

**CARVER COUNTY/ RW FARMS DEMONSTRATION PROJECT
ON THE COLLECTION AND COMPOSTING OF COMMINGLED
ORGANICS AND YARD WASTE**

2008 ANNUAL REPORT



Submitted By:

Carver County Environmental Services
600 East Fourth Street
Chaska, Minnesota 55318

Submitted To:

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155

August 27, 2009

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I. INTRODUCTION

It is estimated that food waste and non-recyclable paper represent almost 1/3 of the weekly residential single-family trash. Carver County pledged to increase the collection and recovery of food waste and other organics by 20% by 2008. To reach this goal Carver County was one of the first public entities in Minnesota to implement a co-collection program intended to demonstrate that collection costs could be reduced by co-collecting organics with yard waste in the same collection container and compost the material at an approved yard waste compost site.



Organics processed at Arboretum Site

Carver County's innovative approach to collecting and composting organics began in 2007 with a demonstration project allowing for the co-collection of food waste, non recyclable paper and yard waste. The demonstration project started with residential curbside organics collection for approximately 600 Waste Management customers in Chanhassen. The material collected was delivered to the RW Farms compost site located at the University of Minnesota Landscape Arboretum in Chanhassen.

In 2008 the program was expanded to include:

- a second organics composting site in the City of Mayer
- four new waste haulers and eight new municipalities
- increased participation grew to over 1500 households
- accepting organics from commercial accounts as well as special events such as the Women's US Open Golf Tournament

The project's success has also contributed to changing the statutory definition of organics, which now allows for the co-collection of food waste and non-recyclable paper with yard waste throughout the State. Operating results and data submitted as part of this demonstration project will also assist the Minnesota Pollution Control Agency and others in the effort to develop a new facility type which can accept organics without the regulatory requirement of a MSW Compost facility permit. Should such a the rule change be made, facilities such as the two operating in Carver County can be duplicated elsewhere in the state and significantly increase the rates of organics recycling.

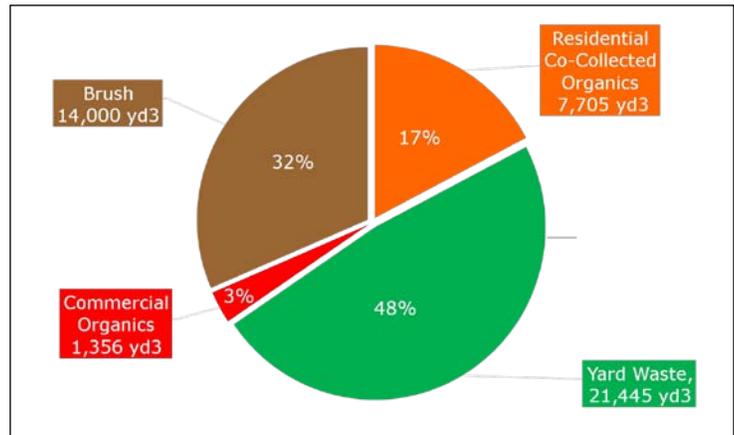
II. PROJECT METRICS

A. QUANTITY AND COMPOSITION OF DELIVERED MATERIALS

In 2008, approximately 9,061 cubic yards of source separated organic material was delivered to the Minnesota Landscape Arboretum's yard waste composting site as part of

the demonstration project. Materials collected as part of this project include 7,705 cubic yards of residential co-collected organics with yard waste in addition to 1,356 cubic yards of organics from commercial sources. Organics in this report are defined as food waste and non-recyclable paper. Additional materials were processed on the site and included 21,445 cubic yards mixed yard waste (leaves, grass, shrub trimmings, etc.) and 14,000 cubic yards of brush. The total incoming material for the 2008 was 44,506 cubic yards. The

Chart 1.0
Material Volumes



percentages and material volumes can be found in Chart 1.0. The approved capacity for the site is 20,000 cubic yards on the site at any given time. Although the total volume of material delivered to the site for 2008 was higher than 2007, the approved capacity was never reached because material was routinely processed into either finished compost or mulch and marketed.

Yard waste and woody materials are managed separately from the mixed organics. Regardless of their source, however, leaves and ground brush are added to the mixed organics as a bulking agent/carbon source in an approximate 3-1 ratio and larger size materials are then screened out from the finished compost created from this project.

B. COMPOSTING PILES TEMPERATURE MEASUREMENTS

During the yard waste season, the mixed organics from the residential routes come into the Arboretum site several days a week. Once the Spring-Fall yard waste season is over, SSCM collection moves to every other week though the routes are still on the same day. The weekly delivery of mixed organics is combined into one static pile for the initial composting phase.

In this initial stage of composting, the static piles are monitored for temperature inside the piles. Readings are taken with an average calculated. If needed, piles are turned to maintain optimal temperatures above 131⁰ F.



Temperature reading on compost pile

Piles are monitored closely to achieve Process to Further Reduce Pathogens (PFRP), which for the static aerated pilot method of composting is maintaining 55°C (131°F) for at least a seven day period. During 2008, 31 static piles for the initial composting stage of the mixed organics were created.

Once piles achieved PFRP, they were screened to remove contaminants and placed in larger static piles for curing. The compost in the curing stage remains in these larger static piles for 60 to 90 days before being screened. During the curing period, the piles are turned several times to provide aeration and accelerate the curing process.

C. FINISHED COMPOST

In 2008, a total of approximately 7,084 cubic yards of finished materials were produced at the Arboretum’s composting site. The finished material includes:

- Finished source separated organics/yard waste compost (not used by the Arboretum)– 584 yds³
- Wood mulch – 6,500 yds³

An estimated 25% of the finished compost produced at this site was used by the Arboretum on gardens within the property. The majority of the wood mulch produced at the site was sold as a bio-fuel for the production of electricity.



Arboretum employee utilizing compost on flower beds

Analytical testing was done on finished compost from the mixed organics received in 2008. Samples of finished compost made from materials received in 2008 were taken in February, March and June 2009. Composite grab sampling was performed to ensure representative samples were taken. Samples taken in February were analyzed by Braun Intertec Laboratory. The contaminant levels tested in the compost were well below the contaminant concentration limits for Class I compost listed under Minnesota Rules 7035.2836, Subp. 6. Analysis for copper, zinc and PCBs were inadvertently left out on the sample sent in for the February sampling of the 2008 finished compost. Additional samples

of the 2008 finished compost taken in March and June of 2009 were analyzed by Soil Control Lab, Watsonville, California. The test levels were well below the Class I compost concentration limits. PCB’s were not included in the analysis. The results of the 2007 batch testing was completed for all Class I test parameters including copper, zinc and PCBs and all parameters were well below the contamination limits for Class I compost. All test results and are illustrated in Chart 2. Copies of the lab reports for sample analysis are included in Appendix 1.

**Table 2.0
Finished Compost Test Results
Materials Received in 2008-Tested February 2009**

Contaminant	Minnesota Class I Compost Heavy Metals and PCB Limits (mg/kg)	Mixed Organics Compost Test Results (mg/kg)
Arsenic	41	4.1
Cadmium	39	<.77
Copper	1,500	
Lead	300	14
Mercury	5	0.040
Molybdenum	18	<1.5
Nickel	420	11
Selenium	100	<3.1
Zinc	2,800	
PCB	6	

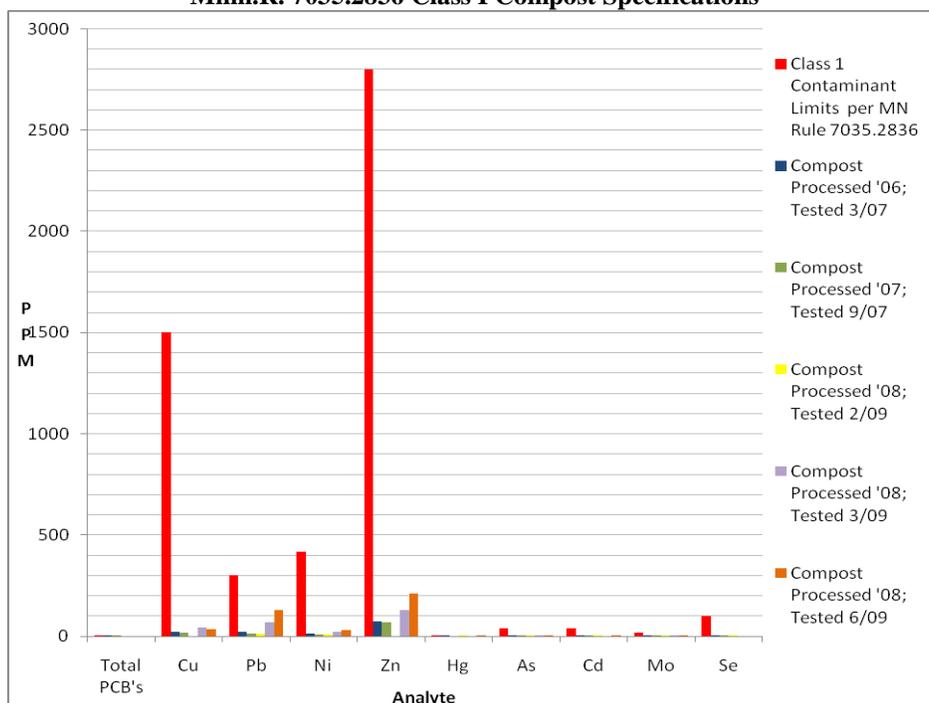
Table 2.1
Finished Compost Test Results
Materials Received in 2008-Tested March 2009

Contaminant	Minnesota Class I Compost Heavy Metals and PCB Limits (mg/kg)	Mixed Organics Compost Test Results (mg/kg)
Arsenic	41	6.7
Cadmium	39	
Copper	1,500	42
Lead	300	68
Mercury	5	<1.0
Molybdenum	18	1.8
Nickel	420	22
Selenium	100	<1.0
Zinc	2,800	130
PCB	6	

Table 2.2
Finished Compost Test Results
Materials Received in 2008-Tested June 2009

Contaminant	Minnesota Class I Compost Heavy Metals and PCB Limits (mg/kg)	Mixed Organics Compost Test Results (mg/kg)
Arsenic	41	4.1
Cadmium	39	1.4
Copper	1,500	37
Lead	300	130
Mercury	5	.065
Molybdenum	18	1.2
Nickel	420	29
Selenium	100	<0.5
Zinc	2,800	210
PCB	6	

Chart 2
Finished Compost Test Results as Compared to
Minn.R. 7035.2836 Class I Compost Specifications



D. PRECIPITATION

Daily precipitation was recorded using data from the National Weather Service Station located in Chanhassen, MN, which is 4 miles from the site. The summer months saw a below average rainfall.

Table 1.0 shows the actual precipitation amounts measured during the months of January through December.

**Table 1.0
2008 Monthly Precipitation**

Month	Measured Precipitation*	Historical Monthly Average Precipitation**
January	.06	.93
February	.36	.62
March	1.10	1.77
April	2.84	2.40
May	2.46	3.65
June	2.23	4.21
July	3.15	4.43
August	1.93	4.48
September	2.62	2.91
October	1.48	2.14
November	1.28	2.00
December	.26	.84

*Inches as reported by <http://www.wunderground.com/weatherstation>

** Inches as reported by the MN State Climatology Office (www.climate.umn.edu)

E. CONTACT WATER AND STORM WATER DATA

The compost site was engineered to capture contact water and storm water during the composting process through ten (10) buried ceramic tubes (lysimeters) with collection points to the sides of, underneath, and in front of the active composting area (See Diagram 1). Of the four collection tubes located in front of (down slope) the active composting area, two of them are located just north of a 2-foot by 2-foot compost berm with the other two located just south of the berm. A 3-inch seeded compost blanket is in place on the north and south sides of this berm to absorb additional runoff.

Samples were collected to record volumes of contact water following significant rainfall events. Sample volumes varied considerably for each collection location. The largest volumes of water were collected from lysimeters A, B, C and D which are located just north and just south of the berm. Lysimeters located directly under or next to the organics pile had significantly less water collected. Relatively low volumes of water collected in the lysimeters could be a reflection of the high absorption capacity of the compost. Sample volumes are compiled in Table 3 and are averaged in Chart3.



Installation of lysimeters

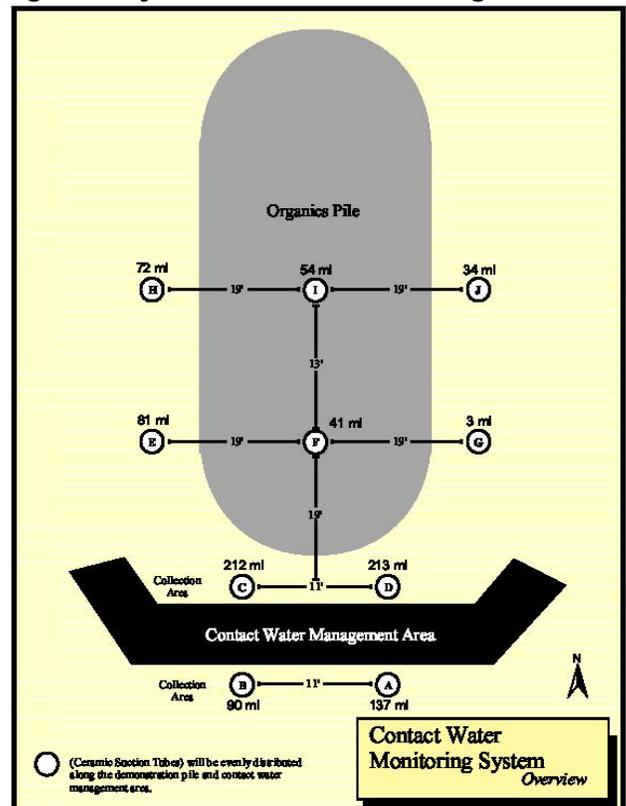
**Table 3
Contact Water Volume Data-Arboretum**

Sample Date	A (ml)	B (ml)	C (ml)	D (ml)	E (ml)	F (ml)	G (ml)	H (ml)	I (ml)	J (ml)
5/25/2007	261	103	210	330	130	160	0	466	118	113
6/4/2007	202	12	325	268	240	5	30	250	10	170
6/7/2007	56	21	0	200	116	100	12	139	98	110
6/21/2007	0	0	472	0	190	20	0	140	134	82
7/9/2007	0	0	48	260	216	62	18	262	112	116
7/26/2007	0	0	144	0	82	54	5	100	0	137
8/7/2007	0	0	0	82	73	0	0	82	0	120
8/11/2007	0	0	64	315	320	0	0	79	80	104
8/15/2007	350	335	400	324	200	0	0	55	150	72
8/24/2007	330	322	400	330	146	40	0	100	26	42
8/29/2007	396	38	440	356	98	82	0	90	132	72
9/19/2007	475	360	400	225	124	20	0	62	245	0
10/10/2007	260	325	350	300	100	0	25	0	280	0
10/22/2007	290	397	505	480	237	125	0	63	166	0
5/12/2008	400	Trace	500	300	92	75	0	5	Trace	-
5/22/2008	244	240	318	230	Trace	140	0	88	Trace	0
5/30/2008	190	113	154	278	Trace	112	0	50	12	Trace
6/4/2008	104	42	-	220	40	100	Trace	14	12	Trace
6/10/2008	130	0	62	274	Trace	30	0	30	20	0
6/17/2008	423	402	310	325	14	100	Trace	23	10	0
7/10/08	Trace	Trace	4	Trace	Trace	8	0	14	Trace	0
7/17/08	Trace	0	Trace	209	4	2	0	6	2	0
7/21/08	0	0	250	0	Trace	0	0	5	Trace	0
8/04/08	0	0	30	164	0	Trace	0	10	Trace	0
8/14/08	0	0	Trace	190	Trace	0	Trace	Trace	0	0
9/11/08	0	0	Trace	10	Trace	0	0	Trace	0	0
9/15/08	0	0	364	218	0	0	0	Trace	0	0
9/27/08	0	0	10	Trace	0	0	0	0	0	0
10/23/08	0	0	226	344	0	0	0	0	0	0
11/14/08	0	0	372	152	0	0	0	30	0	0

In addition to the volume measurements that were collected from the lysimeters, samples were also collected in April, June and November and were analyzed for 503 metals (Arsenic, Cadmium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium and Zinc), specific conductance, nitrates, total Kjeldahl nitrogen(TKN), total Phosphorus, total organic carbon (TOC), and pH. Results of these tests are summarized in Appendix 2.

Because there are no standards currently established for contact water from compost sites, it was agreed to with MPCA that the data from the samples was compared to the most stringent water standards (where applicable), which are those used for drinking water. The Minnesota Department of Health (MDH) has adopted "Health Risk Limits" or "Action Levels" for drinking water contaminants. Four of the samples analyzed had concentration levels above the MDH Health Risk Limit for Arsenic, (HRL for As is 10ug/l) The four samples above this level were 15.6ug/l; 32.1ug/l;13.5ug/l; and 17.9 ug/l. One of the samples had a concentration level above the MDH Health Risk Limit for Nickel. The HRL

Diagram 1-Lysimeter Locations/Average Volumes



for Ni is 100 ug/l and the sample concentration was 147 ug/l. As previously stated, that the MDH Health Risk limits were developed for groundwater, and not for compost. Therefore, no regulatory thresholds were exceeded. In addition, no soils analysis was completed on the soils beneath the active composting area prior to the beginning of the demonstration project to determine background levels.

III. PROJECT DEVELOPMENTS/RECOGNITION

In its second full year of operation, there were a number of recognitions and acknowledgements that the project received for its demonstrated support for organics composting.

- The Organics Project was a recipient of a 2008-09 Minnesota Governor's Award for Pollution Prevention. The County along with the project partners RW Farms, Waste Management, Inc. and the University of Minnesota Landscape Arboretum were selected for the award for their innovative approach to collecting and composting organics.
- The Recycling Association of Minnesota awarded Carver County and RW Farms the 2008 Recycler of the Year award in recognition of their groundbreaking work in organics composting.



Governor's Award Recipients

- Carver County and RW Farms were recognized as one of three finalists nominated to receive the Minnesota Environmental Initiative Award for leading efforts to change the amount of organic material entering the landfill.
- Carver County received a Local Government Innovation Award from the Humphrey Institute's Public and Nonprofit Leadership Center. The County was given the award for its organic waste composting program, which successfully demonstrated the effectiveness of simultaneous collecting and composting of yard waste, food waste and non recyclable paper. Carver County was the first public entity in Minnesota to implement this type of collection and also contributed to an effort to clarify the statutory definition of organics to allow for this type of co-collection to occur.
- In addition to site tours, project partners presented information on the project to further advance education and understanding of organics recycling challenges and successes to numerous organizations including but not limited to school groups, Minnesota Chamber of Commerce Waste Wise, MPCA CISSR group, Three Rivers Parks District, Carver County Public Health, Carver County Water and Natural Resource Committee, and Carver County Attorneys.

IV. SUMMARY AND CONCLUSIONS

Overall, a very successful second year of operations of the demonstration project was completed. The total amount of incoming material including yard waste, brush and organics delivered to the site increased from 12,898 cubic yards in 2007 to 44,506 cubic yards in 2008. The organics portion of the incoming material also increased from 3,548 to 9,061 cubic yards.

Education and awareness of organics recycling as a method of waste management was significantly increased to those working in the field of solid waste management, government officials and the general public as a result of the publicity and public outreach that resulted from this project. Government officials, various city staff, school groups, compost site operators, environmental groups and school groups frequently requested tours of the project site. There was an increase in the frequency that the demonstration project and source separated organics were featured in local newspaper and television news, thus further raising awareness of organics recycling as a method of waste management. For a complete list of articles please refer to Appendix 4.

APPENDIX 1
COMBINED LAB REPORTS
Compost Analysis

FOR MARCUS

MINNESOTA VALLEY TESTING LABORATORIES, INC.

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724
51 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885

MEMBER
ACIL

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

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RUSS LEISTIKO
RW FARMS
17505 KELLY LAKE RD
CARVER MN 55315

Report Date: 23 Mar 07
Lab Number: 07-N1417
Work Order #:12-2777
Account #: 040031
Sample Matrix: COMPOST
Date Sampled: 8 Mar 07
Date Received: 8 Mar 07 10:00

Sample Description: ARB

Temp at Receipt: AMBIENT

Table with columns: Dry Basis Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include: Date Ext / Total PCB, Wet Digestion, Solids, Total, pH, Man Made Inert, C:N Ratio, Total PCB's, Organic Matter, Soluble Salts, Carbon, Total, Nitrogen, Total, Copper, Lead, Nickel, Zinc, Mercury, Arsenic, Cadmium, Molybdenum, Selenium, PARTICLE SIZE-19 mm SIEVE, BULK DENSITY-LOOSE, BULK DENSITY-PACKED.

No collection time supplied by the client.

** This analyte reported on As Received basis.

Approved by:

Jason G. Smith, Chemistry
Laboratory Manager New Ulm, MN

or

Dan O'Connell, Asst. Chemistry
Laboratory Manager New Ulm, MN

RL = Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration
! = Due to sample quantity + = Due to extract volume
^ = Due to instrument performance at RL

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447620 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

SOIL CONTROL LAB

42 HANGAR WAY
WATSONVILLE
CALIFORNIA
95076
USA

Account #: 9060751-1/1-5912
Group: Jun.09 D #14
Reporting Date: July 7, 2009

RW Farms
3309 47th Ave. S.
Minneapolis, MN 55406
Attn: Kay Yanisch

Date Received: 25 Jun. 09
Sample Identification: Site A Yardwaste
Sample ID #: 9060751 - 1/1

MN-Rule Form

Parameter	Units	Class I Range	Class I Pass/Fail	Your Value
*Organic Matter Content (550 deg.C) START	% dw	X	X	NA
Organic Matter Content (550 deg.C) END	% dw	X	X	14.3
Reduction of Organic Fraction	%	> 60	NA	NA
C/N Ratio (Leco CN analyzer)	Ratio	< 20:1	Pass	13:1
Respiration Rate	mg CO ₂ -C/g-C/day	< 5	Pass	1.1
NPK Ratios (as N/P ₂ O ₅ /K ₂ O)	% dw	X	X	0.6/0.1/0.5
pH	SU	X	X	7.45
Moisture Content (105 deg.C)	%	X	X	22.1
Inert Material (from > 4mm fraction) (plastic, glass, metal, sharps)	% dw	< 3	Pass	0
Soluble Salts (EC5 DW)	mmhos/cm	X	X	1.8
Germination Test (cucumber seed)	%	> 80	Pass	100
Screened Particle Size	% < 4mm : > 9.5mm	X	X	88:0
Contaminents				
Arsenic (As)	mg/kg dw	< 41	Pass	4.1
Cadmium (Cd)	mg/kg dw	< 39	Pass	1.4
Copper (Cu)	mg/kg dw	< 1500	Pass	37
Lead (Pb)	mg/kg dw	< 300	Pass	130
Mercury (Hg)	mg/kg dw	< 5	Pass	0.065
Molybdenum (Mo)	mg/kg dw	< 18	Pass	1.2
Nickel (Ni)	mg/kg dw	< 420	Pass	29
Selenium (Se)	mg/kg dw	< 100	Pass	< 0.5
Zinc (Zn)	mg/kg dw	< 2800	Pass	210
PCB's	mg/kg dw	< 6	NA	NA

X = no requirement NA=not available * = value supplied by producer
dw = calculated based on dry weight ww = calculated based on wet weight (as-received)
NOTE: Required values may change and additional specifications meet before approved for use.

