CARVER COUNTY
PILOT PROJECT
FINAL GRANT REPORT

TO THE
MINNESOTA POLLUTION CONTROL AGENCY

COMMINGLING RESIDENTIAL ORGANICS
WITH YARD WASTE
July 9, 2008

Submitted By:

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GRANT OVERVIEW

CARVER COUNTY FINAL REPORT
COMMINGLING RESIDENTIAL ORGANICS WITH YARD WASTE

Grantee: Carver County Environmental Services Contact name and phone #: Marcus Zbinden (952) 361-1806

Grant amount: $55,000 Grantee match: $18,670 ($11,050 Inkind/$7,620 Cash)

Project start date: June 2006 Time period covered: 25 months

This is the: __Interim report; Progress report #__; or __X_ Final report Submittal date July 9, 2008

Instructions for Completing the Interim / Final Report: Project participants are required to complete and submit reports as outlined in the grant agreement and work plan during the grant period. **Failure to submit a completed report may result in the loss of grant funds or the withholding of additional grant disbursements**.

A grantee may fill-in-the-blanks in the form provided, or you may tailor the form to more accurately fit your project. Since projects are very diverse, the latter method may work best. The average report will be 3 to 4 pages. Please refer also to the information requested by the MPCA grant manager for your grant.

SECTION I – WORKPLAN REPORT

1. Describe the work that has been done during this reporting period. Please refer back to the activities listed in Attachment A (workplan) in your grant proposal; indicate which tasks have been completed and which are on going. Attach copies of any documents or products that have been produced during the reporting period including brochures, press releases, etc.

The status of work activities to date is reported below along with problems, delays and difficulties and how those issues have been resolved.

Objective 1: Project Design

Task A: Determine the best collection and management method for organic material.

Sub-task 1: Select a consultant to assist in the design, implementation and monitoring of project.

An environmental consultant (Tim Goodman & Associates) was hired to assist with project design, implementation and monitoring.

Sub-task 2: Define acceptable and unacceptable materials criteria.

When organics collection first began in Carver County in April 2007 it focused on residential material. The materials accepted as part of the residential program included the items listed in Table 1. As the program matured the County requested an amendment to the MPCA Demonstration Agreement to expand the acceptable material to include organics from the commercial sector. The main difference between the residential source separated organics and the material collected from the commercial sector is the amount of yard waste. Residential loads were 80% yard waste while commercial loads had no yard waste included. The site is allowed to accept material from commercial sources as long as the total organics does not exceed 25% of the material managed on site. Managing commercial material requires the site to have large stock piles of additional feed stocks available. The feedstocks such as leaves, wood chips and straw provide needed carbon to manage the high nitrogen content of the organics piles in a nuisance-free manner.

Co-collected Residential Material

Commercial Organics Material

Acceptable and unacceptable materials have been defined as follows:

Table 1.

Acceptable Materials			Unacceptable Materials
All food scraps including fruits and vegetables, dairy products, bread, rice, cereals, pasta, eggs, meats, bones, fish, coffee grounds, filters and tea bags.	Food soiled paper including pizza boxes, egg cartons, waxed paper containers, and paper plates, cups, napkins and towels.	Other household organics including dryer lint, houseplants, pet hair, sawdust and compostable plastics.	Liquids, diapers, pet litter, animal waste, metal, plastic items, glass, non-compostable plastic bags, plastic wrap, straws and Styrofoam.

Sub-task 3: Select appropriate containers and collection methods.

Partnering with Waste Management, Inc. (WM), Carver County rolled out the program in April of 2007. At that time, a decision was made to utilize existing yard waste carts. WM offers various sizes ranging from 30, 60 and 90 gallons. The carts are designed for automated collection vehicles. As part of the program rollout, 7.5 liter in-home kitchen containers were provided to participating residents in combination with the yard waste carts. The yard waste/organics cart is serviced the same day as waste and recyclables.

Research has shown that municipalities who allow residents to use non-compostable plastic bags in their yard waste/organics program reversed direction and banned these plastic bags due to problems with contamination. Based on this research and the concern with having to re-educate later, Carver County chose to pursue a program using only compostable plastic bags or no bag at all. This decision was made to encourage the best long term participation.

Carver County provided residents with in-home organics collection containers, biodegradable bags and educational material. The residents were instructed to empty the in-home container into the larger yard waste cart on wheels for weekly collection. Larger acceptable items (e.g., pizza boxes) are placed directly into the yard waste cart. The yard waste cart is served weekly during the summer months and every other week during the winter. WM used both side-load and rear-load trucks to service the accounts.

Yard Waste/Organics Cart

Three bin collection service - waste, yard waste/organics and recyclables

Sub-task 4: Determine appropriate containers to collect organics in homes.

Participating households are supplied with an in-home kitchen container for placing their food waste and soiled paper in.

Characteristics of the in-home kitchen container made by Norseman Plastics include*:

User Friendly – Oval shape facilitates easy plate-scraping.

Aesthetics – Designed by award-winning home product designer Myles Keller, the Kitchen Collector's soft, smooth lines and contemporary styling are a welcome addition to any countertop.

Cleaning- Rounded corners allow easy, thorough cleaning. Fits comfortably under faucets.

Security – 7.5 liter size promotes bi/tri-weekly emptying. The lid with its snap-latch and 360 degree double-rim closure is an effective barrier to flies and odors.

Kitchen Collection Container

*Characteristics of in-home kitchen container obtained from Norseman Plastics marketing materials.

Sub-task 5: Determine which biodegradable bags to use in project.

The County tested numerous biodegradable bags prior to the project roll-out. The County settled on two brands for using in the program: Husky EcoGuard™ bags and Bag-to-Nature™ bags. Both of these bags have Biodegradable Plastic Institute (BPI) certification. Residents can also use Kraft paper lawn and leaf bags for lining their yard waste cart. All three bags were available at stores within each participating community. The County began receiving complaints regarding the Husky EcoGuard™ soon after the program started. The complaints centered on the durability of the bags. Residents stated that tears would develop on the side seams as well as the bottom while placing material into the bags. The County discontinued use of the Husky EcoGuard™ in August 2007 and has utilized the Bag-to-Nature™ bags manufactured by Indaco Marketing exclusively.

Bag-to-Nature™ certified compostable bags and cart liners have all the strength of conventional plastic bags. They are a quality Canadian made product designed to help reduce the amount of organic waste entering our diminishing landfills. Bag-to-Nature™ has been engineered for disposal in backyard composters as well as today's high-tech fast action commercial and municipal composting systems. Bag-to-Nature™ has been tested by independent laboratories meeting ASTM standard D6400-99. Bag-to-Nature™ is made from a blend of organic biopolymers which degrade completely leaving no residues and are made from renewable resources. These certified bags and liners are made in sizes from mini kitchen bags to large cart liners. **

**Information obtained from Bag-to-Nature™ marketing materials.

Bag-to-Nature Bags come in 3 sizes (mini kitchen, jumbo kitchen and lawn and leaf)

Kraft Lawn & Leaf

Discontinued Husky EcoGuard

Objective 2: Recruit Partners

Task A: Select community where organics collection will be implemented.

In 2006, Carver County began discussions with WM to serve as the collection entity for the project. WM agreed and identified two of their residential yard waste subscription routes as being suitable candidates for this program. These two routes consist of approximately 570 households in the cities of Chanhassen, Chaska, Waconia and Watertown with over 80% of these households in Chanhassen. Carver County entered into an agreement with WM to deliver source separated organics to the designated compost site beginning April 2007 and agreed upon compensation for these additional services.

The County and the University of Minnesota Landscape Arboretum began discussion about composting the cafeteria waste coming from the Arboretum as part of the organics project. In September 2007, Carver County requested an amendment from the MPCA to the Demonstration Project agreement to allow the Arboretum to deliver organics. The MPCA agreed to the amendment and the Arboretum designed a custom trailer to deliver the organics to the site. The Arboretum has also worked with their food vendor to convert utensils and other food products in the cafeteria to biodegradable paper and plastic materials.

In October 2007, Carver County, in collaboration with Hennepin County, approached the MPCA regarding receiving test loads from Hennepin County's Source Separated Organics (SSO) program. Four 40 cubic yard roll-offs consisting of SSO from residential and school organics programs in Hennepin County would be delivered to the RW Farms Site at the University of Minnesota Landscape Arboretum (RW Farms site at the Arboretum) for composting. Additionally, half of the loads would be processed the same way as the Carver County material utilizing a Supreme Mixer and half would be shredded with a Vermeer shredder utilizing various screen sizes prior to mixing and blending. The reason for doing this was to see how the size reduction in some materials (specifically poly-coated packaging such as milk cartons) would impact the composting process. The MPCA gave their approval and this demonstration project was conducted. The findings demonstrated that preprocessing aids in the decomposition process of poly-coated packaging.

