



# Watershed Policy For Jamaica

November 2003





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## **Message from Minister**

## **Acknowledgement**

This Policy has benefited from the ideas and insightful comments of Jamaicans of all walks of life during the island-wide public consultation process. Successive drafts of the Policy were improved by the input of several Government and non-governmental entities. The Government acknowledges all contributions with gratitude.

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## Acronyms

CBO	Community-based Organization
CIDA	Canadian International Development Agency
ENACT	Environmental Action Programme
FAO	Food and Agriculture Organization
FD	Forestry Department
GIS	Geographic Information System
GOJ	Government of Jamaica
GRWMC	Great River Watershed Management Committee
IUCN	
KSAC	
LFMC	Local Watershed Management Committees
LWMC	
MLE	Ministry of Land and Environment
MOA	Ministry of Agriculture
MoF	Ministry of Finance
NEPA	National Environment and Planning Agency
NGO	Non-Governmental Organization
NIWMC	National Integrated Watershed Management Council
NIWMP	National Integrated Watershed Management Programme
NLA	
NRCA	Natural Resources Conservation Authority
NWC	National Water Commission
ODPEM	Office of Disaster Preparedness and Emergency Management
PC	Parish Council
PDC	Parish Development Committee
R2RW	Ridge to Reef Watershed Project
RADA	Rural Agriculture Development Authority
RGWMC	Rio Grande Watershed Management Committee
SPAW	
SWB	Sustainable Watershed Branch
TBD	
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
JPSCo	Jamaica Public Service Company
UWI	University of the West Indies
WMU	Watershed Management Units
WRA	Water Resources Authority



## Executive Summary

Concern over many decades about the increasing degradation of Jamaica's watersheds led, over time, to a series of interventions aimed at mitigating and preventing the environmental and human factors which impact negatively on watershed areas. These interventions were, for the most, part project-based. They were undertaken mainly through bilateral and multilateral assistance and had varying degrees of success. Activities under many projects as well as watershed management actions taken by Government were often *ad hoc* and unrelated as there was no unifying set of principles to provide guidance, to ensure a coherent approach to watershed management or to set priorities for action.

The Government of Jamaica seeks to articulate a coherent policy on watershed management in Jamaica and to set out the principles that should guide decision-making by agencies having functions in relation to watersheds. The Policy builds on the already agreed National Integrated Watershed Management Programmatic Framework and supports the continuing efforts to define and clarify roles, responsibilities, programmes and actions.

An important feature of the policy-making process was the level of public participation. The Draft Policy was made available to the public for comment and Officers of the then NRCA had extensive consultations all over the Island. In 1999 the Draft document entitled "*Towards a Watershed Policy for Jamaica*" was tabled in Parliament as Green Paper No. 2/99 and was subsequently amended following further public input. For various reasons, the finalization of the document was delayed. NEPA, with the assistance of the Ridge to Reef Watershed Project facilitated further refinement of the document for approval by Cabinet.

The Policy is divided into 3 sections:

- ✍ Section 1 provides a context for the Policy, giving by way of Background, a brief description of the physical location of Jamaica's watersheds, and provides a concise overview of past efforts at watershed management in Jamaica.
- ✍ Section 2 sets out the Current Situation. This includes:
  1. Presenting a synopsis of watershed condition and problems;
  2. Highlighting the causes and effects of degradation;
  3. Setting out the International Conventions and other instruments which influence Watershed Policy nationally and internationally;
  4. Giving an overview of the prevailing domestic legislative, institutional and policy frameworks within which watersheds in Jamaica are managed;
  5. The work of key significant watersheds management projects are also highlighted in this Section; and
  6. The Section ends with a summary of the issues and concerns that the Policy seeks to address. These include governance (legislative and institutional frameworks; human, technical, and financial resources requirements, as well as public awareness, and land use capabilities
- ✍ In Section 3, Government's vision, policy goals and objectives are set out; the principles that guide the policies and proposed strategies and actions are enunciated; and the mandates of various entities are identified in so far as they affect watersheds management.

The specific Policy Goals are summarised as follows:

- Goal 1:** A coherent and rationalized legislative and institutional framework for the integrated Management of watersheds on a sustainable basis is put in place.
- Goal 2:** Provision and development of adequate human resources for effective Watershed Management
- Goal 3:** Adequate financing for watershed management is secured.
- Goal 4:** Availability of improved technical capacity for effective watershed management
- Goal 5:** Increased public awareness for improved participation in watershed management
- Goal 6:** Initiatives to encourage proper Land Use supported

A Plan for the Implementation of the Strategies is included in this Policy Document as Appendix 2.

The Policy is intended to guide all watershed management activities and legislative initiatives carried out over the next five years by Government Departments and Agencies, Private Sector interests and Donor Agencies. It will be monitored and adjusted as necessary to ensure relevance and usefulness as a management tool. NEPA will exercise this monitoring function.

While maintaining its overall co-ordinating function, NEPA will seek to facilitate the management of watersheds by establishing linkages and partnerships with other Central Government agencies, the Parish Councils, NGOs and the Private Sector.

The Policy sets out the functions and responsibilities of the following principal agencies involved in watershed management:

- ✍ National Environment and Planning Agency (NEPA): (Policy; Regulatory)
- ✍ National Integrated Watershed Management Council: (Co-ordination)
- ✍ Ministry of Agriculture: (Regulatory; Research)
- ✍ Forestry Department: (Regulatory; Management)
- ✍ Rural Agriculture Development Authority (RADA): (Technical Assistance, Extension, Advisory, Research)
- ✍ Water Resources Authority: (Regulatory, Management, Advisory)
- ✍ National Land Agency: (Custodial)
- ✍ National Water Commission: (Custodial)
- ✍ National Works Agency (Technical Assistance, Advisory)
- ✍ Civil Society Groups
- ✍ Local Authorities
- ✍ Island Constabulary Force

## Introduction

Concern over many decades about the increasing degradation of Jamaica's watersheds led over time to a series of interventions aimed at mitigating and preventing the environmental and human factors which impact negatively on watershed areas. These interventions were, for the most, part project-based. They were undertaken mainly through bilateral and multilateral assistance and had varying degrees of success. Activities under many projects as well as watershed management actions taken by Government were often *ad hoc* and unrelated as there was no unifying set of principles to provide guidance, to ensure a coherent approach to watershed management or to set priorities for action.

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An important feature of the policy-making process was the level of public participation. The Draft Policy was made available to the public for comment and officers of the then NRCA had extensive consultations all over the island. In 1999 the Draft document entitled "*Towards a Watershed Policy for Jamaica*" was tabled in Parliament as Green Paper No. 2/99 and was subsequently amended following further public input. For various reasons, the finalization of the document was delayed. NEPA, with the assistance of the Ridge to Reef Watershed Project facilitated further refinement of the document for approval by Cabinet.

The Policy is divided into 3 sections. Section 1 provides a context for the policy, giving by way of Background, a brief description of the physical location of Jamaica's watersheds and providing a concise overview of past efforts at watershed management in Jamaica. Section 2 sets out the Current Situation. The watershed condition and problems and the causes and effects of degradation are highlighted, the international conventions and other instruments which influence watershed policy nationally and internationally are set out, and an overview is given of the prevailing domestic legislative, institutional and policy frameworks within which watersheds in Jamaica are managed. The work of key significant watersheds management projects are also highlighted in this Section which ends with a summary of the issues and concerns that the Policy will seek to address.

In Section 3 Government's vision, policy goals and objectives are set out. The principles that guide the policies and proposed strategies and actions are enunciated and the mandates of various entities are identified in so far as they affect watersheds management.

A Plan for the Implementation of the Strategies is included in the Policy document.

The Policy is intended to guide all watershed management activities and legislative initiatives carried out over the next five years by Government departments and agencies, private sector interests and donor agencies. It will be monitored and adjusted as necessary to ensure relevance and usefulness as a management tool. NEPA will exercise this monitoring function.

