

Raleigh Water

Resource Recovery Division

Environmental Management System Manual

Issue Date: October 1, 2005
Revision Date: October 26, 2026

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Document Control Log

Title	Approved By:	Approval Date
Biosolids EMS Manual	Marti Gibson, EMS Coordinator	Oct 1, 2005
Revision Number	**Description of Revisions**	**Date**
00	Original Distribution	Oct 1, 2005
01	Revisions resulting from initial internal audit	Aug 16, 2006
02	Revisions resulting from Document Review	Oct 12, 2006
03	Revisions resulting from Phase 2 of 3rd party audit	Nov 16, 2006
04	Revisions resulting from annual manual review	Nov 26, 2007
05	Revisions resulting from annual manual review and internal audit. Revisions made to reflect actual procedures utilized.	Oct 30, 2008
06	Condensed and streamlined entire EMS manual to more closely reflect current practices and reduce overall size of manual.	Jan 21, 2009
07	Updated Appendix 5-1 to define action plans and responsible parties for goals and objectives	Aug 1, 2009
08	Revisions resulting from annual manual review and audit processes.	Dec 1, 2009
09	Revisions resulting from annual manual review and audit processes.	Oct 1, 2010
10	Revisions resulting from annual manual review and audit processes.	Jan 17, 2012
11	Revisions resulting from annual manual review and audit processes.	Jan 30, 2012
12	Per request from Department Director	Feb 22, 2012
13	Revisions resulting from annual manual review and audit processes: Revised entire manual to include updates and ISO 14001:2004 requirements.	Feb 20, 2014
14	Revamped entire manual to more process-oriented manual	1/15/2015
15	Revisions to Memorandum of Understanding to cover ISO 14001:2004 requirements (associated EMS manual document); revised manual to reflect changes to Memorandum of Understanding	5/5/15
16	Revisions to glossary	8/26/15
17	Revisions to Scope, signature page, and overall changes to include entire Resource Recovery Division	11/12/15
18	Revisions to entire manual to comply with ISO 14001:2015 standards	2/2/17
19	Revisions resulting from annual manual review and audit processes	1/11/18
20	Revisions resulting from annual review and audits	1/9/19
21	Revisions resulting from annual review and audits	1/8/2020
22	Revisions resulting from audits	4/27/2020
23	Revisions resulting from annual manual review	1/21/2021
24	Revisions resulting from annual review	1/21/2022
25	Revisions resulting from annual review	3/15/2023
26	Revisions resulting from annual review	3/8/2024

Date	Revision No.	Change	Reference Section	Edited By
January 2026	27	Added “Renewable Natural Gas”	Operational Control	EMS Team
October 2026	28	Updated the Intended Outcomes Update Life Cycle Considerations	Page 4 Page 16	EMS Team

Introduction

The initial copy of this Resource Recovery Division’s (RRD) Environmental Management System (EMS) Manual has been approved by the Raleigh Water Director. Future revisions to the manual can be made by the EMS Coordinator in conjunction with the EMS Team.

Requirements of this manual apply to the Wastewater Program in the Resource Recovery Division’s service area and meet the minimum requirements of ISO 14001:2026.

Revised manual approval:

Whit Wheeler

Whit Wheeler
Raleigh Water Director

March 8, 2024

Intended Outcomes

Environmental management for the Resource Recovery Division is a strategic priority. The EMS is intended to produce continual program improvement through the establishment of the following intended outcomes, aligning with the City Raleigh’s Strategic Plan and Raleigh Water’s Business Plan:

1. Strengthen Environmental Performance
2. Fulfillment of compliance obligations
3. Recruit, develop, and retain a competent workforce
4. Promote consistent and effective operational quality practices

Scope

The overall scope of the Environmental Management System is the collection and treatment of wastewater and the control and the return of treated water and biosolids to the environment.

Boundaries include the Neuse River Resource Recovery Facility, Little Creek Resource Recovery Facility, Smith Creek Resource Recovery Facility, pretreatment program, reclaimed water, biosolids, effluent, and pump stations in the Resource Recovery Division's service area.

Planned Arrangements

The EMS is based on the ISO 14001:2026 Standard.

EMS Manual

Review and Approval

1. Review manual and appendices at least annually or when major changes occur in treatment processes, equipment, or other relevant areas (EMS Team).
2. Recommend and review any updates and other changes at EMS team meetings.
3. Update manual and appendices with approved changes (EMC).

Communication and Revisions

1. Communicate revisions to the EMS manual to the EMS team (EMC).
2. Post EMS manual on the City's website and in the Raleigh Water Teams folder.
3. Control manual so that changes can be made only by the EMC or designee.

