybdenum, Mo (mg/L)		2	1.25	1.6	1.95	1.35	1.55	1.9	2	2	2	2	2			
Nickel, Ni (mg/L)		7	6.5	6	7	7.5	7	8.5	11	10	10	11	7			
Lead, Pb (mg/L)		5	3.95	3.75	5.2	5.6	5.35	3.025	7	6	6	6	3			
Selenium, Se (mg/L)	Metals	1	0.5	0.5	0.75	0.75	0.5	1.25	1	1	1	1	1		Average Results	Max Criteria
Zinc, Zn (mg/L)		150	130	140	150	170	165	175	225	220	215	205	165			
[As] in sludge (mg/kg)	As	2.6	2.4	2.4	2.2	3.2	3.3	2.0	3.9	3.0	5.7	3.3	2.6		3.0	170
[Cd] in sludge (mg/kg)	Cd	0.6	0.5	0.4	0.8	0.6	0.6	0.4	0.8	0.5	0.8	0.9	0.4		0.6	34
[Co] in sludge (mg/kg)	Co	2.9	2.4	1.3	2.8	2.7	2.9	2.0	2.5	1.7	2.3	2.4	1.7		2	340
[Cr] in sludge (mg/kg)	Cr	29.9	25.5	29.0	35.1	36.8	34.3	38.0	32.4	33.5	36.6	32.4	21.0		32	2800
[Cu] in sludge (mg/kg)	Cu	597	484	576	542	588	597	618	907	689	778	696	667		645	1700
[Hg] in sludge (mg/kg)	Hg	1.8	2.9	1.4	2.8	1.1	0.9	1.4	2.1	1.2	0.7	1.1	1.0		2	11
[Mo] in sludge (mg/kg)	Mo	8.8	6.0	7.7	8.5	5.7	6.9	7.6	5.8	8.7	10.1	9.8	8.5		8	94
[Ni] in sludge (mg/kg)	Ni	33.8	31.0	28.8	30.4	31.5	31.0	33.9	40.5	37.4	45.8	45.7	35.9		35	420
[Pb] in sludge (mg/kg)	Pb	24.4	18.9	18.0	22.6	23.5	23.7	12.1	25.5	25.2	29.3	24.8	13.7		22	1100
[Se] in sludge (mg/kg)	Se	3.9	2.4	2.4	3.3	3.2	2.2	5.0	2.9	3.0	5.7	5.4	5.1		4	34
[Zn] in sludge (mg/kg)	Zn	779.2	620.5	671.5	650.8	714.3	730.1	697.2	868.7	866.1	984.0	891.3	846.2		777	4200
Ecoli (cfu/1gm dried wgt)		45430	25459	11849	6091	16855	199556	32385	143902	44594	151911	134363	201485		84490	2000000

Metal Concentration vs Criteria 2010 Tillsonburg Dewatered Biosolids



Thamesford WWTP Biosolids 2010 **Metal Concentrations** **Table 1**

Date	Lab	Total Solids (%)		Metals mg/L										
				Arsenic (mg/L)	Cadmium (mg/L)	Cobalt (mg/L)	Chromium (mg/L)	Copper (mg/L)	Lead (mg/L)	Mercury (mg/L)	Molyb (mg/L)	Nickel (mg/L)	Selenium (mg/L)	Zinc (mg/L)
10-Jan-10	SGS	2.75		0.1500	0.015	0.025	0.20	5.300	0.100	0.0005	0.05	0.200	0.1500	8.600
3-Feb-10	SGS	2.75		0.15	0.02	0.03	0.20	5.10	0.10	0.002	0.05	0.20	0.15	7.90
17-Mar-10	SGS	2.30		0.15	0.02	0.03	0.20	3.80	0.05	0.002	0.05	0.10	0.15	6.50
7-Apr-10	SGS	1.69		0.15	0.02	0.03	0.10	2.90	0.05	0.002	0.05	0.10	0.15	5.00
5-May-10	SGS	1.39		0.15	0.02	0.03	0.10	2.50	0.05	0.002	0.05	0.05	0.15	4.00
2-Jun-10	SGS	2.97		0.15	0.02	0.03	0.30	5.50	0.10	0.001	0.05	0.20	0.15	9.00
15-Jul-10	SGS	1.83		0.15	0.02	0.03	0.05	4.40	0.05	0.002	0.05	0.05	0.15	7.00
11-Aug-10	SGS	1.54		0.15	0.02	0.03	0.20	4.00	0.10	0.002	0.05	0.10	0.15	7.80
1-Sep-10	SGS	1.03		0.15	0.02	0.03	0.10	2.00	0.05	0.001	0.05	0.05	0.15	3.60
5-Oct-10	SGS	2.75		0.15	0.02	0.03	0.40	6.00	0.20	0.002	0.10	0.20	0.15	12.00
3-Nov-10	SGS	2.31		0.15	0.02	0.03	0.30	5.40	0.20	0.001	0.10	0.20	0.15	9.10
1-Dec-10	SGS	2.46		0.15	0.02	0.03	0.10	4.30	0.05	0.002	0.10	0.05	0.15	7.90
Average		2.15		0.15	0.02	0.03	0.19	4.27	0.09	0.00	0.06	0.13	0.15	7.37

Thamesford WWTP Biosolids 2010 **COMPARISON TO GUIDELINE** **Table 2**

Date	Lab		Metals (mg/kg solids)										
			As	Cd	Co	Cr	Cu	Pb	Hg	Mo	Ni	Se	Zn
10-Jan-10	SGS	mg/kg	5.45	0.55	0.91	7.27	192.73	3.64	0.02	1.82	7.27	5.45	312.73
3-Feb-10	SGS	mg/kg	5.45	0.55	0.91	7.27	185.45	3.64	0.07	1.82	7.27	5.45	287.27
17-Mar-10	SGS	mg/kg	6.52	0.65	1.09	8.70	165.22	2.17	0.09	2.17	4.35	6.52	282.61
7-Apr-10	SGS	mg/kg	8.88	0.89	1.48	5.92	171.60	2.96	0.12	2.96	5.92	8.88	295.86
5-May-10	SGS	mg/kg	10.79	1.08	1.80	7.19	179.86	3.60	0.14	3.60	3.60	10.79	287.77
2-Jun-10	SGS	mg/kg	5.05	0.51	0.84	10.10	185.19	3.37	0.03	1.68	6.73	5.05	303.03
15-Jul-10	SGS	mg/kg	8.20	0.82	1.37	2.73	240.44	2.73	0.11	2.73	2.73	8.20	382.51
11-Aug-10	SGS	mg/kg	9.74	0.97	1.62	12.99	259.74	6.49	0.13	3.25	6.49	9.74	506.49
1-Sep-10	SGS	mg/kg	14.56	1.46	2.43	9.71	194.17	4.85	0.05	4.85	4.85	14.56	349.51
5-Oct-10	SGS	mg/kg	5.45	0.55	0.91	14.55	218.18	7.27	0.07	3.64	7.27	5.45	436.36
3-Nov-10	SGS	mg/kg	6.49	0.65	1.08	12.99	233.77	8.66	0.04	4.33	8.66	6.49	393.94
1-Dec-10	SGS	mg/kg	6.10	0.61	1.02	4.07	174.80	2.03	0.08	4.07	2.03	6.10	321.14
Average			7.72	0.77	1.29	8.62	200.09	4.28	0.08	3.08	5.60	7.72	346.60
Max Criteria			170	34	340	2800	1700	1100	11	94	420	34	4200

Thamesford WWTP Biosolids 2010 **Sampling Results** **Table 3**

Date	Lab	Total Solids (%)		Volatile Solids (%)	TP (mg/L)	TKN (mg/L)	Free NH3 (mg/L)	NO3 (mg/L)	pH (mg/L)	Alkalinity as CaCO3 (mg/L)
10-Jan-10	SGS	2.75		1.9	750	1500	50	0.15	7.58	569
3-Feb-10	SGS	2.75		1.8	690	2000	135.0	0.40	7.29	81
17-Mar-10	SGS	2.3		1.6	600	1530	113.0	0.15	7.56	663
7-Apr-10	SGS	1.69		1.1	470	1120	61.6	0.15	7.28	528
5-May-10	SGS	1.39		0.9	380	746	52.6	0.15	7.16	564
2-Jun-10	SGS	2.97		2.0	860	1580	103.0	0.15	7.21	749
15-Jul-10	SGS	1.83		1.2	750	1020	34.8	0.15	7.40	829
11-Aug-10	SGS	1.54		1.2	690	792	74.2	0.15	7.44	860
1-Sep-10	SGS	1.03		0.7	303	640	87.7	0.15	7.65	684
5-Oct-10	SGS	2.75		1.9	950	1140	43.1	0.15	7.49	794
3-Nov-10	SGS	2.31		1.6	904	1180	4.9	0.60	nss	nss
1-Dec-10	SGS	2.46		1.7	770	1510	66.8	0.15	7.31	421
Average		2.15		1.45	676.42	1229.83	68.88	0.21	7.40	612.91

EXHIBIT 2

2010 Results of Analysis of Samples of Biosolids Taken at Farm Application Site
Biosolids Source BCSF

Sample Date		April 5, 2010	April 16, 2010	April 20 to 21	31-Aug	Aug. 31 & Sept. 1	1-Sep	1-Oct	10-Nov	11-Nov	Avaerage Results	
Permit #		S- 1004 -113	S - 1004 - 114	S - 0708 - 125	S-0708-125	S-0708-145	S-0708-146	S-0708-145	S-0708-125	S-0708-125		
Total Solids	mg/L	294000	266000	256000	318000	283000	271000	295000	195000	280000	273111	
Volatile Solids	mg/L	146000	141000	139000	167000	142000	144000	155000	121000	139000	143778	
Specific Gravity		1.1	1.0	1.0	1.4	1.2	1.1	1.1	1.1	1.1	1.1	
pH	units	7.96	7.75	7.78	8.29	8.16	8.28	8.38	8.05	8.00	8.07	
Alkalinity (as CaCO3)		16800	5650	7980	15900	13800	12500	17800	8240	6620	11699	
Ammonia+Ammonium (N)	mg/L	2170	2200	1300	3600	3200	3000	2800	2300	2300	2541	
Nitrogen-kjeldahl (N)	mg/L	10100	8900	13000	14000	12000	11000	11000	8400	9600	10889	
Nitrite as N	mg/L	0.3	0.3	4.5	3.2	7.1	3.6	1	0.3	0.6	2.3	
Nitrate as N	mg/L	0.3	0.3	0.3	0.3	0.9	0.3	0.3	0.3	0.3	0.4	
Nitrite+Nitrate as N	mg/L	0.3	0.3	4.5	3.2	8.0	3.6	1.0	0.3	0.6	2.4	
As Arsenic	mg/L	1	1	1	2	2	2	2	1	2	1.6	
B Boron	mg/L	22	5	6	10	3	3	11	3	3	7.3	
Cd Cadmium	mg/L	0.80	0.75	0.64	0.80	0.80	0.8	0.8	0.07	0.53	0.67	
Co Cobalt	mg/L	2.2	1.8	1.6	2.4	2.4	2.3	2.3	0.7	2.4	2.0	
Cr Chromium	mg/L	18	17	14	24	21	18	21	9.2	24	18	
Cu Copper	mg/L	221	190	170	240	200	190	230	150	220	201	
Hg Mercury	mg/L	0.4	0.4	0.2	0.4	0.3	0.3	0.3	0.2	0.2	0.3	
P Phosphorus	mg/L	9000	8200	8000	11000	10000	88000	9900	10000	10000	18233	
K Potassium	mg/L	219	220	300	380	520	330	260	560	250	338	
Mn Magnesium	mg/L											
Mo Molybdenum	mg/L	3.9	3	2.8	19.0	3.9	3.1	3.9	2.5	5.0	5.3	
Na Sodium	mg/L	276	260	290	420	410	350	300	420	270	333	
Ni Nickel	mg/L	31	29	23	44	42	35	38	9	39	32	
Pb Lead	mg/L	15	13	11	13	11	12	17	6.7	16	12.7	
Se Selenium	mg/L	1	1	1	2	1	1	1	1	1	1.11	
Zn Zinc	mg/L	380	340	280	440	370	380	420	210	420	360.00	
E Coli (cfu/1gm dried wgt)		3891	25564	13672	5723	2247	365	37	34410	149286	26133	Geomean
All results less than MDL taken as MDL												
Results Compared to Criteria												Criteria
As Arsenic	mg/kg	3	4	4	6	7	7	7	5	7	6	170
Cd Cadmium	mg/kg	2.7	2.8	2.5	2.5	2.8	3.0	2.8	0.4	1.9	2.4	34
Co Cobalt	mg/kg	7	7	6	8	8	8	8	4	9	7	340
Cr Chromium	mg/kg	61	64	55	75	74	66	71	47	86	67	2800
Cu Copper	mg/kg	752	714	664	755	707	701	780	769	786	736	1700
Hg Mercury	mg/kg	1.36	1.50	0.78	1.26	1.06	1.11	1.02	1.03	0.71	1.09	11
Mo Molybdenum	mg/kg	13	12	11	60	14	11	13	13	18	18	94
Ni Nickel	mg/kg	105	109	90	138	148	129	129	46	139	115	420
Pb Lead	mg/kg	51	49	43	41	39	44	58	34	57	46	1100
Se Selenium	mg/kg	3	4	4	6	4	4	3	5	4	4	34
Zn Zinc	mg/kg	1293	1278	1094	1384	1307	1402	1424	1077	1500	1306	4200

2010 Results of Analysis of Samples of Biosolids Taken at Farm Application Site
Biosolids Source Thamesford WWTP

Sample Date		April 1 & 3, 2010	April 3 & 5	April 14, 2010	Aug. 20 to 26	Nov. 9 to 10	Avaerage Results		
		S-0709-96	S-0709-154	S-0709-154	S0709-155	S-0708-125			
Total Solids	mg/L	30000	35600	29500	18800	15300	25840		
Volatile Solids	mg/L	22400	26600	21800	13000	9600	18680		
Specific Gravity		1.0	1.0	1.0	1.0	1.0	1.0		
pH	units	6.66	6.62	5.84	7.51	7.49	6.82		
Alkalinity (as CaCO3)		1108	1370	1230	2090	1320	1424		
Ammonia+Ammonium (N)	mg/L	204	229	458	258	303	290		
Nitrogen-kjeldahl (N)	mg/L	1950	2290	1440	1400	1160	1648		
Nitrite as N	mg/L	5.7	7.4	6.8	1.2	1.3	4.5		
Nitrate as N	mg/L	0.3	0.3	0.3	0.3	0.3	0.30		
Nitrite+Nitrate as N	mg/L	5.7	7.4	6.8	1.2	1.3	4.5		
As Arsenic	mg/L	0.3	0.3	0.3	0.3	0.3	0.30		
B Boron	mg/L	1.00	0.91	0.8	0.05	1.20	0.79		
Cd Cadmium	mg/L	0.03	0.03	0.03	0.03	0.03	0.03		
Co Cobalt	mg/L	0.08	0.05	0.1	0.05	0.05	0.06		
Cr Chromium	mg/L	0.3	0.4	0.4	0.1	0.3	0.30		
Cu Copper	mg/L	3.7	5.8	6.1	5.3	3.4	4.86		
Hg Mercury	mg/L	0.002	0.002	0.1	0.002	0.002	0.02		
P Phosphorus	mg/L	550	820	820	640	510	668		
K Potassium	mg/L	97	130	150	100	80	111		
Mn Magnesium	mg/L								
Mo Molybdenum	mg/L	0.1	0.1	0.1	0.1	0.1	0.10		
Na Sodium	mg/L	380	490	504	264	220	372		
Ni Nickel	mg/L	0.2	0.3	0.2	0.3	0.2	0.24		
Pb Lead	mg/L	0.1	0.2	0.2	0.2	0.1	0.16		
Se Selenium	mg/L	0.3	0.3	0.3	0.3	0.3	0.30		
Zn Zinc	mg/L	8.1	13	13	8.5	6.7	9.86		
E Coli (cfu/1gm dried wgt)		703333	519663	3525424	244681	751634	1148947	Geomean	
All results less than MDL taken as MDL									

Results Compared to Criteria								Criteria
As Arsenic	mg/kg	10	8	10	16	20	13	170
Cd Cadmium	mg/kg	1.0	0.8	1.0	1.6	2.0	1.3	34
Co Cobalt	mg/kg	3	1	2	3	3	2	340
Cr Chromium	mg/kg	10	11	14	5	20	12	2800
Cu Copper	mg/kg	123	163	207	282	222	199	1700
Hg Mercury	mg/kg	0.07	0.06	3.39	0.11	0.13	0.75	11
Mo Molybdenum	mg/kg	3	3	3	5	7	4	94
Ni Nickel	mg/kg	7	8	7	16	13	10	420
Pb Lead	mg/kg	3	6	7	11	7	7	1100
Se Selenium	mg/kg	10	8	10	16	20	13	34
Zn Zinc	mg/kg	270	365	441	452	438	393	4200

EXHIBIT 3

WESSUC INC - WASTE MANAGEMENT SYSTEM NUMBER 1603-4LJGBN

2010 ANNUAL REPORT FOR THAMESFORD LIQUID AEROBIC BIOSOLIDS - "SCHEDULE B"

Wessuc #	C of A #	Farmer	Farm ID:	Lot	Concession	Township	County	Usable Ha	Expiry	Dates Spread	Volume m³
N/A	S-0709-96					Zorra	Oxford	24.3	25/Nov/10	April 1, 3	1376
OX2051	S-0709-154					Zorra	Oxford	59.5	05/Nov/14	April 3, 5, 14	1978
OX2052	S-0709-155					Zorra	Oxford	18.6	16/Aug/15	August 19-26	3934
OX2055	S-0708-148					SW Oxford	Oxford	11.7	29/Sep/15	November 9, 10	1978
										Thamesford Total	***5332***

WESSUC INC - WASTE MANAGEMENT SYSTEM NUMBER 1603-4LJGBN

2010 ANNUAL REPORT FOR THE BIOSOLIDS CENTRALIZED STORAGE FACILITY DEWATERED BIOSOLIDS- "SCHEDULE B"

Wessuc #	C of A #	Farmer	Farm ID:	Lot	Concession	Township	County	Usable Ha	Expiry	Dates Spread	Wet Tonnes
OX2031	S-1004-113					Burford	Brant	36.6	10-Jul-14	April 5	390.84
OX2032	S-1004-114					Burford	Brant	31.8	13-Jan-14	April 15, 16	564.04
OX1010-W	S-0708-125					SW Oxford	Oxford	142.5	13/Oct/29	Apr 20, 21, Aug 31,Nov 10, 11	3078.61
OX2053	S-0708-145					SW Oxford	Oxford	39.5	12/Aug/15	Aug 31, Sep 1, Oct 1	1215.51
OX2046	S-0708-146					SW Oxford	Oxford	12.5	28/Jul/14	Sep 1	356.66
										BCSF Total	***5605.66***

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,
N6E 1L3

Dear Sir:

RE: Year-End Report Woodstock Wastewater Treatment Plant (WWTP) 2010
(Certificate of Approval #5950-7XQKXS)

This year-end report is prepared as required by the certificate of approval # 5950-7XQKXS.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT
Project Engineer, Oxford County

Overview

The Woodstock Wastewater Treatment Plant (WWTP) is a conventional activated sludge system that provided effective wastewater treatment in 2010, with an average flow for the plant of 19 774 m^3/day which represents 59.9 % of the design capacity of 33 000 m^3/day. The total flow for 2010 was 7 228 344 m^3.

Project Description

The facility is a conventional activated sludge plant consisting of primary and secondary treatment, with an outfall pipe to the Thames River. The facility adds Ferrous Chloride into the reactors for phosphate control, Sodium Hypochlorite for disinfection seasonally and then de-chlorination using Sodium Bisulfite.
Oxford County owns and operates the facility.

Plant Specifications

Facility - Woodstock Wastewater Treatment Plant
Design Capacity - 33 000 m^3 / day
Average Daily Flow - 19 774 m^3 / day
Receiving Area - Thames River
Classification - WWT – IV
Certificate(s) of Approval #5950-7XQKXS

Effluent Limits:	Ave. Monthly Concentration May 01-Nov. 30	Ave. Monthly Concentration Dec. 1-April 30	Ave. Monthly Concentration May 1 – Oct. 31
CBOD	15 mg/L	20 mg/L	--
Suspended Solids	15 mg/L	15 mg/L	--
Total Ammonia Nitrogen	3 mg/L	5 mg/L	--
Total Phosphorus	0.75 mg/L	0.75 mg/L	--
TRC	--	--	<0.05 mg/L
pH	6.0 – 9.5	6.0-9.5	--
			Monthly Geometric Mean
E. Coli	--	--	200 #/100 ml

Sampling Procedure

Sewage samples are collected weekly. Raw sewage samples are collected where the two sewer trunks combine before entering the sewage works. A composite sampler collects samples over a 24-hour duration. After primary treatment and before secondary treatment a second composite sample is collected. This also is a 24-hour composite sample.

Final Effluent 24-hour composite sample is collected after secondary treatment, disinfection and de-chlorination and prior to the effluent discharge to the Thames River.

Laboratory analysis is performed by SGS Lakefield Research Ltd. on all samples that are reported for compliance except for pH, DO, chlorine residual and temperature which are field collected. All in-house testing is done for process control and is not included in this report.

Flows

The total flow treated in 2010 was 7 228 344 m3. The daily average flow was 19774 m^3/day which represents 59.9 % of the design flow for Woodstock WWTP of 33 000 m^3/d.

Raw Sewage Quality

The annual average raw sewage BOD concentration to the plant was 163 mg/L which represents an average loading of 3188 kg/day. The average suspended solids concentration was 225 mg/L (or 4400 kg/day of loading). Average nitrogen levels, as TKN were 21.2 mg/L (or a loading of 419 kg/day). Total phosphorus was 3.6 mg/L, which represents a loading of 71 kg/day.

Plant Performance & Effluent

Detailed analytical data of annual and monthly averages are summarized later in this report in Exhibit 1.

Over the reporting period, the annual average effluent $CBOD_5$ concentration was 2.9 mg/L (or an equivalent 97.9 % reduction). The suspended solids average was 3.9 mg/L, which represents a 98.3 % reduction. Ammonia averaged 0.17 mg/L (or a 98.9 % reduction). Total phosphorus average was 0.24 mg/L, which represents a 93.3 % reduction.

All pH is measured for both Influent and Effluent by the operator with a minimum weekly basis and there was no single sample outside out limits of 6-9.5 for 2010.

Bypassing, Upset and Abnormal Conditions

There were no bypasses in 2010. There was a ruptured Sodium bisulphate line that went into the containment area of the tank. The break was repaired and the chemical returned to the tank for use. The total volume into containment was 1000 liters.

Maintenance and Calibration

The operating and maintenance staff from the Woodstock WWTP conducts regular scheduled maintenance of the plant equipment. Detailed maintenance records for each piece of equipment are kept on site at the Woodstock Plant.

Calibration of flow meters is conducted yearly by R&R Instrumentation; the records are kept on site at the plant.

Biosolids

Discussion:

The biosolids are anaerobically digested and dewatered at the Woodstock Wastewater Treatment Plant using an Alfa Laval Centrifuge. The biosolids are then disposed of on agricultural land or stored at the Oxford County biosolids centralized storage facility. The testing results and land application details are included and summarized at the end of this report in a separate Biosolids report.

Haulers Report

Exhibit 2 has a summary table for incoming septic haulers for volumes.

Summary and Recommendations

The Woodstock Wastewater Treatment Plant was operating within its design criteria for 2010.

Exhibit 1

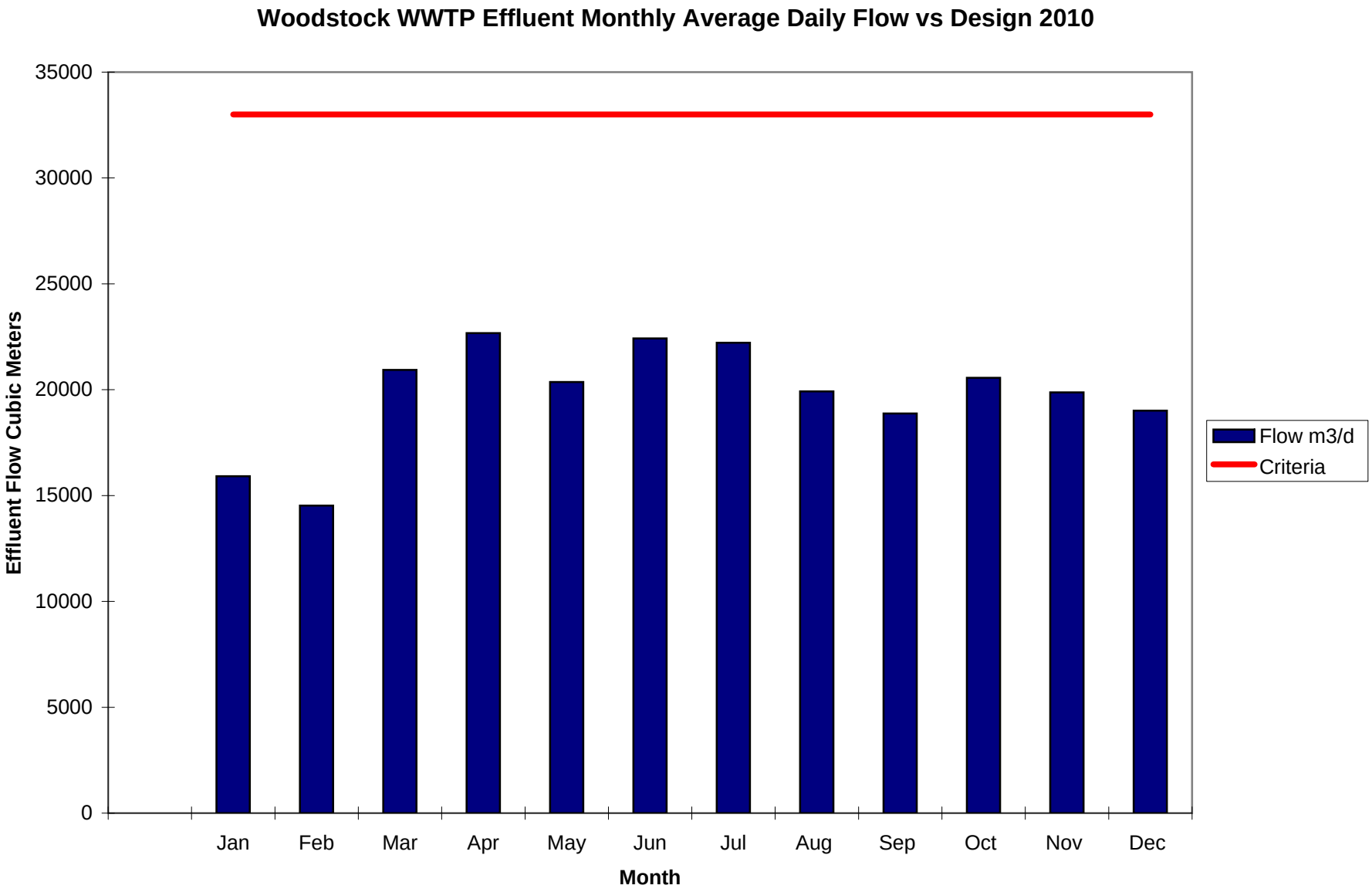
Municipality: Woodstock
PROJECT:Woodstock WWTP
Operator: County of Oxford
Works Number:
120000685

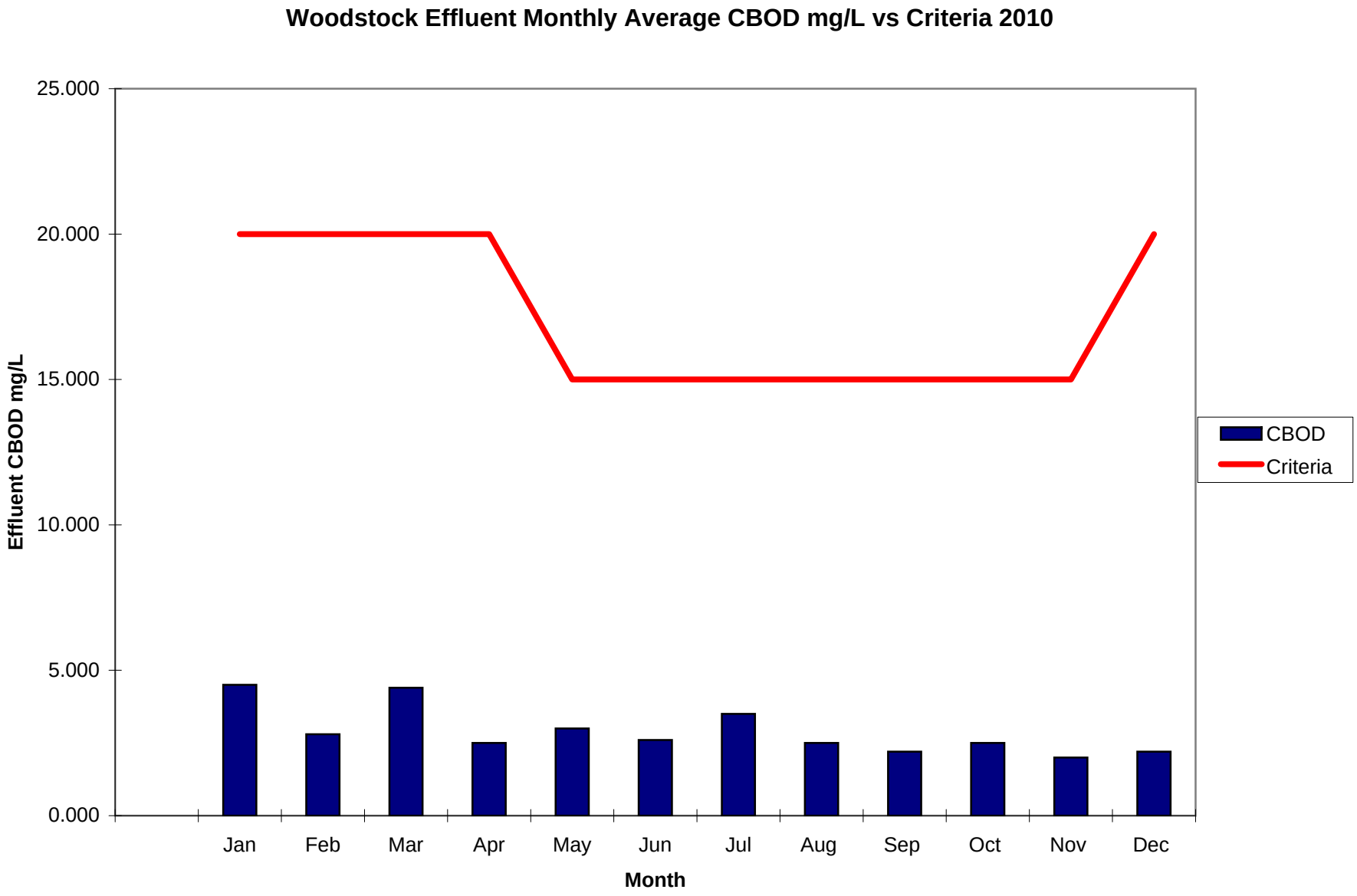
2010

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avaerage	Min	Max	Total	Total 1000m3	
Total Flow m3	(m3)	493278	406784	648930	680223	631182	672593	688823	617490	566202	637321	596284	589234				7228344	7228	Design
Flow m3/d	(m3/d)	15912	14528	20933	22674	20361	22420	22220	19919	18873.4	20559	19876	19008	19774	14528	22674			33000
Min. Daily Flow	(m3/d)	11759	12742	13780	14921	15664	13903	13853	13897	15875	14621	14651	13519	14099	11759	15875			
Max. Daily Flow	(m3/d)	24946	18182	40410	48379	25953	31963	72154	28011	27331	26859	36611	27194	33999	18182	72154			
Influent																			
BOD5	(mg/L)	184	192	119	151	151	147	132	186	200	199	165	131	163	119	200			
SS	(mg/L)	253	278	148	235	216	185	178	250	247	267	264	181	225	148	278			
Total P	(mg/L)	4.9	5.0	2.4	3.0	2.9	3.2	2.6	4.1	4.3	3.0	4.8	2.9	3.6	2.4	5.0			
NH3+NH4-N	(mg/L)	19.2	19.0	14.7	14.9	15.1	15.1	16.4	13.8	16.8	14.8	18.2	15.8	16.1	13.8	19.2			
TKN	(mg/L)	25.8	29.5	15.8	17.6	16.4	19.5	17.0	19.3	26.4	16.4	30.3	20.1	21.2	15.8	30.3			
NITRITE	(mg/L)	0.36	0.24	0.40	0.24	0.06	0.14	0.06	0.08	0.09	0.17	0.06	0.32	0.18	0.06	0.40			
NITRATE	(mg/L)	0.65	0.46	0.60	0.73	0.05	0.11	0.05	0.05	0.14	0.16	0.05	0.27	0.28	0.05	0.73			
pH		7.63	7.57	7.65	7.68	7.52	7.52	7.61	7.65	7.75	7.59	7.72	7.78	7.64	7.52	7.78			
Temp	Celcius	10.9	10.3	10.1	12.2	13.9	16.3	17.8	18.0	17.5	16.0	14.4	12.0	14.1	10.1	18.0			
CBOD (mg/L)		155	172	101	155	142	131	102	130	138	171	142	158	141	101	172			
Primary Effluent																			Criteria
BOD5	(mg/L)	72	81	76	107	133	75	70	101	75	84	79	118	89	70	133			
SS	(mg/L)	91	131	108	160	206	100	109	146	110	91	80	131	122	80	206			
Total P	(mg/L)	1.9	2.2	1.6	3.2	3.8	2.3	1.8	3.3	2.0	1.6	1.7	2.4	2.3	1.6	3.8			
NH3+NH4-N	(mg/L)	16.7	14.5	16.2	13.9	15.4	15.7	14.1	16.0	19.8	16.4	18.3	21.0	16.5	13.9	21.0			
TKN	(mg/L)	17.3	23.6	17.5	13.8	22.8	16.5	17.6	19.6	20.8	17.2	18.9	25.1	19.2	13.8	25.1			
NITRITE	(mg/L)	0.49	0.74	0.60	0.38	0.28	0.45	0.42	0.50	0.77	0.41	0.62	0.64	0.52	0.28	0.77			
NITRATE	(mg/L)	3.96	2.91	3.09	1.76	1.41	1.72	1.52	1.19	1.65	1.06	2.54	2.09	2.07	1.06	3.96			
pH		7.57	7.41	7.52	7.53	7.51	7.54	7.50	7.60	7.64	7.60	7.69	7.68	7.56	7.41	7.69			
Temp	Celcius	5.8	4.0	5.6	8.8	10.3	14.4	16.3	11.8	14.4	12.0	10.0	6.0	9.9	4.0	16.3			
CBOD	(mg/L)	50	55	55	59	84	57	40	61	38	49	56	140	62	38	140			

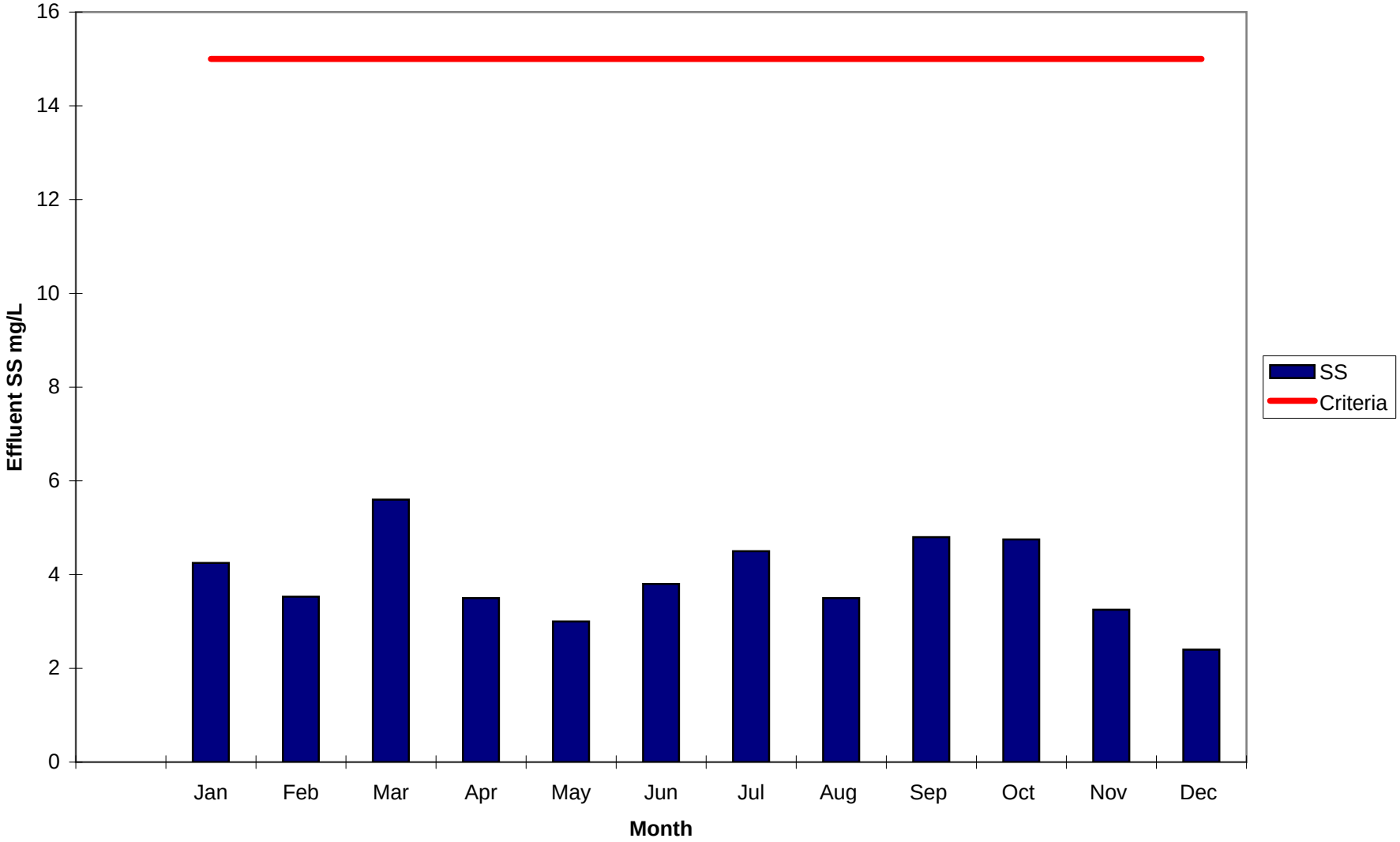
Plant Effluent																		
CBOD	(mg/L)	4.5	2.8	4.4	2.5	3.0	2.6	3.5	2.5	2.2	2.5	2.0	2.2	2.9	2.0	4.5			25
SS	(mg/L)	4.3	3.5	5.6	3.5	3.0	3.8	4.5	3.5	4.8	4.8	3.3	2.4	3.9	2.4	5.6			25
Total P	(mg/L)	0.24	0.39	0.16	0.19	0.22	0.25	0.18	0.25	0.26	0.25	0.28	0.29	0.24	0.16	0.39			1
Soluble P	(mg/L)	0.19	0.14	0.14	0.15	0.18	0.18	0.17	0.19	0.23	0.23	0.26	0.23	0.19	0.14	0.26			
Ammonia	(mg/L)	0.18	0.10	0.66	0.10	0.10	0.14	0.13	0.23	0.12	0.1	0.12	0.12	0.17	0.10	0.66			
TKN	(mg/L)	0.6	0.5	1.1	0.7	0.8	1.1	1.8	1.1	0.9	1.2	1.5	1.4	1.1	0.5	1.8			
NITRITE	(mg/L)	0.17	0.12	0.29	0.06	0.06	0.06	0.11	0.08	0.07	0.06	0.08	0.09	0.10	0.06	0.29			
NITRATE	(mg/L)	23.1	24.9	19.7	19.9	21.4	20.6	20.4	18.8	20.4	18.5	20.7	19.7	20.7	18.5	24.9			
pH		7.38	7.35	7.33	7.33	7.30	7.34	7.34	7.58	7.67	7.40	7.72	7.74	7.46	7.30	7.74			
Temp (C)		9.5	8.8	10.3	12.3	15.0	17.8	19.6	19.4	19.2	17.1	16.2	12.1	14.8	8.8	19.6			
DO mg/L		8.1	8.0	7.5	7.0	8.3	8.1	7.4	7.8	8.3	7.8	8.7	9.2	8.0	7.0	9.2			
BOD5	(mg/L)	7.3	3.8	6.2	3.8	2.8	3.4	2.3	4.0	2.2	4.0	3.0	5.2	4.0	2.2	7.3			
Disinfection Effluent																			
E. Coli (geomean)	(#/100 mL)					4	4	9	6	12	6			7	4	12			200

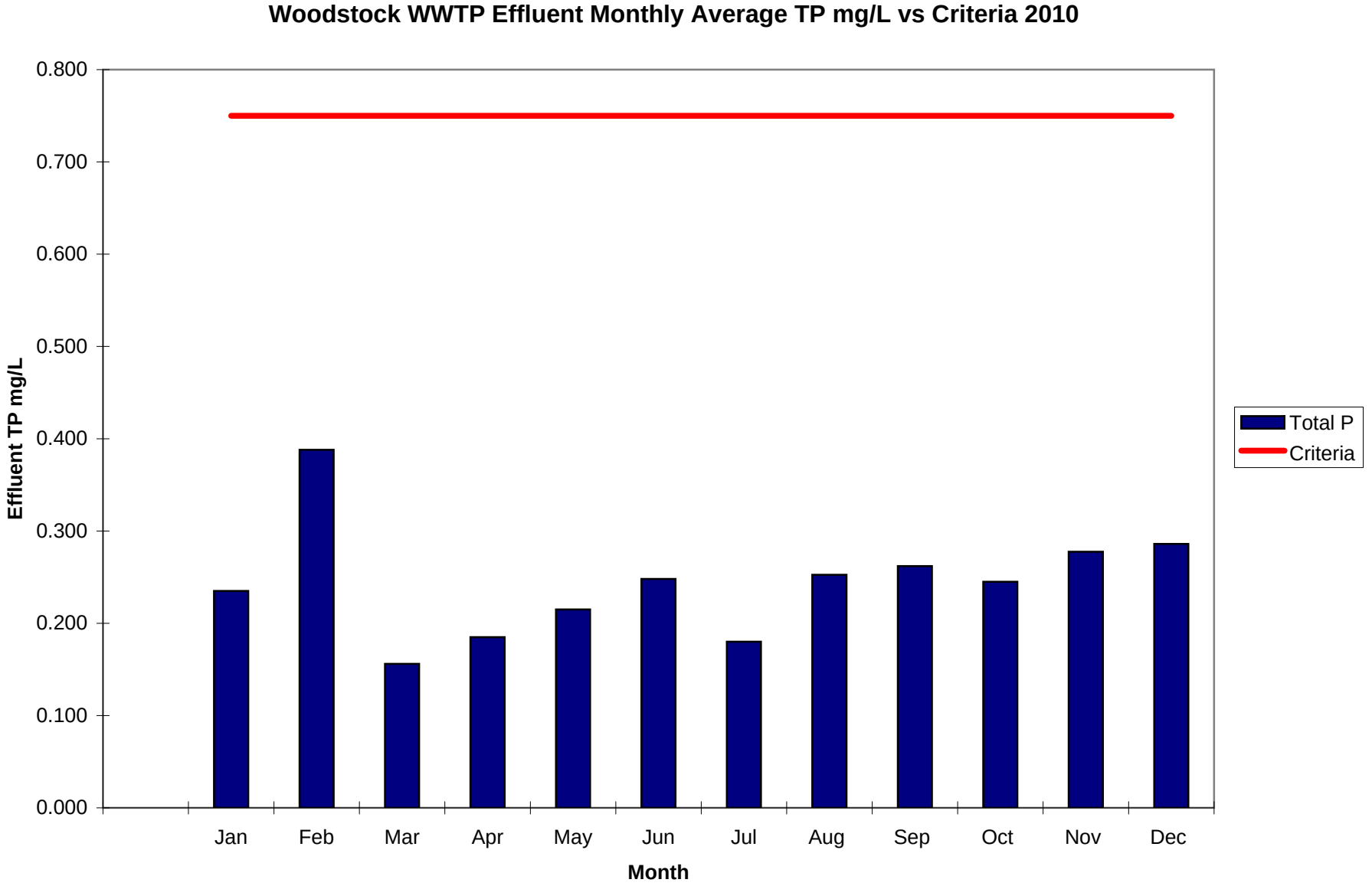
Influent Loadings																			
Month														Average	Min	Max			Criteria
BOD kg/d		2928	2789	2491	3429	3074	3305	2927	3695	3767	4081	3275	2490	3188	2490	4081			
TSS kg/d		4026	4039	3090	5334	4388	4152	3944	4980	4669	5494	5237	3448	4400	3090	5494			

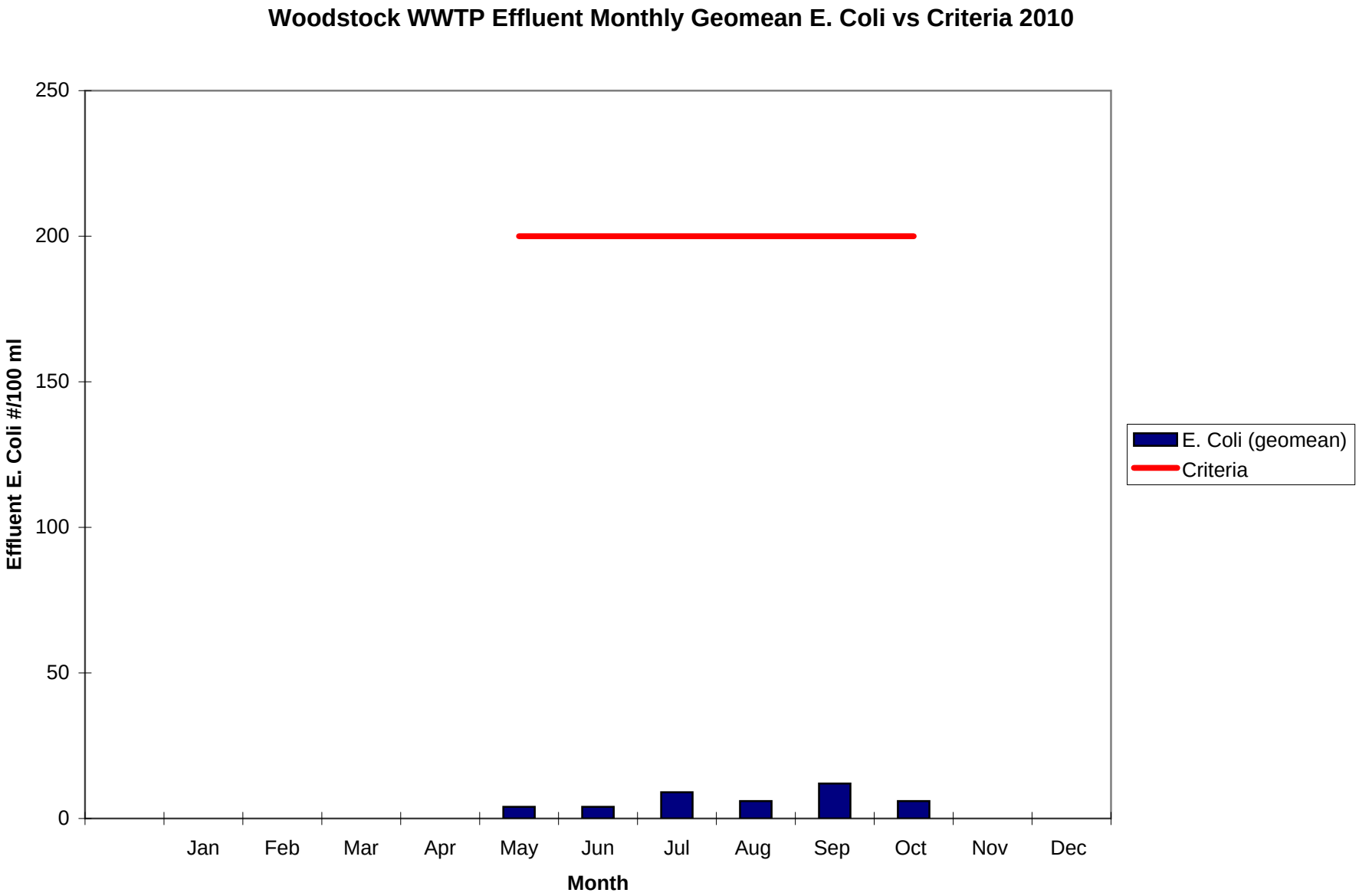

Woodstock WWTP Effluent Monthly Average Daily Flow vs Design 2010
Effluent Flow Cubic Meters
35000
30000
25000
20000
15000
10000
5000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Flow m3/d
Criteria

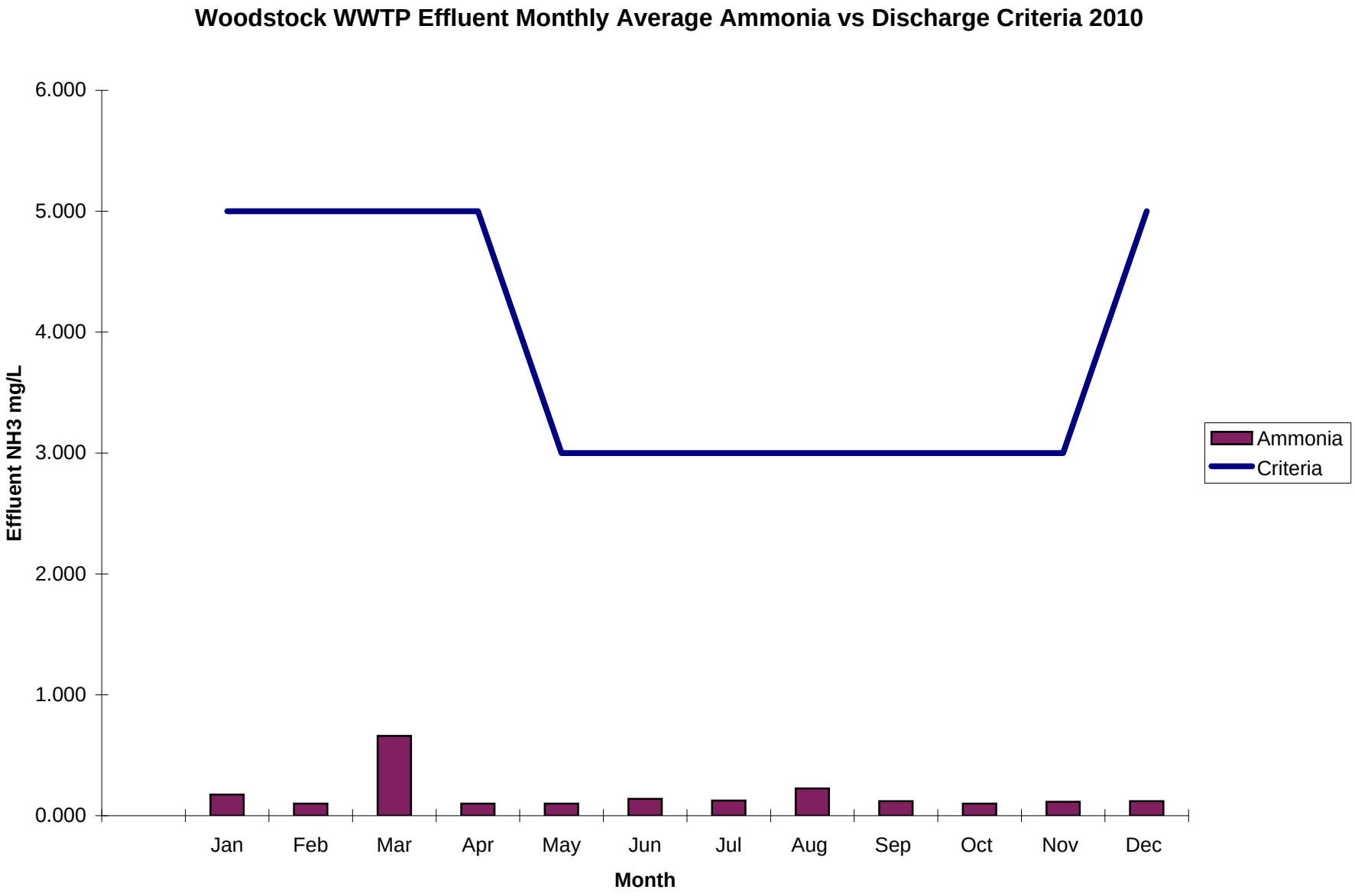

Woodstock Effluent Monthly Average CBOD mg/L vs Criteria 2010
25.000
20.000
15.000
10.000
5.000
0.000
Effluent CBOD mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
CBOD
Criteria

