



National Biosolids Partnership

Biosolids Management Program Interim Audit Report

City of Mankato Wastewater Treatment Facility

Mankato, Minnesota

Audit Dates: June 1 & 2, 2016

Audit Conducted By: DEKRA Certification, Inc. (Chalfont, PA)

DEKRA Reference:

Audit Team: Mr. Jon Shaver, Biosolids EMS Lead Auditor / Biosolids Auditor

Report Date: October 19, 2016

Reviewed By: Patti Mettler, City of Mankato (10/14/16)

Approved By: Michelle Hunn, DEKRA certification, Inc. (10-19-16)

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1. SUMMARY

DEKRA Certification, Inc. (DEKRA) conducted an independent audit of the biosolids management program (BMP) being used by the City of Mankato Wastewater Treatment Facility (Mankato). The audit was conducted onsite June 1 and 2, 2016 at Mankato's request and was Interim Audit #2-1 following DEKRA's Verification of Mankato's BMP in April 2015.

Audit Purposes

This interim audit was conducted to:

- Verify that the management system being used by the City of Mankato in managing its biosolids program activities meets National Biosolids Partnership (NBP) expectations and requirements of the NBP BMP Elements.
- Confirm that the City of Mankato is managing its biosolids program effectively, with practices and procedures being performed as documented.
- Examine outcomes that the City of Mankato is achieving through the use of their biosolids management systematic.
- Review the effectiveness of corrective action taken in response to nonconformances from the previous DEKRA third party audit.

The audit scope covered parts of the Mankato biosolids program, including activities within their biosolids value chain, consistent with NBP requirements and the Interim Audits Program previously agreed by Mankato and DEKRA. Audit criteria included requirements of the 17 NBP BMP Elements and Mankato's biosolids program.

Summary of Audit Results and Conclusions

Five minor nonconformances from DEKRA's Reverification Audit in April 2015 have been effectively corrected and are now closed. One minor nonconformance from that audit remains open.

Two additional minor nonconformances were found during this audit. Mankato has prepared corrective action plans for these nonconformances that have been approved by DEKRA's Lead Auditor. Verification of effective corrective action for all open nonconformances will be included in the next Dekra audit.

Based on the results of this audit, DEKRA has determined that:

- The City of Mankato's biosolids activities are consistent with NBP expectations and meets requirements of the NBP BMP Elements.
- Use of a management system approach continues to generate positive outcomes for the City of Mankato's biosolids program in the areas of regulatory compliance, environmental performance, quality practices and relations with interested parties.
- DEKRA recommends continuing "Platinum" certification of the City of Mankato's biosolids program within NBP Biosolids Management Program.

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2. AUDIT DETAILS

2A. Auditee Information and Biosolids Program

Organization Details

Name: City of Mankato Wastewater Treatment Facility (referred to as Mankato in this report)

Number of Employees = 11

Biosolids Preparation Sites: City of Mankato Wastewater Treatment Facility, Mankato Minnesota

Mankato Biosolids Program

The City of Mankato's Biosolids Program includes processes for procurement, compost preparation, maintenance, compost sale and distribution and control of contractors. All compost produced at the plant is used in agriculture applications.

Mankato manages their biosolids program using a management system approach based on the NBP BMP Elements. The Biosolids Management Policy provides commitment and direction for the program.

2B. Audit Team

DEKRA conducted this audit at the request of the City of Mankato Wastewater Treatment Facility. Mr. Jon Shaver led the audit on behalf of DEKRA. Mr. Shaver is certified as a Biosolids EMS Lead Auditor and Biosolids Auditor by NBP. DEKRA and our auditor have an independent relationship with Mankato that meets NBP criteria for Third Party Audit Companies and Auditors.

2C. Audit Criteria, Scope and Methodology

Audit Criteria

Requirements stipulated in the NBP BMP Elements (July 2011) and the Mankato "Biosolids Management Program" were used as criteria for this audit.

Audit Scope

This audit covered parts of the Mankato biosolids management program, with special attention to practices and management activities that directly support biosolids-related operations, processes and activities. The audit covered the following topics, consistent with NBP requirements for interim audits, the interim audits program and Scope of Work agreed by DEKRA and Mankato.

