

**NATIONAL BIOSOLIDS PARTNERSHIP  
SIXTH INTERIM AUDIT REPORT**

**Louisville and Jefferson County  
Metropolitan Sewer District**

**Louisville Green Management System**

**Louisville, Kentucky**

**Audit conducted by**

**NSF-International Strategic Registrations**

**William R. Hancuff, Lead Auditor**

**References:**

**National Biosolids Partnership (NBP) *BMP Elements*  
NBP *Third Party Verification Auditor Guidance – November 2001*  
(*Latest Revision August 2011*)  
NBP *Code of Good Practice*  
*Louisville Green Management System Manual*  
(*Rev 17 – May 27, 2014*)**

**Final Report – July 28, 2014**

## **INTRODUCTION**

The purpose of the Biosolids Management Program (BMP) interim audits are to verify through regular reviews the system's health and effectiveness between verification audits. The third party on-site interim audits provide independent reviews and support credibility between re-verification audits. The goal of the audit is to collect and evaluate objective evidence related to a portion of the BMP such that over the course of the four interim audits conducted between verification audits all 17 elements are addressed.

The goal of the audit is to determine whether the Louisville and Jefferson County Metropolitan Sewer District (MSD) Louisville Green Management System (LGMS) is functioning as intended, that practices and procedures are conducted as documented, and that the BMP as implemented conforms to the NBP's Code of Good Practice and the BMP requirements of the National Biosolids Partnership (NBP) program objectives.

## **RECOMMENDATION**

The results of the LGMS sixth interim audit and review of corrective action plans are positive, and it is the recommendation of the audit team that the Louisville and Jefferson County Metropolitan Sewer District LGMS maintain its Platinum Level Certification status.

## **AUDIT SCOPE**

The (NSF-ISR) conducted a third party interim audit of the MSD's LGMS from June 10 through June 12, 2014. The on-site audit team consisted of Dr. William R. Hancuff, Lead Auditor.

The primary objective of the annual interim audit was to ensure the environmental management system health by reviewing:

- Progress toward goals and objectives,
- Corrective and preventive action requests and responses.
- Actions taken to correct minor non-conformances,
- Management review process, and
- EMS outcomes (environmental performance, regulatory compliance, interested party relations, and quality practices)

The first four items identified above involved reviewing procedures, activities, processes and products that have general requirements found in the NBP standard elements 5, 14, 15, 16 and 17. The fifth item, BMP outcomes, had the potential of involving other NBP standard elements, namely: 1, 2, 4, 6, 9, 10 and 13.

In addition to evaluation of the system as outlined above; the present interim audit scope included the review and verification of the maintenance and implementation of the LGMS relative to standard elements 2, 5, 6, and 9.

The physical biosolids facilities included in the audit and visited during the interim audit included the Morris Forman and Cedar Creek regional wastewater treatment plants, the Louisville Green processing and transportation facilities, a product retailer (Security Seed 7 Chemical) and three Louisville Green/Top Choice farm application sites (Desmuck Farms, Lincoln Parkway Cattle Farm, and Petzinger Farms all in the Elizabethtown area of Hardin County KY. The physical biosolids facilities included in the audit and visited during the audit included the following biosolids value chain process area critical control points: preliminary/primary treatment, pure oxygen secondary treatment, digestion, secondary solids dissolved air floatation, digested solids dewatering, solids heat drying, solids silo storage and truck loading and weighing.

The following individuals were interviewed or otherwise participated in meetings as part of the audit process:

Alex Novak	Treatment Facilities Director
Saeed Assef	Infrastructure and Flood Protection Director
Robert Bates	Operations Treatment Facilities Manager
Joseph Falleri	Operations Project Specialist
Robin Burch	Process Support Supervisor
Jenni Schelling	Laboratory Manager, MSD Internal Auditor
Vicki Combs	Operations Performance Manager
James T. Bridges	Maintenance Manager of Treatment Facilities
Tony Calhoun	Process Technician III (Centrifuges)
John Baldrige	Maintenance Technician
Bobby Rosengarden	Maintenance Technician
Gary Hickman	Maintenance Technician
Donald Bowman	Process Technician II (Liquid side – DAFT)
Arthur Curry	Process Technician III
Jordon Wilkerson	Laborer
Kevin Ries	Operations Treatment Facilities Manager, Regional Plants
Shaun Smith	Process Technician III, Cedar Creek Regional Plant
Penny Terry	Laborer III – truck loader
Doug Hodges	Truck driver (subcontractor to Mannco)
Scott Miller	Manager – Security Seed & Chemical (Top Choice retailer)
Chris Houck	Biosolids spreader for David Pepper (land owner)
Bradley Mannis	Marketer for Mannco Inc. (Biosolids purchaser/contractor)
Tony Glore	Training and Performance Administrator
Glenn Eilers	Senior Trainer: Operations
Mike Hext	M&I Sales Manager, Waste Management
Bob Bickner	Supervisor, Kentucky Department of Environmental Protection, Division of Waste Management, Solid Waste