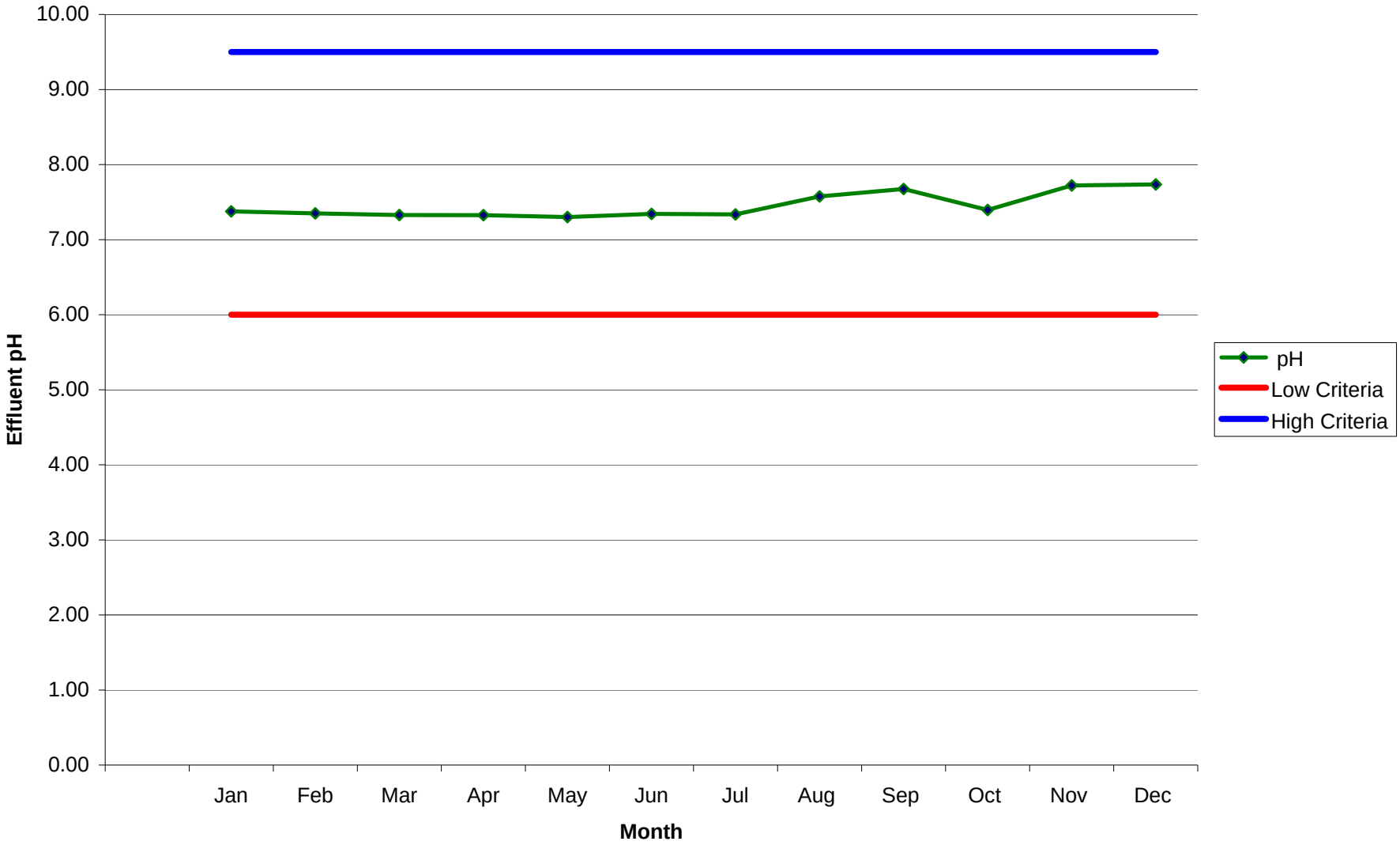
Woodstock WWTP Effluent Monthly Average SS vs Criteria 2010




Woodstock WWTP Effluent Monthly Average TP mg/L vs Criteria 2010
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
Effluent TP mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Total P
Criteria


Woodstock WWTP Effluent Monthly Geomean E. Coli vs Criteria 2010
Effluent E. Coli #/100 ml
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
E. Coli (geomean)
Criteria


Woodstock WWTP Effluent Monthly Average Ammonia vs Discharge Criteria 2010
6.000
5.000
4.000
3.000
2.000
1.000
0.000
Effluent NH3 mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Ammonia
Criteria


Woodstock WWTP Effluent Monthly Average pH vs Discharge Criteria 2010
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Effluent pH
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
pH
Low Criteria
High Criteria

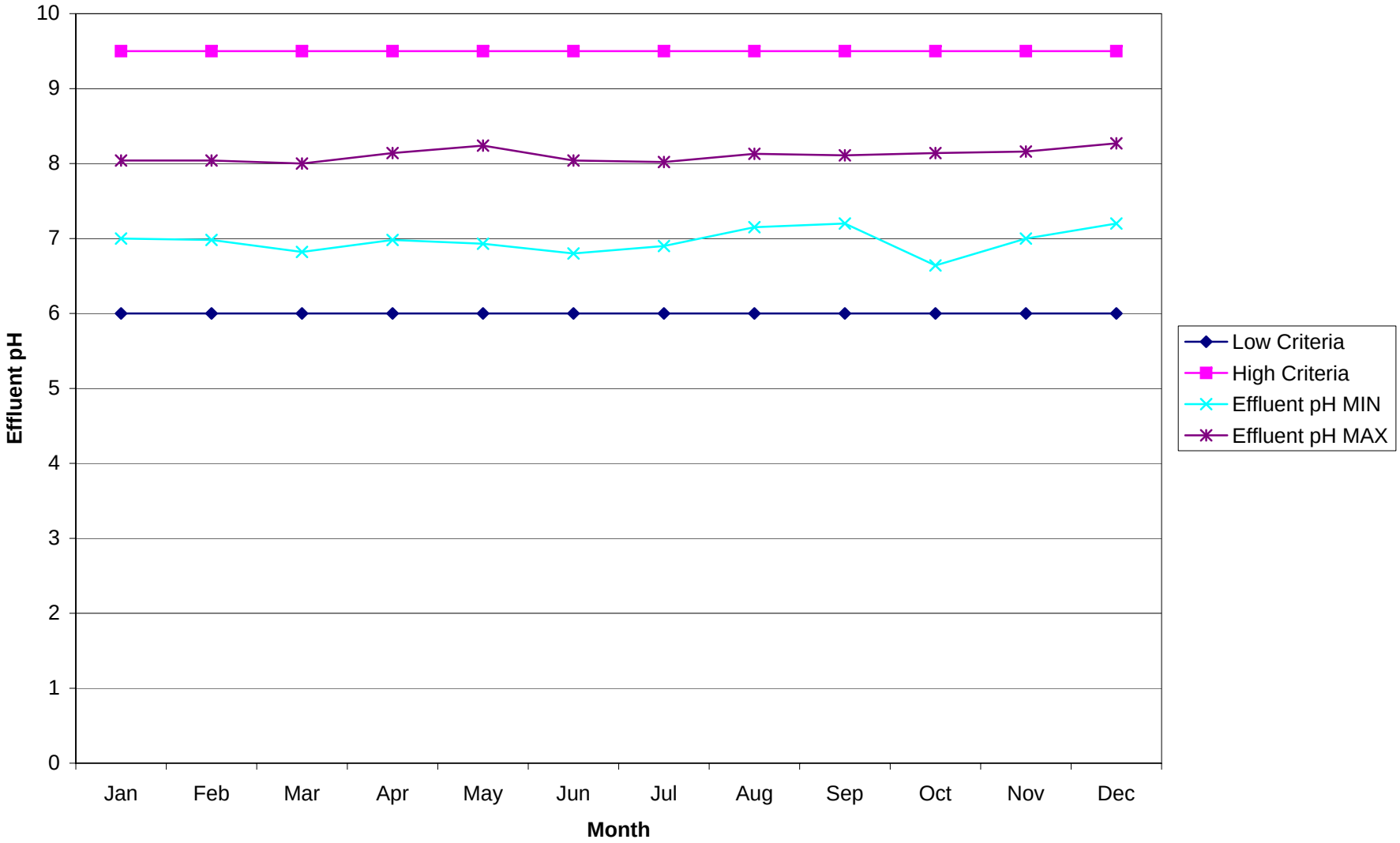

Woodstock WWTP Effluent Min pH and Max pH 2010
Effluent pH
10
9
8
7
6
5
4
3
2
1
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Low Criteria
High Criteria
Effluent pH MIN
Effluent pH MAX

Exhibit 2

Hauler Summary 2010

Hauler Name	Quantity												Gallons
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Year to Date
Grand Bend													0
Chitters	6,000		7,000	10,400	21,000	17,600	6,500	10,900					79,400
County	30,800	25,200	33,600	25,200	19,600	28,000	22,400	25,200	33,600	42,000	34,000	16,800	336,400
Denby	52,300	47,350	99,600	112,075	86,400	111,200	111,900	79,600	79,000	77,600	67,200	63,400	987,625
Oxford Ent	434,600	336,200	483,800										1,254,600
Jack Hall	13,400	12,500	23,800	93,500	62,700	83,100	52,020	56,300	56,400	78,000	102,100	27,600	661,420
Norms	14,900	16300	18,800	44,700	37,600	43,500	58,600	54,600	28,300	49,800	46,800	22,400	436,300
Otterville	16,000	22,400	34,600	39,000	33,300	71,900	55,800	60,300	34,600	39,000	31,200	34,000	472,100
E + J		100		225	600	150	175	450	550	375			2,625
Watts	2,800	5,100	11,900	11,000	14,000	15,500	12,300	9,600	10,400	19,000	6,400	4,000	122,000
Aff Portable	780	805	1,115	815	1,050	455	770	1,335	535	1,385	2,020	420	11,485
Nor Pac	43,200	57,600	43,200									43,200	187,200
Ingersoll	127,800	85,000	126,200	205,600	255,000	225,000	208,600	211,300	230,000	179,600	230,000	128,400	2,212,500
Total Haula	742,580	608,555	883,615	542,515	531,250	596,405	529,065	509,585	473,385	486,760	519,720	340,220	6,763,655

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,
N6E 1L3

Dear Sir:

RE: Year-End Report Ingersoll Wastewater Treatment Plant (WWTP) 2010
(Certificate of Approval #0342-7WCKCJ)

This year-end report is prepared as required by the certificate of approval #0342-7WCKCJ.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT
Project Engineer, Oxford County

Overview

The Old and New Ingersoll Wastewater Treatment Plants (WWTP) are conventional activated sludge systems that provided effective wastewater treatment in 2010, with an average flow for the New Plant of 4528 m^3/d and 2459 m^3/d for the Old Plant. The combined average flow of 6987 m^3/d represents 68.3 % of the design capacity of 10 227 m^3/d for both plants. The total combined flow for 2010 was 2,550,150 m^3.

Project Description

The Ingersoll Old Wastewater Treatment Plant began operation in 1947 and the Ingersoll New Plant in 1972. The facilities are conventional activated sludge plants consisting of primary and secondary treatment that until March 2010 had separate outfall pipes to the Thames River, however; beginning in March both plants share the same ultraviolet light disinfection system and combine for a single discharge point. The facility adds Ferric Chloride or Aluminum Sulphate into the reactors for total phosphorus reduction. Ultraviolet light disinfection was substantially completed in March 2010 and in place for the disinfection season May through October.

Oxford County owns and operates the facility.

Plant Specifications

Facility - Ingersoll Wastewater Treatment Plant
Design Capacity - 10227 m^3/d

Average Daily Flow - 6987 m^3/d
Receiving Area - Thames River
Classification - WWT – III
Certificate(s) of Approval
MOE CofA #0342-7WCKCJ

CofA Effluent Requirements	Limits Monthly Average Concentration	Limits Monthly Average Loading	Objectives Monthly Average Concentration
CBOD	25 mg/L	256 kg/d	15 mg/L
SS	25 mg/L	256 kg/d	15 mg/L
TP	1 mg/L	10.3 kg/d	0.8 mg/L
E.Coli	NA	NA	200 organisms/100 ml

Seasonal Disinfection May 1 - October 31

Sampling Procedure

Influent and Effluent samples are collected bi-weekly. Raw sewage samples are collected at the main lift station located on-site; the sample is drawn after pumping by the lift station pumps and prior to the primary tanks of either plant.

Two composite samplers collect samples over a 24-hour duration after the chlorine chamber at both the New and Old Plants. This sample is taken prior to the effluent discharge to the Thames River. After March 2011 the Old Plant sample point became an internal sample and the New Plant sampler draws directly from the combined flow after it leaves the UV disinfection system prior to discharge and constitutes the effluent sample for the entire facility.

Laboratory analysis is performed by SGS Lakefield Research Ltd. on all samples that are reported for compliance except for pH, DO, and temperature which are field collected. All in-house testing is done for process control and is not included in this report.

Flows

The total flow treated in 2010 was 2,550,150 m3. The daily average flow was 6987 m^3/day which represents 68.3 % of the design flow for Ingersoll WWTP of 10227 m^3 /day.

Raw Sewage Quality

The annual average raw sewage CBOD concentration to the plant was 105 mg/L, which represents an average loading of 727 kg/day. The average suspended solids concentration was 147 mg/L, which represent a loading of 1022 kg/day. Average nitrogen concentration, as TKN was 19 mg/L equivalent to a loading of 133 kg/day. Total phosphorus was 0.4 mg/L, which represents a loading of 2.8 kg/day.

Plant Performance & Effluent

Detailed analytical data of annual and monthly averages are summarized later in this report in Exhibit 1.

Over the reporting period, the annual average effluent CBOD concentration for the New Plant was 6 mg/L or an equivalent 94.3 % reduction. At the Old Plant CBOD for January and February 2011 it was 7 mg/L or an equivalent 93.3 % reduction. The New Plant suspended solids average concentration was 11 mg/L, which represents a 92.5 % reduction and the Old Plant for the first two months of the year had suspended solids average concentration of 11.5 mg/L, which represents a 92.5 % reduction. New Plant Effluent Ammonia averaged 0.5 mg/L or a 96.9 % reduction and Old Plant effluent Ammonia averaged 0.93 mg/L or a 94.2 % reduction for the two months the Old Plant had a separate discharge. New Plant effluent Total phosphorus average was 0.4 mg/L, which equates to an

81.6 % reduction and the Old Plant effluent Total Phosphorus was 0.34 mg/L, which represents an 84.4 % reduction.

All pH is measured for both Influent and Effluent by the operator approximately four times a week and there was no single sample outside out limits of 6-9.5 for 2010.

Bypassing, Upset and Abnormal Conditions

There were no bypasses or spills of raw wastewater at the Ingersoll Wastewater Treatment Plant in 2010.
All results for 2010 were compliant to the CofA limits.

Maintenance and Calibration

The operating and maintenance staff from the Ingersoll WWTP conduct regular scheduled maintenance of the plant equipment. Detailed maintenance records for each piece of equipment are kept on site at the Ingersoll WWTP.

R&R Instrumentation Services provided meter calibration service on both effluent meters.

Biosolids 2010

The Ingersoll Wastewater Treatment Plant utilizes anaerobic digesters to stabilize biosolids prior to dewatering through a belt press. The dewatered cake is stored at the Oxford County Biosolids Centralized Storage Facility and land applied.

The system was offline in 2010 as the digesters had to be cleaned and repaired prior to an upgrade scheduled for 2011. Raw co-thickened sludge was transported to Woodstock for treatment and no Biosolids were digested or dewatered on site.

Please see Biosolids report appended to this annual report.

Summary and Recommendations

The Ingersoll Wastewater Treatment Plant was operating within its hydraulic design criteria in 2010. With the upgrade to a UV disinfection system to replace the chlorine gas system, the plant effluent was combined into a single discharge stream in March 2010.

The digester upgrades entered the initial phases with a cleaning of the primary digester, an inspection and technical report on repair of the existing tankage and the tendering of new cladding for both primary and secondary digesters. A detailed design of the upgraded digesters, to include a new roof, mixing and associated systems, is to begin in 2011 with construction to quickly follow within the same year.

Exhibit 1

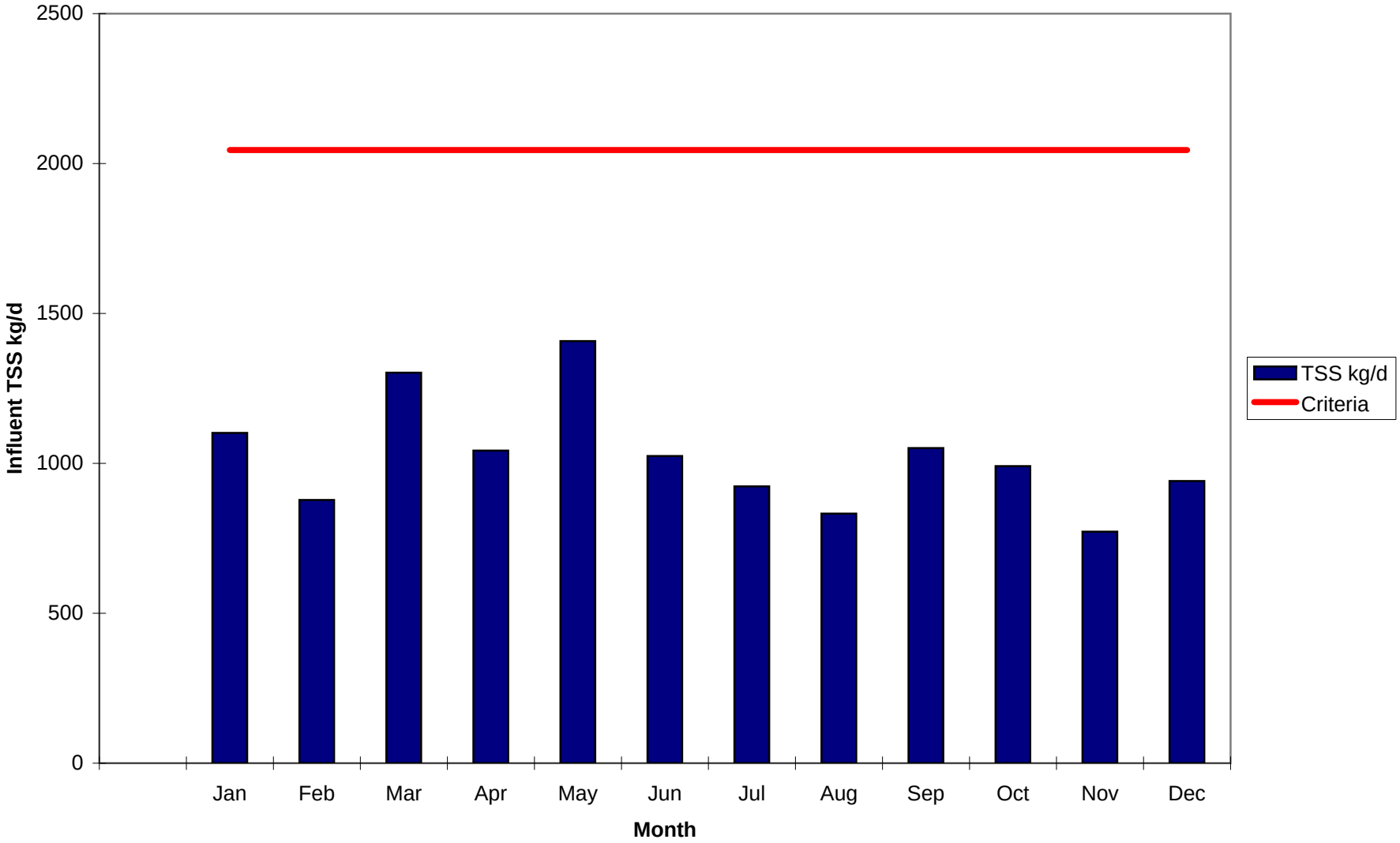
Municipality: INGERSOLL
PROJECT:INGERSOLL WWTP
Operator: County of Oxford
Works Number:
(O) 110003978 (N) 110003969

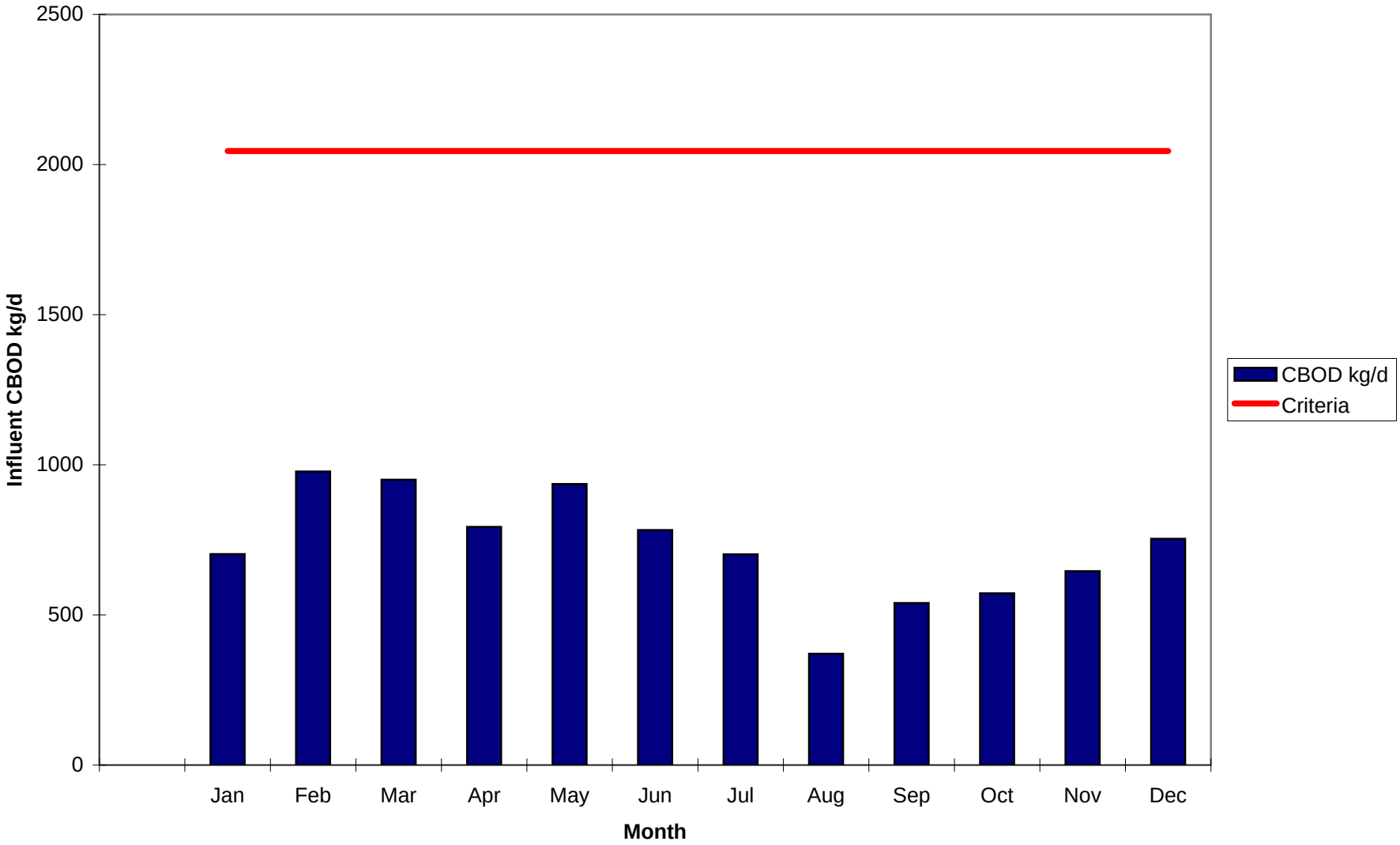
2010

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avaerage	Min	Max	Total	Total 1000m3
Total Flow m3	(m3)	204500	186241	233832	226688	207304	216408	188300	208885	212050	238093	216469	211380				2550150	2550.15
Flow m3/d (N)	(m3/d)	3941	4488	5083	4832	4318	4637	4013	4327	4669	4841	4826	4359	4528	3941	5083	Design	
Flow m3/d (O)	(m3/d)	2656	2163	2460	2725	2369	2577	2061	2411	2399	2839	2390	2460	2459	2061.4	2839	Criteria	
Flow m3/d (T)	(m3/d)	6597	6651	7543	7556	6687	7214	6074	6738	7068	7680	7216	6819	6987	6074.2	7680	10227	
Max Daily Flow	(m3/d)	7983	8315	13544	11886	8768	10307	7907	8216	8478	10028	10737	9174	9612	7907	13544		
Min Daily Flow	(m3/d)	5023	5236	5186	5206	5210	5563	3164	4772	5434	5546	4505	4900	4979	3164	5563		
Common Influent																		
CBOD	(mg/L)	107	147	126	105	140	109	116	55	76	75	90	111	104.53	55	147		
SS	(mg/L)	167	132	173	138	211	142	152	124	149	129	107	138	146.69	107	210.5		
Total P	(mg/L)	3.1	2.8	2.6	1.9	2.5	1.7	1.9	1.5	2.5	2.1	1.9	1.7	2.18	1.49	3.145		
NH3+NH4-N	(mg/L)	17.4	14.7	25.9	16.9	19.0	11.1	16.7	15.1	22.0	12.6	11.0	11.0	16.10	11	25.9		
TKN	(mg/L)	20.2	18.7	28.8	18.2	22.6	15.1	17.1	16.5	25.3	15.9	13.1	12.4	18.65	12.35	28.8		
NITRITE	(mg/L)	0.28	0.29	0.15	0.24	0.03	0.17	0.05	0.16	0.27	0.19	0.23	0.46	0.21	0.03	0.455		
NITRATE	(mg/L)	0.37	0.24	0.10	0.42	0.06	0.16	0.09	0.40	0.62	0.14	0.43	8.93	1.00	0.0625	8.925		
pH		7.54	7.43	7.58	7.78	7.44	7.12	7.63	7.64	7.75	7.62	7.53	7.81	7.57	7.12	7.805		
Effluent (N)		Old and New Plant Combined Effluent after UV System Upgrade															Objectives	Limits
CBOD(New)	(mg/L)	11	9	7	6	6	4	5	5	5	5	5	6	6	4	7	15	25
SS New	(mg/L)	17.5	11.5	8.3	7.5	11.5	11.5	8.0	8.0	11.7	13.5	7.5	13.0	11	7.50	13.50	15	25
Total P New (mg/L)		0.43	0.35	0.30	0.40	0.39	0.51	0.44	0.44	0.61	0.55	0.37	0.33	0.4	0.3	0.6	0.75	1
NH3+NH4-N	(mg/L)	0.08	0.13	2.53	0.70	0.60	0.10	0.18	0.20	0.22	0.38	0.38	0.18	0.5	0.1	2.5		
TKN	(mg/L)	2.95	1.70	3.02	2.00	1.80	1.20	1.03	2.20	3.07	1.45	3.00	3.00	2.201	1.025	3.067		
NITRITE	(mg/L)	0.10	0.16	0.39	0.29	0.60	0.09	0.39	0.13	0.03	0.05	0.05	0.06	0.19	0.03	0.60		
NITRATE	(mg/L)	14.95	16.80	16.27	14.70	19.15	12.35	19.05	17.50	16.97	16.45	16.25	14.60	16.253	12.350	19.150		
pH		6.81	7.25	7.38	7.13	7.38	7.01	7.48	7.37	7.50	7.83	7.95	7.80	7.4	7.0	8.0		
E.Coli Geomean NEW						3	3	24	3	6	43			14	3.00	43	200	NA
unionized ammonia		0.003	0.003	0.045	0.003	0.003	0.003	0.003	0.003	0.011	0.017	0.007	0.010					
Effluent (O)		Old and New Plant Combined Effluent after UV System Upgrade																
CBOD(Old)	(mg/L)	8	7											7	7.00	0	15	25
SS Old	(mg/L)	12	12											11.5	11.50	0	15	25
Total P Old (mg/L)		0.26	0.43											0.34	0.43	0.00	0.75	1
NH3+NH4-N	(mg/L)	1.18	0.68											0.93	0.68	0.00		
TKN	(mg/L)	3.15	0.88											2.02	0.88	0.00		
NITRITE	(mg/L)	2.11	2.01											2.06	2.01	0.00		
NITRATE	(mg/L)	15.05	18.65											16.85	18.65	0.00		
pH		6.83	7.35											7.09	7.35	0.00		
E.Coli Geomean OLD																	200	NA
unionized ammonia		0.003	0.003															

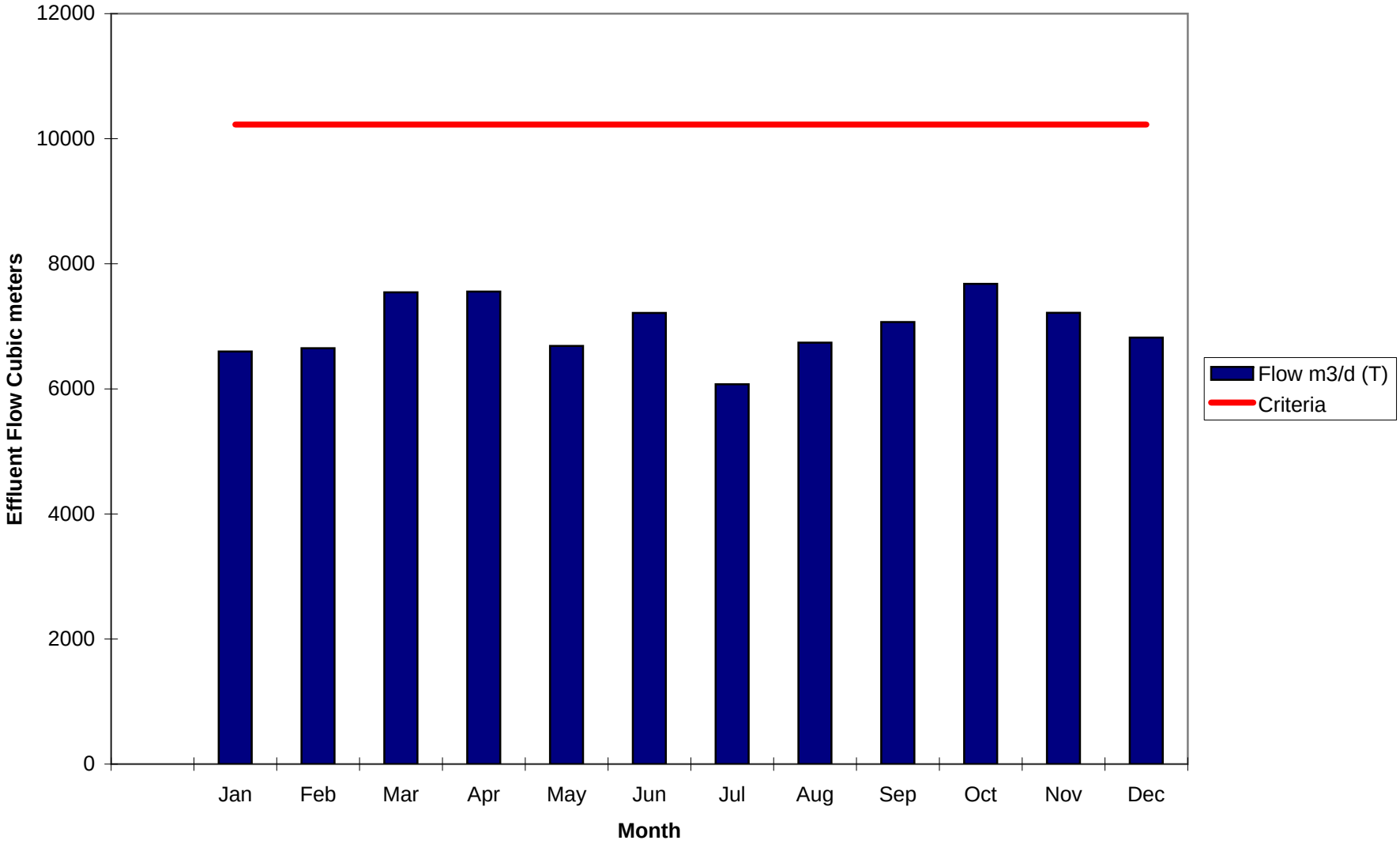
Influent Loadings																	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Min	Max		Design
CBOD kg/d	703	978	950	793	936	783	702	371	540	572	646	753	727	371	950		2045
TSS kg/d	1102	878	1302	1043	1408	1024	923	832	1051	991	772	941	1022	772	1408		2045
Effluent Loadings to Thames River																	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Min	Max		Limits
CBOD kg/d	63	56	36	29	26	19	18	22	23	24	24	24	30	18	63		256
TSS kg/d	100	76	42	36	50	53	32	35	54	65	36	57	53	32	100		256
TP kg/d	2	2	2	2	2	2	2	2	3	3	2	1	2	1	3		10.3

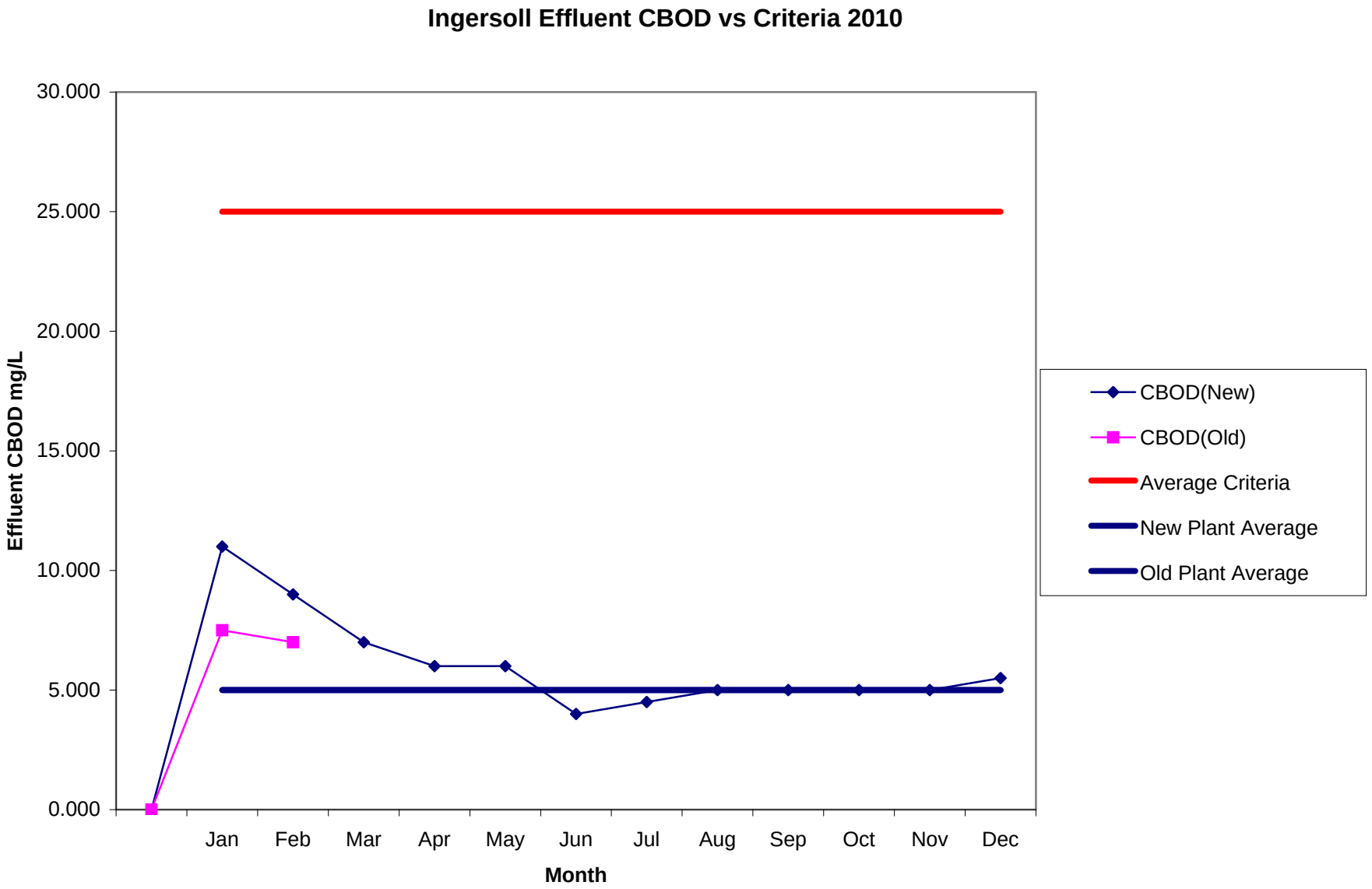
Ingersoll WWTP Influent TSS Loading Vs Design 2010

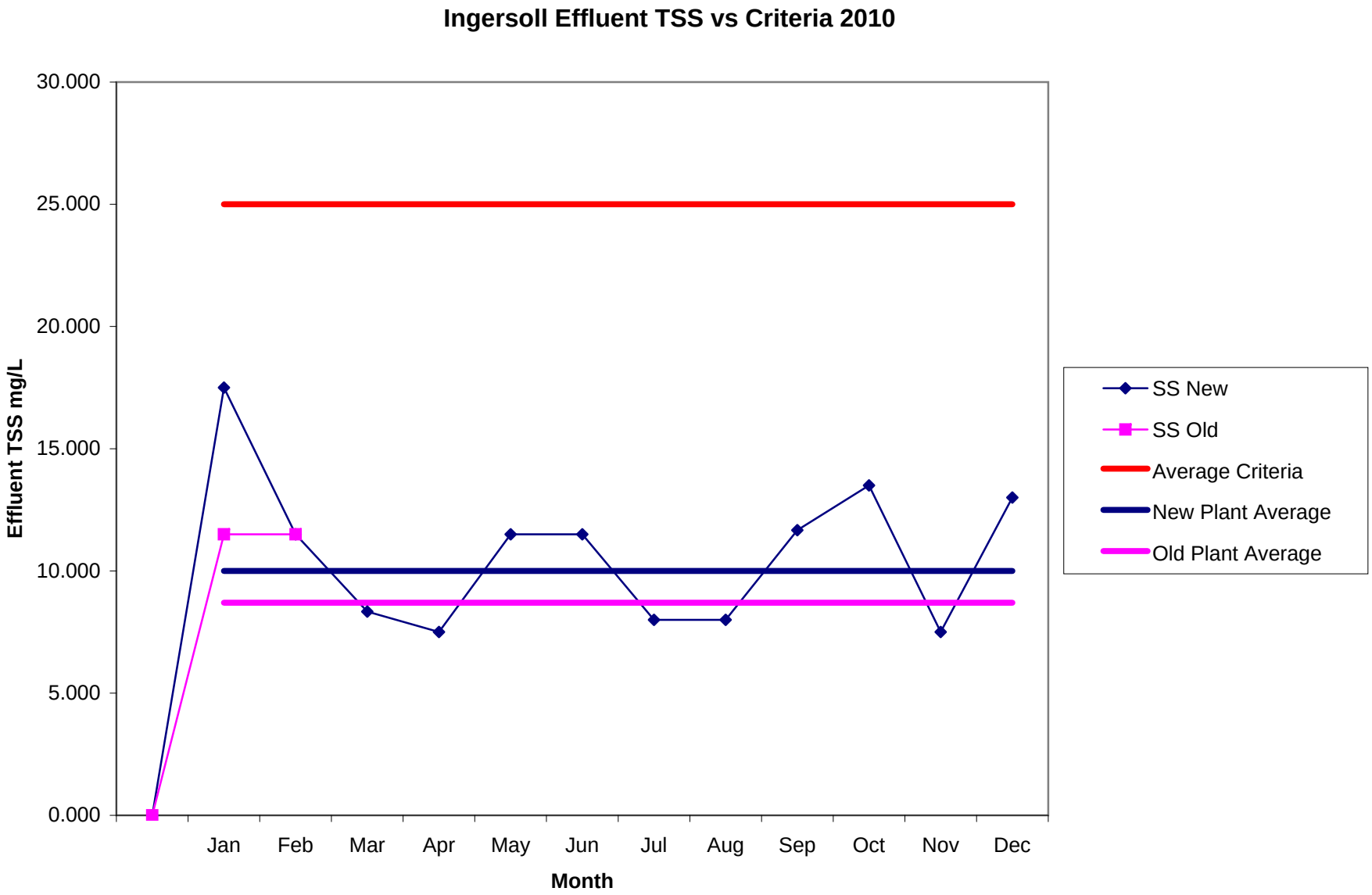



Ingersoll WWTP Influent CBOD Loading Vs Design kg/d 2010
Influent CBOD kg/d
2500
2000
1500
1000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
CBOD kg/d
Criteria

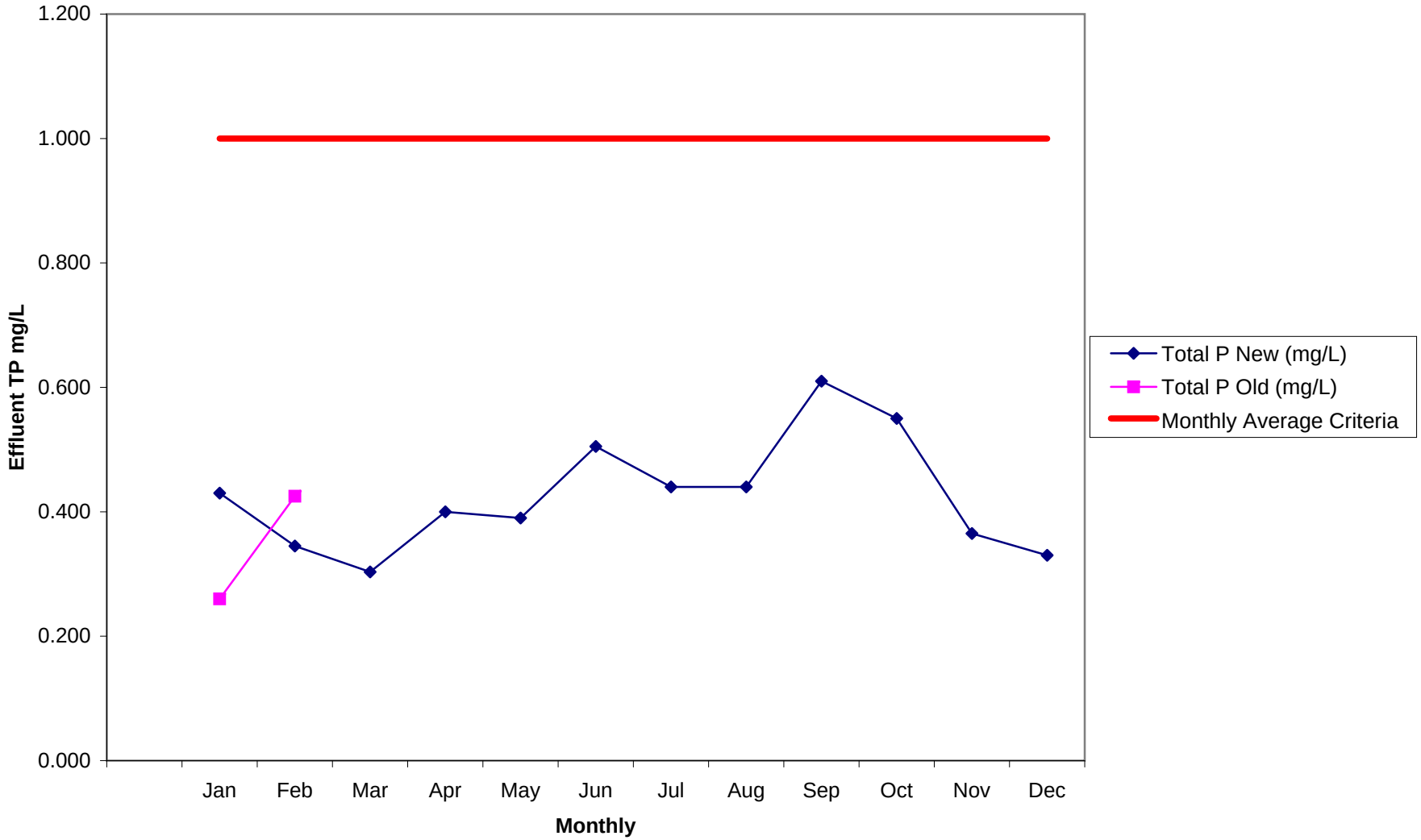
Ingersoll WWTP Effluent Flow Cubic Meters 2010



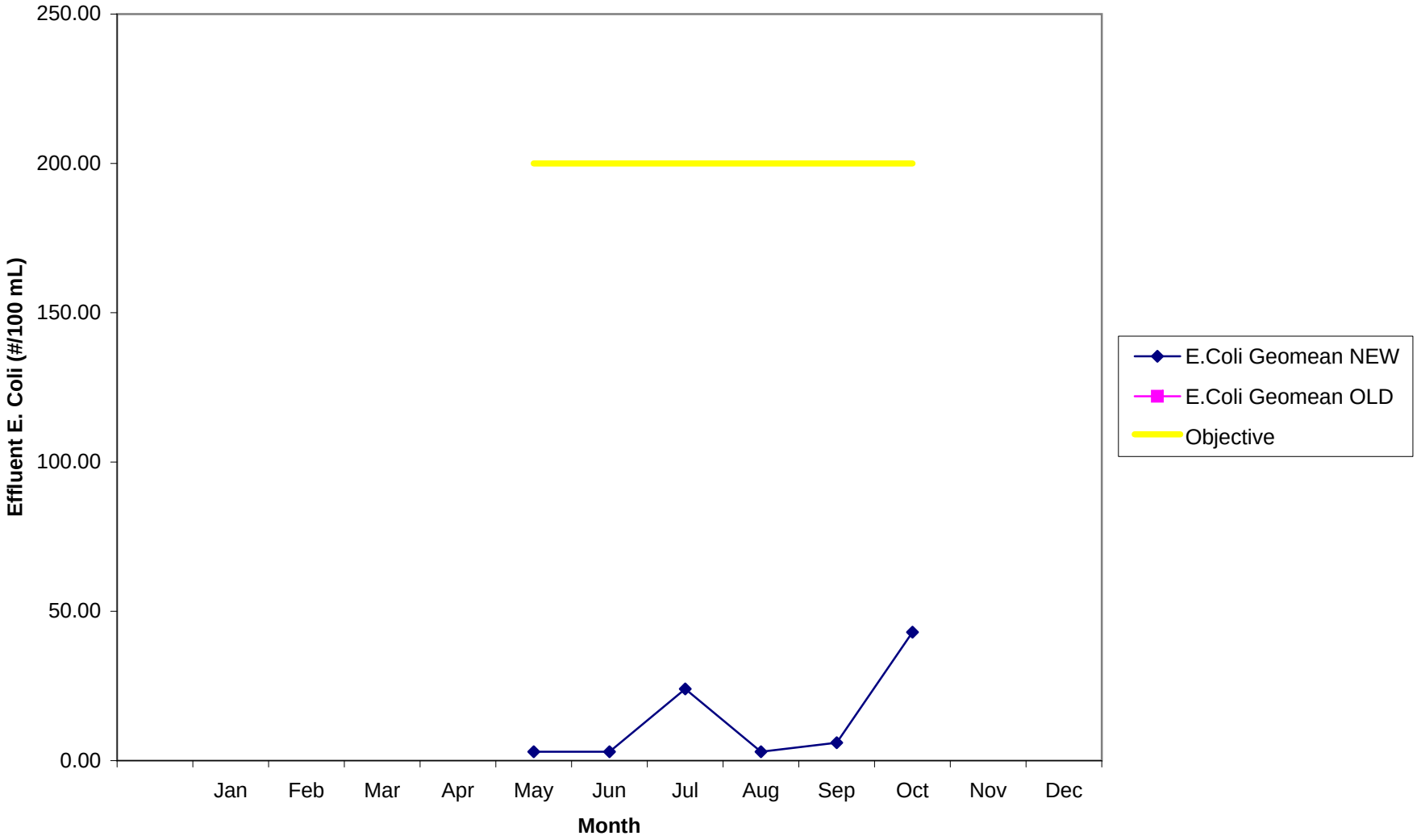

Ingersoll Effluent CBOD vs Criteria 2010
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Effluent CBOD mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
CBOD(New)
CBOD(Old)
Average Criteria
New Plant Average
Old Plant Average