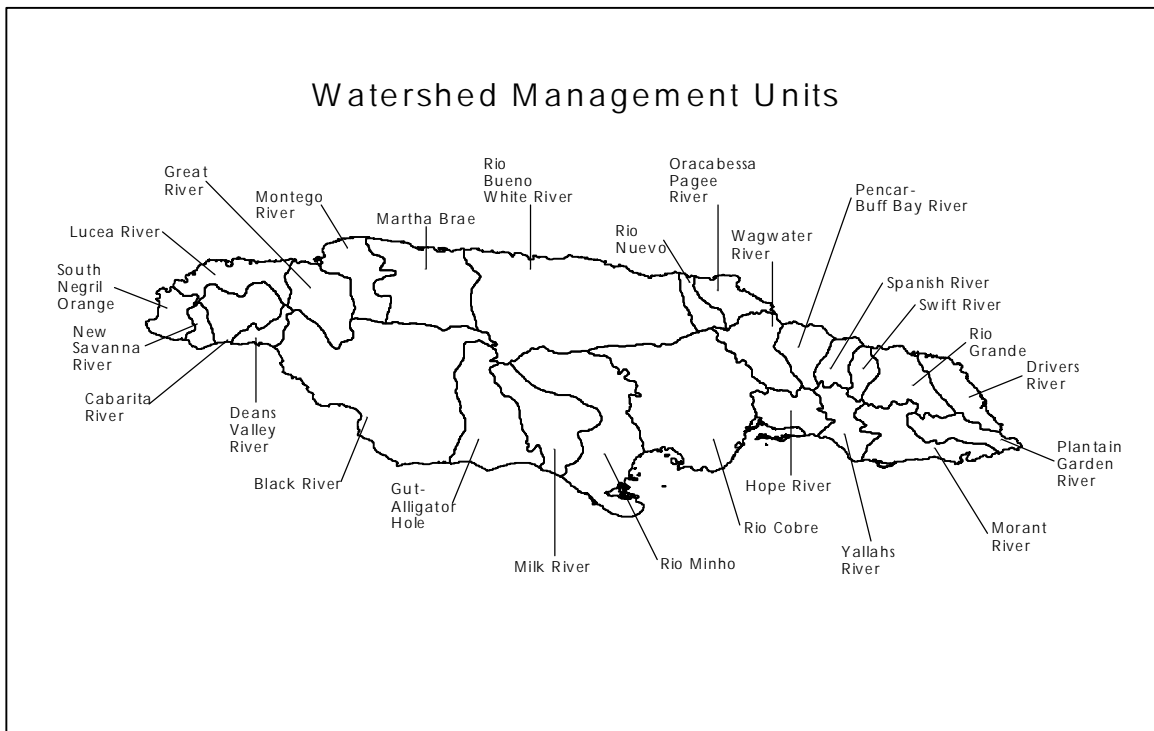
# Section 1: Background

## 1.1 Physical Setting

Jamaica is primarily a mountainous country with over sixty percent of the island having an altitude of over 230 metres above sea level. The mountains are characterized by a central ridge that transverses the length of the island. In the east, the crest of the ridge exceeds 2,100 metres above sea level for at least 16 kilometres, with the highest summit in the Blue Mountains.

The Blue Mountain Range, which is to be found at the eastern end of the ridge, is composed of igneous and metamorphic rocks and is dissected by a network of steep sided ravines. This type of land formation gives rise to surface drainage by a large network of streams and rivers. The remainder of the island is composed of limestone with a few scattered occurrences of igneous and metamorphic rocks. Surface drainage in the form of rivers is far less dominant in these limestone areas.

The island is divided into twenty-six (26) Watershed Management Units (WMUs) comprising all the land from the mountains to the sea and containing over 100 streams and rivers. These WMUs are essentially composites of watersheds which fall within ten (10) hydrological basins (regions). The land in the upper part of the WMUs is characterized by steep slopes usually in excess of 20 degrees. Limestone derived soils cover about 65% of the watersheds and the remaining areas are composed of soils derived from weathered igneous and metamorphic rocks.



Watershed Areas

## 1.2 History of Watershed Management in Jamaica

Jamaica's awareness of the need for soil conservation and watershed protection dates back to the late 1800s. In a report on the forests of Jamaica dated 1885 there were four main recommendations:

1. It was recommended that lands in the Blue Mountains should be surrendered amicably to the government or all lands private lands on the ridge or near it should be obtained.
2. The demarcation and survey of the reserve so formed and its protection against fire and theft and trespass, employing Maroons for this purpose.
3. The retention of forest reserves on all blocks of Crown lands on the limestone formations that exceed two thousand acres in extent: to restrict ground provision cultivation in them wherever possible or expedient, protecting the reserves against felling of valuable timbers and generally conserving them.
4. The rigid enforcement of all conditions in the Cinchona leases (patents), and in the case of new leases the addition of a clause providing for the protection of the hillsides from having more than three acres cleared in one spot at a time.

The lack of a Forest department was also highlighted in the report. Other reports in the early 1900s continued to highlight the need for forest cover to improve water retention in catchments as a means to ensure reliable water yield and prevent soil erosion. In subsequent years the point was stressed by Croucher and Swabey (1937), Wakefield (1941), and the first annual report of the Soil Conservation Division (1944). With reference to watershed degradation, an Economic Policy Committee Report in 1945 stated that:

*" Steps must be taken to meet this grave and widespread menace before it is too late."*

In the decades that followed, Government took steps to strengthen the legislative and institutional framework for watershed management and, in collaboration with donor agencies, undertook several significant watershed management projects and programmes. These include the Christiana and Yallahs Valley Land Authorities of 1951-1961 established under the Land Authorities Law number 25, The Watershed Protection Act of 1963, the Farm Development Scheme, the Integrated Rural Development Project between 1978-1983 and the Hillside Agriculture Development Project of 1987-1997. Milestone events and significant developments in watersheds management are highlighted in Appendix 1.

Interventions over the years have met with varying degrees of success. Their overall impact on the state of the environment seems to have been minimized for a number of reasons. The lack of a sound and steady policy to guide the design of watershed interventions resulted in the implementation of activities that, in some cases, have been inconsistent with watershed management principles. Moreover, a project-based rather than programme-based approach has meant that the gains from previous interventions have been short-lived and have seldom been sustained by investments in long-term programmes. Institutional instability, the loss of trained staff and lack of data/information have also minimized the gains from interventions.

## Section 2: The Current Situation

### 2.1 Watershed Conditions and Problems

Landslides and slope failures are very common in the non-limestone watersheds due to the presence of steep slopes and thin or erosive soils. This situation is further compounded by heavy and high intensity rains in the upper watershed areas, soil erosion, and susceptibility to earthquakes. These natural conditions of instability are aggravated by a number of human activities.

- ✍ Unsuitable farming practices such as over-cultivation of steep slopes has long been recognized as the single most important cause of the degradation of watersheds in Jamaica. Upwards of 170,000 farmers cultivating just under 245,000 hectares, and using unsuitable agricultural practices have contributed to massive soil loss. Depending on crops and practices, the average soil loss reaches approximately 30 tons per hectare per year according to some statistics (NRCA, 1997).
- ✍ Large scale removal of trees from watershed areas, illegal mining, unapproved and informal quarrying of sand and limestone, housing programmes and squatter settlements have contributed to the high rate of deforestation.
- ✍ Trees are cut for fuel wood and charcoal production, yam sticks and lumber and the problem is aggravated by forest fires that occur during extended periods of drought. Evelyn *et al* estimate that the rate of deforestation is about 0.1%.
- ✍ Forest fires are set by individuals.
- ✍ Some roads are not properly constructed and road maintenance is often inadequate
- ✍ Lack of proper or adequate drainage systems
- ✍ Planting of the wrong types of trees, e.g. pine.

Studies undertaken by the Forestry Department have shown that watershed degradation occurs mostly in parishes where bauxite mining is being done.

The above-mentioned factors have resulted in:

- ✍ Reduced tree and vegetative cover and productivity of land
- ✍ Heavy siltation of rivers, reservoirs, irrigation canals, water intakes, beaches and harbours
- ✍ Increased surface runoff (due to excavation of slopes, diminished vegetation cover, compacted soils)
- ✍ Reduced storage and availability of water
- ✍ Severe flooding, especially during the hurricane season resulting in considerable losses in life, agricultural crops and other property and damage to roads
- ✍ Increased marine and coastal contamination and degradation adversely affecting recreational tourism and economic use of beaches and the coastal zone
- ✍ Loss of habitat for important flora for fauna

✍ Reduced ability of forests to sequester carbon.

In addition, water pollution has become a serious problem as a result of the increased use of industrial and agro-chemicals and, as human settlements have become more extensive, the impacts of improper disposal of solid waste and sewage effluents have increased accordingly.



*Preparing a hillside for coffee farming in a Wag Water community*

### **Urban Watersheds**

Watersheds in close proximity to urban areas are deserving of special mention due to their particular physical and social characteristics. The land area of Jamaica is characterized by central steep, hilly and mountainous terrain, which has forced urban centers into coastal areas. This is even more pronounced on the southern side of the island where there are larger better-developed plains due to the natural tilt of the island. These high density, intensely settled, high economic activity areas require large inputs of natural goods and services such as clean air, potable water and habitable land. On the northern side of the island where there are less well-developed coastal plains the issues are even more critical because there is the added consideration where environmental vulnerability is a density function. The concentration of tourism activities on the north coast of the island also compounds the problems of urban areas in this part of the island.

The multiplicity of issues include: rapid human population growth, the presence of limited land resources, high dependence on marine resources, exposure to extremely damaging natural disasters, land pollution, soil degradation, shortage of land, mining, chemical contamination, land titles, illegal construction, informal settlements, deforestation, forest conversion, mining, available freshwater resources/ water shortages/limited groundwater, saltwater intrusion, losses from distribution networks, groundwater contamination, pollution(sewage, erosion i.e. suspended

solids, fertilizer runoff), poor, solid waste disposal, sedimentation (from land exposed during deforestation, mining). These all have to be considered against the emerging body of evidence that supports climate change (changes in temperatures, winds, storms, floods, landslides, droughts and sea level rise

## 2.2 Existing International Framework for Watershed Management

Early watershed programmes and projects in developing countries concentrated on soil conservation and erosion control work. However, since the 1980s, greater emphasis has been placed on utilizing an integrated approach, which combines soil conservation and rural development elements with strategies to improve both land and people.

