CReW's Lines

Newsletter of the Caribbean Regional Fund for Wastewater Management

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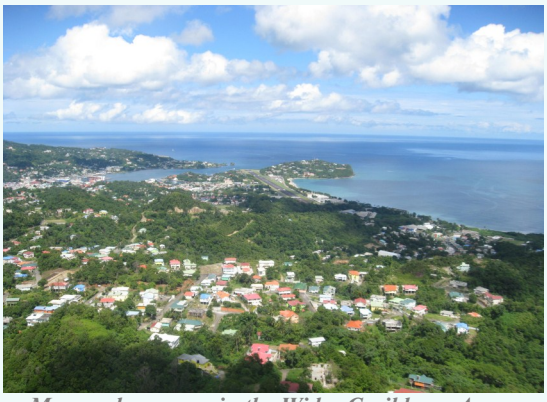

Many urban areas in the Wider Caribbean Area lack adequate wastewater treatment systems, putting our health and environment at risk.

Upgrading Wastewater Management Systems to 21st Century Standards

Current Issues and Challenges in Wastewater Management in Jamaica

A study of the performance of the Jamaican domestic wastewater sector conducted from 2001 - 2003 (The Coastal Water Quality Improvement Project, funded by USAID and the Government of Jamaica) showed that of the 60 plants monitored, only 23 (40%) met the national Sewage Effluent Standard.

While sewerage service exists in most major urban areas, in rural areas, it tends to be confined to small housing developments. Nationwide, the use of flush toilets increased from 58.1 per cent in 1997 levelling off at 64.0 per cent in 2004. Nationally, as many as 42.4% of households were not linked to sewers, indicating that soil absorption systems were the predominant means of sewage disposal for the country. Wastewater from both the industrial and agro-industrial sectors tends to have high Biochemical Oxy-

Facultative pond., De la Vega, Jamaica

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Stakeholder Involvement in the CReW

Effective stakeholder involvement and participation is strongly encouraged by the management programmes supported by GEF-IW in the region. It provides an important vehicle for information and knowledge transfer and dissemination.

There are many different approaches to involving stakeholders. The approach used can range from one-way information sharing to a more far-reaching form of participation. At the very least it is essential to share information about the project, its goals and objectives with stakeholders. This can be done via radio, television or newspapers if access to the mass

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media is good. Alternatively posters and leaflets may be prepared and distrib

uted in relevant areas and/or presentations may be given.

Extent of participation can be limited, as in one-way **information sharing/dissemination**, or be two-way as in **consultation**, where stakeholder representatives are given the opportunity to voice their concerns and regularly informed of the progress of the project (via progress reports or by being invited to project meetings).

Greater involvement is possible if provision is made for stakeholders to actually be involved in decision-making related to the project's goals, objectives and design. There was extensive consultation with stakeholders in the development of the CReW Project. Key beneficiaries and implementers, i.e. stakeholders of the project were found to include:

- Regional water and wastewater organizations
- National ministries with responsibility for water and wastewater
- National water and wastewater utilities
- Universities and schools
- Private sector companies
- Hotel owners
- Manufacturers
- Developers
- Civil society organizations
- Media
- The wider public

The regional institutional arrangements for project execution were selected to ensure broad representation of all interests. The pilot projects should all be designing activities to actively engage stakeholders. Both Component 2: Reforms for Wastewater Management, and Component 3: Communications, Outreach and Training, propose and develop activities in consultation with stakeholders and with a view to meeting stated needs. As such they focus upon stakeholder involvement and public participation in both planning and implementation.

As the CReW develops, opportunities for stakeholder involvement will be provided through regional and national meetings, consultations and consensus–building workshops. Stakeholders will be directly involved in public outreach, demonstration projects and other phases of the project.