Environmental Policy

The Resource Recovery Division recognizes the responsibility to protect the environment and public health focusing on products for beneficial reuse by:

- meeting or exceeding compliance obligations
- seeking continual improvement in all operations
- promoting positive relations with interested parties
- protecting the environment, including prevention of pollution

Approved: July 23, 2004

Revised: January 8, 2020

Signed: *Whit Wheeler,* Raleigh Water Director

Procedure

- Communicate policy to affected staff, relevant contractors, and interested parties.
- Post the policy statement on the City's intranet and website (www.raleighnc.gov).
- Train affected employees on the EMS policy. Employees are expected to comply with the letter and intent of this policy.

Leadership and Commitment

EMS's top management, which includes the Raleigh Water Assistant Director for Wastewater and the Resource Recovery Division Manager, is responsible for the establishment, integration, and effectiveness of the EMS. Top management ensures that the EMS achieves intended outcomes, promotes continual improvement, supports employee contribution to the EMS, and supports other managers in their leadership as it applies to their areas of responsibility.

Roles and Responsibilities

Purpose

To define the roles and responsibilities for staff and contractors performing EMS functions. Other sections and related documents also describe roles and responsibilities where relevant to certain procedures.

1. Roles and responsibilities for staff (including contractors) that are specific to the EMS are assigned by the Resource Recovery Manager and the EMC. They are reviewed and updated as necessary on an annual basis.
2. The Resource Recovery Manager and the EMC will also review existing roles/responsibilities whenever significant operational changes are made. Revisions to the roles and responsibilities tables are made by the EMC.
    - **Raleigh Water Director**
      Top management with responsibility and authority for oversight of Raleigh Water
    - **Raleigh Water Assistant Director for Wastewater**
      Top management for oversight of wastewater management for the department.
    - **Resource Recovery Manager**
      Overall management of the Resource Recovery Division and the environmental performance of the plant.
    - **EMS Team**
      RRD program managers and supervisors. Reviews and implements EMS within the programs they manage.
    - **EMS Senior Management Team**
      Participates in management review of EMS.
    - **Environmental Management System Coordinator (EMS)**
      Overall responsibility for implementing and monitoring EMS. Facilitates and coordinates EMS activities and reports performance for management review and is the Divisional representative for the Raleigh Water Departmental Management System.
    - **Contractors, Vendors and Suppliers**
      Provide materials and supplies for the effective operation and maintenance of the RRD. Comply with policies and procedures of the Resource Recovery Division as listed in service agreements, contractor letters, and Memorandum of Understanding for contracted activities relevant to wastewater management.

Context of the Organization

Internal and External Issues

Internal and external influences on the EMS are identified by the EMS team utilizing various resources. This list of resources includes:

- Cityworks (CMMS)
- Electronic communication lists
- Electronic Links on City Website (provides ways for stakeholders to contact us and provide feedback)

External influences are customer service related/focused and align with Raleigh Water's Business Plan, which highlights the desire to become a world-class utility. External influences include regulatory compliance, customers/end users, environmental conditions, and social, political, and competitive circumstances.

Internal influences include Process Control Points and associated Operational Controls.

Monitoring of internal and external influences is achieved by the EMS team maintaining and responding to the request in the CMMS for feedback and considering feedback and input when establishing Environmental Objectives and Significant Environmental Aspects. All input received is discussed during management review to ensure both internal and external influences are considered when moving toward becoming a world-class utility.