Several international conventions and other instruments have had global influence on watershed management. Many of these have boarder impact on environmental policy formulation in Jamaica, especially where obligations have been assumed under conventions. They reflect objectives and principles that are relevant to watershed management.

<p><b>1980</b></p> <p>The World Conservation Union published its World Conservation Strategy  <i>Stimulated the development of national environmental polices and laws</i></p>
<p><b>1987</b></p> <p>Report on World Commission on Environment and Development (Brundtland Commission)  <i>Urged action in light of environmental crisis facing humanity</i></p>
<p><b>1990</b></p> <p>Protocol Concerning Specially Protected Area and Wildlife (SPAW)  <i>Objective: To protect rare and fragile ecosystems and habitats thereby protecting endangered and threatened species which inhabit them. (Signed by Jamaica in 1990 but not ratified)</i></p>
<p><b>1991</b></p> <p>IUCN Document "Caring for the World"  <i>Defined concept of "sustainability"</i></p>
<p><b>1992</b></p> <p>Convention on Biological Diversity Objectives:</p> <ul style="list-style-type: none"> <li>- <i>To conserve biodiversity</i></li> <li>- <i>To use biological resources in a sustainable manner</i></li> <li>- <i>To fairly and equitably share the benefits derived from the use of genetic resources</i></li> </ul> <p><i>(Ratified by Jamaica January 6, 1995)</i></p>
<p><b>1992</b></p> <p>Agenda 21  <i>Put forward a set of principles for the sustainable management of natural resources emphasizing critical link between social and economic development and the participatory approach to sustainable use of resources</i></p>



<p><b>1992</b></p> <p>Dublin Statement on Water and Development</p> <p><i>Enunciated inter alia, the principle that water development and management should be based on a participatory approach involving users, planners and policy-makers at all levels</i></p>
<p><b>1993</b></p> <p>UN Convention to Combat Desertification In Those Countries Experiencing Serious Drought</p> <ul style="list-style-type: none"> <li>- <i>Objective: To promote effective action against deforestation and land degradation</i></li> <li>- <i>Advocates involvement of local communities in the sustainable management of natural resources. (Jamaica acceded to the Convention November 12, 1997)</i></li> </ul>
<p><b>2003</b></p> <p>World Summit on Sustainable Development</p> <p>Among the commitments made by states (including Jamaica) are:</p> <ul style="list-style-type: none"> <li>- <i>To integrate measures to prevent and combat desertification and to mitigate the effects of drought</i></li> <li>- <i>To implement programmes to address deforestation, erosion, land degradation, loss of bio-diversity and disruption of water flows</i></li> <li>- <i>To promote full participation and involvement of mountain communities in decisions that affect them and integrate indigenous knowledge and values in all development in initiatives</i></li> </ul>

### 2.3 Existing Legislative Framework

The Watersheds Protection Act, 1963, is the principal law governing watersheds in Jamaica and is administered by the Natural Resources Conservation Authority/National Environmental Protection Agency (NRCA/NEPA). The primary focus of the Act is the conservation of water resources by protecting land in or adjoining the watersheds. The Act is intended to: ensure proper land use in vital watershed areas; reduce soil erosion; maintain optimum levels of groundwater and promote regular flows in waterways.

The Act has not benefited from any substantial revision since its promulgation and needs updating with respect to participatory approaches, and the more recent division of the island into 26 Watershed Management Units. The focus of the Act is on regulating activities to protect watersheds: it lacks adequate incentives to encourage watersheds development and makes no provision for education and the involvement of local communities in watersheds management.

No regulations have been promulgated under this Act.

In addition to the Watershed Protection Act, 1963, several pieces of legislation are pertinent to watershed management. The major ones are below:

- ✍ Country Fires Act (1942)
- ✍ Wildlife Protection Act (1945)
- ✍ Mining Act (1947)
- ✍ Town and Country Planning Act (1958)
- ✍ Floodwater Control Act (1958)
- ✍ Land Development and Utilization Act (1966)
- ✍ River Rafting Act (1973)
- ✍ Quarries Control Act (1984)
- ✍ Public Health Act (1985)

- ✍ Rural Agricultural Development Act (1990)
- ✍ Natural Resources Conservation Authority Act (1991)
- ✍ Water Resources Act (1995)
- ✍ Forest Act (1996); Forest Regulations, (2001)
- ✍ National Solid Waste Management Act (2001)

The Watersheds Protection Act and many related acts have a number of gaps and overlaps in terms of areas and responsibilities. For instance, both the Forest Act and Natural Resources Conservation Authority Act both have areas that are called “Protected Areas”, yet the very description provided in the legislation requires a separate form of management. This is due to the fact that though they share the same name, the function of the Protected Area in the Forest Act is directed towards the protection of the terrestrial area versus the focus on the natural resources under the NRCA Act.

The laws are enforced by officers of relevant departments and agencies and by officers of the Island Special Constabulary Force.

## 2.4 Existing Policy Framework

Several policies, plans and guidelines and other policy documents issued by Government are of relevance to watershed management as they affect many types of activities which take place in watershed areas. Significant among these are the following:

### **National Land Policy (1996)**

The Policy sets out Government policies on issues relating to:

- ✍ Land Information Systems
- ✍ Land Resources and Land Use
- ✍ Land Titling, Land Tenure and Access
- ✍ Acquisition, Pricing and Divestment of Government-Owned Lands
- ✍ Taxation and Incentives For Property Development
- ✍ Environment and Disaster Management
- ✍ Legislative and Institutional Framework for Land Administration

The Policy acknowledges the important nexus between land use policies and water resource management and identifies the following among the issues affecting watersheds:

- a) The need to preserve and reafforest watersheds, in particular, the upper watersheds, to ensure recharging of aquifers and to control water flows to reduce problems such as flooding and turbidity;
- b) Severe watershed degradation;
- c) The lack of a national plan to manage watersheds;
- d) The lack of adequate co-ordinated efforts to manage watersheds, forests, protected areas,
- e) Coastal resources and waste, including hazardous waste.

Policy statements and strategies outlined are consistent with the goals and objectives of the Watershed Policy. The National Land Policy provides, *inter alia* that:

- ✍ The use of fire to clear hillside land will not be allowed;

- ✍ All designated watershed areas will be protected by proper management measures and legislation; and
- ✍ The mandate of the Government Agencies involved in forests and watershed areas and the co-ordination of management activities will be clarified.

Government declared its intention to protect water resources in upper watersheds areas by prohibiting or restricting certain activities (e.g. clear -felling, logging) and also articulated the policy that Government lands would not be leased for seasonal cash crops and that logging would be allowed subject to certain conditions.

### ***Forest Policy (2001)***

One of the three goals of the Policy is the management of forested watersheds. The aim is to minimize the effects of flooding, soil erosion, siltation of rivers and sedimentation of marine environments and to ensure adequate supply and acceptable quality of water for domestic and other purposes. The other goals are the conservation and protection of forests and the management of forestlands. The Policy sets out the following strategies and tools for implementation:

- a) Community participation
- b) Public awareness and environmental education
- c) Forest research
- d) Co-operative management agreements
- e) Regulations of forest industries and forest land use
- f) Promotion of investment in forestry
- g) Training and human resource development and planning and monitoring.

The Policy also sets out the mandates and roles of Government entities having functions in relation to forestland management.

### ***National Forest Management and Conservation Plan (2001)***

This Plan was mandated under the Forest Act, 1996. Its stated purpose is to promote and improve the conservation and sustainable use of forest resources of the country to meet local and national needs through protecting managing and restoring the resource for the benefit of present and future generations. It contains information prescribed by the Act and reflects the values, goals and strategies specified in the Forest Policy, 2001, to restore and protect forest lands. Among the implementation strategies outlined are public education, the preparation of local forest plans, the use of co-operative agreements, a forest production programme and the use of incentives to encourage investment in forestry development.

A high degree of policy articulation and complementarity is essential with respect to forest management and watershed management and also with respect to institutional co-operation among agencies responsible for watershed management and forest management.

### ***Towards a National Strategy on Biological Diversity in Jamaica (2001)***

The development of the National Strategy on Biodiversity and the supporting Action Plan are requirements of the Convention on Biological Diversity which has been ratified by Jamaica. The Strategy outlines plans and programmes for the sustainable use of Jamaica's biodiversity. The protection and conservation of forests and watershed areas are critical to species diversity and the preservation of ecosystems and habitats.

### **Water Sector Policy (1999)**

This document identifies the problems relating to water resource management, urban water and sewage, rural water and sanitation, urban drainage and irrigation and sets out strategies and action plans to address them. Strategies include-

- ✍ The rationalization of the regulatory framework for watershed management currently shared among WRA, NRCA, Forestry Department and the Land Planning Unit
- ✍ Rationalization of the legal framework for flood water control through amendment of the Water Resources Act to include the regulation of floodwater control and the amendment of the Flood Water Control Act to assign to the WRA sole responsibility for the design, construction and maintenance of flood water control structures.
- ✍ The development of a Flood Water Control Master Plan which will identify flood-prone areas and flood boundaries and prioritize measures to reduce the impact of flooding.
- ✍ Increased stakeholder participation on water resources management.

