National Ballast Water Management Strategy for Jamaica

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ABBREVIATIONS AND ACRONYMS

BWM	Ballast Water Management
BWM Convention	International Convention on the Control and Management of Ships' Ballast Water and Sediments, 2004
CARICOM	Caribbean Community
CAR/RCU	Caribbean Regional Co-ordinating Unit
CARTAGENA CONVENTION	Convention of Protection and Development of the Marine Environment of the Wider Caribbean Region
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CME	Compliance Monitoring and Enforcement
CP	Contact Point
CPPS	Comisión Permanente del Pacifico Sur
CMoU	Memorandum of Understanding on Port State Control in the Caribbean Region
CRIMP	Centre for Research on Marine Pests
CSA	Caribbean Shipping Association
EFJ	Environmental Foundation of Jamaica
GBP	GloBallast Partnerships
GEF	Global Environment Facility
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environment Protection
HAOP	Harmful Aquatic Organisms and Pathogens
IAS	Invasive Aquatic Species
IMO	International Maritime Organization
ISSG	Invasive Species Specialist Group
IUCN	International Union for Conservation of Nature

LPC	Lead Partner Country
MAJ	Maritime Authority of Jamaica
MEPC	Marine Environment Protection Committee
MFAFT	Ministry of Foreign Affairs and Foreign Trade
NBWMS	National Ballast Water Management Strategy
NCOCZM	National Council on Ocean and Coastal Zone Management
NEPA	National Environment and Planning Agency
NRCA	Natural Resources Conservation Authority
NTF	National Task Force
PAJ	Port Authority of Jamaica
PBBS	Port Biological Baseline Survey
RAC/REMPEITC-Caribe	Regional Activity Centre / Regional Marine Pollution Emergency, Information and Training Centre for the Wider Caribbean Region
RTF-WCR	Regional Task Force on Control and Management of Ships-Ballast Water and Sediments in the Wider Caribbean Region
SOLAS	International Convention for Safety of Life at Sea
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UWI	University of the West Indies
WCR	Wider Caribbean Region
WHO	World Health Organization
WSSD	World Summit on Sustainable Development

1. Executive Summary

Marine invasive species are species which become established in natural or semi-natural ecosystems or habitat, changing and threatening native biological diversity. This is a major problem for a country such as Jamaica that is highly dependent on its marine and coastal resources. The ballast water of ships has been identified as the vector of introduction of at least one invasive species in Jamaica and the Wider Caribbean. In 2006, the Wider Caribbean Region (WCR) was designated as one of the top priority regions during the second phase of the 5-year (2008-2012) GloBallast Partnership (GBP) Project. Jamaica consented to be a lead partner country (LPC) to this project. The country has also established its National Task Force (NTF) in March 2009, under the chairmanship of the Maritime Authority of Jamaica (MAJ).

Jamaica currently lacks specific laws, policies or strategies for ballast water regulation and management. This document presents the National Ballast Water Management Strategy (NBWMS) for Jamaica to enable management of the problem as well as to satisfy the requirements and standards of the International Maritime Organization (IMO) – International Convention on the control and Management of Ships' Ballast Water and Sediment, 2004 (BWM Convention). The document addresses the issue of Invasive Alien Species (IAS) (section 2.1); issue of Ballast Water Management (section 2.2); international agreements/treaties related to IAS (section 2.1); geographical and technical scope of the strategy (section 3) strategic action plan; (section 3.4) as well as the standards for implementation, awareness raising (section 6.4) and funding (section 7).

The seven goals/ objectives of the NBWMS are to:

- Establish a ballast water management system in order to mitigate, minimize and eventually eliminate the transfer of Harmful Aquatic Organisms and Pathogens (HAOP) in ships' ballast water with respect to the BWM Convention.
- Identify the need for national legislation and promote the legislation.
- Create framework for coordination with regional and international initiatives such as the GEF/UNDP/IMO GloBallast Partnerships project – Regional Activity Centre / Regional Marine Pollution Emergency, Information and Training Centre for the Wider Caribbean Region

(RAC/REMPEITC-Caribe) and the Caribbean Regional Co-ordinating Unit/ United Nations Environment Programme (CAR-RCU/ UNEP) Regional Seas Programme (Cartagena Convention).

- Develop and implement Compliance Monitoring and Enforcement (CME) programmes to ensure the successful implementation of the BWM Convention.
- Build capacity and provide training to address ballast water management matters to all relevant stakeholders.
- Promote and facilitate scientific and technical research on ballast water management.
- Increase the level of public awareness on the potential dangers associated with the transfer of HAOP in ballast water.

The implementation approach will be cross-sectoral, involving the collaboration and input of various ministries and agencies. The Ministries of Transport, Works and Housing as well as Water, Land, Environment and Climate Change are identified as key government authorities which have existing laws and policies that are relevant to shipping industry in Jamaica and the protection of native species. The National Environment and Planning Agency (NEPA) is identified as the line agency responsible for overall coordination and management of invasive species problems and the MAJ as the lead implementing agency. As lead agency, the MAJ is expected to coordinate and oversee the implementation of the strategy, delegate various aspects/components of the NBWMS to other agencies as well as to address the administration of relevant international instruments related to ballast water management.

The Ballast Water Management strategy addressed the requirements for a certificate of compliance to be issued; validity of certificate; requirements of the BWM plan, record books; reporting form; and selection of ships to be sampled. An action plan and time frame for implementation is also outlined. This plan states the objectives, activities, the responsible parties for the activities and the date for which the activity should be implemented.

In terms of implementation funding, contributions will be solicited from the IMO-Globallast programme; Regional Marine Pollution Emergency, Information and Training Centre for the Wider Caribbean Region (REMPEITC-Caribe) among others.

2. Introduction

2.1 Background to the issue of Invasive Alien Species (IAS)

An alien species is any species whether plant, animal or micro-organism that has been introduced to a new ecosystem that is outside of their normal habitation. The Invasive Species Specialist Group-ISSG (2000) defines alien species as "a species, subspecies, or lower taxon occurring outside of its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could not occupy without direct or indirect introduction or care by humans) and includes any part, gametes or propagules of such species that might survive and subsequently reproduce". These species can be referred to as "non-native", "alien", "exotic", "foreign" or "non-indigenous". They are usually introduced either intentionally or unintentionally by various pathways or vectors. Intentional introduction refers to the deliberate movement and/or release by humans of an alien species outside its natural range. Some examples of intentional introductions include aquarium trade, aquaculture, live bait fish (Holeck et al.2004), horticulture, hunting, ornamental and for pleasure (Howard 2009). Unintentional introductions examples on the other hand include transportation of organisms in imported nursery soils, imported fruits and vegetables, tourists and their luggage as well as those related to international shipping, which include the hull, ballast water and sediments.