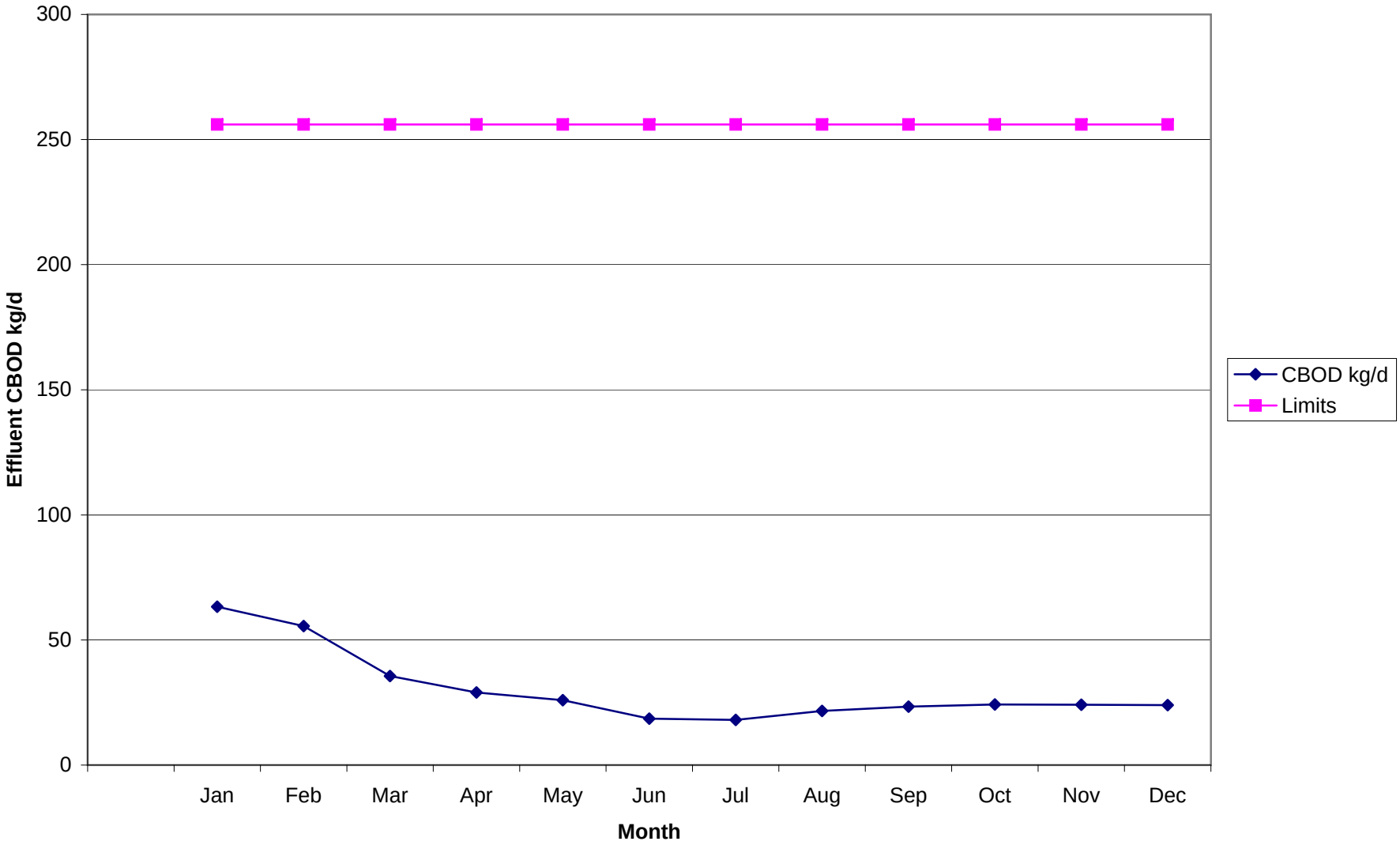

Ingersoll Effluent TSS vs Criteria 2010
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Effluent TSS mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
SS New
SS Old
Average Criteria
New Plant Average
Old Plant Average

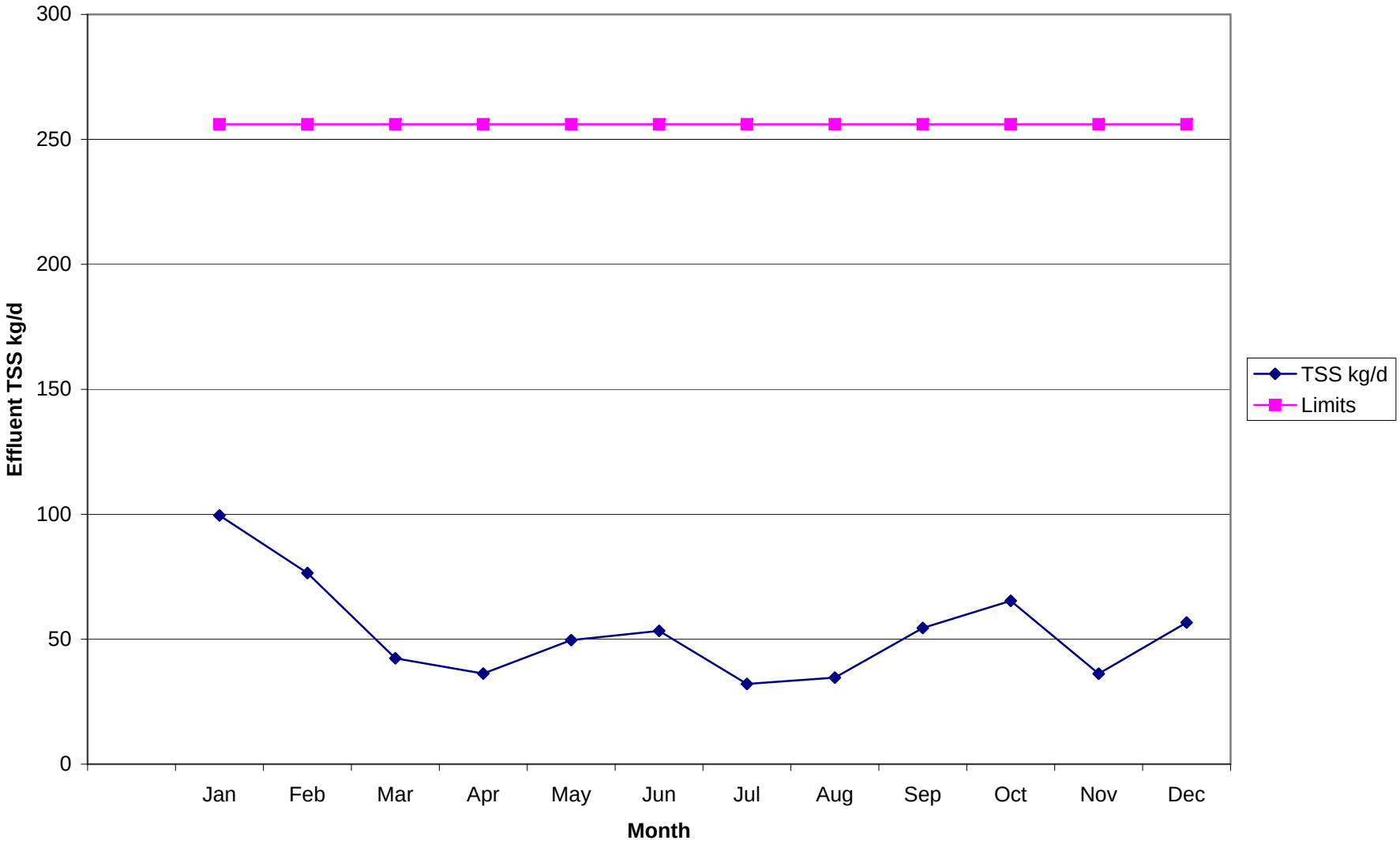
Ingersoll Effluent TP mg/L vs Criteria 2010

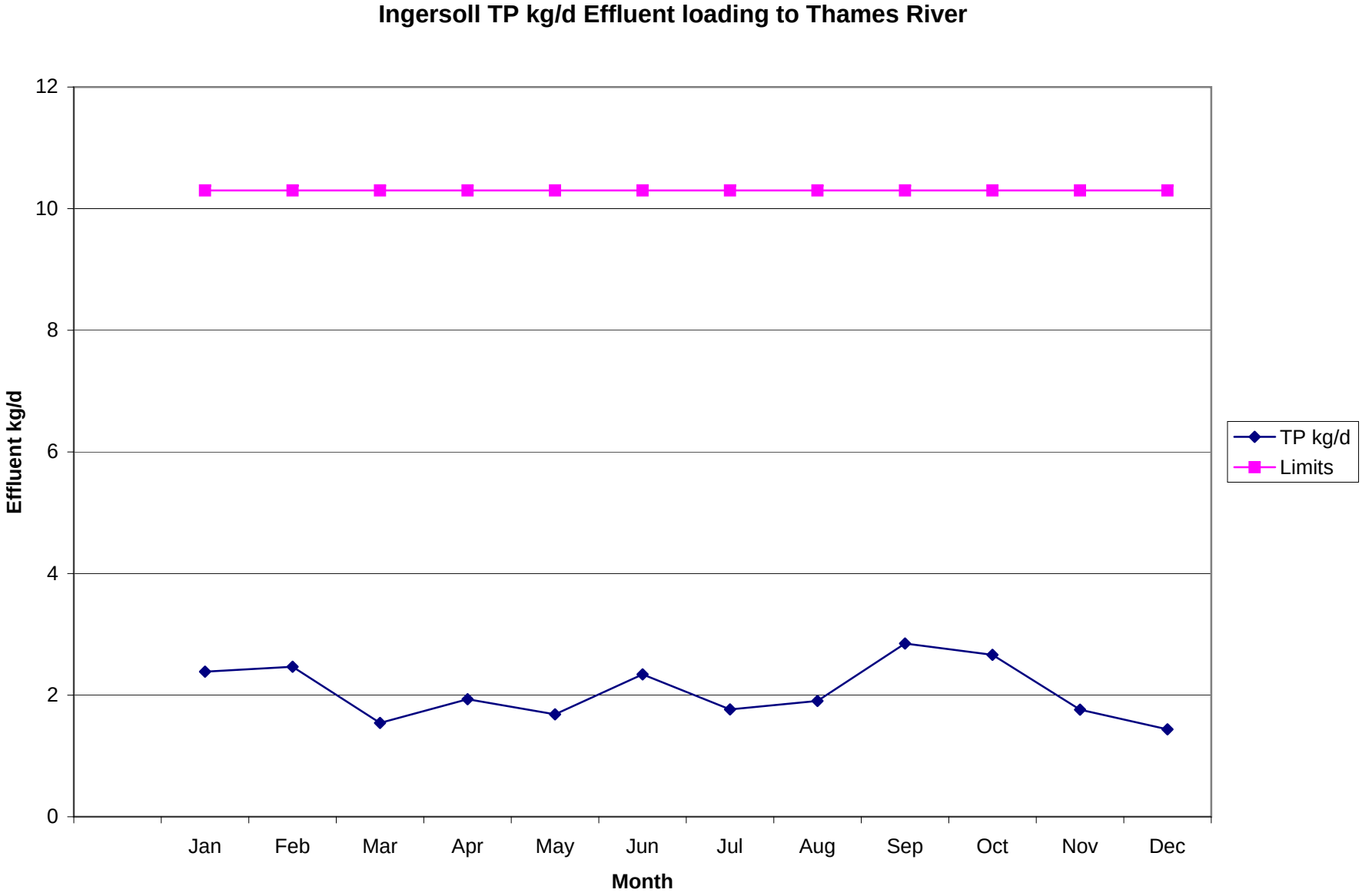


Ingersoll Effluent E. Coli (#/100 mL) Vs Discharge Guideline 2010




Ingersoll CBOD kg/d Effluent Loadings to Thames River
Effluent CBOD kg/d
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
CBOD kg/d
Limits


Ingersoll TSS kg/d Effluent Loading to Thames River
300
250
200
150
100
50
0
Effluent TSS kg/d
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TSS kg/d
Limits


Ingersoll TP kg/d Effluent loading to Thames River
12
10
8
6
4
2
0
Effluent kg/d
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TP kg/d
Limits

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,
N6E 1L3

Dear Sir:

RE: Year-End Report Tillsonburg Wastewater Treatment Plant (WWTP) 2010
(Certificate of Approval # 9997-82RS5A)

This year-end report is prepared as required by the certificate of approval # 9997-82RS5A.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT,
Project Engineer, Oxford County

Overview

The Tillsonburg Wastewater Treatment Plant (WWTP) is a conventional activated sludge system that provided effective wastewater treatment in 2010, with an average flow for the plant of 5744 m^3/day which represents 70.2 % of the design capacity of 8180 m^3/day. The total flow for 2010 was 2,096,417 m^3.

Project Description

The facility is a conventional activated sludge plant consisting of primary and secondary treatment, with an outfall pipe to the Big Otter Creek. The facility adds Aluminum Sulphate into the reactors for phosphate control and Ultraviolet Light for disinfection seasonally.
Oxford County owns and operates the facility.

Plant Specifications

Facility - Tillsonburg Wastewater Treatment Plant
Design Capacity - 8180 m3/day
Average Daily Flow - 5744 m3/day
Receiving Area - Big Otter Creek
Classification - WWT – III
Certificate(s) of Approval CoA # 9997-82RS5A

CofA Effluent Requirements	Limits Monthly Average Concentration	Limits Monthly Average Loading	Objectives Monthly Average Concentration
CBOD	25 mg/L	203 kg/d	15 mg/L
SS	25 mg/L	203 kg/d	15 mg/L
TP	1 mg/L	8.1 kg/d	0.75 mg/L
E.Coli*	200 organisms/100 ml*	NA	150 organisms/100 ml*
pH	6.0-9.5		6.5-8.0
TRC			1.0

*Seasonal May 1 to Nov. 30

Sampling Procedure

Raw sewage samples are collected after the grit chamber where the influent streams combine before entering the sewage works. A composite sampler gathers samples over a 24 hour duration on a bi-weekly basis.

Final Effluent 24-hour composite sample is collected after secondary treatment and disinfection, and prior to the effluent discharge to the Big Otter Creek on a weekly basis.

Laboratory analysis is performed by SGS Lakefield Research Ltd. on all samples that are reported for compliance except for pH, DO, and temperature which are field collected. All in-house testing is done for process control and is not included in this report.

Flows

The total flow treated in 2010 was 2,096,417 m^3. The daily average flow was 5744 m^3 day which represents 70.2 % of the design flow for Tillsonburg WWTP of 8180 m^3/day.

Raw Sewage Quality

The annual average raw sewage CBOD concentration to the plant was 174 mg/L which corresponds to an average loading of 997 kg/day. The average suspended solids concentration was 228 mg/L that corresponds to 1304 kg/d. Average nitrogen level, as TKN was 21 mg/L which represent a load of 121 kg/d. Total phosphorus was 3.9 mg/L, which represents a loading of 22 kg/day.

Plant Performance & Effluent

Detailed analytical data of annual and monthly averages are summarized later in this report in Exhibit 1.

Over the reporting period, the annual average effluent CBOD concentration was 2.3 mg/L this is a 98.7 % reduction. The suspended solids average concentration was 6.3 mg/L, which represents a 97.2 % reduction. Ammonia averaged 1.8 mg/L. Total phosphorus average was 0.41 mg/L, which results in an 89.5 % reduction.

All pH is measured in the Effluent by the operator a minimum of weekly and there was no single sample outside our range of 6-9.5 for 2010.

Bypassing, Upset and Abnormal Conditions

There were no bypasses of raw sewage to Big Otter Creek in 2010 from the Tillsonburg Wastewater Treatment Plant.

Maintenance and Calibration

The operating and maintenance staff from the Ingersoll and Tillsonburg WWTP conduct regular scheduled maintenance of the plant equipment. Detailed maintenance records for each piece of equipment are kept on site.

Calibrations are completed by R&R Instrumentation on an annual basis for all flow measurement devices.

Summary and Recommendations

The Tillsonburg Wastewater Treatment Plant was operating within its discharge criteria for 2010.

A class environmental assessment has begun that includes the WWTP, looking at needed upgrades to meet future capacity needs.

Biosolids

Discussion:

The biosolids are aerobically digested and dewatered then taken to the Oxford County's Biosolids Centralized Storage Facility after which they are land applied.

Details of the Biosolids and the land application program are contained in a separate biosolids report appended to this report.

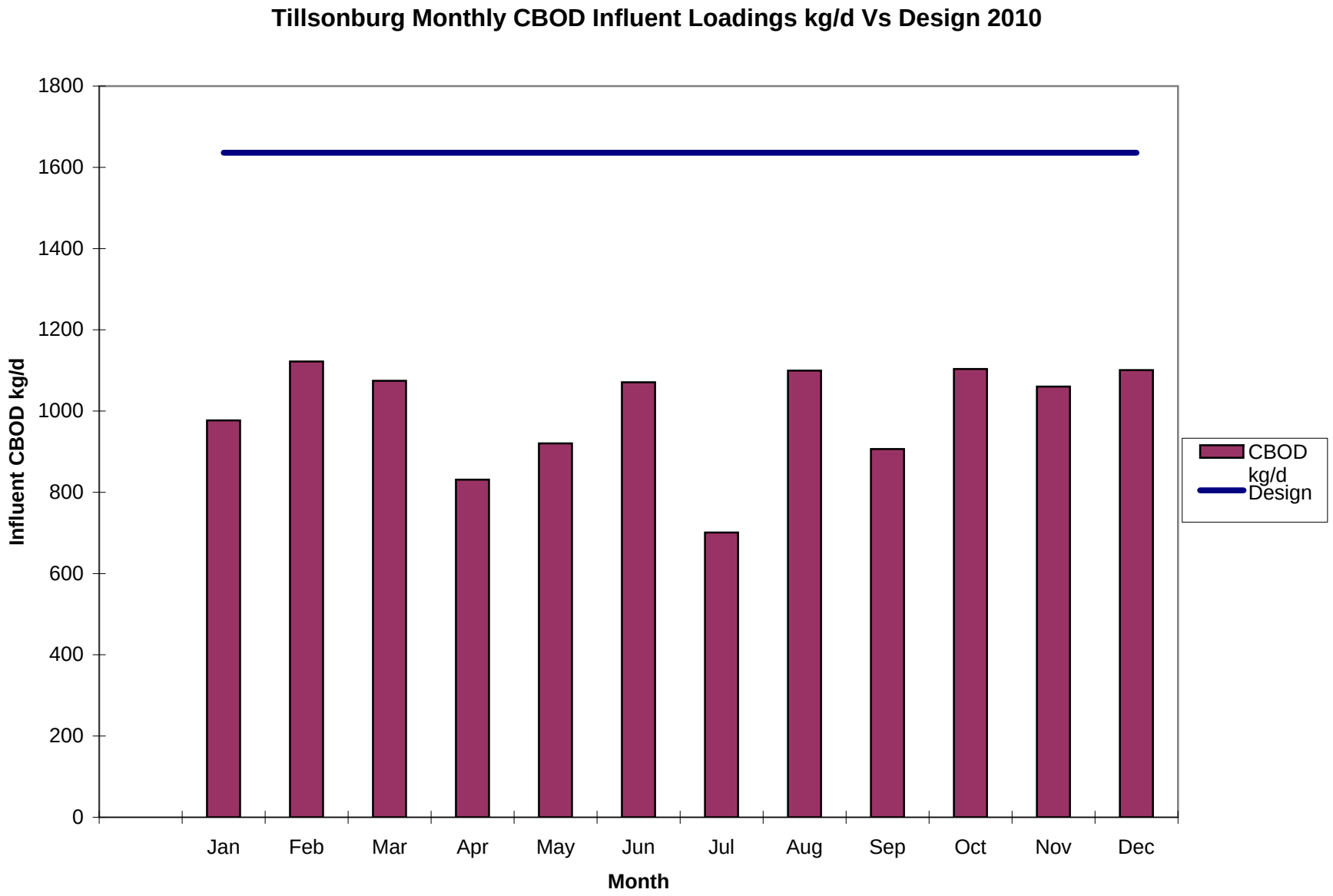
Exhibit 1

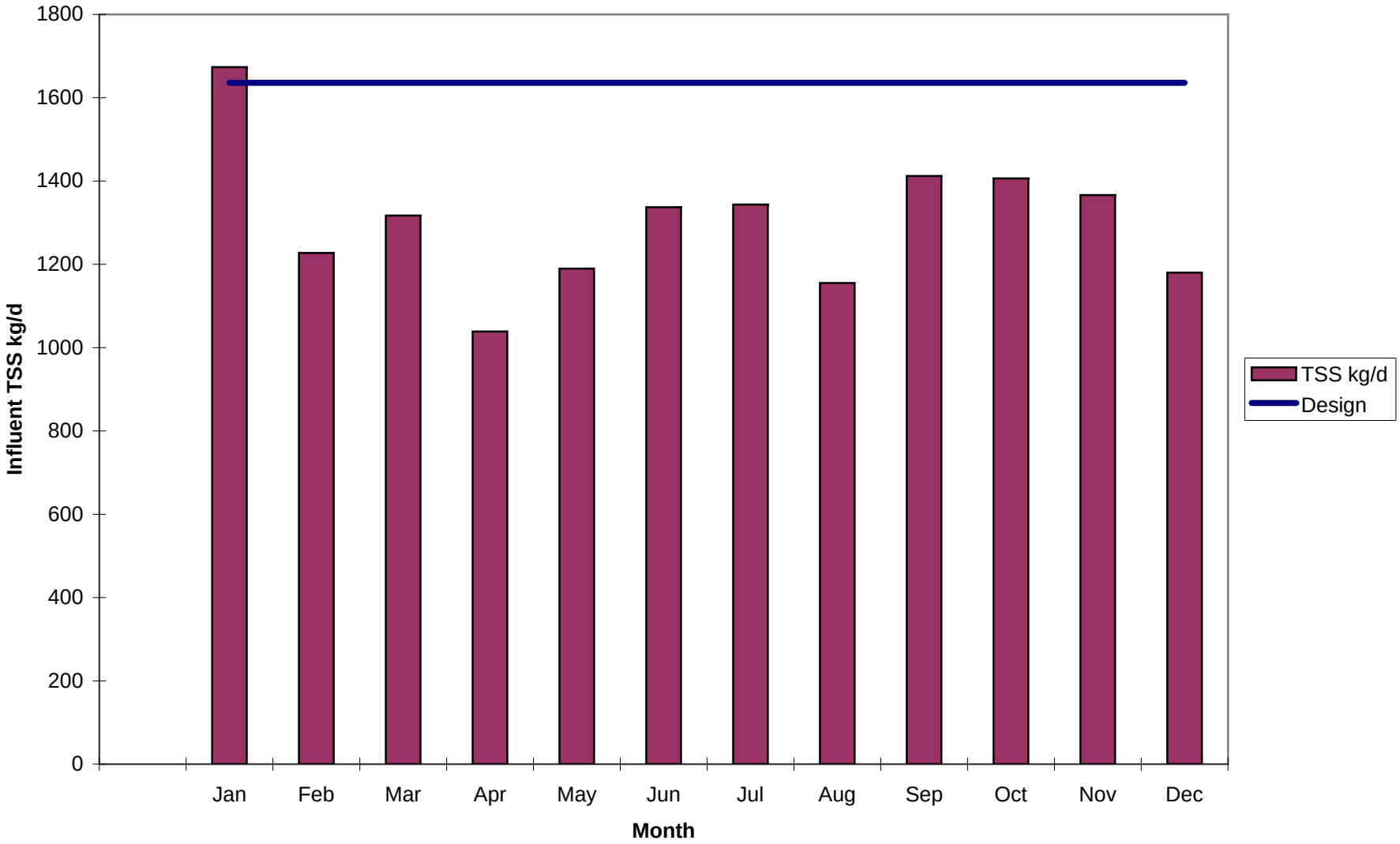
Municipality: TILLSONBURG
PROJECT:TILLSONBURG WWTP **2010**
Operator: County of Oxford
Works Number:
110000757

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avaerage	Min	Max	Total	Criteria
Total Flow m3	(m3)	189327	163642	189633	183312	187690	176214	164642	164272	160466	170629	166973	179617				2096417	
Flow m3/d	(m3/d)	6107	5844	6117	6110	6055	5874	5311	5299	5349	5504	5566	5794	5744	5299.1	6117.2		8180
Min Daily Flow	(m3/d)	5155	4853	5307	5139	4930	4935	4240	4552	4413	4670	4743	4786	4810	4240	5307		
Max Daily Flow	(m3/d)	7071	6791	7112	8588	7296	7246	6271	5967	6446	6954	7451	7088	7023	5967	8588		
Influent																		
BOD5	(mg/L)																	
CBOD	(mg/L)	160	192	176	136	152	182	132	208	170	201	191	190	174	132	208		
SS	(mg/L)	274.0	210.0	215.3	170.0	196.5	227.7	253.0	218.0	264.0	255.5	245.5	203.7	228	170	274		
Total P	(mg/L)	3.8	3.6	3.3	3.9	3.7	3.3	4.3	4.0	4.6	4.6	3.6	4.4	3.9	3.3	4.6		
Ammonia	(mg/L)																	
TKN	(mg/L)	22.3	18.5	15.9	20.8	15.6	15.23	29.60	21.65	26.10	24.2	16.6	29.1	21	15	29.6		
NITRITE	(mg/L)																	
NITRATE	(mg/L)																	
pH		7.58	7.52	7.90	7.92	7.39	7.45	7.36	7.41	7.28	7.38	7.45	7.54	7.51	7.28	7.92		
Temp (C)		14.15	13.80	13.83	14.15	16.65	17.33	19.95	21.50	22.15	21.65	18.85	16.20	17.5	13.8	22.2		
Effluent																		Criteria
BOD5	(mg/L)																	
SS	(mg/L)	7.8	10.5	6.8	6.0	5.3	6.8	5.3	4.8	6.2	6.0	5.3	5.2	6.31	4.75	6.80		25
Total P	(mg/L)	0.51	0.27	0.26	0.41	0.45	0.49	0.43	0.38	0.51	0.45	0.49	0.29	0.41	0.3	0.5		1
NH3+NH4-N	(mg/L)	2.53	5.78	3.81	1.38	0.48	0.60	1.11	2.41	1.53	0.54	0.55	0.94	1.8	0.5	3.8		
TKN	(mg/L)																	
NITRITE	(mg/L)																	
NITRATE	(mg/L)																	
pH		7.87	7.81	7.76	7.94	7.71	7.85	7.95	7.63	7.66	7.68	7.77	7.82	7.8	7.6	8.0		6-9.5
Temp (C)		13.23	13.28	13.02	14.78	16.08	18.50	20.23	21.53	21.18	19.35	17.83	14.90	17.0	13.0	21.5		
E.Coli Geomean	(#/100 ml)					2	1	4	6	3	7	2		4	1	7		200
CBOD		3.0	5.0	4.4	2.0	1	2.2	1.3	1	2	1.3	1.3	3	2.3	1.3	4		25
Un-ionized Ammonia Calculated		0.009	0.059	0.031	0.025	0.003	0.004	0.008	0.026	0.021	0.004	0.003	0.003	0.0	0.0			

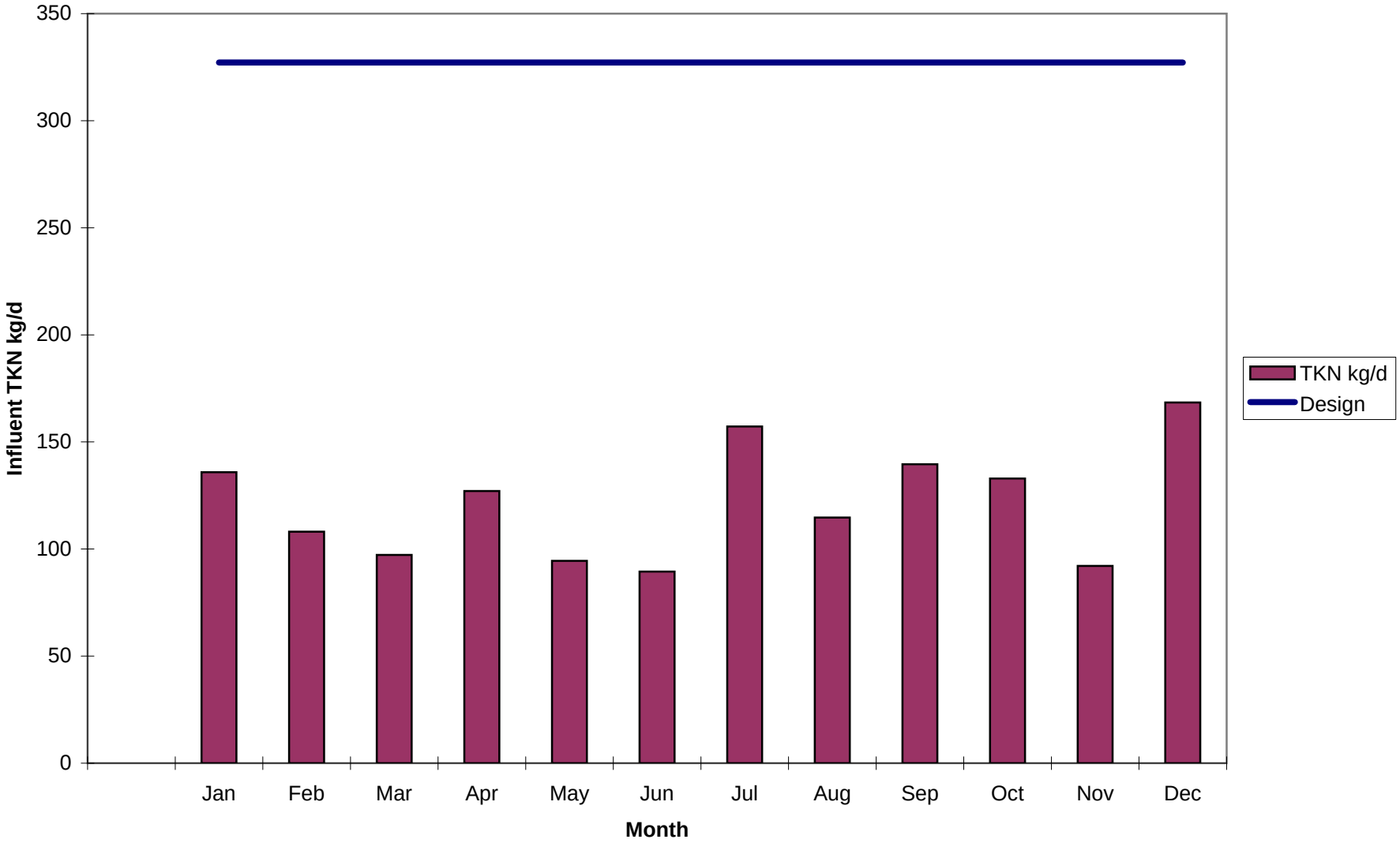
Influent Loadings

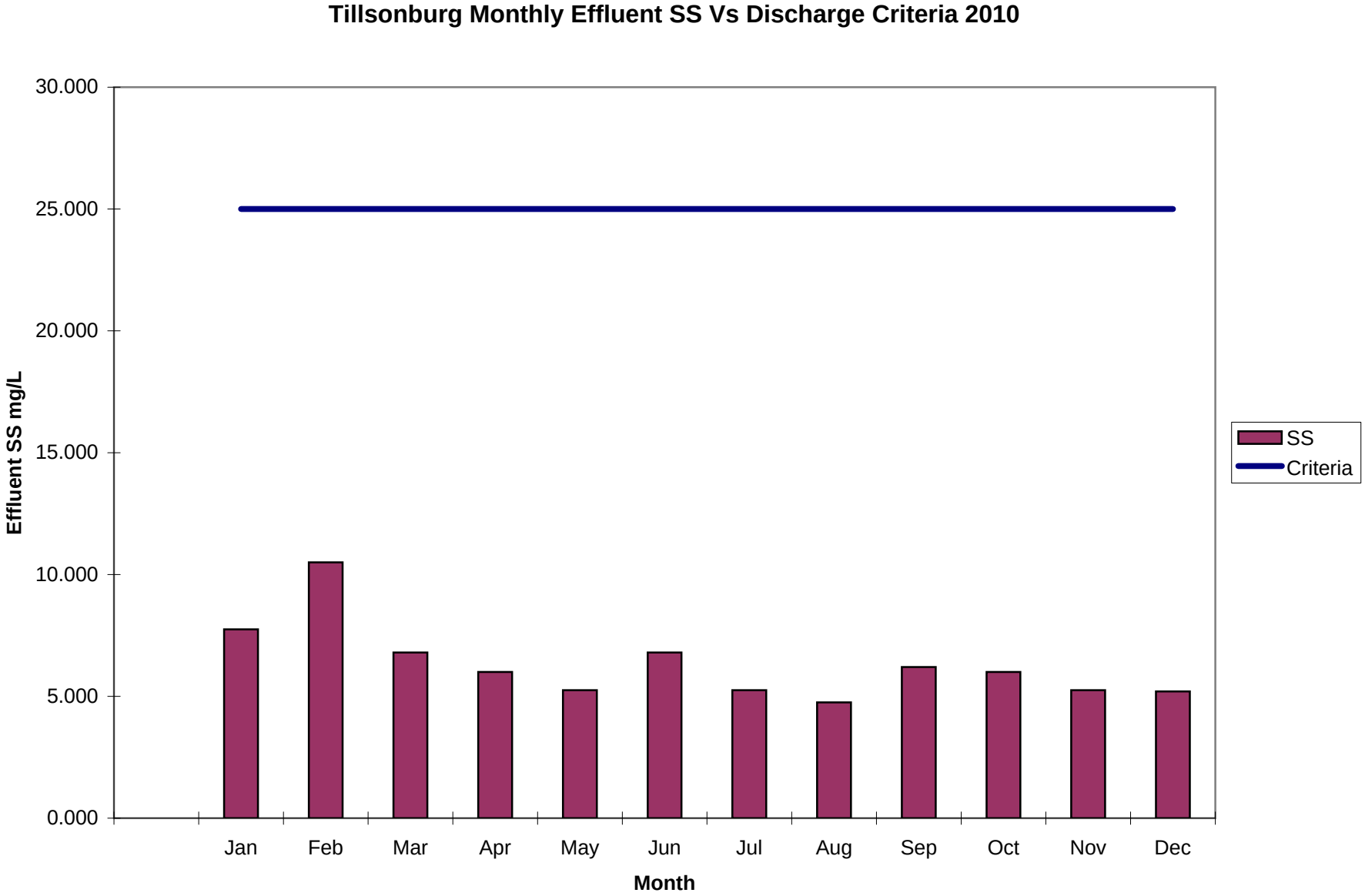
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Min	Max		Design
CBOD kg/d	977	1122	1075	831	920	1071	701	1100	907	1104	1060	1101	997	701	1122		1636
TSS kg/d	1673	1227	1317	1039	1190	1337	1344	1155	1412	1406	1366	1180	1304	1039	1673		1636
TKN kg/d	136	108	97	127	94	89	157	115	140	133	92	168	121	89	168		327.2

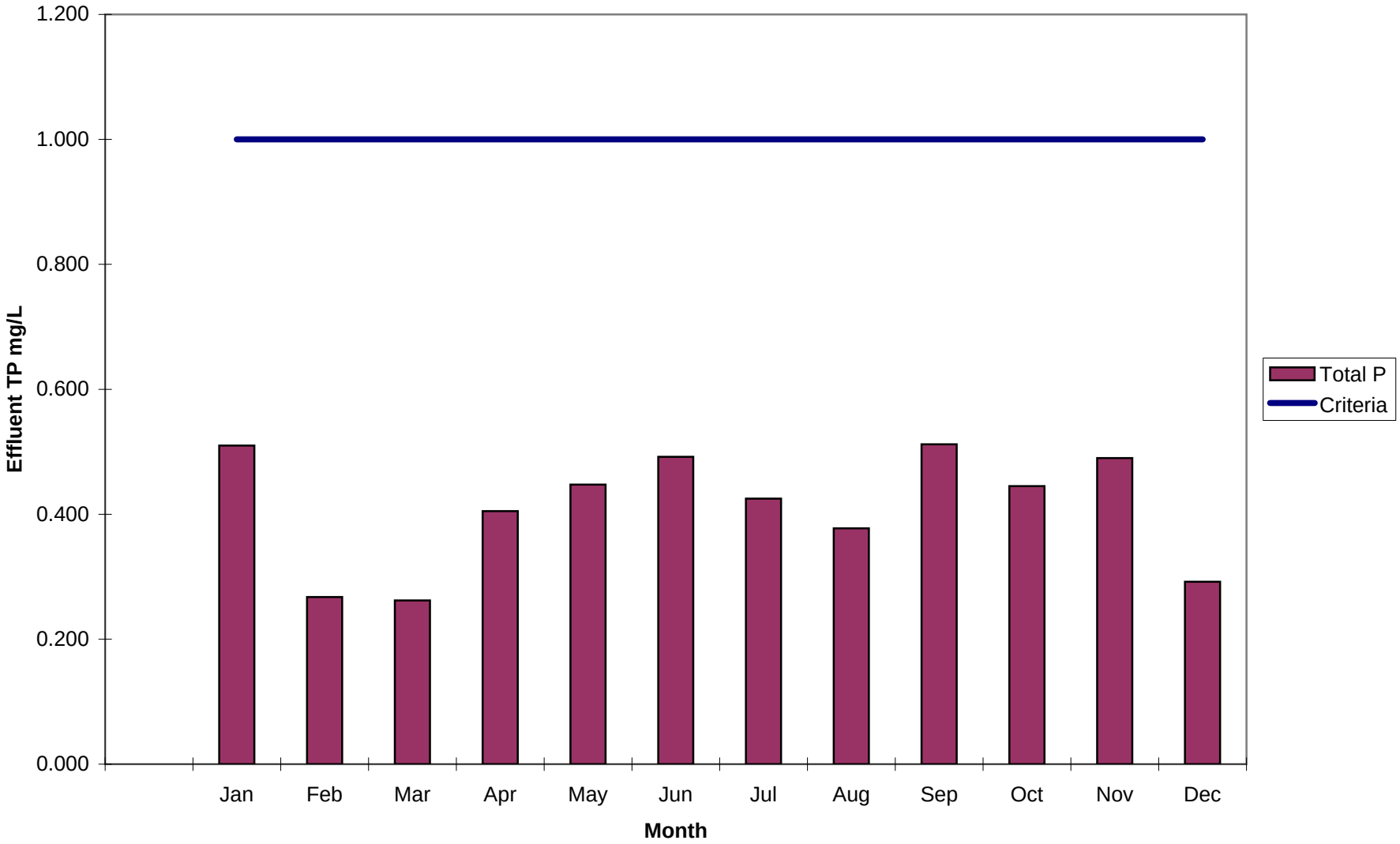

Tillsonburg Monthly CBOD Influent Loadings kg/d Vs Design 2010
Influent CBOD kg/d
1800
1600
1400
1200
1000
800
600
400
200
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
CBOD kg/d
Design

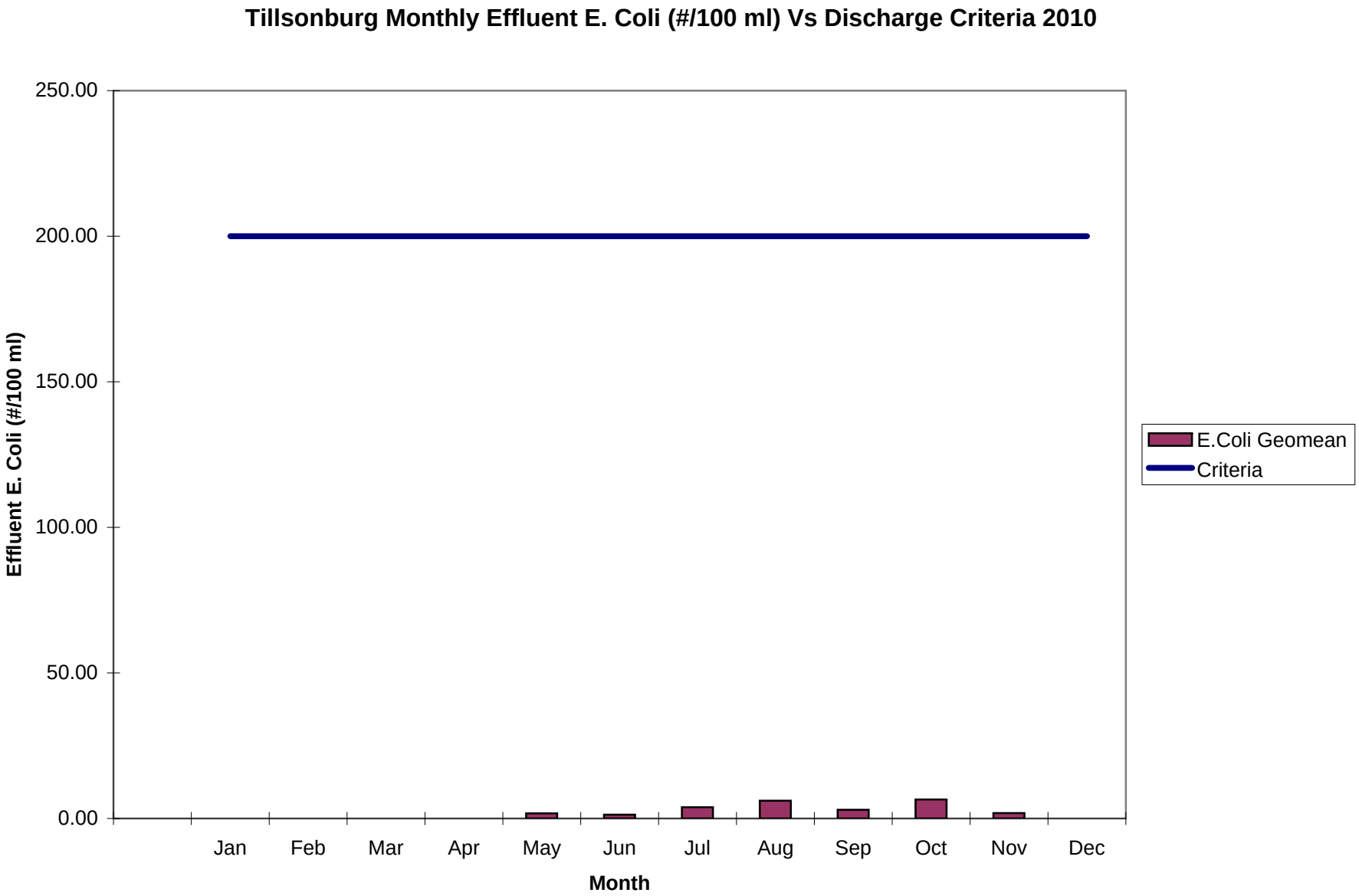

Monthly Tillsonburg TSS Influent Loadings kg/d Vs Design 2010
Influent TSS kg/d
1800
1600
1400
1200
1000
800
600
400
200
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TSS kg/d
Design

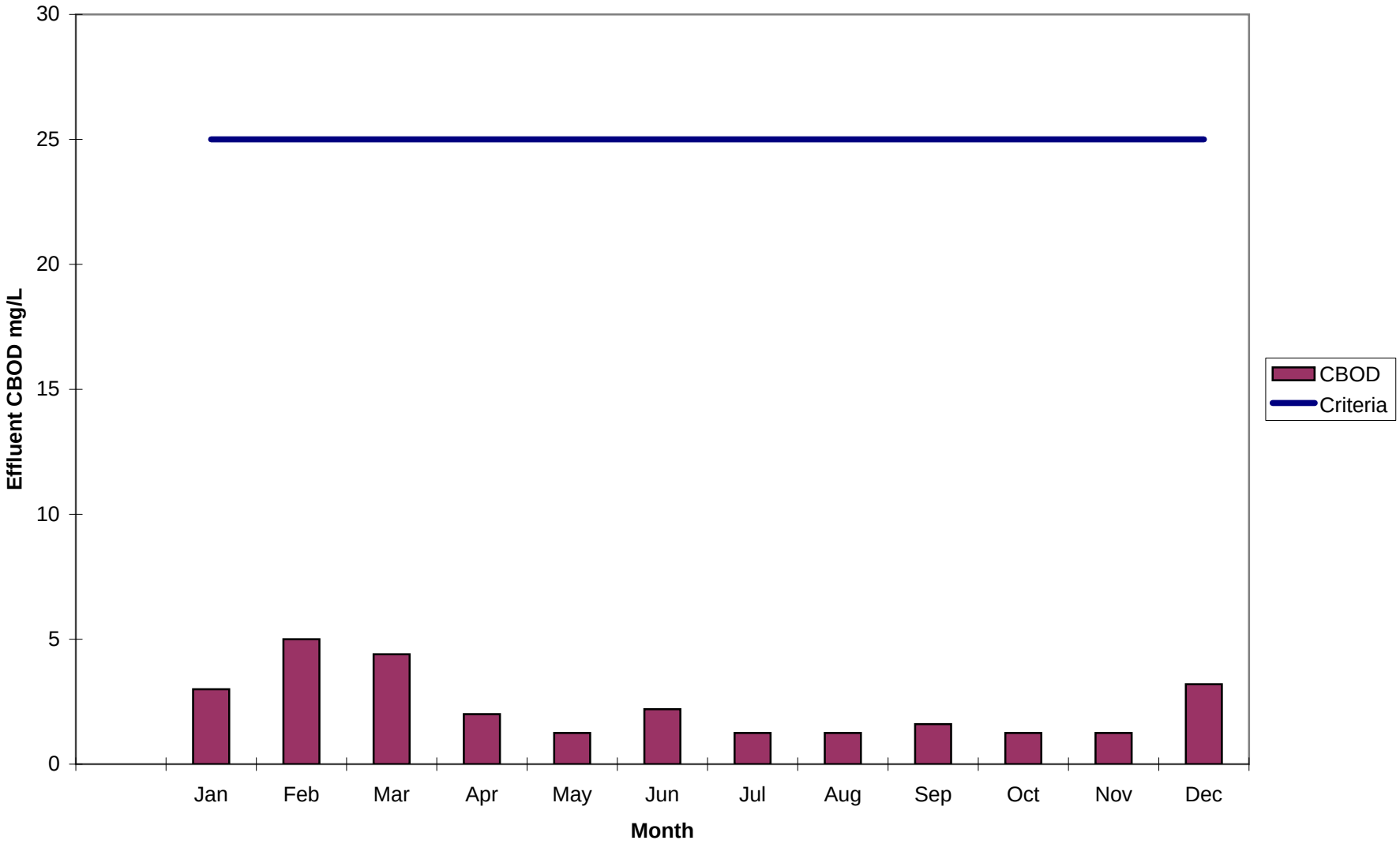
Monthly Tillsonburg TKN Influent Loadings kg/d Vs Design 2010




Tillsonburg Monthly Effluent SS Vs Discharge Criteria 2010
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Effluent SS mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
SS
Criteria


Tillsonburg Monthly Effluent TP mg/L Vs Discharge Criteria 2010
1.200
1.000
0.800
0.600
0.400
0.200
0.000
Effluent TP mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Total P
Criteria


Tillsonburg Monthly Effluent E. Coli (#/100 ml) Vs Discharge Criteria 2010
250.00
200.00
150.00
100.00
50.00
0.00
Effluent E. Coli (#/100 ml)
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
E.Coli Geomean
Criteria


Tillsonburg Efluent CBOD vs Criteria 2010
Effluent CBOD mg/L
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
CBOD
Criteria

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,

Dear Sir:

RE: Year-End Monitoring Report 2010 for Thamesford Wastewater Treatment Plant
(Certificate of Approval #6974-6FKKAY)

Attached is the monitoring report for 2010 for the Thamesford Wastewater Treatment Plant. This report is prepared as required by the certificate of approval #6974-6FKKAY.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT
Project Engineer, Oxford County

THAMESFORD WASTEWATER TREATMENT PLANT

YEAR END MONITORING REPORT FOR 2010

This monitoring report is prepared for the Ministry of the Environment as part of the requirements of our certificate of approval (CoA) #6974-6FKKAY

CONTENTS

OVERVIEW THAMESFORD WASTEWATER TREATMENT PLANT

The Thamesford Wastewater Treatment Plant provided effective wastewater treatment in 2010. The average daily flow for 2010 was 1384 m^3/d this represents 55 % of the design criteria of 2500 m^3/d. The total annual flow was 503,837 m^3 with an average monthly flow of 41,986 m^3.

The flow for purposes of calculating loading to the river is from the parshall flume located after the stilling well just before discharge to the re-aeration chamber and the Middle Thames River. The flow used to apportion the loading to the plant is from two meters one on each lift station. The influent meters and all meters are calibrated annually.

The Thamesford WWTP forms part of the Oxford County Wastewater Treatment System, which contains nine wastewater treatment facilities.

The main customer is Maple Leaf Foods (MLF) complex but the treatment plant also receives an amount of domestic wastewater via a connection to the sanitary sewer line and dedicated lift station. The wastewater from MLF Inc. is collected from its various on-site business units and pumped to pretreatment through equalization and a Dissolved Air Flotation (DAF) unit. The influent enters the MLF lift station of the Wastewater Treatment Plant where it is pumped to the complete mix aeration basin. The system is an extended aeration system comprised of two tanks referred to as the complete mix basin and the plug flow reactor. After leaving the plug flow reactor, the wastewater enters one of two clarifiers where the activated sludge is either returned or wasted and the clear water goes to either sand filter and disinfection before direct discharge to the Middle Thames River. Sludge handling occurs in two aerobic digesters, which stabilize the sludge, which is then held on-site in a storage tank for eventual removal, and application to permitted soil-conditioning sites.

SAMPLING DESCRIPTION

Influent samples were taken from sampling ports located in-line after the influent pumps. Two composite samplers take a sample every 15 minutes for a 24-hour period concurrent with effluent sampling.

A sampler is installed on the municipal and the Maple Leaf Foods influent. The two Influents are separately tested and then the results mathematically combined based on flow.

Effluent samples were taken using a composite sampler set to take a sample every 15 minutes for 24 hours. Samples were drawn from a stilling well prior to the parshall flume immediately before the discharge.

TRC samples are taken daily from the stilling well prior to the parshall flume. The stilling well follows the disinfection and dechlorination chambers. pH of the effluent composite is measured.

Dissolved Oxygen samples are taken at the discharge well. After the parshall flume, the effluent flows through a discharge pipe and drops about 30" into a discharge well prior to flowing to the river. This serves as re-oxygenation as reflected in the DO measurements.

Laboratory analysis is performed by SGS Lakefield Research Ltd. on all samples except TRC, DO and pH which is tested in field. These results are used here for determination of compliance. Any information generated in-house is used in process control but is not included in this report.

UPSET AND BYPASS EVENTS

There were no non-compliances for 2010.

There were no spills or by-passes from the wastewater treatment plant however the collection system had a spill from the Allen St. Lift Station on July 28th 2010.

There was a power outage of 21 minutes at the Allen St. Lift Station from 18:15 to 18:36, with a trickling of flow approximately 0.5 inch depth in a 6 inch pipe. The spills action center was called and no further action was required. When the power resumed both pumps returned the water level back to a normal operating level.

Maintenance and Calibration

The operating and maintenance staff from the Ingersoll WWTP conduct regular scheduled maintenance of the plant equipment. Detailed maintenance records for each piece of equipment is kept on site at the Ingersoll Plant and is available upon request.

All flow meters were checked and calibrated by R&R instrumentation.

DISCUSSION OF RESULTS

Exhibit 1 is a summary Table with the average, maximum and minimum values for all influent and effluent parameters. The table is based on all external test results.

The average annual Influent BOD_5 concentration to the plant was 681 mg/L. This corresponds to an average BOD_5 loading of 835 kg/d. This is 63 % of a design value of 1333 kg/d. The average annual Influent TSS concentration to the plant was 407 mg/L. This corresponds to an average TSS loading of 498 kg/d which is 64 % of the design criteria of 779 kg/d. The annual average TKN concentration was 95.9 mg/L. This corresponds to 118 kg/d which is 59.3 % of a design value of 199 kg/d. The annual average TP concentration was 14.3 mg/L. This corresponds to 17 kg/d which is 74 % of

a design value of 23 kg/d. The annual average O&G loading is 64 mg/L. This corresponds to 77 kg/d which is 31 % of the design criteria of 250 kg/d.

All analytical data included with this report shows the Thamesford WWTP complied with its discharge requirements. The annual average BOD concentration was 1.4 mg/L. This represents 99.8 % removal efficiency. The annual average TSS concentration was 3.4 mg/L which represents 99.2 % removal efficiency. The annual average Ammonia concentration was 0.33 mg/L. The annual average TP concentration was 0.15 mg/L. This represents 99 % removal efficiency.

All pH is measured in the Effluent by the operator a minimum of weekly and there was no single sample outside our range of 6-9.5 for 2010. All dissolved oxygen readings in the Effluent were measured at least weekly by the operator and no sample was below the required minimum of 5 mg/L.

