

COOPERATIVE PERFORMANCE AUDIT REPORT
ON SOLID WASTE MANAGEMENT
BY THE MAJURO ATOLL WASTE COMPANY, INC.
FOR THE PERIOD OCTOBER 1, 2007 TO DECEMBER 31, 2009



REPUBLIC OF THE MARSHALL ISLANDS
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August 11, 2010

Mr. Smith Ysawa
Chairman
Majuro Atoll Waste Company, Inc.
Majuro, MH 96960

Dear Chairman:

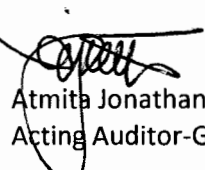
We are enclosing herein our report on "Solid Waste Management" by Majuro Atoll Waste Company, Inc. (MAWC) for the period October 1, 2007 to December 31, 2009".

Pursuant to the Auditor-General Act of 1986, we provided the General Manager of MAWC with a draft of the report with the opportunity for him and the Board of Directors to respond to our findings and recommendations. The General Manager provided us with a response in which he agreed to the recommendations. Copy of the response letter is attached as Appendix "B".

The most important outcome of any audit or review is the correction of deficiencies and improvement in the management of the audited entity. We believe that the implementation of our recommendations is a step in that direction. In this regards, our office maintains a "follow-up-system", and in order for this audit to be closed, we would expect the General Manager and the Board of Directors to provide us with a time table for the implementation of the recommendations he agrees with, as well as advice on the steps he plans to institute in regards to the actions, detailed in Appendix "A".

We wish to express our appreciation for the cooperation and assistance we received from the General Manager and the staff during the course of the audit.

Respectfully,


Atmita Jonathan
Acting Auditor-General

Cc: HE President Jurelang Zedkaia
Minister of Finance
Secretary of Finance
General Manager
OAG Files

SOLID WASTE MANAGEMENT

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List of Acronyms

ADB	- Asian Development Bank
EMP	- Environmental Management Plan
EPA	- National Environmental Protection Authority
CMI	- College of the Marshall Islands
DUD	- Darrit, Uliga and Delap
IDI	- INTOSAI Development Initiative
INTOSAI	- International Organization of Supreme Audit Institutions
JOCV	- Japan Overseas Corporation Volunteer
LOE	- Line of Enquiry
MALGOV	- Majuro Atoll Local Government
MAWC	- Majuro Atoll Waste Company
MOH	- Ministry of Health
MICS	- Marshall Islands Conservation Society
MIRC	- Marshall Islands Revised Code
MITA	- Marshall Islands Tourism Association
NSWSP	- National Solid Waste Strategic Plan
NSWC	- National Solid Waste Committee
OAG	- Office of the Auditor-General
PAF	- Private Accounting Firm
PASAI	- Pacific Association of Supreme Audit Institutions
PICs	- Pacific Islands Countries
RMI	- Republic of the Marshall Islands
SWM	- Solid Waste Management
SWR	- Solid Waste Regulations
SWTF	- Solid Waste Task Force
USEPA	- U.S. Environmental Protection Authority

1.0 EXECUTIVE SUMMARY

Solid waste is the greatest immediate environmental problem facing the Marshall Islands. The change in lifestyle towards consumption of imported goods with a high degree of packaging has meant that waste has gone from being largely biodegradable in the past to being significantly non-biodegradable. In a mainland nation, the primary way of disposing of waste is through landfill. But in an atoll environment, this may not be feasible.

The objective of the audit is to assess how effective are the operations and activities of the Majuro Atoll Waste Company, Inc (MAWC) management of solid waste collection and disposal, and if MAWC complies with all applicable laws, rules and regulations that have an impact on its operation and activities. To achieve this objective the following issues were reviewed and assessed:

- (1) The existence of a legal and policy framework for Solid Waste Management;
- (2) The process by which the legal and policy framework is implemented, including whether the risks to implementation have been considered;
- (3) Compliance with the legal and policy framework, including monitoring arrangements.

The powers of the Auditor-General to conduct audits and investigations are vested in Article VIII, Section 15 of the Constitution of the Marshall Islands and the Auditor-General Act 1986 (MIRC Title 3, Chapter 9). The audit was conducted pursuant to the Auditor-General Act and in accordance with the *Generally Accepted Government Auditing Standards* issued by the Comptroller General of the United States.

Key Audit Findings

Existence of a legal and policy framework

- The Solid Waste Regulations (SWR) promulgated pursuant to Part III, Section 121 of the National Environmental Protection Act 1984 (MIRC Title 35, Chapter 1), provides the legal and policy framework to manage solid waste in the Republic of the Marshall Islands (RMI). However, the regulations do not address the current situation of solid waste management in the RMI, in that the regulations have been designed for the physical environment of the U.S. mainland, and not for an atoll environment.
- Cabinet has established a National Strategic Committee to develop a National Solid Waste Strategic Plan. The committee has not met regularly and has failed to develop the Strategic Plan. Currently, MAWC is using a draft Environmental Management Plan (EMP) as a guide for its operation on the Majuro landfill while the process of developing a national strategic plan is ongoing.

Process by which legal and policy framework is implemented

- The audit disclosed that there were residential properties that have no bins and gather their household garbage and leave them outside their houses for collection, attracting animals.

- MAWC maintains a weekly collection schedule for each community in the service area from Rita to the Airport which consisted of 3,000 residential properties. Beyond the airport to Laura, representing approximately 500 residential properties, there is no transport available for solid waste collection.
- Key Risks to Public Health and Environmental Health were identified in the draft Environmental Management Plan that is used as the operational plan for the MAWC management of solid waste. However, due to insufficient funds, limited implementation could be undertaken by MAWC.
- MAWC 2008 operation budget request of US\$1.4 million was not approved and MAWC received US\$325,000. This seriously affected MAWC operations.
- MAWC recognizes that recycling will never pay for itself completely and will continue to be dependent on international aids.
- Asian Development Bank (ADB) is currently funding a feasibility study into a waste energy incinerator. If constructed, this operation will generate for MAWC annual revenues of around US\$6 million dollars.

Compliance with the legal and policy framework

- MAWC failed to comply with occupational health and safety standards and requirements.
- EPA monitoring of MAWC activities disclosed that MAWC failed to be in compliance with 7 of these requirements.

General Recommendation

The responsible agencies should take prompt action to address effectively the specific audit finding and recommendations stated in this report in order to reduce the impact of solid waste management in the RMI.

