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First Meeting of the Contracting Parties (COP) to the
Protocol Concerning Pollution from Land-Based Sources
and Activities (LBS Protocol) in the Wider Caribbean
Region

Punta Cana, Dominican Republic, 24 October, 2012

**Workshop Summary
Regional Experts Workshop on Environmental Monitoring and Assessment
Montego Bay, Jamaica**

26-30 September, 2011

For reasons of economy and the environment, Delegates are kindly requested to bring their copies of the Working and Information documents to the Meeting, and not to request additional copies.

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Workshop Summary

Regional Experts Workshop on Environmental Monitoring and Assessment

September 26-30, 2011

The Ritz-Carlton Golf And Spa Resort, Montego Bay, Jamaica

Chair: Country Jamaica - Paulette Kolbusch and Anthony McKenzie (alternately)

Participants: Please see participants list (Annex 1)

Rapporteur: AMEP Secretariat

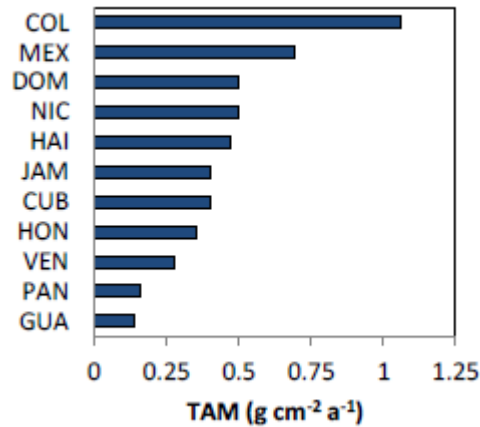
Meeting Objectives:

- Provide technical input and guidance to allow the Secretariat to prepare a technical brief on environmental monitoring and assessment studies for discussion at the 1st Meeting of the LBS Protocol's Scientific Technical, and Advisory Committee (STAC);
- Review and provide recommendations on effluent monitoring and assessments and other information that may be used to develop the State of the Convention Area Report referred to in Articles XII and XIV of the LBS Protocol, including reporting requirements of the LBS Protocol since its entry into force;
- Provide recommendations on the adequacy of current measures and methodologies; plans and programmes; and common criteria, standards and/or guidelines within the LBS Protocol, on national and regional capacity building opportunities, regional laboratory capacity for water quality parameter measurements, and other issues relating to the prevention, reduction and control of pollution in the Wider Caribbean;
- Consider recommendations for future reporting on pollution of the Convention Area, as well as identify any constraints to the ratification and implementation of the LBS Protocol;

- Share lessons learnt from the implementation of pilot projects under the GEF IWCAM Project relating to the Assessment and Management of Hot Spots; and
- Facilitate Prize Giving Ceremony for the Regional LBS Protocol Collage Competition;

Date and Time: Monday, September 26 (9:00 am)

Day 1	Opening and Welcome
	<p>Opening and Welcome Statements were done by Mr. Christopher Corbin (UNEP CAR/RCU and Mr. Anthony McKenzie (Jamaica, Chair of Workshop)</p>
<p>Discussions/Points Raised:</p>	<p>Participants gave a brief introduction on their role and agency/department they represent. Christopher Corbin provided an overview of the workshop objectives and expected outcomes. He also gave a presentation on the Cartagena Convention and the LBS Protocol.</p> <p>Theme: State of the Marine Environment of the Convention Area</p> <ul style="list-style-type: none"> • The Wider Caribbean Region does not have standardized methodologies for environmental monitoring. • Agriculture is not the only contributor to sedimentation, but infrastructure developments can also contribute e.g. a main cause of sedimentation is the clearing of land for development without having run-off control measures in place. <p>Sedimentation rates (TAM, Figure 1) ranging from 0.14 g cm⁻² a⁻¹ in Guatemala up to 1.1 g cm⁻² a⁻¹ in Colombia year indicate a clear increase in soil erosion, attributed to deforestation, land use changes, urban and industrial activities and climatic factors.</p>