Interested Parties

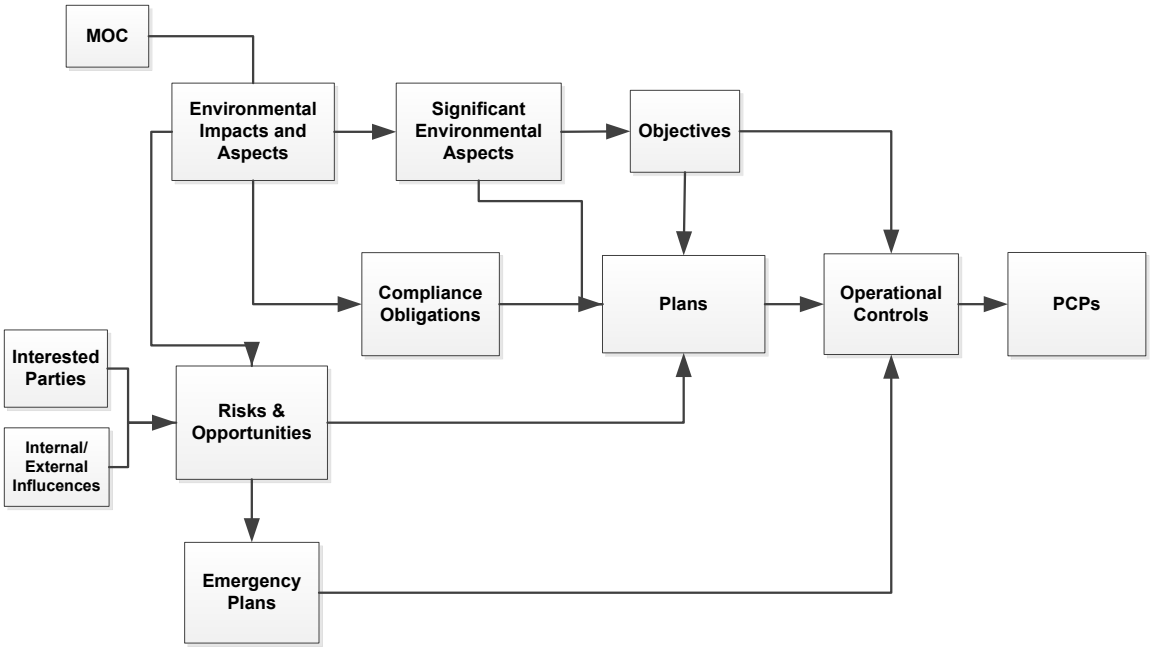
Interested parties that are relevant to the Environmental Management System are determined by the EMS Team. Discussions take place based on historical information, knowledge of the requirements of the EMS related to interested parties, and consideration of known interested parties. Once the interested parties have been identified, the relevant needs and expectations (requirements) of the interested parties are determined. Additionally, methods by which the expectations will be managed are documented. The EMS team also determines which of the interested party expectations become compliance obligations (Appendix E).

Communication with internal and external interested parties is also a component of the EMS. Input from stakeholders and interested parties is considered when making decisions regarding the wastewater management program, setting program objectives and initiatives, and identifying risks and opportunities for continual improvement of the EMS.

Environmental Management System

The Resource Recovery EMS will establish, implement and maintain operational processes that interact collectively for continuous improvement (See Appendix A). These processes work together to protect the environment and public health from pollution, depletion of natural resources, with a consideration of climate change (Appendix K).

Planning



In order to address program components such as environmental aspects and impacts, compliance obligations, environmental objectives, interested party input, emergency plans, internal/external influences, and risks and opportunities, the EMS team meets on a consistent basis to discuss and review any changes. Intended outcomes are considered when identifying these program components.

Significant environmental aspects are reviewed periodically as determined by the EMS team or when changes in processes occur. Changes in processes may occur due to a change in the City's Strategic Plan, Raleigh Water's Business Plan, or directives passed down from City Council.

Action plans to address risks are identified and considered when establishing environmental objectives. Interested party input and internal/external influences are also included in the plans to address risks.

The process control points, significant environmental aspects, and operational controls are utilized to determine environmental objectives and risks and opportunities. Environmental Objectives are reviewed every other month by the EMS team to evaluate improvement. Effectiveness of these components is reviewed during management review.

Environmental Aspects

Purpose

To identify environmental aspects and impacts within the EMS that could potentially have an environmental impact, either positive or negative (Appendix D).

Procedure

1. The EMS team shall identify and document environmental aspects and impacts that it has control or influence over, while considering historical data, staff experience, system knowledge, public input, and compliance obligations.
2. Where reasonable, consider both direct and indirect impacts.
3. Following identification of aspects, assign an impact rating (low, medium, or high) for significance in the areas of overall impact, business effect, severity, and scale of impact to determine significance. Aspects with ratings of medium or high or have a high likelihood of improvement are considered significant. The team also deemed compliance obligations as significant.
4. Document life cycle perspective for each aspect.
5. The criterion for determining significance is based upon the opinion, reasonable judgment, and consensus of the EMS team members. When determining the significance of environmental aspects, the EMS team considers:
   - the level of Resource Recovery control or influence
   - new or modified developments
   - activities, products, or services
   - normal and abnormal conditions
   - reasonably foreseeable emergency conditions
   - past environmental incidents (experience/history)
   - regulations
   - business impact, severity, or scale (direct/indirect)
6. Document identified significant aspects and action plans to address them.
7. Plans to address significant environmental aspects include following established procedures, interested party input, internal and external influences, and risks and opportunities.
8. Environmental aspects and impacts will be reviewed by the EMS team at least annually or when major changes occur to processes, equipment, or other relevant areas.

Risks and Opportunities

Purpose

To identify risks to EMS operations that could impede or hinder the ability to achieve the intended outcomes and continual improvement, as well as to identify opportunities for continual improvement (Appendix I).