## **INTERIM AUDIT FINDINGS**

The interim audit included review of the latest versions of relevant LGMS manual element procedures and employed the most recent version of the NBP Third Party Verification Auditor Guidance dated August 2011. The interim audit found 5 positive observations, no major non-conformances, 3 minor non-conformances and 6 opportunities for improvement.

The NBP Third Party Verification Auditor Guidance indicates that when the auditor has identified minor nonconformances during the on-site audit, the organization must resolve the nonconformances and provide documentation to the auditor within 30 days of the audit. NBP acknowledges that biosolids organizations may not be able to fully correct some minor nonconformances within 30 days, in which case NBP requires that the audited organization develop an action plan with time frames. The lead auditor must approve this plan and schedule for correcting minor nonconformances. Corrective action plans were prepared and submitted to the lead auditor and the approach and time frame for implementation were approved. Field verification of the closure of all minor findings will be finalized during the next scheduled interim audit.

The following is a review of the positive observations made during the interim audit. The minor non-conformances and opportunities for improvement follow, and are listed by item number, which correspond to the element minimum conformance requirements found in the NBP Third Party Verification Auditor Guidance. These findings are presented in the sequence of the NBP standard elements.

### **Positive Observations**

The MSD management and all plant personnel involved in the biosolids environmental management system development should be recognized for their outstanding achievements, and the exceptional features of their Louisville Green Management System. The following is a summary of those positive observations made during the audit.

Requirement 5.3 – MSD has developed a model method for proactive public participation for gathering input from interested parties using the “Random Site Inspection Form” for interviewing customers who receive their Louisville Green and Top Choice product.

Requirement 5.5 – MSD has developed an excellent visual display in its Appendix 5B: Goals and Objectives Action Plan and Tracking Spreadsheet to ensure that each one of the SMART criteria are addressed.

Requirement 5.7 – MSD has provided a noteworthy tool associated with its Appendix 5B: Goals and Objectives Action Plan and Tracking Spreadsheet to track progress on action plan schedules, milestones, and responsibilities for achieving biosolids goals and objectives.

Requirement 14.6 – MSD has developed an exemplary tracking system to ensure that progress in completing the corrective actions and periodically updating the status to reflect completion using Appendix 14A – Corrective Action Tracking Spreadsheet.

Element 15 – MSD has again set a fresh benchmark by preparing a publicly friendly annual Biosolids Management Performance Reports Summary that presents not only its accomplishments in the four outcome areas, but also specifics on revenue generation and cost savings information directly resulting from the optimizing biosolid value chain operations. This example that should be followed by all certified agencies. This a similar to a positive finding identified three years ago.

And finally, the hard work and dedication of the Core BMP Team must be acknowledged. Maintaining BMP platinum level certification is obviously a team effort, but the hard work and dedication of Robin Burch and leadership of Robert Bates and direction of Joseph Falleri to ensure continuous improvement must be recognized. Additionally, the support, encouragement and active participation of the Director of Operations, Alex Novak, in the BMP process has guaranteed the continued success of the program.

### **Minor Nonconformances**

Requirement 8.1 – The training program has not effectively communicated general awareness of the BMP and how each employee’s assigned roles and responsibilities relate to the entire biosolids value chain.

Requirement 10.1 – The Standard Operating Procedures for Solids Drying has not been completed.

Requirement 17.2 – The management review action plan that includes a schedule to address the recommendation of the management review did not include the recommendation made by a management team member to tie the Strategic Business Plan into the Goals and Objectives.

### **Opportunities for Improvement**

Requirement 5.1 – Not all the goals and objectives were specifically identified with numerically measureable criteria to be used to assess and track performance improvements.

Requirement 6.1 – Consider updating Appendix 6A: List of Interested Parties to reflect those individuals or organizations that are currently interested or involved in Louisville Green or Top Choice.

