

1 % for the Tetons-Grant Application Form

Organization Name: Terra Firma Organics
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Title of Application: Phase II Food Waste Pilot Project

Amount Requested: \$40,000

A. Please give a summary of the program for which funding is requested. If this is a collaborative role with several entities, explain the role of each.

Phase II of the Food Waste Pilot program will be a continuation of the Food/Paperboard Compost Pilot Project which was partially funded by the 2007 1% for the Tetons Grant. In Phase II, The Teton Conservation District, Terra Firma Organics, Teton County, Wyoming and Jackson Community Recycling are proposing an expanded program to identify a technology to collect and process an increased volume of food waste, paperboard and waxy cardboard. The collected material will continue to be processed at Terra Firma's composting site at the Teton County Transfer Station.

Thus far, the Phase I Food Waste pilot program has been a resounding success and has highlighted the willingness and ability of local businesses to separate pre-consumer food waste. The current challenges lie in being able to properly process a large amount of food waste given the shortcomings of the composting site at the Teton County Transfer Station. The goal of the Phase II grant will be to increase the quantity of materials collected from existing participants and to conduct a thorough investigation of the potential in-vessel technologies for processing food waste. The biggest priority is to find a compost management system that is site-specific and flexible enough to accommodate the fluctuations in organic waste throughout the year. In-vessel composting is an industrial form of composting biodegradable waste that occurs in enclosed reactors. The current pilot project will only be able to continue past the capacity of the current pilot program if additional funding occurs. As it is, a new system must be identified to process waste. Phase I has identified the shortcomings of the site and the need for an in-vessel system to safely process organic waste.

Teton County, Wyoming's government mission is to "support the well-being of its residents by providing responsive and efficient services; providing programs that contribute to public health, safety, and welfare; and supporting the community's goals as expressed in the Teton County Comprehensive Plan."

Jackson Community Recycling is a public non-profit whose mission is “to reduce landfill-bound waste in Teton County, Wyoming by providing convenient recycling and hazardous waste disposal opportunities, encouraging materials reuse, and reducing overall consumption.” Jackson Community Recycling provides residents and visitors of Teton County the opportunity for recycling instead of landfilling many solid wastes. Jackson Community Recycling is the ideal partnering agency for this pilot program because their overarching goal is to divert waste from the landfill.

The Teton Conservation District is a non-profit government agency whose mission is to “to promote conservation and management of natural resources -- air, land, water, vegetation, and wildlife -- through watershed-based research, education, conservation practices, cooperative projects, and on-the-ground actions to ensure the health, safety and general welfare of the people and resources of this area.” The Teton Conservation District has a long history with Terra Firma Organics in partnering to not only effectively deal with wood waste at the transfer station but also to investigate the biomass challenges that the local forests face.

Terra Firma Organics is a for profit business that is currently under contract with Teton County to manage the organic waste that is being collected at the Teton County Transfer Station. The organic material that is being collected includes brush, grass clippings, horse manure, clean lumber and gypsum. Terra Firma is also operating in Teton County, Idaho to manage their transfer station and potentially to begin an organic waste composting program. It is the intent to take the lessons learned from Teton County, Wyoming’s pilot project to Teton County, Idaho, as well as other neighboring communities.

The proposed pilot program will continue to include The Four Seasons Resort, The Cascade Grill at The Teton Mountain Lodge, The Terra Café at The Hotel Terra, The Blue Lion, The Journey’s School, The Mangy Moose and Jackson Whole Grocer. The participants have committed to paying a fee for material pick-up if the program is to continue.

B. What need or trend does this program address? What data supports this? Include citations.

Composting and Climate Change

Applying organic fertilizers, such as those resulting from composting, to agricultural land could increase the amount of carbon stored in soils and contribute significantly to the reduction of greenhouse gas emissions, according to new research published in a special issue of Waste Management & Research. Carbon sequestration in soil has been

recognized by the Intergovernmental Panel on Climate Change and the European Commission as one of the possible measures through which greenhouse gas emissions can be mitigated.

"... increasing organic matter in soils may cause other greenhouse gas-saving effects, such as improved workability of soils, better water retention, less production and use of mineral fertilizers and pesticides, and reduced release of nitrous oxide."¹

National statistics demonstrate that more than 72 percent of all materials entering landfills can be diverted through composting.

Food Composting

Eco-Cycle of Boulder, Colorado operates recycling and composting facilities for their region. Their work with a National Oceanic and Atmospheric Administration (NOAA) expert and data from the Intergovernmental Panel on Climate Change (IPCC), has led them to focus their efforts on keeping organic materials out of the landfill. They see this as the easiest and cheapest first step for a community to immediately reduce its greenhouse gas emissions while working toward longer-term reduction strategies.