Procedure

1. The EMS team will consider the level of control of influence, normal and abnormal conditions, reasonable and foreseeable emergency conditions, life cycle, and past environmental incidents when identifying risks and opportunities.
2. Risks are assessed according to the criteria of frequency, severity, and probability. Values of 1-5 are assigned based upon history, experience, and reasonable judgment of the EMS team; items with a value of 9 or above were deemed significant.
3. The EMS team shall determine action plans to address risks and opportunities to avoid and/or mitigate risks or improve upon opportunities.
4. Note occasions where the Division does not have a degree of management control or influence over the risk for future review.
5. Consider both harmful and beneficial environmental impacts when determining risks.
6. Consider and incorporate risks into environmental objectives.
7. The EMS team will incorporate and implement the action plans in the EMS process and evaluate the effectiveness of these actions.
8. Review the Division's activities and risks at least annually, or when major changes occur to processes, equipment, or other relevant areas.

Compliance Obligations

Purpose

To identify compliance obligations and changes in regulatory compliance issues that are applicable to the Resource Recovery Division and to monitor compliance of contractors.

Procedure

1. The EMS team will identify compliance obligations for the Resource Recovery Division through networking, communication with regulatory agencies, professional associations and publications, management review process, needs and expectations of interested parties, and any other available means.
2. Establish, document, and maintain operational controls for process control points to ensure regulatory compliance with compliance obligations.
3. Document compliance obligations.
4. Address all noncompliances through the corrective action process.
5. To ensure compliance obligations are met, periodic inspections or audits are conducted by North Carolina State regulators. Evaluation of conformance with the EMS is conducted once per certification cycle.

Monitoring Regulatory Compliance of Contractors

1. Contractors are to adhere to applicable regulatory and other requirements as stated in contract agreements and Memorandum of Understanding.
2. Contract liaisons will monitor, record, and identify regulatory compliance or noncompliance of contractors during site inspections.
3. Contractors will be notified by the contract liaison of any regulatory or contractual changes via various methods including electronic communication, face to face meetings, and Management of Change (MOC) process.
4. Contractors must notify the contract liaison, appropriate management staff, and the local office of NCDENR of any regulatory noncompliance.
5. Contractors will notify the Resource Recovery Manager, contract liaison, and appropriate program management staff of contractual (non-regulatory) noncompliances.
6. Address all noncompliances through the corrective action process.

Environmental Objectives

Purpose

To establish environmental objectives for continuous improvement of the EMS.

Procedure

1. Establish environmental objectives annually that support performance improvements in the intended outcomes based on the following criteria:
    a) Compliance Obligations
    b) Organizational Policies (City of Raleigh / RW Department)
    c) Risks and Opportunities
    d) Significant Environmental Aspects
    e) Interested Party Input
2. Develop environmental objectives using the SMART criteria that are consistent with the EMS.
3. Present draft environmental objectives to interested parties for review and/or comment.
4. Develop an action plan assigning responsibilities, timeframes, and necessary resources for established environmental objectives.
5. At scheduled intervals, the EMS team will monitor progress toward environmental objectives and evaluate results at management reviews and internal audits. Consider environmental objectives and make recommendations during annual budget development process for appropriate resources.
6. Final version of environmental objectives, for the specified period, and initiatives will be posted on the City of Raleigh's shared locations for internal and external view.
7. Corrective action process may be used if progress is considered inadequate or action plans are not met.

Management of Change

Purpose

To identify and address when there are changes in conditions, regulations, or other requirements, or when new development occurs that affects operations of the Resource Recovery Division.

Procedure

1. Monitor for changing conditions, requirements, or regulations that require modification to the operation of the Resource Recovery Division.
2. Assess divisional processes affected by changing conditions or requirements and review initiation of those changes at EMS team meetings.
3. Assign staff to design and implement the changes.
4. Document the changes using Management of Change form and implement approved changes.
5. Update procedures and documents per established procedures.
6. Notify the third-party auditor of any significant changes to the EMS.
7. Retrain affected staff and contractors on revised EMS procedures and practices as soon as practical (EMS team and appropriate supervisors).

Support

Resources

The Resource Recovery Division's management will provide the necessary resources for the EMS. Resources include, but are not limited to human resources, technology, specialized skills, and financial support. These resources are needed for the effective functioning and improvement of the EMS. This will be verified by establishing a training program, conducting internal audits, holding regular scheduled management reviews, and fulfilling the roles and responsibilities of the EMS team.

Competence and Awareness

To identify, track and provide training activities to ensure competency of staff in wastewater management activities and EMS functions, including training activities of contractors.

Competence

1. Assess staff competency in performing their assigned wastewater management responsibilities using some or any of the following methods.
   - Job descriptions
   - Oral or written tests
   - City of Raleigh annual employee performance reviews
   - Communication
   - On the job observations and compliance audits
2. Provide additional training in areas where skill may need to be improved when competency is determined to be inadequate.

