ISO 14001 Certification Process

LNBA/NRCA Annual Training Workshop
July 26 & 28, 2016

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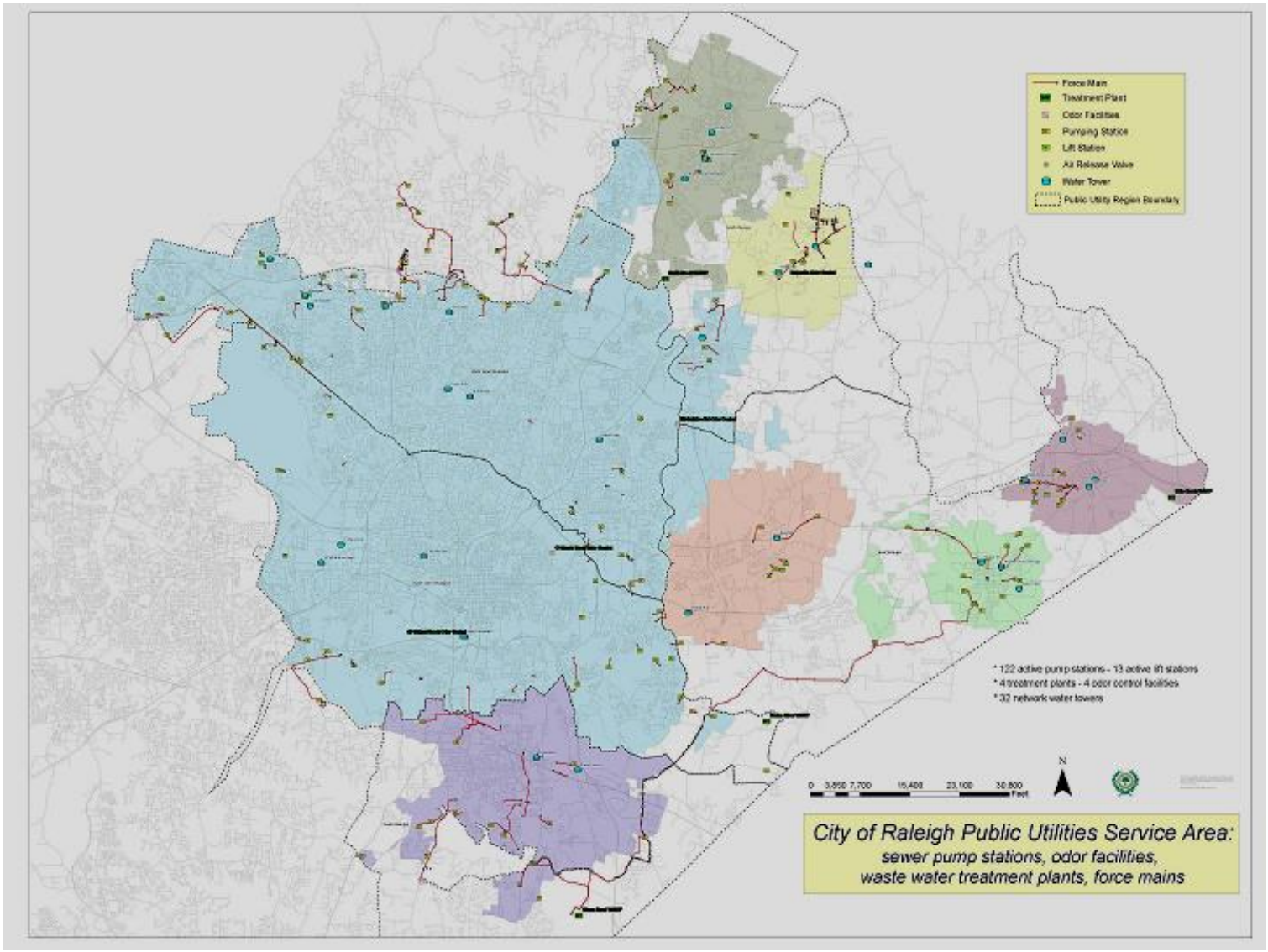
Resource Recovery Division

