



**National Biosolids Partnership
Biosolids EMS Audit Report**

**City of Wyoming Clean Water Plant
Wyoming, Michigan**

Audit Dates: December 6 to 8, 2010
+ Follow-up March 4, 2011

Audit Conducted By:

DEKRA Certification, Inc. (Chalfont, PA)

Auditors: Jon Shaver, Biosolids EMS Lead Auditor

Audit Report Date: Draft March 4, 2011

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Technical Review By: Dave Oostindie, City of Wyoming

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1. SUMMARY

DEKRA Certification Inc. (DEKRA), formerly KEMA-Registered Quality Inc., conducted an independent audit of the environmental management system (EMS) being used by the City of Wyoming Clean Water Plant (Wyoming) in managing its biosolids program. The audit was performed December 6 to 8, 2010 at the request of the City of Wyoming. A follow-up (Corrective Action) audit was conducted March 4, 2011. This audit was interim audit #1 following DEKRA's verification of Wyoming's biosolids management program in December 2009.

The purposes of this audit were to:

- Verify that the biosolids EMS being used by the City of Wyoming conforms to expectations and requirements of the NBP *Environmental Management System for Biosolids*, comprised of 17 EMS Elements
- Confirm that the City of Wyoming biosolids management program is functioning as intended, with practices and procedures being performed as documented.
- Examine outcomes the City of Wyoming is achieving by using a systematic approach for managing their biosolids program.

During the audit DEKRA reviewed several processes and activities used by Wyoming in managing its biosolids program and assessed the conformance of these processes with expectations and requirements of the NBP EMS Elements. This scope of the audit was consistent with the interim audit program agreed upon by Wyoming and DEKRA.

The audit determined that:

- The management system is generating positive outcomes, particularly in the areas of public acceptance.
- The City of Wyoming biosolids management system meets requirements of NBP's EMS Elements with one major exception (major nonconformance) and three minor exceptions (minor nonconformances), as described in this report.
- All open nonconformances from prior third party audits have been effectively corrected.
- "Opportunities for improvement" were noted.

Based on results of this audit, DEKRA continues our Verification that the City of Wyoming biosolids management system meets the expectations and requirements of the NBP EMS Elements. We recommend continuing certification within NBP's Biosolids Management (EMS) Program.

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2. AUDIT DETAILS

2A. Local Agency Details

Agency Name: City of Wyoming Clean Water Plant (referred to as Wyoming in this report)

Facility: City of Wyoming Clean Water Plant, Wyoming Michigan

Number of Employees (approximate): 35

Volume of Wastewater Treated (approximate): = average 16 MGD with design maximum 24 MGD

Tons of Biosolids Produced (approximate): 8,000 dry tons per year (Class B)

Biosolids use / Disposition Sites Audited

None

Contractors Participating

None

Interested Parties Interviewed

Michigan DNRE

Interested citizens (1)

2B. Audit Team

DEKRA-Registered Quality Inc. performed this audit on behalf of the National Biosolids Partnership. Mr. Jon Shaver conducted the audit for DEKRA. Mr. Shaver is certified by the NBP as a Biosolids EMS Lead Auditor and Biosolids Auditor. DEKRA asserts that our firm and auditors have an independent relationship with the City of Wyoming that meets criteria established by the NBP for Third Party Audit Companies and Auditors.

2C. Audit Scope and Methodology

The City of Wyoming biosolids program encompasses pretreatment, biosolids stabilization, storage and transportation and end use / disposition, with special attention to practices and management activities that directly support biosolids-related operations, processes and activities.

This interim audit covered the following topics and parts of the Wyoming biosolids program, consistent with NBP requirements and the overall audit program agreed to by DEKRA and Wyoming.