ISSG (2000) define invasive alien species as "an alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity". IAS can cause negative impacts at the species, population and community levels. The most significant harm is altering ecosystem functions. Table 1 highlights three major negative impact of IAS.

Table 1 Ecological, Biodiversity, Economic and Health impacts of IAS (Howard 2009)

ECOLOGICAL & BIODIVERSITY IMPACTS	ECONOMIC IMPACTS	HEALTH IMPACTS
Direct predation/ herbivory	**Direct impacts:** Direct loss of crops, reduced yields	**Direct impacts:** Disease
Competition for resources/exclusion (e.g. Light, food, water, space)	Lost export earnings	Allergic reactions

Transmission of pathogens and parasites	Loss of tourism revenues	Injuries through stinging or biting
Alteration of micro-climate, nutrient availability, ecosystem Cycles (energy, water, minerals, organics)	Management costs	Poisons
Disturbance to ecological processes (e.g. Pollination)	**Indirect impacts:** Impaired ecosystem services	**Indirect impacts:** Providing a vector for disease
Disruption of ecosystem services (e.g. Flood attenuation)	Damaged infrastructure	
Environmental degradation, facilitating further invasions	Costs to natural environment and societal or cultural values	

IAS are considered the second greatest threat posed to biodiversity globally. However, in evolutionarily isolated ecosystems, such as islands, IAS possibly are the greatest threat to our ecosystems (Institute of Jamaica 2010). Studies have confirmed at least 84 IAS in Jamaica with 300 records of occurrences causing some change to the habitats (Institute of Jamaica 2010). Some of the most famous invasives for Jamaica are as follows:

Figure 1 Photograph showing *Perna viridis*- Asian Green Mussel[1]

Origin: Indo-Pacific

Recorded: Kingston Harbour, Discovery Bay, Montego Bay

[1] www.sms.si.edu/irlspec/perna_viridis.htm

Impact:

- Biofouls boats and submerged infrastructure such as bridges, seawalls, docks, and buoys.
- Clogs cooling water intakes and outflow pipes of industry and power plants.

Figure 2 Photograph showing *Pterois volitans*- Lionfish[2]

Origin: Indo-Pacific

Recorded: Jamaican waters

Impact:

- Feed upon a wide diversity of reef-associated species thereby reducing fish resources.

(Photo by: Dayne Buddo)

Figure 3 Photograph of *Penaeus monodon* - Asian Tiger Shrimp[3]

Origin: Indo-Pacific, Australia, East Africa

Recorded: South Coast Jamaica-Hellshire, Galleon Harbour

Impact: Unknown impact in Jamaica.

[2] http://blog.cutlassandcane.com/regional-news/invasive-lionfish-go-from-predator-to-prey/
[3] http://nas.er.usgs.gov/queries/specimenviewer.aspx?SpecimenID=290099

 (Photo by: Kurt Kissmann)

Figure 4 Photograph of *Hedychium coranarium* - White Ginger Lily[4]

Origin: Southern Asia

Recorded: Hardwar Gap, St. Andrew; Whyda and Green Hill, Portland

Impact:

- Outgrows low level species in waterlogged area.
- Clog shallow water systems, streams and waterlogged areas disturbing water flow.

 (Photo by: Dayne Buddo)

Figure 5 Photograph of *Psidium catteianum*- Strawberry Guava[5]

Origin: Caribbean, Central and South America, Southern USA

Recorded: Mason River

Impact:

- Forms dense, nearly impenetrable thickets that crowd native species.
- Disrupt native animal communities.

[4] http://www.cabi.org/isc/?compid=5&dsid=26678&loadmodule=datasheet&page=481&site=144

[5] http://www.oas.org/dsd/IABIN/Component2/Jamaica/I3N-InstituteOfJamaica/Poster.pdf

Howard (2009) stated "IAS management and control is supported by bilateral, regional and global instruments and guidance". Below is a list of international agreements and commitments relevant to IAS. These international agreements serve to both influence and in turn are influenced by domestic legislation (McConnell 2002).

- Convention on Biological Diversity (CBD), 1992
- The Ramsar Convention on Wetlands, 1971
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973
- United Nations Convention on the Law of the Sea (UNCLOS), 1982
- International Convention for the Prevention of Pollution from Ships , 1973 as amended (MARPOL)
- International Convention for the Control and Management of Ships Ballast Water and Sediments, 2004
- International Plant Protection Convention (IPPC), 1951
- World Summit on Sustainable Development (WSSD), 2002
- IUCN Guidelines for the Prevention of Biodiversity Loss caused by Alien Invasive Species, 2000
- Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention), 1987
- The Cartagena Protocol on Biosafety
- The Rio Declaration and Agenda 21, 1992
- International Convention on the Control of Harmful Anti-fouling Systems on Ships (Anti-Fouling Convention), 2001
- Convention on International Civil Aviation, 1994 (2001)
- International Convention for Safety of Life at Sea, 1974 as amended , (SOLAS 74/78)
- International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 as amended (STCW Convention)
- World Trade Organisation Agreements, 1994
- General Agreement on Trade and Tariffs and related Agreement,1994
- The ICES Code of Practice on the Introduction and Transfer of Marine Organisms, 1994
- FAO Code of Conduct for Responsible Fisheries and subsequent Technical Guidelines,1995
- Guidelines for the control and management of ships' ballast water, 1997

Jamaican legislation relevant to IAS

Laws

- National Resources Conservation Authority Act, 1991
- Wild Life Protection Act, 1945
- Endangered Species (Protection, Conservation and Regulation of Trade) Act, 2000

Strategies/Policies

- National Strategy and Action Plan on Biological Diversity in Jamaica, 2003
- National Action Plan on Ocean and Coastal Zone Management, 2000

2.2 Background to the issue of Ballast Water Management

The shipping industry is a vital part of the expanding global economy providing a cost effective option for the transportation of goods over far distances. Shipping is responsible for the movement of over 90% of the world's commodities; in addition, it transfers approximately 3 to 5 billion tonnes of ballast water internationally on an annual basis (GEF-UNDP-IMO GloBallast Partnerships and IOI 2009). These ships are designed to navigate safely through the ocean while carrying exceptionally heavy weight. However, in order to operate effectively when there is a lighter load or no load at all, additional material must be carried on board – ballast (GEF-UNDP-IMO GloBallast Partnerships and IOI 2009). The fact that ballast is a necessity for ships makes the quantity of ballast transfers and the amount of alien species contained in the released ballast water a very serious matter.

