

51614

Sampling and Analysis Plan

Food Waste Recovery and Recycling Project Grant IG1-14

Submitted to the Florida Department of Environmental Protection on May 27, 2003, by
Sarasota County

Prepared by Resource Management Group, Inc.

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1. Introduction

1.1 Project Description

Sarasota County, under a State of Florida Department of Environmental Protection Innovative Recycling Grant, was to conduct a three-tiered food reuse and recycling project in cooperation with local organizations. The production of compost made from organic solid waste (food residuals and food soiled paper products) was a primary component of this program.

The concept of a sampling plan that goes beyond compliance is an outgrowth of Sarasota County's desire to commercialize composting of food discards mixed with yard trimmings. During the County's attempt to site a composting facility on a farm and, later, an unlined section of the Central County Solid Waste Disposal Complex, barriers were encountered to facility permitting.

The project is moving forward as a pilot program. The primary purpose of this pilot is to collect data about the environmental impacts, particularly on water quality, that a composting facility produces. Does a food waste composting facility adversely affect water quality, and is the final product safe for commercial distribution?

Sarasota's experience is that the current standards for construction and operation of a composting facility make cost too high to encourage this type of waste reduction. If sampling can demonstrate that environmental risks are minimized, it is hoped that FDEP and the legislature will consider regulatory changes or exemptions for compost facilities that adhere to certain best management practices.

1.2 Project Scope and Purpose

The purpose of this project is to collect data on the physical and chemical properties of source-separated organic waste, storm and yard debris, the compost produced from their decomposition, and the leachate produced during the processing of these wastes into marketable compost.

The sampling and analysis of leachate, waste, and compost will take place over a period of approximately four months beginning on May 28, 2003. Sampling will be conducted during all phases of the composting process. Attached is a projected sampling schedule for the first two weeks of the project. As discussed below, this sampling will determine the type and frequency of future analytical work.

1.3 Project Organization

As mentioned previously, this project is being funded by FDEP. Sarasota County is overseeing the project and dispensing funds. The project will be operated on County-owned land. FDEP Tampa District has permitted the facility (permit #200819-001-SO) and included in this permit guidelines for analytical parameters that may be useful to the Department. FDEP Tallahassee has provided input on the sampling plan and will be responsible for any rule changes that come about as a result of this project.

Resource Management Group, Inc. (RMG) is the consulting firm responsible for the specific implementation of the project's activities and goals and will operate the facility on a day-to-day basis. RMG is also responsible for sampling plan development and sample collection. ELAB, Inc. will analyze samples submitted by RMG and dispense data to the County. Outlined below are individuals involved in the project, their respective roles and contact information.

<u>Name and Organization</u>	<u>Involvement</u>
Larry Alexander Onyx Waste Management 941 486-0085 llalexander@superiorserve.com	Landfill Operations Manager Manages Landfill operations under contract to County. Responsible for Landfill leachate management.
Gary Bennett Sarasota County 941 861-1571 gbennett@co.sarasota.fl.us	General Manager Solid Waste office at the County.
Suzanne Boroff FDEP, Tallahassee 850 245-8718 suzanne.boroff@dep.state.fl.us	Project Manager for Tallahassee FDEP. Manages the FDEP grant.
Frank Desteno Sarasota County 941 861-6361 fdesteno@scgov.net	Responsible for quality control of data received by the County.
Kim Ford FDEP, Tampa District 813-744-6100 kim.ford@dep.state.fl.us	PE for Tampa District Solid Waste Section; Regulator responsible for permitting the facility and managing compliance.
Cory Jamieson Resource Management Group 941-358-7730 cory@rmg.us	Responsible for design and implementation of sampling plan.
Francine Joyal FDEP, Tallahassee 850 245-8747 Francine.Joyal@dep.state.fl.us	Provides FDEP input on sampling plan and regulatory affairs.
Jean Nutter Sarasota County 941 861-1535 JNUTTER@co.sarasota.fl.us	Project Manager for Sarasota County. Receives data and disseminates to appropriate parties.
Susan Pelz FDEP, Tampa District 813 744-6100 susan.pelz@dep.state.fl.us	PE for Tampa District Solid Waste Section. Provides assistance in sampling plan development.

<u>Name and Organization</u>	<u>Involvement</u>
Bob Sleep Resource Management Group 941 727-1268 Robesleep@aol.com	PE and manager of equipment and facility operation.
Joe Vondrick ELAB, Inc 386 672-5668 JVondric@elabusa.com	Project manager for ELAB, responsible for receiving and analyzing samples
Jesse White Resource Management Group 941-358-7730 jesse@rmg.us	President of RMG; has bottom line responsibility for managing the project for RMG
Paul Wingler Sarasota County 941 861-1578 pwingler@co.sarasota.fl.us	PE for the County and responsible for landfill management

2. Data Quality Objectives (DQO)

2.1 Data Use

The data produced by this project will be provided to the Florida Department of Environmental Protection for the purpose of assessing the environmental impacts of composting. The department will make decisions concerning the applicability of current regulations to the composting methods utilized during this project, and to compost facilities in general.

Specifically the permitting requirements of future facilities using the practices demonstrated in this project will be considered. If the data warrants rule modifications or special exemptions then the Department will act according to internal procedures for decision-making, data review, and rule changes.

Permit-required compliance monitoring will be used to maintain operations of the facility and classify the final product for end use application as outlined in 62-709.550 and 62-709.600.

2.2 Data Quality

The data provided to the Department will give assurances that the analytes of interest either do or do not exist in a given matrix at the applicable regulatory threshold. This data quality will be pursued for both compliance monitoring and data gathering objectives.

If no regulatory threshold exists for a parameter then the preferred method's MDL will be appropriate for characterizing the parameter's presence. Specifically the data will

be presented and compared to a regulatory threshold, if applicable, with a two-tailed t-test at 80% confidence as recommended in SW 846 chapter nine.

