

# H<sub>2</sub>O PERATOR

## CARIBBEAN

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**Water Industry Operators  
of the Caribbean**



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## Let's discuss real issues and practical solutions!



by **CHRISTOPHER HUSBANDS**

*President of CAWASA and General Manager, NAWASA, Grenada*

It is a great pleasure to bring greetings on the occasion of our 5th Water Operators' Conference, which draws together water and wastewater operators from Caribbean utilities, as well as expertise from a broad range of related disciplines.

Since our first conference, we have learned a lot about the power of working together to advance the interests of our customers.

Our utilities have benefitted from the technical exchanges and networking among the operators, which has helped them develop more effective responses to the myriad of challenges that they face at their respective work places.

Our greatest assets in the delivery of effective and quality services are our workers.

Through our Association, CAWASA, the utilities provide resources, services and opportunities for capacity and personal development of the workforce. This conference is one such opportunity dedicated to the operators.

The Conference is designed as a platform for water operators to discuss real issues and practical solutions, as well as cultivating innovations and inspiring synergies to address present and future challenges in the Caribbean's water and sewerage sectors.

CAWASA is an integral partner in the promotion of Water Operator Partnerships (WOPs) in the Caribbean, which is a system of peers helping each other improve the delivery of services.

As such, the conference presents an opportunity to inculcate WOPs best practices among our operators. Of particular relevance to WOPs is the fact that partnerships are now recognized as effective mechanisms for learning.

Our Association, cognizant of the challenges of mobilizing financial resources for training -- particularly the prohibitive cost of regional travel -- has pursued the option of the use of virtual platforms for training.

In that regard, we have revamped our website, which now includes a customized online training platform, an online suite of training materials -- and will live-stream major events, including this year's conference in Dominica.

We intend to increase the connectivity of our utilities and our work teams through the use of new and emerging technologies for the ultimate improvement of services to our customers.

On behalf of my colleague directors, our member utilities and associates, I wish to thank our well-wishers, sponsors, presenters and participants, for their contributions to the successful hosting of the Conference and the publishing of the H2Operator-Caribbean Magazine.

We especially single out Mr. Bernard Ettinoffe and his Team at DOWASCO for their overwhelming support in realizing this Conference -- and I wish all participants a productive and rewarding conference.

Welcome to the third issue of our H<sub>2</sub>Operator- Caribbean Magazine and to our 5th Caribbean Water Operators' Conference.

Every two years we bring our water operators together to facilitate the exchange of knowhow, ideas, information, and enhance their skill sets, with the ultimate objective of translating these into improved performance of our water utilities.

This edition of the magazine features our conference theme "Connecting Water Operators: Strengthening Utilities", which invites us to reflect on the critical role operators play in enabling our utilities to execute their mandates. The key to improving service quality and effectiveness of our utilities is through increasing the skills and competences of the workforce.

The solidarity of the workforce towards problem solving across the utilities is a powerful mechanism for improving utility performance. One such mechanism is the Water Operator Partnership (WOP).

Through the support of the UN-Habitat's Global Water Operators' Partnerships Alliance (GWOPA), a growing number of public sector water companies have been collaborating in a variety of ways, in mentoring others to improve their delivery of services. The participants will have an opportunity to engage a representative of the GWOPA during a feature presentation on WOPs.

Our keynote address will be from a veteran engineer, who started his career with a water and sewerage utility, and now heads the Economic Infrastructure Division at the Caribbean Development Bank (CDB), Mr. O'Reilly Lewis.

The conference also helps to support our operators with professional certification through peer-to-peer experience exchanges and presentations by a Certification Commissioner from the Association of Boards of Certification (ABC) of the USA, a professor and professional engineer from Florida State College, an associate professor in environmental engineering from Arkansas State University, and a wastewater professional and course tutor from Trinidad.

CAWASA has been designated by the ABC as its certification authority in the Caribbean and therefore has the responsibility for coordinating the certification examinations for water and wastewater operators and laboratory analysts. The courses offered include, Water Treatment, Wastewater Treatment, Water Distribution, Wastewater Collection, Water Laboratory, Wastewater Laboratory, Small Wastewater Systems, and Very Small Water Systems. To date, over 400 operators from our member utilities and Trinidad & Tobago have been certified.

The safety of our people is paramount in service delivery and for this with have included a double session on occupational safety and health which will be presented by a veteran Caribbean OSH Specialist.

The conference culminates with an exciting competition among the participants to show-off a combination of their skills, speed and knowhow in the performance of their regular functions.

We have dedicated the centre pages of this edition to recognize the role of women in the water and wastewater sectors through photographs and brief biographies of women who work in our utilities. We hope to elaborate on this feature in the next edition of our E-Source Newsletter.

We are pleased to announce that the opening session of this year's conference will be streamed live via social media.

On behalf of our Board of Directors, and Team at CAWASA, and member utilities, we thank the Board of Directors, Management and Staff of the Dominica Water and Sewerage Company (DOWASCO) for hosting the conference in the Nature Island. Special thanks to other sponsors of the conference and the H2Operator-Caribbean Magazine. Happy reading!



**IGNATIUS JEAN**  
*Executive Director*

# CAWASA Welcomes New General Managers in Barbados and Saint Lucia



**BWA General Manager  
KEITHROY HALLIDAY**

CAWASA wishes to announce the appointment of new general managers at the Barbados Water Authority (BWA) and the Water and Sewerage Corporation (WASCO) in Saint Lucia.

Mr Halliday, an MBA, is currently pursuing his DBA with Arthur Lok Jack, UWI. He is a visionary leader who has held several senior management postings in the banking, financial, retail and telecommunications sectors. His skill sets and competencies include sound operational management, proactive change management, keen financial and credit analysis, effective company turnarounds, best practices implementation, tactical and strategic leadership.

His most recent achievements include:-

- Leading a financially ailing transnational company to profitability in 6 months.
- Successful restructuring and change management initiatives.
- Development of empowered human resource to continue delivery of new strategies.
- Introduction of a Process/Quality management system for monitoring and evaluation of improvement strategy.
- Leading telecommunications retail company to win Bmobile and Digicel awards in two countries over the last 5+ years.

Mr. Halliday's experience in telecommunications and as a business consultant, followed his early years in banking, highlighted by his appointment as the youngest person at that time to be appointed manager of a CIBC branch. It was an appointment that earned him the sobriquet of "Boy Banker" by the island's leading newspaper, the Nation.



**WASCO General Manager  
EDMUND REGIS**

Mr. Edmund Regis is the new General Manager at the Saint Lucia Water and Sewerage Company Inc (WASCO). He has served in the public service of Saint Lucia for over 30 years in various capacities including, the Ministry of Communications and Works, over a decade in the Office of the Prime Minister and Manager of the National Printing Corporation.

He is a former President of the largest cooperative in Saint Lucia, the Saint Lucia Civil Service Cooperative Credit Union Limited, a past Treasurer, Vice President and President of the Saint Lucia Junior Chamber of International (JCI), and currently a Director on the Board of the Saint Lucia Fish Marketing Corporation Limited.

Mr Regis' academic qualifications include a B.Sc. degree in Public Administration from the University of the West Indies (UWI) St. Augustine Campus and a Master of Business Administration (M.B.A.) from Middlesex University, England.

Mr. Regis enjoys jogging, intellectual discourse, and is a father of two children, one of who carries his name and is a medical doctor practicing in Jamaica.