### **Policy for Jamaica's System of Protected Areas (1997)**

The Policy was formulated under the NRCA Act. It defines a protected area as an area of water or land that is managed for the protection and maintenance of its ecological systems, biodiversity and/or specific natural, cultural or aesthetic resources. It is envisaged that the system will be an essential tool for environmental protection, conserving essential resources for sustainable use, helping to expand and diversify economic development and contributing to public recreation and education. The need for community-based management or local co-management programmes and sustainable management programmes is emphasized. The goals of the protected areas system are expressed as economic development and environmental conservation. The goals of this Policy are compatible with the philosophy of an integrated sustainable approach to watershed management.

## **2.5 Existing Institutional Framework**

The institutional framework for watershed management in Jamaica is comprised of a mix of management structures that exercise regulatory, technical, advisory and extension functions. Currently, management functions are undertaken by bodies established by statute, *ad hoc* co-ordinating committees, NGOs and external funding agencies.

### **NRCA/NEPA**

Overall responsibility for the management of watersheds in Jamaica is conferred by statute on the Natural Resources Conservation Authority (Board). This responsibility arises as part of its general mandate under the NRCA Act, 1991, when the Authority replaced the Watersheds Protection Commission. The Authority has the responsibility to manage, conserve and protect the natural resources of Jamaica.

With the establishment of NEPA, the Sustainable Watersheds Branch (SWB) came into being to replace the Watershed Protection Management Unit of NRCA. A decision was taken that the SWB should focus on monitoring and co-ordinating activities within watersheds, providing general oversight and promoting public awareness of watershed issues. It was also decided that the SWB should serve as secretariat to the NIWMC.

The work of the SWB is complemented by activities of the Compliance and Regional Services Division of NEPA whose task is to monitor compliance with relevant laws, regulations and

standards, take enforcement action and implement NEPA's programmes and services at the regional level.

### ***Forestry Department***

Under the Forest Act, the Forestry Department has responsibility, *inter alia*, for the protection and preservation of watersheds in areas declared under that Act as forest reserves, protected areas or forest management areas.

The Forestry Department has, among its many functions mandated under the Forest Act, the responsibility to protect and preserve upper watersheds within the land that it manages, namely, forest estates and reserves. This task falls within their mandate to sustainably manage and effectively conserve the forest resources in these areas.

### ***National Integrated Watershed Management Council***

Over the years, a large number of public and private sectors players have become involved in watershed management, including eleven (11) Government departments/ agencies, seven (7) multilateral donor agencies and twenty-five (25) NGOs, each with different objectives and sometimes conflicting interests. Government decided that there was a need for a central point of reference for overall planning, co-ordination, implementation and monitoring of watershed projects, programmes and activities. It therefore authorized the development of an umbrella national programme for watershed management under the guidance of a National Watershed Task Force appointed by the Right Honourable Prime Minister under the chairmanship of the then Senior Advisor to the Prime Minister on Land Policy and Physical Development.

Accepting a recommendation made in the NIWMP Framework document, Cabinet gave formal approval, in May 2000, for the establishment of the National Integrated Watershed Management Council (NIWMC), whose role is to improve cohesion, planning, fund raising, resource allocation, co-ordination, monitoring and evaluation and implementation of watershed programmes and projects and to be the key link with donor and lender agencies that are active in watershed management in Jamaica.

Specifically, the NIWMC's functions are to:

- ✍ Co-ordinate and promote an integrated approach to watershed management to allow for the sustainable use of natural resources and the minimization of undesirable impacts
- ✍ Implement the NIWMP
- ✍ Design, plan and implement watershed interventions for the benefit of the communities concerned -upstream and downstream - and all sectors
- ✍ Establish desired operational and governance structures such as task forces, committees etc.

NIWMC is multi-disciplinary and cross-sectoral. It reports to Cabinet through the Minister responsible for the environment and can appoint subcommittees to facilitate its work.

### ***Local Watershed Management Entities***

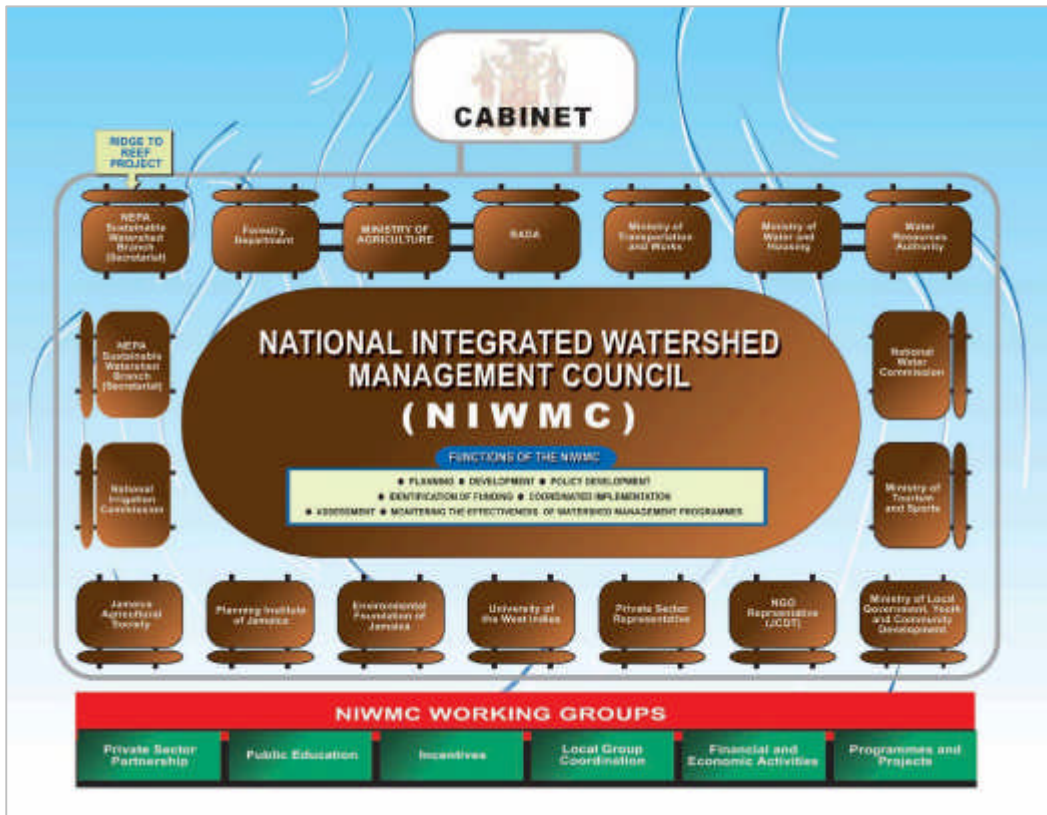
It is generally accepted that the sustainable management, protection and use of watershed resources require the participation and commitment of local communities, and that such communities should derive some benefit from their efforts. Government is committed to community participation in managing the country's natural resources. In May 2000 Cabinet

authorized the establishment of Local Watershed Management Committees and Local Forest Management Committees as mechanisms to contribute to watershed management in Jamaica.

The existence of such entities is consistent with other national initiatives that include the process of modernizing the planning framework to incorporate citizen participation in local level planning and implementation, and initiatives to improve the performance of local authorities in undertaking a greater role in governance.

Several examples now exist of local structures established to manage natural resources. These include Watershed Management Committees (operating in the Great River Watershed and the Rio Grande Watershed, for example) and Local Forest Management Committees, such as those operating in the Pencar/Buf Bay Watershed. With the support of the National Irrigation Commission, Water Users Associations have been formed to manage the distribution of water and farmer groups have been established in eastern Jamaica under the Eastern Jamaica Agricultural Support project to manage farming inputs. The experience to date indicates that Local Watershed Management Committees may be established at different levels – at the level of the (a) Watershed Unit – e.g. the GRWMC and the RGWMC (b) the sub-unit level e.g. the Buff Bay/Pencar watershed which is separated into two sub-units because of the geographic barrier between the two sides of the watershed and (c) the community level (attempted in earlier projects) where the watershed is divided into manageable units in respect of which management responsibility is assigned to specific communities.

In relation to local watershed management, Government policy is to achieve community participation by engaging existing community-based organization in the management process. Where they exist, local forest management committee will perform functions watershed management committee. Existing community groups may be designated local watershed management committees. A relationship between the LWMCs and the PDCs will be established.



## **2.6 Current Project Activities**

In order to support Watershed Management in Jamaica, several international agencies have developed project interventions to support Government of Jamaica policies to encourage best practices and minimize adverse practices. Some of the current projects are described below:

### ***Ridge to Reef Watershed Project***

The Ridge to Reef Watershed Project is a five-year bilateral initiative (2000 – 2005) between the Government of Jamaica/NEPA and the Government of the United States through its Agency for International Development. The Project, which has completed its third year, is focused on enhancing sustainable environmental practices, improving compliance and enforcement and strengthening the capacities of organizations involved in watershed management. Project activities have been taking place in the targeted watersheds of the Great River and the Rio Grande.

The strategic principles underlying project activities are (a) building strategic partners (b) community involvement (c) identifying leverage points (d) targeted appropriate practices.