Requirement 6.2 – Consider identifying in Section 6 – Public Participation in Planning, of the Louisville Green Management System Manual a reference to the “Random Site Inspection Form” as a source of public input.

Requirement 8.1 – Consider having the Human Resources Training Department develop and present hands-on training sessions associated with the most important biosolids value chain SOP Operations Documentation.

Requirement 10.2 – Consider including in the Dryer Operation Standard Operating Procedure greater detail on the legal requirements for pathogen elimination and vector attraction reduction, such as: Pathogens 503.32(a) – sewage sludge class A, subsection (7) Class A, alternative 5; subsection (ii) sewage sludge PFRP in Appendix B; Appendix B – Section B – Process to Further Reduce Pathogens (PFRP); subsection 2 – Heat Drying. And for Vector Attraction Reduction 503.33(b)(7) percent solids.

Element 17 – Define the members of the MSD Executive Team.

For the minor non-conformances, MSD personnel prepared Corrective Action Plans, and will implement corrective actions according to their BMP procedures to provide continual improvements to their biosolids program. All proposed corrective action work plans were reviewed by the auditor and found to be acceptable and final closure will be verified during the next external third party audit. As a further measure to demonstrate continuous improvement the opportunities for improvement will be addressed to the maximum extent possible.

## **METROPOLITAN SEWER DISTRICT COMMENTS**

The sixth Interim Audit performed by Mr. Bill Hancuff continues to be a value added experience to what should be considered a mature Biosolids Management System. At the onset of the audit the Management Team was unsure of the value that could be added by an audit so soon after the re-verification audit in 2013. Mr. Hancuff showed through his positive findings that even though the Management System is mature, improvement is still possible. The nonconformance findings during the audit were fair and accurate. -- Robin Burch MSD Process Support Supervisor.

As discussed during our Management Review interview, the focus of any non-conformances and opportunities in audits of mature systems like MSDs continues to narrow. In MSDs case, that focus was identified as more measurable criteria in Goals and Objectives. The feedback from Mr. Hancuff will help MSD develop more refined measurable and continue our improvement process. I found the audit to be fair and accurate. – Robert Bates, Operations Treatment Facilities Manager.

## **OUTCOMES MATTER**

The Louisville Green Management System of the Louisville and Jefferson County Metropolitan Sewer District (MSD) once again attained an enviable record in 2013 increasing its beneficial use of its biosolids product from 98.8 percent in 2012 to 100%

in 2013, resulting in none of the product being sent to a landfill. The District is unique in its annually reporting of financial benefits resulting from its Biosolids Management Program. In 2011 the LGMS generated \$286,000 in sales of its product, which increased to \$380,546 in 2012 and \$442,165 in 2013. In 2012 MSD reported a savings of approximately \$464,000 in natural gas by using digester generated biogas to fuel its drying operation. Also, by beneficially using its biosolids as a resource it avoided landfill costs of \$586,000 in 2011, \$581,000 in 2012 and \$1,148,563 in 2013.

The LGMS completely reevaluated its goals and objectives in 2013 and revamped their program through establishing one main goal and eight objectives to attain that goal.

The Goal is to “continually enhance the biosolids process to improve communication, efficiency, quality and sustainability through 2018.”

Each of the eight objectives is focused on supporting and achieving this goal. The objectives were developed by the LGMS Core Team considering public input and using Specific, Measurable, Achievable, Relevant, and Time-bound (SMART) criteria which tied the relevant criteria into one or more of the four NBP required outcome areas below:

1. Environmental Performance,
2. Regulatory Compliance,
3. Relations with Interested Parties, and
4. Quality Biosolids Management Practices.

While it is not a requirement to fully attain all objectives, it is a critical component of the system to make progress towards accomplishing the overall goal.

The Policy of the LGMS is simply summarized as “MSD will produce Exceptional Quality (EQ) biosolids and promote beneficial use.” The final Louisville Green Organic Fertilizer has consistently attained an Exceptional Quality “EQ” rating and generated a highly marketable biosolids product. As a result of the aggressive marketing campaign and sales program the beneficial reuse of material in 2013 was 100%.

The facility’s performance relative to each of the above listed outcome is identified parenthetically as a “relevant” criterion with each of the objectives addressed below.