- 3 Treatment Plants
- Biosolids/Residuals
- Reclaimed Water
- Plant/Facility Operations & Maintenance
- Off-site pump stations (~120)
- Laboratory
- Industrial Pretreatment
- Warehouse

Public Utilities Service Area



Little Creek WWTP

Smith Creek WWTP

Neuse River Resource Recovery Facility

Neuse River Resource Recovery Facility

- Currently permitted for 60 MGD
- Upgrading to 75 MGD
- Produce ~45 dry tons of biosolids per day
- 3 products produced

Products Currently Produced

Class A product (Raleigh Plus)—lime stabilized product applied on privately owned agricultural land

Dewatered primary compost product (Class A) produced by private industry

Aerobically digested Class B liquid sludge product used as fertilizer on permitted fields

Early 2000s Biosolids Crisis

- Error in PAN formula
  - Delay in correction
  - 20% MR supported by NCSU in early 1990s
  - 30% MR more accurate
  - Mentality of "more is better"
- Increase in flow from 35 MGD in early 2000s to 46 MGD currently
- Limited outlets for biosolids
- In depth site study
- Land Application Moratorium
  - Initially voluntary
  - State-mandated beginning in 2002

Outcomes

- $74,000 Civil Penalty

- Credibility and trust gone
- What to do now?

Results

National Biosolids Partnership + 

EMS =

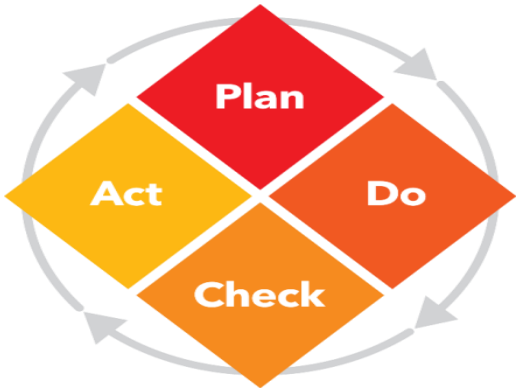
December 19, 2006

Environmental Management System

- Third-party audit process
- On-site audit
- Interim audit performed annually following certification
- Raleigh received NBP certification December 2006; Platinum certification received December 2007
- Received ISO 14001:2004 certification April 2014

What is an EMS?

- EMS is a set of guidelines/framework to maintain high standards and act on opportunities to improve in the following areas:
  - Regulatory compliance
  - Product and service quality
  - Credibility with stakeholders
  - Internal communication
  - Emergency preparedness and response



- EMS Standards
  - Based on the Plan-Do-Check-Act cycle
  - WEF National Biosolids Partnership (NBP) Code of Good Practice
  - ISO 14001:2004 American National Standards

Why did Raleigh implement an EMS?

- Regulatory and media-related issues
- Operational and communication issues
- Higher product/service quality and consistency
- Product diversification
- Encourages efficiency with eventual cost savings
- Outcomes matter
- Commitment to go beyond compliance
- Public demand for accountability

Improvement Processes

- Objectives and Targets
- Corrective and Preventive Action (CAPA)
- Internal Audits
- Management of Change
- Management Review

Objectives and Targets

- Items you set for improvement (set and agreed upon by EMS team)
- Example:
  - Objective—Increase level of preventive maintenance
  - Target—Based on the average of PM hours assigned to work orders in preceding 12 months, increase 2016 levels by 10%

Objectives and Targets

- Actions—Increase PM activities and accountability of time via work orders in MaintStar. Track PM hours in KPI dashboard.

- Objectives and targets are reviewed in EMS team meetings on a monthly basis to determine if items are on target.