Analyst: Assaf Sadeh



SOIL CONTROL LAB



Account #: 9060751-1/1-5912
Group: Jun.09 D #14
Reporting Date: July 7, 2009

RW Farms
3309 47th Ave. S.
Minneapolis, MN 55406
Attn: Kay Yanisch

Date Received: 25 Jun. 09
Sample Identification: Site A Yardwaste
Sample ID #: 9060751 - 1/1

Nutrients	Dry wt.	As Rcvd.	units
Total Nitrogen:	0.63	0.49	%
Ammonia (NH ₄ -N):	16	12	mg/kg
Nitrate (NO ₃ -N):	350	270	mg/kg
Org. Nitrogen (Org.-N):	0.59	0.46	%
Phosphorus (as P ₂ O ₅):	0.28	0.22	%
Phosphorus (P):	1300	980	mg/kg
Potassium (as K ₂ O):	0.48	0.37	%
Potassium (K):	4000	3100	mg/kg
Calcium (Ca):	2.7	2.1	%
Magnesium (Mg):	1.1	0.84	%
Sulfate (SO ₄ -S):	120	90	mg/kg
Boron (Total B):	13	10	mg/kg
Moisture:	0	22.1	%
Sodium (Na):	0.044	0.034	%
Chloride (Cl):	0.067	0.052	%
pH Value:	NA	7.45	unit
Bulk Density :	46	59	lb/cu ft
Carbonates (CaCO ₃):	200	150	lb/ton
Conductivity (EC5):	1.8	1.4	mmhos/cm
Organic Matter:	14.3	11.2	%
Organic Carbon:	8.3	6.4	%
Ash:	85.7	66.7	%
C/N Ratio	13	13	ratio
AgIndex	> 10	> 10	ratio

Stability Indicator:	Respirometry	Biologically Available C
CO₂ Evolution		
mg CO ₂ -C/g OM/day	0.6	1.2
mg CO ₂ -C/g TS/day	0.089	0.17
<i>Stability Rating</i>	<i>very stable</i>	<i>very stable</i>

Maturity Indicator: Cucumber Bioassay		
Compost:Vermiculite(v:v)	1:1	1:3
Emergence (%)	100	100
Seedling Vigor (%)	100	100
<i>Description of Plants</i>	<i>healthy</i>	<i>healthy</i>

Pathogens	Results	Units	Rating
Fecal Coliform	15	MPN/g	pass
Salmonella	< 3	MPN/4g	pass
Date Tested: 25 Jun. 09			

Inerts	% by weight
Plastic	< 0.5
Glass	< 0.5
Metal	< 0.5
Sharps	ND

Metals	Dry wt.	EPA Limit	units
Aluminum (Al)	4700	-	mg/kg
Arsenic (As):	4.1	41	mg/kg
Cadmium (Cd):	1.4	39	mg/kg
Chromium (Cr):	19	1200	mg/kg
Cobalt (Co)	5.3	-	mg/kg
Copper (Cu):	37	1500	mg/kg
Iron (Fe):	11000	-	mg/kg
Lead (Pb):	130	300	mg/kg
Manganese (Mn):	370	-	mg/kg
Mercury (Hg):	< 1.0	17	mg/kg
Molybdenum (Mo):	1.2	75	mg/kg
Nickel (Ni):	29	420	mg/kg
Selenium (Se):	< 1.0	36	mg/kg
Zinc (Zn):	210	2800	mg/kg

Size & Volume Distribution			
MM	% by weight	% by volume	BD g/cc
> 50	0.0	0.0	0.00
25 to 50	0.0	0.0	0.00
16 to 25	0.0	0.0	0.00
9.5 to 16	0.0	0.0	0.00
6.3 to 9.5	5.0	4.9	0.89
4.0 to 6.3	6.8	7.3	0.82
2.0 to 4.0	17.3	14.6	1.04
< 2.0	70.9	73.2	0.85
Bulk Density Description:<.35 Light Materials, .35-.60 medium weight materials, >.60 Heavy Materials			

Analyst: Assaf Sadeh

*Sample was received and handled in accordance with TMECC procedures.

Account No.: 9060751 - 1/1 - 5912
 Group: Jun.09 D No. 14

Date Received: 25 Jun. 09
 Sample i.d.: Site A Yardwaste
 Sample I.d. No.: 1/1 9060751

INTERPRETATION:

Is Your Compost Stable?

Respiration Rate 0.6 mg CO ₂ -C/ g OM/day	Biodegradation Rate of Your Pile ++ < Stable > < Moderately Stable > < Unstable > < High For Mulch
Biologically Available Carbon (BAC) 1.2 mg CO ₂ -C/ g OM/day	Optimum Degradation Rate ++++ < Stable > < Moderately Stable > < Unstable > < High For Mulch

Is Your Compost Mature?

Ammonia/Nitrate N ratio 0.046 Ratio	+ VeryMature> < Mature > < Immature
Ammonia N ppm 16 mg/kg dry wt.	+ VeryMature> < Mature > < Immature
Nitrate N ppm 350 mg/kg dry wt.	++++ < Immature > < Mature
pH value 7.45 units	++++ < Immature > < Mature > < Immature
Cucumber Emergence 100.0 percent	++++ < Immature > < Mature

Is Your Compost Safe Regarding Health?

Fecal Coliform < 1000 MPN/g dry wt.	+++++ < Safe > < High Fecal Coliform
Salmonella Less than 3 /4g dry wt.	+++++ <Safe (none detected) > < High Salmonella Count(> 3 per 4 grams)
Metals US EPA 503 Pass dry wt.	+++++ <All Metals Pass > < One or more Metals Fail

Does Your Compost Provide Nutrients or Organic Matter?

Nutrients (N+P2O5+K2O) 1.4 Percent dry wt.	+++++ <Low > < Average > < High Nutrient Content
AgIndex (Nutrients / Sodium and Chloride Salts) 13 Ratio	+++++ ((N+P2O5+K2O) / (Na + Cl)) <Na & Cl > < Nutrient and Sodium and Chloride Provider > < Nutrient Provider
Plant Available Nitrogen (PAN) 2 lbs/ton wet wt.	+++++ Estimated release for first season Low Nitrogen Provider> < Average Nitrogen Provider > <High Nitrogen Provider
C/N Ratio 13 Ratio	+++++ < Nitrogen Release > < N-Neutral > < N-Demand > < High Nitrogen Demand
Soluble Available Nutrients & Salts (EC5 w/w dw) 1.8 mmhos/cm dry wt.	+++++ SlORelease> < Average Nutrient Release Rate > <High Available Nutrients
Lime Content (CaCO3) 200 Lbs/ton dry wt.	+++++ < Low > < Medium > < High Lime Content (as CaCO3)

What are the physical properties of your compost?

Percent Ash 85.7 Percent dry wt.	+++++ < High Organic Matter > < Average > < High Ash Content
Sieve Size % > 6.3 MM (0.25") 5.0 Percent dry wt.	+++++ All Uses > < Size May Restrict Uses for Potting mix and Golf Courses

Account No.:
9060751 - 1/1 - 5912
Group: Jun.09 D No. 14

Date Received 25 Jun. 09
Sample i.d. Site A Yardwaste
Sample I.d. No. 1/1 9060751

INTERPRETATION:

Is Your Compost Stable?

Page two of three

Respiration Rate

0.6 Low: Good for all uses mg CO₂-C/g OM/day

The respiration rate is a measurement of the biodegradation rate of the organic matter in the sample (as received). The respiration rate is determined by measuring the rate at which CO₂ is released under optimized moisture and temperature conditions.

Biologically Available Carbon

1 Low: Good for all uses mg CO₂-C/g OM/day

Biologically Available Carbon (BAC) is a measurement of the rate at which CO₂ is released under optimized moisture, temperature, porosity, nutrients, pH and microbial conditions. If both the RR and the BAC test values are close to the same value, the pile is optimized for composting. If both values are high the compost pile just needs more time. If both values are low the compost has stabilized and should be moved to curing. BAC test values that are higher than RR indicate that the compost pile has stalled. This could be due to anaerobic conditions, lack of available nitrogen due to excessive air converting ammonia to the unavailable nitrate from lack of nitrogen or other nutrients due to poor choice of feedstock, pH value out of range, or microbes rendered non-active.

Is Your Compost Mature?

Ammonia:NitrateN ratio

0.046 very mature

Composting to stabilize carbon can occur at such a rapid rate that sometimes phytotoxins remain in the compost and must be neutralized before using in high concentrations or in high-end uses. This step is called curing. Typically ammonia is in excess with the break-down of organic materials resulting in an increase in pH. This combination results in a loss of volatile ammonia (it smells). Once this toxic ammonia has been reduced and the pH drops, the microbes convert the ammonia to nitrates. A low ammonia + high nitrate score is indicative of a mature compost, however there are many exceptions. For example, a compost with a low pH (<7) will retain ammonia, while a compost with high lime content can lose ammonia before the organic fraction becomes stable. Composts must first be stable before curing indicators apply.

Ammonia N ppm

16 very mature

Nitrate N ppm

350 mature

pH value

7.45 mature

Cucumber Bioassay

100.0 Percent

Cucumbers are chosen for this test because they are salt tolerant and very sensitive to ammonia and organic acid toxicity. Therefore, we can germinate seeds in high concentrations of compost to measure phytotoxic effects without soluble salts being the limiting factor. Values above 80% for both percent emergence and vigor are indicative of a well-cured compost. Exceptions include very high salts that affect the cucumbers, excessive concentrations of nitrates and other nutrients that will be in range when formulated to make a growing media. In addition to testing a 1:1 compost: vermiculite blend, we also test a diluted 1:4 blend to indicate a more sensitive toxicity level.

Is Your Compost Safe Regarding Health?

Fecal Coliform

< 1000 /g dry wt.

Fecal coliforms can survive in both aerobic and anaerobic conditions and is common in all initial compost piles. Most human pathogens occur from fecal matter and all fecal matter is loaded in fecal coliforms. Therefore fecal coliforms are used as an indicator to determine if the chosen method for pathogen reduction (heat for compost) has met the requirements of sufficient temperature, time and mixing. If the fecal coliforms are reduced to below 1000 per gram dry wt. it is assumed all others pathogens are eliminated. Potential problems are that fecal coliform can regrow during the curing phase or during shipping. This is because the conditions are now more favorable for growth than during the composting process.

Salmonella Bacteria

Less than 3 3 / 4g dry wt. Salmonella is not only another indicator organism but also a toxic microbe. It has been used in the case of biosolids industry to determine adequate pathogen reduction.

Metals

Pass

The ten heavy metals listed in the EPA 503 regulations are chosen to determine if compost can be applied to ag land and handled without toxic effects. Most high concentrations of heavy metals are derived from woodwaste feedstock such as chrome-arsenic treated or lead painted demolition wood. Biosolids are rarely a problem.

Does Your Compost Provide Nutrients or Organic Matter?

Nutrients (N+P₂O₅+K₂O)

1.4 low nutrient content

This value is the sum of the primary nutrients Nitrogen, Phosphorus and Potassium. Reported units are consistent with those found on fertilizer formulations. A sum greater than 5 is indicative of a compost with high nutrient content, and best used to supply nutrients to a receiving soil. A sum below 2 indicates low nutrient content, and is best-used to improve soil structure via the addition of organic matter. Most compost falls between 2 and 5.

Account No.:
 9060751 - 1/1 - 5912
 Group: Jun.09 D No. 14

Date Received: 25 Jun. 09
 Sample i.d.: Site A Yardwaste
 Sample I.d. No.: 1/1 9060751

INTERPRETATION:

AgIndex (Nutrients/Na+C)

13 High nutrient ratio Composts with low AgIndex values have high concentrations of sodium and/or chloride compared to nutrients. Repeated use of a compost with a low AgIndex (< 2) may result in sodium and/or chloride acting as the limiting factor compared to nutrients, governing application rates. These composts may be used on well-draining soils and/or with salt-tolerant plants. Additional nutrients from another source may be needed if the application rate is limited by sodium or chloride. If the AgIndex is above 10, nutrients optimal for plant growth will be available without concern of sodium and/or chloride toxicity. Composts with an AgIndex of above 10 are good for increasing nutrient levels for all soils. Most composts score between 2 and 10. Concentrations of nutrients, sodium, and chloride in the receiving soil should be considered when determining compost application rates. The AgIndex is a product of feedstock quality. Feedstock from dairy manure, marine waste, industrial wastes, and halophytic plants are likely to produce a finished compost with a low AgIndex.

Plant Available Nitrogen (lbs/ton)

2 Low N Provider Plant Available Nitrogen (PAN) is calculated by estimating the release rate of Nitrogen from the organic fraction of the compost. This estimate is based on information gathered from the BAC test and measured ammonia and nitrate values. Despite the PAN value of the compost, additional sources of Nitrogen may be needed during the growing season to offset the Nitrogen demand of the microbes present in the compost. With ample nutrients these microbes can further breakdown organic matter in the compost and release bound Nitrogen. Nitrogen demand based on a high C/N ratio is not considered in the PAN calculation because additional Nitrogen should always be supplemented to the receiving soil when composts with a high C/N ratio are applied.

C/N Ratio

13 Indicates maturity As a guiding principal, a C/N ratio below 14 indicates maturity and above 14 indicates immaturity, however, there are many exceptions. Large woodchips (>6.3mm), bark, and redwood are slow to breakdown and therefore can result in a relatively stable product while the C/N ratio value is high. Additionally, some composts with chicken manure and/or green grass feedstocks can start with a C/N ratio below 15 and are very unstable. A C/N ratio below 10 supplies Nitrogen, while a ratio above 20 can deplete Nitrogen from the soil. The rate at which Nitrogen will be released or used by the microbes is indicated by the respiration rate (BAC). If the respiration rate is too high the transfer of Nitrogen will not be controllable.

Soluble Nutrients & Salts (EC5 w/w dw - mmhos/cm)

1.8 Average salts This value refers to all soluble ions including nutrients, sodium, chloride and some soluble organic compounds. The concentration of salts will change due to the release of salts from the organic matter as it degrades, volatilization of ammonia, decomposition of soluble organics, and conversion of molecular structure. High salts + high AgIndex is indicative of a compost high in readily available nutrients. The application rate of these composts should be limited by the optimum nutrient value based on soil analysis of the receiving soil. High Salts + low AgIndex is indicative of a compost low in nutrients with high concentrations of sodium and/or chloride. Limit the application rate according to the toxicity level of the sodium and/or chloride. Low salts indicates that the compost can be applied without risking salt toxicity, is likely a good source of organic matter, and that nutrients will release slowly over time.

Lime Content (lbs. per ton)

200 High lime content Compost high in lime or carbonates are often those produced from chicken manure (layers) ash materials, and lime products. These are excellent products to use on a receiving soil where lime has been recommended by soil analysis to raise the pH. Composts with a high lime content should be closely considered for pH requirements when formulating potting mixes.

Physical Properties

Percent Ash

85.7 High ash content Ash is the non-organic fraction of a compost. Most composts contain approximately 50% ash (dry weight basis). Compost can be high in ash content for many reasons including: excess mineralization (old compost), contamination with soil base material during turning, poor quality feedstock, and soil or mineral products added. Finding the source and reducing high ash content is often the fastest means to increasing nutrient quality of a compost.

Particle Size % > 6.3 MM (0.25")

5.0 May restrict use Large particles may restrict use for potting soils, golf course topdressings, seed-starter mixes, and where a fine size distribution is required. Composts with large particles can still be used as excellent additions to field soils, shrub mixes and mulches.

Particle Size Distribution

Each size fraction is measured by weight, volume and bulk density. These results are particularly relevant with decisions to screen or not, and if screening, which size screen to use. The bulk density indicates if the fraction screened is made of light weight organic material or heavy mineral material. Removing large mineral material can greatly improve compost quality by increasing nutrient and organic concentrations.

Appendix:	Estimated available nutrients for use when calculating application rates
Plant Available Nitrogen (PAN) calculations: $PAN = (X * (\text{organic N})) + ((\text{NH}_4\text{-N}) + (\text{NO}_3\text{-N}))$ X value = If BAC < 2 then X = 0.1 If BAC =2.1 to 5 then X = 0.2 If BAC =5.1 to 10 then X = 0.3 If BAC > 10 then X = 0.4	lbs/ton Plant Available Nitrogen (PAN) 2.0 Ammonia (NH4-N) 0.02 Nitrate (NO3-N) 0.54 Available Phosphorus (P2O5*0.64) 2.9 Available Potassium (K2O) 7.5
Note: If C/N ratio > 15 additional N should be applied.	



**US COMPOSTING
COUNCIL**

*Seal of Testing
Assurance*

RW Farms
Kay Yanisch
3309 47th Ave. S.
Minneapolis
MN 55406 (612) 432-1096

Date Sampled/Received: 24 Jun. 09 / 25 Jun. 09

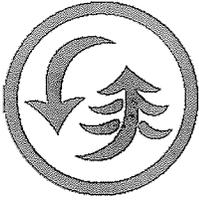
Product Identification Compost
Site A Yardwaste

COMPOST TECHNICAL DATA SHEET

LABORATORY: Soil Control Lab; 42 Hangar Way; Watsonville, CA 95076 tel: 831.724.5422 fax: 831.724.3188			
<i>Compost Parameters</i>	<i>Reported as (units of measure)</i>	<i>Test Results</i>	<i>Test Results</i>
Plant Nutrients:	% weight basis	% wet weight basis	% dry weight basis
Nitrogen	Total N	0.49	0.63
Phosphorus	P ₂ O ₅	0.22	0.30
Potassium	K ₂ O	0.37	0.48
Calcium	Ca	2.1	2.7
Magnesium	Mg	0.84	1.1
Moisture Content	% wet weight basis	22.1	
Organic Matter Content	% dry weight basis	14.3	
pH	units	7.45	
Soluble Salts <i>(electrical conductivity EC_s)</i>	dS/m (mmhos/cm)	1.8	
Particle Size or Sieve Size	% under 9.5 mm, dw basis	100.0	
Stability Indicator (<i>respirometry</i>)		<i>Stability Rating:</i>	
CO ₂ Evolution	mg CO ₂ -C/g OM/day	0.6	Very Stable
	mg CO ₂ -C/g TS/day	0.089	
Maturity Indicator (bioassay)			
Percent Emergence	average % of control	100.0	
Relative Seedling Vigor	average % of control	100.0	
Select Pathogens	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.32(a)	Pass	<i>Fecal coliform</i>
		Pass	<i>Salmonella</i>
Trace Metals	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3.	Pass	<i>As,Cd,Cr,Cu,Pb,Hg</i> <i>Mo,Ni,Se,Zn</i>

Participants in the US Composting Council's Seal of Testing Assurance Program have shown the commitment to test their compost products on a prescribed basis and provide this data, along with compost end use instructions, as a means to better serve the needs of their compost customers.

Laboratory Group: Jun.09 D	Laboratory Number: 9060751-1/1
Analyst: Assaf Sadeh 	www.compostlab.com



US COMPOSTING COUNCIL

Seal of Testing Assurance

RW Farms
 Kay Yanisch
 3309 47th Ave. S.
 Minneapolis
 MN 55406 (612) 432-1096

Date Sampled/Received: 24 Jun. 09 / 25 Jun. 09

Product Identification Compost
Site A Yardwaste

COMPOST TECHNICAL DATA SHEET

LABORATORY: Soil Control Lab; 42 Hangar Way; Watsonville, CA 95076 tel: 831.724.5422 fax: 831.724.3188			
<i>Compost Parameters</i>	<i>Reported as (units of measure)</i>	<i>Test Results</i>	<i>Test Results</i>
Plant Nutrients:	%, weight basis	Not reported	Not reported
Moisture Content	%, wet weight basis	22.1	
Organic Matter Content	%, dry weight basis	14.3	
pH	units	7.45	
Soluble Salts <i>(electrical conductivity EC_s)</i>	dS/m (mmhos/cm)	1.8	
Particle Size or Sieve Size	maxium aggregate size, inches	0.38	
Stability Indicator (<i>respirometry</i>)		Stability Rating:	
CO ₂ Evolution	mg CO ₂ -C/g OM/day	0.6	Very Stable
	mg CO ₂ -C/g TS/day	0.089	
Maturity Indicator (bioassay)			
Percent Emergence	average % of control	100.0	
Relative Seedling Vigor	average % of control	100.0	
Select Pathogens	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.32(a)	Pass	Fecal coliform
		Pass	Salmonella
Trace Metals	PASS/FAIL: per US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3.	Pass	As, Cd, Cr, Cu, Pb, Hg Mo, Ni, Se, Zn

Participants in the US Composting Council's Seal of Testing Assurance Program have shown the commitment to test their compost products on a prescribed basis and provide this data, along with compost end use instructions, as a means to better serve the needs of their compost customers.

Laboratory Group: Jun.09 D	Laboratory Number: 9060751-1/1
Analyst: Assaf Sadeh	www.compostlab.com

MVTL

MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
1411 S. 12th St. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724
51 W. Lincoln Way ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885

MEMBER
ACIL

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

AN EQUAL OPPORTUNITY EMPLOYER

Page: 1 of 1

RUSS LEISTIKO
RW FARMS
17505 KELLY LAKE RD
CARVER MN 55315

Report Date: 24 Sep 07
Lab Number: 07-N6233
Work Order #:12-10389
Account #: 040031
Sample Matrix: COMPOST
Date Sampled:
Date Received: 31 Aug 07 15:56

Project Name: ARB ORGANICS
Sample Description: ARB ORGANICS

Temp at Receipt: 25.0C

Table with columns: Dry Basis Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include: Date Ext / Total PCB, Wet Digestion, Moisture, Total, Man Made Inert, Total PCB's, Copper, Lead, Nickel, Zinc, Mercury, Arsenic, Cadmium, Molybdenum, Selenium.

No collection time supplied by the client.

zinc was detected in the blank at .011mg/L. Only data that exceeded the blank result by a factor of ten was reported.

** This analyte reported on As Received basis.

Approved by: Jason G. Smith, Chemistry Laboratory Manager New Ulm, MN or Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

RL = Reporting Limit
Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration
! = Due to sample quantity + = Due to extract volume
^ = Due to instrument performance at RL

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447680 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

MVTL

MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890
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MEMBER
ACIL

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

AN EQUAL OPPORTUNITY EMPLOYER

Page: 1 of 1

RUSS LEISTIKO
RW FARMS
17505 KELLY LAKE RD
CARVER MN 55315

Report Date: 24 Sep 07
Lab Number: 07-N6234
Work Order #:12-10389
Account #: 040031
Sample Matrix: COMPOST
Date Sampled:
Date Received: 31 Aug 07 15:56

Project Name: ARB ORAGNICS
Sample Description: YARD WASTE COMPOST

Temp at Receipt: 25.0C

Table with 7 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst, and two unlabeled columns. Rows include pH and Soluble Salts.

