CONSULTANT SERVICES AGREEMENT

THIS IS AN AGREEMENT made as of October 1, 2017 between the LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT (**OWNER**) and MSW CONSULTANTS. (**CONSULTANT**). **OWNER** intends to proceed with organics recycling feasibility study planning in Lexington, Kentucky as described in the attached Request for Proposal document (Exhibit "A"). The services are to include professional planning and analysis services for the city as contemplated in the **OWNER**'s Request for Proposal No. 24-2017. The services are hereinafter referred to as the Project.

OWNER and **CONSULTANT** in consideration of their mutual covenants herein agree in respect of the performance of professional planning and analysis services by **CONSULTANT** and the payment for those services by **OWNER** as set forth below.

CONSULTANT was selected by **OWNER** based upon its response to the Request for Proposal No. 24-2017.

CONSULTANT shall provide professional consulting services for **OWNER** in all phases of the Project to which this Agreement applies, serve as **OWNER'S** professional planning and analysis representative for the Project as set forth below and shall give professional consultation and advice to **OWNER** during the performance of services hereunder.

SECTION 1 - BASIC SERVICES OF CONSULTANT

CONSULTANT shall perform professional services as hereinafter stated which include customary planning and analysis incidental thereto.

The following documents are incorporated by reference herein as if fully stated and are attached hereto as exhibits: RFP No. 24-2017(Exhibit "A"), Consultant's Response dated August 21, 2017 (Exhibit "B"), and Consultant's Revised Response (Exhibit "C").

To the extent there is conflict among their provisions, the provisions of this Agreement shall take precedence, followed by the provisions of Request for Proposal No. 24-2017 (Exhibit "A").

After written authorization to proceed with the Project, **CONSULTANT** shall:

1. Notify the **OWNER** in writing of its authorized representative who shall act as Project Manager and liaison representative between the **CONSULTANT** and the **OWNER**.
2. On the basis of "Selection Criteria" in the "Request for Proposal", attached in Exhibit "A", conduct field surveys and gather other necessary data or information, prepare/perform all required deliverables listed in the Request for Proposal. See Exhibit "A" for complete listing of all deliverables.

This Agreement (consisting of pages 1 to 9 inclusive), together with the Exhibits and schedules identified above constitutes the entire Agreement between **OWNER** and **CONSULTANT** and supersedes all prior written or oral understandings. This Agreement and said Exhibits and schedules may only be amended, supplemented, modified, or canceled by a duly executed written instrument.

The General Condition provisions of RFP No. 24-2017 are incorporated herein by reference as if fully stated.

SECTION 2 - ADDITIONAL SERVICES BY CONSULTANT

2.1. The **OWNER** may desire to have the **CONSULTANT** perform work or render services in connection with this Project other than provided by Exhibit A of this Agreement. Such work shall be considered as "Additional Services", subject to a change order, supplemental to this Agreement, setting forth the character and scope thereof and the compensation therefore. Work under such change order shall not proceed until the **OWNER** gives written authorization. Should the **OWNER** find it desirable to have previously satisfactorily completed and accepted plans or parts thereof revised, the **CONSULTANT** shall make such revisions as directed, in writing, by the **OWNER**. This work shall be considered as "Additional Services" and shall be paid as such.

2.2. All "Additional Services" is subject to prior written authorization of **OWNER** and necessary appropriations made by the Urban County Council.

SECTION 3 - OWNER'S RESPONSIBILITIES

OWNER shall:

3.1. Provide criteria and information as to **OWNER'S** requirements for the Project, including design objectives and constraints, space, capacity and performance requirements, flexibility and expandability, and any budgetary limitations.

3.2. Assist **CONSULTANT** by placing at his disposal available information pertinent to the Project.

3.3. Examine all studies, reports, sketches, drawings, specifications, proposals and other documents presented by **CONSULTANT**, and render in writing decisions pertaining thereto within a reasonable time so as not to delay the services of **CONSULTANT**.

3.4. Designate in writing a person to act as **OWNER'S** representative with respect to the services to be rendered under this Agreement. Such person shall have complete authority to transmit instructions, receive information, interpret and define **OWNER'S** policies and decisions with respect to materials, equipment, elements and systems pertinent to **CONSULTANT'S** services.

3.5. Give written notice to **CONSULTANT** whenever **OWNER** observes or otherwise becomes aware of any development that affects the scope or timing of **CONSULTANT'S** services, or any defect in the work of Contractor(s).

3.6. Furnish or direct **CONSULTANT** to provide, necessary Additional Services as stipulated in Section Two (2) of this Agreement or other services as required.

SECTION 4 - PERIOD OF SERVICES

4.1. Time is of the essence. See Exhibit "B" (attached) for the project schedule.

4.2. The provisions of this Section Four (4) and the various rates of compensation for **CONSULTANT'S** services provided for elsewhere in this Agreement have been agreed to in anticipation of the orderly and continuous progress of the Project through completion.

If delays result by reason of acts of the **OWNER** or approving agencies or other causes, which are beyond the control of the **CONSULTANT**, an extension of time for such delay will be considered. If delays occur, the **CONSULTANT** shall within 30 days from the date of the delay apply in writing to the **OWNER** for an extension of time for such reasonable period as may be mutually agreed upon between the parties, and if approved, the Project schedule shall be revised to reflect the extension. Such extension of time to the completion date shall in no way be construed to operate as a waiver on the part of the **OWNER** of any of its rights in the Agreement. Section 6.5, under DISPUTES, of this Agreement, shall apply in the event the parties cannot mutually agree upon an extension of time.

In the event that the overall delay resulting from the above described causes is sufficient to prevent complete performance of the Agreement within six (6) months of the time specified therein, the Agreement fee or fees shall be subject to reconsideration and possible adjustment. Section 6.5 of this Agreement shall apply in the event the parties cannot mutually agree upon an adjustment of fee.

SECTION 5 - PAYMENTS TO CONSULTANT

5.1 Methods of Payment for Services of CONSULTANT

5.1.1 For Basic Services.

All Lump Sum Pricing shall include all direct labor and supervision necessary to complete the item in a manner that meets or exceeds the customer's satisfaction. It shall also include the labor payroll costs, overhead (such as unemployment taxes, general liability insurance, rent, utilities, phones, supplies, administrative salaries, F.I.C.A. sick and vacations, etc. disposal fees tool allowance, equipment, materials, profit and all other costs used on the job. The negotiated cost of services is represented below.

BUDGET AND SCHEDULE

The following table summarizes the labor hours and total costs for conducting the scope of services contained in this proposal.

Budget [Updated]

Phase/Task	Labor Hours	Labor Cost	Expenses	Total
1 Project Initiation				
1.1 Information Request and Review	16	$1,700		$1,700
1.2 Meetings and Site Visits	72	$7,900	$2,600	$10,500
1.3 Organics Diversion Case Studies	32	$3,600	$100	$3,700
1.4 Working Session/Brainstorming	30	$3,200	$1,500	$4,700
2 Identify and Evaluate Organics Collection Options				
2.1 Update UCG Collection Model	24	$2,700	$100	$2,800
2.2 Identification of Collection Alternatives	24	$2,800	$100	$2,900
2.3 Analysis of Collection Alternatives	46	$5,200	$200	$5,400
3 Identify and Evaluate Organics Processing Options				
3.1 Processing Technology	30	$3,400		$3,400
3.2 Analysis of Alternatives	22	$2,500		$2,500
4 Reporting				
4.1 Report Outline	8	$900		$900
4.2 Draft Report	64	$6,800	$200	$7,000
4.3 Final Report and Presentation	34	$3,500	$1,100	$4,600
Grand Total	**402**	**$44,200**	**$5,900**	**$50,100**

Assuming the Notice to Proceed is received by November 3, 2017 it is possible the final presentation would be conducted in February 2018 after the Report finalization by the end of January.

5.2. Times of Payment.

5.2.1. **CONSULTANT** shall submit a schedule of values subject to approval by the **OWNER** prior to starting work. The approved schedule of values will be the basis for monthly statements for Basic Services and Additional Services rendered. The Statements will be based upon **CONSULTANT'S** estimate of the proportion of the total services actually completed at the time of billing and are subject to approval by the **OWNER**. **OWNER** shall pay **CONSULTANT'S** monthly statements within thirty (30) days of receipt.

5.3. Other Provisions Concerning Payments.

5.3.1. In the event the Agreement is terminated by the **OWNER** without fault on the part of the **CONSULTANT**, the **CONSULTANT** shall be paid for the work performed or services rendered an amount bearing the same ratio to the total Agreement fee as the amount of work completed or partially completed and delivered to the **OWNER** is to the total amount of work provided for herein, as determined by mutual agreement between the **OWNER** and the **CONSULTANT**.

5.3.2. In the event the services of the **CONSULTANT** are terminated by the **OWNER** for fault on the part of the **CONSULTANT**, the **CONSULTANT** shall be paid reasonable value of the work performed or services rendered and delivered, and the amount to be paid shall be determined by the **OWNER**.

5.3.3. In the event the **CONSULTANT** shall terminate the Agreement because of gross delays caused by the **OWNER**, the **CONSULTANT** shall be paid as set forth in 5.1.1 above.

SECTION 6 – ADDITIONAL GENERAL CONSIDERATIONS

6.1. Termination

6.1.1. The obligation to provide further services under this Agreement may be terminated by either party upon thirty (30) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party, provided the non-terminating party fails to cure such default within the thirty (30) day period.

6.1.2. The **OWNER** reserves the right to terminate the Agreement for any reason at any time upon seven (7) days written notice to the **CONSULTANT**.

6.2. Ownership and Reuse of Documents.

All documents, including Drawings and Specifications, prepared by the **CONSULTANT** pursuant to this Agreement shall be delivered to and become the property of the **OWNER**. The **OWNER** shall have the right to reuse same without restriction or limitation, but without liability or legal exposure to **CONSULTANT**.

6.3. Legal Responsibilities and Legal Relations.

6.3.1. The **CONSULTANT** shall familiarize himself with and shall at all times comply with all federal, state and local laws, ordinances, and regulations which in any manner affect the services of this Agreement.

6.3.2. In performing the services hereunder, the **CONSULTANT** and its **CONSULTANTS**, employees, agents and representatives shall not be deemed or construed to be employees of **OWNER** in any manner whatsoever. Except as otherwise provided in this Agreement, the **CONSULTANT** shall be acting as an independent contractor. The **CONSULTANT** shall not hold itself out as, nor claim to be, an officer or employee of **OWNER** by reason hereof and shall not make any claim, demand or application to or for any right or privilege applicable to an officer or employee of **OWNER**. The **CONSULTANT** shall be solely responsible for any claims for wages or compensation by **CONSULTANT'S** employees, agents and representatives, including **CONSULTANTS**, and shall save and hold **OWNER** harmless therefrom.

6.3.3. The parties hereto agree that causes of actions between the parties shall be governed by applicable provisions of the Kentucky Revised Statues.

6.4. Successors and Assigns.

6.4.1. **CONSULTANT** binds itself and his partners, successors, executors, administrators, assigns and legal representatives to this Agreement in respect to all covenants, agreements and obligations of this Agreement. **CONSULTANT** shall not assign any interest, obligation or benefit in this Agreement. **CONSULTANT** shall not assign any interest, obligation or benefit in this Agreement or transfer any interest in the same, whether by assignment or novation, without prior written consent of **OWNER**.

6.4.2. The **CONSULTANT** shall not subcontract more than fifty percent (50%) of the work, based upon dollar value, to be provided under this Agreement. The **CONSULTANT** shall obtain written approval prior to subletting or assigning any services contained in this Agreement, and consent to sublet or assign any part of this Agreement shall not be construed to relieve the **CONSULTANT** of any responsibility for compliance with the provisions of this Agreement.

6.4.3. Nothing herein shall be construed to give any rights or benefits hereunder to anyone other than **OWNER** and **CONSULTANT**.

6.5. Disputes.

Except as otherwise provided in this Agreement, any dispute concerning the amount of payment due the **CONSULTANT** or any dispute concerning any question of fact of any act to be performed under this Agreement, which is not disposed of by agreement between the Urban County Division of Central Purchasing and the **CONSULTANT**, shall be submitted to the Commissioner, Department of General Services, Lexington-Fayette Urban County Government for review. The decision of the Commissioner as to the determination of such dispute shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, capricious, arbitrary or so grossly erroneous as necessarily to imply bad faith. Pending a final decision of a dispute hereunder, the **CONSULTANT** shall proceed diligently with the performance of the Agreement in accordance with the directions of the **OWNER**.

6.6. Accuracy of CONSULTANT'S Work.

The **CONSULTANT** shall be required to perform this Agreement in accordance with the degree of ordinary and reasonable skill and care usually exercised by professional architects and engineers prevailing at the time, place and under similar conditions as the services hereunder are rendered.

The **CONSULTANT** shall be responsible for the accuracy of all work, even though Drawings and Specifications have been accepted by the **OWNER**, and shall make any necessary revisions or corrections resulting from errors and/or omissions on the part of the **CONSULTANT**, without additional compensation. By submission of reports, soils and subsurface information, quantities estimates, calculations and Drawings and Specifications to the **OWNER**, the **CONSULTANT** has made a statement that, to the best of its belief and knowledge, the information is accurate. Failure on the part of **CONSULTANT** to provide the expected level of accuracy may be grounds for the **OWNER** to disqualify **CONSULTANT** from consideration for future **CONSULTANT** service agreements.

6.7. Security Clause.

The **CONSULTANT** certifies that he shall not at any time release or divulge any information concerning the services covered by this Agreement to any person or any public or private organization except the **OWNER** without prior approval of the **OWNER**.

6.8. Access to Records.

The **CONSULTANTS** and his sub-**CONSULTANTS** shall maintain all books, documents, papers, and accounting records, and make such materials available at their respective offices at all reasonable times during the contract period and for three (3) years from the date of final payment under the contract for inspection by the **OWNER**, and copies thereof shall be furnished if requested. Failure to maintain such records for three (3) years after the date of final payment may be grounds for the **OWNER** to disqualify the **CONSULTANT** from consideration for future **CONSULTANT** service agreements.

6.9. Required Risk Management Provisions.

The Risk Management Provisions of RFP No. 24-2017 are incorporated herein by reference as if fully stated. Copies of the required Certificates of Insurance shall be provided to **OWNER** as required therein.

SECTION 7 - EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this service agreement, the **CONSULTANT** agrees as follows:

7.1. The **CONSULTANT** will not discriminate against any employee or application for employment because of race, color, religion, national origin, sex, age or handicap. The **CONSULTANT** will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, national origin, sex, age or handicap. Such action shall include, but not be limited to the following: employment upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeships. The **CONSULTANT** agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this non-discrimination clause.

7.2 The **CONSULTANT** will, in all solicitations or advertisements for employees placed by or on behalf of the **CONSULTANT**, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, sex, age (between forty and seventy), or handicap.

SECTION 8 - SPECIAL PROVISIONS

8.1. This Agreement is subject to the following provisions.

8.1.2. Pursuant to subparagraph 3.4 of this Agreement, **OWNER** has assigned the appropriate LFUCG employee (the "**OWNER'S** Agent"), as the authorized agent of **OWNER**, to monitor, direct and review the performance of work of the **CONSULTANT**. Documents, data, reports and all matters associated with carrying out this Agreement shall be addressed to the **OWNER'S** Agent or their designee. Questions by the **CONSULTANT** regarding interpretations of the terms, provisions and requirements under this Agreement shall be addressed to the **OWNER'S** Agent or their designee. The **CONSULTANT** shall look only to the **OWNER'S** Agent or their designee for direction in its performance under this Agreement; no other direction shall be binding upon **OWNER**. **OWNER** shall respond to written requests by **CONSULTANT** within thirty (30) days.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement as of the day and year first above written.

OWNER (LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT):

Signature: _____
JIM GRAY, MAYOR

Date: DEC 0 7 2017

ATTEST:
_____
MARTHA ALLEN, COUNCIL CLERK

CONSULTANT (MSW CONSULTANTS):

Signature: _____

Printed Name: John Culbertson

Position: Principal

Date: November 14, 2017

STATE OF FLORIDA
COUNTY OF (Orange)

The foregoing instrument was subscribed, sworn to and acknowledged before me by John Culbertson as Principal for and on behalf of MSW Consultants, on this the 14th day of November, 2017.

My commission expires: July 23, 2019

_____
NOTARY PUBLIC, STATE AT LARGE, FL

LISA PORTMAN
MY COMMISSION # FF902813
EXPIRES July 23, 2019
(407) 398-0153 FloridaNotaryService.com

Ex. A

Lexington-Fayette Urban County Government

Request for Proposals

The Lexington-Fayette Urban County Government hereby requests proposals for **RFP #24-2017 Organics Recycling Feasibility Study** to be provided in accordance with terms, conditions and specifications established herein.

Sealed proposals will be received in the Division of Central Purchasing, Room 338, Government Center, 200 East Main Street, Lexington, KY, 40507, until **2:00 PM**, prevailing local time, on **August 21, 2017**.

Proposals received after the date and time set for opening proposals will not be considered for award of a contract and will be returned unopened to the Proposer. It is the sole responsibility of the Proposer to assure that his/her proposal is received by the Division of Central Purchasing before the date and time set for opening proposals.

Proposals must be sealed in an envelope and the envelope prominently marked:

RFP #24-2017 Organics Recycling Feasibility Study. If mailed, the envelope must be addressed to:

Todd Slatin – Purchasing Director
Lexington-Fayette Urban County Government
Room 338, Government Center
200 East Main Street
Lexington, KY 40507

Additional copies of this Request For Proposals are available from the Division of Central Purchasing, Room 338 Government Center, 200 East Main Street, Lexington, KY 40507, (859)-258-3320, at no charge.

Proposals, once submitted, may not be withdrawn for a period of sixty (60) calendar days.

The Proposer must submit one (1) master (hardcopy), (1) electronic version in PDF format on a flashdrive or CD and seven (7) duplicates (hardcopies) of their proposal for evaluation purposes.

The Lexington-Fayette Urban County Government reserves the right to reject any or all proposals, and to waive technicalities and informalities when such waiver is determined by the Lexington-Fayette Urban County Government to be in its best interest.

Signature of this proposal by the Proposer constitutes acceptance by the Proposer of terms, conditions and requirements set forth herein.

Minor exceptions may not eliminate the proposal. Any exceptions to the specifications established herein shall be listed in detail on a separate sheet and attached hereto. The Lexington-Fayette Urban County Government shall determine whether any exception is minor.

The Lexington-Fayette Urban County Government encourages the participation of minority- and women-owned businesses in Lexington-Fayette Urban County Government contracts. This proposal is subject to Affirmative Action requirements attached hereto.

Please do not contact any LFUCG staff member or any other person involved in the selection process other than the designated contact person(s) regarding the project contemplated under this RFP while this RFP is open and a selection has not been finalized. Any attempt to do so may result in disqualification of the firm's submittal for consideration.

Laws and Regulations

All applicable state laws, municipal ordinances and regulations of all authorities having jurisdiction over the project shall apply to the contract, and shall be deemed to be incorporated herein by reference.

Equal Employment Opportunity

The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, creed, national origin, sex or age, and to promote equal employment through a positive, continuing program from itself and each of its subcontracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.

Kentucky Equal Employment Opportunity Act

The Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any "county, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

"During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, or national origin;

(2) The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, or national origin;

(3) The contractor will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provision of the nondiscrimination clauses required by this section; and

(4) The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses."

The Act further provides:

"KRS 45.610. Hiring minorities -- Information required

(1) For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetables.

(2) Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.

KRS 45.620. Action against contractor -- Hiring of minority contractor or subcontractor

(1) If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.

(2) If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 to 45.640.

(3) The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job."

It is recommended that all of the provisions above quoted be included as special conditions in each contract. In the case of a contract exceeding $250,000, the contractor is required to furnish evidence that his workforce in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

LFUCG Non-Appropriation Clause

Contractor acknowledges that the LFUCG is a governmental entity, and the contract validity is based upon the availability of public funding under the authority of its statutory mandate.

In the event that public funds are unavailable and not appropriated for the performance of the LFUCG's obligations under this contract, then this contract shall automatically expire without penalty to the LFUCG thirty (30) days after written notice to Contractor of the unavailability and non-appropriation of public funds. It is expressly agreed that the LFUCG shall not activate this non-appropriation provision for its convenience or to circumvent the requirements of this contract, but only as an emergency fiscal measure during a substantial fiscal crisis, which affects generally its governmental operations.

In the event of a change in the LFUCG's statutory authority, mandate and mandated functions, by state and federal legislative or regulatory action, which adversely affects the LFUCG's authority to continue its obligations under this contract, then this contract shall automatically terminate without penalty to the LFUCG upon written notice to Contractor of such limitation or change in the LFUCG's legal authority.

Contention Process

Vendors who respond to this invitation have the right to file a notice of contention associated with the RFP process or to file a notice of appeal of the recommendation made by the Director of Central Purchasing resulting from this invitation.

Notice of contention with the RFP process must be filed within 3 business days of the bid/proposal opening by (1) sending a written notice, including sufficient documentation to support contention, to the Director of the Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his/her contention with the RFP process. After consulting with the Commissioner of Finance the Chief Administrative Officer and reviewing the documentation and/or hearing the vendor, the Director of Central Purchasing shall promptly respond in writing findings as to the compliance with RFP processes. If, based on this review, a RFP process irregularity is deemed to have occurred the Director of Central Purchasing will consult with the Commissioner of Finance, the Chief Administrative Officer and the Department of Law as to the appropriate remedy.

Notice of appeal of a RFP recommendation must be filed within 3 business days of the RFP recommendation by (1) sending a written notice, including sufficient documentation to support appeal, to the Director, Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his appeal. After reviewing the documentation and/or hearing the vendor and consulting with the Commissioner of Finance and the Chief Administrative Officer, the Director of Central Purchasing shall in writing, affirm or withdraw the recommendation.

SELECTION CRITERIA:

1. Specialized experience and technical competence of the person or firm (including a joint venture or association) with the type of service required (20 points)

2. Capacity of the person or firm to perform the work, including any specialized services, within the time limitation (15 points)

3. Past record and performance on contracts with LFUCG or other governmental agencies and private industry with respect to such factors as control of cost, quality or work, and ability to meet schedules (15 points)

4. Familiarity with the details of the project (15 points)

5. Extent of innovative ideas presented throughout analysis. Additional considerations will be given to unique and innovative approaches to organics management while keeping in mind the end results is the beneficial reuse of composted material (15 points)

6. Degree of local employment to be provided by the person or firm in the performance of the contract by the person or firm (5 points)

7. Estimated cost of services (15 points)

Proposals shall contain the appropriate information necessary to evaluate based on these criteria. A committee composed of government employees as well as representatives of relevant user groups will evaluate the proposals.

Questions shall be submitted via IonWave at: https://lexingtonky.ionwave.net

Affirmative Action Plan

All vendors must submit as a part of the proposal package the following items to the Urban County Government:

1. Affirmative Action Plan for his/her firm;
2. Current Work Force Analysis Form;

Failure to submit these items as required may result in disqualification of the submitter from award of the contract. All submissions should be directed to:

Director, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, 3rd Floor
Lexington, Kentucky 40507

All questions regarding this proposal must be directed to the Division of Central Purchasing, (859)-258-3320.

AFFIDAVIT

Comes the Affiant, _____, and after being first duly sworn, states under penalty of perjury as follows:

1. His/her name is _____ and he/she is the individual submitting the proposal or is the authorized representative of_____, the entity submitting the proposal (hereinafter referred to as "Proposer").

2. Proposer will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the proposal is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.

3. Proposer will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.

4. Proposer has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.

5. Proposer has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Proposer will not violate any provision of the campaign finance laws of the Commonwealth.

6. Proposer has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as "Ethics Act."

Continued on next page

7. Proposer acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

Further, Affiant sayeth naught.

_____

STATE OF _____

COUNTY OF _____

The foregoing instrument was subscribed, sworn to and acknowledged before me by _____ on this the _____ day of _____, 20__.

My Commission expires: _____

_____
NOTARY PUBLIC, STATE AT LARGE

EQUAL OPPORTUNITY AGREEMENT

The Law

- Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.

- Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and sub-contractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.

- Section 503 of the Rehabilitation Act of 1973 states:

  The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.

- Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal contracts.

- Section 206(A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

  The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

****

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractors may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped and aged persons.

_____ _____

Signature *Name of Business*

WORKFORCE ANALYSIS FORM

Name of Organization: _____

Categories	**Total**	White (Not Hispanic or Latino)		Hispanic or Latino		Black or African-American (Not Hispanic or Latino		Native Hawaiian and Other Pacific Islander (Not Hispanic or Latino		Asian (Not Hispanic or Latino		American Indian or Alaskan Native (not Hispanic or Latino		Two or more races (Not Hispanic or Latino		**Total**	
		M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Administrators																	
Professionals																	
Superintendents																	
Supervisors																	
Foremen																	
Technicians																	
Protective Service																	
Para-Professionals																	
Office/Clerical																	
Skilled Craft																	
Service/Maintenance																	
Total:																	

Prepared by: _____ **Date:** _____/_____/_____

(Name and Title)

Revised 2015-Dec-15

DIRECTOR, DIVISION OF CENTRAL PURCHASING
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 EAST MAIN STREET
LEXINGTON, KENTUCKY 40507

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITIES AND DBE CONTRACT PARTICIPATION

Notice of requirement for Affirmative Action to ensure Equal Employment Opportunities and Disadvantaged Business Enterprises (DBE) Contract participation. Disadvantaged Business Enterprises (DBE) consists of Minority-Owned Business Enterprises (MBE) and Woman-Owned Business Enterprises (WBE).

The Lexington-Fayette Urban County Government has set a goal that not less than ten percent (10%) of the total value of this Contract be subcontracted to Disadvantaged Business Enterprises, which is made up of MBEs and WBEs. The Lexington Fayette Urban County Government also has set a goal that not less than three percent (3%) of the total value of this Contract be subcontracted to Veteran-owned Small Businesses. The goal for the utilization of Disadvantaged Business Enterprises as well Veteran –owned Small Businesses as subcontractors is a recommended goal. Contractor(s) who fail to meet such goal will be expected to provide written explanations to the Director of the Division of Purchasing of efforts they have made to accomplish the recommended goal, and the extent to which they are successful in accomplishing the recommended goal will be a consideration in the procurement process. Depending on the funding source, other DBE goals may apply.

For assistance in locating Disadvantaged Business Enterprises Subcontractors contact:

Sherita Miller, MPA, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street, 3rd Floor, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

Firm Submitting Proposal: _____

Complete Address: _____
Street City Zip

Contact Name: _____ Title: _____

Telephone Number: _____ Fax Number: _____

Email address: _____

Lexington-Fayette Urban County Government
MWDBE PARTICIPATION GOALS

A. GENERAL

1) The LFUCG request all potential contractors to make a concerted effort to include Minority-Owned (MBE), Woman-Owned (WBE), Disadvantaged (DBE) Business Enterprises and Veteran-Owned Small Businesses as subcontractors or suppliers in their bids.

2) Toward that end, the LFUCG has established 10% of total procurement costs as a Goal for participation of Minority-Owned, Woman-Owned and Disadvantaged Businesses on this contract.

3) The LFUCG has also established a 3% of total procurement costs as a Goal for participation of Veteran-Owned Small Businesses (VOSB).

4) **It is therefore a request of each Bidder to include in its bid, the same goal (10%) for MWDBE participation and other requirements as outlined in this section.**

B. PROCEDURES

1) The successful bidder will be required to report to the LFUCG, the dollar amounts of all payments submitted to Minority-Owned, Woman-Owned or Veteran-Owned subcontractors and suppliers for work done or materials purchased for this contract. (See Subcontractor Monthly Payment Report)

2) Replacement of a Minority-Owned, Woman-Owned or Veteran-Owned subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of Good Faith Efforts to replace the subcontractor / supplier with another MWDBE Firm; this is subject to approval by the LFUCG. (See LFUCG MWDBE Substitution Form)

3) For assistance in identifying qualified, certified businesses to solicit for potential contracting opportunities, bidders may contact:

    a) The Lexington-Fayette Urban County Government, Division of Central Purchasing (859-258-3320)

4) The LFUCG will make every effort to notify interested MWDBE and Veteran subcontractors and suppliers of each Bid Package, including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the project.

C. DEFINITIONS

1) A Minority-Owned Business Enterprise (MBE) is defined as a business which is certified as being at least 51% owned and operated by persons of African American, Hispanic, Asian, Pacific Islander, American Indian or Alaskan Native Heritage.

2) A Woman-Owned Business Enterprise (WBE) is defined as a business which is certified as being at least 51% owned and operated by one or more Non-Minority Females.

3) A Disadvantaged Business (DBE) is defined as a business which is certified as being at least 51% owned and operated by a person(s) that are economically and socially disadvantaged.

4) A Veteran-Owned Small Business (VOSB) is defined as a business which is certified as being at least 51% owned and operated by a veteran and/or a service disabled veteran.

5) Good Faith Efforts are efforts that, given all relevant circumstances, a bidder or proposer actively and aggressively seeking to meet the goals, can reasonably be expected to make. In evaluating good faith efforts made toward achieving the goals, whether the bidder or proposer has performed the efforts outlined in the Obligations of Bidder for Good Faith Efforts outlined in this document will be considered, along with any other relevant factors.

D. OBLIGATION OF BIDDER FOR GOOD FAITH EFFORTS

1) **The bidder shall make a Good Faith Effort to achieve the Participation Goal for MWDBE and Veteran-Owned subcontractors/suppliers. The failure to meet the goal shall not necessarily be cause for disqualification of the bidder; however, bidders not meeting the goal are required to furnish with their bids written documentation of their Good Faith Efforts to do so.**

2) Award of Contract shall be conditioned upon satisfaction of the requirements set forth herein.

3) The Form of Proposal includes a section entitled "MWDBE Participation Form". The applicable information must be completed and submitted as outlined below.

4) **Failure to submit this information as requested may be cause for rejection of bid or delay in contract award.**

E. DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS

1) Bidders reaching the Goal are required to submit only the MWDBE Participation Form." The form must be fully completed including names and telephone number of participating MWDBE firm(s); type of work to be performed;

estimated value of the contract and value expressed as a percentage of the total Lump Sum Bid Price. The form must be signed and dated, and is to be submitted with the bid.

2) Bidders not reaching the Goal must submit the "MWDBE Participation Form", the "Quote Summary Form" and a written statement documenting their Good Faith Effort to do so. If bid includes no MWDBE and/or Veteran participation, bidder shall enter "None" on the subcontractor / supplier form). In addition, the bidder must submit written proof of their Good Faith Efforts to meet the Participation Goal:

a. Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

b. Included documentation of advertising in the above publications with the bidders good faith efforts package

c. Attended LFUCG Central Purchasing Economic Inclusion Outreach event

d. Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned businesses of subcontracting opportunities

e Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses.

f. Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

g. Contacted organizations that work with MWDBE companies for assistance in finding certified MWBDE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

h. Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less that seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

i. Followed up initial solicitations by contacting MWDBEs and Veteran-Owned Businesses to determine their level of interest.

j. Provided the interested MWBDE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

k. Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

l. Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

m. Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

n. Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

o. Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

p. Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

q. Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

Note: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

MINORITY BUSINESS ENTERPRISE PROGRAM

Sherita Miller, MPA
Minority Business Enterprise Liaison
Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street
Lexington, KY 40507
smiller@lexingtonky.gov
859-258-3323

OUR MISSION: The mission of the Minority Business Enterprise Program is to facilitate the full participation of minority and women owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long term economic viability of Lexington-Fayette Urban County Government.

To that end the city council adopted and implemented resolution 167-91—Disadvantaged Business Enterprise (DBE) 10% Goal Plan in July of 1991. The resolution states in part (a full copy is available in Central Purchasing):

> *"A Resolution supporting adoption of the administrative plan for a ten percent (10%) Minimum goal for disadvantaged business enterprise participation in Lexington-Fayette Urban County Government construction and professional services contracts; Providing that as part of their bids on LFUCG construction contracts, general Contractors shall make a good faith effort to award at least ten percent (10%) of All subcontracts to disadvantaged business enterprises; providing that divisions of LFUCG shall make a good faith effort to award at least ten percent of their Professional services and other contracts to disadvantaged business enterprises..."*

A Disadvantaged Business Enterprise is defined as a business that has been certified as being at least 51% owned, operated and managed by a U.S. Citizen of the following groups:

- African-American
- Hispanic-American
- Asian/Pacific Islander
- Native American/Native Alaskan
- Non-Minority Female
- Economically and Socially Disadvantaged

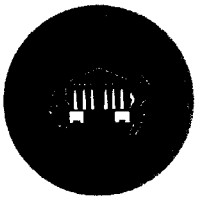
In addition, to that end the city council also adopted and implemented resolution 167-91—Veteran-owned Businesses, 3% Goal Plan in July of 2015. The resolution states in part (a full copy is available in Central Purchasing):

> *"A resolution adopting a three percent (3%) minimum goal for certified veteran-owned small businesses and service disabled veteran-owned businesses for certain of those Lexington-Fayette Urban County contracts related to*

construction for professional services, and authorizing the Division of Purchasing to adopt and implement guidelines and/or policies consistent with the provisions and intent of this resolution by no later than July 1, 2015."

We have compiled the list below to help you locate certified MBE, WBE and DBE certified businesses. Below is a listing of contacts for LFUCG Certified MWDBEs and Veteran-Owned Small Businesses in (https://lexingtonky.ionwave.net)

Business	Contact	Email Address	Phone
LFUCG	Sherita Miller	smiller@lexingtonky.gov	859-258-3323
Commerce Lexington – Minority Business Development	Tyrone Tyra	ttyra@commercelexington.com	859-226-1625
Tri-State Minority Supplier Diversity Council	Susan Marston	smarston@tsmsdc.com	502-365-9762
Small Business Development Council	Shirie Hawkins UK SBDC	smack@uky.edu	859-257-7666
Community Ventures Corporation	Phyllis Alcorn	palcorn@cvky.org	859-231-0054
KY Transportation Cabinet (KYTC)	Melvin Bynes	Melvin.bynes2@ky.gov	502-564-3601
KYTC Pre-Qualification	Shella Eagle	Shella.Eagle@ky.gov	502-782-4815
Ohio River Valley Women's Business Council (WBENC)	Sheila Mixon	smixon@orvwbc.org	513-487-6537
Kentucky MWBE Certification Program	Yvette Smith, Kentucky Finance Cabinet	Yvette.Smith@ky.gov	502-564-8099
National Women Business Owner's Council (NWBOC)	Janet Harris-Lange	janet@nwboc.org	800-675-5066
Small Business Administration	Robert Coffey	robertcoffey@sba.gov	502-582-5971
LaVoz de Kentucky	Andres Cruz	lavozdeky@yahoo.com	859-621-2106
The Key News Journal	Patrice Muhammad	paatricem@keynewsjournal.com	859-373-9428



LFUCG MWDBE PARTICIPATION FORM
Bid/RFP/Quote Reference #_____

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately. **Failure to submit a completed form may cause rejection of the bid.**

MWDBE Company, Name, Address, Phone, Email	MBE WBE or DBE	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1.				
2.				
3.				
4.				

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

_____ _____

Company **Company Representative**

_____ _____

Date **Title**

LFUCG MWDBE SUBSTITUTION FORM
Bid/RFP/Quote Reference #_____

The substituted MWDBE and/or veteran subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to Central Purchasing for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project.

SUBSTITUTED MWDBE Company Name, Address, Phone, Email	MWDBE Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1.					
2.					
3.					
4.					

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Company _____ **Company Representative** _____

Date _____ **Title** _____

MWDBE QUOTE SUMMARY FORM
Bid/RFP/Quote Reference #_____

The undersigned acknowledges that the minority and/or veteran subcontractors listed on this form did submit a quote to participate on this project. Failure to submit this form may cause rejection of the bid.

Company Name	Contact Person
Address/Phone/Email	Bid Package / Bid Date

MWDBE Company Addre	Contact Person	Contact Information (work phone Email, cell)	Date Contacte	Services to be performed	Method of Communicati (email, phone meeting, ad, event etc)	Total dollars $$ Do Not Leave Blank (Attach Documentation	MBE * AA HA AS NA Female	Veteran

(MBE designation / AA=African American / HA= Hispanic American/AS = Asian American/Pacific Islander/ NA= Native American)

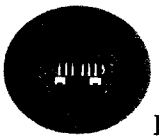
The undersigned acknowledges that all information is accurate. Any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

_____ _____

Company **Company Representative**

_____ _____

Date **Title**



LFUCG SUBCONTRACTOR MONTHLY PAYMENT REPORT

The LFUCG has a 10% goal plan adopted by city council to increase the participation of minority and women owned businesses in the procurement process. The LFUCG also has a 3% goal plan adopted by cited council to increase the participation of veteran owned businesses in the procurement process. In order to measure that goal LFUCG will track spending with MWDBE and Veteran contractors on a monthly basis. By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentation may result in termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims. Please submit this form monthly to the Division of Central Purchasing/ 200 East Main Street / Room 338 / Lexington, KY 40507.

Bid/RFP/Quote #_____

Total Contract Amount Awarded to Prime Contractor for this Project_____

Project Name/ Contract #	**Work Period/ From:** **To:**
Company Name:	**Address:**
Federal Tax ID:	**Contact Person:**

Subcontractor Vendor ID (name, address, phone, email	Description of Work	Total Subcontract Amount	% of Total Contract Awarded to Prime for this Project	Total Amount Paid for this Period	Purchase Order number for subcontractor work (please attach PO)	Scheduled Project Start Date	Scheduled Project End Date

By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentations may result in the termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

_____ _____

Company **Company Representative**

_____ _____

Date **Title**

LFUCG STATEMENT OF GOOD FAITH EFFORTS
Bid/RFP/Quote #_____

By the signature below of an authorized company representative, we certify that we have utilized the following Good Faith Efforts to obtain the maximum participation by MWDBE and Veteran-Owned business enterprises on the project and can supply the appropriate documentation.

_____ Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

_____ Included documentation of advertising in the above publications with the bidders good faith efforts package

_____ Attended LFUCG Central Purchasing Economic Inclusion Outreach event

_____ Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned Businesses of subcontracting opportunities

_____ Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses

_____ Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

_____ Contacted organizations that work with MWDBE companies for assistance in finding certified MWBDE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

_____ Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

_____ Followed up initial solicitations by contacting MWDBEs and Veteran-Owned businesses to determine their level of interest.

