

**OPERATIONAL ASSESSMENT WORKSHOP BEST
PRACTICES FOR RUNNING WASTEWATER UTILITIES
AN EFFECTIVE UTILITY MANAGEMENT WORKSHOP**





Operational Assessment Workshop Best Practices for Running Wastewater Utilities

An Effective Utility Management Workshop

AGENDA

Item	Responsibility
Welcoming remarks	
Participant introductions and identification of wastewater challenges	All
Overview of CReW project	Denise Forrest & Chris Corbin
Baseline Assessment report and discussion	WWWS
Break	
BAQ continued	
EUM Primer and Self Assessment	All
Lunch	All
The Utility Operational Assessment: Concepts, Principles and Benefits and Case study	WWWS - All
Conducting an Operational Assessment: Data Requirement and Sources	WWWS
Conducting an Operational Assessment: (ii) Data Collection Methodology	
Break	
Conducting an Operational Assessment: (iv) Report on Findings	WWWS
Wrap up	

Item	Responsibility
Review Day 1 and comments	WWWS
Day 2 ASPECT DETAILS	
The link between the EUM Management Certificate Programme and Operational assessments	WWWS
Hiring and Personal development tool presentation Break	Doug McRae via Go to Meeting
Break	
St Lucia Case Study	WASCO
Communications	WWWS & WASCO Communica- tions consultant
Identified Wastewater Challenges and how Operation- al assessments help	All
Operational Assessment Best Practices discussion and sharing Topics selected by group might include: <ul style="list-style-type: none"> • Policies • Standard Operating Procedures • Safe work procedures • Emergency Response Planning • Testing • Governance • Funding • Training • Preventative maintenance 	All – table topics
Break	
Recommendations on key institutional entry points in each country for future capacity building and training including media and educational institutions for sus- tainability.	Discussion all
Next steps. Upcoming opportunities. How to get in- volved. Panel discussion	WWWS/Victor Poyotte/Chris Corbin
Wrap up	

Welcoming remarks

Participant introductions and Wastewater Challenges

The CReW Project

- Overview of project
- Main Objectives
- Scope
- Overview of Baseline Analysis and Operational assessment workshop

The United Nations Environment Programme Caribbean Environment Programme has partnered with the Inter-American Development Bank and the Global Environmental Facility to develop a Prototype Caribbean Regional Fund for Wastewater Management (known as CReW) to provide sustainable financing for environmentally sound and cost-effective wastewater management projects in the Wider Caribbean Region. The general objective of that initiative is to improve the capacity of States in the region to fulfill obligations of the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region and the Protocol on the Control of Pollution from Land-Based Sources and Activities, regional agreements governing the management and control of polluting substances in the Wider Caribbean waters.

This Study's Objectives. This Regional Baseline Assessment Study is intended to assist the United Nations Environment Programme-Caribbean Regional Coordinating Unit (UNEP-CAR/RCU) in the design and implementation of future capacity building activities related to wastewater management. It is information for a broad group of stakeholders to understand the general and the specific needs that should be considered in the development of a National Domestic Wastewater Management Plan (DWMP). This Study forms part of a larger initiative, which includes 13 Baseline Assessment studies of, select Caribbean countries. The Study is prepared from information collected by National Baseline Assessments conducted to assist Wider Caribbean Region (WCR) governments to meet requirements of Annex III, the Protocol on control of pollution from land based sources and activities, as well as, governments working towards protecting and preserving the marine environment by addressing domestic wastewater management needs.

Baseline Assessment Questionnaire Report

The State of the Utility Sector

Background

- *Industry professionals around the world face many competing priorities and common challenges;*
- *Major industry Associations such as the American Water Works Association (AWWA), American Public Works Association (APWA), Environmental Protection Agency (EPA) and the Water Environment Federation (WEF) respond to assist the industry with their challenges;*
- *Ten thousand utilities are asked each year to identify the top issues they believe the industry is facing;*
- *A 'State of the Industry' report is developed each year to identify priorities and assist in the development of effective tools for water professionals; and*
- *The 'Top 10' issues facing the industry are tabulated and revealed annually.*



2008 State of the Industry (SOI) 'Top 10 Issues'

1. Infrastructure
2. Regulatory
3. Source Water
4. Business Factors
5. Workforce
6. Drinking Water Quality
7. Energy
8. Technology
9. Customer Perception
10. Industry Leadership

2011

- Business Factors
- Regulatory
- Infrastructure
- Source Water
- Workforce
- Consumers
- Water Treatment
- Industry Leadership
- Macro Factors
- Drinking Water Quality

Industry Call to Action – The Birth of Effective Utility Management (EUM)

- State of the Industry Report inspires a “call to action” for industry leaders;
- Industry stakeholders collaborate to build a number of tools to assist the industry with challenges identified;
- Effective Utility Management (EUM) is born as a primer for water and wastewater utilities;
- EUM produced ‘for utility managers BY utility managers’;
- EUM distills the experience of industry leaders in utility management into a framework intended to help utility managers address their most pressing needs; and
- Accomplished through customized incremental approach that is relevant to your day to day challenges

Why Effective Utility Management?