Objective 1: Implement an improved Preliminary Treatment System by December 31, 2015 to reduce the amount of debris sent to the anaerobic digesters. The facility’s digesters accumulate inert and inorganic materials sufficient to reduce the effectiveness of the digestion process and require the digesters to be frequently cleaned at a substantial cost. Improving the preliminary treatment through installing new bar screens with reduced openings will remove considerably more materials than has historically been collected thus eliminating a portion of the inert materials that otherwise would pass through into the digesters and have deleterious effects on pumps and other processes downstream. Additionally redesigning the headworks grit removal system will have a measurable impact on the amount of inorganic material prevented from entering the

digesters and reducing their effective treatment volume. The amount of debris removed through the preliminary treatment processes has been historically measured by the amount of material collected in the waste luggers. The increase in the amount waste removed through the new preliminary processes is estimated to be approximately 50%; and the reduction of material accumulated in the digester that will need to be removed is anticipated to be roughly 20%. The latter will be determined during the regularly scheduled routine cleaning of digesters.

Outcome Areas: Environmental Performance and Quality Biosolids Management Practices.

Objective 2: Replace the failing High Purity Oxygen Generation System to maintain secondary treatment characteristics by December 2015. Since the installation of the pure oxygen treatment system many years ago the reliability has diminished. The health of the secondary process, biosolids settleability and downstream processing is dependent upon the oxygen fed and the resulting dissolved oxygen in the process. Failure to feed the required amount of oxygen will result in biological upset, which has a direct correlation to the quality of solids removed and the waste activated solids (WAS) used to produce the Louisville Green final product. The replacement of the oxygen generation system will increase the reliability of the system and minimize potential adverse consequences associated with failure, including compliance with regulatory requirements. The fourth stage dissolved oxygen and the return activated solids volatile settleable solids are monitored on a daily basis. The dissolved oxygen of 10 ppm in the fourth stage has historically proven to be a desirable target. Concern develops if this value drops to below 8 ppm. The new system will assure that 10 ppm will be maintainable 100% of the time, if desired.

Outcome Areas: Environmental Performance, Quality Biosolids Management Practices and Regulatory Compliance.

Objective 3: Complete a feasibility study of the Regional Plant Solids Dewatering by December 31, 2013. Note: this objective completed, removed and replaced with the following new objective.

Installation of Dewatered Biosolids Conveyance System to provide for greater disposal options by December 31, 2014. There are currently three sets of conveyors to transport biosolids cake to the truck loadout and cake hopper. The conveyors are old and have not had any major rebuilding. They are in need of repair to maintain reliable functioning in the future. If the conveyors fail the cake would not be able to be sent to the landfill, if the dryer trains fail, however the latter are reaching the end of their useful life without major rehabilitation. As of June 19, 2014 the design is 60% complete.

Outcome Areas: Environmental Performance and Quality Biosolids Management Practices



Objective 4: Develop a new strategy for product recycle to improve process operation consistency and final product size by June 30, 2014. This objective was developed in response to complaints by end users based on concerns with excess fines in the final product. The objective has several action plans that singly or in combination with one another are anticipated to improve the consistency and final product size. The actions consist of re-routing shaker hoses/diverter valve output to the recycle bin on Train #3; install crusher inlet diverter box on Train #1, and monitor wear on Train #1; install a new 1.7 mm screen in the shaker to eliminate the pan on a train, then monitor the pellet size on Train #3 and compare to last six months of sieve data; install a cleanout port on the recycle bin on all trains and monitor the number of train shutdowns due to recycle bin vactoring for six months; install diverter box on Train #2; and install new gear box to speed up the metering roll. The measurement used to indicate improvements are: 1) the reduction in the acceptable product range from 2.8 mm to 1.2 mm to 2.8 mm to 1.7 mm, thus eliminating the fines, and 2) improving performance by reducing the number and time of shutdowns.

Outcome Areas: Relations with Interested Parties, Environmental Performance and Quality Biosolids Management Practices

Objective 5: Identify three options for Morris Forman biosolids disposition by December 31, 2014. This objective is the first stage of a multistage process of evaluating several possible options for the future of biosolids use. It is still in the conceptual stage with several alternatives being reviewed.

Outcome Areas: Environmental Performance, Regulatory Compliance, Relations with Interested Parties, and Quality Biosolids Management Practices.