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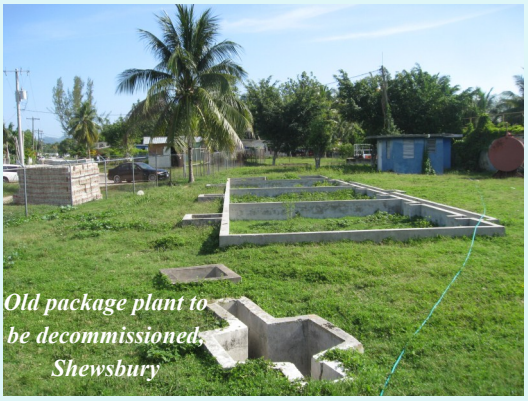
Non-functioning clarifier

gen Demand (B.O.D.) and Total Suspended and Dissolved Solids, particularly in the sugar and coffee industries and for distilleries and abattoirs.

The disposal of improperly treated wastewater effluent into drains, rivers and coastal waters is one of the main contributors to coastal zone degradation in Jamaica. It poses significant threat to national development as it related to the degradation of the national resource base, public health and a number of economic sectors. Existing wastewater treatment systems use a variety of methods including Contact Stabilization, Oxidation Ditch, Aerated Lagoons and Stabilization Ponds. Other facilities (mainly mechanical packaged plants) are owned by hotels, local corporations and public housing development agencies which, more often than not, do not conduct any form of monitoring in order to assess performance.

Several assessments have revealed that the low level of performance in the sector is due to significant operational and maintenance issues including:

- improper plant designs;
- old technology;
- overloading, particularly in urban areas;
- lack of maintenance so that plants are in a state of disrepair;
- improper operations due in part to the limited technical capacity and/or inadequate training of staff;
- lack of proper equipment;



Old package plant to be decommissioned; Shewsbury

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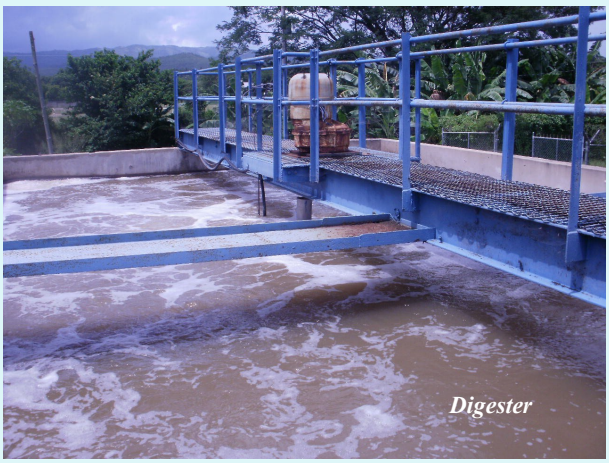
- need for greater emphasis upon safety in design and operations;
- the absence of documented standard operating procedures;
- inadequate monitoring and limited enforcement options by regulatory agencies.



Digester

The National Water Commission (NWC), has, since 1980, had responsibility for public water supply systems, public sewerage and sewage treatment. It operates sixty-eight sewage treatment plants of varying sizes on the island and has a substantial network of sewerage systems in major cities and towns providing central sewerage services for about 20% of Jamaica's population. It operates sixty-eight wastewater treatment facilities; most of which were constructed in association with housing developments and then turned over to NWC. Central sewerage systems are mainly located in Kingston and St. Andrew, Portmore, Ocho Rios, Negril and Montego Bay.

The NWC faces many challenges, not least the problem of interconnection to the central systems by those entities that generate wastewater as there is currently no legislation binding the wastewater generators to interconnect to the sewerage system.

Many existing WWTPs were constructed to satisfy immediate needs. This led to the existence of multiple small treatment plants situated in confined spaces, often running with less than maximum efficiency and with no room to expand in order to accommodate future growth. Effluent standards for sewage treatment plants built prior to 1997 are different than from those built after 1997. Post 1997 nutrient (nitrates and phosphates) standards became more rigorous with the expectation that that would be more tertiary level treatment applied to wastewater.