_____ Provided the interested MWBDE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

_____ Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the

contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

_____ Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

_____ Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

_____ Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

_____ Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

_____Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

_____ Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE **and Veteran participation.**

NOTE: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to approval by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Company	**Company Representative**
Date	**Title**

GENERAL PROVISIONS

1. Each Respondent shall comply with all Federal, State & Local regulations concerning this type of service or good.

   The Respondent agrees to comply with all statutes, rules, and regulations governing safe and healthful working conditions, including the Occupational Health and Safety Act of 1970, *29 U.S.C. 650 et. seq.*, as amended, and KRS Chapter 338. The Respondent also agrees to notify the LFUCG in writing immediately upon detection of any unsafe and/or unhealthful working conditions at the job site. The Respondent agrees to indemnify, defend and hold the LFUCG harmless from all penalties, fines or other expenses arising out of the alleged violation of said laws.

2. Failure to submit ALL forms and information required in this RFP may be grounds for disqualification.

3. Addenda: All addenda, if any, shall be considered in making the proposal, and such addenda shall be made a part of this RFP. Before submitting a proposal, it is incumbent upon each proposer to be informed as to whether any addenda have been issued, and the failure to cover in the bid any such addenda may result in disqualification of that proposal.

4. Proposal Reservations: LFUCG reserves the right to reject any or all proposals, to award in whole or part, and to waive minor immaterial defects in proposals. LFUCG may consider any alternative proposal that meets its basic needs.

5. Liability: LFUCG is not responsible for any cost incurred by a Respondent in the preparation of proposals.

6. Changes/Alterations: Respondent may change or withdraw a proposal at any time prior to the opening; however, no oral modifications will be allowed. Only letters, or other formal written requests for modifications or corrections of a previously submitted proposal which is addressed in the same manner as the proposal, and received by LFUCG prior to the scheduled closing time for receipt of proposals, will be accepted. The proposal, when opened, will then be corrected in accordance with such written request(s), provided that the written request is contained in a sealed envelope which is plainly marked "modifications of proposal".

7. Clarification of Submittal: LFUCG reserves the right to obtain clarification of any point in a bid or to obtain additional information from a Respondent.

8. Bribery Clause: By his/her signature on the bid, Respondent certifies that no employee of his/hers, any affiliate or Subcontractor, has bribed or attempted to bribe an officer or employee of the LFUCG.

9. Additional Information: While not necessary, the Respondent may include any product brochures, software documentation, sample reports, or other documentation that may assist LFUCG in better understanding and evaluating the Respondent's response. Additional documentation shall not serve as a substitute for other documentation which is required by this RFP to be submitted with the proposal,

10. Ambiguity, Conflict or other Errors in RFP: If a Respondent discovers any ambiguity, conflict, discrepancy, omission or other error in the RFP, it shall immediately notify LFUCG of such error in writing and request modification or clarification of the document if allowable by the LFUCG.

11. Agreement to Bid Terms: In submitting this proposal, the Respondent agrees that it has carefully examined the specifications and all provisions relating to the work to be done attached hereto and made part of this proposal. By acceptance of a Contract under this RFP, proposer states that it understands the meaning, intent and requirements of the RFP and agrees to the same. The successful Respondent shall warrant that it is familiar with and understands all provisions herein and shall warrant that it can comply with them. No additional compensation to Respondent shall be authorized for services or expenses reasonably covered under these provisions that the proposer omits from its Proposal.

12. Cancellation: If the services to be performed hereunder by the Respondent are not performed in an acceptable manner to the LFUCG, the LFUCG may cancel this contract for cause by providing written notice to the proposer, giving at least thirty (30) days notice of the proposed cancellation and the reasons for same. During that time period, the proposer may seek to bring the performance of services hereunder to a level that is acceptable to the LFUCG, and the LFUCG may rescind the cancellation if such action is in its best interest.

A. Termination for Cause

(1) LFUCG may terminate a contract because of the contractor's failure to perform its contractual duties

(2) If a contractor is determined to be in default, LFUCG shall notify the contractor of the determination in writing, and may include a specified date by which the contractor shall cure the identified deficiencies. LFUCG may proceed with termination if the contractor fails to cure the deficiencies within the specified time.

(3) A default in performance by a contractor for which a contract may be terminated shall include, but shall not necessarily be limited to:
(a) Failure to perform the contract according to its terms,

conditions and specifications;

(b) Failure to make delivery within the time specified or according to a delivery schedule fixed by the contract;

(c) Late payment or nonpayment of bills for labor, materials, supplies, or equipment furnished in connection with a contract for construction services as evidenced by mechanics' liens filed pursuant to the provisions of KRS Chapter 376, or letters of indebtedness received from creditors by the purchasing agency;

(d) Failure to diligently advance the work under a contract for construction services;

(e) The filing of a bankruptcy petition by or against the contractor; or

(f) Actions that endanger the health, safely or welfare of the LFUCG or its citizens.

B. At Will Termination

Notwithstanding the above provisions, the LFUCG may terminate this contract at will in accordance with the law upon providing thirty (30) days written notice of that intent, Payment for services or goods received prior to termination shall be made by the LFUCG provided these goods or services were provided in a manner acceptable to the LFUCG. Payment for those goods and services shall not be unreasonably withheld.

13. Assignment of Contract: The contractor shall not assign or subcontract any portion of the Contract without the express written consent of LFUCG. Any purported assignment or subcontract in violation hereof shall be void. It is expressly acknowledged that LFUCG shall never be required or obligated to consent to any request for assignment or subcontract; and further that such refusal to consent can be for any or no reason, fully within the sole discretion of LFUCG.

14. No Waiver: No failure or delay by LFUCG in exercising any right, remedy, power or privilege hereunder, nor any single or partial exercise thereof, nor the exercise of any other right, remedy, power or privilege shall operate as a waiver hereof or thereof. No failure or delay by LFUCG in exercising any right, remedy, power or privilege under or in respect of this Contract shall affect the rights, remedies, powers or privileges of LFUCG hereunder or shall operate as a waiver thereof.

15. Authority to do Business: The Respondent must be a duly organized and authorized to do business under the laws of Kentucky. Respondent must be in good standing and have full legal capacity to provide the services specified under this Contract. The Respondent must have all necessary right and lawful authority to enter into this Contract for the full term hereof and that proper corporate or other action has been duly taken authorizing the Respondent to enter into this

Contract. The Respondent will provide LFUCG with a copy of a corporate resolution authorizing this action and a letter from an attorney confirming that the proposer is authorized to do business in the State of Kentucky if requested. All proposals must be signed by a duly authorized officer, agent or employee of the Respondent.

16. Governing Law: This Contract shall be governed by and construed in accordance with the laws of the Commonwealth of Kentucky. In the event of any proceedings regarding this Contract, the Parties agree that the venue shall be the Fayette County Circuit Court or the U.S. District Court for the Eastern District of Kentucky, Lexington Division. All parties expressly consent to personal jurisdiction and venue in such Court for the limited and sole purpose of proceedings relating to this Contract or any rights or obligations arising thereunder. Service of process may be accomplished by following the procedures prescribed by law.

17. Ability to Meet Obligations: Respondent affirmatively states that there are no actions, suits or proceedings of any kind pending against Respondent or, to the knowledge of the Respondent, threatened against the Respondent before or by any court, governmental body or agency or other tribunal or authority which would, if adversely determined, have a materially adverse effect on the authority or ability of Respondent to perform its obligations under this Contract, or which question the legality, validity or enforceability hereof or thereof.

18. Contractor understands and agrees that its employees, agents, or subcontractors are not employees of LFUCG for any purpose whatsoever. Contractor is an independent contractor at all times during the performance of the services specified.

19. If any term or provision of this Contract shall be found to be illegal or unenforceable, the remainder of the contract shall remain in full force and such term or provision shall be deemed stricken.

_____ _____

Signature Date

RISK MANAGEMENT PROVISIONS INSURANCE AND INDEMNIFICATION

INDEMNIFICATION AND HOLD HARMLESS PROVISION

(1) It is understood and agreed by the parties that Consultant hereby assumes the entire responsibility and liability for any and all damages to persons or property caused by or resulting from or arising out of any act or omission on the part of Consultant or its employees, agents, servants, owners, principals, licensees, assigns or subcontractors of any tier (hereinafter "Consultant") under or in connection with this agreement and/or the provision of goods or services and the performance or failure to perform any work required thereby.

(2) Consultant shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by Consultant's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the Consultant; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.

(3) Notwithstanding, the foregoing, with respect to any professional services performed by Consultant hereunder (and to the fullest extent permitted by law), Consultant shall indemnify, save, hold harmless and defend LFUCG from and against any and all liability, damages and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees, for any damage due to death or injury to any person or injury to any property (including the loss of use resulting therefrom) to the extent arising out of, pertaining to or relating to the negligence, recklessness or willful misconduct of Consultant in the performance of this agreement.

(4) In the event LFUCG is alleged to be liable based upon the above, Consultant shall defend such allegations and shall bear all costs, fees and expenses of such defense, including but not limited to, all reasonable attorneys' fees and expenses, court costs, and expert witness fees and expenses, using attorneys approved in writing by LFUCG, which approval shall not be unreasonably withheld.

(5) These provisions shall in no way be limited by any financial responsibility or insurance requirements, and shall survive the termination of this agreement.

(6) LFUCG is a political subdivision of the Commonwealth of Kentucky. Consultant acknowledges and agrees that LFUCG is unable to provide indemnity or otherwise save, hold harmless, or defend the Consultant in any manner.

FINANCIAL RESPONSIBILITY

Consultant understands and agrees that it shall demonstrate the ability to assure compliance with the above Indemnity provisions and these other risk management provisions prior to final acceptance of its proposal and the commencement of any work or the provision of services.

INSURANCE REQUIREMENTS

YOUR ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW, AND YOU MAY NEED TO CONFER WITH YOUR INSURANCE AGENTS, BROKERS, OR CARRIERS TO DETERMINE IN ADVANCE OF SUBMISSION OF A RESPONSE THE AVAILABILITY OF THE INSURANCE COVERAGES AND ENDORSEMENTS REQUIRED HEREIN. IF YOU FAIL TO COMPLY WITH THE INSURANCE REQUIREMENTS BELOW, YOU MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

Required Insurance Coverage

Consultant shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work or services hereunder by Consultant. The cost of such insurance shall be included in any bid:

Coverage	**Limits**
General Liability (Insurance Services Office Form CG 00 01)	$1 million per occurrence, $2 million aggregate or $2 million combined single limit
Commercial Automobile Liability (Insurance Services Office Form CA 0001)	combined single, $1 million per occurrence
Professional Liability	$1 million per occurrence, $2 million aggregate
Worker's Compensation	Statutory
Employer's Liability	$500,000 to $1million

The policies above shall contain the following conditions:

a. All Certificates of Insurance forms used by the insurance carrier shall be properly filed and approved by the Department of Insurance for the Commonwealth of Kentucky. LFUCG shall be named as an additional insured in the General Liability Policy and Commercial Automobile Liability Policy using the Kentucky DOI approved forms.

b. The General Liability Policy shall be primary to any insurance or self-insurance retained by LFUCG.

c. The General Liability Policy shall include Products and Completed Operations coverage and Premises and Operations Liability coverage, unless it is deemed not to apply by LFUCG.

d. The General Liability Policy shall have a Professional Liability endorsement (including Errors and Omissions) for any services performed pursuant to the contract, and/or a separate Professional Liability Policy shall be provided in the amount specified above unless deemed not to apply by LFUCG.

f. The Professional Liability policy shall be maintained for a minimum of three years beyond the completion date of the project, to the extent commercially available. If not commercially available, Consultant shall notify LFUCG and obtain similar insurance that is commercially available and acceptable to LFUCG.

g. LFUCG shall be provided at least 30 days advance written notice via certified mail, return receipt requested, in the event any of the required policies are canceled or non-renewed.

h. Said coverage shall be written by insurers acceptable to LFUCG and shall be in a form acceptable to LFUCG. Insurance placed with insurers with a rating classification of no less than Excellent (A or A-) and a financial size category of no less than VIII, as defined by the most current Best's Key Rating Guide shall be deemed automatically acceptable.

Renewals

After insurance has been approved by LFUCG, evidence of renewal of an expiring policy must be submitted to LFUCG, and may be submitted on a manually signed renewal endorsement form. If the policy or carrier has changed, however, new evidence of coverage must be submitted in accordance with these Insurance Requirements.

Deductibles and Self-Insured Programs

IF YOU INTEND TO SUBMIT A SELF-INSURANCE PLAN IT MUST BE FORWARDED TO LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DIVISION OF RISK MANAGEMENT, 200 EAST MAIN STREET, LEXINGTON, KENTUCKY 40507 NO LATER THAN A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE RESPONSE DATE. Self-insurance programs, deductibles, and self-insured retentions in insurance policies are subject to separate approval by Lexington-Fayette Urban County Government's Division of Risk Management, upon review of evidence of Consultant's financial capacity to respond to claims. Any such programs or retentions must provide LFUCG with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance coverage. If Consultant satisfies any portion of the insurance requirements through deductibles, self-insurance programs, or self-insured retentions, Consultant agrees to provide Lexington-Fayette Urban County Government, Division of Risk Management, the following data prior to the final acceptance of bid and the commencement of any work:

a. Latest audited financial statement, including auditor's notes.
b. Any records of any self-insured trust fund plan or policy and related accounting statements.

c. Actuarial funding reports or retained losses.
d. Risk Management Manual or a description of the self-insurance and risk management program.
e. A claim loss run summary for the previous five (5) years.
f. Self-Insured Associations will be considered.

Safety and Loss Control

Consultant shall comply with all applicable federal, state, and local safety standards related to the performance of its works or services under this Agreement and take necessary action to protect the life, health and safety and property of all of its personnel on the job site, the public, and LFUCG.

Verification of Coverage

Consultant agrees to furnish LFUCG with all applicable Certificates of Insurance signed by a person authorized by the insurer to bind coverage on its behalf prior to final award, and if requested, shall provide LFUCG copies of all insurance policies, including all endorsements.

Right to Review, Audit and Inspect

Consultant understands and agrees that LFUCG may review, audit and inspect any and all of its records and operations to insure compliance with these Insurance Requirements.

Safety and Loss Control

Consultant shall comply with all applicable federal, state, and local safety standards related to the performance of its works or services under this Agreement and take necessary action to protect the life, health and safety and property of all of its personnel on the job site, the public, and LFUCG.

DEFAULT

Consultant understands and agrees that the failure to comply with any of these insurance, safety, or loss control provisions shall constitute default and that LFUCG may elect at its option any single remedy or penalty or any combination of remedies and penalties, as available, including but not limited to purchasing insurance and charging Consultant for any such insurance premiums purchased, or suspending or terminating the work.

Request for Proposals:

Organics Recycling Feasibility Study

The Lexington-Fayette Urban County Government (LFUCG) and its Division of Waste Management seek proposals from qualified contractors to perform a comprehensive feasibility study for the potential to establish an organic waste recycling program.

The consultant must have expertise in solid waste management program analysis, particularly in the areas of program design, systems planning and economic efficiency.

I. Statement of Purpose:

The overall goal of conducting a feasibility study is to determine the options available to LFUCG in pursuing an effective organics recycling program. LFUCG would like the opportunity to evaluate all available solutions to divert organic food waste from the waste stream.

II. Background and Overview:

A. Lexington consists of 314,488 residents (per 2015 U.S. Census data), and 76.82% of residential homes are serviced through city collection (per the 2016 Fayette County Solid Waste Management Area Annual Report). LFUCG's Division of Waste Management provides collection services to 96,000 residents and 3,000 businesses as part of its weekly collection program. Collection services include refuse, recycling and yard waste container services.

B. For the curbside collection program, LFUCG provides residents with a 95-gallon yard waste container. Debris that will not fit in the container can be consolidated into small-sized bundles. Residents may also place their material in biodegradable paper yard waste bags that are provided to residents free of charge by the LFUCG. And once per year, during the late fall, the LFUCG will provide vacuum leaf collection service to each household in the urban services area.

C. Yard waste is processed by a contracted vendor. The processing site is located on city-owned property. The vendor processes yard waste material from city-serviced residences, and additional material received from citizen and business drop-offs.

D. LFUCG currently collects the following organic yard waste materials from residences:

1. Tree and brush prunings
2. Leaves
3. Grass clippings

4. Garden and plant scrap (no dirt, rocks or plastic planter pots accepted)
5. Stumps and branches

III. Lexington Waste Stream Analysis (see Attachment A)

A. One of the key factors in analyzing overall program success and areas of future focus for diversion efforts is through periodic waste stream analyses.

B. LFUCG Division of Waste Management has conducted studies to analyze the overall waste stream in 2009 and 2014 (included as Attachment A).

C. The 2014 study indicates the potential with organic materials in overall landfill waste diversion efforts. LFUCG would like the contractor to consider the findings and recommendations outlined within the study as they relate to food and other organics diversion.

D. Food waste was found to be the most prevalent material within single-family, multi-family and commercial waste streams. Therefore, food waste – along with yard wastes and possibly compostable papers – offers the most potential to reduce landfill waste volumes and increase diversion efforts. The study concludes that this is achievable, but only if viable alternatives can be identified.

E. Particularly, the 2014 study determined:

1. 22.6% of the aggregate solid waste stream being sent to Kentucky landfills by LFUCG is comprised of organic material. 12.3% of those organic materials are comprised of food waste material.
2. 29.8% of the overall solid waste stream is comprised of paper, which includes many easily-composted paper products. Plain corrugated paper and food were the two most prevalent single material categories (together making up 24.8% of the overall solid waste stream).
3. Within the single-family waste analysis, 31% of the surveyed waste was organic material, with 18.8% being food waste.

F. Further detailed results can be observed within Attachment A.

IV. Pilot Study and Additional Programs

LFUCG has performed related past projects with the goal of wider food and other organics material collection.

A. A food waste compost pilot program was developed in 2010. This program was designed to integrate kitchen food waste, collected from 366 residences and four business locations, into yard waste that is normally collected and processed through LFUCG operations. The

collection of food scrap was performed by the existing yard waste route in the area, and collected material was processed with yard waste materials at the LFUCG composting facility. The lack of control measures, lack of quantifiable or usable data, increased unprocessable contamination and lack of a continued education program caused the overall project to be inconclusive in providing the best next steps. Collection continued for a number of years from partner businesses, but the pilot program was ended in the spring of 2017 because of the factors mentioned above.

B. LFUCG has also partnered with other entities to periodically offer home composting instructional workshops. LFUCG has most recently partnered with the Fayette County Cooperative Extension Service to hold informational sessions that encourage home composting efforts within the community.

C. LFUCG contracts with Seedleaf, a local non-profit specializing in composting methods and education. Seedleaf works, on behalf of LFUCG, with local restaurants that have readily-available post-consumer food scraps for disposal. Seedleaf provides as-needed food waste pick-ups, transports it to area gardens where they oversee the processing of material for re-use in community gardens. The joint project between LFUCG and Seedleaf is ongoing and serves to divert a large portion of tonnage annually from the landfill waste stream, to be re-used as soil amendment.

Based on past and present projects and conclusions drawn from numerous waste stream studies, LFUCG has determined that a variety of new programs could be developed that would utilize more of the existing program infrastructure in place, would consider a wider base of organics materials to be collected and could be, overall, more cost-efficient and beneficial to LFUCG.

V. Project Scope:

A. LFUCG would like to determine viable options available to establish an organic waste recycling program.

B. The contractor should consider the following as part of the study:

1. Residential collection of organic food waste material
2. Commercial collection of organic food waste material
3. Dual residential and commercial collection programs
4. Any other organic program options that may present viable opportunities

C. Many communities have implemented some level of food waste diversion through source reduction, and some have focused on collection and composting of food waste in order to significantly increase landfill diversion.

D. For programs specifically targeting both residential and commercial food waste generators and food service providers, consideration should be given to the following:

1. Types of organic waste (produced and to be managed)
2. Convenience
3. Participation and diversion levels
4. Costs of services
5. Containers and container maintenance
6. Collection frequency

E. Overall, LFUCG requests that the selected contractor consider and study a number of factors related to:

1. Types of organics collection programs already in place, and other existing infrastructure available to potential future programs
2. Types of organic waste (produced and to be managed) and available processing and system capacity
3. Participation and diversion levels
4. Participants and potential program partners; public/private partnerships
5. Markets for compost and education components to be incorporated/community engagement
6. Economic impacts (cost of services, cost-savings, maintenance costs)
7. Composting system types, methods and capacities, and other technical requirements
8. Environmental impacts (negative and positive; disposal costs avoided)
9. Implementation viability (such as convenience factor)

F. LFUCG will provide the contractor with current program data to aid in the study.

G. LFUCG requests a report detailing recommendations and all viable program options. Implementation of the results from the study will increase the rate of diversion of LFUCG's overall waste stream through the selected organics recycling program.

VI. All submissions must include the following information:

A. Organization Information

1. An organizational chart and list of personnel that would be providing service to LFUCG

2. Resumes detailing the qualifications for each of the individuals listed in the organizational chart

3. References on comparable projects

B. Performance Record

1. Past record and performance on contracts with the LFUCG or other governmental agencies and private industry with respect to such factors as quality of work and ability to meet schedules

2. Degree of local employment to be provided by the person or firm in the performance of the contract

C. Detailed Project Approach

VII. Scoring:

A. Please provide a detailed project approach.

B. Proposal will be evaluated based on the following criteria:

1. Specialized experience and technical competence of the person or firm (including a joint venture or association) with the type of service required (20 points)

2. Capacity of the person or firm to perform the work, including any specialized services, within the time limitation (15 points)

3. Past record and performance on contracts with LFUCG or other governmental agencies and private industry with respect to such factors as control of cost, quality or work, and ability to meet schedules (15 points)

4. Familiarity with the details of the project (15 points)

5. Extent of innovative ideas presented throughout analysis. Additional considerations will be given to unique and innovative approaches to organics management while keeping in mind the end results is the beneficial reuse of composted material (15 points)

6. Degree of local employment to be provided by the person or firm in the performance of the contract by the person or firm (5 points)

7. Estimated cost of services (15 points)

Schedule:

A. Consultant shall complete all work within 120 calendar days from the Notice to Proceed.

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT

COUNTY-WIDE WASTE STREAM ANALYSIS

FINAL REPORT

NOVEMBER 10, 2014

MSW CONSULTANTS

MSW CONSULTANTS

MidAtlantic Solid Waste Consultants

11875 High Tech Avenue, Suite 150, Orlando, FL (800) 679-9220

www.mswconsultants.com

This report was delivered electronically. If it is necessary to print hard copies, please do so on post-consumer recycled paper and recycle.

TABLE OF CONTENTS

This page intentionally left blank.

1. INTRODUCTION

1.1 OVERVIEW

The Lexington-Fayette Urban County Government (LFUCG) last conducted a waste characterization study in 2009 as part of its Recycling Center Master Plan. Since that time, waste generation patterns have changed due to factors such as light-weighting, the continuing shift from print to digital, expansion of e-commerce, increased attention to diversion and sustainability by the business sector, and ongoing evolution of the economy.

LFUCG retained MSW Consultants, LLC to perform an updated County-wide waste characterization study (2014 Study). The objectives of this study were to:

- Quantify the waste generated by major generating sectors including single family residential, multi-family residential, commercial, industrial, and construction and demolition (C&D);
- Representatively characterize wastes from each generator sector and for the UCG service area as a whole; and
- Compare the results of this update with the 2009 Study to measure recycling progress and to identify future initiatives to increase diversion within each generator sector.

Findings from this study will be used to select new programs or to modify existing programs, and ultimately to help guide development of a strategic zero waste plan.

1.2 COMPARISON OF 2009 AND 2014 STUDIES

The 2014 Study generally used the same methodology as was used in the 2009 Study. Notable similarities and differences are listed below. It is possible that differences in the design and execution of the two studies may obscure changes in the disposed waste stream. Results that may be impacted by study design changes are described in the results section.

1.2.1 SIMILARITIES

- **Generator Sectors**: Both studies used the same generator sectors.
- **Material Definitions**: The studies used substantially identical material definitions. (However, several plastics categories were slightly modified.)
- **Material Streams**: Both studies measured the composition of both disposed municipal solid waste (MSW) and also construction and demolition (C&D) debris.
- **Manual Sorting and Visual Surveying**: The studies used identical methodologies for sampling incoming loads of waste, and for sorting or visually surveying samples of MSW and C&D, respectively.
- **Host Facility for MSW Sampling**: Both studies captured samples of MSW exclusively at the Bluegrass Transfer Station.

1.2.2 DIFFERENCES

- **Seasonality**: The 2009 Study captured samples in two seasons, winter (January) and spring (April). The 2014 Study captured samples only in the summer season (September).
- **Number of Samples**: The 2009 Study captured 100 manually sorted MSW samples and 200 visually surveyed C&D samples. Due to budget limitations and schedule demands, the 2014 Study captured half as many – 50 manually sorted MSW samples and 100 visually surveyed loads of C&D.
- **Host Facility for C&D Surveying**: On 2009, the Haley Pike Landfill was open and roughly half of the visual surveying of C&D loads took place at this facility, with the remainder of surveys were taken at the Bluegrass Transfer Station. The Haley Pike Landfill no longer accepts waste and all visual surveying of C&D loads occurred at the Bluegrass Transfer Station.

1.3 REPORT ORGANIZATION

The remainder of this report presents the methodology and results of the 2014 Study. The report is divided into the following sections:

- **Methodology**: This section quantifies waste disposal quantities captured in the study, presents the sampling plan for MSW and C&D waste, and summarizes the field data collection methods and analytical methods applied in the study.
- **Results**: Detailed results about the composition of LFUCG's disposed waste are presented in this section. Results are presented in both tabular and graphical format to highlight findings of interest. This section also identifies the most prevalent materials remaining in the waste stream, and comments on the fraction of wastes that could be recycled, composted, reused or otherwise diverted from disposal.
- **Conclusions and Recommendations**: This section presents the conclusions and recommendations for further study.

2. METHODOLOGY

2.1 STUDY DESIGN

This project defined two discreet waste streams to be characterized: (1) municipal solid wastes (MSW) – including single family residential, multi-family residential, commercial, industrial, and self-haul wastes – disposed at the Bluegrass Transfer Station, and (2) C&D debris, also disposed at the Bluegrass Transfer Station. This study did not attempt to characterize any MSW or C&D waste that may be exported for disposal in surrounding counties.

Prior to conducting any field data collection, a Study Design and Sampling Plan was developed to assure that the incoming truckloads of waste that were ultimately sampled and characterized were representative of the entire incoming waste stream. This section summarizes the pertinent details of the Study Design and Sampling Plan that was developed prior to field data collection.

2.1.1 WASTE GENERATION SECTORS

For the purposes of this study, a total of six generator sectors were defined. Allocation of incoming loads into these sectors was based on scalehouse records at the Bluegrass Transfer Station. It should be noted that the scalehouse's assignment of loads to a sector served as the basis for determining the generator sector.

- **Single-Family Residential Wastes**: Includes residentially generated garbage and trash from single-family households that is collected by LFUCG or private haulers, primarily in compactor vehicles. The majority of the single family residential waste is collected by the UCG.
- **Multi-Family Residential Wastes**: Includes wastes generated garbage and trash that is collected by private or public haulers, primarily in compactor vehicles, from multi-family apartments and condominiums.
- **Commercial Wastes**: Includes municipal solid wastes generated by commercial and institutional facilities and delivered by both LFUCG and private haulers primarily in compactor trucks or in compacting roll-off boxes. This stream may include some non-compacted wastes delivered in open top roll-off boxes and in other vehicles. Note that commercial wastes exclude any "special" wastes that may be generated in these sectors.
- **Industrial Wastes**: Includes wastes generated in the industrial and agricultural sectors and delivered by private haulers. This stream may include compacted and non-compacted wastes delivered in various truck types.
- **Self-haul Waste**: Encompasses wastes that are delivered to the landfill or transfer station by the actual residential generator. Self-haul waste includes small to mid-size deliveries of waste in cars, pick-up trucks and vans, including those with trailers. Self-haul wastes are recorded separately by the gate house.
- **C&D Debris**: This includes all wastes that are generated as a result of construction, demolition and renovation activities, regardless of who is delivering the wastes. C&D wastes may be delivered by private (or public) haulers in roll-off boxes, and also may be delivered by self-haulers or contractors on construction/demolition/renovation projects (e.g., roofing contractor delivering shingles). C&D wastes also include any load that is classified as C&D by the disposal facility scalehouse, even if the load was not generated as a result of C&D activities.

2.1.2 MATERIAL CATEGORIES

Prior to the study, LFUCG developed a preferred list of material categories for use in sorting the municipal solid waste stream. In total, there were 79 categories used in the manual sorts. The visual survey of C&D loads applied an abbreviated set of material categories to reflect the differences in C&D

waste compared to MSW. A total of 42 material categories were used for the C&D visual surveys. The material categories correspond closely with the 2009 Study and allow for close comparisons. A complete list of the material categories and definitions is included as Appendix A.

2.1.3 SEASONALITY

The 2014 Study field data collection was performed over only one season. All sampling, sorting and visual surveying took place September 8 through 12, 2014, and could be considered representative of the summer season.

The 2009 Study obtained data over two seasonal field data collection events in January (winter) and April (spring). Budget and schedule limitations required the 2014 update to be performed in September.

2.1.4 WASTE STREAM QUANTIFICATION

The tables below define and quantify the waste streams analyzed for this project. Although other wastes may be generated in Fayette County and exported elsewhere for final disposal, this study did not attempt to integrate exported wastes into the overall characterization. It is assumed that the composition of these exported wastes would be comparable to the wastes disposed at the two host facilities.

Table 2-1 presents the annual material volumes delivered to the LFUCG Blue Grass transfer station for the previous 12 months, for each defined generator sector. Facility operations personnel assigned each load into the generator sectors defined for this study. The assignment of loads to generator sectors appeared to be consistent with the 2009 Study.

Table 2-1 – Annual Waste Deliveries: August 1, 2013 to July 31, 2014

Incoming Material Type	Loads	Percent of Loads	Tons	Percent of Tons
Residential	14,556	28.6%	91,183	33.0%
Commercial and Multi-Family Residential	11,982	23.5%	102,623	37.1%
Industrial	12,671	24.9%	50,609	18.3%
Self-Haul	4,994	9.8%	3,516	1.3%
Construction and Demolition (C&D)	6,774	13.3%	28,679	10.4%
Total	**50,977**	**100%**	**276,611**	**100%**

As shown, over 276,000 tons of MSW and C&D was delivered to the transfer station, spread among the single-family, commercial/multi-family, industrial, self-haul, and C&D generator sectors.

2.1.5 SAMPLING TARGETS

Based on the waste deliveries above, known variance in the composition of wastes from each generator sector, and on the targeted level of statistical validity, Table 2-2 summarizes the targeted number of samples from each of the generating sectors, as well as the number of samples actually obtained. As presented, sampling targets were substantially achieved for all generator sectors, with a slight shortfall of industrial generator samples and a slight excess of commercial samples. C&D sampling targets were exceeded. MSW Consultants believes the samples obtained reasonably reflect the sampling plan targets.

Table 2-2 Targeted and Actual Sample Summary

Sample Type	Generator Sector	Targeted Samples	Samples Obtained	Variance
Manual	Residential	14	14	0
	Multi-family	5	5	0
	Commercial	20	22	+2
	Industrial/Self Haul	11	9	-2
	Sub Total Manual	**50**	**50**	**0**
Visual	C&D Debris	100	111	+11
	Sub Total Visual	**100**	**111**	**+11**
Grand Total		**150**	**161**	**+11**

The sampling methodology targeted grab samples at or above 200 pounds. As part of the analysis, average sample weights were evaluated to determine if minimum sample weights were achieved. Table 2-3 shows the average sample weight by generating sector. As presented, the average sample weight exceeded the minimum sample weight for all generator sectors for which manual sorts were performed.

Table 2-3 Average Sample Weight by Generation Sector

Generating Sector	Average Sample Weight (Pounds)
Residential	213
Multi-family	209
Commercial	208
Industrial	212
Self-haul	219

Table 2-4 shows the distribution of C&D loads and total weight of C&D loads surveyed by C&D generator sector at the Bluegrass Transfer Station.

Table 2-4 Distribution of C&D by Generator Sectors

Metric	Residential	Non-Residential	Total
Number of Loads	39	72	111
Weight of Loads (pounds)	214,600	736,280	950,880

As a final exercise, MSW Consultants interviewed drivers of incoming loads to determine the origin of the debris contained in the load. **Table 2-5** presents the breakdown of the waste generating activity for the visually surveyed loads that were classified as C&D.

Table 2-5 Activity by Generator Sector

Generator Sector	Construc-tion	Reno-vation	Demo-lition	Manufac-turing	Retail	Ware-house	Clean-out	Total
Residential	7	17	1	0	0	0	14	39
Non-Residential	15	16	1	11	7	14	8	72
Total	**22**	**33**	**2**	**11**	**7**	**14**	**22**	**111**

MSW Consultants believes that the distribution of C&D loads selected for visual surveying is representative of the mix of C&D debris (and other debris coded as C&D debris) being delivered to the transfer station and recorded as C&D. It is noted that some of the loads were not actually generated from construction or demolition related activities.

2.2 FIELD DATA COLLECTION

Field sampling and sorting methods used in this analysis generally conformed to industry standards, refined based on the extensive experience of MSW Consultants in performing numerous similar studies. The following sections summarize field sampling and sorting procedures.

2.2.1 LOAD SELECTION

MSW Consultants used a systematic selection procedure to identify the vehicles to be selected for manual grab sampling (MSW) or visual surveying (C&D) at each host facility. Systematic sampling is intended to remove any sampling bias that may arise from an individual selecting specific incoming vehicles. To remove such bias, the Field Supervisor divided the total number of incoming residential, commercial, and C&D loads at the transfer station by the number of samples needed that day. The resulting number is the sampling frequency and determines whether every third vehicle, every sixth vehicle, or every 20th vehicle is selected for sampling. This strategy is the known as the "Nth Truck" approach.

Systematically selected loads were directed to a designated tipping area for subsequent grab sampling or visual surveying. The Field Supervisor interviewed the drivers of selected loads to confirm information such as origin of the load, waste generating sector, hauler, vehicle type and number, and other data. This information was noted on a vehicle selection form, along with a unique identifying number associated with that vehicle on that day.

2.2.2 PHYSICAL SORTING OF MSW SAMPLES

Once the sample had been acquired and placed on a plastic tarp, the material was manually sorted into the prescribed component categories. Plastic 18-gallon bins with sealed bottoms were used to contain the separated components. Figure 2-1 shows the work area being set up.

Figure 2-1 Work Area at Bluegrass Transfer Station

Sorters were trained to specialize in certain material groups, with someone handling the paper categories, another person handling plastics, another glass and metals, and so on. In this way, sorters became highly knowledgeable in a short period of time as to the definitions of individual material categories.

The Crew Chief monitored the bins as each sample was being sorted, requiring a re-sort of materials that were improperly classified. Open bins allowed the Crew Chief to see the material at all times. The Crew Chief also verified the sorting accuracy of each component during the weigh-out. The materials were sorted to particle size of 2-inches or less by hand, until no more than a small amount of homogeneous material remained. This layer of mixed 2-inch-minus material was allocated to the appropriate categories based on the best judgment of the Crew Chief—most often a combination of Other Paper, Other Organics, or Food Waste.

The overall goal was to sort each sample directly into component categories in order to reduce the amount of indistinguishable fines or miscellaneous categories. Note that the sorting methodology included the use of a customized, sturdy framed sort table that has a removable screen sized at ½ inch. Small particles passing through the screen were swept into a separate container and allocated to the appropriate category.

2.2.3 VISUAL SURVEYING OF C&D LOADS

Visual surveying of a load of C&D waste involved detailed volumetric measurements of the truck and load dimensions, followed by the systematic observation of the major material components in the tipped load. The basic steps to visual surveying were:

- Measure the dimensions of the incoming load prior to tipping and (if possible) estimate the percent full of the vehicle.
- Tip the load. If it is a large load, and if possible, have a loader spread out the material so that it is possible to discern dense materials such as block, brick, and dirt that tend to sink to the bottom of the pile.
- Make a first pass around the load marking the major material categories that are present in the load—cardboard, drywall, dimensional lumber, etc. Estimate the percentage of the load made up of these major materials. If possible, estimate of the volume in cubic yards associated with this material.
- Make a second pass around the load, noting the secondary material categories contained in the load. Estimate the percentage of the load made up of these materials. If possible, estimate of the volume associated with this material.
- Validate that the estimated percentages sum to 100 percent, and that the estimated volume of major material categories is realistic given the overall truck dimensions and volume.

Figure 2-2 C&D Load Awaiting Visual Surveying

Figure 2-2 shows a C&D load awaiting surveying.

2.2.4 DATA RECORDING

The weigh-out and data recording process is arguably the most critical process of the sort. The Crew Chief was singularly responsible for overseeing all weighing and data recording of each manually sorted sample. Once each sample had been sorted, and fines swept from the table, the weigh-out was performed. Each bin containing sorted materials from the just-completed samples were carried over to a digital scale. Sorting laborers assisted with carrying and weighing the bins of sorted material, the Crew Chief recorded all data.

The Crew Chief used a waste composition data sheet to record the composition weights. Each data sheet containing the sorted weights of each sample was matched up against the Field Supervisor's sample sheet to assure accurate tracking of the samples each day.

C&D load visual survey sheets were filled out by the Field Supervisor, who could easily match them up against the master sample sheet. The Field Supervisor also acquired weigh tickets for each of the visually surveyed samples.

2.3 STATISTICAL METHODS

The following statistical measures were calculated to determine the overall composition of each commercial waste stream.