1. Management System Dynamics (+Effectiveness Review)
 - Review of changes affecting the biosolids management program
 - Biosolids Policy
 - Review of Effectiveness:
 - Corrective & Preventive Action Process
 - Goals & Objectives Process
 - Management Review Process
 - Review of Internal Audits (& related Corrective Action)
2. Process Audits, consistent with Interim Audits Program:

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BMP Planning

- Communications Program
- Critical Control Points & Operational Controls
- Goals & Objectives Process
- Management Involvement

Biosolids Preparation

- Wastewater treatment, solids conditioning & handling, solids storage)

Biosolids Use

- Control of Contractors

3. Verification of effective correction of open nonconformances from previous DEKRA third-party audits (April 2015)
4. Examination of EMS Outcomes

Audit Methodology

The audit was conducted by interviewing key Mankato personnel with biosolids responsibilities, observing practices in place and reviewing pertinent documents and records. It was performed in a manner that is consistent with the NBP Auditor Guidance, with standard audit sampling techniques used.

Transactions were tested to help verify the health and effectiveness of the management system. Interested parties were interviewed to verify the effectiveness of the external communications and public participation programs.

2D. Definitions of Audit Findings & Required Corrective Action

Major Nonconformance – a serious omission from requirements and/or other departure that represents, or could cause, a systemic failure, or the existence of multiple related minor nonconformances, or failure to effectively correct a nonconformance in a timely manner. For verification to proceed, the effectiveness of corrective action for major nonconformances must be verified by an accredited third party auditor within 90 days.

Minor Nonconformance – an isolated departure from requirements that does not represent a systemic failure. Minor nonconformances require timely and effective corrective action by the agency and verification of corrective action effectiveness by an accredited third party auditor.

Opportunity (for improvement) – possible improvement in the EMS based on auditor observations. There is no obligation for action in response to these observations.

2E. Reference Materials

The following documents were used as references during this audit:

- City of Mankato BMP Manual (current version)
- NBP BMP Elements (July 2011)
- NBP Third Party Auditor Guidance (August 2011)
- NBP Code of Good Practice
- NBP Manual of Good Practice

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2F. Appeals

The NBP provides an appeals process for biosolids organizations and interested parties that disagree with the findings of a third party EMS audit. The verification appeals process involves an Appeals Board; representing a balance of biosolids management interested parties, including an environmental advocacy group, and wastewater industry professionals. An appeal must be submitted within 30 days of the official verification decision or interim audit decision by the Audit Company. Information about the appeals process is available from the NBP. Contact Ms. Lisa McFadden at lmcfadden@wef.org).

2G. Additional Information

Further information about this audit and/or the National Biosolids Partnership Biosolids Management Program can be obtained from the City of Mankato Wastewater Treatment Plant. Contact Ms. Patti Mettler (e-mail: pmettler@mankatomn.gov).

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3. SUMMARY OF AUDIT RESULTS

3A. Verification Conclusion

Based on the results of this audit, DEKRA has verified that the Mankato BMP continues to meet the expectations and requirements of the NBP Biosolids Management Program. Continuing "Platinum" certification within the NBP Biosolids Management Program is recommended.

3B. Strengths

During this audit, DEKRA noted the following strengths in the Mankato biosolids management program.

- Housekeeping throughout the wastewater treatment plant is excellent.

3C. Closure of Open Nonconformances

Five nonconformance findings from DEKRA's Verification Audit in April 2015 have been effectively corrected. See section 4 of this report for details.

One nonconformance from the 2015 audit remains open. This nonconformance is restated below. An approved corrective action plan is in place for this nonconformance and progress is being made in implementing that plan.

Minor Nonconformance JS/15-02 NBP BMP Element 2 requires Biosolids Policy commitments be communicated to contractors and cover activities performed by contractors and element 16 requires that internal audits cover contractor activities.

Audits of conformance with the Code of Good Practice principles in December 2014 and December 2013 did not include assessment of contractor activities for agricultural use of Mankato's biosolids.