- With regard to reducing non-point sources of pollution, the Protocol concerning Pollution from Land-Based Sources and Activities (LBS Protocol) outlines measures for reducing agricultural run-off (Annex IV) but there is a need to reduce run off from all potential sources.
- Sediment loading from Watersheds is generally higher than from activities that take place in urban areas and cities. There is a need to focus on improving watershed management to reduce sediment run-off. Results from models and studies confirm that the load reaching rivers from watersheds is higher than from industrialized areas and activities in upper watersheds can significantly and negatively impact activities in the lower watershed and coastal areas.
- The new IDB/UNEP GEF Caribbean Regional Fund for Wastewater Management Project (CRew), to be executed by UNEP CAR/RCU, offers countries of the Wider Caribbean an opportunity to improve national wastewater management frameworks. While the project was open to all countries, only those countries which formally endorsed the project will receive direct benefits from project funds. Annex 2 is a fact sheet summarizing the main objectives and proposed activities for the project. The participating countries are Antigua and Barbuda, Barbados, Belize, Costa Rica, Jamaica, Guatemala, Guyana, Honduras, Panama, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago.
- During the CRew project implementation, the Secretariat will ensure, to the greatest extent possible, that lessons learnt are shared with other countries in the Wider Caribbean.
- There is a lack of ongoing regional, and in some cases national, monitoring programmes in environmentally “sensitive” areas and/or pollution “hot

spots". This makes it very difficult to establish historical trends and draw conclusions on changes in pollutant loading to the coastal and marine environment over time.

- Many countries often use and adopt external environmental quality and effluent standards that may not be the most appropriate for the region. Many such standards do not relate to the specific use of the receiving waters.
- Decision makers often want comparative data and an established standard to compare national and local results and in many cases, these are absent.
- It is important that each country develops national standards for Coastal Water Quality.
- There has been reluctance by some countries to ratify the LBS Protocol due to fear of not being able to meet all of the obligations. This fear is often unjustified and countries often have in place most of the requirements required for meeting these obligations. The LBS Protocol further offers technical guidance such as for the Classification of receiving waters that will enable countries to strengthen their national programmes.
- While countries in the Wider Caribbean continue to face challenges of insufficient financial, human and technical resources, there is political willingness in many countries to address the problem of pollution. However, lack of resources has limited the scope and regularity of national monitoring programmes.
- Many countries lack a single agency responsible for coordinating monitoring activities and ensuring that data gathered is effectively compiled, analyzed and disseminated. Scientific agencies and educational institutions generally don't have the authority to use and/or publish data and in some countries environmental quality information is not made available to the general public.
- Convincing decision-makers that there is enough information for action to be taken in response to a pollution-related problem is often more challenging than the lack of resources. It is important to provide guidance on how to effectively target senior levels of Ministries to convince them of the need to take action.
- One way of selling the usefulness of monitoring is to show policy makers concrete examples of data being used by Governments. One such example was in Colombia, when data collected in 2001 by INVEMAR was used by a Judge to fine a polluter.

- In developing national monitoring programmes, one must ensure that the parameters chosen consider existing resources and technical capacity. It is important that parameters are chosen which are both useful but also technically feasible to monitor on a routine basis.
- Results of recent monitoring and assessment studies such as, the update of the CEP Technical Report 33 on pollutant loadings and the assessment of regional “hot spots” under the Know Why Network Partnership project cannot always be directly compared and care must be taken when drawing definitive conclusions from these studies.
- Beach compliance, certification and Blue Flag programmes are examples of how monitoring may be integrated into existing national programmes. While criteria and applicable standards being used for these certification programmes may differ, they offer an opportunity to reduce overlap and duplication and are being used in some countries such as Jamaica.
- Countries have varying experiences in the development and implementation of national monitoring programmes. The following were highlighted by specific countries.

Barbados

- Barbados’ Marine Pollution Control Act mirrors the LBS Protocol in terms of applying a classification method for receiving water bodies. All of the beaches of Barbados are classified as Class 1 waters for human health reasons. There is a lack of capacity in the labs responsible for water quality monitoring, both in terms of equipment and human resources. Water quality is not always a priority but linking it to human health factors improves chances for financing. Results of water quality monitoring are available to Government Agencies for appropriate response/action but not to the general public.

Colombia

- Marine and Coastal monitoring is a very high priority. Efforts are ongoing to integrate data and information management for coastal and marine ecosystems with those for inland monitoring programmes. While significant capacity exists within specific labs such as INVERMAR, there is a need to strengthen lab capacity at other national laboratories. In addition to generating new scientific data, there has also been a policy to publish this information in various journals- this assists in the dissemination of results.