Conclusion

While there have been considerable improvements in the management of solid waste on Majuro Atoll since the establishment of MAWC, the Office of the Auditor-General (OAG) concluded that for Solid Waste to be effectively managed, more needs to be done. There is a need to prioritize the development and design of a National Solid Waste Strategic Plan addressing the current situation of solid waste management in the RMI.

It is prudent that the Solid Waste Regulations are further revised to take into account the current and local situation, such as our atoll environment, as the current regulations have been designed for the physical environment of the U.S mainland, and not for an atoll environment.

There is also a need to address the situation of the Majuro landfill lifespan. Given the situation of the landfill lifespan and some other health issues raised during EPA monitoring process, the MAWC Board should find ways to persuade the National Government to give them sufficient funding to address all the obstacles preventing MAWC to manage the landfill in the most efficient, effective and economical way, and also to reduce the Health Risks to the people on Majuro.

2.0 INTRODUCTION

Background

Waste is a product that is no longer suited for its intended use. It may be worn out or it may be an unwanted by-product of a process. The different categories of waste are listed below:

Non-hazardous (Solid Waste) or “garbage”¹, although non-hazardous waste can cause harm or damage to people and the environment;

Hazardous waste has inherent chemical and physical characteristics (toxic, ignitable, corrosive, and carcinogenic) and can cause significant adverse effects;

Radioactive waste is highly toxic; exposure to radiation can cause illness and even death. Different kinds of waste require different treatment and final handling due to both the physical and chemical composition of the waste and associated levels of dangerousness. The composition of the waste will have an impact on the collection process and on whether the waste can be re-used for energy production, composting etc.

Solid Waste Management (SWM) is widely recognized as a major concern for Pacific Island Countries (PICs) with the potential to cause negative impacts on national development activities, including tourism and trade, food supplies, public health and the environment.

Why audit Solid Waste Management?

The audit on Solid Waste Management was undertaken by the Office of the Auditor-General as part of an initiative developed by the Pacific Association of Supreme Audit Institutions (PASAI) with the support of the Asian Development Bank (ADB) and the INTOSAI Development Initiative (IDI). Ten PASAI member countries in the Pacific, including RMI, are participating in the cooperative audit. Other participating audit offices include: Cook Islands, Federated States of Micronesia, Fiji, Guam, Palau, Papua New Guinea, Samoa, Tonga and Tuvalu.

Each of the participating audit offices is auditing the same topic of Solid Waste Management within their respective jurisdictions, with a focus on national policies and how these apply to a particular site or entity.

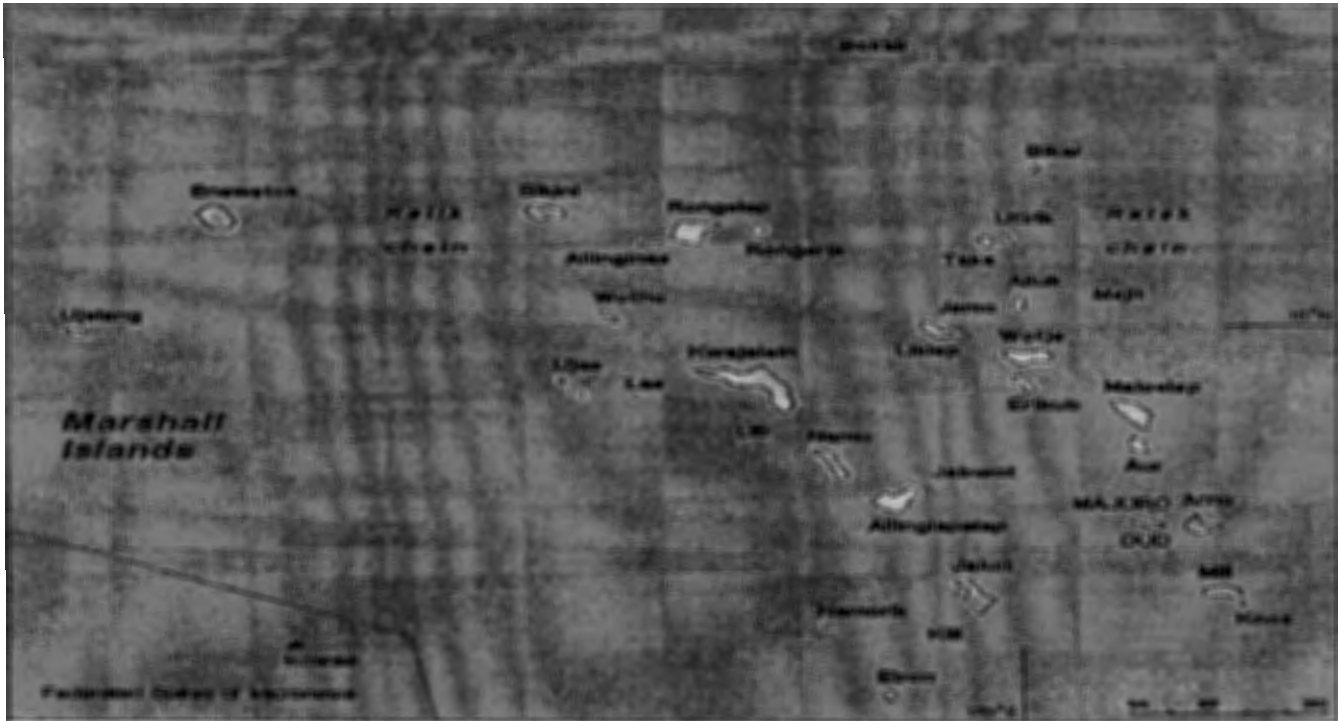
Introduction to Solid Waste Management in the Marshall Islands

The Republic of the Marshall Islands (RMI) consists of 29 atolls each made up of many islets, and 5 islands. The atolls and islands are situated in two parallel chain-like formations known as the Ratak and Ralik group. The total number of islands and islets in the whole Republic is approximately 1,225 spreading across a sea area of over 750,000 square miles (1.9 million square kilometers). The total land area is about 70 square miles (181square kilometers). The mean height of land is about 7 feet (2 meters)² above sea level.

¹ Garbage includes household and commercial waste, glass materials, aluminum cans, scrap metal and ‘green’ waste, that is, waste that can be re-used for other purposes.

² Office of Planning and Statistics, Marshall Islands Statistical Abstract, 2000.