- Utility Managers face the common challenge of ‘running’ from one urgent priority to another;
- EUM considers all significant aspects of water utility management beyond just financial and operational;
- Applying Effective Utility Management will:
 - Provide a clear set of reference points to help gauge performance and assess improvement progress;
 - Educate utility staff and stakeholders on the range of utility management responsibilities and duties;
 - Provide a framework for long term strategic planning efforts;
 - Integrate EUM best practice with existing strategic business and asset management plans;
 - Help improve products and services;
 - Increase community support;
 - Ensure a long term viability and enhance the stewardship of their infrastructure;
 - Improve overall performance; and
 - Support ongoing collaboration between government, industry, elected officials and other stakeholders.

Key Attributes of Effective Utility Management (EUM)

What is an attribute?

Wikipedia defines an attribute as *‘a quality, trait or characteristic’*.

An *attribute* implies the assignment of a quality, factor or responsibility; for example, *‘Courage is the most important attribute of a soldier’*.

Group Discussion

“What do you believe are the Key Attributes of Effective Utility Management?”



In your Case Study group, discuss and determine what you believe are the Key Attributes that are the foundation of Effective Utility Management.

Things to consider:

- Each attribute should provide useful and concise reference points for utility managers;
- Each attribute should allow managers to ‘gather and measure’ for the purpose of improving organization wide performance, “You cannot manage what you don’t measure!” and
- Managers should be able to use measurement data from each attribute to identify strengths, opportunities for improvement and select priorities

Worksheet #1: EUM Attributes & Challenges

Attribute Type Primary / Secondary	Challenge	Severity (1-3)

Attribute Type Primary / Secondary	Challenge	Severity (1-3)

Attribute Type Primary / Secondary	Challenge	Severity (1-3)

Attribute Type

Rating	Description
PQ	Product Quality
CS	Customer Satisfaction
ED	Employee & Leadership Development
OO	Operational Optimization
FV	Financial Viability
IS	Infrastructure Stability
OR	Operational Resilience
SU	Community Sustainability
WA	Water Resource Adequacy
SS	Stakeholder Understanding & Support

Severity Ranking

Rating	Description
1	Critical: must be resolved as quickly as is practical.
2	Important: should be resolved.
3	Low: should be addressed as time, resources and higher priorities permit.

Worksheet #2: Attribute Importance / Performance Ranking

Attribute	Attribute Components	Step 1: Rate Importance (1-10)	Step 2: Rank Achievement (1-5)
Product Quality (PQ)	<ul style="list-style-type: none"> Complies with regulatory and reliability requirements. Consistent with customer, public health, and ecological needs. 		
Customer Satisfaction (CS)	<ul style="list-style-type: none"> Provides reliable, responsive, and affordable services. Receives timely customer feedback. Responsive to customer needs and emergencies. 		
Employee and Leadership Development (ED)	<ul style="list-style-type: none"> Recruits and retains competent workforce. Collaborative organization dedicated to continual learning and improvement. Employee institutional knowledge retained and improved. Opportunities for professional and leadership development. Integrated and well-coordinated senior leadership team 		
Operational Optimization (OO)	<ul style="list-style-type: none"> Ongoing performance improvements. Minimizes resource use and loss from day-to-day operations. Awareness and timely adoption of operational and technology improvements. 		
Financial Viability (FV)	<ul style="list-style-type: none"> Understands full life-cycle cost of utility. Effective balance between long-term debt, asset values, operations and maintenance expenditures, and operating revenues. Predictable and adequate rates. 		
Infrastructure Stability (IS)	<ul style="list-style-type: none"> Understands the condition of and costs associated with critical infrastructure assets. Maintains and enhances assets over the long-term at the lowest possible life-cycle cost and acceptable risk. Repair efforts are coordinated within the community to minimize disruptions. 		

Attribute	Attribute Components	Step 1: Rate Importance (1-10)	Step 2: Rank Achievement (1-5)
Operational Resiliency (OR)	<ul style="list-style-type: none"> • Staff works together to anticipate and avoid problems. • Proactively establishes tolerance levels and effectively manages risks (including legal, regulatory, financial, environmental, safety, security, and natural disaster-related). 		
Community Sustainability (SU)	<ul style="list-style-type: none"> • Attentive to impacts on community and watershed health and welfare. • Operations enhance natural environment. • Efficiently use water and energy resources; promote economic vitality; and engender overall community improvement. • Maintain and enhance ecological and community sustainability including pollution prevention, watershed, and source water protection. 		
Water Resource Adequacy (WA)	<ul style="list-style-type: none"> • Ensures water availability through long-term resource supply and demand analysis, conservation, and public education. • Manages operations to provide for long-term aquifer and surface water sustainability and replenishment. 		
Stakeholder Understanding and Support (SS)	<ul style="list-style-type: none"> • Engenders understanding and support from oversight bodies, community and watershed interests, and regulatory bodies for service levels, rate structures, operating budgets, capital improvement programs, and risk management decisions. • Actively involves stakeholders in the decisions that will affect them. 		