- **Sample Mean**: The sample mean, or average, composition is considered the "most likely" fraction for each material category in the waste stream. The sample mean is determined by (i) summing the weight of each material in each sample; (ii) summing the total weight of all samples, and (iii) dividing the first value by the second value to determine the percent-by-weight composition. Note that the sample mean, while a good estimate, is unlikely to be identical to the population mean value. The meaningfulness of the sample mean is enhanced by the following statistical measures.
- **Confidence Intervals**: When a sample of data is obtained, it is analyzed in an attempt to determine certain values that describe the entire population of data under analysis. For example, in a poll of likely voters, the intent of the poll is to determine the percentage of all voters who support a given candidate, not simply the percentage of voters in the poll who support that candidate. The percentage of voters who support a given candidate in the poll can easily vary from sample to sample; but the percentage of all voters who support that candidate is a fixed value. In our sample of incoming loads of waste, we are not primarily interested in the percentage composition of the sampled loads, but rather in trying to determine what the composition of the sampled loads tells us about the composition of all waste generated. A confidence interval is a statistical concept that attempts to indicate the likely range within which the true value lies. The confidence intervals reflect

the upper and lower range within which the population mean can be expected to fall. Confidence intervals require the following "inputs:"

- The "level of confidence", or how sure one wants to be that the interval being constructed will actually encompass the population mean;
- The sample mean, around which the confidence interval will be constructed;
- The sample standard deviation, which is used as a measure of the variability of the population from which the sample was obtained; and
- The number of sampling units that comprised the sample (a.k.a. sample size).

Confidence intervals have been calculated at a 90 percent level of confidence, meaning that we can be 90 percent sure that the population mean falls within the upper and lower confidence intervals shown. (The converse is also true: that there is a 10 percent chance that the population mean falls outside of the sample mean.) In general, as the number of samples increases, the width of the confidence intervals decreases, although the more variable the underlying waste stream composition, the less noticeable the improvement for adding incremental samples. This principal also drives the need for a significantly larger sample of C&D loads for visual surveying compared to MSW samples for manual sorting.

It should be noted that the manually sorted data analysis was performed after converting each sample from its absolute weight to percent by weight of each material type. Conversely, the visual C&D survey data underwent a more elaborate analysis. First, volumetric estimates of each surveyed load were converted to weight based on density factors. The density factors have been accumulated by MSW Consultants from industry resources and supplemented with real-world densities obtained in other waste characterization studies. The calculated load weights were then compared against the actual reported weights as presented on the weigh tickets obtained for each load.

Density factors may be adjusted for certain materials if the variance between the calculated and actual weight of visually surveyed C&D loads varies by more than five to 10 percent. In Lexington-Fayette County, the variance was six percent. MSW Consultants believes that the calculated weights derived from the visual volumetric estimates are highly representative of the actual weights.

This page intentionally left blank.

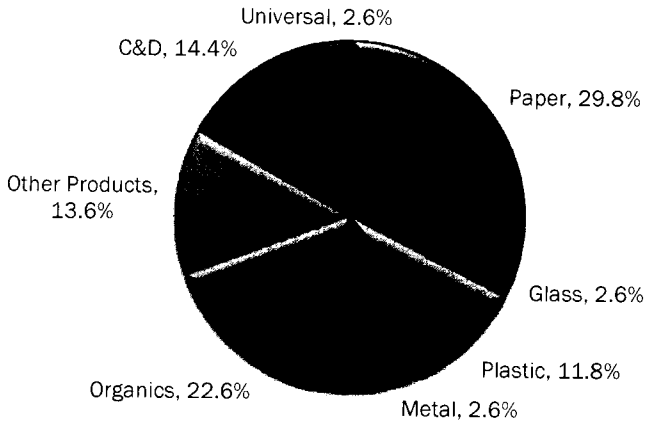
3. RESULTS

3.1 AGGREGATED MUNICIPAL SOLID WASTE COMPOSITION (EXCLUDING C&D)

The aggregated municipal solid waste (MSW) stream is the sum of single-family residential, multi-family residential, commercial, industrial and self-haul waste disposed at the Bluegrass Transfer Station. The aggregated MSW waste stream excludes C&D waste (see Section 3.6 for C&D waste composition data and results).

Figure 3-1 shows the breakdown of the aggregated waste stream by material group (paper, plastic, glass, metal, etc.) in percent by weight.

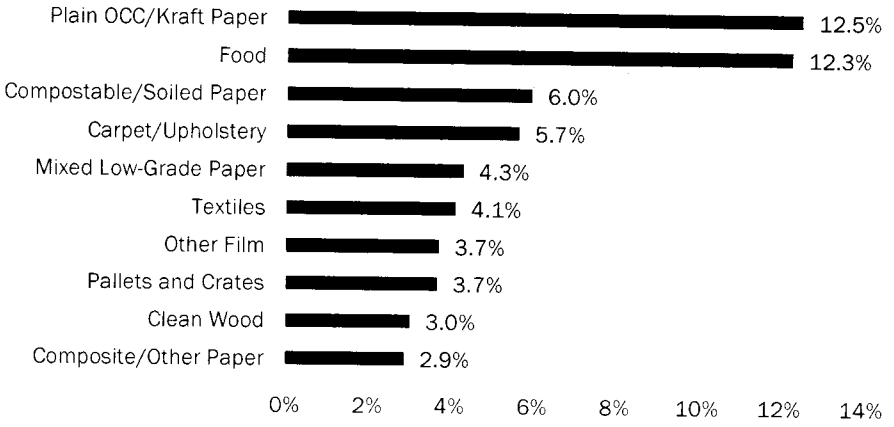
Figure 3-1 Composition of the Aggregated MSW Stream



As presented in the chart above, Paper makes up almost 30 percent of the waste stream, followed by Organics at 23 percent.

Figure 3-2 presents the top ten most commonly found materials in the aggregated waste stream.

Figure 3-2 Top 10 Most Common Materials in the Aggregated MSW Stream



It is noteworthy that Plain OCC (including Kraft Paper) was the most prevalent single material category, although followed closely by Food. The prevalence of Plain OCC is driven by the large amount of OCC

that was found in the Industrial generator sector. Excluding the impact of the Industrial generator sector, Food is the most prevalent material. However, a number of other divertible items also made the top 10.

As a final step, MSW Consultants evaluated the fraction of the disposed waste stream that could be recycled, composted, or otherwise diverted.[1] Specifically, each material was assigned as being either recyclable, compostable, accepted at the Transfer Station or Convenience Center for diversion, reusable, or non-recoverable. Table 3-1 summarizes how each material was classified for purposes of assigning diversion potential. Each diversion strategy is defined below this table.

Table 3-1 Diversion Strategies for Lexington County, by Material Category

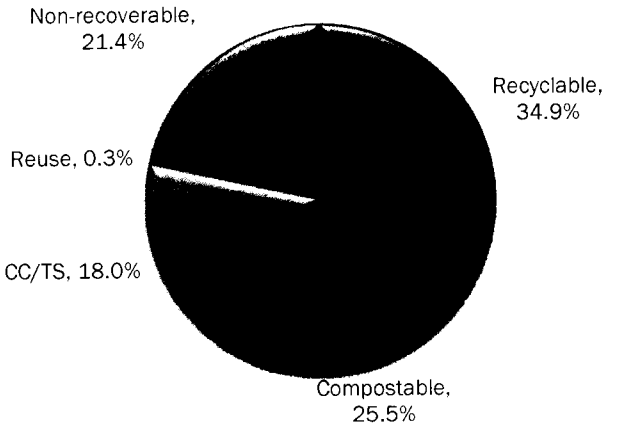
Recyclable	Convenience Center/ Transfer Station	Non-Recoverable
Newspaper	Tires	Composite/Other Paper
Plain OCC/Kraft Paper	Rubber	Nonfood Expanded Polystyrene
High-Grade Paper	Carpet/Upholstery	Other Food Service Plastics
Mixed Low-Grade Paper	Appliances	Other Rigid Packaging
Phone Books	Clean Wood	Other Film
Paperback Books	Pallets and Crates	Plastic Products
PET Bottles	Clean Gypsum	Composite/Other Plastic
#1 PET Thermoforms	Rock/Concrete/Bricks	Plate Glass
#2 HDPE Natural/Colored Bottles	Asphaltic Roofing	Composite/Other Glass
Other Plastic Bottles	Sand/Soil/Dirt/Grit/Fines	Composite/Other Metals
No. 2 Through 7 Tubs, Cups, and Lids	Batteries	Disposable Diapers
Clean Shopping/Dry Cleaner Bags	Cleaners	Composite/Other Organic
Other Clean Polyethylene Film	Oil Fuels	Mattresses
Clear Glass Bottles & Jars	Electronics	Composite/Other Products
Green Glass Bottles & Jars	Television	Composite/Other Wood
Brown Glass Bottles & Jars	Computers	Painted Gypsum
Aluminum Cans	Other electronics	Fiberglass Insulation
Aluminum Foil/Containers	**Compostable**	Ceramics
Other Aluminum	Waxed OCC/Kraft Paper	Composite/Other Construction Debris
Other Nonferrous	Polycoated Paper	Pesticides/Herbicides
Tin/Steel Cans	Compostable/Soiled Paper	Medical waste
Empty Paint and Aerosol Cans	Grass	Treated Wood
Empty Propane and Other Tanks	Leaves	Light Bulbs
Other Ferrous	Prunings	Other Hazardous Waste
Textiles	Other Yard Waste	**Reuse Store**
	Food	Paperback Books
	Animal By-products	Apparel
	Stumps and Logs	Furniture
		Appliances
		Paint

[1] It is important to note that the condition of any recyclable or reusable item in the disposed waste stream may be so poor as to prevent diversion or recovery of that item. The recoverability options shown are intended to reflect how an item in good enough condition could be diverted instead of disposed.

- **Recyclable**: Includes recyclable materials that are targeted in existing recycling programs in the Lexington area.
- **Compostable**: Includes organic materials that can be composted, whether or not a commercial composting operation exists in Lexington County.
- **Accepted at Convenience Center or Transfer Station (CC/TS)**: County solid waste facilities accept a range of special materials for diversion at the Bluegrass Transfer Station or local convenience centers.
- **Reuse Store**: Some materials can be taken to a thrift shop or reuse store if they are in good condition.
- **Non-Recoverable**: Some items are disposed and have no realistic, near-term opportunity for diversion. It should also be noted that many of actual items found during the sort were too damaged or contaminated to realistically be diverted.

The pie chart in Figure 3-3 illustrates the recoverability potential of the aggregate disposed MSW stream.

Figure 3-3 Diversion Potential of Aggregated Waste MSW Stream



As presented in Figure 3-3, a significant fraction of the disposed waste stream can potentially be recycled, composted, or otherwise reused. As mentioned above, however, it is important to note that many factors will in practice reduce the actual diversion potential, including the condition or level of contamination of the disposed item, the existence of a local market for recovered materials, the existence of an appropriate collection and transportation network to aggregate materials, and the availability of a sufficient quantity of the material to warrant diversion or recycling.

Table 3-2 on the following page provides the detailed statistical analysis of the aggregate disposed MSW composition, including average percent composition and 90 percent confidence interval. These results exclude C&D debris.

Table 3-2 Detailed Aggregate Waste Composition

Material	Percent	Conf Int (+/-)	Material	Percent	Conf Int (+/-)
Paper	**29.8%**	**4.9%**	**Metal**	**2.6%**	**0.5%**
Newspaper	2.2%	1.3%	Aluminum Cans	0.6%	0.1%
Plain OCC/Kraft Paper	12.5%	4.4%	Aluminum Foil/Containers	0.2%	0.1%
Waxed OCC/Kraft Paper	0.3%	0.3%	Other Aluminum	0.0%	0.0%
High-Grade Paper	0.4%	0.2%	Other Nonferrous	0.0%	0.0%
Mixed Low-Grade Paper	4.3%	0.9%	Tin/Steel Cans	0.6%	0.2%
Phone Books	0.1%	0.1%	Empty Paint and Aerosol Cans	0.1%	0.1%
Paperback Books	1.0%	1.1%	Empty Propane and Other Tanks	0.0%	0.1%
Polycoated Paper	0.1%	0.1%	Other Ferrous	0.2%	0.2%
Compostable/Soiled Paper	6.0%	0.9%	Composite/Other Metals	0.9%	0.4%
Composite/Other Paper	2.9%	2.0%			
			Organic	**22.6%**	**4.2%**
Plastic	**11.8%**	**1.5%**	Grass	1.2%	1.0%
PET Bottles	1.0%	0.2%	Leaves	0.1%	0.2%
#1 PET Thermoforms	0.1%	0.0%	Prunings	1.1%	0.8%
#2 HDPE Natural/Colored Bottles	0.4%	0.1%	Other Yard Waste	1.9%	2.0%
Other Plastic Bottles	0.1%	0.1%	Food	12.3%	2.8%
#2 - #7 Tubs, Cups, and Lids	0.4%	0.2%	Disposable Diapers	2.4%	0.8%
Nonfood Expanded Polystyrene	0.1%	0.0%	Animal By-products	2.4%	1.4%
Other Food Service Plastics	1.2%	0.3%	Composite/Other Organic	1.2%	0.4%
Other Rigid Packaging	0.4%	0.1%			
Clean Shopping/Dry Cleaner Bags	0.9%	0.2%	**Other Products**	**13.6%**	**3.6%**
Other Clean Polyethylene Film	1.6%	0.9%	Tires	0.4%	0.7%
Other Film	3.7%	0.6%	Rubber	1.5%	1.0%
Plastic Products	0.5%	0.2%	Textiles	4.1%	1.6%
Composite/Other Plastic	1.1%	0.3%	Carpet/Upholstery	5.7%	2.8%
			Apparel	0.3%	0.2%
Glass	**2.6%**	**0.8%**	Furniture	Not found	
Clear Glass Bottles & Jars	1.1%	0.3%	Mattresses	0.2%	0.3%
Green Glass Bottles & Jars	0.5%	0.2%	Appliances	0.3%	0.2%
Brown Glass Bottles & Jars	0.6%	0.3%	Composite/Other Products	1.1%	0.7%
Plate Glass	0.0%	0.0%			
Composite/Other Glass	0.4%	0.6%	**Construction & Demolition**	**14.4%**	**4.5%**
			Clean Wood	3.0%	1.4%
Universal Waste	**2.6%**	**1.3%**	Pallets and Crates	3.7%	1.9%
Paint	0.0%	0.0%	Stumps and Logs	Not found	
Batteries	0.0%	0.0%	Composite/Other Wood	2.1%	1.5%
Cleaners	Not found		Clean Gypsum	0.0%	0.1%
Oil Fuels	Not found		Painted Gypsum	0.8%	1.0%
Electronics	0.2%	0.2%	Fiberglass Insulation	0.2%	0.2%
Television	0.2%	0.3%	Rock/Concrete/Bricks	1.5%	1.6%
Computers	Not found		Asphaltic Roofing	Not found	
Other Electronics	0.3%	0.4%	Ceramics	1.1%	1.0%
Pesticides/Herbicides	Not found		Sand/Soil/Dirt/Grit/Fines	1.1%	0.4%
Medical Waste	0.1%	0.1%	Composite/Other Construction Debris	0.9%	0.9%
Treated Wood	1.8%	1.2%			
Light Bulbs	0.0%	0.0%		**Total**	**100%**
Other Hazardous Waste	Not found			**Total Samples**	**100**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

3.2 SINGLE-FAMILY WASTE

The remaining sections provide parallel results for each of the major generator sectors analyzed in the study.

Figure 3-4 below presents the breakdown of single-family residential waste. Organics are the most prevalent material group by a significant margin.

Figure 3-4 Composition of Single-Family Residential Waste

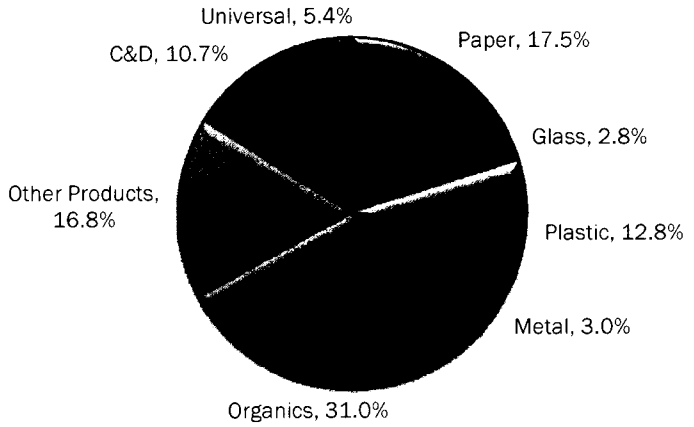


Figure 3-5 presents the top ten materials disposed in the single-family waste stream. The top ten most commonly found materials in the study made up over 64 percent of all the materials disposed in the single-family waste stream. Food comprises almost 19 percent of single family residential waste. It is noteworthy that not a single targeted recyclable made the top 10.

Figure 3-5 Top 10 Most Common Materials in Single-Family Residential Waste Stream

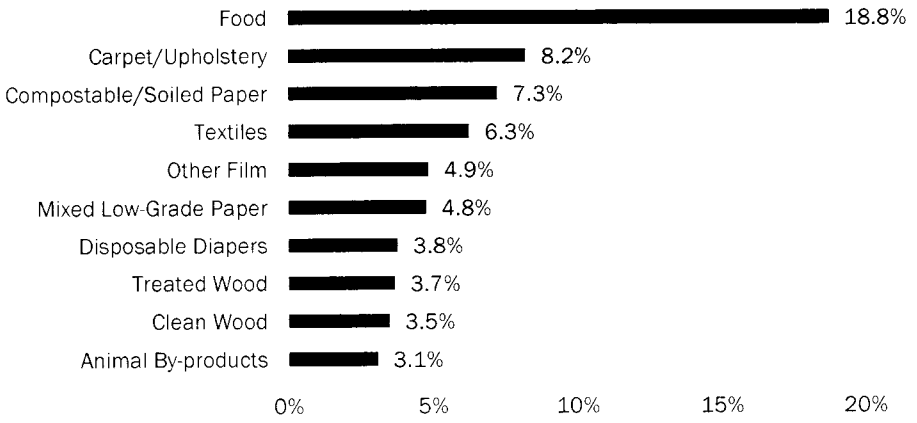


Figure 3-6 illustrates the potential recoverability of waste from the single-family residential waste stream.

Figure 3-6 Single -Family Diversion Potential

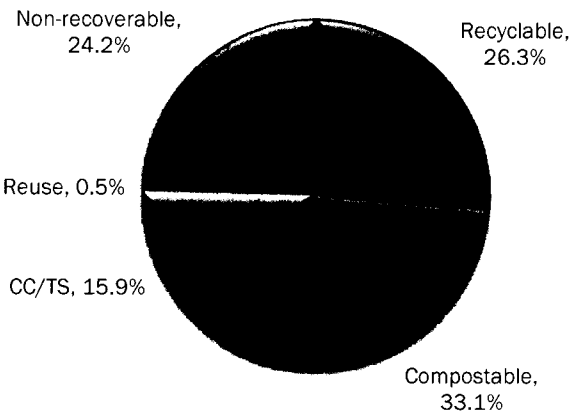


Table 3-3 provides a detailed tabular summary of single-family residential waste composition.

Table 3-3 Detailed Single Family Residential Waste Composition

Material	Percent	Conf Int (+/-)	Material	Percent	Conf Int (+/-)
Paper	**17.5%**	**2.6%**	**Metal**	**3.0%**	**0.6%**
Newspaper	1.8%	0.7%	Aluminum Cans	0.5%	0.2%
Plain OCC/Kraft Paper	2.3%	1.4%	Aluminum Foil/Containers	0.3%	0.1%
Waxed OCC/Kraft Paper	0.1%	0.1%	Other Aluminum	Not found	
High-Grade Paper	0.1%	0.1%	Other Nonferrous	Not found	
Mixed Low-Grade Paper	4.8%	0.9%	Tin/Steel Cans	0.9%	0.3%
Phone Books	0.3%	0.3%	Empty Paint and Aerosol Cans	0.2%	0.1%
Paperback Books	0.1%	0.1%	Empty Propane and Other Tanks	0.2%	0.3%
Polycoated Paper	0.1%	0.0%	Other Ferrous	0.4%	0.3%
Compostable/Soiled Paper	7.3%	1.5%	Composite/Other Metals	0.6%	0.5%
Composite/Other Paper	0.7%	0.2%			
			Organic	**31.0%**	**5.5%**
Plastic	**12.8%**	**1.6%**	Grass	2.3%	2.2%
PET Bottles	1.0%	0.2%	Leaves	0.3%	0.5%
#1 PET Thermoforms	0.1%	0.1%	Prunings	1.0%	1.2%
#2 HDPE Natural/Colored Bottles	0.6%	0.3%	Other Yard Waste	0.3%	0.5%
Other Plastic Bottles	0.3%	0.2%	Food	18.8%	3.3%
#2 - #7 Tubs, Cups, and Lids	0.4%	0.2%	Disposable Diapers	3.8%	1.3%
Nonfood Expanded Polystyrene	0.1%	0.1%	Animal By-products	3.1%	1.2%
Other Food Service Plastics	1.4%	0.2%	Composite/Other Organic	1.5%	0.6%
Other Rigid Packaging	0.4%	0.1%			
Clean Shopping/Dry Cleaner Bags	1.0%	0.3%	**Other Products**	**16.8%**	**4.9%**
Other Clean Polyethylene Film	0.6%	0.9%	Tires	Not found	
Other Film	4.9%	0.7%	Rubber	0.6%	0.5%
Plastic Products	0.6%	0.4%	Textiles	6.3%	4.0%
Composite/Other Plastic	1.4%	0.6%	Carpet/Upholstery	8.2%	4.4%
			Apparel	0.5%	0.4%
Glass	**2.8%**	**0.7%**	Furniture	Not found	
Clear Glass Bottles & Jars	1.7%	0.4%	Mattresses	0.7%	1.1%
Green Glass Bottles & Jars	0.3%	0.3%	Appliances	0.3%	0.3%
Brown Glass Bottles & Jars	0.6%	0.4%	Composite/Other Products	0.2%	0.2%
Plate Glass	Not found				
Composite/Other Glass	0.2%	0.2%	**Construction & Demolition**	**10.7%**	**4.4%**
			Clean Wood	3.5%	2.4%
Universal Waste	**5.4%**	**3.7%**	Pallets and Crates	Not found	
Paint	0.0%	0.0%	Stumps and Logs	Not found	
Batteries	0.1%	0.1%	Composite/Other Wood	2.4%	2.3%
Cleaners	Not found		Clean Gypsum	0.1%	0.1%
Oil Fuels	Not found		Painted Gypsum	0.1%	0.2%
Electronics	0.3%	0.4%	Fiberglass Insulation	Not found	
Television	0.1%	0.1%	Rock/Concrete/Bricks	0.1%	0.2%
Computers	Not found		Asphaltic Roofing	Not found	
Other Electronics	1.0%	1.3%	Ceramics	1.6%	2.7%
Pesticides/Herbicides	Not found		Sand/Soil/Dirt/Grit/Fines	1.6%	0.9%
Medical Waste	0.2%	0.2%	Composite/Other Construction Debris	1.3%	1.0%
Treated Wood	3.7%	3.6%			
Light Bulbs	0.0%	0.0%		**Total**	**100%**
Other Hazardous Waste	Not found			**Total Samples**	**14**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

3.3 MULTI-FAMILY WASTE

Only five samples of multi-family waste were obtained in the 2014 Study. This is not a sufficient sample size to draw statistically meaningful conclusions, and consequently only the detailed results table is provided for multi-family wastes.

Table 3-4 is a detailed tabular summary of multi-family residential waste composition.

Table 3-4 Detailed Multi-Family Waste Composition

Material	Percent	Conf Int (+/-)	Material	Percent	Conf Int (+/-)
Paper	**35.8%**	**13.0%**	**Metal**	**3.2%**	**1.1%**
Newspaper	8.8%	11.0%	Aluminum Cans	1.0%	0.3%
Plain OCC/Kraft Paper	10.0%	5.0%	Aluminum Foil/Containers	0.5%	0.3%
Waxed OCC/Kraft Paper	0.2%	0.4%	Other Aluminum	Not found	
High-Grade Paper	0.4%	0.5%	Other Nonferrous	Not found	
Mixed Low-Grade Paper	8.8%	4.6%	Tin/Steel Cans	1.1%	0.5%
Phone Books	0.1%	0.2%	Empty Paint and Aerosol Cans	0.1%	0.1%
Paperback Books	0.2%	0.3%	Empty Propane and Other Tanks	Not found	
Polycoated Paper	0.0%	0.0%	Other Ferrous	0.0%	0.0%
Compostable/Soiled Paper	5.8%	0.4%	Composite/Other Metals	0.5%	0.4%
Composite/Other Paper	1.4%	0.5%			
			Organic	**23.9%**	**6.6%**
Plastic	**12.1%**	**3.1%**	Grass	Not found	
PET Bottles	1.6%	0.7%	Leaves	Not found	
#1 PET Thermoforms	0.0%	0.0%	Prunings	0.2%	0.3%
#2 HDPE Natural/Colored Bottles	0.5%	0.5%	Other Yard Waste	Not found	
Other Plastic Bottles	0.2%	0.1%	Food	17.3%	5.0%
#2 - #7 Tubs, Cups, and Lids	0.7%	0.4%	Disposable Diapers	2.7%	2.2%
Nonfood Expanded Polystyrene	0.1%	0.1%	Animal By-products	2.5%	1.8%
Other Food Service Plastics	1.2%	0.2%	Composite/Other Organic	1.2%	1.1%
Other Rigid Packaging	0.8%	0.4%			
Clean Shopping/Dry Cleaner Bags	1.8%	0.5%	**Other Products**	**7.6%**	**3.7%**
Other Clean Polyethylene Film	0.0%	0.0%	Tires	Not found	
Other Film	3.2%	0.6%	Rubber	0.2%	0.1%
Plastic Products	0.8%	0.6%	Textiles	3.0%	2.4%
Composite/Other Plastic	1.3%	0.5%	Carpet/Upholstery	1.9%	2.0%
			Apparel	0.8%	1.2%
Glass	**3.0%**	**1.5%**	Furniture	Not found	
Clear Glass Bottles & Jars	1.5%	1.0%	Mattresses	Not found	
Green Glass Bottles & Jars	0.7%	0.4%	Appliances	0.6%	1.1%
Brown Glass Bottles & Jars	0.7%	0.4%	Composite/Other Products	1.0%	0.7%
Plate Glass	0.1%	0.1%			
Composite/Other Glass	0.0%	0.0%	**Construction & Demolition**	**14.0%**	**18.1%**
			Clean Wood	0.1%	0.1%
Universal Waste	**0.5%**	**0.6%**	Pallets and Crates	Not found	
Paint	Not found		Stumps and Logs	Not found	
Batteries	0.0%	0.0%	Composite/Other Wood	4.1%	6.7%
Cleaners	Not found		Clean Gypsum	Not found	
Oil Fuels	Not found		Painted Gypsum	Not found	
Electronics	0.0%	0.0%	Fiberglass Insulation	1.2%	1.9%
Television	Not found		Rock/Concrete/Bricks	2.9%	4.7%
Computers	Not found		Asphaltic Roofing	Not found	
Other Electronics	0.0%	0.1%	Ceramics	3.5%	5.8%
Pesticides/Herbicides	Not found		Sand/Soil/Dirt/Grit/Fines	2.2%	1.5%
Medical Waste	Not found		Composite/Other Construction Debris	0.1%	0.2%
Treated Wood	0.4%	0.6%			
Light Bulbs	Not found			**Total**	**100%**
Other Hazardous Waste	Not found			**Total Samples**	**5**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

3.4 COMMERCIAL WASTE

Figure 3-7 presents the breakdown of commercial waste. As shown, Paper and Organics both comprise almost one quarter of the commercial waste stream.

Figure 3-7 Composition of the Commercial Waste Stream

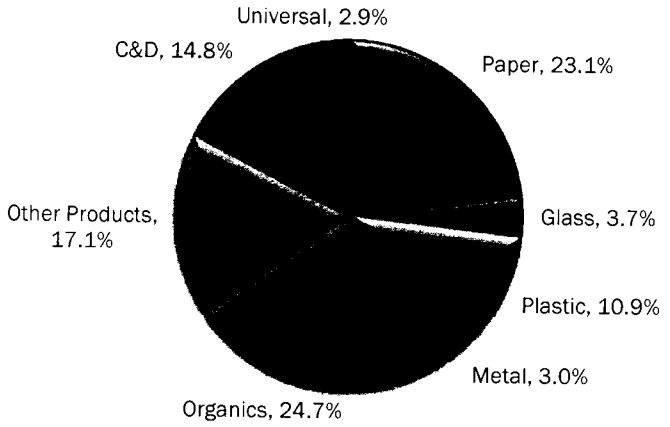


Figure 3-8 presents the top ten most commonly found materials in the commercial waste stream. These materials sum to over 58 percent of all materials found in commercial waste

Figure 3-8 Top 10 Most Common Materials in the Commercial Waste Stream

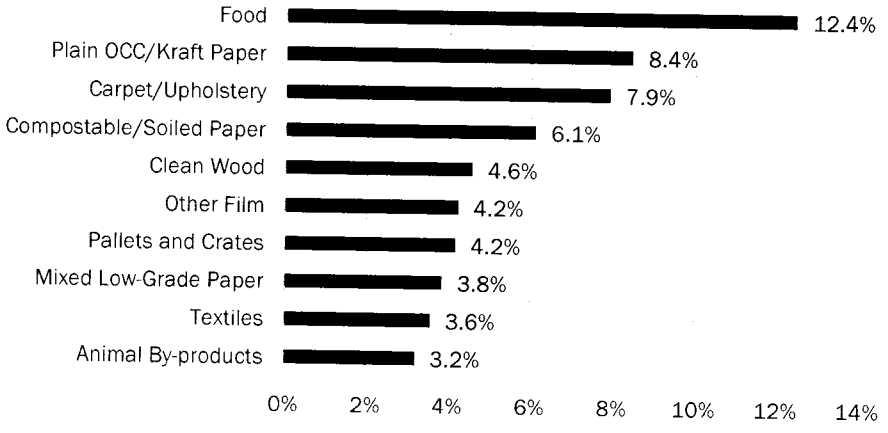


Figure 3-9 shows the potential recovery of materials in the commercial waste stream.

Figure 3-9 Diversion Potential of Commercial Waste Stream

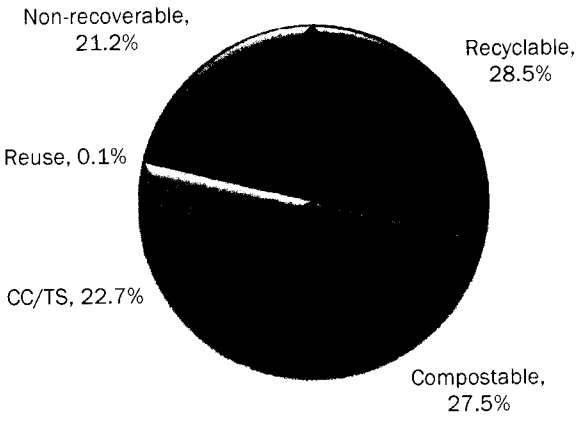


Table 3-5 shows the detailed tabular summary of commercial waste composition.

Table 3-5 Detailed Commercial Waste Composition

Material	Percent	Conf Int (+/-)	Material	Percent	Conf Int (+/-)
Paper	**23.1%**	**3.6%**	**Metal**	**3.0%**	**1.0%**
Newspaper	1.8%	1.3%	Aluminum Cans	0.6%	0.2%
Plain OCC/Kraft Paper	8.4%	2.3%	Aluminum Foil/Containers	0.1%	0.1%
Waxed OCC/Kraft Paper	0.7%	0.8%	Other Aluminum	Not found	
High-Grade Paper	0.6%	0.5%	Other Nonferrous	0.0%	0.0%
Mixed Low-Grade Paper	3.8%	1.2%	Tin/Steel Cans	0.5%	0.3%
Phone Books	0.1%	0.1%	Empty Paint and Aerosol Cans	0.2%	0.1%
Paperback Books	0.4%	0.5%	Empty Propane and Other Tanks	Not found	
Polycoated Paper	0.2%	0.2%	Other Ferrous	0.3%	0.4%
Compostable/Soiled Paper	6.1%	1.3%	Composite/Other Metals	1.3%	0.8%
Composite/Other Paper	1.0%	0.4%			
			Organic	**24.7%**	**6.7%**
Plastic	**10.9%**	**1.8%**	Grass	1.4%	1.7%
PET Bottles	1.2%	0.3%	Leaves	0.2%	0.3%
#1 PET Thermoforms	0.0%	0.0%	Prunings	2.1%	1.6%
#2 HDPE Natural/Colored Bottles	0.5%	0.2%	Other Yard Waste	1.1%	1.8%
Other Plastic Bottles	0.1%	0.1%	Food	12.4%	5.0%
#2 - #7 Tubs, Cups, and Lids	0.3%	0.1%	Disposable Diapers	2.7%	1.4%
Nonfood Expanded Polystyrene	0.1%	0.1%	Animal By-products	3.2%	3.0%
Other Food Service Plastics	1.5%	0.4%	Composite/Other Organic	1.6%	0.7%
Other Rigid Packaging	0.3%	0.1%			
Clean Shopping/Dry Cleaner Bags	0.9%	0.4%	**Other Products**	**17.1%**	**6.9%**
Other Clean Polyethylene Film	0.1%	0.1%	Tires	1.0%	1.5%
Other Film	4.2%	0.9%	Rubber	2.7%	2.3%
Plastic Products	0.7%	0.5%	Textiles	3.6%	1.6%
Composite/Other Plastic	0.9%	0.5%	Carpet/Upholstery	7.9%	5.6%
			Apparel	0.1%	0.1%
Glass	**3.7%**	**1.5%**	Furniture	Not found	
Clear Glass Bottles & Jars	1.3%	0.5%	Mattresses	Not found	
Green Glass Bottles & Jars	0.7%	0.5%	Appliances	0.4%	0.4%
Brown Glass Bottles & Jars	0.8%	0.6%	Composite/Other Products	1.3%	1.2%
Plate Glass	0.0%	0.0%			
Composite/Other Glass	0.9%	1.4%	**Construction & Demolition**	**14.8%**	**6.0%**
			Clean Wood	4.6%	2.7%
Universal Waste	**2.9%**	**1.6%**	Pallets and Crates	4.2%	3.4%
Paint	Not found		Stumps and Logs	Not found	
Batteries	0.0%	0.0%	Composite/Other Wood	1.5%	2.4%
Cleaners	Not found		Clean Gypsum	0.1%	0.1%
Oil Fuels	Not found		Painted Gypsum	1.3%	2.1%
Electronics	0.2%	0.2%	Fiberglass Insulation	0.1%	0.2%
Television	0.5%	0.8%	Rock/Concrete/Bricks	0.0%	0.0%
Computers	Not found		Asphaltic Roofing	Not found	
Other Electronics	0.0%	0.0%	Ceramics	0.7%	1.1%
Pesticides/Herbicides	Not found		Sand/Soil/Dirt/Grit/Fines	1.0%	0.5%
Medical Waste	0.1%	0.1%	Composite/Other Construction Debris	1.3%	1.9%
Treated Wood	2.0%	1.4%			
Light Bulbs	0.0%	0.0%		**Total**	**100%**
Other Hazardous Waste	Not found			**Total Samples**	**22**

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

3.5 INDUSTRIAL WASTE

Only nine samples of industrial waste were obtained in the 2014 Study. Industrial wastes are highly variable from load to load and from sample to sample. Consequently, this is not a sufficient sample size to draw statistically meaningful conclusions, and only the detailed results table is provided for industrial wastes.

Table 3-6 is a detailed tabular summary of industrial waste composition. As shown, the samples obtained for this study contained an unusually high fraction of corrugated cardboard, and many of the material categories were not observed in these nine samples. It is not clear that this is an accurate representation of the industrial waste stream, and readers are cautioned in relying on these data for planning and projection purposes.

It is also worth noting that the high incidence of cardboard in the industrial sector contributes to a high overall incidence of cardboard in the aggregate waste stream. MSW Consultants believes that the incidence of cardboard may be overstated as a result of the contribution in the industrial stream.

Table 3-6 Industrial Waste Composition

Material	Percent	Conf Int (+/-)
Paper	**54.0%**	**18.8%**
Newspaper	Not found	
Plain OCC/Kraft Paper	33.6%	19.6%
Waxed OCC/Kraft Paper	Not found	
High-Grade Paper	0.5%	0.5%
Mixed Low-Grade Paper	2.4%	2.6%
Phone Books	Not found	
Paperback Books	3.5%	5.8%
Polycoated Paper	Not found	
Compostable/Soiled Paper	4.2%	3.1%
Composite/Other Paper	9.8%	10.7%
Plastic	**12.1%**	**6.4%**
PET Bottles	0.4%	0.3%
#1 PET Thermoforms	0.2%	0.2%
#2 HDPE Natural/Colored Bottles	0.0%	0.1%
Other Plastic Bottles	0.0%	0.0%
#2 - #7 Tubs, Cups, and Lids	0.6%	0.9%
Nonfood Expanded Polystyrene	0.0%	0.0%
Other Food Service Plastics	0.6%	0.7%
Other Rigid Packaging	0.5%	0.7%
Clean Shopping/Dry Cleaner Bags	0.4%	0.3%
Other Clean Polyethylene Film	6.4%	4.2%
Other Film	1.7%	1.5%
Plastic Products	0.0%	0.0%
Composite/Other Plastic	1.3%	1.0%
Glass	**0.3%**	**0.2%**
Clear Glass Bottles & Jars	0.2%	0.1%
Green Glass Bottles & Jars	0.1%	0.1%
Brown Glass Bottles & Jars	Not found	
Plate Glass	Not found	
Composite/Other Glass	Not found	
Universal Waste	**Not found**	
Paint	Not found	
Batteries	Not found	
Cleaners	Not found	
Oil Fuels	Not found	
Electronics	Not found	
Television	Not found	
Computers	Not found	
Other Electronics	Not found	
Pesticides/Herbicides	Not found	
Medical Waste	Not found	
Treated Wood	Not found	
Light Bulbs	Not found	
Other Hazardous Waste	Not found	

Material	Percent	Conf Int (+/-)
Metal	**1.0%**	**1.0%**
Aluminum Cans	0.2%	0.1%
Aluminum Foil/Containers	0.0%	0.0%
Other Aluminum	0.0%	0.0%
Other Nonferrous	0.0%	0.0%
Tin/Steel Cans	0.0%	0.0%
Empty Paint and Aerosol Cans	Not found	
Empty Propane and Other Tanks	Not found	
Other Ferrous	0.0%	0.1%
Composite/Other Metals	0.7%	1.0%
Organic	**8.1%**	**10.1%**
Grass	Not found	
Leaves	Not found	
Prunings	Not found	
Other Yard Waste	6.3%	10.3%
Food	1.8%	1.8%
Disposable Diapers	0.0%	0.0%
Animal By-products	Not found	
Composite/Other Organic	0.0%	0.0%
Other Products	**6.2%**	**6.2%**
Tires	Not found	
Rubber	0.8%	0.9%
Textiles	3.2%	5.2%
Carpet/Upholstery	0.2%	0.3%
Apparel	0.0%	0.0%
Furniture	Not found	
Mattresses	Not found	
Appliances	Not found	
Composite/Other Products	1.9%	2.6%
Construction & Demolition	**18.5%**	**17.6%**
Clean Wood	1.1%	1.3%
Pallets and Crates	9.0%	5.9%
Stumps and Logs	Not found	
Composite/Other Wood	1.7%	2.8%
Clean Gypsum	Not found	
Painted Gypsum	1.2%	2.0%
Fiberglass Insulation	Not found	
Rock/Concrete/Bricks	5.3%	8.8%
Asphaltic Roofing	Not found	
Ceramics	Not found	
Sand/Soil/Dirt/Grit/Fines	0.1%	0.1%
Composite/Other Construction Debris	Not found	
Total	**100%**	
Total Samples	**9**	

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.

