National Biosolids Partnership
Biosolids EMS Verification Audit Report

Orange County Utilities
Orlando, Florida

Report Date: November 30, 2007

Audit Conducted By

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Audit Dates

Documentation Review – August 19, 2007
Onsite audit – August 27 - 30, 2007
Corrective Action Audits – November 2 & 14, 2007

Review and Approval

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1. SUMMARY

KEMA-Registered Quality Inc. (KEMA) conducted an independent Verification Audit of the Biosolids Environmental Management System (EMS) being used by Orange County Utilities (OCU) in managing their biosolids activities. The purpose of the audit was to verify that the EMS being used by OCU conforms to expectations and requirements of the National Biosolids Partnership (NBP) *Environmental Management System for Biosolids* standard, comprised of 17 EMS Elements. The audit was also intended to verify that the EMS is functioning as intended, practices and procedures are being performed as documented and that the EMS is producing desired outcomes.

1A. Audit Scope and Methodology

This Verification Audit covered the entire biosolids value chain (pretreatment, collection and treatment, stabilization, storage and transportation and end use / disposition, or equivalent) as applied to OCU's biosolids program, with special attention to practices and management activities that directly support biosolids-related operations, processes and activities.

The scope of this audit included:

- Review of OCU Biosolids EMS Documentation (EMS Manual).
- Onsite audit of EMS processes that OCU uses in managing its biosolids activities, covering all requirements of the 17 EMS Elements.
- Interviews with interested parties, including regulators, neighbors and environmental advocates.
- Testing of pertinent transactions to assess EMS functionality.
- Examination of outcomes being achieved by OCU through the use of their EMS.

The audits were performed by assessing key processes within the OCU biosolids program for conformance with requirements of applicable EMS Elements. Using sampling techniques, the auditors interviewed key persons, observed practices in place and reviewed pertinent documents and records for each process. Representative interested parties, including regulators, were interviewed to obtain stakeholder perspectives on the biosolids program.

1B. Summary of Audit Findings

<u>EMS Strengths</u>

During this audit, the auditors observed the following strengths in OCU's biosolids program:

- OCU management is clearly dedicated to implementing a management system approach for continually improving their performance.
- Public participation methods allow for input from a representative cross section of interested parties and for continuing dialogue through regular Planning Group meetings.
- The Facilities Plan addresses anticipated biosolids needs and situations concisely.

EMS Outcomes

OCU has achieved significant outcomes through the use of an environmental management system in managing their biosolids program, including cost saving initiatives and improved public perception. Details are described in Section 3 of this report.

Nonconformances

At the conclusion of this audit, no major nonconformances and seven (7) minor nonconformances with respect to the audit criteria remained open, as described in the "Detailed Audit Results" section of this report.

Opportunities for Improvement

During the audit, KEMA noted opportunities for improvement in the OCU biosolids EMS. These opportunities are described in the detailed audit reports (Section 4 of this report).

1C. Verification Statement

Based on the results of our audit, KEMA issues the following verification statement for the EMS being used by Orange County Utilities for managing its biosolids activities:

"Orange County Utilities has been independently verified by KEMA-Registered Quality Inc. as having an effective biosolids environmental management system that supports continually improving environmental performance, meeting regulatory compliance obligations, utilizing good management practices and creating meaningful opportunities for public participation, and is in conformance with the requirements of the National Biosolids Partnership."

1D. Agreements & Requests

An interim audit of the OCU biosolids program will be conducted by KEMA before November 30, 2008 to verify continuing conformance with NBP requirements and expectations. That audit will include audit and review of processes as noted on the Interim Audits Plan agreed to by OCU and KEMA and verification of effective correction for all open nonconformances from this Verification Audit. OCU will make arrangements for the Interim Audit through the National Biosolids Partnership.

1E. 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, OCU 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.

2. AUDIT DETAILS

2A. Local Agency Details

Agency Name: Orange County Utilities, Orlando Florida (referred to as OCU in this report)

Facilities: South Water Reclamation Facility (SWRF), Eastern Water Reclamation Facility (EWRF) and Northwest Water Reclamation Facility (NWRF) & Central Biosolids Management Facility (BMF) all in or near Orlando, Florida.

Volume of Wastewater Treated : SWRF = 43 MGD, EWRF = 19 MGD, NWRF = 7.5 MGD

Biosolids Produced (all Class B, dry tons per year) SWRF = 5332, EWRF = 6515, NWRF = 1566

Number of Employees = SWRF = 42, EWRF = 22, NWRF = 15

Biosolids Production Sites Audited

South Water Reclamation Facility (SWRF), Eastern Water Reclamation Facility (EWRF) and Northwest Water Reclamation Facility (NWRF).

Biosolids Use / Disposition Sites Audited

Mormon Ranch & Partin Ranch (both in Osceola County)

Contractors Interviewed

Shelley's Environmental Systems
T. Wayne Hill Trucking, Inc.

2B. Audit Phases and Timing

This Verification Audit was conducted in three phases. Phase 1 included a review of EMS Documentation and results were reported to OCU on August 19, 2007.

Phase 2 was conducted onsite August 27 to 30, 2007 and consisted of audits of processes used in the OCU biosolids management program, transaction tests, interviews with interested parties and examination of EMS outcomes.

Phase 3 was conducted onsite at OCU on November 2, 2007 and offsite November 14, 2007 and included review of corrective actions taken by OCU in response to certain nonconformances identified during Phase 1 and Phase 2.

2C. Audit Team

The National Biosolids Partnership assigned KEMA-Registered Quality Inc. to perform this audit on their behalf. KEMA's Audit Team consisted of:

Jon Shaver – Biosolids EMS Lead Auditor

Michael Wardell – Biosolids Auditor

The above auditors are qualified to perform this audit through certification by the National Biosolids Partnership. KEMA asserts that the relationship that our firm and auditor has with Orange County Utilities is independent and meets criteria for Third Party Audit Companies and Third Party Auditors established by the National Biosolids Partnership.