Awareness

1. Conduct awareness training on the EMS at least annually, promoting awareness of environmental aspects, policy, SOPs and MOCs through discussions at staff meetings and Division meetings.
2. Conduct awareness training with new and transferred employees on policy and general EMS awareness as part of employee orientation.
3. Post EMS policy at various locations throughout the facility.
4. Notify contractors of the environmental policy and require establishment of their own training program consistent with the EMS. Contractor personnel training requirements will be monitored on a periodic basis and reported to the contract liaisons.
5. Conduct awareness training on facility emergency action procedures.
6. Provide employees with general awareness of environmental policy; significant aspects; their contribution to the effectiveness of the EMS; benefits of the EMS; implications for not conforming to EMS requirements and not fulfilling compliance obligations.

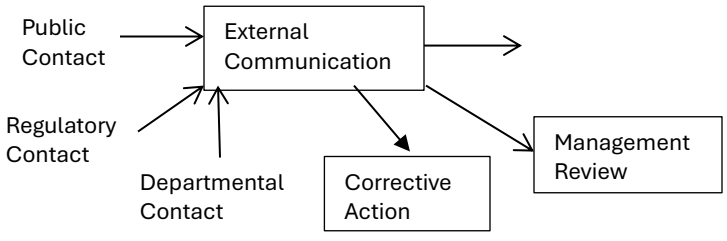
Recordkeeping

1. Document attendance at EMS training sessions and maintain records.
2. Maintain employee training records containing certifications and/or attendance sheets for training sessions attended, both inside and outside of Raleigh Water.
3. Contractor training records are maintained by the respective contractors' human resources divisions, as defined in service agreements and Memorandum of Understanding or contracts.

Communication

Purpose

To establish, implement, and maintain a process to provide, receive and respond to external communication from interested parties, contractors, and internal communication from staff in the Resource Recovery Division, relevant to the EMS processes and compliance obligations (Appendix B).



External Communication

1. Receive and respond to public input using multiple forms of communication.
2. Document contact, input and/or complaints information received, both formal and informal, using Cityworks.
3. Contractors may also receive input, while performing contracted services for the wastewater program, through their contract liaison.
4. Review data periodically and evaluate areas of concern for improvement.
5. Response and Consideration of Public Input
6. Consider input received from stakeholders and interested parties (if any) when making decisions regarding the EMS program environmental objectives (EMS Team).
7. The EMS team also discusses and considers input received from stakeholders and interested parties when determining which (if any) of their expectations become compliance obligations.
8. Review records of public input received (if any) for:
    a. relevancy to the program
    b. incorporation in environmental objectives when feasible and/or appropriate
    c. incorporation in environmental impacts when feasible and/or appropriate

Communication and Outreach

1. Identify interested parties and stakeholders, which may include public, contractors, and regulators. Maintain a list of interested parties and contact information.
2. Provide opportunities for interested parties to communicate their input on environmental impacts, program performance, and areas in which the program can improve using multiple forms of communication.
3. Communicate information about management policy, applicable compliance obligations, environmental objectives, third party audit schedules and results, and other EMS program information to stakeholders and interested parties via the City website.
4. Provide information on significant environmental aspects per regulatory requirements or upon request.
5. Refer media requests to the Public Information office.

Management System Performance Report

1. Provide management system performance information, for annual reporting, to the departmental communications office.
2. Include the following information in the report
3. Summary of monitoring, measurement and other results that demonstrate the performance of the management system relative to objectives, initiatives, and legal and other requirements.
4. Summary of the progress toward achieving program environmental objectives.
5. Summary of contractor performance.
6. Summary of results of internal audits and independent third-party audits (or where to obtain results).

Internal Communication

1. Report information about wastewater management activities to staff using multiple forms of communication.
2. Provide opportunities for employees input into the EMS via corrective actions, emails, open door discussions, and program specific EMS meetings.
3. Input will be considered in the development of environmental objectives and identifying risks and opportunities for continual improvement of the EMS.

Contractor Communication

1. Identify and incorporate the roles, duties and communication responsibilities of wastewater management suppliers and contractors into service agreements and Memorandum of Understanding.
2. Share EMS program information to contractors through contract negotiations or other standing and ad-hoc meetings, email, phone conversations and or during inspections for contract compliance.
3. Contractors and suppliers communicate any relevant or required information to Raleigh Water.

Documented Information

Identify documented information required to support and demonstrate the performance of the EMS program. This procedure applies to contractor activities within the wastewater management program as stated in their service agreement and Memorandum of Understanding but does not apply to contractors' internal documents, which are controlled and managed according to contractors' internal procedures as appropriate.

