



# National Biosolids Partnership

## Biosolids EMS Internal Audit Report

**Internal Audit Date:** February 22, 2021

**Internal Audit Report Date:** March 2, 2021

**Internal Audit Team:**

Elijah Stuber – Environmental Compliance Specialist, Lead Auditor

Noah Czech – Stormwater Compliance Specialist, Lead Auditor

Chris Plautz – Wastewater Services Supervisor

Mark Weyer – Utilities Maintenance Mechanic

Wayne Ethen – Heavy Equipment Operator II

Emma Larson – Assistant Public Utilities Director

David Wallen – Wastewater Services Specialist

Rocio Durkot – Utilities Laboratory Technician

Shanna Czeck – Utilities Water Quality Coordinator

Jacob Ethen – Wastewater Services Manager

*\*Also in attendance: Elizabeth Kramer – Public Services Analyst*

### Objectives

The City of St. Cloud, Minnesota's Environmental Management System (EMS) is at Platinum Level Status regarding its Biosolids program at the Wastewater Treatment Facility (WWTF). The EMS covers the WWTF Biosolids value chain from pretreatment of wastewater through the end use via land application as a valued agricultural product.

The primary objective of the internal audit is to verify that the St. Cloud WWTF EMS is being used to manage its Biosolids program and conform to the requirements of the National Biosolids Partnership (NBP) *Environmental Management System for Biosolids* standards. Additional internal audit objectives are to:

- Evaluate the effectiveness of the Biosolids Management Program and the EMS;
- Evaluate progress towards goals and objectives;
- Review responses to non-conformances and seek opportunities to improve;
- Evaluate the effectiveness of the management review elements;
- Evaluate the success of public participation and communication;
- Evaluate progress towards NBP outcomes; and
- Ensure requirements of the platinum level program status are being met.

## **Audit Scope**

The EMS team's lead auditors decided that EMS team members would help conduct the Year 3 Internal Audit. The lead auditors created a detailed agenda outlining areas to be reviewed by select team members. The lead auditors provided oversight of the entire audit process. A detailed email was distributed by the lead auditors to the audit team prior to the internal audit. The email assigned element review teams, provided audit guidance, background material and information about where to gather audit materials.

Below is a summary of the internal audit agenda:

- Lead auditors reviewed with all members' effective auditing practices.
- Progress towards NBP outcomes (Environmental Performance, Regulatory Compliance, Interested Party Relations, Quality Practices) were reviewed by the entire team.
- Corrective and preventive actions were reviewed.
- Actions taken on minor non-conformances and opportunities for improvement were reviewed and the status of open items were discussed.
- Progress toward Goals and Objectives were reviewed by team members. This included an update about the annual goal review and discussion that occurred prior to the audit.

The below elements were audited in teams. Teams took detailed notes, conducted interviews as needed and reviewed working forms and documents. Small teams presented findings to the entire audit team. The lead auditors guided a discussion and asked questions as each team provided their findings.

Element 5: Goals and Objectives (Noah Czech, Elijah Stuber)

Element 6: Public Participation (Wayne Ethen, Mark Weyer, Jacob Ethen)

Element 9: Communication (Chris Plautz, Rocio Durkot, David Wallen)

Element 14: Non-Conformances, Corrective and Preventive Actions (Noah Czech, Elijah Stuber)

Element 16: Internal Audit (Emma Larson, Shanna Czeck)

## **Reference Materials**

- St. Cloud WWTF Environmental Management System Manual (2019)
- National Biosolids Partnership "Third Party Verification Auditor Guidance" (2011)
- The National Biosolids Partnership "Code of Good Practice"
- The National Biosolids Partnership "Biosolids Management Program Guidance Manual"

## **Definitions of Audit Terms**

**Major Non-conformance** - A serious omission from requirements and/or other departure that represents, or could cause, a systemic failure.

**Minor Non-conformance** - An isolated departure from requirements that does not represent a systemic failure.

**Opportunity for Improvement** - Possible improvement opportunity in the EMS based on auditor observations.

## **Annual Review Requirement Results**

### **Progress towards Goals and Objectives**

The annual review of goals and objectives occurred in January 19, 2021 by the EMS Team prior to the internal audit. Updates were made to action steps and ongoing status items. Several time bound changes were made to reflect the impacts of COVID, or where more time was needed to properly complete objectives and action steps. Current/open goals were reviewed during the internal audit and are summarized below. It was determined that goals and associated objectives have either been met or are on schedule to be completed with these updates.

**Goal 7: Reduce purchased electricity by 100% by 2022:** Goal 7 was reviewed and discussed during the internal audit. An objective summary is below and is further detailed in the Goal summary sheet. The team agreed the objectives clearly met SMART criteria.

