



National Biosolids Partnership  
Environmental Management System (EMS)  
Internal Audit Report  
City of Fort Worth Water Department  
Village Creek Water Reclamation Facility  
Fort Worth, Texas

Audit Performed By:  
Steven L. Nutter  
Audit Dates: July 20-27, 2016  
Report Date: July 29, 2016



References

City of Fort Worth EMS for Biosolids  
NBP - 3<sup>rd</sup> Party Auditor Guidance (August 2011)  
NBP – Guidance for Interim Audits (August 2004)

## **1.0 - INTRODUCTION**

The Fort Worth Water Department, in conjunction with Renda Environmental Inc. (Contractor), has developed and implemented an environmental management system (EMS) for its Biosolids Program. The EMS helps the Village Creek Water Reclamation Facility to manage all aspects of its Biosolids Program, including solids treatment, dewatering, transporting and beneficial land application. The EMS was first certified on July 20, 2005 by the National Biosolids Partnership (NBP). Fort Worth was one of the original programs to volunteer to become a NBP Demonstration Agency, becoming the seventh agency in the country and the first in Texas to receive EMS certification from NBP.

A properly implemented EMS assists the Biosolids Program with the following:

- Identifying the overall goals and objectives of the Biosolids Program.
- Creating a series of management practices to meet the goals and objectives.
- Managing biosolids and monitoring and measuring the effectiveness of the program.
- Taking corrective and preventative measures if the management practices are not operating correctly.
- Conducting audits of the Biosolids EMS Program.
- Requiring management involvement to make changes to the program as needed.

The City of Fort Worth conducts annual internal audits of its Biosolids EMS Program. The internal audits are structured to work in tandem with third party interim and verification audits. The City believes that the internal audits provide opportunities to continually improve the EMS program and prepare staff for third party audits.

In accordance with Element 16 of the Biosolids EMS Program, an internal audit was conducted on July 20-27, 2016. The audit team consisted of the following individuals from the Fort Worth Water Department:

- Steven L. Nutter, REM, CEA (Lead Auditor) - Over 15 years of experience conducting environmental audits & inspections with the City of Fort Worth Water Department and the Texas Commission on Environmental Quality (TCEQ).

## **2.0 - SCOPE AND OBJECTIVES**

EMS Element 16 details procedures for conducting internal audits of the Fort Worth Biosolids Program. There are two types of internal audits:

- Interim Audits – During any given reporting year if a third party auditor is not utilized then the City shall conduct interim audits that cover the biosolids EMS management activities performed by the Contractor and the City. Interim audits are similar in scope and procedure to the National Biosolids Partnership (NBP) interim third party audits.
- Pre-Interim Audits - The City conducts pre-interim audits prior to third party audits. Pre-interim audits are more general in nature and focus on items such as environmental performance and goals & objectives.

This year the internal audit scope was designed to follow the pre-interim audit procedures. This included the review of the following items:

- Overall Environmental Performance
- Compliance Status
- EMS Goals & Objectives
- EMS Management Review Meetings
- Annual EMS Performance Report
- Corrective Action Notices (CAN)

The objective of the audit was to determine whether or not the EMS is effective in helping the Water Department to manage its biosolids processes, as well as assisting the Biosolids Program in preparing for the third party verification audit.

## **3.0 - METHODOLOGY**

The audit followed the guidelines provided in EMS Element 16 of the Fort Worth Biosolids Program. Each of the required components was reviewed to determine overall program effectiveness. Specifically, the program was evaluated using the following methods:

- Document Review
- Interviews with City and Contractor Personnel

#### **4.0 - OVERALL EVALUATION**

The Fort Worth Biosolids Program has undergone significant changes over the last year. Newly implemented management practices and treatment technologies have helped Fort Worth to improve the odor characteristics of the land applied biosolids. New infrastructure projects are under construction or are entering design phase (see EMS goals and objectives). These projects are being undertaken to improve biosolids processing activities and enhance overall environmental performance. During the spring of 2016 persistent wet weather conditions and limited access to municipal landfills presented a challenge for the beneficial reuse and/or disposal of biosolids. Fort Worth and its Contractor adapted to these changing circumstances by utilizing the EMS to help ensure the overall sustainability of the biosolids program.

Based on the pre-interim audit results, the EMS continues to be an effective tool for assisting with biosolids program implementation and improvement. The EMS is a critical component that allows the City and the Contractor to respond to program challenges in a systematic and timely manner. However, there are opportunities for improvement that both the City and Contractor have acknowledged and are committed to addressing. This is further testimony to the continual improvement philosophy of Fort Worth's Biosolids EMS Program.

#### **5.0 - AUDIT PARTICIPANTS**

The following City employees and Contractor personnel were contacted during the course of the audit:

Ben Davis, Biosolids Program Manager (Contractor): (817) 571-9391  
Magan Lersch, Biosolids EMS Coordinator: (817) 392-4979  
Glory Walker, Sr. Environmental Specialist: (817) 392-4936

#### **6.0 - PRE-INTERIM AUDIT FINDINGS**

The following summary addresses positive observations, nonconformances and recommendations noted by the auditor during the pre-interim audit.

##### **6.1 - Positive Observations:**

The Fort Worth Biosolids EMS is an established program that helps improve activities associated with the biosolids value chain. City and Contractor personnel are well trained and understand their roles and responsibilities. The Biosolids Program continues to utilize corrective action notices and goals and objectives to address program deficiencies and promote overall program improvement.