2D. Consistency with NBP Requirements

This Verification Audit was conducted in accordance with the National Biosolids partnership Auditor Guidance (August 2007) and the scope of work agreed to by the National Biosolids Partnership and KEMA. All requirements of the 17 EMS Elements were covered during the audit.

2E. Reference Materials

The following documents were used as references during this audit:

OCU EMS Manual (including June 2006 initial version & August 2007 update)
National Biosolids Partnership "EMS for Biosolids" standard (May 2002)
National Biosolids Partnership Biosolids EMS Auditor Guidance (March 2006)
National Biosolids Partnership Code of Good Practice
National Biosolids Partnership Manual of Good Practice

2F. Definitions of Terms

Major Nonconformance – an omission from requirements and/or other departure that represents, or could cause, a systemic failure and/or a departure from the Biosolids Policy.

Minor Nonconformance – an isolated departure from requirements that does not represent a systemic failure.

Opportunities (for Improvement) – suggested improvement(s) in the EMS based on auditor observations. There is no obligation for action in response to these observations.

Corrective Action Plan – a plan developed by the agency being audited to correct a nonconformance and/or prevent that nonconformance from re-occurring.

3. SUMMARY OF AUDIT RESULTS

3A. EMS Outcomes

OCU reported the following outcomes from the use of an environmental management system approach to managing their biosolids program in the past 3 years: KEMA examined these outcomes and agree that they represent gains achieved by the use of the OCU biosolids EMS.

Regulatory Compliance

- Contractors are now more concerned with hauling practices and public perception.
- A compliance calendar is now used, resulting in increased confidence in meeting regulatory requirements.

Environmental Performance

- Improved equipment maintenance has resulted in reduced stormwater impact, fewer odor issues, stormwater pond cleaning frequency expanded to 5 year cycle from 3 year cycle. Estimated savings $40K / year.

Biosolids Quality

- More efficient filter presses at EWRF have enabled drier cake, ability to process increased volume, decreased hauling cost, less impact to the environment and less maintenance of equipment. This has resulted in $300,000/yr savings on hauling, 20% ROI ($1.5M investment), $1-2,000/month in reduced maintenance cost.
- The development of SOP's and appointment of “subject matter experts” has captured knowledge and enabled OCU to improve operator skills, reduce training costs and improved training for new operators.
- Operators recognize the benefit/value of maintaining biosolids quality, resulting in improved operator skills and attention to detail, better product going to beneficial use, reduced cost of operation.
- The use of a value chain process has improved communication between staff/positions & better understanding of how each process affects overall biosolids quality.

Interested Party Relations

- There is a strong demand for OCU biosolids from local ranchers. In the future this may allow OCU to achieve positive cash flow for biosolids application.
- Programs for public education and communication of benefits of biosolids and reclaimed wastewater have created more educated customers and more acceptability for siting and expanding facilities.

3B. Audit Results by EMS Element

The following nonconformances were identified and remain open as of the date of this report.

EMS Element	EMS Status (@ 11/15/07)	Open Nonconformances (corrective action plan approved for each nonconformance)
1. Documentation of EMS for Biosolids	Conforms	Minor Nonconformance JS/07-16/Element 1 The OCU EMS Manual (October 2007) does not include a procedure for identifying and tracking other requirements (even though there are currently no other requirements) and does not clearly describe how public input is used in determining biosolids goals and objectives..
2. Biosolids Management Policy	Conforms	None
3. Identification of Critical Control Points	Conforms	None
4. Legal and Other Requirements	Conforms	None
5. Goals and Objectives for Continual Improvement	Minor Nonconformance	Minor Nonconformance JS/07-05/Element 5 The measurability of goals and objectives is not fully defined in continual improvement terms.
6. Public Participation in Planning	Conforms	None
7. Roles and Responsibilities	Conforms	None
8. Training	Conforms	None
9. Communication	Minor Nonconformance	Minor Nonconformance JS/07-06/Element 9 Some contractor and internal personnel are not aware of the biosolids policy or Code of Good Practice, indicating incomplete communication to these persons about the biosolids program.

EMS Element	EMS Status (@ 11/15/07)	Open Nonconformances (corrective action plan approved for each nonconformance)
10. Operational Control of Critical Control Points	Minor Nonconformance	Minor Nonconformance JS/07-08/Element 10 There is inconsistency in the comparative scale of operational controls identified at critical control points and it is not clear how some operational controls are related to environmental impacts (EMS Elements requirements) and/or biosolids quality (OCU requirements). Minor Nonconformance JS/07-17/Element 10 While a process is in place for verifying that contractors are performing as expected and some contractors have been evaluated, OCU has not fully verified that all contractors are performing according to expectations.
11. Emergency Preparedness and Response	Conforms	None
12. EMS Documentation, Document Control and Recordkeeping	Conforms	None
13. Monitoring and Measurement	Minor Nonconformance	Minor Nonconformance JS/07-12/Element 13 Monitoring of contractors on a 6-week basis (for one contractor) and annually (for another contractor) is not sufficiently frequent or complete, given the reliance on those contractors.
14. Nonconformances: Preventive and Corrective Action	Minor Nonconformance	Minor Nonconformance JS/07-13/Element 14 The effectiveness of some formal corrective actions has not been verified and corrective action reports are not available for some noncompliances.
15. Biosolids Program Periodic Performance Report	Not Audited	None
16. Internal EMS Audits	Conforms	
17. Periodic Management Review of Performance	Conforms	None

Note – nonconformances 07-01, 07-02, 07-03, 07-04, 07-07, 07-08, 07--09, 07-10, 07-11, 07-14 and 07-15 were closed during the Corrective Action / Follow-up Audit (see Section 5 of this report).

