CDM

EMS Implementation

Not Pretty but Effective

James Ricci

Department of Public Infrastructure
City of New Bedford, Massachusetts

Peter Maynard

Management Consultant

CDM

NACWA 2008 Winter Conference

New Bedford EMS Implementation
Not Pretty but Effective

- **Background**
- **The Challenges**
- **What Works Well**
- **Net results – so far**

New Bedford, Massachusetts

- South Coast of Massachusetts
- 7th largest city in MA *(2000 Census)*
- Population 99,927 *(2000)*
- Land area: 20.1 square miles
- Elevation: 50 Ft

Department of Public Infrastructure (DPI)

Ronald H. Labelle, Commissioner

- Water Division
- Wastewater Division
- Highways Division
- Engineering Division

Backhoe/Loader #42 and Dump Truck # 62 at City Yard

How it all began…

- 2003 Consent agreement with EPA- NE
- Consent Decree requirements:
  - Document EMS in a Manual
  - Implement EMS for 1 year
  - Achieve continual improvement for energy & waste
  - Conduct 3rd party audit after 1 year
- DPI initiated EMS development in 2004

The initial building blocks of the New Bedford DPI EMS

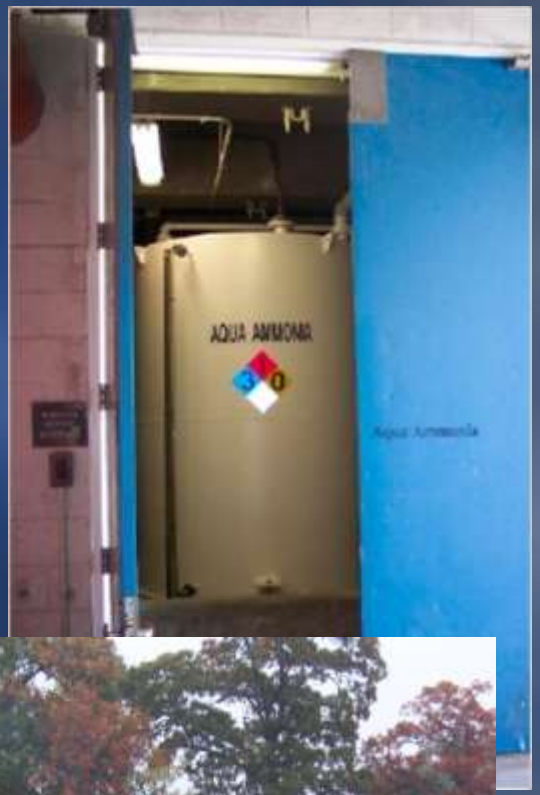
- Framework:
  - EPA NEIC Compliance Focused EMS
- Fenceline :
  - Quittacas WTP
  - DPI Operations at administration and repair facility

EMS Development Strategy

- Engaged consulting engineer to provide expertise and resources
- Incorporated Continual Improvement Framework
  - Continual Improvement in Utility Management: A framework for integration
    EPA/AMWA/WEF
- Incorporated ISO 14001 elements into EMS
  - Aspects and Impacts
  - Objectives, Targets and Action Plans
  - Moving beyond Compliance

EMS Development – Roles & Responsibilities

- EMS Director
- Training Officer
- Quality Control Officer
- Project Officer



New Bedford's Environmental Policy

- Maintain compliance
- Prevent pollution
- Minimize waste through awareness & recycling
- Improve environmental awareness through training & communication

City of New Bedford
Department of Public Infrastructure

Environmental Management Policy

Providing the residential, commercial and industrial customers served by the Department of Public Infrastructure (DPI) with a clean, safe drinking water of sufficient quantity to meet their needs, together with a well maintained infrastructure including water treatment and distribution, wastewater collection and treatment and roadways is the primary responsibility of the department.

In doing so the department is committed to providing for the safety of its employees, the public served and our environment.