Figure 1: Map of the Marshall Islands



Environmental Protection Authority files

Urban centers are Majuro atoll with DUD (Darrit, Uliga and Delap) as its core and Ebeye, Kwajalein. Majuro is the capital of the RMI and is approximately 3.75 square miles. The total population of the Republic was 50,840 at the 1999 census. Just less than half of the population (23,676) lived on Majuro atoll. The total population is projected to increase to around 81,000 by 2014 with around 50 per cent residing on Majuro atoll.³

Solid waste is the greatest immediate environmental problem facing the Marshall Islands. The change in lifestyle towards consumption of imported goods with a high degree of packaging has meant that waste has gone from being largely biodegradable in the past to being significantly non-biodegradable. In a mainland nation, the primary way of disposing of waste is through landfill.⁴ But in an atoll environment, this may not be feasible.

Present status of Solid Waste Management in the Marshall Islands – who is responsible?

On August 25, 1989, the Cabinet of the RMI Government approved the National Environmental Protection Authority (EPA) Solid Waste Regulations for the purpose of establishing minimum standards governing the design, construction, installation, operation, and maintenance of solid waste storage, collection and disposal systems.

³ Ibid

⁴ National Environmental Protection Authority, *Strategic Plan 2004-2007*, p. 51.

In response to an Asian Development Bank (ADB) report titled: *Increasing ownership of and effective demand for improved urban waste management*, on October 5, 2006, Cabinet approved the establishment of Majuro Atoll Waste Company, Inc. (MAWC). Its objective is to manage solid waste on Majuro Atoll. The Corporation is owned by the Government of the Marshall Islands and the Majuro Atoll Local Government (MALGOV). On November 16, 2006, Cabinet approved the appointment of a Board of Directors. At the same time, Cabinet also approved that all solid waste initiatives on Majuro Atoll present and future be coordinated by Majuro Atoll Waste Company, Inc.

MAWC's new motto emphasizing the need for "cooperative effort" in working toward a cleaner environment by:

- instilling the interest and involvement of the community at all levels
- building ownership with community for more cooperative efforts
- working closely with MICS
- working closely with Ministry of Health and Ministry of Education
- community awareness programs

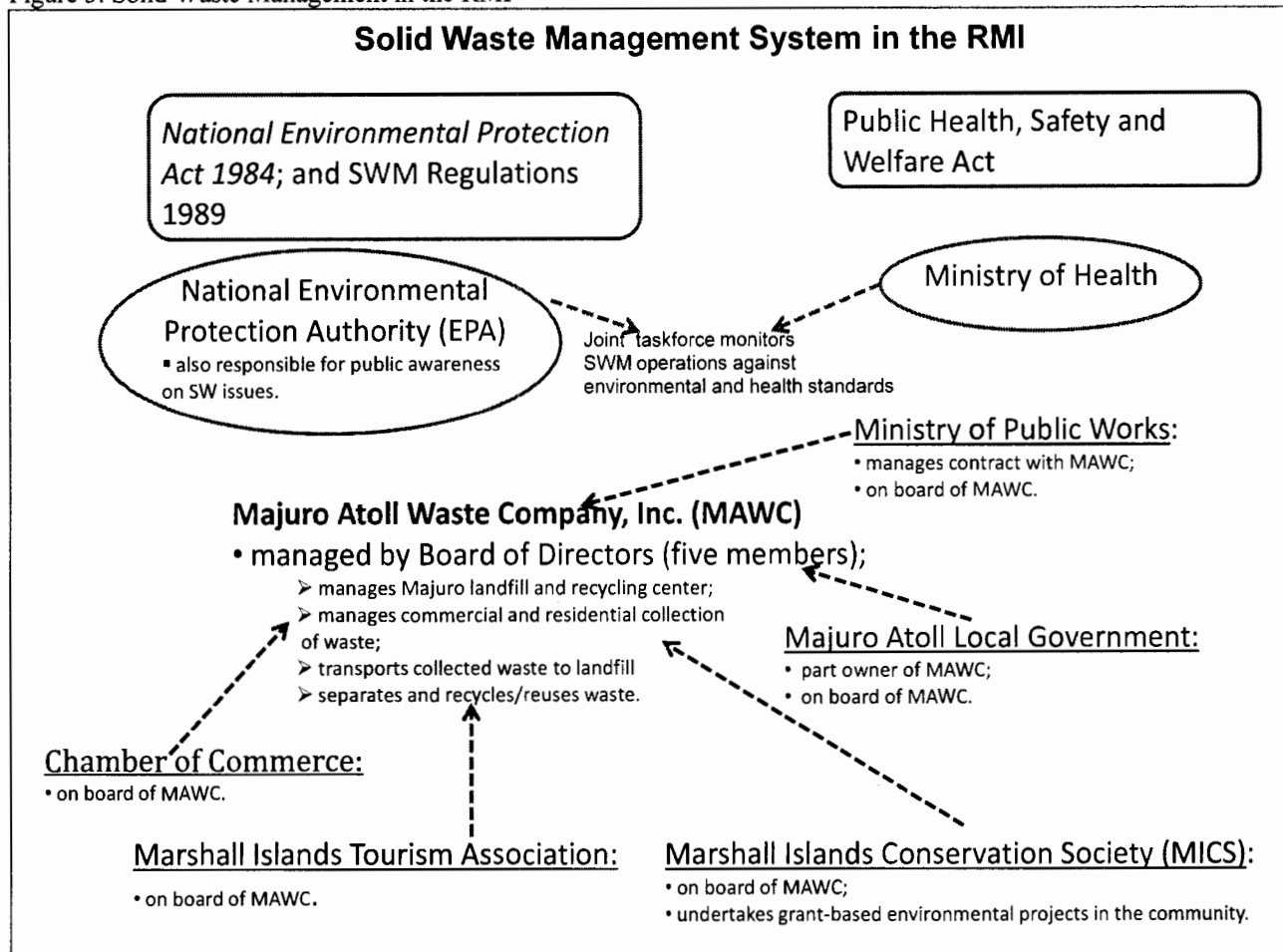
Figure 2: Majuro Landfill and Recycling Center Entrance (October 2007)



Source: MAWC Development Vision 2008

Figure 3 illustrates the main pieces of legislation relating to Solid Waste Management as well as the responsible parties in achieving the Majuro Atoll Waste Company Inc's **Development Vision 2008: Working towards a cleaner environment through cooperative efforts.**

Figure 3: Solid Waste Management in the RMI



Primary Source: National Environmental Protection Authority, RMI.

Prior audit coverage

- This is the first performance audit conducted on Solid Waste Management by the Office of the Auditor-General.
- At the time of our fieldwork, MAWC was undergoing a financial and compliance audit by a Private Accounting firm (PAF).