3.6 CONSTRUCTION AND DEMOLITION DEBRIS

Consistent with the 2009 Study, loads of C&D waste were visually surveyed into 42 separate material categories. These material categories aggregate into material groups (paper, plastic, glass, etc.). These material categories differ from categories used for the MSW stream; C&D categories were selected based on MSW Consultants' experience of expected components in C&D waste.

Visual surveys were performed on complete incoming loads of C&D wastes at the Bluegrass Transfer Station. Visually obtained volumetric estimates of waste were made of each load immediately after the load was tipped by the collection vehicle. These data were recorded at the time of making the visual observations. After the field work was completed, volume measurements were converted to weight-based estimates using industry-accepted density factors, and the weight values were then normalized based on actual load weights taken from scale tickets.

It should be noted that the definition of C&D waste was based on the classifications of incoming loads at the scalehouse. If a load was coded as C&D, it was considered C&D for the purposes of this study even if the load contained non-C&D debris.

Figure 3-10 shows the breakdown of the C&D waste stream by material group. Not surprisingly, almost 70 percent of the wastes were construction and demolition-related materials.

Figure 3-10 Composition of the C&D Waste Stream

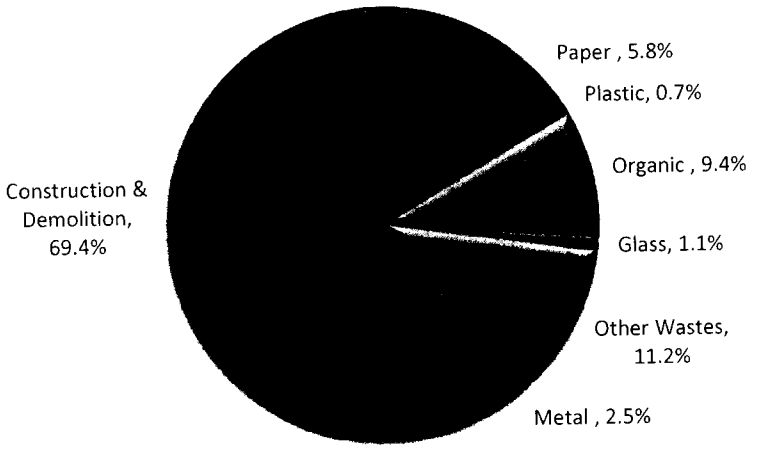


Figure 3-11 shows the most prevalent materials in C&D loads. These 10 materials make up almost 75 percent of the C&D waste stream.

Figure 3-11 Top 10 Most Prevalent C&D Materials

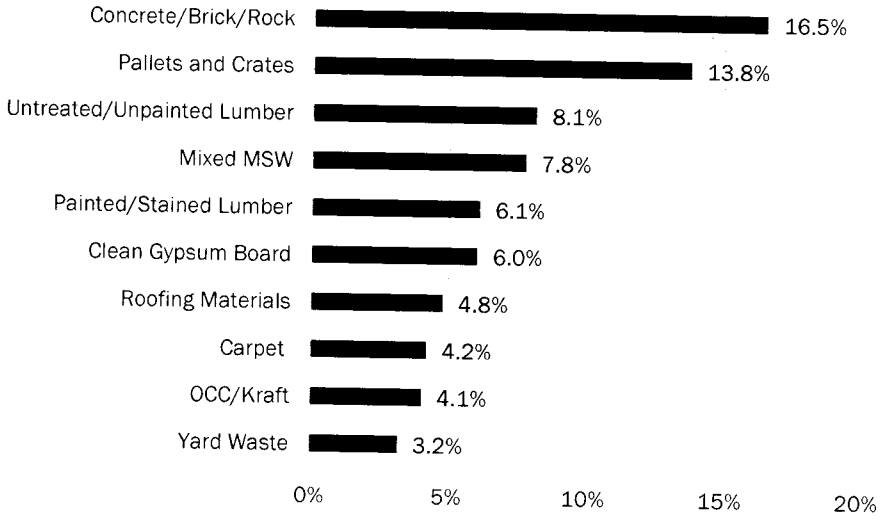


Table 3-7 provides the detailed composition of C&D wastes.

Table 3-7 C&D Waste Composition

Material	Percent	Conf Int (+/-)	Material	Percent	Conf Int (+/-)
Paper	**5.8%**	**2.0%**	**Construction & Demolition**	**69.4%**	**4.9%**
OCC/Kraft	5.1%	1.8%	Concrete/Brick/Rock	16.4%	4.8%
R/C and Other Paper	0.7%	0.3%	Asphalt Paving	Not found	
			Roofing Materials	4.8%	2.9%
Plastic	**1.1%**	**0.3%**	Ceiling Tiles	0.1%	0.1%
HDPE Buckets	0.0%	0.0%	Pallets and Crates	15.0%	4.1%
Clean Recoverable Film	0.1%	0.1%	Untreated/Unpainted Lumber	7.8%	2.2%
R/C and Other Plastic	1.0%	0.3%	Treated Lumber	0.5%	0.4%
			Painted/Stained Lumber	5.9%	1.7%
Glass	**0.7%**	**0.9%**	Plywood	1.4%	0.6%
			OSB	1.6%	0.8%
Metal	**2.5%**	**0.9%**	MDF and Particle Board	0.9%	1.0%
Appliances	0.0%	0.0%	Wood Furniture	1.9%	0.9%
Other Ferrous Metals	2.2%	0.9%	Other Wood	0.7%	0.9%
HVAC Ducting	0.1%	0.1%	Clean Gypsum Board	6.0%	2.6%
			Painted Gypsum Board	2.1%	1.2%
Other Wastes	**11.2%**	**3.2%**	Dirt, Sand, and Gravel	2.6%	1.7%
Electronics	0.6%	0.4%	Insulation	0.5%	0.3%
Items with CRTs	0.2%	0.2%	R/C and Other C&D	1.2%	0.9%
Bulky Items	2.2%	1.2%			
Tires	0.3%	0.4%	**Organic**	**9.4%**	**3.0%**
Lead acid batteries	Not found		Yard Waste	3.1%	1.8%
Vehicle and Equipment Fluids	Not found		Carpet	4.1%	1.9%
Paint and Paint Related Waste	0.1%	0.1%	Carpet Padding	0.1%	0.1%
Other Hazardous	0.0%	0.0%	R/C and Other Organics	2.0%	1.7%
Fines/Mixed Residue	0.4%	0.3%			
Mixed MSW	7.4%	2.8%	**Total**		**100.0%**
			Samples		**111**

3.7 COMPARISON OF 2014 AND 2009 STUDY RESULTS

The following table is provided to allow for comparisons between the two study results. It is the opinion of MSW Consultants that the most informative comparisons can be made for single family residential and commercial wastes, as both studies captured enough samples to achieve relatively stable statistical results. Comparisons of the industrial waste stream – and by extension, the aggregate waste stream – are less informative because of the underlying uncertainty about industrial waste composition in the 2014 Study. Ideally, the industrial waste stream should undergo more extensive sampling in order to improve the accuracy of these results.

Table 3-8 Comparison of MSW Composition, 2014 and 2009

Material	Aggregate 2014	Aggregate 2009	Residential 2014	Residential 2009	Commercial 2014	Commercial 2009	Industrial 2014	Industrial 2009
Paper	**29.8%**	**24.0%**	**17.5%**	**21.9%**	**23.1%**	**30.9%**	**54.0%**	**19.0%**
Newspaper	2.2%	1.8%	1.8%	2.8%	1.8%	1.3%	Not found	1.6%
Plain OCC/Kraft Paper	12.5%	9.1%	2.3%	3.4%	8.4%	12.2%	33.6%	13.6%
Waxed OCC/Kraft Paper	0.3%	0.2%	0.1%	0.2%	0.7%	0.4%	Not found	0.0%
High-Grade Paper	0.4%	2.7%	0.1%	1.4%	0.6%	5.6%	0.5%	0.7%
Mixed Low-Grade Paper	4.3%	3.0%	4.8%	5.0%	3.8%	2.8%	2.4%	0.5%
Phone Books	0.1%	0.3%	0.3%	0.1%	0.1%	0.7%	Not found	0.0%
Paperback Books	1.0%	0.1%	0.1%	0.2%	0.4%	0.0%	3.5%	0.0%
Polycoated Paper	0.1%	0.4%	0.1%	0.4%	0.2%	0.8%	Not found	0.0%
Compostable/Soiled Paper	6.0%	5.0%	7.3%	7.0%	6.1%	5.5%	4.2%	1.4%
Composite/Other Paper	2.9%	1.3%	0.7%	1.4%	1.0%	1.6%	9.8%	1.1%
Plastic	**11.8%**	**11.3%**	**12.8%**	**12.2%**	**10.9%**	**11.8%**	**12.1%**	**9.5%**
PET Bottles	1.0%	0.9%	1.0%	1.2%	1.2%	1.0%	0.4%	0.2%
#1 PET Thermoforms	0.1%	N/A	0.1%	N/A	0.0%	N/A	0.2%	N/A
#2 HDPE Bottles	0.4%	N/A	0.6%	N/A	0.5%	N/A	0.0%	N/A
#2 HDPE Natural Bottles	N/A	0.2%	N/A	0.4%	N/A	0.2%	N/A	0.0%
#2 HDPE Colored Bottles	N/A	0.3%	N/A	0.4%	N/A	0.3%	N/A	0.0%
Other Plastic Bottles	0.1%	0.2%	0.3%	0.3%	0.1%	0.2%	0.0%	0.0%
#2 - #7 Tubs, Cups, and Lids	0.4%	N/A	0.4%	N/A	0.3%	N/A	0.6%	N/A
#2, 4, and 5 Tubs, Cups, and Lids	N/A	0.3%	N/A	0.4%	N/A	0.3%	N/A	0.1%
#1, 3, 6, and 7 Tubs, Cups, and Lids	N/A	0.4%	N/A	0.4%	N/A	0.4%	N/A	0.4%
Nonfood Expanded Polystyrene	0.1%	0.8%	0.1%	0.3%	0.1%	0.2%	0.0%	2.5%
Other Food Service Plastics	1.2%	1.2%	1.4%	1.9%	1.5%	1.2%	0.6%	0.2%
Other Rigid Packaging	0.4%	0.7%	0.4%	0.4%	0.3%	0.6%	0.5%	1.6%
Clean Shopping/Dry Cleaner Bags	0.9%	0.2%	1.0%	0.3%	0.9%	0.3%	0.4%	0.0%
Other Clean Polyethylene Film	1.6%	0.2%	0.6%	0.1%	0.1%	0.5%	6.4%	0.1%
Other Film	3.7%	3.4%	4.9%	4.1%	4.2%	3.8%	1.7%	1.6%
Plastic Products	0.5%	1.4%	0.6%	0.9%	0.7%	1.6%	0.0%	1.6%
Composite/Other Plastic	1.1%	1.2%	1.4%	1.0%	0.9%	1.4%	1.3%	1.1%
Glass	**2.6%**	**2.4%**	**2.8%**	**2.8%**	**3.7%**	**2.5%**	**0.3%**	**0.0%**
Clear Glass Bottles & Jars	1.1%	0.8%	1.7%	1.6%	1.3%	0.7%	0.2%	0.0%
Green Glass Bottles & Jars	0.5%	0.3%	0.3%	0.5%	0.7%	0.3%	0.1%	0.0%
Brown Glass Bottles & Jars	0.6%	0.8%	0.6%	0.5%	0.8%	1.2%	Not found	0.0%
Plate Glass	0.0%	0.2%	Not found	0.0%	0.0%	0.0%	Not found	0.0%
Composite/Other Glass	0.4%	0.3%	0.2%	0.2%	0.9%	0.4%	Not found	0.0%
Universal Waste	**2.6%**	**0.8%**	**5.4%**	**0.6%**	**2.9%**	**1.5%**	**Not found**	**0.0%**
Paint	0.0%	0.0%	0.0%	0.1%	Not found	0.1%	Not found	0.0%
Batteries	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	Not found	0.0%
Cleaners	0.0%	0.0%	Not found	0.0%	Not found	0.0%	Not found	0.0%
Oil Fuels	0.0%	0.0%	Not found	0.1%	Not found	0.0%	Not found	0.0%
Electronics	0.2%	0.4%	0.3%	0.0%	0.2%	1.0%	Not found	0.0%
Television	0.2%	0.0%	0.1%	0.0%	0.5%	0.0%	Not found	0.0%
Computers	0.0%	0.0%	Not found	0.0%	Not found	0.0%	Not found	0.0%
Other Electronics	0.3%	0.0%	1.0%	0.1%	0.0%	0.0%	Not found	0.0%
Pesticides/Herbicides	0.0%	0.0%	Not found	0.0%	Not found	0.0%	Not found	0.0%
Medical Waste	0.1%	0.1%	0.2%	0.1%	0.1%	0.0%	Not found	0.0%
Treated Wood	1.8%	0.0%	3.7%	0.0%	2.0%	0.0%	Not found	0.0%
Light Bulbs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Not found	0.0%
Other Hazardous Waste	0.0%	0.1%	Not found	0.1%	Not found	0.2%	Not found	0.0%

Table 3-8 (continued)

Material	Aggregate 2014	Aggregate 2009	Residential 2014	Residential 2009	Commercial 2014	Commercial 2009	Industrial 2014	Industrial 2009
Metal	**2.6%**	**4.6%**	**3.0%**	**4.6%**	**3.0%**	**5.1%**	**1.0%**	**1.7%**
Aluminum Cans	0.6%	0.5%	0.5%	0.8%	0.6%	0.5%	0.2%	0.1%
Aluminum Foil/Containers	0.2%	0.2%	0.3%	0.2%	0.1%	0.2%	0.0%	0.0%
Other Aluminum	0.0%	0.1%	Not found	0.1%	Not found	0.2%	0.0%	0.2%
Other Nonferrous	0.0%	0.1%	Not found	0.1%	0.0%	0.1%	0.0%	0.2%
Tin/Steel Cans	0.6%	0.5%	0.9%	0.9%	0.5%	0.5%	0.0%	0.0%
Empty Paint and Aerosol Cans	0.1%	0.1%	0.2%	0.1%	0.2%	0.1%	Not found	0.0%
Empty Propane and Other Tanks	0.0%	0.0%	0.2%	0.0%	Not found	0.0%	Not found	0.0%
Other Ferrous	0.2%	1.3%	0.4%	1.2%	0.3%	0.8%	0.0%	1.2%
Composite/Other Metals	0.9%	1.9%	0.6%	1.1%	1.3%	2.8%	0.7%	0.0%
Organic	**22.6%**	**23.3%**	**31.0%**	**33.5%**	**24.7%**	**22.5%**	**8.1%**	**12.8%**
Grass	1.2%	0.7%	2.3%	1.1%	1.4%	0.3%	Not found	0.6%
Leaves	0.1%	3.6%	0.3%	9.7%	0.2%	1.6%	Not found	1.0%
Prunings	1.1%	0.5%	1.0%	0.9%	2.1%	0.4%	Not found	0.2%
Other Yard Waste	1.9%	0.5%	0.3%	0.3%	1.1%	0.6%	6.3%	0.8%
Food	12.3%	12.1%	18.8%	16.1%	12.4%	13.7%	1.8%	3.8%
Liquid Food Waste	N/A	1.0%	N/A	0.6%	N/A	0.8%	N/A	2.1%
Disposable Diapers	2.4%	1.8%	3.8%	2.3%	2.7%	1.2%	0.0%	0.2%
Animal By-products	2.4%	2.5%	3.1%	1.5%	3.2%	2.9%	Not found	4.2%
Composite/Other Organic	1.2%	0.6%	1.5%	0.8%	1.6%	0.9%	0.0%	0.0%
Other Products	**13.6%**	**12.5%**	**16.8%**	**16.8%**	**17.1%**	**12.0%**	**6.2%**	**7.1%**
Tires	0.4%	0.0%	Not found	0.0%	1.0%	0.0%	Not found	0.0%
Rubber	1.5%	0.2%	0.6%	0.3%	2.7%	0.1%	0.8%	0.2%
Textiles	4.1%	1.9%	6.3%	1.7%	3.6%	1.9%	3.2%	1.9%
Carpet/Upholstery	5.7%	3.0%	8.2%	5.9%	7.9%	3.5%	0.2%	0.1%
Apparel	0.3%	1.7%	0.5%	3.3%	0.1%	0.9%	0.0%	0.1%
Furniture	0.0%	3.0%	Not found	4.2%	Not found	0.3%	Not found	4.3%
Mattresses	0.2%	1.5%	0.7%	0.6%	Not found	3.1%	Not found	0.5%
Appliances	0.3%	0.4%	0.3%	0.5%	0.4%	0.8%	Not found	0.0%
Composite/Other Products	1.1%	0.7%	0.2%	0.4%	1.3%	1.4%	1.9%	0.0%
Construction & Demolition	**14.4%**	**21.0%**	**10.7%**	**7.6%**	**14.8%**	**13.7%**	**18.5%**	**49.8%**
Clean Wood	3.0%	2.1%	3.5%	1.0%	4.6%	1.3%	1.1%	4.7%
Pallets and Crates	3.7%	11.0%	Not found	0.0%	4.2%	6.8%	9.0%	34.9%
Stumps and Logs	0.0%	0.7%	Not found	0.5%	Not found	1.0%	Not found	0.1%
Composite/Other Wood	2.1%	1.7%	2.4%	1.5%	1.5%	1.4%	1.7%	2.6%
Clean Gypsum	0.0%	0.5%	0.1%	0.2%	0.1%	0.0%	Not found	1.8%
Painted Gypsum	0.8%	0.9%	0.1%	0.0%	1.3%	0.1%	1.2%	0.0%
Fiberglass Insulation	0.2%	0.0%	Not found	0.0%	0.1%	0.0%	Not found	0.0%
Rock/Concrete/Bricks	1.5%	0.8%	0.1%	0.3%	0.0%	1.0%	5.3%	0.4%
Asphaltic Roofing	0.0%	0.1%	Not found	0.3%	Not found	0.2%	Not found	0.0%
Ceramics	1.1%	0.1%	1.6%	0.2%	0.7%	0.1%	Not found	0.0%
Sand/Soil/Dirt/Grit/Fines	1.1%	2.6%	1.6%	2.4%	1.0%	1.4%	0.1%	5.3%
Composite/Other Construction Debris	0.9%	0.6%	1.3%	1.2%	1.3%	0.6%	Not found	0.1%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Total Samples	***50***	***102***	***14***	***28***	***22***	***38***	***9***	***38***

3.7.1 CHANGES IN RESIDENTIAL WASTE

Both the 2009 and 2014 Studies obtained enough residential samples to draw meaningful comparisons. The following observations are made about changes in the Residential waste stream:

- The incidence of recyclable fiber has decreased meaningfully. This is likely due to a combination of factors, including lower generation of fiber as well as increased use of recycling program.

- There does not appear to have been any changes in the fraction of recyclable containers being disposed. However, these containers are still a small amount of total disposal.
- Likely due to the different seasonal data collection periods for the two studies, the quantity of leaves, and of total yard waste – was significantly lower in the 2014 Study.
- The incidence of Treated/Painted Wood was noticeably higher in 2014, which had an impact on total Universal Wastes. However, this result was driven by one sample that contained almost 32 percent treated/painted wood. Had this sample been omitted from the analysis, the actual amount of treated wood would have been less than half the amount shown.
- Food waste slightly increased since 2009; this may be driven by a reduction in other historically prevalent materials such as paper and
- Other Products stayed relatively consistent as a group, but there was shift from Apparel to other Textiles and a slight increase in Carpet/Upholstery in the 2014 Study.

3.7.2 CHANGES IN COMMERCIAL WASTE

Both the 2009 and 2014 Studies obtained enough commercial samples to draw meaningful comparisons. The following observations are made about changes in the Commercial waste stream:

- There was a significant reduction in the incidence of both cardboard and high grade paper. While there has been reduced generation of these materials, it seems likely that recycling has increased in the commercial sector.
- Organic wastes were relatively consistent between the studies.
- There were significantly fewer metals in the disposed commercial waste stream.
- Treated/Painted Wood was higher in 2014, again due in part to a single samples which contained over 18 percent of this material. Had this sample been omitted from the analysis, the actual amount of treated wood would have been roughly half the amount shown.
- Textiles and Carpet/Upholstery both reflected an increase in the 2014 Study.

3.7.3 CHANGES IN C&D WASTE

In 2009, almost three quarters of the C&D visual surveying took place at the Haley Pike Landfill; conversely, all of the C&D surveying occurred at the Bluegrass Transfer Station in 2014. The MSW Consultants visual surveyor noticed a significantly different mix of incoming C&D loads at the transfer station. Specifically, there were very few loads of roofing material and relatively few open top boxes in the 2014 Study at the transfer station. In 2009, many of the loads surveyed were larger open top boxes consistent with a large construction site.

Because of the vastly different mix of C&D loads captured in 2014, this report does not attempt to compare the C&D composition as such comparison provides little insight into the impact of program changes or even changes in C&D waste generation as a whole.

4. CONCLUSIONS

4.1 CONCLUSIONS

The 2014 Study successfully updated UCG's understanding of the constituents remaining in the disposed waste stream received at the Bluegrass Transfer Station. As the UCG embarks on a zero waste strategic planning process, the results of this study will inform planners and stakeholders about various options and priorities for future diversion increases. The following conclusions can be drawn based on the results of this study.

- **Targeted Recyclables**: Despite a reduction in the percentage of recyclables in disposed waste since the 2008 Study, there are still recyclable fiber, bottles and containers that are being disposed. Continued public education will be needed to maximize the use of current recycling programs.
- **Organics**: Food is still the most prevalent material in the single family residential, multi-family residential and commercial waste streams. Along with yard wastes (and possibly compostable papers), organics therefore offers the most potential to reduce waste disposal if viable alternatives can be found.
- **Yard Wastes**: The 2014 Study field data collection schedule did not allow for testing how much yard wastes are being disposed rather than diverted via existing yard waste collection systems. Very little yard waste was found; however, no sampling was performed during the spring and fall months when yard waste generation tends to be higher.
- **Industrial Waste**: The industrial waste stream was found to have a surprising amount of corrugated cardboard in this study. Although this finding is qualified due to a relatively low sample count, there are obviously opportunities to divert cardboard from the industrial waste stream (as this waste stream was defined for this study).
- **C&D Debris**: In addition to the segregated loads of C&D recorded by the scalehouse, a significant fraction of C&D waste was found in the residential, commercial and industrial waste streams mixed in with other wastes. C&D diversion programs should consider how to shift these wastes from the MSW to the C&D waste stream where they could be processed and recovered at a higher rate.
- **Hazardous Wastes**: Hazardous waste and electronic waste programs appear to be effective, based on the very small amount of universal, household hazardous, and electronic wastes found in the study.
- **Maximum Diversion Potential**: It is important to note that, even if 100 percent of recoverable and reusable constituents in the waste stream were successfully diverted, the UCG could achieve no more than a 75 to 80 percent diversion rate because there simply are not viable options to divert the remaining 20 to 25 percent.

Ultimately, the UCG manages a large waste shed spanning multiple generator types, and it will require a range of waste reduction programs to successfully target the entire disposed waste stream. There is no "one size fits all" strategy. The UCG should expect zero waste planning and implementation to take many years and multiple iterations, and should focus on making steady progress over time.

4.2 RECOMMENDATIONS

The following recommendations are offered to the extent the UCG wishes to better understand the composition and origin of disposed wastes so that diversion policies and programs can most effectively target various classes of generators.

- **Perform Regular Waste Stream Analyses**: The waste stream has been changing rapidly for the past decade, and if current trends continue, disposed wastes will be substantially different in five years. The UCG should continue performing waste stream composition analysis on a five year

schedule, especially as it initiates a zero waste plan. Such analyses are critical to measure progress and guide zero waste objectives.

- **Align Project Resources to Achieve Desired Objectives**: the 2008 Study allowed for capture of 100 manually sorted samples, which enabled separate analyses of the six different generator sectors to a reasonable degree of statistical validity. The 2014 Study allowed capture of 50 manually sorted samples; however, it retained the same generator sectors. As described in the Section 3, there was not a sufficient number of samples obtained from thee multi-family, industrial or self-haul sectors to accurately characterize the wastes from these sectors. Should the UCG wish to separately analyze all six sectors in the future, it is recommended that a two-season sort be budgeted rather than a single season. Conversely, if only a single season can be accommodated within budget, the UCG should revisit the method and importance of each of the current generator sectors.
- **Align Seasonal Data Collection in Subsequent Studies**: The 2014 Study was limited to one week of field data collection, in late summer. The 2008 Study captured two seasons of field data collection, in the winter and spring. The UCG should standardize the number of seasons and the timing of each seasonal field data collection event in future studies. Doing so will reduce the number of variables that have changed since the preceding study, and better illuminate actual changes to the composition of the waste stream over time.
- **Additional Analysis of Industrial Sector**: The industrial sector was not sufficiently analyzed in this study, although the relatively small number of samples obtained identified a significant amount of recyclable cardboard. The UCG should consider a follow-up study of the industrial sector that includes gate surveying and visual surveying of industrial loads over several days. Such data collection is significantly less expensive than manual sorting, and would better assess the types of generators and types of wastes contributing to this sector. The cost of a focused industrial waste study is estimated to be less than $10,000 if performed by a consultant.
- **Additional Analysis of Self Haul Loads**: The self-haul sector was not sufficiently analyzed in this study. According to scalehouse records, this sector makes a very small contribution to overall waste disposal (less than 1.5 percent), so it is appropriate that this sector received relatively little focus. However, like the industrial sector, a brief analysis that applies gate surveying and visual surveying of self haul loads would cost-effectively expand the UCG's understanding of diversion opportunities from self haulers.

APPENDIX A

MATERIAL CATEGORIES & DEFINITIONS

This page intentionally left blank.

Municipal Solid Waste Material Categories

PAPER

1. NEWSPAPER: Printed ground-wood newsprint. Advertising "slicks" (glossy paper), if found mixed with newspaper; otherwise, ad slicks are included with mixed low-grade paper.

2. PLAIN OCC/KRAFT PAPER: Unwaxed/uncoated corrugated container boxes, clean pizza boxes, and Kraft paper. Includes large clean Kraft carryout bags and white shopping bags from department stores, hardware stores, etc. with or with paper handles, paper fast-food packaging bags, paper lunch-size bags, etc.

3. WAXED OCC/KRAFT PAPER: Waxed/coated corrugated container boxes and Kraft paper, and brown paper bags.

4. HIGH-GRADE PAPER: White and lightly colored bond, rag, or stationery-grade paper. This includes white or lightly colored sulfite/sulfate bond, copy papers, notebook paper, envelopes, continuous feed sulfite/sulfate computer printouts, and forms of all types, excluding carbonless paper.

5. MIXED LOW-GRADE PAPER: Mixed paper acceptable in LFUCG's residential curbside program. This includes junk mail, magazines, catalogs, colored papers, bleached Kraft, boxboard, mailing tubes, carbonless copy paper, and ground-wood computer printouts.

6. PHONE BOOKS: Phone books.

7. PAPERBACK BOOKS: Paperback books.

8. GABLE TOP/ASEPTIC CONTAINERS: Bleached and unbleached paperboard coated with HDPE film. This includes polycoated milk, juice (including those with plastic spouts), and ice cream cartons, paper cups, takeout containers, and frozen/refrigerator packaging and aseptic drink boxes.. Excludes juice concentrate cans.

9. COMPOSTABLE/SOILED PAPER: Paper towels, paper plates, waxed paper, tissues, and other papers that were soiled with food during use (e.g. pizza boxs).

10. COMPOSITE/OTHER PAPER: Predominantly paper with other materials attached (e.g., orange juice cans and spiral notebooks), and other difficult to recycle paper products such as ice cream cartons, paper cups, takeout containers, and frozen/refrigerator packaging, hardcover books, and photographs,

11. #1 PET BOTTLES: #1 PET or PETE narrow necked bottles such as soda, water, and other bottles with the label #! PET or PETE.

12. #1 PET THERMOFORMS: #1 PET or PETE thermoforms i.e. clamshells and trays.

13. #2 HDPE BOTTLES: #2 HDEP (High-density polyethylene) natural or colored narrow neck bottles. These are translucent milk or juice bottles and colored liquid detergent bottles and some hair care bottles.

Municipal Solid Waste Material Categories

14. OTHER PLASTIC BOTTLES: Plastic bottles not classified in the above-defined #1 PET or #2 HDPE categories; includes No. 3 through No. 7, unknown bottles, and other bottles with narrow necks.

15. NO. 2, THROUGH 7 TUBS: No. 2, 3, 5, 6, and 7 wide-mouth tubs, without a neck. Items such as cottage cheese, margin, cleaning, auto, and other products and packaging.

16. NONFOOD EXPANDED POLYSTYRENE: Nonfood packaging and finished products made of expanded polystyrene. Includes Styrofoam products such as packaging peanuts and blocks.

17. FOOD SERVICE PLASTICS/EXPANDED POLYSTYRENE: Includes plastic food-service related packaging and finished products not classified elsewhere that are made of polystyrene (expanded or clear) and other plastic resins . Includes items such as plastic utensils, straws, stirrers, cups and lids, styrofoam plates, bowls, clamshells, cups, and condiment packaging.

18. OTHER RIGID PACKAGING: No. 2 through No. 7 and unmarked rigid plastic packaging and containers Includes clamshells, salad trays, microwave trays, cookie tray inserts, plastic toothpaste tubes blister packs, and spools. Excluding expanded polystyrene and food service plastics.

19. CLEAN SHOPPING/DRY CLEANER BAGS: Clean retail grocery and other shopping bags intended for one time use. This category includes bags intended to contain produce, bread, merchandise, dry-cleaned clothing, and newspapers, but it does not include bags that are contaminated with food, liquid, or grit during use.

20. OTHER CLEAN POLYETHYLENE FILM: Clean polyethylene film, plastic sheeting, and bags, other than those identified above, which were not contaminated with food, liquid, or grit during use.

21. OTHER CONTAMINATED FILM: Film packaging other than clean checkout bags, and not defined above, or: was contaminated with food, liquid, or grit during use; is woven together (e.g., grain bags); contains multiple layers of film or other materials that have been fused together (e.g., potato chip bags). This category also includes photographic negatives, shower curtains, and used garbage bags. This category also includes supermarket and shopping bags that were contaminated with food, liquid, or grit during use.

22. PLASTIC PRODUCTS: Other finished plastic products made entirely of plastic such as toys, toothbrushes, vinyl hose, and lawn furniture.

23. COMPOSITE/OTHER PLASTIC: Items that are predominantly plastic with other materials attached such as disposable razors, pens, lighters, toys, and binders.

24. CLEAR GLASS BOTTLES & JARS: Clear glass bottles and jars including: soda, liquor, wine, juice, beer, mineral water, sports drinks and food containers.

Municipal Solid Waste Material Categories

25. GREEN/BLUE GLASS BOTTLES & JARS: Green and blue glass bottles and jars including: soda, liquor, wine, juice, beer, mineral water, sports drinks and food containers.

26. BROWN/RED GLASS BOTTLES & JARS: Brown and red glass bottles and jars including: soda, liquor, wine, juice, beer, mineral water, sports drinks and food containers.

27. PLATE GLASS: Clear or tinted window, door, shelf, tabletop, flat auto, bus shelter, and other flat glass, including tempered.

28. COMPOSITE/OTHER GLASS: Mirrors, glassware, crystal, Pyrex and Corning Ware, and laminated or curved glass such as windshields.

29. ALUMINUM CANS: Aluminum beverage cans (UBC) and bi-metal cans made mostly of aluminum.

30. ALUMINUM FOIL/CONTAINERS: Aluminum food containers, trays, pie tins, and foil.

31. OTHER ALUMINUM: Aluminum products and scraps such as window frames and cookware.

32. OTHER NONFERROUS: Metals not derived from iron, to which a magnet will not adhere, and which are not significantly contaminated with other metals or materials.

33. TIN/STEEL CANS: Tinned steel food, pet food, and other containers, including bi-metal cans mostly of steel.

34. EMPTY PAINT AND AEROSOL CANS: Empty, metal paint and aerosol cans, including metal lids.

35. EMPTY PROPANE AND OTHER TANKS: Metal tanks used for storage and distribution of propane and other compressed fuels.

36. OTHER FERROUS: Ferrous and alloyed ferrous scrap metals, to which a magnet adheres, and which are not significantly contaminated with other metals or materials.

37. COMPOSITE/OTHER METALS: Items that are predominantly metal such as motors, insulated wire, large appliances, and other products or parts containing a mixture of metals, or metals and other materials.

38. GRASS: Grass clippings only, not including sod or weeded plants.

39. LEAVES: Leaves from trees usually in the fall.

40. PRUNINGS: Brush and cut prunings, 4 feet or less in length, from bushes, shrubs, and trees.

41. OTHER YARD WASTE: Weeded plants, sod and other organic yard waste not already included.

Municipal Solid Waste Material Categories

42. FOOD: Food wastes and scraps, including meat, bone, dairy, grains, rinds, tea bags, coffee grounds with filters, etc. Excludes the weight of food containers, except when container weight is not appreciable compared to the food inside.

43. DISPOSABLE DIAPERS: Diapers made from a combination of fibers, synthetic and/or natural, and made for the purpose of single use. This includes disposable baby diapers and adult protective undergarments.

44. ANIMAL BY-PRODUCTS: Animal carcasses not resulting from food storage or preparation, animal wastes, and kitty litter.

45. COMPOSITE/OTHER ORGANIC: Combustible materials including wax, bar soap, cigarette butts, feminine hygiene products, vacuum cleaner bag contents, leather, briquettes, and fireplace, burn barrel, and fire-pit ash, and other organic materials not classified elsewhere.

46. TIRES: Vehicle tires of all types. Inner tubes are put into the rubber category.

47. RUBBER: Finished products and scrap materials made of natural and synthetic rubber, such as bath mats, inner tubes, rubber hoses, gloves, and foam rubber.

48. TEXTILES: Rag stock fabric materials and clothing including natural and synthetic textiles such as cotton, wool, silk, woven nylon, rayon, and polyester.

49. CARPET/UPHOLSTERY: General category of flooring applications and non-rag stock textiles consisting of various natural or synthetic fibers bonded to some type of backing material. Also includes non-rag stock grade textiles such as heavy linens and draperies.

50. APPAREL: Shoes, tennis shoes, purses, and other composite accessories.

51. FURNITURE: Mixed-material furniture such as upholstered chairs. Furniture that is made purely of one material, such as plastic or metal, would be categorized according to that material (e.g., plastic products or other ferrous metal).

52. MATTRESSES/BOX SPRINGS: Mattresses and box springs.

53. SMALL CONSUMER APPLIANCES: Nonhazardous, not predominantly metal electric appliances such as toasters, microwave ovens, power tools, curling irons, and light fixtures.

54. COMPOSITE/OTHER PRODUCTS: Other multi-material assembled or composite household and other products.

55. CLEAN WOOD: Including milled lumber commonly used in construction for framing and related uses, including 2 x 4's and 2 x 6's, and sheets of plywood, strandboard, and particleboard.

Municipal Solid Waste Material Categories

56. PALLETS AND CRATES: Clean wood pallets (whole and broken), crates, pieces of crates, and other packaging lumber and panel board. Small compostable wooden produce crates are put in the food category.

57. STUMPS AND LOGS: Stumps or logs 4 feet or greater in length.

58. COMPOSITE/OTHER WOOD: Predominantly wood and lumber products that are mixed with other materials in such a way that they cannot easily be separated. This includes wood with metal, gypsum, concrete, or other contaminants. Painted or chemically treated wood goes in the hazardous waste "treated wood" category.

59. CLEAN GYPSUM: Calcium sulfate dehydrate sandwiched between heavy layers of Kraft-type paper. Also known as drywall. This category includes drywall that has not been painted or treated in other ways.

60. PAINTED GYPSUM: Used or demolition gypsum wallboard that has been painted or treated.

61. FIBERGLASS INSULATION: Fiberglass building and mechanical insulation, mat or rigid.

62. ROCK/CONCRETE/BRICKS: Any rock, gravel, portland cement mixtures (set or unset), and fired-clay bricks.

63. ASPHALTIC ROOFING: Asphalt shingles and tarpaper of built-up roofing.

64. CERAMICS: Finished ceramic or porcelain products such as toilets, sinks, cups, and dishware.

65. SAND/SOIL/DIRT/GRIT/FINES: Contains mixed fines smaller than 2" in diameter, including floor sweepings from construction sites and other inorganic waste.

66. COMPOSITE/OTHER CONSTRUCTION DEBRIS: Construction debris (other than predominantly wood) that cannot be classified elsewhere.

67. PAINT: Wet water/oil base paints and stains in cans or buckets This excludes paint or stains that have been thoroughly dried in an open can or bucket.

68. BATTERIES: Dry or wet cell household and car batteries.

69. CLEANERS: Caustic or volatile petroleum cleaners such as drain cleaners, paint thinners, paint strippers, lacquer thinners, part cleaners, and industrial janitorial detergents.

70. OIL FUELS: Liquid petroleum products used for fuel for heating, cooking, or motorized vehicles. These include items such as kerosene, diesel, naphtha, gasoline, etc. This excludes pressurized bottled gas such as propane.