Uncontaminated winter loads

The County requested an extension of the demonstration project through 2008 in order to see how well the program would work during the winter months when just SSO (no yard waste) was collected and processed at the site. The MPCA granted the extension and the collection and processing was successful.

Turning the piles

Ever other week collections began in November 2007 and continued through March 2008. The average load delivered during this time was 2 tons. The loads were clean and free of contamination. This result was expected because the residents participating during the winter were motivated recyclers and supportive of the program. Processing of incoming loads was handled in the same manner as summer loads. The material continued to decompose in the piles as temperatures reached 170 F during the coldest days of the year.

Near 170 Degree Fahrenheit winter temperature reading

In general the winter collection was successful. The decision to collect every other week reduced costs and increased collection efficiency. Participants had enough capacity in their yard waste containers to manage the volume of two weeks of organic materials. Prior to the start of winter collection Carver County staff had concerns that every other week collection would generate odors and that material would freeze to the bottom of the container in colder temperatures. Neither of these issues was raised by participants or WM.

In 2008, WM agreed to expand the residential collection program to include a third route in the Chanhassen-Chaska area as well as a route to include the cities of Victoria, New Germany and Mayer. WM also agreed to offer organics collection to the commercial sector throughout Carver County. The additional organics route from Western Carver County as well as the commercial route began service in April 2008. Refer to Chart 1. for a map of residential organics service area in Carver County.

In May 2008, Carver County began offering organics drop-off at the Carver County Environmental Center at no charge. This service was added in order to allow residents who did not have the curbside organics collection service the opportunity to recycle their organics. At the Environmental Center the material is collected in a 4 yard front-end load dumpster and is serviced by WM. The County also sells biodegradable bags and kitchen collection pails to residents at the Environmental Center.

In May of 2008, the County worked on an agreement with Barthold Farms, a food for pigs operation, to deliver a test load of the material they collect from schools and other commercial food waste generators. Bartholds has indicated they have more food waste than they have capacity for in their operation at the current time. As a result, Bartholds offered to deliver 36 tons of food waste a week to the Arboretum site. After processing their material, it has been determined that the loads would require a large amount of various feedstocks to process, and the RW Farms site at the Arboretum is not able to manage the material at this time.

In June 2008, Water Billboards of the Buffalo Ridge Water Company in Canby, Minnesota, a bottler of water using biodegradable plastics contacted Carver County Environmental Services to create a test pile with their biodegradable plastic bottles to determine the time required for them to fully degrade. On June 4th, 24 whole empty biodegradable bottles were put together in one pile while another 24 of the whole bottles were mixed throughout a second pile. In addition, the pieces of 50 broken up biodegradable plastic bottles were buried in the same pile as the 24 bottles that were placed together. It was interesting that the bottles placed in a pile together degraded more quickly than the bottles that were mixed evenly throughout the pile. The results of this test study show that it takes approximately two weeks for the bottles to degrade 95% of their total mass. It is the hope of the bottler that at the end of this project there will be no plastic pieces remaining. The complete data from the study thus far can be found in Attachment B.

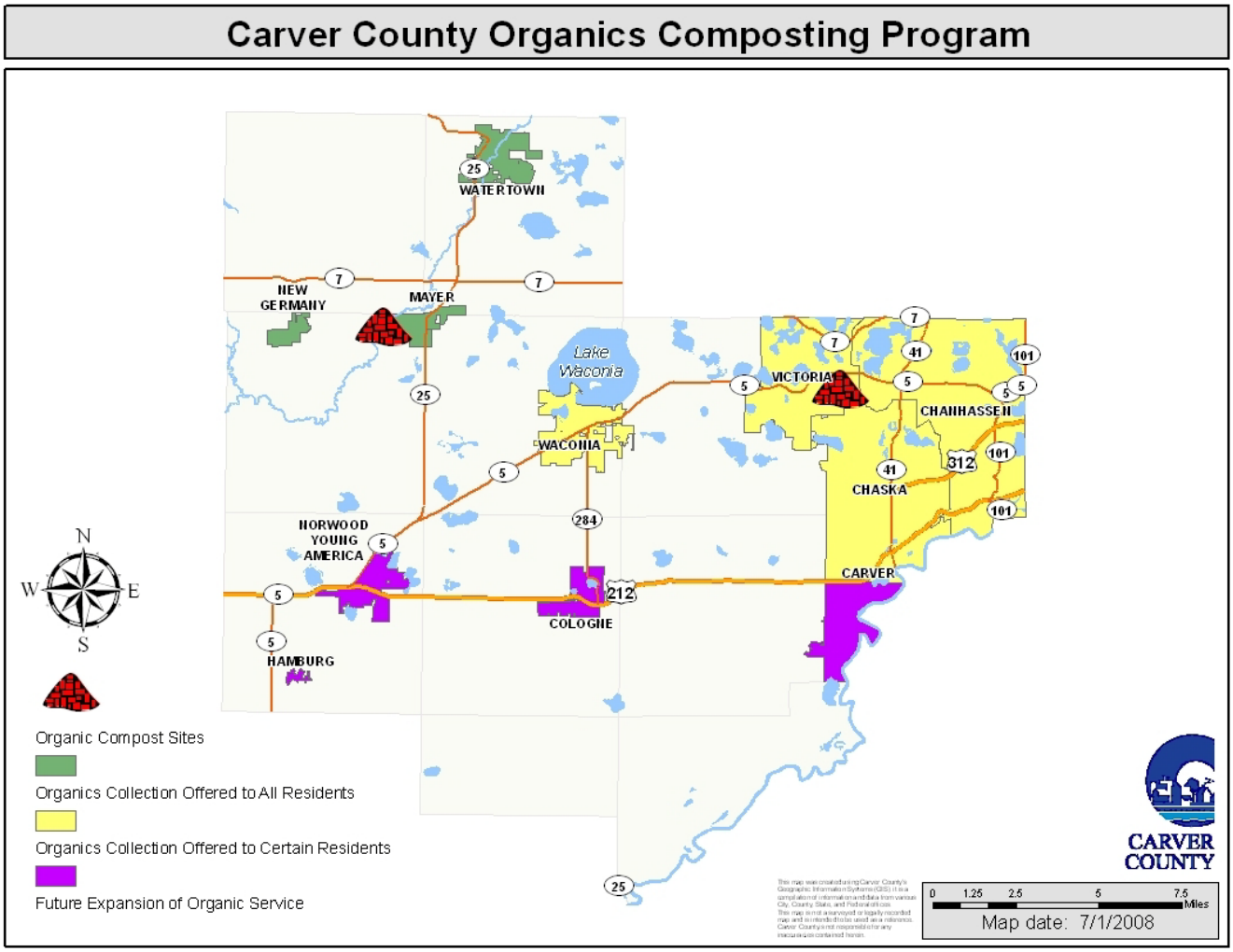
In May 2008, Carver County facilitated an agreement between Allied Waste Industries, Inc. and RW Farms to accept organics from the USGA Women's Open golf tournament held at the Interlachen Course in Edina, Minnesota. Allied Waste delivered a 40 cubic yard roll-off box of organics to the RW Farms site at the Arboretum during the week of June 21-28, 2008. Ellen Telander, ED of the Recycling Association of Minnesota, and the organizer of over 100 Ecology Team volunteers at the USGA Women's Open announced that volunteers helped divert 70% of the total event waste from area landfills. The recycled material included not only organics but also aluminum and plastic beverage containers with the majority of volume attributed to organics materials.

In the second week in July 2008, the site also accepted organics collected by WM from the Taste of Minnesota festival in St. Paul. Materials delivered from this event contained high levels of contamination. The lack of

public understanding of what is acceptable as organic material as well as lack of staff oversight at the event contributed to this contamination. As much of the contamination as possible was removed by site operators before the compost was processed. The final results of contamination from the US Open and from the Taste of Minnesota festival will be available in the annual MPCA Demonstration Project report due in December 2008.