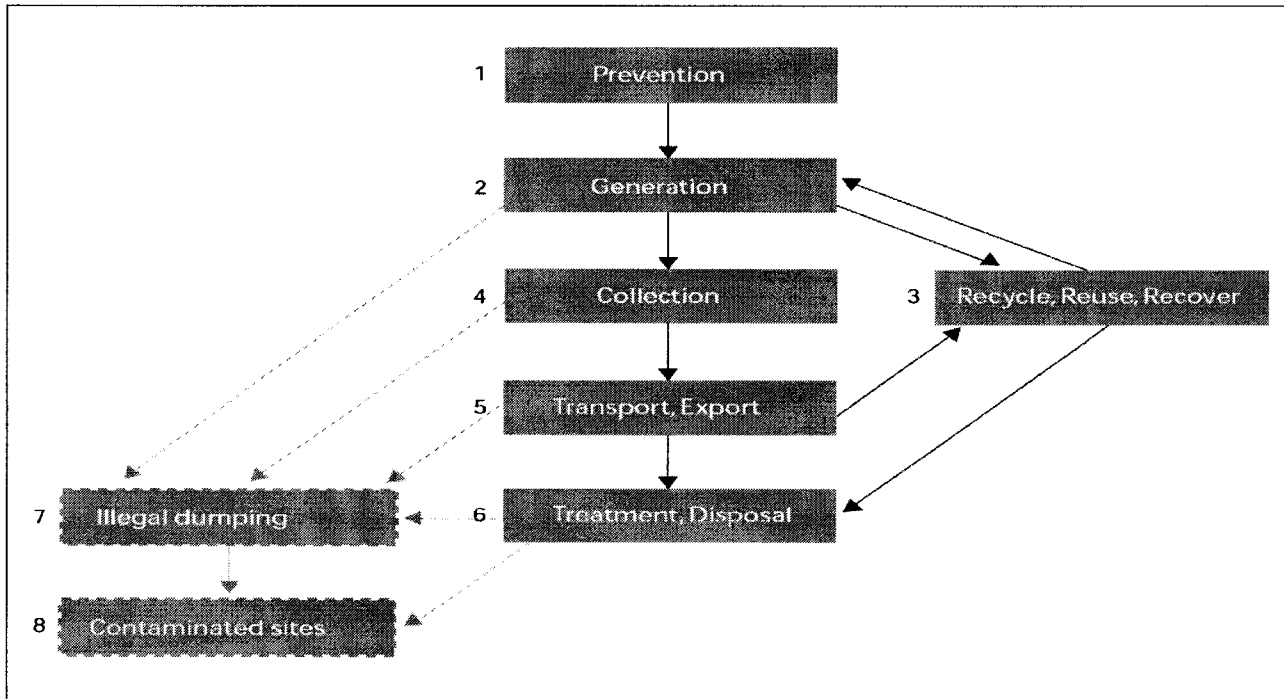
3.0 AUDIT OBJECTIVE AND SCOPE

The objective of the audit is to assess the effectiveness of the operations and activities of the Majuro Atoll Waste Company, Inc (MAWC) in the management of solid waste collection and disposal, and if MAWC complies with all applicable laws, rules and regulations that have an impact on its operations and activities in managing solid waste collection and disposal.

Audit scope

The audit will focus primarily on the operations of MAWC and the regulatory roles of key Government Agencies, specifically the National Environment Protection Authority and the Ministry of Health. The auditing period covers October 1, 2007 to December 31, 2009. This is concerning aspects of the Waste Stream represented below at Figure 4.

Figure 4: The Waste Stream



Source: INTOSAI WORKING GROUP ON ENVIRONMENTAL AUDITING (WGEA), *TOWARDS AUDITING WASTE*

The following key aspects of the waste stream are the focus of the audit:

Prevention

Information/education that is available to the community and businesses to increase awareness of how they can limit the amount of solid waste that is produced.

Generation

This aspect examines who produces the waste – households, businesses and government, and what measures are in place to minimize the generation of solid waste.

Recycle, Reuse and Recover

This aspect examines policies or procedures that are in place to assist waste generators to recycle waste products and also examines what processes there are, as part of the collection process, to maximize opportunities for recycling and reuse of components of solid waste.

Collection

Under the above waste stream audit will look into the process of waste collections from the generators. The means, fee structure and frequency of collection will also be covered.

Transport

This aspect of the waste stream refers to the transportation of waste once collected from the generators.

Treatment/Disposal

This covers the treatment and disposal of waste and the suitability of areas designated for these activities.

4.0 AUDIT METHODOLOGY

The Methodology used to accomplish the audit objectives are as follows:

- Obtain and review documents at the Majuro Atoll Waste Company Inc., the National Environmental Protection Authority and the Marshall Islands Conservation Society.
- Interview MAWC Management & Staff, EPA Officials, MICS Management, Chairman of MAWC Board of Directors.
- Do on site visits and participate in EPA & Health Promotion of School Awareness Program and also participate in community clean-ups.
- Interview responsible officials with set of questions.

5.0 FINDINGS AND RECOMMENDATIONS

5.1 The existence of legal and policy framework of solid waste management

There are two pieces of legislation relevant to Solid Waste Management (SWM) in the RMI; the National Environment Protection Act 1984 (EPA Act 1984) and the Public Health, Safety and Welfare Act. In addition to these are the Solid Waste Regulations (SWR) approved in 1989 by the RMI Government pursuant to Section 21 of the EPA Act 1984 for the purpose of establishing minimum standards governing the design, construction, installation, operation, and maintenance of solid waste storage, collection and disposal systems.

5.1.1

Criteria: There should be a legal process and framework governing the management of solid waste.

Issue:

The Solid Waste Regulations established as a legal framework have not been updated since 1989. This means the regulations do not really address the current situation of solid waste management in the RMI.

- The regulations are mostly designed for the physical environment of the US mainland, and not for an atoll environment;
- Compliance with the regulations may not be economically or physically viable for the RMI at this time; and
- The enforcement approach does not take into account the cultural parameters of the Marshall Islands.

Recommendation No.1:

We recommend that the Chairman of MAWC Board of Directors and Chairman of EPA Board of Directors submit a proposal to amend the Solid Waste Regulations for Cabinet approval to ensure the regulations take into account the issues relevant to Solid Waste Management in the RMI.

Management Comments:

See Appendix “B”

5.1.2

Criteria: There should be a National Strategic Plan.

Issue:

A National Solid Waste Committee (NSWC) comprising of six (6) members was established in 2006 to develop a National Solid Waste Strategic Plan (NSWSP). The committee meets irregularly and as a result no plan has been developed.

Currently, MAWC is using a draft Environmental Management Plan (EMP), prepared by the Ministry of Public Works, MAWC and their Consultant as a guide for its operation of the Majuro solid waste landfill and associated collection and recycling facilities and services on Majuro.

