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## Message from the Executive Director

## 1.0 About the Environmental Protection Agency

### 1.1 The Mission of the EPA

The mission of the Environmental Protection Agency (EPA) is to ensure management, conservation, protection and improvement of the environment, the prevention or control of pollution, the assessment of the impact of economic development on the environment and the sustainable use of natural resources.

### 1.2 The Environmental Protection Act

On June 5, 1996, the Environmental Protection Act (EP Act) was passed by Parliament. This legislation comprehensively addresses the areas of environmental management and sustainable use of natural resources and established the Environmental Protection Agency (EPA). The EP Act mandates the EPA to oversee effective management, conservation, protection and improvement of the environment, the prevention and control of pollution, the assessment of the impact of economic development on the environment and the sustainable use of natural resources.

Although an Environmental Unit was created in the Office of the President after the passing of the EP Act, the EPA itself did not become fully staffed and operational until 1998.

The objectives of the EPA are to protect Guyana's environment and in so doing, contribute to global environmental protection. The EPA approaches environmental protection through education, partnership, collaboration, regulation and enforcement.

### 1.3 The Functions of the EPA

The functions of the EPA are clearly stated in the EP Act, Part II 4 (1). They can be classified into three broad categories, namely, *regulatory, coordinating and the promotion of public participation in environmental protection*.

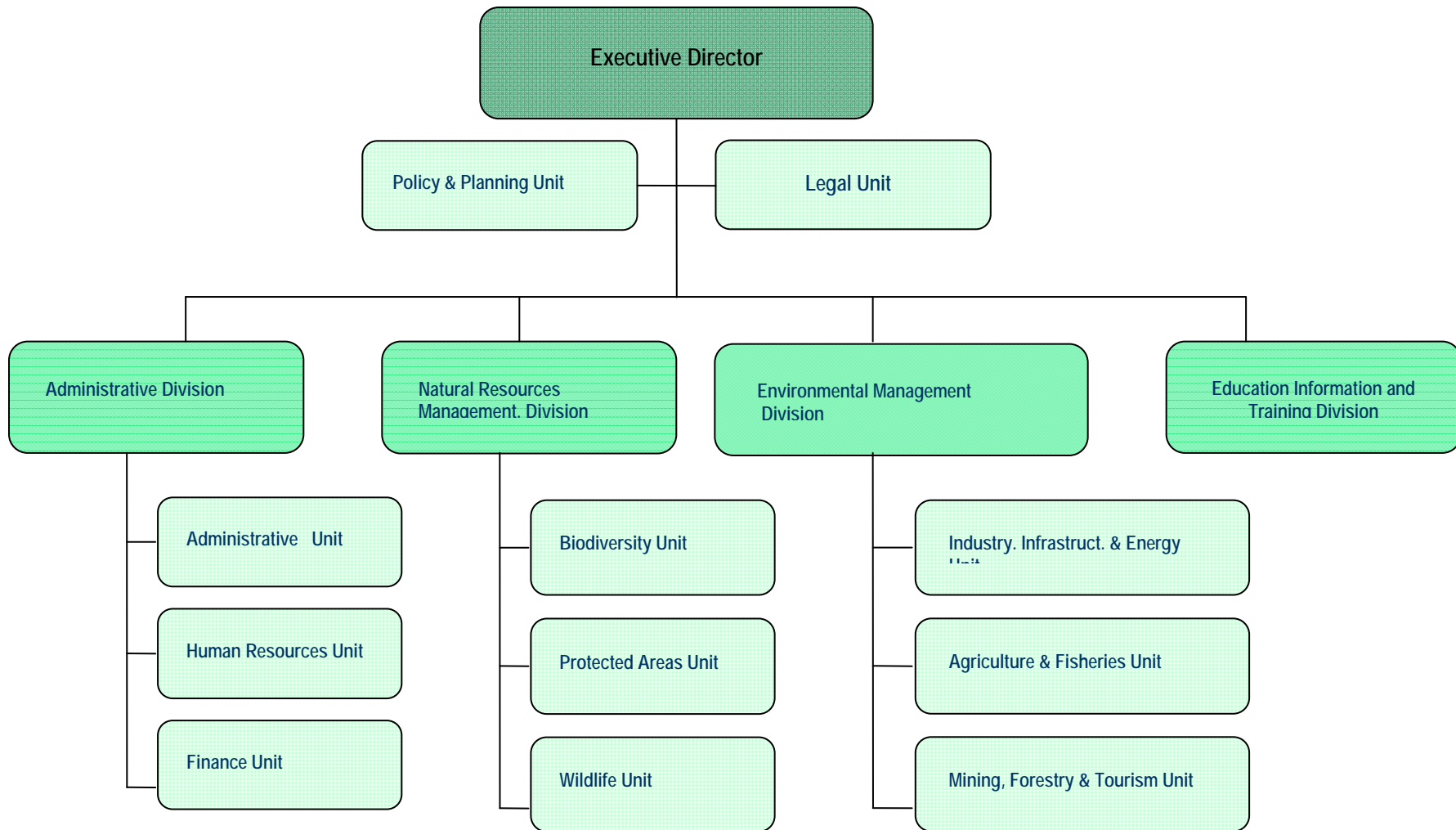
The Agency's regulatory function gives it the responsibility to monitor and enforce the EP Act and associated regulations. This function of the EPA ensures that development integrates measures for environment protection.

The EPA has a major coordinating function with regard to the sustainable use and conservation of Guyana's natural resources. The work of the EPA is complex, spanning a range of interconnected issues, making coordination with private and public sector and non-governmental organizations essential for the accomplishment of its mandate.

The EPA has a responsibility to promote the participation of the public in the process of integrating environmental concerns in the planning for sustainable development. This is achieved by providing information to the public on environmental issues and problems and EPA's procedures and processes.

## 1.4 The Organizational of Structure the EPA

Figure 1 below shows the organizational structure of EPA in 2003. Both the Chairman of the EPA Board and the Executive Director of the EPA report to the President of Guyana. The President of Guyana is the Minister with responsibility for the Environment.



## 2.0 Programme Areas

The work of the Environmental Protection Agency is implemented under four Programmes: Natural Resources Management, Environmental Management, Education, Awareness and Capacity Building and Cross-Sectoral Programmes.

### 2.1 Natural Resources Management

Having ratified the Convention on Biological Diversity, Guyana committed to developing National Strategies, Plans and Programmes for conservation and sustainable use of biodiversity and to take legislative, administrative and policy measures in achieving these tasks. The Environmental Protection Agency, by virtue of its mandate, has the national responsibility to coordinate and maintain a programme for the conservation of biodiversity and its sustainable use in Guyana. Within the Agency, the Natural Resources Management Division (NRMD) has been taking the lead in this direction through its various programmes / projects.

To achieve its objectives, the Division works in collaboration with various sectoral agencies/institutions in Guyana such as the Guyana Forestry Commission, Ministry of Agriculture, Wildlife Division, Guyana Geology and Mines Commission, University of Guyana, National Parks Commission and others. It also works with several, local and international Non-Governmental Organization (NGOs), such as Conservation International – Guyana (CIG), the Guyana Marine Turtle Conservation Society (GMTCS), World Wildlife Fund for Nature (WWF) and Fauna and Flora International (FFI), among others, and most importantly with the local communities.

One of the most important strategy documents guiding the work of the Division is the National Biodiversity Action Plan (NBAP), which outlines the major programme areas for biodiversity management in Guyana. The work focuses mainly on Conservation of Biodiversity, Sustainable use of Biodiversity, Conservation and Sustainable use of Wildlife.

### 2.2 Environmental Management

The Environmental Management Division (EMD) has the major role of ensuring that developmental projects conform to the goal of sustainable development. To ensure that this goal is met, the Division oversees the process of authorization and ensures that polluters remediate the environment through the process of pollution control and enforcement. Some of the strategies adopted by the EMD to assure that the EP Act, 1996 is enforced include:

- **Authorising New Developments:** Any new development that may have a significant effect on the environment is required to conform to the EPA's authorization process which involves application, screening, publication of the EPA's decision, EIA (or not), decision to grant environmental authorization or not.
- **Monitoring of Environmental Authorisations:** As part of the EPA's responsibility to ensure that developments mitigate against pollution and remediate when necessary, monitoring of the ambient environment as well as specific environmental authorizations is necessary.
- **Authorising Existing Developments:** EMD through the Environmental Protection (EP) Regulations (2000) has regularised existing industrial activities through a registration process.

EMD, based on the registration process will develop sectoral compliance schedules that will upgrade these sectors to an acceptable environmental standard.

- **Developing Competencies in Environmental Management:** The EPA recognizes that the role of the Agency would be much more effective if the stakeholders are aware of their responsibilities.
- **Developing Regulations:** In keeping with the EP Act, EMD has begun and will continue the pursuit of regulations development.
- **Reviewing and Developing standards, environmental and operational guidelines, codes of practice etc.**
- **Coordinating environmental management through stakeholder collaboration**
  - EPA-UG ongoing environmental management research programme
  - Inter-agency collaboration in the area of environmental authorizations and complaints responses has been strengthened
- **Managing Environmental Complaints:** EMD continues to resolve legitimate environmental complaints.
- **Preparing for environmental emergencies**

## 2.3 Information, Awareness, Education and Capacity Building

The promotion of public awareness and participation in protection, conservation and sustainable use of the environment is a key function of the EPA as outlined in the EP Act (1996). This function of the EPA is the responsibility of its Education, Information and Training (EIT) Division.

A National Environmental Education Strategy formulated in 1998 serves as a guide in the promotion of public awareness and public participation in the protection, conservation and sustainable use of the environment.

Through its EIT Programme the EPA interfaces with a wide segment of the population and provides information in a range of formats to raise environmental awareness and knowledge of the populace.

The delivery of the EIT programme entails working in close collaboration with the Environmental Management and the Natural Resources Management Programmes of the EPA as well as a number of Sectoral Agencies and Non-Governmental Organisations.

The purpose of the EIT Programme is twofold; it promotes public awareness of and participation in environmental decision-making as well as informs the public of systems and procedures established by the EPA. The extent to which the public understands such established procedures and systems will determine their efficacy.

## 2.4 Cross-Sectoral Programmes

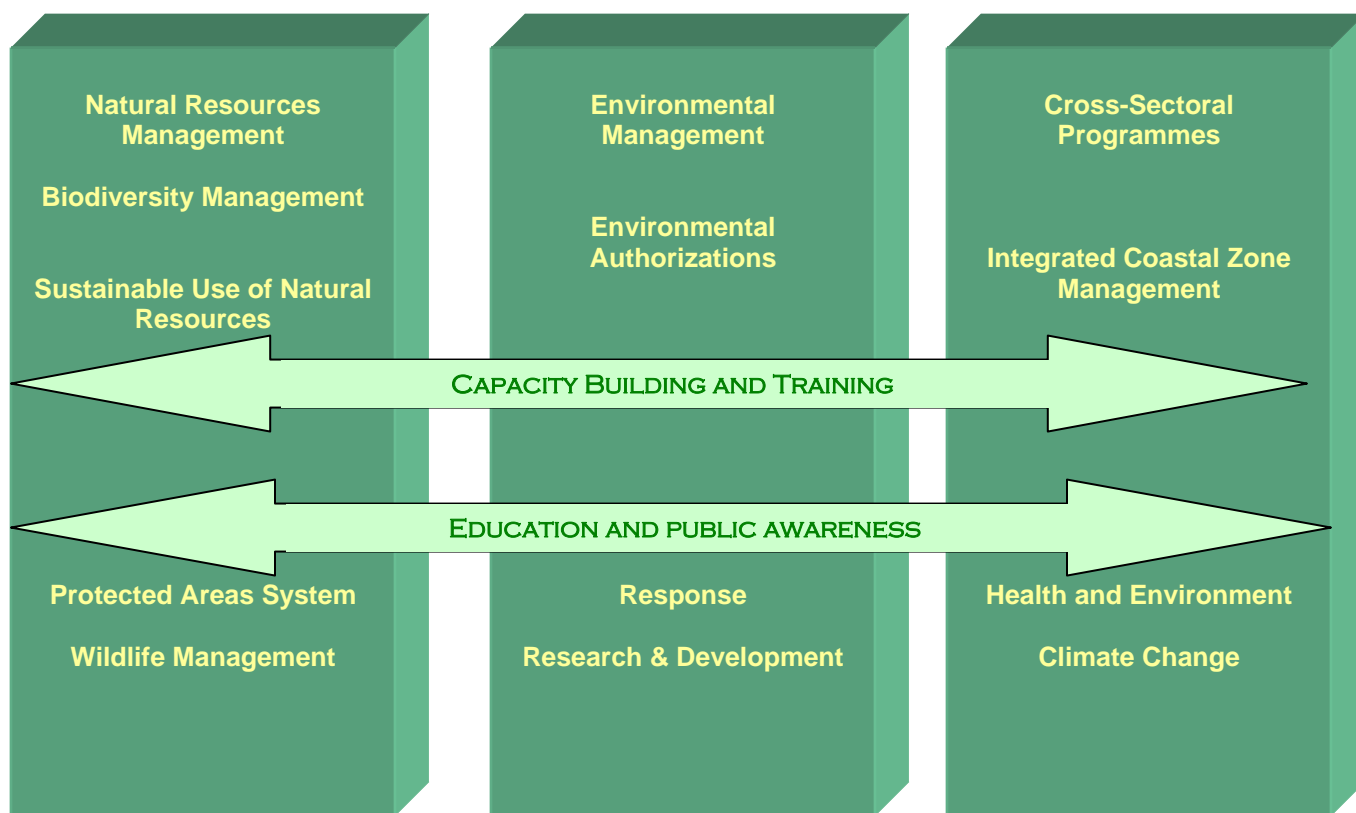
Currently, the EPA plays a major role in two cross-sectoral programmes in the areas of Integrated Coastal Zone Management and Climate Change.