OCU Comments

During review of the above nonconformances OCU made the following comments.

Nonconformance 07-06 OCU has developed a training module to increase the awareness of the policy and Code of Good Practice , which need to be verified during interim audit.

Nonconformance 07-08 A revised CCP table identifies the environmental impacts and operational control relationship.

Nonconformance 07-12 OCU has started to inspect the contractor facilities on a monthly basis , which need to be verified during interim audit.

Nonconformance 07-13 OCU has revised the procedures to increase the effectiveness of corrective action plans that need to be verified during interim audit.

3C. Opportunities

The following "opportunities" for improving the OCU Biosolids Management Program were identified during the audit. They are based on the Auditors experience only and there is no requirement for action by OCU in response to these observations.

EMS Documentation

1. The EMS Manual could be simplified and written more as a high level system document.

Goals and Objectives

2. The program to develop a Class A product could be a biosolids objective.

Communication

3. Increased internal communication of the meaning and intent of policy commitments is possible.
4. Increased communication of OCU biosolids program performance, objectives and plans to EPA is possible.

Operational Controls

5. Some safety improvements are possible at EWRF, such as use of HMIS labels, better use of lockout/tagout procedure, avoidance of handwritten instructions on control boards.

Emergency Preparedness

6. More follow-up for corrective actions and to assess emergency plans could be done after emergency drills.

4. DETAILED AUDIT RESULTS

KEMA made the following observations and findings during this audit. Process descriptions are summaries only.

4A. Audit - EMS Documentation

Process Description

The OCU EMS Manual and its elements describe procedures that OCU uses to manage its biosolids activities. The manual is divided into 17 sections (called Elements), corresponding to the 17 EMS Elements of the NBP EMS for Biosolids standard. Each section has a unique identification, date / version number and approval and includes a purpose, scope, responsibilities, applicable procedures and references.

Audit Results

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

> Minor Nonconformance JS/07-16/Element 1 The OCU EMS Manual (October 2007) does not include a procedure for identifying and tracking other requirements (even though there are currently no other requirements) and does not clearly describe how public input is used in determining biosolids goals and objectives.

4B. Audit - Biosolids Policy

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

Process Description

OCU's "Biosolids Policy Statement" is included in the EMS Manual and communicated internally via training and externally via a letter to interested parties and via the OCU website. That Statement commits OCU to "100% diversified beneficial use" of biosolids. "effective source control compliance", and to "investigate and implement feasible innovative, and cost effective resource recovery". A separate Board of Commissioners Resolution commits OCU to follow the principles of the NBP Code of Good Practice.

Audit Results

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

4C. Audit - Biosolids Production

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

Process Description - General

Operational control(s) for each critical control point are identified in the OCU EMS Manual. These operational controls, along with training and awareness, monitoring and measurement and legal requirements were reviewed during each process audit. Transaction tests for regulatory requirements and implementation of new / revised operational controls were performed during each process audit to verify that OCU is effectively using a systematic approach to plan, implement and check these controls. Identified critical control points and operational controls are consistent in scope with the National Manual of Good Practice.

Maintenance (all facilities)

The plant Maintenance Department includes mechanics and I&E technicians who are qualified based on skills and on the job assessments. Daily meetings are held to communicate ongoing matters. O&M Manuals are used to control maintenance activities for each piece of equipment. An electronic system (Maximo) is used to generate PM and other work orders and store maintenance records. Critical equipment (identified) is inspected regularly.

Pretreatment & Collection (all facilities)

An active industrial pretreatment program issues permits and monitors significant industrial users. Influent is monitored continually to assist in planning operational controls. There are approximately 21 SIU's, and OCU is pursuing an aggressive FOG program by permitting all restaurants in the service area. SWRF does accept approximately 30,000 gpd of septage, and there is an effective sampling and inspection program in place.

Wastewater Treatment & Solids Generation

At each plant solids and grit are removed from incoming wastewater using bar screens and aerated grit removal equipment. The wastewater is treated using anoxic and aerated secondary processes which provide some nutrient removal. Treated wastewater goes through secondary clarifiers, followed by filtration and chlorination. Reclaimed water is then discharged to rapid infiltration basins or to wetlands for final polishing, followed by discharge or sent via pipeline to various end users for reuse.

Biosolids Stabilization, Conditioning Storage & Transportation

EWRF - Incoming wastewater is first anaerobically treated and then aerated to settle sludge. Clear water is flocculated and filtered and treated with sodium hypochlorite prior to disposition as reclaimed water, most of which is sent to nearby industrial facility. Clarified Sludge is pressed (belt filter press) to produce dewatered sludge. A contractor (Shelley Environmental Services) hauls dewatered biosolids to a central processing facility for further processing. The contractor provides transportation, lime stabilization, storage and land application.

NWRF - Solids from the secondary clarifiers are thickened in aerated holding tanks before being dewatered on belt filter presses and loaded onto trucks. Trucks are staged and loaded with the intention of delivery to the contractor biosolids processing facility (Central Biosolids Management Facility – CBMF) on the following day. A contractor (Shelley Environmental Services) provides transportation, lime stabilization, storage and land application.

SWRF - Solids from the secondary clarifier are thickened on gravity belt thickeners before going to one of two anaerobic digesters. Digested solids are dewatered on belt filter presses and loading onto trucks. Trucks are staged and loaded with the intention of delivery to land application sites the following day. A contractor (Hill Trucking) provides transportation and land application.