BIOSOLIDS 2010

Discussion:

The Biosolids removal was contracted out to WESSUC for land application. The details of the quantity and quality of the biosolids can be found in a separate Biosolids Report appended to this annual report

DAF BIO-SOLIDS ACTIVITY

January to December 2010

MLF Inc. operates its own wastewater pretreatment system which includes a Dissolved air flotation (DAF) treatment where biosolids are produced. The material is transported to the Thamesford Wastewater Treatment Plant where it is combined with the stored Biosolids. There is an existing letter from the MOE indicating this practice is acceptable.

EXHIBIT 1

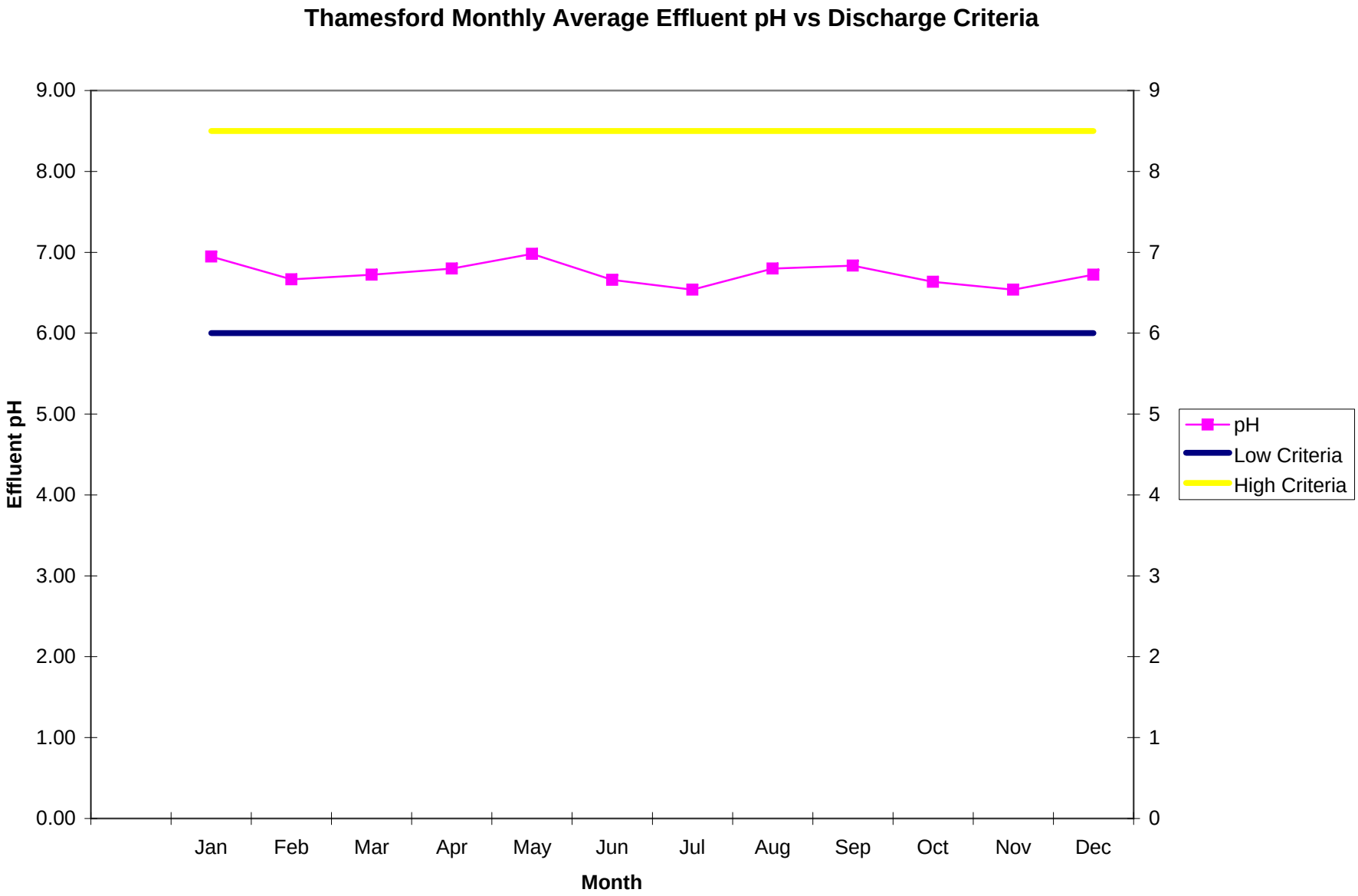
Municipality: THAMESFORD
PROJECT:THAMESFORD WWTP
Operator: County of Oxford
Works Number:
120002601

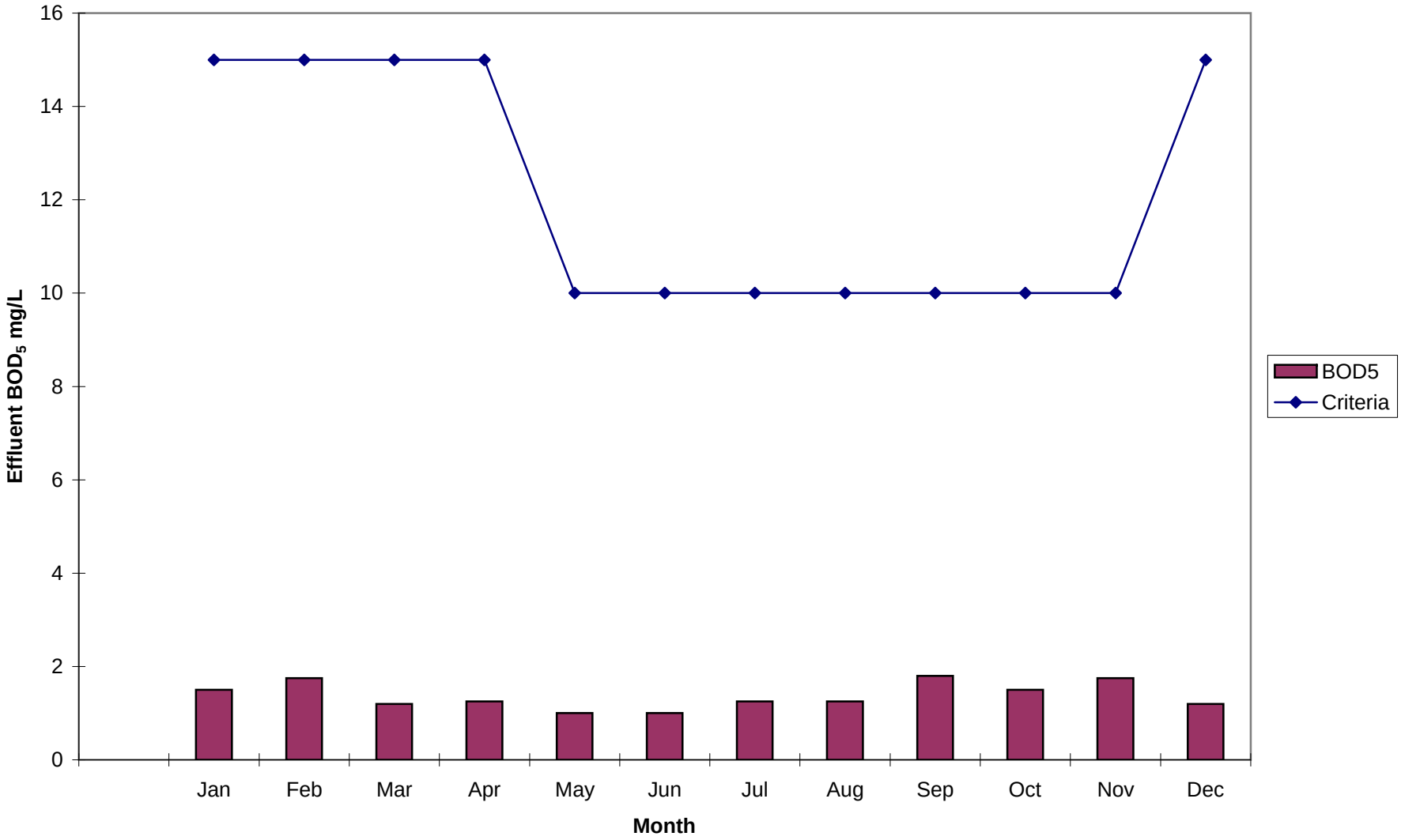
2010

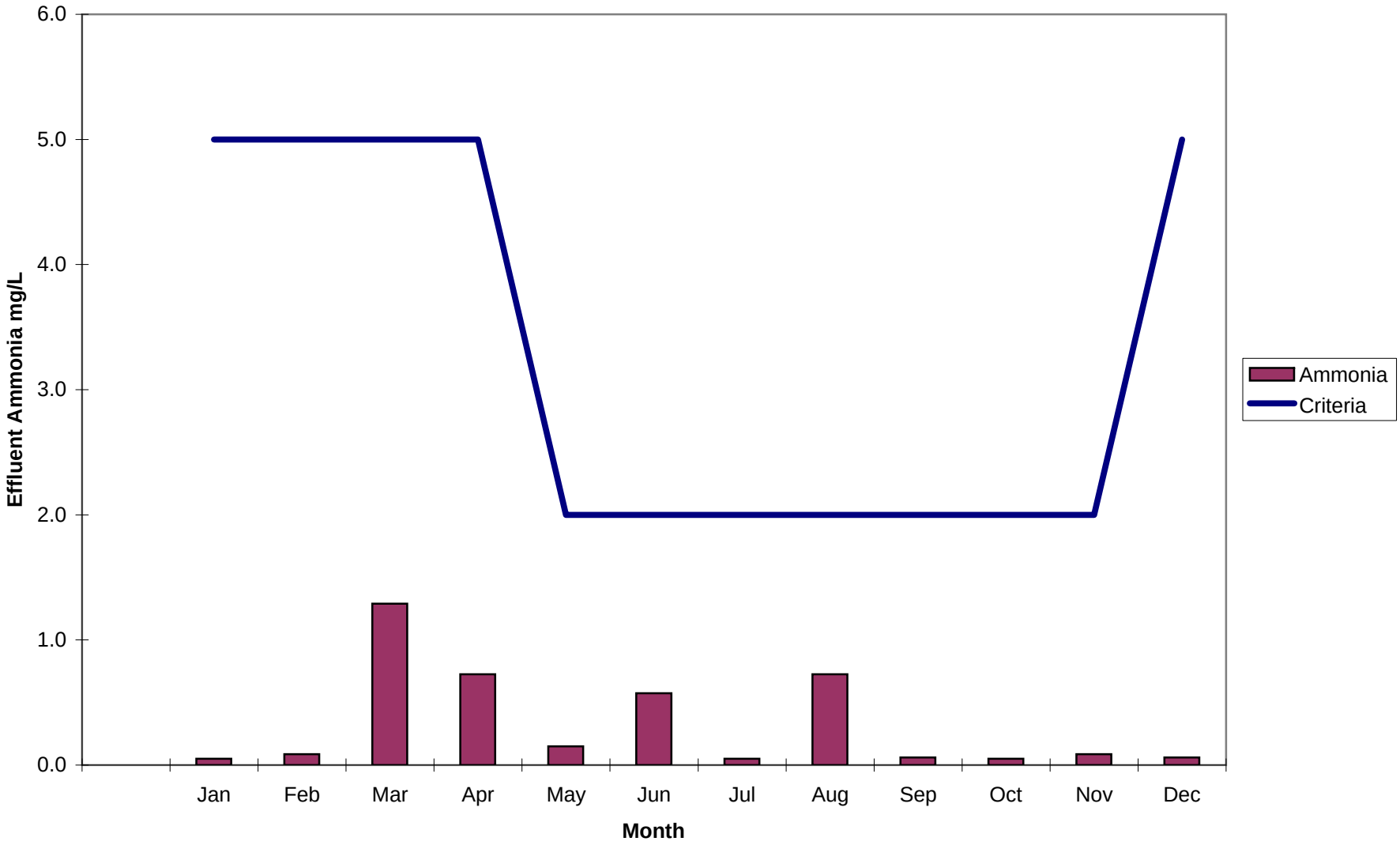
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avaerage	Min	Max	Total	Criteria
Effluent Meter																		
Total Flow 1000m3		40.964	36.627	42.433	36.809	38.493	44.722	48.072	36.809	45.532	42.637	44.699	46.040	41.986	36.627	48.072	503.837	
Average Daily Flow 1000m3		1.321	1.308	1.369	1.227	1.242	1.491	1.551	1.227	1.518	1.375	1.490	1.485	1.384	1.227	1.551		2.5
Maximum Daily Flow 1000 m3		1.940	1.896	2.073	2.051	2.104	1.962	2.210	2.051	2.099	1.986	1.900	2.174	2.037	1.896	2.210		
Daily Average Influent																		
CSF Flow	(m3/d)	719	710	839	664	629	906	1001	664	996	866	933	941	822	629	1001		
Municipal	(m3/d)	374	369	363	354	399	424	417	354	433	418	386	421	393	354	433		
Combined Flow	(m3/d)	1093	1079	1202	1018	1027	1330	1418	1018	1429	1283	1319	1361	1215	1018	1429		
Production Average Influent																		
CSF Flow	(m3/d)	1118	1124	1169	912	925	1142	1254	912	1304	1158	1136	1280	1119	912	1304		
Municipal	(m3/d)	352	407	369	357	405	426	430	357	452	426	392	426	400	352	452		
Combined Flow	(m3/d)	1470	1531	1538	1269	1330	1568	1684	1269	1755	1583	1528	1706	1519	1269	1755		
Combined Influent																		
pH		7.30	7.33	7.32	7.18	7.11	7.22	7.04	7.19	6.90	7.24	7.29	7.29	7.20	6.90	7.32		
BOD	(mg/L)	387	742	600	717	584	826	674	717	787	546	750	844	681	546	844		
TSS	(mg/L)	265	443	355	421	366	564	475	421	373	381	377	446	407	355	564		
TKN	(mg/L)	79.6	93.8	84.2	97	70	96.2	118	96.8	104	103	104	104.5	95.9	70.3	117.7		
TP	(mg/L)	13.2	13.8	12.5	16	15	15.3	12	15.7	14	14.2	14.9	14.9	14.3	12.3	15.7		
O&G	(mg/L)	52	38	70	91	36	39	49	91	48	42	98	111	64	36	111		
Effluent																		
pH		6.95	6.66	6.72	6.80	6.98	6.66	6.54	6.80	6.83	6.63	6.54	6.72	6.74	6.54	6.98		6.0-9.5
BOD_5	(mg/L)	1.5	1.75	1.2	1.3	1	1	1.3	1.3	1.8	1.5	1.8	1.2	1.4	1.0	1.8		10/15
TSS	(mg/L)	4	4.75	3.8	3.75	2	4.6	5.3	3.75	2.2	3.25	1.8	1.2	3.4	1.2	5.3		10/15
Ammonia	(mg/L)	0.05	0.09	1.29	0.73	0.15	0.58	0.05	0.73	0.06	0.05	0.09	0.06	0.326	0.050	1.290		2/5
TP	(mg/L)	0.19	0.17	0.17	0.11	0.16	0.16	0.15	0.11	0.14	0.15	0.18	0.17	0.15	0.11	0.18		0.2/0.5
TRC mg/L		0.01	0.007	0.010	0.004	0.00	0.009	0.00	0.00	0.007	0.007	0.008	0.008	0.007	0.003	0.010		0.01
Temp	(C)	11.8	11.3	13.0	15.8	17.81	21.2	23.8	15.8	19.5	18.8	16.4	13.4	16.6	11.3	23.8		
DO	(mg/L)	6.7	6.1	5.7	5.5	5.3	5.3	5.1	5.51	5.14	5.56	5.10	5.67	5.56	5.09	6		5
E. Coli	(#/100mL)	1	31	3	63	1	22	1	63	119	1	3	1	26	1	119		200
Unionized Ammonia	(mg/L)	0.0001	0.0002	0.0025	0.0031	0.0012	0.0070	0.0005	0.0003	0.0002	0.0001	0.0002	0.0003	0.0013	0.0001	0.0070		

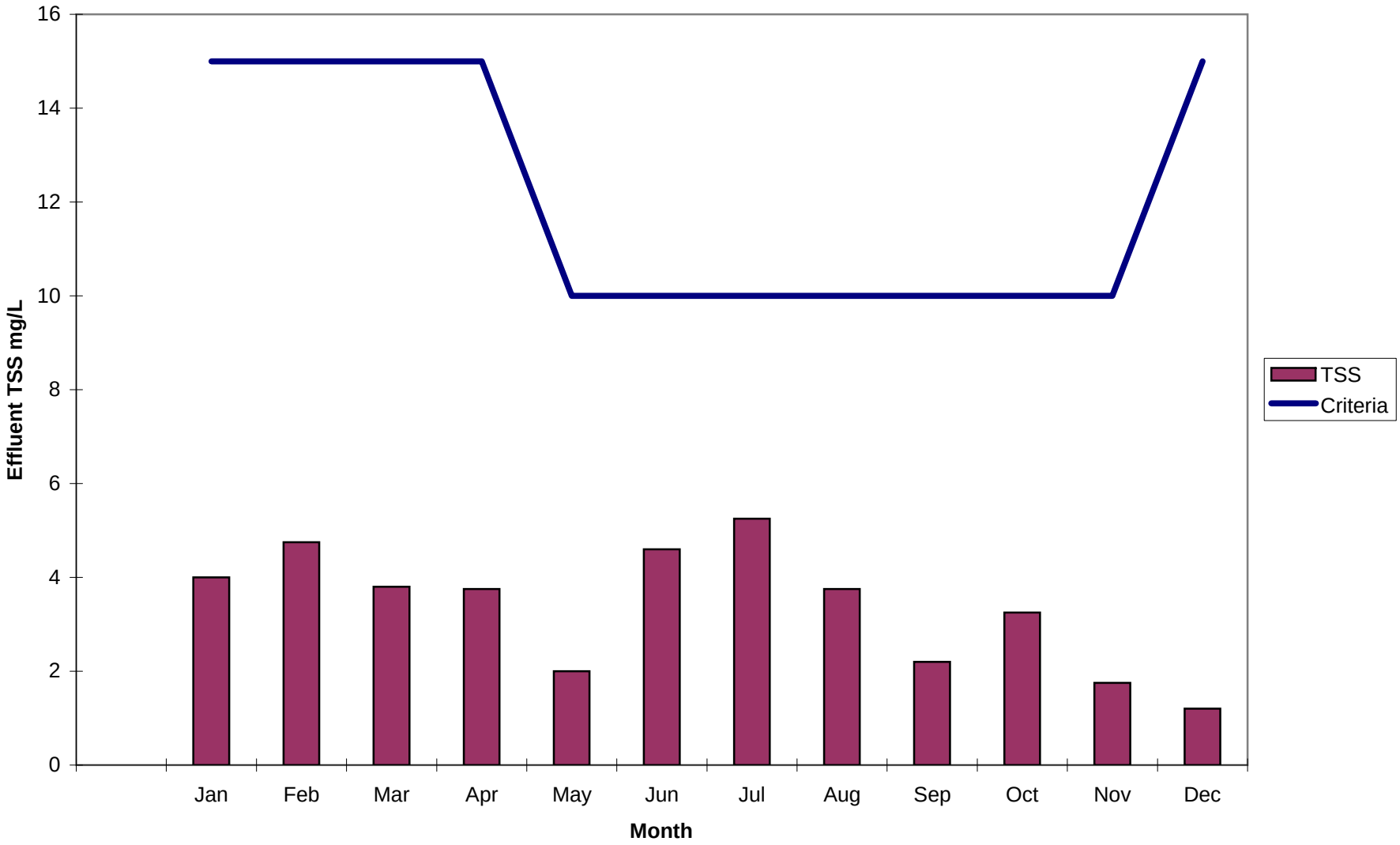
Influent Loadings based on Combined Average Daily Influent Flows and Results																		Design
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average	Min	Max		Criteria
BOD_5 kg/d		422	800	722	730	600	1099	956	730	1125	701	989	1149	835	422	1149		1333
TSS kg/d		289	478	427	429	377	751	673	429	534	489	498	607	498	289	751		779
TKN kg/d		87	101	101	99	72	128	167	99	149	132	137	142	118	72	167		199
TP kg/d		14	15	15	16	16	20	17	16	20	18	20	20	17	14	20		23
O&G kg/d		57	41	84	92	37	53	70	92	68	54	129	151	77	37	151		250

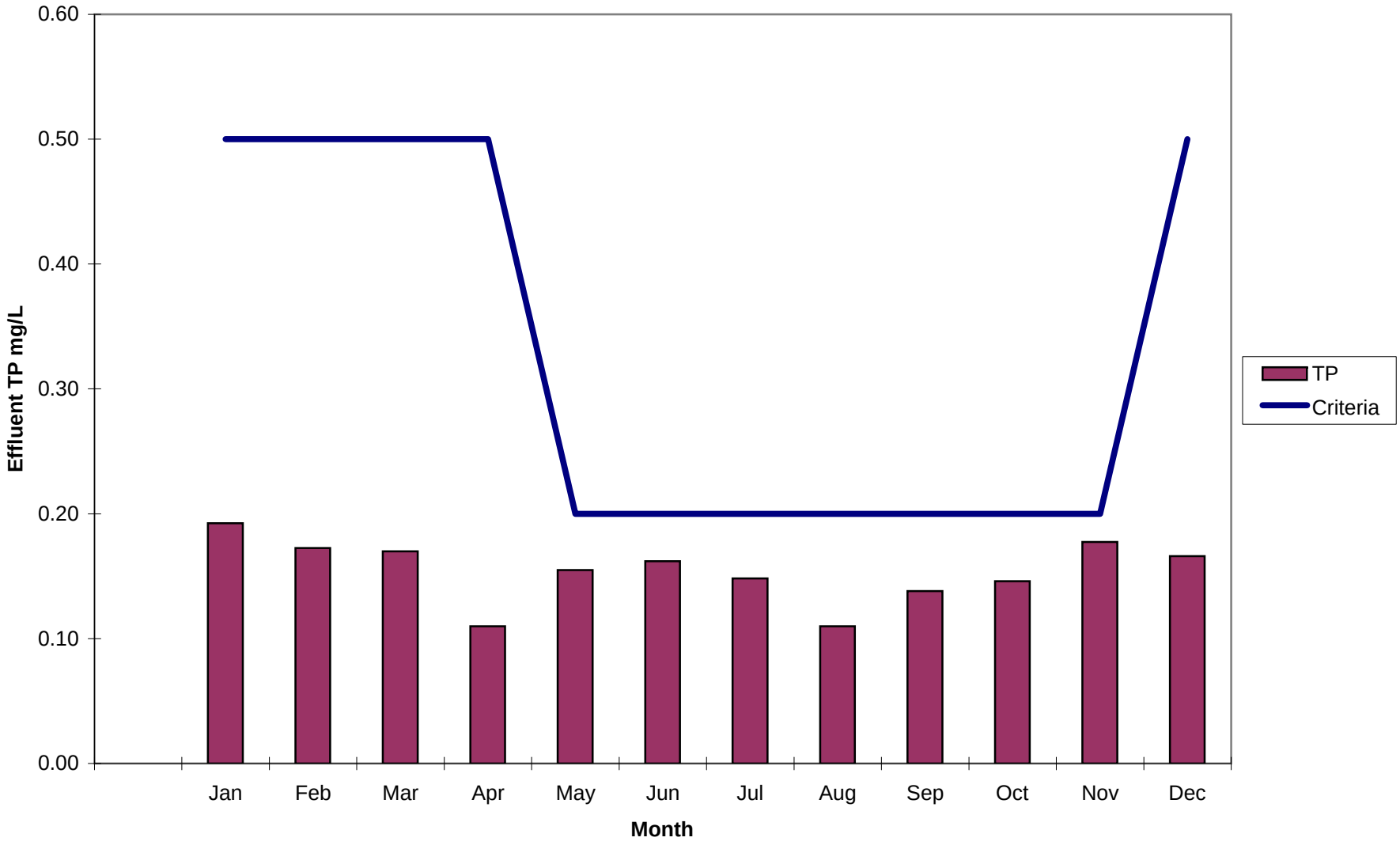
EXHIBIT 2

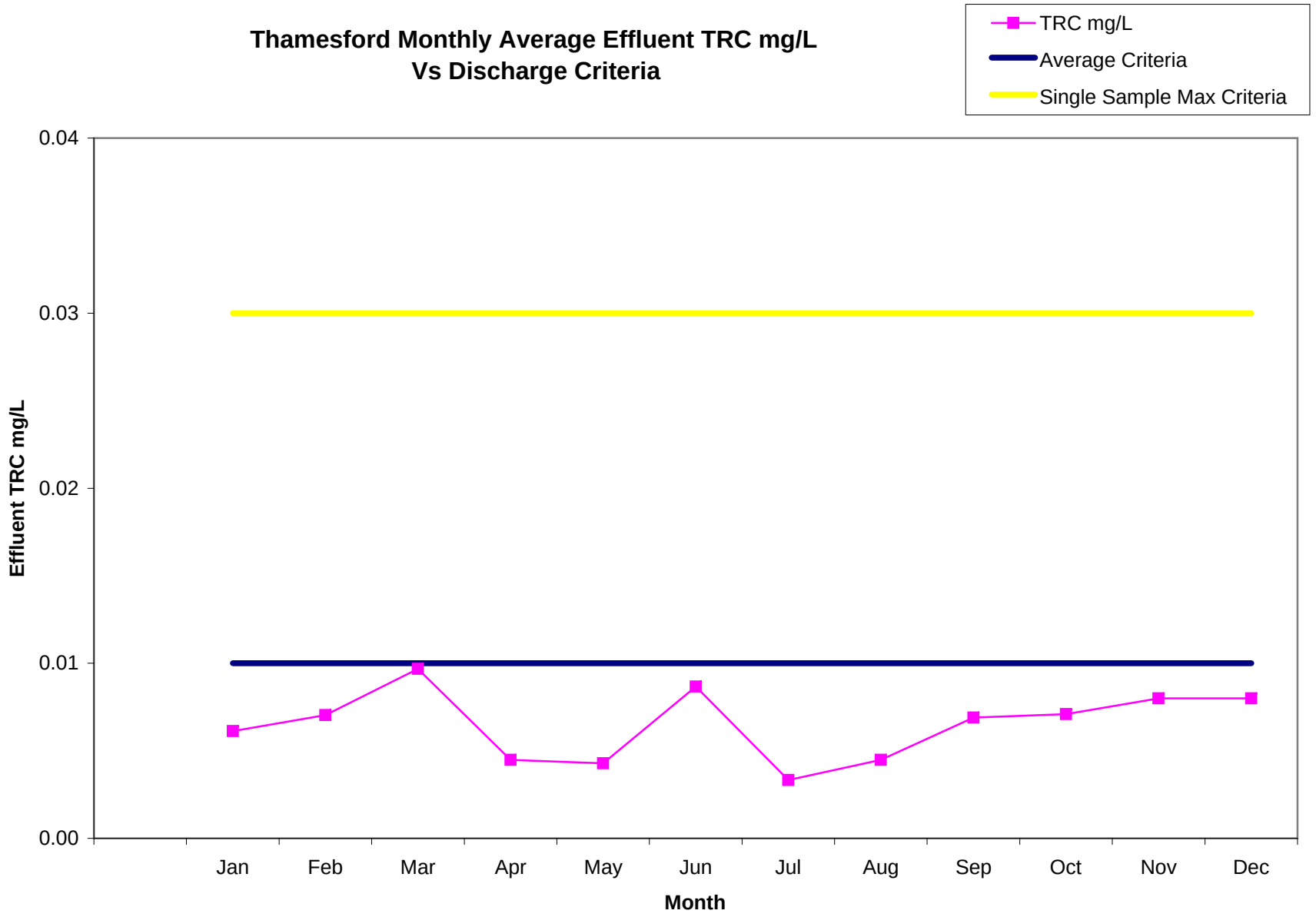

Thamesford Monthly Average Effluent pH vs Discharge Criteria
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Effluent pH
9
8
7
6
5
4
3
2
1
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
pH
Low Criteria
High Criteria


Thamesford Monthly Average Efluent BOD5 mg/L Vs Discharge Criteria
Effluent BOD5 mg/L
16
14
12
10
8
6
4
2
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
BOD5
Criteria


Thamesford Monthly Average Effluent Ammonia mg/L Vs Discharge Criteria
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Effluent Ammonia mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Ammonia
Criteria


Thamesford Monthly Average Effluent TSS mg/L Vs Discharge Criteria
Effluent TSS mg/L
16
14
12
10
8
6
4
2
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TSS
Criteria


Thamesford Monthly Average Effluent TP mg/L Vs Discharge Criteria
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Effluent TP mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TP
Criteria


Thamesford Monthly Average Effluent TRC mg/L
Vs Discharge Criteria
TRC mg/L
Average Criteria
Single Sample Max Criteria
0.04
0.03
0.02
0.01
0.00
Effluent TRC mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month

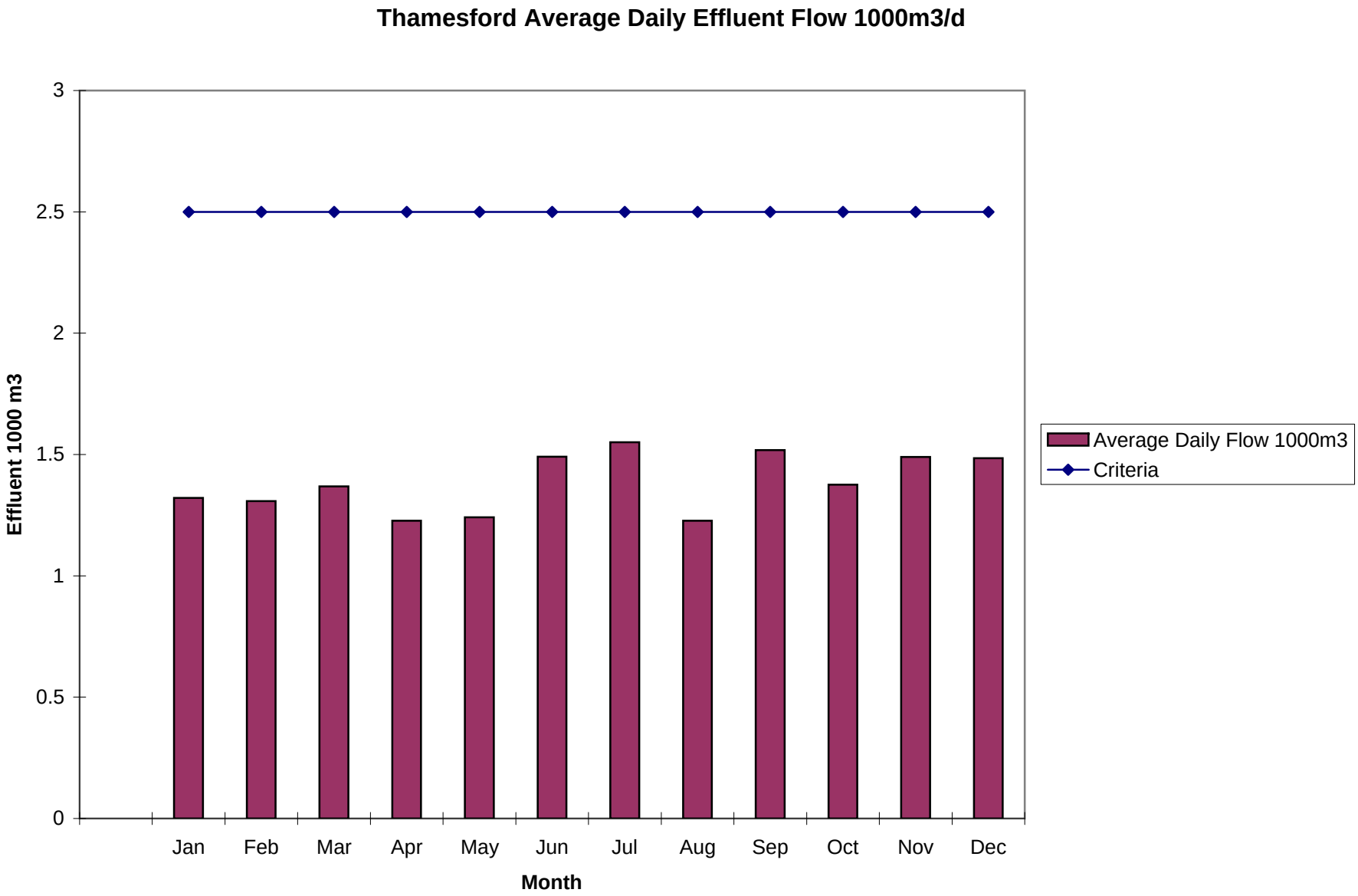
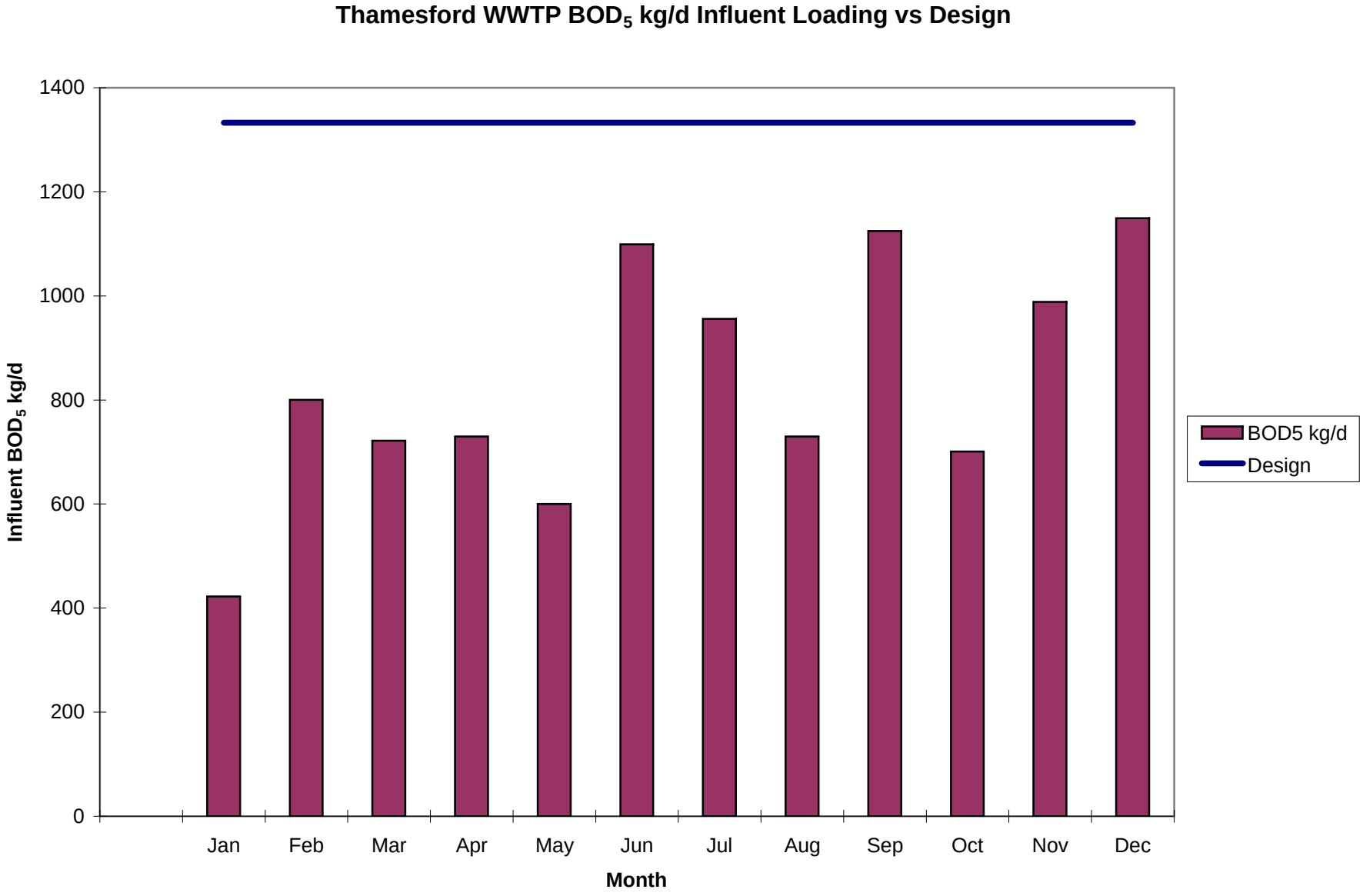
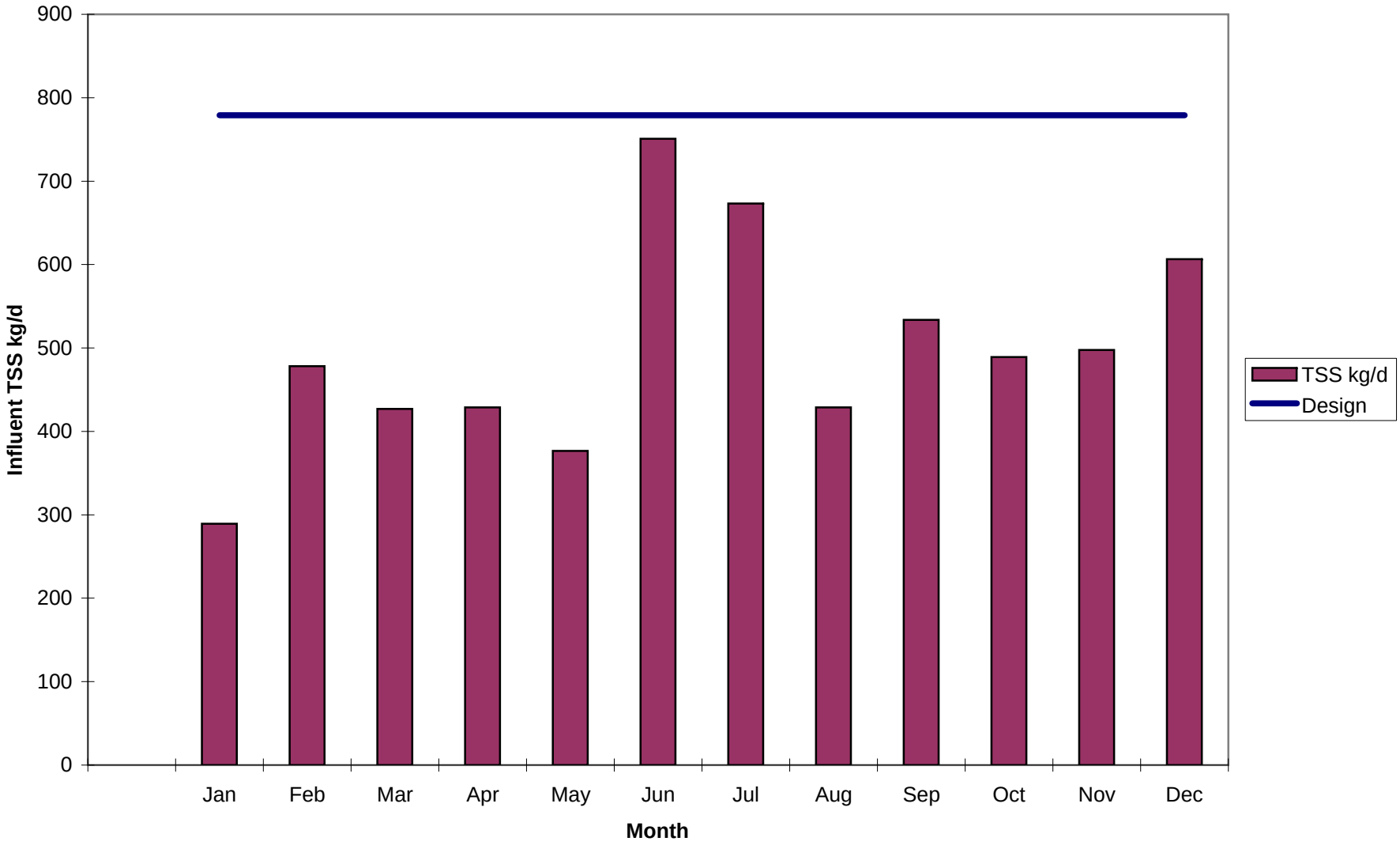
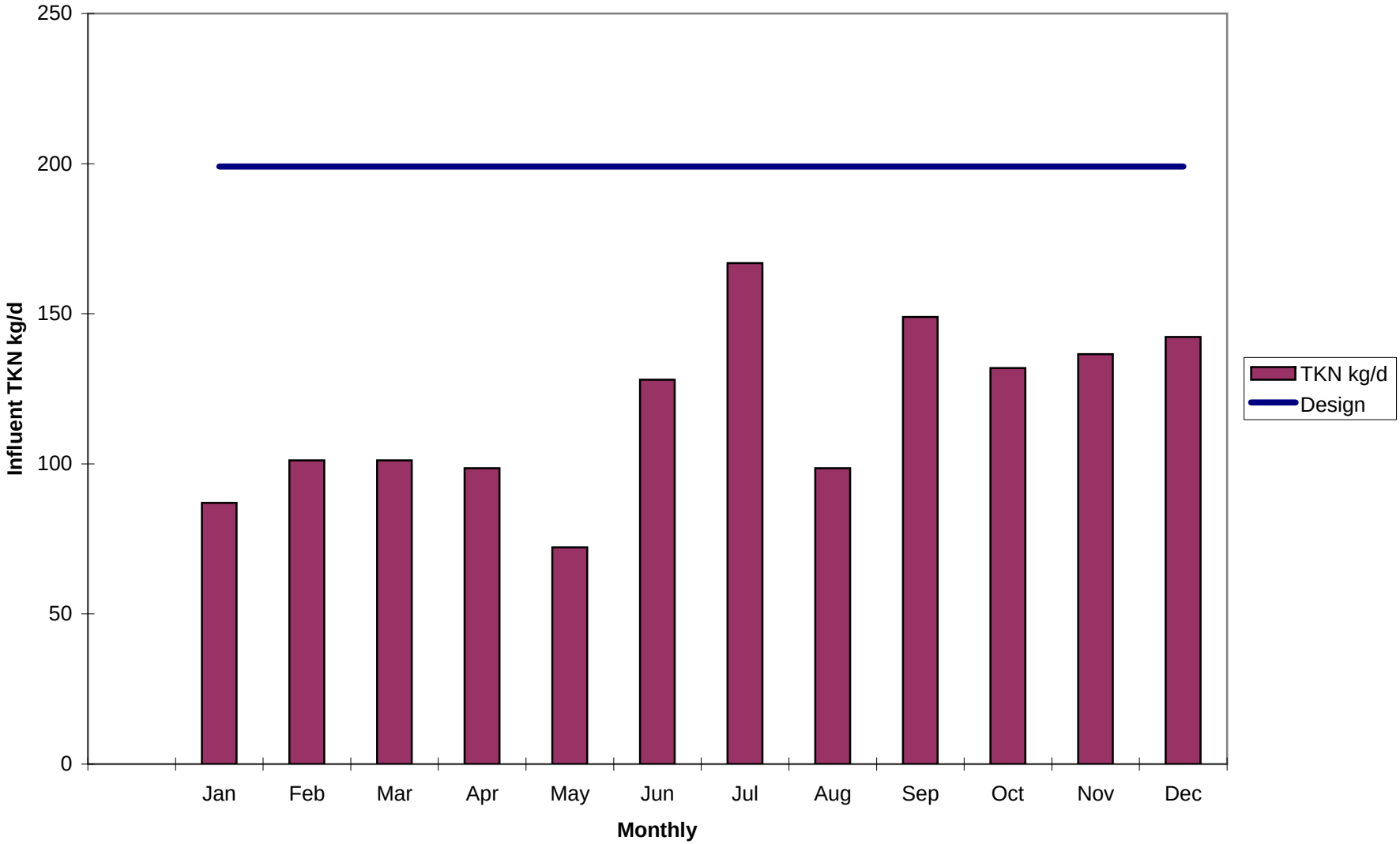

Thamesford Average Daily Effluent Flow 1000m3/d
Effluent 1000 m3
3
2.5
2
1.5
1
0.5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Average Daily Flow 1000m3
Criteria

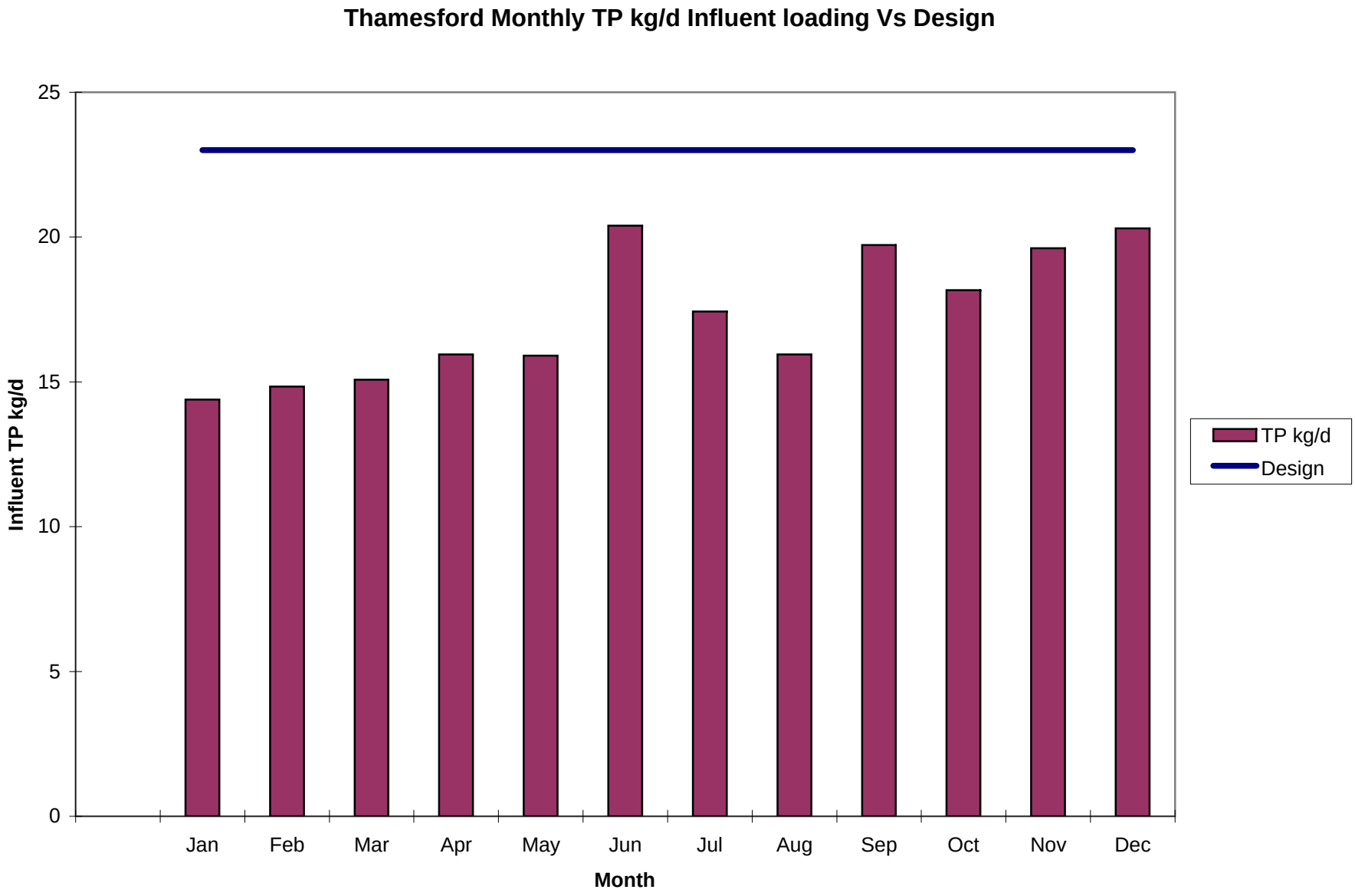
EXHIBIT 3

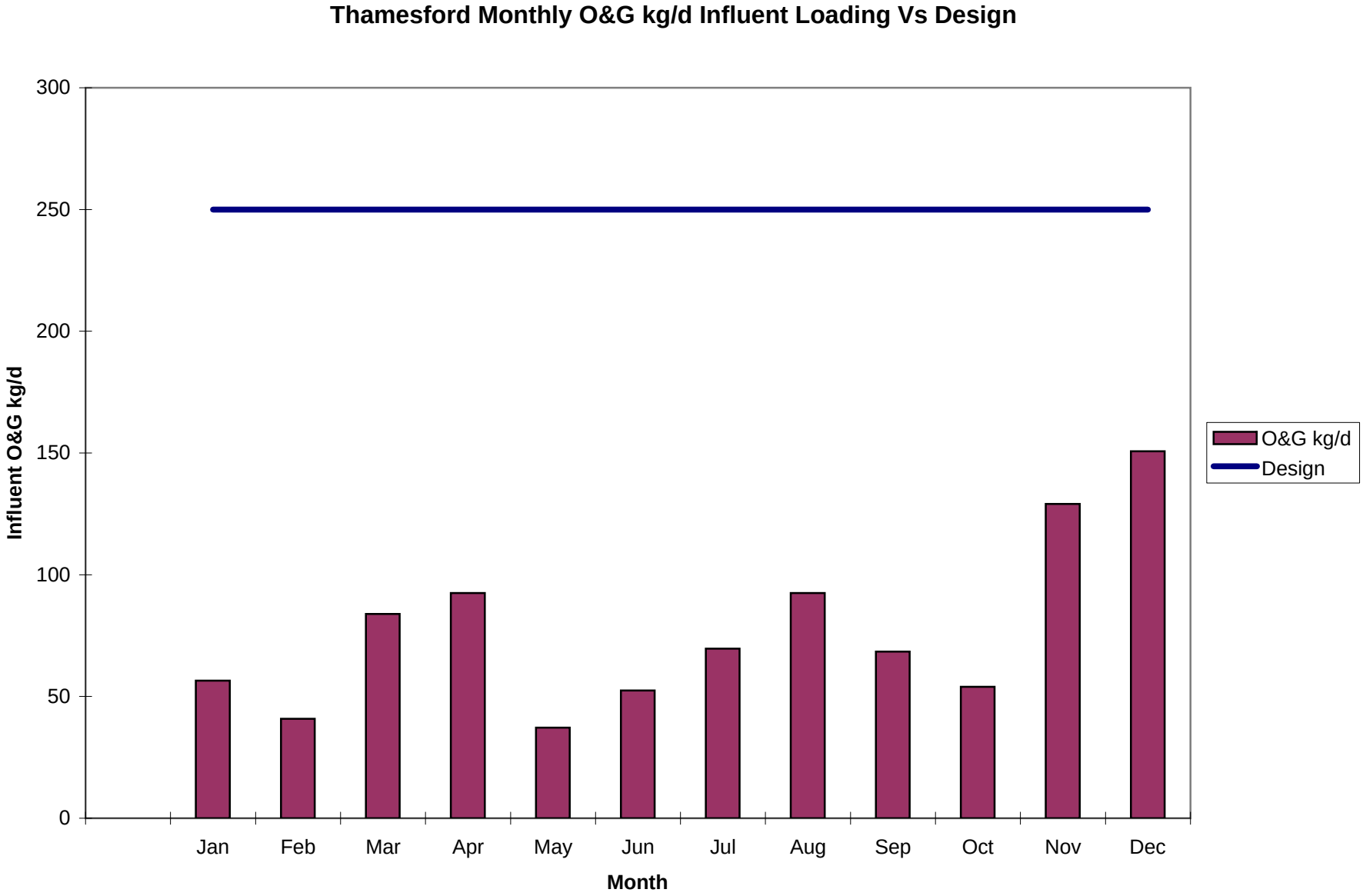

Thamesford WWTP BOD5 kg/d Influent Loading vs Design
Influent BOD5 kg/d
1400
1200
1000
800
600
400
200
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
BOD5 kg/d
Design