Studies have documented that marine organisms are taken aboard the ships in the ballast water that is drawn into the ballast water tanks. Some of these organisms are actually able to survive the journey to the next port of call where cargo is to be taken on-board. The ballast water tanks are emptied into the new environment, which results in the introduction of alien species with the potential to of becoming invasive (Figure 6).

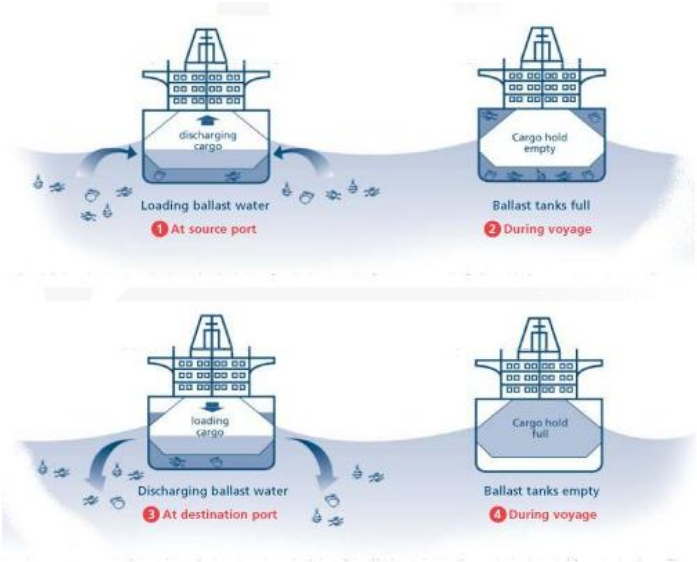

Figure 6 Cross-Section of ships showing ballast tanks and ballast water cycles[6]

[6] http://globallast.imo.org Jan. 21 2012)

Ballast water therefore serves as one of the major contributors to unintentional introductions of marine IAS. As mentioned before, depending on the environmental conditions in the new ecosystem, the alien species can survive and become a homogeneous part of the new ecosystem, or, it can survive, multiply rapidly because of the lack of predation and become the primary predator of that ecosystem thereby greatly diminishing or even wiping out certain species in that environment. This of course will drastically change the dynamics of the ecosystem, and highly likely have adverse effects on the local environment, the economy and even human health.

2.2.1 Internationally and regionally

Several initiatives have been put in place to address the issue of ballast water. The IMO has been at the forefront of this agenda, working alongside key stakeholders from shipping, the ports, environmental groups, tourism bodies and public health organizations to name a few (GEF-UNDP-IMO GloBallast Partnerships and IOI 2009). The IMO is an agency of the United Nations with primary responsibility for international regulations of ships' safety and security as well as the prevention of marine pollution from ships.

In 1973, the IMO along with member states assisted in the adoption of the International Convention for the Prevention of Pollution from Ships, 1973 as amended (MARPOL). One of the adopted resolutions stated, "ballast water taken in waters which may contain bacteria of epidemic diseases, may, when discharged, cause a danger of spreading of the epidemic diseases to other countries" (GEF-UNDP-IMO GloBallast Partnerships and IOI 2009). Studies to solve the ballast water were enlisted by the IMO in conjunction with the World Health Organization (WHO). A Ballast Water Working Group was established under the Marine Environment Protection Committee (MEPC). This working group has been actively making strides in finding solutions to the issues associated with ballast water. The development of the International Convention for the Control and Management of Ships' Ballast Water and Sediments was born out of activities undertaken by the Working Group. This Convention was adopted by consensus at a Diplomatic Conference on February 13 2004 at the IMO Headquarters in London (GEF-UNDP-IMO GloBallast Partnerships and IOI 2009).

In the year 2000, the IMO joined forces with the Global Environment Facility (GEF), the United Nations Development Programme (UNDP), member governments and the shipping industry to assist less-industrialised countries to tackle the ballast water problem. The project was entitled "Removal of Barriers to the Effective Implementation of Ballast Water Control and Management Measures in Developing Countries"

but it is simply referred to as the Global Ballast Water Management Programme, or GloBallast (IMO 2011).The Wider Caribbean Region (WCR) was designated as one of the top priority regions during the second phase of the 5-year (2008-2012) GBP Project. The GBP project was extended for more years and is expected to end in 2014[7]. Regional Activity Centre / Regional Marine Pollution Emergency, Information and Training Centre for the Wider Caribbean Region (RAC/REMPEITC-Caribe) is the Regional Coordinating Organization (RCO) in the Wider Caribbean Region for the GBP project that aims to help developing countries to establish ballast water management policies in order to decrease the risk of marine bio-invasions.

In the Caribbean, countries were classified (non-statically) according to the support they provided to the project before its endorsement[8]:

Lead partner countries: Venezuela, Jamaica, Trinidad & Tobago and Bahamas

Current Partners (GEF eligible & endorsed GBP): Anguilla, Antigua & Barbuda*, Barbados*, Belize, Costa Rica, Haiti, Cuba, Dominica, Guatemala and Mexico*

Other GEF eligible: Dominican Republic, Grenada, Guyana, Honduras, Nicaragua, St. Kitts and Nevis*, St. Lucia, St. Vincent and Grenadines, and Suriname

Non-GEF eligible: USA, UK, France*, Dutch Kingdom

* Party to the 2004 BWM Convention as at 30 June 2009

Colombia and Panama were considered as part of the South East Pacific region (SEPR), which Regional Coordinating Organization (RCO) is the Comisión Permanente del Pacifico Sur (CPPS) based in Ecuador. However, REMPEITC has interactions also with these two countries.

2.2.2 Nationally

Jamaica has been working closely with the IMO and has consented to be a lead partner country (LPC) to the seven year GBP project which will assist particularly vulnerable Caribbean States to enact legal, policy and institutional reforms to minimize the adverse impacts of aquatic invasive species transferred by ships.

[7] http://globallast.imo.org/index.asp?page=GBPintro.html&menu=true
[8] http://cep.unep.org/racrempeitcNational

The country has also already undertaken a National Ballast Water Status Assessment through the University of the West Indies (UWI) via funding from the GBP project. The Environmental Foundation of Jamaica (EFJ) also funded a 3 year study by the UWI on ballast water sampling activities in Kingston Harbour and Discovery Bay. In March 2009, the first meeting for the Ballast Water Management National Task Force (BWMNTF) was held in Kingston under the chairmanship of the Maritime Authority of Jamaica (MAJ), the national focal point for IMO and Ballast Water management activities in Jamaica.

