



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, 2013

District Manager
Ministry of the Environment
London District Office
C/o
Mr. Bob Slivar
Provincial Officer
733 Exeter Rd.
London, Ont.

Dear Sir:

RE: 2012 Year-End Report containing Reports on the Biosolids Land Application Program, the Storm Water Management Facility for the Biosolids Centralized Storage Facility (BCSF), and the Inspection of the BCSF

Attached is the monitoring report for 2012 for Oxford County's biosolids land application program from the BCSF (storage site for Woodstock, Tillsonburg, and Ingersoll WWTPs), and the Thamesford WWTP Liquid Storage Tank. Also included is a report on the Storm Water Management Facility and an inspection report for the BCSF.

I trust this report fulfills the intent of the annual reporting requirements of the Certificates of Approval now referred to as Environmental Compliance Approval (ECA) #'s A800939, 3816-76HRYS, 5950-7XQKXS, 9997-82RS5A, 6974-6FKKAY, 5936-8RKKNU, 0342-7WCKCJ, and 8633-76AHSG. 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, P.Eng.
Project Engineer, Oxford County

Overview of the Biosolids 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 recirculating sand filter (RSF). 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 changed recently 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 farms having a non-agricultural source material (NASM) plan, 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 division acquired additional sophisticated automatic sampling equipment. These changes were made with the goal of improving the quality and reducing the quantity of biosolids produced.

Ingersoll WWTP produced only a limited amount of dewatered biosolids this year as the digester upgrade was only completed in July and the dewatering construction project started in October. The majority of material was trucked daily to the Woodstock Wastewater Treatment Plant.

Oxford County also tendered the cleanout of two digesters in 2012 and the material was screened and land applied.

The Biosolids from all facilities were compliant with the Nutrient Management Act (NMA) regulations governing NASM.

Sampling Description

A sample is collected from each bin that leaves the wastewater treatment plants and composited over a 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 required 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 NMA maximum criteria. All sources were compliant 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 NMA 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 NASM plans indicating spreading applications is included in Exhibit 3.

In summary, Oxford County's Biosolids Management program provided for the effective production, transport, storage, and eventual reuse as a nutrient via land application of all biosolids generated under the program. All operation and maintenance activities were performed by Oxford County 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 Oxford County's behalf. There were no notable upsets or spills during the year of operation and no complaints have been received to date.

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

Table 1

Parameter	Woodstock WWTP	Ingersoll WWTP	Tillsonburg WWTP	Thamesford WWTP	NMA Metals Criteria
Metals mg/kg dry solids	2012 Annual Average	2012 Annual Average	2012 Annual Average	2012 Annual Average	Maximum
Arsenic	4.9	3.4	3.4	16	170
Cadmium	0.76	0.6	0.5	1.6	34
Cobalt	5.90	8	5	2.9	340
Chromium	63.1	70	31	27	2800
Copper	655	660	638	209	1700
Mercury	0.8	0.77	0.98	0.15	11
Molybdenum	11.8	27	8	6	94
Nickel	92	33	47	13.9	420
Lead	31	22	25	6.03	1100
Selenium	4.05	10	5	16	34
Zinc	1034	1667	760	360	4200

Biosolids Centralized Storage Facility (BCSF) Operation

The Biosolids Centralized Storage Facility (BCSF) was built for the dewatered biosolids for periods such as winter months 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 bays so that should material be determined to be non-compliant, it can be removed and taken 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 selected 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 7,000 m³ 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 bays. 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 in future. 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 Oxford County staff push the biosolids into higher piles at the back of the bay using the existing loader. There are large passive 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 would be powered by a portable generator only if needed during times of biosolids removal. The daily transport of the material into the storage facility is done during daylight hours.

Biosolids Production Rate, Type and Destination in 2012

Table 2

FACILITY	2012 Biosolids Land Applied (wet tonnes or m ³ / dry tonnes)	2012 Biosolids Stored BCSF or Thamesford Tank	2012 Raw Sludge Hauled Between Plants	Total Biosolids Generated 2012 Dry tonnes	Biosolids Type	2012 Destination
Woodstock WWTP	4132.76 tonnes/ 983.7 dry tonnes	1016 wet tonnes/ 243 dry tonnes at start of year 575 wet tonnes 138 dry tonnes at year end		3692 wet tonnes 886 dry tonnes	Anaerobic dewatered	Storage Facility & Land Application
Ingersoll WWTP			8431 m ³	114 wet tonnes 21 dry tonnes	Co-thickened Primary Sludge & Anaerobic dewatered	Woodstock WWTP & Storage Facility
Tillsonburg WWTP	1844.76 tonnes/ 407.6 dry tonnes	792 wet tonnes 174 dry tonnes At start of year 106 wet tonnes 23 dry tonnes At year end		1159 wet tonnes 255 dry tonnes	Aerobic dewatered	Storage facility & Land Application
Thamesford WWTP	8142 m ³ / 172 dry tonnes	700 m ³ / 17 dry tonnes		189 dry tonnes	Aerobic liquid	Land Application
Drumbo SBR		–	1826 m ³	n/a	Co-thickened Primary Sludge	Woodstock WWTP

Overview of the Storm Water Management Facility for the Biosolids Centralized Storage Facility (BCSF)

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.

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 1,200 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
pH

Temperature
 Conductivity
 Dissolved Oxygen

Storm Water Management Facility Performance & Effluent

The facility is inspected regularly and a log book of the inspections is maintained at the BCSF. The results of the sampling program are included in Exhibit 4 in a summary Table.

Spills, Upset and Abnormal Conditions

There were no spills or abnormal discharge events in 2012.

Inspection of the BCSF

The Biosolids Centralized Storage Facility was cleaned and an in-house inspection took place on May 11th, 2012.

Landfill staff swept the building prior to inspection and a contractor was used to pump out the sump pits.

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

Inspection Item	Action Taken
<ul style="list-style-type: none"> • There are cracks in the concrete floor at the aisle end of the concrete divider wall of bays 1, 3, 4, 5, 6, 7, 8, 9, 10, 11&12. 	No action required at this time, minor cracks.
<ul style="list-style-type: none"> • There is a sump pit cover missing in bay 4. 	Missing sump pit covers installed.
<ul style="list-style-type: none"> • In the centre aisle east of Bay 5 there is a piece of concrete reinforcing steel exposed. 	This was addressed last year; however, staff will be removing more exposed steel to avoid any injury.
<ul style="list-style-type: none"> • In Bay 12 on the south side near the west end there are two places in the floor that are broken. 	No action required at this time.
<ul style="list-style-type: none"> • There are minor cracks in the exterior walls on all sides of the building, some have minor staining, but none of them have opened up. 	There is no action required.

Summary

The storm water management facility provided effective attenuation of storm water in 2012 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 2012.

EXHIBIT 1

Ingersoll WWTP Dewatered Biosolids 2012

Lab Number		CA13695-AUG12	CA12236-SEP12	CA13558-SEP12		
Sample Date		29-Aug-12	12-Sep-12	26-Sep-12		
					Average	
Specific Gravity		1.0	1.0	1.0	1.0	
Oil & Grease (total)		23000	26000	33000	27333	
pH	units	7.64	7.61	7.59	7.61	
Alkalinity (mg/L as CaCO3)		3950	3470	9370	5597	
Total Solids	mg/L	13.7	12.7	12.9	13	
Volatile Solids	mg/L	9.2	8.4	8.5	9	
Total Nitrogen-kjeldahl (N)	mg/L	5100	6500	5300	5633	
Ammonia+Ammonium (N)	mg/L	600	900	800	767	
Nitrite as N	mg/L	0.3	5.3	0.6	2.1	
Nitrate as N	mg/L	0.3	0.3	0.3	0.3	
Nitrite+Nitrate as N	mg/L	0.3	5.3	0.6	2.1	
As Arsenic	mg/kg	4	4	2.1	3.4	
B Boron	mg/kg	65	56	54	58.3	
Ca Calcium	mg/kg	28000	29000	31000	29333.3	
Cd Cadmium	mg/kg	0.73	0.4	0.61	0.58	
Co Cobalt	mg/kg	7	8	8	7.67	
Cr Chromium	mg/kg	73	69	67	69.7	
Cu Copper	mg/kg	630	650	700	660	
Hg Mercury	mg/kg	0.7	0.8	0.8	0.8	
K Potassium	mg/kg	910	810	860	860	
Mg Magnesium	mg/kg	3500	3600	3800	3633	
Mo Molybdenum	mg/kg	25	28	29	27.3	
Na Sodium	mg/kg	1700	1800	1800	1767	
Ni Nickel	mg/kg	33	33	33	33	
P Phosphorus	mg/kg	33000	34000	36000	34333	
Pb Lead	mg/kg	19	25	22	22.0	
Se Selenium	mg/kg	10	11	8	10	
Zn Zinc		1600	1600	1800	1667	
E Coli (cfu/1gm dried wgt)		48140	8689	1394	8354	Geomean
E Coli (cfu/100gm)		660000	110000	18000	109329	Geomean
All results less than MDL taken as MDL						
Results Compared to Criteria						
						Criteria
As Arsenic	mg/kg	4.0	4.0	2.1	3.4	170
Cd Cadmium	mg/kg	0.73	0.4	0.61	0.6	34
Co Cobalt	mg/kg	7.0	8.0	8.0	8	340
Cr Chromium	mg/kg	73	69	67	70	2800
Cu Copper	mg/kg	630	650	700	660	1700
Hg Mercury	mg/kg	0.7	0.8	0.8	0.77	11
Mo Molybdenum	mg/kg	25	28	29	27	94
Ni Nickel	mg/kg	33	33	33	33	420
Pb Lead	mg/kg	19	25	22	22	1100
Se Selenium	mg/kg	10	11	8	10	34
Zn Zinc	mg/kg	1600	1600	1800	1667	4200