Municipal Solid Waste Material Categories

71. SMALL CONSUMBER ELECTRONICS: Items such as cell phones, PDAs, MP3 players, DVD players, VCRs, etc. This does not include televisions, computers, and cathode ray tubes (CRT).

72. TELEVISION: All televisions including flat screen TVs.

73. COMPUTERS: Computers and computer monitors such as cathode ray tubes and flat screens.

74. COMPUTER PERIPHERAL ELECTRONICS: Other electronics such as printers, external computer equipment i.e. cables, hard rives, keyboards, mouse, and discarded circuit boards from repairing electronic equipment.

75. PESTICIDES/HERBICIDES: All insecticides, fungicides, and herbicides.

76. MEDICAL WASTE: Treated or untreated medical waste. Includes bandages, gauze, diabetic strips, syringes, needles, and medical tubing.

77. TREATED WOOD: Wood that has been treated with paint, stain, or pressure treated.

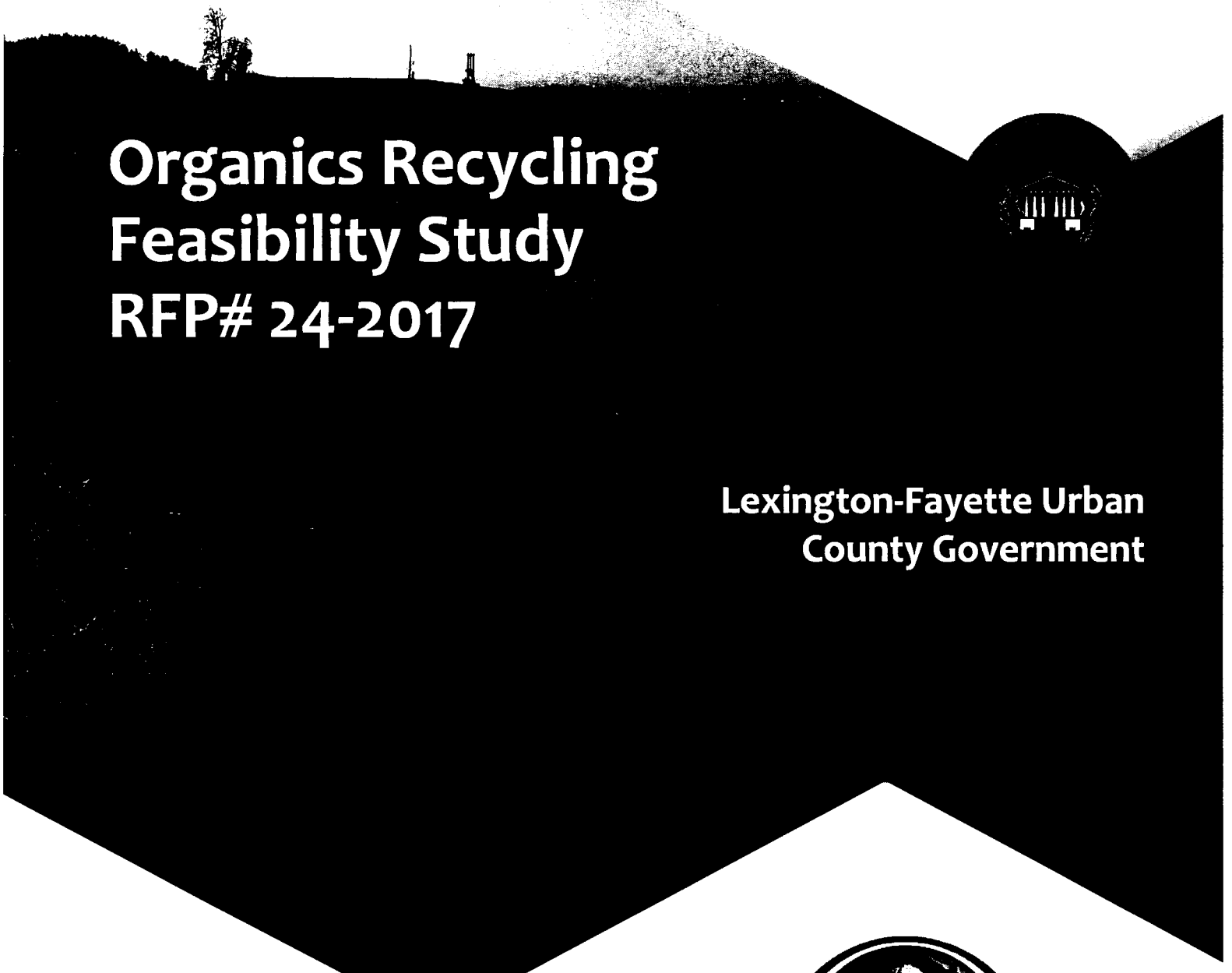
78. LIGHT BULBS: All light bulbs and light tubes.

79. OTHER HAZARDOUS WASTE: Solvent-based adhesives/glues, water-based adhesives/glues, oil filters, asbestos, explosives, other chemicals, certain cosmetics, and other potentially harmful wastes. This category also includes plastic, paper, and glass containers that were used for the sale or distribution of products categorized as hazardous materials and that contained any noticeable amount of the hazardous product.

Ex B

PROPOSAL

August 21, 2017



Organics Recycling Feasibility Study RFP# 24-2017

Lexington-Fayette Urban County Government

MSW CONSULTANTS

11875 High Tech Avenue, Suite 150
Orlando, FL 32817 | 800-679-9220

This document was printed on Recycled-content/FSC-certified paper.

Firm Submitting Proposal: MSW Consultants

Complete Address: 11875 High Tech Avenue, Suite 150, Orlando, FL 32817
Street City Zip

Contact Name: John Culbertson Title: Vice President

Telephone Number: 800-679-9220 Fax Number: 800-679-9220

Email address: jculbertson@mswconsultants.com

This page intentionally left blank.

August 15, 2017

Mr. Todd Slatin
Lexington-Fayette Urban County Government
Room 338, Government Center
200 East Main Street
Lexington, KY 40507

Subject: Proposal for RFP# 24-2017 Organics Recycling Feasibility Study

Dear Mr. Slatin:

MSW Consultants, LLC, is pleased to provide this proposal to Lexington-Fayette Urban County Government (LFUGC) to assess the feasibility of organics diversion opportunities within the residential, institutional and commercial sectors of Fayette County and the surrounding region.

MSW Consultants is a national leader in evaluating and optimizing integrated municipal solid waste management programs, including high-diversion programs that target organics. We have been fortunate to develop an excellent working relationship with LFUCG through our work on a variety of solid waste projects. For this engagement, we have assembled a Project Team that supplements our existing local program expertise with leading national organics recycling experts to comprehensively and authoritatively identify and assess the most promising alternatives to boost organics diversion. Our Project Team's expertise covers:

- **LFUCG Collection System Parameters**: MSW Consultants President and Founder Walt Davenport is a leader in optimizing municipal collection systems. Under Walt's leadership on prior engagements, MSW Consultants has already compiled a pro forma collection model that captures the operational parameters of the UCG collection system. Our team can authoritatively model the impacts of new collection systems targeting organics.
- **Organics Processing**: Senior Associate Craig Coker, who is also the principal of a compost-focused consulting firm, is a leading national expert on organics processing. His has extensive experience in designing, evaluating and developing organics processing solutions in Kentucky and surrounding states.
- **Maximized Organics Diversion**: Senior Associate Richard Gertman is one of California's leading experts on designing and implementing aggressive organics diversion programs for many of the California cities and counties that are recognized nationally for their exceptionally high diversion rates.

Collectively, our team and approach will answer the questions posed in the RFP and provide a road map toward increasing organics diversion over the short and long term. Please do not hesitate to contact me at (301) 607-6428 or wdavenport@mswconsultants.com, if you have any questions about our proposal. We appreciate the opportunity to be considered for this project.

Sincerely,

MSW CONSULTANTS, LLC

Walt Davenport

Walt Davenport, President

This page intentionally left blank.

Lexington-Fayette Urban County Government

RFP# 24-2017
Organics Recycling Feasibility Study

TABLE OF CONTENTS

This page intentionally left blank.

PROPOSAL

EXECUTIVE SUMMARY

MSW Consultants is a national leader in evaluating and optimizing integrated municipal solid waste management programs, including high-diversion programs that target organics. We have been fortunate to develop an excellent working relationship with Lexington-Fayette Urban County Government (LFUCG) through our work on a variety of solid waste projects. Local project experience, like those highlighted in the table at right, have strengthened our understanding of local operational and market dynamics and provided an in-depth understanding of local business practices, government function, and political dynamics.

MSW CONSULTANTS UCG PROJECT HIGHLIGHTS	
Year	**Project**
2014	County-wide Waste Stream Analysis
2012	Cost-of-Service and Rate Study
2011	Solid Waste Collection System Benchmarking
2011	Route Optimization and Onboard Systems
2009	County-wide Waste Stream Analysis
2007	Collection Optimization and Cost Analysis

As LFUCG has demonstrated on many projects and initiatives, it is a leader in the area of sustainability, environmental awareness, and good business practice. The proposed organics diversion project is no exception. Achieving aggressive diversion rates and implementing effective organics diversion programs is challenging, and requires evolution in both the available collection programs and processing infrastructure. That is why we have assembled a Project Team that combines local expertise and leading national organics experts to serve as LFUCG's trusted advisor on this important feasibility study. Our Project Team's expertise covers:

- **LFUCG Collection System Parameters**: MSW Consultants President and Founder Walt Davenport is a leader in optimizing municipal collection systems. Under Walt's leadership on prior engagements, MSW Consultants has already compiled a pro forma collection model that captures the operational parameters of the UCG collection system. Our team can authoritatively model the impacts of new collection systems targeting organics.
- **Organics Processing:** Senior Associate Craig Coker, who is also the principal of a compost-focused consulting firm, is a leading national expert on organics processing. His has extensive experience in designing, evaluating and developing organics processing solutions in Kentucky and surrounding states.
- **Maximized Organics Diversion:** Senior Associate Richard Gertman is one of California's leading experts on designing and implementing aggressive organics diversion programs for many of the California cities and counties that are recognized nationally for their exceptionally high diversion rates.

Our Project Team is uniquely suited to successfully and authoritatively complete this project.

An MSW Consultants crew sorts waste and recycling carts in Lexington, KY

MSW Consultants evaluated the residential food waste collection program in State College, PA

Creech Services in Lexington

ORGANIZATION INFORMATION

MSW Consultants is a specialized consulting company whose key management staff have over 100 years combined experience providing municipal solid waste management planning, recycling program assessment, collection program productivity analysis and routing, solid waste cost-of-service and rate development, waste composition and generation studies, litter and marine debris management, procurement assistance, and implementation assistance for state, county and local governments across the nation. MSW Consultants was created in name in 2002 and legally established as a Maryland Limited Liability Company (LLC) in 2004. The firm converted to a Florida LLC in 2014, and is currently headquartered in Orlando, FL. The firm's client base has expanded to over 55 city, county, state and private organizations across the U.S., served by 14 staff and associates. MSW Consultants provides the following menu of solid waste consulting services:

SOLID WASTE MANAGEMENT PLANS

- SWMPs and Zero Waste Plans
- Overview of waste management systems and technologies
- Stakeholder committee facilitation
- Public education and outreach strategies

RECYCLING/COMPOSTING

- Yard waste collection/Diversion/Processing
- Food waste collection/Diversion/Processing
- Compost facility layout and permitting
- Residential/Commercial recycling programs
- Single stream recycling analysis
- Volume-based pricing (Pay-As-You-Throw)
- Recycling and compost service procurement

COLLECTION OPTIMIZATION

- Refuse, recycling, yard waste and bulky waste productivity analysis and improvement
- Automated and single-stream collection conversion assistance
- Front-load and roll-off efficiency analysis and service rate development
- GPS, event tracking, RFID and onboard data collection system development
- Route development, route balancing, and area/path re-routing

FINANCIAL ANALYSIS

- Solid waste system full-cost-of-service studies
- Enterprise fund development
- Lifecycle cost development
- Solid waste enterprise fund service rate development
- Facility processing/tip fee analysis
- User fee and non-ad valorem assessment rate development

COLLECTION, DISPOSAL AND RECYCLING PROCUREMENT SERVICES

- Solid waste, recycling, yard waste and bulky waste collection procurement assistance
- Contract/franchise system analysis
- w
- Managed competition assistance
- Contract negotiation assistance

WASTE COMPOSITION AND GENERATION ANALYSIS

- Sampling plan development
- Waste composition field sampling and sorting
- Statistical analysis
- Waste generation rate studies
- Institutional and commercial waste audits and recycling program improvement
- Visible litter studies and litter/illegal dumping research

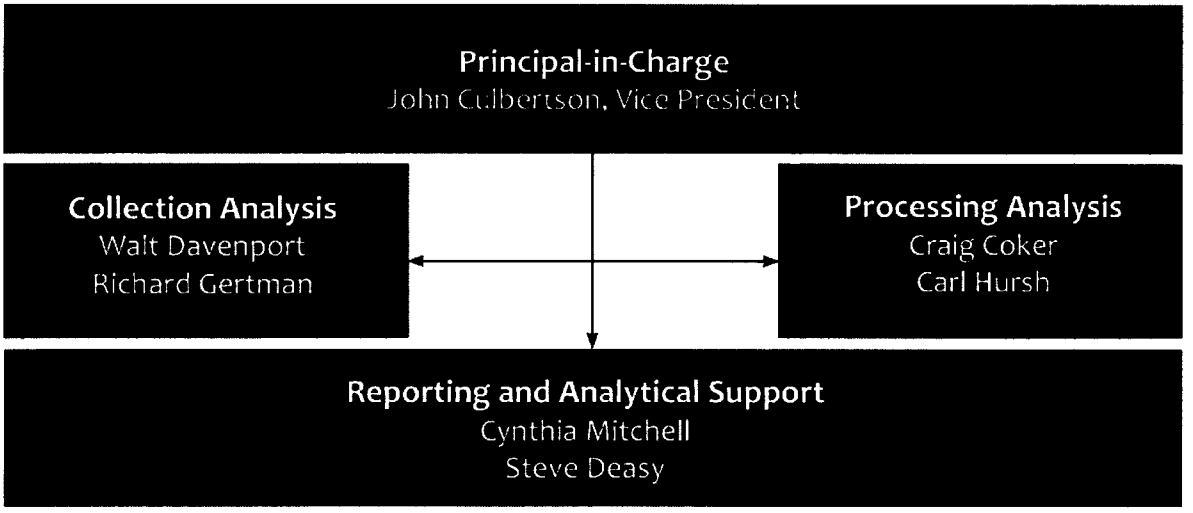
SOLID WASTE ENGINEERING

- Facility permitting and permit modifications
- Plans and specifications, construction management and contract monitoring
- Transfer station facility siting, design and optimization
- Compost facility siting, design and operations support
- Recyclables drop-off and MRF design, equipment procurement

MIDATLANTIC SOLID WASTE CONSULTANTS
Florida – Pennsylvania – Missouri
(800) 679-9220
www.mswconsultants.com

The company's organizational chart is below, and our staffing plan for this project is discussed in a subsequent section.

PROJECT *Team*



LFUCG PROJECT EXPERIENCE

As demonstrated by the following project profiles MSW Consultants has worked collaboratively and successfully with the LFUCG's Division of Waste Management over the past 11 years. Additionally, these projects showcase our Project Team expertise in the areas of organics management and diversion. We have included two LFUCG contacts for these projects in the References sections of our proposal.

COUNTYWIDE WASTE STREAM ANALYSIS (2014)

Lexington-Fayette County's Waste Management Division retained MSW Consultants to perform a comprehensive countywide waste stream analysis. In 2009, working as a subconsultant, MSW Consultants completed a similar study, and the 2014 comprehensive analysis followed the same methods and protocols, to ensure excellent comparability of results.

MSW Consultant used the 2009 sampling plan and captured 50 samples of refuse (including residential, commercial, multi-family, industrial, and self-haul wastes), plus 160 visually surveyed samples of C&D debris, during one season of data collection. MSW Consultants also conducted the statistical and comparative analysis and prepared all narrative for inclusion in the Final 2014 Report.

SOLID WASTE COLLECTION AND COST-OF-SERVICE STUDY (2012)

The Lexington-Fayette Urban County Government Division of Waste Management (DWM) provides comprehensive collection of residential and commercial waste and recyclables. The DWM operates as

part of the Urban Services Fund, and is funded by a solid waste tax equal to 0.1430 per $100 of assessed value of residential and commercial properties.

The LFUCG retained MSW Consultants to perform a detailed cost-of-service and rate study of the publicly-provided collection services provided by the DWM. The collection cost and rate study was intended to: (1) Validate the current cost-of-service and project system cost forward for planning purposes, (2) Calculate a schedule of user fees if the LFUCG were to move away from the ad valorem revenue mechanism; (3) Evaluate a Pay-As-You-Throw (PAYT) rate structure for residential households; and (4) Comment on the costs, benefits and disadvantages of privatizing waste and recycling collection.

SOLID WASTE COLLECTION, DISPOSAL AND RECYCLING BENCHMARKING (2011)

MSW Consultants conducted a detailed comparative analysis of the LFUCG's integrated waste management system versus two separate groups of local governments. LFUCG listed as peer municipalities the cities of Louisville, KY; Nashville, TN; Knoxville, TN; Pittsburg, PA; Riverside, CA; Orlando, FL; and Indianapolis, IN. It identified San Francisco (77% diversion rate); Madison, WI (57%); Ann Arbor, MI (43%), Austin, TX (37%), and Gainesville-Alachua County, FL (40%) as high performers. MSW Consultants developed a comprehensive list of system attributes and characteristics to be compiled from each benchmark target. The results of this comparative analysis were delivered to the LFUCG's Waste Task Force to inform its debate about the future direction of the LFUCG as a high diversion organization.

ROUTE OPTIMIZATION AND ONBOARD SYSTEMS IMPLEMENTATION (2011)

As a follow-on to a previous collection system optimization study, MSW Consultants continued assisting the LFUCG (as a subcontractor) on an ambitious project to develop computer-optimized collection routes and install onboard monitoring and event tracking systems on LFUCG collection vehicles. Successful implementation of this solution required integration of several routing and technology vendors and systems. Because of its experience and knowledge of the LFUCG collection system, and because of its positive relationship with collection system management and route supervisors, MSW Consultants was retained to serve as the client liaison and functional manager for the engagement. In this role, MSW Consultants reviewed technical capabilities with the LFUCG, and captured requirements for communication to the technical project team. MSW Consultants also worked with the LFUCG to validate collection routes developed by the routing algorithm.

WASTE CHARACTERIZATION STUDY (2009)

Lexington-Fayette Urban County Government's (LFUCG) Waste Management Division is responsible for provision of a vertically integrated waste management and recycling program. LFUCG provides single stream recyclables collection, and since 2002, has owned and operated a material recovery facility (MRF) to process these materials. This facility had previously been converted from dual stream to single stream processing.

Recognizing the need for expanded processing of recyclables in Fayette County and the broader region, in 2009 the LFUCG prepared a Recycling Center Master Plan

to guide the long term expansion and/or replacement of this facility, and to guide the LFUCG in growing recycling regionally by attracting materials to the plant. As part of this project, MSW Consultants performed a comprehensive waste characterization study while working as a subconsultant.

This comprehensive study captured 100 samples of refuse (including residential, commercial, multi-family, industrial, and self-haul wastes), plus 200 visually surveyed samples of C&D debris, across two seasons of data collection. MSW Consultants performed the statistical analysis and prepared all narrative for inclusion in the Recycling Master Plan report. Of particular importance, the disposed waste stream was disaggregated to reflect materials that were:

- recyclable in the LFUCG recycling program
- commercially compostable
- recyclable at the LFUCG drop-off convenience center
- accepted at a thrift store or reuse store
- non-recoverable in Fayette County (at the current time)

SOLID WASTE COLLECTION SYSTEM ANALYSIS AND COST-OF-SERVICE STUDY (2006)

MSW Consultants performed a comprehensive collection system operational evaluation and cost-of- service study for the Lexington-Fayette Urban County Government (LFUCG), as a sub consultant to GBB, Inc. The LFUCG provides residential semi and fully automated collection to over 80,000 households in the City-County area, including cart-based refuse collection, voluntary single-stream recycling collection, and yard waste collection. Additionally, the LFUCG provides commercial dumpster service to area businesses, as well as small business collection, downtown collections, and a range of commercial and institutional recycling collection programs

MSW Consultants led the observation and analysis of collection operations, and managed and performed field observations of all LFUCG collection activities. Further, MSW Consultants conducted the cost-of-service analysis to develop activity-based costs for a total of 19 separate functional activities performed by the LFUCG collections division.

Full recommendations, delineating short term, intermediate-term, and long-term initiatives, were delivered to the LFUCG in November 2006. Recommendations encompassed operational improvements to the commercial business district collection program, route balancing and optimization of automated collection, conversion of the solid waste revenue mechanism from an ad valorem tax to a user fee (or non-ad valorem assessment), and other changes.

ORGANICS COLLECTION AND PROCESSING PROJECT EXPERIENCE

The project profiles below reflect our extensive experience performing comprehensive and insightful organics feasibility studies for state and local governments, institutional generators, and private organizations.

NATIONAL PARK SERVICE – GRAND TETON, WY: ZERO LANDFILL INITIATIVE (ONGOING)

Grand Teton National Park (GTNP) showcases the major peaks of the 40-mile long Teton Range and includes more than 1,000 drive-in campsites and over 200 miles of hiking trails within a 480-square mile footprint. The National Park Service (NPS), the Grand Teton Lodge Company (GTLC), and Signal Mountain Lodge (SML) maintain several visitor centers, picnic sites, trail heads, campgrounds, retail shops, marinas, guest lodging, and employee housing throughout the Park.

GTNP faces a number of unique waste management challenges. Waste and recycling containers throughout the Park must be bear-proof and provide sufficient capacity to prevent waste material overflow. Daily and seasonal visitation rates change dramatically, complicating the logistics of solid waste collection, transportation and processing from this vast area. Further, Park guests originate from anywhere in the world and have a wide range of expectations about recycling, waste reduction, sustainability, and environmental behaviors.

MSW Consultants developed a Waste Diversion Plan for GTNP. In this role, MSW Consultants chaired the Zero Landfill Coordinating Committee, a multi-organization group responsible for boosting the Park's recycling rate. Subaru of America (SOA) is the corporate sponsor for the Zero Landfill Initiative (ZLI). MSW Consultants evaluated GTNP's existing conditions, benchmarked current recycling rates, identified opportunities to increase recyclables and organics diversion, and developed best management practices to optimize collection and increase waste diversion.

LOUISVILLE METRO GOVERNMENT, KY: COMPREHENSIVE SOLID WASTE SYSTEM ANALYSIS (2017)

MSW Consultants performed a comprehensive solid waste system analysis and 10-year solid waste plan for the Louisville Metro Government. The three phases of this project included:

Two-season Waste Characterization Study: MSW Consultants analyzed the residential, commercial, and C&D waste stream composition, as well as the composition of residential single stream recyclables and wet/dry wastes collected in the Central Business District. Results identified current residential recycling capture rates, and identified materials available for future diversion efforts.

Collection System Analysis and Cost-of-Service Study: MSW Consultants conducted a collection system optimization analysis for the LMG-provided residential and CBD collection system, which included an activity-based full cost-of-service analysis to identify true costs of solid waste management in the General Funded system. **This analysis covered the wet-dry collection program offered to the Central Business District, which is capturing organics and achieving recycling rates over 70 percent.**

Comprehensive Plan: MSW Consultants managed a team of consultants to collaborate with over 60 stakeholder organizations, as well as the 80 incorporated municipalities in Jefferson County, to develop a viable 10-year solid waste plan. The plan identified the policies, programs and facilities that will be needed to reach regional waste management and diversion goals.

CITY OF CUPERTINO - CONTRACT DEVELOPMENT (2009-17)

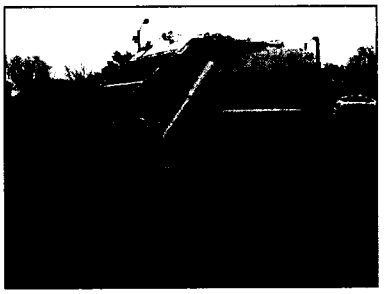
On September 26, 2014, Governor Brown signed Assembly Bill 1826, which requires businesses that generate a specified amount of organic waste and multi-family properties with 5 units or more to subscribe to an organics recycling program.

Over the last 16 years, Team member Richard Gertman has assisted the City of Cupertino with a series of materials management contract negotiations. In 2009, Mr. Gertman negotiated a new scope of services for a five year contract extension with Recology that added many new services, with no corresponding increase in service rates. In 2011, Richard assisted the City with the preparation of changes to City ordinances to match current state materials management mandates. These ordinances were updated again in 2015 in response to AB 1826. Richard is currently assisting the City in negotiations with Recology on improved collection and processing services that will expand residential food scrap collection, separate multi-family collection services from other commercial services, implement a commercial wet dry collection system, and secure higher value processing of collected materials.

Results

- Cupertino was one of the first cities in Santa Clara County to have residential food scrap collection services, with residents requested to put food scraps in with plant trimmings.
- City ordinances were changed to mandate separation and separate collection of commercial organics.
- Commercial organics collection service was to be made available to all businesses and multi-family complexes in the City at rates lower than for commercial garbage collection services.
- Recology provides "on-call" door to door collection of household hazardous wastes twice a year.

CITY OF GEORGETOWN, KY: MUNICIPAL SOLID WASTE SYSTEM EVALUATION AND RATE STUDY (2016)

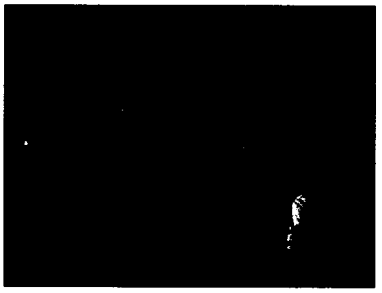


The City of Georgetown, through its Department of Public Works (DPW), is the exclusive collector to the roughly 11,000 residential housing units, providing collection of refuse in 96-gallon "Herbie" garbage carts, as well as bulky items and brush. The City also provides commercial cart service and commercial frontload service to a small number of customers. In an ongoing effort to systematically evaluate and improve its service delivery, the City commissioned a comprehensive report on the City's existing solid waste collection operations, including logistics and routing, personnel, equipment, finances and rate structure, maintenance, safe ty, regulatory compliance, facilities, quality of service, solid waste ordinances and enforcement procedures.

MSW Consultants provided a comprehensive evaluation of the City's operations, policies, and rate structure. This analysis identified that the City's exclusively-provided residential collection system was efficiently performed, and that residential rates were sufficient not only to fund the residential services, but also had been subsidizing commercial cart and dumpster collection. The analysis identified fixes to the commercial cart rate structure to shore up the financial performance of that service. Finally,

the analysis found that the City's dumpster customer base was too small to be economically viable and recommendations were offered to exit the business or outsource the service.

CONFIDENTIAL MUNICIPALITY: MUNICIPAL SOLID WASTE COMPOST PLANT RECOMMISSIONING EVALUATION (2016)



MSW Consultants served as a subcontractor on a project to evaluate a 30-year-old MSW Composting Facility for a municipality in the Kingdom of Saudi Arabia. The facility has been out of operation for roughly 10 years, and the municipality was interested in re-starting the plant. The 215 tpd plant's processing configuration is centered around a 120-ft composting drum.

MSW Consultants assembled a team of MRF/compost engineers and processing equipment specialists to evaluate the cost and schedule for rehabilitating, repairing and replacing plant equipment with an objective of re-starting the plant in 2016. This engagement included a preliminary evaluation without energizing equipment; and was followed by energized/dry cycle testing of all plant equipment in Phase 2. At the current time the MSW Consultants team has developed mechanical specifications to repair and replace equipment, and has designed a new control and instrumentation system to incorporate modern human/machine interfaces, remote monitoring technology, and safety functionality to the plant. Installation and commissioning are scheduled to take place the second half of 2017.

GARDEN CITY SANITATION COMPANY – HIGH DIVERSION SYSTEM DESIGN (2015-16)

On July 6, 2015, the City of Milpitas released an RFP for collection of solid waste, recyclable materials, and organic materials, the processing of recyclable materials and organic materials, street sweeping services, and collection and processing of construction and demolition materials.

Team member Richard Gertman designed an alternative collection system and participated in drafting a proposal for Garden City Sanitation Company to submit to the City of Milpitas. The proposed alternative was selected by the City; and the new service is scheduled to start in September, 2017.

Results

- Residential materials collection is proposed to be in five streams; matching the services proposed by 4S2 for Sunnyvale. The streams include collection of clean plant trimmings in a single compartment wheeled cart; recyclable fiber in one side of a split cart and other recyclable materials in the other side of the same split cart; and food scraps in one side of a split cart and materials destined for landfill in the other side of the cart.
- Collected food scraps will be processed into animal feed at the Sustainable Alternative Feed Enterprises (SAFE) facility in Santa Clara.
- The commercial collection system is patterned after the City of San Jose wet/dry collection system, but with a collection system better designed to recover clean materials, and a MRF better designed to process the collected materials.
- The recovery rate is projected to be over 80% of the materials collected through the Franchise Agreement.

WEST CHESTER BOROUGH, PA: FOOD WASTE COLLECTION EVALUATION AND PILOT PROJECT (2015)

Steve Deasy, working for a prior employer, served as Project Manager and solid waste expert responsible for evaluating the feasibility of implementing a permanent food waste collection and composting for commercial food waste generators and residential units located within the Borough of West Chester. This project included the evaluation cost structures for solid waste collection and food waste collection and composting services. The analysis led to recommendations for an expanded scale food waste pilot program over a 1-2-year implementation to record metrics to verify long term feasibility and management and operating details. Mr. Deasy also developed a survey to identify commercial participants for the expanded pilot and to assess opinions, attitudes and concerns from commercial food waste generators regarding organics diversion.

NEW CITY DEPARTMENT OF SANITATION (SIMS RECYCLING), NY: RESIDENTIAL ORGANICS, LITTER BASKET AND SCHOOL WASTE STREAM AUDITS (2014)

MSW Consultants conducted a series of waste stream audits to assess the composition of wastes, recyclables and organics collected by the New York City Department of Sanitation (DSNY). In May 2013, New York City joined the growing ranks of large cities that have begun to offer residential curbside collection of organics, including food wastes. NYC initiated a pilot test of organics collection in several neighborhoods on Staten Island. This collection service joined existing organics collection provided by DSNY to City public schools.

As an add-on to an ongoing, Citywide waste characterization study, MSW Consultants performed waste stream audits of NYC's recently initiated residential organics program; as well as Refuse, Paper, Metal/Glass/Plastic (MGP), and Organics from City schools; and a sample of litter basket waste from several boroughs. This project focused on evaluating the performance of each collection program's effectiveness at collecting targeted material, minimizing contamination, and identifying new recycling and/or materials management strategies.

Results of this effort were delivered to the City but have not been publicly released.

CITY OF BOSTON, MA: FOOD WASTE DISPOSER EVALUATION (2014)

InSinkErator and the City of Boston conducted a pilot test to determine the impact of increasing food waste disposer market penetration on the solid waste stream. MSW Consultants performed baseline and post-implementation waste and recycling audits to measure effectiveness of the food waste disposers. Specifically, MSW Consultants coordinated with the City, its contract hauler, and a local waste management facility to collect and analyze wastes and recyclables generated at the 48-unit Thomas Atkins apartment complex. At the outset of the study, this apartment complex had no food waste disposers. After the baseline audit, InSinkErator installed food waste disposers and performed a series of outreach initiatives to educate residents about food waste disposer usage. MSW Consultants conducted a second audit in the fall of 2014 after roll-out of the disposers, and measured the impact of these disposers on food waste disposal in the solid waste stream.

CITY OF MILWAUKEE, WI: FOOD WASTE DIVERSION STUDY (2014)

MSW Consultants performed a joint project for the City of Milwaukee and InSinkErator to compare and contrast the effectiveness of food waste disposers and backyard composting as a method to reduce food wastes in the solid waste stream. MSW Consultants developed a test protocol for two sets of households selected by the City to participate in this study. For each set of households, MSW Consultants coordinated and pre-audit of the waste and recycling streams generated. Subsequent to the pre-audit, the City and InSinkErator performed a range of education and outreach regarding food waste disposers or backyard composting, and distributed either new food waste disposers or new compost bins. MSW Consultants re-audited the households to develop before and after comparisons of the diversion of organics materials.

BERKS COUNTY SOLID WASTE AUTHORITY, PA: FOOD WASTE COLLECTION PROGRAM EVALUATION (2014)

Steve Deasy, working for a prior employer, was a Project Manager and Solid Waste Specialist responsible for evaluating a commercial food waste collection program operated via a contract between a private food waste hauler and the County Solid Waste Authority. Evaluated operations, contractual obligations, and the financial structure of the food waste collection and processing agreement. Determined the contractual arrangement misplaced financial incentives creating a deficit to the Authority over time. Transitioned the organics recovery program to the private sector.

ECOMAINE SOLID WASTE AUTHORITY, ORGANICS RECYCLING FEASIBILITY STUDY, PORTLAND, ME (2013-2014)

Perofrmed by Team member Craig Coker: Evaluation of source-separated food scraps recycling alternatives at a solid waste authority whose service area covers 24 counties in southern Maine, both rural and urban, serving 40% of the State's population. The study evaluated: waste generation rates for food scraps, yard trimmings and vegetative debris, collection system alternatives, processing technology alternatives (anaerobic digestion [AD] and aerobic composting only), alternative siting evaluations, product market evaluations for biogas and compost, permitting and approval assessments, facility planning-level cost estimates, financial sensitivity analysis, and preparation of a final report with implementation recommendations. The Authority recently signed a five-year contract with a merchant AD facility for diversion of about 8,000 tons/year of food wastes.

MILLCREEK TOWNSHIP, PA: IN-VESSEL & AERATED STATIC PILE COMPOST SYSTEMS EVALUATION (2013)

Steve Deasy, working for a prior employer, was a Project Manager and Solid Waste Specialist responsible for evaluating the preliminary feasibility of increased recovery and processing of compostable feed stocks, including curbside-collected leaf waste, grass, and food wastes from commercial establishments. Completed a comparative analysis of in-vessel and aerated static pile compost technologies. Analyzed costs, funding mechanisms, budget, operations, permit requirements and market potential for incoming feedstocks. Developed site configuration conceptual layouts. Provided recommendations including a phased approach to lease high-cost equipment to test multiple technologies simultaneously over a 1 to 2-year period, prior to equipment procurement. Prepared a final report describing implementation strategies, costs, site layouts, and vendor specifications.

CITY OF PHILADELPHIA, PA: RESIDENTIAL FOOD WASTE EVALUATION (2013)

MSW Consultants was retained by the City of Philadelphia as an on-call recycling and waste management consultant. MSW Consultants implemented a sampling and sorting plan to test the impacts of a new City pilot study related to food waste management. The City worked with InSinkErator to install garbage disposal systems on two specific routes within the City, and to provide public education on the benefits of using garbage disposal systems for food waste disposal instead of the solid waste collection system. The City operates a state-of-the-art wastewater treatment facility that can accept ground organics and produce high quality methane gas as a by-product. This pilot project tested the amount of food waste that could be removed from the waste stream requiring curb-side collection and landfill disposal, shifting that volume to the waste water collection system.

MSW Consultants sampled disposed solid wastes from the pilot test collection routes on three separate points in the study: a baseline analysis in targeted areas to document food waste incidence prior to the pilot test; a snapshot of disposed wastes within the first three months after a public education blitz to attempt to change food waste management behaviors among multi-family dwellings; and a third snapshot six months after implementation to measure the "steady-state" diversion in the pilot area. Each sort included the area of a route where the InSinkErator disposals were installed, a route area which did not have InSinkErator disposals installed, and a pilot area where public education was performed.

Wastes were sorted into 29 categories by a four person sort crew over a two day period during each of the three seasons. The results of the three points in the study were delivered to the City for review and further consideration.

MARPLE TOWNSHIP, PA: COMPOST FACILITY FEASIBILITY STUDY (2013)

MSW Consultants assisted Johnson Controls and Marple Township, Pennsylvania, to assess the feasibility of developing a compost facility for processing leaves and grass collected by both Marple Township and, potentially, neighboring Haverford Township. At the time of the study, Marple and Haverford Townships were paying a vendor to transport leaves for transportation to a distant processing site. Marple Township owned a parcel of land that was formerly a quarry, and was interested in converting this site into a local compost operation as a means to reduce overall cost of managing leaves and grass.

With input from the Township, MSW Consultants developed a conceptual facility plan using aerated static pile technology, which is already successfully in use in the region. MSW Consultants designed the modular aerated pile configuration; prepared a conceptual layout of receiving areas, aerated piles, and curing piles; estimated processing parameters based on seasonal leaf and grass generation and availability; and scoped out site start-up, capital equipment, and ongoing operating costs. The cost savings achieved from development of the compost facility was intended to enable the Township to pursue other clean energy initiatives with Johnson Controls.

BOROUGH OF STATE COLLEGE (RTA), PA: EDUCATIONAL PROGRAM DEVELOPMENT FOR RESTAURANT RECYCLING AND COMPOSTING PROGRAM (2012)

The intent of this project was to improve commercial recycling through a partnership with the Centre Region Council of Governments (CRCOG) and Centre County Recycling and Refuse Authority. Case studies of some successful composting and recycling programs in other locations were provided to the Borough. MSW Consultants developed a survey form which was distributed by Borough staff to owners/managers of food establishments. The survey gathered valuable information from a subset of businesses and was augmented by staff from the Department of Ordinance Enforcement and Public Health. An educational program was then developed for recycling and composting at restaurant and commercial facilities with the objective of decreasing the number of ordinance violations and increasing recycling and composting participation. A guide book, posters, brochures, flyers and video scripts were developed. A reporting form, adapted from the survey instrument, was developed for use of the staff who perform the annual inspections. This project provided the Borough with the information and materials needed to improve the commercial recycling and composting program.

HOWARD COUNTY, MD: WASTE COMPOSITION ANALYSIS OF RESIDENTIAL FOOD SCRAP COLLECTION PILOT PROGRAM (2012)

At the time of the study, Howard County had established a composting pilot project to compost green wastes, vegetable food scraps, and compostable paper such as pizza boxes and paper towels. To test this pilot facility technology, the County initiated collection routes for residents in the Ellicott City and Elkridge area that added food scraps to the yard trim collection services already provided. Like many other local governments nationally, Howard County recognized the potential for significant gains in waste diversion from a successful food scrap diversion program for the residential sector.