We will:

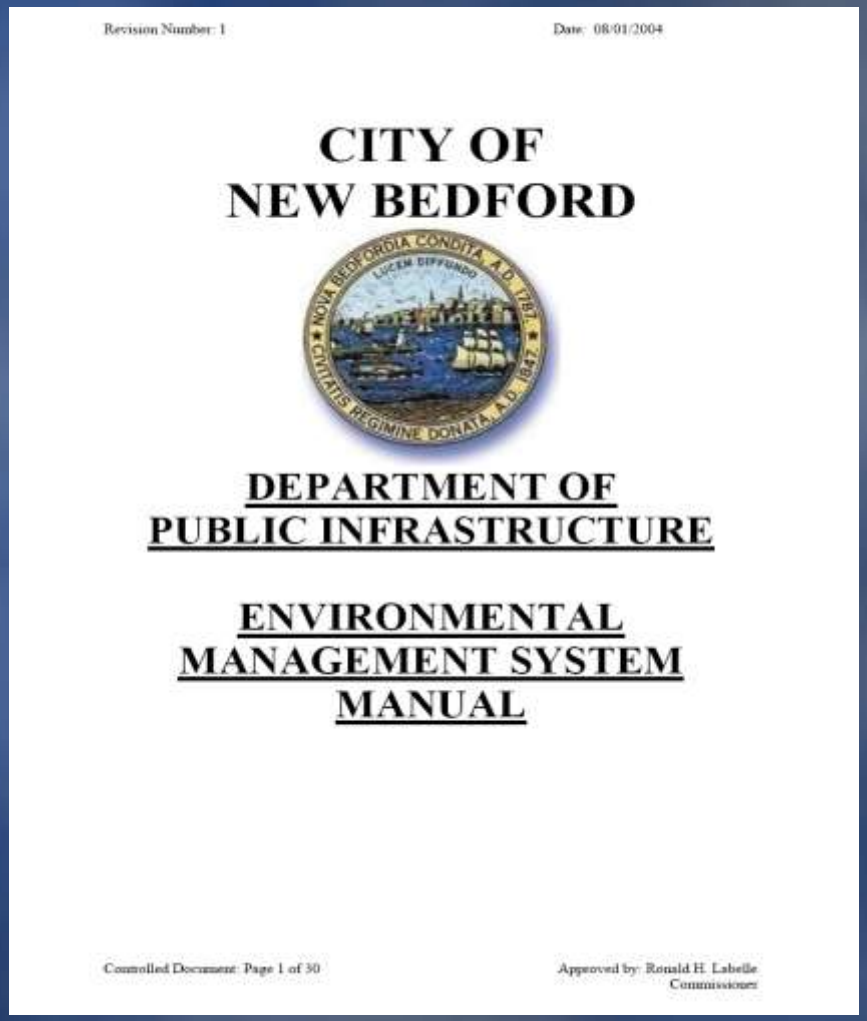
- Continually work to maintain compliance with all applicable laws and regulations governing our activities
- Prevent pollution by accessing potential environmental aspects and impacts of our activities
- Use our best efforts to minimize and eliminate where practicable waste streams through awareness and recycling
- Continue improved environmental awareness through employee training and the documentation, implementation and maintenance of our Environmental Management System

Ronald H. Labelle, Commissioner

May 2004

The system was documented in the EMS MANUAL

- Roadmap for EMS duties, roles, responsibilities & activities
- Provides linkages to ongoing & new programs part of EMS



First Cycle of Implementation completed late 2005 – early 2006

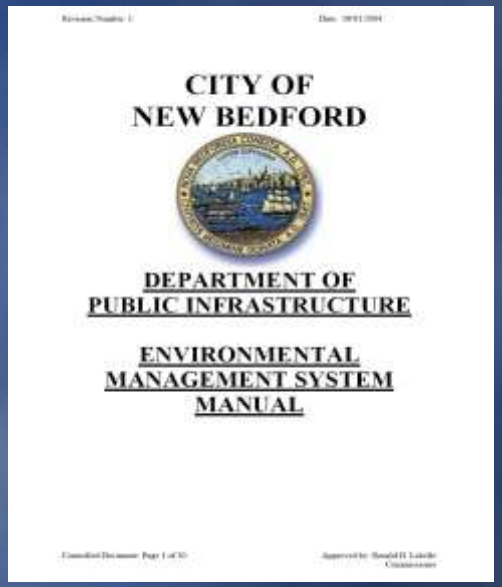
- Internal Audit June 2005
- Third-Party Conformance Audit Dec 2005
- Compliance Audit February 2006