## Successful Operators and Analysts

### 2016-2017 Operators Examinations

Country	Operator	Certificate Course	Certification Level
Antigua & Barbuda	Bari Stevens	Water Laboratory	II
	Terry Benjamin	Water Distribution	I & II
	Jelani Liverpool	Water Distribution	I
Cayman Islands	Krista Powell	Water Laboratory	I
Trinidad & Tobago	Sinatra Mohammed	Water Treatment	I & II
	Everis Gonzales	Water Treatment	I & II
	Devika Rooplal	Wastewater Treatment	I
	Shurland Dolloway	Wastewater Treatment	I
	David Boyce	Wastewater Treatment	I & II
	Christopher Tang	Wastewater Treatment	II
	Christian Simon	Wastewater Treatment	I
	Derwin Vallie	Wastewater Treatment	I
	David Benny	Water Treatment	II

# Water Operators Competition 2015 – Grenada

## Winners

### Installation of 4" Valve

- 1st Place Winners: St Vincent & the Grenadines
- 2nd Place winners: St Lucia & Montserrat
- 3rd Place winners: Grenada

### Service Connection

- 1st Place Winners: Grenada
- 2nd Place Winners: Grenada
- 3rd Place Winners: Grenada & Dominica



## Michéla ADIN, the new head of the Martinique Water Office

Ms. Michéla ADIN was appointed as the general manager at the Office De l'Eau (ODE) – the Water Office in Martinique, in April 2017. Ms. Adin is a Martiniquan woman, determined and committed to the development of her island.

As a graduate in law and tourism, at age 24, she became the head of an air transport reservation center in Bordeaux, France, a position which she held for 6 years. On her return to Martinique, she worked as a job counsellor for 7 years in the towns of Lorrain and Marin.



She successfully completed the Territorial Officer exams in 2006 and joined the territorial public service as Director of the Education Office in the city of Robert.

In 2009, she joined the financial director study cycle of the National Specialized Institute of Territorial Studies of Angers, a reference in the field of training for senior managers of local and regional authorities.

In 2012, she graduated with a Master's degree in Finance at the Cergy Pontoise University and was promoted at the same time through an examination procedure to the rank of Main Territorial Officer.

Laureate of the territorial administrator competition in February 2013, she was admitted to the National Institute of Territorial Studies of Strasbourg under the promotion Simone de BEAUVOIR, for a period of 18 months. She is the second Martiniquan woman to reach this level of territorial grade through competitive examination.

It was at the end of this professional course in September 2014, and in her capacity as new territorial administrator, that Michéla ADIN joined the Northern Country Agglomeration Community of Martinique to perform the functions of Deputy Director General and then Director General of the Services.

Today, this mother of 2 girls, dynamic and passionate about her territory, faces new challenges related to the preservation of water and aquatic environments in Martinique. It is this passion and this new challenge that she wishes to meet with her teams from the Water Office of Martinique.

## Mr. Guito Edouard, New Director General at DINEPA, Haiti



Mr. Guito Edouard is the new Director General at Direction Nationale de l'Eau Potable et de l'Assainissement (DINEPA) - National Directorate for Water Supply and Sanitation. He replaced Mr. Benito Dumay. DINEPA is an agency of the Ministry of Public Works in Haiti. The directorate is in charge of implementing the sector policy, coordinating donor assistance and regulating service providers.

CAWASA has been closely associated with DINEPA through various activities during Mr. Benito Dumay's tenure as Director General. Among these activities were: DINEPA participation in CAWASA's Caribbean Water Leaders' Conferences in Barbados and Antigua, establishing a Framework of Cooperation (FOC) between CariWOP and GWOPA towards establishing a multi-partner WOP with DINEPA, participation in CAWASA/CARINDCO water operators' workshop in Antigua in 2016.

CAWASA looks forward to working with the new Director General, Mr. Edouard, and to strengthening its relations with DINEPA.



The Water Office of Martinique (ODE) is a local public sector institution that facilitates various actions of common interest in the field of water and aquatic environments. Its local status gives executive prerogatives to the Director of the ODE that broadens the scope and eases the procedures for exercising the authority of the ODE. The ODE has the flexibility to adapt measures of the Water Framework Directive (WFD) to the characteristics of the Martinique territory to and experiment with new techniques.

Its mission includes the study and monitoring of water resources, aquatic and coastal environments and their uses, technical assistance, training and information and awareness of the people of Martinique.

The ODE provides financial and technical support for the development of innovative or adapted methods for the local context in the areas of drinking water, sanitation, waste and management and maintenance of wetlands. The ODE also has responsibility for international cooperation activities.

The ODE welcomes the opportunity to participate in the 5th CAWASA Water Operators' Conference in Dominica and looks forward to broadening its collaboration with the water and sanitation sector in the Caribbean.

# CAWASA's 5th Caribbean Water Operators' Conference

“Connecting Water Operators: Strengthening Utilities”

The 2017 Water Operators Conference will be held in the Commonwealth of Dominica from June 29-30, 2017 in collaboration with host Utility, the Dominica Water and Sewerage Company (DOWASCO).

The CAWASA Water Operators' Conference is designed as a platform for water operators to discuss real issues and practical solutions, as well as cultivating innovations, and inspiring synergies to address present and future challenges in the Caribbean's Water and Sewerage sectors.

The theme for this year's conference: “Connecting Water Operators: Strengthening Utilities,” invites us to reflect on the critical role operators play in enabling our utilities to execute their mandates.

A Water Operators' Partnership (WOP) is collaboration between two or more water or wastewater operators, conducted on a not-for-profit basis, with the aim of developing their capacity. These partnerships are being used as a way of helping the world's public operators to sustainably deliver adequate water and sanitation for all.

The conference also provides the operators with an opportunity to assess the potential impact of the latest technological tools developed in the water and wastewater sector.

A unique feature of the conference is a competition organized for the Operators to test their competence in areas directly related to their functions. This practical aspect of the conference is intended to provide participants with an opportunity to display their skills and add much needed excitement to the conference.

This event will bring together engineers, water and wastewater operators, water and wastewater laboratory analysts, stakeholders and other water industry personnel. Operators may earn up to 12 hours continuing education units (CEUs) for the two days for certificate renewal purposes.

The key note speaker at this year's conference is Engineer O'Reilly Lewis, Head of the Economic Infrastructure Division at the Caribbean Development Bank (CDB) and a past president of the CWWA. Other presenters include Dr. Jose Luis Martin Bordes, Programme Officer at the Global Water Operators' Partnerships Alliance (GWOPA), Cheryl Capron, Distribution Commissioner for the Certification Commission for Environmental Professionals (C2EP), Dr. Lashun K. Thomas, Assistant Professor and Program Coordinator in Environmental Engineering at the University of Arkansas, Mr. Lesmond Magloire, Occupational Health and Safety Consultant and Ms. Shervon Ifill and Mr. Irwin Gill, Sanitation Specialists.

# Lennox O'Reilly Lewis

KEYNOTE SPEAKER



Lennox O'Reilly Lewis a Civil Engineer with over 20 years' experience in the design and implementation of infrastructure projects in the Caribbean.

As Water Engineer (1995 – 2000) at the Central Water and Sewerage Authority in St. Vincent, he was responsible for managing various aspects of water supply operations, including water quality monitoring, distribution systems operations, and disaster preparedness. As Sanitary Engineer (2000 – 2001) at the Caribbean Environmental Health Institute, he provided technical and policy advice to Caribbean Community Member States in Water Supply, Waste Management (liquid, solid and hazardous). As Solid Waste Manager (2001 – 2004) in St. Vincent and the Grenadines, he spearheaded the development of new solid waste management legislation and the development of a national solid waste management strategy.

He is currently a Division Chief of the Economic Infrastructure Division at the Caribbean Development Bank (CDB) where he serves as a team leader in the preparation, appraisal and supervision of numerous CDB-financed projects (ranging from technical assistance projects to infrastructure projects) in countries stretching from Guyana to Belize and ranging from water supply to transport infrastructure. He currently spearheads several CDB-led regional initiatives and inter-agency collaborations in the water sector, including capacity building exercises and sector studies.

He also served as the President the Caribbean Water and Wastewater Association where he worked extensively with professionals in the private sector and institutional stakeholders in the water and waste management sectors.

He is a graduate of the University of Manchester in 1993 with a B.Eng (first class honours) in Civil Engineering, and from Cornell University in 1995 with a M.Sc in Environmental Engineering.