No collection time supplied by the client.

Approved by: Jason G. Smith, Chemistry Laboratory Manager New Ulm, MN or Dan O'Connell, Asst. Chemistry Laboratory Manager New Ulm, MN

RL = Reporting Limit

Elevated "Less Than Result" (<): @ = Due to sample matrix # = Due to sample concentration
! = Due to sample quantity + = Due to extract volume
^ = Due to instrument performance at RL

CERTIFICATION: MN LAB # 027-015-125 WI LAB # 999447660 ND MICRO # 1013-M ND WW/DW # R-040 IA LAB #: 132 IA LAB #: 022

SOIL CONTROL LAB

42 HANGAR WAY
WATSONVILLE
CALIFORNIA
95076
USA

Account #: 9030742-1/1-5912
Group: Mar.09 D #16
Reporting Date: May 1, 2009

RW Farms
3309 47th Ave. S.
Minneapolis, MN 55406
Attn: Kay Yanisch

Date Received: 26 Mar. 09
Sample Identification: Site A Yard Waste
Sample ID #: 9030742 - 1/1

Nutrients				Stability Indicator:			
	Dry wt.	As Rcvd.	units	CO2 Evolution	Respirometry	Biologically Available C	
Total Nitrogen:	0.92	0.48	%	mg CO ₂ -C/g OM/day	1.3	3.7	
Ammonia (NH ₄ -N):	< 10	< 5.3	mg/kg	mg CO ₂ -C/g TS/day	0.41	1.1	
Nitrate (NO ₃ -N):	300	160	mg/kg	<i>Stability Rating</i>	<i>very stable</i>	<i>stable</i>	
Org. Nitrogen (Org.-N):	0.89	0.47	%	Maturity Indicator: Cucumber Bioassay			
Phosphorus (as P ₂ O ₅):	0.49	0.26	%	Compost:Vermiculite(v:v)	1:1	1:3	
Phosphorus (P):	2200	1100	mg/kg	Emergence (%)	100	100	
Potassium (as K ₂ O):	0.51	0.27	%	Seedling Vigor (%)	100	100	
Potassium (K):	4200	2200	mg/kg	<i>Description of Plants</i>	<i>weeds</i>	<i>mushroom</i>	
Calcium (Ca):	2.5	1.3	%	Pathogens			
Magnesium (Mg):	0.79	0.42	%	Results	Units	Rating	
Sulfate (SO ₄ -S):	90	48	mg/kg	Salmonella	< 3	MPN/4g	<i>pass</i>
Boron (Total B):	23	12	mg/kg	Date Tested: 26 Mar. 09			
Moisture:	0	47.2	%	Inerts			
Sodium (Na):	0.049	0.026	%	% by weight			
Chloride (Cl):	0.091	0.048	%	Plastic	< 0.5		
pH Value:	NA	7.47	unit	Glass	< 0.5		
Bulk Density :	23	43	lb/cu ft	Metal	< 0.5		
Carbonates (CaCO ₃):	120	62	lb/ton	Sharps	ND		
Conductivity (EC5):	1.9	1.0	mmhos/cm	Size & Volume Distribution			
Organic Matter:	30.2	16.0	%	MM	% by weight	% by volume	BD g/cc
Organic Carbon:	14.0	7.3	%	> 50	0.0	0.0	0.00
Ash:	69.8	36.9	%	16 to 25	0.0	0.0	0.00
C/N Ratio	15	15	ratio	9.5 to 16	0.0	0.0	0.00
AgIndex	> 10	> 10	ratio	6.3 to 9.5	4.1	3.9	0.62
				4.0 to 6.3	11.9	14.8	0.48
				2.0 to 4.0	21.1	22.2	0.57
				< 2.0	62.9	59.1	0.64
				Bulk Density Description:<.35 Light Materials, .35-.60 medium weight materials, >.60 Heavy Materials			
				Analyst: Assaf Sadeh			

*Sample was received and handled in accordance with TMECC procedures.

Account No.: 9030742 - 1/1 - 5912
 Group: Mar.09 D No. 16

Date Received
 Sample i.d.
 Sample I.d. No.

26 Mar. 09
 Site A Yard Waste
 1/1 9030742

INTERPRETATION:

Is Your Compost Stable?

Respiration Rate	Biodegradation Rate of Your Pile				
1.3 mg CO ₂ -C/ g OM/day	+++++	< Stable	> < Moderately Stable	> < Unstable	> < High For Mulch
Biologically Available Carbon (BAC)	Optimum Degradation Rate				
3.7 mg CO ₂ -C/ g OM/day	+++++	< Stable	> < Moderately Stable	> < Unstable	> < High For Mulch

Is Your Compost Mature?

AmmoniaN/NitrateN ratio 0.018 Ratio	+	VeryMature> <	Mature	> <	Immature
Ammonia N ppm 5.5 mg/kg dry wt.	+	VeryMature> <	Mature	> <	Immature
Nitrate N ppm 300 mg/kg dry wt.	+++++	< Immature	> <	Mature	
pH value 7.47 units	+++++	< Immature	> <	Mature	> < Immature
Cucumber Emergence 100.0 percent	+++++	< Immature	> <	Mature	

Is Your Compost Safe Regarding Health?

Fecal Coliform Not tested MPN/g dry wt.	Not tested	< Safe	> <	High Fecal Coliform
Salmonella Less than 3 /4g dry wt.	+++++	<Safe (none detected)	> <	High Salmonella Count(> 3 per 4 grams)
Metals US EPA 503 Pass dry wt.	+++++	<All Metals Pass	> <	One or more Metals Fail

Does Your Compost Provide Nutrients or Organic Matter?

Nutrients (N+P ₂ O ₅ +K ₂ O) 1.9 Percent	+++++							
AgIndex (Nutrients / Sodium and Chloride Salts) 14 Ratio	+++++	Na & Cl	> <	Nutrient and Sodium and Chloride Provider	> <	Nutrient Provider		
Plant Available Nitrogen (PAN) 4 lbs/ton wet wt.	+++++	Low Nitrogen Provider> <	Average Nitrogen Provider	> <	High Nitrogen Provider			
C/N Ratio 15 Ratio	+++++	< Nitrogen Release	> <	N-Neutral	> <	N-Demand	> <	High Nitrogen Demand
Soluble Available Nutrients & Salts (EC ₅ w/w dw) 1.9 mmhos/cm dry wt.	+++++	SlowRelease> <	Average Nutrient Release Rate	> <	High Available Nutrients			
Lime Content (CaCO ₃) 120 Lbs/ton dry wt.	+++++	< Low	> <	Medium	> <	High Lime Content (as CaCO ₃)		

What are the physical properties of your compost?

Percent Ash 69.8 Percent dry wt.	+++++	< High Organic Matter	> <	Average	> <	High Ash Content
Sieve Size % > 6.3 MM (0.25") 4.1 Percent dry wt.	+++++	All Uses	> <	Size May Restrict Uses for Potting mix and Golf Courses		

Account No.:
9030742 - 1/1 - 5912
Group: Mar.09 D No. 16

Date Received 26 Mar. 09
Sample i.d. Site A Yard Waste
Sample I.d. No. 1/1 9030742

INTERPRETATION:

Is Your Compost Stable?

Page two of three

Respiration Rate

1.3 Low: Good for all uses mg CO₂-C/g OM/day

The respiration rate is a measurement of the biodegradation rate of the organic matter in the sample (as received). The respiration rate is determined by measuring the rate at which CO₂ is released under optimized moisture and temperature conditions.

Biologically Available Carbon

4 Low: Good for all uses mg CO₂-C/g OM/day

Biologically Available Carbon (BAC) is a measurement of the rate at which CO₂ is released under optimized moisture, temperature, porosity, nutrients, pH and microbial conditions. If both the RR and the BAC test values are close to the same value, the pile is optimized for composting. If both values are high the compost pile just needs more time. If both values are low the compost has stabilized and should be moved to curing. BAC test values that are higher than RR indicate that the compost pile has stalled. This could be due to anaerobic conditions, lack of available nitrogen due to excessive air converting ammonia to the unavailable nitrate from lack of nitrogen or other nutrients due to poor choice of feedstock, pH value out of range, or microbes rendered non-active.

Is Your Compost Mature?

Ammonia:NitrateN ratio

0.018 very mature

Ammonia N ppm

5.5 very mature

Nitrate N ppm

300 mature

pH value

7.47 mature

Composting to stabilize carbon can occur at such a rapid rate that sometimes phytotoxins remain in the compost and must be neutralized before using in high concentrations or in high-end uses. This step is called curing. Typically ammonia is in excess with the break-down of organic materials resulting in an increase in pH. This combination results in a loss of volatile ammonia (it smells). Once this toxic ammonia has been reduced and the pH drops, the microbes convert the ammonia to nitrates. A low ammonia + high nitrate score is indicative of a mature compost, however there are many exceptions. For example, a compost with a low pH (<7) will retain ammonia, while a compost with high lime content can lose ammonia before the organic fraction becomes stable. Composts must first be stable before curing indicators apply.

Cucumber Bioassay

100.0 Percent

Cucumbers are chosen for this test because they are salt tolerant and very sensitive to ammonia and organic acid toxicity. Therefore, we can germinate seeds in high concentrations of compost to measure phytotoxic effects without soluble salts being the limiting factor. Values above 80% for both percent emergence and vigor are indicative of a well-cured compost. Exceptions include very high salts that affect the cucumbers, excessive concentrations of nitrates and other nutrients that will be in range when formulated to make a growing media. In addition to testing a 1:1 compost: vermiculite blend, we also test a diluted 1:4 blend to indicate a more sensitive toxicity level.

Is Your Compost Safe Regarding Health?

Fecal Coliform

Not tested /g dry wt. Fecal coliforms can survive in both aerobic and anaerobic conditions and is common in all initial compost piles. Most human pathogens occur from fecal matter and all fecal matter is loaded in fecal coliforms. Therefore fecal coliforms are used as an indicator to determine if the chosen method for pathogen reduction (heat for compost) has met the requirements of sufficient temperature, time and mixing. If the fecal coliforms are reduced to below 1000 per gram dry wt. it is assumed all other pathogens are eliminated. Potential problems are that fecal coliform can regrow during the curing phase or during shipping. This is because the conditions are now more favorable for growth than during the composting process.

Salmonella Bacteria

Less than 3 3 / 4g dry wt. Salmonella is not only another indicator organism but also a toxic microbe. It has been used in the case of biosolids industry to determine adequate pathogen reduction.

Metals

Pass The ten heavy metals listed in the EPA 503 regulations are chosen to determine if compost can be applied to ag land and handled without toxic effects. Most high concentrations of heavy metals are derived from woodwaste feedstock such as chrome-arsenic treated or lead painted demolition wood. Biosolids are rarely a problem.

Does Your Compost Provide Nutrients or Organic Matter?

Nutrients (N+P₂O₅+K₂O)

1.9 low nutrient content

This value is the sum of the primary nutrients Nitrogen, Phosphorus and Potassium. Reported units are consistent with those found on fertilizer formulations. A sum greater than 5 is indicative of a compost with high nutrient content, and best used to supply nutrients to a receiving soil. A sum below 2 indicates low nutrient content, and is best-used to improve soil structure via the addition of organic matter. Most compost falls between 2 and 5.

Account No.:
 9030742 - 1/1 - 5912
 Group: Mar.09 D No. 16

Date Received: 26 Mar. 09
 Sample i.d.: Site A Yard Waste
 Sample I.d. No.: 1/1 9030742

INTERPRETATION:

AgIndex (Nutrients/Na+Cl)

14 High nutrient ratio Composts with low AgIndex values have high concentrations of sodium and/or chloride compared to nutrients. Repeated use of a compost with a low AgIndex (< 2) may result in sodium and/or chloride acting as the limiting factor compared to nutrients, governing application rates. These composts may be used on well-draining soils and/or with salt-tolerant plants. Additional nutrients from another source may be needed if the application rate is limited by sodium or chloride. If the AgIndex is above 10, nutrients optimal for plant growth will be available without concern of sodium and/or chloride toxicity. Composts with an AgIndex of above 10 are good for increasing nutrient levels for all soils. Most composts score between 2 and 10. Concentrations of nutrients, sodium, and chloride in the receiving soil should be considered when determining compost application rates. The AgIndex is a product of feedstock quality. Feedstock from dairy manure, marine waste, industrial wastes, and halophytic plants are likely to produce a finished compost with a low AgIndex.

Plant Available Nitrogen (lbs/ton)

4 Low N Provider Plant Available Nitrogen (PAN) is calculated by estimating the release rate of Nitrogen from the organic fraction of the compost. This estimate is based on information gathered from the BAC test and measured ammonia and nitrate values. Despite the PAN value of the compost, additional sources of Nitrogen may be needed during the growing season to offset the Nitrogen demand of the microbes present in the compost. With ample nutrients these microbes can further breakdown organic matter in the compost and release bound Nitrogen. Nitrogen demand based on a high C/N ratio is not considered in the PAN calculation because additional Nitrogen should always be supplemented to the receiving soil when composts with a high C/N ratio are applied.

C/N Ratio

15 Indicates immaturity As a guiding principal, a C/N ratio below 14 indicates maturity and above 14 indicates immaturity, however, there are many exceptions. Large woodchips (>6.3mm), bark, and redwood are slow to breakdown and therefore can result in a relatively stable product while the C/N ratio value is high. Additionally, some composts with chicken manure and/or green grass feedstocks can start with a C/N ratio below 15 and are very unstable. A C/N ratio below 10 supplies Nitrogen, while a ratio above 20 can deplete Nitrogen from the soil. The rate at which Nitrogen will be released or used by the microbes is indicated by the respiration rate (BAC). If the respiration rate is too high the transfer of Nitrogen will not be controllable.

Soluble Nutrients & Salts (EC5 w/w dw - mmhos/cm)

1.9 Average salts This value refers to all soluble ions including nutrients, sodium, chloride and some soluble organic compounds. The concentration of salts will change due to the release of salts from the organic matter as it degrades, volatilization of ammonia, decomposition of soluble organics, and conversion of molecular structure. High salts + high AgIndex is indicative of a compost high in readily available nutrients. The application rate of these composts should be limited by the optimum nutrient value based on soil analysis of the receiving soil. High Salts + low AgIndex is indicative of a compost low in nutrients with high concentrations of sodium and/or chloride. Limit the application rate according to the toxicity level of the sodium and/or chloride. Low salts indicates that the compost can be applied without risking salt toxicity, is likely a good source of organic matter, and that nutrients will release slowly over time.

Lime Content (lbs. per ton)

120 High lime content Compost high in lime or carbonates are often those produced from chicken manure (layers) ash materials, and lime products. These are excellent products to use on a receiving soil where lime has been recommended by soil analysis to raise the pH. Composts with a high lime content should be closely considered for pH requirements when formulating potting mixes.

Physical Properties

Percent Ash

69.8 High ash content Ash is the non-organic fraction of a compost. Most composts contain approximately 50% ash (dry weight basis). Compost can be high in ash content for many reasons including: excess mineralization (old compost), contamination with soil base material during turning, poor quality feedstock, and soil or mineral products added. Finding the source and reducing high ash content is often the fastest means to increasing nutrient quality of a compost.

Particle Size % > 6.3 MM (0.25")

4.1 May restrict use Large particles may restrict use for potting soils, golf course topdressings, seed-starter mixes, and where a fine size distribution is required. Composts with large particles can still be used as excellent additions to field soils, shrub mixes and mulches.

Particle Size Distribution

Each size fraction is measured by weight, volume and bulk density. These results are particularly relevant with decisions to screen or not, and if screening, which size screen to use. The bulk density indicates if the fraction screened is made of light weight organic material or heavy mineral material. Removing large mineral material can greatly improve compost quality by increasing nutrient and organic concentrations.

Appendix:	Estimated available nutrients for use when calculating application rates lbs/ton
Plant Available Nitrogen (PAN) calculations: PAN = (X * (organic N)) + ((NH4-N) + (NO3-N))	
X value = If BAC < 2 then X = 0.1	Plant Available Nitrogen (PAN) 4.3
If BAC = 2.1 to 5 then X = 0.2	Ammonia (NH4-N) 0.01
If BAC = 5.1 to 10 then X = 0.3	Nitrate (NO3-N) 0.32
If BAC > 10 then X = 0.4	Available Phosphorus (P2O5*0.64) 3.2
Note: If C/N ratio > 15 additional N should be applied.	Available Potassium (K2O) 5.3

R W Farms
17505 Kelly Lake Road
Carver, MN 55315

Client Ref: Leaf and SSO Compost
Client Contact: Ms. Kay Yanisch
PO Number:

Work Order #: 0900684
Project Mgr: Richard A. Maw
Account ID:

SSO Compost
0900684-02 (Compost)

2/11/09 16:00

08

Classical Chemistry Parameters

Analyte	Result	MRL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Nitrogen	12900	100	mg/kg dry	1	B9B0427	2/26/09	2/26/09	EPA 351.2/353.2	
Total Organic Nitrogen	12000	320	mg/kg dry	1	B9B0428	2/26/09	2/26/09	Calculation	
pH	8.3		pH Units	1	B9B0228	2/16/09	2/16/09	EPA 9045D	
Ammonia as N	880	30	mg/kg dry	20	B9B0376	2/23/09	2/23/09	SM4500NH3	
Nitrate as N	14	1.5	mg/kg dry	1	B9B0360	2/23/09	2/26/09	SM4500NO3	
Phosphorus, Total as P	1700	38	mg/kg dry	20	B9B0239	2/16/09	2/18/09	SM4500-P	
% Solids	62	0.050	% Wt	1	B9B0224	2/13/09	2/16/09	EPA 3545 7.2	
Soluble Salts	1400	1.0	mg/L	1	B9B0303	2/19/09	2/23/09	ASA 62.2	

Metals

Analyte	Result	MRL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	4.1	1.5	mg/kg dry	1	B9B0220	2/13/09	2/16/09	EPA 6010B	
Cadmium	< 0.77	0.77	mg/kg dry	1	B9B0220	2/13/09	2/16/09	EPA 6010B	
Chromium	9.1	1.5	mg/kg dry	1	B9B0220	2/13/09	2/16/09	EPA 6010B	
Lead	14	1.5	mg/kg dry	1	B9B0220	2/13/09	2/16/09	EPA 6010B	
Molybdenum	< 1.5	1.5	mg/kg dry	1	B9B0220	2/13/09	2/16/09	EPA 6010B	
Nickel	11	3.1	mg/kg dry	1	B9B0220	2/13/09	2/16/09	EPA 6010B	
Potassium	6900	140	mg/kg dry	5	B9B0309	2/18/09	2/25/09	EPA 6010B	
Selenium	< 3.1	3.1	mg/kg dry	1	B9B0220	2/13/09	2/16/09	EPA 6010B	
Mercury	0.040	0.030	mg/kg dry	1	B9B0268	2/17/09	2/18/09	EPA 7471A	

8 pulls

APPENDIX 2
COMBINED LAB REPORTS
Contact Water Analysis

**Contact Water Analytical Data-Arboretum Site
April 29, 2008 Sampling Event**

Parameter	A (µg/L)	B (µg/L)	C (µg/L)	D (µg/L)	E (µg/L)	F (µg/L)	MDH HRL (µg/L)
Arsenic	ND	ND	ND	15.6	ND	ND	10**
Barium	224	234	928	1190	731	882	2,000
Cadmium	ND	ND	ND	ND	ND	ND	4
Chromium	ND	ND	ND	10	ND	ND	100
Copper	21.6	20.0	69.7	ND	ND	ND	1300 *
Lead	ND	ND	ND	ND	ND	ND	15*
Mercury	---	---	---	---	ND	ND	2
Molybdenum	ND	ND	ND	ND	ND	15.9	No HRL Set
Nickel	ND	ND	67.4	147	53.8	71.6	100
Nitrate	1000	190	920	ND	---	---	10,000
pH	8.0	8.1	8.1	7.9	---	---	No HRL Set
Phosphorus	ND	820	ND	ND	---	---	No HRL Set
Potassium	82,600	62,300	139,000	187,000	103,000	96,400	No HRL Set
Selenium	ND	ND	ND	ND	ND	ND	30
Silver	ND	ND	ND	ND	ND	ND	30
TKN	2000	1600	5000	14200	---	---	No HRL Set
TOC	---	---	---	ND	---	---	No HRL Set
Zinc	137	42.1	158	63.9	ND	478	2000

*No HRL has been set for these elements as they are not found in source waters. MN Dept. of Health has set an "action level" for these elements.**The HRL for Arsenic was changed from 50 ug/L to 10 ug/L in 2006. Methods used for testing include: EPA 200.7 (K), EPA 6010 (Metals), EPA 245.1 (Hg), EPA 120.1 (Specific Conductance), EPA 351.2 (TKN), EPA 365.4 (Total Phosphorus), EPA 150.1 (pH), EPA 9060, (TOC), EPA 353.1(Nitrate)

**Contact Water Analytical Data-Arboretum Site
June 10, 2008 Sampling Event**

Parameter	A (µg/L)	B (µg/L)	C (µg/L)	D (µg/L)	E (µg/L)	F (µg/L)	MDH HRL (µg/L)
Arsenic	ND		ND	32.1			10**
Barium	265		889	1230			2,000
Cadmium	ND		ND	ND			4
Chromium	ND		ND	ND			100
Copper	28.3		69.5	ND			1300 *
Lead	ND		ND	ND			15*
Mercury	ND						2
Molybdenum	ND		ND	ND			No HRL Set
Nickel	ND		66.5	42.7			100
Nitrate	ND			ND			10,000
pH							No HRL Set
Phosphorus	ND			670			No HRL Set
Potassium							No HRL Set
Selenium	ND		ND	ND			30
Silver	ND		ND	ND			30
TKN	2400			11,600			No HRL Set
TOC				128,000			No HRL Set
Zinc	45.4		78.1	ND			2000

*No HRL has been set for these elements as they are not found in source waters. MN Dept. of Health has set an "action level" for these elements.**The HRL for Arsenic was changed from 50 ug/L to 10 ug/L in 2006. Methods used for testing include: EPA 200.7for metals, EPA 245.1 (Hg), EPA 120.1 (Specific Conductance), EPA 351.2 (TKN), EPA 365.4 (Total Phosphorus), SM 5310C (TOC), EPA Nitrate 353.1

Contact Water Analytical Data
November 14, 2008 Sampling Event-Arboretum Site-Carver County

Parameter	A (µg/L)	B (µg/L)	C (µg/L)	D (µg/L)	E (µg/L)	F (µg/L)	G (ug/L)	H (ug/L)	I (ug/L)	J (ug/L)	MDH HRL (µg/L)
Arsenic			13.5	17.9							10**
Barium			1110	922							2,000
Cadmium			ND	ND							4
Chromium			ND	ND							100
Copper			13.1	15.2							1300 *
Lead			ND	ND							15*
Mercury			ND	ND							2
Molybdenum			ND	ND							No HRL
Nickel			66.7	26.8							100
Nitrate			ND								10,000
pH			7.7								No HRL
Phosphorus			ND								No HRL
Potassium											No HRL
Selenium			ND	ND							30
Silver			ND	ND							30
TKN			3000								No HRL
TOC											No HRL
Zinc			71.2	84.9							2000