Additional factors preventing the NWC from providing more adequate wastewater infrastructure are: an increase in the area served by the Commission; insufficient capital to upgrade facilities taken over from Parish Councils, and; infrastructure which is generally in a poor state and which will require significant investment for rehabilitation and upgrade.

Transforming the wastewater sector in Jamaica is not an easy task. New proposed effluent regulations would guide the new operational standards for the new and refurbished/ upgraded plants. Support for the application of these new rules and guidelines will be provided through the capacity building component of CReW. Effluent standards for the plants will meet the requirements of the LBS Protocol (See Box A, pg.) which Jamaica is expected to accede to imminently.

The Credit Enhancement Facility - How it works

Currently in Jamaica, a K-factor surcharge is collected through the water bill and is allocated into a special account for wastewater investment projects. As the K-factor funds are collected on a monthly basis, it was envisioned that rather than using the K-factor funds directly for capital investments, the funds can be better used as debt servicing for larger, commercial bank loans. In order to incentivize the commercial banks to lend to the NWC, the GEF CReW funds will be placed into a reserve account and will act as a secondary assurance to commercial lenders in the event that the flow of K-factor funds should become temporarily unavailable.

US$ 3 million in GEF CReW funds are being provided to the NWC as a grant to be placed in a reserve account and pledged as collateral for commercial bank financing of US$ 10 million in initial wastewater projects by NWC. The source of payment and collateral for the commercial bank loans is the annual K-factor revenues. Total financing is expected to grow to over US$ 300 million. Fourteen projects will be the first generation to be implemented from this guarantee, involving either the rehabilitation of an existing wastewater facility or the construction of a new wastewater facility.

Alfredo Coello, CReW Technical Specialist, and Junior Francis, Project Engineer, Jamaica Pilot, on site visit

First Generation GEF CReW Funded Projects:

The first projects to be implemented from this guarantee involve either the rehabilitation of an existing wastewater facility or the construction of a new wastewater facility. The

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NWC, which is also the Project Executing Agency (PEA), has set up a small Project Management Unit (PMU) to manage this process. Work on the first generation projects began in late 2011. It includes:

- set up of the Credit Enhancement Facility between the Government of Jamaica and the selected commercial bank
- initial surveys of selected wastewater treatment plants to determine state of plant and operations, extent of work needed for retrofitting, upgrade or decommissioning
- wastewater characterization studies
- a socio-economic survey
- selection of the wastewater treatment plants to be refurbished or upgraded

- preparation of RFPs for design, building, operation and maintenance of the WWTPs, taking into consideration a range of recommendations, in particular safety concerns, energy conservation, monitoring and evaluation, including SCADA control systems in all mechanical plants.

Wastewater Characterization Studies

Wastewater characterization studies are currently being undertaken (over eight weeks in August – September 2012) to obtain accurate characterization of the raw wastewater (influent) that flows to each of fourteen plants which are being considered for upgrade. Effluent discharges are also being characterized, in order to assess existing plant performances and the design requirements to address performance deficiencies. The information obtained from these studies will be used to finalize Request for Proposal documents (RFPs) for the rehabilitation/ replacement of wastewater treatment plants which will go to public tender in October 2012.

Socio-Economic Survey

A cost-benefit analysis will be conducted to establish the socioeconomic feasibility of the projects contemplated under the CReW. A Consultant is being engaged to conduct the field survey. The survey will collect data from households in communities that would be directly impacted by the proposed upgrades, in order to ascertain the economic value of each. Utilizing the field data, the project will work closely with the Chief Economist of IAD WSA to determine the socio-economic feasibility of the projects.

Households which have access to sewerage systems that are connected to those plants that will benefit from the proposed improvement works, as well as households that are downstream from the discharge points of these plants and might be affected by these discharges, are being surveyed. These include households along the streets or in the vicinity of drainage systems in which wastewater flows, or near rivers that are being polluted by the inadequately treated wastewater.