Central Biosolids Storage Facility (Shelley's Environmental Services) - Shelley's provides transportation, stabilization, storage and land application for all dewatered sludges produced at the NWRF and EWRF. This is a contract facility, and material from OCU is commingled at the facility with biosolids from other facilities. Dewatered sludges are mixed with quicklime, raising the pH to 12 or higher. A pH of 12 is maintained for at least 2 hours, with the stabilized biosolids being held in a number of covered, concrete lined bunkers. Biosolids pH is measured again prior to land application, with the requirement that the pH be 11 or higher. Once the pH requirement is met, biosolids are loaded into dump trailers and transported to land application sites. Once at the field sites, biosolids are dumped onto the ground prior to loading into spreaders and being uniformly applied. Biosolids may be temporarily stored in the field prior to land application. Application rates are based on crop nitrogen requirements.

Audit Results

The processes described above were found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations, except as noted below.

> Minor Nonconformance JS/07-08/Element 10 There is inconsistency in the comparative scale of operational controls identified at critical control points and it is not clear how some operational controls are related to environmental impacts (EMS Elements requirements) and/or biosolids quality (OCU requirements).

4D. Audit - Biosolids Use & Disposition (including Contractor Control)

Applicable EMS Elements – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable EMS Elements, particularly Elements 3, 7, 9, 10 & 13.

Biosolids Land Application

SWRF produces a Class B biosolids product that is used on agricultural land, either cropland or pasture/hayland. The biosolids are transported and applied by a contractor (T Wayne Hill Trucking) following their own prescribed practices (Management Plan) that have been reviewed by OCU. Application rates are determined by the contractor based on crop nitrogen requirements. Biosolids may be temporarily stored in the field prior to land application. At the time of this audit OCU was inspecting the land application site approximately every 6 weeks, however this frequency has since been increased to monthly.

Dewatered solids from NWRF and EWRF are transported by a contractor to a Central Facility (Shelley's Environmental) where they are mixed with biosolids from other organizations, stabilized and sent to the field. At the land application site the solids are dumped, loaded into spreaders and uniformly applied to pasture land. Solids may be temporarily stored in the field prior to land application. Application rates are determined by Shelley's based on crop nitrogen requirements. Experienced, competent employees are used to spread the solids based on

management instructions. Setbacks are established as permitted and signs are posted at sites notifying the use of biosolids. At the time of this audit OCU was inspecting the land application site approximately annually, however this frequency has since been increased to monthly. Shelley's has an active public communications program, including radio talk shows and public forums held prior to beginning in a new area. Any public complaints are handled directly.

Audit Results

The processes described above were found to conform to applicable EMS for Biosolids requirements and be consistent with NBP expectations, except as noted below.

> Minor Nonconformance JS/07-17/Element 10 While a process is in place for verifying that contractors are performing as expected and some contractors have been evaluated, OCU has not fully verified that all contractors are performing according to expectations.

4E. Audit - Communication

Applicable EMS Elements – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable EMS Elements, particularly Elements 6 & 9.

Process Description

Internal communication to make employees aware of the OCU biosolids program (and EMS) occurs through training and internal newsletters.

Communication with the public and interested parties occurs through plant tours, newsletters and periodic mailings (policy mailed to 3200 people) and through public presentations. The OCU website discusses their biosolids EMS. OCU participates on a public "Agriculture Advisory Committee" used to discuss public concerns and regulatory requirements. In addition, monthly meetings of the Utility Planning Group are attended – these meetings are open to the public. County Commissioner meetings are open to the public and OCU presents biosolids progress reports to the Commissioners periodically.

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/07-06/Element 9 Some contractor and internal personnel are not aware of the biosolids policy or Code of Good Practice, indicating incomplete communication to these persons about the biosolids program.

4F. Audit – Competency, Awareness & Training

Applicable EMS Elements – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable EMS Elements, particularly Elements 7 & 8.

Process Description

EMS training requirements and procedures are described in the EMS Manual. Competency requirements, including qualifications, are defined in job descriptions and assessed during performance reviews. Operators are required to obtain a State C License within two years of employment. Increases in pay grade (from PS Trainee to Level 3) are tied to skills test administered by OCU. Regular safety training (on-line) is used to maintain worker knowledge of a variety of subjects, including the EMS.

Audit Results

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

4G. Audit – Compliance (with Legal & Other Requirements)

Applicable EMS Elements – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable EMS Elements, particularly Elements 4 & 13.

Process Description

Procedures are in place to control operations so that regulatory and permit requirements are met at the treatment plant. Applicable legal requirements are identified through membership in industry associations and communications with regulatory authorities. No “other” requirements have been identified.

Compliance requirements are included in operational controls and operating results are monitored by Operators, Plant Supervisors, Division management and Lab staff who know and understand the regulations and permit requirements. Biosolids application reports are sent quarterly to FDEP and annually to EPA. Reports to EPA had not been sent prior to 2006, resulting in EPA enforcement action and a fine.

Periodic inspections are made of the contractor land application sites and the CBMF run by Shelley Environmental Services. Florida DEP and Orange County Health/Environmental Protection Departments do monthly inspections of the CBMF and forward the results to OCU as needed.

Audit Results

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

4H. Audit - Corrective and Preventive Action

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

Process Description

The formal Corrective & Preventive Action process is used to address complaints, emergency incidents, noncompliances and nonconformances. Informal corrective actions address deviations from standard procedures (recorded in plant files) and maintenance requests (recorded on Maximo system). Formal corrective actions are recorded on the Corrective Action Form and follow-up is done.

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/07-13/Element 14 The effectiveness of some formal corrective actions has not been verified and corrective action reports are not available for some noncompliances.

