

# National Biosolids Partnership Biosolids EMS Interim Audit Report

# Kent County Regional Wastewater Treatment Facility Milford, Delaware

Audit Report Date: November 27, 2006

# Audit Conducted By:

KEMA-Registered Quality, Inc. (Chalfont, PA)

Auditor(s): Mr. Jon Shaver, Biosolids EMS Lead Auditor

Audit Dates: November 20 to 22, 2006

Report Written By: Jon Shaver, Biosolids EMS Lead Auditor

Approved By: KEMA-Registered Quality Inc.



# Kent County Regional Wastewater Treatment Facility Interim Audit #1, November 20 - 22, 2006

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#### 1. SUMMARY

KEMA-Registered Quality Inc. (KEMA) conducted an independent audit of the environmental management system (EMS) being used by Kent County Regional Wastewater Treatment Facility (KCRWTF) in managing its biosolids program. This was interim audit #1 following verification of the KCRWTF biosolids EMS on December 2, 2005 and was performed at the request of the National Biosolids Partnership.

The purposes of this audit were to:

- Verify that the biosolids EMS being used by Kent County Regional Wastewater Treatment Facility conforms to requirements of the National Biosolids Partnership (NBP) Environmental Management System for Biosolids, comprised of 17 EMS Elements
- Confirm that the Kent County Regional Wastewater Treatment Facility biosolids EMS is functioning as intended, with practices and procedures being performed as documented.
- Determine if Kent County Regional Wastewater Treatment Facility is achieving desired outcomes through the use of their biosolids EMS.

# A. Audit Scope and Methodology

The Kent County Regional Wastewater Treatment Facility Biosolids EMS 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.

The scope of this audit included the following and was consistent with NBP requirements for biosolids EMS interim audits and the overall audit program agreed to by KEMA and Kent County Regional Wastewater Treatment Facility.

- 1. Verification of open nonconformances from previous KEMA audits (October 2005)
- 2. Review of significant biosolids program changes
- 3. Audits of the following processes
  - Biosolids Policy
  - Biosolids Production (including Stabilization, Conditioning and Handling)
  - Biosolids Storage & Transportation
  - Biosolids Use & Disposition (land application)
  - Communication
  - Corrective and Preventive Action
  - Critical Control Points (Identification)
  - Planning & Public Participation
  - Goals & Objectives
  - Internal EMS Audits
  - Maintenance Field



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- Maintenance Plant
- Management Involvement & Review
- 4. Examination of EMS Outcomes (regulatory compliance, interested party relations, environmental performance, quality practices)

Qualified auditors performed this audit, following NBP Auditor Guidance (March 2006) and KEMA's Biosolids EMS Audit Planning Guide. Using sampling techniques, the auditor observed practices in place, interviewed key persons and reviewed pertinent documents and records to assess the systematic performance of each process audited. Representative interested parties were interviewed, as agreed and arranged by Kent County Regional Wastewater Treatment Facility.

# **B.** Summary of Audit Findings

#### **EMS Strengths**

KEMA noted the following strengths in the Kent County Regional Wastewater Treatment Facility biosolids program.

- The EHSMS reacted effectively following a minor chlorine leak in July, including investigation of incident, corrective action, review and revision of emergency plans/procedures, responsibilities, documentation, with appropriate communication.
- Kent County received positive comments from local interested parties about their operating improvements in recent years and confidence about their ability to assume direct operating responsibility for biosolids production.
- The Pretreatment Environmental Excellence Program (PEEP) has been effective in encouraging industrial users to reduce polluting discharges & conserving water.
- DNREC is complimentary about their relationship with KCRWTF.

#### **EMS Outcomes**

The Kent County Regional Wastewater Treatment Facility biosolids program is improving through the use of their EMS. Recent outcomes in the areas of regulatory compliance, environmental performance, relations with interested parties and biosolids quality practices are described in the "Detailed Audit Results" section of this report.