Documented Information Requiring Control (Appendix H)

1. The following documented information is under control by Raleigh Water as part of the wastewater management program:
    - Policies
    - EMS Manual
    - SOPs
    - EOPs (Emergency Operations Plans)
    - Contractor Service Agreements
    - Contractor Memorandum of Understanding

Procedure for Documented Information Control

1. Identify documented information that requires control, the individual responsible for the controlled document, the location of stored documents, and the retention requirement (if applicable) (Appendix H).
2. Printed copies of documents are considered uncontrolled and should be labeled accordingly.
3. Controlled documents are approved, identified, and dated, easily accessible and reviewed to ensure the document is correct, complete, up-to-date, and accessible where needed.
4. Review of controlled documents will generally be made in response to one or more of the following: management of change, corrective actions, regulatory requirements, management review, review of SOPs, or periodic review.
5. SOPs have a required reviewer and approver and are reviewed within a period not to exceed every 3 years or when changes are made.
6. Notify affected people of approved changes in controlled documents and make updated versions available.
7. Archive or destroy obsolete versions of the documents.
8. The responsible party may delegate document control responsibilities but retain responsibility to ensure the document is effectively controlled.
9. Follow the state records retention schedule for controlled records

Documented Information of External Origin

1. The following documents are needed to operate the wastewater management system but are not reviewed or approved by Raleigh Water:
    - O & M manuals
    - Regulations
    - Permits
    - SDS sheets
2. These documents must be kept current and accessible by the party responsible.

Operation

The Resource Recovery Division established operational controls to manage significant environmental aspects associated with wastewater pretreatment, centralized treatment, biosolids production, effluent discharge, and the beneficial reuse of resources such as biosolids, reclaimed water, and renewable natural gas. These controls ensure compliance with applicable legal requirements and support continual environmental improvement.

Process control points (PCPs) are identified and updated in the value chain where product quality, compliance obligations, public acceptance and environmental impacts can be controlled (Appendix C). Operational controls are tools utilized to effectively manage outcomes at PCPs to meet compliance obligations and manage significant environmental impacts.

Resource Recovery incorporates a life cycle perspective into the EMS to identify and evaluate environmental aspects and associated impacts of its activities, products, and services. This approach considers the stages of wastewater treatment operations, maintenance, biosolids, and bioenergy/RNG.

The organization evaluates environmental aspects, associated risks and opportunities throughout the stages, considering activities within its direct control and those it can influence. Appropriate operational controls, including standard operating procedures (SOPs), training, monitoring, preventive maintenance, and contractor requirements, are established and maintained as necessary to minimize adverse environmental impacts and support continual improvement.

Life cycle considerations are documented (Appendix L) and reviewed periodically or when significant operational or process changes occur. This approach supports pollution prevention, resource conservation, regulatory compliance, and improved environmental performance in accordance with ISO 14001:2026.

Process Control Points

1. Evaluate unit process operations and management activities (Appendix A) to identify and maintain up-to-date listings of PCPs and operational controls of identified PCPs (EMS Team).
2. Consider compliance and public acceptance requirements as well as personal experience of program staff when identifying and/or updating PCPs.
3. Document identified PCPs.
4. Establish SOPs for monitoring and measuring operating performance and compliance with compliance obligations at PCPs.
5. Review PCPs when there are regulatory changes or whenever operational changes occur and use Management of Change process for operational and process changes.
6. Notify the third-party auditor of any constructive or operational change requiring a corresponding change to the identified PCPs or environmental impacts with the PCP, briefly describing the change and its impacts.

Operational Control

1. Evaluate PCPs to identify operational controls that can affect or influence each outcome.
2. Document identified operational controls.
3. Monitor operational data daily for compliance and record in logbook.
4. Record and track process control system, laboratory information system and operation reporting system analytical information in the Hach WIMS database daily.
5. Update operational controls and monitoring and measurement procedures as necessary.
6. Consider life cycle perspective when developing operational controls.
7. Contractors are to adhere to applicable regulatory and other requirements as stated in contract agreements and Memorandum of Understanding.

Emergency Preparedness and Response

Purpose

To ensure effective response to accidents and emergency situations associated with Resource Recovery activities, and to help minimize consequences or associated risks, including activities of the contractors.

Procedure

1. Evaluate and update the Wastewater Emergency Operations Plans and the NRRRF Employee Evacuation Plan (EEP) at least annually based on desktop exercises, actual incidents, actual exercises, and drills.
2. Reviews and/or updates to the biosolids and reuse EOPs and the NRRRF EEP can also occur due to personnel and equipment changes.
3. Evaluate and provide input in updating the comprehensive Raleigh Water Emergency Operations Plan (EOP) at least every three years.
4. The Departmental Safety Coordinator/Representative will conduct periodic emergency response drills, testing and training.
5. Conduct investigations of accidents and emergency situations associated with Resource Recovery activities and document corrective action plans for incidents and emergency situations utilizing standard accident investigation forms.
6. Monitor Resource Recovery contractors during periodic site visits, by assigned contract liaison, to verify they have on file the most current version of the biosolids EOP and follow the guidelines in the EOP applicable to wastewater management activities as stated in their service agreement and Memorandum of Understanding.