4I. Audit - Critical Control Points

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

Process Description

An extensive list in the EMS Manual identifies critical control points within the OCU biosolids program for each plant, along with operational controls, documents, location of documents, monitoring parameters, records, location of records, environmental impacts and responsible staff. The CCP are listed for each value chain step and are consistent in scope with those stated in the National Manual of Good Practice.

Audit Results

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

4J. Audit - Document Control & Recordkeeping

Applicable EMS Elements – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable EMS Elements, particularly Element 12.

Process Description

The same procedure is used for creating, reviewing, revising EMS documents and records. A document “master list” is reportedly used to identify documentation. Documents and records are kept on the OCU server files. A document numbering system is used to identify individual EMS documents.

Audit Results

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

4K. Audit - Emergency Preparedness

Applicable EMS Elements – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable EMS Elements, particularly Elements 11 & 14.

Process Description

Emergency plans exist for each facility, including specific Emergency Response Plans (ERP's) and a County wide Emergency Preparedness Plan (EPP) that covers larger emergencies (e.g. hurricanes). The plans cover spills, although biosolids spills or emergencies are not specifically mentioned. Emergency drills (chlorine, fire, injury) are held on a regular basis, but limited evaluation is made of the results of these drills. Emergency Plans are available on trucks transporting biosolids.

Audit Results

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

4L. Audit – EMS Planning & Public Participation

Applicable EMS Elements – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable EMS Elements, particularly Elements 5, 6, 7 & 17.

Process Description

The Division Manager was designated as having overall responsibility for the OCU biosolids program. Through delegated lines of authority, the Water Reclamation Manager assigned responsibilities for developing their biosolids EMS and reporting on its performance to the EWRF Plant Manager. Florida regulators were invited to help in developing the biosolids EMS and the public was given opportunity to send comments about the biosolids EMS via mailings and through the website.

Audit Results

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

4M. Audit – Engineering

Applicable EMS Elements – The audit assessed this biosolids program process for consistency with expectations and requirements of applicable EMS Elements, particularly Elements 3, 6 & 10.

Process Description

Engineering is involved in new and modified facilities that are part of the capital budget, which is derived from the Facilities Plans. Most designs are outsourced, but approved by OCU. Environmental impacts are part of the preliminary design and new designs are pilot tested before proceeding to plant-level projects. Engineering is aware of the critical control points, but these are not part of the designs. Public input is considered through the development of Facilities Plans.

Audit Results

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

4N. Audit - Goals and Objectives for Improvement

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

Process Description

Biosolids goals and objectives (milestones), including responsibilities, target dates & resources, are listed on a document. Goals are considered to be high level desired accomplishments (e.g. "improve public involvement and acceptance of the product") and objectives are written as action steps towards the goals (e.g. "develop and implement a system to track public satisfaction and feedback"). The goals and their related objectives are part of a "Comprehensive Plan" that is based on Facilities Plans (strategic) and reviewed / revised during 2 year budget cycles. Progress in achieving goals is reviewed annually as part of the budgeting process and during performance evaluations.

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/07-05/Element 5 The measurability of goals and objectives is not fully defined in continual improvement terms and it is not clear what performance metrics are associated with each biosolids objective.

4O. Audit - Internal Audits

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

Process Description

An extensive internal audit was conducted early in 2007 (January through March) covering each plant and contractor operation. The audit was performed by knowledgeable persons and intended to determine readiness of the biosolids EMS for third party audit. Results were reported to management (management review) and corrective action plans were prepared for findings.

Audit Results

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

4P. Audit - Management Involvement (including Management Review)

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

Process Description

Senior management feels that an EMS approach enables OCU to prepare and plan a proactive approach to involve the public in biosolids program changes. The management review process includes weekly meetings that the Water Reclamation Manager holds with each Section Head, bi-weekly Director meetings held to discuss broad ongoing events and an annual review of the Biosolids EMS, including status, audit results and necessary changes.

Audit Results

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

4Q. Interested Party Interviews

Dr P Kane (Florida DEP) – feels OCU has a good level of compliance and is responsive to requests. He is aware of OCU's Biosolids EMS initiative and considers their communications program to be excellent, particularly public education about biosolids. He has some concerns about contractor compliance, especially use of unstabilized product, odors and truck traffic, however believes that OCU involvement is helping the contractors improve.

Dr. George O'Conner (Professor - University of Florida) was complimentary of the OCU program, especially their public outreach program. He was aware of other Florida biosolids programs where public support was poor, but felt that OCU was doing a good job at educating the public and insuring their biosolids were of good quality.

Michael Hom (USEPA Region VI) was not specifically aware of OCU's EMS program until he was called (regarding interested party interviews) prior to the audit. He was not aware of specifics about OCU's land application program, but has not received complaints regarding their program in the past. EPA does receive complaints from other parts of Florida regarding biosolids land application, so he felt the lack of problems in the Orlando area spoke well of the OCU program. He did state that EPA had taken enforcement action against OCUA for not submitting their annual biosolids reports since 1999. Because OCU does not have any surface discharge, and therefore no NPDES permit, they "fell below our radar" as regards the annual report. He stated OCU was cooperative in bringing their reports up to date and settling the issue.

5. CORRECTIVE ACTION AUDIT

During Phase 3 of this audit, KEMA reviewed corrective actions for five Major Nonconformances and 4 of the Minor Nonconformances found during Phases 1 and 2. The results of that audit are described below.