Tiltsburg WWTP De-Water Sludge 2012

Lab Number	CA12062-JAN12	CA13357-JAN12	CA12062-FEB12	CA12348-FEB12	CA13288-MAR12	CA12469-MAR12	CA13143-APR12	CA13478-APR12	CA12115-MAY12	CA12435-MAY12	CA13136-JUN12	CA12487-JUN12	CA13115-JUL12	CA12448-JUL12	CA12082-AUG12	CA13369-AUG12	CA13090-SEP12	CA13418-SEP12	CA12101-OCT12	CA12399-OCT12	CA12595-OCT12	Average			
Sample Date	4-Jan-12	18-Jan-12	1-Feb-02	15-Feb-12	7-Mar-12	21-Mar-12	4-Apr-12	18-Apr-12	2-May-12	16-May-12	6-Jun-12	20-Jun-12	4-Jul-12	18-Jul-12	1-Aug-12	15-Aug-12	5-Sep-12	19-Sep-12	3-Oct-12	17-Oct-12	25-Oct-12				
Specific Gravity	1.0	1.1	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0			
Oil & Grease (total)	1900	2400	2000	2200	2200	1300	2800	3300	1800	5900	9700	9400	2800	6100	6500	9300	7300	8900	5400	4900	4100	4771			
pH	6.44	6.60	6.60	7.86	6.58	5.54	6.17	5.63	6.17	6.77	6.09	7.02	6.58	7.03	6.95	6.24	6.16	6.13	6.25	6.37	6.83	6.48			
Alkalinity (mg/L as CaCO3)	598	1330	738	5200	470	450	340	160	300	750	350	1500	290	350	690	570	620	570	1230	620	300	860			
Total Solids	203000	240000	214000	18.5	21.4	20.1	26.4	20.6	22.2	21	23.0	21.9	24.7	23.0	21.7	26.8	25.7	24.1	22.1	22.2	22.2	31305			
Volatile Solids	136000	165000	147000	12.79	14.6	13.3	17.9	14.0	15.1	14	15.3	14.6	16.4	15.1	14.1	18.8	17.0	15.7	14.4	14.3	11.9	21346			
Total Nitrogen-hyeldahl (N)	8700	7600	8000	8600	11000	8600	10000	3200	10000	11000	8100	8900	7900	9900	9300	12000	8300	8600	5700	7200	6400	8429			
Ammonia-Nitrogen (N)	100	200	100	100	200	100	300	100	100	100	100	100	100	100	100	100	100	100	100	100	300	129			
Nitrite as N	6.6	30	1.4	2.6	110	18	86	50	120	88	76	93	41	0.5	76	11	4.9	4.7	32	10	45	45			
Nitrate as N	124	130	11	16	85	690	180	280	220	270	159	89	34	3.6	84	210	220	310	360	160	80	160			
Nitrite+Nitrate as N	131	160	12	19	200	710	270	330	340	17	245	85	130	45	85	290	230	310	365	190	100	214			
As Arsenic	2.0	2.0	4.6	4	5.9	2	3.8	3.8	6.0	1.3	5.2	14.4	2	0.5	2	4.1	3.1	4.9	3.8	2.7	4	3			
B Boron	18	26	30	31	34	31	28	28	38	33	13	34	35	29	34	30	25	3.8	26	26	37	28			
Ca Calcium	28000	25000	30000	31000	32000	31000	26000	34000	30000	31000	31000	31000	31000	31000	36000	32000	32000	23000	29000	28000	28000	29695			
Cd Cadmium	0.54	0.54	0.51	0.64	0.23	0.30	0.23	0.24	0.32	0.75	0.31	0.51	0.74	0.74	0.74	0.37	0.86	0.54	0.91	0.54	0.49	0.53			
Co Cobalt	5	4	5	5	5	5	4	5	4	5	4	5	4	4	5	3.7	4	4	4	4	6	5			
Cr Chromium	27	23	24	23	25	24	46	31	35	29	30	32	30	29	33	34	35	37	37	32	34	31			
Cu Copper	660	560	570	570	610	610	610	640	700	640	620	650	610	600	700	700	680	660	690	640	680	638			
Hg Mercury	1.1	0.7	1.0	0.6	1.0	1.0	0.9	1.8	0.8	1.2	1.0	0.8	1.0	0.9	0.9	1.0	0.8	1.0	0.9	1.1	1.1	1.0			
K Potassium	2900	2500	3300	4000	3400	2600	2600	3100	3200	2800	2400	2500	2400	2200	2300	2200	2100	2000	1900	1900	1800	2076			
Mg Magnesium	3200	2200	3700	4200	4200	4000	3000	3700	3000	3300	3000	3300	3500	3400	3000	4000	3300	3200	3200	3000	3000	3425			
Mo Molybdenum	8.7	7.7	8.0	8.4	8.0	7.7	8.8	9.2	11	8.7	8.4	7.6	6.2	4.2	9.2	8.8	5.3	5.4	8.5	6.1	8.0	7.8			
Na Sodium	8.7	1400	1700	1700	1800	1600	1500	1600	1800	1700	1800	1700	1800	1700	1800	1700	1600	1600	1600	1600	1500	1596			
Ni Nickel	34	33	45	43	46	45	57	65	71	56	52	41	46	40	48	43	39	39	41	38	44	47			
P Phosphorus	38000	34000	35000	35000	38000	39000	44000	48000	42000	40000	41000	38000	44000	44000	40000	40000	41000	42000	38000	40000	40000	40143			
Pb Lead	25	24	22	21	24	24	22	29	24	27	22	22	28	23	26	25	26	32	25	26	27	25			
Se Selenium	5	4	6	5	5	5	4	5	4	5	4	5	4	4	9	3.7	8	4	1	4	6	5			
Zn Zinc	710	630	690	620	690	690	710	790	890	780	720	750	760	720	850	670	860	850	850	790	820	780			
E Coli (cfu/100gm dried wtg)	137831	23375	261882	18757	19626	21382	33005	47019	216666	10427	100887	25582	2333	10674	5904	2958	112797	18611	11292	7671	736237	31487			
E Coli (cfu/100gm)	2800000	510000	5600000	310000	420000	430000	870000	970000	4800000	220000	2300000	560000	60000	250000	128000	78000	2900000	400000	250000	170000	13400000	658972			
All results less than MDL taken as MDL																									
Results Compared to Criteria																						Criteria			
As Arsenic	mg/kg	2.0	2.0	4.6	4.0	5.9	2.0	3.8	3.8	6.0	1.3	5.2	4.4	2.0	0.5	2.0	4.1	3.1	4.9	3.8	2.7	4.0	3.4	170	
Cd Cadmium	mg/kg	0.54	0.54	0.51	0.64	0.23	0.30	0.23	0.24	0.32	0.75	0.31	0.51	0.74	0.74	0.74	0.37	0.86	0.54	0.91	0.54	0.49	0.5	34	
Co Cobalt	mg/kg	5.0	4.0	5.0	5.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0	4.0	4.0	5.0	3.7	4.0	4.0	4.0	4.0	6.0	5	340		
Cr Chromium	mg/kg	27	23	24	23	25	24	46	31	35	29	30	32	30	33	34	35	37	37	32	34	31	2800		
Cu Copper	mg/kg	660	560	570	570	610	610	610	640	700	640	620	650	610	600	700	700	680	660	690	640	680	638	1700	
Hg Mercury	mg/kg	1.1	0.7	1.0	0.6	1.0	1.0	0.9	1.8	0.8	1.2	1.0	0.8	1.0	0.9	0.9	1.0	0.8	1.0	0.9	1.1	1.1	1.0	0.98	11
Mo Molybdenum	mg/kg	8.7	7.7	8	8.4	8	7.7	8.8	9.2	11	8.7	8.4	7.6	6.2	4.2	9.2	8.8	5.3	5.4	8.5	6.1	8	8	94	
Ni Nickel	mg/kg	34	33	45	43	46	45	57	65	71	56	52	41	46	40	48	43	39	39	41	38	44	47	280	
Pb Lead	mg/kg	25	24	22	21	24	24	22	29	24	27	22	22	28	23	26	25	26	32	25	26	27	27	25	1100
Se Selenium	mg/kg	5	4	6	5	5	5	4	5	4	5	4	5	4	4	9	3.7	8	4	1	4	6	5	34	
Zn Zinc	mg/kg	710	630	650	620	690	690	710	790	890	780	720	750	760	720	850	670	820	860	850	790	820	780	4200	

2012 Woodstock WWTP Dewatered Sludge

Lab Number	CA13111-JAN12	CA13139-JAN12	CA13043-FEB12	CA12346-FEB12	CA13160-MAR12	CA13436-MAR12	CA12800-MAR12	CA12729-APR12	CA13646-APR12	CA12029-MAY12	CA13439-MAY12	CA12196-JUN12	CA12442-JUN12	CA12552-JUL	CA13432-JUL12	CA13064-AUG12	CA12673-AUG12	CA12275-SEP12	CA12005-OCT12	CA12736-OCT12	CA13289-NOV	CA13455-NOV12	CA12000-DEC12	CA12389-DEC12	Average	
Sample Date	4-Jan-12	18-Jan-12	1-Feb-12	15-Feb-12	29-Feb-12	14-Mar-12	28-Mar-12	11-Apr-12	25-Apr-12	2-May-12	14-May-12	7-Jun-12	19-Jun-12	5-Jul-12	18-Jul-12	1-Aug-12	29-Aug-12	12-Sep-12	1-Oct-12	7-Jun-12	6-Nov-12	20-Nov-12	3-Dec-12	17-Dec-12		
Specific Gravity	1.0	1.0	1.1	1.1	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.1	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Oil & Grease (total)	35000	37600	38000	41000	31000	37000	31000	42130	38000	34000	43000	46000	16000	36000	49000	44000	55000	48000	43000	42000	36000	41000	36000	44000	39322	
pH	6.66	7.01	7.51	7.45	6.96	7.47	7.37	7.12	7.32	7.23	6.92	7.25	7.79	7.32	7.15	7.36	7.46	7.72	7.80	7.60	7.43	7.80	7.26	7.57	7.30	
Alkalinity (as CaCO3)	1640	2360	670	536	2260	4310	196	7470	1150	1740	4090	3800	3860.0	1100	2260	5240	3270	17200	670	3650	4180	2490	3160	3650	3850	
Total Solids	238000	246000	240000	22,78	23	21	23.6	22.6	23.3	23.0	23.9	23.9	24.90	24.6	25.0	25.2	24.1	22.5	24.5	24.6	23.6	23.3	23.3	22.3	30187.3	
Volatile Solids	128000	130000	132000	12,78	13	12	14.1	13.0	13.8	13.1	13.7	14.2	14.1	14.0	14.2	13.5	12.8	14.8	14.7	14.1	13.5	13.5	13.5	13.5	16511.9	
Total Nitrogen- Kjeldahl (N)	8600	7290	10000	8600	9500	8500	2800	2000	10000	9300	10000	4200	3850	8000	7000	6100	10000	6800	8400	8400	10000	8600	7600	3600	7237	
Ammonia-Ammonium (N)	700	670	1000	1200	100	1000	1100	400	600	800	1000	1200	10000	900	800	+100	700	1100	1400	600	900	700	900	1400	1238	
Nitrite as N	mg/L	1.1	0.5	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.9	0.5	0.3	0.6	0.5	
Nitrate as 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	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.5	
Nitrite+Nitrate as N	mg/L	1.1	0.5	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	1.0	0.9	0.5	0.3	0.6	0.7	
As Arsenic	mg/kg	5.0	6.5	6.6	5.7	3.2	3.7	3.8	3.6	2	6.2	4.0	6.1	4.1	4	2.8	3.6	4.1	6.1	6.1	5.4	5.3	5.4	5.3	4.9	
B Boron	mg/kg	16	35	25	29	32	35	20	19	18	34	30	16	31	39	28	35	32	33	24	39	38	34	25	34	
Ca Calcium	mg/kg	46000	44715	31000	38400	42300	41000	35000	36000	38000	36000	36000	34000	30000	30000	30000	35000	41000	43000	34000	33000	31000	31000	31000	36530	
Cd Cadmium	mg/kg	0.68	0.73	0.60	0.84	0.89	0.57	0.92	0.54	0.60	0.22	0.95	0.76	0.60	0.52	0.92	1.1	0.99	0.75	0.94	0.94	0.61	1.20	1.00	0.76	
Co Cobalt	mg/kg	8	7.5	7	6	7	7	5	6	6	6	7	6	6	6	4	6	5	6.2	4	6	4	6	6	6	
Cr Chromium	mg/kg	65	62	58	62	68	66	67	64	64	67	66	67	66	64	66	64	69	58	64	62	59	62	63	63	
Cu Copper	mg/kg	710	650	600	660	690	640	540	610	630	650	640	640	620	640	610	670	690	720	690	700	690	710	660	655	
Hg Mercury	mg/kg	0.8	0.855	0.5	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.4	0.5	0.9	0.8	0.7	1.3	0.5	0.7	0.6	2.2	0.6	0.8	
K Potassium	mg/kg	1100	935	1000	1000	970	1000	860	1100	860	1100	960	880	870	1000	950	870	960	860	840	790	830	910	850	942	
Mg Magnesium	mg/kg	5900	5285	4700	5100	5200	4400	5000	4200	4400	4200	4000	4000	4200	4200	4700	5000	4800	4200	3800	3800	3600	3600	3700	4474	
Mn Manganese	mg/kg	13	12	11	12	12	11	8.6	11.0	8.9	13	12	11	13	13	12	17	13	15	12	12	12	11	8.4	8.9	
Mo Molybdenum	mg/kg	1000	854	860	850	920	1100	840	880	870	880	860	890	790	900	810	850	870	900	880	830	880	850	930	892	
Ni Nickel	mg/kg	92	75	70	77	87	84	74	86	92	97	93	92	87	91	88	91	90	110	92	99	100	120	110	92	
P Phosphorus	mg/kg	30000	30081	29000	33000	35000	36000	31000	33000	32000	34000	32000	33000	30000	31000	30000	31000	28000	32000	31000	33000	33000	34000	33000	31962	
Pb Lead	mg/kg	40	37	34	31	37	28	24	25	28	28	29	26	28	29	35	33	39	32	31	31	30	35	36	31	
Se Selenium	mg/kg	4	4.1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Zn Zinc	mg/kg	1100	1057	940	990	1100	980	870	960	960	960	980	910	1000	1000	1100	1200	1200	960	1100	1100	1140	1100	1100	1034	
E Coli (cfu/100g dried wgt)	30872	182627	174167	283389	97475	325048	177740	150599	68581	121387	37025	220318	461568	36179	80023	241667	302528	934986	87059	2319	17373	34520	33000	44763	84662	
E Coli (cfu/100gm)	730000	4500000	3800000	6000000	2200000	6800000	4200000	3400000	1600000	2750000	9000000	5500000	8800000	8900000	2000000	6100000	7300000	21000000	9000000	57000	410000	800000	770000	1000000	2189915	
All results less than MDL taken as MDL																										
Results Compared to Criteria																										
As Arsenic	170mg/kg	mg/kg	5.0	6.5	6.6	5.7	3.2	3.7	3.8	3.6	2.0	6.2	4.0	6.1	4.1	4.0	2.5	3.6	4.1	6.1	6.1	5.4	5.3	5.4	5.3	4.9
Cd Cadmium	34 mg/kg	mg/kg	0.68	0.73	0.60	0.84	0.89	0.57	0.92	0.54	0.60	0.22	0.95	0.75	0.60	0.52	0.92	1.10	0.99	0.75	0.94	0.61	1.20	1.00	0.61	
Co Cobalt	340 mg/kg	mg/kg	8	7.5	7	6	7	5	6	6	7	6	6	6	6	4	6	5	6	4	6	4	6	6	6	
Cr Chromium	2800 mg/kg	mg/kg	65	62	58	62	68	66	67	64	64	67	66	67	66	64	69	58	64	62	59	62	63	63	63	
Cu Copper	1700 mg/kg	mg/kg	710	650	600	660	690	640	540	610	630	650	640	640	620	640	610	670	690	720	690	700	690	710	660	
Hg Mercury	11 mg/kg	mg/kg	0.8	0.85	0.5	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.7	0.4	0.5	0.9	0.8	0.7	1.3	0.5	0.7	0.6	2.2	0.6	0.8	
K Potassium	40 mg/kg	mg/kg	1100	935	1000	1000	970	1000	860	1100	860	1100	960	880	870	1000	950	870	960	860	840	790	830	910	850	
Mg Magnesium	420 mg/kg	mg/kg	5900	5285	4700	5100	5200	4400	5000	4200	4400	4200	4000	4200	4200	4700	5000	4800	4200	3800	3800	3600	3600	3700	420	
Mn Manganese	34 mg/kg	mg/kg	13	12	11	12	12	11	8.6	11.0	8.9	13	12	11	13	13	12	17	13	15	12	12	12	11	8.4	
Ni Nickel	420 mg/kg	mg/kg	92	75	70	77	87	84	74	86	92	97	93	92	87	91	88	91	90	110	92	99	100	120	110	
Pb Lead	1100 mg/kg	mg/kg	40	37	34	31	37	28	24	25	28	28	29	26	28	29	35	33	39	32	31	31	30	35	36	
Se Selenium	34 mg/kg	mg/kg	4	4.1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Zn Zinc	4200 mg/kg	mg/kg	1100	1057	940	990	1100	980	870	960	960	980	910	1000	1000	1100	1200	1200	960	1100	1100	1140	1100	1100	1034	
Criteria																										