Quality assurance actions will be taken to guarantee data quality. All pertinent quality control measures will be adhered to and applicable quality control programs will be complied with. These items include laboratory and field quality control samples, adherence to Department standard operating procedures and laboratory certification. These items are referenced specifically in section 3.1.

2.2.1 Parameters and Thresholds

The specific parameters fall into two categories: those parameters required by permit for regulatory compliance and those that provide useful information on the environmental impacts of the processes or final product. Those that are monitored for permit compliance are listed in 62-709.530 (1)(a) and (c) and apply to the finished compost product. These parameters are included in Appendix A, Table 4 for convenience.

Parameters that will characterize the potential environmental impact of the product include metals, as well as chlorinated and organophosphorous pesticides (See Appendix A, Table 3). The collection and analysis will provide data to the department that is of sufficient quality to assure that these parameters are, or are not present at levels of concern in the compost produced. Specifically the regulatory thresholds for these parameters are found in 62-777 Table II: Soil Cleanup Target Levels for residential areas (if a threshold exists for the parameter). In addition, metal content will be compared with those levels found in section 62-709.550 (1) (e) for code I classification.

Leachate from the facility will be analyzed for its effect on water quality. Therefore it will be tested for those parameters outlined in 62-701.510 (8) (a) and (b), as well as chlorinated and organo-phosphorous pesticides. This data will be of sufficient quality to draw conclusions about the presence and concentrations of these parameters in leachate at levels of concern. The regulatory thresholds for these parameters are found in 62-302.530 Table: Criteria for Surface Water Classification. The analysis of these analytes will be of sufficient sensitivity to compare their levels to those required for Class I surface water. Organophosphorous and chlorinated pesticides will be compared with their cleanup target levels as found in 62-777 Table 1 (if a threshold exists for the parameter).

The waste will be analyzed for organic matter as required by permit in 62-709.530 (1)(g). Chlorinated and organophosphorous pesticides and nutrient information will be sampled for product and process evaluation. The analysis of wastes will include those parameters listed in Table 2 of Appendix A.

2.3 Analytical Methods

The laboratory methods used for this project were selected based on their ability to test for the analyte of concern in the applicable matrices at a level of precision

consistent with the thresholds for that analyte and applicable rule or Department recommendations. These methods are summarized in Appendix A.

A Synthetic Precipitation Leaching Procedure (SPLP), Solid Waste method 1312 will be used in addition to those methods outlined in Appendix A. This method will be used to characterize the waste's leaching properties and compare it to field collected leachate samples. This method will be performed on both solid waste received (Site B on Figure 1) and the finished compost (Site C on Figure 1). The individual parameters are outlined in the method.

3. Data Quality Indicators

3.1 Quality Control Measures

ELAB, Inc. will be the primary laboratory used for processing samples produced by this project and the only laboratory used for those parameters outlined in this sampling plan. ELAB is NELAC certified for all parameters and methods outlined herein. Certification information is available upon request. ELAB currently processes samples produced by Sarasota County's solid waste disposal complex.

FDEP SOP 001/01 will be followed for all sampling procedures. All requisite documentation will be recorded and filed (see section 5).

ELAB will provide sampling kits for the project. A qualified QA officer will check these kits for compliance with SOP 001/01. All data received and disseminated by the County shall be checked by qualified personnel for data quality.

4. Field Activities

4.1 Sampling Design

This sampling plan is designed to provide a representative body of data about composting and its by-products. Because little preliminary data exists for this project, more samples will be collected than are estimated as necessary to adequately characterize the process. Samples will be taken at the composting facility on cell 3 at Sarasota County's Central County Solid Waste Disposal Complex (CCSWDC), 4000 Knights Trail Rd., Nokomis FL, 34275. Samples will be taken from 3 sites at the facility as illustrated in Figure 1 –Sampling Sites.

4.1.1 Leachate

Leachate will be sampled from site A, the leachate bucket. This is where the vast majority of leachate from the facility will collect, and all the leachate from the receiving and mixing process will be collected.

Samples will be taken during every instance that leachate appears in the collection bucket until the data collected is believed to provide sufficient information as to the

appropriate number and frequency of future sampling. All leachate sampling and analysis is for data collection only and is not related to permit compliance.

4.1.2 Waste

Waste will be sampled at site B, the receiving pad. The nature of the project is such that the waste will be fairly heterogeneous upon receipt and its potential to contain unwanted material is relatively high. Therefore, for the purposes of data quality, generator characterization, and management concerns, the waste will be sampled every day waste is received for the first 5 days the facility receives waste, and then as needed determined by the results and data quality indicators. Waste sampling, outside of testing for organic matter content, is for data collection only and is not related to permit compliance.

4.1.3 Compost

Compost will be sampled at site C, the Ag-Bag area. A three-part composite will be sufficient to characterize the compost as recommended in 62-709.530 (1)(e). Some of the Compost sampling is permit compliance required while the remainder is for data collection purposes, these groups are delineated in Appendix A.

4.2 Sampling Locations and Collection Methods

4.2.1 Locations

Sampling locations are illustrated in Figure 1 and their respective sampling methods are outlined in this section and in the Appendices. Samples will be taken from four sites during the course of the project: the leachate collection bucket (Site A), which collects runoff from the receiving pad; the receiving pad itself (Site B), the Ag-Bag area (Site C), and a mulch windrow offsite (Site D). All permit required compliance monitoring will take place in Site B and Site C.

4.2.2 Collection methods

Collections will be taken using methods from the Florida Department of Environmental Protection Standard Operating Procedures and methods for sampling compost found in DEP form 62-160.900(3) (Revised 6-96) Quality Assurance Project Plan for Testing Compost

Leachate will be sampled from the collection bucket using the grab sample technique for surface waters outlined in DEP-SOP 001/01 FS2100. These procedures will be followed for all samples taken from the collection bucket at Site A. Sampling equipment and applicable preservatives will be supplied by the analytical laboratory (discussed in section 1.3) and will adhere to the standards set forth in Table FS 1000-4 of DEP-SOP 001/01, and outlined in Table 2.