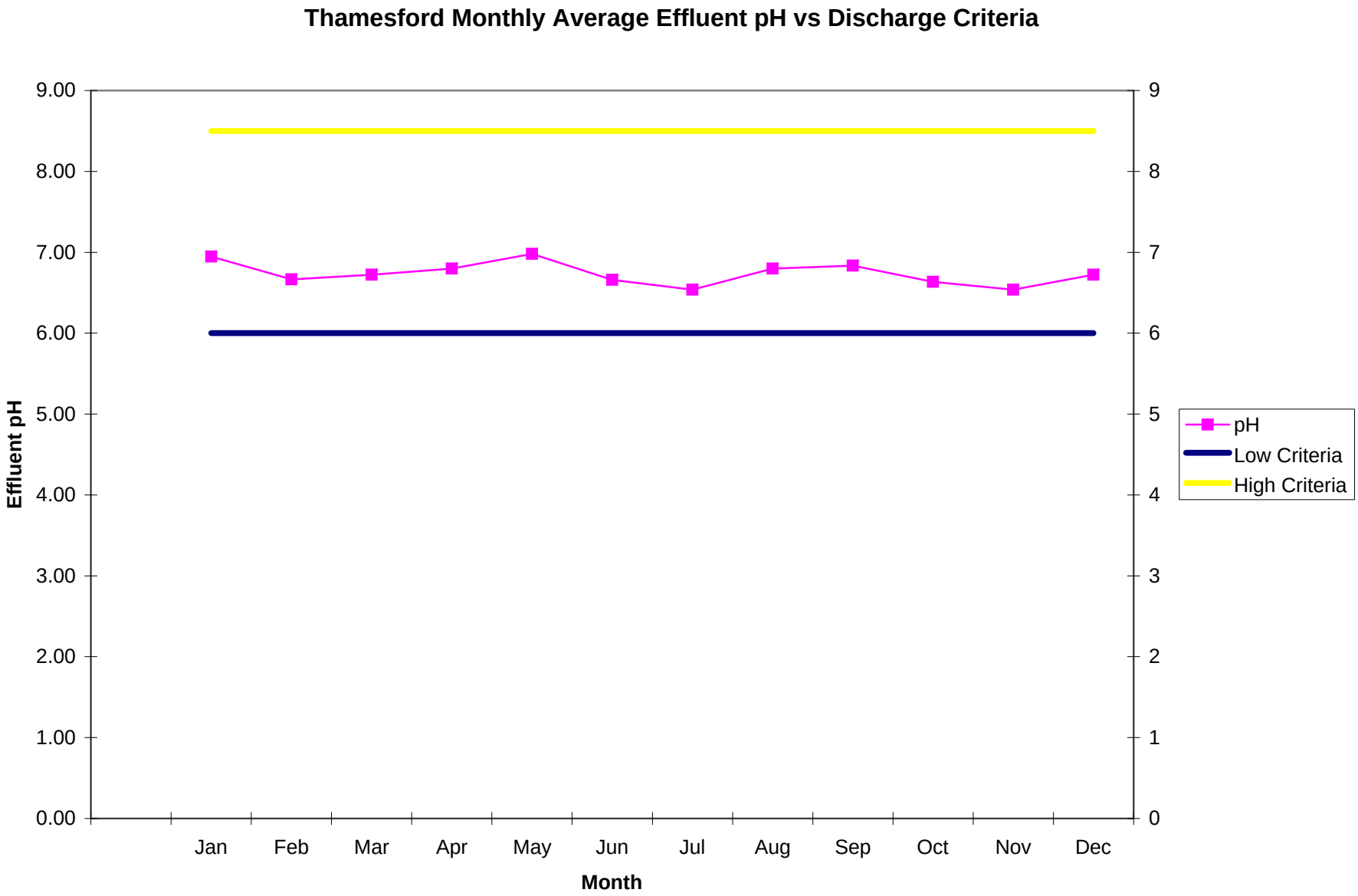

Thamesford Monthly TSS kg/d Influent loading vs Design
900
800
700
600
500
400
300
200
100
0
Influent TSS kg/d
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TSS kg/d
Design

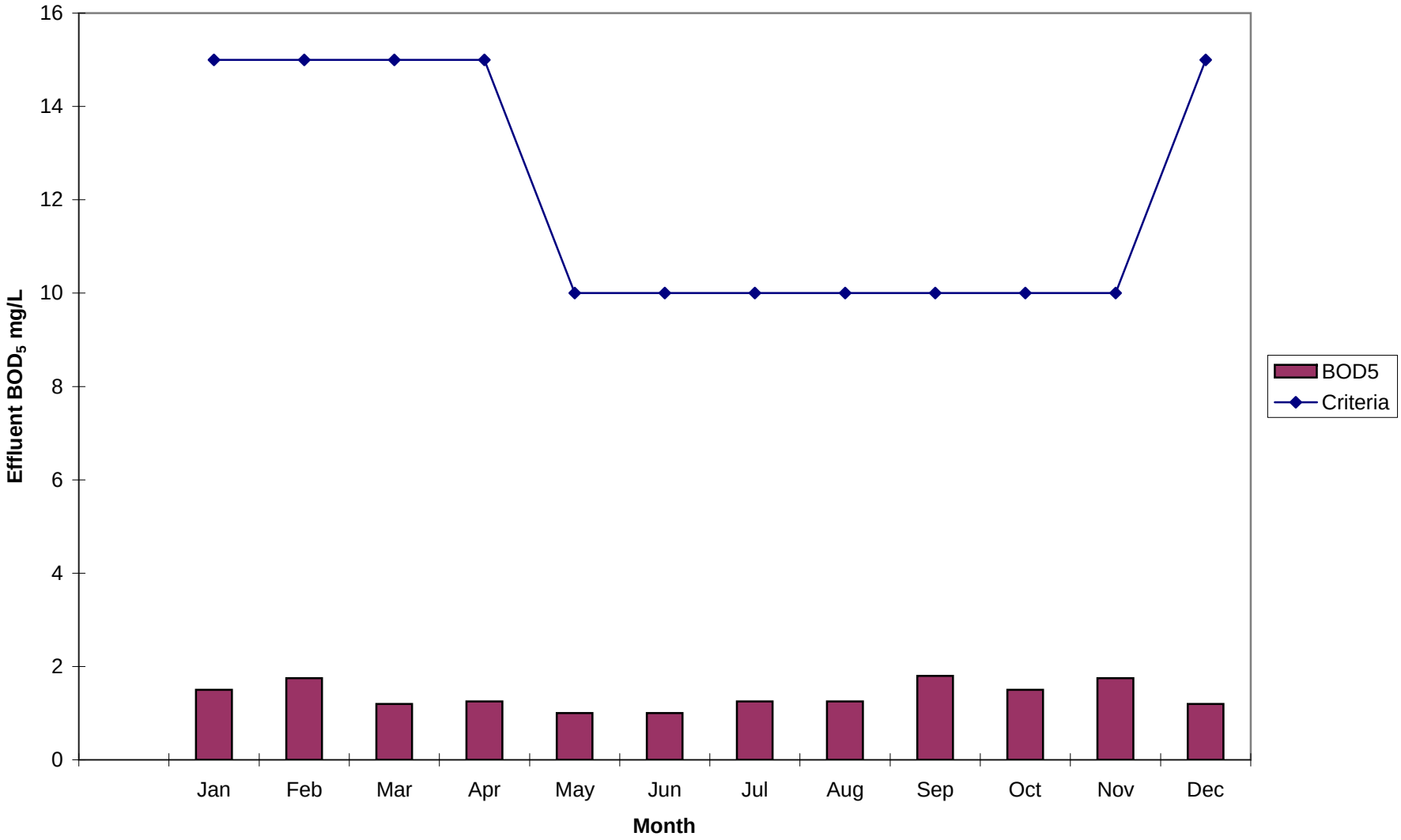
Thamesford Monthly TKN kg/d Influent Loading vs Design

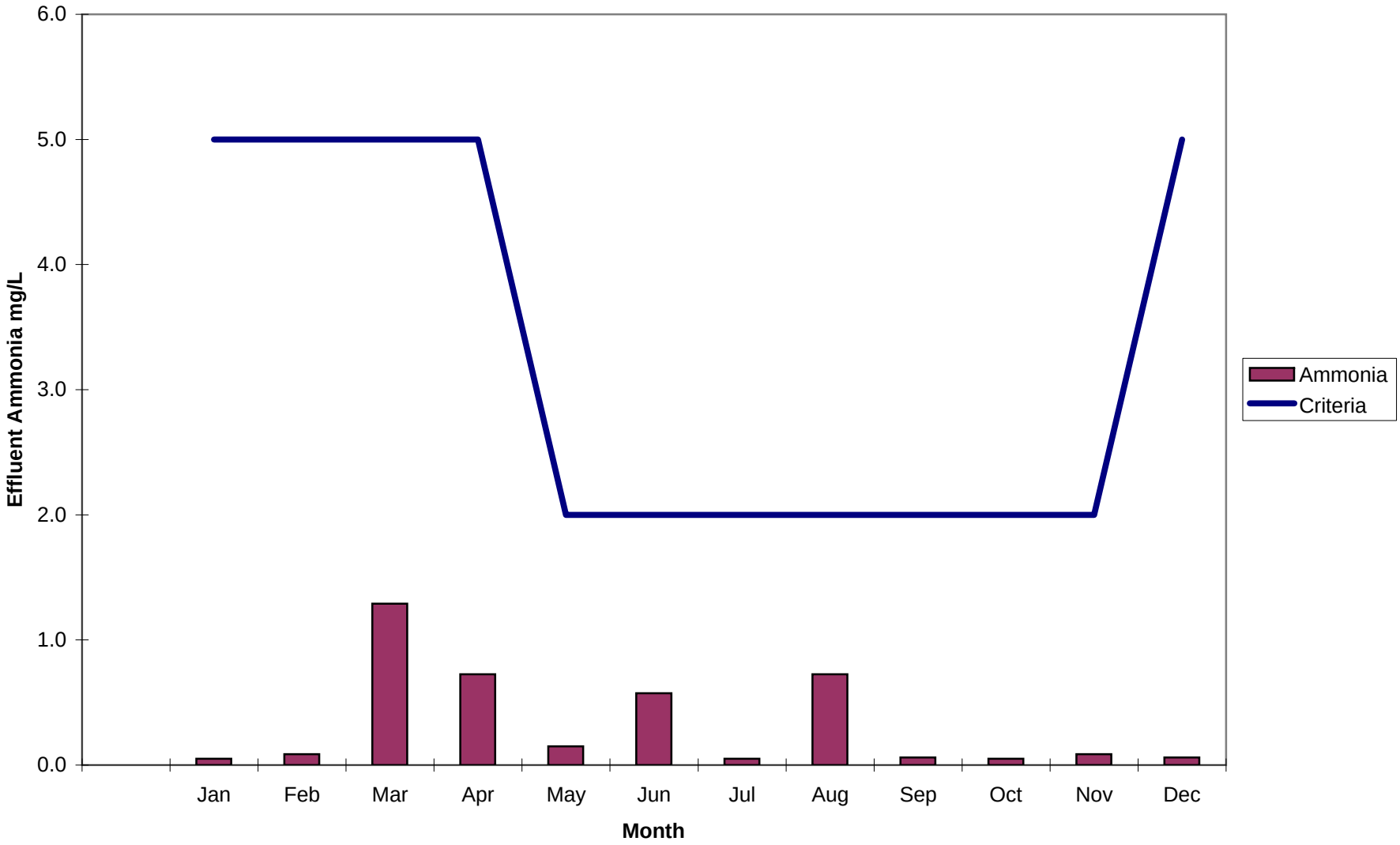


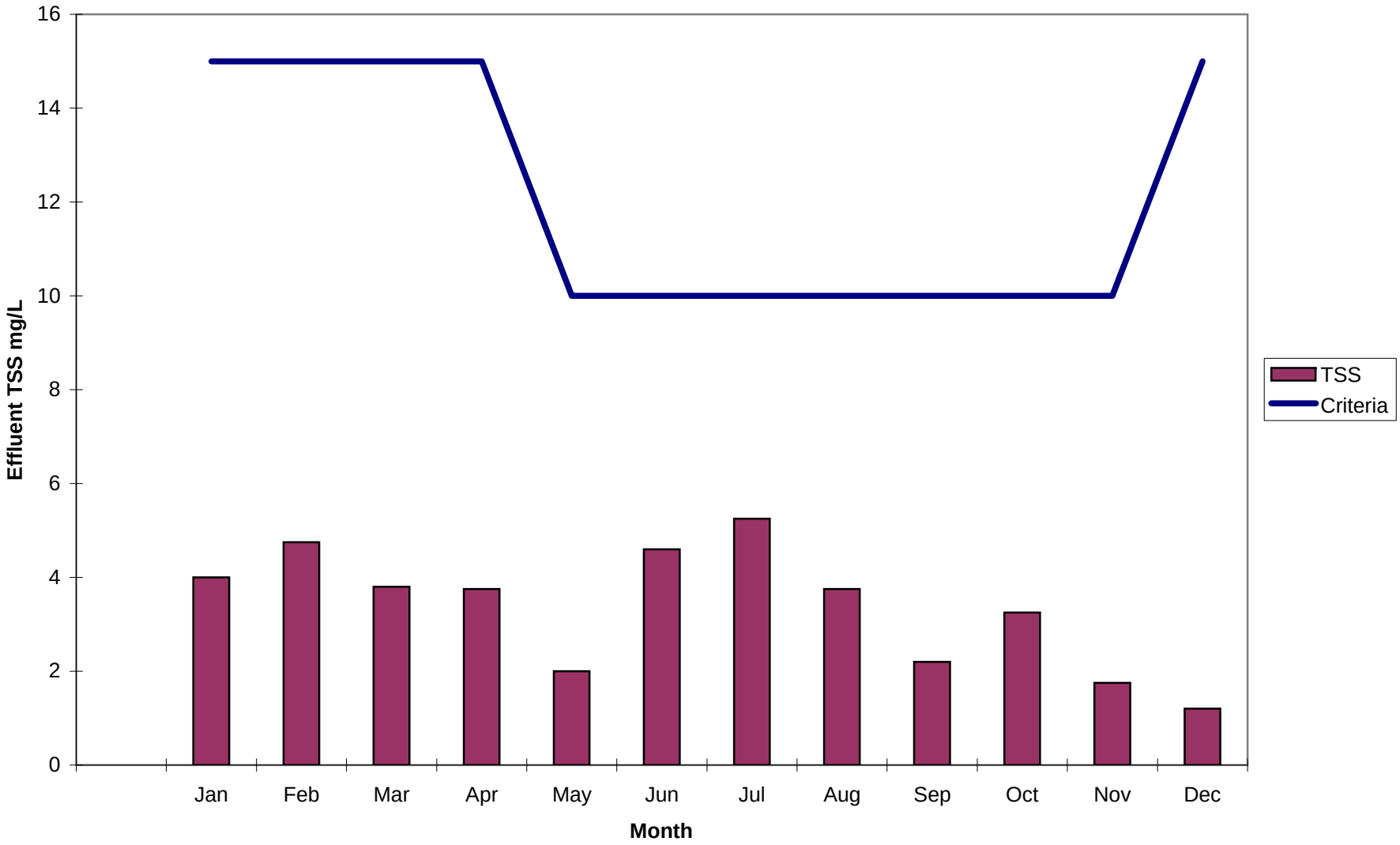

Thamesford Monthly TP kg/d Influent loading Vs Design
Influent TP kg/d
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TP kg/d
Design

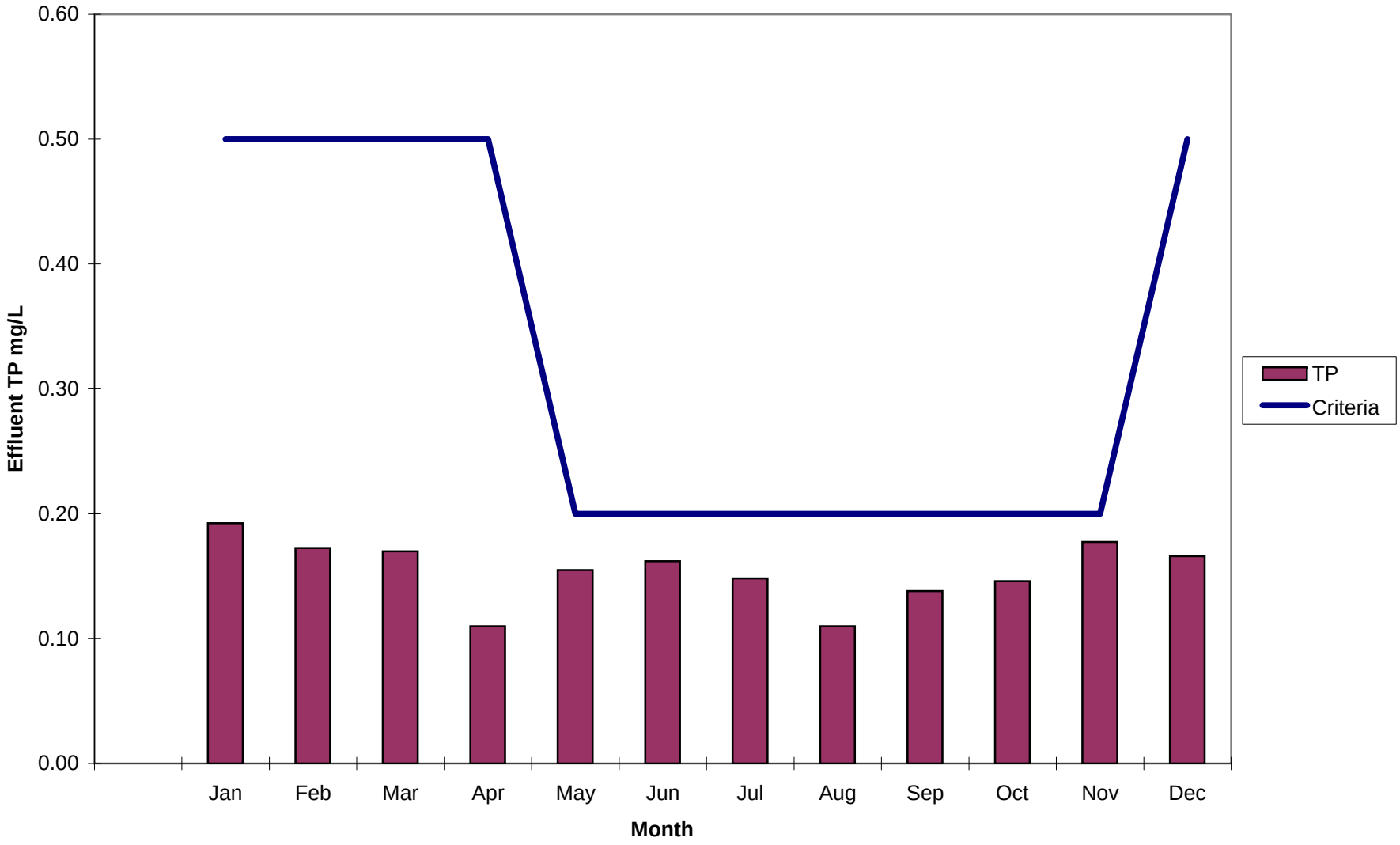

Thamesford Monthly O&G kg/d Influent Loading Vs Design
Influent O&G kg/d
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
O&G kg/d
Design

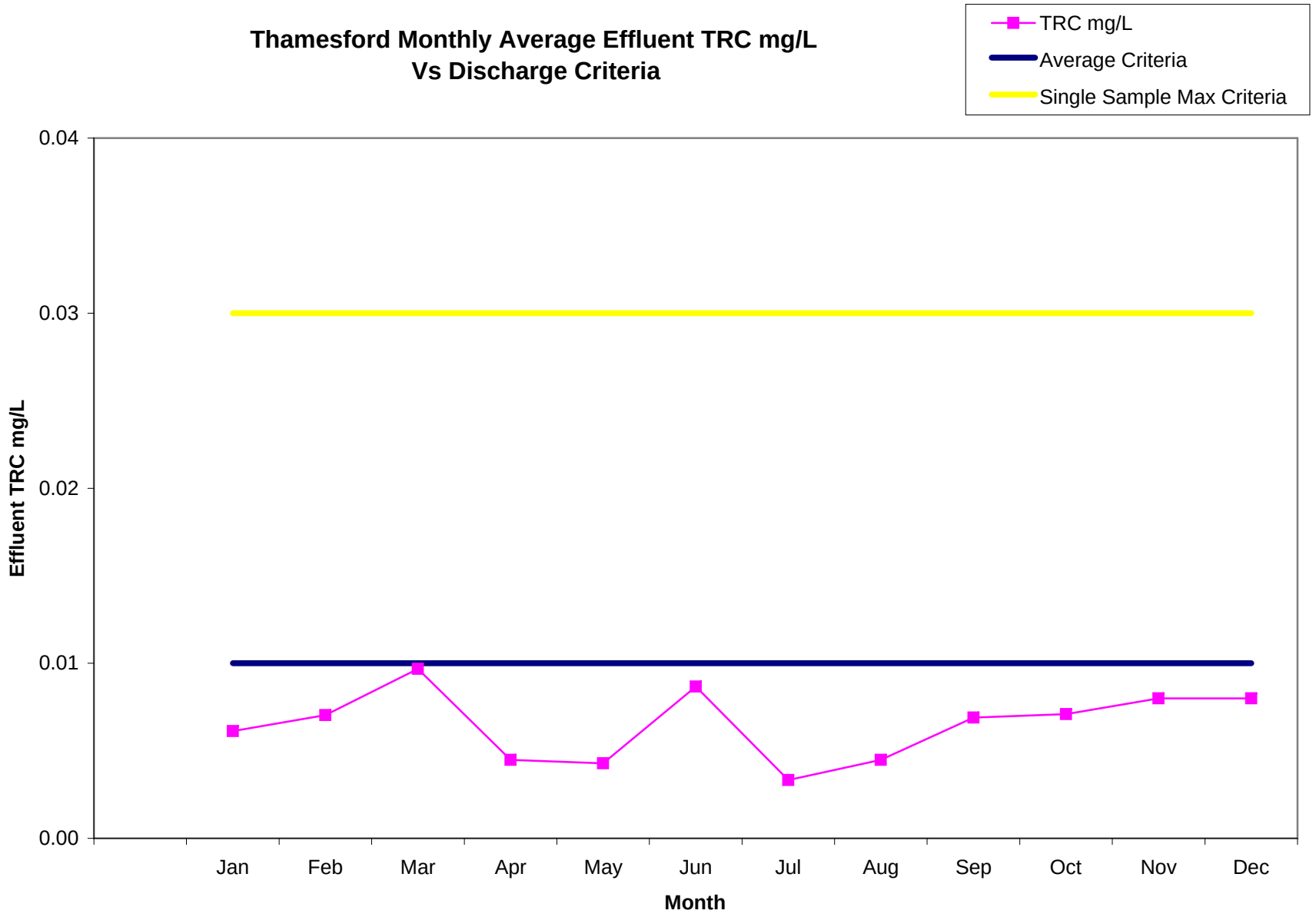

Thamesford Monthly Average Effluent pH vs Discharge Criteria
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Effluent pH
9
8
7
6
5
4
3
2
1
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
pH
Low Criteria
High Criteria

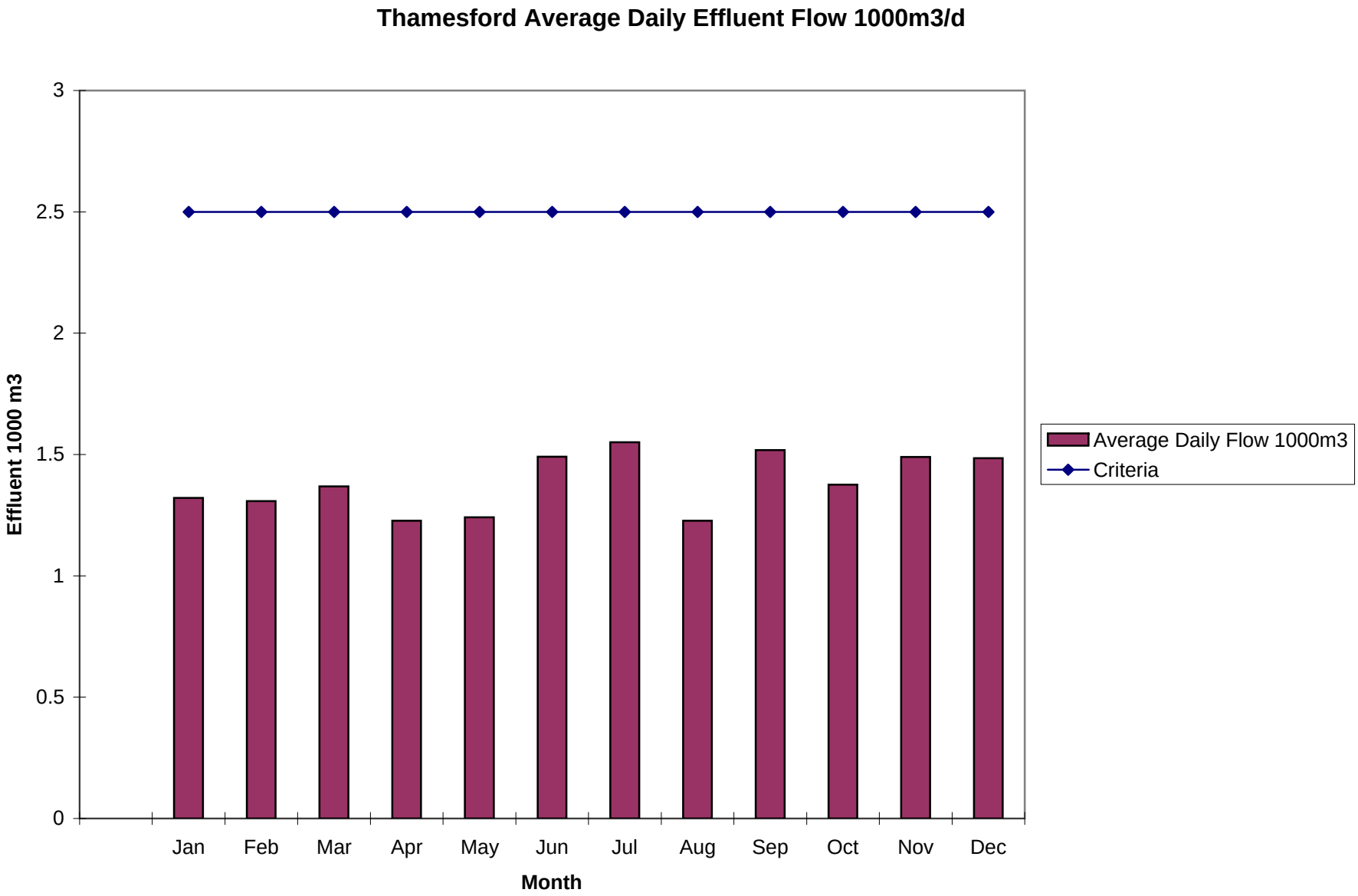

Thamesford Monthly Average Efluent BOD5 mg/L Vs Discharge Criteria
Effluent BOD5 mg/L
16
14
12
10
8
6
4
2
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
BOD5
Criteria


Thamesford Monthly Average Effluent Ammonia mg/L Vs Discharge Criteria
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Effluent Ammonia mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Ammonia
Criteria


Thamesford Monthly Average Effluent TSS mg/L Vs Discharge Criteria
Effluent TSS mg/L
16
14
12
10
8
6
4
2
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TSS
Criteria


Thamesford Monthly Average Effluent TP mg/L Vs Discharge Criteria
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Effluent TP mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TP
Criteria


Thamesford Monthly Average Effluent TRC mg/L
Vs Discharge Criteria
TRC mg/L
Average Criteria
Single Sample Max Criteria
0.04
0.03
0.02
0.01
0.00
Effluent TRC mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month


Thamesford Average Daily Effluent Flow 1000m3/d
Effluent 1000 m3
3
2.5
2
1.5
1
0.5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
Average Daily Flow 1000m3
Criteria

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,
N6E 1L3

Dear Sir:

RE: Year-End Monitoring Report 2010 for Norwich Wastewater Treatment Plant
(Certificate of Approval #1680-6F6QR5)

Attached is the monitoring report for 2010 for the Norwich Wastewater Treatment Plant. This report is prepared as required by the certificate of approval #1680-6F6QR5.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT
Project Engineer, Oxford County

YEAR END MONITORING REPORT FOR 2010

This monitoring report is prepared for the Ministry of the Environment as part of the requirements of our certificate of approval (CofA #1680-6F6QR5)

CONTENTS

OVERVIEW OF NORWICH WASTEWATER TREATMENT PLANT

The Norwich Wastewater Treatment Plant provided effective wastewater treatment in 2010. The average daily flow for 2010 was 928 m^3/d this represents 60.7 % of the design criteria of 1530 m^3/d.

The Norwich Wastewater Treatment plant is a lagoon system serving the community of Norwich, Ontario. The wastewater is pumped from one of two pump stations to a splitter box; then to either of two lagoons as determined by the operator. The lagoons are operated in series with the filtering of the effluent through the sand filter beds performed for a period each day as required. The lagoons may discharge year round, however the freezing period prevents discharge through the filter beds from December to April each year.

Maintenance was completed as needed on the Wastewater Treatment Plant and was initiated by the operator during routine inspection of the system. The system is owned and operated by the County of Oxford and is supervised as one of nine plants. The maintenance is completed by the southern area staff. Detailed records on each piece of equipment are kept at the Ingersoll Wastewater Plant.

R&R Instrumentation Services did meter calibration on the lagoon effluent meter.

SAMPLING DESCRIPTION

Influent samples were taken from the Sutton St. lift station using a composite sampler set to take a sample every 15 minutes for 24 hours. The sampling frequency is once per week and samples are tested for Biochemical Oxygen Demand (BOD_5), and Suspended Solids (SS) monthly, and Total Phosphorus (TP) and Total Kjeldahl Nitrogen (TKN) weekly.

Effluent samples are taken using a composite sampler set to take a sample every 15 minutes for the duration of the discharge period. BOD_5, SS are sampled at least monthly. TP, ammonia, TKN, pH, and temperature samples are taken three times per week; E.coli and dissolved oxygen are tested at least weekly.

Laboratory analysis is performed by SGS Lakefield Research Ltd. on all samples except pH, temperature and dissolved oxygen which is tested in the field during collection. These results are used here for determination of compliance. Any information generated in-house is used in process control but is not included in this report.

DISCUSSION OF RESULTS

Calculated in Table A that follows are the average, maximum and minimum values for all influent, and effluent parameters. The calculation is on all external test results and both flow meters.

The average flow was 928 m^3/d representing 60.7 % of the design criteria of 1530 m^3/d. The average annual Influent BOD_5 concentration to the plant was 252 mg/L. This corresponds to an average BOD_5 loading of 234 kg/d. The average annual Influent SS concentration to the plant was 266 mg/L. This corresponds to an average SS loading of 247 kg/d. The annual average TKN concentration was 39 mg/L. This corresponds to 36 kg/d. The annual average TP concentration was 4.8 mg/L. This corresponds to 4.2 kg/d.

The annual average Effluent BOD_5 concentration was 1.6 mg/L. This represents a 99.4 % removal efficiency. The annual average SS concentration was 1.6 mg/L. This represents 99.4 % removal efficiency. The annual average Ammonia concentration was 1.1 mg/L. The annual average TP concentration was 0.39 mg/L. This represents a 91.9 % removal efficiency.

All pH is measured in the Effluent by the operator a minimum of three times a week during discharge and there was no single sample outside our range of 6-9.5 for 2010. All dissolved oxygen readings in the Effluent were measured at least weekly by the operator during discharge and no sample was below the required minimum of 4 mg/L.

The average, maximum, and minimum influent and effluent results were calculated and are given in Table A of Exhibit 1.

UPSET CONDITIONS 2010

There were no results outside of the compliance limits for 2010.

The Lagoon did not bypass or spill during the reporting period.

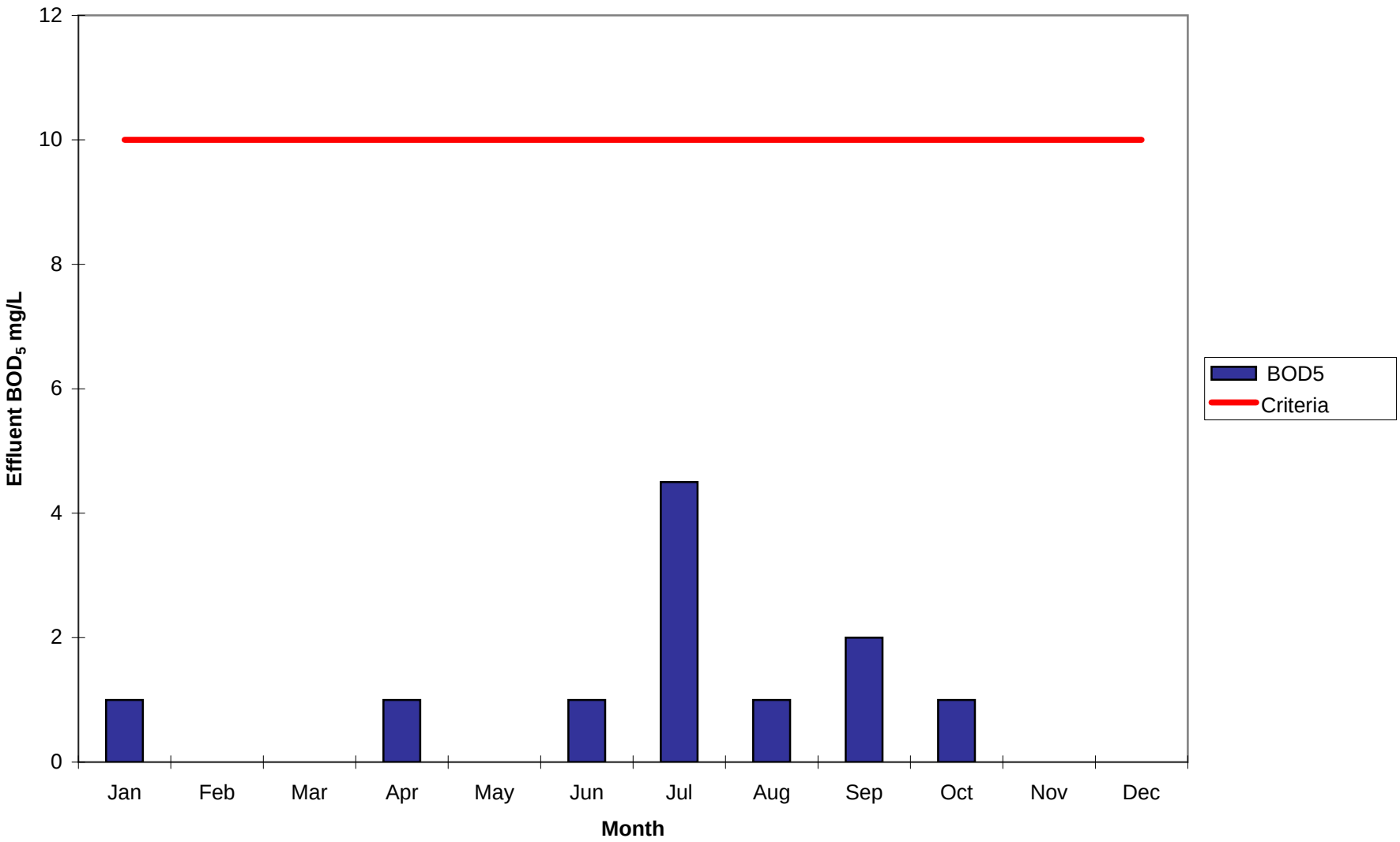
OTHER ACTIVITIES 2010

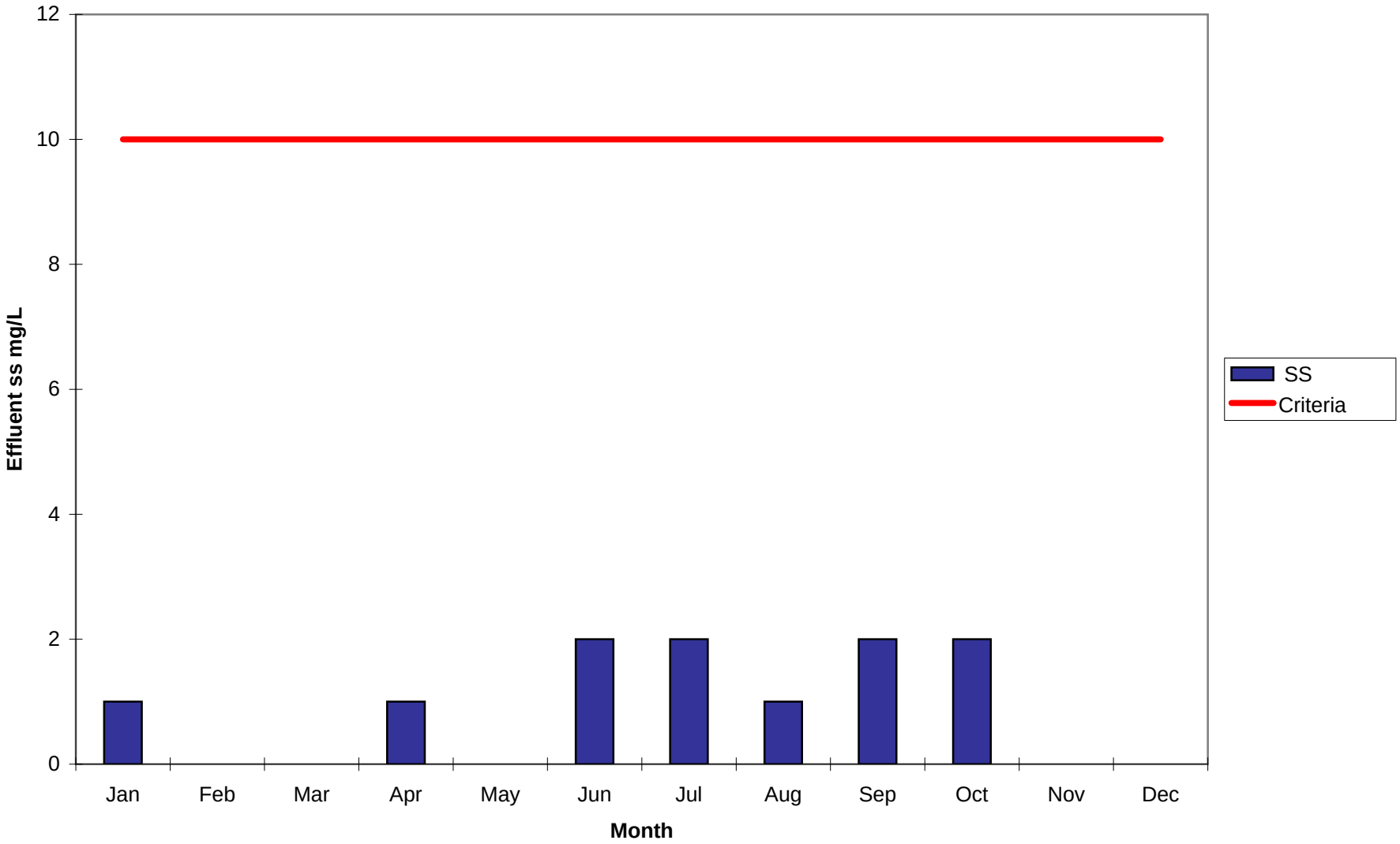
There is a class environmental assessment study underway in Norwich to ascertain the capacity needs for the future development needs of the Town.

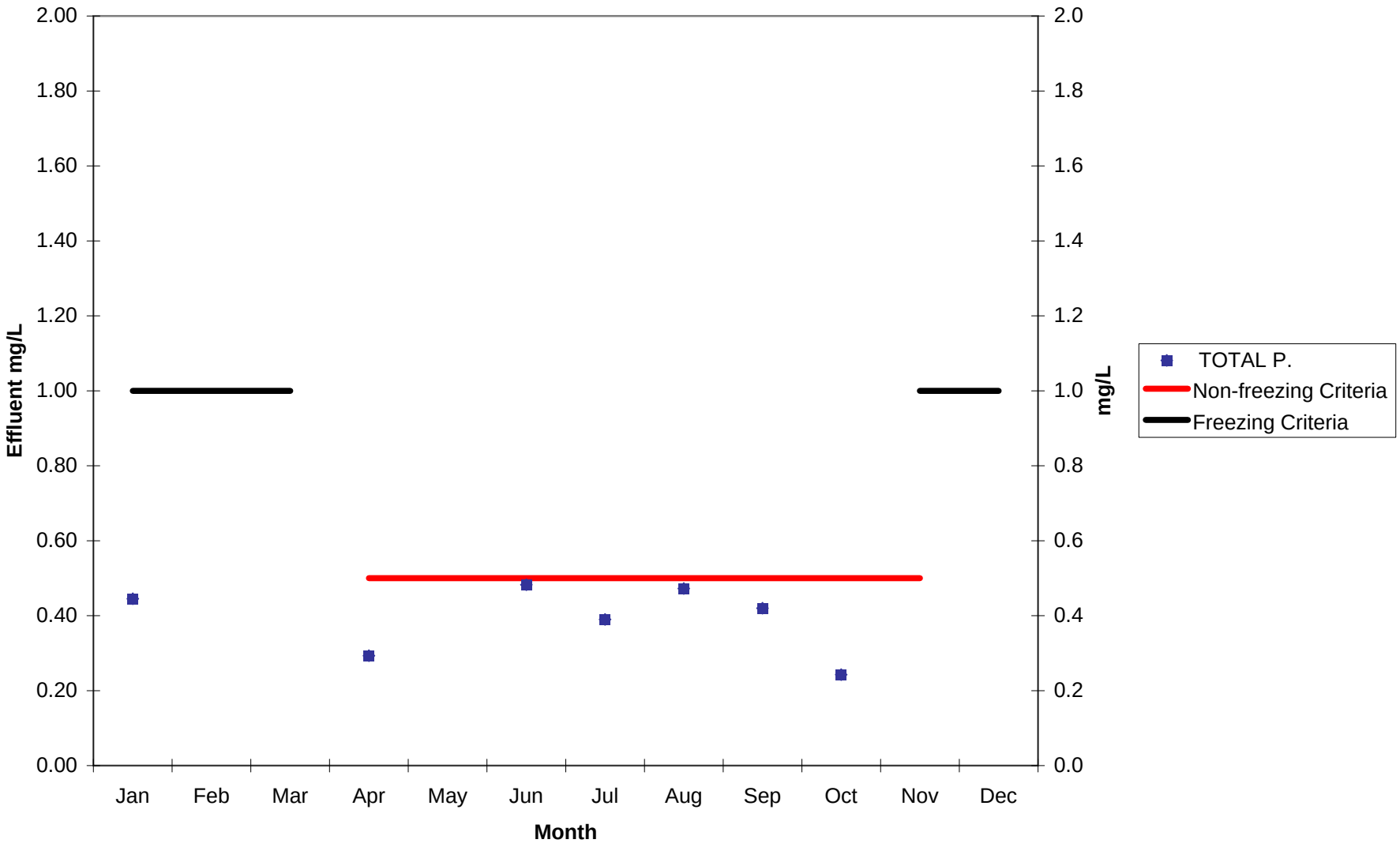
EXHIBIT 1

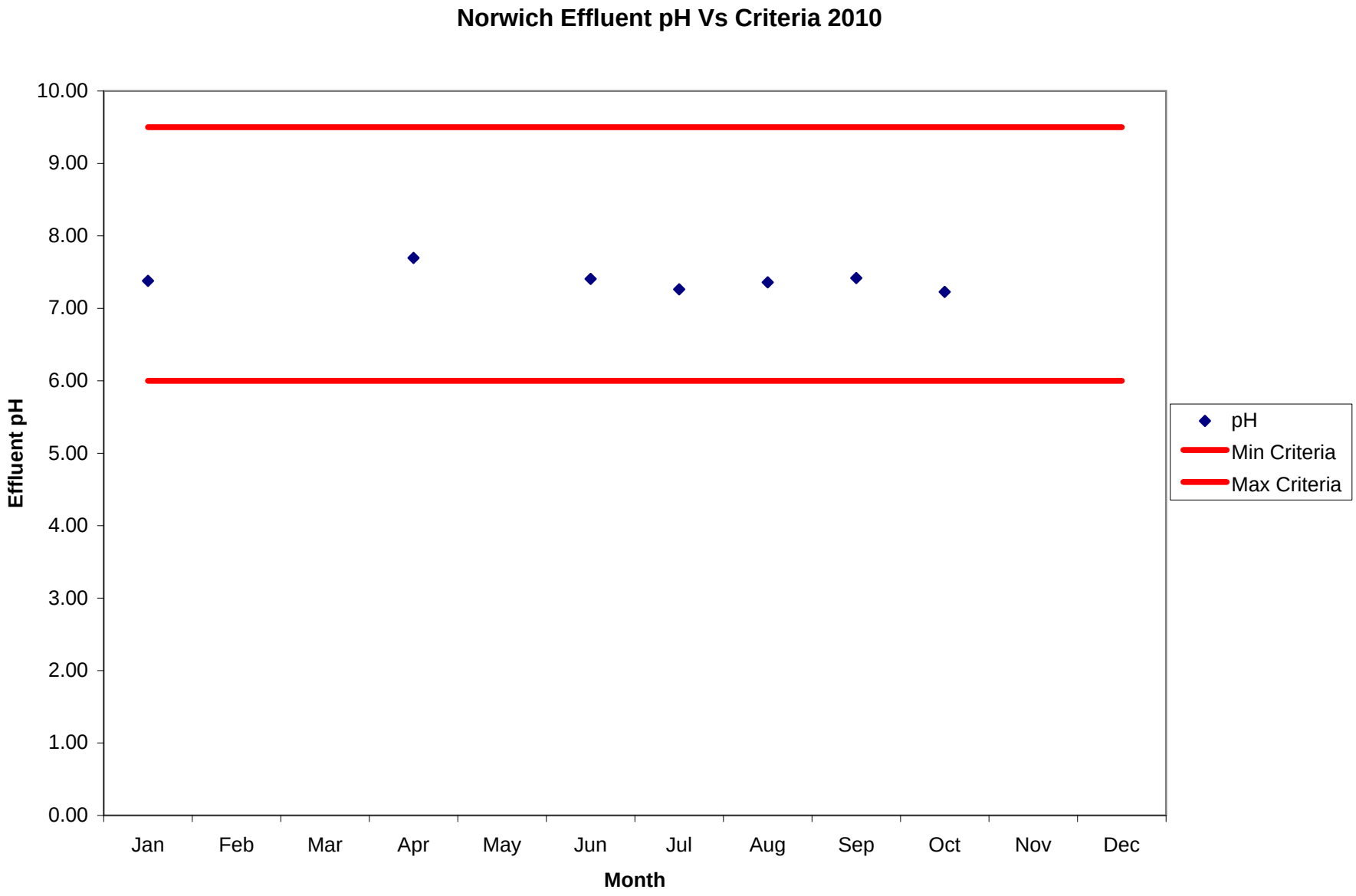
TABLE A	YEAR 2010	NORWICH LAGOONS			WORKS # 110001480												
LAGOON INFLUENT FLOW		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		ANNUAL	DESIGN CRITERIA	CofA Criteria	% Capacity
TOTAL	1000m3	26.663	20.708	37.115	35.671	32.619	32.003	25.216	22.461	20.900	26.809	26.453	32.669	TOTAL	339.287			
AVERAGE DAILY FLOW	1000m3/d	0.860	0.740	1.197	1.189	1.052	1.067	0.813	0.725	0.697	0.865	0.882	1.054	AVERAGE DAILY FLOW	0.928		1.53	60.7%
MAX. DAILY FLOW	1000m3/d	1.671	1.133	2.955	3.065	2.466	1.610	1.191	1.156	1.143	1.323	1.691	2.274	MAX. DAILY FLOW	3.065			
MIN. DAILY FLOW	1000m3/d	0.606	0.434	0.703	0.692	0.632	0.423	0.459	0.498	0.327	0.539	0.575	0.639	MIN. DAILY FLOW	0.327			
LAGOON INFLUENT RESULTS															ANNUAL AVERAGE		ANNUAL MAXIMUM	ANNUAL MINIMUM
BOD	mg/L	188	173	277	215	229	250	80	450	239	230	575	115		251.8		575	80
SS	mg/L	204	202	320	236	242	273	159	86	771	256	317	121		265.6		771	86
AMMONIA	mg/L																	
TKN	mg/L	26.15	36.45	27.74	26.30	29.03	37.34	47.90	43.68	50.70	44.05	49.93	43.50		38.6		50.7	26.2
NITRITE																		
NITRATE																		
TOTAL P.	mg/L	3.46	5.46	3.91	4.57	3.75	3.75	5.43	5.26	6.39	5.17	6.09	4.69		4.8		6.4	3.5
H2S																		
pH		7.46	7.30	7.38	7.35	7.29	7.26	7.28	7.30	7.44	7.45	7.16	7.21		7.32		7.46	7.16
LAGOON EFFLUENT FLOW														TOTAL ANNUAL FLOW	Monthly AVERAGE	DESIGN CRITERIA	CofA Criteria	CofA 236 day
TOTAL	1000m3	5.404			9.49		19.410	28.757	69.748	24.675	74.560			232.047	33.150			
AVERAGE DAILY FLOW	1000m3/d	2.702			2.373		3.235	2.212	2.583	2.468	3.107				2.669			
MAX. DAILY FLOW	1000m3/d	3.042			2.780		3.729	3.083	2.981	3.878	4.457				3.421			
MIN. DAILY FLOW	1000m3/d	2.362			1.734		2.033	0.897	0.828	0.083	0.880				1.260			
LAGOON EFFLUENT RESULTS															Monthly AVERAGE	DISCHARGE CRITERIA	ANNUAL MAXIMUM	ANNUAL MINIMUM
BOD_5	BOD_5	1			1.0		1.0	4.5	1	2.0	1				1.6	10	4.5	1.0
SS	SS	1			1.0		2.0	2	1	2.0	2				1.6	10	2.0	1
AMMONIA	AMMONIA	1.6			2.2		2.9	1.04	0.1042	0.15	0.07				1.1	3.0 non freezing	2.9	0.07
TKN	TKN															& 5.0 freezing		
NITRITE	NITRITE																	
NITRATE	NITRATE																	
TOTAL P.	TOTAL P.	0.45			0.29		0.48	0.39	0.47	0.42	0.24				0.39	0.5 non freezing	0.48	0.24
H2S	H2S															& 1.0 freezing		
pH	pH	7.38			7.70		7.41	7.26	7.36	7.42	7.23				7.39	6.00-9.00	7.70	7.23
E. Coli	E. Coli	5			1		139	9	2	1	20				25	200	139	1
Temp.	Temp.	1.2			11.5		21.7	24.4	22.5	16.171	11.242				15.5		24.4	1.2
D.O.	D.O.	8.5			7.6		5.1	5.2	6.7	8.6571	8.8				7.2	(4.0)	8.8	5.1

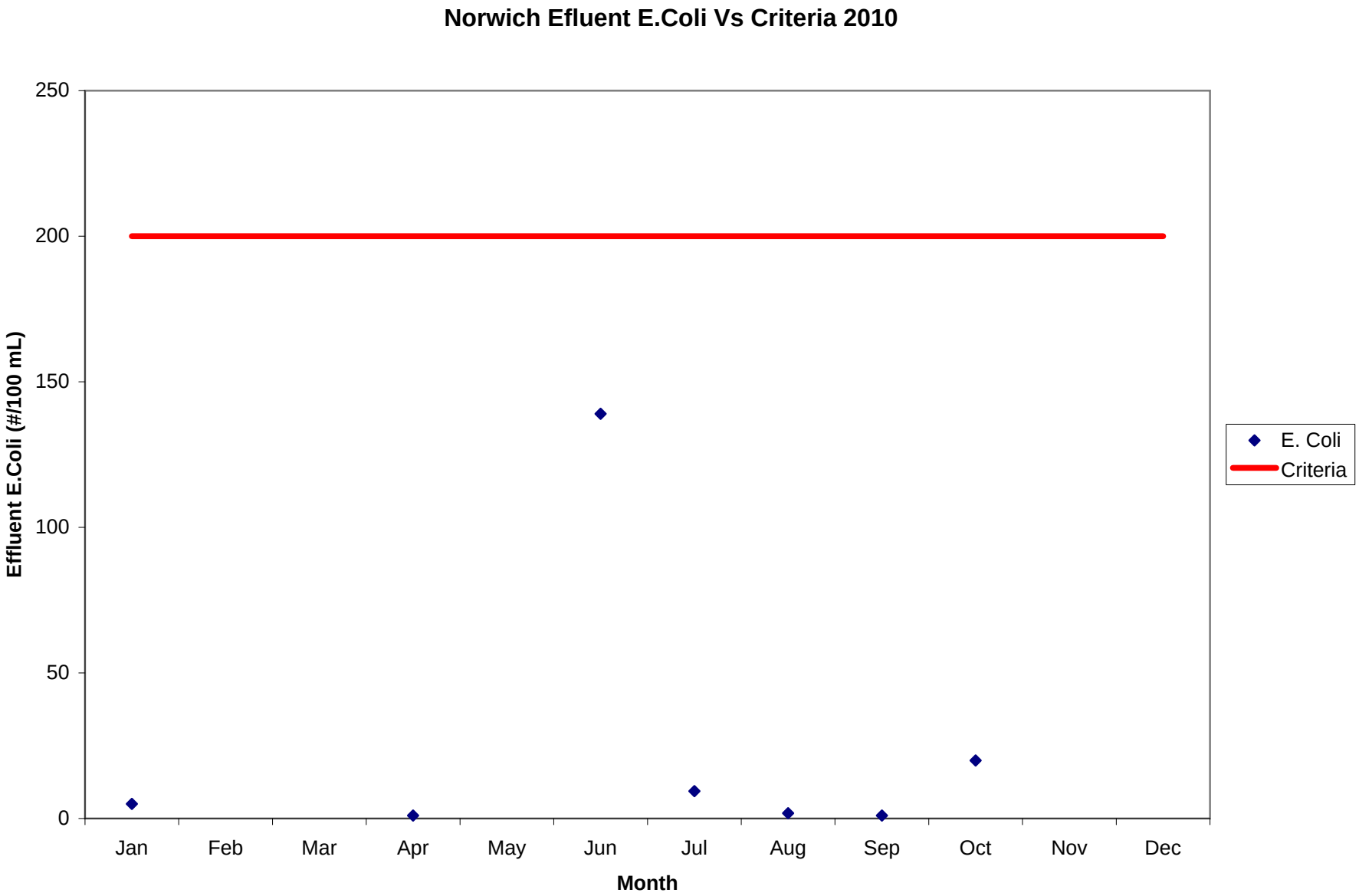
All results below method detection Limit (MDL) list at the MDL value.