Mexico

- Many monitoring parameters are based on US Environmental Protection

	<p>Agency (EPA) standards but there is a need to assess the appropriateness of such indicators to national and local circumstances. There is also a beach certification programme based on WHO standards. Monitoring programmes could benefit by increasing capacity of labs and increasing the number of sites and monitoring stations. While a relatively strong legal framework for regulating water contamination exists, there is a need to update the regulations so that they are more tailored to specific zones.</p> <p><u>USA</u></p> <ul style="list-style-type: none"> • EPA’s Beach Programme emanates from the Beach Act signed into law in 2000. States monitor “coastal recreation waters” – 3600 beaches are currently being monitored, including 500 beaches in the Gulf of Mexico. • The U.S. publishes results of all monitoring on websites, bulletins, etc. and makes these results available to the general public. • States use the EPA criteria to develop water quality standards protective of human health, with permits for dischargers, and to make decisions on whether to issue an advisory due to high bacteria levels. • New Criteria is being revised by 15th October 2012 for recreational waters. The National Coastal Condition Assessment (NCCR) (conducted every 5 to 6 years) measures % of coastal waters in good, fair, & poor condition. <p><u>Jamaica</u></p> <ul style="list-style-type: none"> • Much of the water quality monitoring is done by communities, under the direction of NGOs. Due to Jamaica’s Access to Information Act, anyone who asks for water quality monitoring data can receive it. Hotels are required to do their own monitoring twice per month and report every 3 months. • There is a need to further evaluate the <u>relevance</u> of monitoring for <i>Enterococci</i> in certain areas, and the identification of the most effective indicators for use in the WCR.
Decisions or Recommendations:	<ul style="list-style-type: none"> • There is a need for standardized methodologies throughout the region for handling data, and documenting the methods used during projects, so that the information will be available after the life of the project. • Monitoring Programmes need to focus on the minimum required environmental parameters/indictors as necessary so that the programme can be sustainable. • Monitoring and assessment for non-point run-off should include other land use practices and not just focus on agricultural run-off. • There is an urgent need to extend sanitation coverage and treatment in the WCR to fulfill MDGs. Countries who have endorsed the GEF CReW project should maximize any support being made available through that project and

	<p>CAR-RCU should assist in identifying additional financial support for wastewater interventions in the region.</p> <ul style="list-style-type: none"> • A one-pager on the CReW project should be made available to the workshop participants. (See Annex II to this report) • UNEP CAR/RCU should strengthen partnerships with other projects and Convention Secretariats such as the UN Convention on Desertification (UNCCD) to gain more knowledge on nutrient loading into the coastal and marine environment. • Countries should enhance the implementation of improved watershed management practices including promoting the use of mathematical models and other techniques such as GIS to calculate pollution loads from non-point sources. This will assist countries in complying with Annex 4 of the LBS Protocol on controlling non-point sources of pollution. • High priority should be given to the development and implementation of projects and activities aimed at nutrient and sediment reduction. Depending on local circumstances, specific focus on reducing the impacts of Phosphates will be required. • Governments should encourage certification of national industries e.g. ISO 14001 and the adoption of cleaner production measures. Additional standards may be required, especially for industries. • Available financing is needed for the development/improvement of laboratory capacity in the WCR. • Governments need to recognize the critical importance of baseline information when formulating new project proposals especially for submission to the GEF. There remains a need to further strengthen national and as appropriate regional monitoring and assessment programmes.
Day 2	Themes : Environmental Quality Standards and Criteria, National and Regional Capacity for Environmental Quality Monitoring
Points Raised:	The International Atomic Energy Agency (IAEA) was invited to share experiences from a recently concluded regional project entitled: Use of Nuclear Techniques to Address the Management Problems of Coastal Zones in the Caribbean Region (RLA/7/012).

The project involved 12 IAEA member countries in the Wider Caribbean with financial support from the IAEA Technical Cooperation programme, Governments of Spain and France, and in collaboration with UNEP CAR/RCU.

The key findings were:

- Generated data on the differences between natural levels and anthropogenic levels of mercury, which hopefully can be used by the new Mercury Convention presently being developed.
- In the 12 study areas, sediment cores were collected off shore for analysis and these countries now have the human and technical capacity to collect, prepare and analyze sediment samples as well as interpret the results. .
- Over 6000 data points were measured, and over 70 counterparts trained on various topics, from sampling to analysis to data interpretation. UNEP will be the repository for the data.
- CAR-RCU is committed to being a repository for information, and to disseminate the general results of projects, by means of a clearing-house mechanism, or other information sharing network.