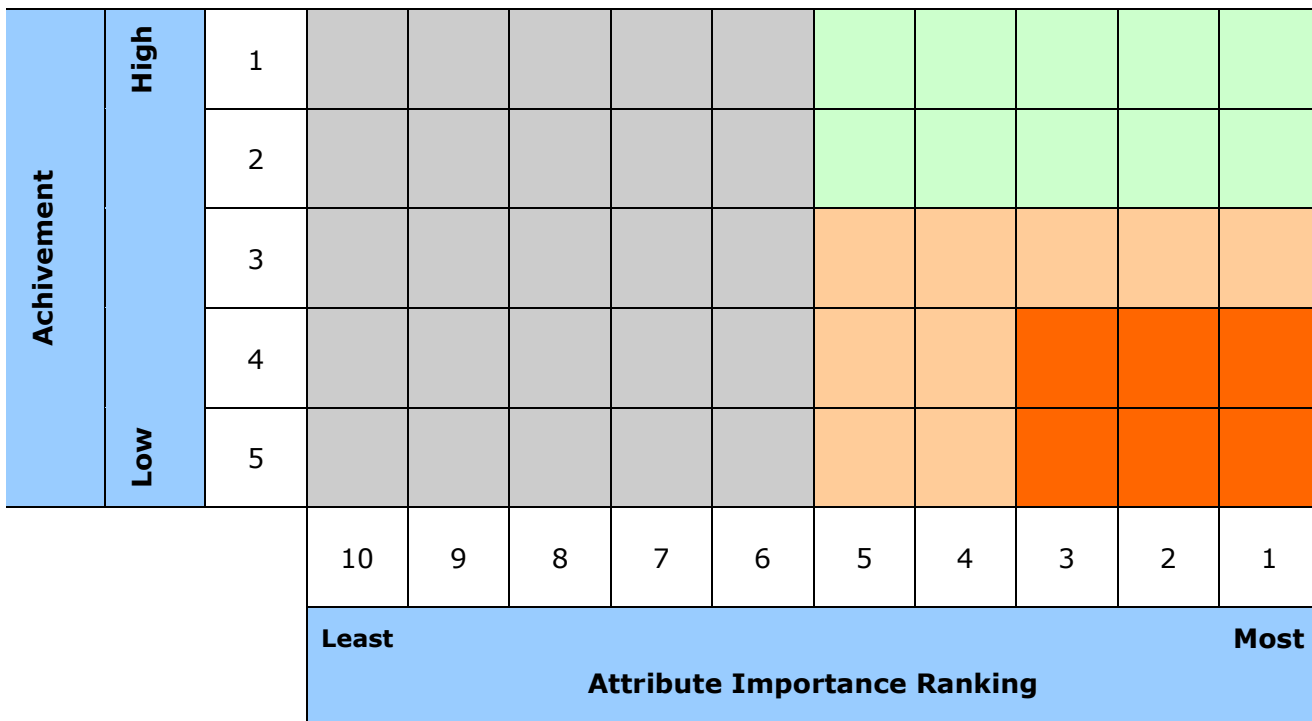
Attribute Importance Ranking

From 1 to 10 with 1 being the most important attribute and 10 the least important.

Achievement Rating

Rating	Description
1	Effective, systematic approach and implementation; consistently achieve goals.
2	Workable systems in place; mostly achieve goals.
3	Partial systems in place with moderate achievement, but could improve.
4	Occasionally address this when specific need arises.
5	No system for addressing this.

Attribute Ranking / Achievement Graph



What is an Operational Assessment?

This section of the workshop will give a broad outline of why operational assessments are important to utilities. It will outline how, by conducting an assessment, utilities can improve the effectiveness and efficiency of their wastewater operations

Unlike an engineering consultancy conducting an overall assessment of utility engineering aspects, operational personnel talking peer to peer with their counterparts conduct WWWS's operational assessments.

Day to day operations of water and wastewater facilities can be a challenging and time-consuming job for most utility managers. Keeping up with the everyday activities and challenges can leave little time to reflect on the bigger picture and research best industry practices. Bringing in industry experts to audit and perform an operational assessment can identify significant areas for improvement. The recommendations can lead to changes in operations making the utility more effective and efficient and, in some instances, resulting in large capital cost savings. These savings can pay many fold of the cost of the assessment and return a significant return on investment.

Unlike many assessments that focus on only high level strategies, the assessments conducted by WWWS in partner with CAWASA, focus on the operational level. They provide concrete, achievable recommendations that are provided by industry peers with expertise in running utilities including an energy audit designed to identify energy cost reduction strategies and savings. Our assessors are some of the most senior and well-respected experts in the wastewater industry.

Although for the CReW initiative the focus is on wastewater, during the assessments the team would also look at the waterside of the utility. Water and wastewater are inimically linked and looking solely at wastewater operations would lead to at best and incomplete picture and at worst a distorted one.



Operational Assessment Case Study

You are the Operations Manager for a medium size utility in North America. You also work as a consultant for a company that conducts Operational Assessments. Your team has been contracted to conduct an operational assessment for the Island of St Monica.