He is married to Andrea, and together, they have the challenging task of parenting Yohance – their 13 year old son, and Adia – their 8 year old daughter. He likes cricket, track and field, and is an avid hiker.

# Smart Meters: Transforming the Water Sector in Barbados

**ELVIN JORDAN**

B. Eng Civil, M. Eng,  
Civil, P.Eng

Project Manager

Capital Works Department,  
Barbados Water Authority



Darwin's theory of biological evolution posits that all species of organisms arise and develop through the natural

selection of small, inherited variations that increase the individual's ability to compete, survive and reproduce. This theory stands true for organizations as well and as such the Barbados Water Authority (BWA) embarked on a programme to increase its ability to compete and survive, not just nationally but regionally.

The BWA Smart Meter Transformation Project is one of the mechanisms by which the organization has commenced its transformation into a robust utility; one that may be employed as a benchmark for similar regional utilities that subsequently emerge. The project seeks to integrate information systems, hardware and software with accurate recordings of customer consumption gathered through the use of "smart water" meters.

Acquiring customer confidence and their willingness to pay their monthly charges hinges on the ability of the BWA to accurately record, gather and transfer information regarding their consumption. Additionally, the customer is currently demanding a more interactive system which extends greater value through provision of consumption and its link to customer information.

The challenge for the BWA was to find an accurate meter. The solution was an ultrasonic meter which possesses no moving parts and can also wirelessly transfer registered consumption automatically and accurately by walk-by, drive-by or via a fixed network.

To date, the Authority has effectively installed eighty-two thousand meters (82,000) over a two-year period which captures approximately 87% of our customer base. Additionally, it aims to capture the other 13% within the subsequent 12 months. Furthermore, the meters have provided valuable information about wastage (showing that approximately 30% of those customers having meters installed have leaks), backflow issues in some neighborhoods, faults within itself allows for the improved management of our distribution system, non-revenue water management and allows for automatic meter reading.

Generally, the use of the "smart meter" enhances the Authority's ability to compete and survive in a changing global economy through the use of small but effective variations.

# WOPs improve the capacity of Caribbean Water Utilities



By  
**Jose Luis Martin**

## The Global Water Operators' Partnerships Alliance (GWOPA)

Formally founded by UN-Habitat in January 2009, upon the request of the former UN Secretary General Kofi Annan, the Global Water Operators' Partnerships Alliance (GWOPA) is an international network created to support Water Operators' Partnerships (WOPs).

GWOPA has analysed success factors, developed guidance material, documented case studies and developed a strong alliance of water operators, UN Agencies, water associations, development partners, labour and civil society bodies, International Financial Institutions and the private sector.

GWOPA has to date played a significant role in promoting and facilitating WOPs around the world.

GWOPA's vision is that water and sanitation operators help each other to achieve universal access to sustainable water and sanitation services through not-for-profit peer support partnerships.

These partnerships result in public operators – the target of support – with strong technical, financial and management capacity, able to provide a sustainable, high-quality service to all.

GWOPA's mission is to promote the effective use of not-for-profit partnerships between water operators to realize its vision.

GWOPA will be the global leader in WOPs promotion, facilitation and coordination, and the principle source for WOPs knowledge and guidance so that effective WOPs contribute to meeting national and global water and sanitation objectives including those relating to the Sustainable Development Goals and the Human Right to Water.

GWOPA has helped establish regional platforms for WOPs in Africa, Asia, the Pacific, South East Europe, and Latin America and the Caribbean.

It assists regional WOP platforms to develop business plans, helps them to raise money to support WOPs, and provides guidance on WOPs implementation.

## Water Operators' Partnerships (WOPs)

WOPs make use of the fact that while many operators lack capacity, others have it in abundance, and are willing to share it on a solidarity basis.

A WOP is a peer-support exchange between two or more water or sanitation operators, carried out on a not-for-profit basis with the objective of strengthening capacity, enhancing performance and enabling the water operator to provide a better service to more people, especially the poor.

WOPs have existed in one form or another for decades and vary greatly in their objectives, approach and outcomes.

Nevertheless, they are always carried out by and for utilities, and according to a number of guiding principles, notably not-for-profit and integrity.

WOPs propose to increase the ability of water operators to meet the needs of the people they are meant to serve, by enabling them to improve and extend their services.

WOPs work by harnessing the skills, know-how and goodwill within a strong 'mentor' utility in order to sustainably build the capacity of another utility – the 'mentee' – that needs assistance.

Through mentorship, WOPs progressively strengthen and empower the mentee operator at management, financial and technical levels to implement changes that will lead to better performance and service.

Some WOPs focus on a particular aspect of service provision or seek to change particular processes, while others are more comprehensive. *Continued on Page 14*

## ABOUT

**Jose Luis Martin Bordes**

*Programme Officer,  
GWOPA/UN-Habitat*

Jose Luis Martin Bordes is a civil engineer and water expert and holds a PhD in Civil and Urban Engineering.

In 2004, he joined UNESCO's International Hydrological Programme (IHP) in Paris where he served for 6 years working in the areas of urban hydrology, groundwater resources management and transboundary waters.

From 2008 to 2010 he worked at the UN-Water Decade Programme on Capacity Development (UNW-DPC) hosted by United Nations University in Bonn, implementing capacity development activities mainly focusing on improving water efficiency in water utilities worldwide.

In May 2008, he became project coordinator of UNESCO-IHP's component on coastal aquifer management of the GEF-funded "Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem".

In July 2012, Dr. Martin-Bordes joined UN-HABITAT in Nairobi, Kenya, as Programme Officer at the Global Water Operators' Partnerships Alliance (GWOPA).

In his current position, he is responsible for the coordination of GWOPA's activities in Latin America and the Caribbean, South East Europe and the Pacific.

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## CAWASA is a global water leader!

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The Global Water Leaders Group (GWLG) has been proud partner of CAWASA in supporting the performance and innovation of water and wastewater utilities since 2015.

### About GWLG: A Global Focus

GWLG is a global network with utility and ministerial members in over 100 countries, spanning both developed and developing countries.

GWLG's mission is to create a better story for water and this is carried out by hosting face-to-face water leader meetings around the world, disseminating best practice more broadly to around 3,000 water leaders via publications, and providing professional leadership training in various performance-related contexts.

The leadership of GWLG consists of Dr. William Muhairwe (Executive Director of GWLG, Founder of 2ML Consulting and former Managing Director of Uganda's utility, called NWSC), Christopher Gasson (Founder and Publisher of Global Water Intelligence) and Samantha Yates (Secretary General of GWLG).

### GWLG and CAWASA: Activities With & For Caribbean Water Utilities

GWLG's involvement with the Caribbean region has been many and varied. The main locus of collaboration between GWLG and CAWASA has been the highly successful CEO-level events for the Caribbean water utilities.

There have been two of these events so far, held in Barbados and Antigua, and there are plans to continue this vital meeting series in the near future.

GWLG has also published various articles about Caribbean water utilities' innovations in the flagship publication called 'Water Leader' magazine (which has recently collaborated with its sister publication, called GWI magazine).

In addition, Caribbean water utility CEOs have been included in GWLG meetings in other regions such as in North America (during the American Water Summit), as well as Europe and the Middle East (during the Global Water Summit).

Integration of the Caribbean water leaders in the international community is important for refreshing the knowledge-base

and encouraging experience-sharing in a wider context for the benefit of both the Caribbean CEOs and the wider GWLG.

Secretary General, Samantha Yates says: "Working alongside CAWASA to support the performance and innovation of Caribbean water utilities has been a great experience for the Global Water Leaders Group.

"While all water utilities tend to have similar categories of challenges, it has been interesting hearing from the utility leaders about the local specificity of the challenges, how these can be transformed into opportunities, and how we can support and empower those improvements.

"We look forward to continuing working in the region and providing opportunities for growth and connectivity so that the sector can progress together."