"When biodegradable materials such as paper products, food scraps and yard trimming are tossed in the garbage and sent to the landfill, those lettuce heads, grass clippings and paper boxes don't just break down as they would in nature or in compost pile. They decompose anaerobically, without oxygen, and in the process **become the number one source of human-caused methane** and a major player in climate change. In fact, methane is now understood to be 72 times more potent than CO₂ over a 20-year period. This means our landfills emit the greenhouse gas equivalent of 20% of U.S. coal-fired power plants every year!"²

When food waste ends up in the landfill it produces methane, a greenhouse gas judged to be more than 20 times as powerful as carbon dioxide. Throwing less food away produces less methane in the landfill and reduces other harmful environmental impacts from producing, packaging and transporting food.

According to the Alameda County Waste Management Board, "Food scraps and food soiled paper is the largest single item in our waste stream – making up approximately 35% of what gets throw away." They go on to say that, "Food scraps are a resource, not a waste. By participating in food diversion programs, food scraps and food soiled paper can be sent to a composting facility. Instead of taking up space in the landfill, the food scraps become compost – a valuable resource used by landscapers and others for mulch or erosion control."³

In addition to receiving food scraps, Terra Firma Organics will gradually receive and compost pre-consumer food waste, waxed corrugated cardboard and paperboard. These materials are being landfilled since they are not currently recyclable as fiber. But, when collected by Terra Firma, they will be added to the compost blend as a viable carbon source. A partnership with Jackson Community Recycling has been established to collect paperboard and waxy cardboard to be processed at the transfer station site and turned into compost.

C. How does this program further the mission of 1% for the Tetons?

Not only will composting decrease the amount of material taken to the landfill but it will also create a product that can be utilized by local consumers ranging from commercial landscaping companies, golf course operations, government agencies and residential consumers. Information from Phase I supports this data as it demonstrates that on average most participants have been able to divert half of their existing waste from the landfill.

There is a significant need for high organic soil in Teton County; compost can be used locally for landscape material, as erosion control and water quality protection for road work and in the construction industry. Not only will the amount of material being sent to the landfill decrease but truck transport to the Sublette County Landfill (food waste and other organics are wet and heavy therefore contributing the most weight to transport costs) will be reduced. All of these measures clearly save on fuel costs, reduce air pollution, and increase the waste diversion rate for Teton County.

D. There are 10 criteria for a successful grant. How does this program address each?

1. Focus on sustaining the greater Teton ecosystem's essential qualities—particularly its extraordinary natural resources—for future generations;

Diverting material from the Sublette County Landfill will:

Heather Overholser
Jun 13, 9:32 AM
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- sustain the use of the landfill for materials that cannot be reused;
- decrease carbon output through reducing the transportation of landfill-bound waste out of Teton County and that of manufactured compost into Teton County; and finally,
- reduce methane gas produced at the landfill.

Each of these measures can be counted as direct and immediate successes for the environment. Healthy soils create a much needed sink for carbon. As an increased quantity of material is diverted and appropriate technologies are discovered, the long-term solution for utilizing food waste for community wide participation will become a reality.

2. Address the critical linkages between the area's essential economic, social and environmental qualities;

The composting of food, paperboard and waxy cardboard would not only increase jobs in Teton County through providing a new value-added product in the community, but would also divert material from the landfill. It is essential to be liable for our waste and not rely on other communities to bare the burden of responsibility. Overall, this project will greatly help to preserve the lasting health of the environment.

3. Offer unambiguous, measurable criteria for evaluating success;

The cost savings realized as a result of participants being able to decrease the size of their trash containers as well as the frequency of their trash pick-ups will be calculated when Phase I is complete. At this point, these data are still unofficially reported and the savings have not yet been calculated. The quantity of waste diverted will continue to be tracked through the life of the grant.

The Phase II grant will focus on finding a food composting management system that is appropriate for our community. If a system is discovered that can operate on the existing composting site, successfully process all collected food waste, and produce an appropriate product, the Phase II project will result in a permanent and long-term solution for organic waste in Teton County. This information will be valuable to similar communities that are also looking for waste diversion solutions.

4. Produce significant effects or change with the funds invested;

The Phase II program will gradually include post-consumer food waste, paperboard and waxy cardboard from those participants not already diverting these materials. According to an analysis by the US Department of Agriculture, "over one quarter of the total edible food in the US is lost to human use each year during the retail, food service, and

consumer stages of the food system, resulting in nearly 100 billion pounds of waste.”⁴

If the Phase II program is awarded a grant, a portion of the funds will be used to identify an appropriate in-vessel technology and integrate it into the current composting system, which will allow for the inclusion of all interested parties in the food waste diversion program.

5. Emphasize forward-looking solutions, i.e. preventing future problems or turning today’s possibilities and disciplines;

It is clear that food composting will serve Teton County in many ways.

First, this project will help to permanently create a value-added product that is currently not produced in the state and will add new jobs locally. Currently mulch and compost are sourced from Montana and Colorado. There is a small amount of compost and mulch that is available from the Phase I process. The demand for this material has already been overwhelmingly positive.

Second, managing a waste product that is produced in our community is socially and environmentally responsible. Currently, food waste, waxy cardboard and paperboard are taken to the Sublette County landfill. This practice of disposing of waste material, which could be processed locally, is not responsible or proactive.