#### **Nonconformances**

During this audit, KEMA found five (5) minor nonconformances with respect to the audit criteria. These nonconformances are described in the "Audit Results" section of this report.

#### Opportunities for Improvement

KEMA noted several opportunities for improvement in the Kent County Regional Wastewater Treatment Facility biosolids EMS. These are described in the detailed report for each audit (Audit Results).



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#### C. Verification Statement

Based on the results of this audit, KEMA has verified the management system for the Kent County Regional Wastewater Treatment Facility biosolids program continues to meet the expectations and requirements of NBP's Biosolids EMS Program. KEMA's verification of KCRWTF biosolids EMS continues.

# D. Agreements

KCRWTF has agreed to prepare written plans for correcting the nonconformances identified during this audit and to send these plans to KEMA's Lead Auditor by November 30, 2006. KEMA will review these plans for consistency with NBP requirements and, if acceptable, approve them for implementation in correcting the nonconformances. Kent County Regional Wastewater Treatment Facility will implement the approved plans in a timely manner and will review the corrections internally within 6 months. The effectiveness of actions taken to correct nonconformances will be reviewed during the next third party audit. KCRWTF and KEMA have agreed that interim audit #2 will be a third party audit and that KCRWTF will make arrangements with the National Biosolids Partnership for that audit to occur before December 1, 2007.

KCRWTF and KEMA have agreed upon an audit plan for all 4 interim audits.

## E. 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. Eugene DeMichele at 703-684-2438, or send an e-mail to: edemichele@wef.org.

In addition, KCRWTF may, if it chooses, appeal the manner in which this audit was conducted and/or any findings directly to KEMA by contacting KEMA's headquarters at 4377 County Line Road, Chalfont PA. KEMA will review any such appeal to verify that the audit and/or any findings are consistent with acceptable management system auditing practices.



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#### 2. AUDIT DETAILS

# A. Agency Details

Agency name, Location: Kent County Regional Wastewater Treatment Facility, Milford Delaware

Biosolids production location(s): same as above

Number of employees: 30 (including biosolids production & wastewater treatment)

Wastewater treated: average 10 to 12 million gallons per day

Biosolids production: approximately 7000 dry tons per year (100% Class A)

Audits Conducted (all applicable requirements of the 17 EMS Elements audited)

**EMS Outcomes Examination** 

Processes scheduled for audit during interim audit #1 were audited.

Transaction tests – response to chlorine leak, expansion of EHS management system scope and policy to entire treatment plant.

#### Biosolids use / Disposition Sites Audited

Blessing Farm (near Harrington Delaware)

#### **Contractors Audited**

None (not applicable)

#### Third Parties Interviewed During Audit

Mr. Bill Yonker (interested party, member SAB, neighbor)

Mr. Robert Underwood (DNREC – Delaware State Biosolids Coordinator)

### **Audit Team**

The National Biosolids Partnership assigned KEMA Quality Inc. to perform this audit on their behalf. Mr. Jon Shaver performed the audit for KEMA.

KEMA asserts that the relationship that our firm and auditors have with KCRWTF is completely independent and meets criteria established by the National Biosolids Partnership for Third Party Audit Companies and Third Party Auditors.

#### B. Reference Materials

The following documents were used as references during this audit:

Kent County Regional Wastewater Treatment Facility EHS Management System Manual National Biosolids Partnership "EMS for Biosolids" standard (May 2002) National Biosolids Partnership Biosolids EMS Auditor Guidance (March 2006)



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National Biosolids Partnership Code of Good Practice National Biosolids Partnership Manual of Good Practice

# C. Definitions of Audit Findings & Required Corrective Action

<u>Major Nonconformance</u> – a serious omission from requirements and/or other departure that represents, or could cause, a systemic failure. Major nonconformances must be corrected within 90 days for verification to proceed.

<u>Minor Nonconformance</u> – an isolated departure from requirements that does not represent a systemic failure. Minor nonconformances require timely and effective correction and verification by the Third Party Auditor.