Recommendation No 2:

1. The Cabinet should follow-up with the National Solid Waste Committee on the status of the National Solid Waste Strategic Plan and takes necessary action in reappointing new committee members if the members are not really committed to this project.
2. Development of the National Solid Waste Strategic Plan should be linked to the Environmental Management Plan as it was created in accordance with the Solid Waste Regulations and the strategy used for solid waste management in Pacific Island Countries and Territories.
3. MAWC should make it a priority to get the draft EMP approved by the appropriate authority.

Management Comments:

See Appendix "B"

5.2 The process by which legal and policy framework of solid waste management is implemented

On October 5, 2006, the Cabinet approved the establishment of the Majuro Atoll Waste Company, Inc. to manage solid waste on Majuro Atoll. The Cooperation is owned by the Government of the Marshall Islands and the Majuro Atoll Local Government (MALGOV).

On November 16, 2006, the Cabinet approved the appointment of MAWC's Board of Directors. At the same time, the Cabinet also approved that the Solid Waste Task Force established in 2004 be dissolved and that all solid waste initiatives on Majuro Atoll present and future be coordinated by MAWC.

Prevention

5.2.1

Criteria: There should be Public Awareness Activities for Solid Waste Management.

The following Agencies have taken the lead in promoting and coordinating public awareness programs and activities on solid waste management.

Environmental Protection Authority (EPA)

The EPA is responsible for public awareness on solid waste issues. EPA goals are:

- (1) To increase knowledge of environmental issues in the community and increase participation of the community in caring for the environment;
- (2) To increase knowledge of environmental issues with schoolchildren; and
- (3) To increase participation of schools in caring for the environment.

To achieve these goals, EPA has developed a community awareness program for the next three years in coordination with the local governments, traditional leaders, and the Ministry of Internal Affairs. The program includes a monthly newspaper article, weekly radio broadcast, printed materials on environmental issues and maintaining the EPA website. In addition to these, there are scheduled community clean-up activities in conjunction with the Japan Overseas Corporation Volunteer (JOCV).

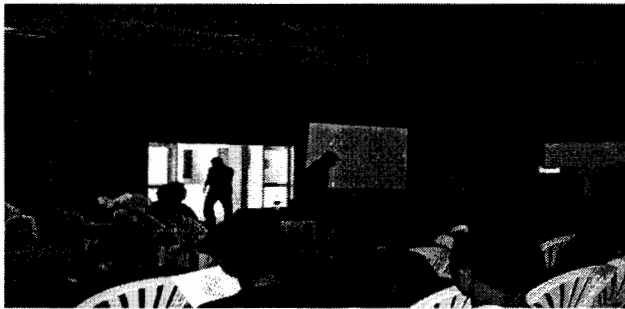
The program includes expanding school visits over the next 3 years in coordination with the Ministry of Education. EPA has also developed environmental education guidelines for the new environment curriculum and works with school teachers on the curriculum.



JOCV public cleanup activities



RMI-EPA/MOH awareness program



School awareness program (Laura High School)



School awareness program (Laura High School)

Marshall Islands Conservation Society (MICS)

The Marshall Islands Conservation Society is also involved in promoting public awareness and request grants for community local environmental activities.

Established in 2004, MICS foremost task was to assist Majuro residents in straightening out the dump site on Majuro Atoll. In 2005, MICS started its solid waste campaign and the following are the activities:

- Production of a video “Talking trash in Majuro”
- Battery drive; An island-wide collection of old batteries stored and shipped abroad for recycling
- Purchased a Wood Chipper for composting

In 2006, activities performed in 2005 were continued along with additional activities such as community consultations on basic waste management, segregation of recyclable materials (glass, plastics & aluminums). The same activities were done in 2007.

From 2008 to present, MICS has done the following:

- (1) Received ADB Technical Assistant Grant and assisted one of the community (Jenrok) in establishing a waste committee;

- (2) Distributed 300 wheelie bins to each household;
- (3) Coordinated road clean-ups, assisted JOCV in their monthly clean-up;
- (4) MICS also featured with MAWC on the Marshall Islands Journal (Island Newspaper), the Radio Station (V7AB) regarding Solid Waste Management; and
- (5) They also coordinated a Waste Strategy Workshop and also a production of a 5 minute video (Diaper Fishing).

The audit found that the community awareness program was comprehensive. Staffs involved in the audit have participated in one of the awareness program sponsored by EPA.

Recycle, Reuse and Recover

Under the Development Vision 2008, MAWC is responsible for managing the Majuro landfill and the recycling center. MAWC uses the draft Environmental Management Plan as a guideline for its operations at the landfill.

MAWC has begun a recycling program and separating waste into recyclable items. This includes the composting of green waste and processing aluminum, pet, steel, tin cans, glass and cardboard. MAWC aims to reduce the amount of waste stream material entering the landfill by 70-80%, thereby increasing the lifespan of the existing landfill by many years.



Stockpiled PET bottles at the Majuro Landfill



Stockpiled glass bottles at the Majuro Landfill

5.2.2

Criteria: MAWC should ensure that operational activities are in line with their Vision 2008 Plan and the Solid Waste Regulations.

Issue:

As a result of our analysis, we noted that not all of the recycling activities identified in MAWC's Development Vision 2008 have progressed very well and attention needs to be given to those areas requiring further action.

The following table illustrates MAWC's recycling progress against targets set out in its Development Vision 2008.

Table 1: Composition of Waste Stream

Item	Percentage of waste stream (%)	Proposal	In place
Green waste and organic matter	20-25	use for compost and mulch	✓
Scrap steel, aluminum, other metals and automobiles	10	Export	✓
Paper and cardboard packaging	15-20	shred and mix with green waste for use as compost and mulch	* - all currently going into landfill
Pet plastic, HDPE plastic, Styrofoam and packaging	10	plastic recycling can create usable fuel in 3 grades. HDPE can be reused to make plastic collection bins etc,	* Trial of this process conducted – result, too costly Proposal – currently in storage to be used to make water tanks
Glass bottles and jars	5-7	grind up and use in road base etc	✓
White goods and electronics	5-7	separate these items into component parts and sell	✓ - mainly exported
Wood waste and construction debris	5	ground and mixed with green waste for compost	Half in place – wood waste is stored and construction debris is being used to construct sea walls
Lead acid batteries	1	stockpile and export	✓
Waste oil, chemicals and hazardous material	2-5	incinerated or distilled locally	* waste oil stored with MEC and chemicals with EPA

Source: MAWC, *Development Vision 2008*

Recommendation No 3:

MAWC should identify ways (funding source) to address the recycling activities under their Development Vision 2008 that needs further action.