St Monica has a resident population of 200000 people. 40% of the population (80000 residents) reside in the northern part of the island and are serviced by a sewer collection system and six major lift stations that deliver wastewater to a secondary wastewater treatment facility. Additional capacity was installed for both the lift stations and the plant in 2002 to meet a system design capacity of 20 mgd (80 million litres per day) to ultimately service a population equivalent of 150000 people. This will include the existing serviced population, growth and infill in these regions and ultimately connect a number of adjacent areas to the system over the 20-year horizon. The island's other areas are managed by a combination of collection ponds and lagoons, septic tanks or pit latrines. The island has several rivers and was formed by volcanic activity. It possesses vast tracts of rich rain forests in the Southern range and mostly flat plains, used primarily for agriculture in the North; the central area has gently undulating hillsides. The country covers an area of 2800 square kilometers.

Currently the plant is not performing and is using excess capacity due to inefficiencies and operational approaches. During peak periods the plant is using 85 to 90 % of its design capacity and is very inefficient due to a number of operational inefficiencies. This is slowing down the rate of future development and the rate and number of additional services from adjacent areas to come on board and ultimately be connected to the collection system and the plant. It is also creating an issue with the overall wastewater management plan. One of the previous recommendations is to simply upsize the plant capacity in preparation for additional loading but to date all applications for funding assistance have been denied based on the belief that existing capacity is not being properly utilized. Unaffordable capital cost implications therefore exist for the utility. The utility has therefore decided that it must first review all current operational practices by way of an operational assessment, to ensure maximum efficiency for the system is demonstrated based on original design capacity. This will also demonstrate a commitment to ensuring peak plant performance and reconfirm the actual amount of future capacity that is available for planning purposes that can then accompany and application for future funding assistance.

Your team is meeting for the first time. Your objective is to determine the framework for the operational assessment.

Discuss and document what you believe you should be assessing.

Be prepared to present to the Wastewater Authority of St. Monica.

The assessment will include on the ground operational aspects. These would be included in an operational assessment and should be identified in the case stud

- Review of any 24-hour daily plant flow data during average and peak flow periods to determine plant flow profile.
- Review of wastewater influent quality (COD) and individual process data include air demand, dissolved oxygen, TSS and effluent quality leaving the plant during average and peak periods.
- Relationships between lift station run times and plant flows.
- Lift station records including pump run times, breakdowns and pump maintenance frequency
- Energy usage at lift stations and on / off pump cycles
- Operational check sheets that provide data such as chemical feed flow data, pump performance, dissolved oxygen readings, equipment hour meter run times and cycles, out of service equipment by process area within the plant.
- Use of excess capacity or tankage that is on line as a result of out of service equipment due to break down or failure. Identify what needs to be done to get back on track with using only what plant capacity is required.
- Chemical feed rates and possible inefficiencies that result in increase chemical costs due to equipment breakdown, malfunction or poor performance
- All major equipment maintenance and equipment service frequency records by process area.
- Inventory of equipment currently out of service due to failure, lack of spare parts, manuals and lack of training.
- Identify critical areas of equipment redundancy.
- Review of equipment failure rates or back up equipment failure rates by area that result in impacts to the treatment process and lack of redundancy (valve gates, pumps, motors, clarifier rakes)
- Potential areas where on line analyzers can be installed to improve overall plant performance and provide operators with on line data to make more efficient process decisions.
- Review of simple, cost effective SCADA equipment that provides improved control and cost reductions.

The following are what we hope to accomplish at the more visionary higher level:

- Total energy use by plant process area and by major component (pumps, motors, blowers etc.). Identify improvements that result in true power savings and cost reductions
- Daily water and wastewater operator system checks
- Recommendations for predictive and preventive maintenance programmes to reduce down time and costs.
- Improvements for water and wastewater quality sampling, testing and reporting practices
- Identification of efficiencies that can be gained through the use of simple approaches to SCADA
- System security
- Identifying the benefits of critical equipment redundancy
- Data capture for Benchmarking initiatives
- Customer relations and communication strategies
- Clearly defining customer rate classes
- Opportunities to defer capital expenditures through effective conservation
- Financial and budgetary processes
- Human capital planning related to personnel development for Effective Utility Management and operator capacity building
- Corporate Governance and mission
- Management systems
- Performance management
- Information management
- Organizational structure
- Employee motivation
- Managerial Practices
- Productivity
- Testing procedures
- Security Programme

The Benefits to the Wastewater Authority/Utility



- With your case study group outline what you see as the benefits your organization might gain by having an operational assessment?

Kelowna Case Study

The following provides an example of the benefits derived from an Operational Assessment conducted by the City of Kelowna, BC, Canada.

1. Reduced equipment downtime by 40%
2. Significant deferral of capital investment for upgrading water distribution system through demand side management initiatives
3. Increases customer satisfaction rating from 60 – 90% (survey data)
4. Rates and tariff review created better equity and true cost of service between rate classes
5. SCADA upgrades improve response times for emergencies and failures by 60%
6. Significant improvements to equipment tracking, performance reporting and record keeping
7. Improved water quality monitoring and reporting programmes by over 50%

Many assessment processes only provide general recommendations that the utility may find too general, too costly or too complex to implement. The WWWS assessment team works directly with operations and management staff to make practical “on the ground” recommendations for improvement to gain efficiencies in daily operator routines and equipment maintenance and selection. The recommendations that are provided will include detailed information on the latest in industry equipment that is practical, low cost and best suited to the challenges of the site.