- **Objective 7.1 High Strength Waste (HSW) utilization optimization completed by 2021.**  
Maintaining seven HSW sources on an ongoing basis. Currently not advertising available HSW intake due to limited capacity. New HSW pump planned for 2021 will increase daily feed rate and capacity. Study with Hazen is ongoing. An Energy Balance and Analysis Tool (EBAT) model will be generated to enable quick review of sources.
- **Objective 7.2 Biofuel Generator expansion – Generator ordered, installation, operation, and optimization to be completed by the end of 2020.**  
Completed in 2020.
- **Objective 7.3 Improve digester gas production through increased primary digester capacity – Converting digester 4 to a primary by 2022.**  
In 2022 Capital Outlay.
- **Objective 7.4 Install a hydro turbine within the effluent piping from the NEW RF to the Mississippi River.**  
In planning, research, and funding phase. Equipment Supplier Study Completed November 2018.

**Goal 8: Reduce Phosphorus Concentration in St. Cloud's Biosolids Liquid Product by 2020:**

Goal #8 was reviewed and discussed during the internal audit. An objective summary is below and is further detailed in the Goal summary sheet. The team agreed the objectives clearly met SMART criteria. An update was provided in the goal for each action step.

➤ **Objective 8.1 Reduce phosphorous concentration and volume in Biosolids Fertilizer Product to ensure regulatory compliance and to increase farmer interest in product by 2021.**

HSW studies in 2019/2020 identified Melrose Dairy as high in phosphorus and low in COD. Looking to discontinue discharge from this source. The WSSTRIP process may already be fully optimized as percent removal to soluble phosphorus in the 910 tank has been 45%-58%, this is above expected values. Further optimization may not be achievable.

**Goal 9: Optimize Polymer Consumption in Lystek Process.**

Goal #9 was reviewed and discussed during the internal audit. An objective summary is below and is further detailed in the Goal summary sheet. The team agreed the objectives clearly met SMART criteria. An update was provided in the goal for each action step.

➤ **9.1. Provide stable polymer feed to the Lystek process to reduce consumption rate.**

The goal to reduce polymer feed rate by 1 gallon/hour is on hold until the feed water system is reviewed to stabilize water temperatures. Switched to a different polymer blend that is more suitable for winter use. Working to optimize steam boiler system in the 500 building to potentially use for polymer feedwater system and dryer for Ostara.

**Goal 10: Ensure Long Term Program Sustainability by Reducing Recycling Expenditures.**

Since the previous internal audit, the measurable section of objective 10.1 was updated to be more specific and the time bound section was extended until the end of 2023 due to COVID. Goal 10 was reviewed and discussed during the internal audit. An objective summary is below and is further detailed in the Goal summary sheet. The team agreed the objectives clearly met SMART criteria. An update was provided in the goal for each action step.

The lead auditors asked to review the measurable section of this goal: *Annual review of Cost to Haul monitoring parameters, including staff overtime, fuel usage, miles driven, extension of capital depreciation, contract hauler expenses.* An opportunity for improvement was identified within this goal.

➤ **Objective 10.1 Evaluate available options to reduce recycling expenditures.**

Plans to host an open house event were put on hold due to COVID. The team did discuss implementation strategies with another biosolids recycling program. Remaining action steps are on-hold due to COVID.

**Opportunities for Improvement – Goals & Objectives:**

- 1) No formal documentation of the measurable section of goal 10 available. This discussion topic will be added to the Management Review that follows internal audits.

**Progress Toward NBP Outcomes**

Environmental Performance:

Staff continue to meet and exceed regulatory compliance. The program strives for greater environmental sustainability through the NR2 project, installation of the second biofuel generator, and phosphorus reduction goal.

Regulatory Compliance:

Staff continues detailed sampling, testing, and operations to ensure regulatory compliance. There were no Regulatory Non-Compliances noted for 2020.

Interested Party Relations:

Unfortunately, due to COVID, most plans in 2020 related to interested party relations had to be put on hold. A facility virtual tour is being created.

In 2020, the City of St. Cloud received the "2020 Water Technology Innovator Award" from Central States Water Environment Association. This award was given "In Recognition of Innovative and Proactive Accomplishments Beyond the Traditional Wastewater Operational Models".

Quality Practices:

Implementation of the EMS program continues to lead St. Cloud's Biosolids program to maintain a high-quality product, nutrient recovery, and energy production.

**Actions Taken on Minor Non-Conformances**

There were zero non-conformances to address from the 2020 internal audit and no outstanding non-conformances to address. The new comprehensive corrective action plan tracking spreadsheet continues to be a great tracking tool that is used to track non-conformances.

**Actions Taken on Opportunities for Improvement (OFI)**

The internal audit team reviewed the eight opportunities for improvement identified during the 2020 internal audit and one opportunity for improvement open from the 2019 internal audit. The eight opportunities for improvement from 2020 have been fully reviewed, addressed, and/or completed. The OFI to "create new SOPs and EOSs for new equipment and processes" is very close to being completed. A detailed tracking spreadsheet was reviewed during the audit. Staff has invested a tremendous amount of time into this opportunity for improvement.

The EMS team continues to demonstrate great effort in continual improvement by addressing/completing opportunities for improvement.

### **Corrective and Preventive Actions**

No required corrective/preventative actions were identified since the last internal audit.

## **Audit Report**

### **Element 5: Goals and Objectives**

#### **Major or Minor Non-Conformances:**

No major or minor non-conformances were found.