Major Nonconformance JS/07-01/Element 1 The OCU EMS Manual (November 2006) does not meet requirements in the following areas:

- Authorization for developing and implementing the EMS is not stated.
- Contractor activities / responsibilities are not clearly stated in the EMS Manual
- There is no specific reference to the Biosolids Policy in OCU EMS Element 2, except by inference.
- The Biosolids Policy included in the EMS Manual is not dated or approved.
- The procedure stated for identifying and tracking legal and other requirements does not describe how the requirements are tracked or how applicability is determined.
- Other requirements are not referenced and procedures for identifying and tracking these requirements and incorporating them into biosolids activities are not stated.
- Element 5 references Element 6 for considering public input in determining goals and objectives, however Element 6 does not address this. It is therefore not clear how interested party input is considered in developing and updating biosolids program goals and objectives.
- There is no procedure stated for receiving inquiries and requests for information from interested parties other than from the website.
- The person with responsibility for the biosolids management program is not specifically identified.
- There is no written procedure for identifying and investigating noncompliances.
- The written description of the Management Review process (EMS Manual, Section 17) does not reflect actual practices.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that several parts of the EMS Manual were revised and all items noted above, have been effectively corrected. Two items have not been corrected, however this is not considered systemic and this major nonconformance is now closed. Minor nonconformance JS/07-16 / Element 1 has been issued to address the two remaining deficiencies.

Minor Nonconformance JS/07-02/Element 3 Environmental impacts have not been identified at some critical control points and those that are identified are not described as environmental impacts.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that the table used to identify critical control points and operational controls has been revised to include environmental impacts at critical control points. This nonconformance is now closed.

Major Nonconformance JS/07-03/Element 5 The documented process for setting biosolids goals and objectives and monitoring progress in achieving those objectives does not reflect actual practices, nor is it clear how environmental impacts, legal and other requirements and best management practices are considered in setting goals and objectives.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that the description of the process used to set biosolids goals and objectives and monitor progress in achieving them (Element 5) has been revised to show how legal and other requirements (Element 4), environmental performance and best management practices are considered in determining these objectives. Interviews and records reviewed confirmed that the process is used as described. This nonconformance is now closed.

Minor Nonconformance JS/07-04/Element 5 The description of the goals and objectives process does not identify the Comprehensive Plan, Master Plan and Facilities Plan used in setting biosolids goals and objectives.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that the description of the process used to set biosolids goals and objectives has been modified to note how the Comprehensive Plan, Master Plan and Facilities Plan relate to biosolids goals and objectives. This nonconformance is now closed.

Major Nonconformance JS/07-07/Element 10 The link incorporating applicable legal and other requirements into operational controls has not been identified.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that the written procedure used to identify needed operational controls (Element 10) has been modified to note how legal and other requirements are considered. The applicability of legal and other requirements at critical control points and within operational controls has been identified in Element 3. This nonconformance is now closed.

Minor Nonconformance JS/07-09/Element 10 Service Agreements with contractors are incomplete in requiring contractors to establish operational controls, establish and maintain monitoring & measurement procedures, establish training programs and control documents and records.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that a letter has been issued to contractors involved in biosolids activities that describes OCU's expectations for contractor performance, including the need for the contractor to establish operational controls, establish and maintain monitoring & measurement procedures, establish training programs and control documents and records. More frequent inspections of contractor activities have started with the intention of verifying that contractors are performing as expected. This nonconformance is now closed. See also Minor Nonconformance JS/07-17/Element 10.

Minor Nonconformance JS/07-10/Element 11 There is limited description of response to biosolids spills and related emergencies in the Emergency Response Plan.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that procedures to use in the event of a biosolids spill have been added to Emergency Preparedness Plans for each facility. This nonconformance is now closed.

Minor Nonconformance JS/07-11/Element 12 Not all documents and records requiring control have been identified.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that documents and records requiring control have been identified in the revised EMS Manual (October 2007). This nonconformance is now closed.

Major Nonconformance JS/07-14/Element 16 Internal audits have not been used to evaluate performance against policy commitments, progress in achieving goals and objectives or performance against established “performance indicators”.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that internal audits include an evaluation of performance against objectives and program requirements. Performance against “key performance indicators” is assessed during regular monitoring of operations. This nonconformance is now closed.

Major Nonconformance JS/07-15/Element 17 Management Reviews do not address performance against policy commitments or changing circumstances and do not make a conclusion about the suitability, adequacy and effectiveness of the biosolids program / EMS.

Corrective Action

Review of corrective action taken by OCU to resolve the above nonconformance determined that a management review conducted November 6, 2007 included discussion of policy requirements and conclusions about the effectiveness of the EMS and its suitability and adequacy. This nonconformance is now closed.

APPENDICES

a) List of Audit Participants

The following personnel participated in this audit. Where necessary, other employees provided additional explanations.

OCU

Bob Boyd	Plant Specialist, EWRF
Myron Claxton	PS1
Shane Benner	NWRF Plant Manager
Danie DeLeon	Sr Op'n Specialist
Herman Fahie	SWRF Acting Section Manager
Chris Fasnacht	Acting Utility Supervisor
Mark Gant	Sr Op'n Specialist
Keith Girolanni	Operator
John Haak	Sr Op'n Specialist
Ray Hansen	Deputy Director
John Harvey	Sr Op'n Specialist
Sidney Heppern	Trainee
Bill Hurley	Water Reclamation Manager
Allison Kadlecek	Utilities Service Specialist
Anthony Keeney	Operator PS2
Susanna Littell	Env. Compliance Section Manager
Tim Madhanagopal	EWRF Plant Manager / EMS Coordinator
Ralph Nelson	Operator, EWRF
Doug Rogers	Maintenance Coordinator
Andy Rutherford	Operator, EWRF
Nick Sassic	Auditor (contractor)
Emmitt StricklandI	ndustrial Mechanic 2
Larry Tunnell	Chief Engineer, Utilities Eng'g Div
John VanMutius	Plant Specialist 1