Waste will be sampled on the receiving pad using the methods described in section 6.1 of the Quality Assurance Project Plan for Compost Made From Solid Waste, which is included in Appendix B. Materials for sampling will be provided by the laboratory and

will conform to DEP SOP 001/01 Tables FS 1000-3 and 1000-7 as outlined in Appendix A Table 2.

Compost will be sampled using procedures described in section 6.2 of the Quality Assurance Project Plan for Compost Made From Solid Waste, as included in Appendix B. Materials and equipment will be supplied by the laboratory and will adhere to DEP SOP 001/01 Tables FS 1000-2 and 1000-6 and applicable procedures.

4.3 Field Testing Activities

Field testing of materials and leachate will take place at the sampling locations illustrated in Figure 1. All field sampling is for data collection purposes and does not constitute permit compliance monitoring. Leachate at site A will be tested using the following SOPS for the field parameters below:

- Temperature – FT1400
- pH - FT1100
- Conductance – FT1200
- Turbidity – FT1600
- Dissolved Oxygen – FT1500

All instruments and associated equipment will conform to the above SOPs. These measurement will be taken at least during every sampling event for leachate.

Compost will be monitored for the following field parameters:

- Temperature – FT1400
- pH - FT1100

All instruments and associated equipment will conform to the above SOPs. Measurements for temperature will be taken at least daily. Measurements for pH will be taken at least every time there is a sampling event for compost.

5. Documentation

All analytical data submitted to the Department will be accompanied by the applicable documentation. This documentation will conform to FDEP SOP 001/01 FD 1000.

All data reported by the laboratory will conform to NELAC standards for data presentation and reporting. Included with this documentation will be the appropriate chain of custody information.

All field data collected and reported will be recorded according to FDEP SOP 001/01 FT 1000 section 4.1 and 4.2.

Appendix A, Table 1 - Leachate Parameters and Methods

Leachate Parameter (Site A)*	CAS #	Water Method
Field Parameters		
Colors/Sheens		observe
Specific Conductance		FT 1200
DO - Dissolved Oxygen		FT 1500
pH		FT 1100
Salinity		FT 1300
Temperature		FT 1400
Turbidity		FT 1600
Physical/Biological Characteristics		
BOD5 - Biochemical Oxygen Demand		EPA 405.1
Chlorophyll a		SM10200H
COD - Chemical Oxygen Demand		EPA 410.4
Fecal Coliform		SM9222D
TDS - Total Dissolved Solids		EPA160.1
Total Hardness		EPA200.7
Total Organic Carbon		EPA415.1
TSS - Total Suspended Solids		EPA160.2
Metals		
Antimony.	Total	SW6010B
Arsenic	Total	SW6010B
Barium	Total	SW6010B
Beryllium	Total	SW6010B
Cadmium	Total	SW6010B
Chromium	Total	SW6010B
Cobalt	Total	SW6010B
Copper	Total	SW6010B
Iron	Total	SW6010B
Lead	Total	SW6010B
Mercury	Total	SW6010B
Nickel	Total	SW6010B
Selenium	Total	SW6010B
Silver	Total	SW6010B
Sodium	Total	SW6010B
Thallium	Total	SW6010B
Vanadium	Total	SW6010B
Zinc	Total	SW6010B
Inorganic Nonmetallics		
Ammonia -N		350.1
Unionized Ammonia		calc.
Chlorides		EPA300
Kjeldahl Nitrogen		EPA351.2
Nitrates/Nitrites		EPA353.2
Phosphates	Total	365.1
Nitrogen	Total	EPA353.2+351.2
Volatile Organics		
Acetone	67-64-1	SW8260B
Acrylonitrile	107-13-1	SW8260B

Appendix A, Table 1 - Leachate Parameters and Methods

Leachate Parameter (Site A)*	CAS #	Water Method
Benzene	71-43-2	SW8260B
Bromochloromethane	74-97-5	SW8260B

Appendix A, Table 1 - Leachate Parameters and Methods

Leachate Parameter (Site A)*	CAS #	Water Method
Bromodichloromethane	75-27-4	SW8260B
Bromoform; Tribromomethane	75-25-2	SW8260B
Carbon disulfide	75-15-0	SW8260B
Carbon tetrachloride	56-23-5	SW8260B
Chlorobenzene	108-90-7	SW8260B
Chloroethane; Ethyl chloride	75-00-3	SW8260B
Chloroform; Trichloromethane	67-66-3	SW8260B
Dibromochloromethane; Chlorodibromomethane	124-48-1	SW8260B
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	SW8260B
1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4	SW8260B
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	SW8260B
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	SW8260B
trans-1,4-Dichloro-2-butene	110-57-6	SW8260B
1,1-Dichloroethane; Ethylidene chloride	75-34-3	SW8260B
1,2-Dichloroethane; Ethylene dichloride	107-06-2	SW8260B
1,1-Dichloroethylene; 1,1-Dichloroethene	75-35-4	SW8260B
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	SW8260B
trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5	SW8260B
1,2-Dichloropropane; Propylene dichloride	78-87-5	SW8260B
cis-1,3-Dichloropropene	10061-01-5	SW8260B
trans-1,3-Dichloropropene	10061-02-6	SW8260B
Ethylbenzene	100-41-4	SW8260B
2-Hexanone; Methyl butyl ketone	591-78-6	SW8260B
Methyl bromide; Bromomethane	74-83-9	SW8260B
Methyl chloride; Chloromethane	74-87-3	SW8260B
Methylene bromide; Dibromomethane	74-95-3	SW8260B
Methylene chloride; Dichloromethane	75-09-2	SW8260B
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	SW8260B
Methyl iodide; Iodomethane	74-88-4	SW8260B
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	SW8260B
Styrene	100-42-5	SW8260B
1,1,1,2-Tetrachloroethane	630-20-6	SW8260B
1,1,2,2-Tetrachloroethane	79-34-5	SW8260B
Tetrachloroethylene; Tetrachloroethene	127-18-4	SW8260B
Toluene	108-88-3	SW8260B
1,1,1-Trichloroethane; Methylchloroform	71-55-6	SW8260B
1,1,2-Trichloroethane	79-00-5	SW8260B
Trichloroethylene; Trichloroethene	79-01-6	SW8260B
Trichlorofluoromethane; CFC-11	75-69-4	SW8260B
1,2,3-Trichloropropane	96-18-4	SW8260B
Vinyl acetate	108-05-4	SW8260B
Vinyl chloride	75-01-4	SW8260B
Xylenes	1330-20-7	SW8260B