Performance Evaluation and Improvement

Periodic reviews of the EMS take place through internal audits, monitoring and measuring, and management reviews to track and evaluate performance of the system and to identify opportunities for improvement.

Monitoring, Measurement, Analysis, and Evaluation

Purpose

To monitor environmental performance with applicable compliance obligation requirements, measure performance at PCPs, and track progress toward achievement of objectives (Appendix J).

Procedure

1. The EMS monitors and measures the following Key Performance Indicators (KPIs):
    - Compliance Obligations
    - Crop Productivity
    - Maintenance Productivity
    - Energy Consumption Rates
    - Chemical Consumption Rates
    - Process Control Requirements

2. Items related to compliance obligations, environmental objectives, environmental performance, and effectiveness of the EMS will be monitored.
3. The methods for monitoring are based on compliance obligations and/or existing performance metrics requested by the Executive Management Team. Information is analyzed, evaluated, documented, and reported via periodic performance reports.
4. Data input by staff and monitored by the program managers occurs on a continual basis and may be discussed in regularly scheduled EMS meetings, Resource Recovery program meetings, and management review meetings.
5. Review monitoring and measurement activities whenever significant changes in processes, operations, or regulatory compliance occur.

Internal Audit

Purpose

To perform periodic review of the EMS to evaluate its performance and identify opportunities for improvement.

Procedure

1. The EMS team will develop a three-year audit schedule for conducting internal and process audits, based upon the EMS processes.
2. Develop scope and plan for internal audits and process audits with input from EMC.
3. Evaluate EMS performance in the process of continual improvement of the intended outcomes and progress of established program environmental objectives.
4. The auditor will conduct audits, develop reports, and review preliminary audit results (findings and/or opportunities) with the process owner and the EMS team.
5. Findings will be addressed using the corrective action process based on the decision of the EMS team.
6. Corrective actions will be presented to the auditor; auditor will follow up to verify corrective action results.
7. The EMC will present audit results as part of the management review process.

Selecting and Training Auditors

1. The EMC, with input from the EMS team, selects auditors to conduct internal audits.
2. Impartiality will be ensured by selecting internal auditors outside the Resource Recovery Division.
3. Internal auditors will be trained by a third party or internally by the Departmental Performance, Quality and Assurance (PQA) team or the EMC.

Corrective Action

Purpose

To identify findings, potential problems or opportunities discovered during routine monitoring and measurement, emergency incidents, audits, experience, or other methods.

Procedure

1. Identify the issue and initiate correction; determine if the issue is systemic.
2. For non-systemic issues, correction is all that is required. Document the immediate correction and take no further action.
3. For systemic issues, conduct a root cause analysis.
4. Document problems or issues using the Corrective Action form and present to EMS team and/or affected parties.
5. Develop corrective action plans and implement appropriate corrective actions.
6. Monitor progress in achieving corrective action.
7. Verify effectiveness of corrective action (completed and eliminated cause).
8. Record corrective actions and look for trends.
9. Corrective actions identifying a change in procedure, policy, workflow, and/or equipment needs are communicated through the Management of Change (MOC) process and presented to affected parties.
10. If the problem identified is with a contractor/supplier, the steps above will apply; a SCAR form will be issued to the contractor for resolution.

Management Review

Purpose

To provide a strategic review of the EMS, at scheduled intervals, to see if the system continues to be suitable, adequate and functions effectively and to identify continual improvement opportunities.

Procedure

1. Conduct periodic management reviews with EMS Senior Management team, which includes the Assistant Director for Wastewater and Resource Recovery Manager.
2. Management review will include:
   - Status of actions from previous management reviews
   - Changes in external and internal issues; interested party needs/expectations; significant environmental aspects; risks and opportunities
   - Progress toward achieving environmental objectives
   - Environmental performance information (including monitoring/measurement results, nonconformities and corrective actions, fulfillment of compliance obligations, and audit results)
   - Adequacy of resources
   - Relevant communication, including complaints, with interested parties
   - Opportunities for continual improvement

3. Discuss and provide information to the management review participants in advance of management review, along with recommendations for improvement (EMS team).
4. Senior Management Team will review suitability, effectiveness, and adequacy of the management system, including actions required when environmental objectives are not achieved; opportunities to improve EMS integration with other business processes; and implications for strategic direction.
5. Prepare minutes of the Management Review and post on Raleigh Water shared drive.
6. Assign responsibilities on action items with timelines.