It is envisioned that at the end of the Project a framework for sustained watershed management will be in place, evidenced by:

- ✍ Improved governance
- ✍ Enhanced capacity
- ✍ Effective institutional arrangements
- ✍ Appropriate policies
- ✍ Public awareness

### ***Trees for Tomorrow Project***

The Trees for Tomorrow Project Phase II is a seven-year bilateral initiative between the Government of Jamaica/Forestry Department and the Government of Canada through the Canadian International Development Agency. The Project goal is to improve the management and conservation of forests and tree crops for the sustainable benefit of the people of Jamaica.

Under the Project, the legislative, institutional, and policy frameworks for forest management in Jamaica were modernized, studies were undertaken, national and local forest management plans were prepared and forest land use planning initiated in selected areas.

The Buff Bay/Pencar Watershed Management Unit was selected as a pilot area for the development and implementation of forest practices within the overall context of improving watershed management. Buff Bay and Pencar Local Forest Management Committees have been formed, agro-forestry and other forest activities introduced and a public awareness campaign started.

### ***Eastern Jamaica Agricultural Support Programme***

This Programme which is supported by the European Union, started in 2002. Its objectives are to reduce poverty in rural areas, generate employment and reduce rural-urban drift, while having regard to the sustainable use of the resource base. Implemented mainly by RADA, the Programme focuses on the small-scale farm sector in the parishes of Portland, St. Andrew, St. Mary and St. Thomas with the aim of promoting improved and sustainable farming of non-traditional commodities.

The areas in which the Programme has concentrated include extension and commodity development, good land husbandry and road rehabilitation. One consequence of the efforts under the Programme is that farmers in the targeted parishes are rehabilitating large tracts of deforested and rinate lands and overcoming the effects of soil erosion.

A critical aspect of the Programme has been the delivery of workshops to a cross section of citizens in the parishes on various aspects of environmental management, including soil erosion and deforestation and the management of watersheds for sustainable development and the handling of agricultural chemicals.

### ***White River Integrated River Basin Management Project***

The Friends of the Sea is the lead implementing entity for the White River Project. The project is funded in part by USAID (Washington) with co-financing from USAID (Jamaica). Major stakeholders include the JPSCo, NWC, hotels, tourist attractions, farmers, fishermen, small businesses and local communities. Project objectives seek to develop an approach and method for sustainable planning of river-basin activities given the multiple stakeholder use of the resources. Other components of the project seek to address pollution mitigation, the development of a governance structure for the White River, and to enhance environmental awareness and promote 'best practices' in the river basin by implementing several demonstration projects.

### ***Environmental Foundation of Jamaica Projects***

The EFJ has provided funding for several projects. Of particular significance in the context of this Policy are:

#### **A. Dunn's River Watershed Management Project**

This Project is focused on the Watershed Management Unit that comprises the watersheds of the Cave, Dunn's and Roaring rivers. It includes the following elements: 1) water resource monitoring 2) reforestation and 3) watershed management, including the development and implementation of a Sustainable Watershed Development and Management Plan.

#### **B. National Spinal Forest Project**

Is a long-term undertaking to revive continuous forest along the central mountain spine of the Island.

### ***Other Projects and Programmes***

Many other projects and programmes have been undertaken that will impact positively on watershed management. Of note are various projects undertaken by the Ministry of Transport and Works/National Works to improve flood control and storm water drain maintenance and to rehabilitate damaged roads, and the Fruit Tree Crop Development Programme of the Ministry of Agriculture.

## **2.7 Summary of Current Issues and Concerns**

A number of Stakeholder consultations have been held under donor funded projects to identify the current issues and concerns of residents of watershed areas. These are grouped and listed below:



### ***Governance - Legislative and Institutional Frameworks***

- ✍ Fragmented legislative framework for watershed management – a patchwork of laws
- ✍ Watersheds Protection Act outdated
- ✍ Absence of regulations under the Watersheds Protection Act
- ✍ Command and control approach in legislation outdated
- ✍ Absence of appropriate legal framework for incentives for participation in watershed management
- ✍ Limited extension services
- ✍ Weak enforcement of laws that protect the watersheds and the environment, generally
- ✍ Lack of clarity on jurisdiction of Government agencies having functions in relation to watershed management.
- ✍ Role of Local Government, Parish Development Committees and local watershed management committees and their relationship to NIWMC not clear
- ✍ Inadequate stakeholder participation in governance
- ✍ Absence of a policy on rivers

### ***Human Resources***

- ✍ Inadequate numbers of trained personnel working in watersheds management
- ✍ Limited opportunities for on-going training and improvement of skills

### ***Financial***

- ✍ Over-reliance on project funds - not conducive to sustainable management of watershed
- ✍ Absence of strategy for funding watersheds management
- ✍ No effective scheme of incentives
- ✍ Lack of funding to support training programmes

### ***Technical***

- ✍ Inadequate research capabilities
- ✍ Lack of a proper data management system
- ✍ Low technical capacity at the local level

### ***Public Awareness***

- ✍ Limited knowledge of environmental laws

- ✍ Low levels of knowledge of environmental issues
- ✍ Limited understanding of value of watersheds
- ✍ Limited understanding of connection between sanitation and agriculture practices and watershed degradation
- ✍ Lack of knowledge of options for improving environmental quality

***Land Use***

- ✍ Land use capability recommendations for cultivating lands not being implemented
- ✍ Security of tenure issues remain unresolved, especially as regards “family lands”.
- ✍ Illegal and unregulated housing developments

## Section 3: Policy

### 3.1 Goal

The overall goal of the Policy is to promote the integrated management, protection, conservation and development of land and water resources in watersheds for their sustainable use and for the benefit of the nation as a whole.



### 3.2 Approaches to Watershed Management

In order to manage and protect the Island's watersheds fully and effectively, and to address the challenges and issues identified above, Government seeks to provide clear policy guidance. This Policy reflects two distinct but related approaches to watershed management - the integrated management approach and the ecosystem approach.

#### ***The Integrated Management Approach***

This management paradigm requires that the approach to the protection and development of watersheds should be:

#### Comprehensive and Holistic

The simultaneous consideration of all elements of the natural and socio-economic systems (e.g. drainage basins, surface water and ground water, upstream and down stream activities; land use and land use practices, economic activity and social development; governance and institutional capacity).

#### Cross-sectoral

Consideration must be given to the impact of all management decisions on all sectors of the country's economy such as water supply, tourism, health and agriculture.

#### Participatory

Effective participation of all stakeholders as partners - in particular, the involvement of local communities in policy-making and decision-making and in identifying and finding solutions to problems affecting watersheds.

The integrated management approach assigns to Government the following roles:

- ✍ Governance of stakeholder participation
- ✍ Policy formulation
- ✍ Drafting of legislation
- ✍ Strategic planning
- ✍ Regulation of service providers
- ✍ Capacity building

### ***The Ecosystem Approach***

The ecosystem approach views watershed management as the management of a complex ecosystem, and regards all its components – air, land, water, fish, wildlife and humans - as interrelated.

Key features of the approach are:

- a) Any of the components of the ecosystem can be understood only in the broader context of the other components. Research and policy management must, therefore, be integrated across administrative boundaries and specific core interests.
- b) An understanding of the ecosystem is best achieved by focusing on the processes and functions within the system, including the ecological, economic and social ones
- c) Human beings are part of ecosystems and human use of resources (rather than human exclusion) must be factored into management systems
- d) Social equity issues must be considered and a bottom-up approach to learning adopted. There is an emphasis on participatory capacity building.

This approach contrasts with the traditional “river basin” approach to watershed management.

### **3.3 Guiding Principles**

Watershed management requires a coordinating framework for environmental management that directs the efforts of all stakeholders and sectors to address priority issues. Various approaches may be utilised to achieve specific objectives. The approaches will differ based on available resources, characteristics of the area and time. Against this background the following principles should serve as basic guidelines:

1. Watershed management is a long-term and permanent process requiring continuous investment and consistent effort in order to obtain desirable results. A common vision and collective objectives should be formulated at the watershed level.
2. The design, planning and implementation of watershed management interventions is for the benefit of the residents of the area concerned both upstream and downstream, and for all sectors. Interventions should be flexible to allow for adaptation to changes over time or mores of a particular area.
3. Some aspects of management (such as geographic area overseen by a local watershed management committee) and interventions will require considerations of scale dependency.
4. The people in the upper watershed areas and their environment need special attention and support, especially the less privileged ones.

5. Consensus rather than confrontation should be preferred, and complimentary rather than contradictory approaches are to be taken in resolving conflicts of interest that may arise in resource uses. This is even more critical in watersheds that cross boundaries (land ownership and jurisdictional)
6. Effective watershed management is a multi-stakeholder approach that includes close coordination among government agencies, public and private entities, civil society and communities.
7. The best scientific information (social and technical) should be integrated with local knowledge to form an interdisciplinary body of knowledge.
8. A combination of regulatory and voluntary (including stewardship and incentives) approaches should be used to achieve management objectives. In general the use of partnerships based on mutual understanding should be promoted.
9. Monitoring of environmental conditions as well as social outcomes should be undertaken and management strategies adapted based on the results obtained.