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



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#### 3. SUMMARY OF AUDIT RESULTS

# A. EMS Changes

KCRWTF has implemented the following changes related to the use of its biosolids program since the previous KEMA audit (November 2005).

- Parts of the EHSMS Manual were revised. These modifications do not significantly affect environmental impacts or critical control points.
- KCRWTF has assumed direct responsibility for operating the biosolids production unit.

KEMA determined that the changes noted above do not require any audits beyond the scope of audits planned in the Audit Program agreed between KCRWTF and KEMA.

#### B. EMS Outcomes

KEMA examined the outcomes being achieved by KCRWTF through the use of an environmental management system in managing their biosolids program. The results are summarized below. It is evident that many of these outcomes influence performance in more than one area.

#### Regulatory Compliance

Improved field maintenance and increased interaction with food service users has practically eliminated sanitary sewer overflows, resulting in reduced pollution, reduced potential for regulatory fines, improved plant operation (lower FOG) and reduced labor costs. Total value is estimated to be cost reduction of \$30K - \$80K /year.

#### **Environmental Performance**

Installation of automated controls on air supply from blowers to aeration basins has resulted in more consistent primary treatment operation, reduced energy usage rates (equivalent to about \$50K/year) and better nitrification allowing TMDL and biosolids quality requirements to be more easily met.

Regular monitoring has enabled usage rates for chlorine and sulfur dioxide continue to decrease (further 10% reduction for SO2 and 20% for Cl2), resulting in improved water quality and approximately \$10K/year lower material cost.

# **Biosolids Quality Practices**

Encouragement for upstream industrial dischargers to conserve water and install equalization equipment has reduced incoming flow by 1MGD, improved incoming wastewater quality and reduced waste activated sludge and biosolids production rates.

#### Interested Party Relations

Certification within the NBP Biosolids Program and certification to ISO-14001:2004 and OHSAS-18001:1999 were recognized by Levy Court and the Sewer Advisory Board as a positive step in continuing to improve operations at KCRWTF.



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Interested parties, including the Sewer Advisory Board, Levy Court and DNREC have shown confidence in KCRWTF ability to assume direct responsibility for operating the Biosolids Production operations. This confidence was brought about in large part by credibility generated in recent years for the KCRWTF Biosolids Program. Lack of contractor involvement is estimated to save approximately \$200K / year in operating costs.

# C. Summary of Audit Results by EMS Element

The following summarizes the results of this audit related to the 17 EMS Elements. Details of the process audits are described in Section 4 of this report.

	EMS Element	Status (@ 11/22/06)	Nonconformances
1.	Documentation of EMS for Biosolids	Conforms	None
2.	Biosolids Management Policy	Conforms	None
3.	Critical Control Points	Conforms	None
4.	Legal and Other Requirements	Conforms	None
5.	Goals and Objectives for Continual Improvement	Conforms	None
6.	Public Participation in Planning	Conforms	None
7.	Roles and Responsibilities	Conforms	None
8.	Training	Conforms	None
9.	Communication	Conforms	None
10.	Operational Control of Critical Control Points	Minor Nonconformance	Minor Nonconformance JS / 06-02
		Noncomornance	Many handwritten changes on equipment control devices and operating instructions used in the biosolids production areas indicate inadequate control of those operations.
11.	Emergency Preparedness and Response	Conforms	None
12.	EMS Documentation, Document Control and Recordkeeping	Conforms	None