Management Comments:

See Appendix "B"

Collection

Currently there are 120 tons of wastes entering the landfill on a daily basis of which 20 tons are organic and 10 tons are plastic and metal.

MAWC has a user pay system for commercial enterprises and currently has 92 commercial accounts. MAWC also maintains a weekly collection schedule for each community. The public is aware of this schedule. The service area is Rita to Airport and consists of 3000 residential properties. For these properties there is no collection fee structure.

5.2.3

Criteria: Are there regulation controls in place to cover the collection process.

Issue:

MAWC is responsible for management of solid waste on Majuro Atoll, which includes the responsibility of collection, recycle, reuse and disposal of solid waste. However, according to MAWC Development Vision 2008, the corporation is not responsible for waste collection on Majuro. The Vision states that waste collection is the responsibility of the Majuro Atoll Local Government.

Interview with MALGOV councilman who is also a board member of the MAWC Board of Directors, disclosed that MALGOV present financial status prevent them from purchasing new vehicles and equipments to help with the collection of garbage on Majuro Atoll. Currently, they have one truck that is only collecting the large garbage bins. We were also informed by the Councilman that before the establishment of MAWC, MALGOV was handling the collection of waste on Majuro Atoll with the help of the Ministry of Public Work.

Recommendation No 4:

It is recommended that MAWC adhere to the Cabinet Minute which allocated the responsibility of collection, recycle, reuse and disposal of solid waste to the company and not considering the garbage collection MALGOV responsibility.

Management Comments:

See Appendix "B"

5.2.4:

Criteria: The aesthetic, non-hazardous and sanitary storage of solid waste is the responsibility of the person owning, operating or managing the property, premise, business establishment or industry where the solid waste is accumulated. (Solid Waste Regulation, Part IV Section 12)

Issue:

Currently residential properties that have no bins gather their household garbage and leave them outside their houses for collection. These garbage are an attraction to animals which may leads to public health issues.

MAWC proposes within the next two years to provide each resident in the collection area with one bin for recycling and one bin for non-recyclables. This builds on the successful MICS/MAWC pilot project. It is to be noted that just recently, a Japan Grass Root Grant was approved in the amount of US\$97,000 for 1,200 wheelie bins.

Recommendation No 5:

We recommend that both Majuro Atoll Waste Company and Marshall Islands Conservation Society develop a plan for continuing the pilot project to ensure that each resident on Majuro is provided with a bin that would improve collection of garbage and ensure safety and welfare of the people.

Management Comments:

See Appendix "B"

Transport

MAWC maintains a weekly collection schedule for each community in the service area from Rita to the Airport. The public is aware of this schedule. This service area consists of 3000 residential properties.

5.2.5

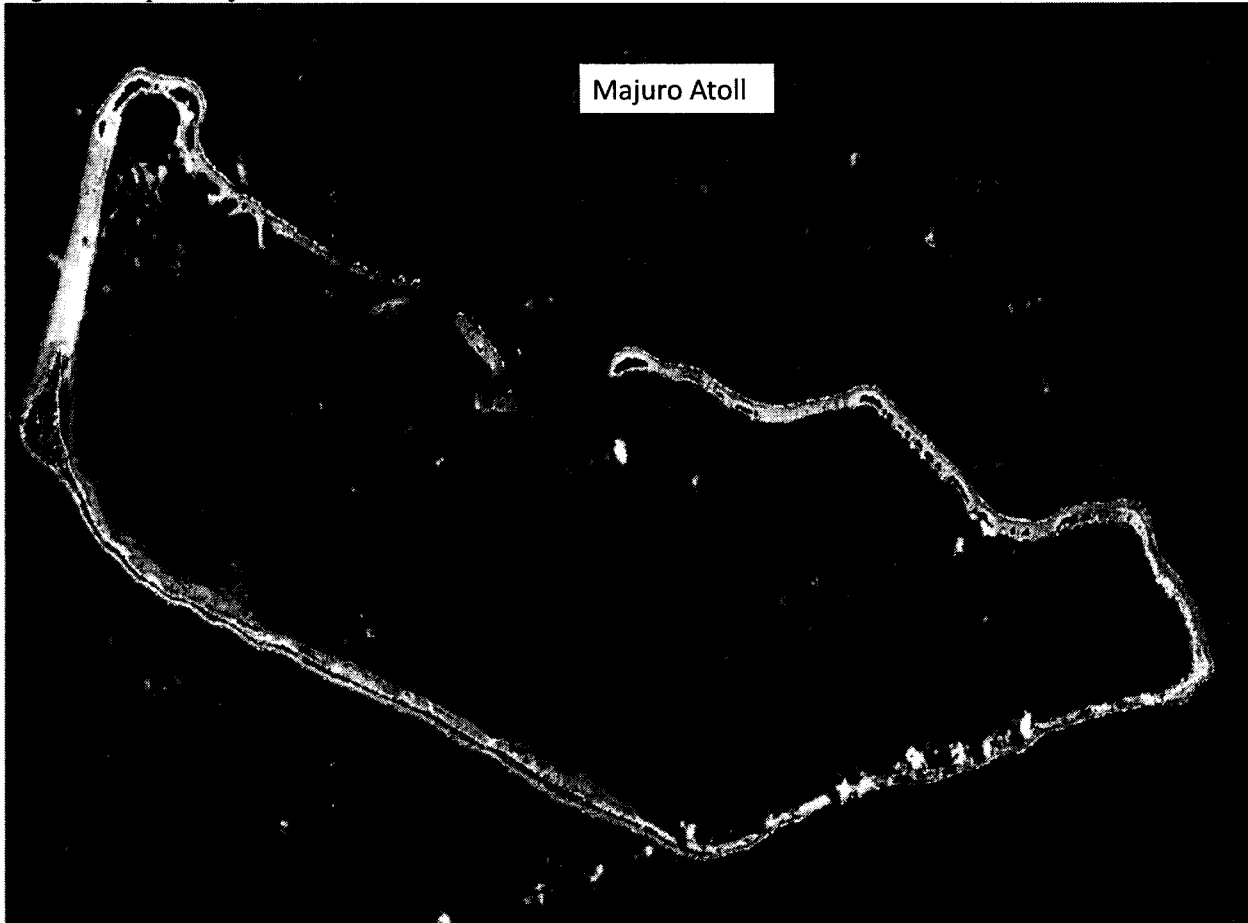
Criteria: There should be an operational plan to guide the collection process.