### **3.4 Specific Policy Goals**

The following goals have been developed to direct the current policy:

1. A coherent and rationalized legislative and institutional framework for the integrated management of watersheds on a sustainable basis is put in place
2. Provision and development of adequate human resources for effective watershed management
3. Adequate financing secured for watershed management activities
4. Availability of technical information for effective watershed management
5. Increased public awareness for improved participation in watershed management
6. Initiatives to encourage proper land use supported.



*Community mobilization and strategic action – planning workshop at the Knockalva Agricultural School*

### 3.5 Strategic Objectives for Attainment of Policy Goals

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#### GOAL 1

#### A coherent and rationalized legislative and institutional framework is put in place

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Objective # 1: Revise the Legislative and Institutional Framework

Government will provide a coherent legal framework which, *inter alia*:

- ✍ Reflects modern concepts of watershed management including the integrated approach and an eco-system approach;
- ✍ Mandates the development and periodic updating of a National Watersheds Management Plan;
- ✍ Clarifies the respective roles of central government and local Government agencies in watershed management;
- ✍ Provides for a scheme of incentives for private sector participation in watershed management and development; and
- ✍ Prescribes realistic penalties for infringements.

The Watersheds Protection Act is outdated in its approach to watersheds and so are the existing orders establishing watershed areas. In the law reform exercise, account will be taken of the need to co-ordinate primary watersheds legislation with other relevant sector legislation such as the Forest Act, the Mining Act, the Quarries Act and the Country Fires Act. In addition, codes of practice for associated land uses will be developed for related sectors, such as agriculture and construction. Legislative provisions relating to point source pollution (e.g. fishing with chemicals, livestock facilities, solid waste collection) and non-point source pollution will also be reviewed in the context of watershed protection.

While the intention is that, through clear legislative provisions, overlap of functions and jurisdictions will be minimized, multi-agency involvement in watershed management might necessitate the use of clarifying instruments such as memoranda of understanding and co-operative agreements to reduce duplication or conflicts.

Objective # 2: Sensitize law enforcement officials, including the judiciary, of the importance of enforcing environmental laws generally and particularly those affecting watersheds.

Currently, enforcement of environmental laws is weak. While Government's policy is to encourage and facilitate compliance, enforcement is critical if environmental values are to be upheld and efforts to rehabilitate and develop watersheds are not to be undermined.

Objective # 3: Continue to promote interagency co-operation and co-ordination through the work of the NIWMC and its Working Groups

The successful operation of the NIWMC, an interagency, cross-disciplinary, multi-stakeholder body, is critical to the achievement of the coherent and co-ordinated management of watersheds. Government is therefore committed to ensuring that the NIWMC's effective operation. To this

end, the six Working Groups established by the Council to assist it in carrying out its mandate will be fully activated.

**Objective # 4: Promote Governance System for watershed management**

The activities of NGOs and CBOs are critical to the watershed governance system. These will be supported and encouraged through the provision of technical and financial assistance where possible. Local Watershed Management Committees comprising local and national NGOs, local community organizations, public and private sector interests and local authorities will be established. Where LFMCs or other appropriate organizations exist, they may be conferred with the authority to act as LWMCs.

These organizations will play a major role in facilitating the involvement of communities in the management of watersheds, in mobilizing local support for watershed protection and management and in the dissemination of information. They will also be expected to collaborate and supervise watershed management activities, where possible, and to forge strategic linkages with schools, churches and other organizations.

**Objective # 5: Establish linkages with the Local Government System**

Linkages will be established with local government to ensure that there are adequate levels of support for and co-ordination of watershed protection and management activities taking place within each parish.

The LWMC will, where appropriate, be integrated into the relevant PDC(s) as task forces or as subcommittees. They will link with community level structures such as Community Development Committees, Area Development Committees as well as the Local group co-ordinating group within the NIWMC, so as to ensure two-way flow of information from the project (field) level to the policy review and co-ordination level.

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**GOAL 2**  
**Provision and development of adequate human resources for effective watershed management**

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**Objective # 1: Improve the capability of the SWB and other relevant departments and agencies by ensuring proper staff complement**

Existing staffing arrangements are inadequate if the SWB is to perform its statutory functions and at the same time carrying out its task as the secretariat of the NIWMC. The existing staff complement of the Forestry Department, the Water Resources Authority and the National Irrigation Commission will also have to be reviewed and augmented, as necessary.

**Objective # 2: Provide or facilitate the provision of appropriate training to upgrade the skills of persons involved in watershed management at all levels.**

Skills need to be developed in soil conservation, hydrology, agricultural engineering, forest management, land husbandry, Geographic Information Systems, mechanisms for fostering participatory management and institutional development.

A national programme for training in watershed management skills should be established. Courses which develop watershed management skills should be offered at vocational schools and at the College of Agricultural Science and Education and other tertiary level institutions.

Professional certification programmes, should also be established to encourage professional development at an institution such as the Management Institute for National Development. Government views training as a continuous undertaking and will facilitate and encourage the development and upgrade of skills.

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### **GOAL 3**

#### **Adequate financing for watershed management is secured**

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The Government recognizes that substantial investment is needed to protect the country's vast watershed areas. This investment, though substantial, is justifiable when compared with the potential losses and the substantially higher level of investment, which would be required to address the consequences associated with the non-adoption of protective measures. The 1996 and 1998 floods which occurred in the parish of Portland illustrate this point. The rehabilitation cost associated with the flood damage was estimated at JA\$261.5 million and JA\$832.3 million for 1996 and 1998, respectively.

Government is committed to providing financial support within the constraint of the national budget. Additional funds will have to be raised by various means from other national and international sources.

Objective # 1: Identify rehabilitation and management needs in WMUs

Objective # 2: Explore funding options

Among them:

- ✍ Allocation of a small percentage of the cost of major construction projects taking place in watersheds (such as projects relating to highways, reservoirs, dams and housing) for slope stabilization and watershed protection purposes;
- ✍ Collection from persons who grow major export crops on slopes, of a small cess for soil conservation and land husbandry purposes.
- ✍ Collection of a small percentage of water utility bills to protect watersheds.
- ✍ Establishment of a fund for watershed management to receive contributions from business entities and other benefactors;
- ✍ Allocation of a percentage of the fees collected for permit applications for projects within watersheds
- ✍ Exploring creative financing mechanism through NGOs and CBOs such as "green passports"
- ✍ Collection of user fees
- ✍ Institution of a plastic packing levy.
- ✍ Institution of a scheme of fiscal incentives for participation in watershed management

At the present time, tax exemptions are given to landowners who use their property in a way that is consistent with watershed preservation, and income tax relief is granted against profits derived

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from certain agricultural activities, including forestry. In addition, certain types of planting material of particular value in watershed areas are zero-rated under the general consumption tax regime.

There is, however, a need to articulate and implement a comprehensive and coherent scheme of incentives to encourage private sector participation in watershed management. Such a scheme of would be beneficial to participants either by way of increased economic benefits or decreased economic costs.

Government will examine ways in which it can extend the current limited tax incentives to provide income tax relief for contributions of land, conservation easements, money or other assets which are dedicated to watershed conservation and management. It will also take account of other approaches to economic incentives for watershed conservation and management that have been proposed, including, notably, those contained in a study undertaken under the aegis of the Ridge to Reef Watershed Project. These include:

- ✍ Tax allocation of national or parish-based revenues, by way of reward to areas which set aside land for conservation purposes
- ✍ Tradeable development permits- the use of market incentives for conservation by creating a set of tradeable permits for development of a given area to be used in conjunction with credits for conservation activities
- ✍ Eco-labelling by which Government and consumers promote “green” products through labelling that allows consumers to evaluate the impact of the product on the environment.

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#### **GOAL 4**

#### **Ensure availability of technical information for watershed management**

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The completion of the GIS Database is a significant step in upgrading technical capacity. However, further enhancement of technical capacity is required for informed decision-making and to provide technical assistance to farmers and other land users carrying out conservation work.

Objective # 1: Maintain and update the GIS Database

Objective # 2: Collaboratively, determine information needs and identify shared research goals

Resources can be more effectively utilized and duplication of efforts avoided, if agencies and departments involved in watershed management consulted with each other on information needs and research goals and shared information on research output.

Objective # 3: Conduct research and special studies

Objective # 4: Document best practices and lessons learnt

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**GOAL 5**  
**Increased public awareness for improved participation in watershed management**

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Public education is of the utmost importance to any watershed conservation and development programme. In building greater awareness for genuine or enhanced public involvement, the public education exercise must be oriented towards empowering and promoting opportunities for participation at all levels. Watershed residents will be motivated to positive actions when they understand the issues and feel compelled to act. Farmers and other land users will be exposed to information on the importance of soil and water resources, their protection and conservation needs, and the environmental impact of activities taking place upstream and downstream in the community. Volunteers will be recruited and field days conducted to enforce the ideas of resource conservation and watershed management. The involvement of grassroots extension organizations will be facilitated and schools will be actively encouraged to play a leading role in this process.

Objective # 1: Continue to adapt and apply existing materials, strategies and techniques

Objective # 2: Change stakeholders' behaviours and attitudes

A participatory approach encourages sustainable community action and facilitates the inclusion of indigenous technical and cultural knowledge in identifying and solving problems within watersheds. Community action helps to promote the required attitudinal and behavioural changes among watershed users. The involvement of community leaders in group activities will be encouraged in an effort to engender dynamism and continuity.