The ICZM focuses on three major activities: assessment of the potential damage and loss to the Coastal Zone (vulnerability assessment) in face of sea-level rise, assessment of steps that are in place for the Coastal Zone to adjust/adapt to sea level rise and Management of infrastructure and natural resources.

The Climate Change program focuses on the establishment of measures for adaptation to consequences of climate-related environmental problems.

As part of its role regarding environmental coordination, the EPA's primary approach to environmental protection and management is to work through existing organizations dealing with the environment and create partnerships around important environmental activities.

Figure 3 below shows the EPA Programmes, their components and links.



## 3.0 Administration

The Administrative Division provided support to facilitate the effective implementation of the Agency's work programme and projects. Its specific objectives were:

- To establish efficient financial planning, management and reporting systems and to develop and manage a long-term financial framework and revenue streams for the self-sufficiency of the Agency. To develop consolidated financial reports for all sources of funding and comparative reports for projects reflecting budgets and actual expenditures for each accounting category;
- To recruit and develop a team of skilled, talented and highly motivated staff to execute the work programme of the Agency and to enhance performance through training and the provision of good work environment; and
- To procure and manage assets and support services to facilitate the efficient and effective performance of the Agency.

## 3.1 Human Resources

### Staffing

The Agency recruited a total of thirteen (13) persons to fill vacancies that existed within the Agency. Eight (8) of these persons were appointed as Environmental Officers (8), two (2) as Executive Assistants, one (1) as a Senior Environmental Officer, one (1) as a Field Technician and one (1) as an Environmental Economist. The staff complement at the end of 2005 was fifty (50) (see Appendix 1) and was distributed across the four divisions as shown in Table 1 below:

Divisions	No. of Staff
Administration	21
Environmental Management	16
Natural Resources Management	8
Environmental Information & Training	5
<b>TOTAL</b>	<b>50</b>

*Table 1: Divisional Distribution of Staff in 2005*



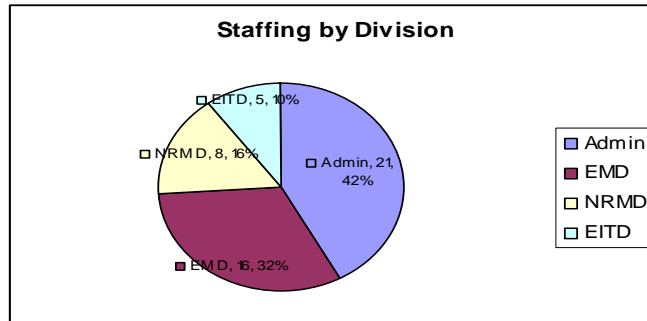


Figure 2: Staff Distribution by Division

During the year, seven (7) persons resigned from the Agency and the services of two (2) Officers were terminated.

### Training

Under the Environmental Management Programme (Phase II), funded by the Inter-American Development Bank, staff of the Agency participated in training courses as shown below:

- Database package
- Human Resources Management
- Business Administration
- Computer Software
- First Aid & CPR Techniques
- ACCPAC
- MCSA and Hardware repairs
- Communications

### Meetings and Workshops

During the year staff of the Agency attended important meetings and workshops as shown in the table below:

- Meeting on Memorandum of Co-operation (MOC) between the Office of the President and Jacksonville Zoo: Iwokrama; January 06, 2005.
- WWF workshop "Management Effectiveness of Protected Areas in the Guianas: MARIPA-G Training of Protected
- Protected Area Managers Workshop: Iwokrama Field Station, Region 9; March 01-06, 2005
- VSO workshop "Securing Livelihoods"; Ocean View International Hotel, Georgetown; March 08, 2005
- GFC workshop "Validation of 15 Priority Indicators for Amazon Forest Sustainability"; Guyana Forestry Commission, Georgetown; March 17, 2005.
- EPA/FFI workshop "Financing Protected Areas – Options for Guyana"; Sea Breeze Hotel, Georgetown; March 30-31, 2005
- Stakeholder Forum "Sustainable Management of the Rupununi: Linking Biodiversity, Environment and People"; Centre for the Study of Biological Diversity, Georgetown; May 11, 2005.

- ACTO meeting to develop areas of cooperation and prioritise activities for support on the Araucaria 21 project to be funded by the Spanish Government; Ministry of Foreign Affairs, Georgetown; May 2005.
- Ministry of Agriculture Stakeholder Forum "A proposed Common Fisheries Policy and Regime for the CARICOM"; Ministry of Agriculture, Georgetown; June 24, 2005.
- Kaieteur National Park Board Meetings: 39<sup>th</sup> (July 27, 2005); 41<sup>st</sup> (November 17, 2005); and 42<sup>nd</sup> (December 13, 2005)
- Financial Solutions (Suriname) and the World Wildlife Fund (WWF): Presentation on the CITES Workstation "Monitoring Trade Permits and the Wildlife Trade"; Cara Lodge; September 08, 2006.
- Review of the institutional framework to support Multi-Stakeholder involvement in the management of the North Rupununi Wetlands; Iwokrama, Georgetown; October 2005
- Ministry of Foreign Affairs workshop on Project Monitoring and Evaluation; Ministry of Foreign Affairs, Georgetown; October 2005
- ACTO Permanent Sub-Commission Meeting; October 2005
- Ministry of Agriculture Stakeholder Forum "Draft Fisheries Management Plan (FMP) for Marine Fisheries of Guyana; Ministry of Agriculture, Georgetown; November 17, 2005.
- Consultation on the Policy and Regulations of the "Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising out of their Use"; Ministry of Foreign Affairs Georgetown; December 2005
- Caribbean Regional National Biosafety Frameworks and the Biosafety Clearing House workshop; Barbados; December 12-16, 2005
- Advisory Committee meeting on the UNDP Capacity Building for the NR & E Project; December 2005
- Ministry of Health Committee Meeting "Avian Influenza National Preparedness Planning Committee and the Animal Health Sub-Committee", Ministry of Health.
- 8<sup>th</sup> JEC Meeting of Caribbean Regional Environmental Programme (CREP) in St Vincent on 10-12<sup>th</sup> August 2005.
- Launching of the CREP project in Guyana at Corentyne, Berbice.
- *"International Fair and Conference on Carbon Finance"*, in Cologne, Germany.
- Millennium Development Goals and the Private Sector Workshop, convened by UNDP, on the 23<sup>rd</sup> and 24<sup>th</sup> of June.
- Pollution Abatement workshops held in Guyana, during October, November and December 2005.
- Development of a public awareness and capacity building project related to non-biodegradable waste. A workshop was conducted to develop the project from which a competition was organized for reuse and recycling of PET plastic waste.
- Mercury Awareness Raising Workshop, Trinidad & Tobago, January, 2005,
- Post Graduate Course: Technology and Sustainable Development, January – April, 2005, Chennai, India
- WWF, French Guiana, March 2005,
- Country Environmental Profile, EU, March 2005, Guyana.
- Water Quality Sampling and Analysis, May 2005, PAHO, Guyana
- Trade and Environment, WTO, July, 2005, Dominican Republic,
- Legal Implementation of law of the Sea Convention and MEAs for SIDS, July 2005, Jamaica

- Wind Energy - Delta Wind Farm Tour, October 2005, Curacao
- LDC-SIDS Targeted Portfolio Approach for Capacity Development and mainstreaming for Sustainable Land Management : MSP Workshop, November, 2005, CARICOM Secretariat, Guyana
- National Disaster Risk Reduction and Management Planning, GOG/UNDP, 2005, Guyana
- First Aid: Red Cross, Georgetown.
- Monitoring and Evaluation: Ministry of Foreign Affairs October 12<sup>th</sup> – 14<sup>th</sup> 2005
- Water Quality Monitoring and Surveillance: PAHO, Guyana, 27<sup>th</sup> -28<sup>th</sup> October 2005
- PET Public Awareness workshop
- Forensic Investigation and Preparation for Litigation.

## 3.2 Procurement

Day-to-day management of the fleet of vehicles was carried out to meet the transportation needs of the Agency. All fixed assets of the Agency were managed to ensure accountability. Additionally,, the Administrative Unit was engaged in the procurement of materials, equipment and consultancy services under several Projects being managed by the Agency. Among these were:

- the Environmental Management Program - Phase II being funded by the Inter-American Development Bank;.
- The Caribbean Regional Environmental Programme (CREP) Amenity Area Demonstration Project funded by the European Union; and
- The National Biosafety Framework Project funded by UNEP;

Funds were made available through by the Government of Guyana under its Capital Program for 2005 to extend offices to include the unused laboratory in the IAST Building. The procurement process was followed to the point where the National Board for Procurement and Tender Administration awarded the tender for the extension of offices. However, the works were placed on hold as the Institute of Applied Science and Technology required the use of the unused laboratory as a part of its extension programme. The funds were refunded to the Office of the President.

Materials and equipment were procured for the year under the EMP Phase II being funded by the IDB. These included:

- Maps for the Indicators of Impacts on Forest Biodiversity Project;
- Additional office and computer equipment and
- A Sharp ARM-237 Photocopier.

Tenders were opened for the Supply of Field and Laboratory Equipment. This equipment will be purchased with funding under the EMP Phase II which is funded by the IDB.

The National Board for Procurement and Tender Administration awarded the tender for the extension of offices under the EPA's Capital Program for 2005. However, the works were placed on hold as the Institute of Applied Science and Technology indicated its intention to retrieve Offices currently being used by the EPA.

### 3.3 Policy and Planning

The Policy and Planning Unit is responsible for providing advice to management on the development of National Policy and the application of Environmental Economic Instruments, Environmental Evaluation, Capacity Building and Project Development. This year, focus continued to be placed on research and development of economic instruments which can benefit the Agency. These included:

#### Permit Fees

Draft screening criteria for determining the scale of new and existing developments for environmental permits was developed. These were tested by EMD and presented to Senior Management for appraisal.

#### Kyoto Protocol

Research was conducted on (1) the potential benefits and constraints from Guyana's ratification of the Kyoto Protocol and the registration process for a Designated National Authority for Kyoto's Clean Development Mechanism.

#### Sustainable Environmental Management

Research was conducted for a draft Policy Paper for "*Use of Economic Instrument for Sustainable Environmental Management*".

#### Policy Briefs

Policy Briefs were prepared during the year as follows:

- "*Emissions Trading – Opportunities for Guyana*"
- "*Economic Instruments - Stakeholder Feedback*"
- "*Ethanol for Gasohol in Guyana*"

#### Environmental Valuation

As part of the ECLAC Environmental Damage Assessment a Household survey on the **indirect environmental damage of the flood** was designed, conducted and analyzed. A report on the household survey was prepared for reference.

A Report into the economic impacts of the fuel spill at Charity, Pomeroon River, was completed.

#### Other

#### Replacement for Current Environmental Economist

Overseas Development Institute (ODI) Fellow, Mr Conor Fox served the Agency as Environmental Economist for two years. His tenure came to an end in October this year and he was replaced by another ODI Fellow, Mr Tim Laing.

#### Inter-Agency Collaboration

The Agency participated in the Flood Relief – Flood Coordination Group, convened by the Ministry of Health and the Pan-American Health Organisation (MOH/PAHO) for the preparation of Action Plans for: Water; Sanitation; Solid

Waste Management; and Post Flood Clean-up.

### Strategic Plan

The Agency participated in the preparation of several background documents for the consultant engaged to prepare its new Strategic Plan 2006-2010. This consultancy is being funded under the UNDP Capacity Building for Management of Natural Resources and Environment.

### Internal Committees

The Agency's Water Working Group met twice during 2005. The group will be reconvened in 2006.