### Most Recently...

GWLG welcomed a group of Caribbean water utility CEOs to the Global Water Summit in April 2017 in Madrid, Spain.

Here, they continued to take part in the global conversation about excellence in water services.

Caribbean attendees included Christopher Husbands from NAWASA in Grenada and President of CAWASA; Gelia Frederick van-Genderen from the Cayman Islands Water Authority; Mark Barnett from the National Water Commission of Jamaica; and John Mwansa from the Barbados Water Authority.

The leaders took part in high-level networking events and private workshops for water leaders on the topics of tariff reform and meeting the Sustainable Development Goals through the implementation of new models for water access and sanitation.

Both utility leaders and water ministers from around the world were present in these meetings and all benefitted from the mutual active participation.

### Conclusion

GWLG looks forward to continued collaboration on all fronts with CAWASA and utilities in the region in an ongoing way, so that water's potential can be fully realized, best practices delivered, and innovations implemented for the benefit of each utility' community.

# CAWASA Offers 360 Online Training

CAWASA has added a new customized, interactive, online learning facility on its website that is being hosted by the Ohio 360Water's cloud application.

Water and wastewater operators in our utilities are challenged with finding time for scheduled face-to-face tutorials in preparing for sitting the ABC Certification Examinations and for accumulating the requisite continuing education units (CEU's) for renewal of their certification.

CAWASA has responded to this need by offering this online training format that allows the operators to learn at their own pace and time.

The training website offers 48 water and wastewater online training courses.

The courses are based on the Association of Boards of Certification (ABC) "need to know" criteria for water and wastewater systems.

Training can be accessed at <http://www.cawasa.org> with a link to <https://cawasa.360water.com>.

The site is only accessible by users designated by CAWASA.

The Modules include the following functions:

1. Intermittent Quizzes and a final Test.
2. Randomly ordered answer choices to preserve testing integrity.
3. Immediate wrong answer notification to the user.
4. 100% proficiency on the course exam is required before a certificate of completion is generated.
5. A real time clock on screen that verifies the time spent on the course material.
6. The software program will automatically bookmark when the operator leaves a course (in case of power outage or an emergency in the facility).
7. CAWASA has the regulatory authority to approve the online education platform for continuing education.

Once logged in, users are presented with a listing of water and wastewater courses.

The course list is dynamic and organized in categories (based on water and wastewater subject type).

Users are able to search courses by title and see their completed and in progress courses.

We are excited about this new feature and hope that our operators will improve their performances in their certification examinations.

## Greetings from the Caribbean Desalination Association (CaribDA)



**JOHN D THOMPSON**

*President of CaribDA and General Manager,  
Desalination Company of Trinidad & Tobago Limited.*

On behalf of the Caribbean Desalination Association (CaribDA), I congratulate CAWASA for holding a Water Operator Conference in Dominica 29-30 June 2017 and wish CAWASA very success in holding this forum for the water sector in the Caribbean.

We are in challenging recessionary times in the Caribbean and in the water sector face public demands for improved water supply (and sewerage treatment) to match standards that are improving throughout the developed world with increasingly affluent standards of living. Despite the higher cost than conventional water treatment, desalination is increasingly taking larger role in potable water production worldwide, with a global capacity of more than 86.8 million cubic metres per day, becoming at least a part of utility provision for many governments and private companies. Water sector operator knowledge of membrane processes and plants operations more akin to process plant technology is therefore becoming increasingly important.

Development continues to find more economic ways to desalinate, with currently the most successful advances being in membrane technology rather than replacing the reverse osmosis process which became reliably the most cost effective desalination technique at the beginning of this century. CaribDA provides a forum in the Caribbean for the advancement of desalination and would welcome new members from operating or any other background in the water sector.

We hope that you all save the date of May 29 – June 1, 2018, on your calendars for the CaribDA 2018 Biennial Conference that focus on "New Initiatives on Integrated Water Resource Management" and a celebration of the 90th Anniversary of Desalination in Curacao and the 10th Anniversary for CaribDA.

# Women in Caribbean Water Utilities

The realm of water utilities is perceived as a man's employment domain. Contrary to this perception, however, female employees can be found in almost every department in our Caribbean water utilities - technical services and maintenance, site managers and engineers, unit heads, customer service and consumer complaints, finance and administration, human resource development, and public relations etc.

We have dedicated this section to recognize the role of women in the water and wastewater sectors through photographs and brief biographies of some women who work in our utilities.



**Dr. Gelia Frederick-van Genderen**  
Director  
Water Authority,  
Cayman Islands

Dr. Gelia Frederick-van Genderen began her professional career as Environmental Health Technologist with the Department of Environmental Health in 1983. In 1988 she left to take up a position with the Water Authority as Operations Scientist. In 1994 she was appointed Deputy Director and later promoted to Director of the Water Authority in October 2000.



**Xiomara K. R. Forsyth**  
Corporate Secretary/  
In-House Legal  
Counsel  
NAWASA, Grenada

Mrs. Xiomara K. R. Forsyth is the Corporate Secretary/In House Legal Counsel at the National Water and Sewerage Authority in Grenada. She has been a part of the organization since August, 2012. In her capacity, as In-House Legal Counsel, Mrs. Forsyth manages the legal affairs of the organization, which includes but is not limited to land acquisition, contracts, labour relations and debt collection. In addition to her duties as Corporate Secretary/Legal Counsel, Mrs. Forsyth serves as the Chair of NAWASA's Accident Committee and also deals with all claims for damage and loss made by Third Parties as against the Authority.

She is a graduate of the University of the West Indies, Faculty of Law and a former recipient of the University of the West Indies Open Scholarship Award. She graduated from the Hugh Wooding Law School and has been called to the Grenada Bar since 2008. Mrs. Forsyth is also an ICOSA accredited Corporate Secretary, by virtue of training under the Directors' Education and Accreditation Programme (Caribbean).



**Mrs. Perline Scatliffe-Leonard**  
Director of the  
Water and Sewerage  
Department,  
British Virgin Islands  
(BVI)

Mrs. Perline Scatliffe-Leonard is a business management professional who currently serves as Director of the Water and Sewerage Department, British Virgin Islands (BVI). She has been in this position for four (4) plus years, and is notably the first female to serve in this capacity in the BVI.

She holds a Bachelor Degree in Management, Executive Diploma in Management and a Post-Graduate Certificate in Business Management.



**Ms. Euphemia Willsia Charles**  
Metering Technician  
WASCO

Ms. Euphemia Willsia Charles is the only female Metering Technician employed with the Water and Sewerage Company (WASCO) in Saint Lucia.

In August, 2006 she was contracted for two years, to work as a field inspector at WASCO on a Caribbean Development Bank (CDB)-funded project. Her experience as a Field Inspector and good rapport with employers and employees at the WASCO, paved the way in securing a full-time position as a Metering Technician in 2010.

Euphemia does not only read meters but attends to customer complaints, inspects meters for unauthorized connections, reports to relevant departments problems such as damaged lines and performs minor field repairs.

She is an ABC Certified Water Operator - Level 1 Water Distribution.



**Ms. Melissa Y. McKenzie**  
Information  
Technology Manager  
CWSA, St. Vincent and  
the Grenadines

Melissa McKenzie joined the Central Water & Sewerage Authority in 2004 as a Systems Analyst in the Information Technology Department and was promoted in 2007 to Information Technology Manager.

Melissa has a wide range of responsibilities including the integrity of all information systems, processes and product development. She designs and implements most of the organization's operational information technology support and financial systems. Melissa also designed and created the company's website and was instrumental in the design and development the company's eBill service- for secure, online functionality to CWSA's customers.

Melissa holds a BBA in Management Information Systems from the Florida International University in Florida; a DMS and an MBA from the University of Sunderland in England.