3D. Audit Findings – Nonconformances

One minor nonconformance found during this audit remains open. Mankato has prepared Corrective Action Plans for the nonconformance and DEKRA's Lead Auditor has approved those plans. DEKRA will verify the effective correction of each nonconformance during the next Third Party Audit.

Minor Nonconformance JS/16-01/5 BMP Element 5 requires the organization to establish action plans that designate schedules, milestones, resources, and responsibilities for achieving its biosolids program goals and objectives. Action Plans established for achieving 2016 biosolids objectives do not designate resource requirements or responsibilities.

Minor Nonconformance JS/16-02/13 BMP Element 13 requires the organization to maintain regular monitoring and measurement procedures and practices to measure biosolids program performance at critical control points. Upper & lower flow sensors in digester pump building are >6 months beyond calibration due date. Biosolids measurement at these critical control points cannot be relied upon.

Verification of effective corrective action for the above nonconformances will occur during DEKRA's next audit, which is currently planned to occur in June 2017.

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3E. Agreements

Mankato and DEKRA have agreed that the next Interim Audit (#2-2) will occur in June 2017 and be conducted as a third party audit. The audit dates and schedule will be agreed in advance. The Interim Audits Program covering 2014 through 2017 remains in effect and will provide a projected scope for the interim audits.

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4. MANAGEMENT PROGRAM DYNAMICS

Review of the biosolids management program dynamics and outcomes is conducted to verify that the biosolids management program is functioning effectively and generating positive outcomes and that changes are being incorporated consistent with BMP requirements. The following summarizes DEKRA's review of the dynamics of Mankato's biosolids management program.

4A Significant Changes

No significant changes affecting the City of Mankato Biosolids Management Program have occurred since the previous DEKRA audit in April 2016. Two replacement clarifiers were installed as a retrofit over the past two years. Transaction testing verified that appropriate documentation on the equipment (O&M Manuals) is in place and training of operators and maintenance personnel was completed to verify competence.

4B Revisions to the Management System and Related Documentation

Minor changes were made in the Mankato EMS Manual. These changes did not significantly affect the biosolids program.

4C Examination of Outcomes

The Mankato Biosolids Management Program is improving through the use of a systematic approach to managing their biosolids activities. The following improvement outcomes within the past two years were confirmed.

Environmental Performance

The retrofit of two primary clarifiers has improved solids collection and gas generation.

Generation of reuse water from the wastewater treatment plant continues. Approximately \$3M saving in potable water use.

Quality Practices

Biosolids users stated that biosolids spreading has improved in recent years and that odors appear to have reduced.

Interested Party Relations

Interest in plant tours has increased. Number of tours improved from 8 in 2015 to annualized 12 tours in 2016.

City of Mankato personnel are increasing presentations about the Mankato BMP to other wastewater agencies.

Regulatory Compliance

Operations are preparing for anticipated lowered limit for phosphorus in land applied biosolids.

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4D Correction of Nonconformances from Previous Third Party Audits

Corrective action taken in response to nonconformances from the DEKRA's Interim Audit of the Mankato Biosolids Management Program in October 2015 and the status of those nonconformances is summarized below.

Minor Nonconformance JS/15-01 NBP BMP Element 1 requires the organization's BMP manual to contain procedures required by the BMP Elements. The current BMP Manual (rev March 2015) does not meet requirements as summarized below:

- There is no reference to "other requirements" in the procedure for identifying and tracking legal and other requirements.
- "Assessment" Element 13 does not state how other regulatory and other requirements are monitored / measured and does not include procedure(s) for monitoring progress in achieving biosolids goals & objectives.
- Table 3 (Critical Control Points & Operational Controls) does not identify critical control points or operational controls for legal requirements, quality or interested party relations.

Corrective Action - Mankato determined that the above nonconformance was caused by misinterpretation of some documentation requirements. In response, Mankato reviewed BMP documentation requirements with the BMP Management Team and added the missing or incomplete documentation. Review by DEKRA's Lead Auditor determined that this corrective action has been effectively implemented. This nonconformance is now closed.