## 4.0 Natural Resources Management Programme

The Natural Resources Management Programme (NRMP) focuses on the conservation of biological diversity and its sustainable use. Major components of this programme include Protected Areas, Biodiversity Research Management and Wildlife Management.

The EPA coordinates the establishment and management of protected areas. The Agency also manages and regulates biodiversity research and wildlife use.

Its work in protected areas requires that the NRMP works with local communities, NGOs and governmental agencies. Biodiversity research management makes it important for the Programme to work with individuals and groups many of which are from overseas. Wildlife management involves coordination with a number of entities including the Wildlife Management Authority.

The NRMP is headed by a Director, Dr. Indarjit Ramdass who is supported by a Biodiversity Specialist, a Senior Environmental Officer (SEO) and five (5) Environmental Officers who are distributed across the Biodiversity, Protected Areas and Wildlife Units. An Executive Assistant provides secretarial services to the Programme.

Six (6) additional staff were engaged to assist the NRMP's core team with the implementation of projects. These included a Project Coordinator and an Administrative Assistant each for the National Capacity Self-Assessment (NCSA) and National Biosafety Projects; a Demonstration Project Manager for the Caribbean Regional Environmental Programme (CREP), and a Technical Officer under the EPA/FFI Project.

Staff of the Division functioned as representatives of the EPA on Committees and Boards. These included the National Biodiversity Advisory Committee (NBAC), Museum Development Committee, Sub-Committee on Genetically Modified Foods and Organisms, Kaieteur National Park Board, Wildlife Scientific Authority, and the Wildlife Management Authority.

### 4.1 Protected Areas

#### GPAS Project

The Guyana Protected Areas System (GPAS) is a proposed project with the goal to ensure effective protection and sustainable management of representative ecosystems of Guyana. This will be done through a national system of protected areas which is self-sustained, transparent, decentralized and managed through partnerships.

The Project is designed with a two-phased approach. Phase I will focus on two sites: Shell Beach and Kanuku Mountains. The lessons learnt in Phase I will inform the development of activities and plans for Phase II of the Project. The major block of funds is expected from the Global Environmental Facility (GEF) through the World Bank (WB) as the Implementing Agency. Financing for the Project is also to be provided by the German Development Bank (KfW) and Conservation International.

Phase I of the GPAS is expected to cost US\$6.0 million and is to be implemented over a 5 year period under the following components:

- Component A - Establishment of the Institutional and Technical Capacity for GPAS Management;
- Component B - Development of the Legal and Regulatory Framework;
- Component C - Planning and Co-Management of Shell Beach Pilot Protected Area; and
- Component D - Planning and Co-management of Kanuku Mountains Pilot Protected Area.

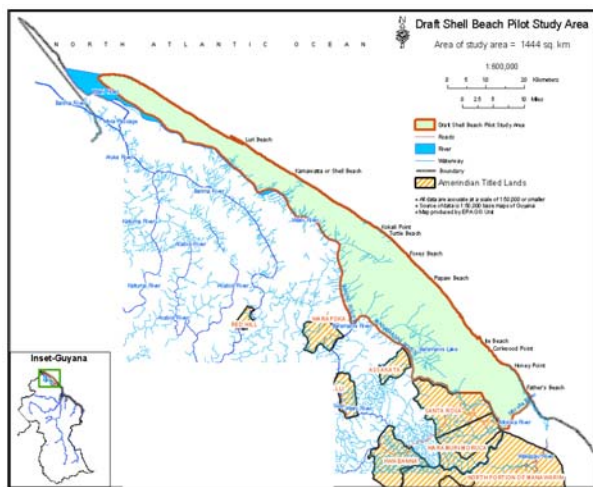


Figure 4: Proposed Shell Beach Pilot Study Area

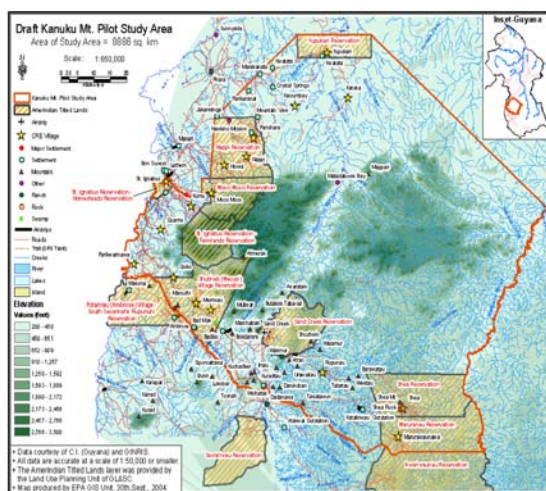


Figure 5: Proposed Kanuku Mts. Pilot Study Area

The Guyana Marine Turtle Conservation Society (GMTCS) and Conservation International – Guyana (CI-G) have been identified as the Lead Agencies to assist with the implementation of the activities for the pilot areas Shell Beach and Kanuku Mountains respectively. The Lead Agencies have been actively working on the ground, sensitising communities on the process and benefits of protected areas, and strengthening local capacities.

The Project has been appraised by the WB and negotiations were continuing between the WB and Government of Guyana (GoG) with regards to its approval. The EPA, which is the Executing Agency for the GPAS Project on behalf of the GoG, has been working with other major stakeholders to meet the conditions as set out by the WB for the

proposal to be considered. These included:

- The preparation of the Indigenous People Development Plan (IPDP) and Process Framework document to address the potential impacts of GPAS on Amerindians. These documents were approved by the WB and subsequently simplified for distribution to the local communities during 2005. Participation in the process of formulating a new Amerindian Act through national consultations to address Amerindian land and resource use issues. The new Act is to be tabled in Parliament as a condition for project effectiveness and enacted as a condition for disbursement.
- Preparation of the protocols for the establishment of a Grievance Committee to address grievances without the expense entailed with recourse to legal services and without prejudice to individual or collective rights.
- Preparation of a Memorandum of Understanding (MoU) between EPA and Ministry of Amerindian Affairs.
- Implementation of a moratorium on granting new concessions for mining, forestry and other commercial activities in the project study area sites.
- Participation in the process of developing a National Protected Areas Trust Fund to fund existing and future protected areas in Guyana.

#### KfW Small Grants Project

The Federal Republic of Germany supports Guyana's objective to establish a comprehensive and representative ecosystem conservation scheme. Under the Small Grants component of the GPAS Project, the Kreditanstalt fur Wiederaufbau (KfW) or the German Bank for Reconstruction and Development signed a Financing Agreement for EURO 2.56M (US\$3.1M) in July, 2004. The goal of this component is the conservation of ecosystems and enhancing the livelihoods of the various Amerindian communities living in or in close proximity to protected / proposed protected areas.

In August, 2005, a consultancy contract was signed between GFA Group GmbH, Germany and KfW as representative of the EPA to deliver the following:

- Provision and maintenance of basic infrastructure and equipment for protection, management and environmental communications;
- Measuring and demarcation of borderlines of conservation zones;
- Establishment of management plans or parts thereof;
- Equipment and temporary operations support for administration of conservation areas; and
- Support to ecologically sustainable land use in the surrounding support zones.

The Project will provide small grants (maximum of US \$180 000 per project) for projects to benefit Amerindian communities particularly at the two pilot study sites, Shell Beach and the Kanuku Mountains, and the established protected area, Kaieteur National Park.

In addition, approval was received from KfW to sign a separate agreement for EURO 370,000 with the Iwokrama



Centre to provide training in Participatory Natural Resource Management over a two year period. The specific objectives of the contract are to train:

- graduates/ professionals from governmental and non-governmental organisations in collaborative natural resources management;
- community members and representatives in collaborative natural resources management;
- persons in park rangering;
- persons in visitor management/ tour guiding; and
- provide consulting services.

EPA has been working on reviewing and approving the Agreement to be signed.

### FFI Project

In August 2003, the EPA on behalf of the GoG signed a MoU with Fauna & Flora International (FFI) for the implementation of the Darwin Initiative Project: Institutional strengthening and capacity building for Guyana's Protected Area System. The objective of this three year co-operative partnership was to strengthen the capacity for the development of Guyana's National Protected Area System at central government (EPA) and site (Shell Beach) level by supporting in-country capacity training for:

- protected areas planning and management to include sustainable use options; and
- development of appropriate public awareness and marketing materials to effectively transmit key messages from central and site-specific management entities.

For the year 2005, several outputs were delivered under this project. These included the Rapid Biodiversity Assessment Report, a one-month Ranger training course, a workshop on financing protected areas, a Sustainable Livelihood Study for Shell Beach, and the production of a public awareness video and two infomercials on protected areas. Most of these were completed before the Project came to an official close on August 31, 2005.

The aims and objectives of the Rapid Assessment were to compare the diversity and distribution of mammals, birds, reptiles and amphibians, and fish in the main habitat types of the area that can provide baseline data necessary for the development of research and management in the Shell Beach proposed protected area. Approximately six weeks were spent in the field and visits were made to eleven sites, during which 170 species of birds, 31 species of herpetofauna and 20 species of mammals were observed.

In February, 2005, a one-month Ranger training course was conducted by and at the Iwokrama Centre in which eight individuals from Shell Beach (and greater Region One) and two wardens from Kaieteur National Park were trained. Topics included basic biological concepts, safety in the field and basic species surveys. Each ranger received a basic ranger kit, reference materials including species guide books, and a complete ranger training manual.

A two-day workshop to examine sustainable financing for Protected Areas including the establishment of an Environmental Trust Fund was conducted from March 30-31, 2005. Approximately fifteen (15) representatives from the EPA, Lead Agencies, NGO's, Ministry of Finance, etc. participated in the workshop. A number of options were discussed such as the types of Conservation Trust Funds (CTFs), advantages and disadvantages of each type, and designing and setting-up of CTFs. A report on the workshop was prepared by Consultant Julian Caldecott.



*Figure 6: Some images from the Rapid Biodiversity Assessment*

During August 2005, a Feasibility Study was carried out for Shell Beach with the overall objective being to provide the EPA and GMTCS with an assessment of the most probable sustainable economic activities. The Study focused on Non-Timber Forest Products (NTFPs), in particular Crabwood Oil, and was carried out by a NTFP expert from UNEP-WCMC. The Report put forward recommendations regarding markets for commercialization, as well as for sustainable use of the crabwood oil tree by the Waini communities at Shell Beach.

In June 2005, work commenced on the production of a 15-minute video documentary and two 30-second infomercials to educate the public and raise awareness on Guyana's efforts towards establishing Protected Areas and the Shell Beach initiative. The production team visited Shell Beach, Kaieteur National Park, Orinduik Falls and Iwokrama. The script for the video was reviewed and approved by the EPA.

### CREP Project

The Caribbean Regional Environmental Programme (CREP) is designed to strengthen regional cooperation and build capacity for conservation management and sustainable development in Amenity Areas in the Caribbean. The project seeks to demonstrate that environmentally sound projects can create opportunities for sustainable development whilst maintaining the integrity of the natural resource base.

The EPA has been chosen as the National Focal Point Organization (FPO) for the Guyana Amenity Area

Demonstration Project (AADP). The site selected for the AADP is located between Numbers 43-74 Villages on the Corentyne Coast, Berbice. The area has vast mangrove cover, which provides very important ecosystem functions and is linked to a variety of economic activities in the area. Watermelon farmers are a majority of the resource users located on the beach front and have had to clear the natural and introduced vegetation for farmlands.

On October 14, 2005, the Project was publicly launched. However, prior to the launch, the following was done:

- Site visits were made to interact with key resource users and other stakeholders in and around the Amenity Area. These visits allowed the Project Management Unit (PMU) based in Barbados to understand the nuances of the local resource management issues and critical issues relevant for the project definition. A refocused project proposal was prepared by the EPA and approved by the PMU.
- Meetings were held to coordinate the launch process and to put administrative arrangements in place for project implementation.
- A Technical stakeholder Workshop with a representative group of local and national stakeholders was held on October 12, 2005. This allowed for stakeholder input into the workplan and the establishment of a Stakeholder Committee to oversee the project.
- On October 13, 2005, an inaugural meeting of the Stakeholder Committee was held.
- Two signs were erected on the main road with the approval of the local authorities to define the Amenity Area.

The initial workplan for the project was revised to focus primarily on the watermelon farmers of the area. This was subsequently approved by the PMU and the Stakeholder Committee. The Demonstration Project Manager (DPM) also assisted the EIT Division of EPA in establishing eight (8) Environmental Clubs in schools within the AADP site.