Objective 6: Develop a plan to identify and schedule replacement/repair of the biosolids equipment for the next 5 years by December 31, 2013 while meeting budget reductions and maintaining regulatory compliance. This objective proceeded through several steps of planning and evaluation to determine the highest priority. These steps included development of a biosolids equipment repair sheet, identification of the most critical replacement/repairs with regulatory compliance considerations, consensus building on highest priorities, determination of priority list considering budget limitations, and formulation of repair/replacement schedule considering operational needs. The selected equipment included: polycyclone/preseparator Train 1 & 2; Outlet Duct Train 2; Drying Drum; Furnace Controller; Condenser; and RTO Media.

Outcome Areas: Environmental Performance, Regulatory Compliance, Relations with Interested Parties, and Quality Biosolids Management Practices.

Objective 7: Develop a Public Friendly Version of the Program Performance Report for distribution to ten interested parties by March 31, 2014. This objective was developed based on the idea that information contained in the annual biosolids program performance report could be simplified and made more public friendly yet contain all of the most

meaningful information in which the general public might be interested. This objective was accomplished in March 2014 and a template was established for future reports.

#### Outcome Areas: Relations with Interested Parties

Objective 8: To continually improve employee knowledge, evaluate the communication and training process for Standard Operating Procedures (SOPs) by June 1, 2014. This objective has proven to be considerably challenging because of the complexity of the workforce. Numerous excellent SOPs have been developed, but general acceptance has been slow. There appears to be a need for top management to make SOP use one of the performance criteria when evaluating salary increases for supervisors.

Outcome Areas: Environmental Performance, Regulatory Compliance, Relations with Interested Parties, and Quality Biosolids Management Practices.

### **CONCLUSIONS AND RECOMMENDATIONS**

The results of the third party interim audit show the Louisville and Jefferson County Metropolitan Sewer District has a fundamentally strong Environmental Management System. The NSF lead auditor reviewed and approved the corrective action plans for the minor nonconformances associated with the interim audit. Therefore, it is the recommendation of the audit team that the Louisville Green Environmental Management System of Louisville, Kentucky retain its platinum level certification status.

As was mentioned previously, a BMP is a continuously improving process, and retention of certification status is not the end. The results of this and future audits will provide value added to the system and should be viewed as an overall opportunity to improve. Every audit is a snapshot in time, and does not, or cannot, identify each and every area for improvement. And yet, while no single audit identifies all of the areas for improvement the results of each audit provide an additional incremental step in the overall system's improvement.

The scope of each interim audit must include a review of the organization's progress toward goals and objectives; BMP outcomes (environmental performance, regulatory compliance, interested party relations, and quality practices); actions taken to correct minor nonconformances; the management review process; and corrective and preventive action requests and responses. This review generally includes requirements found in elements 1, 2, 5, 6, 9, 14, 15, 16 and 17.

In order to address each element of the NBP standard over the four years of interim audits the following elements are tentatively scheduled over the period between verification audits:

Year 6 (third party) – Elements 2, 5, 6, and 9 (completed)

Year 7 (third party or internal) – Elements 1, 4, and 8

Year 8 (third party) – Elements 3, 10, and 13

Year 9 (third party or internal) – Elements 7, 11, and 12

Year 10 (third party) – Re-Verification audit

## **Attachment 1**

### **Documents and Other Objective Evidence Reviewed During the Interim Audit**

#### Element 1. BMP Manual

- Louisville Green Management System (LGMS) Manual, Rev17 – May 27, 2014
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor, and James T. Bridges, Maintenance Manager of Treatment Facilities
- LGMS Manual – Table of Contents
- LGMS Manual – Appendix H: Revision Log
- LGMS Manual – Element 2 – Biosolids Management Policy
- LGMS Manual – Element 3 – Critical Control Points
- LGMS Manual – Element 4 – Legal and Other Requirements
- LGMS Manual – Element 5 – Goals and Objectives
- LGMS Manual – Element 6 – Public Participation in Planning
- LGMS Manual – Element 8 – Training
- LGMS Manual – Element 9 – Communication
- LGMS Manual – Element 10 – Operational Controls
- LGMS Manual – Element 13 – Monitoring and Measurement
- LGMS Manual – Element 14 – Nonconformances – Preventive & Corrective Action
- LGMS Manual – Element 15 – Biosolids Management Report
- LGMS Manual – Element 16 – Internal Audits
- LGMS Manual – Element 17 – Management Review
- Louisville Green Management System Contractor Requirements contained in request for proposals and contracts.