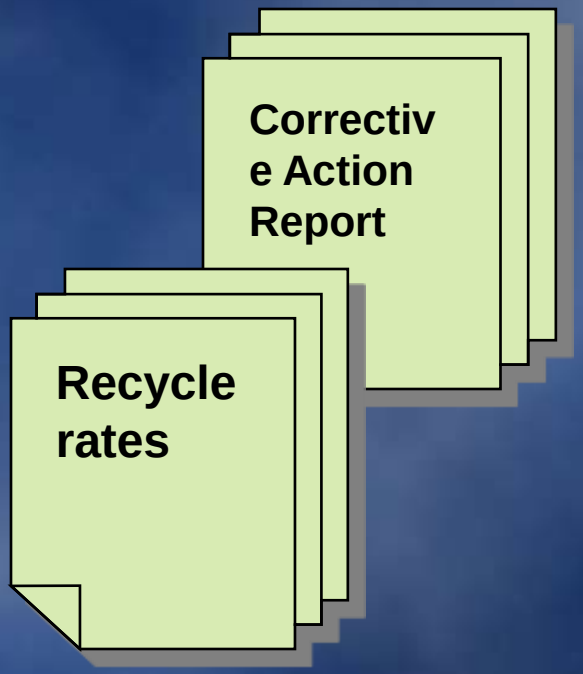
The Challenges

- Staffing Resources
  - Training Program
  - Quality Control –internal audits
  - Project Management
- Managing an EMS on top of existing process – not along-side, still requires resources

The Challenges

- Documentation
- Control of Records





What has Worked Well

- Environmental Awareness by all Staff
  - Increased recycling – office and yard
- Planning process has become structured
  - Incorporated into budget cycle
  - Used for technical considerations – fluoridation
- EPA requirement for energy use reduction has lead to significant cost savings

Planning Process became embedded in the organization

Identification of Significant Aspects

- Assessing all work processes for performance improvement
- Establishing Priorities (Ranking) of aspects

Establishing Objectives and Targets

- Planning aligned with priorities
- Setting real and measurable targets

Third Party Audit Findings - Strengths

- Facilities and housekeeping
- Top management commitment

- Project oversight; considerations in planning
- Aspect identification and prioritization

Results 2005 - 2006
Energy Reduction

- Replacement lighting program
  - estimated annual reduction > 1 million KWH

Facility	Est. Reduction
Quittacas WTP	122,000 KWH
Admin/Garage	16,000 KWH
WWTP	950,000 KWH

Almost 450 metric tons CO2 saved annually

- Department Cost $ 53, 800
- Estimated savings $ 141,000

Results – 2005 - 2006
Waste Reduction

- Waste Reduction / Pollution Prevention
  - “Finding” 100,000 gpd of “lost” treated water
  - Reduced number and quantity of waste (oil and antifreeze) collection areas
- Expanded the office recycling program
  - Fuller awareness of staff
  - Engagement beyond DPI

Results 2007
Pollution Prevention – Watershed Protection

- Installed a fuel pump metering system to track usage (individuals and vehicle).
- Purchased conservation restriction on 77 acres of land in our water shed as part of a larger conservation effort with the State EOEA, Fish and Wildlife, and the Town of Middleboro protecting 450 acres from future development.
- Modeling distribution system identified valves out of position that produced circular flow and constant pumping; fix reduced pump runs 40%
- Modeling WW collection system allowed reprioritization of CIP

Looking Forward

- Replace pump motors with VFD
  - Low Lift, 2- 200 HP VFD's
  - High Lift, 2- 700 HP VFD's

- Total cost $794,000
  NSTAR rebate $419,000
  City $375,000
  Est annual Savings $ 272,449
  Est annual electric savings 2,000,000 KWH Total

Equivalent to 860 metric tons CO2 emission reduction

Looking Forward (coming years)

- Grant from Mass Technical Collaborative to install a meteorological tower to analyze potential efficiency of wind turbines near the WWTP
- WTP facility upgrade to consider solar hot water and photovoltaics, green roofs, insulated windows
- Improved monitoring and control of electricity usage (NStar Energy Link)
- Become more involved in utility load-shedding program

Summary

- In many ways – public water utilities need to build upon “natural” disposition towards the environment
- EMS fosters performance improvement through identification of aspects and establishing goals and objectives
- Even if it’s not very pretty - EMS can yield ongoing benefits
- Use existing budget or planning cycle to incorporate continual improvement of environmental performance

Acknowledgement and Thanks

- Ronald Labelle DPI Commissioner
- Charles Kennedy – DPI Asst. Superintendent Water
- Staff at DPI
- Carol Rego and Bill Glynn - CDM

For additional information contact

James Ricci
Department of Public Infrastructure
City of New Bedford, Massachusetts
james.ricci@ci.new-bedford.ma.us

Peter Maynard
Management Consultant
CDM
maynardpt@cdm.com