Objective # 3: Develop new materials, strategies and techniques for public awareness and education

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**GOAL 6**  
**Initiatives to encourage proper Land Use supported**

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Proper land use is the foundation of watershed conservation work.

Objective # 1: Optimize functions of watersheds

Objective # 2: Improve security of tenure to encourage better stewardship of farming and private lands

Objective # 3: Improve capital operations and restoration of bauxite, mining and quarry areas

### **3.6 Institutional Mandates for Watershed Management**

While maintaining its overall co-ordinating function, NEPA will seek to facilitate the management of watersheds by establishing linkages and partnerships with other Central Government agencies, the Parish Councils, NGOs and the private sector.

The following sections indicate the functions and responsibilities of the main agencies involved in watershed management. Co-ordination and collaboration among agencies will be essential.

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Law enforcement and other agencies will also be involved in watershed protection work in general. The assistance of the NGOs, Parish Councils, the Island Special Constabulary Force and volunteers is critical to the overall watershed programme.

**I. National Environment and Planning Agency (NEPA): Policy; Regulatory**

NEPA has overall responsibility for conservation, protection and proper use of land, water and other resources in the nation's watersheds. NEPA is a lead agency among others in national policy formulation, national planning and inter-agency coordination and serves as the lead regulatory agency for watershed management. Based on its mandate, the responsibilities of the NEPA are to:

1. Formulate national policy and strategies for watershed management;
2. Study national issues in watershed management and formulate options and solutions about major watershed problems;
3. Review and approval of development applications, and issues of permits for development projects in watershed areas;
4. Classify and rank the nation's watersheds and produce national plans and programmes for watershed management.
5. Maintain databases and information systems for monitoring the nation's watersheds.
6. Develop criteria for land use, critical area identification and zoning for improved land management;
7. Establish mechanisms that will allow for wider participation in watershed management at a community, parish and/or regional levels.
8. Facilitate the work of the NIWMC.
9. Initiate enforcement actions for infringement of watershed legislation
10. Conduct land use adjustment and intensify land use on idle lands.
11. Promote national awareness of watershed conservation.

**II. National Integrated Watershed Management Council (NIWMC): Co-ordination; Advisory**

1. Co-ordinate and promote an integrated approach to watershed management to allow for the sustainable use of natural resources and the minimization of undesirable impacts
2. Implement the NIWMP
3. Design, plan and implement watershed interventions for the benefit of the communities concerned -upstream and downstream - and all sectors
4. Establish desired operational and governance structures such as task forces, committees etc.
5. Seek resources and budgetary support for watershed management programmes;

### **III. Ministry of Agriculture:** Regulatory; Research

The Ministry of Agriculture has overall responsibility for the Forestry Department, RADA and the Rural Physical Planning Unit. More specifically, the MOA has direct responsibility for promotion of environmentally sound agricultural practices, and the provision of other technical services.

### **IV. Rural Physical Planning Unit:** Regulatory; Advisory

1. Plan rural agricultural activities
2. Carry out land settlement in accordance with land capabilities and soil conservation.

### **V. Forestry Department (FD):** Regulatory; Management

The FD not only directly manages Government - owned forest lands but also assists private landowners with the management of their private forest lands. In addition to its normal mandate in protecting forest resources, its duties as they relate to watershed management are to:

1. Develop mutual and integrated plans for protecting, rehabilitating and developing potential forest lands in watersheds.
2. Establish mechanisms that will allow for wider participation in forestry management at a community, parish and/or regional levels.
3. Administer forestry programmes in the targeted watersheds, co-ordinating with Government agencies and NGOs in the implementation of these programmes.
4. Provide extension services to key land users and rural women in particular, so as to increase the number of trees grown on farms for production and protection functions.
5. Establish and promote public education programmes to improve understanding of contribution of forests to national development
6. Conduct applied research and experiment in watershed management and forest hydrology.
7. Enforce rules and regulations for preservation of forest reserves and forest estates
8. Promote the development of forests on private lands.

### **VI. Rural Agricultural Development Authority (RADA):** Technical Assistance, Extension, Advisory and Research

RADA is an extension and rural development agency. It promotes rural development and farming practices which are environmentally friendly. RADA implements its work in targeted watersheds in close coordination with FD. Its responsibilities are to:

1. Provide technical assistance and non-monetary incentives to encourage land users to adopt soil conservation, land husbandry, and agro-forestry practices on their farms.
2. Promote farming practices and cropping systems that will increase production and reduce soil erosion and pollution.
3. Assist in maintaining a vegetative cover on slopes by monitoring and discouraging indiscriminating land clearing activities, including burning.

4. Provide extension education to land users regarding land husbandry and agro-forestry jointly with the FD.
5. Collaborate with Forestry Department and NRCA/NEPA on public awareness initiatives.
6. Promote agro-industry/cottage industry development.
7. Design and implement rural development programmes in agriculture for the benefit of the residents of the watersheds.

**VII. Water Resources Authority:** Regulatory, Management and Advisory

The Water Resources Authority has responsibility for monitoring and regulating the use of surface and ground water resources of the country. Its responsibilities are to:

1. Monitor stream-flow, sediments, surface and ground water quality.
2. Interpret stream-flow and water quality data and use the information to inform the public regarding necessary policy and action interventions required.
3. Provide to Government agencies technical information on watershed management, relating for example, to flood plains, stream boundaries, and wetlands for planning land use.
4. Identify Water Quality Control Areas and stream buffer strips for protection purposes.
5. Conduct public education from a watershed management perspective.
6. Undertake flood control regulation.

**VIII. National Land Agency:** Custodial

Lands in Jamaica that are registered in the name of the Commissioner of Lands are owned by the Commission in trust for the people. The functions of the National Lands Agency are to:

1. Consult with NEPA in leasing of Crown lands.
2. Minimize illegal cultivation on Crown Lands.
3. Advise on land administration, title, and other legal matters.
4. Carry out land settlement in accordance with land capabilities and soil conservation principles.

**IX. National Water Commission:** Custodial

The National Water Commission is responsible for the island's potable water supply. It has jurisdiction over large tracts of lands in specific watersheds which supply water to townships and other areas. Its responsibility is to collaborate with NRCA/NEPA, FD and other agencies to ensure that watershed management and protection interventions harmonize with and facilitate plans to supply potable water. It also has responsibility for water quality monitoring within the areas where it draws water.

**X. National Works Agency:** Technical; Advisory

1. Undertake functions relating to:

- ✍ bank stabilization
- ✍ erosion control
- ✍ river training
- ✍ road slope stabilization work
- ✍ road construction
- ✍ flood prevention
- ✍ construction of and maintenance of watercourses

2. Implement gully and stream erosion control work and landslide and road slope stabilization with the support of public agencies or land-owners.

**XI. Civil Society Groups:** Advisory, Management

Non-Governmental Organizations, Community-based organizations and other civil society groups will be integral to the design and implementation of specific watershed management initiatives at the local levels. Mechanisms being developed under the Local Government Reform Programme for stakeholder participation in local governance will be the vehicle by which these groups will participate in these initiatives.

**XII. Local Authorities:** Technical; Advisory

The relevant central Government Ministry and Executive Agency and the Local Authorities (KSAC and the Parish councils) have the responsibility for the maintenance and management of roads at the parish level. In the watershed areas their responsibilities are to:

1. Plan, design, construct and maintain public roads in watersheds and provide effective drainage systems along the roads.
2. Undertake river training work along major streams.
3. Assist in rural development work.
4. Establish and maintain rural water supply systems

**XIII. Island Special Constabulary Force:** Enforcement

Enforcement of laws relating to watershed management to include but not be limited to:

1. Inspection of premises
2. Ensure compliance with set guidelines or specific conditions
3. Seizure of specimens/evidence
4. Search
5. Examination of equipment
6. Prosecution of offences

## References

- Ad Hoc Watershed Management Committee 1996. Report on the work of the Ad Hoc Committee and Fuelwood Production Committee. Kingston, Jamaica.
- Croucher, H. H. & Swabey, C. 1937. Soil erosion and soil conservation in Jamaica. In Department of Science and Agriculture, Jamaica, Bulletin No. 17 (New Series). Kingston, Jamaica.
- Development of a National Watershed Classification and Monitoring Program, Jamaica. Technical Assistance Report, Computer Assisted Development Inc. 1999
- Division of Economics and Statistics. 1961. Report on an evaluation study of the Yallahs Land Authority, 1951-1961. Kingston, Jamaica.
- Economic Policy Committee. 1945 Report of the Economic Policy Committee. The Government Printer, Kingston, Jamaica.
- Evelyn, O. B. 1997. Deforestation in Jamaica: An analysis of the Data. Forestry Department, Kingston, Jamaica.
- Gordon, Valerie. Review of Local Watershed management Committees and Governance Mechanisms. Prepared for GoJ/NEPA and USAID, December 2002
- Government of Jamaica. 1996. National Land Policy. 1999 Jamaica's National Integrated Watershed Management Programme
- McCalla, W and Persaud, W: *Development of Incentives for Private Sector Investment in Improved Watershed Management in Jamaica* (Draft) November 2002. Prepared for under the Ridge to Reef Watershed Project for NEPA (Government of Jamaica) and USAID
- Ministry of Agriculture and Mining. 1996. Forestry Land Use Policy.
- NRCA. 1997. Draft Watershed Policy. Kingston, Jamaica.
- NRCA. 1997. Policy for the National Systems of Protected Areas.
- NEPA/USAID. Second Annual Report, 2001, Ridge to Reef Watershed Project. Third Annual Work Plan, 2002, Policy and Legislative Framework For Watershed Management in Jamaica, 2001, Governance and Watershed Management, 2001
- Sheng, T. C. 1973. Watershed Management and soil conservation activities in Jamaica: An evaluation report. UNDP/FAO JAM 5, Technical Report 9. Kingston, Jamaica.
- Sheng, T. C. 1984. A national soil conservation programme for Jamaica. UNDP/FAO JAM/82/006 Working Document: WP- 1/84, Kingston Jamaica.
- Soil Conservation Division. 1944. First annual report. Department of Agriculture. Kingston, Jamaica.
- Wakefield, A. J. 1941. Memorandum of agricultural development in Jamaica. The Government Printer, Kingston, Jamaica.