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EMS Element	Status (@ 11/22/06)	Nonconformances
13. Monitoring and Measurement	Conforms	None
Nonconformances:     Preventive and Corrective     Action	Conforms	None
15. Biosolids Program Periodic Performance Report	Conforms	None
16. Internal EMS Audits	Minor Nonconformance	Minor Nonconformance JS / 06-03 Internal audits address EHSMS requirements, however reports do not reference review of policy or objectives, indicating that the audits have not fully evaluated the extent that policy commitments are being met or effectiveness of the objectives / targets process.  Minor Nonconformance JS / 06-04 Reports of internal audit results do not describe conclusions related to the audit purpose and present results without much background, which does not readily enable management to make decisions based on audit results.
17. Periodic Management Review of Performance	Minor Nonconformance	Minor Nonconformance JS / 06-05  Some information being provided for management reviews is either very detailed or provided only orally, thus not easily enabling evaluation of overall performance of the system and its processes.  Minor Nonconformance JS / 06-06  Management Review records show only the topics discussed, thus not describing or recording discussions about EHS performance, changing circumstances or policy commitments.

Note – identification of nonconformances may not be sequential since some nonconformances found during the integrated ISO-14001, OHSAS 18001 & Biosolids EMS audit do not apply to the biosolids program.



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# D. Opportunities:

#### Management Involvement

- Management of change plans for assuming responsibility for biosolids production operations at KCRWTF should be documented.
- Management Reviews could focus more on process improvement instead of individual situations.

## Policy

3. Wording in the Policy, especially section A, could lead to incorrect understanding of expectations for standards used as guidelines.

#### Communications

4. Performance results, such as reduced chlorine usage, pretreatment incidents / abnormalities, tons biosolids shipped, could be communicated internally (perhaps using graphs) to generate discussion. Examples: Cl2 use rate, energy use rate, biosolids tons shipped, call-outs.

#### Objectives, Targets & Programs

5. Record status of progress in achieving objectives, targets & programs in more detail than "date completed".

#### Critical Control Points / Operational Controls

- Consider identifying system-wide critical control points based on analysis of significant environmental impacts, OHS hazards and quality and taking into account best practices (e.g. NBP MoGP) and legal & other requirements.
- 7. It could be helpful to reference desired results, "critical control points", operating parameters and consequences of departure in written SOPs.

#### **Wastewater Operations**

- 8. The wooden shed near SO2 area contains flammable materials, however there are no warning labels on / near the shed and there is no fire extinguisher nearby.
- Empty chlorine cylinders (near north gate) should be painted or properly tagged to avoid miscommunication of chlorine hazard.

#### **Biosolids Land Application**

10. More frequent sampling of grit used in biosolids could be more consistent with need to sample land applied biosolids monthly.

#### Waste Management

11. A written process / procedure could help in managing the various waste situations that can occur.



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# **Internal Audits**

12. Measures of performance for expected outcomes from EHSMS processes could be developed and reviewed as part of the internal audit process.

# **Corrective & Preventive Action**

13. Consider using a "top corrective action" step and analysis of root causes to identify cause of causes and subsequent preventive action.

#### Documentation

14. Using position / title instead of proper names in EHSMS documents and SOPs could help avoid need for changing these document.



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#### 4. DETAILED AUDIT RESULTS

The NBP Auditor Guidance (March 2006) was used as a guide in performing each of the audits described below. The audits of each process covered all applicable requirements of the EMS Elements.

### A. Review of Open Nonconformances

KEMA auditors reviewed corrective action taken in response to the following nonconformances that remained open from the November 2005 KEMA third party Verification Audit. Numbering of nonconformances may not be sequential since some nonconformances were closed during a follow-up audit in November 2005 and some nonconformances identified for ISO-14001 and/or OHSAS-18001 may not apply to the Biosolids Program.

Minor Nonconformance 05-04 / Biosolids EMS El 3 The link between environmental impacts and operational controls does not correctly identify some of the applicable critical control points.

Corrective Action: Review of corrective action taken by Kent County in response to the above finding determined that applicable critical control points (consistent with NBP Manual of Good Practice) have been added to the table identifying significant environmental aspects and related operational controls. This nonconformance is now closed.

Minor Nonconformance 05-07 / Biosolids EMS EI 9 There are indications that the external communications program is not sufficiently proactive. Some key interested parties (such as regulators) have not received information about the EMS and a lack of consideration exists in the Communications Program for encroaching residential development noted in public plans for the area.