A number of municipalities throughout the metro area, as well as several counties around the state, have expressed interest in taking part in the project or requested assistance in setting up a similar facility in their jurisdiction. These communities recognize that the most cost-effective way of managing organics is through the commingled collection and processing of yard waste and SSO at a yard waste composting facility designed to manage the mixed organics material. In April 2008, Carver County facilitated an agreement between Gary Vierkant, an independent hauler and owner of Vierkant Disposal, and Russ Leistiko, site operator of the RW Farms site at the Arboretum, and owner of RW Farms, to begin accepting organics from Vierkant Disposal's customers from the City of Edina. Carver County offered technical assistance to ensure the collection of organics and yard waste was successful. The initial load from Edina will arrive at the Arboretum site on July 9, 2008.

Diagram 1. Organics Service Map



Sub-task 1: Ensure compliance with local solid waste regulations.

Ensuring compliance with local solid waste regulations (outside of the exemptions granted by the MPCA) is an on-going project priority.

Sub-task 2: Enlist staff support for promoting project.

Carver County has built a coalition of support for the organics composting project. Carver County has worked closely with the Solid Waste Coordinating Board Organics Committee to promote composting as a method to manage organics. Minnesota State Representative Paul Gardner, who serves on the Environment and Natural Resources Committee, toured the site and is kept abreast of the pilot project. He has been an ardent supporter of the project and continues to promote organics composting. In February 2008, presentations on the demonstration pilot project were made at two conferences. The first presentation was made at the US Composting Council Conference in Oakland, CA on February 11, 2008. The second presentation was made at the Minnesota Air, Water and Waste Conference on February 27th, 2008.

Tour of site with Representative Paul Gardner (Left to right) Russ Leistiko, RW Farms; Ginny Black, MPCA; Steve Giddings, MPCA; Tim Goodman, Goodman & Associates; Paul Gardner, State Representative; Marcus Zbinden, Carver County; Jill Sinclair, City of Chanhassen; and Peter Moe, Minnesota Landscape Arboretum.

In May 2008, Carver County was recognized as one of the finalists to receive the highly competitive Minnesota Environmental Initiative (MEI) Award for its leading efforts to change the amount of organics that currently is landfilled (Refer to Attachment F. for the newspaper article). MEI's Awards program honors projects that have achieved extraordinary outcomes for Minnesota's environment by harnessing the proposer's partnerships.

Sub-task 3: Survey residents taking part in project to determine interest level and identify service needs.

An online survey of participating households was conducted to gauge their interest in participating in the project and to identify what additional information or service needs there were. The survey yielded an overall response rate of 35%. Beyond general information the survey consisted of 16 questions in three categories – Current Garbage/Recycling Procedures, Composting, and Organics Collection Program. In this final category, 88% of the respondents thought that household organic separation and collection was a good way to recycle more waste, 82% indicated a willingness to use biodegradable bags for the pilot project, and 78% were interested in participating in the household organics pilot project. Participants were asked to complete an online survey and survey results were summarized using an Internet based survey tool, Survey Monkey. A summary of the results can be found in Attachment B.

Task B: Finalize agreement with hauler to participate in the collection of food waste and non-recyclable paper with their existing yard waste collection system.

Since the program began, Carver County facilitated and RW Farms entered into agreements to deliver organics to the site with the following haulers:

- Waste Management, Inc.
- Allied Waste Industries, Inc.
- Vierkant Disposal
- Waconia Rolloff, Inc.

There are on-going discussions with other entities such as Eureka Recycling and Randy's Sanitation to deliver material in the future.

Sub-task 1: Enter into a contract for the collection and transportation of the additional material.

Carver County along with RW Farms has made it a priority to locate additional sources of organics. Presentations have been given to haulers as well as municipalities and businesses. Based on preliminary results, it can be said that organics composting is a service that is and will continue to be in demand as local governments, haulers, policy makers, businesses and residents are searching for new ways to manage their waste.

For a complete list of additional sources of organic material currently accepted at the Arboretum Compost Site as well as a detailed description of their pro and cons please refer to Attachment C.

Objective 3. Site Selection

Task A: Select yard waste site that will manage organics collected.

In 2006, Carver County approached the Minnesota Landscape Arboretum (MLA) regarding using their yard waste composting site as the designated site for the demonstration project. In addition to handling the green waste coming from the Arboretum, this site also serves as a yard waste site for the Carver County yard waste management program. The site is maintained and operated by Russ Leistiko of RW Farms. The Minnesota Landscape Arboretum site is an ideal site for this project as it is located in the City of Chanhassen and adjacent to the City of Chaska. The transportation distance between the collection routes and the compost site is less than four miles. A five year agreement was negotiated for the use of Minnesota Landscape Arboretum land as a compost site. As part of the agreement the Arboretum can deliver organics generated on their property to the site for composting at no cost as well as utilize unlimited amount of finished compost.

As the first year of the organics demonstration project came to an end Carver County approached the MPCA with a requested to operate a second site in the City of Mayer. The request was made after discussions with haulers and city officials from around the metro area who are searching for a location with a large enough capacity to bring their organic material. Organics will be managed by Russ Leistiko of RW Farms in the same manner as the Arboretum site. The Mayer site will be used by residents and businesses in the western portion of Carver County. Refer to Diagram 2 for a visual map of Carver County and where the two organic sites are located. The County received Demonstration Project approval from the MPCA and the site will be operational in July 2008.

The Mayer site is located on recently vacated city water treatment property. The site is approximately 8 acres in size and offers an excellent location to operate a composting facility.

Sub-task 1: Determine processing requirements for site.

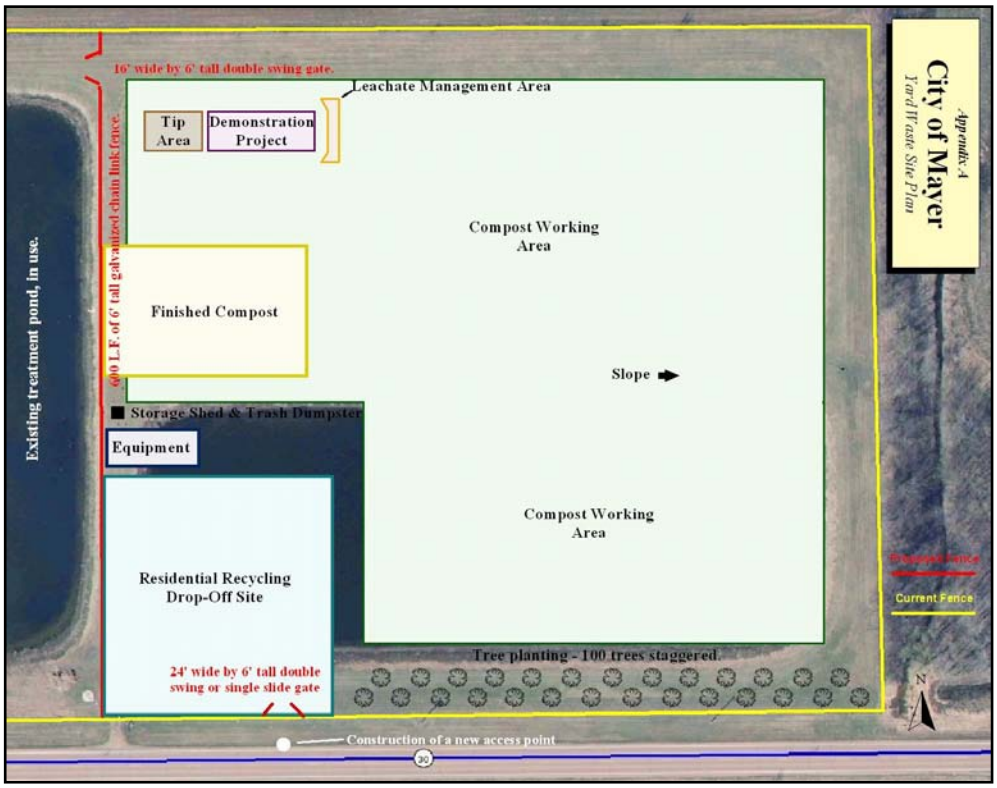
An application for an MPCA Demonstration Research Project (DRP) was submitted to the Agency for their consideration on both the RW Farms Site at the University of Minnesota Landscape Arboretum as well as the RW Farms Site in Mayer. The MPCA responded back with some questions and operating/environmental monitoring conditions. The MPCA required several modifications to the site to accommodate the commingled mixture of SSO and yard waste.

These modifications included:

- Construction of a compost berm on the south end of the site to collect and filter any water leaving the site;
- Installation of a 3" seeded compost blanket on the north and south sides of the berm to absorb runoff;
- Installation of 10 ceramic collection suction tubes across the site and under the compost pile to monitor leachate/storm water runoff;
- A leachate/storm water testing regime for specific parameters;
- Screening as needed to control blowing litter; and
- Grinding of material prior to composting.