2012 Thamesford WWP Secondary Digester

Lab Number Sample Date	CA12498-JAN12 20-Jan-12	CA12382-FEB12 15-Feb-12	CA12291-MAR12 14-Mar-12	CA13552-MAR12 21-Mar-12	CA12111-APR12 4-Apr-12	CA13209-APR12 11-Apr-12	CA12544-APR12 25-Apr-12	CA12274-MAY12 9-May-12	CA13438-JUN12 20-Jun-12	CA12136-JUL12 4-Jul-12	CA13565-JUL12 16-Jul-12	CA13206-AUG12 8-Aug-12	CA13369-AUG12 15-Aug-12	CA13693-AUG12 28-Aug-12	CA13284-SEP12 12-Sep-12	CA12813-SEP12 28-Sep-12	CA12348-OCT12 10-Oct-12	CA12539-OCT12 24-Oct-12	CA13853-NOV12 28-Nov-12	CA13251-DEC12 12-Dec-12	CA13479-DEC12 27-Dec-12	Average
pH	7.02	7.09	7.09	6.95	6.99	7.34	7.04	7.03	7.00	7.13	6.94	7.56	7.07	7.07	7.14	6.97	7.09	7.05	6.98	6.95	6.88	7.07
Alkalinity (as CaCO3)	537	508	457	537	508	485	263	404	588	762	863	994	404	538	681	396	538	418	437	563	379	525
Total Solids	21200	21300	18300	18000	11300	7620	16200	21100	23300	22700	24200	10900	17900	23700	27600	24400	17300	21400	23100	34200	28900	20798
Volatile Solids	14700	14900	12200	12100	7200	4470	11800	14300	15700	15600	17200	7300	14400	16500	19000	16900	11700	15900	16300	24700	21400	14442
Total Nitrogen-kjeldahl (N)	1390	1320	1080	1050	666	437	1060	136	1070	1430	1520	1300	962	910	63	876	1160	1540	1540	1730	1680	1058
Ammonia+Ammonium (N)	96.3	57.7	37	58.8	42.3	37.8	26.3	18.5	63.5	98.7	183	145	42.6	39.7	4.2	34	19	31	26	48	500	77
Nitrite as N	0.3	0.5	0.5	0.7	0.7	0.5	1.3	0.4	0.8	0.6	1.4	0.3	0.3	0.6	1.0	0.3	0.3	0.3	0.3	0.3	0.8	0.58
Nitrate as N	0.3	0.3	0.3	1.9	0.8	0.3	45	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	1.0	7.9	0.8	1.2	1.1	0.8	3.05
Nitrite+Nitrate as N	0.3	0.5	0.5	2.6	1.5	0.8	46	0.4	0.8	0.6	1.4	0.3	0.3	0.6	1.0	1.0	7.9	0.8	1.2	1.1	1.6	3.39
Cu & Cobalt (Total)	12	27	28	6	3	5	5	36	4	12	19	6	28	33	20	33	12	11	30	30	12	28
As - Arsenic	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
B - Boron	0.76	0.81	0.69	0.55	0.42	0.11	0.57	0.85	0.92	0.94	1.10	0.12	0.98	1.40	1.30	1.10	0.81	1.00	1.0	0.95	1.10	0.82
Cd - Cadmium	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Co - Cobalt	0.10	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Cr - Chromium	0.5	0.4	0.5	0.5	0.3	0.2	0.5	0.5	0.5	0.5	0.7	0.3	0.6	0.8	0.9	0.8	0.6	0.8	0.70	0.5	0.6	0.56
Cu - Copper	4.0	3.5	3.7	3.5	2.5	1.4	4.0	4.4	4.5	4.6	5.4	2.0	4.6	5.0	6.7	5.4	4.1	4.9	5.4	5.3	6.0	4.3
Hg - Mercury	0.003	0.001	0.003	0.001	0.001	0.001	0.003	0.002	0.006	0.003	0.005	0.001	0.002	0.003	0.002	0.002	0.002	0.007	0.002	0.001	0.001	0.001
K - Potassium	120	110	110	82	86	75	100	130	120	110	130	86	110	110	120	130	100	110	140	140	150	113
Mo - Molybdenum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.12
Na - Sodium	340	340	360	300	345	300	310	360	240	220	260	220	240	260	300	310	320	340	310	260	330	298
Ni - Nickel	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.2	0.3	0.4	0.4	0.3	0.2	0.3	0.4	0.4	0.4	0.29
P - Phosphorus	640	580	620	600	440	250	690	730	800	810	970	310	720	800	1100	890	660	780	830	820	940	798
Pb - Lead	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.11
Se - Selenium	0.03	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.29
Zn - Zinc	6.3	6.0	6.2	6.0	4.4	2.6	8.8	7.3	7.6	8.3	9.8	3.5	8.2	9.2	12.0	9.8	6.9	8.4	8.8	8.6	9.1	7.43
E Coli (cfu/1gm dried wgt)	141509	1093897	207650	111111	150442	144357	98901	156398	313305	555066	371901	287037	35280	126582	163043	118852	69364	45794	116883	96481	330000	155577
E Coli (ctu/100gm)	300000	2330000	380000	200000	170000	110000	160000	330000	730000	1260000	900000	310000	61000	300000	450000	290000	120000	98000	270000	330000	301251	Geomean
All results less than MDL taken as MDL																						Geomean

Results Compared to Criteria

	14	14	16	17	27	39	14	13	13	12	28	17	13	11	12	17	14	13	9	10	16	170
As - Arsenic	mg/kg	14	14	16	17	27	39	14	13	12	28	17	13	11	12	17	14	13	9	10	16	170
Cd - Cadmium	mg/kg	1.4	1.4	1.6	1.7	2.7	3.9	1.4	1.3	1.2	2.8	1.7	1.3	1.1	1.2	1.7	1.4	1.3	0.9	1.0	1.6	34
Co - Cobalt	mg/kg	5	3	4	3	4	7	3	2.4	2.1	2.2	4.6	2.9	2.1	1.8	2.0	2.9	2.3	2.2	1.5	1.7	2.9
Cr - Chromium	mg/kg	24	19	27	28	27	26	24	21	22	29	28	35	34	33	35	37	30	35	15	21	27
Cu - Copper	mg/kg	189	164	202	194	221	184	220	209	193	223	185	266	211	243	221	237	229	234	156	208	209
Hg - Mercury	mg/kg	0.14	0.05	0.16	0.06	0.09	0.13	0.16	0.07	0.13	0.21	0.09	0.12	0.13	0.07	0.08	0.40	0.04	0.04	0.03	0.03	0.15
Mo - Molybdenum	mg/kg	5	5	5	6	9	13	5	4	4	4	6	4	4	7	8	6	9	4	3	7	8
Ni - Nickel	mg/kg	9	9	11	11	9	13	11	14	17	18	4	19	17	17	12	14	17	12	14	17	14
Pb - Lead	mg/kg	5	5	5	6	9	13	5	4	4	4	9	4	4	7	4	6	9	4	3	7	6
Se - Selenium	mg/kg	11	14	16	17	39	39	16	14	13	13	28	17	13	11	12	17	14	13	9	10	16
Zn - Zinc	mg/kg	297	282	339	333	389	341	374	335	366	405	324	474	388	435	402	399	393	381	251	315	360