Contractors

Larry Crawford	Land Appl'n Mgr, Shelleys Environmental Service
Rick Donahue,	Shelleys Environmental Service
Jim Fisher,	Shelleys Environmental Service
Doug Hill	President, T Hill Trucking
Bill McFerran,	Shelleys Environmental Service
Doug Shelley	Shelleys Environmental Service
Chuck Wolfe,	Shelleys Environmental Service

Interested Parties (telephone interviews)

Michael Hom	USEPA Region VI

Dr Phil Kane Florida DEP
Dr. George O'Conner Professor (University of Florida)

b) List of Documents Reviewed (by EMS Element)

Baseline Monitoring Report for Air Products (undated)
Biosolids Facilities Plan (vol 5)
Biosolids goals & objectives (Doc ENS5ED2)
Biosolids Mgmt Program presentation (undated)
Biosolids Recycling Program (not dated)
Biosolids Regional Partnership document 8/3/07
Board of Commissioners Resolution 2003-M-12 (4/29/03)
Brochure – "What's in a Name?" (2005)
CCP listing SWRF, EWRF, NWRF (orig 4/13/05, rev 11/8/06 & 8/21/07)
Chain of Custody Record, undated
Chlorine Leak Response evaluation, dated 10/12/04, with attached employee training roster
Composting Pilot Project description 6/19/06, 3/15/07
Contract – Shelley's + OCU Purchasing #46-1106, 12/1/06
Corrective Action Plans (various – internal audit nonconformances)
Critical Control Points spreadsheet for EWRF dated 8/21/07
DMR Memo from J. VanMutius re: April/May 2007
Document numbering system document
Emergency Drill observations (11/11/03)
Emergency Response Plan (on-line)
Emergency Management Plan (OCU) 2006
Emergency Response Plan SWRF
Emergency Preparedness Plan EWRF
Employee Training Roster & records (various)
Employee Training Roster, EMS Training, 7/26/07
Employee Training Roster, EMS Training, undated
EMS Awareness Training Module
EMS Questionnaires, various employees, undated
FAC No.62640 Ag Use Plan for Permit No. FLA011067, 8/20/02
FDEP Permit No.FLA016177 for biosolids treatment facility, 10/30/06
Goals & Objectives document EMS-5ED2
Gravity Belt Thickener Status, dated 8/28/07
Internal audit report 11-13-07
Incident Investigation Reports 8/23/04, 9/13/05
Internal training procedure 11/12/05, 4/3/07
IWDP#06016ASIU for Air Products and Chemicals
Job descriptions for Plant Specialist Training, Level 1, 2 and 3
Letter 4/22/03 from Director to Board re community acceptance
Letter to Florida DEP from William Hurley with compliance results for April/May 2007, dated 7/13/07
Management Review minutes 3/19/07
Management Review (biosolids) record 11/6/07
MSDS (various)
Newsletter – Orange Speil 3/2003
Newsletter - Reclamation Roundup (spring 2006, summer 2005)
O& M Manual for Ashbrooke-Klampress Belt Filter Press
OCU EMS Manual (including attachments)
OCU EPD inspection report dated 7/20/07
OCU Facilities Plan May 2007
OCU Internal Audit Report
On-line review of Maximo system reports and work orders
Performance indicators 2002-2006
Reclamation Report 2002
Results of biosolids analysis, Flowers Chemical, 8/28/07
Safety Meeting Agenda and sign in sheet, 7/30/074
Sewer Use Ordinance (on-line document)
Shelley's Agricultiral Use Plan (June 2007)
Shelley's Safety Procedures, undated
Shelley's Septic Tank, Inc. EMS Manual, undated
Shelley's Spill Response Plan (Oct 2005)
SOP for Wasting, NWRF, 3/7/05
Spill Prevention Control Plan for Air Products, dated 9/2004
T Hill Biosolids Management Manual
Term Contract No. Y9-1160 for Biosolids Removal, Transportation and Disposal, dated 9/28/06
Work Orders (various)

c) Desk Audit Observations (by EMS Element)

The following "observations" were made during the review of OCU EMS Documentation (EMS Manual). Results of that review were reported to OCU August 17, 2007. "Observations" can lead to EMS nonconformances if not corrected. "Comments" do not require action.

Element 1 – Documentation of EMS for Biosolids

Observations

1. Authorization for developing and implementing the EMS is not stated.
2. Contractor activities / responsibilities are not clearly stated in the EMS Manual

Comments

- The EMS Coordinator is referenced in the Introduction (El 1) however there is no description of who that is or the authorities of that position.

Element 2 - Biosolids Management Policy

Observations

3. There is no specific reference to the Biosolids Policy in OCU EMS Element 2, except by inference.
4. The Biosolids Policy included in the EMS Manual is not dated or approved.

Comments

- OCU EMS Element 2 speaks of a "Biosolids Policy Statement", "Biosolids Management Policy" and "Biosolids Policy" and a "Board Resolution" is included in Section 2 of the EMS Manual. It is not clear how these apparently different terms / policies are related.
- Authorization of the Biosolids Policy needs clarification.
- There is no mention of how OCU ensures its biosolids policy is incorporated into programs, procedures, practices.

Element 3 - Critical Control Points

Observations

5. No environmental impacts have been identified for some critical control points, particularly those at MWRF and EWRF.

Comments

- Environmental impacts identified for some critical control points could be more specific (e.g. "sanitary sewer overflow"," adversely affect biosolids quality").

Element 4 - Legal and Other Requirements

Observations

6. The procedure stated for identifying and tracking legal and other requirements does not describe how the requirements are tracked or how applicability is determined.

7. Other requirements are not referenced and procedures for identifying and tracking these requirements and incorporating them into biosolids activities are not stated.