**Mrs. Kervelle George-Munro**  
Senior Engineer  
DOWASCO

Mrs. Kervelle George-Munro is the Senior Engineer at the Dominica Water and Sewerage Company Limited (DOWASCO). She has been with the company since 1999 and was first employed there as a Technical Assistant. In 2003 she left Dominica to pursue a Bachelor's Degree in Civil Engineering at the University of Mississippi where she graduated magna cum laude with a GPA of 3.93 in 2007. At DOWASCO, some of her responsibilities include water and sewerage project designs, tender & contract process management and project management.

# Women in Caribbean Water Utilities



**Ms Monique A. Hull**  
Financial Controller  
Central Water and  
Sewerage Authority  
(CWSA)  
St. Vincent & the  
Grenadines

Ms. Monique Hull has been at the head of the Finance Department as Financial Controller for the past 10 years. Ms. Hull joined the Central Water & Sewerage Authority many moons ago as the Assistant Accountant and moved through the rank of Accountant to Financial Controller.

She was instrumental in the conversion of the paper based accounting system of CWSA to the ABECAS computer based accounting system. This system covers all the major aspects of accounting, namely, General Ledger, Cost Accounting, Payables, Receivables, Inventory, Payroll, Billing, Purchase Orders and Asset Management. She is currently the company's go to person for anything ABECAS.

The CWSA has its financial challenges as with any other organization but it is happy to note that it is one of the few water utilities in the region that is viable and has been for the past 20 years. Ms. Hull has the qualifications of BBA (Hons) and FCCA.



**Mrs. Ivanira Da Costa James**  
Operations Manager,  
DOWASCO

Mrs. Ivanira Da Costa James began working at the Dominica Water and Sewerage Company Limited (DOWASCO) from 1997 where she started as an Engineer and became the first female operations and maintenance manager at DOWASCO. She is now the Engineering and Technical Services Manager.

Her duties involve designing and supervising the implementation of new water systems in remote areas (villages not previously served with potable water); extending existing systems due to increasing demand and renovating broken and worn-out segments of the major networks. Her team includes a team of 83 male operators.

DOWASCO has 43 water systems that serve potable water to 99 percent of the 70,000 population of Dominica.



**Mrs. Shelly Parris**  
Senior Engineer –  
Distribution Systems  
Barbados Water  
Authority (BWA)

Mrs. Shelly Parris is the Senior Engineer – Distribution Systems at the Barbados Water Authority (BWA).

She was the Project Engineer on the Water and Sanitation Systems Upgrade Project funded by the Inter- American Development Bank. Under that project she oversaw the replacement of forty nine kilometres (49km) of water mains through from selection of locations to be replaced to final completion over a period of approximately two (2) years. This project also saw the achievement of the use of the pipe bursting technique for the first time in both urban and rural Barbados.

Mrs. Parris is a professional engineer and holds a B.Sc. degree in Civil Engineering from the University of the West Indies (UWI), St. Augustine Campus, a Master's degree in Project Management and Evaluation from the UWI, Cave Hill Campus.



**Ms. Theakler Verne Joseph**  
Communications  
Officer  
WASCO

Mrs. Theakler Verne Joseph is a Communications Officer at the Water Sewerage Company Inc. (WASCO) in Saint Lucia. She has been employed with the company for almost seven (7) years and has been working in the Water Services Department for nearly five (5) years.

Her duties include but are not limited to: monitoring the SCADA system and receiving reports regarding damaged lines (water and sewerage), choked pipes, low water pressure and the shortage of water. She then conveys this information to the appropriate individuals.

Mrs. Joseph is currently ABC certified, level one in Water Distribution and holds a Bachelor's Degree in Business Management.



**Mrs. Timica Richards-Allen**  
Chemist  
Water Laboratory  
Antigua Public  
Utilities Authority

Timica Richards-Allen is a Chemist in the Water Laboratory at the Antigua Public Utilities Authority (APUA). She is also a senior member of the Water Business Unit Executives team.

She manages a team of four men and has responsibility for the water quality of the APUA, water distribution system and treatment plants, which includes ground water, surface water and desalination. She has the formidable task of leading the process towards accreditation of the APUA with the ISO-17025 Standard. In addition, she is part of the team of instructors for the ABC certification program for Water Treatment Operators and the ABC certification program for Laboratory Analysts.

She holds a B.Sc. in Chemistry (honours) and a minor in Business Administration from Midwestern State University, USA and a Certificate in Applied Project Management from the Management Institute for National Development (MIND) in Jamaica.



**Ms. Lenisha Creese**  
Shift Leader  
Water Business Unit,  
Antigua Public  
Utilities Authority  
(APUA),  
Antigua & Barbuda

Twenty-six year old Lenisha Creese is a young vibrant individual who joined the APUA Water Business Unit in June 2015. She was assigned to the Camp Blizzard Reverse Osmosis Plant as a junior operator. Ms. Creese was promoted to shift leader in March 2016, only nine months later. She's extremely passionate about her job and the responsibilities that come along with it. She is currently preparing for the ABC level one Water Treatment Operator Certification while also pursuing an Associate's Degree in Financial Accounting. Ms. Creese is the first and only female operator in the Water Business Unit.

Continued on Page 16

# NON-REVENUE WATER

Managing Real Apparent Losses in the Distribution System

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METERS AMR/AMI CONTROL

Integrated Metering Technologies

octave  
Ultrasonic Water Meters

sonata  
Ultrasonic Residential Water Meter

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# Integrated Operations Planning (IOP)

By SHEREE BARON, IMS Business Academy



**Figure 1** Individuals working together.  
(Integrated Operations Planning - IOP)



**Figure 2** Management planning as a team.  
(Silo Management)

Looking for an innovative way to improve the communication and effectiveness of your executive and management team? The Integrated Operations Planning process is used to improve communication and decision-making within the whole organization, starting from the top executive, then moving to the management team and encompassing the entire employee base.

The term Integrated Operations Planning used as an acronym, IOP, is a combination of two business terms, Integrated Operations and Integrated Business Planning. Integrated Operations is a term used to define a company that combines two or more operations or divisions and operates as a single business unit. This collaborative method of conducting business offers cost savings and increases efficiency. Integrated Business Planning is a joint planning exercise that ensures participation of all stakeholders and affected departments. Its objective is to examine all economic, social, and environmental costs and benefits in order to determine the most appropriate option and to plan a suitable course of action.

Integrated Operations Planning (IOP) is a planning process with collaboration of all departments or divisions of an organization. The process is executed through short, well-organized meetings that include the whole management team. The management team works together to identify issues and challenges in a timely manner; develop effective solutions, and execute steps to keep projects on-target and on-time. The IOP process will enable the organization

to eliminate silo management and move to team-based management.

The IOP process is executed through short, well-organized meetings that include participation from all members of the management team and all departments of the organization. The outcome of the IOP is a smooth running operation capable of responding to client requests and projects in a timely, efficient and effective manner.

For organizations experiencing a need to improve internal and external communication IOP is a cost effective, quick to implement business improvement process. Typical consultant involvement is 10-hours weekly for 3 months to coach the executive team; 4 to 6 hours monthly for the next 3 months to support on-going development of the process; 4 to 6- hours quarterly for 2 quarters to ensure sustainability of the process.

The IOP process is user friendly, flexible, and easy to implement. There is no need for expensive hardware or software upgrades. Meetings are focused with a specific start and end time; agenda is preapproved and distributed well in-advance of the actual meeting. All attendees have a role and are expected to arrive on-time, prepared to participate.

Organizations who have successfully implemented and sustained the IOP process report significant improvement in employee morale, improved communication throughout their supply chain, and greater commitment and involvement at all levels of the organization.

# WOPs improve the capacity of Caribbean water utilities

*Continued from Page 7*

Most work by changing processes that will result in increased efficiency, leading to greater financial sustainability and the eventual ability to improve and extend services. Other WOPs help the mentee extend their services directly.

They may focus on transfer of expertise around pro-poor service delivery, extension into informal settlements, fair tariff setting, and so on.