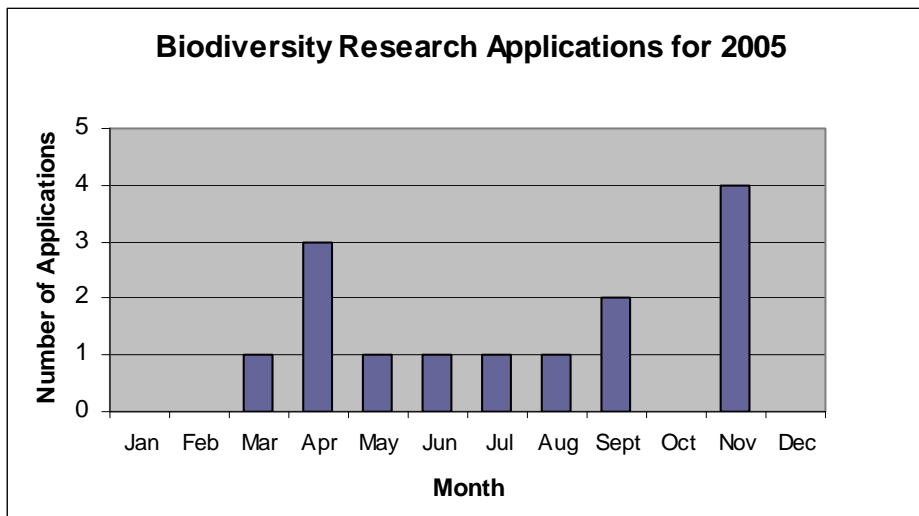


Figure 6: Watermelon farm in the Amenity Area

## 4.2 Biodiversity Research Application and Permit

The Biodiversity Unit (BU) is the operational hub of the NRMD which facilitates Biodiversity Research in Guyana. In addition to the need for baseline data on Guyana's biological and anthropological resources, it has been observed that, there is a growing interest in the study of Guyana's rich natural and cultural resources by foreign researchers. The EPA continued to receive Biodiversity Research Applications from research and academic institutions, organisations and individuals around the world. However, Applications from Universities made up the bulk of applications received. Of a total of fourteen (14) applications received in 2005, eight (8) were from Universities in Europe and North America including the highly recognised Harvard, Oxford and Yale Universities.

The number of Biodiversity Research Applications received had declined from the previous year from twenty in 2004 to fourteen in 2005. The trend of Applications received during 2005 is shown in Figure V.

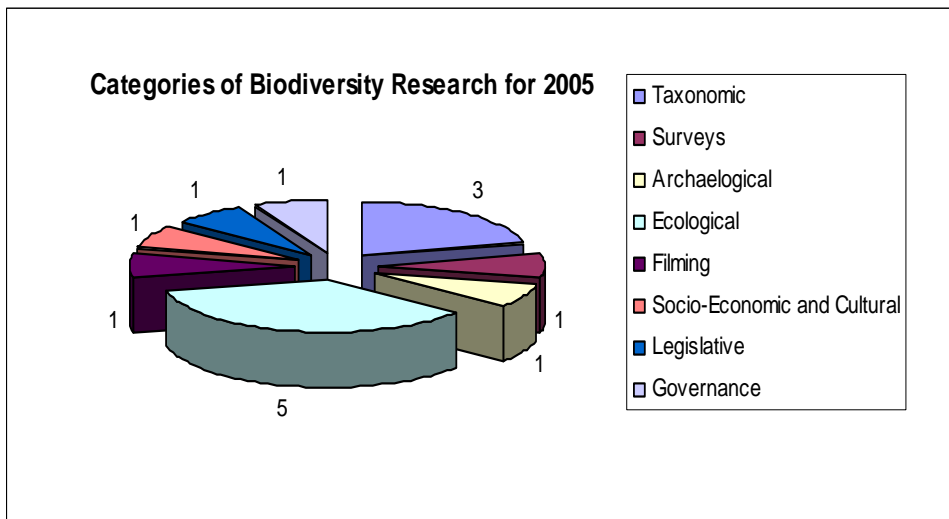


*Figure 7: Total Number of Biodiversity Research Applications received during the period January- December, 2005.*

No application was received in January, February, October and December. It is not unusual to have periods during the year when no application would have been submitted. The overall average of two (2) applications per month has been consistent during the past five years.

The categories of biodiversity research have diversified over the years. Applications have been received to film documentaries of the country's biological and non-biological resources such as the forests, wildlife, natural sites,

hinterland communities and culture; to conduct studies on local governance and socio-cultural issues e.g. indigenous language and education. Figure VI shows eight categories of research for which applications were received in 2005 and the number of applications for each category. More than half of all applications received were for taxonomic and ecological studies.



*Figure 8: Categories and Quantity of Biodiversity Research Applications for 2005*

The processing of applications has generally improved over the years. Applications received within the stipulated guideline period are reviewed, approved/rejected and permitted on time. Almost all applications received were approved. Table 3 shows that of the fourteen applications received, thirteen were approved and issued with Research Permits. The Permits issued in 2005 were for applications received in the same year as well as those received late in the previous year, this explains the increase in the number of Permits issued in 2005 when compared with the number of applications received. Similarly, Specimen Export Permits issued in 2005 also included Permits for research done in the year 2004.

Total Number of Applications Received	Total Number of Applications Approved	Total Number of Research Permit Issued	Total Number of Specimen Export Permit Issued
14	13	16	12

*Table 2: Summary of Applications Received, Approved and Permits Issued in 2005*

### 4.3 Biodiversity Related Projects

The Biodiversity Unit also implemented a number of projects. These are presented below:

#### Review of the National Biodiversity Action Plan (NBAP), 1999-2004

The NBAP Review project was initiated in 2004 to assess the implementation of the programmes and activities outlined in the NBAP for biodiversity conservation and management in Guyana. Financial support for the project was provided by the United Nations Development Programme and implemented through the Ministry of Foreign Affairs. The recommendations from this review are expected to guide the development of a second National Biodiversity Action Plan for a further five year period. The final report on this review was completed in May 2005 and copies have been circulated to key stakeholders

#### National Biosafety Framework (NBF)

The activities of the NBF Project continued through the year towards the development of a National Biosafety Framework. The project began in March 2004 and is funded by the Global Environmental Facility (GEF) through the United Nations Environmental Programme (UNEP). Activities are implemented in four phases and nine survey consultancies. Seven of these consultancies were being implemented. Public awareness through seminars, panel discussions and newspaper articles were done. A newsletter and web page on Biosafety issues were also developed through the project.

In December 2005, a Caribbean Regional workshop was held in Barbados to review the implementation of National Biosafety Frameworks and to guide countries on the development of their national Biosafety Clearing House.

#### Access and Benefit Sharing of Genetic Resources Policy and Regulations

The Access and Benefit Sharing (ABS) Project commenced in March 2005, with financial support from the United Nations Development Programme (UNDP). The objective of the project was to develop a National Policy and Regulations to strengthen the process for access to Guyana's genetic resources and the equitable sharing of the benefits arising from its use. The Policy was adopted by the EPA Board and the drafting instructions for the Regulations were being developed.

#### National Capacity Self-Assessment (NCSA)

The NCSA project was initiated in June 2005 and formally launched in September 2005. Its aim is to identify and characterise capacity constraints relevant to effective environmental management in the natural resource and environment sector under three thematic areas namely, Biodiversity, Climate Change and Desertification. Guyana's performance under the United Nations Conventions in these three thematic areas, the United Nations Convention on Biological Diversity (UNCBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD) is a key component of this project. One of the major



outputs is to develop a National Strategy and Action Plan. This project is funded by the Global Environmental Fund (GEF) through the United Nations Development Programme (UNDP).

Some of the major achievements of the project are listed below:

#### *Project Inception and launch*

In this phase (July-Sept 2005), the Project Management Unit (PMU) was established with the recruitment of the Project Coordinator and an Administrative Assistant; a Project Steering Committee was established; a detailed work-plan was developed and the project was launched in September, 2005 in a public ceremony attended by a wide cross-section of stakeholders.

Awareness materials and a community awareness strategy were developed; and Terms of References for the Stock-taking and Thematic Assessment Consultancies were developed and finalized. Three Consultants were hired and work had commenced for these consultancies.

#### *Public Awareness Programme on the NCSA:*

Activities were carried out in keeping with the Community Awareness Strategy and project promotion. These included development of:

- Four brochures, one on each of the three thematic areas and one on the NCSA Project. These brochures were done in consultation with the focal points and have been published and distributed widely to stakeholders during the community awareness and regional consultations.
- A web link to the EPA website which is expected to be uploaded soon.
- A newsletter to inform stakeholders on the progress of the project. This document will be distributed in printed and electronic formats.

#### *Launch of the Community Awareness Component*

A Community Awareness component and a strategy were developed to guide the project's approach to targeting and educating community-level stakeholders. This strategy was felt to be necessary due to the distribution of the communities in the hinterland, and differing levels of awareness of the Conventions at the community level. The strategy recommended the use of Guyana's ten Administrative Regional Authorities as a support mechanism for the distribution of brochures on the Conventions and the project. Included also in the strategy is the use of the print media and television to reach a wide cross-section of stakeholders.

The Community Awareness component of the project was launched with a number of activities being implemented concurrently.

### *Publicity of Project*

Four articles, one each on the project, the UNFCCC, UNCBD and the UNCCD were prepared and these were published in the Our Environment Column in the Sunday Chronicle.

Four appearances were made on the Guyana Today Show on NCN Channel 11, one each with the EPA and Focal Point representatives for the Conventions to inform the public of the NCSA Project.

### *Regional Meetings*

Meetings were scheduled in the Administrative Regions at the levels of the Regional Democratic Council (RDC) and the Regional Administrative Committee (RAC). The objectives of these meetings were to:

- sensitize the Regional representatives of the project;
- request assistance at the regional level to identify stakeholders to represent the Regions at the consultation workshops; and
- request assistance for the distribution of brochures to identified stakeholders, to enable more informed consultations.

### *Stock-taking and Thematic Assessment Reports*

Three individual Consultants were contracted in October, 2005 to conduct this second phase of the NCSA process. The objective of the Stock-taking and Thematic Assessment was to conduct a gap analysis to determine Guyana's current programmes with respect to the three UN Conventions of Biodiversity, Climate Change and Desertification, followed by a full assessment of each thematic area. This will include: identifying and reviewing priority issues; identifying capacity constraints for the priority issues; assessing the constraints at the individual, institutional and systemic levels; categorizing opportunities in terms of a) creating new capacity, b) mobilizing or redeveloping existing capacity, and c) enhancing existing capacities; and identifying necessary corrective action.

Draft reports were submitted by the three Consultants on 10 November, 2005 and a presentation was made at the Project Steering Committee Meeting held on 15 November, 2005. The draft reports were reviewed and comments were offered by the focal point institutions to the UN Conventions and members of the Project Steering Committee.

Regional Consultations Workshops were also organized by the Project Management Unit, at which the initial findings of the Stock-taking and Thematic Assessments were presented by the Consultants and feedback obtained from community and regional level stakeholders. The consultations commenced on 29 November, 2005 and are scheduled to conclude in January 2006.





*Figure 9: NCSA Consultation Workshop in Region Nine*

#### Forest Biodiversity Monitoring Project

Two project proposals were prepared to develop indicators to monitor forest biological diversity at the micro-level and macro-level in Guyana. The Inter-American Development Bank (IDB) approved financial support for the macro-level project. The key objective of this project is to develop an indicator system at a macro-level to assess the impacts of forest activities on forest biodiversity.

The macro-level indicators are intended to guide the decision-making process towards effective management of Guyana's forest resources. This will ultimately provide the necessary baseline data for the development of indicators to monitor forest biological diversity at a micro-level. The Project commenced in November 2005 and is expected to be completed by July, 2006.

#### **4.4 Wildlife Unit**

The aim of the Wildlife Unit is to work towards the conservation and sustainable use of wildlife. During 2005, the Unit worked towards implementing the activities of the workplan which included:

- Collaboration with stakeholders involved in the management and conservation of wildlife;
- Participation in relevant meetings and training sessions; and
- Investigation of complaints related to wildlife.

## 4.5 Collaboration with Stakeholders

### Guyana Marine Turtle Conservation Society

The Agency collaborated with the Guyana Marine Turtle Conservation Society (GMTCS) which has been monitoring the nesting activities of four marine turtles, namely the Leatherback (*Dermochelys coriacea*), the Olive Ridley (*Lepidochelys olivacea*), the Green turtle (*Chelonia mydas*) and the Hawksbill (*Eretmochelys imbricata*) in the Shell Beach area. The raw nesting data for 2001, 2002, 2004 and 2005 were obtained from GMTCS and the process of organising and analysing of the data was initiated.

There was a significant increase in the number of turtles observed during the period analyzed. In 2001, 382 turtles were observed as against 958 for the year 2005. This represented an increase of 151% over the four-year period.

For the years analyzed, the greatest numbers of turtles were observed during the month of June. In June 2005, 347 turtles were observed which was the highest number recorded during the four year period. This also represented an increase of 244% compared to 101 observed in June 2001.

