2019

Environmental Protection Department Annual Report

JANUARY 1-DECEMBER 31, 2019

Executive Summary

In 2019, amidst many challenges, the Environmental Protection Department embarked on activities aimed at protecting human health and the environment via the various programmes in the Departmental mandate.

Concerning building development, one thousand five hundred and thirty-six (1, 1,536) applications were received by Department during 2019. The majority of applications received were residential applications (71%). Two thousand six hundred and one (2,601) applications were pending as of January 1, 2020. In 2019, one thousand and fifty-two applications were processed with the majority being approved or approved with conditions.

Forty-nine (49) consultation files were received by the Department. Eleven (11) of these were processed while three were outstanding at the end of the year. The remaining were classified under Development related documents. Thirteen (13) development-related documents were received during 2019, which consisted of environmental impact assessments, monitoring reports, and scoping studies among others.

Concerning complaints, there were fifty-nine (47) air quality complaints, twelve (12) noise complaints, two (2) water quality, and seven (7) complaints related to marine pollution. Most of the air quality complaints were related to vehicle maintenance facilities and nuisances. Thirteen (13) air quality, five (5) noise, and seven (7) marine investigations were carried out in response to the complaints submitted.

Two noise characterization studies were conducted in Holetown and Speightstown with three (3) and five (5) sites being used respectively. The reports for both studies will be completed in 2019. Information collected during the studies included sound level data, meteorological data, traffic counts, and activity surveillance data.

The Ambient Air Quality Passive Monitoring report of Bridgetown, Oistins/Speightstown, and Holetown and Two Rural Areas commenced and provided a summary and comparison of the results of the previous ambient air quality monitoring programmes. Once completed, the report will make recommendations on the way forward in the approach and scope of any future ambient air quality monitoring conducted by the Department.

In 2019 the Global Environmental Facility Project 4881 “Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the Latin American and Caribbean Region” continued with the passive air sampling aspect of the project along with the collection of national samples (fish, sediment, soil, water, egg yolks, and pork) and training.

The Solid Waste and Hazardous Materials Section received twenty-two (22) requests for disposal advice, fifty (50) applications for the importation of radioactive materials, and eleven (11) applications for the importation of pesticides. The majority of the requests were handled throughout the year.

Issue 18 of the EnviroFocus Newsletter was distributed during the year. The Summer Internship programme was also carried out with six (6) interns from Barbados Community College, Barbados Youth Service, and the University of the West Indies. The interns participate in several activities in the department including a re-organization and cataloguing of the department file registry, conducting public education and surveys; conducting desktop research on ambient air quality indexing systems participating.

In 2019, the staff participated several training courses. Most notable of these was the IAEA National Training Course on Orphan Sources and the GEF 5558 National Training Workshop on Public Awareness and Public Education Strategies on Persistent Organic Pollutants (POPs) for Barbados.

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1. Overview

The Environmental Protection Department of the Ministry of Environment and National Beautification has been in existence since 1971 and is responsible for the regulation, management, and control of practices that may harm the environment and human health.

There are several areas to which the Department has a responsibility and these are as follows:

- Air and noise pollution
- Marine pollution
- Solid waste and hazardous materials
- Water quality (inclusive of groundwater and nearshore)
- Building development control
- Multilateral environmental agreements.

These different areas are reflected in the makeup of the Department with each responsibility being assigned to a particular section. It should be noted that the derelict buildings and vehicles programme, as well as asbestos abatement, fall under Solid Waste and Hazardous Materials.

Three Officers in senior posts retired from the Department in 2019 and two other senior officers are currently on no-pay leave from the department which led to the reorganization of tasks within the Department.

2. Air and Noise Pollution Control

Ambient air quality management and control of noise pollution is the responsibility of the Air and Noise Pollution Control Section (ANPC). From March 2019 the Section consisted of a Senior Environmental Technician with the two Environmental Technicians positions being vacant. The specific functions of the Air and Noise Pollution Section include but are not limited to the monitoring and regulation, investigation of complaints, research, and the development of policies and programmes.

2.1. Complaints and Investigations

Overall the ANPC Section received a total of fifty-nine (59) complaints during 2019. The majority of complaints were for vehicle maintenance facilities and air quality-related nuisances (0). Nuisances may include emissions from construction and odours. There were no complaints from industrial stacks. The majority of the complaints were classified as new, however, there was one (1) recurring complaint.