Corrective and Preventive Action (CAPA)

- Document items that don't go as planned (nonconformances, noncompliances, problems, or potential problems)
- Tool to document deficiencies, determine their root cause and make a plan to correct it so it doesn't happen again
- Integral component of continual improvement

Corrective and Preventive Action Plan Form (CAPA)

Doc ID #: 634-2016-03CAPA	Issue Date: 2/15/2016	Solution Due Date: 4/30/2016	Issued To: Marla Dalton Division: RR	Closed By: Closing Date: 5/16/2016
Requested By: Marla Dalton			CAPA Manager: Marla Dalton	

Problem Statement: Reuse water that exceeded turbidity limits was pumped to the tank for distribution.

Correction: (immediate action taken to remedy the problem) Do not pump reuse water to the distribution system during high flow events. When high flow events predicted fill tank prior to event. Programmer was instructed to determine why pump shut off did not work and to repair programming. Operators to monitor until fixed.

Probable cause:

- ☐ Management Error
- ☐ Weather/Natural Causes
- ☒ Design Error
- ☐ Competency/Training/Awareness Problem
- ☐ Maintenance Problem
- ☐ Procedure Problem/Incorrect Procedure
- ☐ Off-sight Problem
- ☐ Communication Problem
- ☐ Supplier/Contractor Problem
- ☐ Equipment Problem
- ☐ Other

Contributing Factors:

High flow event due to heavy rains.

Implemented Solution to correct or prevent CAUSE:

Programmer discovered logic error and repaired logic programming.

Results (confirming effectiveness of solution):

Turbidity values have not exceeded maximum set points since event. Set point was lowered to mimic a high turbidity event and pumps shut down as directed. Verified by Nathan Howell.

Is MOC required: ☐ Yes ☒ No

MOC# _____

Management of Change

- Documentation tool to record when changes take place in processes or system
- Ensures all affected parties are aware of the change
- Identifies those who need to be made aware of changes and any training that needs to occur
- Sign-off process to make sure affected parties have done what is required with respect to changes made

MANAGEMENT OF CHANGE
Resource Recovery Division

The following questions must be answered prior to major changes to any of the treatment, management programs or business processes in the Resource Recovery Division. Changes must be authorized by the program managers and final authorization by the Resource Recovery Superintendent before they are implemented.

MOC #: 602-2016-06MOC

Date: 5/26/16

Person(s) requesting change:
Nathan Howell

Responsible person:
N. Howell, R. Faw, E. Wilcox, K. Perry

What is the proposed change?
The proposed change is the addition of sampling/testing for the new primary sampling points

What is the purpose and technical basis for the proposed change?
The purpose is to sample for conditions from the new primary influent/effluent distribution boxes. The basis for development is to use the sampling/testing parameters from the existing primary samplers to learn and track removal rates for the new primaries currently under construction. When Aeration Basins 1 & 2 are taken out for construction, the sampling/testing from the old primary sampler will cease for good. The lab is to provide the new sample bottles/CoC in the sample kits provided beginning 06/6/16. The first monthly samples requested by Industrial Pretreatment will begin on the first Wednesday of July, 2016 and take place the first Wednesday of every month thereafter. The lab is to provide the sample bottles/CoC for those samples in the sample kit for Operations also. All sample kits/CoC's are to be provided to Operations & Industrial Pretreatment as long as those programs are completing the pour up of any or all samples.