The County retained MSW Consultants to statistically analyze the impact the new food scrap collection program was having on disposed wastes. MSW Consultants performed a side-by-side comparison of waste composition from the pilot routes and from an existing "control" route. This study spanned one week of regularly scheduled collections, and took place at the County landfill. Results of the control and pilot route waste composition were compared at a 90 percent level of confidence.

REPUBLIC SERVICES – HIGH DIVERSION COMMERCIAL COLLECTION SYSTEM DESIGN (2010-12)

On April 16, 2010, the City of San Jose released an RFP for Commercial Solid Waste and Recyclable Material Collection Services.

Team member Richard Gertman designed the wet/dry commercial collection system and participated in drafting a proposal for Republic Services to submit to the City. This program design built on the two-stream collection system design Richard implemented for Santa Clara County government facilities in 2003 that increased the County government recycling rate to over 75%. .

The program design includes providing separate organics bins for businesses that prepare, sell or distribute food. These businesses are required to keep all compostable organics separate from all other materials, most of which are recyclable. The two streams ('wet' food and food soiled paper and

'dry' mostly recyclable materials are separately collected and hauled to the MRF at Newby Island for processing.

Results

- Recovered organics are hauled to the Zero Waste Energy Development (ZWED) Company anaerobic digester in San Jose; where they are processed to produce methane which is burned on site to produce electricity.
- Dry materials are sorted at the Newby Island Resource Recovery Park, and recyclables are sold on the open market by Republic Services
- The commercial waste recovery rate was increased from 22% to over 70% in less than 4 months.
- Approximately 75%.of the materials collected by Republic Services under this contract are now diverted from landfill. Only residue from the two processing systems are landfilled.
- Individual businesses only have to sort food scraps from other discards; they do not have to sort wastes into three categories. Businesses need only provide space for one or two bins, not two or three bins.
- Messaging to employees is easier as there are fewer separations to be made.

CONFIDENTIAL EQUIPMENT, GA: CHARACTERIZATION AND CHEMICAL PROPERTY ANALYSIS OF ANAEROBIC DIGESTION FEEDSTOCK (2011)

MSW Consultants assisted this European equipment manufacturer in a performance test of a pilot installation in the United States. The manufacturer was in the process of ramping up U.S. sales of a process for generating an anaerobic digestion feedstock from mixed municipal solid wastes and biosolids. MSW Consultants designed, implemented and managed two separate laboratories in conducting a series of pre- and post-process material stream characterization tests to validate certain physical and chemical properties of the organic materials.

CITIES OF PORTOLA VALLEY, WOODSIDE AND LOS ALTOS HILLS – CONTRACT DEVELOPMENT (2002-10)

Richard Gertman, working for a prior employer, assisted the Cities of Portola Valley, Woodside, and Los Altos Hills in the preparation of an RFP for collection services, the negotiation of contract for services and the preparation of the Franchise Agreement.

The scope of services called for the collection of two streams: clean recyclables, and all other wastes. The recyclables are processed for market; and the all other wastes stream is processed to remove the remaining recyclables before the remainder is composted as mixed waste at the Z-Best Compost Facility.

Results

- Award of exclusive franchises with GreenWaste Recovery for collection of two streams of materials.

- GreenWaste collects clean recyclables and everything else. The recyclables processed at the GreenWaste MRF in San Jose, and the remaining materials processed at the Z-Best compost facility outside of Gilroy.
- The two stream collection service is provided for all residential and commercial customers.
- No materials collected in these three communities are hauled directly to landfill. A recovery rate of over 90% is achieved, and less than 10% by weight of the materials collected are landfilled.

PROJECT TEAM

We are pleased to introduce the following MSW Consultants project team members. Complete resumes of these Project Team members are included in **Appendix A** of our Proposal.

JOHN CULBERTSON, VICE PRESIDENT

Principal-in-Charge

John Culbertson is a Principal of MSW Consultants with a background in solid waste management and recycling planning, financial analysis, procurement, and program optimization. Mr. Culbertson has 20 years of experience providing waste management consulting services to federal, state, county and city organizations across the nation. He specializes in helping municipalities implement integrated waste management strategies that align policy, education, revenue mechanisms, service contracts, and programs for effective diversion and environmentally sound waste management. A graduate of Yale University, Mr. Culbertson is a long-time member of the Solid Waste Association of North America (SWANA) and several state recycling associations, and is a frequent speaker at national waste management and recycling conferences.

WALT DAVENPORT, PRESIDENT

Collection Analyst

As the founder of MidAtlantic Solid Waste Consultants in 1992, and with over 30 years of waste management industry experience, Walt Davenport has extensive operational background and knowledge of waste and recycling collection, processing and disposal operations. With roots in the solid waste collection and hauling industry and the past 15 years spent consulting for the benefit of municipal and state organizations to solve waste industry problems, Mr. Davenport specializes in helping municipalities transition and optimize their collection systems. He specializes in collection procurement strategy; routing and route balance; onboard data management systems; waste characterization; and analysis of local and regional waste and recycling market dynamics.

RICHARD GERTMAN, SENIOR ASSOCIATE

Collection Analyst

Richard Gertman has over 45 years of materials management experience, including working for the California Waste Management Board, Davis Waste Removal Company (a small private waste hauler), the City of San Jose, a non-profit, and four waste management consulting firms. His projects span over 100 communities throughout the US and internationally. Richard is best known for developing creative and innovative materials recovery programs focused on retaining the value of the recovered materials, and to minimize the volume of waste requiring disposal in landfill. Concepts include a four-sort MRF for Santa Cruz County, a one-bin plus, two-stream collection system for Santa Clara County (2003); a commercial wet-dry waste management system the City of San Jose (2010); and a selective commercial routing system for the City of Fremont (2012).

CRAIG S. COKER, SENIOR ASSOCIATE

Processing Analyst

Mr. Coker has over 35 years of technical experience in the environmental science and engineering fields associated with recycling food scraps and other organics through composting or digestion. Mr. Coker has provided these consulting services to multiple local governments and solid waste authorities since 2005. Prior to that, his experience includes three years as an Environmental Engineer in County Government managing biosolids composting projects, three years' experience as the Organics Recycling Coordinator for North Carolina developing new food scraps diversion projects at composting facilities, six years' experience operating aerated static pile composting facilities for private companies, and 18 years consulting engineering experience for municipal governments in biosolids and solid waste composting.

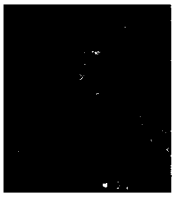
CARL HURSH, SENIOR CONSULTANT

Processing Analyst

Hursh has 30 years of progressively expanded public service working with the Pennsylvania Department of Environmental Protection, culminating as the State Recycling Coordinator responsible for advancing state-of-the-art recycling, composting, and waste diversion programs. He is a Senior Certified Recycling professional with ties to state and multi-state recycling organizations, and has actively assisted numerous local governments to establish and optimize their recycling, composting and beneficial use programs. Carl is an accomplished instructor and technical writer, and is also skilled in media relations for recycling, composting and waste diversion projects and concepts.

CYNTHIA M. MITCHELL, SENIOR CONSULTANT

Reporting and Analytical Support



Cynthia Mitchell recently joined MSW Consultants after spending 20 years working in the solid waste industry for public sector, non-profit and commercial organizations. She most recently served as the Solid Waste Utilities Director for the City of Columbia (Missouri), where she managed the operational and financial aspects of residential collection, commercial container collection, roll-off collection, a Class I

bioreactor landfill, a compost facility and material recovery facility (MRF). Of particular relevance, Ms. Mitchell managed a full cost-of-service and rate study for the City in 2015. Her expertise encompasses all aspects of a full-service collection, disposal and recovery solid waste utility, including planning and budgeting; personnel management; procurement/contracts; capital projects; rolling fleet and routing; heavy equipment; subtitle D and bioreactor landfill; waste analysis, minimization and sustainability programs; facility operation and regulatory compliance. She is an active member of multiple public works/solid waste and recycling trade associations.

STEVE DEASY, SENIOR ASSOCIATE SOLID WASTE PLANNER

Reporting and Analytical Support

Steve Deasy is a Solid Waste Specialist and Project Manager with 20 years of solid waste, sustainability, environmental management, and strategic planning experience. Mr. Deasy has completed a wide variety of compost projects ranging from yard waste and food waste collection studies to organics diversion pilot projects, equipment assessments, and compost facility permitting. He specializes in providing counties, local governments, and private clients with guidance and recommendations regarding solid waste program implementation, strategic planning, program feasibility and education.

PROJECT APPROACH

UNDERSTANDING

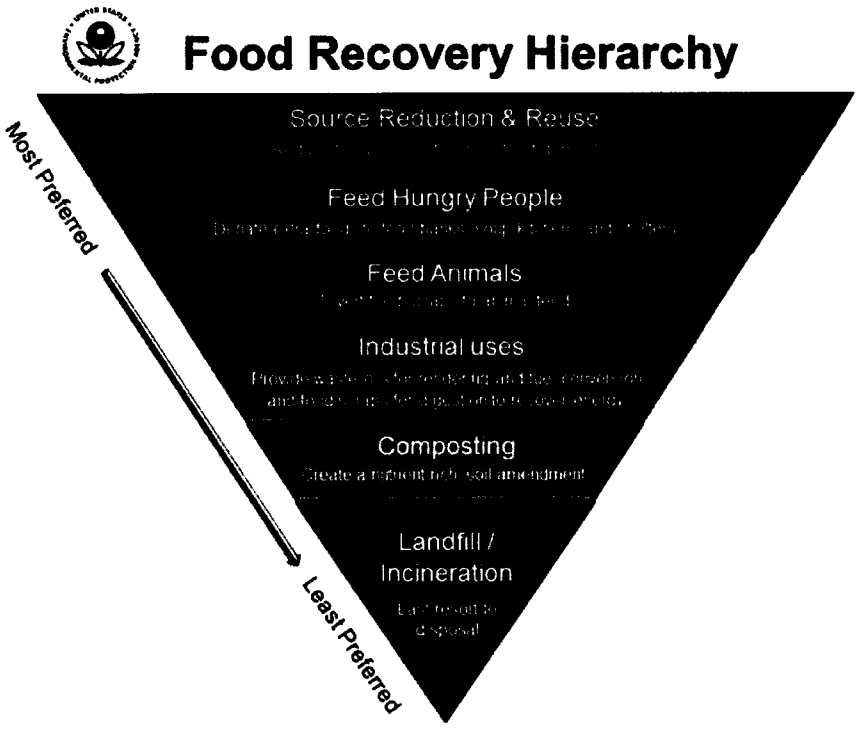
In our work with LFUCG on solid waste projects over the past 10 years, the MSW Consultants Project Team has developed a detailed understanding of LFUCG and Lexington-Fayette solid waste market dynamics. Additionally, our Project Team provides an in-depth and national perspective on organics management alternatives. Our Project Team has evaluated and developed organics collection and processing programs and implemented high-diversion programs across the Country. The combined knowledge of the Lexington-Fayette solid waste system and organics program implementation position us to be a trusted advisor to LFUCG on this important project. **We are prepared to identify the options available for effective organics recycling and to evaluate viable solutions to divert food waste.**

What does the Lexington-Fayette solid waste system and waste characteristics tell us about organics? With MSW Consultant's support, LFUCG previously conducted waste characterization studies in 2009 and 2014. These studies reveal that food waste and compostable papers are low hanging fruit for increased diversion for residential households and at least a portion of commercial businesses.

In 2012, MSW analyzed the cost of service for comprehensive solid waste and recycling services provided by LFUCG's Division of Waste Management (DWM). Our Project Team understands solid waste system cost, solid waste tax assessments, and the implications existing cost structures have on organics recycling. Competitive disposal fees and access to local processors not only impact the economic feasibility of recycling, but also the political dynamics of increased organics recovery and processing. Although recoverable quantities of food waste and other organics are in the waste stream, diverting organics is not simple. LFUCG has experienced these challenges through its yard waste programs, pilot studies, and partnerships targeting organics. **We will apply our understanding of the Lexington-Fayette collection system and waste stream to develop realistic capture rates and develop implementable solutions to address the financial, management and operational challenges of organics management.**

The federal government, led by EPA and the United States Department of Agriculture (USDA), is seeking to work with communities, organizations and businesses along with states, tribal and local governments to reduce food loss and waste by 50 percent over the next 15 years. As part of this initiative, they have developed a Food Recovery Hierarchy, as shown in **Figure 1**.

Figure 1. EPA/USDA Food Recovery Hierarchy



The multi-level hierarchy has been used by local and regional governmental entities to plan for organics recycling. With the well-known closure of big, centralized processing plants for organics (Wilmington Organics Recycling Facility in Delaware in 2014 and Heartland Biogas Food Recycling Facility in Colorado in 2017) - a multiple-outlet, decentralized approach can be an effective strategy for organics diversion when economic feasibility is present. The Lexington-Fayette County region has elements of, and potential for, a multiple-outlet strategy for organics:

- **Scale & City Collection Services** - Lexington consists of 314,488 residents (per 2015 U.S. Census data). About 77 percent of residential homes are serviced through UCG collection. LFUCG's Division of Waste Management provides weekly refuse, recycling and yard waste collection services to 96,000 residents and 3,000 businesses. Residential curbside collection includes a 95-gallon yard waste container supplemented with bundled collection for larger organics. Residents may place their material in biodegradable paper yard waste bags provided free-of-charge. LFUCG provides one vacuum leaf collection service to each household in the urban services area in late fall.
- **Yard Waste Processing** - Yard waste material from city-serviced residences and citizen and business drop-offs is processed by a contracted vendor on city-owned property. LFUCG currently collects the following organic yard waste materials from residences:
  - Tree and brush pruning's
  - Leaves

- Grass clippings
- Garden and plant scrap (no dirt, rocks or plastic planter pots accepted)
- Stumps and branches

- **God's Pantry Food Bank, 1685 Jaggie Fox Way, Lexington** – This non-profit organization has been distributing food to the hungry since 1955 across a 50-county area of central and eastern KY. They diverted over 5,000 tons of produce alone in the past year, and their Lexington warehouse has capacity for 1,000 tons of food products.
- **Organics Recycling Law** - The KY legislature passed, and Gov. Bevin signed, a new organics recycling law. This act is designed to increase food waste diversion to the hungry by extending legal protection against liabilities arising from food donations (KY House Bill 237, effective July 1, 2017). This legislation buttresses the Federal legislation, "The Bill Emerson Good Samaritan Act" (P.L. 104-210, 1996).
- **LFUCG Partnerships and Pilot Studies** - LFCUG has been very active developing partnership and conducting pilot studies to advance organics diversion. Examples include:
  - Food waste compost pilot program (2010 – 2017) that integrated food waste with yard waste collection from 366 residences and four businesses. Ultimately the pilot failed due to high contamination rates.
  - Home composting education partnerships, including with the Fayette County Cooperative Extension Service.
  - LFUCG – Seedleaf contract to provide as needed food scrap collection and transport to community gardens. LFUCG partners with Seedleaf, a community-supported agriculture non-profit organization dedicated to improving healthy food access to the urban residents who lack access to nearby grocery stores. Seedleaf has 16 community gardens and diverted about 67 tons of food waste in 2016 to amend garden soils.
- **Thoroughbred Compost** - One of the largest composting facilities in KY, Thoroughbred Compost, owned by Creech Hay Services, Inc., is located adjacent to the LFUCG Haley Pike Waste Management Facility on Hedger Lane. This facility specializes in composting horse manure and bedding and has a 10-acre concrete composting pad.
- **Curbside Yard Waste Collection** - LFUCG DWM collects yard waste at curbside and directs it to a contractor-run yard waste mulching and composting operation.
- **Anaerobic Digestion** - The LFUCG Division of Water owns and operates the 71 million-gallon-per-day (MGD) Town Branch wastewater treatment plant on Lisle Industrial Ave. Anaerobic digestion is used to process sewage sludge for land application. Several wastewater treatment plants have been evaluating the co-digestion of food wastes with sludges to increase biogas production and improve renewable energy generation. There is also a co-digestion anaerobic digester at MAC Farms in Campbellsville, KY that is interested in receiving substrate feedstocks from food waste diversion.
- **Dedicated Organics Transfer Station** – To reduce transport costs to organics recycling facilities outside the City, it may be feasible to construct a dedicated transfer station (or modify an existing piece of infrastructure) to handle organics via transfer trailer. As some organics recycling outlets have specifications on allowable levels of inert contamination in the incoming organics (i.e. plastic,

glass, metal, etc.), it may also be necessary to plan for organics processing equipment to remove contaminants and/or pre-process organics for system suitability.

MSW Consultants specializes in municipal waste management program optimization, including diversion of organics and recyclables. We are committed to assist LFUCG in its pursuit to develop integrated and financially responsible waste management and recycling programs that serve as long term solutions. Our approach to assist the LFUCG in this project is outlined below.

APPROACH

Our approach assigns our uniquely experienced Project Team, with intimate knowledge Lexington-Fayette solid waste and organics collection, processing and diversion strategies, to work closely with LFCUG to perform the proposed organics recycling feasibility study. As stated in the RFP#24-2017, the core elements of the project scope include:

- Determine viable options for organics recycling,
- Evaluate residential and commercial organics recycling alternatives,
- Consider factors related to organics program implementation:
  - Existing collection programs and infrastructure available to future programs,
  - Types of organic waste and available processing and system capacity,
  - Participation and diversion levels,
  - Participants, program partners, and public/private partnerships,
  - Compost markets and community education components,
  - Economic impacts (cost of services, cost-savings, maintenance costs),
  - Composting systems, methods, capacities, and other technical requirements,
  - Environmental impacts (negative and positive; disposal costs avoided),
  - Implementation viability (such as convenience factor).

The phase and task list below presents our approach to successfully complete the study. We remain available to modify and refine this approach based on input from LFUCG.

PHASE 1 – PROJECT INITIATION AND CURRENT SYSTEM DATA ASSEMBLY

Task 1.1 Information Request and Review of Data: MSW Consultants will submit a written request for information to be provided by LFCUG. We will review responses and work with LFCUG to address information gaps. We will review publicly available information and past work we have completed for LFCUG relating to collection systems, rates, and waste characterization. We will also review non-LFCUG project information and case studies pertaining to organics diversion, particularly where this information adds value regarding aggressive organics diversion programs.

Task 1.2 Meetings: We recommend the following meetings in Phase 1 to close information gaps, align with LFCUG, and review preliminary alternatives:

- **Kick-off Meeting** – In-person meeting to introduce key Project Team members, review contract and scoping details, establish project expectations and schedules and align the Project Team with LFCUG's anticipated outcomes.

- **Site Visit** – A 3-day trip by key Project Team members, with two (2) days in the field to visit key organics collection and processing facilities and programs. The Project Team will coordinate with LFCUG before the site visit to confirm the site visit details (e.g. location, timing, coordination with facility managers/contacts, etc.). A key outcome of the site visits will be to verify existing organics processing capacity and identify potential opportunities to expand processing capacity.

Task 1.3 Organics Diversion Case Study Research. MSW Consultants will compile brief case studies of organics diversion in other communities across the U.S. that have successfully implemented an organics diversion program within either the residential or commercial sector. This effort is intended to quickly summarize the diversity of organics diversion programs, and describe both residential and commercial programs. MSW Consultants intends to draw from its own internal experiences as well as some literature search for well-known national programs. The purpose of the research is to inform the brainstorming to be performed in the following working session.

Task 1.4 Working Session 1 – Brainstorm Alternatives. The Project Team will conduct a one day working session to identify obstacles and opportunities and to review and develop a comprehensive list of potential organics diversion strategies spanning collection and processing. The end of this session will be used to prioritize preferred strategies recommended for further evaluation. It is anticipated that LFCUG and other stakeholders invited by LFCUG will attend. Prior to brainstorming breakout sessions, the Project Team will conduct a presentation to the group to introduce relevant organics information to participants.

PHASE 2 – IDENTIFY AND EVALUATE ORGANICS COLLECTION OPTIONS

The organics collection system must compliment the organics processing option(s) selected by the City. The processing system determines the material types diverted and how the waste stream is separated for collection. This phase will evaluate organics collection and recovery alternatives to be reviewed in this project, along with others identified in cooperation with LFUCG.

Task 2.1 Update UCG Collection System Model. MSW Consultants maintains a proprietary residential routing spreadsheet model that assembles and baselines operational parameters for residential and commercial collection systems. We have previously populated this model for UCG, including routing, service level, tonnage, and customer data to model the existing collection systems. In this task, MSW Consultants will update this model to reflect changes to the collection system (e.g., growth in the customer base, new service areas, etc.) since this model was last updated. The MSW Consultants collection model will then be used in subsequent tasks to estimate the impact of new organics collection programs.

Task 2.2 Identification of Alternative Collection Programs. There are numerous options for organics collection from residential, institutional and commercial establishments. This task will identify the five most promising collection alternatives to be considered for organics diversion. A description of potential organics collection configurations are listed below.

1) **Residential Food Scrap Collection System Options**:

   a) 3-cart, 3-stream system, with garbage: one each for recycling, garbage, and with food and food soiled paper are added to yard waste collection. This is the most common option because it is the easiest to implement; but as garbage is still collected separately, in most communities less than half of the food waste generated is separated for composting, the rest still goes to landfill.

   b) 3-cart, 3-stream system, without garbage: one each for yard waste, recycling, and food scraps (organics); in this system, no garbage intended to be hauled directly to landfill is collected, all

collected materials are processed. Each of the three carts would be collected in a separate truck.

c) 2-cart, 2-stream system: all compostable organics, including yard waste, food scraps, and food soiled paper are collected in one cart; and all other (non-compostable) materials are collected in the second cart. In this system, there is no garbage to be hauled directly to landfill, and all collected materials are processed. The 2 streams can be collected in a split body truck or in two separate trucks.

d) 3-cart, 5-stream system: In the City of Sunnyvale, CA, cart #1) yard waste is collected in a single compartment cart and loaded into a single compartment truck; in cart #2) fiber is collected in one side of a split recycling cart, and all other recyclables are collected in the other side of the same split cart, and both material types are loaded into a split body collection vehicle; in cart #3) clean food scraps are collected in one side of a split recycling cart, and all other garbage is collected in the other side of the same split cart, and both material types are loaded into a split body collection vehicle.

e) MSW collection, a version of the 2-cart, 2-stream system where recyclables are collected in one cart and everything else (garbage) in the other cart. Some of the new, more sophisticated MRFs can preprocess garbage to remove problem materials and then in-vessel compost the remaining mixed materials. The low-quality compost produced can be used for erosion control, especially along highways. But at least the organics do not end up in landfill.

2) **Commercial Food Scrap Collection System Options**:
Keys to the success of commercial food scrap recovery include the number of separations required by the staff of the business and space constraints caused by the business location.

a) Three-Stream collection: three commercial collection bins are provided at each business for separate recovery of food, recyclables and garbage. The bins would be serviced on a frequency as needed. Using three separate bins means that the business must provide space for each bin type, and three separate trucks must come to the site on a frequency as needed to provide service. Also, janitorial staff must properly maintain the three separations.

b) Wet and Dry collection: all businesses would be provided two waste bins; one bin for food and soiled paper, and a second bin for everything else. The food bin would capture breakroom food waste, coffee station wastes and left-overs from parties and celebrations where food was served.

c) One Bin Plus!© collection: Our experience is that at most businesses the bathroom and breakroom wastes are hauled out to the dumpster in plastic bags that have been tied off by janitors when they are removed from the waste receptacles. If there is no food service at that business, then the loose (mostly recyclable) materials and the bagged wet materials can be disposed of in a single dumpster; and at a materials processing facility the bagged materials can be pulled off the line and landfilled, while the dry materials can be sorted and prepared for market. So, most businesses need only one collection bin to manage all of their wastes if they have a local processing facility. Any business in the community that included a food service operation (restaurant, market, deli, caterer, etc.) would need a second bin (the Plus) for food and food soiled paper; and would have to plastic bag all food soiled plastic packaging. These wet, organic materials would be separately collected from the dry recyclables.

Task 2.3 Analysis of Collection Alternatives. MSW Consultants will use the baseline collection model to estimate the number of routes, fleet vehicles, carts/containers, collection staff, tonnage, and cost of each collection alternative. It is important to note that we will also use the model to calculate

any reductions to existing collection services that may be achieved if organics are collected separately and removed from current refuse service.

These data will be compiled in the final report.

PHASE 3 – IDENTIFY AND EVALUATE ORGANICS PROCESSING OPTIONS

Based on the various collection configuration above, the Project Team will perform a technical analysis of processing options.

Task 3.1 Processing Technology Identification. MSW Consultants will first evaluate the existing organics processing infrastructure and potential organics collection programs to identify the range of processing options to be considered. This task includes:

- **Establish System Capacities** – All mechanisms, methods and outlets for recycling organics have finite absorption and processing capacities for handling wastes. The team will conduct detailed evaluations of each of the possible organics recycling options noted above to define capacities today, and over the recommended planning period of 2018-2028;
- **Identify New Programs** – Working closely with LFUCG, the Project Team will identify other possible options not currently available (i.e. transfer station dedicated to organics, develop a new food waste composting or digestion facility somewhere in the service area, etc.), which would include evaluation of composting and/or digestion types, methods and capacities, and other technical requirements;
- **Define Processing Alternatives** – MSW Consultants will select the

Task 3.2: Analysis of Processing Alternatives: The Project Team will perform both quantitative and qualitative analysis of the selected processing alternatives. This analysis will include:

- **Feasibility** – For preferred alternatives, each alternative will be evaluated for economic and non-economic feasibility.
  - **Economic** feasibility will be evaluated based on preliminary estimates of capital and operating costs, along with estimates of revenues and avoided costs, expressed as 10-yr Net Present Values.
  - **Non-economic** alternatives will be evaluated using a weighted-criteria matrix evaluation system, which would include environmental impacts (positive and negative), implementation viability, operational considerations and any other non-economic factor LFUCG staff considers important. The factors identified by LFCUG in Sections V.D. and V.E. of the Proposal (RFP#17-2017) will be applied as evaluation criteria. In these types of matrix evaluations, MSW Consultants staff will suggest evaluation criteria for measurement and LFUCG staff will assign importance, or weighting, factors.
- **Market Penetration** – For those options that may involve the LFUCG DPW producing, or having responsibility for, a product made from organic wastes (i.e. compost, compost-based soil blends, biogas-based biomethane, and/or biogas-based electricity), the team will evaluate market penetration potentials. This evaluation will include identification of market customers, competing products, and likely market price points.

Results of this analysis will be included in the report.

PHASE 4 - REPORTING

Task 4.1 Report Outline: MSW Consultants will prepare a concise written report detailing recommendations and all viable program options. We would first submit an outline of the report content for review and approval prior to MSW Consultants initiating the report development.

Task 4.2 Draft Report: MSW Consultants will prepare a draft report in electronic format, including appendices, for review by the UCG. It is anticipated that this report would identify viable organics options, and demonstrate the incremental impacts to the waste stream for viable programs over the planning period.

Task 4.3 Final Report/Presentation: MSW Consultants will receive and incorporate LFCUG comments on the Draft Report and deliver a Final Report in MSW Word and PDF format. Appendices and working files including excel spreadsheets will provided to LFCUG. To bring the project to a close, our Project Team's organics experts will provide a final presentation to convey the results of the organics feasibility study. This presentation will highlight the top priorities, milestones, and implementation schedule for advancing organics diversion in Lexington-Fayette area.

OPTIONAL TASKS

The following tasks are offered because MSW Consultants feels these tasks may benefit the project outcome.

- **Pilot Study Details –** For some alternatives, it may be necessary develop pilot studies to verify feasibility, obtain data, and fine to operational details and scalability. If requested. MSW Consultants is prepared to assist in the development of pilot study details.
- **Procurement Document Development –** Organics feasibility often requires development of thoughtful procurement documents that effectively leverage solid waste markets and collectors to achieve feasibility. MSW Consultants can assist the UCG to develop technical specifications and/or assist with subsequent procurements.
- **Agreements Development –** Sustainable organics diversion programs are reinforced by a variety of agreements and implementation documents. Examples of agreements include those between generators and collectors (e.g. material handling and quality), collectors and processors, private and public sector, and intermunicipal and cooperative agreements. MSW Consultants can assist in the negotiation of appropriate processing (or collection) agreements.
- **Ordinance Development –** Local and county ordinances must align with organics diversion goals and programs to assure compatibility. MSW Consultants can assist with edits to the U07CG solid waste ordinance to accommodate any new organics programs.

REFERENCES

ORGANIC FEASIBILITY PROJECT REFERENCES

Client/Project	Contact	Reference for:
Borough of State College (RTA), PA Educational Program Development for Restaurant Recycling and Composting Program (2012)	***Douglas Shontz*** Communications Specialist 243 South Allen Street State College, PA 16801 (814) 278-4723 dshontz@statecollegepa.us	MSW
Louisville Metro Government, KY Comprehensive Solid Waste System Analysis (2017)	***Mr. Pete Flood*** Compliance & Enforcement Manager 600 Meriwether Avenue Louisville, KY 40217 (502) 574-3290 pete.flood@louisvilleky.gov	MSW
City of Philadelphia, PA Residential Food Waste Evaluation (2013)	***Scott McGrath*** Recycling Coordinator City of Philadelphia 1401 JFK Building Philadelphia, PA 19102 (215) 686-5095 scott.mcgrath@phila.gov	MSW
Ecomaine Solid Waste Authority, ME Organics Recycling Feasibility Study, Portland (2013-201)	***Mr. Kevin Roche, CEO,*** (207) 773-1738 roche@ecomaine.org	Craig Coker
City of Rolla, MO Organics Recycling Feasibility Study (2015)	***Mr. Brady Wilson, Director, Environmental Services,*** (573) 364-6693 bwilson@rollacity.org	Craig Coker
City of Cupertino, CA Contract Development (2009-2017)	***Cheri Donnelly*** Environmental Programs Manager City of Cupertino (408) 777-3242	Richard Gertman
Republic Services, City of San Jose, CA High Diversion Commercial Collection System Design (2010-12)	***Gil Cheso*** President Municipal Services Manager (408) 586-2240	Richard Gertman

LFUCG PROJECT REFERENCES

LFUCG Projects	Contact	Project Team
Lexington-Fayette Urban County Government, KY Solid Waste Collection and Cost-of-Service Study (2012)	***Mr. Brad Stone*** Senior Admin Officer 200 East Main Street Lexington, KY 40507 (859) 425-2520 bstone@lexingtonky.gov	MSW
Lexington-Fayette Urban County Government, KY Countywide Waste Stream Analysis (2009 & 2014)	***Mr. Kevin Bennett*** Solid Waste Operations Manager 675 Byrd-Thurman Drive Lexington, KY 40507 (859) 425-2832 kevinb@lfucg.com	MSW

BUDGET AND SCHEDULE

The following table summarizes the labor hours and total costs for conducting the scope of services contained in this proposal.

Budget

Phase/Task	Labor Hours	Labor Cost	Expenses	Total
1 Project Initiation				
1.1 Information Request and Review	16	$1,700		$1,700
1.2 Meetings and Site Visits	96	$10,500	$3,200	$13,700
1.3 Organics Diversion Case Studies	48	$5,300	$100	$5,400
1.4 Working Session/Brainstorming	42	$4,500	$1,600	$6,100
2 Identify and Evaluate Organics Collection Options				
2.1 Update UCG Collection Model	24	$2,700	$100	$2,800
2.2 Idenification of Collection Alternatives	24	$2,800	$100	$2,900
2.3 Analysis of Collection Alternatives	58	$6,400	$200	$6,600
3 Identify and Evaluate Organics Processing Options				
3.1 Processing Technology	34	$3,800		$3,800
3.2 Analysis of Alternatives	22	$2,500		$2,500
4 Reporting				
4.1 Report Outline	8	$900		$900
4.2 Draft Report	68	$7,400	$200	$7,600
4.3 Final Report and Presentation	34	$3,500	$1,100	$4,600
Grand Total	**474**	**$52,000**	**$6,600**	**$58,600**

Assuming the Notice to Proceed is October 2, 2017 it is possible the final presentation would be conducted in January 2018 after the Report finalization by the end of December.

REQUIRED PROPOSAL FORMS

The following forms can be found in **Appendix B**:

- Affidavit
- Equal Opportunity Agreement
- Workforce Analysis
- MWSBE
- Statement of Good Faith Efforts

APPENDIX A

RESUMES

This page intentionally left blank.

JOHN CULBERTSON
Vice President

Experience Summary

- 21 years as a planning consultant in the waste management and recycling industry
- Successfully performed and managed consulting engagements for over 50 municipalities nationally

Education/Certifications

- B.A. Economics, **Yale University**
- SWANA Certified **Municipal Solid Waste Management Systems Manager**

Select Professional Affiliations

- Technical Advisor for Waste Management Industry, **Gerson Lehman Group Council of Advisors**, 2004-present
- Member, **Solid Waste Association of North America**, 2000-present
- Member, **National Recycling Coalition**, 2004-present

Key Skills

- Strategic/Master Planning
- Financial Analysis and Rate Development
- Procurement Assistance and Contract Negotiation
- Waste Composition and Generation Analysis
- Recycling Program Development

Mr. Culbertson has dedicated his career to providing waste management and recycling consulting services to federal, state, county and city governments and organizations in Florida and across the nation. His expertise encompasses all aspects of the waste management industry, including solid waste system planning and strategic analysis; financial analysis and system funding; procurement assistance and contract negotiation; collection efficiency and routing; transfer and long-haul logistics; MRF operations and efficiency; waste stream and waste generation analysis; and a wide range of information management and statistical analysis.

Mr. Culbertson is currently directing an internal project team in the migration of the firm's critical analytical tools and waste/recycling market tracking system to a cloud-based application for use by employees and clients. He is the firm's QA/QC manager and also manages its Orlando, Florida office.

Select Project Experience

Louisville Metro Government (KY), Comprehensive Solid Waste Plan (2017): Mr. Culbertson is managing three major phases of this solid waste management planning project for LMG. He designed a two-season waste characterization study which was completed in 2016; and also is performing a collection system cost-of-service analysis for the Urban Service District. Mr. Culbertson is on a three-person team that is facilitating a series of four stakeholder outreach meetings to identify elements of a 10-year solid waste master plan for Louisville and Jefferson County.

Grand Teton National Park (WY), Zero Waste to Landfill Plan (Ongoing): Mr. Culbertson is serving as a Technical Advisor on this project to facilitate a long-term zero waste-to-landfill plan for this national park as part of Subaru of America's sponsorship of zero waste within the National Park Service.

City of Georgetown (KY), Collection System Operational and Rate Evaluation (Ongoing): Mr. Culbertson is managing this project to optimize the City's residential and commercial collection operations and to establish rational collection rates.

Confidential Client, Municipal Solid Waste Compost Plant Recommissioning Evaluation (Ongoing): Mr. Culbertson is managing a team of processing facility experts to evaluate current plant condition and design a plan for restarting a mothballed 200 tpd MSW composting plant.

Borough of State College (PA), System Evaluation and Cost-of-Service/Rate Study (2015): Mr. Culbertson provided technical QA/QC on all phases of a comprehensive collection system evaluation and rate study for the Borough.

City of Boston (MA), Residential Capture Rate and Waste/Recycling Composition Analysis (2013): Mr. Culbertson developed a sampling plan to enable the City of Boston to test recycling program effectiveness within three subsets of neighborhoods with varying recycling collection frequency, as part of a Citywide residential composition study. He subsequently performed the statistical analysis of results by neighborhood and in the aggregate.

Lexington-Fayette Urban County Government (KY), Countywide Waste Characterization Study (2014): Mr. Culbertson developed the single-season sampling plan and was responsible for the statistical analysis for this one-season study encompassing manual sorting of residential and commercial wastes, and visual surveying of coded C&D debris received at the County's sole transfer station.

City of Boston (MA), Residential Food Waste Evaluation (2014): Mr. Culbertson assisted the City, and a garbage disposal equipment manufacturer partner, in a test of the performance of a pilot program at a multi-family apartment complex to divert food wastes from solid to liquid wastes via enhanced usage of modern garbage disposals.

City of Philadelphia (PA), Residential Food Waste Evaluation (2012-2014): Mr. Culbertson assisted the City, and a garbage disposal equipment manufacturer partner, in a test of the performance of a pilot program to divert food wastes from solid to liquid wastes via enhanced usage of modern garbage disposals. Mr. Culbertson developed the sampling plan and statistically analyzed the characterization of wastes.

NYC Department of Sanitation (NY)/Sims Municipal Recycling (NY), Residential Organics, Litter Basket and School Waste Stream Audit (2014): Mr. Culbertson served as the technical manager of a waste stream audit of NYC's recently initiated residential organics program. He developed the data management protocol and oversaw data management, statistical analysis, and results interpretation.

Winchester Municipal Utilities (KY), Collection Service Optimization and Rate Study (2013): Mr. Culbertson developed an activity-based cost-of-service analysis and full rate study for the collection system and transfer station for this small municipal utility in an effort to improve rate equality among customer classes. He also supervised a benchmarking survey of similar sized municipalities in Kentucky and managed a survey of commercial customers.

Lexington-Fayette Urban County Government (KY), Cost-of-Service Analysis (2012): Mr. Culbertson prepared an activity based cost model for the UCG's solid waste collection system. He subsequently summarized the cost-of-service model in a white paper to illustrate how user fees might look for the UCG's main revenue source, how PAYT rates could be implemented, and to document the cost of common good services that would likely remain tax funded even if user fees were implemented for direct collection services.

City of Philadelphia (PA), Residential Waste Composition Analysis (2010): In 2010, Mr. Culbertson performed a waste composition analysis of the residential curbside municipal waste and single stream recyclables collected by the City. The City performed a similar study in 2000, whereby they evaluated the composition of the residential waste stream in a four season waste characterization study. For the most recent study, Mr. Culbertson developed the representative sampling plan to capture refuse and curbside recyclables samples from 12 collection districts at two facilities, spread over two seasonal sampling events. Mr. Culbertson was the primary report author.