Corrective Action: Review of corrective action taken by Kent County in response to the above finding determined that the Kent County website is readily accessible and provides information about the KCRWTF biosolids program and a Biosolids Program Performance Report was issued publicly in March 2006. A goal for developing a long range biosolids strategy includes plans for communication about the biosolids program. This nonconformance is now closed.

Minor Nonconformance 05-08 / Biosolids EMS EI 10 Identified operational controls (MS2-07-P01) do not include or reference maintenance procedures.

Corrective Action: Review of corrective action taken by Kent County in response to the above finding determined that EHSMS procedure 2-07-P01 (developing operational controls) has been modified to reference maintenance activities such as preventive maintenance and calibration. This nonconformance is now closed.

Minor Nonconformance 05-14 / Biosolids EMS El 11 Emergency response information does not include or reference hazards, emergency procedures and contacts for the biosolids stabilization / production operation and emergency plans /procedures for that operation are not readily available.



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Corrective Action: Review of corrective action taken by Kent County in response to the above finding determined that emergency information and contacts for biosolids production operations has been added to the Emergency Action Plan. This nonconformance is now closed.

Minor Nonconformance 05-10 / Biosolids EMS El 13 Biosolids monitoring procedures (02-14-P01) do not sufficiently state practices for some potential quality problems.

Corrective Action: Review of corrective action taken by Kent County in response to the above finding determined that procedure 2-14-P01 (corrective and preventive action) has been modified to include quality monitoring and corrective action for quality concerns. This nonconformance is now closed.

Minor Nonconformance 05-05 / Biosolids EMS EI 14 The corrective action for a nonconformance found in July 2005 internal audit regarding employee awareness of significant aspects and consequences of departure from defined controls has not been effectively implemented.

Corrective Action: Review of corrective action taken by Kent County in response to the above finding determined that employees were involved in updating significant aspects and OHS hazards and understand these concepts and the related consequences of departure from specified controls. This nonconformance is now closed.

Minor Nonconformance 05-12 / Biosolids EMS EI 14 The Corrective and Preventive Action process description (02-15-P01) has not been sufficiently established, particularly with respect to corrections from incident investigations and complaints.

Corrective Action: Review of corrective action taken by Kent County in response to the above finding determined that an incident in July 2006 involving chlorine leak was properly investigated and corrective actions were implemented, including review & revision of emergency plans. This nonconformance is now closed.

Minor Nonconformance 05-11 / Biosolids EMS El 16 The various system performance assessments being done have not been integrated into a single internal audit process for assessing EMS performance.

Corrective Action: Review of corrective action taken by Kent County in response to the above finding determined that procedure 2-16-P01 was revised to describe internal audit procedures for the full EHSMS and the internal audit conducted 11/1/06 covered the complete EHSMS. This nonconformance is now closed. See also nonconformances 06-03 and 06-04.

Minor Nonconformance 05-13 / Biosolids EMS EI 17 Management reviews do not provide an assessment of the suitability, adequacy and effectiveness of the full EMS.

Corrective Action: Review of corrective action taken by Kent County in response to the above finding determined that Core Team meetings conducted bi-monthly during 2006 have suggested appropriate changes to improve the suitability, adequacy and effectiveness of the EHSMS. This nonconformance is now closed. See also nonconformances 06-05 and 06-06.



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The above reviews have verified that all open nonconformances from the previous audits have been effectively corrected.

## B. Audit – Biosolids Policy

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Element 2.

#### **Process Description**

The EHS and Biosolids Policy was authorized by Levy Court 3/31/05 and commits KCRWTF to work in accordance with the NBP Code of Good Practice, comply with regulations, prevent pollution, improve workplace safety & health and continually improve operations. The policy is documented in the EHSMS Manual, posted openly throughout the plant and on the Kent County website. All personnel interviewed, including interested parties, were aware of the Policy and how it is applied.

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.