Glossary of Terms

Appendices - documents that relate more to the wastewater management system as a whole. The manual is complete without the appendices, but appendices add insight into the wastewater management program.

Biosolids – solid organic matter recovered from a wastewater treatment process and used especially as fertilizer; usually referred to in the plural.

BMP – Best Management Practice

Contractor Memorandum of Understanding – Document that is signed by contractors or suppliers stating their understanding of our EMS program and detailing their responsibilities under that program; this document also details the City's responsibility to contractors under the EMS program

Contractor Service Agreements – Contracts that have been signed by contractors or suppliers; these are housed downtown at the City Clerk's office

SOP – Standard Operating Procedures. Standard work instructions and practices for employees describing the "how to" steps in managing PCPs of a specific management activity affecting NRRRF activities and compliance obligations.

DWR – Division of Water Resources (State of North Carolina)

EMC – Environmental Management System Coordinator – Project Manager for the Divisional EMS system.

EMR – Environmental Management Representative – EMC that represents the Division on Departmental related continuous improvement efforts.

EMS – Environmental Management System: management framework for integrating environmental considerations into day-to-day operations and decision-making, and for improving organizational performance over time.

EMS Senior Management Team – includes Assistant Director for Wastewater, Resource Recovery Manager, Environmental Management System Coordinator.

EMS Team – includes the EMC, program managers and supervisors or their designee for the Resource Recovery Division.

Environmental Aspects – wastewater treatment activities, products or services that can interact with the environment.

Environmental Impacts – any adverse or beneficial change to the environment, wholly or partially, resulting from the NRRRF wastewater activities.

EOP – Emergency Operations Plan

Goals – desired outcomes and/or improvements to the system.

Interested Parties – a person or organization that can affect or be affected by or perceive itself to be affected by any activities we perform.

Internal Audit – a systematic internal investigation process for objectively evaluating the conformance to the requirements of the EMS and identifying deficiencies to be corrected or resolved.

Intranet – the Raleigh Water shared drive.

Life cycle – consecutive and interlinked stages of a product (or service) system, from raw material acquisition or generation from natural resources to final disposal.

NCDEQ – North Carolina Department of Environmental Quality

Noncompliances – a deviation from federal, state and local laws, regulations and other compliance requirements applicable to NRRRF activities.

Nonconformances - a deviation from wastewater management policy, EMS procedures/requirements of the EMS Elements, or ISO 14001:2026 American National Standards. They include circumstances that can create a noncompliance situation or significant environmental impacts.

NRRRF – Neuse River Resource Recovery Facility

O&M Manuals – Operation and Maintenance manuals

Objectives – measurable improvements to established goals

Operational Controls – include associated SOPs, O&M manuals, maintenance procedures, lab analysis, contracts and employee skills that are required to effectively manage PCPs and meet legal requirements, including conformance with policy requirements and achievement of goals and objectives.

Other Requirements – other binding wastewater management practices and requirements to which the NRRRF follows as part of the wastewater management system. Examples include binding agreements with customers, suppliers, public organizations and commitments to going beyond compliance.

PCP – Process Control Point: the process control points where product quality, legal compliance and requirements, public acceptance, and environmental impacts can be controlled

RRD – Resource Recovery Division; consists of Neuse River Resource Recovery Facility, Little Creek Wastewater Treatment Plant, and Smith Creek Resource Recovery Facility and all associated pump stations.

Service Agreements – the contract between the City (NRRRF) and other person(s) to perform specific activities and services.

Significant Aspects – something that can cause a high or medium risk in areas where improvement is desired.

SIU – Significant Industrial User.

SMART Criteria – **S**pecific, **M**easurable, **A**chievable, **R**elevant, **T**ime-bound; criteria that is used to define and evaluate the suitability of a goal or objective/target.

Third party Verification Audit – a systematic, structured audit of the EMS; performed by a qualified independent third-party auditor using a standardized protocol for verification.

USEPA – United States Environmental Protection Agency

USEPA 40 CFR 503 – Federal regulation governing biosolids

Written Documentation – Documents that may be referenced to effectively manage PCPs and meet legal requirements. These documents include O & M manuals, SOPs, and training documents.

Appendices (Separate from Manual)

Appendix A EMS Program Structure

Appendix B Communications

Appendix C Process Control Points

Appendix D Environmental Impact and Aspect Analysis

Appendix E Interested Parties

Appendix F Roles & Responsibilities

Appendix G Lines of Authority

Appendix H Documented Information Requiring Control

Appendix I Risk Assessment

Appendix J Monitoring and Measurement Analysis

Appendix K Appendix K Climate Change Consideration.pdf