EXHIBIT 2

2012 Thamesford WWTP Secondary Digester

Lab Number	CA12311-APR12	CA12597-AUG12	CA12237-NOV12	CA12396-NOV12			
Sample Date	April 10, 11, 12	Aug. 23 & 24, 2012	Nov. 7 & 8	Nov. 15 to 16			
	NASM 20502	NASM 20568	NASM 20244	NASM 20953	Average		
Specific Gravity		1.0	1.0	1.0	1.0		
pH	units	7.07	7.33	7.18	7.18	7.19	
Alkalinity (as CaCO3)		315	2090	2470	2350	1806	
Total Solids	mg/L	36600	19000	23100	29500	27050	
Volatile Solids	mg/L	24400	12000	16000	19600	18000	
Total Nitrogen-kjeldahl (N)	mg/L	2190	1000	1960	2070	1805	
Ammonia+Ammonium (N)	mg/L	645	4.2	711	590	488	
Nitrite as N	mg/L	0.3	0.3	0.3	0.3	0.3	
Nitrate as N	mg/L	0.3	0.3	0.3	0.3	0.3	
Nitrite+Nitrate as N	mg/L	0.3	0.3	0.3	0.3	0.3	
Oil & Grease (Total)	mg/L		34	28	94	52	
As Arsenic	mg/L	0.3	0.3	0.3	0.3	0.3	
B Boron	mg/L	0.84	0.80	1.1	1.3	1.0	
Ca Calcium			640	930		785	
Cd Cadmium	mg/L	0.03	0.03	0.03	0.03	0.03	
Co Cobalt	mg/L	0.06	0.05	0.05	0.05	0.05	
Cr Chromium	mg/L	0.6	0.7	0.9	1.1	0.8	
Cu Copper	mg/L	5.1	4.4	6.1	8.0	5.9	
Hg Mercury	mg/L	0.001	0.002	0.002	0.002	0.002	
K Potassium	mg/L	130	100	130	140	125	
Mg Magnesium			110	160		135	
Mo Molybdenum	mg/L	0.1	0.1	0.2	0.2	0.2	
Na Sodium	mg/L	330	240	300	300	293	
Ni Nickel	mg/L	0.3	0.4	0.4	0.6	0.4	
P Phosphorus	mg/L	810	690	990	1200	923	
Pb Lead	mg/L	0.2	0.1	0.2	0.2	0.2	
Se Selenium	mg/L	0.3	0.03	0.3	0.3	0.2	
Zn Zinc	mg/L	11	8	12	16	11.8	
E Coli (cfu/1gm dried wgt)		909836	505263	813853	1220339	822009	Geomean
E Coli (cfu/100gm)		3330000	960000	1880000	3600000	2156721	Geomean

All results less than MDL taken as MDL

Results Compared to Criteria						Average	Criteria
As Arsenic	mg/kg	8	16	13	10	12	170
Cd Cadmium	mg/kg	0.8	1.6	1.3	1.0	1.2	34
Co Cobalt	mg/kg	2	3	2	2	2	340
Cr Chromium	mg/kg	16	37	39	37	32	2800
Cu Copper	mg/kg	139	232	264	271	227	1700
Hg Mercury	mg/kg	0.03	0.11	0.09	0.07	0	11
Mo Molybdenum	mg/kg	3	5	9	7	6	94
Ni Nickel	mg/kg	8	21	17	20	17	420
Pb Lead	mg/kg	5	5	9	7	7	1100
Se Selenium	mg/kg	8	2	13	10	8	34
Zn Zinc	mg/kg	301	421	519	542	446	4200

Tillsonburg WWTP De-Water Sludge 2012

Lab Number	CA12310-APR12	CA13574-APR12	CA12237-NOV12	CA13419-NOV12			
Sample Date	April 12 to 13	April 20 & 23	Nov. 7 & 8	Nov. 15, 16 & 17			
	NASM 20567	NASM 20606	NASM 20244	NASM 20991	Average		
Specific Gravity	1.0	1.2	1.0	1.0	1.1		
Oil & Grease (total)			28	5300	2664		
pH	units	7.64	7.66	7.18	7.64	7.53	
Alkalinity (mg/L as CaCO3)		3160	4230	2470	1430	2823	
Total Solids	mg/L	17.6	18.7	23100	17.8	5789	
Volatile Solids	mg/L	11.2	12.8	16000	11.2	4009	
Total Nitrogen-kjeldahl (N)	mg/L	7100	8000	1960	7000	6015	
Ammonia+Ammonium (N)	mg/L	800	700	711	400	653	
Nitrite as N	mg/L	2.6	3.5	0.3	14	5.1	
Nitrate as N	mg/L	0.3	17	0.3	61	19.7	
Nitrite+Nitrate as N	mg/L	2.6	21	0.3	75	24.7	
As Arsenic	mg/kg	2	6.3	0.3	3.4	3.0	
B Boron	mg/kg	40	19	1.1	31	22.8	
Ca Calcium	mg/kg	38000	31000	930	33000	25733	
Cd Cadmium	mg/kg	0.40	0.37	0.03	0.90	0.43	
Co Cobalt	mg/kg	6	5	0.05	6	4.26	
Cr Chromium	mg/kg	35	24	0.9	34	23.5	
Cu Copper	mg/kg	790	580	6.1	740	529	
Hg Mercury	mg/kg	0.8	0.7	0.002	2.0	0.876	
K Potassium	mg/kg	3400	3000	130	2400	2233	
Mg Magnesium	mg/kg	4800	4000	160	3600	3140	
Mo Molybdenum	mg/kg	10	4.2	0.2	5.4	5.0	
Na Sodium	mg/kg	2000	1600	300	1900	1450	
Ni Nickel	mg/kg	45	41	0.4	50	34.1	
P Phosphorus	mg/kg	48000	37000	990	46000	32998	
Pb Lead	mg/kg	27	23	0.2	27	19.3	
Se Selenium	mg/kg	6	5	0.3	6	4.3	
Zn Zinc		900	670	12	910	623.0	
E Coli (cfu/1gm dried wgt)		466174	2141328	813853	269663	684147	Geomean
E Coli (cfu/100gm)		8200000	40000000	1880000	4800000	7375955	Geomean
All results less than MDL taken as MDL							
Results Compared to Criteria						Average	Criteria
As Arsenic	mg/kg	2.0	6.3	0.3	3.4	3.0	170
Cd Cadmium	mg/kg	0.40	0.37	0.03	0.90	0.43	34
Co Cobalt	mg/kg	6.0	5.0	0.1	6.0	4.3	340
Cr Chromium	mg/kg	35	24	1	34	23	2800
Cu Copper	mg/kg	790	580	6	740	529	1700
Hg Mercury	mg/kg	0.8	0.7	0.002	2.0	0.9	11
Mo Molybdenum	mg/kg	10	4	0.20	5.40	5.0	94
Ni Nickel	mg/kg	45	41	0.40	50.0	34	420
Pb Lead	mg/kg	27	23	0.20	27.0	19	1100
Se Selenium	mg/kg	6	5	0.3	6	4	34
Zn Zinc	mg/kg	900	670	12	910	623	4200

2012 Woodstock WWTP Dewatered Sludge

Lab Number	CA12387-APR12	CA12546-APR12	CA12238-NOV12	CA12249-NOV12				
Sample Date	Apr. 16 to 17	Apr. 23 to 25	7-Nov-12	Nov. 6, 7, & 8				
	NASM 20501	NASM 20606	NASM 20953	NASM 20954	Average			
Specific Gravity	1.0	1.0	1.0	1.0	1.0			
Oil & Grease (total)			42000	40000	41000			
pH	units 7.28	7.98	8.37	8.02	7.91			
Alkalinity (as CaCO3)	2060	5080	3290	3130	3390			
Total Solids	mg/L 25.8	24.6	24.1	24.0	25			
Volatile Solids	mg/L 13.2	13.7	12.9	13.1	13			
Total Nitrogen-kjeldahl (N)	mg/L 11000	11000	8700	9300	10000			
Ammonia+Ammonium (N)	mg/L 500	700	2600	2800	1650			
Nitrite as N	mg/L 0.3	< 0.3	1.8	0.3	0.8			
Nitrate as N	mg/L 0.3	0.5	0.3	0.3	0.4			
Nitrite+Nitrate as N	mg/L 0.3	0.5	1.8	0.3	0.7			
As Arsenic	mg/kg 6.2	3.2	6.3	5.5	5.3			
B Boron	mg/kg 29	18	28	32	26.8			
Ca Calcium	mg/kg 47000	38000			42500			
Cd Cadmium	mg/kg 0.90	0.91	0.2	0.21	0.56			
Co Cobalt	mg/kg 7	6	4	4	5			
Cr Chromium	mg/kg 69	63	73	70	69			
Cu Copper	mg/kg 730	650	730	800	728			
Hg Mercury	mg/kg 0.9	0.8	0.8	0.7	0.8			
K Potassium	mg/kg 1200	1100	940	1000	1060			
Mg Magnesium	mg/kg 6800		13	5300	4038			
Mo Molybdenum	mg/kg 13	9.1		14	12			
Na Sodium	mg/kg 1100	960	1000	1000	1015			
Ni Nickel	mg/kg 85	77	97	110	92			
P Phosphorus	mg/kg 34000	32000	35000	35000	34000			
Pb Lead	mg/kg 41	31	32	39	36			
Se Selenium	mg/kg 4	4	4	4	4			
Zn Zinc	mg/kg 1200	1000	1100	1200	1125			
E Coli (cfu/1gm dried wgt)	65	13799	12868	25010	4117	Geomean		
E Coli (cfu/100gm)	210000	340000	310000	600000	339471	Geomean		
All results less than MDL taken as MDL								
Results Compared to Criteria					Average	Criteria		
As Arsenic	170mg/kg	mg/kg	6.2	3.2	6.3	5.5	5.3	170
Cd Cadmium	34 mg/kg	mg/kg	0.90	0.91	0.20	0.21	0.56	34
Co Cobalt	340 mg/kg	mg/kg	7	6	4	4	5	340
Cr Chromium	2800 mg/kg	mg/kg	69	63	73	70	69	2800
Cu Copper	1700 mg/kg	mg/kg	730	650	730	800	728	1700
Hg Mercury	11 mg/kg	mg/kg	0.9	0.8	0.8	0.7	0.8	11
Mo Molybdenum	94 mg/kg	mg/kg	13	9	0	14	9	94
Ni Nickel	420 mg/kg	mg/kg	85	77	97	110	92	420
Pb Lead	1100 mg/kg	mg/kg	41	31	32	39	36	1100
Se Selenium	34 mg/kg	mg/kg	4	4	4	4	4	34
Zn Zinc	4200 mg/kg	mg/kg	1200	1000	1100	1200	1125	4200

EXHIBIT 3

2012 Biosolids Applied - Oxford Cake

Month	Date(s)	Farmer	Farm Name	Township	County	NASM Plan ID	Acres Spread	% Solids	Ingersoll WT	Tillsonburg WT	Woodstock WT	Total WT
April												
	12 & 13			Zorra	Oxford	20567	68.91	20.47	0	831.05	0	831.05
	16 & 17			Zorra	Oxford	20501	89.83	23.45	0	0	1179.03	1179.03
	20 & 23			Oxford on Thames	Oxford	20606	27.91	23.88	0	378.99	0	378.99
	23 - 25			Oxford on Thames	Oxford	20606	93.41	23.32	0	0	1121.03	1121.03
April Total:							280.06	-	0	1210.04	2300.06	3510.1
November												
	7			Oxford on Thames	Oxford	20953	27.39	24.32	0	0	331.05	331.05
	8			Dorchester	Oxford	20954	91.88	24.32	0	0	1501.65	1501.65
	15 & 16			Oxford on Thames	Oxford	20991	71.5	23.18	0	634.72	0	634.72
November Total:							190.77	-	0	634.72	1832.7	2467.42
Yearly Total:							470.83	-	0	1844.76	4132.76	5977.52