Lexington-Fayette Urban County Government (KY), Waste Characterization Study (2009): Mr. Culbertson developed the sampling plan for this two season study, encompassing both manual sorting of municipal solid wastes as well as visual surveying of C&D debris loads. He subsequently performed a full statistical analysis on the underlying composition data. Mr. Culbertson authored a chapter in the UCG's Recycling Center 10-year Master Plan to document the results of the waste composition analysis.

Lexington-Fayette Urban County Government (KY), Cost-of-Service Analysis (2007): Mr. Culbertson worked on a project team to lead the development of a detailed full cost of service study for the Urban County Government's residential and commercial waste management system.

WALT DAVENPORT

Owner/President

Experience Summary

- 30 years in the waste management/recycling industry
- Collection System Optimization and Waste Composition Expert

Select Professional Affiliations

- Member, **Solid Waste Association of North America**, 2006-present
- **Professional Recyclers of Pennsylvania**, 2000-present

Key Skills

- Operations Management
- Collection Efficiency and Automated Technology
- Procurement Assistance and Contract Negotiation
- Waste Characterization
- Solid Waste Fleet Management
- Facility Conceptual Design & Feasibility Studies

Education/Certifications

- SWANA Certified **Collection Systems Manager**
- California Resource Recovery Association **Zero Waste Certification**
- Meteorology coursework (2.5 years), State University of New York at Oswego
- Business Management coursework, Siena College, Albany, NY

MSW Consultants founder and President Walt Davenport has worked in the public and private sectors of the solid waste management industry as a team leader, technical expert, operations specialist, and problem solver. His early career in the private sector was characterized by his ability to increase productivity and profitability, improve customer and employee satisfaction, and negotiate and manage contracts. Since the early 1990s, Mr. Davenport has shifted his consulting focus by assisting dozens of state, county, and city clients across the nation as a subcontractor and, since 2005, as the president of the firm. With extensive experience in collection efficiency and routing, waste composition and generation studies, facility and collection system management and operations, and as a senior business manager, Mr. Davenport brings a wealth of knowledge and resources for the benefit of the firm's clients.

Selected Project Experience

Montgomery County/Northeast Maryland Waste Disposal Authority (NMWDA), Shady Grove Transfer Station Evacuation Plan (Ongoing): Mr. Davenport is the Principal-in-Charge for a project to prepare an evacuation plan to provide for the safe and efficient egress of all employees and visitors in the event of a fire, hazardous material incident, natural disaster, dangerous armed person, or any other event necessitating partial or full evacuation of the facility.

Howard County/Northeast Maryland Waste Disposal Authority (NMWDA), Alpha Ridge Landfill Traffic Study (Ongoing): Mr. Davenport is the Principal-in-Charge for a project to analyze the traffic flows through a busy county transfer station, wood waste processing center and heavily utilized citizen drop-off center. He is developing the report that will provide the county with traffic flow and recommendations for improved operations, facility ingress/egress, lane modifications and equipment changes.

Town of West Hartford (CT), Solid Waste Management Plan (Ongoing): Mr. Davenport is the Project Manager to develop a curbside refuse, recycling, bulky waste and yard waste collection RFP. The RFP will be designed to provide flexibility in collection methods and at the same time stabilize pricing over the contract period.

City of Georgetown (KY) (2017): Mr. Davenport was the Project Manager for a project designed to evaluate the curbside refuse collection system, perform a cost-of-service study, and evaluate the potential for a curbside recycling collection program. His recommendations included implementation of a citywide single stream recycling program and more competitive pricing for the commercial sector based on actual cost of service.

Winchester Municipal Utilities (KY), Collection Service Optimization and Rate Study (2016): Mr. Davenport conducted a review of WMU's commercial refuse and recycling collection in an effort to increase the commercial diversion rate. His recommendations included increasing the number of carts allowed for each business as well as an increase in the frequency of recycling collection.

DAVENPORT (continued)

Louisville Metro Government (KY), Comprehensive Waste Management Plan (2017): Mr. Davenport served as the Project Manager for a major effort to develop a Sustainability Plan after a detailed waste composition, collection efficiency, and cost-of-service studies was completed.

Centre County Recycling and Refuse Authority (PA), Single Stream Recycling Analysis and Rate Study (2016): Mr. Davenport performed a collection efficiency study as part of a project that included cost-of-service, single stream collection and processing feasibility.

State College Borough (PA), Cost-of-Services and Single Stream Recycling Collection Feasibility Study (2015): Mr. Davenport managed a project for a cost-of-service study for residential and commercial collection operations including residential refuse, recycling, bulky waste and organics collection along with commercial refuse, and OCC collection. The Borough was interested in the feasibility of implementing a residential single stream recycling system including curbside collection and transportation to a regional single stream processing facility.

City of Boston/InSinkerator (MA), Multi-family Waste Audit (2015) Mr. Davenport served as the Project Manager for analyzing the impact of food waste disposer installation on the incidence of discards in the solid waste stream. During this pilot test, he is managing the crews as they perform a baseline audit of wastes and recyclables from 48 participating households that currently have no food waste disposers. Mr. Davenport also managed the repeat audit after installation of the disposers was completed.

Lexington-Fayette Urban County Government (KY), Countywide Waste Characterization Study (2014): Mr. Davenport served as the field data collection team leader and was responsible for visually surveying over 100 loads of C&D debris and other bulky wastes delivered to the local transfer station.

City of Milwaukee/InSinkerator (WI), Food Waste Characterization Study Results (2013-2014): Mr. Davenport was the Project Manager for analyzing the impact of food waste disposer or backyard compost bin installation on the incidence of discards in the solid waste stream. He managed the repeat audit, after installations of the disposers and bins, and submitted the results for a final report.

Sims Municipal Recycling/New York City Department of Sanitation (NY), 2012 Residential Waste Characterization (2012-2014): Mr. Davenport served as the Officer-in-Charge and Project Manager for this large-scale composition analysis of New York City's residential waste stream. He had overall responsibility for the performance of the project, including on-site management for all field data collection events.

City of Philadelphia (PA), Residential Food Waste Evaluation (2010-2013): Mr. Davenport served as Project Manager for this multi-season pilot test that analyzed the impact of food waste disposer installation on the incidence of discards in the solid waste stream. He coordinated with the City and with a food waste disposal equipment manufacturer to plan and perform waste stream audits for control areas and test areas.

Lexington-Fayette Urban County Government (KY), Route Optimization and Onboard Systems Implementation (2008-2012): Mr. Davenport managed a series of projects for the UCG to optimize the publicly provided residential and commercial collection system, and to perform a countywide waste characterization study in support of a 10-year recycling plan. Mr. Davenport participated on a project team that implemented computer-optimized routing and onboard monitoring systems for the UCG's collection system.

Lexington-Fayette Urban County Government (KY), Countywide MSW and C&D Composition Analysis (2009): Mr. Davenport served as Project Manager for a countywide waste characterization study in support of a 10-year recycling plan. The composition analysis included two seasons of sampling, as well as visual surveying of construction and demolition debris. Mr. Davenport organized the field operations team and provided training at the outset of field operations.

Lexington-Fayette Urban County Government (KY), Waste Characterization Study (2009): Mr. Davenport served as the Project Manager and Officer-in-Charge of this two season waste composition analysis in support of the UCG's Recycling Center 10-year master plan. He trained and managed a field data collection team that performed a manual characterization of municipal solid waste and visual surveys of construction and demolition debris generated within County borders.

RICHARD GERTMAN

Senior Associate

Experience Summary

- Over 45 years of material management experience.
- His projects span over 100 communities throughout the US and internationally.
- President of For Sustainability Too.

Education/Certifications

- BS & MS – Geology & Paleontology, Tulane University, 1966, 1968
- PhD (ABD) - Geology & Paleontology, University of CA, 1975

Select Professional Affiliations

- Californians Against Waste (CAW) – Current Board Member
- California Resource Recovery Association (CRRA) – Past Board Member
- National Recycling Coalition (NRC) – Member, Past Board Member
- Northern California Recycling Association (NCRA) – Past President
- SWANA Gold Rush Chapter – Member

Awards

- California Resource Recovery Association, "Recycler of the Year" in 1982 & 2014

Richard Gertman has over 45 years of materials management experience, including working for the California Waste Management Board, Davis Waste Removal Company (a small private waste hauler), the City of San Jose, a non-profit, and four waste management consulting firms. His projects span over 100 communities throughout the US and internationally.

Richard is best known for developing creative and innovative materials recovery programs focused on retaining the value of the recovered materials, and to minimize the volume of waste requiring disposal in landfill. Concepts include a four-sort MRF for Santa Cruz County, a one-bin plus, two-stream collection system for Santa Clara County (2003); a commercial wet-dry waste management system the City of San Jose (2010); and a selective commercial routing system for the City of Fremont (2012).

Recent projects include assisting the City of Cupertino with the management of their franchise agreement; and designing new food scrap recovery systems, including a pilot project in the City of Sunnyvale with the implementation of a five-sort, three-stream residential collection system to recover food scraps separate from other wastes from households. He is on the Team preparing a Zero Waste Principles and Practices professional certification training course for SWANA and the CRRA.

Select Project Experience

City of Sunnyvale, CA, Residential Food Scrap Recovery Pilot (2015): Richard assisted the City of Sunnyvale in the design and implementation of a split cart food scrap recovery program that asks residents to separate food scraps from garbage. Based on the success of the pilot, the City of Sunnyvale will be expanding this program to citywide in the fall of 2017; the City of Milpitas will be implementing this program starting in September, 2017; and the City of San Jose is piloting this food scrap recovery system. The protein value of the wasted food is retained so that it can be used to produce animal feed.

Rethinking Recycling, Certification Training, CRRA (2007-2012): Richard led a certification course to introduce recyclers to the concepts of zero waste and proper resource management. Course showed students how to move away from the concepts of managing wastes at the end of the pipeline to managing resources throughout the flow of materials – changing the concept from 'cradle-to-grave' to cradle-to-cradle. Recyclers were instructed on how to minimize the use of resources and maximize recovery; truly implementing the reduce, reuse, and recycle hierarchy.

City of San Jose, CA, Commercial Collection System Design, Republic Services (2010-2011): Richard assisted the City of Sunnyvale in the design and implementation of a split cart food scrap recovery program that asks residents to separate food scraps from garbage. Based on the success of the pilot, the City of Sunnyvale will be expanding this program to citywide in the fall of 2017; the City of Milpitas

will be implementing this program starting in September, 2017; and the City of San Jose is piloting this food scrap recovery system. The protein value of the wasted food is retained so that it can be used to produce animal feed.

Santa Clara County, CA, Zero Waste Technical Assistance Program (2005 and 2009-2010): Richard provides technical assistance to county facilities, including evaluation of programs in place, recommendations for changes, and implementation. Facilities include the Department of Correction, Parks Department, Valley Medical Center, Social Services, Facilities and Fleet, Roads and Airports, General Services and other Departmental Agencies.

City of San Jose, CA, Solid Waste and Recycling Planning Services (1994-2010): Richard assisted the City of San José with a range of solid waste and recycling planning services, including: training of City staff, development of procurement policies; assistance with expansion of recycling throughout city facilities; design and evaluation of a commercial source separated materials collection program; design and evaluation of promotional materials; development of a curbside yard waste collection program; review of the residential curbside recycling program; development of an implementation plan for a citywide multi-unit recycling program.

CA Department of Conservation, AF&PA, APC, GPI, and others, CA, Single Stream Recycling Best Practices Manual (2005 - 2007): Richard assisted the City of Sunnyvale in the design and implementation of a split cart food scrap recovery program that asks residents to separate food scraps from garbage. Based on the success of the pilot, the City of Sunnyvale will be expanding this program to citywide in the fall of 2017; the City of Milpitas will be implementing this program starting in September, 2017; and the City of San Jose is piloting this food scrap recovery system. The protein value of the wasted food is retained so that it can be used to produce animal feed.

County of Kauai, HI, Zero Waste Kauai (2007): Richard provided assistance to the Island of Kauai with the design and implementation of a Zero Waste program. He designed a system that will provide for maximum waste prevention, reuse and processing of materials. The focus is on implementing programs that will extend the life of the last remaining landfill on the island and reduce the pollution potential of the landfill. Primary strategies are to reduce the amount of toxic materials used in construction on the island [especially pressure treated lumber], and to process all of the remaining materials in two steams—recyclable materials and compostable materials.

City of San Jose, CA, Zero Waste Assessment (2007): Richard conducted assessments for facilities that were required to fully implement the City's Zero Waste Initiative. Facility types included reuse centers, materials recovery facilities, compost facilities, C&D waste processing facilities, hard to manage recyclables, household hazardous waste facilities, transfer stations, and residuals facilities, landfills. The assessment included program design to maximize waste prevention, reuse and processing of materials; program coordination; the site and equipment requirements; and cost estimates.

County of Maui, HI, Single Stream Recycling Best Practices Manual (1995): Richard prepared an RFP for the operation of a co-composting facility for the County of Maui. The RFP provided a program description and background, described the minimum qualifications of the proposers, detailed the scope of work, and defined proposal submittal requirements. Richard provided assistance in the evaluation of the proposals, and the selection of the contractor.

Publications

Selective Commercial Routing, Resource Recycling, Richard Gertman and Tracie Bills, June, 2016

Divide and Conquer, Resource Recycling, Richard Gertman, February, 2016

Sorting Out Bioplastics, Resource Recycling, Richard Gertman, July, 2013.

A Modest Proposal, Resource Recycling, Richard Gertman, June, 2012

What Does Mandatory Recycling Really Mean? Resource Recycling, Richard Gertman, April, 2011.

Innovative Rate Structures in a Zero Waste World, Resource Recycling, Richard Gertman, October 2010.

CRAIG S. COKER

Senior Associate

Experience Summary

- over 35 years of technical experience in the environmental science and engineering fields associated with recycling and organics.
- Provides consulting services to multiple local governments and solid waste authorities since 2005.
- President of Coker Composting and Consulting.

Education/Certifications

- MS, Environmental Engineering, George Washington University, 1980PhD (ABD) - Geology & Paleontology, University of CA, 1975
- BS, Environmental Science, University of Virginia, 1975

Select Professional Affiliations

- Class 2 Waste Management Facility Operator, Virginia
- Nutrient Management Planner, Virginia

Mr. Coker has over 35 years of technical experience in the environmental science and engineering fields associated with recycling food scraps and other organics through composting or digestion. Mr. Coker has provided these consulting services to multiple local governments and solid waste authorities since 2005.

Prior to that, his experience includes three years as an Environmental Engineer in County Government managing biosolids composting projects, three years' experience as the Organics Recycling Coordinator for North Carolina developing new food scraps diversion projects at composting facilities, six years' experience operating aerated static pile composting facilities for private companies, and 18 years consulting engineering experience for municipal governments in biosolids and solid waste composting.

Select Project Experience

Crimora, VA, Food Scraps Composting Facility, Black Bear Composting (2010-Present): Work has included siting evaluation and selection, permitting applications and support, process and site design, operations support and troubleshooting for a 1,300 ton/yr. turned windrow composting facility processing food scraps from schools and residences.

Evington, VA, Food Scraps Composting Facility, Royal Oak Farm LLC (2005-Present): Work has included: site evaluation, composting process design (recipe development, sizing, layout) for 50,000 ton/year food scraps and industrial residuals composting facility based on use of turned windrows, all waste management and storm water management permitting with VA DEQ, oversight of local engineering firm for site plan preparation, oversight of construction contractors, development of Operations Plan and Health-and-Safety Plan, conduct of operator training, and odor control troubleshooting.

Alachua County, FL, Organics Recycling (2014-2015): This project involved evaluating gasification and digestion technologies for the organics-rich fraction of solid waste arising from a proposed mixed-waste materials recovery facility, development of a Request for Proposals for a design-build-operate organics recycling technology, and assisting the County with proposal evaluation and contract negotiations (scheduled for 2017).

Rolla, MO, Food Scraps Diversion, Collection and Composting Feasibility Study (2014): This 2014 project evaluated the food scraps diversion and collection potential in the City of Rolla, MO. The study was aimed primarily at commercial, institutional and industrial customers, and residential curbside collection was also evaluated. In addition, three sites were evaluated for potential development of a 5,000 ton/yr. composting facility. Regulatory approval requirements were identified. Economic analysis included estimates of capital costs, operating costs, and collection system charges based on diversion container size.

Detroit Shoreway Community Development Organization, Cleveland, OH, Food Waste Recycling Feasibility Study (2013): This 2013 study examined the feasibility of developing small decentralized food waste composting facilities in one section of Cleveland, OH using a "hub-and-spoke" system of decentralized composting coupled with centralized compost curing, screening and product distribution. The composting systems would be maintained by a "circuit rider" who would keep them cleaned up and operating properly.

COKER (continued)

Howard County MD, Process Design for ASP Composting (2013): Work included composting process design (recipe development, sizing, layout) for 55,000 ton/year food scraps and yard waste composting facility based on use of micro-porous fabric-covered negative ASP technology with biofiltration for odor control; and consultation to Owner on composting process issues associated with 7,500 ton/year pilot-scale facility purchased from vendor (Engineered Compost Systems AC Composter). Facility is located at the County's Transfer Station.

Portand, ME, Ecomaine Solid Waste Authority, Organics Recycling Feasibility Study (2012-2013): This 2012-2013 project was a comprehensive evaluation of source-separated food scraps recycling alternatives at a solid waste authority anchored by a 550 ton/day Waste-to-Energy plant and a 35,000 ton/year dual-stream Materials Recovery Facility. Ecomaine's service area covers 24 counties in southern Maine, both rural and urban, serving 40% of the State's population. The study evaluated: waste generation rates for food scraps, yard trimmings and vegetative debris, collection system alternatives, processing technology alternatives (anaerobic digestion and aerobic composting only), alternative siting evaluations, product market evaluations for biogas and compost, permitting and approval assessments, facility planning-level cost estimates, and preparation of a final report.

Kenai, KA, Kenai Peninsula Borough, Organics Recycling Feasibility Study (2012-2013): This project was a comprehensive evaluation of food scraps recycling alternatives at a largely rural borough (county) in Alaska with a population of 55,400 scattered over 16,000 square miles, with most of the population concentrated in four cities/towns. The study evaluated: waste generation rates for food scraps, yard trimmings and vegetative debris, expansion of the current solid waste convenience centers for drop-off of source-separated organic solid wastes, alternative aerobic composting (aerated static pile and in-vessel) and anaerobic digestion (dry fermentation) technologies, alternative sites for decentralized processing facilities, product markets for biogas and compost, permitting and approval requirements, projected capital and operating costs, and nine different alternative configurations (both centralized and decentralized) using a weighted-matrix criteria assessment.

Baltimore, MD, Food Scraps ASP Composting Facility, Chesapeake Compost Works, LLC (2012): This project was for the process and mechanical design in 2012 for an induced-draft aerated static pile system handling 8,000 tons/year of source-separated food scraps, yard trimmings and vegetative debris. The facility occupied 108,000 SF of a 783,000-former steel mill in an industrial sector of Baltimore, MD. The induced-draft system directed all process air to an odor treatment biofilter outside the building.

Prior Lake, MN, Shakopee Mdewakanton Sioux Community, Food Scraps Windrow Composting Facility (2011): This project, completed in 2011, included the composting process design and site design for a 35,000 ton/year turned windrow composting facility handling source-separated food scraps, yard trimmings and vegetative debris. Technical support has been provided since 2011 in composting operations management, food scraps audit at Mystic Lakes Casino and Hotel, and preliminary evaluation of anaerobic digestion options.

Edmond, OK, City of Edmond, Composting Feasibility Study (2009 - 2010): This project consisted of a comprehensive feasibility study (2009-2010) of options for composting source-separated organic solid waste in Edmond, Oklahoma, a suburban city of 80,000 north of Oklahoma City. The study evaluated potential feedstocks to a composting facility (yard trimmings, food scraps, and biosolids), alternative composting configurations (windrow, aerated static pile and in-vessel), alternative siting evaluations (on City-owned land), product market evaluations for compost, public education and outreach needs, permitting and approval requirements, preparation of detailed capital and operating cost estimates, and presentations to stakeholders, interested citizens and City Council.

Frankford, DE, Process and Site Design for Windrow & ASP Composting Facility, Blue Hen Organics LLC (2007-2010): Since 2007, this project has included composting facility permitting and composting process and site design for an initial 30,000 ton/year yard trimmings and greenwaste windrow composting facility. In 2010, the facility was designed to handle source-separated food scraps and poultry industry residuals using a forced-draft aerated static pile composting approach prior to windrow composting. Another round of expansion is currently underway, with the design of an induced-draft aerated static pile system using a biofiltration system for odor control.

CARL R. HURSH, JR.

Senior Consultant

Education

- Senior Certified Recycling Professional, State of Pennsylvania
- M. Ed. Environmental Education, Slippery Rock University
- B.A. Natural Resources, Land Use Planning, Slippery Rock State College

Professional Affiliations

- National Recycling Coalition
- Pennsylvania Resources Council (Awarded "Leadership in Recycling" Distinction, 2012)
- Professional Recyclers of Pennsylvania (PROP)
- Pennsylvania Association for Sustainable Agriculture
- Mechanicsburg Citizen's Recycling Advisory Committee

Key Skills

- Environmental education, curriculum development and class instruction
- Technical writing
- Local government relations
- Recycling media relations
- Planning, budgeting and reporting

Publications

- Co-author, Basic Composting, Stackpole Books, 2003
- Contributor to the *PROP Recycler* Magazine and PROP's *Connecting Recycling Professionals* newsletter

Carl Hursh has 30 years of progressively expanded public service working with the Pennsylvania Department of Environmental Protection, culminating as the State Recycling Coordinator responsible for advancing state-of-the-art recycling, composting, and waste diversion programs. He is a Senior Certified Recycling professional with ties to state and multi-state recycling organizations, and has actively assisted numerous local governments to establish and optimize their recycling, composting and beneficial use programs. Carl is an accomplished instructor and technical writer, and is also skilled in media relations for recycling, composting and waste diversion projects and concepts.

Select Experience

Recycling Characterization Studies (2012-2015) Mr. Hursh has assisted MSW Consultants with characterizing the recycling streams for the City of Maimi, New York City, Philadelphia, Delaware, Grand Teton National Park and Hennepin County, MN.

Pennsylvania Recycling Technical Assistance Program Consulting Services, Pennsylvania State Association of Township Supervisors (Ongoing): Mr. Hursh has provided a variety of technical assistance to municipalities under this state-funded program.

- **Jefferson County Solid Waste Authority, Drop-off Recycling program Options (2016):** Mr. Hursh analyzed Authority recycling data to project options for single stream and source separated recycling, including costs for collection and processing.
- **Dover Township, Enhance Recycling Participation and Diversion** (2014): Mr. Hursh reviewed Recycling, Solid waste and Open Burning Ordinances and recommended updates, provided recommendations on implementing a single-hauler system for all Township entities, and recommended a strategy to increase recycling participation and diversion among Township residents, institutions and businesses.
- **Carroll Township, Yard Waste Composting & Commercial Recycling** (2013): Mr. Hursh developed a plan for improving recycling by Township businesses and schools, identified options for leaf and yard waste management, and recommended updates to the Township's recycling ordinance.
- **Wernersville, Robesonia, Womelsdorf COG, Recycling Education** (2013): Mr. Hursh developed a recycling education strategy to assist the WRW Council of Governments with increasing recycling diversion.
- **North Lebanon Township, Recycling Facility Conceptual Design** (2012): Mr. Hursh examined the existing and proposed features of the Township's recycling and yard waste drop-off facility. He recommended a reconfiguration of the site to improve user and operator convenience and safety. Mr. Hursh designed a layout for an adjacent yard waste composting operation, consistent with state guidelines, to support a Permit-by-Rule composting facility.

HURSH (continued)

- **West Reading Borough, Yard Waste Composting** (2012): Mr. Hursh examined and compared the leaf and yard waste collection and composting practices of the Borough of West Reading to similar-sized municipal operations. He identified leaf waste collection options that were compliant with the state recycling laws and recommended the establishment of a publicly accessible yard waste drop-off facility within the Borough.

Keep Pennsylvania Beautiful (PA), Illegal Dumping Cost Research and Survey (2013): Mr. Hursh contacted counties and municipalities across Pennsylvania to document the direct costs of preventing, remediating and enforcing illegal dumping in support of KPB's statewide illegal dumping survey.

State Waste Reduction and Recycling Coordinator (1985-2010): Mr. Hursh served as Recycling and Waste Reduction Coordinator for the Commonwealth of Pennsylvania assisting with the development and implementation of Act 101, the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988. Mr. Hursh oversaw recycling education, financial and technical assistance programs and assisted with expanding leaf, yard waste and food composting in PA. Mr. Hursh was also active in promoting recycled product procurement, managing recycling data, recycling market development, and school and state agency recycling. Mr. Hursh represented Pennsylvania on the Northeast Recycling Council (NERC), the Coalition of Northeastern Governors (CONEG) Toxics Reduction in Packaging project, and was founder and first president of the Mid-America Council of Recycling Officials (MACRO).

Manager of Statewide Recycling and Composting Technical Assistance Program (1996-2010): During his employment at PADEP, Mr. Hursh played instrumental roles in establishing and managing a unique technical assistance program for the benefit of local governments across the state to improve recycling program effectiveness and efficiency, with an emphasis on achieving the state's 35 percent recycling goal. From 1996 to 2010, Mr. Hursh managed a team of qualified consulting firms in the provision of technical assistance projects to nearly 300 local governments, at an annual budget of $200,000. These engagements offered consultation, analysis, recommendations and a final report to address one of several program improvements, including curbside and drop-off recycling programs, recycling facility enhancements, pay-as-you-throw (PAYT), multi-family and commercial recycling.

Instructor, Professional Recyclers of Pennsylvania (PROP) (2000-Present): Mr. Hursh has served as an instructor for the Professional Recyclers of Pennsylvania's Recycling Profession Certification Program for 15 years. He has developed curricula and taught courses on various recycling and composting subjects to municipal solid waste and recycling officials from across the state. He was a writer for the PROP "Recycler" magazine. Mr. Hursh also is a participating member of PROP's Organics Committee.

State Recycling Media Campaign Manager (1994-2004): Mr. Hursh, in coordination with the PADEP Press Office, was responsible for the design and dissemination of a Recycling Media Campaign involving electronic media; print, radio and television advertising; recycling exhibits; special events; statewide educational competitions; and training for recycling coordinators. He managed the program at an annual budget of $2 million over a time period that saw continuous increases in the Pennsylvania statewide recycling rate.

CYNTHIA M. MITCHELL

Senior Project Manager

Experience Summary

- 20 years serving the City of Columbia Public Works and Utilities Departments
- Successfully managed Collection, Landfill, Composting and Material Recovery Facility Operations

Education

- B.S. Business Administration-Finance, **Northeast Missouri State University**
- MBA, **William Woods University**
- Engineering Coursework, **University of Missouri - Columbia**

Select Professional Affiliations

- Member, **American Public Works Association (APWA)**
- Member, **Missouri Recycling Association (MORA)**
- Member, **Missouri Waste Control Coalition (MWCC)** 1998-2007, 2010 - current
- Member, **Solid Waste Association of North America**, 1998-2007, 2010-current

Key Skills

- Project Management
- Financial Analysis, Budgeting/Capital Planning
- Waste Minimization & Sustainability
- Landfill & Recovery Operation

Ms. Mitchell has dedicated her career to being a resource to officials responsible for integrated solid waste management in governmental, institutional and commercial entities.

Ms. Mitchell's experience encompasses all aspects of a vertically integrated collection, disposal and recovery solid waste utility. She has the unique understanding of all facility operations, including planning and budgeting, personnel management, procurement/contracts and capital projects; landfill operations, including regulatory compliance, heavy equipment, subtitle D, and bioreactor disposal; collections, including rolling fleet and routing; and recovery, including waste analysis, minimization and sustainability programs.

Ms. Mitchell is the firm's Midwest Region Sr. Project Manager and works out of Columbia, MO and Orlando, FL.

Select Project Experience

State of Missouri Department of Natural Resource (MO), Waste Composition Study (Ongoing): Ms. Mitchell is currently managing the state's 2016-2017 Waste Composition Study, a process of sorting landfill and transfer station load samples, analyzing the data and writing a summarizing report for use in state diversion projects. She supervised the 2008 statewide waste composition study, the last time the study was completed.

Dakota County (MN), Municipal Building Waste Composition Study (Ongoing): Ms. Mitchell is managing a waste composition study being conducted on thirteen municipal facilities throughout Dakota County, MN to analyze current recycling activities as well as opportunities for targeted education and improved diversion.

Howard County/Northeast Maryland Waste Disposal Authority (NMWDA), Alpha Ridge Landfill Traffic Study (Ongoing): Ms. Mitchell is managing a study to analyze traffic flows through a busy county transfer station, wood waste processing center and heavily utilized citizen drop-off center. The project will provide the county with an updated traffic flow and recommendations for improved operations, facility ingress/egress, lane modifications and equipment changes.

Ft. Pierce (FL), Collection Efficiency Study (2017): A study was conducted to analyze operational productivity and identify challenges and potential improvements. Ms. Mitchell conducted route observations, productivity modeling and fleet assessment, summarizing for the client the findings and potential areas for advancing the operation.

Vans Retail Store Waste Audit (FL), Waste Audit (2017): To assist the client in LEED facility construction, Ms. Mitchell conducted a waste audit at an existing facility to provide a baseline and targeted materials for the future store.

West Central Solid Waste Management District (MO), 5 Year Guidance Plan (2008): Ms. Mitchell assessed existing solid waste services within the five-county district, identified options for providing additional services most feasibly and provided recommendations for implementation and presented reports to board.

Kaysinger Recycle and Disposal (MO), Recycling Study (2007-2008): Ms. Mitchell conducted study for multi-county rural region and provided recommended recycling service plan including budgeting, scheduling and centralized service locations.

Career Highlights

City of Columbia (MO), Solid Waste Utility Management

Ms. Mitchell served in positions of Solid Waste Utility Manager, Landfill & Recovery Superintendent, Waste Minimization Supervisor, Waste Minimization Coordinator, and Administrative Support throughout twenty years of service. She had responsibility over full-service trash and recycling collection for approximately 45,000 residential accounts, 2,000 commercial accounts, commercial food waste collection for composting, and servicing of 13 citywide recycling drop-off locations; operation of community yard waste drop-off sites and Compost Facility; operation of regional Material Recovery Facility; operation of regional Sanitary Bioreactor Landfill. Responsibilities included capital improvement planning and annual budgeting around $20 million. Ms. Mitchell initiated the city's collection truck conversion to Compressed Natural Gas, managed centralized billing for University of Missouri-Columbia service, established a unique billing structure for the downtown business district incorporating trash and recycling service charges based on customer category and size, and planned and managed numerous contracts for both capital improvement and consulting projects. In her earlier years at the city, Ms. Mitchell wrote and administered multiple grants to develop and progress the city's Recovery programs enabling local processing and production of marketable materials in both the Material Recovery Facility and Compost Facility operations.

City of Columbia (MO): Multiple Positions
Midwest Assistance Program (MO): Multiple Positions

- ☑ Management of average $20 million budget utility
- ☑ Capital and Operational Planning for Administration
- ☑ Collection, Recovery and Disposal Operations – 120 person staff, multi-site operation, broad spectrum of collection and processing equipment
- ☑ Commercial and Residential Collections for Refuse, Recycling and Food Waste
- ☑ Subtitle D Sanitary & Bioreactor Landfill & Compost Facility Management – 720 acre site, EPA and DNR (air, water, and solid waste) regulatory compliance
- ☑ Material Recovery Facility Planning & Management –26,000 sq. ft. Design-Built facility with processing & rolling equipment, commodity marketing
- ☑ Project management, Grant Writing and Administration, Contract Management
- ☑ Completing Regional Solid Waste Studies and Guidance Plans
- ☑ Solid Waste Audits/Waste Composition Studies
- ☑ Technical/Managerial/Financial Assistance to rural communities and utility districts
- ☑ Development of Fee For Service and New Business Development Initiatives
- ☑ Manage revolving loan fund – underwrite and close loans to rural communities, tribal nations, and utility districts; market fund to investors and customers; write applications for capitalizing fund
- ☑ Presentations, Advertisements, Press Releases, Newsletter, Brochure
- ☑ Public Relations through Media Interviews, Site Tours, and Presentations to Public Groups
- ☑ Board/Council Training for Rural Communities and Utility Districts

Training/Certifications

Missouri Department of National Resources

- ☑ Certified Solid Waste Technician, 1999-current
- ☑ Certified Water Distribution Operator – Level DSI, 2007-current

STEVEN M. DEASY, LEED AP, SCRP

Senior Associate

Experience Summary

- 20 years as a planning consultant in the waste management and recycling industry
- Successfully completed over 200 solid waste and environmental projects

Education

- BS, Geoenvironmental Studies **Shippensburg University**
- AS, Liberal Arts, **Harrisburg Community College**

Specialized Training & Certifications

- USGBC- LEED Accredited Professional, 2006-present
- Senior Certified Recycling Professional, 2004-present
- PennDOT Certified Drilling Instructor (No. 355-14) 2014-present
- 40-Hour OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Site Worker Training
- 8-OSHA HAZWOPER Supervisor Training
- 8-Hour OSHA HAZWOPER Refresher Training

Key Skills

- Project Management
- Strategic Planning
- Sustainability

Mr. Steve Deasy is a Solid Waste Specialist and Project Manager with 20 years of solid waste, sustainability, environmental management, and strategic planning experience. Mr. Deasy has completed over 200 diverse solid waste and environmental projects for public sector, private sector, and international clients. Mr. Deasy specializes in evaluating solid waste management systems, engaging stakeholders, and developing implementable strategies to balance economic, environmental, and social factors. Mr. Deasy is a Senior Certified Recycling Professional through the Professional Recyclers of PA (PROP) and Penn State University (PSU) Certification Program. He serves as the Green Schools Committee Co-chair in his active role on the Market Leadership Advisory Board for the US Green Building Council, Central Pennsylvania Region. While at Gannett Fleming, Mr. Deasy spearheaded the development and implementation of the Corporate Sustainability Program, implemented across 60+ offices.

Select Project Experience

City of Georgetown (KY), Municipal Solid Waste Collections Consulting Services (Ongoing): Mr. Deasy is the solid waste specialist responsible for documenting existing solid waste and recycling conditions, developing reports, creating community garbage and recycling surveys and aggregating survey results. He is also identifying alternatives to streamline solid waste management and enhance solid waste diversion for the City.

The National Park Service – Grand Teton (WY), Zero-Landfill Initiative (Ongoing): Solid waste specialist responsible for the development of an efficient, systematic, coordinated approach and implementation plan for increased waste diversion within Grand Teton National Park. Steve was project liaison and technical lead responsible for implementation plan development including project coordination among the National Park Service, National Parks Conservation Association (NPCA), Subaru of America (SOA), park concessioners, Teton County Integrated Solid Waste & Recycling, and other stakeholders. This project was connected to the Zero Landfill Initiative (ZLI) involving Grand Teton National Park, Yosemite National Park, and Denali National Park and Preserve to identify and implement improvements in park waste management programs. Steve worked with the NPS and stakeholders in the following areas: collection efficiency, equipment procurement, building a solid waste assets inventory in Geographic Information Systems (e.g. mapping trash and recycling container distribution), data management, organics diversion, and education.

Louisville Metro Government (KY), Waste Diversion Consultant (2017): Mr. Deasy was the solid waste specialist responsible for documenting existing solid waste and recycling conditions, developing reports, creating community garbage and recycling surveys and aggregating survey results. He also identified alternatives to streamline solid waste management and enhance solid waste diversion with the Urban Service District operated by Louisville Metro and with the incorporated and unincorporated areas of Jefferson County.

DEASY (continued)

Confidential Client, Solid Waste Management Action Plan (2014): Mr. Deasy served as the Business Development Manager, Assistant Project Manager, and Solid Waste Technical Expert responsible for leading all aspects of project management and technical completion of a solid waste management action plan. He assembled a Strategic Advisory Team to brainstorm and select preferred solid waste alternatives. As the Lead Solid Waste Expert Mr. Deasy was responsible for technical roles, including data collection, solid waste alternatives development and analysis, solid waste equipment specification review, surveys, client communications, solid waste action plan development, and technical report writing. Tasks included evaluating existing conditions and solid waste system performance and screening and developing alternatives to improve the solid waste system. Recommendations were provided to address the solid waste system hierarchy of management, waste reduction and reuse, operations and maintenance, logistics, and education.

City of Harrisburg (PA), Solid Waste System Benchmark and Recycling Program Expansion (2013): Mr. Deasy was the Project Manager and Solid Waste Specialist responsible for an evaluation of citywide curbside solid waste and recyclables collection performance. He analyzed recycling alternatives and developed recommendations to implement a solid waste action plan and best management practices.

Millcreek Township, Erie County (PA), Millfair Compost Facility Evaluation Increasing Organics (Food Waste) Diversion (2013): As the Project Manager and Solid Waste Specialist, Mr. Deasy was responsible for a feasibility study to increase quantities of compostable feed stocks, including curbside-collected leaf waste, grass, and food wastes from commercial establishments. He evaluated organics processing technologies including in-vessel systems and aerated static piles. Mr. Deasy recommended that a "pilot study" approach over a trial period of 2 years to obtain operating and cost data. He also developed conceptual layouts for each pilot system within the existing compost site boundary.

Washington Township (PA), Recycling Center Evaluation (2012): Mr. Deasy served as the Project Manager and Solid Waste Specialist for the evaluation of a material recovery facility (MRF) to identify strategies to improve MRF operation efficiency, including commodity marketing/brokering. He analyzed MRF-processed materials, financial mechanisms and budget, and MRF operations. Conducted interviews of the operations and finance managers. Mr. Deasy also evaluated MRF equipment and market conditions. He made recommendations to procure new baler and sort-line equipment, repair and fabricate portions of the sort-line, change material handling and processing procedures, work with additional brokers and commodity markets, and integrate efforts with the County Planning Department through the Act 101, Municipal Waste Management Plan process.

Confidential Client (PA), Waste System Evaluation (2008-2011): As the Project Manager, Mr. Deasy was responsible for evaluating waste management options. He analyzed existing waste and recycling practices and area demographics, surveyed waste haulers to determine existing costs and services, conducted cost-comparison and savings analyses, and recommended public relations and community outreach strategies. Mr. Deasy delivered a concise technical report that outlined the overall findings and recommendations.