1. Management System Dynamics Review, including reviews of:
 - Significant changes
 - Corrective and Preventive Action Process effectiveness
 - Goals & Objectives Process effectiveness
 - Management Involvement & Review Process effectiveness
 - Outcomes being achieved
2. Verification of effective correction of open nonconformances

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3. Process Audits (covering all applicable requirements of the EMS Elements)
 - Communication Program
 - Corrective and Preventive Action
 - Critical Control Points & Operational Controls
 - EMS Planning (incl Roles, Responsibilities, Public Participation)
 - Goals & Objectives
 - Internal EMS Audits
 - Management Involvement (incl Policy, Mgmt Review)

The audit was conducted by interviewing key personnel involved in Wyoming's biosolids program, observing practices in place and reviewing pertinent documents and records. Interested parties were interviewed and transaction tests were performed to verify management system effectiveness. It was performed using sampling techniques in a manner that is consistent with the NBP Auditor Guidance (August 2007) and DEKRA's Biosolids EMS Audit Planning Guide.

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 any nonconformance in a timely manner. For verification to proceed, effective correction of major nonconformances must be verified by DEKRA within 90 days.

Minor Nonconformance – an isolated departure from requirements that does not represent a systemic failure. Minor nonconformances require timely and effective correction by the agency and verification by a Third Party Auditor during the next third party audit.

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 Wyoming EMS Manual (current version)
- National Biosolids Partnership "EMS for Biosolids" standard (May 2002)
- National Biosolids Partnership Biosolids EMS Third Party Auditor Guidance (August 2007)
- National Biosolids Partnership Code of Good Practice
- National Biosolids Partnership Manual of Good Practice

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3. SUMMARY OF AUDIT RESULTS

3A. Verification Conclusion

Based on the results of this audit, DEKRA has verified that the City of Wyoming biosolids management system continues to meet the expectations and requirements of the National Biosolids Partnership Biosolids EMS Program. DEKRA's verification of that management system will continue and continuing certification within the NBP Biosolids Management Program is recommended.

3B. EMS Strengths

During this audit DEKRA noted the following strengths in the Wyoming biosolids management system.

- A positive culture exists for employee involvement in determining and implementing environmental improvements.
- The pharmaceutical take back program could be best practice.
- Several excellent outcomes from management system, particularly addressing public acceptance

3C. Nonconformances

During this audit, DEKRA found the following nonconformances with respect to the audit criteria.

Minor Nonconformance JS/10-02/Element 14 NBP EMS Element 14 requires progress in completing corrective be tracked and updated to reflect completion. Corrective action taken in response to the Big Crooked Lake complaint event did not reflect completion through verification of the effectiveness of action taken.

Minor Nonconformance JS/10-03/Element 16 NBP EMS Element 16 requires that internal audit results be reported to management in a way that allows action and that corrective action be taken in response to audit findings. The internal audit conducted Oct 27 to Nov 10, 2010 is documented only in audit notes and no corrective action plans are in place for the Audit Finding.

Minor Nonconformance JS/10-04/Element 17 City of Wyoming procedures for management review require review of internal audit results and changing circumstances. The Management Review conducted June 2010 did not include a review of internal audit results or changing circumstances.

3D. Nonconformances Closed as Part of This Audit

During the audit of the City of Wyoming's biosolids management system, DEKRA found one major nonconformance for which the City of Wyoming took immediate corrective action. DEKRA reviewed the effectiveness of the corrective action. The results of DEKRA's review are summarized below.

Major Nonconformance JS/10-01/Element 5 NBP EMS Element 5 requires biosolids program goals and objectives to be SMART (Specific, Measurable, Achievable, Relevant, and Time-bounded), and updated on a regular basis. Some biosolids program objectives are not measurable and several objectives have passed expected timing and have not been updated.

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Corrective Action – In response to this nonconformance, the City of Wyoming reviewed and modified their biosolids goals and objectives based on 4 “Strategic Focus Areas” (environmental performance, quality, regulatory compliance and interested party relations). Objectives were made measurable (e.g. reduce energy use by 50% against 2009 benchmark) and action plans, responsibilities and target dates were established. This nonconformance is now closed.

3E. Nonconformances from Previous Audits

All nonconformances from previous DEKRA audits have been closed (see Section 4 of this report). No nonconformances remain open.