2012 Biosolids Applied - Thamesford

Month	Date(s)	Farmer	Farm Name	Township	County	NASM Plan ID	Acres Spread	% Solids	Thamesford Cubic Meters
April									
	10, 11, 12			Zorra	Oxford	20502	98.6	2.01	3239
April Total:							98.6		3239
August									
	23 & 24			Oxford on Thames	Oxford	20568	46.66	1.98	2348.88
August Total:							46.66		2348.88
November									
	7 & 8			Nissouri	Middlesex	20244	28.8	2.23	1148
	15 & 16			Oxford on Thames	Oxford	20953	27.39	2.23	1406.24
November Total:							56.19		2554.24
Yearly Total:							201.45	-	8142.12



AMERICAN WATER
Terratec Environmental

Annual Report:
NASM: #20953
Material Applied: Woodstock
Date of Application: November 7, 2012

Nutrient Concentration (ppm - dry basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Ammonium + Nitrate)	Copper	Phosphorus	Zinc	Solids
4 Recent Avg.	6380	833.33	0.3	5546.67	833.63	668.33	30500.00	1076.67	243200.00
Average (kg/tonne)	0.64	0.08	0.00	0.55	0.08	0.07	3.05	0.11	24.32

** Sample results from SGS Lakefield Reseach Limited

Total Area: ha	11.09	Total Volume Applied (t)	331	Application Rate	29.90	tonne/Ha	Dry Tonnes /ha	7.30
Total Area: ac	27.39				13.32	ton/ac		

NUTRIENT VALUE

Nutrient	Organic N	Plant Aval N	Copper	Phosphorus	Zinc	Total Solids
Kg/Ha	16.55	2.49	1.99	91.03	3.21	725.87
LBS/ Acre	14.77	2.22	1.78	81.23	2.87	647.70

ORGANIC N (TKN) RELEASE

YEAR	% N Release	LBS N/ Acre
Year 1	30%	4.43
Year 2	10%	1.48
Year 3	5%	0.74

PHOSPHORUS AVAILABILITY

YEAR	% P Release	LBS P/Acre
Year 1	40%	32.49
Year 2	40%	32.49
Year 3	20%	16.25

Application Rate of Metals

	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn
Kg/ Ha	0.036	0.006	0.038	0.457	4.852	0.006	0.099	0.680	0.237	0.029	7.816
LBS/ Arce	0.032	0.005	0.034	0.408	4.329	0.005	0.088	0.607	0.211	0.026	6.974
Maximum allowable addition (kg/ha) per 5 years	1.1	0.27	2.7	23.30	13.6	0.09	0.8	3.56	9	0.27	33

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture



Annual Report:
 NASM: #20567
 Material Applied: Tillsonburg
 Date of Application: April 12 & 13, 2012

Nutrient Concentration (ppm - dry basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Ammonium + Nitrate)	Copper	Phosphorus	Zinc	Solids
4 Recent Avg.	21900	449.3	172.43	21450.70	621.73	624.29	38400.00	697.14	204700.00
Average (kg/tonne)	2.19	0.04	0.02	2.15	0.06	0.06	3.84	0.07	20.47

** Sample results from SGS Lakefield Rescearch Limited

Total Area: ha	29.70	Total Volume Applied (t)	831	Application Rate	28.00	tonne/Ha	Dry Tonnes /ha	5.70
Total Area: ac	73.36				12.47	ton/ac		

NUTRIENT VALUE

Nutrient	Organic N	Plant Aval N	Copper	Phosphorus	Zinc	Total Solids
Kg/Ha	60.02	1.74	1.75	107.44	1.95	572.75
LBS/ Acre	53.56	1.55	1.56	95.87	1.74	511.07

ORGANIC N (TKN) RELEASE

YEAR	% N Release	LBs N/ Acre
Year 1	30%	16.07
Year 2	10%	5.36
Year 3	5%	2.68

PHOSPHORUS AVAILABILITY

YEAR	% P Release	LBs P/Acre
Year 1	40%	38.35
Year 2	40%	38.35
Year 3	20%	19.17

Application Rate of Metals

	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn
Kg/ Ha	0.018	0.300	0.029	0.148	3.576	0.005	0.048	0.238	0.135	0.029	3.993
LBS/ Arce	0.016	0.268	0.026	0.132	3.191	0.004	0.043	0.212	0.120	0.026	3.563
Maximum allowable addition (kg/ha) per 5 years	1.1	0.27	2.7	23.30	13.6	0.09	0.8	3.56	9	0.27	33

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture



Nutrient Concentration (ppm - dry basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Ammonium + Nitrate)	Copper	Phosphorus	Zinc	Solids
4 Recent Avg.	17700	154.94	1.19	17545.06	156.13	638.89	32100.00	1001.89	233200.00
Average (kg/tonne)	1.77	0.02	0.00	1.75	0.02	0.06	3.21	0.10	23.32

** Sample results from SGS Lakefield Reseach Limited

Total Area: ha	37.82	Total Volume Applied (t)	1121	Application Rate	29.60	tonne/Ha	Dry Tonnes /ha	6.90
Total Area: ac	93.42				13.18	ton/ac		

NUTRIENT VALUE						
Nutrient	Organic N	Plant Aval N	Copper	Phosphourus	Zinc	Total Solids
Kg/Ha	52.00	0.46	1.89	95.15	2.97	691.21
LBS/ Acre	46.40	0.41	1.69	84.90	2.65	616.78

ORGANIC N (TKN) RELEASE		
YEAR	% N Release	LBs N/ Acre
Year 1	30%	13.92
Year 2	10%	4.64
Year 3	5%	2.32

PHOSPHORUS AVAILABILITY		
YEAR	% P Release	LBs P/Acre
Year 1	40%	33.96
Year 2	40%	33.96
Year 3	20%	16.98

Application Rate of Metals											
	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn
Kg/ Ha	0.032	0.005	0.046	0.434	4.416	0.005	0.077	0.524	0.220	0.028	6.925
LBS/ Arce	0.029	0.004	0.041	0.387	3.940	0.004	0.069	0.468	0.196	0.025	6.179
Maximum allowable addition (kg/ha) per 5 years	1.1	0.27	2.7	23.30	13.6	0.09	0.8	3.56	9	0.27	33

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture



Annual Report:
 NASM: #20606
 Material Applied: Tillsonburg
 Date of Application: April 20 & 23, 2012

Nutrient Concentration (ppm - dry basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Ammonium + Nitrate)	Copper	Phosphorus	Zinc	Solids
4 Recent Avg.	26910	2558.56	1.2	24351.44	2559.76	585.56	28520.00	924.11	238800.00
Average (kg/tonne)	2.69	0.26	0.00	2.44	0.26	0.06	2.85	0.09	23.88

** Sample results from SGS Lakefield Rescearch Limited

Total Area: ha	13.00	Total Volume Applied (t)	379	Application Rate	29.20	tonne/Ha	Dry Tonnes /ha	7.00
Total Area: ac	32.11				13.00	ton/ac		

NUTRIENT VALUE

Nutrient	Organic N	Plant Aval N	Copper	Phosphorus	Zinc	Total Solids
Kg/Ha	70.99	7.46	1.71	83.15	2.69	696.19
LBS/ Acre	63.35	6.66	1.52	74.19	2.40	621.22

ORGANIC N (TKN) RELEASE

YEAR	% N Release	LBs N/ Acre
Year 1	30%	19.00
Year 2	10%	6.33
Year 3	5%	3.17

PHOSPHORUS AVAILABILITY

YEAR	% P Release	LBs P/Acre
Year 1	40%	29.68
Year 2	40%	29.68
Year 3	20%	14.84

Application Rate of Metals

	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn
Kg/ Ha	0.029	0.005	0.043	0.395	4.076	0.005	0.074	0.507	0.211	0.026	6.433
LBS/ Arce	0.026	0.004	0.038	0.352	3.637	0.004	0.066	0.452	0.188	0.023	5.740
Maximum allowable addition (kg/ha) per 5 years	1.1	0.27	2.7	23.30	13.6	0.09	0.8	3.56	9	0.27	33

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture



Annual Report:
 NASM: #20501
 Material Applied: Woodstock
 Date of Application: April 10 - 12, 2012

Nutrient Concentration (ppm - dry basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Ammonium + Nitrate)	Copper	Phosphorus	Zinc	Solids
4 Recent Avg. Average (kg/tonne)	17700	1432.71	1.16	16267.29	1433.87	647.78	32300.00	1024.11	234500.00
	1.77	0.14	0.00	1.63	0.14	0.06	3.23	0.10	23.45

** Sample results from SGS Lakefield Rescearch Limited

Total Area: ha	36.36	Total Volume Applied (t)	1179	Application Rate	32.40	tonne/Ha	Dry Tonnes /ha	7.60
Total Area: ac	89.81				14.43	ton/ac		

NUTRIENT VALUE

Nutrient	Organic N	Plant Aval N	Copper	Phosphourus	Zinc	Total Solids
Kg/Ha	52.75	4.65	2.10	104.74	3.32	760.38
LBS/ Acre	47.07	4.15	1.87	93.46	2.96	678.50

ORGANIC N (TKN) RELEASE

YEAR	% N Release	LBs N/ Acre
Year 1	30%	14.12
Year 2	10%	4.71
Year 3	5%	2.35

PHOSPHORUS AVAILABILITY

YEAR	% P Release	LBs P/Acre
Year 1	40%	37.38
Year 2	40%	37.38
Year 3	20%	18.69

Application Rate of Metals

	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn
Kg/ Ha	0.037	0.006	0.051	0.482	4.925	0.006	0.088	0.583	0.257	0.031	7.783
LBS/ Arce	0.033	0.005	0.046	0.430	4.395	0.005	0.079	0.520	0.229	0.028	6.945
Maximum allowable addition (kg/ha) per 5 years	1.1	0.27	2.7	23.30	13.6	0.09	0.8	3.56	9	0.27	33

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture



Nutrient Concentration (ppm - dry basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Ammonium + Nitrate)	Copper	Phosphorus	Zinc	Solids
4 Recent Avg.	6380	866.33	0.3	5513.67	866.63	668.33	30500.00	1076.67	243200.00
Average (kg/tonne)	0.64	0.09	0.00	0.55	0.09	0.07	3.05	0.11	24.32

** Sample results from SGS Lakefield Reseach Limited

Total Area: ha	37.20	Total Volume Applied (t)	1502	Application Rate	40.40	tonne/Ha	Dry Tonnes /ha	9.80
Total Area: ac	91.88				17.99	ton/ac		

NUTRIENT VALUE						
Nutrient	Organic N	Plant Aval N	Copper	Phosphourus	Zinc	Total Solids
Kg/Ha	22.26	3.50	2.70	123.15	4.35	981.95
LBS/ Acre	19.86	3.12	2.41	109.89	3.88	876.20

ORGANIC N (TKN) RELEASE		
YEAR	% N Release	LBs N/ Acre
Year 1	30%	5.96
Year 2	10%	1.99
Year 3	5%	0.99

PHOSPHORUS AVAILABILITY		
YEAR	% P Release	LBs P/Acre
Year 1	40%	43.95
Year 2	40%	43.95
Year 3	20%	21.98