In April 2009, a brief on the implications of the ratification of the BWM Convention was tabled and discussed at the 83rd meeting of the National Council on Ocean and Coastal Zone Management (NCOCZM), a subcommittee of the Cabinet. The Council is chaired by the Minister of State in the Ministry of Foreign Affairs and Foreign Trade (MFAFT). The Council endorsed the recommendation for Jamaica's accession to the Convention and the Attorney General's Chambers has given its legal opinion paving the way for Jamaica's accession to the Convention, pending the development of legislation incorporating the provisions of the Convention.

3. Scope and Objectives of the Strategy

3.1 Geographic scope

Jamaica is an archipelagic state located in the Caribbean between the Cayman Trench and Jamaica Channel, the main sea lanes for the Panama Canal (Ocean Shipping Consultants 2010). Jamaica has stewardship over a marine space 24 times its land area of 10,891 km^2 with an exclusive economic zone (EEZ) of approximately 235,000 km^2. The geographic scope of this ballast water strategy will extend to the EEZ 200 nautical miles limit.

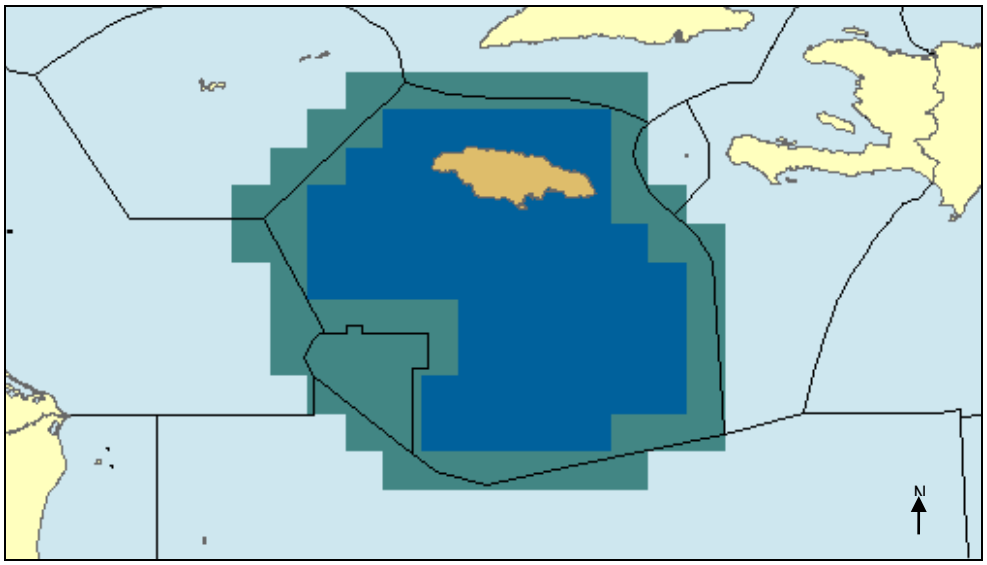

Figure 7 Map showing the Economic Exclusive Zone of Jamaica[9]

3.2 Technical Scope

Technical scope of the strategy includes:

- Legal institutional policy
- Capacity building
- Scientific research
- Awareness raising

9 http://www.seaaroundus.org/eez/388.aspx June 19, 2012

3.3 Purpose of the strategy

IAS have the potential of being hazardous to ecosystems, biodiversity, human health and even the economy of a country if it is affecting a business that cannot afford to pay for the control measures necessary to deal with the problem. It is therefore critical to the future of Jamaica that we begin to take serious strides to address current invasions and also to safeguard our waters from possible future invasions. This national strategy is the beginning of that process.

3.4 Objectives

The objectives of this strategy are as follows:

1. Establish a ballast water management system in order to mitigate, minimize and eventually eliminate the transfer of HAOP in ships' ballast water with respect to the BWM Convention.

2. Identify the need for national legislation.

3. Create framework for coordination with regional and international initiatives such as the GEF/UNDP/IMO GBP project - RAC/REMPEITC-Caribe and the CAR-RCU/UNEP Regional Seas Programme.

4. Develop and implement Compliance Monitoring and Enforcement (CME) programmes to ensure the successful implementation of the BWM Convention.

5. Build capacity and provide training to address ballast water management matters to all relevant stakeholders.

6. Promote and facilitate scientific and technical research on ballast water management.

7. Increase the level of public awareness on the potential dangers associated with the transfer of HAOP in ballast water.

3.4.1 Strategic Action Plan and Implementation time line

OBJECTIVES	ACTIVITIES	RESPONSIBLE PARTIES	Time frame
1. Adopt national legislations	• Prepare draft legislation.	Office of the Parliamentary Counsel (OPC) MAJ, NTF, Legislation Committee	1 year
2. Operate a National Task force	• Adopt the strategy document and action plan. • Plan future activities • Develop methods of eradicating, containing and controlling alien species that are environmentally sound.	NTF members NTF members NTF members	1 year 1 year Ongoing
3. Capacity building and training	• Educating relevant personnel on ballast water sampling, port biological surveying etc.	MAJ/CMI	Ongoing
4. Prepare certificate procedures	• Organize the procedures for preparing the BWM certificates. • Organize the procedures for preparing the type approvals for treatment facility.	NTF/MAJ NTF/MAJ	1 year 1 year
5. Information and awareness raising	• Prepare brochures, posters and radio/tv announcements. • Establish national ballast water management website. • Ballast water forum.	MAJ/ PAJ/NEPA/MWLECC MAJ ENGO's-EFJ	1 year 2 years 1 year
6. Regional and International Coordination	• Participate in regional and international BWM meetings/activities.	MAJ/NTF	Ongoing

7. Port Biological Baseline Surveys	• Organize national baseline survey workshop. • Conduct Port Biological Baseline Surveys. • Collect all baseline survey information to prepare a reporting system.	MAJ/UWI NEPA/UWI NEPA/UWI	2013 and beyond Ongoing Ongoing
8. Compliance, Monitoring & Evaluation System	• Establish guidelines for port state control.	NTF/MAJ/PAJ	Ongoing
9. Accede to BWM Convention	• Legislation passed.	Parliament/ MFAFT	1 year

4. Ballast Water Management

4.1 Leading Agency

The MAJ is the lead agency with responsible for developing and implementing the NBWMS. MAJ will coordinate and oversee the implementation of the strategy and will delegate various aspects/components of the NBWMS to other agencies. This will be done through the NTF.