Minor Nonconformance JS/15-02 NBP BMP Element 2 requires Biosolids Policy commitments be communicated to contractors and cover activities performed by contractors and element 16 requires that internal audits cover contractor activities.

Audits of conformance with the Code of Good Practice principles in December 2014 and December 2013 did not include assessment of contractor activities for agricultural use of Mankato's biosolids.

Corrective Action - Mankato determined that the above nonconformance was caused by incomplete oversight of contractor duties. In response, Mankato conducted an internal audit to verify conformance with the Code of Good Practice that included contractors. Review by DEKRA's Lead Auditor determined that this corrective action has been implemented, however the conformance of contractor practices with the Code of Good Practice is not clearly stated. This nonconformance remains open.

Minor Nonconformance JS/15-03 NBP BMP Element 11 requires the organization to establish and maintain emergency preparedness and response plans and procedures for effective response to accidents and emergency situations associated with its biosolids management activities. The Emergency Procedures Manual does not address emergency situations that may occur within the plant such as fires, personnel injury, security, uncontrolled spill (e.g. biosolids).

Corrective Action - Mankato determined that the above nonconformance was caused by the definition of an emergency being limited. In response, Mankato expanded emergency procedures to include additional risks. Review by DEKRA's Lead Auditor determined that this corrective action has been effectively implemented. This nonconformance is now closed.

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Minor Nonconformance JS/15-04 NBP BMP Element 12 requires the organization to establish and maintain records of its biosolids management activities. The table identifying records that require control does not include some key records such as operating data (SCADA), land application data, laboratory test results, internal audits.

Corrective Action - Mankato determined that the above nonconformance was caused by an incomplete list controlled records and documents. In response, Mankato reviewed requirements for identifying records that require control and added a list that identifies those records and their control requirements. Review by DEKRA's Lead Auditor determined that this corrective action has been effectively implemented. This nonconformance is now closed.

Minor Nonconformance JS/15-05 NBP BMP Element 14 requires the organization to implement a procedure to investigate any noncompliance and/or nonconformance, Identify the cause and take corrective actions to prevent a recurrence. The corrective / preventive action process was not used as part of follow-up investigation of a high flow / equipment failure event that occurred in June 2014.

Corrective Action - Mankato determined that the above nonconformance was caused by was over, focus was on FEMA documentation rather than root cause investigation following the high flow event. In response, Mankato developed a list of circumstances that would require a corrective action and provided training on using the corrective action process. Review by DEKRA's Lead Auditor determined that this corrective action has been effectively implemented. This nonconformance is now closed.

Minor Nonconformance JS/15-06 NBP BMP Element 17 requires documentation of BMP changes resulting from Management Reviews. The Management Review conducted in January 2015 noted recommendations for improvement, however those recommendations do not include what action will occur and responsibility and timing for the action.

Corrective Action - Mankato determined that the above nonconformance was caused by incomplete recording of improvement information in management review records. In response, Mankato modified requirements for management review records too include responsibility, and timing for the actions in the recommended improvements. Review by DEKRA's Lead Auditor determined that this corrective action has been effectively implemented. This nonconformance is now closed.

4E Biosolids Policy Commitments

The Mankato Biosolids Policy Statement was modified 5/25/15. That statement includes reference to consistency with NBP requirements, which in turn implies commitment to follow principles consistent with the NBP Code of Good Practice. Review of performance in meeting commitments made in the policy demonstrated it has been incorporated into the facility's BMP.

4F Effectiveness Reviews

Communications Program

The Mankato Communications Program includes proactive methods for communicating with interested parties through public meetings, tours and through their website. Interested parties interviewed were complimentary about communication channels with the City of Mankato Wastewater Treatment Facility.

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Biosolids Goals and Objectives Process

4 of 7 biosolids program 2015 objectives for improvement were achieved and 3 additional objectives are in progress. Objectives, targets and action plans are updated for 2016. The process is functioning effectively.

Corrective and Preventive Action Process

The Corrective and Preventive Action process is used to address nonconformances from previous Third Party Audits, internal audits and emergency incidents. The process is functioning effectively.