Conducting an Operational Assessment: Data Requirement and Sources

Pre-Visit Information Gathering

Before the assessment team arrives it is most efficient that they study existing documentation

- Examples of any standard operating procedures (SOPs)
- Examples of any safe work procedures
- Examples of quality permits or regulatory requirements
- Overview of current operator certification and staff professional development plans
- Examples of daily operations check sheets
- Operator equipment check sheets and equipment inventory records
- Examples of equipment maintenance and breakdown records
- Examples of chemical feed and process adjustment records
- Quality compliance testing records completed by operations
- Leak detection records
- Inventory Records
- Hydrant and valve maintenance records
- System flushing records
- Number and frequency of customer complaints and operational response
- Operational financials
- Water delivery records (pumped or gravity fed) vs. water consumption records (system losses)
- Power consumption records
- Communication plan
- Rate and Tariff
- Policies

What other aspects would you think might be important to your specific utility?

The Assessment Process

Operational assessments are completed using a peer-to-peer review process. This process brings WWWS operations staff that has extensive operational experience, together with local utility staff to discuss and review day-to-day operational practices. Operators in the field speak the same “language” and understand each other’s work environment and challenges. Information is shared and strengths as well as opportunities for improvement are identified and discussed in all operating areas. Recommendations that include training plans are also provided.

All recommendations utilize industry best practices applied based on-site specific operational needs. Simple low cost, yet effective items are identified and recommendations provided. Assessments done by team of two or three individuals take 5-10 days. Time spent depends on the complexity of the operation and the provision of utility documents such as routine check sheets, water and wastewater quality reporting and customer consumption records submitted before arrival.

The documentation submitted ahead of time decreases the amount of time on- site. At the conclusion a report with recommendations for changes to items such as operational checklists and maintenance procedures, energy saving initiatives etc. is prepared. The utility is presented with working examples of how operational improvements can be implemented. The report also contains a list of simple, clearly defined recommendations that serve as a template that can be referred to which moves operations forward in an effective and efficient manner.

POSSIBLE TIMETABLE

Depending on the number of staff, number of facilities to be visited and observed and the pre visit documents reviewed the on-site time could be between 1 and 2.5 weeks.

Day 1 – Morning: Introductions & Briefing

1. Meet and greet management and operations staff.
2. Initial briefing. Reviews of expectations from both sides, answer questions and provides an overview of the 3-day visit itinerary.
3. Review responses and feedback from the pre-visit operational survey sent to the operations group. This survey provides the review team with valuable pre visit information on operational practices and identifies strengths and opportunities for improvement.

Day 1 – Afternoon: Field Visits to Facilities

Technical assessors: Operations staff provides the review team with an “in the field” look at their daily routine, their sites and discuss challenges. This provides the review team with a first hand look at how the operators apply their knowledge and skill to the job. These visits validate the pre visit information provided and begin to identify gaps and opportunities for improvement.

Governance assessor: Reviews non-technical aspects

Day 2 – Field visit to Facilities continued

Day 3 Morning: Group Discussions

- ❖ The review team conducts a debrief of Day 1 with the operations group
- ❖ Strengths and opportunities for improvement identified by the review team through the pre-visit survey and the field visits is shared with the group
- ❖ Facilitated group discussion to gain feedback is conducted to build consensus and identify and list specific areas of strength and opportunities for improvement.

Day 4 – Afternoon: Presentation of Utility Best Practices Approaches

Practical working examples of utility best practices for operations that reflect the items requested in the pre visit survey will be provided to the group. An overview with handouts of how the items identified in the pre-visit survey are applied will be provided. Group discussion will allow for any questions and any clarification on how these are applied in other operational areas

Interactive Session

In teams, the operations staff will be guided through a process to gain consensus on, a list of strengths and opportunities and apply the real life best practices examples from the morning session to these. Using a guidance manual, each group will build and complete a set of operational best practices that are practical and can be applied to their workplace.

Day 5-6 - Additional Meetings and Report Writing

Day 7 - Presentation of Report

Assessors will meet with utility managers and present their report. They will walk staff through the recommendations, answer questions and guide them into an action plan for implementation



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Conducting an Operational Assessment: The Report

Once all the assessments have been conducted the assessors compare notes and documents their observations and recommendations.

A draft report is presented to the group who has a chance to review and amend incorrect information and provide commentary. These amendments are made in the report and a final report prepared and delivered to the Authority/Commission.