Given the dual need of urgently expanding provision and ensuring the capacity to maintain that service over the long term, WOPs ideally pair an explicit focus on service extension with long-term efforts to ensure sustainability.

Mentor water operators with relevant skills and experience, and mentee water operators that express a demand for assistance to improve their operations, have complementary motivations for taking part in non-commercial partnerships.

The main incentive for the mentee operators is to acquire high-calibre skills and capacity at a low cost to improve their performance and gain comparative experience for their staff.

The key incentives for mentor operators are building the comparative experience for their staff while making their jobs more interesting, gaining exposure and enjoying global visibility. It's the combined incentives of WOP mentors and mentees that fuel the partnerships.

## **The Regional WOPs Platform in the Caribbean (Cari-WOP)**

Cari-WOP is the regional platform for WOPs in the Caribbean and is embedded under the larger geographical WOP platform for Latin America and the Caribbean (WOP-LAC).

The mission of Cari-WOP is to serve as a regional platform to facilitate the sharing and exchange of information and experience and peer-to-peer support between water and sanitation utilities and operators of the Caribbean so as to help them play their full role in delivering and extending quality basic services for all.

Cari-WOP was established in 2011 and held its first Steering Committee meeting in 2013. The permanent Secretariat of Cari-WOP is co-hosted by the two professional water associations in the region: CAWASA and CWWA.

Strengthening the capacity of Caribbean water utilities through peer-to-peer support partnerships is at the core of Cari-WOP's mission and mandate.

The number of WOPs implemented in the region will increase as the Cari-WOP platform gains recognition and mobilizes funds and support in the region and internationally.

The WOPs currently implemented or under implementation are:

- WOP between Guyana Water Inc. (GWI), Guyana and Belize Water Services (BWS), Belize;
- WOP between Corporación del Acueducto y Alcantarillado de la Vega (CORAAVEGA) (República Dominicana) and Empresas Públicas de Medellín (EPM) (Colombia);
- WOP between Belize Water Services (BWS), Belize and Contra Costa Water District (CCWD), USA;
- WOP between Syndicat Intercommunal du Centre et du Sud de la Martinique (SICSM), France and Water and Sewerage Company Inc. (WASCO), Saint Lucia;
- WOP multi-partner with Direction National de l'Eau Potable et de l'Assainissement (DINEPA), Haiti.

As part of Cari-WOP's support to strengthen the capacity of water utilities in the Caribbean, a number of events and workshops were organized in the region, bringing together practitioners, decision-makers and expert institutions:

- Cari-WOP/GWOPA event on 3rd October 2012 at the 21st Annual Caribbean Water & Wastewater Conference, Bahamas
- Cari-WOP Session during the Water Utilities forum on 10th October 2013 at the 22nd Annual Caribbean Water & Wastewater Conference, Barbados
- Workshop on "Risk Management and Natural Disasters - Best practices from Water Operators in Caribbean Countries" on 6th October 2014 at the 23rd Annual Caribbean Water & Wastewater Conference, Bahamas
- Inter-regional session for the Caribbean and the Pacific Regions "Facilitating the inter-regional cooperation for better water and sanitation service provision through information and experience" on 13th April 2015 at the 7th World Water Forum, Korea
- Training Workshop on "Building A Climate Resilient Water Sector in the Caribbean: Strategies for Water Utilities" on 23-24 August 2015 at the 24th Annual Caribbean Water & Wastewater Conference, Miami, USA
- Workshop on "Building Resilient Water Systems for the 21st Century" on 23-34 October 2016 at the 25th Annual Caribbean Water & Wastewater Conference, Port of Spain, Trinidad and Tobago

If you want to know more about the opportunities to engage in a Water Operator's Partnership as a mentor or mentee water utility, you can contact the Secretariat of Cari-WOP: Ignatius Jean, Executive Director of CAWASA ([ijean@cawasa.org](mailto:ijean@cawasa.org)) or Patricia Aquing, Executive Director of CWWA ([paquing@cwwa.net](mailto:paquing@cwwa.net)).

## POWER OF TEN MULTIPLIER CHART

Multiple or Submultiple	Symbol	Prefix	Name
$10^{12} = 1,000,000,000,000$	T	Tera	Trillion
$10^9 = 1,000,000,000$	G	Giga	Billion
$10^8 = 100,000,000$			Hundred Million
$10^7 = 10,000,000$			Ten Million
$10^6 = 1,000,000$	M	Mega	Million
$10^5 = 100,000$			Hundred Thousand
$10^4 = 10,000$			Ten Thousand
$10^3 = 1,000$	K	Kilo	Thousand
$10^2 = 100$	H	Hecto	Hundred
$10^1 = 10$	D	Deka	Ten
$10^0 = 1$			One
$10^{-1} = .1$	d	Deci	One Tenth
$10^{-2} = .01$	c	Centi	One Hundredth
$10^{-3} = .001$	m	Milli	One Thousandth
$10^{-4} = .0001$			One Ten-Thousandth
$10^{-5} = .00001$			One Hundred-Thousandth
$10^{-6} = .000001$	μ	Micro	One Millionth
$10^{-7} = .0000001$			One Ten-Millionth
$10^{-8} = .00000001$			One Hundred-Millionth
$10^{-9} = .000000001$	n	Nano	One Billionth
$10^{-12} = .0000000000001$	p	Pico	One Trillionth
$10^{-15} = .0000000000000001$	f	Femto	One Quadrillionth
$10^{-18} = .0000000000000000001$	a	Atto	One Quintillionth

  
 CARIBBEAN WATER AND  
 WASTEWATER ASSOCIATION  
**26<sup>th</sup> Annual Conference  
 and Exhibition**  
*Promoting Innovation & Creativity  
 in Water, Wastewater  
 and Waste Management*

 Guyana Water Inc.

# Save The Date!

**October 16th-20th, 2017**  
**Marriott Hotel | Georgetown, Guyana**



## Greetings from the Chair of the Global Water Partnership-Caribbean (GWP-C)

It is with great pleasure, that I congratulate the Caribbean Water and Sewerage Association Inc. (CAWASA), on hosting its 5th Water Operators' Conference. CAWASA has been a long-standing Partner of the Global Water Partnership-Caribbean (GWP-C) since 2008, which was about four years after GWP-C came into existence.



**JUDY DANIEL**  
GWP-C Chair

GWP-C was established to support Caribbean countries in achieving long-term water security, through Integrated Water Resources Management (IWRM). Partnership has been the basis of GWP-C being able to promote and strengthen interaction and cooperation amongst various stakeholders and sectors to move commitment on regional water management into action.

As a close Partner, CAWASA has and continues to actively share in our vision of a water secure Caribbean. This is seamlessly linked to their mission of "providing for the sustainable growth and development of Caribbean Water Utilities and the promotion of water and water related issues through the delivery of quality training and utilising collective resources and experiences."

There is no doubt that Caribbean cooperation on water is what is needed to bring about the challenging advancements to benefit the region. CAWASA's Water Operators' Conference is an outstanding and commendable initiative that supports regional partnership building and collaboration in water resources management.

On behalf of GWP-C, I wish CAWASA a successful Conference.

# Women in Caribbean Water Utilities

Continued from Page 11



**Mrs. Pansy Ventour**  
Human Resource Manager  
NAWASA

Mrs. Pansy Ventour has been employed by the National Water and Sewerage Authority (NAWASA) in Grenada for the past twenty-four (24) years. During her tenure, she held the positions of Documentation Officer, Assistant Administrative Manager and currently, Human Resource Manager. She holds a B.Sc. (Hons) in Management Studies and Certificate in Public Administration from the University of the West Indies. She is currently pursuing a certification in Occupational Safety and Health at the Centre for Development and Certification Training (CDACT).

As the HR Manager, Mrs. Ventour has been very instrumental in the development and establishment of some of the following HR policies and procedures for the management of staff at NAWASA: (1) Development of a New Employee Performance Management System (EPMS); (2) Safety and Health Policy and Procedures; (3) Staff Training and Development Policy; (3) Effectiveness of Staff Training and Development.