Management Review

Management involvement has been demonstrated through actions taken regarding issues raised in management reviews and programs for measurement and improvement. The actions taken are consistent with defined objectives. Follow-up actions are recorded. The Management Review process is functioning effectively.

4G Interested Party Interviews

During this audit, DEKRA interviewed representatives from the Minnesota Pollution Control Authority, a user of Mankato biosolids and a representative of the employee union (Teamsters). All were complimentary about Mankato communication and cooperation.

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5. PROCESS AUDITS

5a. Summary

As part of this audit DEKRA audited the following processes that Mankato uses within its biosolids management program and determined the level of conformance of each process with NBP expectations and requirements of the audit criteria.

Process	Primary BMP Elements	Conformance with Applicable BMP Elements
Review of changes affecting BMP		Changes effectively implemented
Biosolids Policy Commitments	2	Conforms
Review of Effectiveness: - Corrective & Preventive Action Process - Goals & Objectives Process - Management Review Process		Processes effective
Review of Internal Audits (& related Corrective Action)	14, 16	Conforms
Communications Program	6, 9, 15	Conforms
Critical Control Points & Operational Controls	3, 10, 13	Conforms
Goals & Objectives Process	5	Conforms, except as noted in nonconformance 16-01
Wastewater treatment, solids conditioning & handling, solids storage)	3, 10, 13	Conforms except as noted in nonconformance 16-02
Management Involvement	2, 7, 17	Conforms
Control of Contractors	various	Conforms except as noted in nonconformance 15-02

5b. Opportunities for Improvement

The following “opportunities” for improving the Mankato biosolids program were noted during the audit. Opportunities do not represent nonconformances and Mankato has no obligation to take any action in response to them.

- The link to the NBP Code of Good Practice could be more clearly stated in the Biosolids Management Policy.
- Identification of environmental impacts used in identifying critical control points could be more specific regarding the impact (e.g. air pollution, water /groundwater pollution, energy use, public health). Operational controls used at critical control points could be categorized as

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“administrative” controls (e.g. SOPs, maintenance procedures, operator skills) and “engineered” controls (e.g. SCADA, flare).

- Consider defining the purpose of the “Critical Control Points” table (BMP Table 3) and reviewing to ensure that purpose is being met. For example: define need for SOPs, define key operator skills, define key equipment for mechanical integrity based on high risk areas.
- Consider adding administrative controls (sign + others) in Waste Receiving Station unloading area.
- A documented process for monitoring and controlling contractors could help in ensuring contractor activities (e.g. land application) are performed in accordance with requirements.
- Reports of results for internal audits could more clearly state the need for corrective actions for audit findings.
- Consider using BMP concepts throughout the plant, including. Key concepts such as critical control points, operational controls, emergency preparedness, operator competency can easily be expanded to include wastewater treatment and effluent disinfection. Other systemic processes such as objectives, internal audits, corrective action, management review can be useful if applied to all Resource Recovery operation

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APPENDICES

List of Participants

The following persons participated in this audit. Other persons provided additional explanations, as needed.

City of Mankato Personnel

Jim Archer	Pretreatment Coordinator
Jim Bruender	General Superintendent
Mary Fralish	Director
Joshua Gad	Plant Foreman
Patti Mettler	Process Chemist / EMS Coordinator
Jason Westphal	Operator

Interested Parties

Sheri Bock	MPCA Biosolids Coordinator
Scott Borgmeier	Farmer Blue Earth County (user of Mankato biosolids)
Jason Westphal	Employee union steward (Teamsters)

List of Documents & Records Reviewed

Biosolids operator logbook
Biosolids Performance report 2015 (March 2016)
Biosolids Policy 11/25/15
BMP Manual (updated 2016)
Communications records 3/22/15
Corrective action plans (various)
Critical control points & operational controls table (12/22/15)
Goals & objectives (2016, 2015)
Internal audit reports 12/28/15, 12/2/15, 11/18/15, 4/8/15
Management review records 1/28/16
SOP – Grit Inspection 4/17/15

END OF REPORT