Marine turtles observed at Shell Beach					
Month	2001	2002	2003	2004	2005
March	19	11	NA	70	68
April	40	86	NA	165	205
May	96	131	NA	250	228
June	101	142	NA	283	347
July	94	63	NA	161	93
August	32	2	NA	14	17
Total	382	435	NA	943	958

Table 3: The table shows the number of marine turtles observed at Shell Beach during the nesting season, March to August for the years 2001-2005. Note: Data for the year 2003 is outstanding.

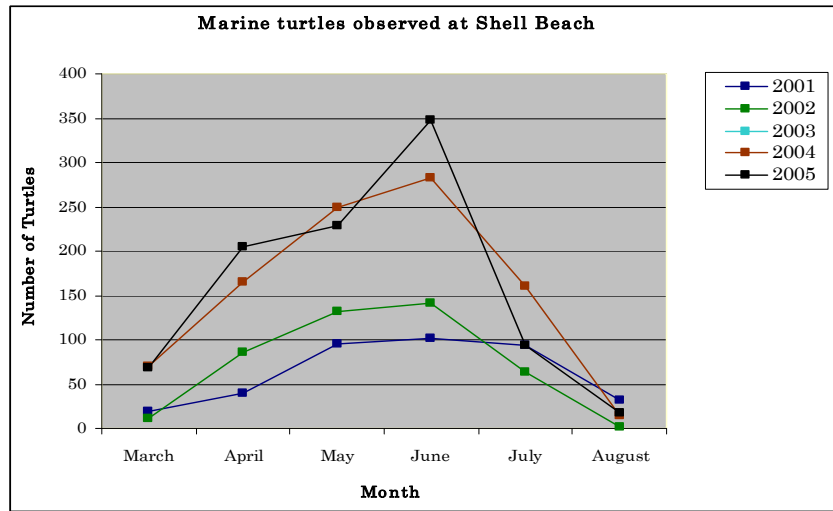


Figure 10. Graph showing the number of marine turtles observed at Shell Beach during the nesting season, March to August for the years 2001-2005.

It was observed that there was a significant increase in the number of turtles that nested during the period analyzed. In 2001, 317 turtles nested versus 746 in 2005. This represented an increase of 135%. It should be noted that in 2004, 756 turtles nested which was the highest number recorded for the period analyzed (Refer to Table 3).

For the years analyzed, the greatest numbers of turtles nested were recorded during the month of June. In June 2005, 287 turtles nested which was the highest number recorded during the four year period. This also represented an increase of 205% compared to 94 turtles that nested in June 2001.

Marine turtles that nested at Shell Beach					
Month	2001	2002	2003	2004	2005
March	9	5	NA	43	39
April	28	66	NA	112	152
May	87	109	NA	208	174
June	94	131	NA	246	287
July	76	45	NA	138	82
August	23	0	NA	9	12
<b>Total</b>	<b>317</b>	<b>356</b>	<b>NA</b>	<b>756</b>	<b>746</b>

Table 4: The table shows the number of marine turtles that nested at Shell Beach during the nesting season, March to August for the years 2001-2005. Data for the year 2003 is outstanding.

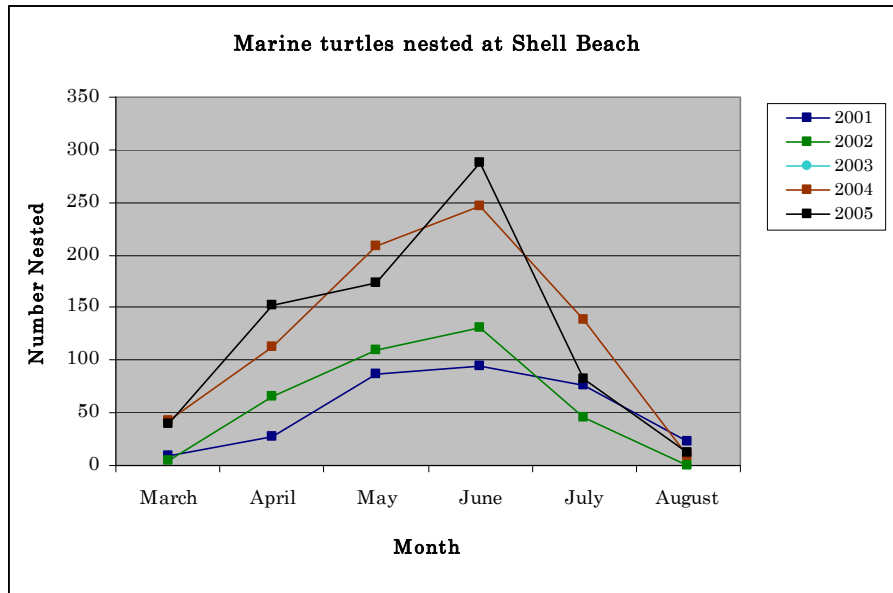


Figure 11: Graph showing the number of marine turtles that nested at Shell Beach during the nesting season, March to August for the years 2001-2005. Data for the year 2003 is outstanding.

South Rupununi Conservation Society

The Wildlife Unit liaised with the South Rupununi Conservation Society (SRCS) on the progress of their activities based on the Agreement made between the SRCS and the Government of Guyana (GOG) through the EPA. The Society was established by local residents to monitor and conduct research on the Red Siskin (*Carduellis cucullata*). Some of the activities undertaken by the Society for the year 2005 are listed below:

- Meetings were held with the District Council;
- Equipment for the Project was purchased;
- Three field surveys of potential research sites were conducted; and
- Consultations were held with teachers to develop educational programmes for schools.

Wildlife Management Authority

On the 23 November, 2004, Cabinet approved the execution of a contract between the Environmental Protection Agency (EPA) and the Wildlife Management Authority (WMA). The EPA agreed to provide scientific and other services to the WMA and in return, the WMA would provide the sum of G\$16 M (Sixteen Million dollars) annually to the EPA for the services.



*Figure 12: Picture of the Red Siskin (male-left, female-right)*

The WMA has the mandate to import or export species based on the annual quota for the country. The Authority uses the Species Protection Regulation, 1999 made under the Environmental Protection Act 1996 (No. 11 of 1996). The Unit prepared a report relating to the trends of Wildlife Exports specific to species that was most commonly traded for the years 1979-2005. Examples of such species are: Tarantula spider (*Avicularia aviculara*), Spectacled caiman (*Caiman crocodilus crocodilus*), Iguana (*Iguana iguana*), Ameiva lizard (*Ameiva ameiva*), Orange-winged parrot (*Amazona amazonica*), and Anoles lizard (*Anolis roquet*).

#### ***Access and Benefit Sharing of Genetic Resources Policy and Regulations***

The Access and Benefit Sharing (ABS) Project commenced in March 2005. Financial support for this Project is provided by the United Nations Development Programme (UNDP). The objective of the project is to develop a National Policy and Regulations to strengthen the process for access to Guyana's genetic resources and the equitable sharing of the benefits arising from its use. The Policy was adopted by the EPA Board and the drafting instructions for the Regulations were being developed.

## 5.0 Environmental Management Programme

Much of the work carried out under the Environmental Management Programme is directly mandated by the Environment Protection Act (1996). The Programme has a strong focus on the management and conservation of the physical environment. This is accomplished through assessment of environmental impact and monitoring of development activities that may impact significantly on the environment. Another key component of the EMP is enforcement as it relates to activities in the environment under existing legislative tools such as the EP Act and the Environmental Protection Regulations for air and water quality and noise and hazardous wastes management. To encourage compliance with the requirements of the Environmental Protection Act, this Programme, invests in research and development on best practices and technologies and has produced environmental guidelines for a number of sectors.

In the application of the various environmental management principles prescribed in the EP Act the EMP engages a number of stakeholders for inputs in order to make the best decisions for the environment. Public notices published in the media, public hearings and sectoral collaboration are included in the measures used towards accomplishing this outcome.

The EMP was lead by a Director, who was supported by three (3) Senior Environmental Officers (SEOs) dedicated to Authorizations, Research and Development and Response and Enforcement, nine (9) Environmental Officers (EOs), two (2) Technicians and one (1) Executive Assistant (EA).

### 5.1 Authorisations

Under the Environmental Protection Act 1996, EPA is responsible for the protection of environment and prevention of pollution and the assessment of economic development among other things. The EPA has an established permitting programme for old and new development and investment projects at both public and private sector levels to obtain environmental authorizations as first development consent and incorporate environmental management in their project design and operation.

#### Environmental Permitting Process

A total of one hundred and eleven (111) applications for environmental authorization were received for the year 2005. Ninety one (91) applications for new projects, fifteen (15) applications for renewal of permits for existing projects and five (5) applications for noise permit. On average eight (8) applications were received per month during this year. The periods April to June and September and October had the highest number of applications.

A total of forty-nine (49) environmental authorizations were issued for the year. These included new Environmental Authorizations, renewed Environmental Authorization and Noise Authorizations. Fifteen (15) authorizations were issued for applications made in 2003-2004 and thirty-four (34) authorizations were issued for applications made in 2005. Processing of the remainder of applications will be continuing in 2006.

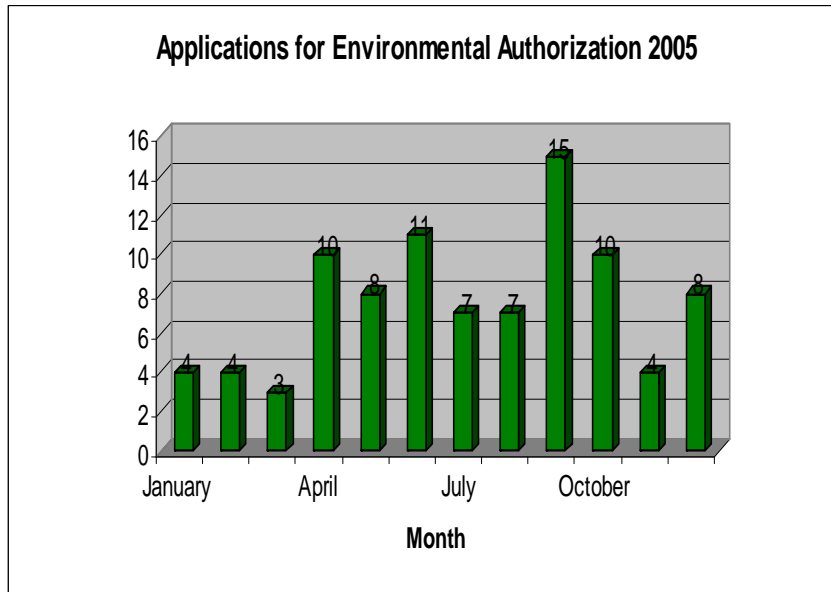


Figure 13: Applications Received in 2005

In 2005 the forestry sector was the development sector with the highest number of applications with saw-milling and lumber yards representing the majority of the applications. This was followed by service stations, sand mining and hotels/apartments/lodges, most other sectors received a maximum of three (3) applications.

<b>Applications for Environmental Authorization in 2005</b>	
<b>Development Sector</b>	<b>No. of Applications</b>
<b>Mining</b>	
Sand Mining	9
Quarry	1
Laterite Mining	1
Gold Mining	1
Bauxite Mining	2
Wharf	1
<b>Building and Construction</b>	
Bridges and Culverts	1
Ashpalt Plant	2
Concrete Blocks Manufacturing	1
Concrete Blocks Manufacturing	1
Hotels/Apartments/Suites/Lodge	6
Resort	1
Tour Operator	1
Funeral Home	2
Abattoir	1
<b>Manufacturing /Industry</b>	
Chemical Company Inc.	1
Cottage Industry	1
Foam Manufacturing Plant	1
Edible Oils	1
Chemical Effluent Treatment Plant	1
Food Packaging	2
Pharmaceutical Packaging Plant	1
Protein Recovery Plant	1
Aluminum/ Wood Product Manufacturing	1
<b>Forestry</b>	
Firewood/ Charcoal Dealers	2
Furniture Factory	1
Rainforest Center	1
Sawmill	20
Wood Working Facility	3
Lumber Yard	13
Logging	3
<b>Energy</b>	
Fuel Service Station	9
Gas Station/Restaurant and Fun Park	1
Crude Oil Refining	1
<b>Agriculture</b>	
Rice Mill	4
Soyabean Production Project	1
<b>Solid Waste</b>	
Solid Waste Disposal Site	1
Disposal Services.	1
<b>Water</b>	
Water Treatment Plant	1
Well	1
Other	8
<b>Total</b>	<b>111</b>

Table 5: Distribution of Applications for Environmental Authorizations Received in 2005



### Management of the Permitting Process

This year, the largest number of applications, sixty five (65), came from the Mining Forestry and Tourism (MF&T) Sectors. The majority of applications were for sawmills and lumber yards, followed by hotels and logging operations. Thirty four (34) applications came from the Industry, Infrastructure and Energy (IIE) Sectors, the majority of them being for service/gas stations. Twelve (12) applications came from Agriculture and Fisheries (A&F) Sectors, the majority of them being were for rice mills. It should be noted that of the one-hundred and eleven (111) applications received in 2005, only seven (7) required Environmental Impact Assessments and Environmental Management Plans. A few EIAs and EMPs from 2004 applications were reviewed and approved this year.