The United Nations University, Institute for Water, Environment and Health (**UNU-INWEH**) shared experiences from a recently completed project for monitoring persistent organic pollutants (POPs). The key challenges and lessons learned from this Caribbean Coastal Pollution Project to monitor POPs were:

- a) Poor connections between coastal managers dealing with fisheries and Marine Protected Areas (MPAs), and labs so problems remain unresolved;
- b) Limited info on POPs in coastal areas;
- c) Limited capacity to monitor contaminants beyond excess in nutrients;
- d) Data found so far indicate the potential human health risk of POPs pollution in coastal waters and fish and oysters in St Lucia, Belize and to lesser extent Trinidad and Jamaica. More data are needed also from organisms higher in the food chain such as snapper & barracuda;
- e) Although the white grunt, as a model, is not ideal for all countries of

	<p>the WCR (as it is difficult to find in some countries of the WCR), the principle of the study, at a regional level, with different species, could be replicated elsewhere, as the testing is relatively inexpensive and analysis can be done at the labs that have been upgraded in Jamaica and Mexico</p> <ul style="list-style-type: none"> • Regarding LBS Protocol and classification of Class 1 and Class 2 waters, originally the classification system came from the recognition that in the region, there were waters that should be subject to differing standards depending on local circumstances. • Countries may wish to consider using Passive Sampling Methods to identify sources of Atmospheric pollution, and new and emerging pollutants. • Association of Marine Labs of the Caribbean (AMLC) was started in 1958 and comprises 30 labs in 20 countries and over 200 individual members globally. AMLC is available to help in the publication of research in the region, for scientific exchange and networking.
Decision or Recommendations:	<ul style="list-style-type: none"> • The LBS STAC should coordinate the development of a strategic plan for the sustainable use of the capacities developed and results of the IAEA study in the region. Since the results are owned by the countries, the region as a whole needs to be involved in the development of such a strategy. • There is a need to strengthen the sharing of information from projects and make project results more readily available to interested stakeholders. This should form part of the CAR/RCU's clearing house mechanism. • Countries need to classify waters Class I & Class II, or develop similar national classification schemes as required by the LBS Protocol. • There is a need to continue to periodically assess the pollutant loading to the Caribbean Sea including freshwater bodies that drain into the Sea. • It may not be necessary for each country to develop sophisticated laboratory capacity and emphasis should be on developing a network of labs that can provide services within the region. • Mussels could be considered a possible alternative indicator organism to White Grunt for monitoring POPs. • Pollutant loads need to be reduced, taking into consideration projections

	<p>noted in the updated TR # 33 (Technical Report 33), so that we are in line with the Millennium Development goals, and in compliance with the LBS Protocol.</p> <ul style="list-style-type: none"> • Project reports and outputs should be tailored and formatted for policy makers. The Environmental Quality Status Report produced by the OSPAR Convention can be used as a model for presenting environmental quality information that can appeal to both the general public and decision makers. • EPA has a website where many training classes are offered on line through which persons can obtain a certificate upon successful completion. An example is the Drinking Water Module that includes topics such as: how to manage a point source discharging programme; how to develop water quality standards, and waste water operator training. Currently, these are available only in English and efforts should be made to source funding to translate into Spanish and French. • In appealing to decision-makers, it is important to demonstrate the value of the data in social and economic terms e.g. to tourism, human health, agriculture and fisheries. • Community based monitoring can be an effective tool to ensure sustainability of monitoring programmes, especially for those that are project funded.
<p>Day 3:</p>	<p>Themes: Environmental Quality Indicators-Smaller Working Group Sessions; Reporting on the implementation of the Cartagena Convention and LBS Protocol.</p>
<p>Points Raised:</p>	<ul style="list-style-type: none"> • While models are excellent predictive tools, their widespread use in the region may be difficult for several reasons. These include the need for validation and extensive baseline data. Many models also do not account for the impact of extreme weather events such as hurricanes and the diffused sources of pollution/sediment in the region. • The U.S. will take into consideration the problem of using EPA models and will either provide guidance material or design a training course and distribute the information. • Measurement of sediments could be considered instead of modeling. • There is a difference between news and information and often the general media is more interested in news and not environmental press releases. When reporters are specialized in specific areas of reporting, such as on

environmental issues, and relationships are built with them and media owners, they are more likely to publicize your activities in the media.

- Several issues were identified relating to capacity building including:
 - a. Required for both basic water quality testing and other parameters;
 - b. Needs to occur at national and regional levels;
 - c. Capacity needs assessments are required to better allocate limited financial resources;
 - d. Inventory of labs and lab capacity currently being developed by CAR.RCU will be an important tool for future work;
 - e. Different types of training are required - short and long-term;
 - f. In many countries, trained personnel exists but the limitation is numbers;
 - g. Difficulty in having dedicated human resources for environmental work as the sector is often not seen as a priority
 - h. Environmental laws in many countries are being updated but these efforts need to be expedited;
 - i. Internship Programmes could be used to improve capacity for short-term assignments both at the Secretariat and in countries involved in various projects;
- More opportunities should be created to exchange personnel among the labs; such has been done under the GEF IWCAM Project. Countries need to maximize on these opportunities where they exist.
- In terms of best practices in watersheds, US EPA consults with agency experts from the USDA and Forest Service to help provide examples of best management practices including those that have been successfully used in tropical conditions in US territories.

