



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: August 28-29, 2019
Report Date: October 10, 2019



References

City of Fort Worth EMS for Biosolids
NBP – 3rd 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, transportation 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 August 28-29, 2019. The audit team consisted of the following individuals from the Fort Worth Water Department:

- Steven L. Nutter, REM, CEA (Lead Auditor) - Over 18 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

For 25 years the City of Fort Worth has beneficially reused its lime stabilized biosolids. This material meets the Environmental Protection Agency's (EPA) definition of exceptional quality (EQ) Class A biosolids. The biosolids are utilized as a soil amendment by many farmers and ranchers around the North Texas area. The slow release of nutrients in the biosolids make it a particularly desirable product, resulting in improved soil quality and higher crop yields.

However, during recent years, the biosolids program has faced a number of challenges that make land application of a lime stabilized material problematic. Biosolids dewatering and odor performance, two closely related issues, have become increasingly difficult to manage. Hold times for biosolids is also critical, as stockpiling biosolids for lengthy periods of time results in poor odor performance during land application activities. It is important to note that the Fort Worth Biosolids Program is particularly susceptible to land application delays from wet weather events around North Texas. Biosolids cannot be land applied during rain events or when the fields are saturated. During such delays, large quantities of stockpiled biosolids accumulate at the Dewatering Facility, and when this material is finally land applied, the resulting odor performance is not good.

The Fort Worth Biosolids Program has developed several goals and objectives to address these program deficiencies. A new five (5) million gallon storage tank project is nearing completion which will provide process redundancy and, most importantly, improve the biosolids wet weather odor performance. The four original belt-filter presses, which are utilized to dewater the biosolids, are currently undergoing refurbishment work to improve their performance. And the City has issued a Request For Proposals (RFP) to have a third party company design, build, operate and maintain a new biosolids processing facility, which will produce a Class A product as defined by the Texas Commission on Environmental Quality (TCEQ). This new facility is being designed to produce a sustainable biosolids solution with improved odor performance while at the same time minimizing impacts resulting from wet weather events. This project is tentatively scheduled to be completed by the summer of 2022.

The Biosolids EMS has been instrumental in identifying and addressing many of the challenges identified above. The "plan-do-check-act cycle," which is a core element of any EMS, is a valuable tool that helps Fort Worth to address problems when they arise and also minimize chances of future reoccurrences. The continual improvement philosophy of the NBP is seen throughout the biosolids program. 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
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 following observations were noted:

- City and Contractor personnel are well trained and understand their roles and responsibilities.
- Contractor utilizes numerous strategies to manage odors at the land application sites.
- The City is dedicating considerable resources to help improve odor performance and dewatering activities.
- The continual improvement philosophy is evident throughout the organization.

6.2 - Program Nonconformances

Item 14.3: Implement a procedure to document the necessary corrective actions taken to prevent a recurrence of nonconformance.

Finding: On July 23, 2019, the odor monitoring activities at the Biosolids Processing Facility was not performed as required by the Texas Pollutant Discharge Elimination System (TPDES) permit. This issue was reported to the regulatory authority (TCEQ) on July 26, 2019. However, the City did not initiate a corrective action notice (CAN) to document the corrective action(s) associated with this issue.

6.3 - Recommendations

1. It is recommended that the City modify the language associated with the Corrective Action Plans (CAPs – See Element 14) to further clarify the criteria under which a project is to be tracked as a CAP versus when it is to be made into a formal goal and objective. It is also recommended that Element 5 (Goals & Objectives) be modified to reference the CAP criteria in Element 14.

7.0 – PRE-INTERIM AUDIT REQUIRED ELEMENTS

7.1 - Environmental Performance

Required TPDES Monitoring. During the 2017-2018 reporting period the Fort Worth Biosolids Program was compliant with the following TPDES monitoring requirements:

- Helminth Ova
- Enteric Virus
- Fecal Coliform
- Metals
- Toxicity Characteristic Leaching Procedure (TCLP)
- Polychlorinated Biphenyl (PCB)

The City was compliant with most TPDES odor monitoring requirements. However, on July 23, 2019, odor monitoring was not performed at the Biosolids Dewatering Facility as required by the TPDES permit. See Section 6.2 of this report for addition information.

In August 2018 and April 2019 the City attempted to utilize Vector Attraction Reduction (VAR) Alternative #1 for TPDES permit compliance. This was done in an effort to minimize biosolids hold times. However, less than optimal volatile solids reduction performance in the anaerobic digesters prevented Village Creek from meeting the 38% VAR requirement. Both instances were reported to the regulatory authority (TCEQ) upon discovery. The City did not issue corrective action notices in response to these events as it has already identified the need for improved digester performance. In fact, the City has already developed and is working on three projects that will help address this problem:

1. Digester Thickening Project (Existing Goal & Objective)
2. Grit Control Project (Existing Goal & Objective)
3. Digester Cleaning Project (see CAP #17-04)

Odors. When the biosolids are adequately dosed with ferric chloride and chlorine dioxide, the land application odor performance is usually quite good, provided the biosolids are not stockpiled for extended periods due to wet weather events. Unfortunately, extensive rain delays occurred during the winter of 2018-2019 when multiple region wide rain events passed through the North Texas area. TCEQ rules stipulate that biosolids cannot be land applied during wet weather events or on the days afterwards when soils are saturated. This resulted in large stockpiles of biosolids accumulating at the Dewatering Facility during the referenced timeframe. As the material sat in stockpiles, its odor performance deteriorated. Unfortunately, the local landfills would only accept very limited quantities of biosolids due to its odor and physical characteristics, and not enough to keep up with daily biosolids production. Eventually, when a few fields in Johnson and Hood counties finally dried out, the subsequent land application activities at those locations resulted in numerous odor complaints from people living near the fields.

The City did not issue corrective action notices in response to these events as it has already identified the need for improved odor performance after wet weather events. In fact the City has developed and is working on two large scale projects that will address this problem:

1. Increase Biosolids Storage Capacity (Existing Goal & Objective)
2. Design, Build & Operate New Biosolids Facility (Existing Goal & Objective)

Other Complaints. During the 2018-2019 reporting period the vast majority of the odor complaints (64 in total) were due to odors. Some of those complainants also took issue with the following:

- Tracking of materials onto roadways
- Land application within required setbacks
- Truck traffic
- Land applying during rain events
- Stormwater runoff

When possible, inspections are performed at land application sites to verify complainant information and to make informed decisions on how to deal with any problems. Tracking of materials onto roadways is addressed at the end of each business day per the contract.

7.2 – Compliance Status

On April 15, 2019, the City and its Contractor received three notice of enforcement letters from TCEQ in regards to land application activities during the winter/spring of 2018-2019. Specifically, the letters referenced “nuisance odor conditions” at three land application sites. See the odor summary provided in Section 7.1 of this document for more information. At this time of this review the formal enforcement action is still pending.

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 9th, 2018. The meeting minutes were documented and it 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. External communication and public participation;
11. Other biosolids performance measures;
12. Future plans and projects;
13. Follow-Up Actions

7.5 – Annual EMS Performance Report

The Annual EMS Performance Report for the 2017-2018 reporting period was issued on October 12, 2018. The EMS Performance Report included all the required elements.

7.6 – Corrective Action Notices

At the time of this review there are no open corrective action notices.