Elements of the assessment report

There are two parts to the report. First the assessors document their observations and secondly their recommendations. Copies of revised documents are included in the appendices

- **Governance and systems**
 - Corporate Governance and Mission
 - Board
 - Mission

 - Management System Framework
 - Policies
 - Management systems

 - Performance Management
 - KPI
 - Work plans

 - Financial Management
 - Budgets
 - Revenue Management

- Information Management
 - Data Definition and Collection
 - Information systems
 - Communications

- **Organizational Structure and Culture**
 - Alignment/realignment
 - Structure & Span of Control
 - Job Descriptions

 - Motivation and accountability
 - Employee motivation
 - Accountability & Performance Management

 - Management Team effectiveness
 - Managerial Practices

 - Productivity
 - Work scheduling
 - Operator Hiring, Training and certification

- **Operational Management**
 - Facilities/Operations & Maintenance
 - Housekeeping
 - Equipment Installation and Maintenance
 - Water Quality Testing
 - Supply/Inventory
 - Security Programme
 - Inventory Management
 - Work Practices
 - Safety Management Programme
 - Standard Operating Procedures
 - Emergency Management

- **Site Specific Observations**

Additional Options

Board workshop

A half day presentation/workshop can be delivered to the Board of Trustees, Minister, Cabinet and Ministry officials outlining the Principles of EUM, Best Industry Practices and assisting the Utility by voicing support for Rate and Tariff increases and setting up for the delivery of the Operational assessment report.

Would this be beneficial in your country? Who would attend? Would participants be receptive?

Writing of Rate and Tariff increase application

The information gathered can be used to develop a rate and Tariff application proposal using Best practices and modeling rather than presenting a wish list.

Assistance in writing utility Communication Plan

The Communication Plan is reviewed as part of the operational assessment. Additional help can be provided in writing/updating the Communication Plan.

Assistance in writing SOPs, Safe Work Procedures, Policies, HR documents etc.

Help can be provided as to updating or ensuring utilities have desired tools for running an effective utility. Many of the items listed here would be covered in the Effective Utility Management Certificate Training Programme that has been endorsed by the CAWASA Board of Directors.

The Link between the Operational Assessment and the Effective Utility Certificate Programme

EUM is designed to help water and wastewater utilities improve performance in many critical areas. Rather than just focusing on financial or operational goals, EUM considers all managerial aspects of water and wastewater utility management. The EUM approach uses 10 core attributes that have been recognized by industry professionals across North America to help water and wastewater utility managers make practical, systematic changes to achieve excellence in utility performance.

The Operational Assessments are based on EUM principles

The ten EUM attributes represent a framework that is intended to help utility managers identify and address the day-to-day challenges that they face. **The Operational Assessment will identify gaps and where training is needed to fill gaps and limitations in the utility.**

Although each EUM attribute, serves as an important component of effective utility management, understanding the relationships between each of the ten attributes will help utilities identify and address their most pressing needs through a customized, incremental approach that focuses on the important inter relationships between them. For example the financial viability of any utility depends on a rate structure that reflects the true cost of providing service to its customers. Additionally, the elimination or deferral of costly capital improvements to the utility can be realized by applying an integrated demand side approach to water sustainability. Furthermore, the optimization of utility operations through innovation and energy reduction strategies can result in increased product quality and improved customer satisfaction. These are just some examples of the interrelationship between the attributes of Effective Utility Management.

The EUM Certificate Programme offers a certificate designed to specifically address the EUM attributes. **It provides you the practical information you need today, from the most experienced consultants and instructors available and will align with the Operational assessment results.**

The Certificate is a flexible program comprised of a series of two and three-day intensive courses that can be completed over time. Participants may also elect to take specific stand-alone modules. All courses will reflect the relationship between the subject matter and Effective Utility Management (EUM) and have examples and exercises directly related to water and wastewater management situations. The course descriptions on the following pages identify the primary EUM attribute covered in the workshop as well as the secondary EUM attributes that are covered to some degree.

Course outlines can be found in the Appendices

Effective Communications

One of the key challenges utilities face is raising the profile of wastewater issues in a more positive way. In developing a Communication's Plan the utility must consider its stakeholders and the differing needs, hence messaging, that is needed for each grouping. One component of the operational assessment is reviewing the existing Communication Plan

Exercise

1. In the table below identify along the horizontal axis the stakeholders with whom communications is needed
2. On the vertical axis identify what tools/medium you have for communicating with stakeholders
3. Place an x in the column where a particular tool might be practical for communicating with that stakeholder

TOOL	STAKEHOLDERS								



Operational Assessment Best Practices/ Wastewater Challenges discussion

With your table teammates select one Table Topic from the list of wastewater challenges identified on Day 1. Resuming the consultant role from the original case study use the materials you brought from your utility and prepare a policy, standard(s) guideline or framework for your topic. Be prepared to present your recommendations/document.

Topics selected by group might include:

- *Policies*
- *Standard Operating Procedures*
- *Safe work procedures*
- *Emergency Response Planning*
- *Testing*
- *Governance*
- *Funding*
- *Training*
- *Preventative maintenance*

Operator Training

Operator Training needs are one of the areas covered by the operational assessments. The Assessment would determine image001.pngCBWMO logo if operators are currently in any certification programme. If operators are certified, how many and at what level? What are some of the key training needs for operators?