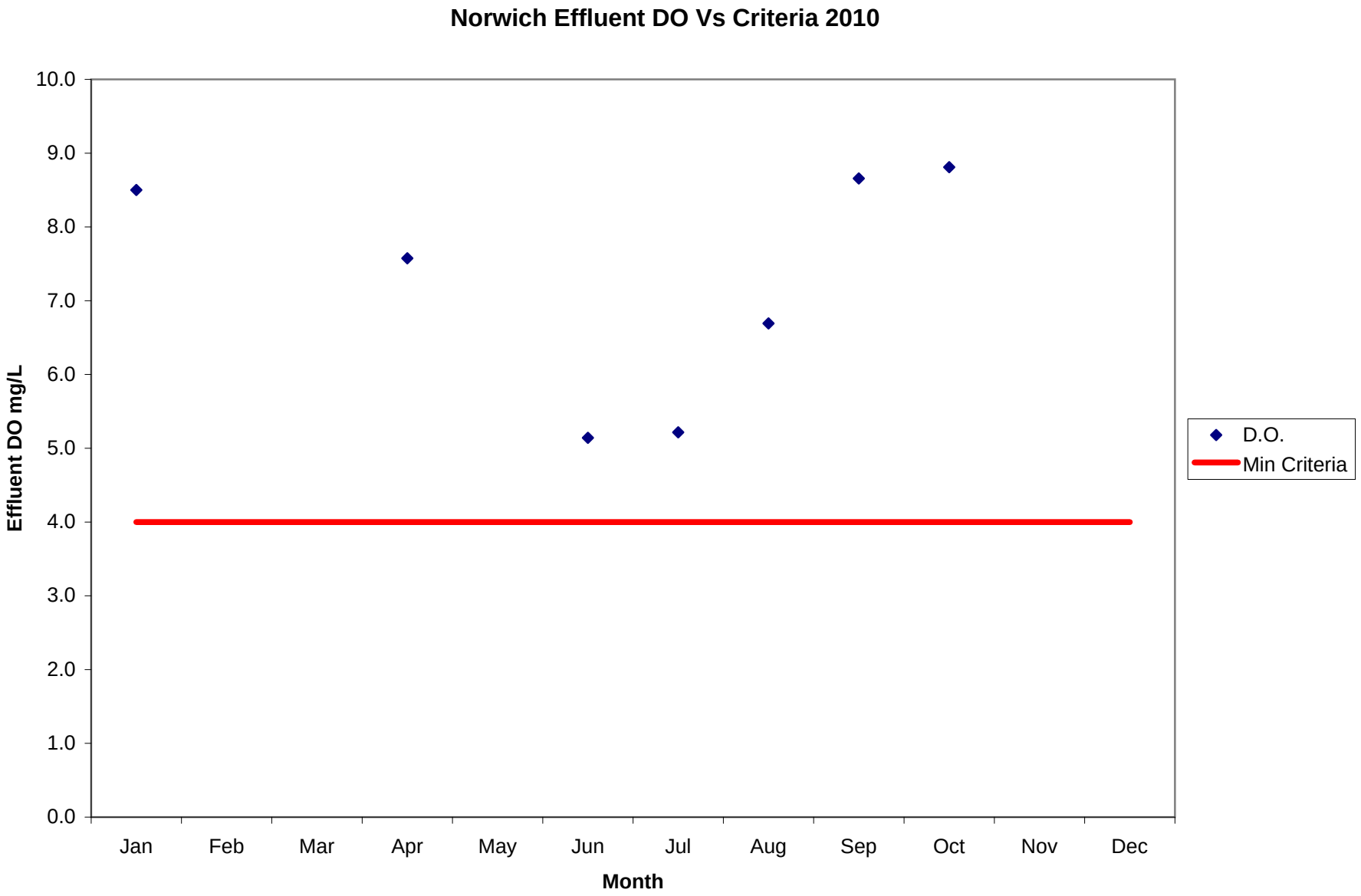

Norwich Lagoons Effluent Monthly Average BOD5 mg/L 2010
Effluent BOD5 mg/L
12
10
8
6
4
2
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
BOD5
Criteria


Norwich Lagoons Effluent Monthly Average SS mg/L vs Criteria 2010
12
10
8
6
4
2
0
Effluent ss mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
SS
Criteria

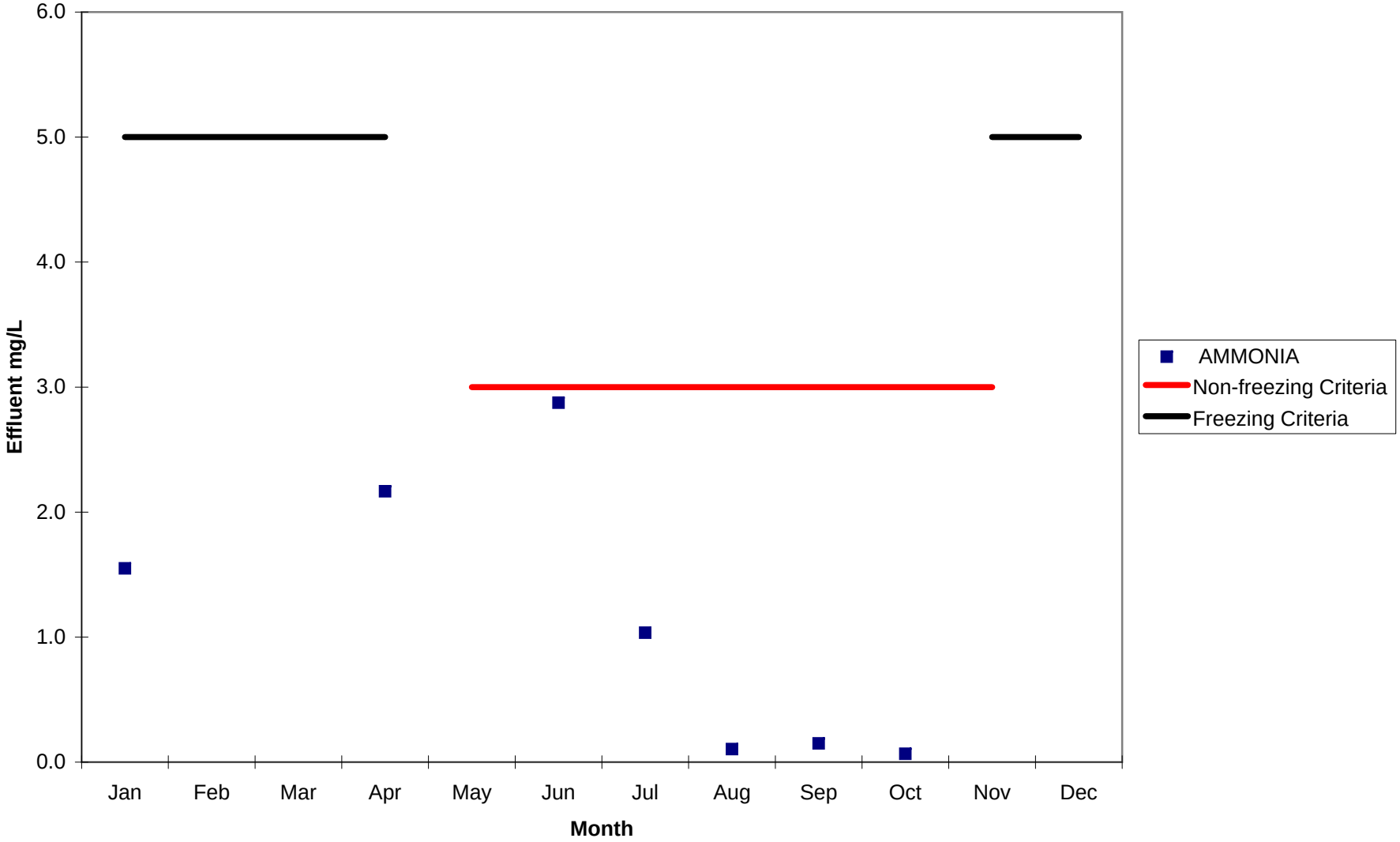

Norwich Lagoons Effluent Monthly Average TP mg/L vs Design 2010
Effluent mg/L
mg/L
Month
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
TOTAL P.
Non-freezing Criteria
Freezing Criteria

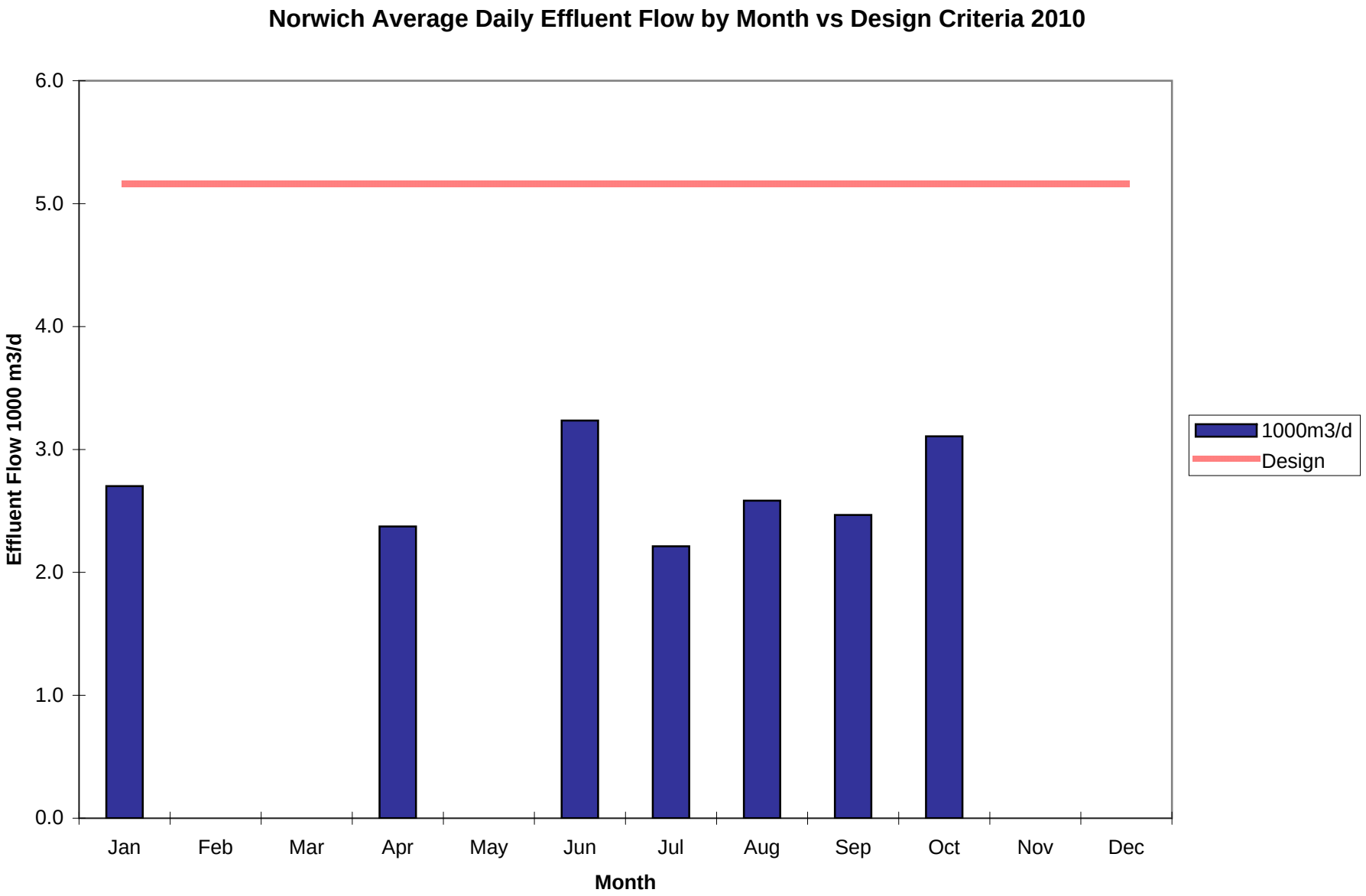

Norwich Effluent pH Vs Criteria 2010
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Effluent pH
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
pH
Min Criteria
Max Criteria


Norwich Efluent E.Coli Vs Criteria 2010
Effluent E.Coli (#/100 mL)
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
E. Coli
Criteria


Norwich Effluent DO Vs Criteria 2010
Effluent DO mg/L
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
D.O.
Min Criteria

Norwich Effluent Monthly Average Ammonia mg/L vs Criteria 2010




Norwich Average Daily Effluent Flow by Month vs Design Criteria 2010
Effluent Flow 1000 m3/d
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
1000m3/d
Design

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,
N6E 1L3

Dear Sir:

RE: Year-End Monitoring Report 2010 for Mount Elgin Wastewater Treatment Plant
(Certificate of Approval # 0611-6Q3JQL)

Attached is the monitoring report for 2010 for the Mount Elgin Wastewater Treatment Plant. This report is prepared as required by the certificate of approval # 0611-6Q3JQL.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT
Project Engineer, Oxford County

YEAR END MONITORING REPORT FOR 2010

This monitoring report is prepared for the Ministry of the Environment as part of the requirements of our certificate of approval (CofA # 0611-6Q3JQL)

CONTENTS

OVERVIEW OF MOUNT ELGIN WASTEWATER TREATMENT SYSTEM

The Mount Elgin wastewater provided effective wastewater treatment in 2010. The average daily flow for 2010 was 17 m^3/d. This represents 18 % of the design criteria of 95.25 m^3/d.

The Septic Tank Effluent Gravity (STEG) system is one component of the overall sewage treatment system. In STEG collection systems, the wastewater is collected from individual homes in septic tanks where it is pretreated to remove solids and grease before it drains by gravity to the small diameter collection mains. The small diameter collection mains direct the primary treated effluent to a pump station located near the main road at the entrance of the sewage treatment plant.

The primary treated effluent now becomes the raw influent to the sewage treatment system where it is pumped to recirculation tanks. The influent is then pumped to the recirculating sand filter and then collected and pumped to a splitter valve that allows 80% of the flow to recirculate and 20% to enter the dosing tank. The dosing tank is where the effluent sample is collected and is the tank that pumps to the shallow buried trench drain field that provides the subsurface discharge.

Maintenance was completed as needed on the wastewater system and was initiated by the operator during routine inspection of the system. The system is owned and operated by the County of Oxford and is supervised as one of nine plants. The maintenance is completed by the southern area staff. Detailed records on each piece of equipment are kept at the Ingersoll Wastewater Plant.

R&R Instrumentation Services did meter calibration on the influent meter; however estimating flow is permitted under the certificate of approval and was necessary as groundwater infiltration to the meter compartment disabled the equipment for long periods of time in 2010.

SAMPLING DESCRIPTION

Grab samples were taken from the influent lift station, the minimum sampling frequency is quarterly and samples are tested for Carbonaceous Biochemical Oxygen Demand (CBOD), Suspended Solids (SS), Total Phosphorus (TP), and Total Kjeldahl Nitrogen (TKN).

Effluent grab samples are taken and analyzed for CBOD, SS, TP, ammonia, TKN, nitrite, nitrate, pH and E.coli at least quarterly.

Groundwater testing is done for nitrites, nitrates and pH on a quarterly basis.

Laboratory analysis is performed by SGS Lakefield Research Ltd. on all samples except pH, which is tested in the field during collection. These results are used here for

determination of compliance. Any information generated in-house is used in process control but is not included in this report.

DISCUSSION OF RESULTS

Calculated in Table A that follows are the average, maximum and minimum values for all influent, and effluent parameters. The calculation is on all external test results and flow information.

The average annual Influent CBOD concentration to the plant was 110.5 mg/L. With an average flow of 17 m^3/d, this corresponds to an average CBOD loading of 2 kg/d. The average annual Influent SS concentration to the plant was 72.5 mg/L. This corresponds to an average SS loading of 1.3 kg/d. The annual average TKN concentration was 61.6 mg/L. This corresponds to 1.1 kg/d. The annual average TP concentration was 7.2 mg/L. This corresponds to 0.13 kg/d.

The annual average Effluent CBOD concentration was 1.3 mg/L. This represents 98.8 % removal efficiency. The annual average SS concentration was 2.6 mg/L. This represents 96.4 % removal efficiency. The annual average Ammonia concentration was 1.1 mg/L. The annual average TP concentration was 6.4 mg/L. This represents and 11 % removal efficiency.

The average, maximum, and minimum influent and effluent results were calculated and are given in Table A in Exhibit 1.

UPSET CONDITIONS 2010

There were no upset conditions in 2010.

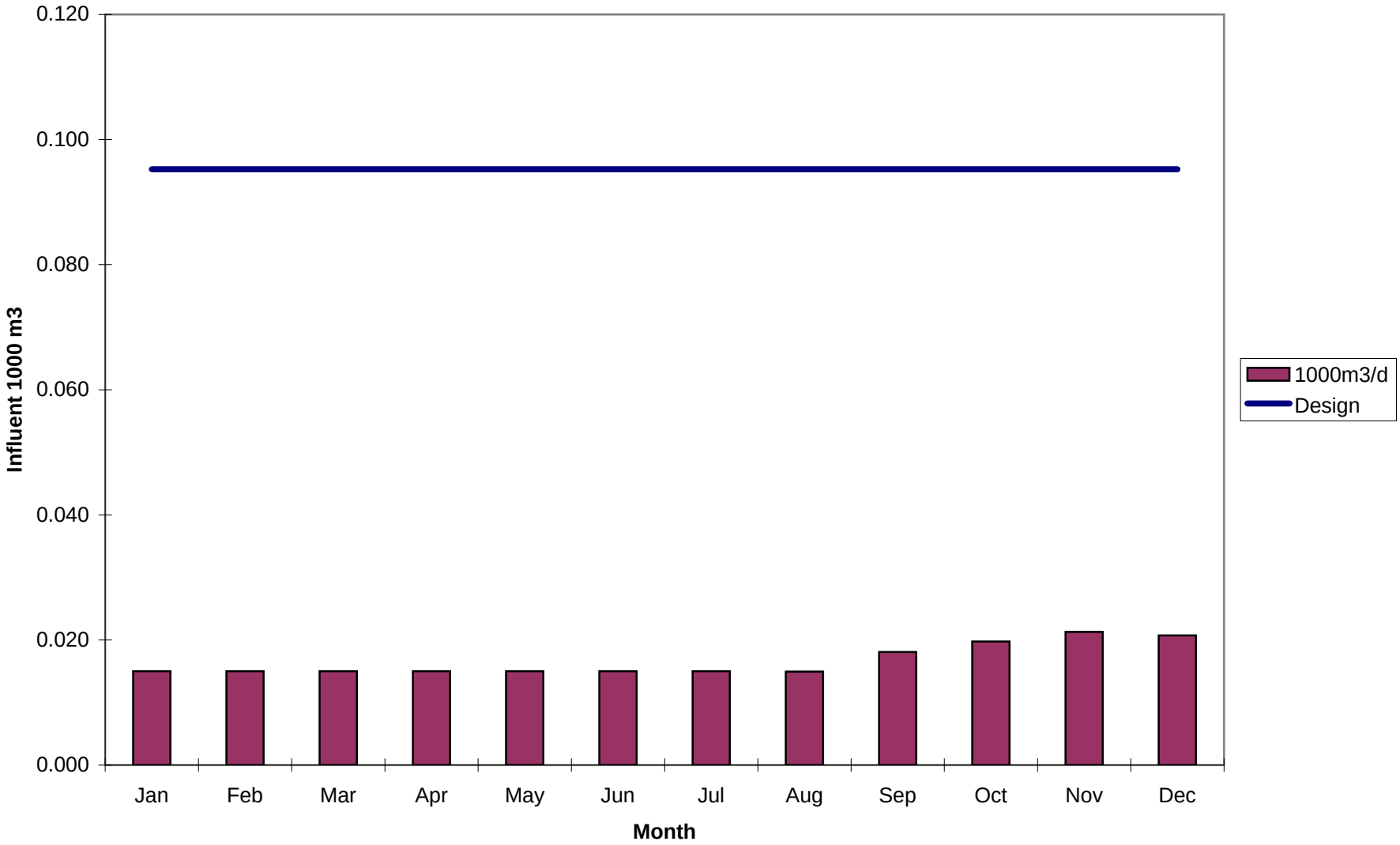
OTHER ACTIVITIES 2010

There were no alterations or changes in operation for 2010.

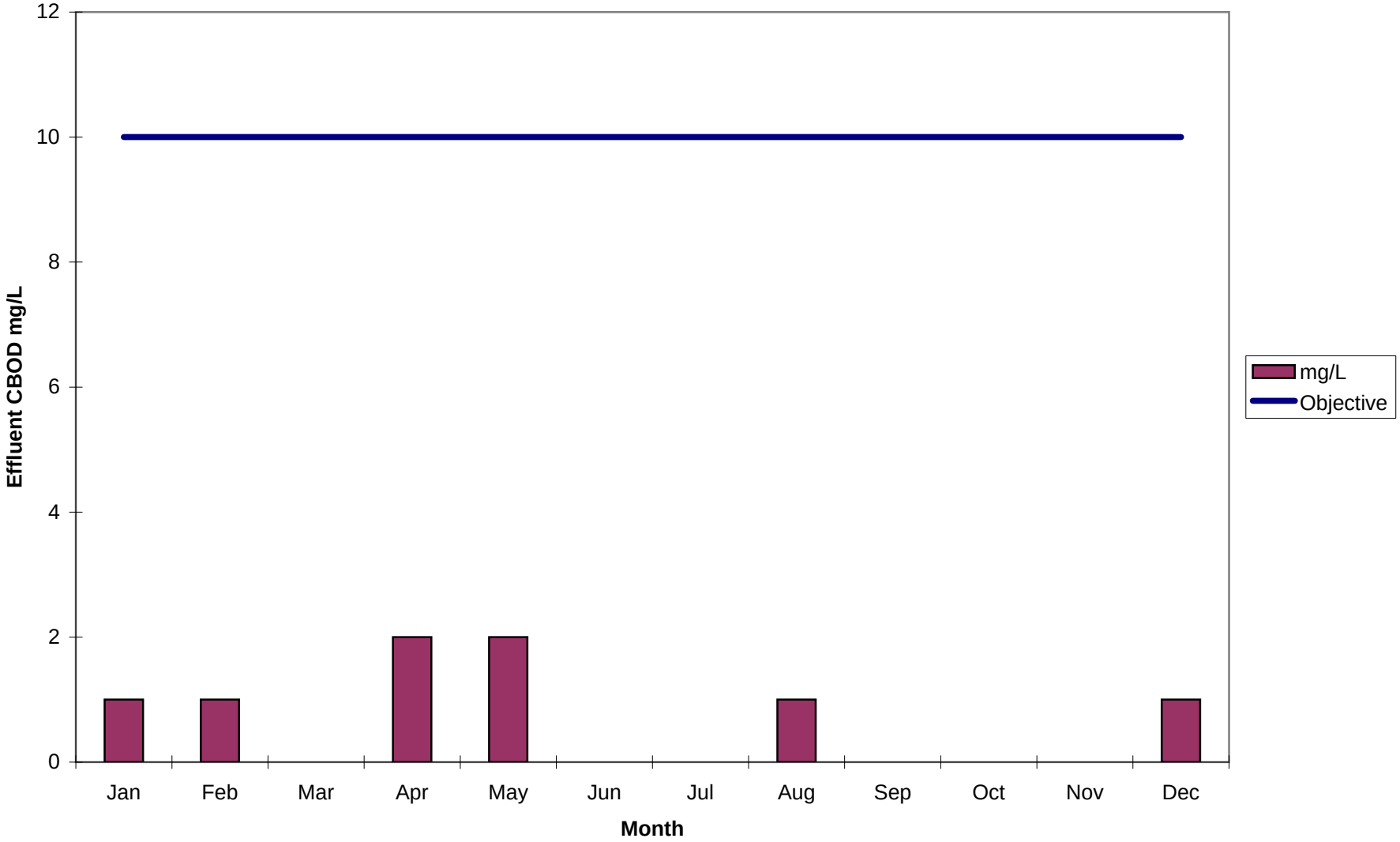
EXHIBIT 1

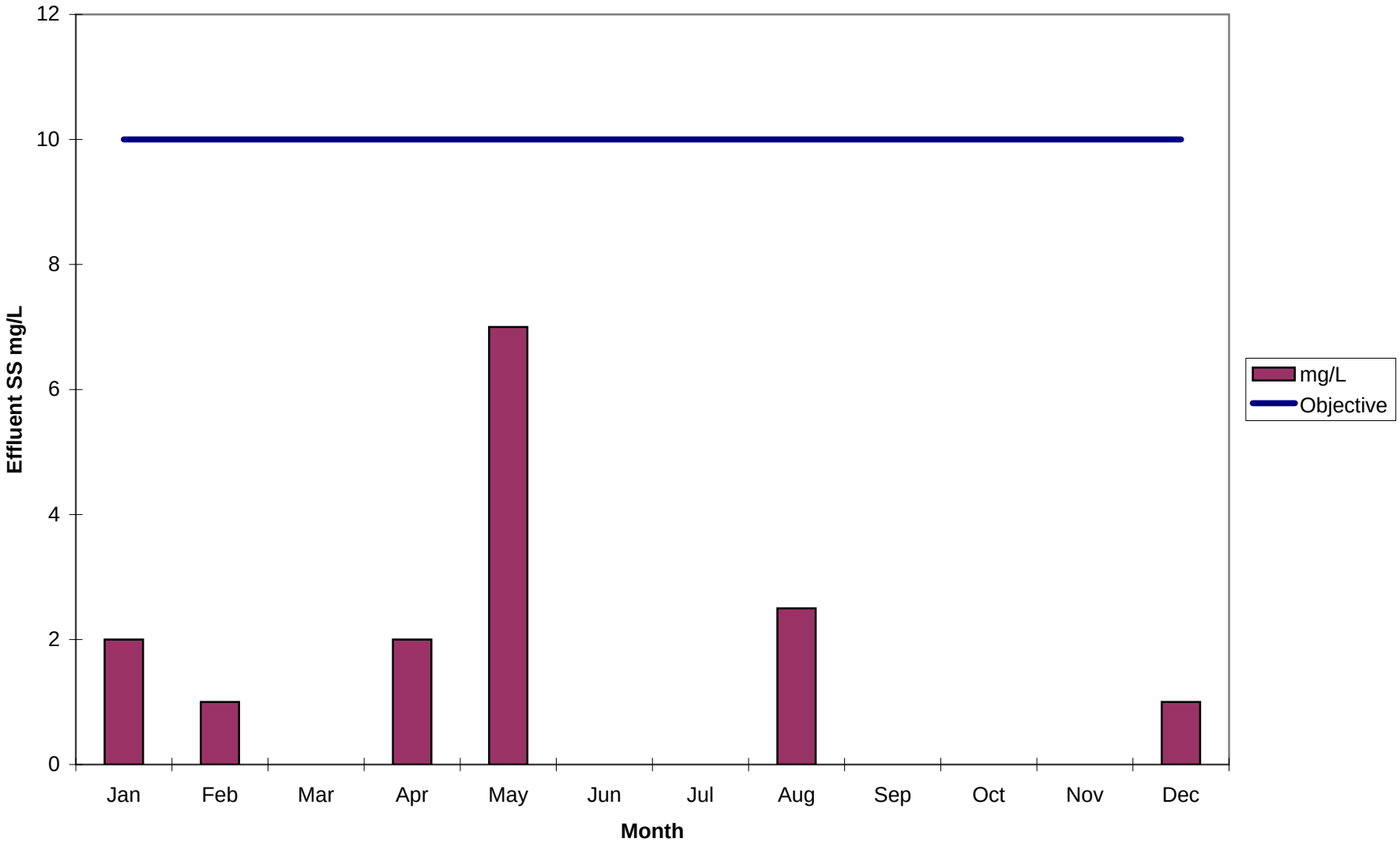
TABLE A	YEAR 2010	Mt Elgin Wastewater			WORKS # 120002870												
INFLUENT FLOW		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		AVERAGE	DESIGN CRITERIA Phase 1	DESIGN CRITERIA All Phases	
TOTAL	1000m3	0.465	0.420	0.047	0.450	0.465	0.450	0.465	0.463	0.542	0.612	0.639	0.643	TOTAL	5.661			
AVERAGE DAILY FLOW	1000m3/d	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.018	0.020	0.021	0.021	AVERAGE DAILY FLOW	0.017	0.09525	0.381	
MAX. DAILY FLOW	1000m3/d	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.017	0.019	0.021	0.024	0.025	MAX. DAILY FLOW	0.025			
INFLUENT RESULTS															AVERAGE		Results MAXIMUM	Results MINIMUM
CBOD	mg/L	140	148		87	91			116				81		110.5		148	81
SS	mg/L	55	33		53	44			215				35		72.5		215	33
TKN	mg/L	72	60		48	60			63				66		61.6		72.2	47.7
TOTAL P.	mg/L	8.51	7.37		3.44	7.38			8.68				7.90		7.2		8.68	3.44
pH		7.96	7.33	7.51	7.29	7.34	7.50	7.18	7.15	7.27	7.44	7.45	7.21		7.4		7.96	7.15
GROUNDWATER															AVERAGE			
pH				7.28		7.53				7.510			7.66		7.494			
Nitrates	mg/L			0.12		0.19				0.413			0.03		0.188			
Nitrites	mg/L			0.03		0.03				0.030			0.07		0.039			
EFFLUENT RESULTS															AVERAGE		Results MAXIMUM	Results MINIMUM
CBOD	mg/L	1	1		2.0	2			1				1		1.3		2	1.0
SS	mg/L	2	1.0		2.0	7			2.5				1		2.6		7	1.0
Ammonia	mg/L	3.3	1.4		0.25	0.60			0.90				0.20		1.1		3.3	0.2
TKN	mg/L	3.4	2		1.3	0.95			1.5				0.25		1.6		3.4	0.3
Total P.	mg/L	8.0	7.3		5.9	7.0			3.9				6.12		6.4		7.96	3.9
pH		7.57	6.99	7.02	7.01	7.06	7.16	6.98	7.07	7.08	7.26	7.12	7.02		7.1		7.57	7.0
E. coli	#/100 ml		96		350		20		168				480		222.8		480	20.0
NITRATES	mg/L	32.8	33.4		26.3	24.3			20.4				36.3		28.9		36.3	20.4
NITRITES	mg/L	0.31	0.1		0.1	24.5			0.225				0.03		4.2		24.45	0.0

All results below method detection Limit (MDL) listed at the MDL value.

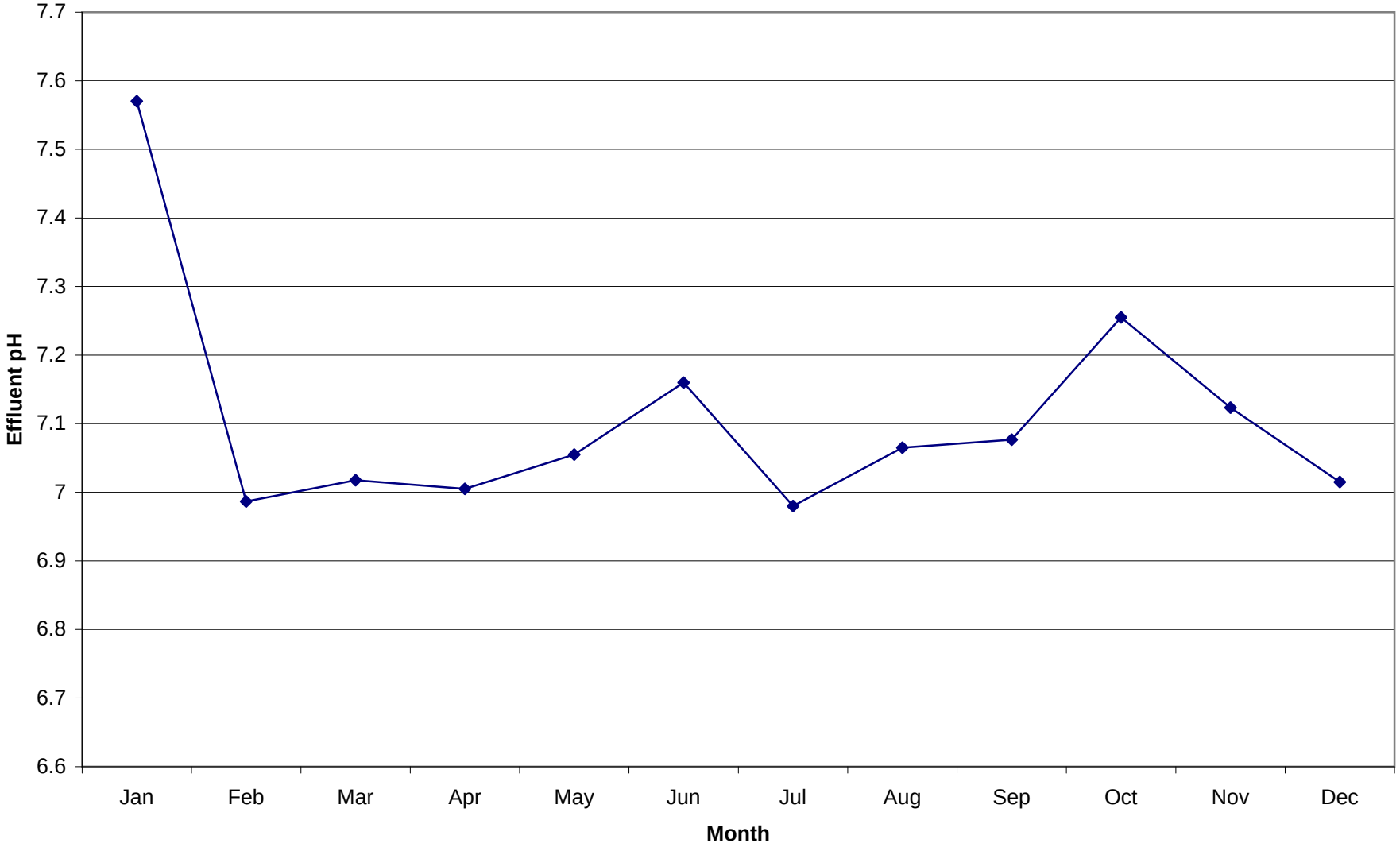

Mount Elgin Average Daily Flow vs Design 2010
0.120
0.100
0.080
0.060
0.040
0.020
0.000
Influent 1000 m3
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
1000m3/d
Design

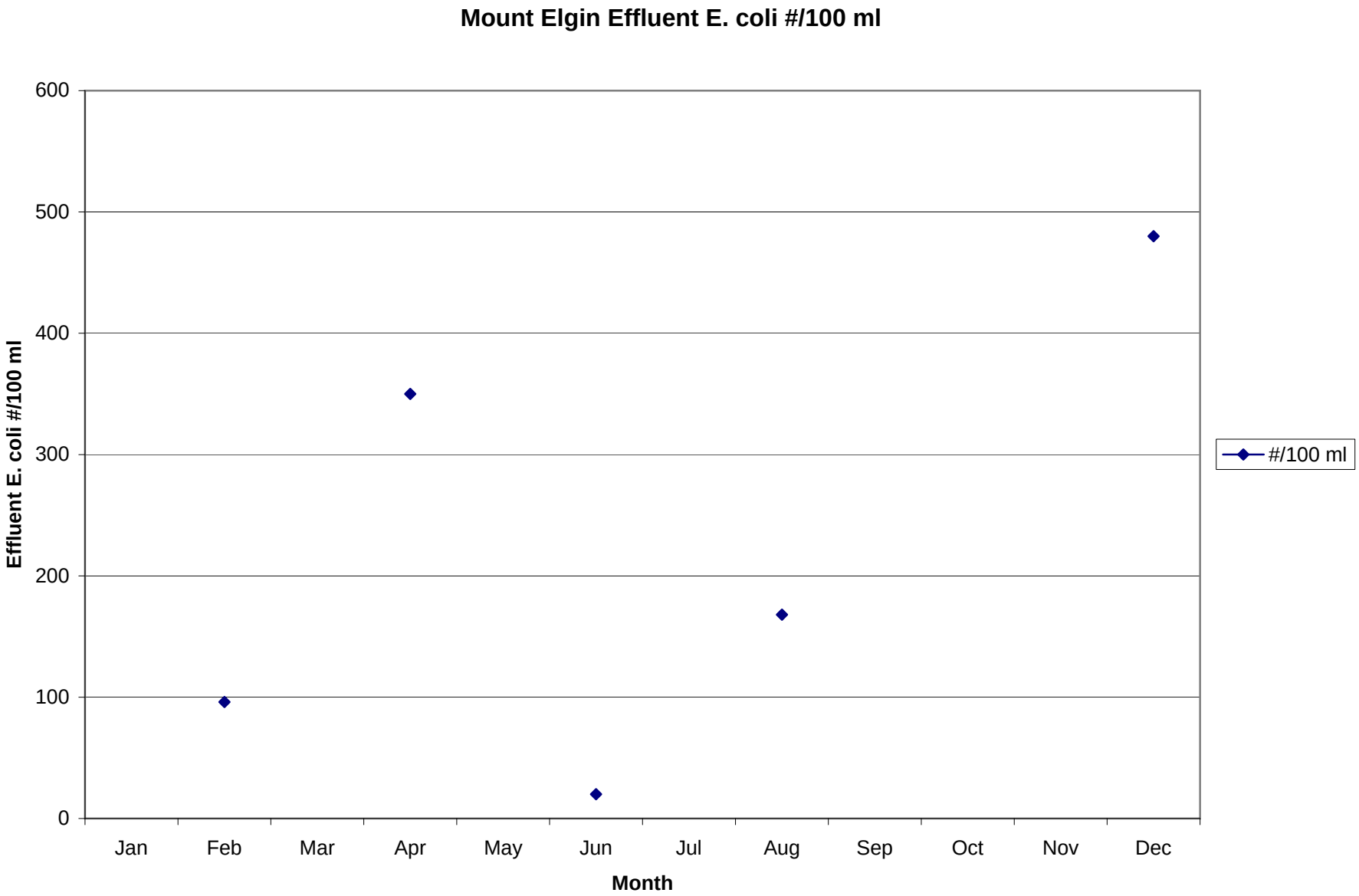
Mount Elgin Effluent CBOD mg/L vs Objectives 2010




Mount Elgin Effluent SS mg/L vs Objective 2010
Effluent SS mg/L
12
10
8
6
4
2
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
mg/L
Objective

Mount Elgin Effluent pH 2010




Mount Elgin Effluent E. coli #/100 ml
600
500
400
300
200
100
0
Effluent E. coli #/100 ml
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
#/100 ml

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,
N6E 1L3

Dear Sir:

RE: Year-End Report Tavistock Lagoon 2010
(Certificate of Approval #8316-6JSJJF)

This year-end report is prepared as required by the certificate of approval #8316-6JSJJF.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT
Project Engineer, Oxford County

Overview

The Tavistock Lagoon System provided effective wastewater treatment in 2010 and all effluent concentration limits as specified by the certificate of approval were met. A new certificate of approval CofA # 7789-8AKJL5 will take effect once substantial completion is achieved likely in the fall of 2011 with interim discharge parameters for nine months after substantial completion. The annual average daily flow was 1503 m3/d this represents 72.6% of the rated capacity of 2070 m3/d included in CofA #8316-6JSJJF.

Project Description

The Tavistock Wastewater Treatment Plant began operation in its present configuration in 1988. The facility consists of three facultative lagoons equipped with Mat Aerators in all three cells and in addition six 15 hp aspirating surface aerators are used in cell 1 to provide the necessary dissolved oxygen for the lagoons. Any two of the three existing rotary positive displacement blowers provide air into cell #1 and cell #2.

There is also the provision for continuous aluminum sulphate addition for phosphorus removal. The wastewater is dosed with aluminum sulphate as it enters cell #1 and as the flow enters cell #2. Effluent from cell #1 overflows to cell #2 then into cell #3 where it is stored until discharge from November 1 to April 30. Again this year a one-time amendment was issued to the CofA allowing for an early release covering the period July to October. This was necessary due to high influent organic loadings effecting ammonia removal and our inability to hold the wastewater to a November release.

Construction began at year end for the new lagoon and filter system with completion anticipated by the fall of 2011. The County of Oxford operates the facility, utilizing the staff located at the Woodstock Wastewater Treatment Plant.

Plant Specifications

Certificate of Approval #8316-6JSJJF

Facilities - Three Facultative Lagoons
Design Capacity - 2070 m^3/day
Peak Capacity - 7556 m^3/day
Average Daily Flow - 1503 m^3/day
Receiving Stream - Thames River via Hohner Drain
Plant Classification - WWT – I
Certificate(s) of Approval 8316-6jSJJF
Effluent requirements:
CBOD 25.0 mg/L
Suspended Solids 25.0 mg/L
Total Phosphorous 1.0 mg/L
Dissolved Oxygen >4.0

Free Ammonia

(Jan. & Feb.)	8.6 mg/L	(Mar.)	4.5 mg/L
(Apr.)	2.0 mg/L	(Nov.)	2.3 mg/L
(Dec.)	6.8 mg/L		

During the period of May 1 to October 31, no effluent is to be discharged to the receiving stream without prior written consent of the Director of MOE, Southwestern Region. A letter from the Manager of the London District Office of the MOE was received, allowing discharge from August to October 2010 but limiting volumes and with additional limits on discharge criteria.

Sampling Procedures

Raw Sewage is sampled a minimum of once monthly and tested for CBOD, suspended solids, TKN, total phosphorous, pH and temperature.
Automatic composite samplers are used to collect raw sewage samples from chamber #3 as the flow enters cell #1. Automated composite samples are also taken at the same time from a major cheese processor in Tavistock. The cheese Company can provide a significant loading on the Tavistock Lagoon system and is under a surcharge agreement with Oxford County.

Grab samples of final effluent is taken weekly during effluent discharge and tested for CBOD, suspended solids, total phosphorous, pH, temperature, nitrate, nitrite and free ammonia. Un-ionized ammonia and E.Coli were also included under the amendment. SGS Lakefield Research Ltd. perform all sample analyses. A detailed summary of monthly raw sewage and final effluent analysis is provided in this report, please see Exhibit 1.

Flows

The annual average daily flow was 1503 m3/d this represents 72.6% of the rated capacity of 2070 m3/d included in CofA #8316-6JSJJF.

Plant treated effluent volume of 570,319 m^3 was released in 2010.

Raw Sewage Quality

The annual average raw sewage CBOD concentration to the plant was 361 mg/L. This corresponds to an average CBOD loading of 543 kg/day. The average suspended solids loading was 328 mg/L or 493 kg/day. The annual raw sewage nitrogen levels as TKN were 31 mg/L or a loading of 47 kg/day. Phosphorous levels averaged 9 mg/L, which correspond to 13.5 kg/day.

Plant Performance & Effluent Quality

Detailed analytical data of annual and monthly averages are summarized later in the report under Exhibit 1.

The annual CBOD concentration was 3.2 mg/L with a removal efficiency of 99 %. The annual suspended solids concentration was 6 mg/L with a removal efficiency of 98.2 %. The annual average TKN concentration was 1.53 mg/L with removal efficiency of 95 %. The annual total phosphorous level was 0.07 mg/L, which represents a removal efficiency of 99.2 %.

For compliance purposes, annual average concentrations are based only on data from the effluent discharge period, while raw sewage flows for the entire year are used to assess loading and hydraulic capacity.

All pH is measured in the Effluent by the operator a minimum of weekly during discharge and there was no single sample outside our range of 6-9.5 for 2010. The Tavistock Lagoon System was operating within its discharge criteria for 2010.

Bypassing and Abnormal Conditions

There were no spills or bypasses of the wastewater lagoons in 2010.

Maintenance and Calibration Activities

Regularly scheduled maintenance of the lagoon equipment is conducted by the operating and maintenance staff of the Woodstock WWTP. Detailed maintenance records are kept on file at the Woodstock Plant.

R & R Instrumentation calibrated all flow measuring equipment.

Summary and Recommendations

The Tavistock Wastewater Treatment Plant performed within its discharge criteria in 2010.

Construction began in the fall of 2010 of the Tavistock Lagoon upgrade it is anticipated to be complete by the fall of 2011.

MISCELLANEOUS

As part of a collection system upgrade in Tavistock a new sewage lift station is under construction adjacent to the lagoon site that will provide relief to the existing pump stations by directing wastewater to this new location.