Refer to Attachment D. for a detailed description of site preparation as well as material management, and the Operational Plans for RW Farms Site at the University of Minnesota Landscape Arboretum.

Diagram 3. Mayer Site.



Sub-task 2: Obtain MPCA approval for Demonstration Project.

MPCA approval of the Demonstration Project application and use of the RW Farms Site at the University of Minnesota Landscape Arboretum as the designated composting site was received on April 9th, 2007. The Approval for the RW Farms Site in Mayer was received May 15th, 2008.

Carver County is working on permitting additional sites in the surrounding area, most notably the former Wright County composting facility. The County has given a tour of the site and has met with members of the Wright County board in April 2008. A presentation for the full Board has been scheduled for July 30, 2008 at which time a proposal to reopen the site will be presented.

In May 2008, Carver County met with officials of the Shakopee Mdewakonton Sioux Community who operate Mystic Lake Casino. The tribe is very interested in organics composting as a method to reduce the amount of material currently being landfilled. They have requested assistance in setting up an organics composting site on tribal land, however; until their personal site is completed their organics will be processed at the Minnesota Landscape Arboretum. Currently Carver County is aiding the Mdewakonton Sioux Community with technical assistance on site operations and permitting to get them started.

Objective 4. Implementation and Monitoring

Task A: Work with hauler, city staff and compost site manager to develop educational material.
Sub-task 1: Produce educational material.

Flyers and brochures were created that described how the program works and what items were acceptable/unacceptable for composting, provided an FAQ on the program, and indicated what brand of biodegradable bags would be accepted and where those bags could be purchased after the initial supply provided by the County was used up. The material provided encouraged residents to continue to separate out their organics for composting, provided pick-up schedules during the winter months and offered ways to improve their in home separation process. In an effort to promote commercial organics the county also developed information geared to businesses such as grocery stores and restaurants.

Sub-task 2: Distribute educational material.

Prior to startup of the residential organics collection program, all targeted households were sent the flyers and brochures created before the roll-out of the program so they could be educated on it before deciding to participate. Upon delivering the kitchen pails to residents' homes additional information was included as easy reference tools for what is and what is not accepted in the program. The County sent out additional educational material to participating residents throughout the year to help ensure success of the project. For a complete catalog of promotion material and corresponding letters refer to Attachment E.

Task B: Select appropriate biodegradable bags and in-home collection containers.
Sub-task 1: Purchase biodegradable bags and in-home collection containers.

For the in-home collection containers, Carver County selected the Norseman Source-Separated Organics Kitchen Container (Figure 1). This container has a 1.9 gallon capacity with a snap latch that secures the lid to the body. The County had customized decals placed on these containers indicating which materials were and which were not acceptable. As noted previously, the County purchased kitchen containers and distributed them to all targeted households. Additionally, an initial supply of bags was supplied to all targeted households.

Sub-task 2: Distribute biodegradable bags and in-home collection containers.

When residents sign up for the organics program or switches from a yard waste to an organics route a County employee personally delivers the kitchen pail with educational materials and the initial supply of biodegradable plastic bags to their home. Upon delivery, the employee reminds the resident that plastic bags are not acceptable for usage in the program and makes sure that any questions they have are answered.

Task C: Hauler begins collection of organics and transports to composting site for management.
Sub-task 1: Respond to resident questions and concerns regarding program.

Since the program was rolled-out in April 2007, the County has responded to questions and concerns regarding the organics collection program. Most questions centered on what type of material and bags were acceptable in the program. As a testament to the site operator, the County has not received a single complaint from the surrounding neighbors regarding the operations at the RW Farms Site at the University of Minnesota Landscape Arboretum. In addition, the Arboretum staff has offered both praise and recognition for the manner in which the site is operated and maintained.

Sub-task 2: Address issues with collection and processing organics.

The program kicked off in January 2007 with the first of many mailing sent to participating residents. The co-collection of organics began on Wednesday, April 11th, 2007 with the two initial rotes. Additional Waste Management routes were added in 2008 that offered service to other communities in Carver County. Additional haulers such as Allied Waste, Waconia Roll-Off and Vierkant have also begun delivering material.

The haulers have begun to tag organics bins that are using plastic bags and will not collect them as such. Since the start of tagging residents' bins that are using non-biodegradable plastic bags there have been no problems of plastic contamination from the residential collections. However, special events have created some problems with contamination, most notably the US Open collection and the Taste of Minnesota collection. This is primarily due to the lack of public knowledge on organics recycling. Due to the fact that these are the first events organics have been collected, the County is still working on a plan that will produce the greatest results in proper participation. This will include better training of staff at such events and updated signage to make the program more visible to citizens.

Objective 5. Program Measurement

Task A: Conduct survey of residents after program has been in operation for a pre-determined time and after completion of project to gauge residents' acceptance, participation and insights.
Sub-task 1: Analyze results of surveys and prepare a report on resident participation and acceptance of program.

Prior to the start of the program, participating households were surveyed to gauge their interest in participating in the project and what, if any, their service needs were. The survey yielded an overall response rate of 35%. Beyond general information the survey consisted of 16 questions in three categories: Current Garbage/Recycling Procedures, Composting, and Organics Collection Program. In the final category, 88% of the respondents thought that household organic separation and collection was a good way to recycle more waste, 82% indicated a willingness to use biodegradable bags for the pilot project, and 78% were interested in participating in the household organics pilot project.

A follow-up survey is planned for September 2008 to gauge residents' acceptance to the program. The September time line for the follow-up survey was chosen to give the new communities such as Mayer and New Germany, who had just started the organics collection program a chance to develop opinions on the project. The results of the survey will be included in the next Demonstration Project Report that will be submitted to the Minnesota Pollution Control Agency in December 2008.

Sub-task 2: Collect and analyze pre-determined program data for measuring program participation, quantities of material collected, and overall program effectiveness including collection and processing costs.

The information regarding participation and overall program effectiveness is outlined in both the MPCA Interm Report dated June 12, 2007 and 2007 Annual Report dated February 29, 2008. This information will also be updated in the next report due December 2008.

Sub-task 3: Analyze survey results to determine effects of composting program on nutrient loading in waste water due to reduced usage of residential garbage disposal.

This task will be completed in September 2008 at which time the follow-up survey will completed.

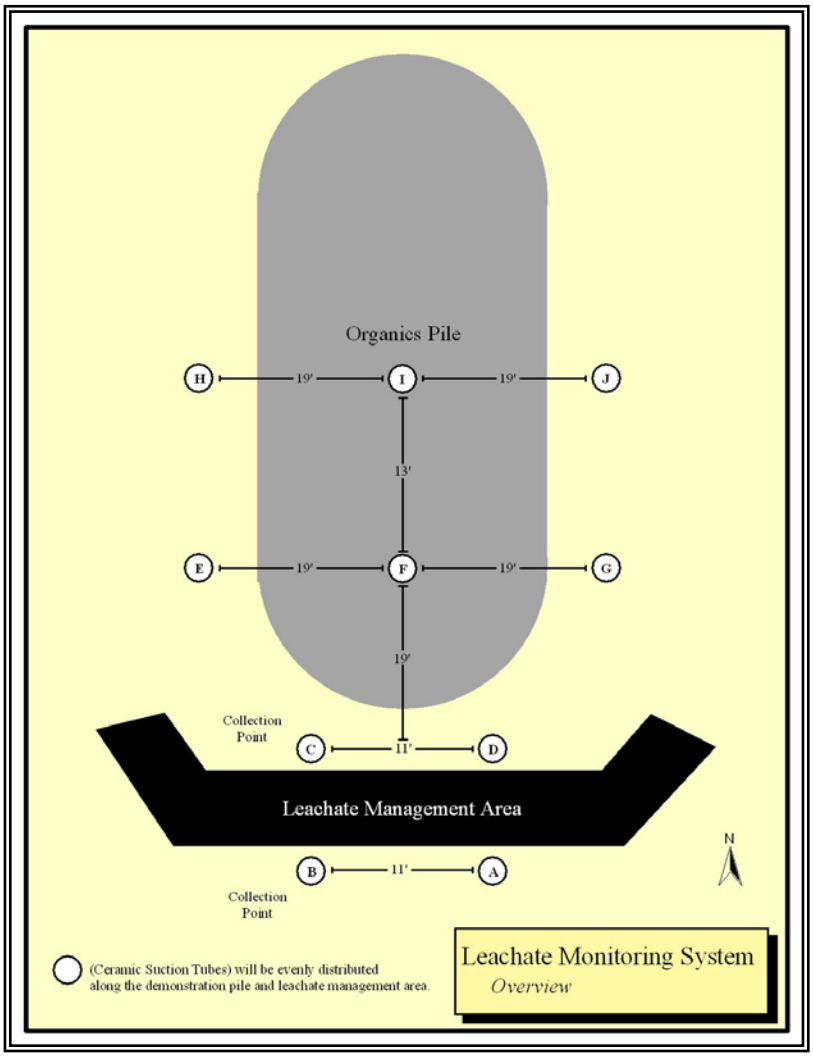
Task B Review compost site operation throughout the entire project timeline.
Sub-task 1: Analyze composting process operational and environmental performance including leachate characteristics.