How will the change affect job hazards? (Example - Safety or health procedures?)
N/A

Will the change affect environmental impacts outlined in the EMS program?
No

Planned timeframe for implementing change:

Starting Date: 06/06/16 Starting Time: 0700

Estimated Time to Complete: No completion date, these are permanent

Estimated/Actual Completion Date:

If Temporary Condition, Ending Date:

Revised May 2016

Authorization to Proceed with Change

Maint. Manager: _____ Date: 6/1/2016

Laboratory Supervisor/Manager: _____ Date: 6/8/2016

Reuse Manager: _____ Date: 5/26/216

NRRRF Facility Manager: _____ Date: 5/27/2016

LCWWTP Facility Manager: _____ Date: 6-1-16

SCWWTP Facility Manager: _____ Date: 6-1-16

Asst. Superintendent: _____ Date: 5/31/2016

Division Head/Superintendent: _____ Date: 6/4/16

Programs affected by change and program supervisor approval:

☒ Plant Operations

Employees Trained in Change By Date

Contractors Trained in Change By Date

☐ Land Management

Employees Trained in Change By Date

Contractors Trained in Change By Date

☐ Plant and Remote Facility Maintenance

Employees Trained in Change By Date

Contractors Trained in Change By Date

☑ Laboratory and Pretreatment Kim Perry

Employees Trained in Change By Date

Contractors Trained in Change By Date

☐ Reuse Water

Employees Trained in Change By Date

Contractors Trained in Change By Date

Follow Up

Completion Checklist:

Process Safety Info Revised By Date

Operating Procedures Revised By Date

I have confirmed that this form is complete and all associated requirements have been met. This management of change can now be closed as it is fully implemented.

Person Responsible for Change: Date: 6/13/16

(Please submit completed form to Management System Coordinator)

Internal Audits

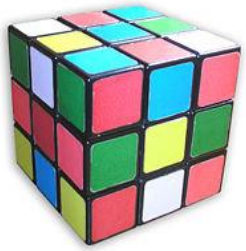
- Cannot audit your own program/area
- Designed to help identify areas for improvements or identify actions that need to be taken when processes are not working efficiently/correctly
- Create CAPAs to address audit findings
- EMS team creates internal audit schedule as a group

Management Review

- Takes place with upper management (Assistant Director, RR Superintendent)
- High-level overview of EMS; status of system is discussed
- Management makes suggestions for improvements to system
- Assists with prioritization of improvements and commits resources to make them happen

Challenges Encountered

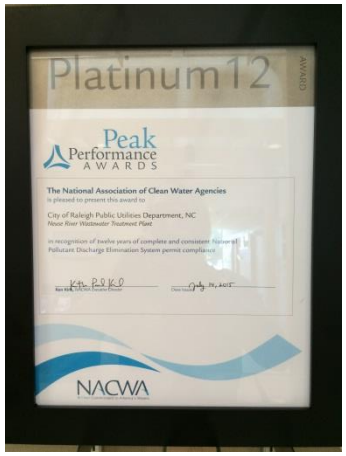
- Creating buy-in from employees
- Obtaining support and commitment from management
  - Time, resources/money, staff
- Documentation
- Realization that EMS is an ongoing process



Benefits and Improvements

- Regulatory compliance
- Documentation and recordkeeping
- Communication
- Improved training and competency
- Restored confidence and acceptance in program
- Increased employee morale and participation
- Financial savings in capital improvements

Regulatory Compliance



- NRRRF—12 years with no NPDES permit violations
- SCWWTP—10 years with no NPDES permit violations
- LCWWTP—10 years with no NPDES permit violations until 2014; currently 1 year with no violations

Internal Communication

- Greater sense of teamwork
- Monthly EMS meetings encourage communication/coordination between programs
- Programs must work together to accomplish changes in processes/procedures
- We all have a common goal

External Communication

- Annual stakeholder meetings to solicit feedback & provide information
- Biannual distribution of newsletters for reuse, industrial pretreatment & biosolids
- City of Raleigh website
- Citizen Contact Tracking Log

Certification is just the beginning…

Neuse River Resource Recovery Facility

- NBP Certification: December 2006 (Biosolids Program)
- NBP Platinum Certification: December 2007 (Biosolids Program)
- ISO 14001:2004 Certification: April 2014 (Wastewater System)
- NACWA Peak Performance Award: Platinum XII Award (2015)

Questions or Comments?

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