EXHIBIT 1

Tavistock Influent Data 2010

		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL	AVE.	Criteria	Special Permit #8316-6JSJJF July-Oct.
Total Influent	1000 m3	44.88	36.11	53.60	49.28	45.65	48.01	44.71	43.56	46.66	46.73	42.70	47.11	**549.01**	**45.751**		
Average Influent	1000 m3/d	1.45	1.29	1.73	1.64	1.47	1.60	1.44	1.41	1.56	1.51	1.42	1.52		**1.503**	**2.070**	
Max Raw	1000 m3/d	1.91	1.47	3.21	3.33	1.84	2.43	1.88	1.83	2.54	2.09	2.18	2.83		**2.296**		
Min Raw	1000 m3/d	1.13	1.00	1.16	1.13	0.98	1.01	1.00	1.00	1.10	1.16	1.01	1.02		**1.058**		
Cheese Total	1000 m3	15.09	11.20	13.37	13.61	14.52	16.24	16.27	16.8	14.83	13.23	15.91	16.11	**177.20**	**14.77**		
Cheese Average	1000 m3/d	0.49	0.36	0.43	0.44	0.47	0.54	0.52	0.54	0.48	0.43	0.53	0.52		**0.48**		
Cheese Max	1000 m3/d	0.79	0.61	0.60	0.64	0.67	0.83	0.84	0.81	0.74	0.67	1.00	0.92		**0.76**		
Cheese Min	10070m3/d	0.17	0.16	0.17	0.00	0.15	0.19	0.21	0.19	0.00	0.18	0.163	0.09		**0.14**		
Effluent Total	1000 m3	72.51	36.11		15.00				43.18	73.43	101.23	119.00	109.86	**570.319**	**71.29**		46.5-108
Effluent Average	1000 m3/d	5.18	1.29		7.50				6.17	5.65	3.62	8.50	3.54		**5.18**		
Effluent Max	1000 m3/d	7.86	1.47		8.00				8.55	9.22	5.03	9.70	7.72		**7.19**		
Effluent Min	1000 m3/d	2.64	2.40		7.01				1.11	0.03	0.00	6.20	0.13		**2.44**		

Tavistock Cheese Influent

BOD	mg/L	1017	1025	1006.5	842	833.75	666	602	755	789	770.50	982.5	1167.25		**871**	
SS	mg/L	320	217	302	267	245.50	229	180	249	281	299.50	275.75	363.5		**269**	
AMMONIA	mg/L	9.4	10.1	10.525	16.10	16.88	11.6	15.3	19.6	12.15	14.73	10.975	15.15		**14**	
TKN	mg/L	61	68.1	56.625	71.10	58.23	50.98	47.8	54.8	51.425	56.70	69.9	76		**60**	
NITRITE	mg/L	3.6	2.49	1.50	6.61	1.77	1.130	0.108	6.83	0.2	0.06	4.4575	6.525		**3**	
NITRATE	mg/L	36.2	32.7	34.25	0.05	10.2125	0.05	0.05	0.05	0.05	0.05	23.2875	24.345		**13**	
TOTAL P.	mg/L	30	27.1	27.325	26.43	26.53	17.88	16.4	18.8	18.05	21.40	27.625	28.2		**24**	
pH	Cheese	8.70	7.83	8.40	6.53	6.76	7.17	7.18	7.17	6.83	6.86	7.88	8.34		**7.47**	

Tavistock Lagoon Influent

CBOD	mg/ L	314	598	252	342	344	282	348	336	333	280	481	418		**360.63**	
BOD	mg/ L	156	540	327	312	380	355	307	381	335	327	487	431		**361.40**	
SS	mg/ L	284.5	402	253	277	337	356	301	384	293	362	386	296		**327.5**	
AMMONIA	mg/ L	13.3	18	17	17	20	20	19	19	13	18	18	19		**18**	
TKN	mg/L	30.3	47.3	24.2	24.1	32.6	26	24.4	35.2	21.7	35.4	36.2	30.2		**30.6**	
NITRITE	mg/L	0.4	0.2	0.1	0.1	0.1	3.5	0.1	0.1	0.2	0.1	0.1	0.1		**0**	
NITRATE	mg/L	6.0	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		**1**	
TOTAL P.	mg/L	8.8	12	7	9	10	10	7	8	6	10	12	5		**9**	
pH	Influent	7.32	7.33	6.96	6.97	6.48	6.77	7.12	7.06	7.02	7.40	7.26	8		**7.11**	
Temperature (celcius)		11.8	10.6	10.9	14.5	19.1	20.7	23.6	22.7	19.6	18.5	14.9	11.4		**16.5**	

Tavistock Lagoon Effluent

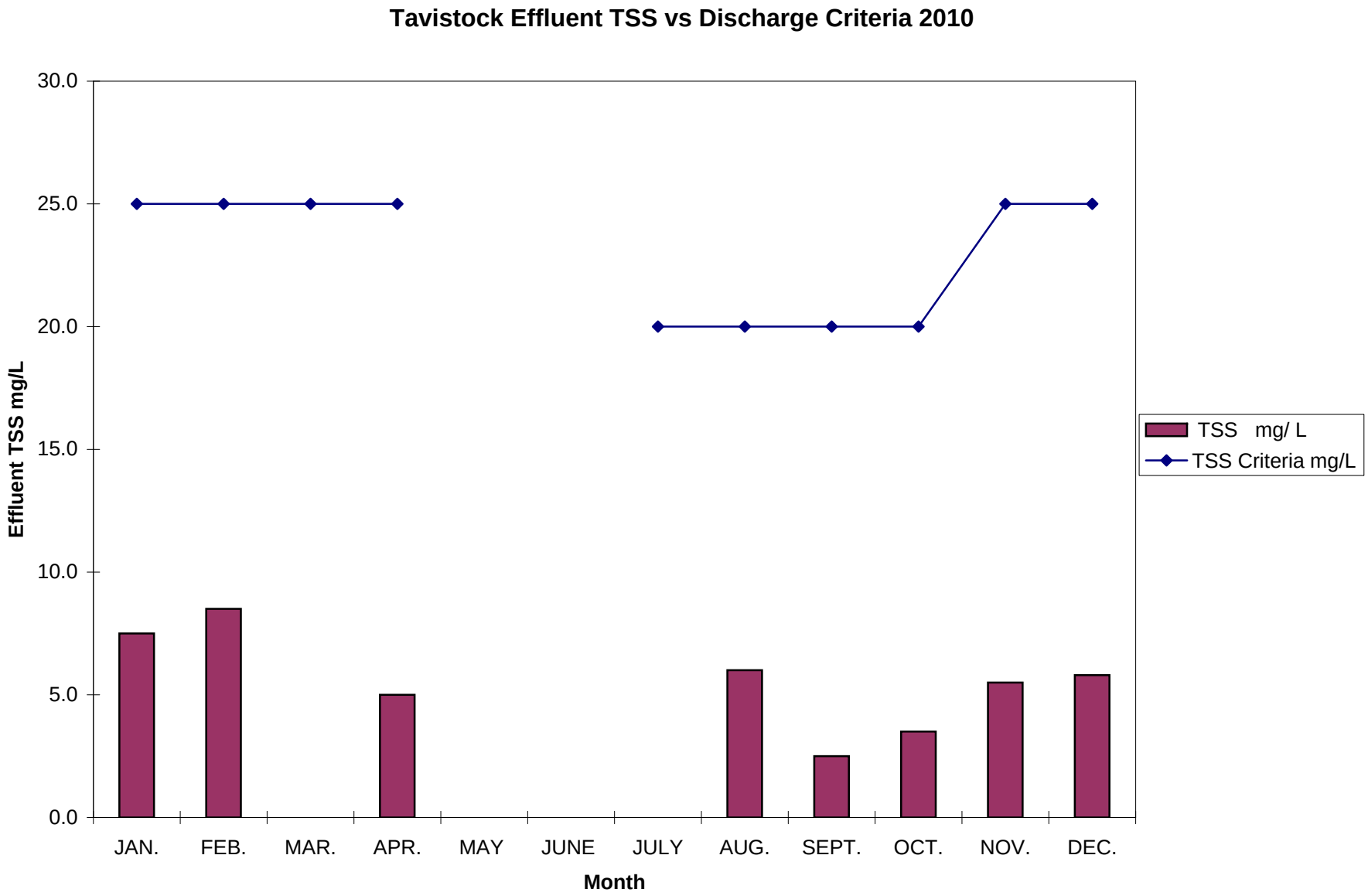
														TOTAL	AVE.	Criteria	Special Permit July-Oct.
CBOD	mg/ L	3.5	6		2				2.5	2.0	2.3	5.0	2.6		**3.24**	**25**	10
BOD	mg/ L	4.5	6.0		2.00				3.0	2.0	2.8	2.5	2.4		**3.15**		
TSS	mg/ L	7.5	8.5		5				6.0	2.5	3.5	5.5	5.8		**6**	**25**	20
AMMONIA	mg/ L	1.70	2.40		0.8				0.1	0.1	0.10	0.10	0.38		**0.71**	**2.0-8.6**	2
TKN	mg/L	2.8	3.5		1.8				0.9	0.8	0.6	0.6	1.28		**1.53**		
NITRITE	mg/L	0.1	0.1		0.1				0.1	0.1	0.1	0.1	0.1		**0.1**		
NITRATE	mg/L	1.6	1.7		1.6				0.2	0.3	0.2	0.2	0.4		**0.8**		
TOTAL P.	mg/L	0.07	0.10		0.18				0.03	0.06	0.03	0.05	0.05		**0.07**	**1.00**	0.5
pH		7.56	7.50		7.70				8.40	8.03	7.95	8.35	8.27		**7.97**		
E. Coli		39	11						39	25	15	3	16		**21**		200
Temp.	Celcius	4.62	3.00		10.70				21.70	18.00	12.65	7.12	3.92		**10.21**		
D.O.	mg/L	7.3	7.2		7.3				13.4	7.8	7.9	8.5	8.3		**8.5**	**(4.0)**	
Un-ion'd Ammonia	mg/L	0.00475	0.0071		0.0032				0.01	0.00	0.00	0.0026	0.00572		**0.005**		0.1

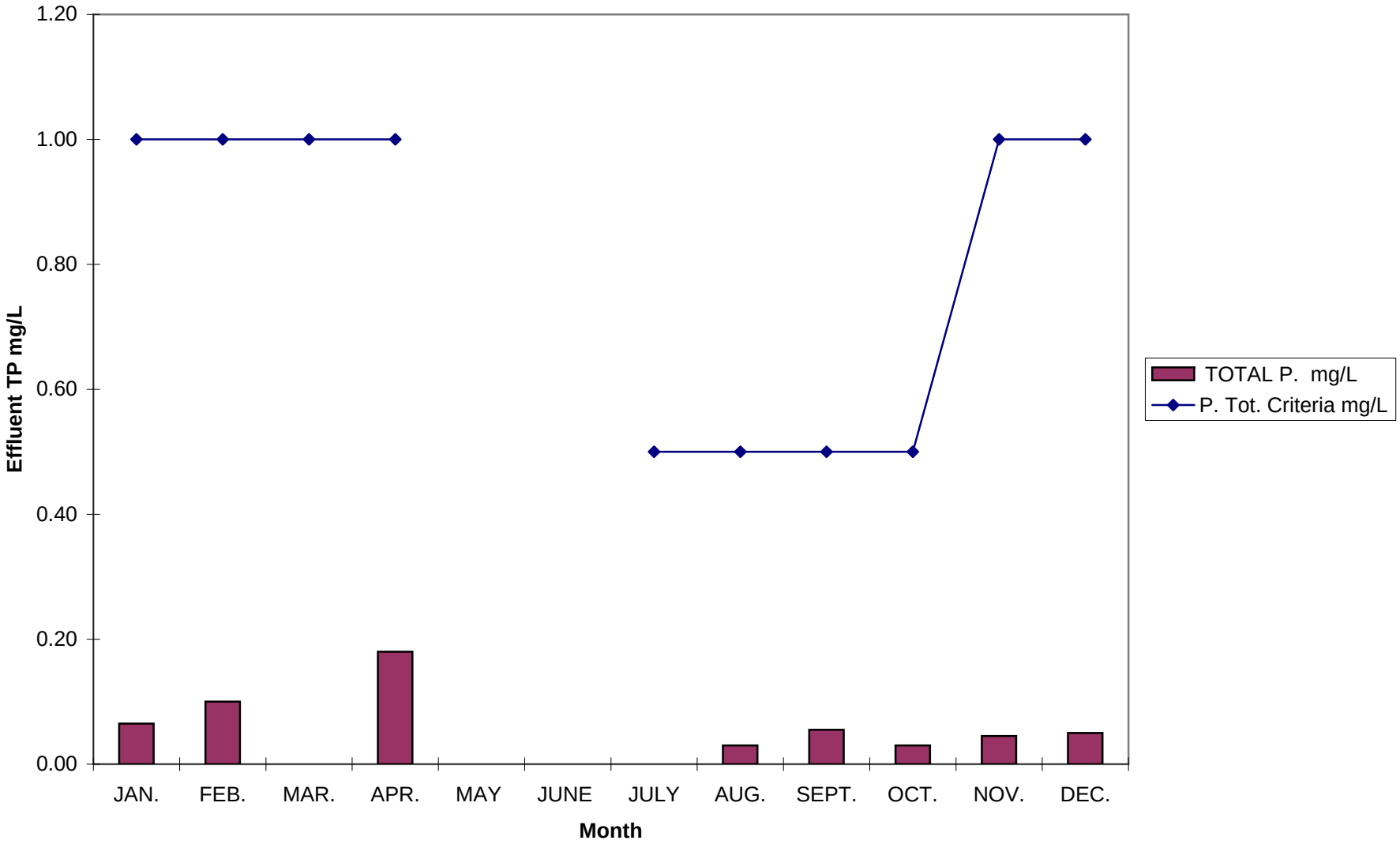
Criteria per Month

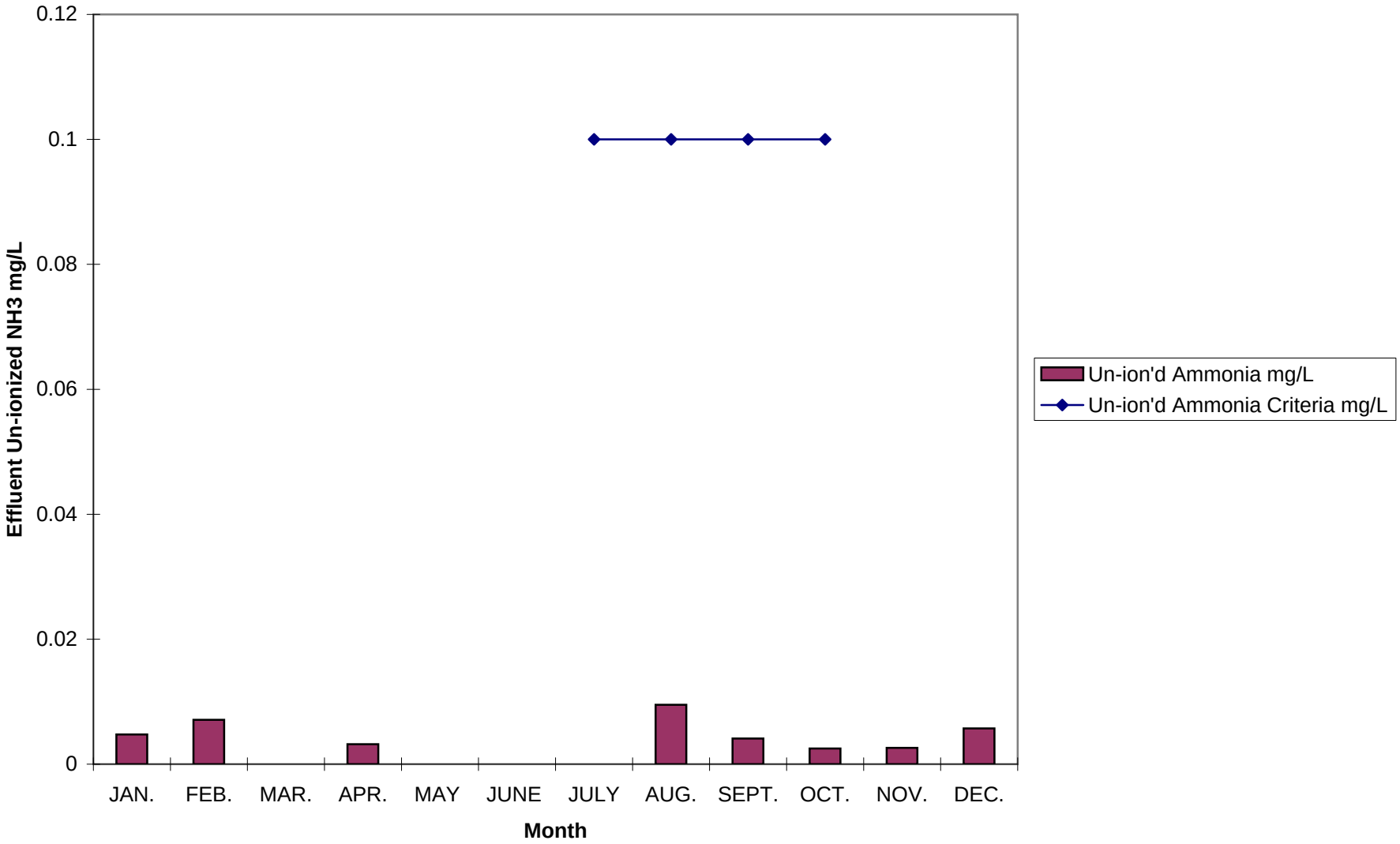
		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
CBOD Criteria	mg/ L	25	25	25	25			10	10	10	10	25	25
TSS Criteria	mg/L	25	25	25	25			20	20	20	20	25	25
P. Tot. Criteria	mg/L	1	1	1	1			0.5	0.5	0.5	0.5	1	1
NH3-N Criteria	mg/L	8.6	8.6	4.5	2			2	2	2	2	2.3	6.8
DO	mg/L	4	4	4	4							4	4
Influent Flow Design	1000m3/d	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07
Un-ion'd Ammonia Criteria	mg/L							0.1	0.1	0.1	0.1		
E.Coli Criteria	#/100 ml							200	200	200	200		
Effluent Flow	1000m3/d							46.5	46.5	75	108		
CBOD	mg/L	25	25	25	25	25	25	25	25	25	25	25	25

Tavistock Influent Loading kg/d 2009

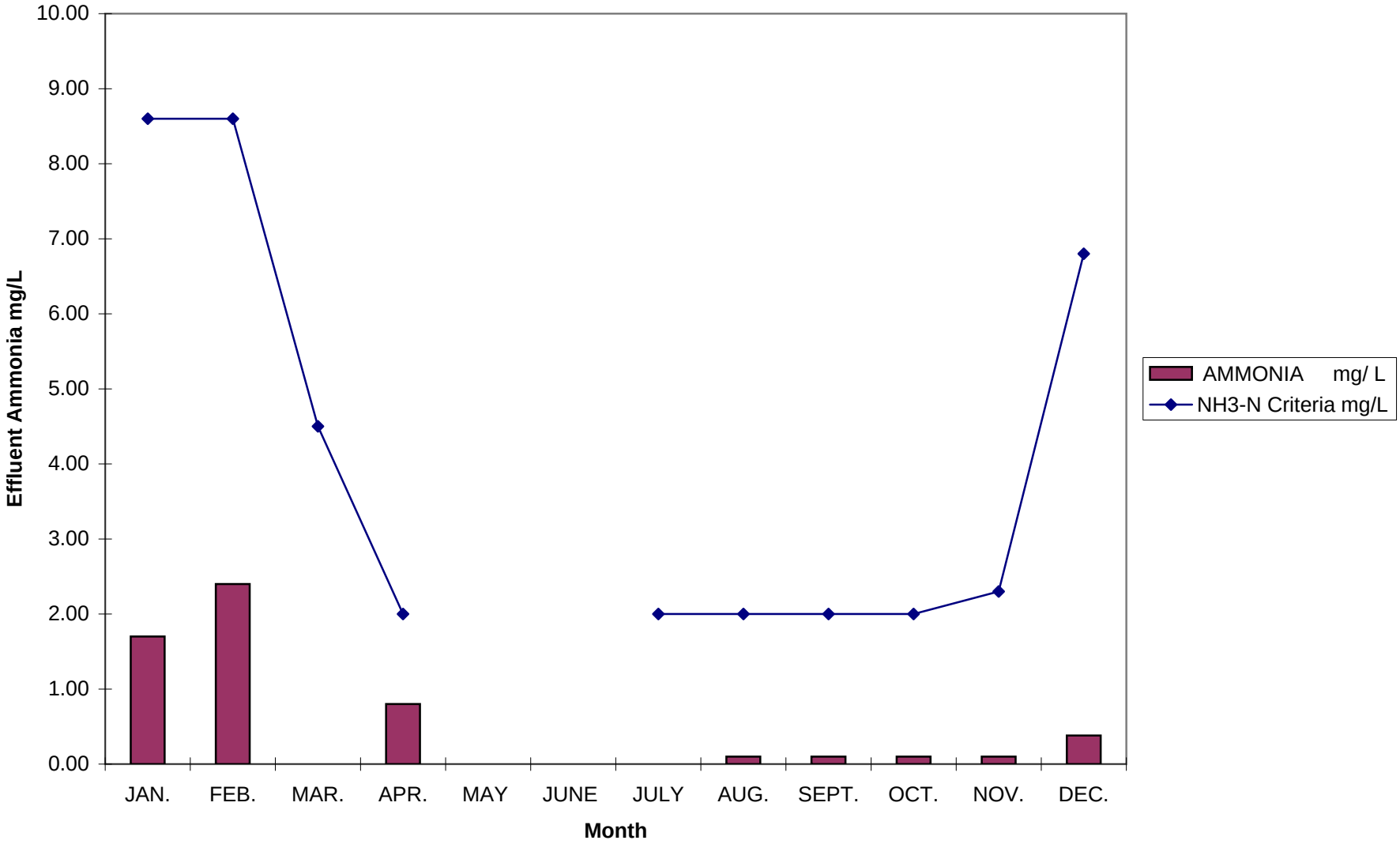
		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.		**AVE.**
BOD Loading	kg/d	226	696	566	512	559	568	443	537	521	493	693	655		**539**
TSS Loading	kg/d	412	518	438	455	496	570	434	541	456	545	549	450		**489**
Cheese BOD Loading	kg/d	495	369	434	370	391	361	316	410	378	329	521	607		**415**
Cheese TS Loading	kg/d	156	78	130	117	115	124	95	135	134	128	146	189		**129**
Cheese TKN Loading	kg/d	30	25	24	31	27	28	25	30	25	24	37	40		**29**
Cheese TP Loading	kg/d	15	10	12	12	12	10	9	10	9	9	15	15		**11**

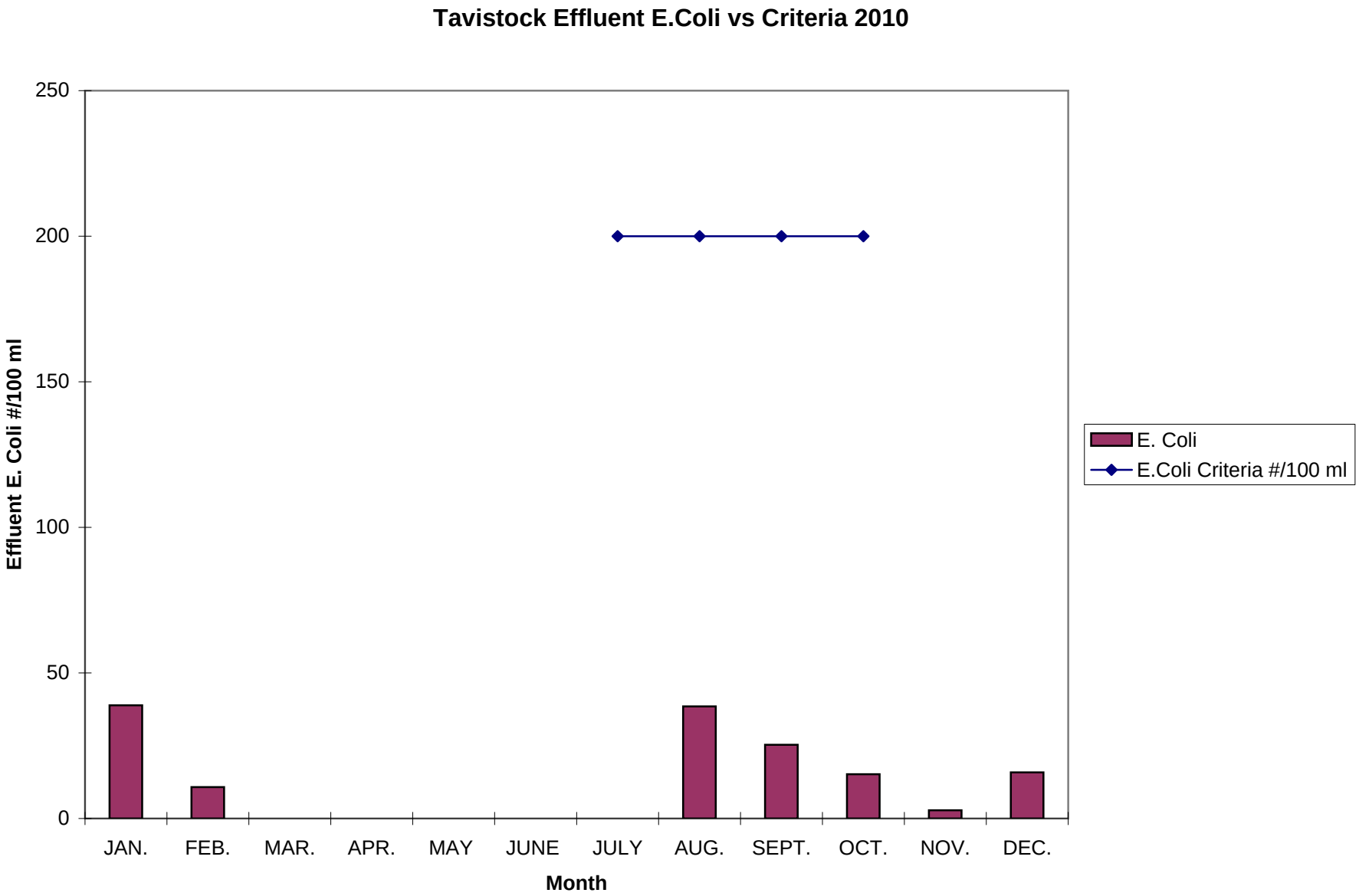

Tavistock Effluent TSS vs Discharge Criteria 2010
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Effluent TSS mg/L
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
Month
TSS mg/ L
TSS Criteria mg/L

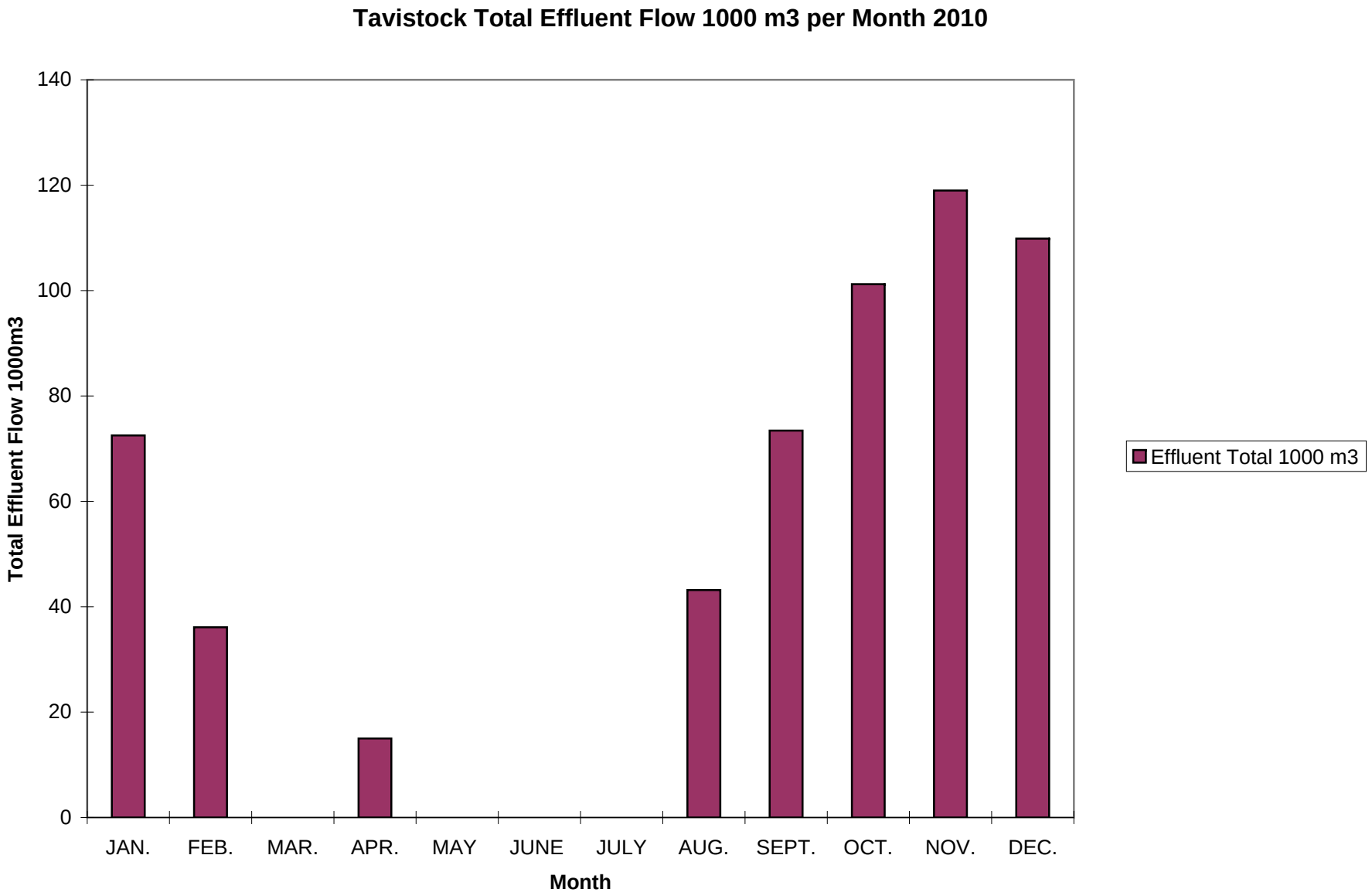

Tavistock Effluent TP vs Criteria 2010
1.20
1.00
0.80
0.60
0.40
0.20
0.00
Effluent TP mg/L
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
Month
TOTAL P. mg/L
P. Tot. Criteria mg/L


Tavistock Effluent Un-ionized Ammonia vs Criteria 2010
0.12
0.1
0.08
0.06
0.04
0.02
0
Effluent Un-ionized NH3 mg/L
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
Month
Un-ion'd Ammonia mg/L
Un-ion'd Ammonia Criteria mg/L

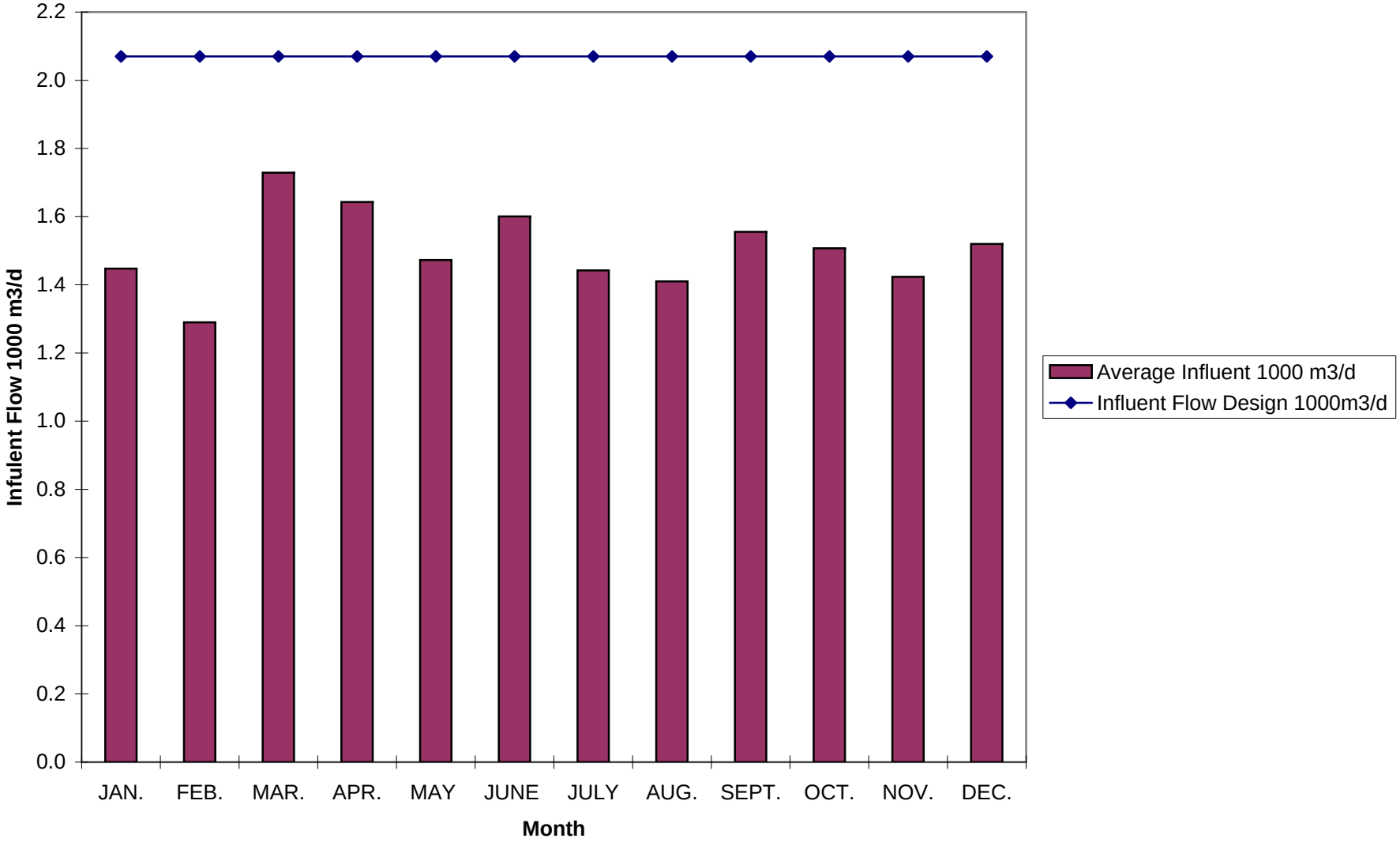
Tavistock Effluent Ammonia vs Criteria 2010

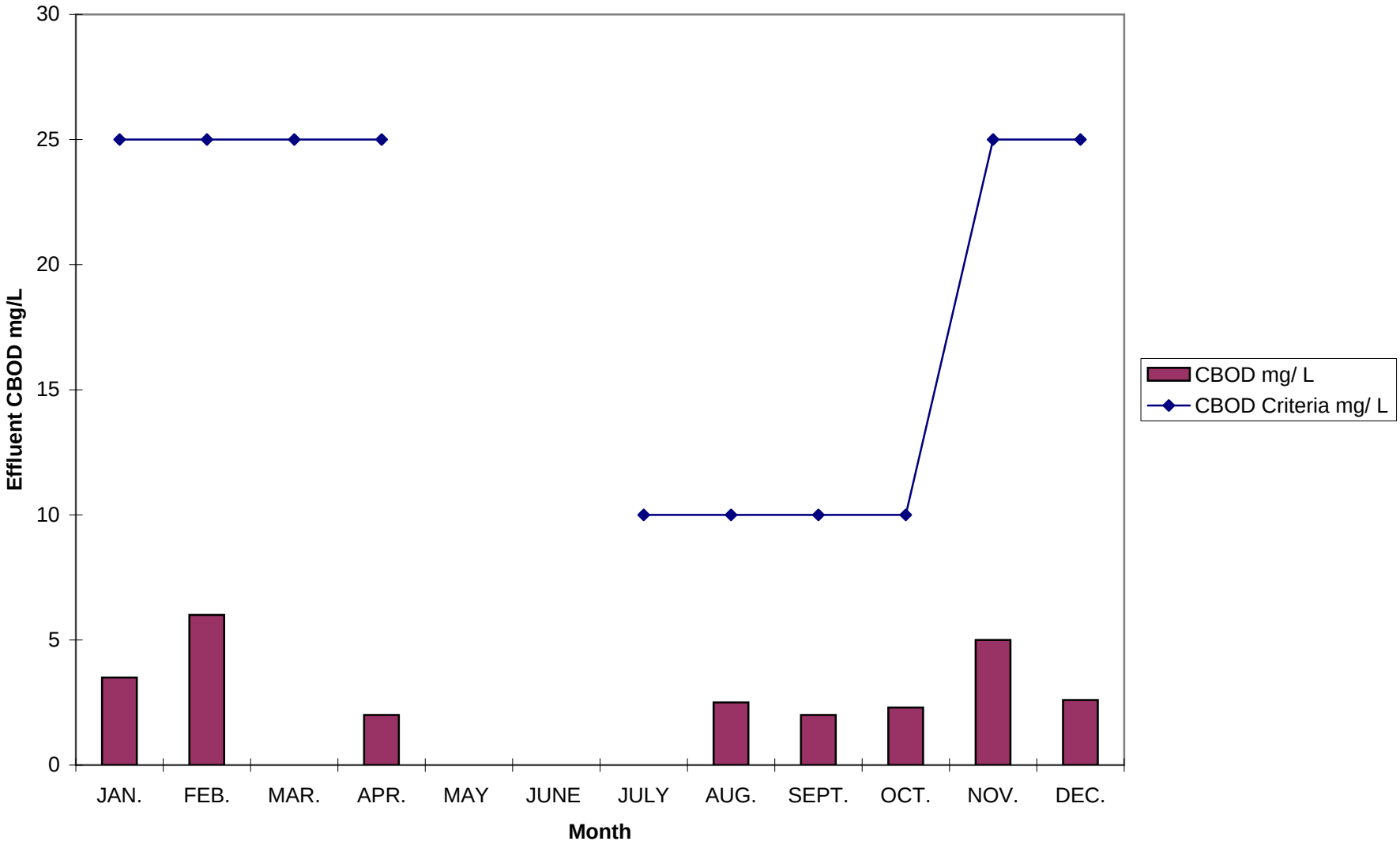


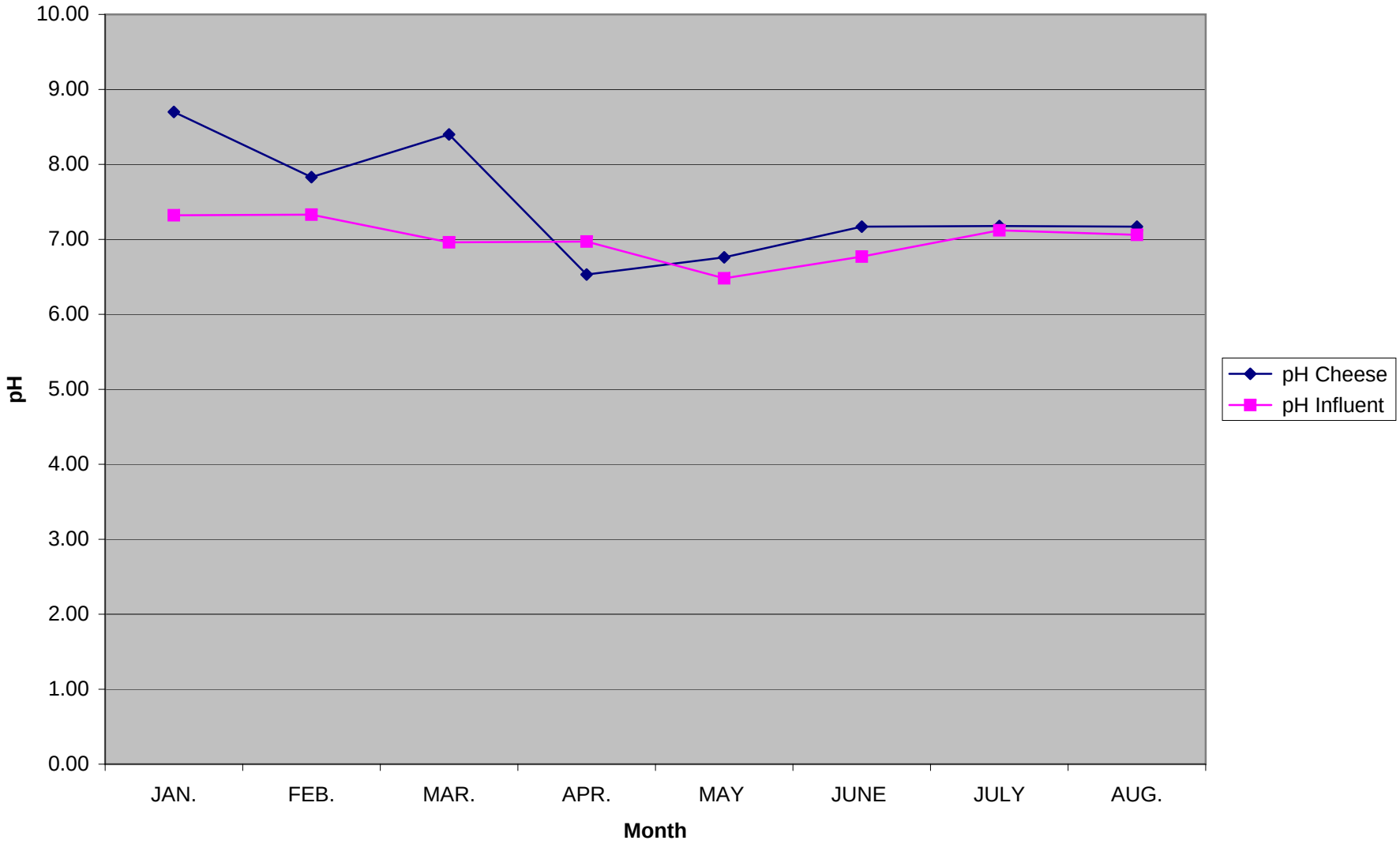

Tavistock Effluent E.Coli vs Criteria 2010
250
200
150
100
50
0
Effluent E. Coli #/100 ml
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
Month
E. Coli
E.Coli Criteria #/100 ml


Tavistock Total Effluent Flow 1000 m3 per Month 2010
Total Effluent Flow 1000m3
140
120
100
80
60
40
20
0
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
Month
Effluent Total 1000 m3

Tavistock Lagoons Monthly Average Daily Influent Flow 1000 m3/d vs Criteria 2010




Tavistock Lagoons Effluent CBOD mg/L vs Criteria 2010
Effluent CBOD mg/L
30
25
20
15
10
5
0
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
Month
CBOD mg/ L
CBOD Criteria mg/ L


Cheese Plant pH vs Lagoon Influent pH 2010
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
pH
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
Month
pH Cheese
pH Influent

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,
N6E 1L3

Dear Sir:

RE: Year-End Report for Plattsville Lagoons 2010
(CofA # 3133-7QWH4N)

This year-end report is prepared as required under CofA # 3133-7QWH4N.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT
Project Engineer, Oxford County

Overview

The Plattsville Lagoon System provided effective wastewater treatment in 2010 and all effluent concentration limits as specified by MOE CofA # 3133-7QWH4N were met on an annual basis. The annual average daily flow rate is 432 m3/d; this represents 54 % of the rated capacity of 800 m3/d.

Project Description

The Plattsville Wastewater Treatment Lagoon was upgraded and substantially completed this year with operation of the facility commencing in May. Wastewater is treated at the lagoon, which includes two aerated cells and two conventional wastewater stabilization ponds. Phosphorus removal is accomplished through batch dosing of Aluminum Sulphate. It then enters a filter system designed for ammonia removal prior to discharge to the Nith River.

The County of Oxford operates the facility, utilizing the staff located at the Woodstock Wastewater Treatment Plant.

Plant Specifications

Facilities - Lagoons
Design Capacity - 800 m^3/day
Average Daily Flow - 432 m^3/day
Receiving Stream - Nith River
Plant Classification - WWT – I
Works Number - 110003022
MOE CofA # 3133 7QWH4N
Effluent Limits:
Monthly Average CBOD 10 mg/L
Monthly Average Suspended Solids 10 mg/L
Monthly Average Total Phosphorous 0.5 mg/L
Monthly Average Ammonia when Nith > 12 degrees Celsius 2 mg/L
Monthly Average Ammonia when Nith < 12 degrees Celsius 5 mg/L
E.Coli geometric mean 200 colonies per 100 ml

Effluent is discharged according to a discharge table (Table 3) within the Certificate of Approval.

Sampling Procedures

Sampling is done on a monthly basis of the raw influent wastewater and analyzed for BOD_5, TSS, TKN, TP and pH. Effluent discharge samples are gathered bi-weekly or monthly and at an interval to meet the % of draw down of the lagoon cell as stipulated in

the CofA during discharge periods and analyzed for $CBOD_5$, TSS, Total Ammonia Nitrogen, TP, E. Coli, temperature and pH.

Groundwater monitoring requires an annual sample be collected and tested for Total Organic Carbon, Total Phosphorus, Total Kjeldahl Nitrogen, Nitrite and Nitrate. Three samples were collected prior to start up of the works and one sample following at two locations referred to as shallow and deep well. The results are included in an attached Table.

Flows

The total flow treated in 2010 was 157,862 m^3. The average daily flow of 432 m^3/day was 54 % of the design capacity of 800 m^3/day.

Plant effluent can be discharged in accordance with Table 3 - Monthly Discharge Regime contained in the CofA. The total discharge for 2010 was 143,658 m3/d.

Raw Sewage Quality

The annual average raw sewage BOD_5 concentration to the plant was 118 mg/L. This corresponds to an average BOD_5 loading of 52 kg/day. The average suspended solids loading was 141 mg/L or 62 kg/day. The annual raw sewage nitrogen levels as TKN were 29.8 mg/L. Phosphorous levels averaged 3.9 mg/L, which correspond to 1.7 kg/day.

Plant Performance & Effluent Quality

Detailed analytical data of annual and monthly averages are summarized later in the report under Exhibit 1.

Over the reporting period, the annual average effluent CBOD concentration was 2 mg/L with a removal efficiency of 98.3 %. The annual suspended solids concentration was 2.2 mg/L with a removal efficiency of 98.6 %. The annual average ammonia nitrogen concentration was 0.13 mg/L with removal efficiency of 99.5 %. The annual total phosphorous level was 0.03 mg/L, which represents a removal efficiency of 99.2 %.

For compliance purposes, annual average concentrations are based only on data from the effluent discharge period, while raw sewage flows for the entire year are used to assess loading and hydraulic capacity.

Bypassing and Abnormal Conditions

There was no bypass of the treatment system at the Wastewater Lagoons to the Nith River.

Maintenance Activities

Regularly scheduled maintenance of the plant equipment including surface aerators is conducted by the operating and maintenance staff of the Woodstock WWTP. Detailed maintenance records are kept on file at the Woodstock WWTP.

Summary and Recommendations

Construction of an upgraded lagoon system including aeration system and an intermittent sand filter was completed in 2010.