Application Rate of Metals											
	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn
Kg/ Ha	0.048	0.009	0.051	0.619	6.562	0.008	0.134	0.920	0.321	0.039	10.571
LBS/ Arce	0.043	0.008	0.046	0.552	5.855	0.007	0.120	0.821	0.286	0.035	9.433
Maximum allowable addition (kg/ha) per 5 years	1.1	0.27	2.7	23.30	13.6	0.09	0.8	3.56	9	0.27	33

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture



Nutrient Concentration (ppm - dry basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Ammonium + Nitrate)	Copper	Phosphorus	Zinc	Solids
4 Recent Avg.	8080	133.33	171	7946.67	304.33	656.67	41000.00	699.33	231500.00
Average (kg/tonne)	0.81	0.01	0.02	0.79	0.03	0.07	4.10	0.07	23.15

** Sample results from SGS Lakefield Reseach Limited

Total Area: ha	28.95	Total Volume Applied (t)	635	Application Rate	21.90	tonne/Ha	Dry Tonnes /ha	5.10
Total Area: ac	71.51				9.75	ton/ac		

NUTRIENT VALUE

Nutrient	Organic N	Plant Aval N	Copper	Phosphourus	Zinc	Total Solids
Kg/Ha	17.43	0.67	1.44	89.93	1.53	507.78
LBS/ Acre	15.55	0.60	1.29	80.25	1.37	453.10

ORGANIC N (TKN) RELEASE

YEAR	% N Release	LBs N/ Acre
Year 1	30%	4.67
Year 2	10%	1.56
Year 3	5%	0.78

PHOSPHORUS AVAILABILITY

YEAR	% P Release	LBs P/Acre
Year 1	40%	32.10
Year 2	40%	32.10
Year 3	20%	16.05

Application Rate of Metals

	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn
Kg/ Ha	0.015	0.003	0.022	0.170	3.332	0.005	0.035	0.214	0.129	0.019	3.549
LBS/ Arce	0.013	0.003	0.020	0.152	2.973	0.004	0.031	0.191	0.115	0.017	3.167
Maximum allowable addition (kg/ha) per 5 years	1.1	0.27	2.7	23.30	13.6	0.09	0.8	3.56	9	0.27	33

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture



AMERICAN WATER
Terratec Environmental

Annual Report:
NASM: #20502
Material Applied: Thamesford
Date of Application: April 10 - 12, 2012

Nutrient Concentration (mg/L - wet basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Nitrate + Ammonium)	Copper	Phosphorus	Zinc	Solids mg/kg
4 Month Avg.	1200	119.01	13.06	1080.99	132.07	3.36	570.00	6.11	20100.00
Average (Kg/m³)	1.20	0.12	0.01	1.08	0.13	0.00	0.57	0.01	20.10

** Sample results from SGS Lakefield Ressearch Limited

Total Area: ha	39.92	Total Volume Applied m3	3239	Application Rate	81.10	M³/Ha	Dry Tonnes /ha	1.60
Total Area: ac	98.60				32.83	M³/Ac		

NUTRIENT VALUE

Nutrient	Organic N	Plant Aval N	Copper	Phosphourus	Zinc	Total Solids
Kg/Ha	87.71	10.72	0.27	46.25	0.50	1630.86
LBS/ Acre	78.26	9.56	0.24	41.27	0.44	1455.23

ORGANIC N (TKN) RELEASE

YEAR	% N Release	LBs N/ Acre
Year 1	30%	23.48
Year 2	10%	7.83
Year 3	5%	3.91

PHOSPHORUS AVAILABILITY

YEAR	% P Release	LBs P/Acre
Year 1	40%	16.51
Year 2	40%	16.51
Year 3	20%	8.25

Application Rate of Metals

	Cu	Zn	Cr	Pb	Ni	Mo	Se	As	Co	Cd	Hg
Kg/ Ha	0.273	0.496	0.032	0.009	0.015	0.008	0.024	0.024	0.005	0.002	0.000
LBS/ Arce Maximum	0.244	0.443	0.029	0.008	0.013	0.007	0.021	0.021	0.004	0.002	0.000
Allowable Addition (kg/ha) per 5 years	13.6	33	23.30	9	3.56	0.8	0.27	1.4	2.7	0.27	0.090

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture



AMERICAN WATER
Terratec Environmental

Annual Report:

NASM: #20568

Material Applied: Thamesford

Date of Application: August 20 & 21, 2012

Nutrient Concentration (mg/L - wet basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Nitrate + Ammonium)	Copper	Phosphorus	Zinc	Solids mg/kg
4 Month Avg.	890	68.7	6.53	821.30	75.23	4.30	690.00	7.00	19800.00
Average (Kg/m³)	0.89	0.07	0.01	0.82	0.08	0.00	0.69	0.01	19.80

** Sample results from SGS Lakefield Ressearch Limited

Total Area: ha	18.89	Total Volume Applied m3	2349	Application Rate	124.40	M³/Ha	Dry Tonnes /ha	2.50
Total Area: ac	46.66				50.36	M³/Ac		

NUTRIENT VALUE

Nutrient	Organic N	Plant Aval N	Copper	Phosphorus	Zinc	Total Solids
Kg/Ha	102.13	9.35	0.53	85.80	0.87	2462.16
LBS/ Acre	91.13	8.35	0.48	76.56	0.78	2197.00

ORGANIC N (TKN) RELEASE

YEAR	% N Release	LBs N/ Acre
Year 1	30%	27.34
Year 2	10%	9.11
Year 3	5%	4.56

PHOSPHORUS AVAILABILITY

YEAR	% P Release	LBs P/Acre
Year 1	40%	30.62
Year 2	40%	30.62
Year 3	20%	15.31

Application Rate of Metals

	Cu	Zn	Cr	Pb	Ni	Mo	Se	As	Co	Cd	Hg
Kg/ Ha	0.535	0.870	0.060	0.016	0.037	0.014	0.037	0.037	0.006	0.004	0.000
LBS/ Arce Maximum	0.477	0.776	0.054	0.014	0.033	0.012	0.033	0.033	0.005	0.004	0.000
Allowable Addition (kg/ha) per 5 years	13.6	33	23.30	9	3.56	0.8	0.27	1.4	2.7	0.27	0.090

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture



Annual Report:
NASM: #20244
Material Applied: Thamesford
Date of Application: November 7 & 8, 2012

Nutrient Concentration (mg/L - wet basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN - Ammonium)	Plant Avail N (Nitrate + Ammonium)	Copper	Phosphorus	Zinc	Solids mg/kg
4 Month Avg.	970	56.54	1.7	913.46	58.24	5.09	830.00	9.08	22300.00
Average (Kg/m³)	0.97	0.06	0.00	0.91	0.06	0.01	0.83	0.01	22.30

** Sample results from SGS Lakefield Ressearch Limited

Total Area: ha	11.66	Total Volume Applied m3	1148	Application Rate	98.50	M³/Ha	Dry Tonnes /ha	2.20
Total Area: ac	28.80				39.88	M³/Ac		

NUTRIENT VALUE						
Nutrient	Organic N	Plant Aval N	Copper	Phosphourus	Zinc	Total Solids
Kg/Ha	89.94	5.73	0.50	81.72	0.89	2195.57
LBS/ Acre	80.25	5.12	0.45	72.92	0.80	1959.13

ORGANIC N (TKN) RELEASE		
YEAR	% N Release	LBs N/ Acre
Year 1	30%	24.08
Year 2	10%	8.03
Year 3	5%	4.01

PHOSPHORUS AVAILABILITY		
YEAR	% P Release	LBs P/Acre
Year 1	40%	29.17
Year 2	40%	29.17
Year 3	20%	14.58

Application Rate of Metals											
	Cu	Zn	Cr	Pb	Ni	Mo	Se	As	Co	Cd	Hg
Kg/ Ha	0.501	0.894	0.070	0.013	0.034	0.014	0.030	0.030	0.005	0.003	0.000
LBS/ Arce Maximum	0.447	0.798	0.062	0.012	0.030	0.012	0.027	0.027	0.004	0.003	0.000
Allowable Addition (kg/ha) per 5 years	13.6	33	23.30	9	3.56	0.8	0.27	1.4	2.7	0.27	0.090

Metals Not Beneficial for Agriculture Metals Beneficial for Agriculture



AMERICAN WATER
Terratec Environmental

Annual Report:

NASM: #20953

Material Applied: Thamesford

Date of Application: November 15 & 16, 2012

Nutrient Concentration (mg/L - wet basis)

Date Sampled	TKN	Ammonium	Nitrate	Organic N (TKN-Ammonium)	Plant Avail N (Nitrate + Ammonium)	Copper	Phosphorus	Zinc	Solids mg/kg
4 Month Avg.	970	56.54	1.7	913.46	58.24	5.09	830.00	9.08	22300.00
Average (Kg/m³)	0.97	0.06	0.00	0.91	0.06	0.01	0.83	0.01	22.30

** Sample results from SGS Lakefield Research Limited

Total Area: ha	11.09	Total Volume Applied m3	1406	Application Rate	126.80	M³/Ha	Dry Tonnes /ha	2.80
Total Area: ac	27.39				51.34	M³/Ac		

NUTRIENT VALUE

Nutrient	Organic N	Plant Aval N	Copper	Phosphorus	Zinc	Total Solids
Kg/Ha	115.81	7.38	0.65	105.23	1.15	2827.21
LBS/ Acre	103.34	6.59	0.58	93.90	1.03	2522.74

ORGANIC N (TKN) RELEASE

YEAR	% N Release	LBs N/ Acre
Year 1	30%	31.00
Year 2	10%	10.33
Year 3	5%	5.17

PHOSPHORUS AVAILABILITY

YEAR	% P Release	LBs P/Acre
Year 1	40%	37.56
Year 2	40%	37.56
Year 3	20%	18.78

Application Rate of Metals

	Cu	Zn	Cr	Pb	Ni	Mo	Se	As	Co	Cd	Hg
Kg/ Ha	0.645	1.151	0.090	0.016	0.044	0.018	0.038	0.038	0.006	0.004	0.000
LBS/ Arce	0.576	1.027	0.080	0.014	0.039	0.016	0.034	0.034	0.005	0.004	0.000
Maximum Allowable Addition (kg/ha) per 5 years	13.6	33	23.30	9	3.56	0.8	0.27	1.4	2.7	0.27	0.09

Metals Not Beneficial for Agriculture

Metals Beneficial for Agriculture

KW4081- Canfield East of Tracks Farm

Woodstock, Ontario

NASM Plan - Biosolids Beneficial Use

WESSUC inc.