3F. Plans for Closure of Open Nonconformances

Wyoming will submit a Corrective Action Plan for each nonconformance found during this audit for approval by DEKRA’s Lead Auditor and will correct the nonconformances in a timely manner.

Verification of effective correction for the minor nonconformances found during this audit will occur during the next Third Party Audit, which is currently planned to occur in December 2011.

3G. Opportunities for Improvement

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

Biosolids Policy

- The Biosolids Management Policy could be shortened by removing some redundancy.

Communications

- It could be worthwhile to determine why no members of the public attended the Big Crooked Lake public meeting as a way of improving external communications.

Operational Control

- SOPs could include reference (or description) for significant risks, including compliance, quality, relations with interested parties, environmental and health and safety.

Corrective and Preventive Action

- Formal corrective action could have been used to analyze, correct and prevent lack of understanding of emergency procedures.

Management Involvement

- A formal “Management of Change” procedure could help in planning significant changes, such as new / modified legal requirements or new equipment.

Contractor Control

- Contractor performance with respect to management system expectations could be discussed with the contractor in a formal meeting to help identify opportunities for improvement.

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3H. Agreements

The City of Wyoming will develop corrective action plans for each nonconformance found during this audit and will submit those plans to DEKRA's Lead Auditor for approval. Wyoming will implement the approved corrective action plans in a timely manner and review the corrections internally within 6 months. The effectiveness of actions taken to correct nonconformances will be verified during the next third party audit.

This audit was the first interim audit in the initial verification / certification cycle for the City of Wyoming's biosolids management system. The next Interim Audit will take place in December 2011 and will be a Third party Audit. Wyoming will make arrangements for that audit directly with DEKRA.

3I. 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. Anyone who may need help in understanding the appeals process should contact the National Biosolids Partnership staff, Mr. Jim Cox by e-mail: jcox@wef.org.

An appeal process is available to persons concerned about the methods and/or scope of this audit. Further information about this appeal process can be obtained directly from DEKRA (contact Pierre Salle, pierre.salle@DEKRA.com or Jon Shaver jon.shaver@DEKRA.com) or from NBP (contact Jim Cox, jcox@wef.org).

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4. MANAGEMENT SYSTEM DYNAMICS

The following summarizes DEKRA's review of the dynamics of the City of Wyoming biosolids management system. The National Biosolids Partnership Biosolids EMS Auditor Guidance (August 2007) and the DEKRA Audit Planning Guide for Biosolids EMS Audits were used as guides.

4A Outcomes

The City of Wyoming biosolids program is improving through the use of their management system. The following outcomes within the past two years were confirmed.

Interested Party Relations

- Meetings with local community association to discuss odor reduction have influenced operations, developed better credibility and helped recover relationship with residents near the wastewater treatment plant.

Quality Practices

- Pharmaceutical take back program has expanded to west Michigan region, increased participation (+75 pharmacies in past year), been recognized by MDNRE and is consistent with proposed Safe Drug Disposal Act.
- Restructuring agreement with land application contractor to include management system requirements has increased contractor awareness, City of Wyoming oversight, lowered liability, lowered costs (\$200K/year) and reduced transportation cost.

Environmental Performance

- GVRBA has started sludge dewatering operation providing a cost effective beneficial disposal option (landfill with methane recovery), reduced onsite storage and resulted in regional cooperation for State revenue sharing. Shared resources save \$20 million capital over 20 years and \$350K/year operating cost.

Regulatory Compliance

- Installation of scrubbers for off gas from primary clarifiers and biosolids storage tanks has reduced odors leading to improved public acceptance and will likely allow removal of consent decree.

4B Significant Changes

The following significant changes affecting the City of Wyoming biosolids program were completed in 2010:

- Organizational change – Tom Kent has been appointed Deputy Director of Public Works and Craig Smith has been appointed Operations Superintendent
- The GVRBA dewatering facility shared with Grand Rapids is running and producing dewatered sludge for disposition in landfills
- An off-gas collection and scrubbing (carbon) operation has been installed to reduce air emissions and odors

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- The contract with Synagro for biosolids transportation and land application was restructured to include EMS expectations

Implementation of these changes within the City of Wyoming biosolids program was reviewed during this audit (transaction tests). An effective management of change procedure was used to plan and install each change.