### Some Significant Watershed Management Projects & Programmes

Year	Activity/Event
1951	Yallahs Valley Land Authority and Christiana Area Land Authority established under Land Authority Act. Their main function was to rehabilitate land, check soil erosion and improve farming
1963	Watershed Protection Act is enacted. Its primary focus is the conservation of water resources. The Act established the Watersheds Protection Commission which was empowered to prohibit and regulate land use and to undertake improvement schemes in watershed areas
1960-1980	FAO soil conservation and watershed management projects executed
1991	NRCA Act passed. It established the NRCA which created the Watershed Protection and Management Branch. (Focus of branch was on regulatory and Public education activities due to staffing and funding limitation)
1957-1962	Morant –Yallahs Agricultural Project funded by the European Union
	Eastern Jamaica Agriculture Support Project
1998-2004	Trees for Tomorrow Project initiated: funded by CIDA
1987-1997	Hillside Agricultural Project funded by USAID
1998	Environmental Management of Watersheds-Development of Institutional Capabilities – UNDP/GOJ
?????	The Forestry Capacity Project
?????	Hydrological Support Unit Project
1991-1996	Protected Areas Resources Conservation Project
1995	Watershed Management and Fuel Wood Production Committees established
1996	Report on the Work of the Ad Hoc Watershed Management Committee and the Fuel Wood Production Committee produced
1998	Watershed Task Force appointed



### Implementation Plan

Name	Strategic Objective	Actions	Planning Horizon	Duration	Cost and Funding Source	Responsible Agency
Establishment of a rationalized legislative and institutional framework for the sustainable management of watersheds	Revise the legislative and institutional framework	Draft regulations	Short Term	1-2 years	Capital A and B And Projects	NEPA and MLE
		Amend Act	Short Term	1-2 Years	Capital A and B And Projects	NEPA and MLE
	Sensitize law enforcement officials and judiciary	Conduct symposia	Short Term	1 Year	ENACT/R2RW	NEPA and National Working Group on Compliance and Enforcement
		Develop training material and courses	Short Term	1 Year	ENACT/R2RW	NEPA and National Working Group on Compliance and Enforcement
	Promote interagency cooperation and coordination	Maintain database of programs, projects and resources	Short Term	On-going	SWB Capital A	NEPA
		Conduct regular meetings of Council and Working Groups	Short Term	On-going	SWB Capital A	NEPA

Name	Strategic Objective	Actions	Planning Horizon	Duration	Cost and Funding Source	Responsible Agency
	Promote governance system for watershed management	Facilitate existing local organizations involved in watershed management	Short to Medium Term	On-going	Agencies involved in watershed management	NEPA, FD, NIC
		2 Continue the establishment of WMCs	Medium to Long Term	On-going	Agencies involved in watershed management	NEPA, FD, NIC, SDC, Projects
	Establish linkages with the Local Government System	Review existing relationships between local organizations and local government (PCs and PDCs)	Short Term	2 months	R2RW	NEPA, MLE
		Recommend framework for linkages	Short Term	1 month	R2RW	NIWMC, MLE
		Implement recommendations	Short Term	12 months	Agencies involved in watershed management	NIWMC and Agencies involved in watershed management
Adequate human resources for effective watershed management	Improve the capacity of government agencies by ensuring proper staff complement	Conduct HR needs assessment	Short to Medium Term	1 year	TBD	NIWMC?
		Implement recommendations	Medium to Long Term	On-going	Agencies involved in watershed management	Agencies involved in watershed management
	Provide appropriate training	Conduct assessment of current personnel	Short to Medium Term	8-12 months	TBD	NIWMC?

Name	Strategic Objective	Actions	Planning Horizon	Duration	Cost and Funding Source	Responsible Agency
		Identify training needs	Short to Medium Term	4-6 months	TBD	NIWMC?
		Identify training opportunities	On-going	On-going	Agencies involved in watershed management	Agencies involved in watershed management
		Train personnel	On-going	On-going	Agencies involved in watershed management	Agencies involved in watershed management
Adequate financing secured for watershed management activities	Identify rehabilitation and management needs in WMUs	Conduct new watershed ranking	Short Term	2-3 months	R2RW SWB Capital A	NEPA
		Identify programmes and projects	On-going	On-going	Agencies involved in watershed management	Agencies involved in watershed management
	Explore funding options	Institute a scheme of fiscal incentives	Medium Term	2-3 years	Agencies involved in watershed management	NIWMC, MLE, MoF
		Develop programmes and projects for donor funding	On-going	On-going	Agencies involved in watershed management	Agencies involved in watershed management
Ensure availability of technical information for watershed management	Maintain and update watershed GIS	Routine collection of data	On-going	On-going	SWB Capital A	NEPA

<b>Name</b>	<b>Strategic Objective</b>	<b>Actions</b>	<b>Planning Horizon</b>	<b>Duration</b>	<b>Cost and Funding Source</b>	<b>Responsible Agency</b>
	Provide information to relevant partners	Process and disseminate information	On-going	On-going	SWB Capital A	NEPA
	Conduct research and special studies	Identify knowledge gaps	Short Term	6-12 months	Donors and Projects	NEPA/NIWMC?
		Develop study and research protocols for identified gaps	On-going	On-going	Agencies involved in watershed management	Agencies involved in watershed management
	Document best practices and lessons learnt	Prepare technical bulletins, case studies etc.	On-going	On-going	Agencies involved in watershed management	Agencies involved in watershed management
		Disseminate publications to relevant organizations	On-going	On-going	Agencies involved in watershed management	Agencies involved in watershed management
Increase public awareness for improved participation in watershed management	Continue to adapt and apply existing materials, strategies and techniques	Develop kits for field based staff and local organizations	Short Term	6 months	Donor Projects, NEEC, Capital A	NEPA, NIWMC
		Conduct animation and community presentation training	On-going	On-going	Donor Projects, Capital A, Capital B	Agencies involved in watershed management
		Use Knowledge Attitudes and Practices study to inform public awareness programmes	Short, Medium Term	1-2 years	R2RW, Capital A SWB	Agencies involved in watershed management

Name	Strategic Objective	Actions	Planning Horizon	Duration	Cost and Funding Source	Responsible Agency
	Change stakeholder's behaviors and attitudes	Measure behavior and attitude change to determine impact of awareness and education programmes	Short to Long Term	On-going	Donor Projects, SWB Capital A	Agencies involved in watershed management, NIWMC
	Develop new materials, strategies and techniques for public awareness and education	Use Knowledge Attitudes and Practices study to inform public awareness programmes	On-going	On-going	R2RW	Agencies involved in watershed management
		Adopt local, regional and international techniques	On-going	On-7going	SWB, NIWMC	Agencies involved in watershed management
Initiatives to encourage proper land use supported	Optimize functions of watersheds	Develop and implement Watershed Management Plans using the principles of integrated and ecosystem approaches	Medium To Long Term	On-going	SWB Capital A	NEPA
		Prepare and use hazard maps in planning and development	Medium Term	On-going	UWI, Donor Projects	NEPA, ODPEM, UWI, PCs

Name	Strategic Objective	Actions	Planning Horizon	Duration	Cost and Funding Source	Responsible Agency
	Improve security of tenure to encourage better stewardship of farming and private lands	Develop and implement programmes such as LAMP etc.	On-going	On-going	NLA, MLE	NLA, MLE
	Improve capital operations and restoration of bauxite, mining and quarry areas	Develop codes of practice for mining and quarry sector	Short to Medium Term	6 – 12 months	NEPA, Donor Projects, MLE, Mining & Quarrying Operators Assoc	MLE, Mining & Quarrying Operators Assoc
		Remove perverse incentives	Medium to Long Term	1-2 years	NIWMC, MoF	MoF
		Develop restoration guidelines	Short to Medium Term	6 – 12 months	NEPA, MLE	NEPA, MLE
		Improve regulatory framework	Short to Medium Term	1-2 years	All relevant agencies	MLE, Quarries Advisory Ctte.