Status of LBS Ratification

- Grenada's ratification is imminent. Others are in various stages- in the process are Jamaica, Barbados and Colombia.
- Lack of knowledge of the LBS Protocol by other agencies and the general

	<p>public was a major barrier in some countries.</p> <ul style="list-style-type: none"> • There was a general concern of the cost implications at the national level for ratification of MEAs in general including the LBS Protocol. • There is a need to link LBS Protocol issues with other national project and activities to demonstrate its practical importance and relevance.
Decision or Recommendations:	<ul style="list-style-type: none"> • Recommendations were made on the Priority indicators for use in national and/or regional monitoring programmes. These included: pH, temperature, salinity, conductivity, dissolved oxygen, total nitrogen, total suspended solids, total phosphorus, biochemical oxygen demand, grease and oils, and ammonium nitrogen. In the case of fecal indicators it is proposed to determine <i>Enterococci</i>, <i>Escherichia Coli</i> or fecal coliforms depending on laboratory conditions and ecosystems under study. Countries should further evaluate existing methodologies for bacteriological analyses and implement new methodologies as appropriate. <p>Recommendations for the Scientific and Technical Advisory Committee (STAC) of the LBS Protocol.</p> <ul style="list-style-type: none"> • Review the indicators and the effluent limitations included in Annex III of the Protocol; • Consider the inclusion of the determination of pollutant loads in the effluents; • Prepare a document with a proposal of methodological guidelines for the implementation and development of monitoring programs for Coastal Ecosystems- These guidelines could include: <ol style="list-style-type: none"> 1. Design of Monitoring Program (for water, sediments and biota). 2. Quality control systems according to international standards. 3. Various forms of dissemination and disclosure of the results of the monitoring program depending on the final recipient of the information (decision makers, scientific community, general public, children and youth). • Further recommend to the First Conference of Parties for the LBS Protocol that the Secretariat assist the Parties to the LBS Protocol in resource mobilization for establishing, maintaining and/or enhancing national monitoring in accordance with Article XVI of the LBS Protocol.

State of the Convention Area Report (SOCAR)

- The State of the Convention area report should be done at an interval of between 5-10 years and should include an executive summary.
- Reports should be received from each country, through the LBS focal point.
- The Secretariat should compile National reports and make them available on the CEP website.
- Reporting should occur at 2 levels: (i) Summary Regional Report based on biennial submissions of the Cartagena Convention Reporting Template by National Focal Points to the Secretariat IGM (biennial); (ii) State of the Convention Area which would be a regional report based on National Reports submitted to the Secretariat.
- Indicators should include those for Domestic Wastewater, Agricultural Runoff and Bacteriological levels.
- Reports should highlight process, stress reduction and environmental quality indicators so that the stressor impact relationship can be determined.
- The report should attempt to highlight relationships with economic sectors recognizing that the capacity for doing this in the region is limited.
- Guidelines should be developed for the National State of the Environment Report so the scope and format for presenting the information is standardized, thus allowing easier compilation into a regional report.
- These guidelines should include roles and responsibilities, timelines, types of indicators and level of detail. The guidelines should outline to countries what information is considered sensitive/confidential. This could be discussed at the STAC and decided at LBS COP if governments need to report on all information available.
- Attempt should be made to ensure that the reporting formats are complementary to reporting activities under other related Conventions.
- Each National Report should have a non technical résumé for decision makers; Regional Reports should also highlight the most important sources

of Environmental Pollution, should stress factors related to environmental quality and how these relate to health, food security and economic development.

- There should be targeted Group Messages (National and Regional), a non-technical executive summary of no more than 5 pages with high quality graphics. (E.g. see www.unesco.org/water/wwap/wwdr3r.) These groups could include Politicians, Students, Development Agencies, Community Based Organization/municipality leaders, Scientists, NGOs, and Media.
- Several mechanisms could be used for disseminating the findings of national and regional reports and should maximize use of existing networks and frameworks. These include: (i) Government Information Service –radio and television to the public; (ii) Web Pages;

Confidentiality/sensitivity of Data and Information

- Article 12.3 and 12.4 of the LBS Protocol provide for honoring of confidentiality and the safeguarding of essential security interests.