*No HRL has been set for these elements as they are not found in source waters. MN Dept. of Health has set an "action level" for these elements.**The HRL for Arsenic was changed from 50 ug/L to 10 ug/L in 2006.Methods used for testing include: EPA 6010 for metals, EPA 7470 (Hg), EPA 120.1 (Specific Conductance), SM4500-H+B (pH), EPA 351.2 (TKN), EPA 353.1 (Nitrate), EPA 365.4 (Total Phosphorus), SM 5310C (TOC)

May 08, 2008

Sylvia Hunter
Pace Analytical Minnesota
1700 Elm Street SE
Suite 200
Minneapolis, MN 55414

RE: Project: 1072347 CARVER COUNTY COMPOST
Pace Project No.: 403305

Dear Sylvia Hunter:

Enclosed are the analytical results for sample(s) received by the laboratory on May 01, 2008. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Eric Wied

eric.wied@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Page 1 of 9

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CERTIFICATIONS

Project: 1072347 CARVER COUNTY COMPOST

Pace Project No.: 403305

Green Bay Certification IDs

Florida (NELAP) Certification #: E87948

Illinois Certification #: 200050

California Certification #: 06246CA

New York Certification #: 11888

North Dakota Certification #: R-150

North Carolina Certification #: 503

Minnesota Certification #: 055-999-334

South Carolina Certification #: 83006001

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

Kentucky Certification #: 82

Louisiana Certification #: 04168

Green Bay Volatiles Certification IDs

Florida (NELAP) Certification #: E87951

California Certification #: 06247CA

Illinois Certification #: 200051

New York Certification #: 11887

North Dakota Certification #: R-200

North Carolina Certification #: 503

Minnesota Certification #: 055-999-334

South Carolina Certification #: 83006001

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

Kentucky Certification #: 83

Louisiana Certification #: 04169

REPORT OF LABORATORY ANALYSIS

Page 2 of 9

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SAMPLE SUMMARY

Project: 1072347 CARVER COUNTY COMPOST
Pace Project No.: 403305

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1072347001	A	Water	04/29/08 00:00	05/01/08 10:00
1072347002	B	Water	04/29/08 00:00	05/01/08 10:00
1072347003	C	Water	04/29/08 00:00	05/01/08 10:00
1072347004	D	Water	04/29/08 00:00	05/01/08 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1072347 CARVER COUNTY COMPOST

Pace Project No.: 403305

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1072347001	A	EPA 351.2	DAW	1	PASI-G
		EPA 365.4	DAW	1	PASI-G
1072347002	B	EPA 351.2	DAW	1	PASI-G
		EPA 365.4	DAW	1	PASI-G
1072347003	C	EPA 351.2	DAW	1	PASI-G
		EPA 365.4	DAW	1	PASI-G
1072347004	D	EPA 351.2	DAW	1	PASI-G
		EPA 365.4	DAW	1	PASI-G
		EPA 9060	AMT	5	PASI-G

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1072347 CARVER COUNTY COMPOST

Pace Project No.: 403305

Sample: A		Lab ID: 1072347001	Collected: 04/29/08 00:00	Received: 05/01/08 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen		Analytical Method: EPA 351.2						
Nitrogen, Kjeldahl, Total	2.0	mg/L	1.0	1		05/02/08 15:18	7727-37-9	
365.4 Total Phosphorus		Analytical Method: EPA 365.4						
Phosphorus	ND	mg/L	0.50	1		05/05/08 15:37	7723-14-0	
Sample: B		Lab ID: 1072347002	Collected: 04/29/08 00:00	Received: 05/01/08 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen		Analytical Method: EPA 351.2						
Nitrogen, Kjeldahl, Total	1.6	mg/L	1.0	1		05/02/08 15:19	7727-37-9	
365.4 Total Phosphorus		Analytical Method: EPA 365.4						
Phosphorus	0.82	mg/L	0.50	1		05/05/08 15:38	7723-14-0	
Sample: C		Lab ID: 1072347003	Collected: 04/29/08 00:00	Received: 05/01/08 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen		Analytical Method: EPA 351.2						
Nitrogen, Kjeldahl, Total	5.0	mg/L	1.0	1		05/02/08 15:20	7727-37-9	
365.4 Total Phosphorus		Analytical Method: EPA 365.4						
Phosphorus	ND	mg/L	0.50	1		05/05/08 15:38	7723-14-0	
Sample: D		Lab ID: 1072347004	Collected: 04/29/08 00:00	Received: 05/01/08 10:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen		Analytical Method: EPA 351.2						
Nitrogen, Kjeldahl, Total	14.2	mg/L	1.0	1		05/02/08 15:20	7727-37-9	
365.4 Total Phosphorus		Analytical Method: EPA 365.4						
Phosphorus	ND	mg/L	0.50	1		05/05/08 15:39	7723-14-0	
Total Organic Carbon		Analytical Method: EPA 9060						
Total Organic Carbon	ND	mg/L	2.0	1		05/07/08 15:43	7440-44-0	
Total Organic Carbon	ND	mg/L	2.0	1		05/07/08 15:43	7440-44-0	
Total Organic Carbon	ND	mg/L	2.0	1		05/07/08 15:43	7440-44-0	
Total Organic Carbon	ND	mg/L	2.0	1		05/07/08 15:44	7440-44-0	
Mean Total Organic Carbon	ND	mg/L	2.0	1		05/07/08 15:43	7440-44-0	

Date: 05/08/2008 05:00 PM

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1072347 CARVER COUNTY COMPOST
Pace Project No.: 403305

QC Batch: WETA/1409 Analysis Method: EPA 9060
QC Batch Method: EPA 9060 Analysis Description: 9060 TOC
Associated Lab Samples: 1072347004

LABORATORY CONTROL SAMPLE: 21977

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mean Total Organic Carbon	mg/L	100	96.3	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 21978 21979

Parameter	Units	9039154001		MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.									
Mean Total Organic Carbon	mg/L	82.9	100	100	186	201	104	118	80-120	7	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 23824 23825

Parameter	Units	402988009		MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.									
Mean Total Organic Carbon	mg/L	5.3	100	100	116	119	111	114	80-120	3	20		

QUALITY CONTROL DATA

Project: 1072347 CARVER COUNTY COMPOST
Pace Project No.: 403305

QC Batch: WETA/1419 Analysis Method: EPA 351.2
QC Batch Method: EPA 351.2 Analysis Description: 351.2 TKN
Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004

METHOD BLANK: 22798

Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	1.0	

LABORATORY CONTROL SAMPLE: 22799

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 22800 22801

Parameter	Units	403206002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	15.2	10	10	25.2	26.7	100	114	90-110	6	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 22802 22803

Parameter	Units	1072322001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	ND	5	5	6.1	5.8	123	116	90-110	6	20	M0

QUALITY CONTROL DATA

Project: 1072347 CARVER COUNTY COMPOST
Pace Project No.: 403305

QC Batch: WETA/1428 Analysis Method: EPA 365.4
QC Batch Method: EPA 365.4 Analysis Description: 365.4 Phosphorus
Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004

METHOD BLANK: 23526

Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Phosphorus	mg/L	ND	0.50	

LABORATORY CONTROL SAMPLE: 23527

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 23528 23529

Parameter	Units	403208002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	<0.17	5	5	4.9	5.0	98	101	90-110	3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 23530 23531

Parameter	Units	1072373002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	0.61	5	5	6.1	6.0	111	107	90-110	3	20	M0

QUALIFIERS

Project: 1072347 CARVER COUNTY COMPOST

Pace Project No.: 403305

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

M0 Matrix spike recovery was outside laboratory control limits.

Chain of Custody



Report To: Sylvia Hunter
Workorder: 1072347 **Workorder Name:** CARVER COUNTY COMPOST PILOT **Results Requested:** 5/13/2008
Subcontract To:

Pace Analytical Services, Inc.
 1700 Elm Street, Suite 200
 Minneapolis, MN 55414
 Phone (612)607-1700
 Fax (612)607-6444

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		EPA 415.1	EPA 351.2	Total Phos	Requested Analysis	Comments
1	A	4/29/2008 00:00	1072347001	Water	1		X	X	X		LAB USE ONLY
2	B	4/29/2008 00:00	1072347002	Water	1		X	X	X		LAB USE ONLY
3	C	4/29/2008 00:00	1072347003	Water	1		X	X	X		
4	D	4/29/2008 00:00	1072347004	Water	2		X	X	X		LAB USE ONLY
Transfers											
1	Released By: Sylvia Hunter	Date/Time: 4/29/08 12:45	Received By:	Date/Time:							
2	Released By: Sylvia Hunter	Date/Time: 5-1-08 0900	Received By: C. J. [Signature]	Date/Time: 5-1-08 0900	Temp: 0.5						
3											
4											
5											

May 13, 2008

Marcus Zbinden
Carver County Environmental Se
600 E 4th Street
Chaska, MN 55318

RE: Project: CARVER COUNTY COMPOST PILOT
Pace Project No.: 1072347

Dear Marcus Zbinden:

Enclosed are the analytical results for sample(s) received by the laboratory on April 30, 2008. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Sylvia Hunter

sylvia.hunter@pacelabs.com
Project Manager

Florida (Nelap) Certification #: E87605

Illinois Certification #: 200011

Iowa Certification #: 368

Minnesota Certification #: 027-053-137

Wisconsin Certification #: 999407970

Enclosures

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project:
Pace Project No.:

Method:
Description:
Client:
Date:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CARVER COUNTY COMPOST PILOT

Pace Project No.: 1072347

Sample: A		Lab ID: 1072347001	Collected: 04/29/08 00:00	Received: 04/30/08 11:40	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7						
Potassium	82600	ug/L	2500	1	05/09/08 18:14	05/12/08 14:31	7440-09-7	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:14	7440-38-2	
Barium	224	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:14	7440-39-3	
Cadmium	ND	ug/L	1.0	1	05/09/08 18:08	05/12/08 11:14	7440-43-9	
Chromium	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:14	7440-47-3	
Copper	21.6	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:14	7440-50-8	
Lead	ND	ug/L	3.0	1	05/09/08 18:08	05/12/08 11:14	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:14	7439-98-7	
Nickel	ND	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:14	7440-02-0	
Selenium	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:14	7782-49-2	
Silver	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:14	7440-22-4	
Zinc	137	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:14	7440-66-6	
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	835	umhos/cm	1.0	1		04/30/08 17:30		
150.1 pH		Analytical Method: EPA 150.1						
pH	8.0	Std. Units		1		05/02/08 13:25		H6
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	1.0	mg/L	0.10	1		04/30/08 17:38	14797-55-8	

Sample: B		Lab ID: 1072347002	Collected: 04/29/08 00:00	Received: 04/30/08 11:40	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7						
Potassium	62300	ug/L	2500	1	05/09/08 18:14	05/12/08 14:36	7440-09-7	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:19	7440-38-2	
Barium	234	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:19	7440-39-3	
Cadmium	ND	ug/L	1.0	1	05/09/08 18:08	05/12/08 11:19	7440-43-9	
Chromium	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:19	7440-47-3	
Copper	20.0	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:19	7440-50-8	
Lead	ND	ug/L	3.0	1	05/09/08 18:08	05/12/08 11:19	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:19	7439-98-7	
Nickel	ND	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:19	7440-02-0	
Selenium	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:19	7782-49-2	
Silver	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:19	7440-22-4	
Zinc	42.1	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:19	7440-66-6	

ANALYTICAL RESULTS

Project: CARVER COUNTY COMPOST PILOT
Pace Project No.: 1072347

Sample: B		Lab ID: 1072347002	Collected: 04/29/08 00:00	Received: 04/30/08 11:40	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	763	umhos/cm	1.0	1		04/30/08 17:30		
150.1 pH		Analytical Method: EPA 150.1						
pH	8.1	Std. Units		1		05/02/08 13:25		H6
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	0.19	mg/L	0.10	1		04/30/08 17:38	14797-55-8	

Sample: C		Lab ID: 1072347003	Collected: 04/29/08 00:00	Received: 04/30/08 11:40	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7						
Potassium	139000	ug/L	2500	1	05/09/08 18:14	05/12/08 14:40	7440-09-7	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:23	7440-38-2	
Barium	928	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:23	7440-39-3	
Cadmium	ND	ug/L	1.0	1	05/09/08 18:08	05/12/08 11:23	7440-43-9	
Chromium	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:23	7440-47-3	
Copper	69.7	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:23	7440-50-8	
Lead	ND	ug/L	3.0	1	05/09/08 18:08	05/12/08 11:23	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:23	7439-98-7	
Nickel	67.4	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:23	7440-02-0	
Selenium	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:23	7782-49-2	
Silver	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:23	7440-22-4	
Zinc	158	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:23	7440-66-6	
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	1570	umhos/cm	1.0	1		04/30/08 17:30		
150.1 pH		Analytical Method: EPA 150.1						
pH	8.1	Std. Units		1		05/02/08 13:25		H6
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	0.92	mg/L	0.10	1		04/30/08 17:38	14797-55-8	

Sample: D		Lab ID: 1072347004	Collected: 04/29/08 00:00	Received: 04/30/08 11:40	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7						
Potassium	187000	ug/L	2500	1	05/09/08 18:14	05/12/08 14:45	7440-09-7	

Date: 05/13/2008 09:05 AM

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CARVER COUNTY COMPOST PILOT

Pace Project No.: 1072347

Sample: D		Lab ID: 1072347004	Collected: 04/29/08 00:00	Received: 04/30/08 11:40	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	15.6	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:30	7440-38-2	
Barium	1190	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:30	7440-39-3	
Cadmium	ND	ug/L	1.0	1	05/09/08 18:08	05/12/08 11:30	7440-43-9	
Chromium	10	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:30	7440-47-3	
Copper	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:30	7440-50-8	
Lead	ND	ug/L	3.0	1	05/09/08 18:08	05/12/08 11:30	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:30	7439-98-7	
Nickel	147	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:30	7440-02-0	
Selenium	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:30	7782-49-2	
Silver	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:30	7440-22-4	
Zinc	63.9	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:30	7440-66-6	
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	2350	umhos/cm	1.0	1		04/30/08 17:30		
150.1 pH		Analytical Method: EPA 150.1						
pH	7.9	Std. Units		1		05/02/08 13:25		H6
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	ND	mg/L	0.10	1		04/30/08 17:38	14797-55-8	

Sample: E		Lab ID: 1072347005	Collected: 04/29/08 00:00	Received: 04/30/08 11:40	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7						
Potassium	103000	ug/L	2500	1	05/09/08 18:14	05/12/08 14:52	7440-09-7	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:44	7440-38-2	
Barium	731	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:44	7440-39-3	
Cadmium	ND	ug/L	1.0	1	05/09/08 18:08	05/12/08 11:44	7440-43-9	
Chromium	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:44	7440-47-3	
Copper	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:44	7440-50-8	
Lead	ND	ug/L	3.0	1	05/09/08 18:08	05/12/08 11:44	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:44	7439-98-7	
Nickel	53.8	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:44	7440-02-0	
Selenium	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:44	7782-49-2	
Silver	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:44	7440-22-4	
Zinc	ND	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:44	7440-66-6	
245.1 Mercury		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1						
Mercury	ND	ug/L	0.20	1	05/09/08 00:00	05/12/08 12:34	7439-97-6	

ANALYTICAL RESULTS

Project: CARVER COUNTY COMPOST PILOT

Pace Project No.: 1072347

Sample: F		Lab ID: 1072347006	Collected: 04/29/08 00:00	Received: 04/30/08 11:40	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7						
Potassium	96400	ug/L	2500	1	05/09/08 18:14	05/12/08 14:58	7440-09-7	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:51	7440-38-2	
Barium	882	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:51	7440-39-3	
Cadmium	ND	ug/L	1.0	1	05/09/08 18:08	05/12/08 11:51	7440-43-9	
Chromium	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:51	7440-47-3	
Copper	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:51	7440-50-8	
Lead	ND	ug/L	3.0	1	05/09/08 18:08	05/12/08 11:51	7439-92-1	
Molybdenum	15.9	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:51	7439-98-7	
Nickel	71.6	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:51	7440-02-0	
Selenium	ND	ug/L	15.0	1	05/09/08 18:08	05/12/08 11:51	7782-49-2	
Silver	ND	ug/L	10.0	1	05/09/08 18:08	05/12/08 11:51	7440-22-4	
Zinc	478	ug/L	20.0	1	05/09/08 18:08	05/12/08 11:51	7440-66-6	
245.1 Mercury		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1						
Mercury	ND	ug/L	0.20	1	05/09/08 00:00	05/12/08 12:35	7439-97-6	

QUALITY CONTROL DATA

Project: CARVER COUNTY COMPOST PILOT
Pace Project No.: 1072347

QC Batch: WETA/6544 Analysis Method: EPA 353.1
QC Batch Method: EPA 353.1 Analysis Description: 353.1 Nitrate, unpreserved
Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004

METHOD BLANK: 470653
Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Nitrate as N	mg/L	ND	0.10	

LABORATORY CONTROL SAMPLE: 470654

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	1	0.95	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 470655 470656

Parameter	Units	1072273001		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	MS Spike Conc.	Spike Conc.	MS Result	MSD Result	% Rec	% Rec				
Nitrate as N	mg/L	36.1	1	1	44.2	37.6	810	150	80-120	16	M0	

QUALITY CONTROL DATA

Project: CARVER COUNTY COMPOST PILOT

Pace Project No.: 1072347

QC Batch: WET/12718

Analysis Method: EPA 120.1

QC Batch Method: EPA 120.1

Analysis Description: 120.1 Specific Conductance

Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004

METHOD BLANK: 471102

Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	

LABORATORY CONTROL SAMPLE: 471103

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Specific Conductance	umhos/cm	1000	993	99	90-110	

SAMPLE DUPLICATE: 471104

Parameter	Units	1072312001 Result	Dup Result	RPD	Qualifiers
Specific Conductance	umhos/cm	295	313	6	

SAMPLE DUPLICATE: 471105

Parameter	Units	1072322001 Result	Dup Result	RPD	Qualifiers
Specific Conductance	umhos/cm	392	401	2	

QUALITY CONTROL DATA

Project: CARVER COUNTY COMPOST PILOT

Pace Project No.: 1072347

QC Batch: WET/12744 Analysis Method: EPA 150.1

QC Batch Method: EPA 150.1 Analysis Description: 150.1 pH

Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004

LABORATORY CONTROL SAMPLE: 471962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH	Std. Units	5	5.0	99	98-102	H6

SAMPLE DUPLICATE: 471963

Parameter	Units	1072306002 Result	Dup Result	RPD	Qualifiers
pH	Std. Units	7.5	7.5	0	H6

SAMPLE DUPLICATE: 471964

Parameter	Units	1072471001 Result	Dup Result	RPD	Qualifiers
pH	Std. Units	8.1	8.1	0	H6

QUALITY CONTROL DATA

Project: CARVER COUNTY COMPOST PILOT

Project No.: 1072347

QC Batch: MERP/2552 Analysis Method: EPA 245.1
 QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
 Associated Lab Samples: 1072347005, 1072347006

METHOD BLANK: 474950

Associated Lab Samples: 1072347005, 1072347006

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Mercury	ug/L	ND	0.20	

LABORATORY CONTROL SAMPLE: 474951

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 474952 474953

Parameter	Units	1072313001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
Mercury	ug/L	ND	5	5	4.2	4.2	82	81	85-115	.8	M0

MATRIX SPIKE SAMPLE: 474954

Parameter	Units	1072633001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.6	89	85-115	

QUALITY CONTROL DATA

Project: CARVER COUNTY COMPOST PILOT
Pace Project No.: 1072347

QC Batch: MPRP/12089 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET
Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004, 1072347005, 1072347006

METHOD BLANK: 475268
Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004, 1072347005, 1072347006

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Potassium	ug/L	ND	2500	

LABORATORY CONTROL SAMPLE: 475269

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	10000	9390	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 475270 475271

Parameter	Units	1072313001		MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
Potassium	ug/L	6690	10000	10000	10000	15200	15500	85	88	70-130	2	

MATRIX SPIKE SAMPLE: 475272

Parameter	Units	1072386001	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Potassium	ug/L	3990	10000	11900	79	70-130	

QUALITY CONTROL DATA

Project: CARVER COUNTY COMPOST PILOT

Pace Project No.: 1072347

QC Batch: MPRP/12092 Analysis Method: EPA 6010
 QC Batch Method: EPA 3010 Analysis Description: 6010 MET
 Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004, 1072347005, 1072347006

METHOD BLANK: 475285

Associated Lab Samples: 1072347001, 1072347002, 1072347003, 1072347004, 1072347005, 1072347006

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Arsenic	ug/L	ND	10.0	
Barium	ug/L	ND	10.0	
Cadmium	ug/L	ND	1.0	
Chromium	ug/L	ND	10.0	
Copper	ug/L	ND	10.0	
Lead	ug/L	ND	3.0	
Molybdenum	ug/L	ND	15.0	
Nickel	ug/L	ND	20.0	
Selenium	ug/L	ND	15.0	
Silver	ug/L	ND	10.0	
Zinc	ug/L	ND	20.0	

LABORATORY CONTROL SAMPLE: 475286

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	896	90	80-120	
Barium	ug/L	1000	917	92	80-120	
Cadmium	ug/L	1000	915	92	80-120	
Chromium	ug/L	1000	921	92	80-120	
Copper	ug/L	1000	905	90	80-120	
Lead	ug/L	1000	911	91	80-120	
Molybdenum	ug/L	1000	924	92	80-120	
Nickel	ug/L	1000	922	92	80-120	
Selenium	ug/L	1000	913	91	80-120	
Silver	ug/L	500	467	93	80-120	
Zinc	ug/L	1000	921	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 475350 475351

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		1072965002 Result	Spike Conc.	Spike Conc.	Result					
Arsenic	ug/L	ND	1000	1000	918	911	91	91	80-120	.8
Barium	ug/L	0.060	1000	1000	990	1000	93	94	80-120	1
Cadmium	ug/L	ND	1000	1000	928	934	93	93	80-120	.6
Chromium	ug/L	ND	1000	1000	925	932	92	93	80-120	.8
Copper	ug/L	ND	1000	1000	930	936	93	94	80-120	.6
Lead	ug/L	ND	1000	1000	881	892	88	89	80-120	1
Molybdenum	ug/L	ND	1000	1000	907	917	90	91	80-120	1
Nickel	ug/L	ND	1000	1000	920	925	92	92	80-120	.5

QUALITY CONTROL DATA

Project: CARVER COUNTY COMPOST PILOT

Pace Project No.: 1072347

Parameter	Units	1072965002		MS		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	% Rec	% Rec						
Selenium	ug/L	ND	1000	1000	918	917	92	92	80-120	.1				
Silver	ug/L	ND	500	500	480	484	96	97	80-120	.8				
Zinc	ug/L	ND	1000	1000	919	926	92	93	80-120	.8				

QUALIFIERS

Project: CARVER COUNTY COMPOST PILOT

Pace Project No.: 1072347

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

ANALYTE QUALIFIERS

H6 Analysis initiated more than 15 minutes after sample collection.