The lead agency will also address the administration of relevant international instruments related to ballast water management. These include but are not limited to integration of the NBWMS into pertinent national policies/strategies and; devising and ensuring implementation of necessary scientific, operational, and administrative arrangements for all ships visiting the country's ports.

The lead agency will ensure that all key stakeholders are fully conversant with the NBWMS and are appropriately trained and properly authorized to act on its behalf, where required. Monitoring and reviewing on an on-going basis how effectively the NBWMS is being implemented and introducing changes will also be a role of the MAJ.

4.2 Division of Labour

Table 2 Roles and responsibilities of ministries, agencies and groups

Agent	Function/Activity
Maritime Authority of Jamaica	• Coordinates and control of shipping including maritime safety and environmental aspects. • Enforces Flag and Port state control. • Implements of shipping-related conventions and legislation. • Approves and endorses assessments, plans and certification. • Collects fees/funds.
Port Authority of Jamaica (PAJ)	Implements port ballast water management plans (consistent with national strategy).
Ministry of Health/Public Health Authority	Supervise and evaluates of sanitary control activities in ports
Ministry of Agriculture and Fisheries-Quarantine Division	Makes and enforces regulations to prevent introduction and transmission of disease and pathogens
National Environment and Planning Agency	• Coordinates and manages invasive species problems, including monitoring and response plans. • Implements biodiversity and environmental conventions.
Jamaica Defence Force-Coast Guard	Maintains law and order in maritime domain.
Ship owners, agencies and other port users	Supervises procedures and activities on board ships. Must inform ship masters about the requirements of the ports to be visited.
Shipyards, ship builders, naval architects, etc	Supervises the adaptation of ships and the building of new ships, according to the principles internationally adopted for dealing with ballast water.
Academia	Provides education and training. Conducts coastal and marine research and ecosystem monitoringwith regards to invasive species associated with ballast water
Environmental NGOs	Assists in monitoring for the early detection of introduced species and community education.

4.3 New legislation and the requirements to implement

A BWM Convention legislation for Jamaica will be developed. The BWM legislation would require vessels entering or leaving Jamaica to:

- manage ballast water to prescribed standards by set timelines;
- have a certificate, record book, and approved management plan;
- be inspected; and
- perform exchange and flushing until they are in compliance with the performance standard of the IMO BWM convention.

It would also require Jamaica to:

- identify and state the requirements for where sediments from ballast tanks may be disposed;
- set the minimum fines for non-compliance; and
- identify the standards for prosecuting flag states and to hold/ detain vessels.

In addition to the above mentioned requirements, the BWM legislation will also require Jamaican registered ships operating globally to be surveyed and certified at regular intervals (by class societies).

The Polluter pays principle (Principle 16, Rio Declaration 1992) states that the polluter should bear the expenses of preventing and controlling pollution "to ensure that the environment is in an acceptable state". This principle should be implemented to provide the necessary funds to prevent and mitigate against marine IAS through ballast water. The BWM legislation would define the procedures for assessing and setting the fees and for collecting, holding and using the funds.

5. Management and Control Requirements

5.1 BWM Certificate

Regulation D-3 of the Convention requires ships flying the flag of a party to the Convention (i.e. an Administration that has ratified the Convention) to have an International Ballast Water Management Certificate. Ships flying the flag of a non-party to the Convention but operating in waters that are under the authority of a party must carry a Certificate of compliance with the BWM Convention.

In order to obtain an International Ballast Water Management Certificate or Certificate of compliance, the following must be done:

1. Ballast Water Management Plan must be approved or examined and available on board
2. A ballast water record book available on board
3. Initial survey

The certificate would be issued by the flag state or organizations nominated by the flag state to issue the same (Appendix I). The certificate will be valid for five years. During that period, the ship will be subjected to a number of surveys by their flag state to ensure full compliance with the requirements of the Convention at all times. A certificate will cease to be valid if there is a change of equipment or if there is a change of Flag State or failure to maintain a BWM Plan and record book.

5.2 BWM Plan

Introduction

Regulation B-1 of the BWM Convention requires all ships to have on board and implement a Ballast Water Management plan. The BWM plan must be approved by the Flag state.

The Plan

1. Vessels equipped with ballast water tanks must develop and maintain on board documentation for a BWM plan. The intent of the plan is to detail safe and effective ship ballast water exchange.
2. The BWM Plan must be specific to the vessel, show that there is a BWM system (see G4 Guidelines) for the vessel and allow any master or other ship's officer serving on that vessel to understand and implement the BWM system for the vessel. Each plan must include:
    - Vessel particulars and drawings
    - Ballast tank arrangements
    - Detailed safety procedures for the ship and the crew associated with Ballast Water Management
    - Detailed description of the actions for implementing the BWM requirements and practices
    - Detailed procedures for sediment removal (at sea and a shore).
    - Identification of the officer(s) in charge of ensuring that the plan is properly implemented
    - A translation of the plan into English, Spanish or French if the ship's working language is another language.
3. The Plan should be readily available for inspection by officers authorized by a Party to the BWM Convention.

5.3 BWM Record Book & Reporting Form

Introduction

The guidelines apply to all ships and to Flag Administrations, ports, ship owners, ship operators, ships' personnel involved in Ballast Water Management, ship designers, ship builders, classification societies as well as other interested parties.

A record is to be kept of each ballast water operation in accordance with Regulation B-2 of the Annex to the BWM Convention. The record should include discharges at sea and at reception facilities. The master, owner, operator or person in charge of any vessel equipped with ballast water tanks, that is bound for ports or places in Jamaican waters and Jamaican registered vessel operating globally must ensure complete and accurate BWM records are kept aboard the vessel for a minimum of 2 years.

BWM Record Book

A responsible officer is to be designated on board each ship to ensure the maintenance of appropriate records and to ensure that ballast water management and/or treatment procedures are followed and recorded.

The records must be complete and accurate. Each record must include all the information listed in template and be in the correct format. The records must also be signed by the master, owner or the responsible officer.

The entries in the Ballast Water Record Book shall be in the working language of the vessel. If that language is not English, French, or Spanish, the entries shall contain a translation into one of those languages.

The port authorities /harbour masters officers may inspect the Ballast Water Record Book onboard any vessel while that vessel is in a port or offshore terminal of that State. The officials may elect to make a copy of the Ballast Water Record Book and require the Master to certify that the copy is a true copy. Any such certified copy shall become admissible in any judicial proceeding as evidence of the facts stated in the entry.