What new projects and activities are needed?

- Support to the production of national and regional information messages in all languages, compilation of data bases and strengthening of national and regional clearing house capacities on pollution.
- Economic Evaluation to show the relationship between environmental status and socio economic impact.
- Human and financial resources to facilitate reporting under the Cartagena Convention and LBS Protocol
- Improve evaluation/ assessment tools such as GeoNode.
- Support for the publishing of national “message sheets”. This could be done with information from TR33 update, environmental monitoring by partners and projects, and afterwards with SOCA reports:
- Projects that focus on monitoring for chemicals including nutrients and improving land management and reducing sedimentation.

Targeted Capacity Building and Training Projects:

- Strengthen existing communication mechanisms;
- Use a decentralized clearing house mechanism for information related to the LBS Protocol;
- Maximize on existing online training available e.g. on U.S. EPA website, and build that capacity in other agencies such as INVEMAR;
- Further training in specific skills e.g. Instrumentation, data collection, and GIS;
- Integrate training in formal curricula e.g. master's programmes;
- Develop individual fact sheets with messages specific to the target audience - (youth/students, decision-makers, general public, scientists, educators);
- Conduct periodic needs assessments to identify gaps and ensure that new projects are designed to meet the needs of the countries;
- Efforts should be made to partner with other regional and international organizations such as the International Maritime Organization and London Convention, who are very committed to collaborating in this region on LBS issues, as evidenced by a joint workshop held recently. Collaboration can also be continued with IAEA.

How to involve academic institutions?

- Involve students in monitoring programmes;
- Inform academic and research institutions of national and regional needs and of emerging issues where research is needed;
- Develop formal training courses including those at the masters level;
- Secretariat sign MOUs with academic institutions to foster closer collaboration.

How to improve coordination and cooperation in existing programmes?

- Use a decentralised clearing house for information related to the LBS

	<p>protocol;</p> <ul style="list-style-type: none"> • Maximize use of national and LBS Focal Points; • Develop and enhance existing formal and informal communication mechanisms and networks.
Day 4	Theme: Integrated Management of Hot Spot Area within SIDS (GEF IWCAM)
Points Raised:	<ul style="list-style-type: none"> • Procedures recommended by UNEP for identification and Classification of “Hot Spots” were not always applicable to Caribbean SIDS. The pilot projects facilitated the development of a tool that may be more applicable for use in SIDS. • Recent UNEP monitoring and assessment reports including updated CEP TR33 and documentation for the GEF CReW Project provides information on appropriate and low cost technologies for pollution reduction and control. The GEF IWCAM Project will also be producing a series of “How to” Manuals that will be available from the CAR/RCU website in early 2012. • In many SIDS, there are several agencies responsible for water quality monitoring and analysis. Such programmes should be streamlined to the extent possible to avoid duplication and overlap. Having a single coordinating agency often assists with this process. • Encourage the engagement of schools in the study of water quality. Students could do a water quality project including environmental monitoring as part of their curriculum. • In SIDS, improved land use policies and rationalization of planning and development regulations to include pollution control measures are needed. • The success of pilot projects was enhanced when the community and private sector were involved and where there was ongoing public awareness, education and sensitization. Persons with a vested interest in the issue – either the source of the pollution problem or those impacted by the issue should be targeted. • The use of spatial and mapping tools such as Google Maps can help demonstrate the extent of the pollution problem and in designing the most appropriate solutions.

	<ul style="list-style-type: none"> • With limited resources, careful selection of the issue to be addressed is critical so as not to raise false expectations and one must ensure that adequate resources are available to make a significant impact rather than spreading oneself too thin. <p>Best Practices for National Water Information System (NWIS):</p> <ul style="list-style-type: none"> • User friendly – no advanced training needed. • Software is open source -- Inexpensive to run and set up. • System links to regional initiatives such as Flood Early Warning System, Caribbean Agro Meteorological System, etc. • Include all data from the very start. • Plan for hardware and software to meet the users’ needs. Version 5.0 of WebMap is better, as it supports all major browsers. • Demonstrate how data can be used by Water Managers in media briefings for example, to ensure political buy-in from policy makers. • Keep statistics on users to report back to the Ministers. • Charging for the maps will generate income for the upkeep of the system.
Decision or Recommendations:	<ul style="list-style-type: none"> • Strong support was expressed for the development of follow up projects to GEF- IWCAM building on the project’s successes. • There is a need to strengthen national monitoring programmes including increasing coverage, scope, frequency and the systems for water quality data management. • Other indicators including biological indicators should be evaluated for use in various water bodies e.g. rivers, estuarine areas and oceans. • The Hot Spot Assessment tool developed should be further evaluated for possible application in Caribbean SIDS. • There is a need to expand partnerships with private sector in particular Industry at national and regional levels so they become more engaged in pollution prevention projects and activities.