#### **Element Audit Summary and Positive Observations:**

Element 5 audit findings were presented by Noah Czech and Elijah Stuber. Chris Plautz was interviewed to understand how input from field owners was taken into consideration when setting goals and objectives. Chris noted that input was considered with action steps related to potassium in Lystek biosolids. The SMART criteria goal format was easy to follow and provides clear information related to element minimum requirements. Continual improvement was highlighted in each goal and consistent with the NBP Code of Good Practice.

It was noted that it was not clear within the goals themselves who is responsible for each task or action, however, the written element describes the EMS team as responsible with help from the EMS coordinator lead where needed. The audit team discussed the minimum element requirement that states: *Does the action plan describe the resources and financial investments needed?* An opportunity for improvement was identified here.

The EMS audit team agreed the element meets all minimum requirements.

#### **Opportunities for Improvement:**

- 1) Review the written element and/or each goal to ensure that the following element minimum requirement 5.7 is clearly achieved: *Does the action plan describe the resources and financial investments needed?*

### **Element 6: Public Participation**

#### **Major or Minor Non-Conformances:**

No major or minor non-conformances were found.

#### **Element Audit Summary and Positive Observations:**

Element 6 audit findings were presented by Wayne Ethen, Mark Weyer, and Jacob Ethen. COVID limited public participation goals and plans for 2020, however, public participation

feedback received in the field from farmers and landowners remained positive. Website updates and a facility virtual tour are planned to provide additional public participation opportunities. The EMS audit team agreed the element meets all minimum requirements.

**Opportunities for Improvement:**

None.

**Element 9: Communication**

**Major or Minor Non-Conformances:**

No major or minor non-conformances were found.

**Element Audit Summary and Positive Observations:**

Element 9 audit findings were presented by Chris Plautz, Rocio Durkot, and David Wallen. Rocio noted that the City website is up to date with various links to the Biosolids Management Program. The "Digester Newsletter" is added to the website annually to provide an overview of the previous year's summary, achievements, and goals. The EMS audit team agreed the element meets all minimum requirements.

It was noted that the entire EMS Manual is not physically provided to contractors and/or new employees of the City, however, the document is available upon request to these parties. The audit team discussed the minimum element requirement that states: *Is the information about our biosolids activities and all 17 elements given to employees and contractors?* An opportunity for improvement was identified here.

Rocio noted that Element 9 states that Interested Parties will be contacted within 24 hours given the complexity of the manner/request. The audit team discussed the minimum element requirement that states: *Are requests for information about the BNP and biosolids program responded to in a timely manner.* Shanna Czeck suggested a log containing correspondence with Interested Parties may be beneficial to the program. An opportunity for improvement was identified here.

**Opportunities for Improvement:**

- 1) Review the written element to ensure that the following element minimum requirement 9.5 is clearly achieved: *Is the information about our biosolids activities and all 17 elements given to employees and contractors?*
- 2) Create a digital log for correspondence with Interested Parties to ensure communication requirements are met in a timely manner. This log would also provide documentation of correspondence with Interested Parties.

**Element 14: Non-Conformances, Corrective and Preventive Actions**

**Major or Minor Non-Conformances:**

No major or minor non-conformances were found.

**Element Audit Summary and Positive Observations:**

Element 14 audit findings were presented by Noah Czech and Elijah Stuber. The element minimum requirements continue to be clearly met. Documentation using the tracking spreadsheet is commended and is very effective. Chris Plautz was interviewed to ensure no items were missed being added to the spreadsheet from the hauling season.

**Opportunities for Improvement:**

None.

**Element 16: Internal EMS Audit**

**Major or Minor Non-Conformances:**

No major or minor non-conformances were found.

**Element Audit Summary and Positive Observations:**

Element 16 audit findings were presented by Emma Larson and Shanna Czech. The element minimum requirements continue to be clearly met. The last two internal audit reports were reviewed as documentation. A strength in 2020 was the ability of the team to ensure continuity of compliance during several position transitions and the COVID-19 pandemic. Two new members were added to the internal audit team in 2021. An opportunity for improvement was identified.

**Opportunities for Improvement:**

- 1) It was noted in review of Element 16 that new internal audit team members should be given audit training from the lead auditors.

**Audit Conclusions**

We appreciate the opportunity to be lead auditors for the Biosolids EMS Internal Audit. It has been remarkable to watch the program grow with new goals, facility changes, new processes, and challenges while maintaining Platinum Level Certification. Staff continues to take great pride in the program and is focused on maintaining the Biosolids Management Program Code of Good Practice.

We recognize and commend the extra effort staff has put forth to maintain the Biosolids Program during staff transitions and COVID. We also thank the EMS team for recognizing how the Internal Audit is organized with different staff reviewing program elements each year. We feel new perspectives provide valuable input and opportunities for improvement that match the goals of this platinum-level program that allows the WWTF to strive for continual improvement. No major or minor non-conformances were identified, and five (5) opportunities for improvement were identified during the 2021 Internal Audit.