APPENDICES

COURSES

FINANCIAL VIABILITY

Primary EUM attribute covered: Financial viability

Secondary attributes: Customer Satisfaction, Infrastructure Stability, Operational Resiliency, Community Sustainability, Stakeholder Understanding and Support

Overview

Understanding the full life cycle cost of a utility is vital to ensuring its financial viability. Maintaining a balance between the value of the assets, long-term debt, future capital requirements, operation and maintenance costs and the overall revenue that is required is critical to any utility's financial viability, health and future success. Achieving this financial balance is often a challenge. Utility managers must attempt to establish policy and adequate rates and charges that are consistent with community expectations and acceptability, while at the same time, ensuring that the utility's immediate and long-term needs are being met. In this module participants will learn what elements make up the full life cycle cost of the utility, how to develop effective financial policies and how to create a balance between the myriad of financial elements that must be managed to ensure a utility's financial health is maintained.

Overall Learning Objectives

By the end of the session participants will be able to:

- Identify all of the financial elements that make up the full life cycle of a utility
- Articulate the necessary relationships between these elements
- Develop a financial policy framework for their utility
- Build a budget and a financial plan for their utility
- Develop the financial plan presentation for decision makers

INTEGRATED ASSET MANAGEMENT

Primary EUM attribute covered: Infrastructure Stability

Secondary attributes: Customer Satisfaction, Water Resource Adequacy, Financial Viability, Community Sustainability, Stakeholder Understanding and Support

Overview

Asset management is now becoming a priority to many utilities due to regulatory authorities' legislation and financial constraints. The single biggest investment for any utility is its assets. Managing these assets in a way that provides acceptable levels of service in the most cost effective way, while at the same time ensuring maximum life cycle, is critical to a utility's long-term viability. In this module participants will learn the value of asset management principles and how

these principles apply to the financial, economic, engineering, planning and operational elements of utility management. The workshop covers the definition of physical assets, the history and need for asset management, including overviews of: the deliverables; core steps, techniques, processes and practices; business integration and the concept of confidence levels in asset management decision making and outputs.

Overall Learning Objectives

By the end of the session participants will be able to:

- Articulate the value of an asset management programme
- Quantify and qualify the assets within their utility
- Develop a framework for conducting an asset inventory and a condition assessment
- Understand how asset management fits with the long term viability of the utility

INTEGRATED DEMAND SIDE MANAGEMENT

Primary EUM attributes: Water Resource Adequacy /Community Sustainability

Secondary Attributes: Stakeholder Understanding and Support, Financial Viability, Operational Optimization, Customer Satisfaction

Overview

This two-day modular workshop will expose participants to the concepts and best practices of Integrated Demand Side Management (IDSM). Through lecture, discussion, exercises and a case study the workshop will cover real life examples of how these practices are used in the water industry in other jurisdictions, and how the learning can apply to the participant situations.

Participants will receive “tool kits” to teach them how to develop an IDSM framework that aligns with industry Best Practices.

Overall Learning Objectives

Through a combination of lecture, exercises, case studies and discussion by the end of the workshop participants will be able to:

- Define Integrated Demand Side Management and why it is beneficial
- Identify the components of an IDSM strategic plan
- Quantify non-revenue water
- Develop an IDSM framework for use in their utility

OPERATIONAL RESILIENCY

Primary EUM attribute: Operational resiliency

Secondary attributes covered: Community Sustainability, Financial Viability, Operational Optimization, and Water Resource Adequacy

Overview

Operational resiliency refers to a utility's ability to proactively identify, assess, and establish the tolerance levels and procedures necessary to manage a wide range of utility business risks. These include legal, regulatory, financial, environmental, safety, security, and other risks associated with system operation and major equipment failure. In this module participants will be exposed to industry best practice around these elements, case studies and real life examples. This module will also include a segment on operational resiliency under emergency conditions and provide a framework for participants to develop safe work and standard operating procedures.

Overall Learning Outcomes

By the end of the session participants will be able to:

- Identify a wide range of business risks that are encountered by a utility
- Assess these risks in the context of a regulatory, environmental, safety, security and operational framework
- Prioritize these risks using case study and industry best practice
- Perform an operational risk assessment on their utility using industry best practice
- Identify the process for the development and implementation of safe work and standard operating procedures for their utility

FUNDAMENTALS OF PERFORMANCE MEASUREMENT AND BENCHMARKING

Primary EUM attribute: Operational Optimization

Secondary Attributes: All other attributes are touched upon in this workshop

Overview

This two-day modular workshop will expose participants to the concepts and best practices of water utility performance measurement & benchmarking. Through lecture, discussion, exercises and a case study the workshop will cover real life examples of how these practices are used in the water industry in other jurisdictions, and how the learning can apply to the participant situations.

Participants will receive "tool kits" to teach them how to develop a set of useful performance monitoring and benchmarking criteria and come away with a starter kit and plan that aligns with American Water Works Association (AWWA) Standards and Best Practices.

Learning Outcomes

Each module will expand the learning through the use of a case study that will build the components of effective performance measurement.