M0 Matrix spike recovery was outside laboratory control limits.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CARVER COUNTY COMPOST PILOT

Pace Project No.: 1072347

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1072347001	A	EPA 353.1	WETA/6544		
1072347002	B	EPA 353.1	WETA/6544		
1072347003	C	EPA 353.1	WETA/6544		
1072347004	D	EPA 353.1	WETA/6544		
1072347001	A	EPA 120.1	WET/12718		
1072347002	B	EPA 120.1	WET/12718		
1072347003	C	EPA 120.1	WET/12718		
1072347004	D	EPA 120.1	WET/12718		
1072347001	A	EPA 150.1	WET/12744		
1072347002	B	EPA 150.1	WET/12744		
1072347003	C	EPA 150.1	WET/12744		
1072347004	D	EPA 150.1	WET/12744		
1072347005	E	EPA 245.1	MERP/2552	EPA 245.1	MERC/3403
1072347006	F	EPA 245.1	MERP/2552	EPA 245.1	MERC/3403
1072347001	A	EPA 200.7	MPRP/12089	EPA 200.7	ICP/5843
1072347002	B	EPA 200.7	MPRP/12089	EPA 200.7	ICP/5843
1072347003	C	EPA 200.7	MPRP/12089	EPA 200.7	ICP/5843
1072347004	D	EPA 200.7	MPRP/12089	EPA 200.7	ICP/5843
1072347005	E	EPA 200.7	MPRP/12089	EPA 200.7	ICP/5843
1072347006	F	EPA 200.7	MPRP/12089	EPA 200.7	ICP/5843
1072347001	A	EPA 3010	MPRP/12092	EPA 6010	ICP/5841
1072347002	B	EPA 3010	MPRP/12092	EPA 6010	ICP/5841
1072347003	C	EPA 3010	MPRP/12092	EPA 6010	ICP/5841
1072347004	D	EPA 3010	MPRP/12092	EPA 6010	ICP/5841
1072347005	E	EPA 3010	MPRP/12092	EPA 6010	ICP/5841
1072347006	F	EPA 3010	MPRP/12092	EPA 6010	ICP/5841

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1071347

Section A Required Client Information:
 Company: Carter County
 Address: 600 E 4th St, Chaska MN 55318
 Email To: mzbinden@co.carter.mn.us
 Phone: 952 361 1806 Fax: 952 361 1828
 Requested Due Date/TAT: STO

Section B Required Project Information:
 Report To: Marcos Zbinden
 Copy To: u
 Purchase Order No.:
 Project Name: Carter County Compost Pilot
 Project Number: 18872

Section C Invoice Information:
 Attention: Sue Berggren
 Company Name: Carter County
 Address: 600 E 4th St, Chaska
 Pace Quote Reference:
 Pace Project Manager: Sylvia Hunter
 Pace Profile #: 18872

Section D Required Client Information:
 Matrix Codes: Drinking Water (DW), Waste Water (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Other (OT)
 Matrix Code: WW
 Sample ID: ASUCW16
 (A-Z, 0-9 / -)
 Sample IDs MUST BE UNIQUE

REGULATORY AGENCY: MN
 NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER
 Site Location: MN STATE: MN

ITEM #	Matrix Codes	MIXED CODE	SAMPLE TYPE (G-GRAB C-COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Requested Analysis Filtered (Y/N)				Pace Project No. / Lab I.D.
				DATE	TIME				DATE	TIME	DATE	TIME	
1	WW	WW	WW	4/30/08	9:10	5	3	Unpreserved	X	X	X	X	001
2	WW	WW	WW	4/30/08	9:10	3	3	H ₂ SO ₄	X	X	X	X	002
3	WW	WW	WW	4/30/08	9:10	3	3	HCl	X	X	X	X	003
4	WW	WW	WW	4/30/08	9:10	3	3	NaOH	X	X	X	X	004
5	WW	WW	WW	4/30/08	9:10	3	3	Na ₂ S ₂ O ₃	X	X	X	X	005
6	WW	WW	WW	4/30/08	9:10	3	3	Methanol	X	X	X	X	006
7	WW	WW	WW	4/30/08	9:10	3	3	Other	X	X	X	X	007
8	WW	WW	WW	4/30/08	9:10	3	3	Analysis Test 1	X	X	X	X	008
9	WW	WW	WW	4/30/08	9:10	3	3	FPA 353.1 Nitrate	X	X	X	X	009
10	WW	WW	WW	4/30/08	9:10	3	3	FPA 120.1 (Conductivity)	X	X	X	X	010
11	WW	WW	WW	4/30/08	9:10	3	3	FPA 610	X	X	X	X	011
12	WW	WW	WW	4/30/08	9:10	3	3	FPA 200.7	X	X	X	X	012
								TKN	X	X	X	X	013
								EPA 365.2	X	X	X	X	014
								TOC as NPOC	X	X	X	X	015

Section E ADDITIONAL COMMENTS: EPA 610 should include Copper, Hg, Molybdenum, Nickel

Section F RELINQUISHED BY / AFFILIATION: Marcos Zbinden DATE: 04/30/08 TIME: 9:10

Section G ACCEPTED BY / AFFILIATION: Marcos Zbinden DATE: 4/30/08 TIME: 11:40

Section H SAMPLE CONDITIONS: Temp in °C: _____ Received on Ice (Y/N): _____ Custody Sealed Cooler (Y/N): _____ Samples Intact (Y/N): _____

Section I SAMPLER NAME AND SIGNATURE: Marcos Zbinden DATE Signed: 4/29/08

Section J SIGNATURE of SAMPLER: _____ DATE Signed: _____

Sample Condition Upon Receipt



Client Name: Carver County

Project # 1072347

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Optional
Proj. Dug ID#:
Proj. Name:

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 230194010, 72610129

Type of Ice: Wet Blue None

Samples on ice, cooling process has begun

Cooler Temperature 12.8

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: AA 4/30/08

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8. <u>TKN? unsure volume</u>
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>WT</u>		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, <u>TOC</u> , O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: Samples rec out of temp - ok to run

Project Manager Review: _____

AA

Date: 4/30/08

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Sample Condition Upon Receipt



Client Name: Pace - MN

Project # 403305

Courier: Fed Ex UPS USPS Client Waltco Commercial Pace Other _____

Tracking #: _____



Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used JB Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 0.5 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 5-1-08 cy

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> <u>cy</u> <input type="checkbox"/> N/A	4. <u>original cy 5-1-08</u>
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed <u>cy</u> Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 05-01-08

ote: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

June 26, 2008

Sylvia Hunter
Pace Analytical Minnesota
1700 Elm Street SE
Suite 200
Minneapolis, MN 55414

RE: Project: 1074916 COMPOSITE PILOT STUDY
Pace Project No.: 405015

Dear Sylvia Hunter:

Enclosed are the analytical results for sample(s) received by the laboratory on June 12, 2008. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Eric Wied

eric.wied@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Page 1 of 9

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CERTIFICATIONS

Project: 1074916 COMPOSITE PILOT STUDY

Pace Project No.: 405015

Green Bay Certification IDs

Florida (NELAP) Certification #: E87948

Illinois Certification #: 200050

California Certification #: 06246CA

New York Certification #: 11888

North Dakota Certification #: R-150

North Carolina Certification #: 503

Minnesota Certification #: 055-999-334

South Carolina Certification #: 83006001

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

Kentucky Certification #: 82

Louisiana Certification #: 04168

Green Bay Volatiles Certification IDs

Florida (NELAP) Certification #: E87951

California Certification #: 06247CA

Illinois Certification #: 200051

New York Certification #: 11887

North Dakota Certification #: R-200

North Carolina Certification #: 503

Minnesota Certification #: 055-999-334

South Carolina Certification #: 83006001

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

Kentucky Certification #: 83

Louisiana Certification #: 04169

REPORT OF LABORATORY ANALYSIS

Page 2 of 9

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SAMPLE SUMMARY

Project: 1074916 COMPOSITE PILOT STUDY

Pace Project No.: 405015

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1074916001	A	Water	06/10/08 00:00	06/12/08 08:45
1074916003	D	Water	06/10/08 00:00	06/12/08 08:45

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1074916 COMPOSITE PILOT STUDY

Pace Project No.: 405015

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1074916001	A	EPA 351.2	DAW	1	PASI-G
		EPA 365.4	DAW	1	PASI-G
1074916003	D	EPA 351.2	DAW	1	PASI-G
		EPA 365.4	DAW	1	PASI-G
		SM 5310C	MY	1	PASI-G

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1074916 COMPOSITE PILOT STUDY
Pace Project No.: 405015

Sample: A		Lab ID: 1074916001	Collected: 06/10/08 00:00	Received: 06/12/08 08:45	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2							
Nitrogen, Kjeldahl, Total	2.4	mg/L	1.0	1		06/18/08 14:43	7727-37-9	
365.4 Total Phosphorus	Analytical Method: EPA 365.4							
Phosphorus	ND	mg/L	0.50	1		06/20/08 15:08	7723-14-0	

Sample: D		Lab ID: 1074916003	Collected: 06/10/08 00:00	Received: 06/12/08 08:45	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2							
Nitrogen, Kjeldahl, Total	11.6	mg/L	1.0	1		06/18/08 14:44	7727-37-9	
365.4 Total Phosphorus	Analytical Method: EPA 365.4							
Phosphorus	0.67	mg/L	0.50	1		06/20/08 15:09	7723-14-0	
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	128	mg/L	2.0	1		06/25/08 15:57	7440-44-0	

QUALITY CONTROL DATA

Project: 1074916 COMPOSITE PILOT STUDY
Pace Project No.: 405015

QC Batch: WETA/1763 Analysis Method: EPA 351.2
QC Batch Method: EPA 351.2 Analysis Description: 351.2 TKN
Associated Lab Samples: 1074916001, 1074916003

METHOD BLANK: 41675

Associated Lab Samples: 1074916001, 1074916003

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	1.0	

LABORATORY CONTROL SAMPLE: 41676

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	5.4	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 41677 41678

Parameter	Units	405069002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	16.7	20	20	37.9	36.3	106	98	90-110	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 41679 41680

Parameter	Units	405226001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	208	20	20	213	216	23	42	90-110	2	20	P6

QUALITY CONTROL DATA

Project: 1074916 COMPOSITE PILOT STUDY
Pace Project No.: 405015

QC Batch: WETA/1776 Analysis Method: EPA 365.4
QC Batch Method: EPA 365.4 Analysis Description: 365.4 Phosphorus
Associated Lab Samples: 1074916001, 1074916003

METHOD BLANK: 42644
Associated Lab Samples: 1074916001, 1074916003

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Phosphorus	mg/L	ND	0.50	

LABORATORY CONTROL SAMPLE: 42645

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	5	5.2	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 42646 42647

Parameter	Units	404978001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	30.9	20	20	51.1	49.3	101	92	90-110	3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 42648 42649

Parameter	Units	405117001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phosphorus	mg/L	0.79J	20	20	21.9	21.6	105	104	90-110	1	20	

QUALITY CONTROL DATA

Project: 1074916 COMPOSITE PILOT STUDY
Pace Project No.: 405015

QC Batch: WETA/1820 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 1074916003

METHOD BLANK: 44545
Associated Lab Samples: 1074916003

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Total Organic Carbon	mg/L	ND	2.0	

LABORATORY CONTROL SAMPLE: 44546

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	100	91.9	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 44547 44548

Parameter	Units	404965001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Total Organic Carbon	mg/L	2.4	100	100	104	106	102	103	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 44549 44550

Parameter	Units	405386001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Total Organic Carbon	mg/L	<2.0	100	100	104	109	102	107	80-120	5	20	

QUALIFIERS

Project: 1074916 COMPOSITE PILOT STUDY

Pace Project No.: 405015

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

CV

Chain of Custody



Workorder: 1074916 Workorder Name: Composite Pilot Study Results Requested 6/23/2008

Report To: Sylvia Hunter
Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Milneapolis, MN 55414
Phone (612)607-1700
Fax (612)607-6444

Subcontract To: Pace Analytical Green Bay
1241 Bellevue Street
Suite 9
Green Bay, WI 54302
Phone (920)469-2436

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers		EPA415.1	TOC	Phos	TKN	Requested Analysis	Comments
					1	2						
1	A	6/10/2008 00:00	1074916001	Water				X	X	X		
2	D	6/10/2008 00:00	1074916003	Water				X	X	X		
3												
4												
5												

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	Sylvia Hunter	6/11/08 8:10D	A. Hunsen	6/12/08 8:15	
2	Sylvia Hunter	6/11/08 8:15	A. Hunsen	6/12/08 8:15	
3					
4					
5					

LAB USE ONLY
001 125000
002 1-807-2746

405015



Sample Condition Upon Receipt

Client Name: Pace Project # 405015

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Optional
Proj. Due Date
Proj. Name

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used JB Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 2°C Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: u6/14/08

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 06/20/08

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

June 26, 2008

Marcus Zbinden
Carver County Environmental Se
600 E 4th Street
Chaska, MN 55318

RE: Project: Composite Pilot Study
Pace Project No.: 1074916

Dear Marcus Zbinden:

Enclosed are the analytical results for sample(s) received by the laboratory on June 10, 2008. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Sylvia Hunter

sylvia.hunter@pacelabs.com
Project Manager

Florida (Nelap) Certification #: E87605

Illinois Certification #: 200011

Iowa Certification #: 368

Minnesota Certification #: 027-053-137

Wisconsin Certification #: 999407970

Enclosures

cc: Anne Ludvik, Carver County Environmental Se

REPORT OF LABORATORY ANALYSIS

Page 1 of 11

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without the written consent of Pace Analytical Services, Inc..



PROJECT NARRATIVE

Project:
Pace Project No.:

Method:
Description:
Client:
Date:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

Page 2 of 11

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ANALYTICAL RESULTS

Project: Composite Pilot Study

Pace Project No.: 1074916

Sample: A **Lab ID: 1074916001** Collected: 06/10/08 00:00 Received: 06/10/08 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Arsenic	ND	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:03	7440-38-2	
Barium	265	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:03	7440-39-3	
Cadmium	ND	ug/L	1.0	1	06/20/08 11:30	06/20/08 17:03	7440-43-9	
Chromium	ND	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:03	7440-47-3	
Copper	28.3	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:03	7440-50-8	
Lead	ND	ug/L	3.0	1	06/20/08 11:30	06/20/08 17:03	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	06/20/08 11:30	06/20/08 17:03	7439-98-7	
Nickel	ND	ug/L	20.0	1	06/20/08 11:30	06/20/08 17:03	7440-02-0	
Selenium	ND	ug/L	15.0	1	06/20/08 11:30	06/20/08 17:03	7782-49-2	
Silver	ND	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:03	7440-22-4	
Zinc	45.4	ug/L	20.0	1	06/20/08 11:30	06/20/08 17:03	7440-66-6	

245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1

Mercury ND ug/L 0.20 1 06/13/08 00:00 06/16/08 12:27 7439-97-6

Sample: C **Lab ID: 1074916002** Collected: 06/10/08 00:00 Received: 06/10/08 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Arsenic	ND	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:07	7440-38-2	
Barium	889	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:07	7440-39-3	
Cadmium	ND	ug/L	1.0	1	06/20/08 11:30	06/20/08 17:07	7440-43-9	
Chromium	ND	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:07	7440-47-3	
Copper	69.5	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:07	7440-50-8	
Lead	ND	ug/L	3.0	1	06/20/08 11:30	06/20/08 17:07	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	06/20/08 11:30	06/20/08 17:07	7439-98-7	
Nickel	66.5	ug/L	20.0	1	06/20/08 11:30	06/20/08 17:07	7440-02-0	
Selenium	ND	ug/L	15.0	1	06/20/08 11:30	06/20/08 17:07	7782-49-2	
Silver	ND	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:07	7440-22-4	
Zinc	78.1	ug/L	20.0	1	06/20/08 11:30	06/20/08 17:07	7440-66-6	

Sample: D **Lab ID: 1074916003** Collected: 06/10/08 00:00 Received: 06/10/08 15:27 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Arsenic	32.1	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:12	7440-38-2	
Barium	1230	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:12	7440-39-3	
Cadmium	ND	ug/L	1.0	1	06/20/08 11:30	06/20/08 17:12	7440-43-9	
Chromium	ND	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:12	7440-47-3	
Copper	ND	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:12	7440-50-8	
Lead	ND	ug/L	3.0	1	06/20/08 11:30	06/20/08 17:12	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	06/20/08 11:30	06/20/08 17:12	7439-98-7	

ANALYTICAL RESULTS

Project: Composite Pilot Study

Pace Project No.: 1074916

Sample: D		Lab ID: 1074916003	Collected: 06/10/08 00:00	Received: 06/10/08 15:27	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7						
Nickel	42.7	ug/L	20.0	1	06/20/08 11:30	06/20/08 17:12	7440-02-0	
Selenium	ND	ug/L	15.0	1	06/20/08 11:30	06/20/08 17:12	7782-49-2	
Silver	ND	ug/L	10.0	1	06/20/08 11:30	06/20/08 17:12	7440-22-4	
Zinc	ND	ug/L	20.0	1	06/20/08 11:30	06/20/08 17:12	7440-66-6	
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	2390	umhos/cm	1.0	1		06/12/08 12:05		
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	ND	mg/L	0.10	1		06/11/08 13:33	14797-55-8	

QUALITY CONTROL DATA

Project: Composite Pilot Study
Pace Project No.: 1074916

QC Batch: WETA/6724 Analysis Method: EPA 353.1
QC Batch Method: EPA 353.1 Analysis Description: 353.1 Nitrate, unpreserved
Associated Lab Samples: 1074916003

METHOD BLANK: 487467
Associated Lab Samples: 1074916003

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Nitrate as N	mg/L	ND	0.10	

LABORATORY CONTROL SAMPLE: 487468

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	1	0.97	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 487469 487470

Parameter	Units	1074916003		487470		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result					
Nitrate as N	mg/L	ND	1	1	0.92	0.93	91	92	80-120	.9

QUALITY CONTROL DATA

Project: Composite Pilot Study

Pace Project No.: 1074916

QC Batch: WET/13112

Analysis Method: EPA 120.1

QC Batch Method: EPA 120.1

Analysis Description: 120.1 Specific Conductance

Associated Lab Samples: 1074916003

METHOD BLANK: 487738

Associated Lab Samples: 1074916003

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	

LABORATORY CONTROL SAMPLE: 487739

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Specific Conductance	umhos/cm	1000	975	98	90-110	

SAMPLE DUPLICATE: 487740

Parameter	Units	1074936001 Result	Dup Result	RPD	Qualifiers
Specific Conductance	umhos/cm	2170	2170	0	

QUALITY CONTROL DATA

Project: Composite Pilot Study
Pace Project No.: 1074916

QC Batch: MERP/2642 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 1074916001

METHOD BLANK: 488777

Associated Lab Samples: 1074916001, 1074916003

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Mercury	ug/L	ND	0.20	

LABORATORY CONTROL SAMPLE: 488778

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 489551 489552

Parameter	Units	1074144009		489551		489552		% Rec Limits	RPD	Qual	
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MS Result	MS Spike Conc.				
Mercury	ug/L	ND	5	5	5	5.0	5.0	99	101	85-115	1

QUALITY CONTROL DATA

Project: Composite Pilot Study

Pace Project No.: 1074916

QC Batch: MPRP/12435 Analysis Method: EPA 200.7
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET
 Associated Lab Samples: 1074916001, 1074916002, 1074916003

METHOD BLANK: 491018

Associated Lab Samples: 1074916001, 1074916002, 1074916003

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Arsenic	ug/L	ND	10.0	
Barium	ug/L	ND	10.0	
Cadmium	ug/L	ND	1.0	
Chromium	ug/L	ND	10.0	
Copper	ug/L	ND	10.0	
Lead	ug/L	ND	3.0	
Molybdenum	ug/L	ND	15.0	
Nickel	ug/L	ND	20.0	
Selenium	ug/L	ND	15.0	
Silver	ug/L	ND	10.0	
Zinc	ug/L	ND	20.0	

LABORATORY CONTROL SAMPLE: 491019

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	975	98	85-115	
Barium	ug/L	1000	992	99	85-115	
Cadmium	ug/L	1000	973	97	85-115	
Chromium	ug/L	1000	963	96	85-115	
Copper	ug/L	1000	958	96	85-115	
Lead	ug/L	1000	956	96	85-115	
Molybdenum	ug/L	1000	1010	101	85-115	
Nickel	ug/L	1000	975	98	85-115	
Selenium	ug/L	1000	976	98	85-115	
Silver	ug/L	500	482	96	85-115	
Zinc	ug/L	1000	976	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 491020 491021

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		1074900001 Result	Spike Conc.	Spike Conc.	Result					
Arsenic	ug/L	ND	1000	1000	992	977	99	98	70-130	2
Barium	ug/L	13.9	1000	1000	1020	1000	101	99	70-130	2
Cadmium	ug/L	ND	1000	1000	990	970	99	97	70-130	2
Chromium	ug/L	ND	1000	1000	987	963	99	96	70-130	2
Copper	ug/L	ND	1000	1000	986	964	98	96	70-130	2
Lead	ug/L	ND	1000	1000	984	955	98	95	70-130	3
Molybdenum	ug/L	ND	1000	1000	1040	1020	103	101	70-130	2
Nickel	ug/L	ND	1000	1000	987	963	99	96	70-130	2
Selenium	ug/L	ND	1000	1000	980	975	98	97	70-130	.5

QUALITY CONTROL DATA

Project: Composite Pilot Study

Pace Project No.: 1074916

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 491020												491021	
Parameter	Units	1074900001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	% Rec	Limits	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Silver	ug/L	30.5	500	500	525	515	99	97	70-130			2	
Zinc	ug/L	842	1000	1000	1840	1800	100	96	70-130			2	

MATRIX SPIKE SAMPLE: 491022											
Parameter	Units	1074968001		Spike Conc.	MS	MS	% Rec	Qualifiers			
		Result	Conc.		Result	% Rec	Limits				
Arsenic	ug/L		ND	5000	4380	88	70-130				
Barium	ug/L		64.0	5000	4220	83	70-130				
Cadmium	ug/L		ND	5000	4260	85	70-130				
Chromium	ug/L		486	5000	4640	83	70-130				
Copper	ug/L		1040	5000	5300	85	70-130				
Lead	ug/L		ND	5000	3910	78	70-130				
Molybdenum	ug/L		ND	5000	4320	86	70-130				
Nickel	ug/L		670	5000	4760	82	70-130				
Selenium	ug/L		ND	5000	4340	87	70-130				
Silver	ug/L		ND	2500	2140	86	70-130				
Zinc	ug/L		ND	5000	4160	83	70-130				

QUALIFIERS

Project: Composite Pilot Study

Pace Project No.: 1074916

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Composite Pilot Study
Pace Project No.: 1074916

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1074916003	D	EPA 353.1	WETA/6724		
1074916003	D	EPA 120.1	WET/13112		
1074916001	A	EPA 245.1	MERP/2642	EPA 245.1	MERC/3491
1074916001	A	EPA 200.7	MPRP/12435	EPA 200.7	ICP/6003
1074916002	C	EPA 200.7	MPRP/12435	EPA 200.7	ICP/6003
1074916003	D	EPA 200.7	MPRP/12435	EPA 200.7	ICP/6003



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1074916 / 126

Section A
 Required Client Information:
 Company: Carver County
 Address: 1000 E 4th Street
 Chaska, MN 55318
 Email To: mzbinden@carver.mn.us
 Phone: 952-361-1906
 Fax: 952-361-1828
 Requested Due Date/TAT:

Section B
 Required Project Information:
 Report To: Marcus Zbinden
 Copy To: Anne Ludvik
 Purchase Order No.:
 Project Name: Carver County Compost Pilot
 Project Number:

Section C
 Invoice Information:
 Attention: Sue Morgan
 Company Name: Carver County
 Address: 1000 E 4th St. Chaska
 Pace Quote Reference:
 Pace Project Manager: Sylvia Hunter
 Pace Profile #:

REGULATORY AGENCY
 NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER

Site Location: STATE: MN

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION		# OF CONTAINERS	Preservatives	Y/N	Requested Analysis Filtered (Y/N)												Pace Project No./ Lab I.D.			
			COMPOSITE START	COMPOSITE END/GRAB			DATE	TIME				DATE	TIME	Analysis Test ↓	EPA 2007 metals	215.1 Hg	Specific Conduct. 120.1	TKN 351.1	Total Phos 305.2	TOC 415.2	Residual Chlorine (Y/N)						
1	A	DW			G	WWJ	6-10-08	11:40	2	Unpreserved		X	X	X	X	X	X	X	X	X	X	X	X	X	X	001	
2	B	WW			G	WWJ			1																	002	
3	C	SL			G	WWJ			4																	002	
4	D	WP			G	WWJ																				003	
5	E	AR			G	WWJ																					
6	F	TS			G	WWJ																					
7	G	OT			G	WWJ																					
8	H				G	WWJ																					
9	I				G	WWJ																					
10	J				G	WWJ																					
11																											
12																											

ADDITIONAL COMMENTS
 EPA 200.7 shows include Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Molybdenum, Nickel, Selenium, Silver, Zinc

RELINQUISHED BY / AFFILIATION
 Anne Ludvik Carver County

DATE
 6-10-08

TIME
 11:40

ACCEPTED BY / AFFILIATION
 Kelley Kira Carver County

DATE
 6/10/08

TIME
 11:40

SAMPLE CONDITIONS
 Received on Ice (Y/N)
 Custody Sealed Cooler (Y/N)
 Samples Intact (Y/N)

Temp In °C
 1.8°C

SAMPLER NAME AND SIGNATURE
 Anne Ludvik Carver County

PRINT Name of SAMPLER:
 Anne Ludvik

SIGNATURE of SAMPLER:
 Anne Ludvik

DATE Signed (MM/DD/YY):
 6/10/08

ORIGINAL

Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.