LEACHATE COLLECTION AND ANALYSIS

The compost site was designed to capture leachate during the composting process through ten (10) buried ceramic tubes with collection points to the sides of, underneath, and in front of the active composting area. Of the four collection tubes located in front of (down slope) of 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 installed on the north and south sides of this berm to help absorb runoff (Refer to Diagram 4.).

Leachate was collected from the ceramic tubes following significant rainfall events between May 25, 2007 and July 10, 2008 (refer to Table 8 & Table 9). During this timeframe many of the samples resulted in either dry samples or leachate volumes that were too small to undergo the range of testing discussed in the sampling plan. This could possibly be explained by the fact the compost piles readily absorb moisture. Much of the precipitation may have been absorbed by materials or given off as steam due to the high composting temperatures.

Diagram 4. Schematics of Leachate Monitoring System



Tables 2 through 7 represent the results from the leachate sampling events that provided enough leachate to run some of the required testing. Pace Analytical provided the laboratory analysis of the samples. For comparison purposes, the Minnesota Department of Health (MDH) Health Risk Limits (HRLs) for groundwater are shown for nitrates and those heavy metals tested for having an HRL. It needs to be stressed, however, that the HRLs are for concentrations of those chemicals in groundwater and that what was actually tested was not groundwater but leachate. Therefore no regulatory thresholds have been crossed.

Table 2
Leachate Analytical Data
June 4, 2007 Sampling Event

Parameter	Combined A & B (µg/L)	Combined C & D (µg/L)	Combined E & H (µg/L)	MDH HRL (µg/L)
pH	8.6	8.1	7.8	No HRL Set
Nitrate (as N)	12,000	ND	ND	10,000
Phosphorus (P)	3,600	480	330	No HRL Set
Potassium (K)	131,000	211,000	114,000	No HRL Set
Arsenic (As)	ND	ND	22.4	10**
Barium (Ba)	382	1,050	890	2,000
Cadmium (Cd)	ND	ND	ND	4
Chromium (Cr)	ND	ND	28.4	100
Lead (Pb)	ND	ND	ND	15*
Selenium (Se)	ND	ND	ND	30
Silver (Se)	ND	ND	ND	30

*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.

Table 3
Leachate Analytical Data
July 9, 2007 Sampling Event

Parameter	Combined E & H (µg/L)	MDH HRL (µg/L)
pH	7.8	No HRL Set
Nitrate (as N)	1,400	10,000
Phosphorus (P)	790	No HRL Set
Potassium (K)	123,000	No HRL Set
Arsenic (As)	ND	10**
Barium (Ba)	740	2,000
Cadmium (Cd)	ND	4
Chromium (Cr)	ND	100
Lead (Pb)	ND	15*
Selenium (Se)	ND	30
Silver (Se)	ND	30

*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.

Table 4
Leachate Analytical Data
August 15, 2007 Sampling Event

Parameter	A (µg/L)	B (µg/L)	C (µg/L)	D (µg/L)	MDH HRL (µg/L)
pH	---	---	---	---	No HRL Set
Nitrate (as N)	2,200	---	5,400	---	10,000
Phosphorus (P)	760	1,100	290	350	No HRL Set
Potassium (K)	---	---	---	---	No HRL Set
Arsenic (As)	---	---	---	---	10**
Barium (Ba)	---	---	---	642	2,000
Cadmium (Cd)	---	---	---	---	4
Chromium (Cr)	---	---	---	---	100
Lead (Pb)	---	---	---	---	15*
Selenium (Se)	---	---	---	40.2	30
Silver (Se)	---	---	---	---	30

*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.

Table 5
Leachate Analytical Data
October 22, 2007 Sampling Event

Parameter	A (µg/L)	B (µg/L)	C (µg/L)	D (µg/L)	E (µg/L)	MDH HRL (µg/L)
pH	8.2	8.0	8.2	8.1	8.1	No HRL Set
Nitrate (as N)	120	ND	2,400	ND	ND	10,000
Phosphorus (P)	400	790	220	680	270	No HRL Set
Potassium (K)	124,000	95,700	200,000	240,000	125,000	No HRL Set
Arsenic (As)	ND	ND	ND	ND	ND	10**
Barium (Ba)	387	328	980	1,120	810	2,000
Cadmium (Cd)	ND	ND	ND	ND	ND	4
Chromium (Cr)	ND	ND	ND	ND	ND	100
Lead (Pb)	ND	ND	ND	ND	ND	15*
Selenium (Se)	ND	ND	ND	ND	ND	30
Silver (Se)	ND	ND	ND	ND	ND	30

*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.

Table 6
Leachate Analytical Data
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.

Table 7
Leachate Analytical Data
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.

Table 8
Precipitation Information

Month -2007	On-Site Measured Precipitation	Historical Monthly Average Precipitation (Chanhassen)*
June	1.50"	4.21"
July	1.50"	4.43"
August	5.35"	4.48"
September	3.71"	2.91"
October	3.28"	2.14"
November	0.11"	2.00"
December	0.23"	0.84"
Month -2008	**Monthly Precipitation Totals****	**Historical Monthly Average Precipitation (Chanhassen)***
January	.15	.93"
February	.45	.62"
March	2.17	1.77"
April	4.51	2.40"
May	2.67	3.65"
June	Not available	4.21"
July	Not available	4.43"

*As stated on The Weather Channel (www.weather.com) **As stated at the MN State Climatology Office(www.climate.umn.edu)

Table 9
Leachate Volume Data

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

Sub-task 2: Analyze finished compost using MPCA testing protocol to determine quality.

During the yard waste season, the mixed organics from the residential routes come into the Arboretum site twice a week. Once the yard waste season is over, SSO collection moves to every other week. The weekly delivery of mixed organics is combined into one static pile for the initial composting phase. The designated area where the static piles are placed for this first stage of composting can accommodate up to five (5) static piles at a time.

In this initial stage of composting, static piles are monitored daily for internal temperature. Several readings are taken with a daily average calculated. If needed, piles are turned in order to ensure aerobic conditions and temperatures above 131^0 F are maintained over an extended period of time. Piles are monitored closely to achieve Process to Further Reduce Pathogens (PFRP), which for the static aerated pilot method of composting is maintaining 55^0C (131^0F) for at least a seven day period. During 2007, twenty-eight (28) static piles for the initial composting stage of the mixed organics were created. An additional 17 piles were created as of July 7, 2008. Table 10 summarizes the temperatures and retention times for the 2007 piles. Summarization of the 2008 pile data will be available in the annual MPCA Demonstration Project due in December

Staff taking daily temperatures of organic static piles

2008.
Once piles had achieved PFRP they were screened for contaminants and placed in larger static piles for curing purposes. The curing compost remains in these larger static curing piles for 60 to 90 days before being screened. During the curing period the piles are turned a couple of times to ensure aeration and complete curing.

FINISHED COMPOST

In 2007, a total of approximately 4,000 yds^3 of finished materials was produced at the RW Farms Site at the University of Minnesota Landscape Arboretum composting site. This finished material breaks out as follows:

- Finished yard waste compost – 1,800 yds^3 (45%)
- Wood mulch – 1,000 yds^3 (25%)
- Finished mixed organics compost – 1,200 yds^3 (30%)

Finished compost being screened

Of the 1,200 yds^3 of finished compost coming from the mixed organics, approximately 500 yds^3 of this material has been used by the Arboretum. The remaining 700 yds^3 is stockpiled onsite awaiting marketing. The compost produced from the mixed organics meets the criteria for Class I compost.

Solvita testing was done on two samples of compost in the finish pile – one sample was taken on November 13, 2007 and one on November 15, 2007. Table 10 on the next page shows the test results.

Based on the results for carbon dioxide and ammonia, the maturity ratings for these two samples were 7 and 6, respectively. Solvita 6 and above is commonly recognized as suitable maturity for official uses.