EXHIBIT 1

Municipality: Plattsville
PROJECT:Plattsville Lagoons
Operator: County of Oxford
Works Number:
110003022

2010

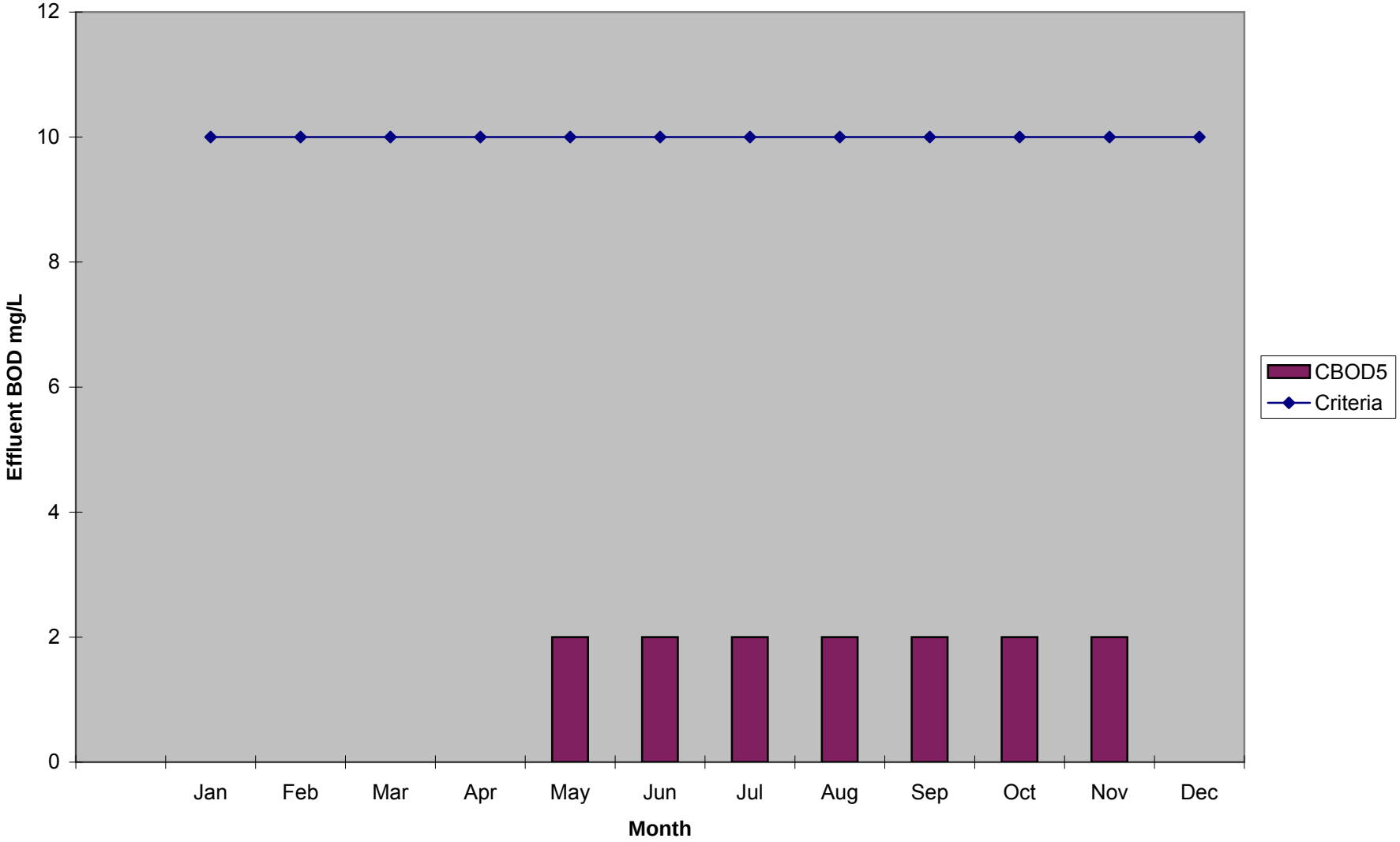
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average	Min	Max	Total	
Influent																		
Total Flow	1000m3	13.5	11.3	14.4	14.49	13.624	13.001	12.211	12.411	12.269	13.662	12.675	14.319				157.862	Criteria
Flow	1000m3/d	0.430	0.402	0.464	0.483	0.439	0.433	0.3939	0.400	0.409	0.441	0.423	0.462	0.432	0.394	0.483		0.8
Max Flow	1000m3/d	0.58	0.57	0.798	0.612	0.54	0.54	0.524	0.529	0.487	0.536	0.523	0.536	0.565	0.487	0.798		2.98
Min Flow	1000m3/d	0.400	0.2	0.400	0.408	0.342	0.339	0.336	0.264	0.348	0.36	0.334	0.326	0.338	0.200	0.408		
Influent																		
BOD5	(mg/L)	128	81	156	184	181	105	85	57	84	124	102	128	118	57	184		
SS	(mg/L)	144	120	156	222	155	141	112	72	107	114	116	228	141	72	228		
AMMONIA	(mg/L)	38.1	18.7	29.0	30.1	30.3	21.8	28.9	13.3	25.3	29.0	28.1	45.6	28.2	13.3	45.6		
TKN	(mg/L)	46.8	19.8	30.0	31.8	30.0	23.8	26.4	15.5	24.9	31.2	28.2	49.6	29.8	15.5	49.6		
NITRITE	(mg/L)	0.10	0.10	0.10	0.06	0.06	0.06	0.06	0.33	0.06	0.06	0.06	0.06	0.09	0.06	0.33		
NITRATE	(mg/L)	0.10	0.10	0.10	0.05	0.050	0.05	0.05	0.28	0.05	0.05	0.05	0.05	0.08	0.05	0.28		
TP	(mg/L)	4.5	3.5	5.0	6.1	3.08	3.6	4.0	1.8	3.0	2.9	3.2	5.9	3.9	1.8	6.1		
Temp	Celcius	10.1	5.0	9.4	11.9	14.308	18.2	19.2	19.9	18.7	16.4	13.4	11.9	14.03	5.00	19.90		
pH	pH	8.24	7.66	7.69	8.02	7.85	7.90	7.89	7.66	7.92	7.75	8.36	8.17	7.92	7.66	8.36		
Effluent																		
Total Flow	1000m3					19.568	27.487	15.872	10.038	8.5	28.2	34					143.658	
Flow	1000m3/d					1.957	1.099	0.588	0.590	0.502	0.911	1.130		0.968	0.502	1.957		
Criteria	1000 m3/d	0.0	0.0	0.0	2.920	2.170	1.447	0.727	0.727	0.727	0.964	1.472	0.0					

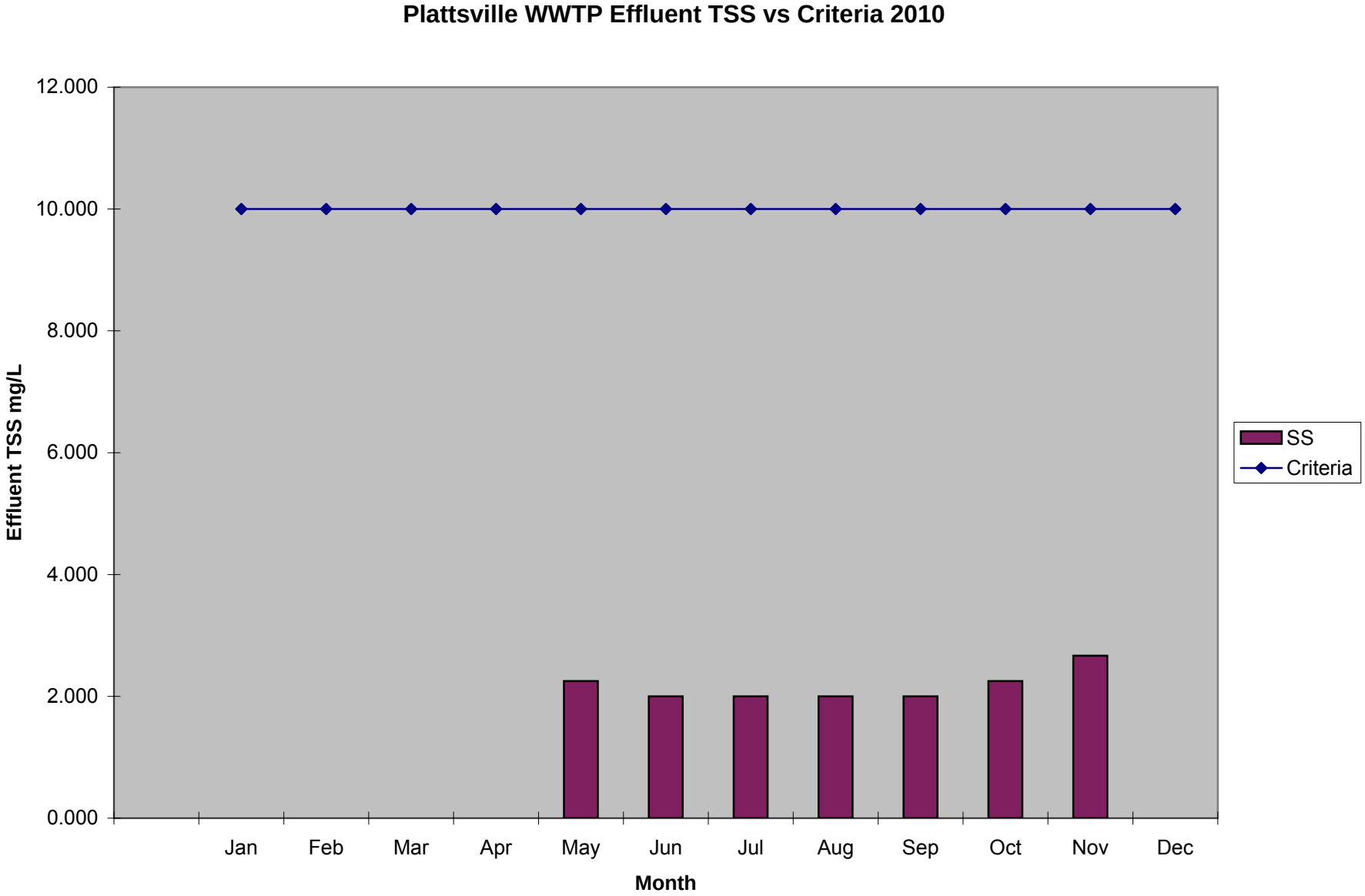
Plant Effluent		Annual Average	Min.	Max.	Compliance Criteria	
CBOD5	(mg/L)	2.0	2.0	2.0	Average*	≤ 10
SS	(mg/L)	2.2	2.0	2.7	Average**	≤ 10
Ammonia	(mg/L)	0.13	0.10	0.20	Average[1]	2 / 5
TKN	(mg/L)	0.62	0.50	0.90		
NITRITE	(mg/L)	0.06	0.06	0.06		
NITRATE	(mg/L)	0.94	0.28	1.61		
TP	(mg/L)	0.03	0.03	0.05	Average***	≤ 0.5
pH		7.75	7.60	8.00		
E. Coli		8	4	22	Geomean	200
Temp.		16.8	7.83	21.9		
D.O.	(mg/L)	9.1	7.96	11.5		

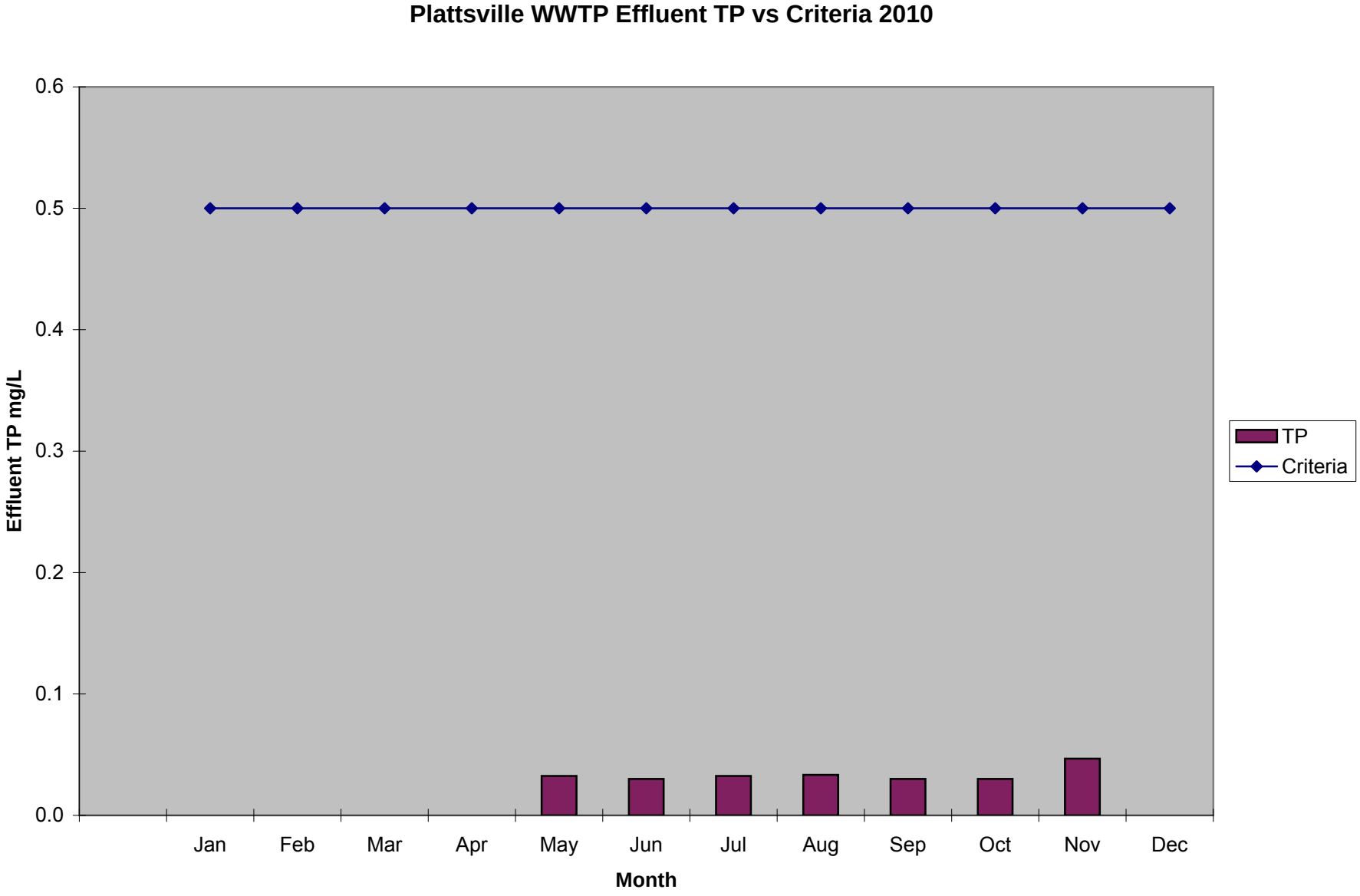
Influent Loadings **Month**	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average	Min	Max	Criteria
BOD5 kg/d	55.040	32.562	72	88.872	79.547	45.504	33.482	22.620	34.353	54.648	43.095	59.124	52	23	89	
TSS kg/d	61.920	48.240	72	107.23	68.120	61.105	44.117	28.83	43.759	50.241	49.010	105.314	62	29	107	
Effluent Loadings																
CBOD5 kg/d					4	2	1	1	1	2	2		2	1	4	
TSS kg/d					4	2	1	1	1	2	3		2	1	4	
TP kg/d					0.064	0.033	0.019	0.020	0.015	0.027	0.053		0.033	0.015	0.064	
Total Ammonia kg/d					0.342	0.110	0.059	0.059	0.050	0.091	0.226		0.134	0.050	0.342	
Criteria																
CBOD5 Criteria kg/d	0	0	0	29	22	14	7	7	7	10	15	0				
TSS Criteria kg/d	0	0	0	29	22	14	7	7	7	10	15	0				
TP Criteria kg/d	0	0	0	1.46	1.09	0.72	0.36	0.36	0.36	0.48	0.74	0				
Total Ammonia Criteria kg/d	0	0	0	15	4	3	1	1	1	2	3	0				

* MOE Criteria: CBOD5 Monthly Average not to exceed 10 mg/L
** MOE Criteria: TSS Monthly Average not to exceed 10 mg/L
[1] MOE Criteria: Ammonia Monthly Average changes when stream is > 12 or < 12 degrees celcius respectively
*** MOE Criteria: TP Monthly Average not to exceed 0.50 mg/L

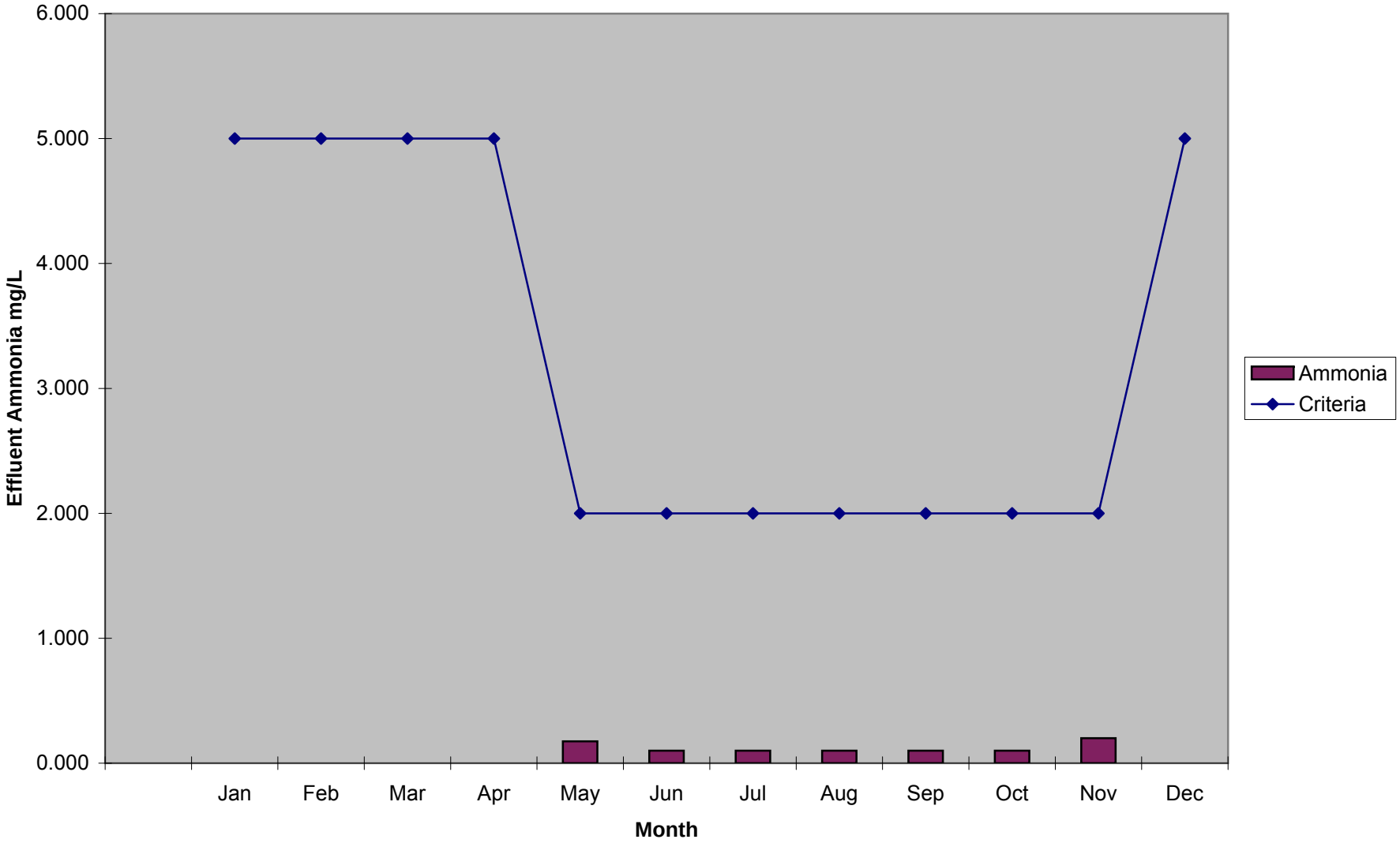
Plattsville WWTP Effluent CBOD5 vs Criteria 2010




Plattsville WWTP Effluent TSS vs Criteria 2010
12.000
10.000
8.000
6.000
4.000
2.000
0.000
Effluent TSS mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
SS
Criteria


Plattsville WWTP Effluent TP vs Criteria 2010
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Effluent TP mg/L
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
TP
Criteria

Plattsville WWTP Effluent Ammonia Discharge vs Criteria



Plattsville Wastewater Treatment Facility
Monitoring Well Chemistry (Lab Analyses)

Parameter	February 25, 2010	March 9, 2010	March 18, 2010	August 26, 2010
	Shallow - Raw, Decant	**Shallow** - Raw, Decant	**Shallow** - Raw, Decant	**Shallow** - Raw, Decant
TOC (mg/L)	1.2 , 1.3	1.5 , 1.2	1.2 , <1.0	1.7 , 1.6
Total P (mg/L)	0.06 , <0.03	<0.03 , <0.03	<0.03 , <0.03	0.06 , <0.03
TKN (mg/L N)	<0.5 , <0.5	<0.5 , <0.5	<0.5 , <0.5	<0.5 , <0.5
Ammonia/ium (mg/L N)	NA	<0.1 , <0.1	<0.1 , <0.1	<0.1 , <0.1
Nitrite (mg/L N)	<0.06 , <0.06	<0.06 , <0.06	<0.06 , <0.06	<0.06 , <0.06
Nitrate (mg/L N)	0.33 , 0.32	0.43 , 0.37	0.41 , 0.36	0.32 , 0.32
Nitrate+Nitrite (mg/L N)	0.33 , 0.32	0.43 , 0.37	0.41 , 0.36	0.32 , 0.32
	Deep - Raw, Decant	**Deep** - Raw, Decant	**Deep** - Raw, Decant	**Deep** - Raw, Decant
TOC (mg/L)	<1.0 , <1.0	<1.0 , <1.0	<1.0 , <1.0	<1.0 , <1.0
Total P (mg/L)	0.54 , <0.03	0.39, <0.03	0.37 , <0.03	0.66 , 0.06
TKN (mg/L N)	<0.5 , <0.5	<0.5 , <0.5	<0.5 , <0.5	<0.5 , <0.5
Ammonia/ium (mg/L N)	NA	<0.1 , <0.1	<0.1 , 0.1	<0.1 , 0.1
Nitrite (mg/L N)	<0.06 , <0.06	<0.06 , <0.06	<0.06 , <0.06	<0.06 , <0.06
Nitrate (mg/L N)	<0.05 , <0.05	<0.05 , <0.05	<0.05 , <0.05	<0.05 , <0.05
Nitrate+Nitrite (mg/L N)	<0.06 , <0.06	<0.06 , <0.06	<0.06 , <0.06	<0.06 , <0.06

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,
N6E 1L3

Dear Sir:

RE: Year-End Report Drumbo SBR 2010
(Certificate of Approval #3-2191-90-916)

This year-end report is prepared as required by the certificate of approval #3-2191-90-916.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT,
Project Engineer, Oxford County

Overview

The Drumbo Wastewater Treatment Plant is a Sequencing Batch Reactor (SBR) that provided effective wastewater treatment in 2010 with an average flow for the plant of 244 m^3/d which represents 89.7 % of the design capacity of 272 m^3/d. The total flow for 2010 was 89,177 m^3.

Project Description

The Drumbo Wastewater Treatment Plant began operation in its present configuration in 1992. The facility is an SBR plant consisting of two alternating reactors, pressure filters and ultra-violet radiation for disinfection, with an outfall pipe to the Cowan Drain. The facility adds aluminum sulphate into the reactors for phosphate control.
The County of Oxford operates the facility, utilizing the staff located at the Woodstock Wastewater Treatment Plant.

Plant Specifications

Facility - Sequencing Batch Reactor
Design Capacity - 272 m^3 / day
Peak Capacity - 774 m^3 / day
Average Daily Flow - 244 m^3 / day
Receiving Area - Cowan Drain
Classification - WWT – II
Certificate(s) of Approval 3-2191-90-916
8-1158-92-006

Effluent Requirements:	Ave. Monthly Concentration	Average Loading
BOD_5 (Period A)	10 mg/L	2.8 kg/day
BOD_5 (Period B)	15 mg/L	4.0 kg/day
Suspended Solids (Period A)	10 mg/L	2.8 kg/day
Suspended Solids (Period B)	15 mg/L	4.0 kg/day
Total Phosphorus (Period A)	0.5 mg/L	0.14 kg/day
Total Phosphorus (Period B)	1.0 mg/L	0.27 kg/day
Total Ammonia (Period A)	3.0 mg/L	0.8 kg/day
Total Ammonia (Period B)	5.0 mg/L	1.36 kg/day
Total Chlorine Residual	0.01 mg/L	

Note:

Period A refers to the time that the receiving stream temperature exceeds 5^{o} C.

Period B refers to the time that the receiving stream temperature is less than or equal to 5^{o} C.

The geometric mean density of E Coli in the effluent shall not exceed 200 per 100 ml for any calendar month.

The average monthly concentration of dissolved oxygen in the effluent shall not be less than 5.0 mg/L.

Sampling Procedure

Influent samples are taken using a composite sampler on a bi-weekly basis from the transfer tank; this tank receives flow from the trash tank, which holds most of the daily flow.

Effluent samples are taken bi-weekly using a composite sampler installed so as to sample during periods of flow from either of two reactors.

Samples are taken on site and tested for pH, chlorine residual, dissolved oxygen and temperature.

Laboratory analysis is performed by SGS Lakefield Research Ltd. on all samples that are reported for compliance except for pH, D.O., chlorine residual, and temperature.

Flows

The total flow treated in 2010 was 89,177 m^3. The daily average flow was 244 m^3/day which represents 89.7 % of the design flow for Drumbo of 272 m^3 /day.

Raw Sewage Quality

The annual average raw sewage BOD_5 concentration to the plant was 126 mg/L and an average loading of 31 kg/day. The average suspended solids concentration was 82 mg/L or 20 kg/day of loading. Average nitrogen levels, as TKN were 30 mg/L or a loading of 7 kg/day. Total phosphorus was 4 mg/L, which represents a loading of 1 kg/day.

Plant Performance & Effluent

Detailed analytical data of annual and monthly averages are summarized later in this report in Exhibit 1.

Over the reporting period, the annual average effluent BOD_5 concentration was 4.3 mg/L or an equivalent 96.6 % reduction. The suspended solids average was 4.3 mg/L, which represents a 94.8 % reduction. Ammonia averaged 0.6 mg/L or a 97.8 % reduction. Total effluent phosphorus average concentration was 0.17 mg/L, which results in a 95.75 % reduction.

Bypassing, Upset and Abnormal Conditions

There were no spills from the Drumbo SBR in 2010.

Maintenance

The operating and maintenance staff from the Woodstock WWTP conduct regular scheduled maintenance of the plant equipment. Detailed maintenance records for each piece of equipment are kept on site at the Woodstock Plant.

Summary and Recommendations

The Drumbo Wastewater Treatment Plant was operating within its design and discharge criteria for 2010.

BIOSOLIDS REPORT 2010

Discussion:

The biosolids are a combination of waste activated sludge and primary sludge which is drawn from the Trash tank which is the first tank the raw sewage enters before siphoning into the transfer tank that loads the reactors. The tank is designed to allow the settling and collection of solids for removal by truck.

The removal is accomplished by the County Of Oxford sewage truck with a useful volume of approximately 13 m^3 (2800 Igals) as permitted under a Waste Management System certificate number A800939 or is accomplished by a contracted certified waste hauler as needed.

The biosolids are then transported to the Woodstock Wastewater Treatment Plant for final disposal.

The total volume was 1529 m^3. Please find the volumes transported summarized in the following table.

SUMMARY OF ALL BISOLIDS REMOVAL

DATE	BIOSOLIDS QUANTITY(m^3)
JAN. 10	140
FEB 10	115
MARCH 10	153
APRIL 10	115
MAY 10	89
JUNE 10	127
JULY 10	102
AUG. 10	115
SEPT. 10	153
OCT. 10	191
NOV. 10	155
DEC. 10	76
Total Annual	1529

Exhibit 1

DRUMBO RAW INFLUENT 2010

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Ave.	Criteria
Volume	m3	7096	5693	8106	8207	7011	7513	7738	7172	6866	8229	7705	7841	**89,177**	**7431**	
Average	m3/d	229	203	261	274	226	250	250	231	229	265	257	253		**244**	**272**
Min	m3/d	199	174	178	223	203	217	197	200	214	234	216	205		**205**	
Max	m3/d	250	228	386	375	249	303	319	267	253	310	337	380		**305**	
BOD_5	mg/L	116	142	104	92	136	169	119	114	139	123	126	133		**126**	
CBOD	mg/L	114	113	108	81	149	164	85	79	103	91	95	135		**110**	
TSS	mg/L	89	76	114	68	103	111	77	62	61	81	71	69		**82**	
Total Phosphorus	mg/L	4.5	3.8	3.8	3.9	4.5	4.2	3.5	3.4	3.7	3.8	3.2	3.0		**4**	
ALKALINITY	mg/L	410.5	406.5	397.6	395.0	391.0	378.0	367.5	400.0	371.7	386.5	364.0	402.0		**389**	
TKN	mg/L	34.55	36.40	28.90	28.05	32.15	25.90	25.10	28.10	32.10	30.85	22.30	32.75		**30**	
AMMONIA	mg/L	32.90	29.95	25.40	28.70	30.40	25.30	24.70	26.40	27.77	27.75	22.00	26.10		**27**	
NITRATE	mg/L	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05		**0**	
NITRITE	mg/L	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.06		**0**	
pH		7.83	7.76	7.79	7.77	7.60	7.77	7.67	7.56	7.70	7.89	7.81	7.83		**8**	
Temp		7.5	5.5	6.3	7.0	12.0	14.5	20.5	13.0	16.7	11.0	9.5	4.5		**11**	

DRUMBO FINAL EFFLUENT 2010

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		**Ave**	**Criteria A**	**Criteria B**
BOD_5	mg/L	5.0	5.0	2.0	2	5.5	5.0	3	3	4.7	2.5	3	10.5		**4.3**	**10**	**15**
CBOD	mg/L	2.0	3.5	2	3	2	3	3	2	2.0	2.0	2.0	4.5		**2.6**		
TSS	mg/L	4.5	4.0	4	2.5	2.5	5	4.5	5.5	3.3	4.5	3.5	8.0		**4.3**	**10**	**15**
Total P	mg/L	0.19	0.17	0.12	0.10	0.17	0.18	0.25	0.20	0.17	0.15	0.130	0.17		**0.17**	**0.5**	**1**
ALKALINITY	mg/L	194	188	197	197	213	214	192	210	189	198	184	212		**199**		
TKN	mg/L	2.00	2.10	0.97	0.65	1.20	0.70	0.75	0.65	1.67	0.50	0.65	2.70		**1.21**		
AMMONIA	mg/L	1.650	1.150	0.300	0.300	0.850	0.450	0.100	0.200	0.433	0.500	0.150	1.350		**0.619**	**3**	**5**
NITRATE	mg/L	14.9	17.0	17.5	16.6	11.2	9.3	15.9	13.7	14.5	14.7	14.9	8.9		**14.1**		
NITRITE	mg/L	4.36	3.31	0.24	0.16	0.30	0.60	0.08	0.17	0.09	0.48	1.72	6.6		**1.51**		
PH	mg/L	7.82	7.96	7.91	7.95	8.09	8.15	8.20	8.14	8.15	8.21	8.05	8.16		**8.06**		
Dissolved Phosphorus	mg/L	0.10	0.07	0.06	0.05	0.07	0.07	0.10	0.11	0.10	0.12	0.07	0.06		**0.08**		
Dissolved Oxygen	mg/L	8.2	8.9	8.8	8.5	7.3	7.9	8.0	7.8	8.2	8.3	8.7	9.2		**8.3**	**Min= 5**	**Min= 5**
E.Coli	#/100 ml	6	19	42	8	11	17	2	2	5	2	3	2		**10.0**	**200**	**200**

Compliance criteria are based on Periods A and B, where Period A refers to the time that the receiving stream exceeds 5 degrees C. and Period B refers to the time that the receiving stream is less than or equal to 5 degrees C, as measured by operating staff.

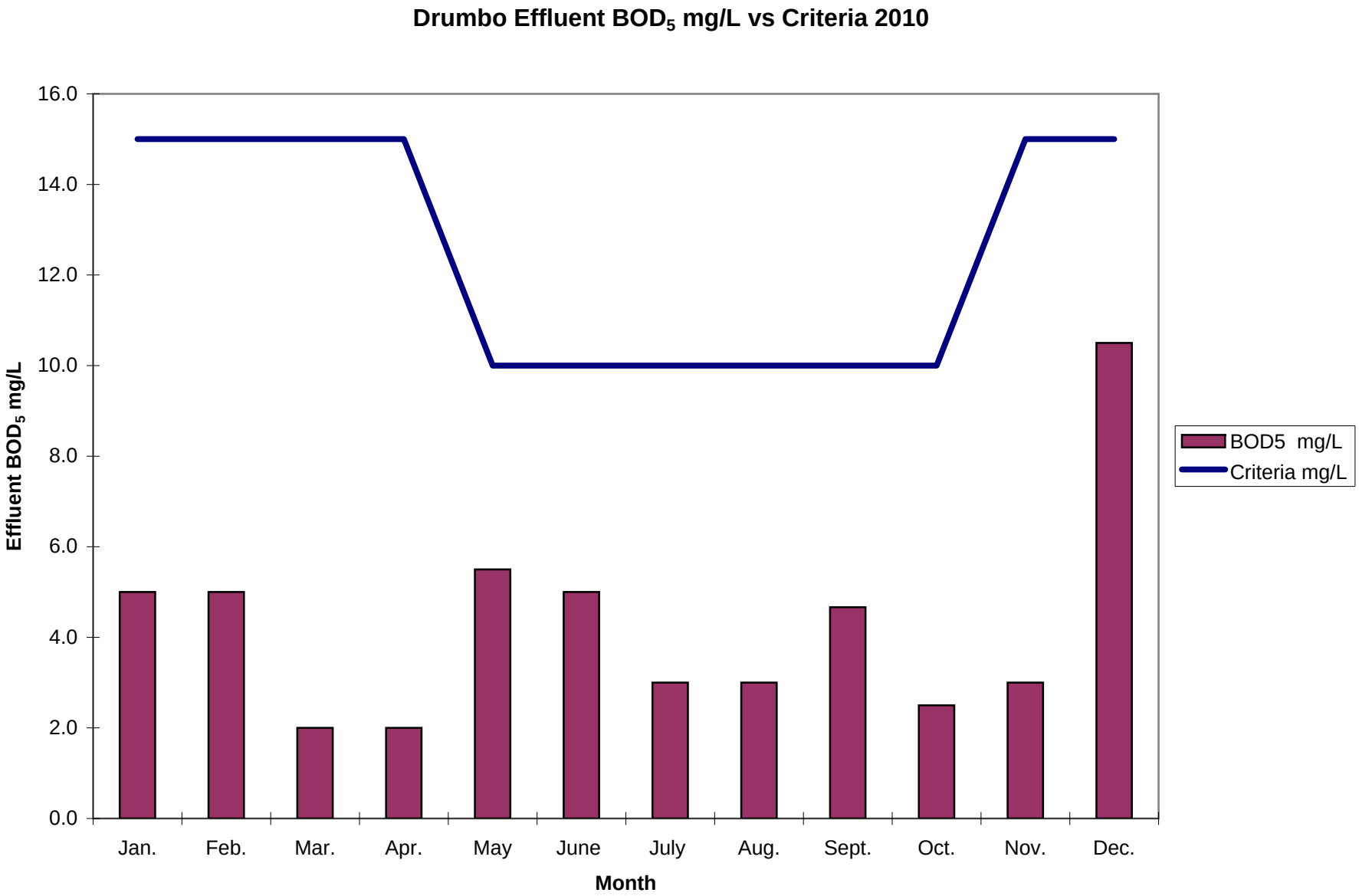
Drumbo SBR Effluent Discharge Loading kg/d 2010

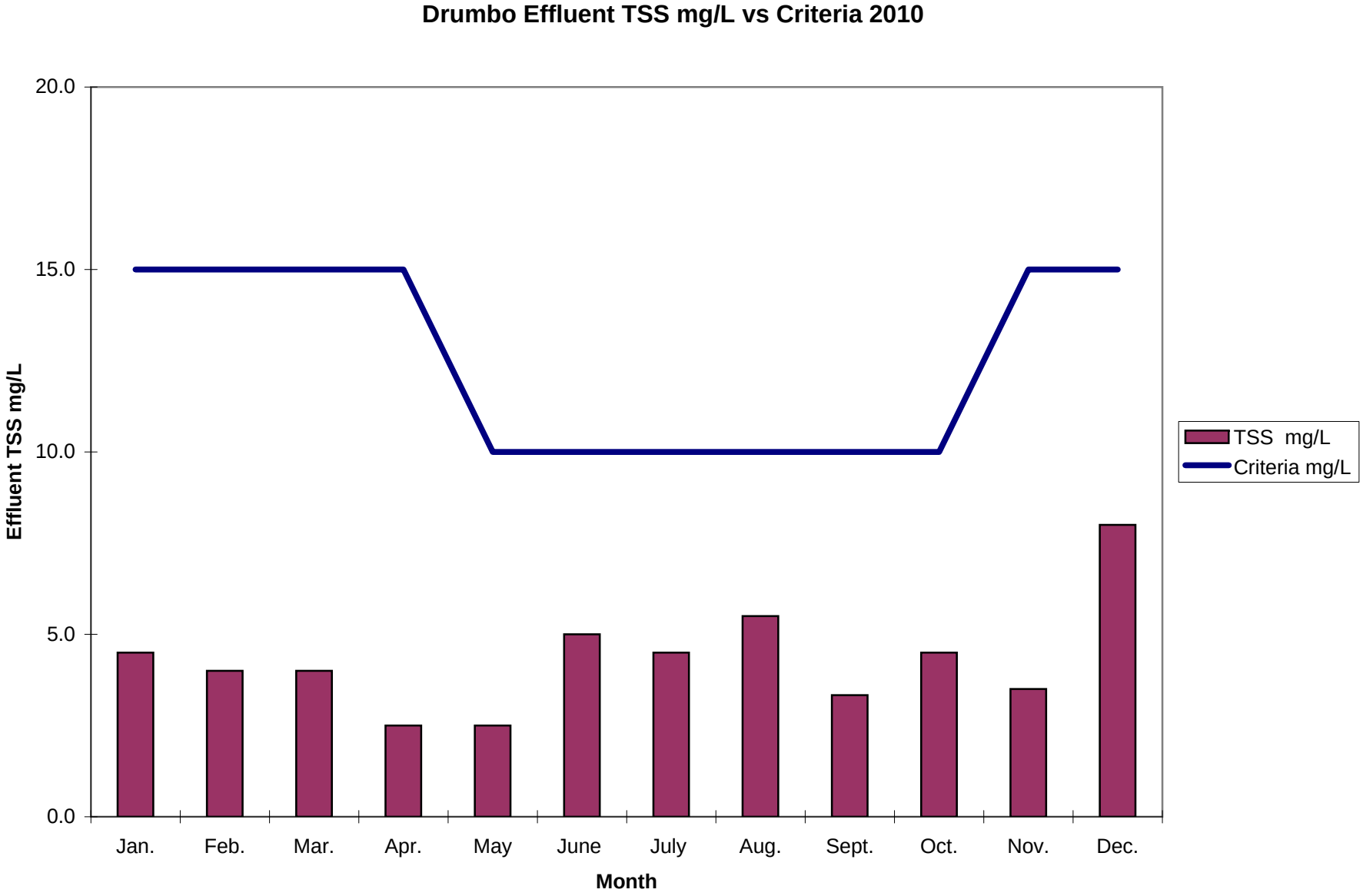
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.		**Ave.**	**Criteria A**	**Criteria B**
BOD_5	kg/d	1.1	1.0	0.5	0.5	1.2	1.3	0.8	0.7	1.1	0.7	0.8	2.7		**1.0**	**2.8**	**4.0**
TSS	kg/d	1.0	0.8	1.0	0.7	0.6	1.3	1.1	1.3	0.8	1.2	0.9	2.0		**1.1**	**2.8**	**4.0**
TP	kg/d	0.04	0.03	0.03	0.03	0.04	0.04	0.06	0.05	0.04	0.04	0.03	0.04		**0.04**	**0.1**	**0.3**
NH4	kg/d	0.38	0.23	0.08	0.08	0.19	0.11	0.03	0.05	0.10	0.13	0.04	0.34		**0.15**	**0.80**	**1.36**

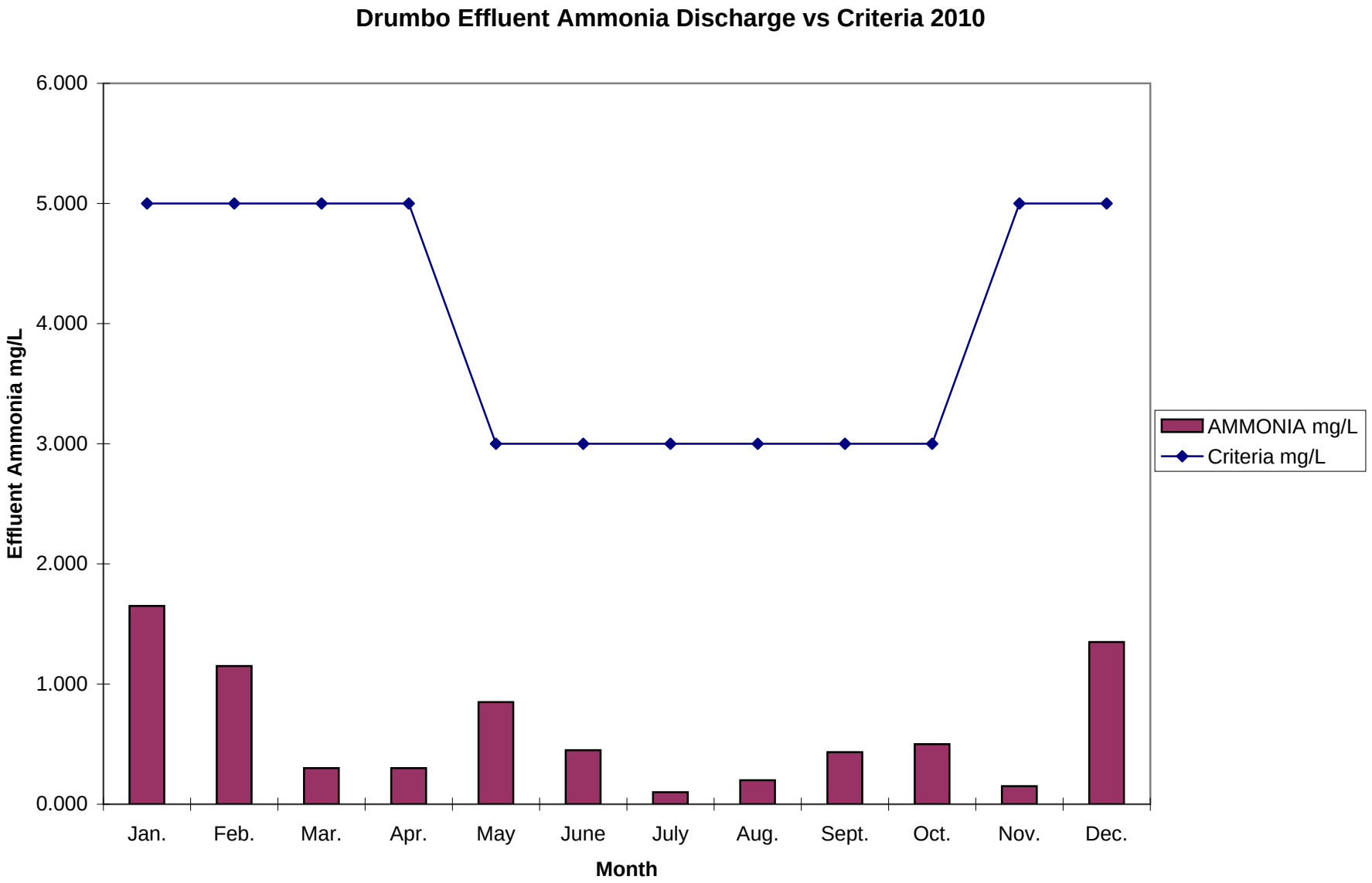
Drumbo SBR Influent Loading kg/d 2010

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		**Ave.**		
BOD	kg/d	26	29	27	25	31	42	30	26	32	33	32	34		**31**		
TSS	kg/d	20	15	30	18	23	28	19	14	14	21	18	17		**20**		
TP	kg/d	1	1	1	1	1	1	1	1	1	1	1	1		**1**		
TKN	kg/d	8	7	8	8	7	6	6	6	7	8	6	8		**7**		

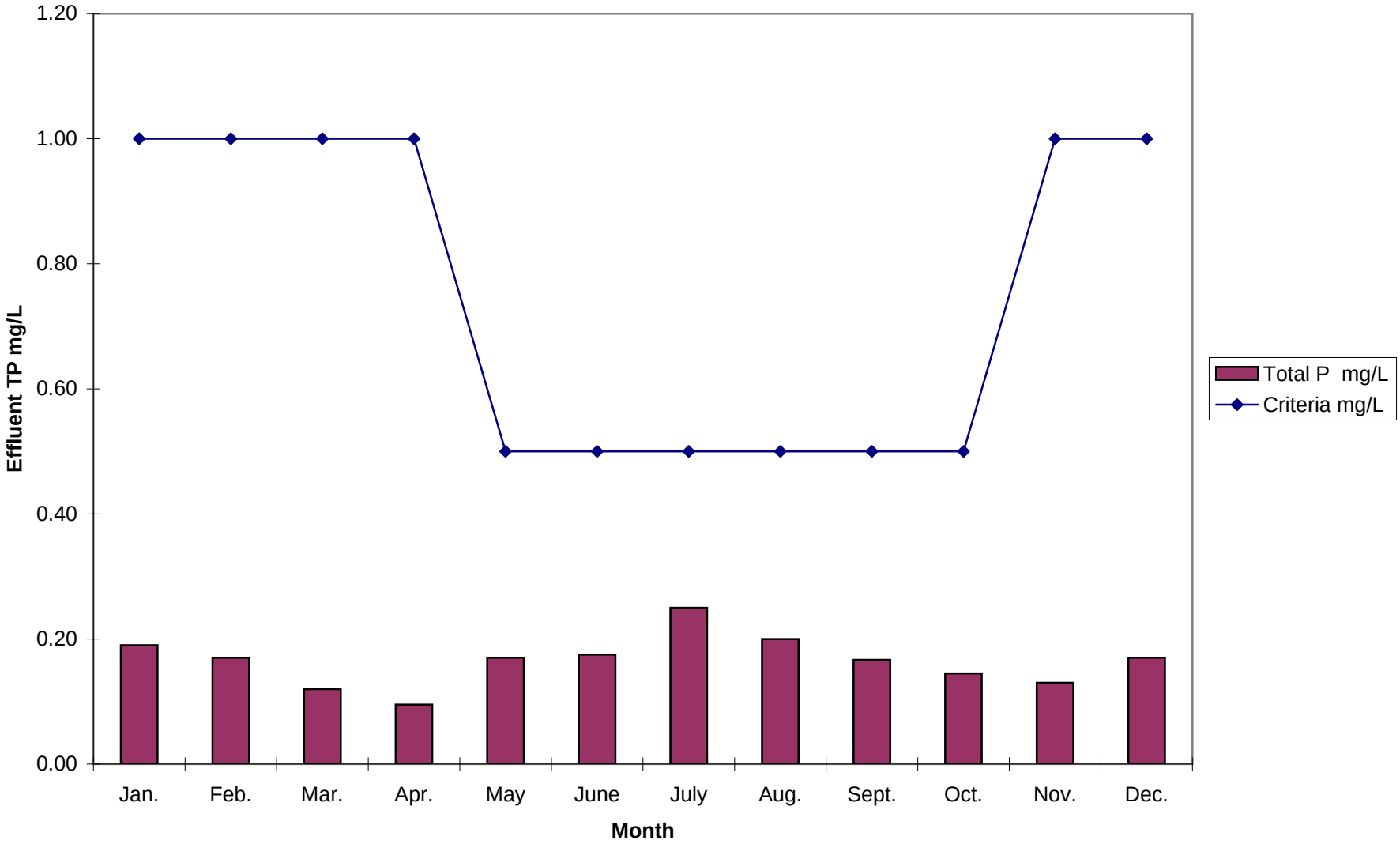
Compliance criteria are based on Periods A and B, where Period A refers to the time that the receiving stream exceeds 5 degrees C. and Period B refers to the time that the receiving stream is less than or equal to 5 degrees C, as measured by operating staff

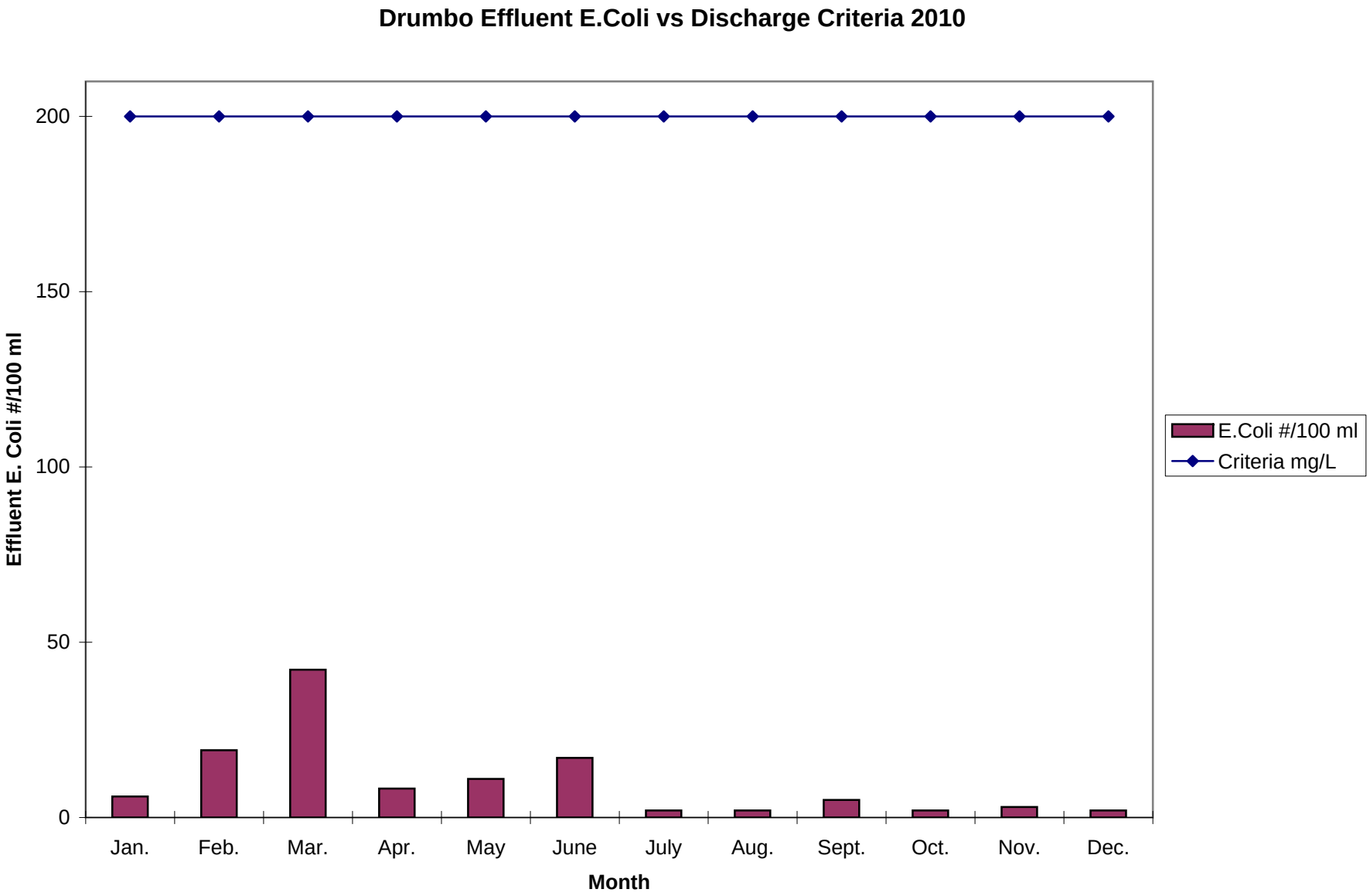

Drumbo Effluent BOD5 mg/L vs Criteria 2010
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Effluent BOD5 mg/L
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Month
BOD5 mg/L
Criteria mg/L


Drumbo Effluent TSS mg/L vs Criteria 2010
20.0
15.0
10.0
5.0
0.0
Effluent TSS mg/L
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Month
TSS mg/L
Criteria mg/L


Drumbo Effluent Ammonia Discharge vs Criteria 2010
6.000
5.000
4.000
3.000
2.000
1.000
0.000
Effluent Ammonia mg/L
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Month
AMMONIA mg/L
Criteria mg/L

Drumbo Effluent TP vs Discharge Criteria 2010




Drumbo Effluent E.Coli vs Discharge Criteria 2010
Effluent E. Coli #/100 ml
200
150
100
50
0
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Month
E.Coli #/100 ml
Criteria mg/L

Public Works
P. O. Box 1614, 21 Reeve St.,, Woodstock Ontario N4S 7Y3
Phone: 519-539-9800 Fax: 519-421-4711
Website: www.oxfordcounty.ca

March 15, 2011

District Manager,
Ministry of the Environment
London Branch
C/o
Mr. Ian Ness-Jack
Provincial Officer
733 Exeter Rd.,
London, Ont.,
N6E 1L3

Dear Sir:

RE: Year-End Report Storm Water Management Facility for the Bisolids Centralized Storage Facility (BCSF) and BCSF Inspection
(Certificate of Approval # 8633-76AHSG)

This year-end report is prepared as required by the certificate of approval # 8633-76AHSG.

I trust this report fulfills the intent of the Certificate of Approval. If there are any questions, please contact me.

Yours Truly,

Don Ford BA, CMM II, C. Tech.
Wastewater Supervisor, County of Oxford

C.c. Mr. Shahab Shafai, M.Sc., P.Eng.
Manager Wastewater Services, Oxford County
Mr. Mark Maxwell, EIT,
Project Engineer, Oxford County

Overview

The storm water management facility services a total drainage area of 4.85 ha consisting of leaf and yard waste composting pad and a biosolids centralized storage facility (BCSF) located east of the Oxford County Landfill site, it was designed to attenuate storm water runoff from storm events.

Project Description and Specifications

The facility consists of approximately a 132 m long 300 mm diameter solid pipe running from the compost pad to the forebay, an approximately 50 m long 200 mm diameter storm sewer collecting from areas located east and north of the BCSF to the forebay, and approximately 300 m long perimeter ditches collecting storm water runoff from the BCSF building and from the south and west side of the structure discharging through a 300 mm diameter CSP culvert to the forebay. It also includes one 18 m long 1 m deep forebay complete with rip rap, two inlet structures and one concrete weir outlet structure discharging to a wet detention pond. The wet detention storm water pond with top dimensions of 78 m long by 38 m wide provides a permanent storage capacity of 1,564 m3 with a depth of 0.9 m. The pond is equipped with an outlet structure consisting of one 1200 mm diameter precast concrete manhole, one 75 mm diameter orifice plate and approximately 13 m long outlet sewer discharging to Hooper drain.

Sampling Procedure

Samples are collected semi-annually during spring and fall after a significant rainfall event and analyzed for the following:

Alkalinity
Total Ammonia Nitrogen
Chloride
Iron
Nitrate Nitrogen
Nitrite Nitrogen
TKN
Total Phosphorus
Total Suspended Solids
Sulphate
CBOD
COD
Phenol

Field parameter

pH
Temperature
Conductivity
Dissolved Oxygen

Storm Water Facility Performance & Effluent

The facility is inspected regularly and a log book maintained at the BCSF of the inspections. The results of the sampling program are included in Exhibit 1 in a summary Table.

Spills, Upset and Abnormal Conditions

There were no spills or abnormal discharge events in 2010.

BCSF Maintenance

The Biosolids Centralized Storage Facility was cleaned and an in-house inspection took place on November 23rd, 2010.

Oxford County's Drumbo Patrol Yard equipment was used to pump out the sump pits and sweep the building prior to inspection.

The following is a list of items found during inspection and the actions taken.

Inspection Item	Action Taken
Cracks in floor at the aisle end of the concrete divider wall of Bins 1, 3, 4, 5, 6, 7, 8, 9, 10, 11&12.	No action required at this time, minor cracks.
There is one sump pit cover missing.	Cover will be located or new one fabricated.
There is ground water leaking into the sump pit in bins 9 & 10.	Not significant quantity of water and no impact to storage bins.
In the centre aisle east of bin 5 there is a piece of concrete reinforcing steel exposed.	Steel smooth to surface will not produce injury.
In bin 12 on the south side near the west end there are two places in the floor that are broken.	There is no action required.

Summary and Recommendations

The storm water facility provided effective attenuation of storm water in 2010 with no adverse or abnormal conditions occurring.

The BCSF provided storage for the Oxford County biosolids land application program and was in excellent overall condition. No complaints were received about the operation of either facility in 2010.

Exhibit 1

BCSF Storm Water Pond 2010

Analysis	Units	Jan.	Feb.	March	April	April Field	June Field	June	July	Aug.	Sept.	Oct. Field	Oct.	Nov	Dec.	Average	Max	MIN
Temperature	C				12	12.2						10.7	9			10.98	12.20	9.00
pH	pH units				8.51	8.44						7.9	7.99			8.21	8.51	7.90
Alkalinity(as CaCO3	mg/L				187								196			191.50	196.00	187.00
Conductivity	uS/cm					460						660				560.00	660.00	460.00
COD	mg/L				39								59			49	59	39
NH3+NH4	as N mg/L				0								1			0.80	1.40	0.20
TKN	as N mg/L				1.00								3.9			2.45	3.90	1.00
Tot Susp.Solids	mg/L				43								53			48	53	43
Sulphate	mg/L				23								29			26.00	29.00	23.00
Nitrite (as nitrogen)	mg/L				0								<0.06			0	0	0
Nitrate(as nitrogen)	mg/L				10								0			5	10	0
Nitrate + Nitrite (as nitrogen)	mg/L				11								0			5	11	0
CBOD	mg/L				9								<4			9	9	9
Chloride	mg/L				50.0								130.00			90	130	50
4AAP-Phenolics	mg/L				< 0.002								<0.002			0	0	0
Fe iron	mg/L				0.86								1.77			1.32	1.77	0.86
Phosphorous	mg/L				0.16								0.27			0.215	0.270	0.160
Disolved Oxygen	mg/L					9.1						5.35				7.225	9.100	5.350

***If less than MDL, detection limit is used**