**Ms. Marcela Martinez-Ebanks**  
Laboratory Manager  
Water Authority of the Cayman  
Islands (WAC)

Marcela Martinez Ebanks is a chemist by training and is the Laboratory Manager at the Water Authority-Cayman. During her 22 years with the Authority's Laboratory she has watched the laboratory more than double its staff compliment, obtain accreditation from the American Association for Laboratory Accreditation (A2LA Cert # 191.01) and witnessed an almost 10-fold increase in the number of samples processed by the laboratory.

She holds a Bachelor of Arts degree in Chemistry from Union College Lincoln, Nebraska USA, a Master in Leadership as well as Class I-IV certification as wastewater laboratory analyst and Class I-IV water laboratory analyst.

# The CWWA Conference and Exhibition

(16th to 20th October 2017)  
The Guyana Marriot Hotel, Georgetown

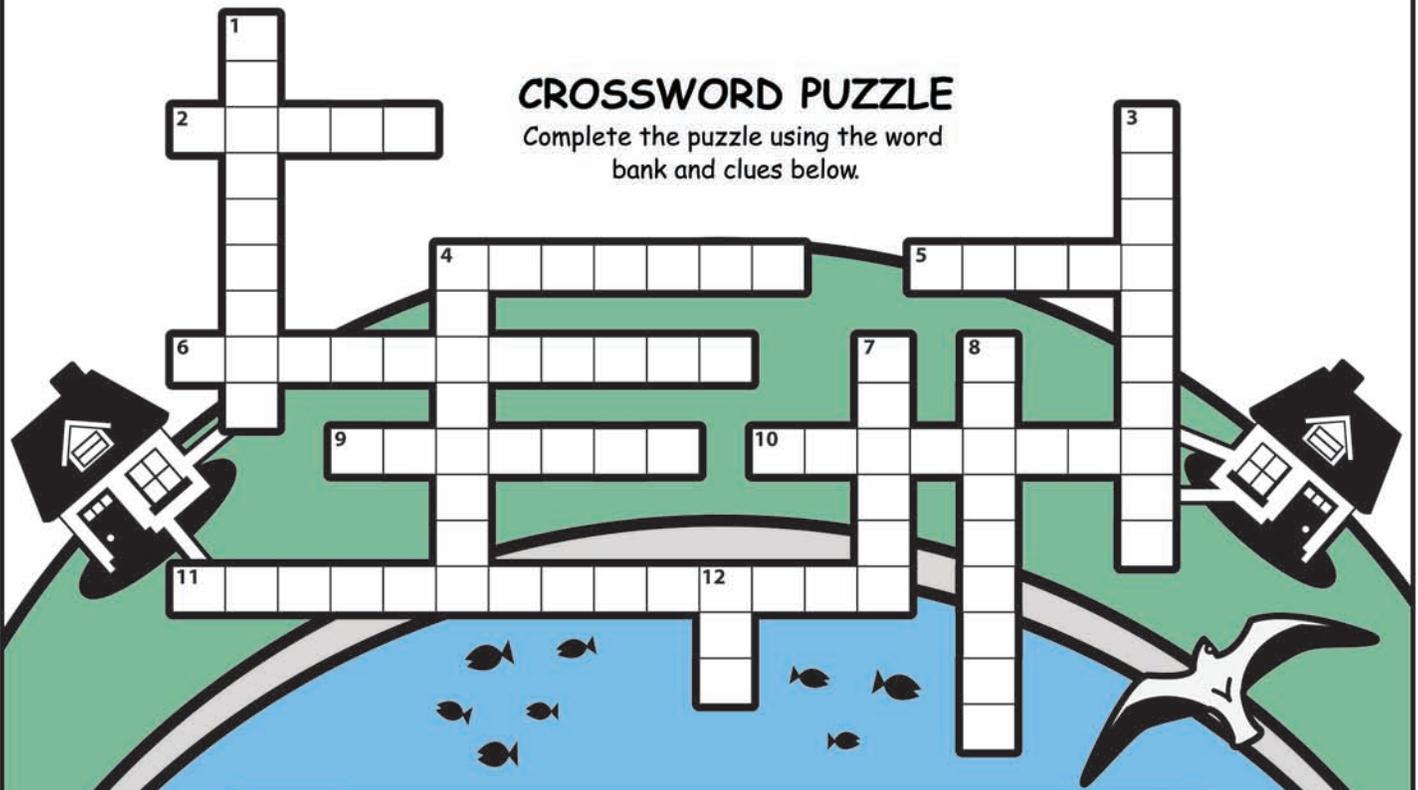
1. The Caribbean Water and Wastewater Association (CWWA) wishes to congratulate the CAWASA on the hosting of its 5th Water Operators Conference. The CWWA and CAWASA are formative partners of the Caribbean Water Operators Partnerships (CariWOP) associated with the GWOPA.
2. Under the aegis of the Ministry of Community, the Guyana Water Inc. (GWI) and the Caribbean Water and Wastewater Association (CWWA) will be hosting the CWWA 26th Conference and Exhibition at the Marriott Hotel in Guyana from the 16th to 20th October 2017.
3. This is the first time in the 27- year history of the CWWA that Guyana will be hosting what is considered the premier event in the Water and Waste Management sectors in the Caribbean. The Conference is on a rotational basis, each year with different Caribbean countries bidding to host.
4. It brings together over 400 participants from the Caribbean, Latin America, North America and Europe. The theme this year is "Promoting Innovation and Creativity in Water, Wastewater and Waste Management" and will be an opportunity for participants to exchange information and experiences, to network and to be exposed to cutting edge technology, products and services in a very dynamic event.
5. A very significant aspect of the event is the Exhibition and this year, a number of sponsors and exhibitors have committed their support. Diehl Metering of Germany has already committed to Platinum sponsorship. Over 60 exhibitors are expected to participate by showcasing their products and services in the water and waste sectors and to interact with Utility companies and other participants. It is an excellent space for networking.
6. Participants include experts, researchers, professionals, students, the media, private companies, development partners such as the development banks such as the Inter-American Development Bank (IDB), the Caribbean Development Bank (CDB), the United Nations Environment (UNEP), the Pan American Health Organisation (PAHO), the Caribbean Desalination Association (CaribDA), the Caribbean Community Climate Change Centre (CCCCC), CARICOM, and CAWASA among others.
7. Another important aspect of the Conference is the convening of the 13th High Level Forum of Caribbean Ministers Responsible for Water (HLF13) which brings together Ministers from all Caribbean countries, water utility managers and development partners to discuss matters of relevance to the water sector. The Ministers usually meet for 2 days of the conference and it gives them the opportunity to be informed about new developments in the water sector and to help shape policy matters.
8. The Conference will cover subjects such as climate change, drought management, integrated water resources management, wastewater management in rural communities, waste recycling technologies for developing countries, landfill engineering and the economics of waste management, to name a few. A number of individual experts, professionals and researchers will present their research findings and technical papers on the various subjects.
9. Participants also look forward to the Water, Rum and Pepper Sauce tasting competition which is a fun event pitting the countries against each other. The GWI is proud to report that at the 2016 Conference in Trinidad, Guyana won the first prize for the best tasting water.
10. An important feature which lends a fun flavor to the conference is an opportunity for participants from all over the world to enjoy the cultural and artistic aspects of the host country of Guyana. The GWI is planning a series of activities to highlight the culture as well as opportunities for participants to venture out on technical field tours to visit places of interest.
11. The Ministry of Communities, the GWI and the CWWA are proud to be convening this event in Guyana in October.

PLEASE VISIT OUR WEBSITE AT: [WWW.CWWA.NET](http://WWW.CWWA.NET)  
FOR MORE INFORMATION.