Table 10
Temperature Readings and Retention Times
For Mixed Organics Aerated Static Piles

Pile	Was PFRP Achieved?	PFRP Temp. Range (^{0}F)	Ave. PFRP Temp. (^{0}F)	PFRP Duration (Days)	Comments
1	Yes	141 – 160	151	8	
2	Yes	137 – 162	151	11	
3	Yes	135 – 168	157	14	
4	Yes	131 – 162	155	23	
5	Yes	143 – 165	156	15	
6	Yes	139 – 158	153	13	
7	Yes	133 – 162	150	10	
8	Yes	131 – 156	146	12	
9	Yes	131 – 154	145	8	
10	Yes	141 – 149	146	13	
11	Yes	140 – 154	148	11	
12	Yes	134 – 154	146	21	
13	Yes	135 – 155	147	17	
14	Yes	131 – 155	148	10	
15	Yes	150 – 160	155	10	
16	Yes	140 – 161	149	8	
17	No	----	----	----	Pile 17 was incorporated into another pile to achieve PFRP.
18	Yes	140 – 156	149	14	
19	Yes	150 – 160	154	10	
20	No	----	----	----	Pile 20 was incorporated into another pile to achieve PFRP.
21	Yes	144 – 165	152	12	
22	Yes	141 – 160	150	9	
23	Yes	144 – 165	152	12	
24	Yes	131 – 164	145	18	
25	Yes	131 – 164	145	18	
26	Yes	135 – 148	142	7	
27	Yes	136 – 142	139	8	
28	No	----	----	----	Pile 28 was constructed in mid-December and as of the end of January had not yet achieved PFRP.

Table 11
Solvita Test Results

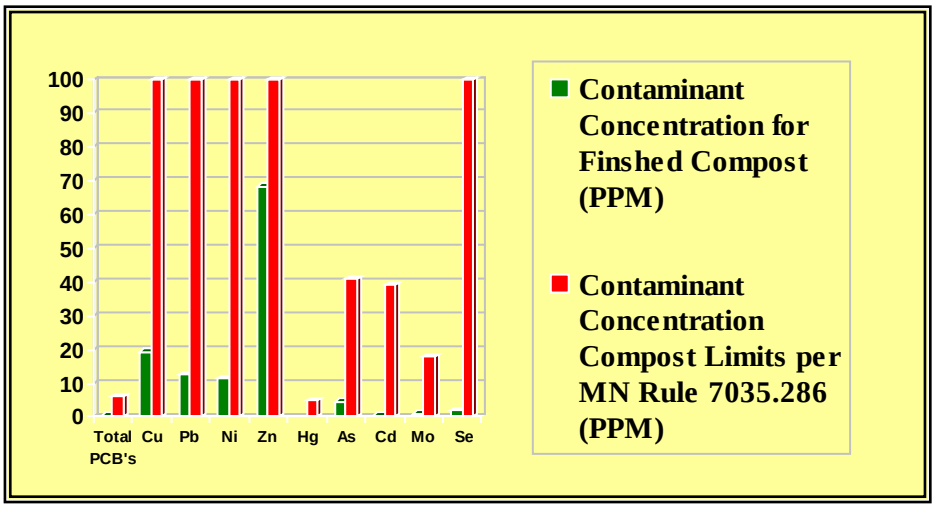
Sample Date	CO2 Results	NH3 Results	Maturity Value	Maturity Description
11/13/07	7	6	7	Well matured, aged compost, cured. Few limitations for usage
11/15/07	4	4/5	6	Curing; aeration requirement reduced. Compost ready for, piling with reduced management requirements

Analytical testing was done on finished compost from the mixed organics in September 2007. Composite grab sampling was performed to ensure a strong representation of material was sent in for analysis. According to the lab results from Minnesota Valley Testing Laboratories, the tested compost is well below the heavy metals and PCB concentration limits for Class I compost listed under Minnesota Rules 7035.2836, Subp. 6. The results, along with the contamination limits for Class I compost, are presented in Table 12. The data is also presented in a tabular format (Graph 1) to visually represent the thresholds for Class I compost. The table depicts the deficiencies in contaminants for the finished material that were tested.

Table 12
Class I Compost Heavy Metals and PCB Concentration Limits

Contaminant	Minnesota Class I Compost Heavy Metals and PCB Limits (mg/kg)	Mixed Organics Compost Test Results (mg/kg)
Arsenic	41	4.44
Cadmium	39	0.53
Copper	1,500	19.28
Lead	300	12.6
Mercury	5	< 0.049
Molybdenum	18	<1.026
Nickel	420	11.5
Selenium	100	< 2.051
Zinc	2,800	68.09
PCB	6	<0.5

Graph 1
Finished Compost Test Results



Task C: Prepare report on program operations and effectiveness.
Sub-task 1: Based on project results recommend revised MPCA permit requirements allowing food waste to be composted with yard waste.

Carver County submitted a Demonstration Project Annual Report to the MPCA on February 29, 2008 with the following recommendations regarding organics to be composted with yard waste.

The first year of implementation and operation of the demonstration project has gone very well with few, if any, problems occurring. In fact, the program has been successful on several fronts including:

- Generating interest and support from residents and other communities and counties who are seeking more efficient and cost-effective methods for diverting household organics to composting facilities.
- Generating interest and support from haulers who recognize the inherent efficiencies and lowered cost of service when residential organics are collected and composted with yard waste at yard waste composting sites specifically setup for mixed organics.
- Demonstrating that when managed properly, composting commingled yard waste and SSO using aerated static piles for composting can produce a high quality product meeting all the requirements of Class I compost.
- Demonstrating (based on the laboratory analyses performed to date) that the leachate generated, or for better terms lack of leachate generated, from mixed organics composting shows very low levels of heavy metals and other chemical constituents associated with composting operations and would likely not pose a significant environmental risk, assuming the site was designed and operated properly.

The growth of the program over the last year, and the expansion to a second site and several more communities this year, has demonstrated the viability of this method for composting organics in Minnesota.

Sub-task 2: Based on project results recommend revised MPCA definition of 'source-separated' to allow for the co-mingling of residential yard waste and residential food waste for the purpose of transporting to a compost facility.

Carver County working with Hennepin County and the other Solid Waste Management Coordinating Board (SWMCB) member were successful in 2008 in revising the definition of 'source-separated' to allow for the co-mingling of residential yard waste and organics for the purpose of transporting to a compost facility.

The definitional change was a small but important part in moving closer to realizing a Metro wide residential organics program. The biggest hurdle, however, will be to find capacity for additional mixed organics/yard waste. Clearly, the best scenario would be for the MPCA to make the necessary regulatory changes to allow a third tier facility such as the sites operating in Carver County. Until this happens, the following interim steps can be taken to foster the current programs and expand capacity.

1) Coordinated SWMCB? message to the MPCA requesting regulation changes and additional Demonstration Projects in the interim.
2) Request legislators loyal to the cause such as Paul Gardner to contact MPCA in support of the organics projects.
3) Investigate the MPCA variance process to allow mixed organics at yard waste sites.
4) Assign a SWMCB Organics site development team to search out potential organics sites.

5) Take steps to move towards a metro wide ban on plastic bags with yard waste.
6) Hold a stakeholder meeting with haulers, county staff, and facility operators to coordinate our efforts.

Objective 6. Fiscal Management

Task A: Track project grant and matching funds and expenditures.
Sub-task 1: Compile and organize invoices.
Sub-task 2: Pay bills.
Sub-task 3: Obtain in-kind documentation.
Sub-task 4: Prepare information for regular reports.

Work activities related to Objective 6 have been ongoing since the effective date of the grant agreement and kick-off of the project. These activities will continue on through the duration of the project. More detailed information can be found in Section IV: BUDGET later in this report and in Attachment G.

2. Describe any problems, delays or difficulties that have occurred in completing the project work program. How did (does) the grantee (plan to) resolve them?

Initially, the most significant difficulties/problems have been concerned with the selection of the composting facility and with the bag and service quality from one of the bag vendors. These issues are described below:

Compost Site Selection

During the early planning stages of the project, several sites were being considered for processing the commingled residential organics to be collected.

Carver County first approached the City of Hutchinson about composting the material at their yard waste site adjacent to their source-separated organics composting facility. They had just gone through a very public battle regarding odor complaints at their composting facility. Though it was determined that their site was not the culprit regarding the odor problem, they were very reluctant to take on a project like this that could create another controversial and highly charged battle.