Communities will be introduced to the project and its potential benefits. General socioeconomic data will be collected and focus groups will consider: the general situation of public services in the neighborhood; detailed information on water and sewerage services; general awareness of environmental problems, attitudes and values, and; awareness of pollution or other problems related to malfunctioning wastewater plants. Willingness to pay will be determined through a referendum model and payment vehicles, possible prices, reasons for payment or no payment will be considered.

Soapberry Treatment Plant

Sewage from Hughenden, Acadia and Bay Farm Villas will be pumped to Soapberry Treatment Plant which is located in the parish of Kingston and St. Andrew. This tertiary level treatment plant was built as part of the Kingston Harbour Clean-up Project, at a cost of US$52 million in a joint venture by the Urban Development Corporation, the National Housing Trust and Ashtrom Building Systems, and began operations in 2008. Soapberry receives sewage from various pumping/transfer stations in the Kingston area and St. Catherine. Sewage is screened at the pumping stations and has been subjected to preliminary treatment by the time it gets to Soapberry. There it undergoes tertiary treatment before effluent is discharged into the Rio Cobre. Soapberry Treatment Plant is run by Waste Water Operation and Management Company on behalf of the NWC and has never operated at full capacity; the flows from the CReW project will be part of an ongoing strategy by the NWC to divert more wastewater to the Soapberry Facility to optimize its performance.

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Wastewater treatment plants being considered for upgrade as part of Jamaica's CReW Pilot project:

Facility	Parish	Existing Technology	Proposed
Hughenden	Kingston & St. Andrew	Contact Stabilization	Decommissioning of existing plants; new pumping stations; conveyance systems to Soapberry Treatment Plant.
Acadia	Kingston & St. Andrew	Extended Aeration	Decommissioning of existing plants; new pumping stations; conveyance systems to Soapberry.
Bay Farm Villas	Kingston & St. Andrew	Package Plant (Mechanical)	Decommissioning of existing plants; new pumping stations; conveyance systems to Soapberry.
Boscobel	St. Mary	Tile field	Decommissioning of existing facility; new plant with tertiary treatment.
Elletson Flats	Kingston & St. Andrew	Extended Aeration	Decommissioning of existing facility; new plant with tertiary treatment.
De La Vega	St. Catherine	Ponds	Retrofit / Upgrade
Lionel Town	Clarendon	Aerated Lagoon	Retrofit / Upgrade and add reed bed or similar.
Blackwood Gardens	St. Catherine	Ponds	Upgrade – increase pond size and add reed bed or similar.
Paisley Pen	St. Catherine	Oxidation Ditch	Retrofit / Upgrade.
Red Hills Pen	St. Thomas	Extended Aeration	Decommissioning of existing facility; new plant with tertiary treatment.
Shewsbury	Westmoreland	Oxidation Ditch	Decommissioning of old, inoperational package plant; replacement with new chlorination chamber and reed bed or similar.
Longville Park	Clarendon	Oxidation Ditch	Upgrade.
Ensom	St. Catherine	Extended Aeration	Retrofit.

Building Capacity to Manage WWTPs better

These new and upgraded WWTPs must be operated efficiently if they are to meet effluent standards well into the future. Issues such as ongoing maintenance, proper operation of equipment and plant, attention to safety in operations, and documented standard operating procedures are also being addressed by CReW's Component 1 as it seeks to provide technical assistance and strengthen technical capacity at the pilot level.

CReW seeks to address the need for wastewater management training, improving skills and knowledge needed for policy formulation, planning and financing, and the development of tools to improve and strengthen legislative frameworks for wastewater management, more widely through its Component 2: Reforms for Wastewater Management, and Component 3: Communications, Outreach and Training.