#### Element 2. Biosolids Management Policy

- LGMS Manual – Element 2 – Biosolids Management Policy
- Proposed Revision to Louisville Green Management System Policy draft June 06, 2014.
- LGMS Manual – Appendix A: Code of Good Practice
- Interview with Alex Novak, Treatment Facilities Director
- Interview with Saeed Assef, Infrastructure and Flood Protection Director
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor, and James T. Bridges, Maintenance Manager of Treatment Facilities

### Element 3. Critical Control Points

- LGMS Manual – Element 3 – Critical Control Points
- LGMS Manual – Appendix 3A – List of Critical Control Points and Operational Controls revised 11-11-13
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; and Robin Burch, Process Support Supervisor

### Element 4. Legal and Other Requirements

- LGMS Manual – Element 4 – Legal and Other Requirements
- Appendix 4A – List of Legal and Other Requirements, Revision Number 019, dated 8-12-13
- Appendix 4D – List of Informational Sources, Revision 002, dated 1-8-14
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor, and James T. Bridges, Maintenance Manager of Treatment Facilities
- Interview with regulator – Bob Bickner, Supervisor, Kentucky Department of Environmental Protection, Division of Waste Management, Solid Waste

### Element 5. Goals and Objectives

- LGMS Manual – Element 5 – Goals and Objectives.
- Appendix 5A: Goals and Objectives Action Plan and Spreadsheet Form, Revision Number 003, dated 7-26-13.
- Appendix 5A : Goals and Objectives Action Plan and Tracking Spreadsheet completed for all Objectives established for 2013; Revision Number 010, updated 5-21-14
- Appendix 6A: List of Interested Parties; Update Number 003, dated 5-20-13
- Appendix 9A: Record of Public Input and Inquiries, Update 003, updated 6-6-14
- Interview with Alex Novak, Treatment Facilities Director
- Interview with Saeed Assef, Infrastructure and Flood Protection Director
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor, and James T. Bridges, Maintenance Manager of Treatment Facilities
- Louisville Green Management System Program Performance Report for 2013 dated 3/14/14
- Louisville Green Management System 2013 Program Performance Report (summary issue for general public distribution)
- Appendix 5B: Goals and Objectives Action Plan and Tracking Spreadsheet Form; Revision 003; dated 7-26-13.
- Completed Appendix 5B Goals and Objectives Action Plan and Tracking Spreadsheet Form for 8 Objectives for 2013.

## Element 6. Public Participation in Planning

- LGMS Manual – Element 6 – Public Participation in Planning
- Table 6.1 – List of Formal and Informal Participation Mechanisms
- Appendix 6A: List of Interested Parties; Update Number 003, dated 5-20-13
- LGMS Manual – Element 9 – Communication
- Appendix 9A: Record of Public Input and Inquiries, Update 003, updated 6-6-14
- Interview with Alex Novak, Treatment Facilities Director
- Interview with Saeed Assef, Infrastructure and Flood Protection Director
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor, and James T. Bridges, Maintenance Manager of Treatment Facilities
- Interviews Scott Miller, Manager – Security Seed & Chemical (Top Choice retailer); Chris Houck, Biosolids spreader for David Pepper (land owner); Bradley Mannis, Marketer for Mannco Inc. (Biosolids purchaser/contractor); and Mike Hext, M&I Sales Manager, Waste Management
- Bob Bickner Supervisor, Kentucky Department of Environmental Protection, Division of Waste Management, Solid Waste
- MSD – Louisville Green Management System website ([http://www.msdlouky.org/programs/envir\\_man\\_sys.htm](http://www.msdlouky.org/programs/envir_man_sys.htm)).
- Multi-color single sheet presentation of MSD Policy and Code of Good Practice.
- Various color flyers presenting the benefits of the Louisville Green organic based fertilizer.
- Multi-color single sheet “Top Choice” – An Exceptional Quality Granular Organic Biosolids Fertilizer
- Top Choice Organic Biosolids Transportation Packet for Haulers (general biosolids information, operational instructions, and emergency response)
- Louisville Green Management System Program Performance Report for 2013 dated 3/14/14
- Louisville Green Management System 2013 Program Performance Report (summary issue for general public distribution)

## Element 7. Roles and Responsibilities

- Appointment Memo from Alex Novak, Director of Operations assigning Robert Bates, Wastewater Process Manager, Biosolids Department at the Morris Forman Water Quality Treatment Center as the responsible person for the implementation and maintenance of the Louisville Green Management System. Dated July 2, 2013.