Issue:

Beyond the airport to Laura, there is no transport available for solid waste collection. This represents a service area of approximately 500 residential properties.

Interview with MALGOV councilman who is also a board member of the MAWC Board of Directors disclosed that MALGOV's present financial status prevent them from purchasing new vehicles and equipments to help with the collection of garbage on Majuro Atoll. Currently, they have one truck that is collecting the large garbage bins.

Figure 5: Map of Majuro Atoll



Source: National Environmental Protection Authority Files

Recommendation No 6:

We recommend that MAWC develop an action plan for improving the waste collection service. The action plan should address collection of solid waste from Rita to Airport and beyond airport to Laura including proposal for Government, donors, and other development partners for funding assistance to implement the plan. The plan should also include sources to purchase more garbage collection vehicle and other equipments for the action plan to be effective as MALGOV lacked funding resources to maintain their garbage collection vehicles and equipments.

Management Comments:

See Appendix "B"

Treatment and Disposal

5.2.6

Criteria: Part VI of the Solid Waste Regulations states that no person shall operate solid waste facility or system which is not in compliance with the standards delineated in these requirements.

Issue:

Key Risks to Public Health and Environmental Health were identified in the draft Environmental Management Plan that is used as the operational plan for the management of the landfill.

These include:

- **Fencing**

The erection and cleaning of fences surrounding the landfill are important to prevent illegal access as well as windblown trash.

- **Action taken** - The dump perimeter is fenced preventing public access without proper authorization. This limits scavenging. Fences are regularly cleaned and any trash that blows out of the dump is collected by MAWC.

- **Daily sand cover**

Exposed decomposing and freshly dumped garbage at the dump attract flies, rats, dogs, and cats which carry disease and may cause sanitary and potential health problems in the vicinity of the dump, particularly around neighboring residences.

Action taken – MAWC is required to cover freshly dumped and decomposing garbage with sand on a daily basis. EPA gave MAWC an exception to continue sand dredging because of the condition of the landfill. Further mitigation strategies are required to address this risk.

- **Drains installed**

During heavy rain, hazardous and infectious run-off and leachate form pools on the dump surface, which can also flow onto the road creating a large roadside pool contaminating general public, workers and passing cars, motorbikes, bicycle, pedestrians who have to pass through it. It can also contaminate the marine environment.

Action taken – Limited drainage has been installed.

- **Workers training and clothing**

Workers exposure to health and safety problems will be greater if they are not trained and provided with gloves, overalls, boots, hats, safety clothing, hard shoes, drinking water, periodic shade and clean-up facilities.

Action taken – All MAWC workers are provided safety clothing and receive at least one hour of health and safety training on starting the job and every three months thereafter. Shades and drinking water are available at all times.

- **Seawall construction and maintenance**

The dumpsite is located at the Ocean side of Majuro. Previously there was no seawall at Jable dump, so trash washed out into the ocean with each high tide. As the dump expanded towards the reef this presented serious environmental problems.

Action taken – A 500 foot long 3-tiered block seawall has been erected in stages holding back the landfill. This is a temporary measure as there are gaps in the face of the seawall allowing trash to be washed out into the ocean.

- **Vehicle and equipment**

It is imperative that MAWC has sufficient operational vehicles and equipments to manage the dumpsite in a sanitary way.

Action taken – There is inadequate vehicle and equipment available for the recycling center. According to MAWC there is insufficient funding to purchase the following vehicle and equipment: New Loader, New Landfill Compactor, New Garbage Collection Truck etc,

Recommendation No 7:

We recommend that the Board of Directors should resolve the matter regarding dredging so MAWC could have sufficient sand to cover the landfill, seek funding from the Government to resolve the matter for a permanent seawall to help prevent trash from being washed out, to purchase more new vehicles and equipments and lastly to make up for the shortfall in installation of drainage. MAWC should identify areas which are to be prioritized to accommodate their available funding source.

Management Comments:

See Appendix “B”

Other Matter:

Financing of Solid Waste Operations

Maintaining a solid waste system is an expensive exercise. It is important that there is adequate funding to maintain the system. Table 2 details annual appropriations for MAWC.

Table 2: Annual appropriations for MAWC

Fiscal year	Sources of funding	Amount – USD
2007	Republic of China (Taiwan) – project funding	325 000
2008	Republic of China (Taiwan) – project funding	325 000
2009	Compact Health Sector funding – Ministry of Health	325 000
	Compact Infrastructure Improvement Grant funding	120 000

Source: Appropriation Acts (FY 2007, 2008 & 2009).

Note: The source of funding for fiscal year 2009 refers to funding made available to the Government of the RMI under the Compact of Free Association with the United States of America.

MAWC asked for a 2008 operation budget of \$1.4 million and received \$325,000. MAWC estimates its basic operational costs at \$425,000. This differential seriously affects MAWC operations.

MAWC is currently discussing with the Government the possibility of modifications to the current sales tax base and the possibility of tariffs or additional taxes on items that need to be recycled. Batteries, automobiles, bottles and cans could be taxed or have a deposit system developed to enhance the MAWC cash flow and reduce the amount of these materials entering the country.

MAWC recognizes that recycling will never pay for itself completely and MAWC will need to subsidize recycling through other revenue generation functions. Table 3 details operating revenues from Recycle and Waste.

Table 3: Operating Revenues

Period	Recycle	Waste
2007	\$ -0-	\$ 30
2008	40,212	64,995
2009	77,727	103,186
Total	\$117,939	\$168,211

Source: MAWC Financial Reports

MAWC will continue to be dependent on international aid until such time that sufficient funding by government is provided or when MAWC is able to generate enough revenues to cover its costs.

The Asian Development Bank (ADB) is currently funding a feasibility study into a waste energy incinerator. If constructed, this operation will generate for MAWC annual revenue of around US \$6 million dollars. The ADB study has been completed but no further action has been taken at the time of the audit.

Recommendation No 8:

MAWC should develop an action plan to address funding sources or workout ways to deal with the available resources that they have.

Management Comments:

See Appendix "B"

5.3 Compliance with the legal and policy framework, including monitoring arrangements

Solid Waste Regulations was promulgated by the Republic of the Marshall Islands Environmental Protection Authority with the approval of the Minister of Health Services pursuant to Section 21 of the National Environmental Protection Act 1984.