# Get to Know Your H<sub>2</sub>O!

## CROSSWORD PUZZLE

Complete the puzzle using the word bank and clues below.



conserve operators leaks quality infrastructure pumps hydrants  
healthy ecosystems groundwater treatment tap finite

### Across

2. \_\_\_\_\_ in our water systems can result in large amounts of wasted water.
4. Drinking water every day is necessary to keep us \_\_\_\_\_.
5. Water flows to our taps through a system of water mains, storage tanks, and \_\_\_\_\_.
6. The water trapped beneath the surface of the ground is called \_\_\_\_\_.
9. Access to clean, safe water is important for maintaining our \_\_\_\_\_ of life in B.C.
10. Water that we \_\_\_\_\_ does not end up in our lakes and rivers, and in wastewater treatment plants.
11. The system of water pipes below the ground is known as our water \_\_\_\_\_.

### Down

1. The people who help deliver our water to our taps and who treat it after we've used it are called water and wastewater \_\_\_\_\_.
3. Taking water from the environment upsets the natural balance of our aquatic \_\_\_\_\_.
4. Water that firefighters use to put out fires often comes from \_\_\_\_\_.
7. Although it seems like there is an unlimited supply of it, water is a \_\_\_\_\_ resource.
8. Water must undergo \_\_\_\_\_ before it can be returned to the environment.
12. \_\_\_\_\_ water offers fire protection, supports the economy, and is safe to drink.



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## OBITUARY



**MR. KIM LUDVIGSEN**  
*former Vice President AVK*

In May 2017, we received the sad news of the passing of Mr. Kim Ludvigsen, former Senior Vice President of AVK Overseas - Latin America and the Caribbean, based in Puerto Rico.

He was employed with AVK from 1983 until his 70th birthday on March 26, 2017, after which he was still attached as a consultant and advisor.

Over the years, he established countless contacts and business relationships with water and gas suppliers as well as agents and distributors in the Caribbean region.

Kim was dedicated to working with the water sector and cooperated with and was a member of organisations such as DANVA in Denmark, AWWA in the USA and Canada, ANEAS in Mexico, CWWA and CAWASA in the Caribbean.

Kim had extensive knowledge and expertise within water and gas supply which customers would draw on when planning, upgrading, repairing and streamlining supply systems.

He collaborated with CAWASA in hosting several "AVK workshops and seminars" in the Caribbean.

CAWASA will long remember him as a committed corporate partner and for sharing his wealth of knowledge with our operators and utilities.

CAWASA sends its condolences to Mr. Ludvigsen's family and the AVK Group.

## CAWASA Full and Associate members

Full members	Associate members
 <b>Apua</b> WATER Antigua Public Utilities Authority <a href="http://www.apua.ag/business/water-division/">http://www.apua.ag/business/water-division/</a>	 <b>NAWASA</b> National Water & Sewerage Authority - Grenada <a href="http://nawasa.gd/">http://nawasa.gd/</a>
 <b>BWA</b> Barbados Water Authority <a href="http://barbadoswaterauthority.com/">http://barbadoswaterauthority.com/</a>	 <b>MONTERRAT UTILITIES LIMITED</b> Montserrat Utilities Limited <a href="http://www.mul.ms/">http://www.mul.ms/</a>
 <b>WATER &amp; SEWERAGE DEPARTMENT</b> Water & Sewerage Department, British Virgin Islands <a href="http://www.bvi.gov.vg/departments/water-and-sewerage-department">http://www.bvi.gov.vg/departments/water-and-sewerage-department</a>	 <b>Nevis Water Department</b> <a href="http://www.nia.gov.kn/index.php/ministries/communications/water-department">http://www.nia.gov.kn/index.php/ministries/communications/water-department</a>
 <b>Water Authority-Cayman, Cayman Islands</b> <a href="http://www.waterauthority.ky/">http://www.waterauthority.ky/</a>	 <b>WATER SERVICES DEPARTMENT</b> Water Services Department - St Kitts <a href="https://www.gov.kn/">https://www.gov.kn/</a>
 <b>WASCO</b> Dominica Water and Sewerage Company Limited Dominica Water & Sewerage Authority <a href="http://www.dowasco.dm/">http://www.dowasco.dm/</a>	 <b>Water &amp; Sewerage Company (WASCO), Saint Lucia</b> <a href="http://www.wascosaintlucia.com/about-us">http://www.wascosaintlucia.com/about-us</a>
 <b>GOV. OF TURKS &amp; CAICOS WATER UNDERTAKING PUBLIC WORKS DEPT.</b> Public Works Department, Turks & Caicos Islands <a href="http://tcimall.tc/turks-and-caicos-government-offices/">http://tcimall.tc/turks-and-caicos-government-offices/</a>	 <b>CWSA</b> Central Water & Sewerage Authority (CWSA), St Vincent & the Grenadines <a href="http://www.cwsasvg.com/">http://www.cwsasvg.com/</a>
	 <b>CARIBBEAN INDUSTRIAL CORP</b> Caribbean Industrial Corporation (CARINDCO) Tel: 786 497 7760 E-mail: <a href="mailto:mike@carindco.com">mike@carindco.com</a> ; Website: <a href="http://www.carindco.com">www.carindco.com</a>
	 <b>COLE ENGINEERING</b> <i>Experience Enhancing Excellence</i> Cole Engineering Tel: 905.940.6161   416.987.6161 <a href="mailto:info@coleengineering.ca">info@coleengineering.ca</a> <a href="http://www.coleengineering.ca/">http://www.coleengineering.ca/</a>
	 <b>PowerSeal PIPELINE PRODUCTS CORPORATION</b> PowerSeal Pipeline Products Corporation Tel: 800.800.0932   940 767 5566; E-mail: <a href="mailto:sales@powerseal.com">sales@powerseal.com</a> <a href="http://powerseal.com">http://powerseal.com</a>
	 <b>SEVEN SEAS WATER</b> Seven Seas Water Corporation Tel: 813-855-8636 E-mail: <a href="mailto:info@7seaswater.com">info@7seaswater.com</a> <a href="http://www.sevenseaswater.com">www.sevenseaswater.com</a>
	 <b>UTILITY SERVICES ASSOCIATES</b> Leak Detection & Solutions Utility Services Associates (U.S.A.) 877-585-LEAK (5325) or (206) 429-3751 E-mail: <a href="mailto:mquetel@leakdetectionservice.com">mquetel@leakdetectionservice.com</a> <a href="http://www.leakdetectionservice.com">www.leakdetectionservice.com</a>





EXPECT... SOLUTIONS NOT ONLY PRODUCTS  
EXPECT... A LONG-TERM PARTNERSHIP

# AVK in the CARIBBEAN REDUCING WATER LOSS!

## AVK IN THE CARIBBEAN

Our regional representative, supported by AVK UK, AVK Nederland's and American AVK together with local agents throughout the Caribbean, providing an effective regional service.

### AVK Lunch and Learns

Our popular lunch and learn training courses are held world-wide to introduce and inform customers about our products and services, training includes:

- Product overview:-
  - Air valves, gate valves, hydrants, fabricated mechanical fittings, stainless steel repair clamps
- Specific product training by request
- Product application
- AVK innovations

Contact **Graham Charnley** (details below) to enquire about or to book a course.

With additional technical support and knowledge from American AVK and AVK Nederlands we can offer extensive expertise to give you the complete solution.

AVK have manufacturing sites worldwide with a substantial product range produced in the UK, supported by UK marketing and distribution.



## WATER MANAGEMENT

**WATER IS BECOMING A SCARCE RESOURCE.**

*There is a global focus on protection of water resources and sustainability. Effective water management is critical to reducing non-revenue water loss.*

AVK, through both proven quality and extensive innovation processes are improving the overall quality of installations and network management capability through network audit, smart design and improving efficiency of network equipment.

### AVK:

- Helping to reduce water loss and increasing network efficiency.
- Helping water supply sustainability.



WIMES Compliant



INVESTORS IN PEOPLE



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Expect... **AVK**