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As such, the CReW expects to benefit from stakeholder involvement in many ways:

- More informed decision-making as stakeholders often possess a wealth of information which can benefit the project
- Less likelihood of conflicts which can harm implementation and success
- Greater transparency as stakeholders are able to monitor actions
- Greater trust between the government and civil society, possibly leading to long-term collaborative relationships.

On 21st August 2012, Jamaica's National Environmental Planning Agency convened a consultation between CReW and local stakeholders in wastewater management to identify, discuss and prioritize critical areas for which Jamaica needs support and capacity building in order to further its wastewater management goals. The consultation was attended by representatives of a number of agencies, among them: the Water Resources Agency, the National Water Commission, the Ministry of Health, the Jamaican Institute of Environmental Professionals, the Ministry of Water, Land, Environment and Climate Change, and, the University of Technology. Specific themes to be addressed in upcoming regional training courses and possible modalities for institutionalizing national training courses were also discussed.

Wastewater Stakeholders Consultation, NEPA, August 2012

Similar stakeholder consultations are on-going in CReW participating countries to identify priority capacity building needs.

CReW:

Building Capacity for Better Wastewater Management

Data gathered in the CReW project's preparation phase showed that amongst participating countries, there are many barriers to appropriate wastewater management. Specific capacity needs were identified and interventions reflecting the needs were developed within the Project sub-components.

Capacity Building Activities include:

- **The implementation of Pilot Financing Mechanisms (PFMs)** in four of the Project's thirteen participating countries - Belize, Jamaica, Guyana and Trinidad & Tobago, resulting in new or upgraded wastewater treatment facilities.

- **Regional and National Training courses –** following needs identified by participating countries. These include workshops and seminars on the management of revolving funds, wastewater management, compliance management, and training for decision-makers regarding the choice of appropriate and cost effective technologies.

- **Guidance in legislative reform and policy formulation** - led by the Convention's Secretariat, the Caribbean Regional Coordinating Unit (CAR/RCU).

- **Sharing of information on best practices and lessons learned –** based upon experiences of the PFMs and other project activities and disseminated via various media, including an information node.

- **Development of a Caribbean Wastewater Management Information Node** – for dissemination of CReW outputs as well as other information and knowledge relevant to good wastewater management.

- **Networking** towards stronger partnerships, both within and between relevant sectors.

Meet the CReW!

Denise Forrest

Denise, the CReW **Project Coordinator** since July 2011, is a Jamaican national with over 12 years' experience in waste management, environmental management, environmental auditing and assessments, and project management. She was the lead consultant in the development of the National Environmental Management Systems (EMS) Policy for the Government of Jamaica. She was also part of the team of consultants who developed the National Solid Waste Plan for Jamaica involved in waste characterisation studies, waste diversion strategies and operational assessments. She has worked in many Caribbean countries on similar projects. Trained as a biochemist and bioprocess engineer in Jamaica and Australia; she has a BSc. in Natural Sciences from the University of the West Indies, a M.Sc. in Bio-Process Engineering from the University of New South Wales; and an MBA from the University of New Orleans. She is a certified Project Manager.

Alfredo Coello Vázquez

Prior to joining CReW as **Technical Specialist** in July 2011, Alfredo, a Spanish national, worked on various projects in Europe, Africa, Central America and the Caribbean for 14 years. He has more than 18 years' experience in water and wastewater management, design and construction. He has a degree in Civil Engineering from Extremadura University (UNEX) in Spain and a MSc in Structural Engineering from Heriot Watt University in the UK.

Tiffoni Buckle

Tiffoni, who joined the CReW in May 2012 as the **Administrative and Budget Specialist,** is an experienced Environmental Health and Safety professional, having until recently worked with Sandals Resorts International as their Environmental Health and Safety Regional Manager, coordinating environmental and risk management programs, training seminars and audits in the Eastern Caribbean. This Jamaican national has experience working in the Caribbean and the United Kingdom on projects such as retrofitting sustainable urban drainage systems and private sector waste and wastewater assessment, monitoring and control. Trained as a Natural Resource Manager and Environmental Engineer in Jamaica and the United Kingdom; she holds a BSc. in Environmental and Natural Resource Management with Biochemistry from the University of the West Indies and a MSc.in Environmental Engineering and Project Management from the University of Leeds, United Kingdom. She is also a certified ISO14001 Internal Auditor and Green Globe Coordinator.