BWM Reporting Form

A Ballast Water Reporting Form is to be used when reporting ballast water exchange to Port State authorities that request such information in advance. The appointed BWM Officer will verify that the appropriate form required by the country is being used. The attached Ballast Water Reporting Form (Appendix 2) was adapted from Annex 2 to MEPC 52/2.

5.4 Ensuring compliance among ships flying the country's flag

The MAJ surveyors will ensure compliance among ships flying the country's flag within the harbours/ports across Jamaica and the EEZ. The MAJ may also delegate this role to one of the major class societies they have an agreement with.

5.5 Inspection of Ships

According to Article 9 of the BWM convention all ships may be inspected by Port State Control officers.

The designated officers will:

- verify that the ship has a valid certificate
- inspect the ballast water record books
- and or take samples of ballast water

Ships without a valid certificate will be subjected to detailed inspections and no ballast water would be permitted to be discharged until proven harmless.

Ensuring compliance will be assessed through unannounced inspections of the vessels as done through SOLAS convention. Port State Control Inspectors will board 15% of all foreign ships which call at Jamaican ports for compliance with the Convention including maintaining the various records and plans and having evidence of legal ballast water exchanges. The Inspectors will have the power to take samples and detain vessels if they are not found to be in compliance but they should try to avoid undue delays.

5.6 Enforcement and Penalties

Article 8 of the BWM Convention prohibits any violation of the requirements of the Convention. Sanctions will be established under the BWM legislation.

The MAJ and the PAJ are the entities that will ensure that the BWM Convention requirements are not violated.

6. Implementation Plan

6.1 Institutional Arrangements

6.1.1 Regional or National responsibilities

Regional

CARICOM

Jamaica has provided technical assistance to Caribbean Community (CARICOM) in training and capacity building; complementing and augmenting the work of the Regional Maritime Adviser (RMA) through the Integrated Technical Cooperation Programme. MAJ will therefore continue to provide these training seminars to CARICOM but with emphasis on ballast water management.

As stated in section 2.2, Jamaica has consented to be a LPC to work closely with the IMO for a seven year GloBallast Partnership project to assist particularly vulnerable Caribbean States to enact legal, policy and institutional reforms to minimize the adverse impacts of marine IAS transferred by ships.

The Memorandum of Understanding on Port State Control in the Caribbean Region (CMOU) was formed in 1996. It is one of the regional bodies established worldwide to conduct Port State Control inspections of foreign flagged vessels, which is deemed an effective measure, using various international maritime legal instruments, to ensure safer ships and cleaner seas in the Caribbean. Jamaica is a member of the CMOU and as such prevented ships which have escaped flag States inspections, for one reason or the other from operating without some form of regulatory compliance.

National

Shipping Association of Jamaica (SAJ) - Private Sector

The Shipping Association of Jamaica represents 78 companies in the private shipping sector. Membership includes shipping agents, wharf owners, terminal operators and stevedoring companies, together with ship owners and operators. The association's primary role is the management of certain categories of labour as well as providing specialized training for its members and community outreach programmes. The SAJ would therefore play important role providing information on ballast water management to its members.

Port Authority of Jamaica (PAJ) -Ministry of Transport, Works and Housing

Port Authority of Jamaica owns and controls the major seaports: Kingston Transhipment Port, Port of Montego Bay and the cruise shipping terminals at Ocho Rios, Port Antonio and Falmouth. The Harbour Master of Jamaica is in charge of the safety of all vessels navigating the ports of entry. The PAJ is expected to have some regulatory responsibilities on the provision of port reception facilities.

National Environment and Planning Agency (NEPA) -Ministry of Water, Land, Environment and Climate Change

NEPA has responsibility for the management of Jamaica's environment including port operations affecting the environment such as oil spills.

Quarantine Authority-Ministry of Health

The Quarantine Authority inspects air or sea vessels upon their arrival and prohibits the offloading of anything that may be a danger to public health (including hazardous wastes).

National Council on Ocean and Coastal Zone Management (NCOCZM) –Interministerial

The National Council on Ocean and Coastal Zone Management (NCOCZM) was established in 1998 with a mandate that included definition of national policy. The Council has identified the need for rationalization of the national policy on the management of the ocean and coastal resources. In its present state, the council is a multidisciplinary and inter-agency advisory body that oversees the activities of the management of the ocean and coastal resources (Creary 2003).

6.1.2 Lead Agency

As stated in section 7, the MAJ will be the lead agency for Ballast Water Management in Jamaica. The Lead Agency, through a designated Contact Point (CP), is responsible for the creation and convening of the necessary National Task Force (NTF). The development and implementation of the necessary country level information, education and participation activities are the keys to success.

6.1.3 Advisory groups or Task Force

A Ballast Water Management National Task Force has been established to address Jamaica's coastal state rights and obligations under the convention. The terms of reference for the task force are:

1. Prepare National Policy and Strategy for Ballast Water Management.
2. Advise Government on the following Ballast Water Management related matters: • **local and international policy developments.** • **status of Jamaica's accession to the Convention.** • **legislative requirements for implementation of the Convention.**
3. Monitor and report on operational arrangements in the harbours and ports affecting ballast water management.
4. Facilitate the preparation of Port Baseline Studies.
5. Provide quarterly reports to the Globallast Secretariat and the Government of Jamaica.
6. Review the terms of reference on an annual basis.

6.1.4 Cross-sectoral collaboration

Cross-sectoral collaboration is needed to facilitate harmonized implementation of the NBWMS. The members of the NTF should therefore have the same goals as well as budgetary priorities. Sharing of information between the members is also critical in the areas of management, policy development, research, and outreach and training.

Current members of the task force include:

- Ministry of Water, Land, Environment and Climate Change

- Ministry of Health
- Shipping Association of Jamaica
- National Environment and Planning Agency
- Jamaica Defense Force-Coast Guard
- Port Authority of Jamaica
- Fisheries Division of the Ministry of Agriculture and Fisheries
- The University of the West Indies

Some actions to be taken include:

i. development of methods of eradicating, containing and controlling alien species that are as environmentally sound and effective.
ii. ensuring regular contacts between sectors involved in the management of alien species for competence-building and exchanging information, including joint meetings.

These actions are of high priority and all ministries/agencies listed above are responsible.

6.2 Information Gathering

6.2.1 Risk Assessment, Survey and Monitoring of IAS

According to Regulation A-4 of the BWM Convention, ships may under specific circumstances be granted exemptions from the requirements of the BWM Convention. In such a case, the BWM Convention provides further guidance on how such a risk assessment should be carried out (see Guidelines G7, Resolution MEPC.162 (56)). According to these guidelines, there are three acceptable risk assessment methods for assessing the risks in relation to exemptions:

• environmental matching risk assessment;
• species' biogeographical risk assessment; and
• species-specific risk assessment.