#### **Opportunities**

 Wording in the Policy, especially section A, could lead to incorrect understanding of expectations for standards used as guidelines.

#### C. Audit – Biosolids Production (Stabilization, Conditioning & Handling)

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Elements 3, 7, 10 & 13.

# **Process Description**

Solids from clarifiers and from some outside agencies are filtered, stabilized (lime addition) and dried to produce a Class A product. At times, grit from grit removal process is blended into biosolids. Monthly sampling is done to verify quality. SOPs and preventive maintenance procedures (hard copy) are available and being followed. Operating parameters are based on compliance requirements and DNREC personnel indicated no compliance concerns have occurred in recent years. Operators understand and follow those procedures.

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.

## **Opportunities**



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- It could be helpful to reference desired results, "critical control points", operating parameters and consequences of departure in written SOPs.
- More frequent sampling of grit used in biosolids could be more consistent with need to sample land applied biosolids monthly.

# D. Audit – Biosolids Storage & Transportation

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Elements 3, 7, 10 & 13.

#### **Process Description**

Class A biosolids are stored in a roofed storage area adjacent to the Biosolids Production process. Truckdrivers transfer a predetermined quantity to their trucks, weigh in and out (records kept) and transport biosolids to pre-arranged sites. SOPs are available for the Ag Operations, including transportation, and drivers understand and follow those procedures. Emergency spill procedures could not easily be located on a truck and the Ag Operations Supervisor took immediate corrective action, including driver training. Biosolids could be stored for up to 2 weeks at the land application site.

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.

#### E. Audit – Communications Process

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Elements 6, 9 and 15.

# **Process Description**

KCRWTF communicates with interested parties in public meetings, including Sewer Advisory Board and Levy Court meetings, and interaction through their website. Annual biosolids application information / reports are submitted to State regulators and an annual Biosolids Performance Report is issued and available on the website. The Delaware Biosolids Coordinator interviewed expressed satisfaction with communication channels established between DNREC and KCRWTF. Information about third party audits is posted on the website and discussed in public meetings.

Internal communications about the EHSMS occurs during staff and management meetings and during annual awareness training sessions for all employees.

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.



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#### Opportunities

 Performance results, such as reduced chlorine usage, pretreatment incidents / abnormalities, tons biosolids shipped, could be communicated internally (perhaps using graphs) to generate discussion. Examples: Cl<sub>2</sub> use rate, energy use rate, biosolids tons shipped, call-outs.

#### F. Audit - Corrective and Preventive Action Process

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Element 14.

#### **Process Description**

The Corrective and Preventive Action process is used to investigate and correct nonconformances identified during audits, compliance assessments, incidents and accidents (including near-misses) and any lack of progress towards targets. The process worked effectively following a minor chlorine leak in July 2006.

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.

#### Opportunities

 Consider using a "top corrective action" step and analysis of root causes to identify cause of causes and subsequent preventive action.

#### G. Audit - Critical Control Points

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Element 3.

#### **Process Description**

Critical Control Points are identified as part of the analysis of significant aspects and occupational health and safety hazards for all wastewater utility operations, including biosolids value chain steps. The process includes consideration of environmental aspects, health and safety hazards, legal and other requirements. A table identifying these aspects and critical control points is available in the EHSMS Manual. Identified critical control points are consistent with the NBP "Manual of Good Practice".

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.



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#### Opportunities

 Consider identifying system-wide critical control points based on analysis of significant environmental impacts, OHS hazards and quality and taking into account best practices (e.g. NBP MoGP) and legal & other requirements.

# H. Audit – Planning& Public Participation Process

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Elements 6 & 7.