Donna Sue Spencer

Communications Specialist with the CReW since March 2012, Donna Sue was previously with another GEF – International Waters project, the Integrating Watershed and Coastal Areas Management (GEF-IWCAM) Project, based at the Caribbean Environment Health Institute (CEHI) in Saint Lucia. Before that she served as the Chief Information Officer at the Institute of Marine Affairs in Trinidad and Tobago. Her experience in environmental information management and communications is varied – including communications strategy; channelling the results of research to a variety of users; stakeholder involvement; the design, implementation and dissemination of information products; public and community education, media and public relations. She has a B.A. in Environmental Studies and Sociology from the University of London and a M.Sc. in Environmental Science from George Washington University. She is also certified in Management Information Systems, from ROYTEC.

The LBS Protocol

The LBS Protocol was developed to respond to the need to protect the marine environment and human health from land-based point and non-point sources of marine pollution.

Ten countries have ratified the LBS Protocol to date: Trinidad and Tobago, Panama, France, Saint Lucia, Belize, United States of American, Antigua and Barbuda, Guyana, Grenada and the Bahamas. The LBS Protocol formally entered into force in August 2010.

Among the actions that the Protocol aims to achieve is the establishment of legally binding standards for sewage effluent and discharges.

To find out more go to:

http://www.cep.unep.org/cartagena-convention/lbs-protocol/protocol-concerning-pollution-from-land-based-sources-and-activities

UPCOMING EVENTS:

DATE	EVENT	PLACE
30 Sept – 1 Oct 2012	GEF CReW (Regional) Wastewater Management Training	Nassau, The Bahamas
1 – 5 Oct 2012	21st Annual CWWA Conference & Exhibition: *"Water & Waste Management in the Caribbean: Strategies and Solutions."*	Nassau, The Bahamas
18 – 19 Oct 2012	Eastern Caribbean Supreme Court Annual Judicial Conference (Environmental Law)	Saint Lucia
24 Oct 2012	First Meeting of the Contracting Parties to the Protocol Concerning Pollution from Land-Based Sources and Activities in the Wider Caribbean Region (1st LBS COP)	Dominican Republic
25 – 27 Oct 2012	Twelfth Meeting of the Contracting Parties to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (12th COP)	Dominican Republic
To be announced	GEF-CReW Workshop on Revolving Funds	Belize
19 – 23 Nov 2012	2nd Meeting of the GEF CReW Project Steering Committee	Costa Rica

The GEF CReW Project Background:

The CReW is a four-year project, funded by the Global Environment Facility (GEF) and implemented by the Inter-American Development Bank (IDB) and United Nations Environment Programme (UNEP). It was established in 2011 and will end in July 2015.

It aims:

- To provide sustainable financing for the wastewater sector
- To support policy and legislative reforms, and
- To foster regional dialogue and knowledge exchange amongst key stakeholders in the WCR.

There are thirteen participating countries: Antigua & Barbuda, Barbados, Belize, Costa Rica, Jamaica, Guatemala, Guyana, Honduras, Panama, Saint Lucia, Saint Vincent & the Grenadines, Suriname, and Trinidad & Tobago.

The Project Coordination Group (PCG) is based in Jamaica, at the offices of the IDB and at UNEP's Caribbean Regional Coordinating Unit which is Secretariat to the Cartagena Convention (UNEP CAR/RCU).

With thanks to the Jamaica Pilot PMU, Christopher Corbin, AMEP Programme Officer, and his team at UNEP CAR/RCU, and the CReW Project Coordination Group.

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