[Improving Ontario's Soil]

1693 COLBORNE ST. EAST

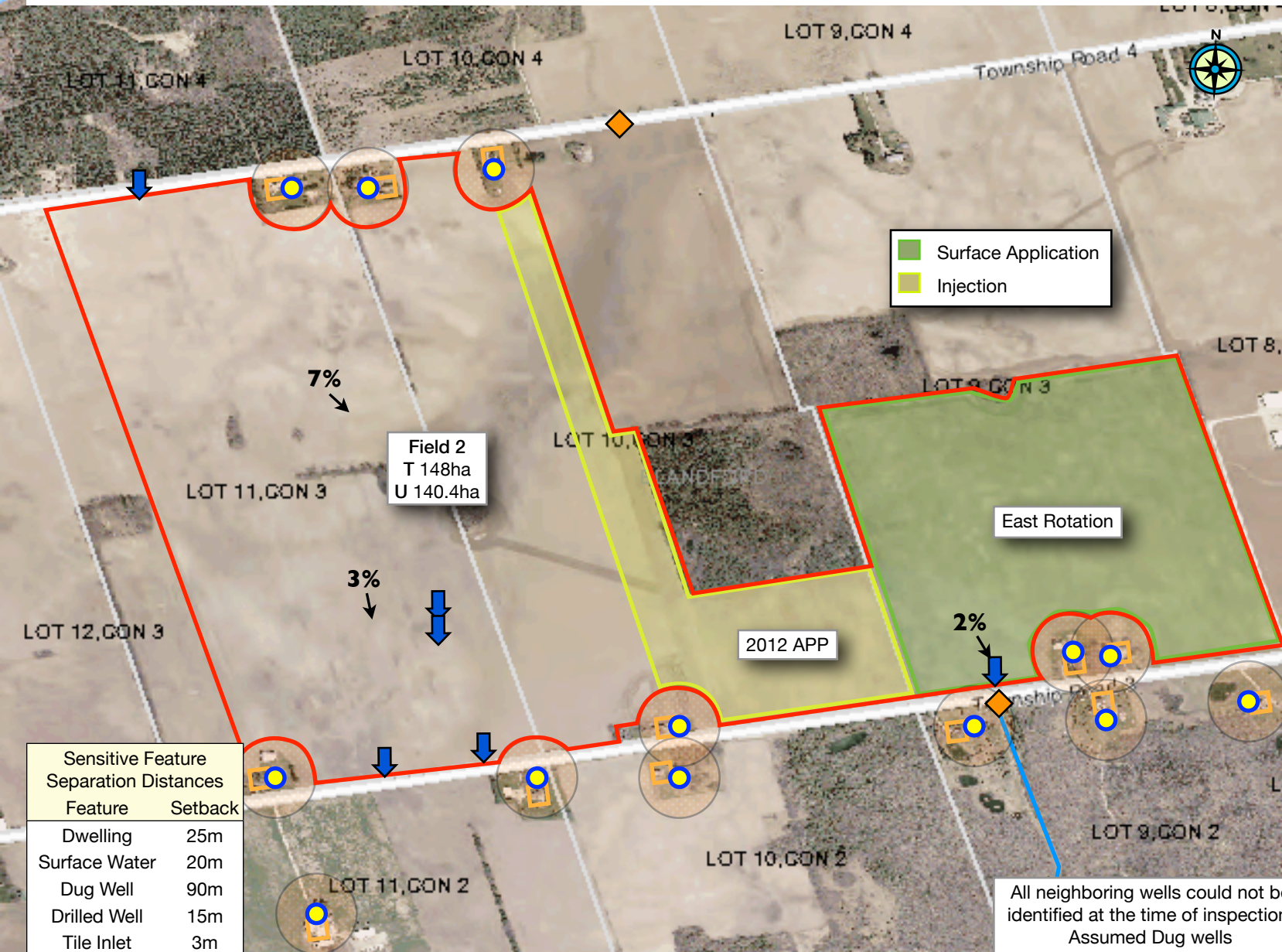
BRANTFORD, ON, N3T 5L4

T: 519.465.7385

F: 519.752.0840

matt@wessuc.com

WWW.WESSUC.COM



Site Assessment:

Person: Matthew Jolley
Date: 2012/08/01

Signature:

Site Information

Location:
Lot: pt 9, 10, 11
Concession: 3
Township: Blandford-Blenheim
County: Oxford

Field Area Information

Tillable Field Area: 148ha/367ac

Usable Field Area		
Field	Ha	Ac
2	140.4	346.8
Total	140.4	346.8

Sensitive Features Summary

Y/N	Feature	Distance to boundary
No	Municipal Well	> 100m
Yes	Dug Wells	> 90m
Yes	Drilled Wells	> 15m
Yes	Tile Inlets	> 3m
Yes	Tile Outlets	> 3m
Yes	Surface Water	150m
Yes	Dwellings	< 25m
No	Bedrock Outcrop	n/a
No	Residential, Commercial, Community, Institutional Use.	> 50m
	Tile Drainage	Yes
	Soil Depth to Bedrock	> 1m
	Areas subject to Ponding	No

Sensitive Feature Separation Distances	
Feature	Setback
Dwelling	25m
Surface Water	20m
Dug Well	90m
Drilled Well	15m
Tile Inlet	3m

Field 2
T 148ha
U 140.4ha

All neighboring wells could not be identified at the time of inspection. Assumed Dug wells

LEGEND

Parcel Area	Grassed Waterways	Barn/Other	Drilled Well	Tile Outlet	Rock Outcrop
Roads	Surface Water	Dwelling	Dug/other Well	Tile Inlet	Gas Well
Usable Area	Setback Area	Residential Area, Commercial, Community, Institutional Use			Municipal Well

Map scale 1:13,000

General Information

Any false or misleading information included in this document may result in non-compliance with any approvals or permits granted, and prosecution in accordance to the provisions of the Nutrient Management Act, 2002.

Compliance with Regulatory Standards

Based on the data supplied in this Post Application Report, the land application practices described in this document are in compliance with regulatory standards.

List of Attachments

Required Sampling and Analysis Results
Maps/Sketches

Preparer Information

Matthew Jolley (#NASMPDC11022)
Wessuc Inc.
1693 Colborne St. E
Brantford, ON, Canada N3T 5L4
Phone #1: 519.465.7385
Phone #2: 519.752.0837
Fax: 519.752.0840
Email: matt@wessuc.com

Agricultural Operation Information

Operator Contact Information
Stuart Canfield
745874 Township Road 4
RR#2
Woodstock, ON, Canada N0J 1L0
Phone #1: 519.860.1475
Owner is the same as the operator

Material Source Summary*Woodstock*

Form: Liquid
Category: 3
NASM Type: 11a. Liquid anaerobically digested sewage biosolids
Material Generator: Oxford County
195 Admiral Street
Woodstock, ON, Canada N4S 7W5
Phone #1: 519.537.8531

Metals Content (CM) Level: CM2 (confirmed by lab analysis)
Pathogen Content (CP) Level: CP2 (confirmed by lab analysis)
Odour Category (OC): OC1

Beneficial Use

Total Concentration of PAN, PAP, and PAK: 1452 ppm (Wet Basis)

Wet Basis

Nutrient	Value	
Dry Matter (DM)	3.06 %	
Nitrogen (N)	0.13 %	
Ammonia + Ammonium Nitrogen	338.5 ppm	
Nitrate + Nitrite Nitrogen	< 0.3 ppm	
Phosphorus (P)	0.09 %	
Arsenic (As)	< 0.3 ppm	CM1
Cadmium (Cd)	0.04 ppm	CM1
Cobalt (Co)	0.16 ppm	CM1
Chromium (Cr)	1.95 ppm	CM1
Copper (Cu)	19.75 ppm	CM2
Mercury (Hg)	0.02 ppm	CM1
Molybdenum (Mo)	0.41 ppm	CM2
Nickel (Ni)	2.58 ppm	CM2
Lead (Pb)	0.94 ppm	CM1
Selenium (Se)	< 0.3 ppm	CM2
Zinc (Zn)	29.8 ppm	CM2
E. coli	14461.438 CFU	CP2

Farm Unit Summary
East Track 4081

This farm is a:

- ASM Receiver
- Commercial Fertilizer Receiver
- NASM Receiver

Status: Owned

Farm Location

County of Oxford, Township of Blandford-Blenheim

BLANDFORD, Concession: 3, Lot: 9







BLANDFORD, Concession: 3, Lot: 10

BLANDFORD, Concession: 3, Lot: 11

 Roll Number(s) 324501001011300
 324501001011400
 324501001010200
 324501001011100
 324501001011000
 324501001010000
 324501001009905

Field Summary
Field 2, East Rotation

Area for Material: 39 ha
 Cropping Year: Fall 2012 - Fall 2013
 Planned Material Application Frequency: Two of Every Five Years

Field Input Description	Agronomic (kg/ha)		Crop Removal (kg/ha)	
	N	P2O5	N	P2O5
 Previous Material N Credit 1 application	3	0	3	0
 Material App 3 October 9, 2012 (actual) Woodstock @ 83 m ³ /ha Total Applied: 3237 m ³ Drag Hose, Not Incorporated Standing Crop	37	68	37	137
 Corn, grain @ 9.9 tonne/ha Planted: May 1, 2013 Harvested: October 25, 2013	-78	-20	-146	-74
 Nutrient Balance August 1, 2012 - October 24, 2013	-38 	48 	-106	63

NASM Minimum Setback Summary

Incorporation Details: Not Incorporated Standing Crop

Wells

Municipal Well 100 m
 Drilled Well (15 m deep, 6 m casing) 15 m
 Other Well 90 m

Surface Water

Min 3 m vegetated buffer in place 20 m

Odour

Single Dwelling 25 m
 Residential Area, Commercial, Community or Institutional 50 m

Waiting PeriodsPre-Harvest Waiting Period After Application

<u>Crop</u>	<u>Waiting Period</u>
Commercial sod	12 months
Hay and haylage	3 weeks
Tree fruits and grapes	3 months
Small fruits	15 months
Vegetables	12 months
Tobacco	12 months

Pre-Grazing Waiting Period After Application

<u>Livestock Type</u>	<u>Waiting Period</u>
Horses, beef or dairy cattle	2 months
Swine, sheep or goats	6 months

Depth of Unsaturated Soil

<u>Depth</u>	<u>Restrictions</u>
< 30 cm	No application is permitted
30 - 60 cm	Application is permitted if: 1) the land is pre-tilled no more than 7 days before the application AND 2) the maximum application rate is 40 m ³ /ha per 48 hours.
61 - 90 cm	Application is permitted if: 1) the land is pre-tilled no more than 7 days before the application OR 2) the maximum application rate is 40 m ³ /ha per 48 hours.
> 90 cm	No restrictions

NASM Application Summary
Regulated Metals

2 addition(s) over regulated time period

Regulated Metal	Soil Test	This Application	Total Applied	5 Year Limit
Arsenic (As)	4.3 ppm	0.025 kg/ha	0.055 kg/ha	4%
Cadmium (Cd)	1.4 ppm	0.003 kg/ha	0.018 kg/ha	7%
Cobalt (Co)	11.9 ppm	0.013 kg/ha	0.03 kg/ha	1%
Chromium (Cr)	25.9 ppm	0.162 kg/ha	0.436 kg/ha	2%
Copper (Cu)	17.2 ppm	1.639 kg/ha	5.689 kg/ha	42%
Mercury (Hg)	< 0.15 ppm	0.002 kg/ha	0.005 kg/ha	5%
Molybdenum (Mo)	< 0.3 ppm	0.034 kg/ha	0.062 kg/ha	8%
Nickel (Ni)	21 ppm	0.214 kg/ha	0.442 kg/ha	12%
Lead (Pb)	11.9 ppm	0.078 kg/ha	0.226 kg/ha	3%
Selenium (Se)	< 1 ppm	0.025 kg/ha	0.055 kg/ha	20%
Zinc (Zn)	87.9 ppm	2.473 kg/ha	5.46 kg/ha	17%

Total Solids

This application:

2.5 tonne/ha

Total applied over regulated time period:

6.9 tonne/ha (31% of 5 year limit)

Phosphate

Cropping Year	P2O5 Crop Removal Balance
Fall 2009 - Fall 2010	199 kg/ha
Fall 2010 - Fall 2011	-42 kg/ha
Fall 2011 - Fall 2012	-69 kg/ha
Fall 2012 - Fall 2013	63 kg/ha

Net P2O5 balance over regulated time period: 151 kg/ha (39% of 5 year limit)

Post Application Report Attachments

Material Sample Analysis Results

Attach and clearly label the NASM analytical test results. Each NASM sample must be collected, transported and analyzed in accordance with the Sampling and Analysis Protocol. Provide a sample key if required. The number of sample results must comply with "Part IX: Sampling, Analysis and Quality Standards and Land Application Rates" in Ontario Regulation 267/03.