- Understand the importance of effective performance measurement in the EUM approach
- Identify the differences between Key performance Indicators and Benchmarking
- Develop KPIs that are relevant to their utility
- Use the KPIs and benchmark indices to analyze their Water Utility's performance
- Set realistic standards of performance that support EUM and drive continual improvement
- Develop the framework for setting regional benchmarks

LEADERSHIP AND TEAMBUILDING (3 days)

Primary EUM attribute: Employee and leadership development

Secondary attributes: Operational Optimization /Customer satisfaction

Overview

This three-day modular workshop will expose participants to the concepts of effective leadership and team building. Through lecture, discussion, exercises and case studies, often customized from examples from within their own workplace, the workshop will cover real life examples of how these practices are used in municipal utilities in other jurisdictions, and how the learning can apply to the participant's situations.

Participants will work in towards a journey of self discovery that encourages them to examine their own management practices and develops their leadership skills. They will distinguish the difference between management and leadership and through exercises and discussion learn how to build an effective team that works towards a common purpose. Participants are challenged to try different methods of communication and management techniques – many of which shed new light on ways to operate and manage. This workshop is one of our most popular in the series and is excellent for in-house delivery so that actual teams can work together to create a more cohesive and better functioning unit.

Learning Objectives

By the end of the workshop participants will be able to:

- Identify the attributes of Effective Utility Management (EUM)
- List the roles and responsibilities of management
- Differentiate between management and leadership
- Determine leadership qualities
- Demonstrate effective active listening skills
- Demonstrate their ability to build consensus
- Determine what is needed to build effective work teams

UTILITY MANAGEMENT COMPETANCIES (3 days)

Primary EUM attribute: Employee and leadership development

Secondary attributes: Operational Optimization, Stakeholder Understanding and Support, Operational Optimization

Overview

Unlike many of the other EUM workshops that concentrate on one specific topic, this workshop covers a number of work related management skills. Many utility foremen, supervisors and managers have been promoted from the ranks and have had little exposure to management techniques. This workshop will cover a variety of topics that utility managers have to deal with in their day-to-day workplace. This workshop presents an **overview** of each topic as well as lecture and exercises on how to implement Best Practices. Participants will leave the course, not as experts in each area, but with an understanding of each topic and its importance in EUM. They will learn some skills for each topic.

The topics include:

- Time Management
- Coaching and Mentoring
- HR – Hiring and Recruiting
- Delegation
- Conflict Management
- Discipline and Grievance
- Stakeholder Communication

Overall learning objectives

By the end of the session participants will be able to:

- Demonstrate time management principles
- Determine the components of a recruiting framework and interview questions
- Develop an employee development plan as part of an effective performance review
- Identify the do and do-nots of delegation
- Demonstrate effective ways of dealing with conflict
- Understand a systematic, escalating process for discipline and grievance
- Identify ways to effectively deal with internal and external stakeholders

SETTING RATES AND TARIFFS

Primary EUM attribute: Financial Viability

Secondary attributes: All other EUM attributes

Overview

This session will expose participants to the concepts of setting appropriate rates and tariffs that reflect the importance of achieving cost recovery for utility services.

Through lecture, interactive group discussion, exercises and case studies participants will learn a process to assess the cost of delivering safe potable water to their community, how to set rates and how to avoid rate shock. The workshop will cover real life examples of setting rates, and facilitate a process where participants can apply theory to practical situations within their own utility. As different regions and countries have different rate structures we propose to use a customized case study to work through the principals of setting rates and tariffs. The various methodologies used in setting rates are discussed including conservation based pricing and participants led through a process to determine which blend of methods would work best for their situation. The challenges of applying full cost of service pricing are examined as well as ways to garner political and community support.

During the afternoon of Day 2 participants can then apply the principles and design a plan for their own utility. Time will be allowed during the workshop for discussion, as this will be a vital component to putting together realistic, practical plans.

Overall Learning Outcomes

- Understand the rationale for setting realistic rates and tariffs
- Work through a process for designing a rates and tariffs programme
- Develop a process for designing rates and tariffs for their own Utility or Water Authority
- Develop the structure for a communication plan to support the rates and tariffs proposal

PROJECT OWNERSHIP & MANAGEMENT

Primary EUM attribute: Operational Optimization

Secondary attributes: Infrastructure Stability, Operational Resiliency, Stakeholder Understanding and Support, Community Sustainability, Product Quality, Financial Viability

Overview

This workshop will expose participants to the concepts of both internal and external project management. In many utilities consultants are engaged to run and manage projects. This workshop leads participants to an understanding of how to manage the project manager, set up a project charter and develop organizational performance monitoring and benchmarking.

Through lecture, discussion, exercises and case studies the workshop will cover real life examples of how a project charter framework is developed, communicated, implemented and measured and how the learning can apply to the participants' situation.

Participants will receive 'tool kits' to teach them how to develop the project charter and a set of useful benchmarking and performance monitoring criteria. Participants come away with a starter kit and plans that will jump-start the development of their own Project Management System.

Overall Learning Objectives

By the end of the session participants will be able to:

- Identify and understand the relationships between Project Ownership & Management (POM) and Effective Utility Management (EUM)
- Understand POM within the whole planning continuum
- Understand the importance of the Business Case as the critical input to the project
- Develop an effective Project Charter and understand the importance of project governance,
- Understand the critical interface between the project owner & the project manager
- Understand the importance of conducting a post-project review in developing & implementing 'lessons-learned'