Sample Condition Upon Receipt

Client Name: Carver County

Project # 1074916

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no



Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used 230194010 72310429 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 1.8
Temp should be above freezing to 6°C

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 6/11/08

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>received only sample A, C, D</u>
-Includes date/time/ID/Analysis Matrix: <u>WT</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed <u>[Signature]</u> Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [Signature]

Date: 6/11/08

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

December 01, 2008

Marcus Zbinden
Carver County Environmental Se
600 E 4th Street
Chaska, MN 55318

RE: Project: Carver County Compost Pilot
Pace Project No.: 1084535

Dear Marcus Zbinden:

Enclosed are the analytical results for sample(s) received by the laboratory on November 14, 2008. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Cory C Lund

cory.lund@pacelabs.com
Project Manager

Enclosures

cc: Anne Ludvik, Carver County Environmental Se

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Carver County Compost Pilot

Pace Project No.: 1084535

Minnesota Certification IDs

Tennessee Certification #: 02818
Wisconsin Certification #: 999407970
Washington Certification #: C754
Pennsylvania Certification #: 68-00563
Oregon Certification #: MN200001
North Dakota Certification #: R-036
North Carolina Certification #: 530
New York Certification #: 11647
New Jersey Certification #: MN-002
Minnesota Certification #: 027-053-137

Maine Certification #: 2007029
Louisiana Certification #: LA080009
Louisiana Certification #: 03086
Kansas Certification #: E-10167
Iowa Certification #: 368
Illinois Certification #: 200011
Florida (Nelap) Certification #: E87605
California Certification #: 01155CA
Arizona Certification #: AZ-0014
Alaska Certification #: UST-078

Green Bay Certification IDs

Louisiana Certification #: 04169
Louisiana Certification #: 04168
Kentucky Certification #: 83
Kentucky Certification #: 82
Wisconsin DATCP Certification #: 105-444
Wisconsin DATCP Certification #: 105-444
Wisconsin Certification #: 405132750
Wisconsin Certification #: 405132750
South Carolina Certification #: 83006001
South Carolina Certification #: 83006001
Minnesota Certification #: 055-999-334

Minnesota Certification #: 055-999-334
North Carolina Certification #: 503
North Carolina Certification #: 503
North Dakota Certification #: R-200
North Dakota Certification #: R-150
New York Certification #: 11888
New York Certification #: 11887
Illinois Certification #: 200051
Illinois Certification #: 200050
Florida (NELAP) Certification #: E87951
Florida (NELAP) Certification #: E87948

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Carver County Compost Pilot
Pace Project No.: 1084535

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1084535001	C-Arb	EPA 120.1	NMH	1	PASI-M
		EPA 351.2	DAW	1	PASI-G
		EPA 353.1	NMH	1	PASI-M
		EPA 365.4	DAW	1	PASI-G
		EPA 6010	IP	11	PASI-M
		EPA 7470	TEM	1	PASI-M
		SM 4500-H+B	LE1	1	PASI-M
1084535002	D-Arb	EPA 6010	IP	11	PASI-M
		EPA 7470	TEM	1	PASI-M
1084535003	A-May	EPA 120.1	NMH	1	PASI-M
		EPA 351.2	DAW	1	PASI-G
		EPA 353.1	NMH	1	PASI-M
		EPA 6010	IP	11	PASI-M
		EPA 7470	TEM	1	PASI-M
1084535004	C-May	SM 4500-H+B	LE1	1	PASI-M
		EPA 120.1	NMH	1	PASI-M
		EPA 351.2	DAW	1	PASI-G
		EPA 353.1	NMH	1	PASI-M
		EPA 365.4	DAW	1	PASI-G
		EPA 6010	IP	11	PASI-M
		EPA 7470	TEM	1	PASI-M
1084535005	D-May	SM 4500-H+B	LE1	1	PASI-M
		SM 5310C	MY	1	PASI-G
		EPA 120.1	NMH	1	PASI-M
		EPA 353.1	NMH	1	PASI-M
1084535006	E-May	SM 4500-H+B	LE1	1	PASI-M
		EPA 120.1	NMH	1	PASI-M
		EPA 353.1	NMH	1	PASI-M
1084535007	F-May	SM 4500-H+B	LE1	1	PASI-M
		EPA 351.2	DAW	1	PASI-G
1084535008	G-May	EPA 6010	IP	11	PASI-M
		EPA 7470	TEM	1	PASI-M
1084535009	H-May	EPA 120.1	NMH	1	PASI-M
		EPA 353.1	NMH	1	PASI-M
		SM 4500-H+B	LE1	1	PASI-M
1084535010	J-May	EPA 120.1	NMH	1	PASI-M
		EPA 353.1	NMH	1	PASI-M

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Carver County Compost Pilot
Pace Project No.: 1084535

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6010	IP	11	PASI-M
		EPA 7470	TEM	1	PASI-M
		SM 4500-H+B	LE1	1	PASI-M

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Carver County Compost Pilot
Pace Project No.: 1084535

Sample: C-Arb		Lab ID: 1084535001	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	13.5 ug/L		10.0	1	11/20/08 15:44	11/30/08 21:56	7440-38-2	
Barium	1110 ug/L		10.0	1	11/20/08 15:44	11/30/08 21:56	7440-39-3	
Cadmium	ND ug/L		1.0	1	11/20/08 15:44	11/30/08 21:56	7440-43-9	
Chromium	ND ug/L		10.0	1	11/20/08 15:44	11/30/08 21:56	7440-47-3	
Copper	13.1 ug/L		10.0	1	11/20/08 15:44	11/30/08 21:56	7440-50-8	
Lead	ND ug/L		3.0	1	11/20/08 15:44	11/30/08 21:56	7439-92-1	
Molybdenum	ND ug/L		15.0	1	11/20/08 15:44	11/30/08 21:56	7439-98-7	
Nickel	66.7 ug/L		20.0	1	11/20/08 15:44	11/30/08 21:56	7440-02-0	
Selenium	ND ug/L		15.0	1	11/20/08 15:44	11/30/08 21:56	7782-49-2	
Silver	ND ug/L		10.0	1	11/20/08 15:44	11/30/08 21:56	7440-22-4	
Zinc	71.2 ug/L		20.0	1	11/20/08 15:44	11/30/08 21:56	7440-66-6	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470						
Mercury	ND ug/L		0.20	1	11/17/08 00:00	11/18/08 13:11	7439-97-6	
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	1710 umhos/cm		1.0	1		11/18/08 15:40		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B						
pH at 25 Degrees C	7.7 Std. Units		0.10	1		11/17/08 10:20		H6
351.2 Total Kjeldahl Nitrogen		Analytical Method: EPA 351.2						
Nitrogen, Kjeldahl, Total	3.0 mg/L		1.0	1		11/21/08 14:38	7727-37-9	
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	ND mg/L		0.10	1		11/14/08 20:02	14797-55-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4						
Phosphorus	ND mg/L		0.50	1		11/24/08 14:01	7723-14-0	

Sample: D-Arb		Lab ID: 1084535002	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	17.9 ug/L		10.0	1	11/20/08 15:44	11/30/08 22:03	7440-38-2	
Barium	922 ug/L		10.0	1	11/20/08 15:44	11/30/08 22:03	7440-39-3	
Cadmium	ND ug/L		1.0	1	11/20/08 15:44	11/30/08 22:03	7440-43-9	
Chromium	ND ug/L		10.0	1	11/20/08 15:44	11/30/08 22:03	7440-47-3	
Copper	15.2 ug/L		10.0	1	11/20/08 15:44	11/30/08 22:03	7440-50-8	
Lead	ND ug/L		3.0	1	11/20/08 15:44	11/30/08 22:03	7439-92-1	
Molybdenum	ND ug/L		15.0	1	11/20/08 15:44	11/30/08 22:03	7439-98-7	
Nickel	26.8 ug/L		20.0	1	11/20/08 15:44	11/30/08 22:03	7440-02-0	
Selenium	ND ug/L		15.0	1	11/20/08 15:44	11/30/08 22:03	7782-49-2	
Silver	ND ug/L		10.0	1	11/20/08 15:44	11/30/08 22:03	7440-22-4	

Date: 12/01/2008 02:41 PM

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Carver County Compost Pilot

Pace Project No.: 1084535

Sample: D-Arb		Lab ID: 1084535002	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Zinc	84.9	ug/L	20.0	1	11/20/08 15:44	11/30/08 22:03	7440-66-6	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	1	11/17/08 00:00	11/18/08 13:12	7439-97-6	

Sample: A-May		Lab ID: 1084535003	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	13.9	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:10	7440-38-2	
Barium	103	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:10	7440-39-3	
Cadmium	ND	ug/L	1.0	1	11/20/08 15:44	11/30/08 22:10	7440-43-9	
Chromium	ND	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:10	7440-47-3	
Copper	12.3	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:10	7440-50-8	
Lead	ND	ug/L	3.0	1	11/20/08 15:44	11/30/08 22:10	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	11/20/08 15:44	11/30/08 22:10	7439-98-7	
Nickel	ND	ug/L	20.0	1	11/20/08 15:44	11/30/08 22:10	7440-02-0	
Selenium	ND	ug/L	15.0	1	11/20/08 15:44	11/30/08 22:10	7782-49-2	
Silver	ND	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:10	7440-22-4	
Zinc	37.7	ug/L	20.0	1	11/20/08 15:44	11/30/08 22:10	7440-66-6	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	1	11/17/08 00:00	11/18/08 13:13	7439-97-6	
120.1 Specific Conductance Analytical Method: EPA 120.1								
Specific Conductance	2190	umhos/cm	1.0	1		11/18/08 15:40		
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	7.9	Std. Units	0.10	1		11/17/08 10:20		H6
351.2 Total Kjeldahl Nitrogen Analytical Method: EPA 351.2								
Nitrogen, Kjeldahl, Total	1.6	mg/L	1.0	1		11/21/08 14:39	7727-37-9	
353.1 Nitrate, unpreserved Analytical Method: EPA 353.1								
Nitrate as N	0.97	mg/L	0.10	1		11/14/08 20:02	14797-55-8	

Sample: C-May		Lab ID: 1084535004	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	ND	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:24	7440-38-2	

Date: 12/01/2008 02:41 PM

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Carver County Compost Pilot

Pace Project No.: 1084535

Sample: C-May		Lab ID: 1084535004	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Barium	139 ug/L		10.0	1	11/20/08 15:44	11/30/08 22:24	7440-39-3	
Cadmium	ND ug/L		1.0	1	11/20/08 15:44	11/30/08 22:24	7440-43-9	
Chromium	ND ug/L		10.0	1	11/20/08 15:44	11/30/08 22:24	7440-47-3	
Copper	14.4 ug/L		10.0	1	11/20/08 15:44	11/30/08 22:24	7440-50-8	
Lead	ND ug/L		3.0	1	11/20/08 15:44	11/30/08 22:24	7439-92-1	
Molybdenum	ND ug/L		15.0	1	11/20/08 15:44	11/30/08 22:24	7439-98-7	
Nickel	ND ug/L		20.0	1	11/20/08 15:44	11/30/08 22:24	7440-02-0	
Selenium	ND ug/L		15.0	1	11/20/08 15:44	11/30/08 22:24	7782-49-2	
Silver	ND ug/L		10.0	1	11/20/08 15:44	11/30/08 22:24	7440-22-4	
Zinc	25.3 ug/L		20.0	1	11/20/08 15:44	11/30/08 22:24	7440-66-6	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470						
Mercury	ND ug/L		0.20	1	11/17/08 00:00	11/18/08 13:15	7439-97-6	
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	1280 umhos/cm		1.0	1		11/18/08 15:40		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B						
pH at 25 Degrees C	8.0 Std. Units		0.10	1		11/17/08 10:20		H6
351.2 Total Kjeldahl Nitrogen		Analytical Method: EPA 351.2						
Nitrogen, Kjeldahl, Total	ND mg/L		1.0	1		11/26/08 13:54	7727-37-9	
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	ND mg/L		0.10	1		11/14/08 20:02	14797-55-8	
365.4 Total Phosphorus		Analytical Method: EPA 365.4						
Phosphorus	ND mg/L		0.50	1		11/25/08 14:42	7723-14-0	
5310C TOC		Analytical Method: SM 5310C						
Total Organic Carbon	21.4 mg/L		2.0	1		11/20/08 10:48	7440-44-0	

Sample: D-May		Lab ID: 1084535005	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	918 umhos/cm		1.0	1		11/18/08 15:40		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B						
pH at 25 Degrees C	7.9 Std. Units		0.10	1		11/17/08 10:20		H6
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	4.0 mg/L		0.50	5		11/14/08 20:02	14797-55-8	

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ANALYTICAL RESULTS

Project: Carver County Compost Pilot
Pace Project No.: 1084535

Sample: E-May		Lab ID: 1084535006	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	7900	umhos/cm	1.0	1		11/18/08 15:40		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B						
pH at 25 Degrees C	7.4	Std. Units	0.10	1		11/17/08 10:20		H6
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	ND	mg/L	0.10	1		11/14/08 20:02	14797-55-8	

Sample: F-May		Lab ID: 1084535007	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 Total Kjeldahl Nitrogen		Analytical Method: EPA 351.2						
Nitrogen, Kjeldahl, Total	ND	mg/L	1.0	1		11/26/08 13:55	7727-37-9	

Sample: G-May		Lab ID: 1084535008	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	11.0	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:30	7440-38-2	
Barium	187	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:30	7440-39-3	
Cadmium	ND	ug/L	1.0	1	11/20/08 15:44	11/30/08 22:30	7440-43-9	
Chromium	ND	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:30	7440-47-3	
Copper	ND	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:30	7440-50-8	
Lead	ND	ug/L	3.0	1	11/20/08 15:44	11/30/08 22:30	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	11/20/08 15:44	11/30/08 22:30	7439-98-7	
Nickel	ND	ug/L	20.0	1	11/20/08 15:44	11/30/08 22:30	7440-02-0	
Selenium	ND	ug/L	15.0	1	11/20/08 15:44	11/30/08 22:30	7782-49-2	
Silver	ND	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:30	7440-22-4	
Zinc	285	ug/L	20.0	1	11/20/08 15:44	11/30/08 22:30	7440-66-6	
7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470						
Mercury	ND	ug/L	0.20	1	11/17/08 00:00	11/18/08 13:16	7439-97-6	

Sample: H-May		Lab ID: 1084535009	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	1670	umhos/cm	1.0	1		11/18/08 15:40		

ANALYTICAL RESULTS

Project: Carver County Compost Pilot

Pace Project No.: 1084535

Sample: H-May		Lab ID: 1084535009	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B						
pH at 25 Degrees C	7.8	Std. Units	0.10	1		11/17/08 10:20		H6
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	ND	mg/L	0.10	1		11/14/08 20:02	14797-55-8	

Sample: J-May		Lab ID: 1084535010	Collected: 11/14/08 00:00	Received: 11/14/08 16:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	13.0	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:35	7440-38-2	
Barium	176	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:35	7440-39-3	
Cadmium	ND	ug/L	1.0	1	11/20/08 15:44	11/30/08 22:35	7440-43-9	
Chromium	ND	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:35	7440-47-3	
Copper	ND	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:35	7440-50-8	
Lead	ND	ug/L	3.0	1	11/20/08 15:44	11/30/08 22:35	7439-92-1	
Molybdenum	ND	ug/L	15.0	1	11/20/08 15:44	11/30/08 22:35	7439-98-7	
Nickel	ND	ug/L	20.0	1	11/20/08 15:44	11/30/08 22:35	7440-02-0	
Selenium	ND	ug/L	15.0	1	11/20/08 15:44	11/30/08 22:35	7782-49-2	
Silver	ND	ug/L	10.0	1	11/20/08 15:44	11/30/08 22:35	7440-22-4	
Zinc	137	ug/L	20.0	1	11/20/08 15:44	11/30/08 22:35	7440-66-6	

7470 Mercury		Analytical Method: EPA 7470 Preparation Method: EPA 7470						
Mercury	ND	ug/L	0.20	1	11/17/08 00:00	11/18/08 13:17	7439-97-6	
120.1 Specific Conductance		Analytical Method: EPA 120.1						
Specific Conductance	1580	umhos/cm	1.0	1		11/18/08 15:40		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B						
pH at 25 Degrees C	7.6	Std. Units	0.10	1		11/17/08 10:20		H6
353.1 Nitrate, unpreserved		Analytical Method: EPA 353.1						
Nitrate as N	5.4	mg/L	0.50	5		11/14/08 20:02	14797-55-8	

QUALITY CONTROL DATA

Project: Carver County Compost Pilot
Pace Project No.: 1084535

QC Batch: WETA/2789 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 1084535004

METHOD BLANK: 103130 Matrix: Water
Associated Lab Samples: 1084535004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	2.0	11/19/08 12:57	

LABORATORY CONTROL SAMPLE: 103131

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	100	106	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 103132 103133

Parameter	Units	1084528001	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits		
Total Organic Carbon	mg/L	10.2	100	100	115	114	104	104	80-120	.6	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 103134 103135

Parameter	Units	1084439002	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits		
Total Organic Carbon	mg/L	ND	100	100	107	105	107	105	80-120	1	

QUALITY CONTROL DATA

Project: Carver County Compost Pilot
Pace Project No.: 1084535

QC Batch: WETA/2802 Analysis Method: EPA 351.2
QC Batch Method: EPA 351.2 Analysis Description: 351.2 TKN
Associated Lab Samples: 1084535001, 1084535003

METHOD BLANK: 104548 Matrix: Water
Associated Lab Samples: 1084535001, 1084535003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	1.0	11/21/08 14:33	

LABORATORY CONTROL SAMPLE: 104549

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 104550 104551

Parameter	Units	4011701005		MS		MSD		% Rec		Limits	RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec			
Nitrogen, Kjeldahl, Total	mg/L	<0.42	5	5	5	5.7	5.4	106	101	90-110	5	

QUALITY CONTROL DATA

Project: Carver County Compost Pilot
Pace Project No.: 1084535

QC Batch: WETA/2812 Analysis Method: EPA 365.4
QC Batch Method: EPA 365.4 Analysis Description: 365.4 Phosphorus
Associated Lab Samples: 1084535001

METHOD BLANK: 105308 Matrix: Water
Associated Lab Samples: 1084535001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.50	11/24/08 13:56	

LABORATORY CONTROL SAMPLE: 105309

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 105310 105311

Parameter	Units	4011694003 Result	MS		MSD		MS		MSD		% Rec Limits	RPD	Qual
			Spike Conc.	Conc.	Result	Result	% Rec	% Rec					
Phosphorus	mg/L	<0.17	5	5	5.3	5.3	105	105	90-110	.2			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 105312 105313

Parameter	Units	4011694013 Result	MS		MSD		MS		MSD		% Rec Limits	RPD	Qual
			Spike Conc.	Conc.	Result	Result	% Rec	% Rec					
Phosphorus	mg/L	<0.17	5	5	5.3	5.3	104	104	90-110	.07			

QUALITY CONTROL DATA

Project: Carver County Compost Pilot

Pace Project No.: 1084535

QC Batch: WETA/2825 Analysis Method: EPA 365.4
 QC Batch Method: EPA 365.4 Analysis Description: 365.4 Phosphorus
 Associated Lab Samples: 1084535004

METHOD BLANK: 105545 Matrix: Water
 Associated Lab Samples: 1084535004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phosphorus	mg/L	ND	0.50	11/25/08 14:34	

LABORATORY CONTROL SAMPLE: 105546

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phosphorus	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 105547 105548

Parameter	Units	1084840001		105547		105548		% Rec Limits	RPD	Qual	
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MS Result	MS Spike Conc.				
Phosphorus	mg/L	2.1	5	5	5	7.1	7.0	99	98	90-110	1

QUALITY CONTROL DATA

Project: Carver County Compost Pilot

Pace Project No.: 1084535

QC Batch: WETA/2844

Analysis Method: EPA 351.2

QC Batch Method: EPA 351.2

Analysis Description: 351.2 TKN

Associated Lab Samples: 1084535004, 1084535007

METHOD BLANK: 106181

Matrix: Water

Associated Lab Samples: 1084535004, 1084535007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	1.0	11/26/08 13:47	