4C Revisions to the Management System and Documentation

Changes made to the EMS Manual included combination of similar elements in an attempt to describe the system as a series of processes.

4D Correction of Nonconformances From Previous Third Party Audits

Corrective action taken in response to nonconformances from previous Third party Audits of the Kent County Biosolids Management System and the status of those nonconformances are summarized below.

Minor Nonconformance JS/09-06/Element 16 NBP EMS Element 16 requires that an internal audit program be used to periodically analyze performance against program requirements, including performance against biosolids policy commitments, and to assess contractor performance. Internal audits performed to date have analyzed program requirements, but have not included assessment of how well policy commitments are being met or assessment of contractor performance.

Corrective Action - The City of Wyoming determined that the cause of this nonconformance was lack of understanding. In response they reviewed NBP requirements for internal audits and included assessment of policy in a documented management review and include assessment of contractor performance in documented inspections. This nonconformance is now closed.

Minor Nonconformance DS/09-08/Element 1 NBP element 12 requires that documents and records be controlled. The EMS manual does not reference a procedure or describe in sufficient detail the actual procedures that will be followed to ensure documents are controlled.

Corrective Action - The City of Wyoming determined that the cause of this nonconformance was lack of understanding. In response they updated their list of documents and records that require control (in EMS Manual). This nonconformance is now closed.

Minor Nonconformance DS/09-09/Element 13 NBP element 13 requires that monitoring and measurement of program performance be performed at critical control points. Monitoring and measurement systems are in place for some, but not all critical control points.

Corrective Action - The City of Wyoming determined that the cause of this nonconformance was incomplete documentation. In response they updated the table listing critical control points and operational controls and included monitoring / measurement required. This nonconformance is now closed.

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5. RESULTS - PROCESS AUDITS

The following describes the results of DEKRA's audit of processes the City of Wyoming is using in managing biosolids activities and the level of conformance of each process with applicable requirements of the EMS Elements.

5A Communication Program

The City of Wyoming Communications Program includes proactive methods for communicating with interested parties, including the public and regulators. Communications occurs through public meetings, City Council meetings, the City of Wyoming website and an annual Biosolids Program Performance Report. Internal communications occurs through regular staff meetings and periodic meetings with contractors. An effective employee input program is in place for suggesting operational improvements, including environmental performance. A Biosolids Program Performance Report was issued in June 2010 and is available on the City of Wyoming website.

Audit Results

The process described above is functioning effectively and meets NBP expectations and requirements of the EMS Elements.

5B Corrective and Preventive Action

Formal corrective action plans, including cause analysis, responsibilities and timing, are used to address nonconformances found during third party and internal audits. The Corrective and Preventive Action process was used to address nonconformances from previous DEKRA Third Party Audits. Those nonconformances were effectively corrected (see Section 4 of this report).

Audit Results

The process described above is functioning effectively and meets NBP expectations and requirements of the EMS Elements, except as noted below.

Minor Nonconformance JS/10-02/Element 14 NBP EMS Element 14 requires progress in completing corrective be tracked and updated to reflect completion. Corrective action taken in response to the Big Crooked Lake complaint event did not reflect completion through verification of the effectiveness of action taken.

5C Compliance (with legal and other requirements)

Legal and other requirements are identified and tracked by the Plant Superintendent. The EMS Team determines applicability and actions to ensure compliance. Operations are monitored continuously, including laboratory testing, to ensure compliance. Any departures from compliance requirements are immediately addressed using the corrective and preventive action process. Monthly reports are sent to MDNRE for biosolids use.

Audit Results

The process described above is functioning effectively and meets NBP expectations and requirements of the EMS Elements.

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5D Critical Control Points & Operational Controls

The EMS Team determines the need for operational controls and related critical control points. Applicable controls and CCP are noted in the EMS Manual and discussed with operators. Critical control points are monitored to ensure compliance (with legal and other requirements), quality and environmental performance.