In the current release of NMAN3, the user must average sample results outside of NMAN3 and enter in the average value into NMAN3. Although not required, it is recommended that a summary table of NASM results also be attached which lists out the individual sample results by date and includes the calculated averages used in NMAN3. This summary table will help to speed up the review of the NASM plan as all calculations must be checked.

Soil Sample Results

If new or additional soil analysis has been carried out for the NASM application area since the approval of the NASM plan or the registration of the operation, include those analyses with this document. Each soil sample must be collected, transported and analyzed in accordance with the Sampling and Analysis Protocol.

Maps/Sketches

Post application sketch(es) are based on actual land application activities and conditions that existed at the time of land application. The sketch(es) must address the presence or absence of the following components, and include the separation distances put in place to protect sensitive features:

- field identifier, field boundaries and sections within the field
- field tile drains and the location of the tile inlets and tile outlets
- areas where the soil depth is less than 30 cm and rock outcrops
- areas subject to ponding
- location of dwellings, residential areas and areas of commercial, community or institutional land uses
- location of any municipal wells within 100 metres of the NASM application area
- location of all other known wells within 90 metres of the NASM application area
- location of all surface water within 150 metres of the NASM application area
- maximum sustained slopes within 150 metres of surface water

List of Attachments:

Required Sampling and Analysis results
Maps/Sketches

General Information

Any false or misleading information included in this document may result in non-compliance with any approvals or permits granted, and prosecution in accordance to the provisions of the Nutrient Management Act, 2002.

Compliance with Regulatory Standards

Based on the data supplied in this Post Application Report, the land application practices described in this document are in compliance with regulatory standards.

List of Attachments

Required Sampling and Analysis Results
Maps/Sketches

Preparer Information

Matthew Jolley (#NASMPDC11022)
Wessuc Inc.
1693 Colborne St. E
Brantford, ON, Canada N3T 5L4
Phone #1: 519.465.7385
Phone #2: 519.752.0837
Fax: 519.752.0840
Email: matt@wessuc.com

Agricultural Operation Information

Operator Contact Information
Stuart Canfield
745874 Township Road 4
RR#2
Woodstock, ON, Canada N0J 1L0
Phone #1: 519.860.1475
Owner is the same as the operator

Material Source Summary***Woodstock***

Form: Liquid
Category: 3
NASM Type: 11a. Liquid anaerobically digested sewage biosolids
Material Generator: Oxford County
195 Admiral Street
Woodstock, ON, Canada N4S 7W5
Phone #1: 519.537.8531

Metals Content (CM) Level: CM2 (confirmed by lab analysis)
Pathogen Content (CP) Level: CP2 (confirmed by lab analysis)
Odour Category (OC): OC1

Beneficial Use

Total Concentration of PAN, PAP, and PAK: 1452 ppm (Wet Basis)

Wet Basis

Nutrient	Value	
Dry Matter (DM)	3.06 %	
Nitrogen (N)	0.13 %	
Ammonia + Ammonium Nitrogen	338.5 ppm	
Nitrate + Nitrite Nitrogen	< 0.3 ppm	
Phosphorus (P)	0.09 %	
Arsenic (As)	< 0.3 ppm	CM1
Cadmium (Cd)	0.04 ppm	CM1
Cobalt (Co)	0.16 ppm	CM1
Chromium (Cr)	1.95 ppm	CM1
Copper (Cu)	19.75 ppm	CM2
Mercury (Hg)	0.02 ppm	CM1
Molybdenum (Mo)	0.41 ppm	CM2
Nickel (Ni)	2.58 ppm	CM2
Lead (Pb)	0.94 ppm	CM1
Selenium (Se)	< 0.3 ppm	CM2
Zinc (Zn)	29.8 ppm	CM2
E. coli	14461.438 CFU	CP2

Farm Unit Summary
East Track 4081

This farm is a:

- ASM Receiver
- Commercial Fertilizer Receiver
- NASM Receiver

Status: Owned

Farm Location

County of Oxford, Township of Blandford-Blenheim

BLANDFORD, Concession: 3, Lot: 9







BLANDFORD, Concession: 3, Lot: 10

BLANDFORD, Concession: 3, Lot: 11

 Roll Number(s) 324501001011300
 324501001011400
 324501001010200
 324501001011100
 324501001011000
 324501001010000
 324501001009905

Field Summary
Field 2, 2012 App

Area for Material: 19.5 ha
 Cropping Year: Fall 2012 - Fall 2013
 Planned Material Application Frequency: Two of Every Five Years

Field Input Description	Agronomic (kg/ha)		Crop Removal (kg/ha)	
	N	P2O5	N	P2O5
 Previous Material N Credit 1 application	3	0	3	0
 Material App 4 November 6, 2012 (actual) Woodstock @ 83 m ³ /ha Total Applied: 1618 m ³ Drag Hose, Injected	40	68	40	137
 Corn, grain @ 9.9 tonne/ha Planted: May 1, 2013 Harvested: October 25, 2013	-130	-20	-146	-74
 Nutrient Balance October 1, 2012 - October 24, 2013	-87 	48 	-103	63

NASM Minimum Setback Summary

Incorporation Details: Injected

Wells

Municipal Well 100 m
 Drilled Well (15 m deep, 6 m casing) 15 m
 Other Well 90 m

Surface Water

Min 3 m vegetated buffer in place 20 m

Odour

Single Dwelling 25 m
 Residential Area, Commercial, Community or Institutional 50 m

Waiting PeriodsPre-Harvest Waiting Period After Application

<u>Crop</u>	<u>Waiting Period</u>
Commercial sod	12 months
Hay and haylage	3 weeks
Tree fruits and grapes	3 months
Small fruits	15 months
Vegetables	12 months
Tobacco	12 months

Pre-Grazing Waiting Period After Application

<u>Livestock Type</u>	<u>Waiting Period</u>
Horses, beef or dairy cattle	2 months
Swine, sheep or goats	6 months

Depth of Unsaturated Soil

<u>Depth</u>	<u>Restrictions</u>
< 30 cm	No application is permitted
30 - 60 cm	No application is permitted
61 - 90 cm	No application is permitted
> 90 cm	No restrictions

NASM Application Summary
Regulated Metals

2 addition(s) over regulated time period

Regulated Metal	Soil Test	This Application	Total Applied	5 Year Limit
Arsenic (As)	4.3 ppm	0.025 kg/ha	0.055 kg/ha	4%
Cadmium (Cd)	1.4 ppm	0.003 kg/ha	0.018 kg/ha	7%
Cobalt (Co)	11.9 ppm	0.013 kg/ha	0.03 kg/ha	1%
Chromium (Cr)	25.9 ppm	0.162 kg/ha	0.436 kg/ha	2%
Copper (Cu)	17.2 ppm	1.639 kg/ha	5.689 kg/ha	42%
Mercury (Hg)	< 0.15 ppm	0.002 kg/ha	0.005 kg/ha	5%
Molybdenum (Mo)	< 0.3 ppm	0.034 kg/ha	0.062 kg/ha	8%
Nickel (Ni)	21 ppm	0.214 kg/ha	0.442 kg/ha	12%
Lead (Pb)	11.9 ppm	0.078 kg/ha	0.226 kg/ha	3%
Selenium (Se)	< 1 ppm	0.025 kg/ha	0.055 kg/ha	20%
Zinc (Zn)	87.9 ppm	2.473 kg/ha	5.46 kg/ha	17%

Total Solids

This application: 2.5 tonne/ha
 Total applied over regulated time period: 6.9 tonne/ha (31% of 5 year limit)

Phosphate

Cropping Year	P2O5 Crop Removal Balance
Fall 2009 - Fall 2010	199 kg/ha
Fall 2010 - Fall 2011	-74 kg/ha
Fall 2011 - Fall 2012	-42 kg/ha
Fall 2012 - Fall 2013	63 kg/ha

Net P2O5 balance over regulated time period: 146 kg/ha (37% of 5 year limit)

Post Application Report Attachments

Material Sample Analysis Results

Attach and clearly label the NASM analytical test results. Each NASM sample must be collected, transported and analyzed in accordance with the Sampling and Analysis Protocol. Provide a sample key if required. The number of sample results must comply with "Part IX: Sampling, Analysis and Quality Standards and Land Application Rates" in Ontario Regulation 267/03.

In the current release of NMAN3, the user must average sample results outside of NMAN3 and enter in the average value into NMAN3. Although not required, it is recommended that a summary table of NASM results also be attached which lists out the individual sample results by date and includes the calculated averages used in NMAN3. This summary table will help to speed up the review of the NASM plan as all calculations must be checked.

Soil Sample Results

If new or additional soil analysis has been carried out for the NASM application area since the approval of the NASM plan or the registration of the operation, include those analyses with this document. Each soil sample must be collected, transported and analyzed in accordance with the Sampling and Analysis Protocol.

Maps/Sketches

Post application sketch(es) are based on actual land application activities and conditions that existed at the time of land application. The sketch(es) must address the presence or absence of the following components, and include the separation distances put in place to protect sensitive features:

- field identifier, field boundaries and sections within the field
- field tile drains and the location of the tile inlets and tile outlets
- areas where the soil depth is less than 30 cm and rock outcrops
- areas subject to ponding
- location of dwellings, residential areas and areas of commercial, community or institutional land uses
- location of any municipal wells within 100 metres of the NASM application area
- location of all other known wells within 90 metres of the NASM application area
- location of all surface water within 150 metres of the NASM application area
- maximum sustained slopes within 150 metres of surface water

List of Attachments:

Required Sampling and Analysis results
Maps/Sketches

Woodstock Digester

Sample Analysis Summary

Date		May-12	Jun-12	Jul-12	Aug-12	Sep-12	Average	%
Total Solids	%	2.7	3.26	3.33	2.94	3.85	3.22	
TKN	% wet weight	1305	1385	1560	1055.5	3025	1666.10	0.17
Ammonium and Ammonia	ppm	367.5	309	331.5	346	359	342.60	
Nitrate + Nitrite	ppm	<.3	<.3	<.3	<.3	<.3	<.3	
Phosphorus (P)	% wet weight	795	940	1050	835	1150	954.00	0.10
Potassium (K)	% wet weight	68	77	77	74	77	74.60	0.01
Arsenic (As)	ppm	<.3	<.3	<.3	<.3	<.3	<.3	
Cadmium (Cd)	ppm	<.03	0.04	0.04	0.04	0.04	0.04	
Cobalt (Co)	ppm	0.13	0.165	0.19	0.155	0.185	0.17	
Chromium (Cr)	ppm	1.65	2	2.3	1.85	2.3	2.02	
Copper (Cu)	ppm	16	19.5	22.5	21	26.5	21.10	
Mercury (Hg)	ppm	0.01	0.014	0.019	0.051	0.0255	0.02	
Molybdenum (Mo)	ppm	0.35	0.35	0.5	0.435	0.55	0.44	
Nickel (Ni)	ppm	2.3	2.55	3.05	2.4	3.6	2.78	
Lead (Pb)	ppm	0.65	0.8	1.25	1.05	1.35	1.02	
Selenium (Se)	ppm	<.3	<.3	<.3	<.3	<.3	<.3	
Zinc (Zn)	ppm	23.5	28	35.5	32.5	43	32.50	
E. Coli	cfu/g	458258	746726	210428	474974	51381	388353.40	

EXHIBIT 4