Of the remaining 55% of applications, Environmental Authorisations for 47% of the projects were prepared but were not granted as they pended the submission of outstanding information such as:

Approval from:

- Neighbourhood Democratic Council (NDC);
- Regional Democratic Council (RDC) and
- Central Housing and Planning Authority (CH&PA).
- Proof of Land Ownership, transport, land lease, etc.

Of the applications received, six percent (6 %) of the projects were required to do an EIA or EMP and were at various stages of the process. Environmental Authorizations for the other eight percent (8%) of the applications were not yet granted for the following reasons:

- 3 % were on hold by the developers due to land or other investment problems;
- 4 % were refused since the sites chosen were not suitable or had legal complications; and
- 1% of the decisions to proceed with the project were appealed by stakeholders.

Sector	Environmental Applications Processed in 2005			
	No. Received	No. Issued	No. Requiring EIA	No. Requiring EMP
Agriculture and Fisheries	12	8	0	2
Industry, infrastructure and Energy	34	16	1	3
Mining Forestry and Tourism	65	25	6	3
<b>Total</b>	<b>111</b>	<b>49</b>	<b>7</b>	<b>8</b>

Table 6: Environmental Applications Processed in 2005 by Sector

<i>Project</i>	<i>Developer</i>	<i>Location</i>
Cement Bagging Plant	Rudisa International Guyana Ltd.	12 Supply, East Bank Demerara.
Lethem Hospital	Basic Needs Trust Fund-Ministry of Finance	Lethem, Region 9.
Logging	Garner Forest Industries Inc.	Puruni-Mazaruni Triangle
Wood Processing Facility	Jaling Forest Industries Inc.	Port Kaituma, North West District
<i>Wood Products Complex</i>	<i>Barama Company Limited</i>	<i>Buck Hall, West Bank Essequibo</i>
<i>Edible Oil Factory</i>	<i>Wauna Edible Oils Company Inc. (WEOCI)</i>	<i>Wauna District, Region 1.</i>
Sanitary Landfill –Georgetown and the Environs	Mayor and Councilors/Ministry of- Local Government & Regional Development	Haag's Bosch, Eccles, East Bank Demerara

Table 7: Major Projects granted Environmental Authorizations in period 2001- 2005

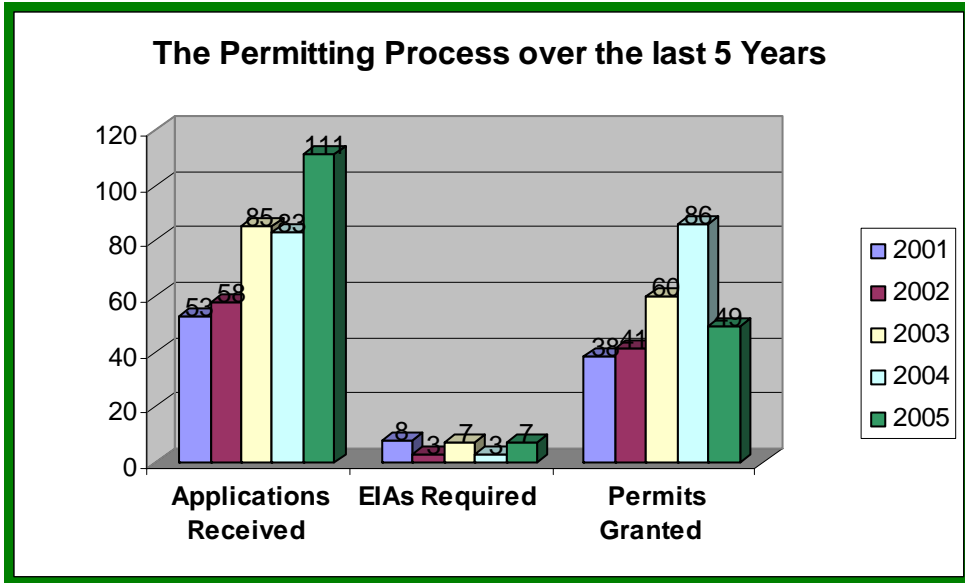


Figure 14: Comparison of Permitting Process Data over the last 5 years

## 5.2 Capacity

### EIA Consultants

Twenty-one (21) Environmental Consultants capable of preparing EIAs and EMPs registered with the Agency during the year 2005.

### Registration of Existing Operations

Registration process for pollution management continued in 2005. Eleven (11) existing businesses registered for the year, mainly from the forestry sector, which gave a total to date of 575 registered operations from all regions of Guyana.

### Compliance Monitoring

Compliance monitoring and enforcement of authorized operations continued to be significant challenge for the EMP. Limitations in this area were due to staff shortage, limited availability of equipment and budgetary constraints. However, even among these limitations, the division conducted some monitoring activities and reviewed industry self monitoring reports on compliance with their permits as follows:

- Compliance monitoring of Omai Bauxite mines Ltd. and Gold Mines Ltd. operations through ground and surface water testing and review of quarterly environmental reports 6 times per year.
- Reviewed data on Guysuco's Sentinel Agricultural Waste Treatment Plant.
- Reviewed progress reports and EMP, compliance checks - Ogle Airport Expansion Project and Cheddi Jagan Airport Expansion and Sewage Treatment Project.
- Several Road Construction and Rehabilitation Projects – Ministry of Public Works
- Sent correspondences to permit holders and polluters reminding them of their compliance obligations.

## **Environmental Assessment Board (EAB)**

The work of the Environmental Assessment Board (EAB) continued in 2005. Five (5) members were appointed to the Board by Cabinet, these were: Dr. Vibart Shury, Chairman, Ms. Denise Simmons, Mr. Frank Anthony, Ms. Patricia Woolford and Mr. Maurice Veacock – representative of GAPE. The Board reviewed several EIAs this year and was engaged in two (2) appeals. One from a resident of Linden against the establishment of a funeral home, the developer has since abandoned the project. The second from Guyana Stockfeeds Rice Mill Development, against the EAB's decision to have an EIA conducted due to objections sent to the Board, from Guyana Pharmaceutical Company. In the absence of the Environmental Appeals Tribunal (EAT) this matter was called at the High Court and the judge ruled that the EPA issue a permit to the project. This was done, however the EAB and CHPA still has an appeal for this case pending in Court. The rice mill construction is now completed, processing and export has also started. EPA has received no complaints to date from this operation.

## **Legal Issues – Environmental Protection Amendment Act 2005**

The Environmental Protection Act and Environmental Authorizations Regulations were amended in October, 2005. A new fee structure was included and the permitting process time frames were reduced. The 60 days period for public objections against EPA's decision has now been reduced to thirty (30) days and the twenty (28) days period for persons to lodge appeals to the EAB and EAT has been reduced to fourteen (14) days.

### **5.3     *Development and Research***

The EPA is mandated by the EP Act 1996 to continuously develop, over time, a number of regulations, standards and guidelines and to engage in research to gather baseline data on the state of our environment.

#### **Development of Regulations**

This year the Agency made the following steps towards the development of environmental regulations:

- Contributed to the revision of the Environmental Protection Act (1996), this revision was approved by Parliament.
- Supported the GGMC in the development of Mining and Environment Regulations.
- Supported the drafting of the Solid Waste Management Bill and Public Health Bill which are currently awaiting approval from the AG's Chambers and the Ministry of Local Government.

#### **Development of Standards**

Progress achieved in 2005, in the development of environmental standards was as follows:

- Support was provided to the Guyana National Bureau of Standards in the drafting and finalization of standards for industrial effluent, noise and air quality.
- Commenced work on the development of the Inspection Manual and Procedures for Inspecting Bodies under the ISO 17020 standards.
- Support was provided to the Guyana Forestry Commission in the Validation of the Priority Indicators for Sustainable Forest Management under the Amazon Cooperation Treaty.

## Development of Environmental/Operational Guidelines:

The following guidelines and fact sheets have been prepared or were revised:

- Preparing Environmental Audits
- Undertaking Surface Water Monitoring
- Site Visits Checklist to be used by EPA Officers
- Spray Painting Operations
- Sand and Saprolite Mining
- Screening criteria for projects relating to new operations as well as for projects relating to new operations as well as for permit fees were drafted.

## Consultancies

### Pollution Abatement Consultancy

A series of workshops on Pollution Abatement funded by IDB were conducted during October- December, 2005 and will continue into 2006. This consultancy involved classroom training, stakeholder meetings and site visits to existing operations. Officers of the EMD worked with the consultants to complete various tasks for this programme.

Workshops were conducted on the sector as follows:

- Rice Sector
- Mining Sector - this workshop included staff of the various Divisions of the EPA and a participant from GGMC.
- Forestry Sector
- Forensic Training Workshop
- Energy Sector
- Social Ecology
- Tourism Training
- Permit Screening, Environmental Monitoring and Information Management

A field trip involving all participants was conducted at Omai Bauxite Mining Inc. at Linden and to sand mines along the Soesdyke-Linden Highway

*Note:* Participants included EPA officers, and officers from the Central Housing and Planning Authority, Guyana Forestry Commission, Ministry of Legal Affairs, Guyana Tourism Authority, etc. Trainings on Forensic Investigations and Litigation, Social Ecology, the Mining, Wood Working, Rice and Energy Sectors were already completed in October and November, 2005. The Tourism Sector and Environmental Screening were held on December 05-09, 2005. The classroom training exercise all have been completed. The deliverables for the Pollution Abatement Consultancy (sector assessments, compliance schedules, codes of practice and case studies) are expected by March 2006. To date initiation reports, training reports on all sectors, sector assessments for the wood and rice and code of practice for the rice sector have been submitted.

## Cross-Sectoral Programmes

### Integrated Coastal Zone Management (ICZM)

In March 2005 the Unit lost its ICZM Officer but filled this position in May 2005.

The Coastal Zone Management System (CZMS) Project was revised and awaiting the go ahead from the Caribbean Development Bank (CDB). The CZMS Project would be established through a technical assistance grant received from the Caribbean Development Bank (CDB) by the Government of Guyana (GOG). The objective of the Technical Agreement is to strengthen GOG's existing capacity for decision-making with respect to coastal and marine living and non-living resources by providing an efficient mechanism to capture, analyse, model and manage data collected from the coastal zone through the establishment of a CZM System.

In the second half of 2005, the ICZM Unit continued to coordinate activities of the ICZM Committee.

A draft status report of the ICZM Action Plan was developed and awaits consultations with the ICZM Committee. The ICZM Action Plan sought to strengthen the process of ICZM and the capacity of key national institutions to deliver an effective ICZM Programme.

### Climate Change

EPA continues to provide extensive support to and is supported by the Hydromet Service on all Climate Change issues. An Ozone Depleting Substances Bill was drafted the AG's Chambers for Hydromet.

## 5.4 Response

### Complaints and Environmental Emergencies Response

The Division received two hundred and forty five (245) complaints and investigated ninety four (94) complaints during 2005. Based on established procedures, post-investigations, EPA recommended mitigation measures to be adopted by the polluters. A significant number of complaints were related to dust and noise, odour, smoke nuisance and solid waste. Some complaints are reoccurring and EPA faces a challenge especially when it comes to land use and zoning and lack of enforcement and processing litigation, which has been slow under the Attorney-General Office. A number of complaints were also referred to other Agencies and Local Authorities for follow up actions. EPA seldom receives any feedback on progress or resolution of such matters.

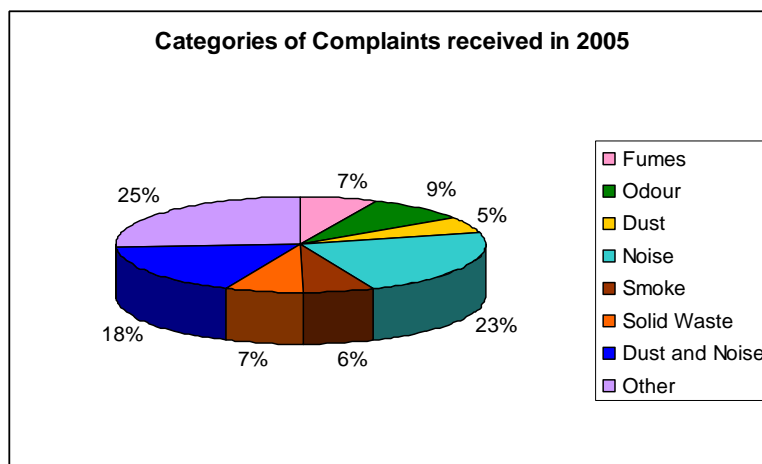


Figure 15: Categories of Complaints received in 2005

It was found that there has been an increase by 68% in the number of complaints received by the Agency compared with 2004. In the area of complaints management, it was a relatively challenging year for the Agency, as 38% of complaints were investigated and 30% were pending, compared with 76% that were investigated and 55% resolved in 2004. In cases where matters are still open, EPA continues to work with the offenders in establishing compliance schedules for the implementation of mitigation measures. There was an increase in the number of complaints forwarded to Sector Agencies to investigate or enforce, from 8% in 2004 to 30% in 2005. Three (3) Prohibition Notices and Cease Orders were issued to polluters who failed to comply with EPA's requirements. There has been an increase on the number of furniture and spray painting workshops and standby generators, accounting for a higher percentage of complaints related to fumes, dust and noise.