Appendix A, Table 1 - Leachate Parameters and Methods

Leachate Parameter (Site A)*	CAS #	Water Method
Chlorinated Pesticides		
Aldrin	309-00-2	SW8081B
-BHC	319-84-6	SW8081B
-BHC	319-85-7	SW8081B
-BHC (Lindane)	58-89-9	SW8081B
-BHC	319-86-8	SW8081B
Chlorobenzilate	510-15-6	SW8081B
-Chlordane	5103-71-9	SW8081B
-Chlordane	5103-74-2	SW8081B
Chlordane	57-74-9	SW8081B
DBCP	96-12-8	SW8081B
4,4'-DDD	72-54-8	SW8081B
4,4'-DDE	72-55-9	SW8081B
4,4'-DDT	50-29-3	SW8081B
Dieldrin	60-57-1	SW8081B
Endosulfan I	959-98-8	SW8081B
Endosulfan II	33213-65-9	SW8081B
Endosulfan sulfate	1031-07-8	SW8081B
Endrin	72-20-8	SW8081B
Endrin aldehyde	7421-93-4	SW8081B
Endrin ketone	53494-70-5	SW8081B
Heptachlor	76-44-8	SW8081B
Heptachlor epoxide	1024-57-3	SW8081B
Hexachlorobenzene	118-74-1	SW8081B
Hexachlorocyclopentadiene	77-47-4	SW8081B
Methoxychlor	72-43-5	SW8081B
Mirex	2385-85-5	SW8081B
Strombane		SW8081B
Toxaphene	8001-35-2	SW8081B
Trifluralin (Treflan)	1582-09-8	SW8081B
Organophosphorus Pesticides		
Atrazine		SW8141A
Azinphos-methyl	86-50-0	SW8141A
Azinphos-ethyl	2642-71-9	SW8141A
Bolstar(Sulprofos)	35400-43-2	SW8141A
Carbophenothion	786-19-6	SW8141A
Chlorfenvinphos	470-90-6	SW8141A
Chlorpyrifos	2921-88-2	SW8141A
Coumaphos	56-72-4	SW8141A
Demeton-O	8065-48-3	SW8141A
Demeton-S	8065-48-3	SW8141A
Diazinon	333-41-5	SW8141A
Dichlorofenthion	97-17-6	SW8141A
Dichlorvos(DDVP)	62-73-7	SW8141A
Dimethoate	60-51-5	SW8141A
Dioxathion	78-34-2	SW8141A

Appendix A, Table 1 - Leachate Parameters and Methods

Leachate Parameter (Site A)*	CAS #	Water Method
Disulfoton	298-04-4	SW8141A
EPN	2104-64-5	SW8141A
Ethion	563-12-2	SW8141A
Ethoprop	13194-48-4	SW8141A
Famphur	52-85-7	SW8141A
Fensulfothion	115-90-2	SW8141A
Fenthion	55-38-9	SW8141A
Leptophos	21609-90-5	SW8141A
Malathion	121-75-5	SW8141A
Merphos	150-50-5	SW8141A
Mevinphos	7786-34-7	SW8141A
Monocrotophos	6923-22-4	SW8141A
Naled	300-76-5	SW8141A
Parathion, ethyl	56-38-2	SW8141A
Parathion, methyl	298-00-0	SW8141A
Phorate	298-02-2	SW8141A
Phosmet	732-11-6	SW8141A
Phoshamidon	13171-21-6	SW8141A
Ronnel	299-84-3	SW8141A
Stirophos(Tetrachlorovinphos)	22248-79-9	SW8141A
Sulfotepp	3689-24-5	SW8141A
TEPP	21646-99-1	SW8141A
Terbufos	13071-79-9	SW8141A
Thionazin(Zinophos)	297-97-2	SW8141A
Tokuthion(Prototiofos)	34643-46-4	SW8141A
Trichloronate	327-98-0	SW8141A

* Grab samples will be collected for leachate. All parameters in the list will be compared with regulatory thresholds for Class I surface water found in 62-302.530 Table: Criteria for Surface Water Classification (if applicable).