	<ul style="list-style-type: none"> • The Secretariat should help compile an inventory of Information Management resources for the WCR and have this form part of their CHM. This could include an Inventory of useful links to resources e.g. training, modeling & open source software. • The Secretariat should help develop Guidelines for conversion of sensitive water quality data into information for the general public. • There is a need to improve sharing of data and information across agencies including use of informal networks and enhance the use of such data and information for decision making, reforms and MEA implementation including the LBS Protocol. • There is a need to develop mechanisms for sustainable financing for environmental interventions such as the wastewater financing mechanism to be developed and tested under the new GEF CReW project. • Specific topics were suggested that could be supported by the GEF CReW Project including: (i) Nutrient removal; (ii) Identification and Categorization of wastewater sources; (iii) Evaluation of Chemical Assisted wastewater treatment; (iv) Continued evaluation on indicators and standards for domestic wastewater effluent; and (v) Replication of low cost and innovative technology such as constructed wetlands in St. Lucia and Tobago implemented under the GEF IWCAM project.
Day 5	Theme: LBS Collage Award Ceremony
Points Raised:	<ul style="list-style-type: none"> • LBS Collage Competition was considered a success and should be repeated in the future.
Decision or Recommendations:	<ul style="list-style-type: none"> • Timing of competition should be more in line with the school year as well as the financial year for countries. • Collages and message/explanation of the collage should be promoted through CEP website and in other awareness activities. • Make guidelines simple for future competitions. • When contacting countries for involvement, contacts should include Ministries of Education and Culture.

	<ul style="list-style-type: none"> • Use more young people and other medium to promote the competition such as through Facebook and Twitter. • Try to maintain continuity of the competition to get countries more familiar with the competition hence increasing support. • Encourage regional and national partners to conduct awareness building workshops as was done in Jamaica. • Incorporate more NGOs and the private sector in planning and implementation. • Contact Museums and Galleries as they can assist in spreading the word and getting persons involved. • Use Cartoon strips to promote the competition. These may be advertised through websites, newspapers and workshops.
	<p>NEXT STEPS</p>
	<ul style="list-style-type: none"> • Development of Recommendations for the 1st LBS STAC in early 2012. • Next Teleconference call of the Interim Working Group on Environmental Monitoring and Assessment. • UNEP CAR-RCU will continue to assist countries in the development of capacities for monitoring programmes within the region and is committed to being a repository of information through the development of a clearing-house mechanism, and other information sharing networks.
	<p>Adjournment Friday 30 September, 2011 1:00pm</p>

Annex 1: Participants List: Regional Experts Workshop on Environmental Monitoring and Assessment

WORKING GROUP			
Participant	Country	Title	Tel/Fax/ Email/ Website
1) John A. Bowleg (On behalf of Richard Cant)	Bahamas	C.Eng, C.Env, C.Sci (Hydrology) Chartered Water & Environmental Manager Water and Sewage Corporation	Tel: 242-302-5602 johnabowleg@aol.com , wjbowleg@wsc.com.bs
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CARIBBEAN REGIONAL FUND FOR WASTEWATER MANAGEMENT (CREW)

SUMMARY

Safeguarding the Caribbean Sea

The degradation of the Caribbean marine environment caused by the discharge of untreated wastewater is a serious concern for those countries whose livelihoods depend heavily on their natural marine resources. Recent scientific studies concur that “sewage pollution from land-based sources and from ships has been the most pervasive form of contamination of the coastal environment”ⁱ

Rapidly growing populations, poorly planned developments and inadequate or non-functioning wastewater treatment facilities are but a few of the contributing factors resulting in drastically low levels of effective wastewater treatment in the region:

- 85% of wastewater entering the Caribbean Sea remains untreated
- Only 17% of households are connected to acceptable waste water collection and treatment systems
- Less than 2% of urban sewage is treated before disposal (often directly into the sea)ⁱⁱ

Commitment to Improving Wastewater Management

Countries increasingly recognize the importance of improving wastewater management, and are seeking a solution designed to:

- Supply accessible, sustainable financing for investments in wastewater management;
- Implement effective national policies, laws and regulations and improved enforcement of existing laws and regulations;
- Facilitate a holistic approach to wastewater management with productive communication among sectors and agencies;
- Produce improvements in technical capacity in terms of project proposal development; operating & maintaining treatment systems; and, monitoring and analyzing wastewater discharges and impacts;
- Result in increased awareness, knowledge and understanding of appropriate, alternative and low cost wastewater treatment technologies.