Environmental matching risk assessment relies on comparing environmental conditions between locations while species' biogeographical risk assessment compares the overlap of native and non-indigenous species to evaluate environmental similarity and to identify high risk invaders. Species-specific risk assessment on the other hand evaluates the distribution and characteristics of identified target species.

Dependent on the scope of the assessment being performed, the three approaches will be used either individually or in any combination, recognizing that each approach has its limitations (IMO, 2011).

Monitoring and sampling programs will be developed to better understand the biology and the chemistry of a region/habitat or the ballast water, to assess compliance with ballast water management requirements i.e. compliance monitoring and to identify occurrence of harmful algal blooms.

6.2.2 Research and Development of Ballast Water Management Schemes

Port Biological Baseline Surveys (PBBS) are vital for assessing existing natural conditions and the presence or absence of introduced marine species. These surveys should be conducted in accordance with internationally adopted protocols / guidelines such as the Centre for Research on Marine Pests (CRIMP) Protocol, and should be conducted on an ongoing basis as a long-term biological monitoring programme for each port in Jamaica. This will allow any introduction to be tracked and managed, and any new introductions to be detected.

The MAJ in collaboration with the PAJ and UWI will coordinate the PBBS in order to determine the state of the sea in the port area. The results of the assessment will then be used to guide water management schemes for all ports around Jamaica.

6.2.3 Monitoring of the National Ballast Water Management Strategy

The effectiveness of implementation will be comprehensively monitored at least three times in the first three years.The results will be reported annually to the MAJ and allow for review and changes as is necessary to achieve the overall goals of the NBWMS. An independent agency such as ENGO's should be acquired for monitoring.

6.2.4 Evaluation & Review of Strategy

Evaluation and review of the NBWMS will be based on the evaluation plan developed by the NTF. This review should occur periodically and should take into account the outcomes of research and development (R&D) activities and experience gained from its operation and implementation.

6.3 Legislation and Regulation

6.3.1 Policy

National policies and legislation are vital for successful management of IAS. The formulation of national policies/legislations would provide access to funds to prevent or mitigate alien species invasion (Buddo 2008). As stated in 4.3, BWM Convention legislation should be developed. The signing of the BWM Convention by Jamaica would encourage regional and global cooperation.

6.3.2 Compliance and Enforcement

This is similar to section 5.6. The MAJ and PAJ are the entities with responsibility for compliance and enforcement.

6.3.3 Cross Jurisdictional Coordination & Fostering international links and cooperation

A form of Cross Jurisdictional Coordination already exists. The Caribbean Shipping Association (CSA) represents private and public sector interests across the entire Caribbean including South, Central and North American ports. The primary function of the CSA is the exchange of information and ideas essential to development as well as training and development of human resources in the Caribbean shipping industry. This association could be used to foster collaboration between the different ports with the region.

In an effort to foster international linkages, Jamaica has participated in international discussions to devise solutions to manage the IAS problem by chairing the BWM regional task force. A regional ballast water exchange policy has already been adopted through the level of coordination between the countries in the region. International linkage may also develop through the CAR/RCU- UNEP Regional Seas programme whose current focus is the implementation of protocols, information management and exchange and environmental education.

6.4 Communication, Awareness Raising and Training

6.4.1 National Governmental Agencies & Industry

For effective implementation of ballast water management plan, inspectors should be kept up to date with current requirements, the ability of ships to comply, overseas developments and the latest information regarding biosecurity risks from international shipping.

The Caribbean Maritime Institute (CMI) will be responsible for raising awareness and training all seafarers. In the past, CMI has trained graduates in the areas of port management, international shipping and industrial systems, operations and maintenance. The MAJ and CMI would develop a training programme for inspectors of the PAJ/Harbour Masters, Coast Guard and the Marine Police.

Governmental agencies would be in charge of raising awareness and training personnel in the following industries who are associated with ballast water:

- Mining Industry- Jamaica Bauxite Institute
- Oil and Cement industry-Ministry of Science, Technology, Energy
- Cruise Industry-Ministry of Tourism
- Manufacturing/Cargo Industry-Jamaica Manufacture Association

6.4.2 Public

Environmental education campaigns geared at addressing the issue of IAS through ballast water will be undertaken. The programmes should be far-reaching and tailored to communicate effectively to all levels of society and all ages. Different types of media will be used to provide information on IAS and their management especially videos which would reach a large cross section of persons.

7. Funding

7.1 Implementation Funding

Initial Funding for implementation of the NBWMS would come from special grants provided by the IMO through the GloBallast partnerships programme. The programme is a joint initiative founded by IMO, UNDP and GEF to assist developing countries to reduce the transfer of harmful aquatic organisms and

pathogens in ships' ballast water. This funding is made up of in kind support which will continue when GloBallast support ends in 2014.

7.1.1 Gathering information, inspections, studies

The Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) was established in 1967 by a number of United Nations Agencies. GESAMP deals with all scientific aspects on the prevention, reduction and control of the degradation of the marine environment to sustain life support systems, resources and amenities. Funds should be sought from the GESAMP for BWM research, equipment development at port facilities and agencies. The IMO could also be another source of funding for this initiative.

The REMPEITC-Carib is an International Maritime Organization (IMO) office which assists the countries in the region in preventing, preparing for and responding to major pollution incidents and as such will be approached for funds to carry out inspections and studies.

7.1.2 Supporting costs (communication, training, monitoring and evaluating)

Other multi-lateral donors: World Bank, Inter-American Development Bank (IDB) and United Nations – UNEP should be approached to provide financial assistance in training, monitoring and evaluation.

7.2 Ongoing Funding

Fines obtained from delinquent vessels would be used for on-going implementation. A Ballast Water Management account should be established where the monetary sanctions are deposited. A portion of the vessel arrival fees will also be deposited into this account. Funds will also be solicited from private sector and national donor agencies. This will be used for gathering information on IAS and any other ballast water studies, inspections, costs of on-going training, monitoring and evaluation.

Appendix

Adapted from Annex 2 to MEPC 52/2

Appendix 1 Form of International Ballast Water Management Certificate

INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE

Issued under the provisions of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (hereinafter referred to as "the Convention") under the authority of the Government of

……

(full designation of the country)

by ……

(full designation of the competent person or organization authorized under the provisions of the Convention)

Particulars of ship[10]

Name of ship .....