LABORATORY CONTROL SAMPLE: 106182

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 106183

106184

Parameter	Units	4011597002 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
			Spike Conc.	Spike Conc.							
Nitrogen, Kjeldahl, Total	mg/L	0.43J	5	5	5.5	5.8	102	108	90-110	5	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 106185

106186

Parameter	Units	4011597012 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
			Spike Conc.	Spike Conc.							
Nitrogen, Kjeldahl, Total	mg/L	<0.42	5	5	5.1	5.1	101	101	90-110	.5	

QUALITY CONTROL DATA

Project: Carver County Compost Pilot
Pace Project No.: 1084535

QC Batch: WETA/7450 Analysis Method: EPA 353.1
QC Batch Method: EPA 353.1 Analysis Description: 353.1 Nitrate, unpreserved
Associated Lab Samples: 1084535001, 1084535003, 1084535004, 1084535005, 1084535006, 1084535009, 1084535010

METHOD BLANK: 552110 Matrix: Water
Associated Lab Samples: 1084535001, 1084535003, 1084535004, 1084535005, 1084535006, 1084535009, 1084535010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	ND	0.10	11/14/08 20:02	

LABORATORY CONTROL SAMPLE: 552111

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	1	0.99	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 552112 552113

Parameter	Units	552112		552113		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		1084535005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result					
Nitrate as N	mg/L	4.0	1	1	5.2	5.1	116	104	80-120	2

QUALITY CONTROL DATA

Project: Carver County Compost Pilot

Pace Project No.: 1084535

QC Batch: WET/14619 Analysis Method: SM 4500-H+B
 QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
 Associated Lab Samples: 1084535001, 1084535003, 1084535004, 1084535005, 1084535006, 1084535009, 1084535010

LABORATORY CONTROL SAMPLE: 552289

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	5	5.0	100	98-102	H6

SAMPLE DUPLICATE: 552287

Parameter	Units	1084436001 Result	Dup Result	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.3	6.3	0	H6

SAMPLE DUPLICATE: 552288

Parameter	Units	1084509001 Result	Dup Result	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	5.4	5.3	2	H6

QUALITY CONTROL DATA

Project: Carver County Compost Pilot
Pace Project No.: 1084535

QC Batch: MERP/3043 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 1084535001, 1084535002, 1084535003, 1084535004, 1084535008, 1084535010

METHOD BLANK: 552641 Matrix: Water
Associated Lab Samples: 1084535001, 1084535002, 1084535003, 1084535004, 1084535008, 1084535010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	11/18/08 12:57	

LABORATORY CONTROL SAMPLE: 552642

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 552643 552644

Parameter	Units	1084439002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Mercury	ug/L	ND	5	5	5.4	5.0	107	100	80-120	7	

QUALITY CONTROL DATA

Project: Carver County Compost Pilot

Pace Project No.: 1084535

QC Batch: WET/14625

Analysis Method: EPA 120.1

QC Batch Method: EPA 120.1

Analysis Description: 120.1 Specific Conductance

Associated Lab Samples: 1084535001, 1084535003, 1084535004, 1084535005, 1084535006, 1084535009, 1084535010

METHOD BLANK: 552699

Matrix: Water

Associated Lab Samples: 1084535001, 1084535003, 1084535004, 1084535005, 1084535006, 1084535009, 1084535010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	11/18/08 15:40	

LABORATORY CONTROL SAMPLE: 552700

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Specific Conductance	umhos/cm	1000	978	98	90-110	

SAMPLE DUPLICATE: 552701

Parameter	Units	1084535001 Result	Dup Result	RPD	Qualifiers
Specific Conductance	umhos/cm	1710	1760	3	

QUALITY CONTROL DATA

Project: Carver County Compost Pilot

Pace Project No.: 1084535

QC Batch: MPRP/13953 Analysis Method: EPA 6010
 QC Batch Method: EPA 3010 Analysis Description: 6010 MET
 Associated Lab Samples: 1084535001, 1084535002, 1084535003, 1084535004, 1084535008, 1084535010

METHOD BLANK: 554054 Matrix: Water
 Associated Lab Samples: 1084535001, 1084535002, 1084535003, 1084535004, 1084535008, 1084535010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	ND	10.0	11/30/08 21:49	
Barium	ug/L	ND	10.0	11/30/08 21:49	
Cadmium	ug/L	ND	1.0	11/30/08 21:49	
Chromium	ug/L	ND	10.0	11/30/08 21:49	
Copper	ug/L	ND	10.0	11/30/08 21:49	
Lead	ug/L	ND	3.0	11/30/08 21:49	
Molybdenum	ug/L	ND	15.0	11/30/08 21:49	
Nickel	ug/L	ND	20.0	11/30/08 21:49	
Selenium	ug/L	ND	15.0	11/30/08 21:49	
Silver	ug/L	ND	10.0	11/30/08 21:49	
Zinc	ug/L	ND	20.0	11/30/08 21:49	

LABORATORY CONTROL SAMPLE: 554055

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	1000	994	99	80-120	
Barium	ug/L	1000	1010	101	80-120	
Cadmium	ug/L	1000	993	99	80-120	
Chromium	ug/L	1000	1020	102	80-120	
Copper	ug/L	1000	979	98	80-120	
Lead	ug/L	1000	1000	100	80-120	
Molybdenum	ug/L	1000	991	99	80-120	
Nickel	ug/L	1000	1000	100	80-120	
Selenium	ug/L	1000	1000	100	80-120	
Silver	ug/L	500	510	102	80-120	
Zinc	ug/L	1000	1050	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 554305 554306

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		1084597001 Result	Spike Conc.	Spike Conc.	Result					
Arsenic	ug/L	ND	1000	1000	979	969	97	96	80-120	1
Barium	ug/L	11.9	1000	1000	989	987	98	98	80-120	.2
Cadmium	ug/L	ND	1000	1000	964	961	96	96	80-120	.3
Chromium	ug/L	ND	1000	1000	986	974	99	97	80-120	1
Copper	ug/L	ND	1000	1000	957	946	96	94	80-120	1
Lead	ug/L	ND	1000	1000	963	963	96	96	80-120	0
Molybdenum	ug/L	ND	1000	1000	970	971	97	97	80-120	.1
Nickel	ug/L	ND	1000	1000	968	963	97	96	80-120	.5
Selenium	ug/L	ND	1000	1000	987	981	98	97	80-120	.6

Date: 12/01/2008 02:41 PM

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Carver County Compost Pilot

Pace Project No.: 1084535

Parameter	Units	1084597001		554305		554306		% Rec	% Rec	% Rec	Limits	RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Silver	ug/L	ND	500	500	452	553	90	111	80-120	20			
Zinc	ug/L	ND	1000	1000	1020	1010	102	101	80-120	1			

QUALIFIERS

Project: Carver County Compost Pilot

Pace Project No.: 1084535

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

PASI-M Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

H6 Analysis initiated more than 15 minutes after sample collection.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Carver County Compost Pilot

Pace Project No.: 1084535

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1084535004	C-May	SM 5310C	WETA/2789		
1084535001	C-Arb	EPA 351.2	WETA/2802		
1084535003	A-May	EPA 351.2	WETA/2802		
1084535001	C-Arb	EPA 365.4	WETA/2812		
1084535004	C-May	EPA 365.4	WETA/2825		
1084535004	C-May	EPA 351.2	WETA/2844		
1084535007	F-May	EPA 351.2	WETA/2844		
1084535001	C-Arb	EPA 353.1	WETA/7450		
1084535003	A-May	EPA 353.1	WETA/7450		
1084535004	C-May	EPA 353.1	WETA/7450		
1084535005	D-May	EPA 353.1	WETA/7450		
1084535006	E-May	EPA 353.1	WETA/7450		
1084535009	H-May	EPA 353.1	WETA/7450		
1084535010	J-May	EPA 353.1	WETA/7450		
1084535001	C-Arb	SM 4500-H+B	WET/14619		
1084535003	A-May	SM 4500-H+B	WET/14619		
1084535004	C-May	SM 4500-H+B	WET/14619		
1084535005	D-May	SM 4500-H+B	WET/14619		
1084535006	E-May	SM 4500-H+B	WET/14619		
1084535009	H-May	SM 4500-H+B	WET/14619		
1084535010	J-May	SM 4500-H+B	WET/14619		
1084535001	C-Arb	EPA 7470	MERP/3043	EPA 7470	MERC/3886
1084535002	D-Arb	EPA 7470	MERP/3043	EPA 7470	MERC/3886
1084535003	A-May	EPA 7470	MERP/3043	EPA 7470	MERC/3886
1084535004	C-May	EPA 7470	MERP/3043	EPA 7470	MERC/3886
1084535008	G-May	EPA 7470	MERP/3043	EPA 7470	MERC/3886
1084535010	J-May	EPA 7470	MERP/3043	EPA 7470	MERC/3886
1084535001	C-Arb	EPA 120.1	WET/14625		
1084535003	A-May	EPA 120.1	WET/14625		
1084535004	C-May	EPA 120.1	WET/14625		
1084535005	D-May	EPA 120.1	WET/14625		
1084535006	E-May	EPA 120.1	WET/14625		
1084535009	H-May	EPA 120.1	WET/14625		
1084535010	J-May	EPA 120.1	WET/14625		
1084535001	C-Arb	EPA 3010	MPRP/13953	EPA 6010	ICP/6601
1084535002	D-Arb	EPA 3010	MPRP/13953	EPA 6010	ICP/6601
1084535003	A-May	EPA 3010	MPRP/13953	EPA 6010	ICP/6601
1084535004	C-May	EPA 3010	MPRP/13953	EPA 6010	ICP/6601
1084535008	G-May	EPA 3010	MPRP/13953	EPA 6010	ICP/6601
1084535010	J-May	EPA 3010	MPRP/13953	EPA 6010	ICP/6601

APPENDIX 3
NEWSPAPER ARTICLES



At last week's Carver County Board meeting, representatives of a local partnership that earned the Governor's Award were in attendance: first row, from left: Coleen Hetzel, Minnesota Pollution Control Agency; Wendy Liestiko, RW Farms; Anne Ludvik, Carver County; Commissioner Gayle Degler, Chair; Ginny Black, MPCA; second row: Commissioner Tim Lynch; Marcus Zbinden, Carver County; Commissioner James Ische; Commissioner Randy Maluchnik, Vice-Chair; Peter Moe, Arboretum; Sheldon Swenson, Waste Management; and Brad Hanzel, Carver County.

Project gets Gov's Award for pollution prevention

The Minnesota Pollution Control Agency recently awarded the Minnesota Governor's Award for Pollution Prevention to Carver County Environmental Services, RW Farms, the University of Minnesota Landscape Arboretum, and Waste Management.

The Governor's Award program honors superior environmental achievement by Minnesota's businesses, non-profits, governmental agencies, and other institutions that focus on preserving the environment through innovative pollution and waste prevention, resource efficiency, and sustainable practices.

In 2007, Carver County received a demonstration project approval as well as a \$55,000 grant from the MPCA to operate an innovative organics compost

program.

Carver County, in cooperation with RW Farms, the University of Minnesota Landscape Arboretum, Waste Management, and a number of municipalities in the county, has effectively demonstrated that safe, convenient and cost effective collection and composting of yard waste and source separated organics (food waste and soiled paper) can be coordinated with waste haulers, compost processors and municipalities, according to a press release.

This project made significant contributions to preserving the environment in several areas including: contributing in helping the state of Minnesota meet its 15 percent recycling goal of organic materials by the year 2020; reducing the amount of fugitive methane escaping

landfills and by taking materials that are typically land filled and turning them into compost, the release stated.

Waste collection and composting began in 2007 with one location at the RW Farms site at the University of Minnesota Landscape Arboretum located in Chanhassen, one hauler, Waste Management, and 570 households in the city of Chanhassen. In 2008 the program has continued to expand.

In 2007, 124 tons of organics material was diverted from the landfill and in 2008 that number climbed to 326 tons. The project has also successfully completed a key goal by assisting in the statutory change of redefining organics, which will allow for the co-collection of organics and yard waste throughout the state.



Oak Ridge works on composting project

Oak Ridge Hotel and Conference Center, a meeting and event facility located in Chaska, is participating in the "Organics Composting" pilot project started by Carver County Environmental Services.

Organics composting allows Oak Ridge to toss all food and food soiled paper products into one single waste collection device. By participating in this project, the hotel and conference center is currently able to divert approximately two tons per week of organic material from local landfills, according to a Carver County Environmental Services press release.

Environmentally friendly initiatives at Oak Ridge already implemented include: donating partially used guestroom ame-

nities to Sharing and Caring Hands, switching out regular light bulbs for CFL's as they burn out, a recycling program for the housekeeping staff, compostable containers, buying only Energy Star appliances and environmentally friendly equipment, e-mailing of internal reports instead of printing, crushing and recycling cardboard, using potted seasonal flowers to plant outside instead of cut flowers, planting more perennials instead of annuals and landscaping with native plants.

"It is important to our company and culture that we give back. Each department at Oak Ridge lends a hand to support our effort in fully becoming a green conference center. We pride ourselves in taking care of the environment," stated Mary Vogel, Oak Ridge marketing manager.

"It is a cost benefit for us," stated Bill Niemer, director of food and beverage, who said the facility has gone from 16 yards to 8 yards of trash per week.

Executive Chef Virgil Emmert is also pleased with their participation in the pilot project. He has revamped the receptacles for staff to dispose of all waste properly. "My staff is behind the green; we try to make it fun. If it came from the earth, let's put it back there," he stated.

For more information regarding the project contact Bill Niemer at (952) 368-1467.

To learn more about the Carver County organics composting pilot project or to set up organics recycling for a business, contact Anne Ludvik at Carver County Environmental Services at (952) 361-1800 or email aludvik@co.carver.mn.us.

County teaches scouts to compost

Over 300 Girl Scouts and 140 volunteers recently participated in the annual Autumn Ridge/Southern Stars Twilight Camp at Lake Minnewasha Regional Park in Carver County.

Every year camp organizers try to reduce the amount of waste generated by the event, and this year campers had the opportunity to be part of the newest waste reduction strategy called "Organics Recycling."

"This has been in the planning for over 8 months," stated Julie Sarff, one of the camp organizers and key on-site composting coordinator in a Carver County press release.

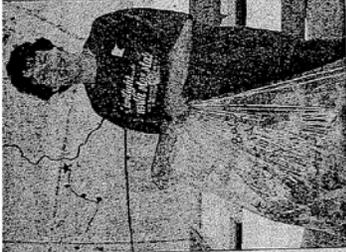
After reading a newspaper article about Carver County and its organics recycling project, Sarff contacted County staff to determine if they could compost a great number of corn cobs that would be generated at the site, the release stated.

She then learned that nearly all of the waste they would be creating could be composted as well. Carver County provided

educational materials, collection containers and coordinated getting the waste to the composting facility. Compost site operator RW Farms walked disposal fees for this event in support of the Girl Scouts.

For more information on the Carver County Organics Recycling Program, contact Anne Ludvik at (952)361-1800 or aludvik@co.carver.mn.us.

Brenda Keske displays corn cobs diverted from the landfill at a recent Girl Scout camp.



SUBMITTED PHOTO

Chaska Herald-Tribune, Aug. 21, 2008

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NOTICE OF MUNICIPAL ELECTION CITY OF CHASKA

**TO THE ELECTORS OF THE CITY OF CHASKA,
COUNTY OF CARVER, STATE OF MINNESOTA**

NOTICE IS HEREBY GIVEN that the State Partisan Primary will be held in the City of Chaska, County of Carver, Minnesota, on Tuesday the 9th day of September, 2008 for the

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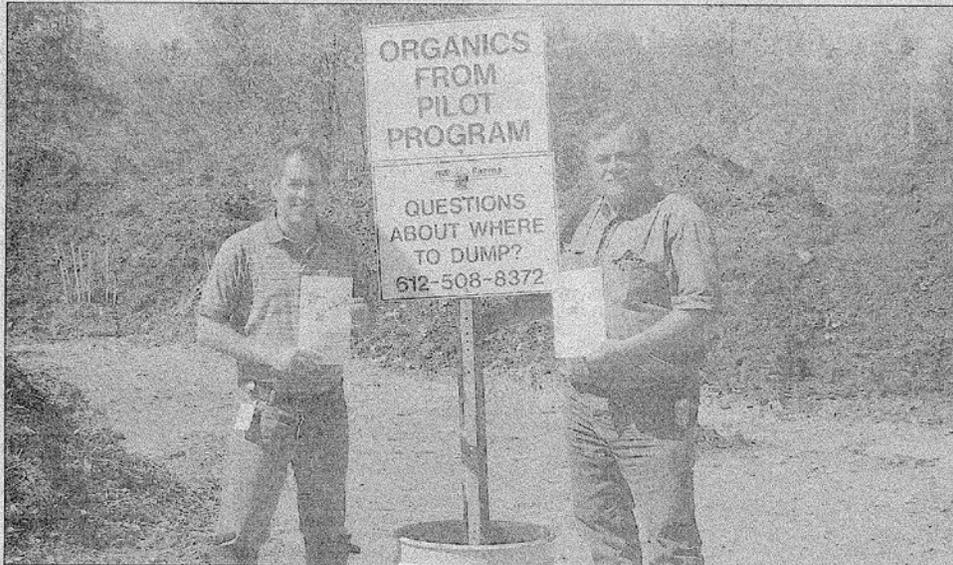
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Marcus Zbinden of Carver County Environmental Services and Russ Leistiko of RW Farms stand near an organics process pilot area in Carver County. SUBMITTED PHOTO

County finalist for environmental award

Carver County Environmental Services was recently recognized as one of the three finalists nominated to receive the highly competitive Minnesota Environmental Initiative (MEI) Award for its leading efforts to change the amount of organic household waste and yard waste that currently enters landfills.

MEI's annual Environmental Initiative Awards program honors projects that have achieved extraordinary outcomes for Minnesota's environment

by harnessing the power of partnership. This year 60 projects under five different categories were submitted from around the state.

Carver County, in partnership with Waste Management, University of Minnesota's Landscape Arboretum, R&W Farms, Minnesota Pollution Control Agency, and local residents developed an organics collection pilot program. The purpose of the project is to demonstrate that food waste and non-recyclable paper can be efficiently

collected together through the existing yard waste collection system and managed effectively at a yard waste composting facility. It is estimated that up to 30 percent of household waste materials have been diverted from the landfill each week through the program.

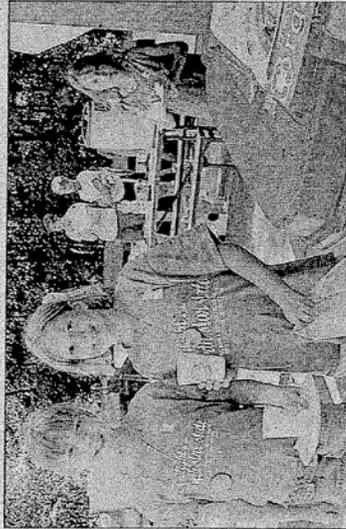
More than 1,500 homes are currently included in the project in portions of Carver and Hennepin counties, all of which pay for a seasonal yard waste.

County, girls scouts commit to waste reduction

Over 300 Girl Scouts, and 140 volunteers fited into Lake Minnewasha Regional Park in Carver County last week for their annual Autumn Ridge/Southern Stars Twilight Camp. Every year camp organizers try to reduce the amount of waste generated by the event, and this year campers had the opportunity to be part of the newest waste reduction strategy — "Organics Recycling."

"This has been in the planning for over 9 months," said Julie Sarff, one of the camp's organizers and key on-site composting coordinator. Sarff added that part of what the girls learn is that everything they do, including their participation in the camp, can impact the environment.

After reading a newspaper article about Carver County and its organics recycling pro-



Girl Scouts enjoyed their recent recycling effort at camp.

ject, Sarff contacted County staff to determine if they could compost a great number of corn cobs that would be generated at the site. She then learned that nearly all of the waste they would be creating could be composted as well.

Carver County provided educational materials, collection containers and coordinated getting the waste to the composting facility. Compost site operator RW Farms waived disposal fees for this event in support of the Girl Scouts.

Anna Kurth, Program Area

Coordinator for Site 4 activities was very enthusiastic to see organics recycling at the event.

"We gave ourselves the challenge, how can we help our environment? This (organics recycling) helped the girls take reduce, reuse, and recycle to the next level. It's been fun. The girls can see this at home, in school, and at camp."

In addition to significantly reducing the amount of garbage generated on site, the scouts also reduced waste by washing and reusing eating utensils and cups.

For more information on area Girl Scouts or the Twilight Camp, contact Camp Director Amy Golf at amygolf@comcast.net. For more information on the Carver County Organics Recycling Program, contact Anne Ludvik at (952)-361-1800.

Cucumber plants have begun to blossom

Notes / from Page 4

materials.

What's happening outdoors now?

The wild cucumber, an annual vine, has mounds of white blossoms. This vine is a wildflower which grows up into trees and shrubs and on fences.

Chokecherries are ripe. Wild grapes have begun ripening. Dozens of bird species, including wood ducks and northern cardinals, relish this fruit. Both great and common ragweeds are shedding pollen.

On August 21 a year ago

We had thunderstorms, only a few breaks in the cloud cover, a low temperature of 65 degrees and a high of 76 degrees. F. Lawns were nice and

green again after cooler temperatures. A nest of snapping eggs hatched. Red-wings and blue jays were busy in the fall and winter. The Franklin's gulls arrived on Lake Wabigoon. A few other area lake-travelers were seen until late into autumn.

Around the Lake shoreline we encountered big clouds of bushtits. Bur oak acorns fell. Wood ducks were animals feeding on Apple growers pick

Jim Gilbert's November column is an occurrence of the Norwood America Times.

Landscape) Arboretum where it's processed with the Arboretum's gardening waste. In fact, the compost piles can be seen from Highway 5. I drive by there everyday and I had wondered what those piles were. It's compost.

"Marcus brought me a small compost bin to start with. In summer, it's great because you can throw your organics right into the yard waste bin, and it's picked up every week. In winter, the haulers aren't picking up yard waste, but you can still put organics in the bin. The only difference is that they pick up the yard bins every other week."

The more the merrier

Endres hopes to get more residents participating in the composting pickup program. "I went to our (Swiss Mountain) homeowners' association meeting to tell them that this service is available to our neighborhood."

While Endres started saving organic scraps in the compost bucket Zbinden provided, she found that she and her family quickly outgrew it. She organized her under-sink space to accommodate three separate waste baskets - one for organic waste, one for trash, and one for recyclables. She's found that sorting out organic matter has really cut down on the trash that ends up in a landfill.

It includes:

- Food scraps
- Bones
- Egg shells
- Used napkins
- Pizza boxes
- Wilted flowers

To learn more about Carver County's mixed organic waste program and how you're your neighborhood can participate, call Marcus Zbinden, Carver County Environmental Services, at (952) 361-1806.

"It's so easy to do," Endres said. "I never use my garbage disposal anymore. I always thought it was OK to use it for peelings and things. But I found out that that waste puts more stress on municipal water treatment plants."