#### **Process Description**

The EHSMS being used by KCRWTF is an integrated system that covers the entire wastewater plant operations from pretreatment through biosolids disposition. The use of this management system was authorized in 2004 by Levy Court and the Environmental Program Manager was assigned Management Representative and EMS Coordinator responsibilities. Planned arrangements for the management system include conformance with NBP expectations (EMS Elements), ISO-14001:2004 and OHSAS 18001:1999 and participation in EPA MUNI and National Performance Track programs. EHSMS effectiveness and improvement opportunities are discussed during Core Team meetings and implemented with authority from the Works Director. Input from interested parties used in planning the EHSMS and establishing performance objectives is received through public meetings (Sewer Advisory Board and Levy Court) and from the Kent County website.

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.

#### **Opportunities**

None

#### I. Audit – Goals & Objectives Process

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Elements 5 & 13.

#### **Process Description**

Biosolids objectives and targets are included in the overall EH&S objectives for the wastewater plant. These objectives are developed during Core Team meetings and presented to Levy Court for approval as part of the annual budgeting process. Each objective has specific, measurable targets and action plans (programs) that designate responsibility and expected completion date. At least one objective exists for each of the 4 outcomes areas expected by NBP. Status of achieving targets is reviewed during Core Team meetings held approximately every other month.



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#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.

### **Opportunities**

Record status of progress in achieving objectives, targets & programs in more detail than "date completed".

#### J. Audit – Internal EMS Audit Process

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Elements 14 & 16.

# **Process Description**

Internal audits of the complete EHSEMS were conducted in November 2006 (by KCRWTF) and December 2005 (by contractor). Audit results, including those from third party audits, are discussed at Core Team management meetings and findings are handled through the Corrective and Preventive Action Process. Auditors are selected by the Environmental Program Manager based on experience with the operation(s) being audited. The documented intention is to conduct internal audits at least annually to assess performance and to include annual third party audits as part of the process to assess consistency with NBP, ISO-14001 and OHSAS-18001 requirements.

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations, except as noted below:

Minor Nonconformance JS/06-03 Internal audits address EHSMS requirements, however reports do not reference review of policy or objectives, indicating that the audits have not fully evaluated the extent that policy commitments are being met or effectiveness of the objectives / targets process.

Minor Nonconformance JS/06-04 Reports of internal audit results do not describe conclusions related to the audit purpose and present results without much background, which does not readily enable management to make decisions based on audit results.

#### **Opportunities**

 Measures of performance for expected outcomes from EHSMS processes could be developed and reviewed as part of the internal audit process.



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#### K. Audit - Maintenance - Field

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Elements 3, 7, 10 & 13.

#### **Process Description**

Maintenance of force mains, laterals and pump stations is performed by KCRTF employees supervised by the Maintenance Supervisor. Competency qualifications include experience and acceptable mechanical aptitude. Drawings are maintained to identify all lines and connections and maintenance records are kept in log books. A preventive maintenance schedule is followed, including some nondestructive testing. Personnel are aware of potential environmental impacts and OHS hazards associated with their work, such as energy use and sanitary sewer overflows, and a program to reduce overflows has all but eliminated them (40 SSO in 2004, 1 in 2006). Written maintenance procedures are available and understood, including safe work practices.

# **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.

# **Opportunities**

None

#### L. Audit – Maintenance - Plant

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Elements 3, 7, 10 & 13.

# **Process Description**

Plant maintenance is performed by Operators supervised by the Operations Foreman. Large and/or complex projects are handled through contractors assigned by the Operations Foreman. Competency qualifications for employees and contractors include experience and acceptable mechanical aptitude and safety performance. P&IDs and equipment manufacturers' information are maintained and maintenance records are kept via work orders. A preventive maintenance schedule is followed, including some nondestructive testing. Personnel are aware of potential environmental impacts and OHS hazards associated with their work, such as waste generated in cleaning basins, potential exposure to chlorine and/or sulfur dioxide. Written maintenance procedures are available and understood, including safe work practices.

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations.



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# Opportunities

Equipment manufacturers' information could be kept electronically.

# M. Audit – Management Involvement & Review Process

<u>Applicable EMS Elements</u> – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable NBP EMS Elements, particularly Elements 2, 5, 7 & 17.