Appendix A, Table 2 - Waste Parameters and Methods

Waste Parameter (Site B)*	CAS #	Waste Method
Field Parameters		
Temperature	na	FT 1400
Physical/Biological Characteristics		
Moisture		EPA 160.3
Total Kjedahl Nitrogen		EPA 351.2
Total NO ₃ -NO ₂		EPA 353
Fecal Coliform		SM9221C (MPN)
Total Phosphorous		EPA365.1
Total Potassium		EPA200.7
Organic Matter (TVS)		EPA160.4
Foreign Matter		62.709.530 (1)(f)
Metals		
Antimony.	Total	SW6010B
Arsenic	Total	SW6010B
Barium	Total	SW6010B
Beryllium	Total	SW6010B
Cadmium	Total	SW6010B
Chromium	Total	SW6010B
Cobalt	Total	SW6010B
Copper	Total	SW6010B
Iron	Total	SW6010B
Lead	Total	SW6010B
Mercury	Total	SW6010B
Nickel	Total	SW6010B
Selenium	Total	SW6010B
Silver	Total	SW6010B
Sodium	Total	SW6010B
Thallium	Total	SW6010B
Vanadium	Total	SW6010B
Zinc	Total	SW6010B
Inorganic Nonmetallics		
Ammonia -N		350.1
Unionized Ammonia		calc.
Chlorides		EPA300
Nitrates		EPA300
Phosphates	Total	365.1
Nitrogen	Total	EPA353+351.2
Volatile Organics		
Acetone	67-64-1	SW8260B
Acrylonitrile	107-13-1	SW8260B
Benzene	71-43-2	SW8260B
Bromochloromethane	74-97-5	SW8260B
Bromodichloromethane	75-27-4	SW8260B
Bromoform; Tribromomethane	75-25-2	SW8260B
Carbon disulfide	75-15-0	SW8260B
Carbon tetrachloride	56-23-5	SW8260B
Chlorobenzene	108-90-7	SW8260B
Chloroethane; Ethyl chloride	75-00-3	SW8260B

Appendix A, Table 2 - Waste Parameters and Methods

Waste Parameter (Site B)*	CAS #	Waste Method
Chloroform; Trichloromethane	67-66-3	SW8260B
Dibromochloromethane; Chlorodibromomethane	124-48-1	SW8260B
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	SW8260B
1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4	SW8260B
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	SW8260B
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	SW8260B
trans-1,4-Dichloro-2-butene	110-57-6	SW8260B
1,1-Dichloroethane; Ethylidene chloride	75-34-3	SW8260B
1,2-Dichloroethane; Ethylene dichloride	107-06-2	SW8260B
1,1-Dichloroethylene; 1,1-Dichloroethene	75-35-4	SW8260B
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	SW8260B
trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5	SW8260B
1,2-Dichloropropane; Propylene dichloride	78-87-5	SW8260B
cis-1,3-Dichloropropene	10061-01-5	SW8260B
trans-1,3-Dichloropropene	10061-02-6	SW8260B
Ethylbenzene	100-41-4	SW8260B
2-Hexanone; Methyl butyl ketone	591-78-6	SW8260B
Methyl bromide; Bromomethane	74-83-9	SW8260B
Methyl chloride; Chloromethane	74-87-3	SW8260B
Methylene bromide; Dibromomethane	74-95-3	SW8260B
Methylene chloride; Dichloromethane	75-09-2	SW8260B
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	SW8260B
Methyl iodide; Iodomethane	74-88-4	SW8260B
4-Methyl-2-pentanone; Methyl isobutyl keto	108-10-1	SW8260B
Styrene	100-42-5	SW8260B
1,1,1,2-Tetrachloroethane	630-20-6	SW8260B
1,1,2,2-Tetrachloroethane	79-34-5	SW8260B
Tetrachloroethylene; Tetrachloroethene	127-18-4	SW8260B
Toluene	108-88-3	SW8260B
1,1,1-Trichloroethane; Methylchloroform	71-55-6	SW8260B
1,1,2-Trichloroethane	79-00-5	SW8260B
Trichloroethylene; Trichloroethene	79-01-6	SW8260B
Trichlorofluoromethane; CFC-11	75-69-4	SW8260B
1,2,3-Trichloropropane	96-18-4	SW8260B
Vinyl acetate	108-05-4	SW8260B
Vinyl chloride	75-01-4	SW8260B
Xylenes	1330-20-7	SW8260B
Chlorinated Pesticides		
Aldrin	309-00-2	SW8081B
-BHC	319-84-6	SW8081B
-BHC	319-85-7	SW8081B
-BHC (Lindane)	58-89-9	SW8081B
-BHC	319-86-8	SW8081B
Chlorobenzilate	510-15-6	SW8081B
-Chlordane	5103-71-9	SW8081B
-Chlordane	5103-74-2	SW8081B
Chlordane	57-74-9	SW8081B
DBCP	96-12-8	SW8081B

Appendix A, Table 2 - Waste Parameters and Methods

Waste Parameter (Site B)*	CAS #	Waste Method
4,4'-DDD	72-54-8	SW8081B
4,4'-DDE	72-55-9	SW8081B
4,4'-DDT	50-29-3	SW8081B
Dieldrin	60-57-1	SW8081B
Endosulfan I	959-98-8	SW8081B
Endosulfan II	33213-65-	SW8081B
Endosulfan sulfate	1031-07-8	SW8081B
Endrin	72-20-8	SW8081B
Endrin aldehyde	7421-93-4	SW8081B
Endrin ketone	53494-70-	SW8081B
Heptachlor	76-44-8	SW8081B
Heptachlor epoxide	1024-57-3	SW8081B
Hexachlorobenzene	118-74-1	SW8081B
Hexachlorocyclopentadiene	77-47-4	SW8081B
Methoxychlor	72-43-5	SW8081B
Mirex	2385-85-5	SW8081B
Strombane		SW8081B
Toxaphene	1582-09-8	SW8081B
Trifluralin (Treflan)	1582-09-8	SW8081B
Organophosphorus Pesticides		
Atrazine		SW8141A
Azinphos-methyl	86-50-0	SW8141A
Azinphos-ethyl	2642-71-9	SW8141A
Bolstar(Sulprofos)	35400-43-2	SW8141A
Carbophenothion	786-19-6	SW8141A
Chlorfenvinphos	470-90-6	SW8141A
Chlorpyrifos	2921-88-2	SW8141A
Coumaphos	56-72-4	SW8141A
Demeton-O	8065-48-3	SW8141A
Demeton-S	8065-48-3	SW8141A
Diazinon	333-41-5	SW8141A
Dichlorofenthion	97-17-6	SW8141A
Dichlorvos(DDVP)	62-73-7	SW8141A
Dimethoate	60-51-5	SW8141A
Dioxathion	78-34-2	SW8141A
Disulfoton	298-04-4	SW8141A
EPN	2104-64-5	SW8141A
Ethion	563-12-2	SW8141A
Ethoprop	13194-48-4	SW8141A
Famphur	52-85-7	SW8141A
Fensulfothion	115-90-2	SW8141A
Fenthion	55-38-9	SW8141A
Leptophos	21609-90-5	SW8141A
Malathion	121-75-5	SW8141A
Merphos	150-50-5	SW8141A
Mevinphos	7786-34-7	SW8141A
Monocrotophos	6923-22-4	SW8141A