Clinton County (PA), Recycling Program Sustainability Study (2008-2009): Mr. Deasy served as the Project Manager and was responsible for assisting with the development of a countywide sustainability plan. He evaluated economic, environmental, and social aspects of Clinton County's solid waste and recycling program. Mr. Deasy analyzed curbside and drop-off recycling programs, performed economic projections, and analyzed the waste stream. He also developed recommended strategies for increasing revenues, decreasing costs, increasing recycling, and decreasing wastes. Mr. Deasy projected the recycling program's environmental benefits using the Northeast Recycling Council Benefit Calculator. The study was then used as part of the County's Act 101, Section 902 grant submission.

Cameron County (PA), Municipal Waste Management Plan Update (2011): Project Manager and technical manager responsible for the completion of the County Municipal Solid Waste Management Plan Revision. Evaluated the existing waste management system and developed preferred alternatives, including enhanced recycling. Successfully identified qualified disposal facilities and county solid waste capacity through a request for proposal (RFP). Coordinated and conducted Solid Waste Advisory Committee meetings. Evaluated waste transfer options for municipal solid waste and biosolids. Plan was approved by PADEP and adopted.

APPENDIX B

REQUIRED PROPOSAL FORMS

This page intentionally left blank.

AFFIDAVIT

Comes the Affiant, John Culbertson, and after being first duly sworn, states under penalty of perjury as follows:

1. His/her name is John Culbertson and he/she is the individual submitting the proposal or is the authorized representative of MSW Consultants, LLC, the entity submitting the proposal (hereinafter referred to as "Proposer").

2. Proposer will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the proposal is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.

3. Proposer will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.

4. Proposer has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.

5. Proposer has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Proposer will not violate any provision of the campaign finance laws of the Commonwealth.

6. Proposer has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as "Ethics Act."

Continued on next page

7. Proposer acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

Further, Affiant sayeth naught.

John Culbertson

STATE OF Florida

COUNTY OF Orange

The foregoing instrument was subscribed, sworn to and acknowledged before me by John Culbertson on this the 15th day of August, 2017.

My Commission expires: July 23, 2019

Lisa Portman

NOTARY PUBLIC, STATE AT LARGE

LISA PORTMAN
MY COMMISSION # FF902813
EXPIRES July 23, 2019
(407) 398-0153 FloridaNotaryService.com

EQUAL OPPORTUNITY AGREEMENT

The Law

- Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.

- Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and sub-contractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.

- Section 503 of the Rehabilitation Act of 1973 states:

  The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.

- Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal contracts.

- Section 206(A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

  The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

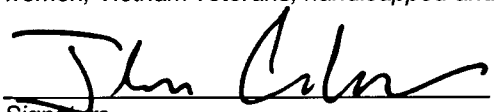
****

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractors may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped and aged persons.



Signature

MSW Consultants
Name of Business

John Culbertson - Vice President

WORKFORCE ANALYSIS FORM

Name of Organization: MSW Consultants

Categories	Total	White (Not Hispanic or Latino)		Hispanic or Latino		Black or African-American (Not Hispanic or Latino		Native Hawaiian and Other Pacific Islander (Not Hispanic or Latino		Asian (Not Hispanic or Latino		American Indian or Alaskan Native (not Hispanic or Latino		Two or more races (Not Hispanic or Latino		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Administrators			1														1
Professionals		6	2													6	2
Superintendents																	
Supervisors		1	1													1	1
Foremen																	
Technicians		1	1													1	1
Protective Service																	
Para-Professionals		2	1													2	1
Office/Clerical			1														1
Skilled Craft																	
Service/Maintenance																	
Total:		10	7													10	7

Prepared by: John Culbertson, Vice President **Date:** 08 / 15 / 2017

(Name and Title)

Revised 2015-Dec-15

LFUCG MWDBE PARTICIPATION FORM
Bid/RFP/Quote Reference # 24-2017 Organics Recycling Feasibility Study

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately. **Failure to submit a completed form may cause rejection of the bid.**

MWDBE Company, Name, Address, Phone, Email	MBE WBE or DBE	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1. NONE				
2.				
3.				
4.				

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

MSW Consultants
Company

Company Representative

08/15/2017
Date

Vice President
Title

LFUCG MWDBE SUBSTITUTION FORM
Bid/RFP/Quote Reference # 24-2017 Organics Recycling Feasibility Study

The substituted MWDBE and/or veteran subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to Central Purchasing for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project.

SUBSTITUTED MWDBE Company Name, Address, Phone, Email	MWDBE Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1. NONE					
2.					
3.					
4.					

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

MSW Consultants
Company

Company Representative

08/15/2017
Date

Vice President
Title

MWDBE QUOTE SUMMARY FORM
Bid/RFP/Quote Reference # 24-2017 Organics Recycling Feasibility Study

The undersigned acknowledges that the minority and/or veteran subcontractors listed on this form did submit a quote to participate on this project. Failure to submit this form may cause rejection of the bid.

Company Name MSW Consultants	**Contact Person** John Culbertson
Address/Phone/Email 11875 High Tech Avenue, Suite 150 Orlando, FL 32817 | 800-679-9220 jculbertson@mswconsultants.com	**Bid Package / Bid Date** August 15, 2017

MWDBE Company Addre	Contact Person	Contact Information (work phone, Email, cell)	Date Contacte	Services to be performed	Method of Communicati (email, phone meeting, ad, event etc)	Total dollars $$ Do Not Leave Blank (Attach Documentation)	MBE * AA HA AS NA Female	Veteran
4966 Winters Lane Cold Spring, KY 41076	Lisa Burns	lburns@ dunrobin.org	6/8/17		email (attached)	$0.00 not qualified	WBE	
3408 Ascot Circle Louisville, KY 40241	Sarah Taylor	Sarah.Taylor@ geomorphics.com	6-9/17		email (attached)	$0.00 not qualified	WBE	
2526 Regency Rd. Ste. 180 Lexington, KY 40503	Steven J. Evans	RColvin@thirdrock consultants.com	6/8/17		email (attached)	$0.00 not qualified	WBE	
366 South Broadway Lexington, KY 40508	Ramona Fry	Ramona@ element-site.com	6/8/17		email (attached)	$0.00 not qualified	WBE	

(MBE designation / AA=African American / HA= Hispanic American/AS = Asian American/Pacific Islander/ NA= Native American)

The undersigned acknowledges that all information is accurate. Any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

MSW Consultants
Company

08/15/2017
Date

Company Representative

Vice President
Title

Gisele Papadakis

From: Carl Hursh
Sent: Thursday, June 08, 2017 10:27 AM
To: lburns@dunrobin.org
Cc: Gisele Papadakis
Subject: Lexington-Fayette UCG organics feasibility study project

Dear Lisa,

Thanks for taking the time to speak with me this morning about the Lexington-Fayette UCG organics feasibility study project. I understand that Dunrobin Associates, LLC specializes in right-of-way acquisition and is therefore not a good fit for the work. However, it was a pleasure learning about your services and we will keep you in mind should future projects arise that are more in line with your service offerings.

Sincerely,

Carl Hursh

Carl Hursh, Senior Consultant
MSW CONSULTANTS
~~~~~~~~~~~~~~~~~~~~~~~~~~~~
300 S High St | Mechanicsburg, PA 17055
(800) 679-9220 x 14 toll free phone
(717) 796-1473 direct | (717) 395-5623 mobile
(800) 679-9220 fax

~~~~~~~~~~~~~~~~~~~~~~~~~~~~
chursh@mswconsultants.com
www.mswconsultants.com

Gisele Papadakis

From: Carl Hursh
Sent: Friday, June 09, 2017 1:19 PM
To: Sarah.Taylor@geomorphics.com
Cc: Gisele Papadakis
Subject: Lexington-Fayette UCG organics feasibility study project

Dear Sarah,

Thanks for taking the time to speak with me this morning about the Lexington-Fayette UCG organics feasibility study project. I understand that GeoMorphics, Inc. has not previously worked on this type of project and you feel that the firm is not a good fit for the work. However, it was a pleasure learning about your storm water management and stream restoration services. We will keep you in mind should future projects arise that are more in line with your service offerings.

Sincerely,

Carl Hursh

Carl Hursh, Senior Consultant
MSW CONSULTANTS
~~~~~~~~~~~~~~~~~~~~~~~~~~~~
300 S High St | Mechanicsburg, PA 17055
(800) 679-9220 x 14 toll free phone
(717) 796-1473 direct | (717) 395-5623 mobile
(800) 679-9220 fax

~~~~~~~~~~~~~~~~~~~~~~~~~~~~
chursh@mswconsultants.com
www.mswconsultants.com

Gisele Papadakis

From: Steve J. Evans <sevans@thirdrockconsultants.com>
Sent: Thursday, June 08, 2017 12:31 PM
To: Carl Hursh
Cc: Gisele Papadakis
Subject: RE: Lexington-Fayette UCG organics feasibility study project

Thanks

Steven J Evans, Environmental Scientist
Third Rock Consultants, LLC | 2526 Regency Rd | Ste 180 | Lexington, KY 40503
Office 859.977.2000 | Mobile 859.327.6601 | www.thirdrockconsultants.com

From: Carl Hursh [mailto:chursh@mswconsultants.com]
Sent: Thursday, June 8, 2017 12:00 PM
To: Steve J. Evans <sevans@thirdrockconsultants.com>
Cc: Gisele Papadakis <GPapadakis@mswconsultants.com>
Subject: Lexington-Fayette UCG organics feasibility study project

Dear Steve,

Thanks for taking the time to speak with me this morning about the Lexington-Fayette UCG organics feasibility study project. I understand that Third Rock Consultants, LLC has not previously worked on this type of project and is therefore not a good fit for the work. However, it was a pleasure learning about your storm water monitoring and analyses services and we will keep you in mind should future projects arise that are more in line with your service offerings.

Sincerely,

Carl Hursh

Carl Hursh, Senior Consultant
MSW CONSULTANTS
~~~~~~~~~~~~~~~~~~~~~~~~~~~~
300 S High St | Mechanicsburg, PA 17055
(800) 679-9220 x 14 toll free phone
(717) 796-1473 direct | (717) 395-5623 mobile
(800) 679-9220 fax

~~~~~~~~~~~~~~~~~~~~~~~~~~~~
chursh@mswconsultants.com
www.mswconsultants.com

Gisele Papadakis

From: Ramona Fry <ramona@element-site.com>
Sent: Thursday, June 08, 2017 10:15 AM
To: Carl Hursh
Cc: Gisele Papadakis
Subject: RE: Lexington-Fayette UCG organics feasibility study project

Thank you for contacting us to verify.
Ramona

Ramona Fry, RLA, ASLA, LEED AP BD+C
Principal

elementdesign
Lexington | Louisville

Kentucky Minority & Women Business Enterprise Certified

From: Carl Hursh [mailto:chursh@mswconsultants.com]
Sent: Thursday, June 8, 2017 10:13 AM
To: Ramona@element-site.com
Cc: Gisele Papadakis
Subject: Lexington-Fayette UCG organics feasibility study project

Dear Ramona,

Thanks for taking the time to speak with me this morning about the Lexington-Fayette UCG organics feasibility study project. I understand that Element Design, PLLC has not previously worked on this type of project and is therefore not a good fit for the work. However, it was a pleasure learning about your services and we will keep you in mind should future projects arise that are more in line with your service offerings.

Sincerely,

Carl Hursh

Carl Hursh, Senior Consultant
MSW CONSULTANTS
~~~~~~~~~~~~~~~~~~~~~~~~~~~~
300 S High St | Mechanicsburg, PA 17055
(800) 679-9220 x 14 toll free phone
(717) 796-1473 direct | (717) 395-5623 mobile
(800) 679-9220 fax

~~~~~~~~~~~~~~~~~~~~~~~~~~~~
chursh@mswconsultants.com
www.mswconsultants.com

LFUCG STATEMENT OF GOOD FAITH EFFORTS
Bid/RFP/Quote # 24-2017 Organics Recycling Feasibility Study

By the signature below of an authorized company representative, we certify that we have utilized the following Good Faith Efforts to obtain the maximum participation by MWDBE and Veteran-Owned business enterprises on the project and can supply the appropriate documentation.

_____ Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

_____ Included documentation of advertising in the above publications with the bidders good faith efforts package

_____ Attended LFUCG Central Purchasing Economic Inclusion Outreach event

_____ Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned Businesses of subcontracting opportunities

_____ Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses

✓ Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

_____ Contacted organizations that work with MWDBE companies for assistance in finding certified MWBDE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

✓ Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

✓ Followed up initial solicitations by contacting MWDBEs and Veteran-Owned businesses to determine their level of interest.

✓ Provided the interested MWBDE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

✓ Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the

contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

_✓_ Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

_____ Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

_____ Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

_____ Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

_____Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

_____ Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE **and Veteran participation.**

NOTE: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to approval by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

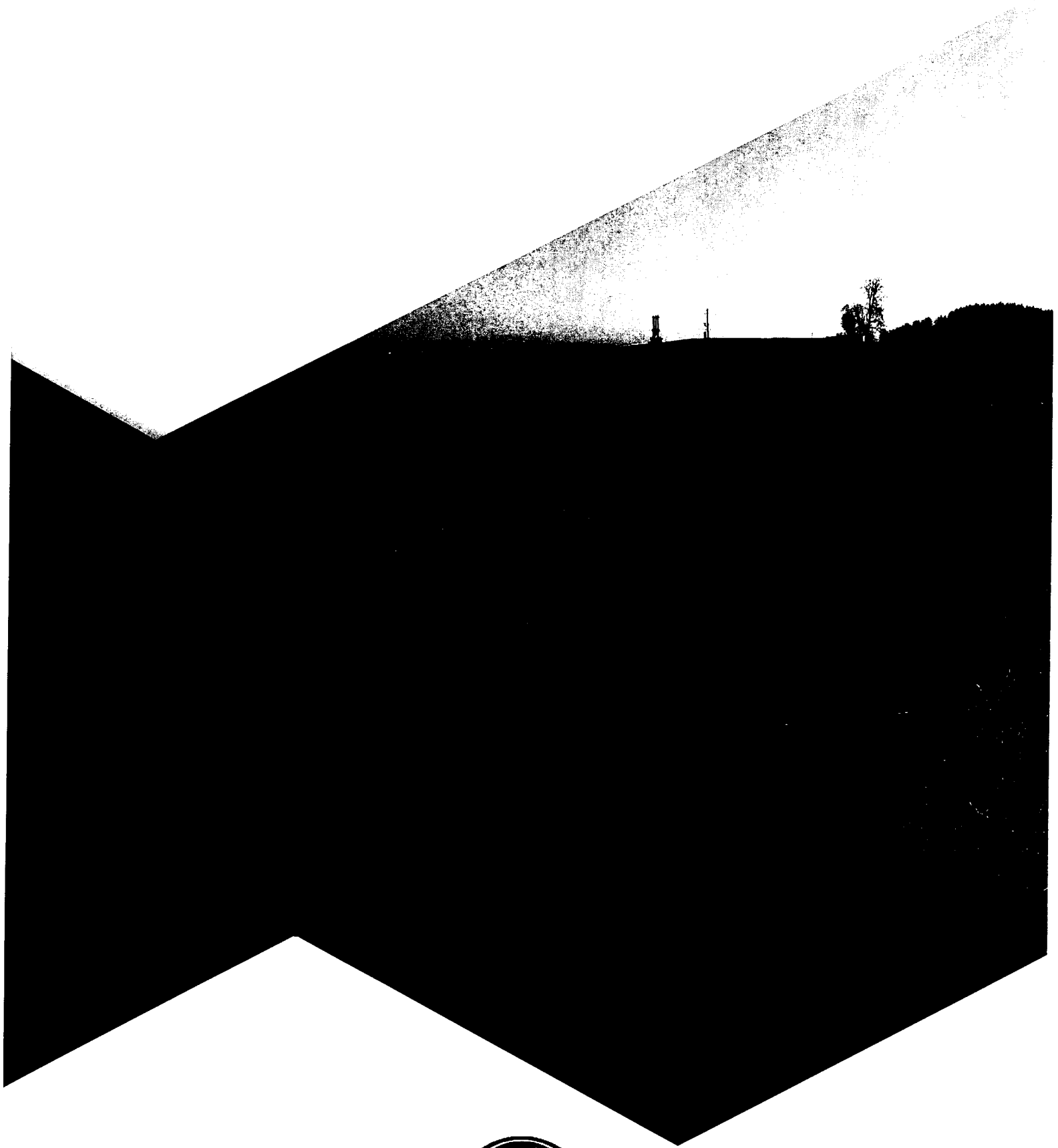
MSW Consultants
Company

August 15, 2017
Date

Company Representative

Vice President
Title

This page intentionally left blank.



MSW
CONSULTANTS
mswconsultants.com

PROPOSAL

PROJECT APPROACH

UNDERSTANDING

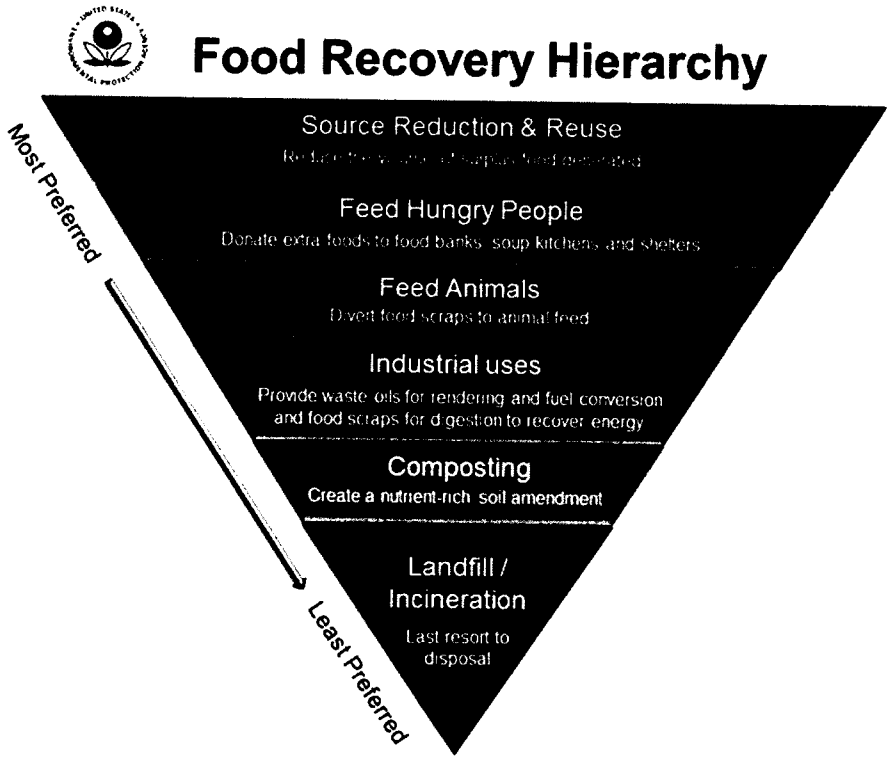
In our work with LFUCG on solid waste projects over the past 10 years, the MSW Consultants Project Team has developed a detailed understanding of LFUCG and Lexington-Fayette solid waste market dynamics. Additionally, our Project Team provides an in-depth and national perspective on organics management alternatives. Our Project Team has evaluated and developed organics collection and processing programs and implemented high-diversion programs across the Country. The combined knowledge of the Lexington-Fayette solid waste system and organics program implementation position us to be a trusted advisor to LFUCG on this important project. **We are prepared to identify the options available for effective organics recycling and to evaluate viable solutions to divert food waste.**

What does the Lexington-Fayette solid waste system and waste characteristics tell us about organics? With MSW Consultant's support, LFUCG previously conducted waste characterization studies in 2009 and 2014. These studies reveal that food waste and compostable papers are low hanging fruit for increased diversion for residential households and at least a portion of commercial businesses.

In 2012, MSW analyzed the cost of service for comprehensive solid waste and recycling services provided by LFUCG's Division of Waste Management (DWM). Our Project Team understands solid waste system cost, solid waste tax assessments, and the implications existing cost structures have on organics recycling. Competitive disposal fees and access to local processors not only impact the economic feasibility of recycling, but also the political dynamics of increased organics recovery and processing. Although recoverable quantities of food waste and other organics are in the waste stream, diverting organics is not simple. LFUCG has experienced these challenges through its yard waste programs, pilot studies, and partnerships targeting organics. **We will apply our understanding of the Lexington-Fayette collection system and waste stream to develop realistic capture rates and develop implementable solutions to address the financial, management and operational challenges of organics management.**

The federal government, led by EPA and the United States Department of Agriculture (USDA), is seeking to work with communities, organizations and businesses along with states, tribal and local governments to reduce food loss and waste by 50 percent over the next 15 years. As part of this initiative, they have developed a Food Recovery Hierarchy, as shown in **Figure 1**.

Figure 1. EPA/USDA Food Recovery Hierarchy



The multi-level hierarchy has been used by local and regional governmental entities to plan for organics recycling. With the well-known closure of big, centralized processing plants for organics (Wilmington Organics Recycling Facility in Delaware in 2014 and Heartland Biogas Food Recycling Facility in Colorado in 2017) - a multiple-outlet, decentralized approach can be an effective strategy for organics diversion when economic feasibility is present. The Lexington-Fayette County region has elements of, and potential for, a multiple-outlet strategy for organics:

- **Scale & City Collection Services** - Lexington consists of 314,488 residents (per 2015 U.S. Census data). About 77 percent of residential homes are serviced through UCG collection. LFUCG's Division of Waste Management provides weekly refuse, recycling and yard waste collection services to 96,000 residents and 3,000 businesses. Residential curbside collection includes a 95-gallon yard waste container supplemented with bundled collection for larger organics. Residents may place their material in biodegradable paper yard waste bags provided free-of-charge. LFUCG provides one vacuum leaf collection service to each household in the urban services area in late fall.
- **Yard Waste Processing** - Yard waste material from city-serviced residences and citizen and business drop-offs is processed by a contracted vendor on city-owned property. LFUCG currently collects the following organic yard waste materials from residences:
  - Tree and brush pruning's
  - Leaves
  - Grass clippings
  - Garden and plant scrap (no dirt, rocks or plastic planter pots accepted)
  - Stumps and branches

- **God's Pantry Food Bank, 1685 Jaggie Fox Way, Lexington** – This non-profit organization has been distributing food to the hungry since 1955 across a 50-county area of central and eastern KY. They diverted over 5,000 tons of produce alone in the past year, and their Lexington warehouse has capacity for 1,000 tons of food products.
- **Organics Recycling Law** - The KY legislature passed, and Gov. Bevin signed, a new organics recycling law. This act is designed to increase food waste diversion to the hungry by extending legal protection against liabilities arising from food donations (KY House Bill 237, effective July 1, 2017). This legislation buttresses the Federal legislation, "The Bill Emerson Good Samaritan Act" (P.L. 104-210, 1996).
- **LFUCG Partnerships and Pilot Studies** - LFCUG has been very active developing partnership and conducting pilot studies to advance organics diversion. Examples include:
  - Food waste compost pilot program (2010 – 2017) that integrated food waste with yard waste collection from 366 residences and four businesses. Ultimately the pilot failed due to high contamination rates.
  - Home composting education partnerships, including with the Fayette County Cooperative Extension Service.
  - LFUCG – Seedleaf contract to provide as needed food scrap collection and transport to community gardens. LFUCG partners with Seedleaf, a community-supported agriculture non-profit organization dedicated to improving healthy food access to the urban residents who lack access to nearby grocery stores. Seedleaf has 16 community gardens and diverted about 67 tons of food waste in 2016 to amend garden soils.
- **Thoroughbred Compost** - One of the largest composting facilities in KY, Thoroughbred Compost, owned by Creech Hay Services, Inc., is located adjacent to the LFUCG Haley Pike Waste Management Facility on Hedger Lane. This facility specializes in composting horse manure and bedding and has a 10-acre concrete composting pad.
- **Curbside Yard Waste Collection** - LFUCG DWM collects yard waste at curbside and directs it to a contractor-run yard waste mulching and composting operation.
- **Anaerobic Digestion** - The LFUCG Division of Water owns and operates the 71 million-gallon-per-day (MGD) Town Branch wastewater treatment plant on Lisle Industrial Ave. Anaerobic digestion is used to process sewage sludge for land application. Several wastewater treatment plants have been evaluating the co-digestion of food wastes with sludges to increase biogas production and improve renewable energy generation. There is also a co-digestion anaerobic digester at MAC Farms in Campbellsville, KY that is interested in receiving substrate feedstocks from food waste diversion.
- **Dedicated Organics Transfer Station** – To reduce transport costs to organics recycling facilities outside the City, it may be feasible to construct a dedicated transfer station (or modify an existing piece of infrastructure) to handle organics via transfer trailer. As some organics recycling outlets have specifications on allowable levels of inert contamination in the incoming organics (i.e. plastic, glass, metal, etc.), it may also be necessary to plan for organics processing equipment to remove contaminants and/or pre-process organics for system suitability.

MSW Consultants specializes in municipal waste management program optimization, including diversion of organics and recyclables. We are committed to assist LFUCG in its pursuit to develop

integrated and financially responsible waste management and recycling programs that serve as long term solutions. Our approach to assist the LFUCG in this project is outlined below.

APPROACH

Our approach assigns our uniquely experienced Project Team, with intimate knowledge Lexington-Fayette solid waste and organics collection, processing and diversion strategies, to work closely with LFCUG to perform the proposed organics recycling feasibility study. As stated in the RFP#24-2017, the core elements of the project scope include:

- Determine viable options for organics recycling,
- Evaluate residential and commercial organics recycling alternatives,
- Consider factors related to organics program implementation:
  - Existing collection programs and infrastructure available to future programs,
  - Types of organic waste and available processing and system capacity,
  - Participation and diversion levels,
  - Participants, program partners, and public/private partnerships,
  - Compost markets and community education components,
  - Economic impacts (cost of services, cost-savings, maintenance costs),
  - Composting systems, methods, capacities, and other technical requirements,
  - Environmental impacts (negative and positive; disposal costs avoided),
  - Implementation viability (such as convenience factor).

The phase and task list below presents our approach to successfully complete the study. We remain available to modify and refine this approach based on input from LFUCG.

PHASE 1 – PROJECT INITIATION AND CURRENT SYSTEM DATA ASSEMBLY

Task 1.1 Information Request and Review of Data: MSW Consultants will submit a written request for information to be provided by LFCUG. We will review responses and work with LFCUG to address information gaps. We will review publicly available information and past work we have completed for LFCUG relating to collection systems, rates, and waste characterization. We will also review non-LFCUG project information and case studies pertaining to organics diversion, particularly where this information adds value regarding aggressive organics diversion programs.

Task 1.2 Meetings: We recommend the following meetings in Phase 1 to close information gaps, align with LFCUG, and review preliminary alternatives:

- **Kick-off Meeting** – In-person meeting to introduce key Project Team members, review contract and scoping details, establish project expectations and schedules and align the Project Team with LFCUG's anticipated outcomes.
- **Site Visit** – A ~~3~~2-day trip by key Project Team members to conduct the kick-off meeting and spend time~~, with two (2) days~~ in the field to visit key organics collection and processing facilities and programs. The Project Team will coordinate with LFCUG before the site visit to confirm the site visit details (e.g. location, timing, coordination with facility managers/contacts, etc.). A key

outcome of the site visits will be to verify existing organics processing capacity and identify potential opportunities to expand processing capacity.

Task 1.3 Organics Diversion Case Study Research. MSW Consultants will compile brief case studies of organics diversion in other communities across the U.S. that have successfully implemented an organics diversion program within either the residential or commercial sector. This effort is intended to quickly summarize the diversity of organics diversion programs, and describe both residential and commercial programs. MSW Consultants intends to draw from its own internal experiences as well as some literature search for well-known national programs. The purpose of the research is to inform the brainstorming to be performed in the following working session. [Note – the level of effort for this task has been reduced by summarizing fewer case studies. See budget adjustment.]

Task 1.4 Working Session 1 – Brainstorm Alternatives. The Project Team will conduct a ~~one~~ half day working session to identify obstacles and opportunities and to review and develop a comprehensive list of potential organics diversion strategies spanning collection and processing. The end of this session will be used to prioritize preferred strategies recommended for further evaluation. It is anticipated that LFCUG and other stakeholders invited by LFCUG will attend. Prior to brainstorming breakout sessions, the Project Team will conduct a presentation to the group to introduce relevant organics information to participants.

PHASE 2 – IDENTIFY AND EVALUATE ORGANICS COLLECTION OPTIONS

The organics collection system must compliment the organics processing option(s) selected by the City. The processing system determines the material types diverted and how the waste stream is separated for collection. This phase will evaluate organics collection and recovery alternatives to be reviewed in this project, along with others identified in cooperation with LFUCG.

Task 2.1 Update UCG Collection System Model. MSW Consultants maintains a proprietary residential routing spreadsheet model that assembles and baselines operational parameters for residential and commercial collection systems. We have previously populated this model for UCG, including routing, service level, tonnage, and customer data to model the existing collection systems. In this task, MSW Consultants will update this model to reflect changes to the collection system (e.g., growth in the customer base, new service areas, etc.) since this model was last updated. The MSW Consultants collection model will then be used in subsequent tasks to estimate the impact of new organics collection programs.

Task 2.2 Identification of Alternative Collection Programs. There are numerous options for organics collection from residential, institutional and commercial establishments. This task will identify the ~~five~~ three most promising collection alternatives to be considered for organics diversion. A description of potential organics collection configurations are listed below.

1) **Residential Food Scrap Collection System Options:**

   a) 3-cart, 3-stream system, with garbage: one each for recycling, garbage, and with food and food soiled paper are added to yard waste collection. This is the most common option because it is the easiest to implement; but as garbage is still collected separately, in most communities less than half of the food waste generated is separated for composting, the rest still goes to landfill.

   b) 3-cart, 3-stream system, without garbage: one each for yard waste, recycling, and food scraps (organics); in this system, no garbage intended to be hauled directly to landfill is collected, all

collected materials are processed. Each of the three carts would be collected in a separate truck.

c) 2-cart, 2-stream system: all compostable organics, including yard waste, food scraps, and food soiled paper are collected in one cart; and all other (non-compostable) materials are collected in the second cart. In this system, there is no garbage to be hauled directly to landfill, and all collected materials are processed. The 2 streams can be collected in a split body truck or in two separate trucks.

d) 3-cart, 5-stream system: In the City of Sunnyvale, CA, cart #1) yard waste is collected in a single compartment cart and loaded into a single compartment truck; in cart #2) fiber is collected in one side of a split recycling cart, and all other recyclables are collected in the other side of the same split cart, and both material types are loaded into a split body collection vehicle; in cart #3) clean food scraps are collected in one side of a split recycling cart, and all other garbage is collected in the other side of the same split cart, and both material types are loaded into a split body collection vehicle.

e) MSW collection, a version of the 2-cart, 2-stream system where recyclables are collected in one cart and everything else (garbage) in the other cart. Some of the new, more sophisticated MRFs can preprocess garbage to remove problem materials and then in-vessel compost the remaining mixed materials. The low-quality compost produced can be used for erosion control, especially along highways. But at least the organics do not end up in landfill.

2) **Commercial Food Scrap Collection System Options**:
Keys to the success of commercial food scrap recovery include the number of separations required by the staff of the business and space constraints caused by the business location.

a) Three-Stream collection: three commercial collection bins are provided at each business for separate recovery of food, recyclables and garbage. The bins would be serviced on a frequency as needed. Using three separate bins means that the business must provide space for each bin type, and three separate trucks must come to the site on a frequency as needed to provide service. Also, janitorial staff must properly maintain the three separations.

b) Wet and Dry collection: all businesses would be provided two waste bins; one bin for food and soiled paper, and a second bin for everything else. The food bin would capture breakroom food waste, coffee station wastes and left-overs from parties and celebrations where food was served.

c) One Bin Plus!© collection: Our experience is that at most businesses the bathroom and breakroom wastes are hauled out to the dumpster in plastic bags that have been tied off by janitors when they are removed from the waste receptacles. If there is no food service at that business, then the loose (mostly recyclable) materials and the bagged wet materials can be disposed of in a single dumpster; and at a materials processing facility the bagged materials can be pulled off the line and landfilled, while the dry materials can be sorted and prepared for market. So, most businesses need only one collection bin to manage all of their wastes if they have a local processing facility. Any business in the community that included a food service operation (restaurant, market, deli, caterer, etc.) would need a second bin (the Plus) for food and food soiled paper; and would have to plastic bag all food soiled plastic packaging. These wet, organic materials would be separately collected from the dry recyclables.

Task 2.3 Analysis of Collection Alternatives. MSW Consultants will use the baseline collection model to estimate the number of routes, fleet vehicles, carts/containers, collection staff, tonnage, and cost of each collection alternative. It is important to note that we will also use the model to calculate

any reductions to existing collection services that may be achieved if organics are collected separately and removed from current refuse service.

These data will be compiled in the final report.

PHASE 3 – IDENTIFY AND EVALUATE ORGANICS PROCESSING OPTIONS

Based on the various collection configuration above, the Project Team will perform a technical analysis of processing options.

Task 3.1 Processing Technology Identification. MSW Consultants will first evaluate the existing organics processing infrastructure and potential organics collection programs to identify the range of processing options to be considered. This task includes:

- **Establish System Capacities** – All mechanisms, methods and outlets for recycling organics have finite absorption and processing capacities for handling wastes. The team will conduct detailed evaluations of each of the possible organics recycling options noted above to define capacities today, and over the recommended planning period of 2018-2028;
- **Identify New Programs** – Working closely with LFUCG, the Project Team will identify other possible options not currently available (i.e. transfer station dedicated to organics, develop a new food waste composting or digestion facility somewhere in the service area, etc.), which would include evaluation of composting and/or digestion types, methods and capacities, and other technical requirements;
- **Define Processing Alternatives** – MSW Consultants will select the most feasible alternatives and further define them for further analysis.

Task 3.2: Analysis of Processing Alternatives: The Project Team will perform both quantitative and qualitative analysis of the selected processing alternatives. This analysis will include:

- **Feasibility** – For preferred alternatives, each alternative will be evaluated for economic and non-economic feasibility.
  - **Economic** feasibility will be evaluated based on preliminary estimates of capital and operating costs, along with estimates of revenues and avoided costs, expressed as 10-yr Net Present Values.
  - **Non-economic** alternatives will be evaluated using a weighted-criteria matrix evaluation system, which would include environmental impacts (positive and negative), implementation viability, operational considerations and any other non-economic factor LFUCG staff considers important. The factors identified by LFCUG in Sections V.D. and V.E. of the Proposal (RFP#17-2017) will be applied as evaluation criteria. In these types of matrix evaluations, MSW Consultants staff will suggest evaluation criteria for measurement and LFUCG staff will assign importance, or weighting, factors.
- **Market Penetration** – For those options that may involve the LFUCG DPW producing, or having responsibility for, a product made from organic wastes (i.e. compost, compost-based soil blends, biogas-based biomethane, and/or biogas-based electricity), the team will evaluate market penetration potentials. This evaluation will include identification of market customers, competing products, and likely market price points.

Results of this analysis will be included in the report.

PHASE 4 - REPORTING

Task 4.1 Report Outline: MSW Consultants will prepare a concise written report detailing recommendations and all viable program options. We would first submit an outline of the report content for review and approval prior to MSW Consultants initiating the report development.

Task 4.2 Draft Report: MSW Consultants will prepare a draft report in electronic format, including appendices, for review by the UCG. It is anticipated that this report would identify viable organics options, and demonstrate the incremental impacts to the waste stream for viable programs over the planning period.

Task 4.3 Final Report/Presentation: MSW Consultants will receive and incorporate LFCUG comments on the Draft Report and deliver a Final Report in MSW Word and PDF format. Appendices and working files including excel spreadsheets will be provided to LFCUG. To bring the project to a close, our Project Team's organics experts will provide a final presentation to convey the results of the organics feasibility study. This presentation will highlight the top priorities, milestones, and implementation schedule for advancing organics diversion in the Lexington-Fayette area.

OPTIONAL TASKS

The following tasks are offered because MSW Consultants feels these tasks may benefit the project outcome.

- **Pilot Study Details** – For some alternatives, it may be necessary develop pilot studies to verify feasibility, obtain data, and fine to operational details and scalability. If requested. MSW Consultants is prepared to assist in the development of pilot study details.
- **Procurement Document Development** – Organics feasibility often requires development of thoughtful procurement documents that effectively leverage solid waste markets and collectors to achieve feasibility. MSW Consultants can assist the UCG to develop technical specifications and/or assist with subsequent procurements.
- **Agreements Development** – Sustainable organics diversion programs are reinforced by a variety of agreements and implementation documents. Examples of agreements include those between generators and collectors (e.g. material handling and quality), collectors and processors, private and public sector, and intermunicipal and cooperative agreements. MSW Consultants can assist in the negotiation of appropriate processing (or collection) agreements.
- **Ordinance Development** – Local and county ordinances must align with organics diversion goals and programs to assure compatibility. MSW Consultants can assist with edits to the U07CG solid waste ordinance to accommodate any new organics programs.

BUDGET AND SCHEDULE

The following table summarizes the labor hours and total costs for conducting the scope of services contained in this proposal.

Budget [Updated]

Phase/Task	Labor Hours	Labor Cost	Expenses	Total
1 Project Initiation				
1.1 Information Request and Review	16	$1,700		$1,700
1.2 Meetings and Site Visits	72	$7,900	$2,600	$10,500
1.3 Organics Diversion Case Studies	32	$3,600	$100	$3,700
1.4 Working Session/Brainstorming	30	$3,200	$1,500	$4,700
2 Identify and Evaluate Organics Collection Options				
2.1 Update UCG Collection Model	24	$2,700	$100	$2,800
2.2 Identification of Collection Alternatives	24	$2,800	$100	$2,900
2.3 Analysis of Collection Alternatives	46	$5,200	$200	$5,400
3 Identify and Evaluate Organics Processing Options				
3.1 Processing Technology	30	$3,400		$3,400
3.2 Analysis of Alternatives	22	$2,500		$2,500
4 Reporting				
4.1 Report Outline	8	$900		$900
4.2 Draft Report	64	$6,800	$200	$7,000
4.3 Final Report and Presentation	34	$3,500	$1,100	$4,600
Grand Total	**402**	**$44,200**	**$5,900**	**$50,100**

Assuming the Notice to Proceed is received by ~~October~~ November ~~2~~3, 2017 it is possible the final presentation would be conducted in ~~January~~ February 2018 after the Report finalization by the end of ~~December~~January.