The CReW: Serving the Region’s Wastewater Management Needs

The Caribbean Regional Fund for Wastewater Management (CReW), established in 2011, seeks to provide sustainable financing for the wastewater sector, support policy and legislative reforms, and foster regional dialogue and knowledge exchange among key stakeholders in the Wider Caribbean Region. The four year project is being funded by the Global Environment Facility

(GEF). The Inter-American Development Bank (IDB) and United Nations Environment Programme (UNEP) will be the co-implementing agencies for the project.

The Project Coordination Group (PCG) based in Jamaica will carry out the day-to-day management of the CReW project under the oversight of UNEP and IDB, and comprises a Project Coordinator, a Technical Specialist, a Communications Specialist and a Financial /Administrative Specialist.

The PCG will be supported by national Pilot Executing Agencies (PEA) in the four pilot countries: the National Water Commission in Jamaica; the Ministry of Finance in Belize; the Ministry of Housing and Water in Guyana, and the Tobago House of Assembly in Trinidad and Tobago. The regional Executing Agency for the project, the Secretariat of the Cartagena Convention (CAR/RCU) based in Kingston, Jamaica, will support additional activities in the remaining 9 countries.

CReW's 3 Interlinked Components

The CReW will assist countries in the region to establish or expand wastewater management programs and policies through the implementation of three inter-linked components:

- Investment & Sustainable Financing
- Reforms for Wastewater Management
- Communications, Outreach & Training

Investment and Sustainable Financing for Wastewater Management

The CReW will test four Pilot Financing Mechanisms (PFMs) for providing innovative and sustainable financing modalities for wastewater management projects. CReW funds will be used for the capitalization of these four PFMs and for providing technical assistance, such as design services. This will ensure that the projects to be financed under the PFMs satisfy the technical, financial, socio-economic and environmental requirements of the CReW and national governments.

A number of options were considered and evaluated in the design of the individual PFMs including revolving funds, reserve accounts and extended liquidity guarantees. The structures of the PFMs reflect local financial conditions, regulatory frameworks, capacity of water and wastewater utilities and national government priorities.

Wastewater management projects financed by the PFMs will have the following characteristics:

- high priority projects for wastewater service providers;

- high impact in terms of significant reduction of pollution of the marine environment leading to improvements in the quality of coastal waters;
- potential to promote national policy and legal reforms; and
- require innovative financial and advisory assistance to bring project financing costs within ratepayers' ability to pay.

Addressing Key Capacity Constraints Within Legal, Institutional and Policy Frameworks

CReW's support in the areas of policy, institutional strengthening and legislative reform will encompass the following:

- Improving skills and knowledge at the national and local level needed for policy formulation, planning and financing in water, sanitation and wastewater management.
- Developing tools to improve and strengthen the legislative framework for wastewater management, including improving compliance with obligations of the Cartagena Convention and its Protocol on Land-Based Sources of Pollution, with the support of the Convention's Secretariat, the Caribbean Environment Programme.
- Developing education and awareness programmes about wastewater and sanitation targeting local and national governments, the media, the formal education system, community members and the general public, including training for decision makers on the choice of appropriate and cost-effective technologies for wastewater management.

One-Stop Shop for Wastewater Management Resources

CReW will support communications, outreach and information exchange through the following activities:

- Sharing of pilot and demo project information and results such as experience notes, case studies and lessons learned through the GEF International Waters Learning Exchange and Resource Network (GEF IW-LEARN), with a view to promoting South-South cooperation, engendering greater local, national and regional stakeholder commitment to wastewater management, and developing strategies for future replication;
- Development of a WCR clearinghouse mechanism to provide information about wastewater management to technical experts within the water and wastewater sector as well as national leaders, policy makers, the private sector, the media and the general public. Linking various information websites and networks currently in existence, the clearinghouse mechanism will also provide a platform for presenting relevant information not yet available online.

CRew Participating Countries

- Antigua and Barbuda
- Barbados
- Belize
- Costa Rica
- Jamaica
- Guatemala
- Guyana
- Honduras
- Panama
- Saint Lucia
- Saint Vincent and the Grenadines
- Suriname
- Trinidad and Tobago

ⁱ Caribbean Sea Ecosystem Assessment (CARSEA) Study

ⁱⁱ Pan American Health Organization (PAHO) -- 2001