Carver County then began working with Resource Recovery Technologies (RRT) formerly known as NRG Processing Solutions. The initial thought was to have the collected materials delivered to their yard waste composting site in Shakopee, MN. RRT chose not to utilize the Shakopee site for operational reasons. They did, however, suggest that their Burnsville site would be a good candidate for this type of project.

Planning began for delivery of the materials to the Burnsville yard waste composting facility and an MPCA Demonstration Research Proposal for utilizing this site was submitted. However, during this process several difficulties were encountered. One problem occurred when RRT overlooked contacting the property owner (RRT leases the land) about the project and he found out about it through the City of Burnsville. The property owner subsequently was reluctant to sign-off on the project.

The greatest difficulty which prevented the use of this site, however, came when the City of Burnsville's planning director denounced the plan. She expressed strong opposition to the project and did not want the project at the Burnsville composting facility. Carver County invited the City of Burnsville to participate in the project,

emphasizing that a portion of their City was currently running a source-separated organics collection program that was having a number of difficulties (collecting the bagged organics with MSW). By inviting them in on the Carver County project they could have commingled their residential organics with yard waste and resolved a number of problems with their existing program. The City, however, declined this offer of co-participation as did the City Planning Director. Because it is crucial to have the City Planning Director's support of the project this could not be a viable option.

Another option with RRT was then considered – having this material either hauled directly or through a transfer station to the composting site in Empire Township. This option was evaluated and determined to be too expensive due to added transportation distances.

Finally, Carver County approached the Minnesota Landscape Arboretum and they were very supportive of the project offering the use of their yard waste compost site for the demonstration project. This actually offered a win-win situation for everyone. The Minnesota Landscape Arboretum was participating in an innovative approach to composting source-separated organics, which would help further their interest in research, outreach and environmental stewardship; the collection company had a much shorter haul distance for delivering the material (less than 4 miles); and the County gained very willing and receptive support from the Minnesota Landscape Arboretum and the City of Chanhassen.

Compostable Bag Problems

During the rollout of the program, several service and quality issues developed surrounding one of the designated compostable bags to be used in the program (Huskie EcoGuard™). The price for the bags was competitive but without a sales representative in the local area, County staff and the environmental consultant hired by the County took on the task of visiting with local retailers to get the bags stocked in the stores.

Due to issues related to shipping and distribution, the County needed to step forward and order the bags for the retailers, store them at their Environmental Center, and deliver the bags to the stores collecting only the County's cost for purchasing the bags. This created additional work and some expense (primarily staff time and consultant time) that was not initially planned for.

Additionally, once the bags were distributed to the residents, a number of complaints were received regarding the bags (the 33-gallon size specifically) tearing and puncturing when materials were placed in them. In talking with the vendor they indicated they would be reformulating the bags to give them greater thickness thus improving their strength. To resolve the more immediate issue with the bag strength, Carver County has secured and distributed different 33-gallon bags (Kraft paper bags) for residents to use in the program. These Kraft paper bags are available through the County as well as being sold in a number of stores in Carver County.

SECTION II - PARTICIPANTS IN PROJECT

3. Have there been any changes in project staff or contractors or has participation by companies or units of government changed?

Marcus Zbinden with Carver County and Tim Goodman (Tim Goodman & Associates) remain the key individuals overseeing the project. At the time of project startup, neither the collection hauler nor the composting facility had been selected. These components were put in place with Waste Management serving as the main

collection entity and the Minnesota Landscape Arboretum providing the compost site. The site is maintained and operated by Russ Leistiko of RW Farms. In addition, Dr. Thomas Halbach with the University of Minnesota has joined the team providing environmental monitoring/sampling services. The Chanhassen Environmental Commission has also been an active player in this project participating in the creation of educational literature and assisting in the distribution of educational materials and the kitchen organics pails. In 2008 the County expanded the program by adding a second site in the City of Mayer. The City Administrator, Luayn Murphy, was very involved in the success of establishing this additional site. The City has been very supportive to organics collection and residents have responded positively to the new service.

Since the program started the County has worked with other haulers including Allied Waste, Vierkant and Waconia Roll-off to deliver organics to both the RW Farms Site at the University of Minnesota Landscape Arboretum and Mayer sites. The County is also promoting a commercial organics route and has a number of large commercial accounts currently delivering material to the RW Farms Site at the University of Minnesota Landscape Arboretum. The accounts include Ridgeview Medical Center, Oak Ridge Conference center and the Minnesota Landscape Arboretum food service. Also, we are currently in the process of implementing an organics program throughout the Courthouse Building and Jail in Chaska.

SECTION III - GRANT RESULTS TO-DATE

In 2007, approximately 12,898 cubic yards of material were delivered to the RW Farms Site at the University of Minnesota Landscape Arboretum. The delivered material breaks out as follows:

Analysis of Organics from Demonstration Project:

- Yard Waste – 6,350 yds^3 (49.2%)
- Brush/Logs – 3,000 yds^3 (23.3%)
- Mixed Organics (commingled yard waste and source-separated organics) – 3,548 yds^3 (27.5%)

Yard waste and woody materials are managed separately from the mixed organics. However, leaves and ground brush are added to the mixed organics as a bulking agent in an approximate 2 ½ to 3-yard ratio for every yard of organics. Prior to the startup of the mixed organics composting project there was a stockpile of brush at the site which provided much of the bulking agent for the spring and summer months.

Source Separated Organics

Based on 2007 waste sort data, SSO accounted for between approximately 3% and 20% of incoming mixed organic loads with an average of about 10%.

In the first half of 2008, approximately 9,270 cubic yards of material was delivered to the RW Farms Site at the University of Minnesota Landscape Arboretum. The delivered material breaks out as follows:

- Yard Waste – 6,010 yds^3
- Brus/logs – 1,660 yds^3
- Mixed Organics – 1,600 yds^3

The projected 2008 year end totals for material delivered to the RW Farms Site at the University of Minnesota Landscape Arboretum are as follows:

- Yard Waste – 12,020 yds^3
- Brus/logs – 3,370 yds^3
- Mixed Organics – 5,000 yds^3

Based on preliminary waste sorts conducted in 2008 and due to the volume of 100% organics loads coming from commercial sources the organics percentage in the loads is over 20%. Refer to **Attachment C.** for a complete inventory of organics materials delivered to the RW Farms Site at the University of Minnesota Landscape Arboretum.

The amount of organics delivered to the RW Farms Mayer Organics compost site will depend greatly on the number of commercial accounts taking part in the organics collection program as well as the number of agreements reached with other entities to deliver material. Based on the preliminary discussions with Hennepin County's Randy's Sanitation, Waste Management and others entities, the amount of organics that will be delivered to the Mayer Site will far out pace that of the Arboretum.