Finally, local carbon emission production will be reduced by decreasing the amount of material trucked to the Sublette County landfill, cut back on the amount of compost material being trucked into the community, and decrease the methane gasses that are produced in the landfill from decomposing food wastes.

6. Demonstrate collaboration by multiple organizations in addressing issues cutting across jurisdictions and disciplines;

This project will involve the Teton Conservation District whose primary mission is to preserve the environment; Jackson Community Recycling is in place to divert material from the landfill and find sources for these recyclables; Terra Firma Organics is currently under contract with Teton County to manage diverted organic material and; Teton County, Wyoming is charged with ultimately managing all waste produced in the county. Each of these organizations is separately working to combat the issue of waste reduction and climate change. Providing a collaborative opportunity to bring these organizations together will foster relationships that will increase the communities’ ability to find lasting change.

7. Fund new programs, or fund innovations in existing programs that will significantly expand and/or increase their measurable results;

Currently the Phase I Food Waste Pilot Project is the only program in place to attend to the reduction of food waste in Teton County. There are many challenges that must be addressed for a Food Waste Diversion program to succeed: finding an appropriate system that will avoid wildlife attraction, while being able to operate on the existing composting site and continually function given the fluctuations of the material that is generated. In addition, the challenges of collecting food waste from participants, given the size of our community and the privatization of waste hauling, has highlighted the need for a waste truck designated specifically for food waste collection. Because the food waste diversion program is only in its pilot phase, no private haulers are willing to invest in trucks solely for this purpose.

8. Look to 1% for the Tetons for matching funds, rather than complete funding;

Each of the partnering organizations has committed to contributing financially to the Phase II pilot program.

9. Focus on the greater Teton ecosystem, both natural and human; and

The production of a high quality amendment to enhance the natural soils as well as reducing carbon and methane gasses serves the larger natural environment. It is the intent for the long-term benefits to be realized through reducing the production and transport of material, as well as enhancing the quality of material that is applied to the local landscape.

10. Not be for economic development, tourism promotion or the like.

This program would solely reduce the amount of material sent to the landfill and create a value added product for the region.

E. What are the specific, measurable objectives of this program?

Diverted material will be weighed as it is collected and then again as it enters the transfer station. Costs to the participant, hauler and composting operation will be calculated to create a baseline for a community wide program. In addition, an analysis of the number of trips reduced through hauling of material to the landfill and compost brought into the community will be estimated.

The compost produced from the food waste will continually be tested for chemical and physical characteristics through the University of Wyoming.

F. How will you measure success against each of your objectives? Is there baseline information against which to measure success? What objective methodology will you use to evaluate the performance of the program?

Success will be measured by the amount of material that is diverted from landfill disposal and subsequently composted. Because the participants will save money on the collection and hauling of their remaining trash, this will offset fees for food waste collection, thereby creating a system of waste management that will be sustainable.

G. Is there additional information you would like to provide?

Educating participants' staff to properly source separate material as post-consumer material is received will be one of the key components to the success of this program. Training will emphasize the necessity to properly separate while utilizing the most material possible. In the Phase I pilot project, Terra Firma Organics was trained by Bob Spencer, Environmental Planning Consultant. Spencer has extensive experience in creating community programs in Massachusetts, where he operated the largest food waste composting facility in the state, successfully serving many large supermarkets. This training provided instruction in the proper separation, collection, transport, and composting of food waste.

Note: Attached is an article that was written about the Food Waste Pilot Project in the June, 2008 issue of Biocycle Magazine.

¹ Experience with the use of LCA-modeling (EASEWASTE) in waste management.

Thomas H. Christensen, Gurbakhash Bhandar, Hanna Lindvall, Anna W. Larsen, Thilde Fruergaard, Anders Damgaard, Simone Manfredi, Alessio Boldrin, Christian Riber, and Michael Hauschild. *Waste Management & Research*, Jun 2007; vol. 25: pp. 257 – 262.

²"Are You Food Scraps and Water Heating The Planet?" Vol. 32 Number 1, Spring/Summer 2008, www.ecocycle.org.

³"Food Scrap Recycling, Make It Second Nature" www.stopwaste.org

⁴(Kantor et al.1997). Kantor, L.S., K. Lipton, A. Manchester, and V. Oliveira. 1997. Estimating and addressing America's food losses. *Food Review* 20 (1).

By submitting this proposal, Terra Firma Organics agrees that **1% for the Tetons** has the right to utilize the supporting data however it sees fit, including publishing it.

Further: if this application is funded, Terra Firma Organics agrees that **1% for the Tetons** may publish the application in its entirety, including the follow-up evaluation and outcomes report.

Submitted by:

Penny McBride\Consultant
Name & Title

Terra Firma Organics
Organization

June
Date

Name & Title

Organization

Date

If applicant is sponsored by another organization, please provide a signature, name and title of its responsible party.

Heather Overholser\Executive Director
Name & Title

Jackson Community
Organization

Name & Title

Organization

Signature