Comments

- It is not clear how "coordinating with contractors on regulatory issues" occurs.
- How is "relevant OCU staff" defined?
- It is not clear how the current list of requirements was compiled.
- The list of current legal requirements appears to be incomplete (no mention of ordinances referenced in the procedure), hazardous waste, hazardous chemical, OSHA or DOT regulations.

Element 5 - Goals and Objectives for Continual Improvement

Observations

8. Element 5 references Element 6 for considering public input in determining goals and objectives, however Element 6 does not address this. It is therefore not clear how interested party input is considered in developing and updating biosolids program goals and objectives.
9. Goals are measurable, however objectives are not, especially those with "continuous" timing.

Comments

- It is not clear how senior management is involved in the goal/objective setting process.
- Aside from noting "recommendations", there is no specific reference to how goals and objectives are integrated into biosolids management activities.
- Except for a general statement, there is no specific reference to note how interested party input is considered in procedure for setting goals and objectives.
- Except for "performance metric" and "target date" there is no action plan identified for achieving objectives.

Element 6 - Public Participation in Planning

Observations

10. There is no procedure stated for receiving inquiries and requests for information from interested parties other than from the website.

Comments

- While several ways of obtaining public input are noted, it is not clear how that input is used in planning the EMS / Biosolids activities.
- How were interested parties originally identified, and how are they defined?
- El 6 references "interested parties", however describes the planning for public participation only. What about other interested parties?
- OCU states they identified 3,200 potential interested parties, but the Interested Party listing (Attachment 6A) shows only 31 names. Does this constitute the entire interested party list, and how was this list derived from 3,200 potential parties?

Element 7 - Roles and Responsibilities

Observations

11. The person with responsibility for the biosolids management program is not specifically identified.
12. Contractor responsibilities are inferred but not specifically stated in the EMS Manual.

Comments

- There is no reference to ensuring the provision of suitable and adequate resources.

Element 8 - Training

Observations

None – see comments below

Comments

- It is not clear how employees receive training in their biosolids management activities.
- There is no reference to competency in the EMS Manual.
- EMS Manual says all employees attend annual training. How is this verified? No mention in internal audit procedures.
- How does the EMS Team ensure contractors provide training for their employees?

Element 9 - Communication

Observations

None – see comments below

Comments

- It is not clear how OCU determines if its Communications Program is consistent with local circumstances, the method of biosolids management, public communications history, and degree of current interest in its biosolids management activities.
- Element 9 discusses various communications methods, items to communicate and references interested parties, however it is not clear how these are linked.
- Contractor communications are described in EMS Manual for public inquiries, but do not mention other interested parties (e.g. regulators).
- The Communications Program does not state specifically how the Biosolids Policy is communicated to employees

Element 10 - Operational Control of Critical Control Points

Observations

None – see comments below

Comments

- Element 10 could be clearer in identifying what operational controls are, describing how the need for these controls is determined and stating where the controls are identified.

- It appears that only operating procedures are used as operational controls. What about other methods?
- There is no link identified between operational controls and legal & other requirements.
- It is not clear how legal and other requirements, goals and objectives, best practices and preventive maintenance are considered in defining need for and establishing operational controls.
- "Encourage" is insufficient for requiring contractors to establish operational controls.

Element 11 - Emergency Preparedness and Response

Observations

None – see comments below

Comments

- It is not clear how OCU ensures emergency equipment is readily available.
- "Encourage" is insufficient for requiring contractors to establish emergency plans.

Element 12 - EMS Documentation, Document Control and Recordkeeping

Observations

None – see comments below

Comments

- It is not clear what documents require control, and at what level. What constitutes an EMS document or record?
- Records requiring control are not identified, except in Element 3 (operating records) and there is no reference in Element 12 to the records in Element 3.
- Control of documents and records references legal and other requirements, however those requirements (e.g. Element 4) do not include document and record control.
- The term "acceptable practices" could be more specific with respect to revision of documents.

Element 13 - Monitoring and Measurement

Observations

13. Element 13 references Element 4 for monitoring and assuring compliance with legal and other requirements, however Element 4 does not discuss this responsibility or procedure.
14. The process for contractors to report noncompliance lacks a method for OCU to verify that they have been informed of any noncompliance.
15. The Goals and Objectives table (ENS-5-D-2) shows target dates that have passed, and it is not clear if this means the objective was reached or if the target was missed.
16. The Element calls for annual review of progress towards meeting goals and objectives. Is this frequent enough to make adjustments should it be found that objectives are not being met?

Comments

- It is not stated how compliance with other requirements is monitored.

Element 14 - Nonconformances: Preventive and Corrective Action

Observations

17. There is no written procedure for identifying and investigating noncompliances.
18. OCU does not require root cause identification for some nonconformances. Identification of root cause is required for all nonconformances.

Comments

- There does not appear to be distinction between nonconformances and noncompliances.
- Typically, Corrective & Preventive Action is used for more than just handling nonconformances, however no further use of the procedure is stated in EMS Manual Element 14.

Element 15 - Biosolids Program Periodic Performance Report

Observations

None – see comments below

Comments

- Why is the Biosolids Report specified as being issued annually? It may be desired more frequently.

Element 16 - Internal EMS Audits

Observations

None – see comments below

Comments

- It is not clear how the scope of each internal audit is determined.
- Contractors are "expected to develop and implement corrective actions for (OCU) audit findings". How will OCU enforce this requirement?

Element 17 - Periodic Management Review of Performance

Observations

19. The required agenda for Management Reviews stated in EMS Manual El 17 does not appear to include status of corrective and preventive action or recommendations for improvement and the need for assessing suitability and adequacy of the EMS is not noted.

Comments

- Forcing management reviews to occur one month after internal audits may be restrictive.
- The person assigned to lead / organize management reviews is not mentioned in the EMS Manual. This would be an appropriate place to provide that authorization.

END OF REPORT