Appendix A, Table 2 - Waste Parameters and Methods

Waste Parameter (Site B)*	CAS #	Waste Method
Naled	300-76-5	SW8141A
Parathion, ethyl	56-38-2	SW8141A
Parathion, methyl	298-00-0	SW8141A
Phorate	298-02-2	SW8141A
Phosmet	732-11-6	SW8141A
Phosphamidon	13171-21-6	SW8141A
Ronnel	299-84-3	SW8141A
Stirophos(Tetrachlorovinphos)	22248-79-9	SW8141A
Sulfotep	3689-24-5	SW8141A
TEPP	21646-99-1	SW8141A
Terbufos	13071-79-9	SW8141A
Thionazin(Zinophos)	297-97-2	SW8141A
Tokuthion(Protothiofos)	34643-46-4	SW8141A
Trichloronate	327-98-0	SW8141A

* Waste will be sampled and composited as outlined in Appendix B. These parameters will be analyzed with sufficient sensitivity to compare their levels with those of 62-777 Table II: Soil Cleanup Target Levels

Appendix A, Table 3 - Compost Parameters and Methods

Compost Parameter (Site C)*		CAS #	Soil Method
Field Parameters			
Oxygen			FT 1500
Carbon Dioxide			FT 1100
Temperature			FT 1400
Physical/Biological Characteristics			
pH			SW9045
Moisture			EPA 160.3
Fecal Coliform			SM9221C (MPN)
Organic Matter (TVS)			EPA160.4
Reduction in Organic Matter (ROM)			62-709.530(1)(g)
Foreign Matter			62.709.530 (1)(f)
Metals			
Antimony	Total		SW6010B
Arsenic	Total		SW6010B
Barium	Total		SW6010B
Beryllium	Total		SW6010B
Cadmium	Total		SW6010B
Chromium	Total		SW6010B
Cobalt	Total		SW6010B
Copper	Total		SW6010B
Iron	Total		SW6010B
Lead	Total		SW6010B
Mercury	Total		SW6010B
Nickel	Total		SW6010B
Selenium	Total		SW6010B
Silver	Total		SW6010B
Sodium	Total		SW6010B
Thallium	Total		SW6010B
Vanadium	Total		SW6010B
Zinc	Total		SW6010B
Inorganic Nonmetallics			
Ammonia -N			EPA350.1
Unionized Ammonia			calc.
Total Kjedahl Nitrogen			EPA 351.2
Total NO ₃ -NO ₂			EPA 353.2
Total Phosphorous	Total		EPA365.1
Total Potassium	Total		EPA200.7
Chlorides			EPA300
Nitrates			EPA300
Phosphates	Total		365.1
Nitrogen	Total		EPA353.2+351.2
Volatile Organics			
Acetone	67-64-1		SW8260B
Acrylonitrile	107-13-1		SW8260B
Benzene	71-43-2		SW8260B
Bromochloromethane	74-97-5		SW8260B
Bromodichloromethane	75-27-4		SW8260B

Appendix A, Table 3 - Compost Parameters and Methods

Compost Parameter (Site C)*	CAS #	Soil Method
Bromoform; Tribromomethane	75-25-2	SW8260B
Carbon disulfide	75-15-0	SW8260B
Carbon tetrachloride	56-23-5	SW8260B
Chlorobenzene	108-90-7	SW8260B
Chloroethane; Ethyl chloride	75-00-3	SW8260B
Chloroform; Trichloromethane	67-66-3	SW8260B
Dibromochloromethane; Chlorodibromomethane	124-48-1	SW8260B
1,2-Dibromo-3-chloropropane; DBCP	96-12-8	SW8011B
1,2-Dibromoethane; Ethylene dibromide; EDB	106-93-4	SW8011B
o-Dichlorobenzene; 1,2-Dichlorobenzene	95-50-1	SW8260B
p-Dichlorobenzene; 1,4-Dichlorobenzene	106-46-7	SW8260B
trans-1,4-Dichloro-2-butene	110-57-6	SW8260B
1,1-Dichloroethane; Ethylidene chloride	75-34-3	SW8260B
1,2-Dichloroethane; Ethylene dichloride	107-06-2	SW8260B
1,1-Dichloroethylene; 1,1-Dichloroethene	75-35-4	SW8260B
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	SW8260B
trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene	156-60-5	SW8260B
1,2-Dichloropropane; Propylene dichloride	78-87-5	SW8260B
cis-1,3-Dichloropropene	10061-01-5	SW8260B
trans-1,3-Dichloropropene	10061-02-6	SW8260B
Ethylbenzene	100-41-4	SW8260B
2-Hexanone; Methyl butyl ketone	591-78-6	SW8260B
Methyl bromide; Bromomethane	74-83-9	SW8260B
Methyl chloride; Chloromethane	74-87-3	SW8260B
Methylene bromide; Dibromomethane	74-95-3	SW8260B
Methylene chloride; Dichloromethane	75-09-2	SW8260B
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	SW8260B
Methyl iodide; Iodomethane	74-88-4	SW8260B
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	SW8260B
Styrene	100-42-5	SW8260B
1,1,1,2-Tetrachloroethane	630-20-6	SW8260B
1,1,2,2-Tetrachloroethane	79-34-5	SW8260B
Tetrachloroethylene; Tetrachloroethene	127-18-4	SW8260B
Toluene	108-88-3	SW8260B
1,1,1-Trichloroethane; Methylchloroform	71-55-6	SW8260B
1,1,2-Trichloroethane	79-00-5	SW8260B
Trichloroethylene; Trichloroethene	79-01-6	SW8260B
Trichlorofluoromethane; CFC-11	75-69-4	SW8260B
1,2,3-Trichloropropane	96-18-4	SW8260B
Vinyl acetate	108-05-4	SW8260B
Vinyl chloride	75-01-4	SW8260B
Xylenes	1330-20-7	SW8260B
Chlorinated Pesticides		
Aldrin	309-00-2	SW8081B
-BHC	319-84-6	SW8081B
-BHC	319-85-7	SW8081B
-BHC (Lindane)	58-89-9	SW8081B
-BHC	319-86-8	SW8081B