#### **Process Description**

The Works Director is responsible for the Biosolids Program and has assigned the Environmental Program Manager as EHSMS Coordinator and Management Representative. The Management Review process includes Core Team meetings that occur approximately every 2 months to discuss ongoing activities and EHSMS issues, such as audit results and corrective actions.

#### **Audit Results**

The process was found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations, except as noted below:

Minor Nonconformance JS/06-05 Some information being provided for management reviews is either very detailed or provided only orally, thus not easily enabling evaluation of overall performance of the system and its processes.

Minor Nonconformance JS/06-06 Management Review records show only the topics discussed, thus not describing or recording discussions about EHS performance, changing circumstances or policy commitments.

#### Opportunities

- Management of change plans for assuming responsibility for biosolids production operations at KCRWTF should be documented.
- Management Reviews could focus more on process improvement instead of individual situations.



Kent County Regional Wastewater Treatment Facility Interim Audit #1, November 20 - 22, 2006

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#### **APPENDICES**

# **List of Participants**

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

Name	Position	Organization
Rheinhold Betschel	Operations Supervisor	KCRWTF
Nyle Calloway	Ag Operations Foreman	KCRWTF
Mari Favres	Plant Secretary	KCRWTF
Craig Harvey	Operations Foreman	KCRWTF
Hans Medlarz	Works Director	KCRWTF
Jim Newton	Environmental Program Manag	er KCRWTF
Keith Powell	Maintenance Supervisor	KCRWTF
Bill Vincent	Operator (+ Union Steward)	KCRWTF

# Interested Parties Interviewed

Robert Underwood Biosolids Coordinator DNREC Bill Yonker SAB (+ neighbor) public

#### **List of Documents & Records Reviewed**

Aeration diary & checklist (11/16/06)

Aspects / Impacts worksheet (6/06)

Authority letter from Works Director (12/19/05)

Biosolids Annual Performance Report (3/06)

Biosolids production sheet

Biosolids shipments spreadsheet (2005, 2006)

Communications procedure 2-09-P01 (1/13/06)

Compliant inquiry response (3/23/06, 11/14/06)

Core Team mtg records (3/31/06, 5/22/06, 6/29/06, 9/21/06, 10/12/06)

Corrective Action procedure 2-15-P02 (1/31/06)

CPAR reports (various)

Daily biosolids production records (11/19, 11/20/06)

Daily operating charts (various)

Delaware Solid Waste Authority permit 2/13/06

Delaware State permit LDM0008/93B

Dover Post news article 4/5/06

Enforcement Response Plan 7/1/04

Fire extinguisher inspections (various)

Fluoregate Certificate of Destruction 12974 (10/19/06)

FOG inspection report 8-03-06

Health & Safety aspects / impacts worksheet (6/06)

Industrial wastewater discharge permit (Perdue) 9/14/05

Internal audit procedure 2-16-P01 (4/30/06)

Internal audit report 11/1/06, 12/20/05

KCRWTF compliance assessment 10/27/06

KCRWTF Emergency Action Plan (3/06)

Kent County Grease Trap & Operating permit #2-260 (1/15/05)

Report Date: November 27, 2006



# Kent County Regional Wastewater Treatment Facility Interim Audit #1, November 20 - 22, 2006

Kent County Position Description WWF Plant Operator Kent County spill control program Kentorganite rate recommendations Laboratory analyses (various) Levy Court newsletter - summer 2006 Management of change procedure 2-17-P02 (11/1/05) MSDS (various) Nonhazardous liquid waste transporters permit (3/16/06) Objectives & targets procedure 2-04-P01 P&IDs (various) Permit APC-2003/0740 – Biosolids operations Preventive maintenance log Public notice 8/28/05 Safety Committee meeting minutes (various) Standard Operating Procedures - KF, KC, Ag Ops & Maintenance Training log (10/06) Training, Awareness & Competency procedure b2-18-P01 Vehicle maintenance file (2005)

**END OF REPORT**