## 6.2 - Minor Program Nonconformances

### Element 3 – Critical Control Points

Item 3.1: Identify and document the critical control points of the organization’s biosolids management activities throughout the biosolids value chain, consistent with those identified in the National Manual of Good Practice and other authoritative sources.

Finding: Ferric chloride is now an established treatment process that is used to improve biosolids dewatering and odor characteristics. It is also instrumental in helping to control struvite buildup at the Dewatering Facility. However, the ferric chloride pump station has not been identified as a critical control point, nor is it included on the “Critical Control Points Master Table”.

### Element 12 – Document Control

Item 12.2(b): Establish and maintain document control procedures and practices to ensure that the EMS program documentation and other documents are created following established document creation protocols.

Finding #1: Ferric chloride is currently being used for post digestion treatment of liquid sludge. Village Creek has not developed standard operating procedures for this process.

Finding #2: The “TPDES Permit Required Report Summary” in Element 12 does not include line items for the reports listed below. Also, several of the dates listed in the “Frequency” column need to be updated

- Quarterly Odor Control Reports
- Monthly Land Application Schedule
- Final Odor Control Reports
- Annual Surface Disposal Reports

### Element 14 – Nonconformance

Item 14.6: Track progress in completing the corrective action notices and periodically update to reflect completion.

Finding: CAN 2016-01 languished for several months and was not updated or closed out in a timely manner. CAN 2014-12 remains open despite being at a point where it needs to be closed out. Significant progress has been made on CAN 2014-05 and as such it should be updated and/or closed out.

## 6.3 - Recommendations

1. It is recommended that the review and update criteria listed in Element 3 (Critical Control Points) be modified to improve the document modification process. For example, this section should specify that the EMS Manager & EMS Coordinator are

responsible for ensuring that the list of critical control points is kept up to date. Furthermore, if critical control points are added or deleted from the list then the EMS Management Team will be notified by email or other means, and allowed to provide feedback if necessary. Also, during the annual EMS Management Review the Management Team will be shown a complete list of all critical control points. Feedback provided during this meeting will be incorporated into the Critical Control Points Master Table.

2. The Contractor has been working to complete standard operating procedures for the operation and maintenance of the heat recovery steam generator (HRSG) and the steam turbines. It is recommended that the Critical Control Points Master Table be amended to reflect that either the SOPs have been completed or provide an estimated date for finalization.

## **7.0 – PRE-INTERIM AUDIT REQUIRED ELEMENTS**

### **7.1 - Environmental Performance**

Required TPDES Monitoring. During the 2014-2015 reporting period the Fort Worth Biosolids Program was 100% compliant with TPDES monitoring requirements:

- Fecal
- Salmonella
- Helminth Ova
- Enteric Virus
- Metals
- Toxicity Characteristic Leaching Procedure (TCLP)
- Polychlorinated Biphenyl (PCB)
- Odor Log Monitoring Requirements
- Vector Attraction Reduction Alternative #1 Requirements

Odors. Odor performance for land application activities has improved when compared to the previous year's performance. During the 2015-2016 reporting period 12 odor complaints were forwarded to the Water Department. In comparison, the 2014-2015 reporting year had a total of 38 odor complaints. This improvement is due to several factors, including:

- Dosing optimization of ferric chloride has resulted in improved dewatering and odor performance
- New management practices were implemented in July of 2015 resulting in reduced odor emissions at the biosolids land application sites.
- Routine inspections and odor monitoring were performed at the Biosolids Dewatering Facility and the land application sites to verify complaint information and to make informed decisions on how to address the odor issues.

Tracking & Dust Complaints. During the 2015-2016 reporting period there were 3 tracking & dust complaints forwarded to the City. The following actions were taken in response to problems associated with tracking of biosolids onto roadways:

- Inspections were performed at land application sites to verify complaint information and to make informed decisions on how to deal with tracking issues.
- For those instances in which a tracking complaint was verified the Contractor promptly dispatched a crew to clean the roadways.

## **7.2 – Compliance Status**

The monthly land application schedule for June 2016 was not submitted within the required timeframe. CAN #2016-04 was created in response to this nonconformance.

## **7.3 – EMS Goals & Objectives**

EMS Goals & Objectives have been developed and updated as required by Element 5.

## **7.4 – EMS Management Review Meeting**

The Annual EMS Management Review Meeting was held on October 2<sup>nd</sup>, 2015. The meeting minutes were documented and followed the criteria outlined in Element 17.

1. Accomplishments since last review;
2. Changes to policy;
3. Goals & Objectives - Advancements towards existing goals and objectives and identifying “New” goals and objectives.
4. Internal EMS audit results;
5. External third-party Interim & verification EMS audits;
6. Legal and self-imposed regulation compliance;
7. Reports on emergencies, spills or other incidents
8. Corrective Action Notices;
9. Update to Critical Control Points;
10. Changing circumstances;
11. External communication and public participation;
12. Other biosolids performance measures;
13. New scientific/technical data on biosolids;
14. Review status of operational control procedures (SOPs)

## **7.5 – Annual EMS Performance Report**

The Annual EMS Performance Report for the 2014-2015 reporting period was completed as required by EMS Element 15. The City will complete the EMS Performance Report for

2015-2016 after the third party reverification audit in order to incorporate any findings. The EMS Planning Schedule deadline for the EMS Performance Report is September 30<sup>th</sup>.

#### **7.6 – Corrective Action Notices**

There were 10 corrective action notices (CANs) created during the 2015-2016 reporting period. Several of the CANs need to be updated and/or closed out to reflect their current status. CAN # 2016-06 will be created in response to this issue.