Appendix A, Table 3 - Compost Parameters and Methods

Compost Parameter (Site C)*	CAS #	Soil Method
Chlorobenzilate	510-15-6	SW8081B
-Chlordane	5103-71-9	SW8081B
-Chlordane	5103-74-2	SW8081B
Chlordane	57-74-9	SW8081B
DBCP	96-12-8	SW8081B
4,4'-DDD	72-54-8	SW8081B
4,4'-DDE	72-55-9	SW8081B
4,4'-DDT	50-29-3	SW8081B
Dieldrin	60-57-1	SW8081B
Endosulfan I	959-98-8	SW8081B
Endosulfan II	33213-65-9	SW8081B
Endosulfan sulfate	1031-07-8	SW8081B
Endrin	72-20-8	SW8081B
Endrin aldehyde	7421-93-4	SW8081B
Endrin ketone	53494-70-5	SW8081B
Heptachlor	76-44-8	SW8081B
Heptachlor epoxide	1024-57-3	SW8081B
Hexachlorobenzene	118-74-1	SW8081B
Hexachlorocyclopentadiene	77-47-4	SW8081B
Methoxychlor	72-43-5	SW8081B
Mirex	2385-85-5	SW8081B
Strombane		SW8081B
Toxaphene	8001-35-2	SW8081B
Trifluralin (Treflan)	1582-09-8	SW8081B
Organophosphorus Pesticides		
Atrazine		SW8141A
Azinphos-methyl	86-50-0	SW8141A
Azinphos-ethyl	2642-71-9	SW8141A
Bolstar(Sulprofos)	35400-43-2	SW8141A
Carbophenothion	786-19-6	SW8141A
Chlorfenvinphos	470-90-6	SW8141A
Chlorpyrifos	2921-88-2	SW8141A
Coumaphos	56-72-4	SW8141A
Demeton-O	8065-48-3	SW8141A
Demeton-S	8065-48-3	SW8141A
Diazinon	333-41-5	SW8141A
Dichlorofenthion	97-17-6	SW8141A
Dichlorvos(DDVP)	62-73-7	SW8141A
Dimethoate	60-51-5	SW8141A
Dioxathion	78-34-2	SW8141A
Disulfoton	298-04-4	SW8141A
EPN	2104-64-5	SW8141A
Ethion	563-12-2	SW8141A
Ethoprop	13194-48-4	SW8141A
Famphur	52-85-7	SW8141A
Fensulfothion	115-90-2	SW8141A
Fenthion	55-38-9	SW8141A

Appendix A, Table 3 - Compost Parameters and Methods

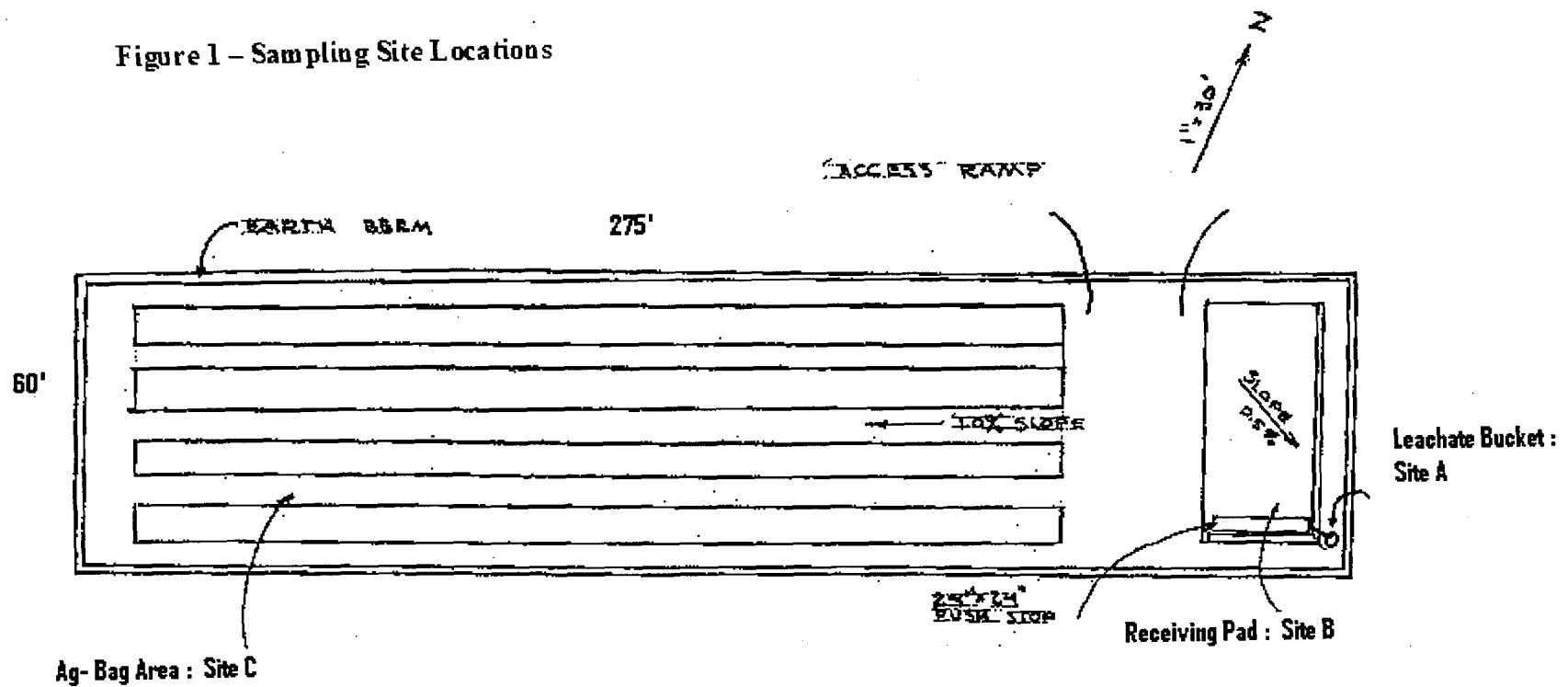
Compost Parameter (Site C)*	CAS #	Soil Method
Leptophos	21609-90-5	SW8141A
Malathion	121-75-5	SW8141A
Merphos	150-50-5	SW8141A
Mevinphos	7786-34-7	SW8141A
Monocrotophos	6923-22-4	SW8141A
Naled	300-76-5	SW8141A
Parathion, ethyl	56-38-2	SW8141A
Parathion, methyl	298-00-0	SW8141A
Phorate	298-02-2	SW8141A
Phosmet	732-11-6	SW8141A
Phoshamidon	13171-21-6	SW8141A
Ronnel	299-84-3	SW8141A
Stirophos(Tetrachlorovinphos)	22248-79-9	SW8141A
Sulfotepp	3689-24-5	SW8141A
TEPP	21646-99-1	SW8141A
Terbufos	13071-79-9	SW8141A
Thionazin(Zinophos)	297-97-2	SW8141A
Tokuthion(Protothiofos)	34643-46-4	SW8141A
Trichloronate	327-98-0	SW8141A