The purpose of the regulations is to establish minimum standards governing the design, construction, installation, operation, and maintenance of solid waste storage, collection and disposal systems. Such standards are intended to:

- Prevent pollution of the drinking and recreational waters of the Republic of the Marshall Islands
- Prevent air and land pollution
- Protect the public health and safety
- Conserve natural resources
- Preserve and enhance the beauty and quality of the environment

This may involve EPA Staff in the field taking samples for testing, carrying out inspections, making observations or collecting photographic evidence. It may also include managing information from other sources, in a surveillance role, such as reports that come in from fishing or dive boats on reef damage or fish populations, or from scheduled surveys such as the marine surveys carried by College of the Marshall Islands (CMI).

5.3.1

Criteria: There should be inspections and reporting for Environmental and Public Health Risks.

EPA advises that they are monitoring the landfill twice a week. Table four presents the compliance results of EPA monitoring.

Table 4: Compliance with Minimum set out in the regulations

Minimum Standards	EPA Monitoring
Permanent Sign at the Facility	✓
All weather access road	✓
Adequate equipment to extinguish fire	✓
Adequate storage of all solid waste	✗
Vertical separation between the deposited solid waste and the anticipated high tide	✓
Measures to manage surface water flow	✗
Sanitary disposal of solid waste	✗
Prohibition on scavenging	✓
Prohibition of animals in the landfill	✓
Minimum working face of landfill site	✗
Adequate equipment	✗
Layers of solid waste	✗
Compacting and covering of solid waste	✗
Procedures for open burning at the landfill	✓

Tick mark: ✓ = represent compliance with
 ✗ = represent not compliance with

Issue:

Our analysis of the above EPA monitoring of MAWC activities disclosed that out of 14 requirements, MAWC failed to be in compliance with 7 of these requirements.

Recommendations No 9:

To ensure that key risks to public and environmental health at the landfill are appropriately addressed, audit recommends MAWC complies with all the monitoring requirements of EPA.

Management Comments:

See Appendix "B"

6.0 CONCLUSION

The two pieces of legislation concerned with Solid Waste Management in the RMI, are the National Environmental Protection Act 1984 and the Public Health, Safety and Welfare Act. The Solid Waste Regulations in placed are in need to be reviewed or revisited as they may no longer be relevant to, or appropriate for, the functioning of management of solid waste in the RMI. Many of these were adopted largely from the USEPA and are unsuitable in several aspects:

- The regulations are often designed for the physical environment of the U.S. mainland, and not for an atoll environment;
- Compliance with the regulations may not be economically or physically viable for the RMI at this time; and
- The enforcement approach does not take into account the cultural parameters of the Marshall Islands.

In addition, the Solid Waste Committee established by Cabinet to develop a National Solid Waste Strategic Plan failed, therefore, there is a need to prioritize the development of a National Strategic Plan addressing the current situation of solid waste in the RMI.

Audit site visits to the landfill found that the lifespan of the landfill have gone over its limit and the action taken by EPA is to monitor the landfill twice a week.

Grants received by MAWC and MICS resulted in 300 wheelie bins distributed to households in one of the community. MAWC and MICS aim to continue Pilot Projects that will assist them in distributing more trash bins for each household in each of the community on Majuro Atoll.

The weekly collection schedule maintain by MAWC for each community service only area from Rita to Airport. Beyond the airport to Laura, there is no transport available for solid waste collection due to insufficient transport vehicle or equipment. MAWC need action plan to address this to improve the waste collection service.

The monitoring by EPA for compliance of solid waste management are in line with the following standards to prevent pollution of drinking water, prevent air and land pollution, protect public health and safety and preserve and conserve natural resources. Our review of the monitoring reports disclosed some instances of noncompliance with the solid waste regulation standards.

The RMI Office of the Auditor-General concludes that the Board of MAWC need to find ways to persuade the National Government to give them funding as this is the main obstacle that prevent them from managing the landfill.

**Performance Audit Report on
Majuro Atoll Waste Company, Inc.
Solid Waste Management
October 1, 2007 through December 31, 2009**

**Responses Required To Clear Audit
From OAG Follow-up System**

In order for this audit to be cleared from OAG Follow-up system, written confirmation and /or documentation indicating action has been taken, as detailed below, should be submitted no later than August 31, 2010.

<u>Recommendation:</u>	<u>Action to be Taken</u>
1.	Provide copy of the proposal submitted by EPA and MAWC Boards to amend the Solid Waste regulations for Cabinet approval ensuring regulations take into account the issues relevant to Solid Waste Management in the RMI.
2.	<ol style="list-style-type: none">1) Cabinet to reappoint members of the National Solid waste Committee if members are not really committed to develop the National Strategic Plan.2) The National Solid Waste Strategic Plan should be linked to the Environmental Management Plan.3) As a priority, MAWC should ensure that the Environmental Management Plan (EMP) is approved by the appropriate authority.
3.	Written assurance that MAWC has identified ways to address the recycling activities under their Development Vision 2008 that needs further action.
4.	Written confirmation that MAWC adhere to the Cabinet Minute which allocated the responsibility of collection, recycle, reuse and disposal of solid waste on Majuro Atoll.

5. Written confirmation that a plan will be developed by MAWC and MICS to continue the pilot project to ensure each resident on Majuro Atoll is provided with a bin and also to ensure the safety and welfare of the people.
6. Provide copy of an action plan for improvement of waste collection service from Rita to Airport and beyond airport to Laura.
7. Written confirmation that MAWC Board of Directors have resolved the matter regarding dredging in order to have sufficient sand to cover the landfill. MAWC should identify areas which are to be prioritized to accommodate their available funding sources.
8. Written assurance that an action plan has been developed to address funding sources or ways to deal with the available resources.
9. Written assurance that MAWC will comply with all EPA monitoring requirements to ensure key risks to public and environmental health at the landfill are appropriately addressed.

MAJURO ATOLL



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Appendix "B"

August 3, 2010

Office of the Auditor General
Karen Joklur

In regards to the draft Management Performance Audit that was recently conducted by your office, I am able to offer no comment other than to extend our thanks for the efforts of your staff.

I have asked for my Board of Directors to comment on the draft but have received no feedback from them.

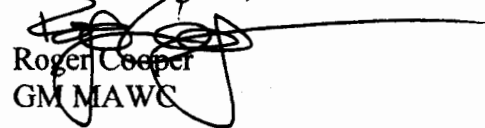
In my opinion, the audit was conducted in a professional and expedient manner. The findings and recommendations as reported are true and accurate.

We look forward to receiving the final report in presentation form.

Again, thank you and your staff for your work on this Audit.

Should you have any questions or require any additional information from us, please do not hesitate to contact either my office staff or myself at the MAWC office at any time.

With kind regards,


Roger Cooper
GM MAWC

CC: MAWC Board
FILE