## Element 8. Training

- LGMS Manual – Element 8 – Training
- LGMS Manual – Appendix E: Employee Training Program Guidelines

- Interviews with training personnel: Tony Glore, Training and Performance Administrator and Glenn Eilers Senior Trainer: Operations.
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor, and James T. Bridges, Maintenance Manager of Treatment Facilities
- Interviews with operations and maintenance personnel: Tony Calhoun, Process Technician III (Centrifuges); John Baldrige, Maintenance Technician; Bobby Rosengarden, Maintenance Technician; Gary Hickman, Maintenance Technician; Donald Bowman, Process Technician II (Liquid side – DAFT); Alan Curry, Process Technician III; Jordon Wilkerson, Laborer; Kevin Ries, Operations Treatment Facilities Manager, Regional Plants; Shaun Smith, Process Technician III, Cedar Creek Regional Plant; and Penny Terry, Laborer III – truck loader
- Interviews with contractors: Mike Hext, M&I Sales Manager, Waste Management and Bradley Mannis, Marketer for Mannco Inc. (Biosolids purchaser/contractor)
- Interviews with product distributors and users - Scott Miller, Manager – Security Seed & Chemical (Top Choice retailer) and Chris Houck, Biosolids spreader for David Pepper (land owner)

#### Element 9. Communications

- LGMS Manual – Element 9 – Communication
- Appendix 9A: Record of Public Input and Inquiries, Update 003, updated 6-6-14
- LGMS Manual – Element 6 – Public Participation in Planning
- Table 6.1 – List of Formal and Informal Participation Mechanisms
- Appendix 6A: List of Interested Parties; Update Number 003, dated 5-20-13
- Interview with Alex Novak, Treatment Facilities Director
- Interview with Saeed Assef, Infrastructure and Flood Protection Director
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor, and James T. Bridges, Maintenance Manager of Treatment Facilities
- Interviews Scott Miller, Manager – Security Seed & Chemical (Top Choice retailer); Chris Houck, Biosolids spreader for David Pepper (land owner); Bradley Mannis, Marketer for Mannco Inc. (Biosolids purchaser/contractor); and Mike Hext, M&I Sales Manager, Waste Management
- Bob Bickner Supervisor, Kentucky Department of Environmental Protection, Division of Waste Management, Solid Waste
- MSD – Louisville Green Management System website ([http://www.msdlouky.org/programs/envir\\_man\\_sys.htm](http://www.msdlouky.org/programs/envir_man_sys.htm)).
- Multi-color single sheet presentation of MSD Policy and Code of Good Practice.
- Various color flyers presenting the benefits of the Louisville Green organic based fertilizer.
- Multi-color single sheet “Top Choice” – An Exceptional Quality Granular Organic Biosolids Fertilizer

- Top Choice Organic Biosolids Transportation Packet for Haulers (general biosolids information, operational instructions, and emergency response)
- Louisville Green Management System Program Performance Report for 2013 dated 3/14/14
- Louisville Green Management System 2013 Program Performance Report (summary issue for general public distribution)

#### Element 10. Operational Control of Critical Control Points

- LGMS Manual – Element 10 – Operational Controls
- LGMS Manual – Element 3 – Critical Control Points
- LGMS Manual – Appendix 3A – List of Critical Control Points and Operational Controls revised 11-11-13
- Appendix 4A – List of Legal and Other Requirements, Rev 019, dated 8-12-13
- Standard Operating Procedure for Dryers
- Review of MLSS Examination for microorganism culture distribution in aeration channels.
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor, and James T. Bridges, Maintenance Manager of Treatment Facilities
- Interviews with operations and maintenance personnel: Tony Calhoun, Process Technician III (Centrifuges); John Baldrige, Maintenance Technician; Bobby Rosengarden, Maintenance Technician; Gary Hickman, Maintenance Technician; Donald Bowman, Process Technician II (Liquid side – DAFT); Alan Curry, Process Technician III; Jordon Wilkerson, Laborer; Kevin Ries, Operations Treatment Facilities Manager, Regional Plants; Shaun Smith, Process Technician III, Cedar Creek Regional Plant; and Penny Terry, Laborer III – truck loader
- Interviews with contractors: Mike Hext, M&I Sales Manager, Waste Management and Bradley Mannis, Marketer for Mannco Inc. (Biosolids purchaser/contractor)
- Interviews with product distributors and users - Scott Miller, Manager – Security Seed & Chemical (Top Choice retailer) and Chris Houck, Biosolids spreader for David Pepper (land owner)
- Interviews with training personnel: Tony Glore, Training and Performance Administrator and Glenn Eilers, Senior Trainer: Operations