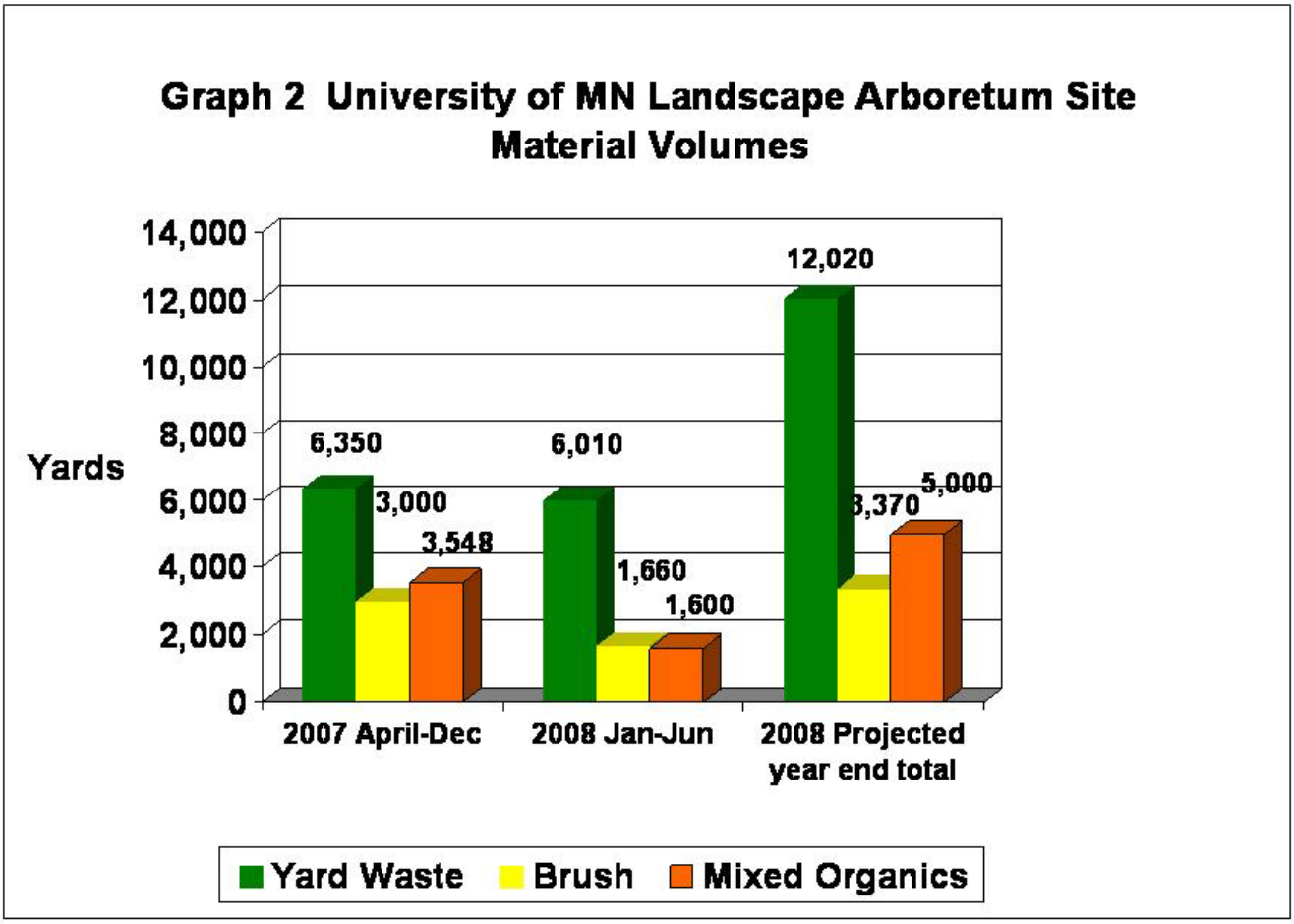
4. Identify which Environmental Priority Project(s) this grant is supporting (See Introduction)

Research has been conducted and upon testing different options, the project will help implement ways to remove barriers to the collection of source-separated organic materials from the mixed municipal waste stream.

5. *Minnesotans prevent waste and pollution and conserve resources.* Detail the amount of material and/or toxicity prevented, reused or recycled through this grant during the reporting period. (i.e. a reduction in MSW generation, reduction in TRI chemicals managed, avoided materials consumed, avoided air and water emissions and avoided energy use.)

The Carver County Pilot Project has diverted significant amounts of organics from the waste stream since it began. In 2007, 3,548 yards or 124 tons of mixed organics were delivered to the RW Farms Site at the University of Minnesota Landscape Arboretum. In 2008, it is projected that 5000 yards or 350 tons will be delivered to the same site. Refer to Chart 4 for a break down of materials delivered to the Arboretum site. The diversion of organics will see an exponential increase as the program continues to mature. The following factors will influence the amount of organics diverted from the waste stream:

- MPCA approval to continue the Demonstration Projects
- The second demonstration site in Mayer accepting material in July 2008
- Waste Management expansion of commercial organics route
- Additional haulers and municipalities offering collection service
- Successful sitting of two new demonstration sites



6. ***Minnesota's waste is recycled and managed in an environmentally sound manner*****. Describe impact your project has had on recycling and waste management. (i.e. increased recycled content in products and feedstock purchasing, avoided energy and materials use from recycling, avoided air and water emissions from recycling, and tons of materials recycled). Please be specific.**

The collection and composting of commingled residential SSO and yard waste provides several major benefits. These include:

- Increased recycling of waste (SSO) into a beneficial product (compost). Compost retains moisture, protects lands that are susceptible to erosion and aids in plant growth. Compost also has some capacity for carbon storage;
- Diversion of organic materials away from landfills where it would otherwise have added to methane production, a potent greenhouse gas; and
- With the commingled collection of SSO and yard waste, a separate truck is not needed for the collection of the residential organics. This results in more recovered materials from the waste stream without increased fuel usage or greenhouse gas emissions during the collection of the material.

7. *Minnesota communities are sustainable.* Describe how your grant contributes to the capacity for others to make decisions about sustainable communities or to implement sustainable actions. Describe the awareness that occurred as a result of this grant. Describe the partnerships that were developed as a result of this grant. Please be specific.

The positive results of this project should be relatively easy to replicate in other communities. Since this project has been so successful, it will provide other communities with a more cost-effective method for collecting and composting SSO. This, in turn, could significantly increase the number of SSO collection programs throughout the state resulting in more diversion/recycling of resources and giving communities one more tool in their toolbox for creating sustainable resource management initiatives.

The partnerships growing out of this project are demonstrating how private companies and public agencies can work together to help further environmental sustainable initiatives and increase both the cost-effectiveness and environmental performance of collection, processing and recycling programs. The major private and public partners participating in this project include:

- Carver County
- Minnesota Pollution Control Agency
- Haulers including Waste Management, Allied Waste, Waconia Roll-off and Vierkant (collection entity)
- Minnesota Landscape Arboretum (compost site)
- RW Farms, LLC (compost site operator)
- Cities of Chanhassen, Chaska, Victoria, Waconia, Mayer, New Germany, Watertown and Edina

8. *Minnesotans make educated decisions and actions regarding the environment.* Describe how your project contributes to educating Minnesotans about the environment and/or contributes to the awareness of environmental decisions. Describe how your grant contributes to the capacity for others to implement environmental education. What changes in behavior have resulted from this grant? Please be specific.

Through program educational literature, news media coverage, and overall participation in the program, Minnesotans are:

- Learning how they can do more to increase recycling rates (e.g., SSO composting);
- Becoming more aware of the ecological connections between people and the natural environment; and
- Actively participating in reducing their environmental impacts and helping in the fight against global warming.

It's anticipated that by the end of the demonstration project participants will have a greater understanding of how something as simple as organics recycling can help improve environmental quality and that recycling means more than just diverting their paper, cans and bottles.

SECTION IV -- BUDGET

9. Fill in the Project Costs and Financing Table. Attach receipts for any expenditure, which will in aggregate total $500 or more.

This section will be completed in the final draft of this report.

SECTION V -- ADDITIONAL QUESTIONS FOR FINAL REPORT

Answer these additional questions if you are completing your final report.

10. Was the project a success? Did you achieve your goals?

Yes, the project has and continues to be successful. The County was able to work cooperatively with an array of partners including the MPCA, local units of government, haulers residents and businesses. The site has produced a Class I compost and has not received a single complaint from surrounding residents. Due to the initial success of the project it has expanded to a second site and the County is working with other jurisdiction on additional sites. The project has gathered the necessary data for the MPCA to use in their rule making processes to evaluate changes that would be necessary for state wide expansion of similar organics compost project.

11. What, if any, data was generated, collected or analyzed by the project sponsor?

Refer back to previous data in this report and also to Carver County Demonstration/Research Project on the Collection and Composting of Commingled Residential Organics and Yard Waste –2007 Annual Report dated February 29, 2007 and the Carver County Interim Report to the Minnesota Pollution Control Agency dated June 12, 2007.

12. List local matching funds. Describe any additional amounts and sources of local cash and/or in-kind matching funds that were secured. Attach letters of verification for new amounts and sources that have not been previously reported to the MPCA.

Refer to Attachment G.

13. What would the project sponsor recommend to others interested in attempting a project like yours?

The main factors that allowed this project to be the success it is include:

- A community with a willingness to participate in reducing their waste going to landfills
- A centrally located organics site for transporting organic material minimal distances
- Haulers willing to adapt their collection schedule to include the new organics route
- A committed organics site manager.

14. Who, if anyone, should the OEA provide information to about this project? (The media, businesses, other agencies, etc.).

This Annual Report, as with ours from the beginning of the project, should be given to any city or county interested in establishing an efficient organics composting site. Media is a cost effective way to get information out to the public and this pilot project information could generate interest to a broad audience. If enough public support exists in non-organics composting counties, knowing this information could lead to more organic sites throughout the state and country. If elected officials hear of this study, they will have a valuable reference to implementing a successful program in their district.

15. Please provide any suggestions you may have for improving the MPCA's Grant Programs.

Not Applicable

SECTION VI -- ADDITIONAL REQUIREMENTS AS REQUESTED BY THE OEA GRANT MANAGER (Grant managers will be working with grantees to use relevant measures from the OEA's performance measures program.)