Distinctive number or letters .....

Port of registry .....

Gross Tonnage .....

IMO number[11].....

Date of Construction ……

Ballast Water Capacity (in cubic metres) .....

Details of Ballast Water Management Method(s) Used

Method of Ballast Water Management used ……...

Date installed (if applicable) .....

Name of manufacturer (if applicable) .....

The principal Ballast Water Management method(s) employed on this ship is/are:

in accordance with regulation D-1

in accordance with regulation D-2

(describe) .....

the ship is subject to regulation D-4

THIS IS TO CERTIFY:

1 That the ship has been surveyed in accordance with regulation E-1 of the Annex to the Convention; and

2 That the survey shows that Ballast Water Management on the ship complies with the Annex to the Convention.

This certificate is valid until …… subject to surveys in accordance with regulation E-1 of the Annex to the Convention.

Completion date of the survey on which this certificate is based: dd/mm/yyyy

Issued at .....

(Place of issue of certificate)

....

(Date of issue) Signature of authorized official issuing the certificate)

(Seal or stamp of the authority, as appropriate)

[10]Alternatively, the particulars of the ship may be placed horizontally in boxes.

[11]IMO Ship Identification Number Scheme adopted by the Organization by resolution A.600(15).

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEY(S)

THIS IS TO CERTIFY that a survey required by regulation E-1 of the Annex to the Convention the ship was found to comply with the relevant provisions of the Convention:

Annual survey: Signed .....
(Signature of duly authorized official)
Place .....
Date.....…
(Seal or stamp of the authority, as appropriate)

Annual*/Intermediate survey*: Signed .....
(Signature of duly authorized official)
Place .....
Date.....…
(Seal or stamp of the authority, as appropriate)

Annual*/Intermediate survey*: Signed .....
(Signature of duly authorized official)
Place .....
Date.....…
(Seal or stamp of the authority, as appropriate)

Annual survey: Signed .....
(Signature of duly authorized official)
Place .....
Date.....…
(Seal or stamp of the authority, as appropriate)

* Delete as appropriate.

ANNUAL/INTERMEDIATE SURVEY
IN ACCORDANCE WITH REGULATION E-5.8.3

THIS IS TO CERTIFY that, at an annual/intermediate*survey in accordance with regulation E-5.8.3 of the Annex to the Convention, the ship was found to comply with the relevant provisions of the Convention:

Signed .....
(Signature of authorized official)
Place .....
Date.....…...
(Seal or stamp of the authority, as appropriate)

ENDORSEMENT TO EXTEND THE CERTIFICATE IF VALID
FOR LESS THAN 5 YEARS WHERE REGULATION E-5.3 APPLIES

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with regulation E-5.3 of the Annex to the Convention, be accepted as valid until……

Signed .....
(Signature of authorized official)
Place .....
Date.....…
(Seal or stamp of the authority, as appropriate)

ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN COMPLETED AND REGULATION E-5.4 APPLIES

The ship complies with the relevant provisions of the Convention and this Certificate shall, in accordance with regulation E-5.4 of the Annex to the Convention, be accepted as valid until ……

Signed .....
(Signature of authorized official)
Place .....
Date.....…
(Seal or stamp of the authority, as appropriate)

* Delete as appropriate

ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE UNTIL REACHING THE PORT OF SURVEY OR FOR A PERIOD OF GRACE WHERE REGULATION E-5.5 OR E-5.6 APPLIES

This Certificate shall, in accordance with regulation E-5.5 or E-5.6* of the Annex to the Convention, be accepted as valid until ……..

Signed .....
(Signature of authorized official)
Place .....
Date.....…
(Seal or stamp of the authority, as appropriate)

ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE WHERE REGULATION E-5.8 APPLIES

In accordance with regulation E-5.8 of the Annex to the Convention the new Anniversary date is …….

Signed .....
(Signature of authorized official)
Place .....
Date.....…
(Seal or stamp of the authority, as appropriate)

In accordance with regulation E-5.8 of the Annex to the Convention the new Anniversary date is …….

Signed .....
(Signature of duly authorized official)
Place .....
Date.....…
(Seal or stamp of the authority, as appropriate)

* Delete as appropriate

Adapted from Annex 2 to MEPC 52/2

Appendix 2 Ballast Water Reporting Form

(TO BE PROVIDED TO PORT STATE AUTHORITY UPON REQUEST)

1. VESSEL INFORMATION **2. BALLAST WATER**

Vessel Name:	Type:	IMO Number:	Specify Units: m³, MT, LT, ST
Owner:	GT:	Call Sign:	Total Ballast Water on Board:
Flag:	Arrival Date:	Agent:	
Last Port and Country:		Arrival Port:	Total Ballast Water Capacity:
Next Port and Country:			

3. BALLAST WATER TANKS BALLAST WATER MANAGEMENT PLAN ON BOARD? YES_____ NO_____ HAS THIS BEEN IMPLEMENTED?
TOTAL NO. OF TANKS ON BOARD_____ NO. OF TANKS IN BALLAST_____ IF NONE IN BALLAST GO TO NO. 5YES_____ NO_____
NO. OF TANKS EXCHANGED_____ NO. OF TANKS NOT EXCHANGED_____

4. BALLAST WATER HISTORY: RECORD ALL TANKS THAT WILL BE DEBALLASTED IN PORT STATE OF ARRIVAL; IF NONE GO TO NO. 5

Tanks/Holds (list multiple sources/tanks separately)	**BW SOURCE**				**BW EXCHANGE** : circle one: Empty/Refill or Flow Through					**BW DISCHARGE**			
	DATE ddmmyy	PORT or LAT. LONG	VOLUME (units)	TEMP (units)	DATE ddmmyy	ENDPOINT LAT. LONG.	VOLUME (units)	% Exch.	SEA Hgt. (m)	DATE ddmmyy	PORT or LAT. LONG.	VOLUME (units)	SALINITY (units)

Ballast Water Tank Codes: Forepeak=FP, Aftpeak=AP, Double Bottom=DB, Wing=WT, Topside=TS, Cargo Hold=CH, O=Other

IF EXCHANGES WERE NOT CONDUCTED, STATE OTHER CONTROL ACTION(S) TAKEN: _____
IF NONE, STATE REASON WHY NOT: _____

5. IMO BALLAST WATER GUIDELINES ON BOARD (RES. 868(20))? YES_____ NO_____

RESPONSIBLE OFFICER'S NAME AND TITLE (PRINTED) AND SIGNATURE: _____

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