#### Element 11. Emergency Preparedness and Response

- Not Reviewed

#### Element 12. BMP Documentation and Document Control

- Not Reviewed



### Element 13. Monitoring and Measurement

- LGMS Manual – Element 13 – Monitoring and Measurement.
- LGMS Manual – Element 3 – Critical Control Points
- LGMS Manual – Appendix 3A – List of Critical Control Points and Operational Controls revised 11-11-13
- Appendix 4A – List of Legal and Other Requirements, Rev 019, dated 8-12-13
- Standard Operating Procedure for Dryers
- Review of MLSS Examination for microorganism culture distribution in aeration channels.
- University of Kentucky Cooperative Extension Service – Soil Test Report for land owned by David Pepper dated 4/21/14.
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor, and James T. Bridges, Maintenance Manager of Treatment Facilities
- Interviews with operations and maintenance personnel: Tony Calhoun, Process Technician III (Centrifuges); John Baldrige, Maintenance Technician; Bobby Rosengarden, Maintenance Technician; Gary Hickman, Maintenance Technician; Donald Bowman, Process Technician II (Liquid side – DAFT); Alan Curry, Process Technician III; Jordon Wilkerson, Laborer; Kevin Ries, Operations Treatment Facilities Manager, Regional Plants; Shaun Smith, Process Technician III, Cedar Creek Regional Plant; and Penny Terry, Laborer III – truck loader
- Interviews with contractors: Mike Hext, M&I Sales Manager, Waste Management and Bradley Mannis, Marketer for Mannco Inc. (Biosolids purchaser/contractor)
- Interviews with product distributors and users - Scott Miller, Manager – Security Seed & Chemical (Top Choice retailer) and Chris Houck, Biosolids spreader for David Pepper (land owner)
- Interviews with training personnel: Tony Glore, Training and Performance Administrator and Glenn Eilers, Senior Trainer: Operations

### Element 14. Nonconformances: Preventive and Corrective Action

- LGMS Manual – Element 14 – Nonconformances - Preventive and Corrective Action
- Appendix 14B - Corrective Action Plan Form, Revision Number 002, dated 6/24/2013
- Review of each Appendix 14B Action Plan and Tracking forms for all minor nonconformities identified during the third party external re-verification audit.
- “The Win Column” list of completed corrective actions.
- Louisville Green Management System Internal Audit #8 – December 2013 – Audit Scope
- National Biosolids Partnership Louisville Green Management System Internal Audit Report #8, dated January 27, 2014.
- Appendix 14A – Corrective/Preventive Action Plan Spreadsheet, current as of audit date

- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor

#### Element 15. Biosolids Management Program Report

- LGMS Manual – Element 15 – Biosolids Management Report
- Interview with Alex Novak, Treatment Facilities Director; Saeed Assef, Infrastructure and Flood Protection Director and Vicki Combs, Operations Performance Manager
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor
- Louisville Green Program Performance Report for 2012, dated 2/4/13
- Louisville Green Management System Program Performance Report for 2013 dated 3/14/14.
- Louisville Green Management System 2013 Program Performance Report (summary issue for general public distribution)

#### Element 16. Internal BMP Audit

- LGMS Manual – Element 16 – Internal Audits.
- Appendix 14A – Corrective/Preventive Action Plan Spreadsheet, current as of audit date
- Appendix 14B - Corrective Action Plan Form, Revision Number 002, dated 6/24/2013
- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor
- Louisville Green Management System Internal Audit #8 – December 2013 – Audit Scope
- National Biosolids Partnership Louisville Green Management System Internal Audit Report #8, dated January 27, 2014.

#### Element 17. Management Review

- LGMS Manual – Element 17 – Management Review
- Reviewed Louisville Green Management Review Scope (agenda) for March 14, 2014
- Reviewed Minutes of Management Review Team Meeting held March 14, 2014
- Reviewed Action Plan for 2013 Management Review, Revision 003, dated 5-6-14
- Interview with Alex Novak, Treatment Facilities Director
- Interview with Saeed Assef, Infrastructure and Flood Protection Director
- Interview with Vicki Combs, Operations Performance Manager

- Interviews with Robert Bates, Operations Treatment Facilities Manager; Joseph Falleri, Operations Project Specialist; Robin Burch, Process Support Supervisor; Jenni Schelling, Laboratory Manager & MSD Internal Auditor