#### MANAGEMENT OF COMPLAINTS IN 2005

Sectors	No of Complaints Received		No of Prohibition Notice Issued		% of Complaints Investigated		% of Complaints Pending		% of Complaint Referred to other Agencies	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
MFT	26	51	2	0	65	25	58	33	12	15
A&F	34	55	0	0	74	41	53	11	3	9
IIE	86	139	2	3	88	42	53	36	8	6
<b>Total</b>	<b>146</b>	<b>245</b>	<b>4</b>	<b>3</b>	<b>76</b>	<b>38</b>	<b>55</b>	<b>30</b>	<b>8</b>	<b>9</b>

Table 8: Management of Complaints in 2005

The Industry, Infrastructure and Energy (IIE) Unit, received a significant number of complaints, i.e. 56.7%, the Mining, Forestry and Tourism received 22.4% and the Agriculture and Fisheries Unit received the least number of 20.8%. IIE in 2005 also had the greatest number of pending complaints and complaints forwarded to other authorities.

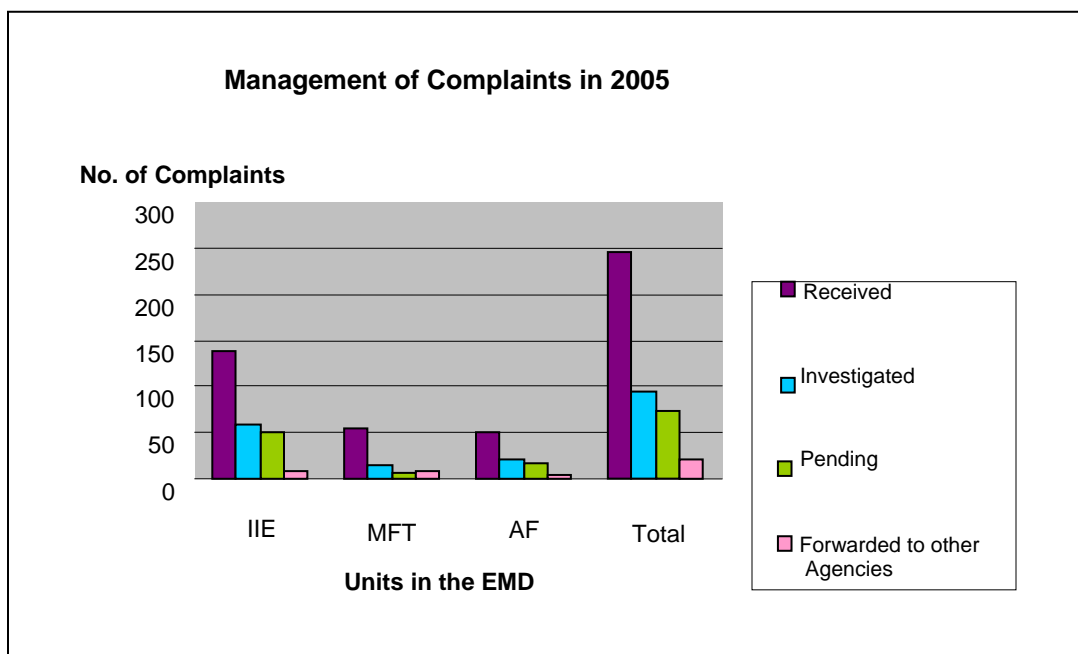


Figure 16: Management of Complaints in 2005

**Inter-Agency Mechanisms:**

There was an improvement in collaboration with other sectoral agencies in responding to complaints. Joint inspections were carried out, and a number of complaints were referred to other agencies, GGMC, GFC, GS&WC, CH&PA, M&CC, NDCs, etc. for actions to be taken.

In particular, EMD found that some complaints received were based on entities that existed illegally. EPA-CHPA inter-agency relationship is to be accordingly improved to ensure that such entities are brought to the attention of all the relevant authorities for coordinated action to regularize or prohibit. A number of complaints brought to the Agency are also neighbourly disputes, which are beyond an environmental nuisance requiring EPA's attention. Others are minor issues that the local authorities themselves can resolve and do not require the effort and resources expenditure of the EPA.

**Interdivision Collaboration****EMD-Administration:**

Training continued under the Environmental Economics Programme, which ended in August 2005, one Officer participated in this training.

EMD worked with the Environmental Economist to review the existing permit fee structure. The Division participated fully in the development of the EPA's 2006-2010 Strategic Plan.

**EMD-EIT:**

There was participation in following activities organized by the EITD:

- Guyana Today Show on the NCN Channel 11.
- Workshops
- Development of EPA Calendars, Greenleaf Newsletter, posters, flyers, facts sheets, etc.

**EMD-NRMD:**

EMD continued to involve the NRMD in review of project EIAs.

**Constraints****Human Resources:**

The January floods severely affected the work of the EPA, particularly that of the EMD since all officers were involved in the response action as well as working to produce the UNECLAC Economic Flood Assessment Report on environment.

Legal Support remains a challenge over the last 2 years at the Agency. This has considerably affected progress with compliance and enforcement, especially in resolving complaints and for legal advice on matters relating to the authorisation process.

An Environmental Appeals Tribunal (EAT) is still not in place to resolve objections and EIA matters in the permitting process, for example, the Guyana Stockfeeds Rice Mill Project matter is still pending in the High Court.

Staff turnover continues to be a challenge at the Agency

Inadequate field staff and scarcity of financial resources, transportation dedicated to the EMD and equipment to undertake monitoring and inspections is still a big limitation.



## Future Plans

In order to enhance the capacity of the Environmental Management Programme the Agency plans to:

- Fill the vacancies for an engineer and an environmental officer within the Agriculture and Forestry Unit.
- Strengthen the permitting process by:
  - increasing the number of compliance schedules and issuance of operation permits to operations registered with the Agency post 2001.
  - instituting fines and penalties to non-registrants, developers and operators who are in offence of the environmental protection regulations.
  - ensuring that sector assessments are carried out to inform the Agency's position on compliance issues for a number of sectors (Rice, Mining, Forestry, Tourism, and Energy).
  - reviewing the environmental authorisation applications forms and develop forms for renewal of permits and prepare application forms for operational permits.
  - conducting training for EPA Officers and Sector Agencies on EIAs and environmental management.
  - facilitating a consultancy for the review of the EIA and Permitting Process
- Develop Environmental Management tools as follows:
  - Procedure for guidelines development incorporating sectoral review.
  - Review of all existing guidelines.
  - Finalize air standards with the Guyana Bureau of Standards.
  - Ambient water quality standards.
  - Air quality standards as they relate to rice mills and wood working establishments.
  - A Public Disclosure System and the First State of the Environment Report
  - Prepare an environmental management manual to guide sector Agencies and the general public.
- Co-ordinate and integrate the implementation of the Coastal Zone Management programme.
- Build response capacity by:
  - Promoting short term and long-term training in data collection for the noise, air and water quality.
  - Fostering greater collaboration with policy makers.
  - Foster greater coordination at the inter-agency level in monitoring pollution causing activities
  - Reviewing existing MOUs and to develop MOUs with other organizations.
  - Implementing a water quality management and monitoring program.
  - Collating existing baseline data and collect baseline data on water, air quality and noise in environmental hot spots areas.
  - Training staff and sector agencies in emergency response and prepare a national emergency response plan.
- Continue Inter-programme collaboration as follows:
  - Assisting in the preparation of information materials for dissemination.
  - Working in a collaborative manner with the NRMP under the UNDP Project for Capacity Building for Natural Resources and the Environment and the IDB Phase II Project on Environmental Management set to continue in 2006.

## 6.0 EDUCATION INFORMATION AND TRAINING PROGRAMME

The Education, Information and Training (EIT) Programme is cross-cutting and its implementation is shared by the Education, Information and Training Division as well as the Environmental Management and Natural Resources Management Divisions. The EIT Programme provides information for environmental decision-making to a range of target groups e.g. public, industry, private and public sector. Information on established processes and procedures for obtaining environmental authorizations and biodiversity permits and on measures to prevent or reduce pollution and to conserve natural resources is made available to these target groups primarily via workshops, public hearings, face to face discussions and media.

### 6.1 Outreach

#### Environmental Protection Regulations 2000

Ten workshops (one in each of the ten administrative Regions) were conducted to make the public aware of the Environmental Protection Regulations 2000. The project was funded by the Inter-American Development Bank (IDB) and Guyenterprise was contracted to conduct the public awareness exercise. As part of the project, public awareness materials including posters, a booklet, a video documentary and public advertisements were produced. These materials and the workshops focused on the EPR 2000 on Air Quality, Water Quality, Noise and Hazardous Wastes.



Figure 16: Public Awareness Workshop on the Environment Protection Regulations (2000)  
Region 8 -Mahdia

## 6.2 Observance of International Environmental Days

A number of activities were conducted during the year in observance of international environment days. These were as follows:

### International Day for Biological Diversity

International Day for Biological Diversity was celebrated under the theme: *Biodiversity: Life Insurance for our Changing World*. Presentations were made to nine schools secondary schools

### World Environment Day

The range of activities organized for the observance of World Environment Day was expanded this year. The Green Walk which heralded the observances saw widespread participation from the public, business, private and public sector and faith based groups. A Green Walk was also organized in Bartica, Region 7 and was well supported by the community.



Figure 17: Green Walk in observance of World Environment Day 2005 at Bartica - Region 7

### *Environmental Exhibition*

The Environmental Exhibition focused directly on school environmental projects. The EPA linked with the Ministry of Education to organize an exhibition of twenty (20) winning projects in the 2005 National Science Fair.

Both the Environmental Exhibition and EPA's participation in the Bartica Green Walk were sponsored by MoneyGram Money Transfer

### *Lecture Series*

Five lectures on the 2005 WED Theme "Green Cities: Plan for the Planet" were organized in collaboration with the Environmental Studies Unit (ESU) of UG. The lectures were presented by Dr Mark Bynoe of the ESU; Mr Lincoln Lewis of the Mayor and City Council; Ms Eliza Florendo of the EPA; Mr Ramesh Lilwah of the EPA; and Mr Rawle Edinboro of the Central Housing and Planning Authority.

The first lecture was held at the UG's Learning Resources Centre while the next four were held at the EPA. The audience included UG students, UNDP representatives, Voluntary Service Officers, and Staff of the EPA.

### *Tree Planting*

The EPA coordinated a tree planting activity with assistance from the Guyana Forestry Commission, Mayor and City Council, Promenade Gardens and the National Parks Commission.

Trees were planted along Brickdam, Vlissengen Road; Carifesta Avenue; Homestretch Avenue, the 1763 Monument and at the East Ruimveldt Secondary School. Burrowes School of Arts, Ministry of Culture, Youth and Sport, the Guyana Defence Force, and the Diocese of the Brickdam Cathedral also participated in the tree planting exercise.

The National Cultural Centre made a special request for their grounds to benefit from the tree planting exercise. This request was granted by the EPA.

### *Youth Camp*

A three-day Camp was conducted for Environmental Clubs on July 2005. Forty youths and ten facilitators participated in the Camp on the Linden Soesdyke Highway.





Figure 18: Youths framing questions on the environment at a Camp conducted by the EPA

At the Camp, the participants engaged in activities aimed at equipping them with skills to study the environment. Some of the activities included, a methodology for asking and answering questions about the environment (*schoolyard ecology*), techniques for sampling and testing water, and observing animals in their habitats at night (*night spotting*). The closing activity at the Camp provided the youths with the opportunity to use creative arts to communicate messages on the environment.

In evaluating the Camp, the participants rated it as a highly educative and enjoyable experience.

#### *TV Panel Discussion*

The EPA organized a panel discussion on TV on the WED 2005 theme. The panel comprised representatives from the EPA, CH&PA and PAHO.

#### *In-house Activities*

As a contribution to “greening” of the city and environment, the EPA staff walked from Turkeyen to Camp Street, Georgetown.