Audit Results

The process described above is functioning effectively and meets NBP expectations and requirements of the EMS Elements.

5E EMS Planning (incl Roles, Responsibilities, Public Participation)

The EMS Team meets quarterly to discuss procedures, communications, objectives and events impacting critical control points and operational controls... The goal is to have a “stable, successful biosolids program”. Special meetings are held to address immediate concerns (e.g. complaint from Big Crooked lake residents).

Audit Results

The process described above is functioning effectively and meets NBP expectations and requirements of the EMS Elements.

5F Goals & Objectives

Biosolids goals are established on a long term basis considering strategic direction and City of Wyoming input. Specific performance objectives are established by the EMS Team on a shorter term basis (1 to 2 years). Two of five objectives for 2009 / 2010 were achieved. Some objectives were canceled or deferred.

Audit Results

The process described above is functioning effectively and meets NBP expectations and requirements of the EMS Elements, except as noted below:

Major Nonconformance JS/10-01/Element 5 NBP EMS Element 5 requires biosolids program goals and objectives to be SMART (Specific, Measurable, Achievable, Relevant, and Time-bounded), and updated on a regular basis. Some biosolids program objectives are not measurable and several objectives have passed expected timing and have not been updated.

5G Internal EMS Audits

Internal audits conducted since the previous Third Party Audit were reviewed. The most recent internal audit of the City of Wyoming EMS was conducted 10/27/10 and results were discussed by the EMS Team, although no written report has yet been issued. Corrective action plans are in place to address findings from that audit.

Audit Results

The process described above is functioning effectively and meets NBP expectations and requirements of the EMS Elements, except as noted below.

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Minor Nonconformance JS/10-03/Element 16 NBP EMS Element 16 requires that internal audit results be reported to management in a way that allows action and that corrective action be taken in response to audit findings. The internal audit conducted Oct 27 to Nov 10, 2010 is documented only in audit notes and no corrective action plans are in place for the Audit Finding.

5H Management Involvement (incl Policy, Mgmt 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 goals and objectives. The EMS Team, comprised of senior managers, meets semi-annually to review the performance of the biosolids management system. Actions arising from the reviews are recorded.

Audit Results

The process described above is functioning effectively and meets NBP expectations and requirements of the EMS Elements, except as noted below.

Minor Nonconformance JS/10-04/Element 17 City of Wyoming procedures for management review require review of internal audit results and changing circumstances. The Management Review conducted June 2010 did not include a review of internal audit results or changing circumstances.

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APPENDICES

List of Participants

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

City of Wyoming Personnel

Tom Eagleson	ES Inspector
Myron Erickson	Lab Services Manager
Tom Kent	Deputy Director of Public Works
Dave Oostinde	Environmental Services Supervisor
Craig Smith	Utility Plant Superintendent
Aaron Vis	ES Inspector

Other

Nancee Dutcher	Interested party (citizen)
Mike Worms	District Supervisor – MDNRE

Appendix 1 List of Documents & Records Reviewed

Big Crooked lake sample locations & results map 6/30/10	Internal audit notes 10/27/10
Biosolids Land Application Permit notification log	Internal audit report 9/16/09
Biosolids Program Performance Report 6/30/10	Letter to MDNRE 7/14/08
Biosolids Value Chain – critical control points & operational controls	List of Legal and Other Requirements
Corrective action 11/16/09 – third party audit findings	Notification to interested parties re Third party Audit
Corrective action reports (various)	NPDES permit
E-mails (various)	Offsite response SOP
Emergency Response Plan 11/1/10	Residual Management Plan
EMS Manual	SOPs (various)
Fecal results analysis	Synagro site identification form 11/29/10
Field survey report	Synagro SOPs (various)
Goals & Objectives table	Table in EMS Manual Element 3 – Critical Control Points & Operational Controls
Grand Rapids Press article 8/4/10	Training records (various)
GVRBA biosolids transportation & land application bid document	Treatment Plant Operator June 2010
ICP 11/1/09	Verification of corrective action 9/29/10

END OF REPORT