"When I was a kid, I remember my parents recycled," Endres said. "They were awesome recyclers. For them it was easy to do because they lived in a community that had good recycling programs."

"I'm hoping to pass this on to my kids, too," Endres said. "It's something they are learning about in school and we do it at home. When you start, you realize how much excess packaging

and waste comes with all our products. We've gotten a lot more conscious of what we buy and bring home. There can be two brands of something. We'll pick the one with less packaging."

A pilot program

Currently, the program is offered on Monday, Wednesday and Friday pickup days, said Zbinden. Eventually, Zbinden said the goal is to offer the program countywide.

Waste Management was the first county hauler to sign up to participate in the mixed organic composting project. More recently, Allied Waste Services and Randy's Sanitation have expressed interest in the program, he said.

In 2006, the county received a grant from the Minnesota Pollution Control Agency, and a grant for a demonstration project grant. Environmental Services surveyed Chanhassen and Chaska residents to gauge interest and the resulting feedback prompted the county to launch the pilot program in 2007.

"The program makes it feasi-

and Resource Recovery Technologies, a Minnesota-based waste processor, have an agreement in which RRT hauls the waste to the Arboretum; RRT also mixes, grinds and screens the compost, which takes about three months to break down. The Arboretum gets as much of the compost as it can use, Zbinden said. There are plans to bag the excess and sell it to consumers through area county garden centers and nurseries.

While there are other communities around the state that have composting programs, Zbinden said that Carver is the only county that allows mixed organics.

PGA compost

Institutions and commercial companies are also signing on to participate. Zbinden said that Oak Ridge Conference Center, Chaska, participates as does Mackenthuns in Waconia and Ridgeview Medical Center. Last year, the county worked with the U.S. Women's Open, to pick up its organic waste from the event; this summer, the county will have a similar agreement with the 2009 PGA Championship at Hazeltine National Golf Club.

After the pilot program ends, the county plans to roll out the program to other cities as other composting sites come online.

Endres is hopeful that more residents will contact their garbage haulers to participate.

"You just have to make it a habit," Endres said. "It's one way for us to assuage the guilt from throwing so much away."



Marcus Zbinden
Environmental specialist

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PHOTOS BY UNSIE ZUEGE

Kathy Endres, of the Swiss Mountain neighborhood in Victoria, has reduced the amount of trash her family sends to the landfill by separating mixed organics and recyclables. Mixed organics end up at the Minnesota Landscape Arboretum, and are transformed into compost that provides rich nutrients for its extensive gardens and landscaping.

Turning garbage into greenery

Composting program reduces landfill waste, promotes Arboretum beauty

By Unsie Zuege

Being attuned to environmentally friendly living, Kathy Endres of Victoria followed up on a news brief she'd read in a local newspaper about a Carver County composting program with the Arboretum. The pilot program was offered to residents in Chanhasen and Chaska.

She called Marcus Zbinden, Carver County environmental specialist, and asked how she could participate.

The county provides a small compost pail to store food scraps, including coffee grounds.



ble for residents to combine organic waste with their existing yard waste that garbage haulers already pick up," Zbinden said. "And it all goes into compost. It was in the county's master plan to reduce its waste stream to landfills by 30 percent.

"In 2007, the Arboretum took in 3,546 yards of mixed organics," he said. "In 2008, it took in 5,000 yards from April through December. "Figure 800 pounds per yard, that's 2,000 tons in 2008. And this is just a pilot program. It's easy for residents

Men earn recycling award

The Recycling Association of Minnesota awarded the 2008 Recycler of the Year Award to Marcus Zbinden of Carver County Environmental Services and Russ Leistikow of R&W Farms of Carver. The award was presented during the annual conference this month as a way to highlight America Recycles Day on Nov. 15.

The award was given to Zbinden and Leistikow in recognition of their groundbreaking work in organics composting. Their collaborative work has laid

the foundation for increasing the diversion of organics from the waste stream in Minnesota by demonstrating that yard waste, food waste and non-recyclable paper can be collected safely and cost effectively, and be composted without causing nuisance conditions. Their project is being replicated throughout the state and has positively impacted organics recycling and Minnesota's environment.

Zbinden said, "It's an honor to receive the award and the recognition is a

great way to celebrate America Recycles Day. The Carver County organics project has provided participating residents a way to recycle up to 30 percent more when they compost both food waste and non-recyclable paper. It is my hope this program will go state wide over the next few years."

The Recycling Association of Minnesota is encouraging residents, businesses and communities to work together to promote recycling.



Pictured, from left to right, are award winners Russ Leistikow-owner of R&W Farms, Mary Chamberlain-Chair of RAM and Marcus Zbinden, Carver County Environmental Services.



Mackenthun's Fine Foods in Waconia has cut 4,000 pounds of garbage out of the waste stream by increasing its recycling efforts.

The waste stops here

Four thousand pounds of waste is a lot of garbage.

That's exactly how much waste is not going into area landfills thanks to the recycling efforts at Mackenthun's Fine Foods in Waconia.

The local grocery store has been an historical leader in the independent grocers industry, so it is not surprising that owner Kim Mackenthun jumped at the opportunity to raise the bar for environmental stewardship in the business community.

With help from Carver County Environmental Services, the store is currently participating in an organics composting demonstration project, rain barrel and compost bin distribution and as well as promoting exciting Earth Day activities.

The organics composting demonstration project has been available to many residents for almost two years. It was recently expanded to include commercial customers.

staff person for implementing organics recycling knew it would fit in with the store's mission and would allow it to take all food waste and non-recyclable paper waste, put it together in one container and ship it off for composting at the Minnesota Landscape Arboretum in Carver County.

Additional environmentally friendly strategies were included in the store's most recent remodeling, which included state of the art upgrades such as high tech climate control, increased use of natural lighting and energy efficient doors.

As part of the County Organics Composting Demonstration project, Mackenthun's will be able to keep more than 4,000 pounds of organic materials out of the landfill each week. "It (composting organics) is the socially responsible thing to do. We create a lot of compostable products that used to go into the landfill. We donate

still good to food shelves, but now all the produce, meat and deli waste are being composted," said Streeter.

Mackenthun has seen a new awareness in recycling by his employees. "With approximately 235 employees, we have been training, training and training. Composting was just a natural extension of our efforts."

This spring, the store will be coordinating with Carver County once again, to distribute rain barrels on Saturday, May 9 during regular business hours. These must be ordered in advance. To order please contact Carver County Environmental Services at 952-361-1800. You can also contact Mackenthun's at 952-442-2512. Exciting Earth Day events are also planned at the store for the week of April 19-25, 2009. For more information on Earth Day activities at the store contact Lorayne Streeter, 952-442-2512.

County receives innovation award

By Katie Winter
Staff Writer

Carver County's pilot compost program has netted another award. This time, it is a Local Government Innovation Award from the Humphrey Institute's Public and Nonprofit Leadership Center.

The county was given the award on April 15 for its organic waste compost program, which has successfully demonstrated the simultaneous collecting and composting of yard waste, food waste and nonrecyclable paper. Carver County was the

first public entity to implement this type of collection and also helped to rewrite the statutory definition of organics.

Last month, the project also received a Minnesota Governor's Award for Pollution Prevention.

In 2007, the county joined forces with RW Farms, the Minnesota Pollution Control Agency, University of Minnesota and private organizations to develop the program.

"This project has made organics composting and its associated benefits a

See Award / Page 5



Compost project earns another award

Award / from Page 1

reality for cities in Minnesota," said Marcus Zbinden, project coordinator and Environmental Specialist with Carver County.

Carver County received a \$55,000 grant from Minnesota Pollution Control to conduct the organic compost program. As the project developed a second compost site in Mayer was added. It continued to expand with 1,500 residents in eight cities participating along with businesses and other haulers. In the project's two years, 750 tons of organic waste was collected, recycled into compost and

most notably diverted from a landfill.

The Humphrey Institute's Center for Public and Nonprofit Leadership launched the awards program in 2006 to recognize outstanding Minnesota local governments. Awards are given to cities, counties, and schools that have demonstrated results in improving local services in collaboration with public, nonprofit, and private organizations; increasing efficiency and cost effectiveness; and management process improvement.

"I am very impressed with the quality of the many applications we received," said Jay Kiedrowski, senior fellow at the Humphrey Institute.

County earns Governor's Award for Excellence

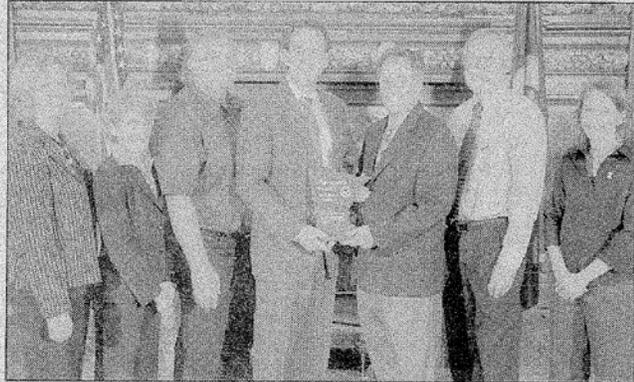
The 2009 Governor's Awards for Excellence in Waste and Pollution Prevention were presented recently to 18 organizations. Twenty-nine applications were submitted for the Governor's Awards. Judges selected Carver County as one of the eight applicants for full awards and 10 for honorable mention.

The annual awards program honors superior environmental achievement by Minnesota businesses, non-profits, local governments and private institutions.

"These organizations have found innovative and resourceful ways to reduce waste and pollution, often increasing efficiency and lowering costs at the same time," Governor Tim Pawlenty said.

Carver County along with the project partners including RW Farms, Waste Management and University of Minnesota Landscape Arboretum, were selected for the award for their innovative approach to collecting and composting organics. The Carver County organics project has given residents in select areas of Carver and Hennepin counties an opportunity to divert their organic waste from the waste stream.

Marcus Zbinden, environmental specialist for Carver County and project manager said, "If all homes



Pictured from left to right: Anne Herzog-Olson- University of Minnesota Landscape Arboretum, Julie Ketchum-Waste Management, Russ Leistikio- RW Farms, Governor Tim Pawlenty, Marcus Zbinden, Mike Lein and Anne Ludvik, all of Carver County. Submitted photo

in the Twin Cities metro area were to implement organics collection, it would be possible to divert 65,000 to 100,000 tons of organics from landfills every year."

Carver County was the first public entity in Minnesota, not using an organized hauling system, to implement a program that cuts collection costs by combining residential source-separated organics with yard waste in the same container. It was also the first public entity in Minnesota to create a separate des-

ignation for compost facilities managing these source-separated organics. This designation, while adding a few more environmental safeguards than is typical for a yard waste compost site, is not as restrictive and expensive as a compost facility for mixed municipal solid waste.

"The recognition that comes with the Governors Award will bring awareness of the benefits of organics collection and hopefully hasten the expansion of the program state wide," Zbinden said.

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Taking recycling beyond just bottles and cans

Carver County is expanding its low-tech organic composting project, and it's working so well the idea could spread to other communities.

By HERÓN MÁRQUEZ ESTRADA
hme@startribune.com

Marcus Zbinden is as happy as a pig in slop right now.

Zbinden, an environmental specialist with Carver County, is elated that a pilot organic recycling project the county started last year is proving so successful that a second site is opening this month.

More than 600 tons of organic waste — such as food, yard clippings and non-recy-

clable paper — have been collected from hundreds of homes since spring 2007, when the county's program began.

The material is dumped at a seven-acre site at the University of Minnesota's Landscape Arboretum, where it is processed into compost that is sold to gardeners, farmers or anyone else who wants it.

Zbinden said there are other compost sites in the state, but those require millions of dollars of investment to set up.

They use special machinery and liners to protect the ground and require monitoring by the Minnesota Pollution Control Agency (MPCA).

The Carver program is different because all that is involved is picking up the waste, dumping it at the site and allowing nature to take its course. The MPCA has granted the county a waiver to allow it to test low-tech composting without a line

Compost continues on AA4 ▶

Carver County takes recycling beyond just bottles and cans

◀ COMPOST FROM AA1

Zbinden said the Carver County site is being monitored to make sure it doesn't hurt the environment. Water and soil reports are sent frequently to the MPCA, he said.

"We're the only ones doing it this way," Zbinden said. But if it continues to prove as successful as it has thus far, the idea could be used in other communities.

Low-tech way that works

"By doing it in this low-tech way, we think a number of these sites could pop up around the metro," Zbinden said.

Already, more than 1,500 Carver County homeowners are participating. Each gets a compost bin from their refuse hauler and stores it with their regular garbage can. The compost is collected on regular trash days.

Because the program has proved so successful, the county has received MPCA permission to open a second site, in Mayer.

The compost program, which is free to county residents, was recently recognized as one of three finalists for a Minnesota Environmental Initiative Award.

"What we are trying to prove is that these sites can be run without negative impacts," Zbinden said.

The benefits, according to the county, could be big. Zbinden estimates that the county could increase its recycling rate by 30 percent simply by diverting the organic material to the two compost sites.

Also, the tons of material no longer going into traditional landfills will extend their lifespan, which will reduce the need for more landfills.

Businesses join program

This year, the county expanded its program to include businesses, especially restaurants. Last month, Oak Ridge Hotel and Conference Center in Chaska became the first business to join the program. "They were not doing any separating

prior to this," Zbinden said.

The facility estimates that it is now diverting two to three tons of organic material per week to the compost bin.

"It is important to our company ... that we give back," said Mary Vogel, marketing manager for Oak Ridge. "We pride ourselves in taking care of the environment."

Oak Ridge officials said the move is also saving the company money in the short and long term.

"It is a cost benefit for us," said Bill Niemer, director of food and beverage for Oak Ridge. "We have gone from 16 yards to eight yards of trash per week."

Oak Ridge said its executive chef, Virgil Emmert, has changed the way waste receptacles are placed in the kitchen to make it almost "foolproof" that organic material is collected.

"If it came from the Earth," Emmert said, "let's put it back there."

Herón Márquez Estrada • 612-673-4280

**APPENDIX 4 –
COMPLAINT RESOLUTION**

Appendix 4

COMPLAINT RESOLUTION

Prior to May 2009, no complaints relative to odors or general operations and management of the site were received by Carver County, the University of Minnesota Arboretum or RW Farms. As illustrated in Chart 1, received in 2008 was primarily from residential sources.

amount of material received from commercial sources organics received from the University of Minnesota Landscape Arboretum Cafeteria (2008), Oak Ridge Hotel and Conference Center in Chaska (starting in May, 2008), Ridgeview Medical Center in Waconia (starting in May, 2008), Mackenthun's Fine Foods in Waconia (starting in August, 2008) and some additional businesses from the Waste Management Burnsville collection route (starting in September, 2008).

The County began receiving complaints from residents neighboring the site in the spring of 2009.

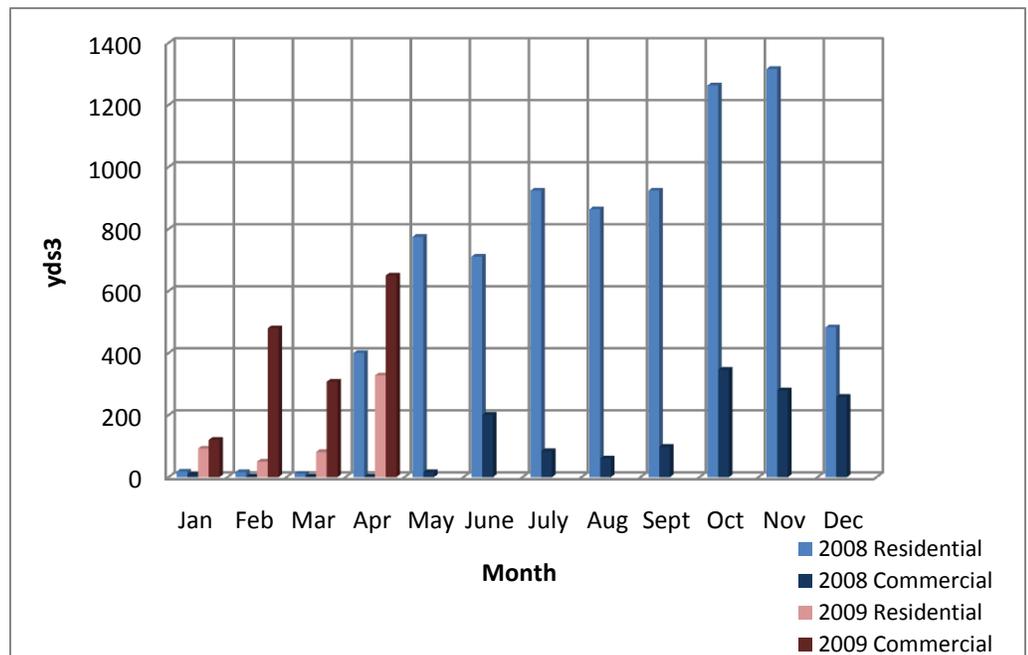
As illustrated in Chart 1. There was a direct correlation between the complaints and an increase of operations at the site. During that same time frame, the operator intensified site operations by accepting additional feed stocks and expanding the site. The main source of additional feed stock was materials originating from commercial sources outside of Carver County including schools and restaurants. RW Farms added a half acre expansion to the western border of the compost site to better accommodate the increase volumes of brush and stumps being processed for bio-fuels. Complaints were reported by residents regarding odors, noise and traffic. A summary list of these complaints can be found in Table 1. Individual names were omitted to preserve privacy.

The contractor made significant changes to the operation to minimize negative impacts to neighbors. These include significantly reducing the amount of incoming material and moving the chipping operations to a different site.

The community's opinion about whether or not composting is a good use of this space varies. Many view organics composting as an important, environmentally-friendly practice that is consistent with the character of the area. They see opportunities for students at the University of Minnesota as well as visitors from around the country to learn about organics composting. Others, primarily those neighboring the site support the concept of composting but perceive the site as "offensive," associate the facility with a dump, and feel it is an inappropriate use of an important site in such close proximity to their homes.

As the project moves forward strict limits on material volumes and operating hours will need to be maintained. The project partners are committed to operating a well maintained site and maintain good relations with residents surrounding the site.

Chart 1
Source Separated Organics
Delivered to the Arboretum Site



Landscape material
The small included

Table 1 – Complaint Summary-Arboretum Compost Facility

Date	Received by	Issue of Concern
5/12/2009	CCES	No issues prior to the last several months. Now, Odors from site, large volume of truck traffic in and out of site, semi truck jack-knifed on Hwy 5, trucks using Minnewashta Parkway, large signage at site, neighbors will be calling, no turn lane for traffic, safety issue for traffic, noise from constant operation of equipment, how was site permitted for such large volume of traffic.
5/12/2009	Peter Moe- U of M Landscape Arboretum	Stated he has noticed bad smells since last fall.
5/12/2009	CCES	Employees of Arboretum have reported increased odors on site
5/15/2009	Peter Moe- U of M Landscape Arboretum, CCES	Noise from trucks, traffic from trucks, works from home, did not feel RW Farms was receptive to her complaint. 17 year resident
5/15/2009	Peter Moe-U of M Landscape Arboretum	Odor, visibility and noise
5/15/2009	CCES, Peter Moe-U of M Landscape Arboretum	Wants to set up a meeting with neighbors, concerned about compost operations, wife believes there is an increase in gnats as a result of compost site, increased odors and truck noise from site.
5/15/2009	CCES	Odor, constant truck traffic and sound of bulldozer
Spring 09	Peter Moe-U of M Landscape Arboretum	Loves the idea of the site, but objects to bad odors and smell. Did not notice issues until this spring of 09
5/29/2009	CCES via email	Odor, noise, traffic, decrease in property value as a result of compost site location
5/18/2009	CCES	
6/1/2009	CCES	Odor but more concerned with increased equipment operations. Has heard equipment operating as early as 6 am, increased traffic on HWY 5 and debris on road from trucks
6/10/2009	CCES	
6/26/2009	MPCA	Noticed odor from compost site when driving by in vehicle. Had to roll up window in car and felt nauseous from odors. Not specific as to what day(s) odor was observed.
7/9/2009	MN Landscape Arb	Lives on Lake Minnewashta and has been there for 23 years. He said the smell was bad a few times a month in 2008 but is very bad this spring and summer. He has smelled it all the way across the lake on the north side recently too. His perspective was a few times is OK but consistent odors are a problem.
7/8/2009	MN Landscape Arb	She has spoken with Peter Moe previously regarding the compost site. They have received letters saying the site is being cleaned up. She has been unable to go outside for literally over 24 hours – the smell has been so bad. It has not rained – they were told the compost would be turned during rain. The kids are unable to go outside. More needs to be done. Please put your heads together and fix the problem. The odors are horrific.

7/8/2009		Rode bike by site at 8:00 am-smell very bad
7/8/2009	MN Landscape Arb	He drove by the site and thought it smelled very bad. He is on one of the yard waste routes that collects organics and feels bad that his materials are contributing to the odors.
7/16/2009	CCES	Odor main concern, smells like fermenting silage, can't open windows of house due to smell, has noticed smell all spring of 2009 and finally decided to call today. Nothing of concern prior to this spring.
7/17/2009	MN Landscape Arb	Sorry to be a complainer, but the compost stench just started up again today. When I got to work this morning, the air was clean and crisp, a great day to bring outside air into the building. However, right now the smell is to the point that it just gives ones nose a little burning sensation, and it really does smell bad. There is a group of 30 or so kids here on a field trip, and families out at the under the oak, and even though they may not complain, it must be having an impact on their visit.It's gross. It is my opinion that a solution must be figured out ASAP.Again, sorry to be a complainer about a project that I truly believe in, but it is even more important to me that our visitors have a great experience when they are here.
7/22/2009		Anne, Peter and Marcus, We are enjoying another stink night in the neighborhood. When will this stop? If you lived here, I know you would not stand for it. It is now the end of July and RW continues to bring more material(non-compost and non-organic) into the dump. Garbage in garbage out - applies to so many things we do - source material cannot be controlled.This has got to stop very soon. Let's move the manure piles to another site to cook right now. There are better locations.How many stink nights have you had? We are up to 21.Losing patience in the 2nd best city in America to live in. Don
7/28/2009	CCES	Drove by the site around 10 pm, no wind, very strong odors
7/28/2009	CCES	Participated in Water,Environment,Natural, Resource Committee tour in the evening- could smell the site from Arboretum grounds.

7/25/2009	RW Farms	Thanks for you e-mail message. Tonite was another intolerable evening in our neighborhood from the odor. I could not enjoy a beautiful summer evening outside on my property because of the smell. This morning one neighbor reported seeing a coyote crossing highway 5 near the entrance to your compost site and entering our neighborhood. While the mold test results will be valued information, the results will not change our concern about the health issues related to fugitive emissions from the site.
7/26/2009	CCES via voicemail	Noticed odor from compost site in the eveing after strong winds had died down.
7/29/2009	CCES via voicemail	Very strong odor this morning, made me nausious when I opened my front door.
7/29/2009	MN Landscape Arb	Emailed Peter Moe, can not enjoy her yard due to odors from compost site. Concerned about potential health hazards.