EPA staff engaged in an inter-divisional paper mache competition. The works of “art” were judged and the Administrative Division was declared the winner.

#### International Ozone Day

A presentation on ‘*Ozone Depletion*’ was delivered on to mark International Ozone Day 2005 to students of six schools.

## International Day for Coastal Cleanup

EPA participated in a clean-up activity to mark International Day for Coastal Cleanup Day. EPA coordinated a contingent of seventy (70) persons comprising EPA staff and members of Environmental Clubs which joined with other groups to clean-up the sea-wall between the Pegasus and the Kitty bandstand.

### **6.3 Development of Educational Materials**

Information materials were developed on environmental issues and are available upon request at the EPA Office. These materials are also distributed during outreach activities. The following materials were developed this year:

- Calendar: The EPA designed and developed its 2006 calendar featuring the theme "Cleaner Industries for a Better Environment." Two thousand copies of the calendar were printed with funding from the IDB. The calendars were distributed to industry, public sector and schools.
- Posters: A poster depicting sound environmental practices in mining was developed for use at the 2005 Mining Exhibition.
- Booklet: The Caribbean Regional Environmental Project (CREP) was summarized in simple language in a booklet which was distributed to stakeholders within the designated CREP Amenity Area Demonstration Site (villages 43-74 on the Corentyne coast) in Guyana.
- EPA Annual Report for 2004.
- Information Packages on were compiled and distributed to Environmental Clubs on:
  - Water for Life
  - Earth Day
  - International Ozone Day
- Presentations were developed as follows:
  - Environmental Legislation on Energy Generation from Fossil Fuels.
  - Environmental Management Systems
  - Environmental Impact Assessment
  - Community Participation in Environmental Management of Water
  - Water for Life
  - Earth Day
  - International Ozone Day
  - International Day for Biological Diversity
  - Solid Waste Management
  - Making a Difference For Our Environment
  - Climate Change and Crop Production
  - The Environment
  - Community Outreach

Lectures

Presentations were delivered on a number of topics and to a range of audiences as shown in the table 9 below:

Title of Presentation	Audience
1. <i>Solid Waste Management</i>	Staff of the St. Joseph Mercy Hospital
2. <i>The Environmental Protection Act (1996)</i>	Junior Officers of the Guyana Police Force
3. <i>Making a Difference for our Environment.</i>	Winners of the G.B.T.I sponsored Art Competition.
4. <i>Treatment and Disposal of Laboratory Waste</i>	Laboratory technicians at a symposium organized by GNBS
5. <i>What is Environment?</i>	Four youth camps in Georgetown
6. <i>Climate Change and Crop Production</i>	Students of GSA
7. <i>Community Outreach</i>	North Ruimveldt Leo Club
8. <i>Proposal Writing</i>	Mildred Mansfield Youth Club
9. <i>Water for Life</i>	Schools
10. <i>International Day for Biological Diversity</i>	Schools
11. <i>Ozone Depletion</i>	Schools
12. <i>Community Participation in Environmental Management of Water</i>	Women's Groups, Journalists, NGOs – Workshop organized by PAHO-WHO
13. <i>Making a Difference for the Environment</i>	Winners Art Competition sponsored by GBTI
14. <i>Environmental Management Systems and EIA</i>	Staff of Guyana Power and Light Inc.

Table 9: Presentations made in 2005



Figure 19: Officers of the Guyana Police Force discussing the Environmental Protection Act during a Training Seminar facilitated by the EPA

### In-house seminars

Fifteen in-house seminars were presented during the year. The seminars provided a forum for Staff of the Agency to share information on their particular spheres of work. External resource persons were also invited to present information on matters of interest to Staff.

### Exhibitions

Exhibitions afford the EPA an opportunity to interface with the public and to share information on the Agency and on environment in relation to a particular theme. This year the EPA participated in the following exhibitions:

#### Guyana Mining Exhibition

This activity was held at the National Museum in August 2005. Using a poster a major tool the EPA informed visitors to its booth of the environmental methods and practices that can reduce the impact of mining on the environment.

#### Science Fair

The EPA hosted a booth at a Science Fair organized at the Central Demerara Academy in September 2005. At the booth visitors viewed a presentation and received educational materials.



Figure 20: Students viewing a film on Ozone Depletion during an EPA Outreach Activity



## Workshops

Workshops conducted this year are as follows:

### *Environmental Protection Regulations 2000*

The EPA conducted a public awareness on the Environmental Protection Regulations 2000 in each of the ten administrative Regions of the country. Under the IDB Phase II, Guyenterprise Advertising Agency was contracted to facilitate the workshops and to develop the public awareness materials on the EPR 2000. Materials developed included a video documentary used as an information tool in the workshops, four posters, a booklet and four public service announcements for radio and television.

### *Environmental Management*

The EPA delivered a two-day workshop in April 2005, to trainee Managers and Shift Charge Engineers of the Guyana Power and Light. Presentations were made to participants on the following subjects:

- Environmental Protection Act
- Environmental Management Systems
- Environmental Impact Assessment
- Environmental Monitoring
- Environmental Auditing

## Environmental Clubs

The EPA engaged six (6) Environmental Clubs in a SWOT analysis and discussion on the basics of proposal writing. Of the Clubs involved in these activities, three were located in New Amsterdam, and one (1) each on the East Coast Demerara, Georgetown and Bartica.

Nine (9) new Environmental Clubs were established on the Corentyne Coast within No. 43-74 Villages.

Two (2) schools were visited to promote the Green Fund. These schools were located in Mahaicony and Linden.

## Green Fund

Ten Project Proposals were received from the Environmental Clubs in Region 9. These proposals were submitted to the Green Fund Steering Committee, which approved five of them with recommendations for minor adjustments.

## Media

The EPA coordinated with a number of Agencies and Organizations to enable their participation in the weekly environment segment on the Guyana Today Show on NCN Channel 11. The environment segment is aired on Tuesdays at 7:00 hrs and allows participating organizations to share information on environment from their particular perspectives.

Special appearances were made on the Breakfast Show and the Let's Gaff Show on GBC Radio for World Environment Day.

Articles were prepared for the "*Our Environment*" column published weekly in the Sunday Chronicle.

## 6.4 Capacity Building

The EPA conducted planning for four (4) workshops to Build Capacity for Stakeholders in Environmental Management. The planning was a collaborative effort among the EITD, EMD and NRMD. The EITD assumed the lead coordinating role for the development of training materials and for the planning and implementation of the workshops. The EMD and NRMD contributed to development and presentation of materials. This project is funded under the IDB EMP Phase II.

### School Yard Ecology

Staff of the EIT Division and members of the internal WED Committee were trained in SYE in order to equip them with the relevant skills as trainers in the methodology. These skills were applied at the Environment Youth Camp to be held in July.

At the three-day Youth Camp organized for Environmental Clubs their capacity for studying the environment was enhanced by training in the SYE and Water Testing. At the Camp the youths were also engaged in discussions on and dramatic portrayal of environmental issues.

### Environmental Economics

Training in this area continued during 2005 for staff of the Agency. The presentation phase was completed. The training material has been compiled into a manual for future use. A proposal is being drafted for a re-run of the programme in 2006-2007.

### Documentation Centre

The Documentation Centre facilitated users throughout the year in terms of environmental information and EPA publications.

## 6.5 Geographical Information System

The GIS Unit has responsibility for the efficient management of all spatial related data and for the empowerment of all employees within the Agency with the necessary skills to enable the use of GIS data as a tool for sound decision making. During 2005 activities were carried out as follows:

### **Preparation of Maps**

The following maps were prepared in 2005:

## Shell Beach and Kanuku Study Area Project

The following maps were prepared under the Shell Beach and Kanuku Mountains Study area Project: Maps were prepared showing the proposed study area of Shell Beach and Kanuku Mountains in Guyana and GPS points and tracks collected within the study areas.

## Environmental Damage Assessment Report

The following maps were prepared for the Environmental Damage Assessment Report during the January 2005 floods:

- Map showing affected villages along the ECD surveyed by the EPA
- Map showing affected villages ranked according to level of flooding
- Map showing Existing industries (by category) granted by EPA within the flooded areas.

## General Maps

General maps were prepared as requested by internal stakeholders as follows:

- Map of Guyana showing the Administrative Regions
- Map of Guyana showing North Rupununi and the neighbouring communities
- Map of North Rupununi showing the ecotourism sites of Iwokrama, Rockview, Surama and the communities of Annai, Rupertee, Wowetta, Surama, Kwatamang and Fairview
- Map showing Forestry and Mining concessions in Guyana
- Map showing Environmental Clubs in Guyana
- Map showing the distribution of complaints along the coastland of Guyana
- Map showing the proposed sites for hydro-power stations in Guyana
- Map showing Caiman Densities in Mahaica, Mahaicony and Abary
- Map showing Areas of Biological Interest in Guyana
- Map showing the East Demerara Water Conservancy
- Map showing potential routes for the annual Greenwalk Event in Georgetown, Bartica and Linden, and the route for Georgetown Event.

## **Data Management**

A number of initiatives were taken to enhance the GIS services offered by the Agency. These include:

- A procedure was developed for updating and managing EPA's GIS database.
- A web-based Map Management System was developed for managing the GIS resources within the GIS Unit.
- A pricing list was developed to aid the recovery of costs for preparing and printing maps for external stakeholders. In addition, a policy was developed to guide decisions regarding conditions of waivers and discounts.
- The GIS database was updated with data received from Iwokrama and the Guyana Sea and River Defence Division. The database was updated with information on the Forest Zones, Sustainable Utilisation Areas and the Wilderness Preserve within the Iwokrama Forest Reserve and digital aerial photographs from 1950, 1970, 1979-1980 and 1983 and satellite images from 1998 and 2000 obtained from the Guyana Sea and River Defence Division.
- Datasets and maps were updated and prepared for the various divisions of EPA, stakeholders and UG students.

## Training

Training activities over the year included:

- Introductory GIS training was given to new staff members of the EPA and staff of the Guyana Sea Defence on the use of:
  - ArcGIS 8.3 GIS Software
  - Global Positioning Systems (GPS) using a GARMIN GPS System.
  - Geo-referencing images and vectorising the coastline of Guyana.
- Support to GINRIS for training local counterparts.
- Workshops and training sessions under the Institutional Capacity Building Activities on Guyana Sea Defences within the framework of the development of a Shore Zone Management System (ICB-SZMS) Project.
- Data Processing and Management Module (for the ICB-SZMS Project) Sub-modules: Introduction to GIS and Information Technology.

## Seminars/Presentations

The following presentations were delivered in 2005:

- Progress of Module 2 - GIS and Data Management - 4<sup>th</sup> and 5<sup>th</sup> Guyana Sea Defences Training Assessment Workshop.
- Introduction to GIS and Information Technology - Shore Zone Management System (ICB-SZMS) Project.

## Development

To aid the enhancement of information for decision making the Agency did the following:

- Developed a draft Geographic Information Systems Policy
- Prepared a paper on metadata and metadata systems for review by the Guyana Integrated Natural Resource Information System (GINRIS) technical committee.
- Initiated a project to map the distribution of mangroves along the coastline of Guyana using Remote Sensing and IKONOS satellite imagery taken in 2003
- Provided support to the Shell Beach Protected Area (SBPA) Project. Developed protocols and procedures for data collection during biodiversity assessments of Shell Beach Study Area. The Unit has mapped the boundaries of this Study Area for the Global Environment Facility (GEF) funded Protected Areas Project, completed digitization of 1:50,000 base maps and developed geo-spatial databases. These databases will provide information needed for research to be conducted in Shell Beach.
- Prepared maps showing different draft study areas of the Kanuku Mountains Area in Region 9.
- Continue to provide support to the Guyana Sea Defences project on use of GIS in Sea Defences Management.
- Reviewed the TORs for the CDB-CZMS project before submission to the CDB for funding.

## Activities planned for 2006

In 2006 it is planned to conduct the following:

- Spatial analyses and maps performed and presented for EPA staff in a timely manner.
- Training and presentations to build the GIS capacity both within the EPA and among GINRIS members.
- Spatial data management and development of procedures for updating the GIS database.
- Manage and document all aspects of GIS at the EPA, including projects that have a spatial component.
- Provide GIS advice to the public and sector agencies upon request.
- Continue to assist the Coastal Zone Unit of EPA.
- Provide support in projects which require GIS support.
- Continue support of GINRIS and their activities.

## Information Systems

The information system for the Agency was improved as follows during 2005:

- Web-based applications were developed to make network management easier;
- Data management tactics were implemented to allow for increased data tolerance;
- New equipment was added to the EPA's network;
- Databases were developed to allow easier access to information for various departments;
- Both external and internal websites were updated;
- More reviews of the network management and security were done to allow for better management of the IT infrastructure; and
- Security measures and policies were implemented.