* All samples for compost will consist of a minimum 3-part composite. The parameters in this list will be compared to the residential thresholds found in 62-777 Table II (if applicable).

Appendix A Table 4 - Parameters required for permit compliance

Location	Matrix	Analytes
Receiving Pad - Site B	Solid Waste	Organic Matter (TVS)*
Compost - Site C	Soil	Moisture
The parameters listed in this section are required for permit compliance. They are included in their respective tables for waste and leachate but are included here for clarification. All other parameters are for data collection purposes.		Nitrogen (total) Phosphorous (total) Potassium (total) Reduction in OM OM pH Foreign Matter Cadmium Copper Lead Nickel Zinc Fecal Coliform

Figure 1 – Sampling Site Locations



Sarasota County Food Waste Recycling Project - IG1-14

Sampling Schedule

Prepared by Resource Management group 5/26/03

Week 1	Month	Date	Day	Sample matrix	Parameters	Sampling Events	Type
	May	26	Mon	**	**	**	**
	May	27	Tue			1	Composite
						1	Grab
	May	28	Wed			1	Grab
	May	29	Thu	Size-reduced SW Leachate (water)*	App. A - Table 2 - Site B App. A - Table 1 - Site A	1 1	Composite Grab
	May	30	Fri	Leachate (water)*	App. A - Table 1 - Site A	1	Grab
	May	31	Sat	Size-reduced SW Size-reduced SW Leachate (water)*	SPLP Procedure - SW 1213 App. A - Table 2 - Site B App. A - Table 1 - Site A	1 1 1	Composite Composite Grab
	June	1	Sun	**	**	**	**
Week 2	June	2	Mon			1	Composite
	June	3	Tue	Size-reduced SW Leachate (water)*	App. A - Table 2 - Site B App. A - Table 1 - Site A	1 **	Grab **
	June	4	Wed	**	**	**	**
	June	5	Thu	Size-reduced SW Leachate (water)*	App. A - Table 2 - Site B App. A - Table 1 - Site A	1 **	Grab **
	June	6	Fri	**	**	**	**
	June	7	Sat	Size-reduced SW Leachate (water)*	App. A - Table 2 - Site B App. A - Table 1 - Site A	1 1	Composite Grab
	June	8	Sun	**	**	**	**

* Leachate samples will be collected if leachate is present. If leachate is not present then leachate will be collected when it is present (e.g. - after a rain event).

** No sampling is scheduled for this day.

Field Testing Schedule

Week 1	Month	Date	Day	Test matrix	Parameters	Testing Events	Type
	May	26	Mon	**	**	**	**
	May	27	Tue	Leachate (water)	App. A Table 1 - Field Parameters	1	field
	May	28	Wed	Leachate (water)	App. A Table 1 - Field Parameters	1	field
	May	29	Thu	Leachate (water)	App. A Table 1 - Field Parameters	1	field
	May	30	Fri	Leachate (water)	App. A Table 1 - Field Parameters	1	field
	May	31	Sat	Leachate (water)	App. A Table 1 - Field Parameters	1	field
	June	1	Sun	**	**	**	**
Week 2	June	2	Mon	Leachate (water)	App. A Table 1 - Field Parameters	**	**
	June	3	Tue	**	**	**	**
	June	4	Wed	**	**	1	field
	June	5	Thu	**	**	**	**
	June	6	Fri	**	**	**	**
	June	7	Sat	Leachate (water)	App. A Table 1 - Field Parameters	1	field
	June	8	Sun	**	**	**	**

Note: Field data will be collected for leachate each day there is a sampling event for leachate and following rain events.

* Leachate samples will be collected if leachate is present. If leachate is not present then leachate will be collected when it is present (e.g. - after a rain event).

** No sampling is scheduled for this day.