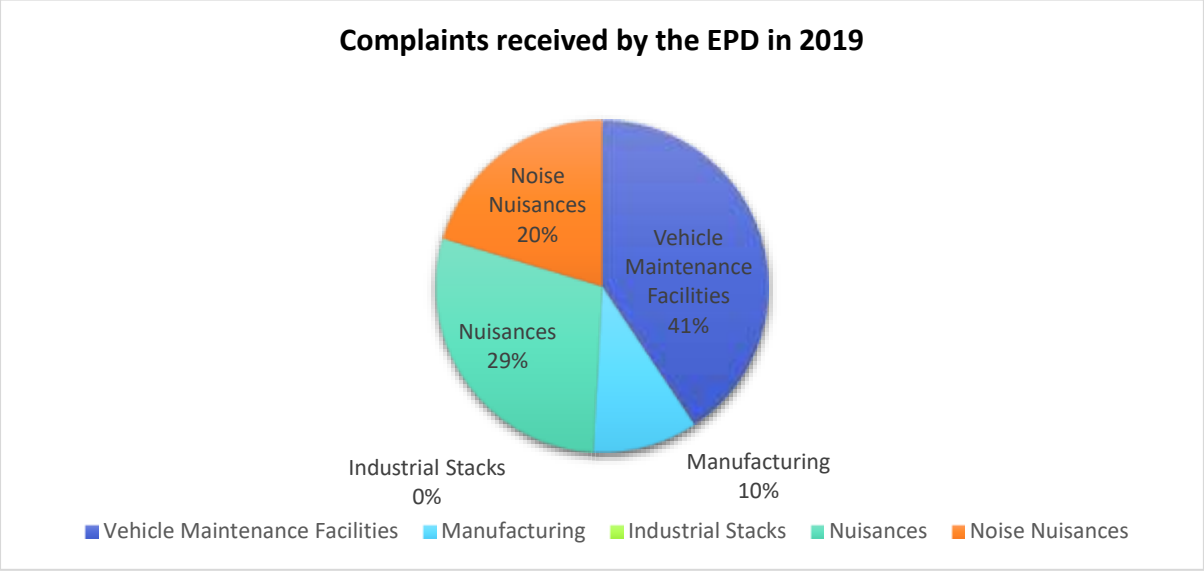

Figure 1: Complaints received by the Department in 2019

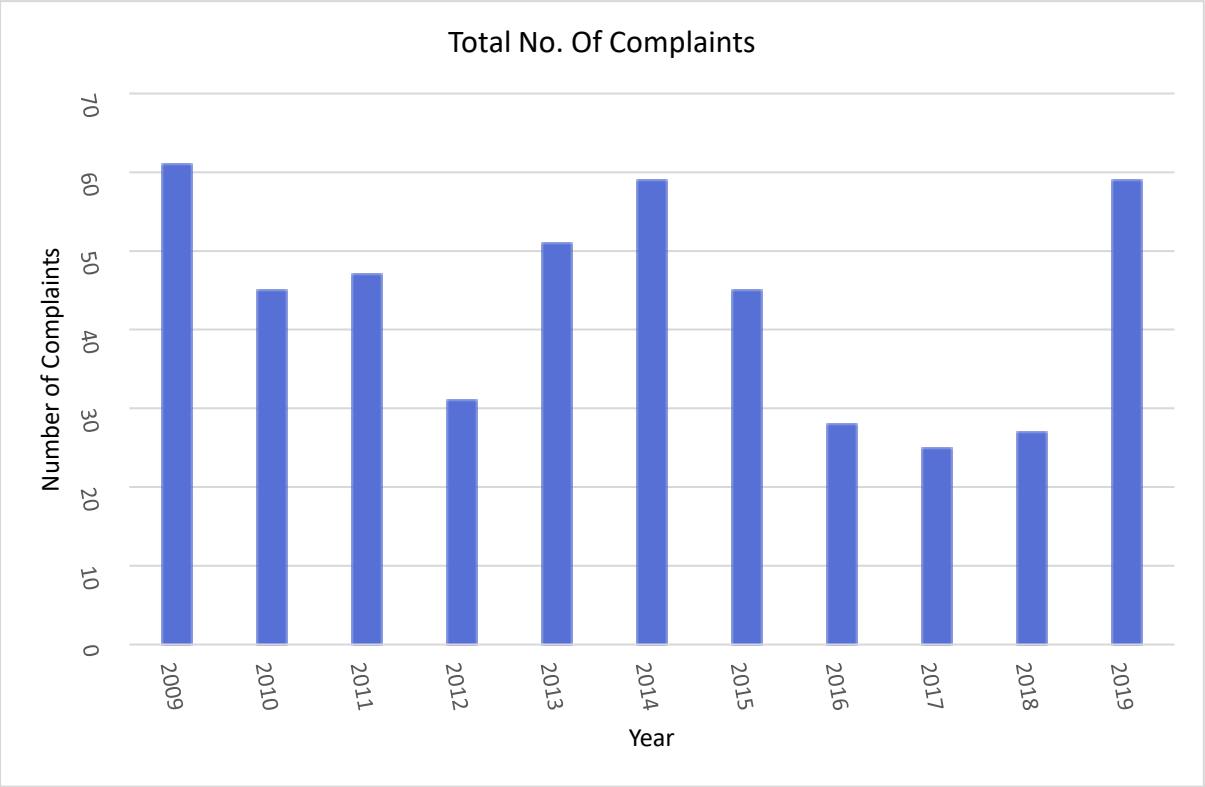

Figure 2: Total Number of complaints submitted to the ANPC Section between 2009 and 2019

0 shows that after an initial downward trend between 2009 and 2012, complaints rose between 2013 and 2014, decreased again between 2015 and 2018, and rose again in 2019. The majority of the complaints received were associated with vehicle maintenance facilities operating in residential areas.

There were thirteen (13) investigations undertaken during 2019, related to ambient air quality. Five (5) investigations were undertaken concerning noise. Seven regulatory notices were sent out with the majority relating to ambient air quality. The decline was due to a mandated shift in the focus of the Department in the processing of building development applications, resulting in officers across the various sections assisting with the processing of the backlog of residential applications.

2.2. Noise Characterization Studies

The Air and Noise Pollution Control Section drafted two noise characterization reports and their respective Cabinet Papers. The reports were based on monitoring conducted in Speightstown and Holetown during 2018. In Speightstown, six sites were monitored from February 7 to April 12, 2018. The sites were District E Police Station, Eddies Trading Co. Ltd., Speightstown Fish Market, Northern Business Centre, Pizza Man Doc Restaurant, and Port St. Charles. In Holetown, three sites were monitored from June 26 to September 19, 2018. The monitoring sites were Royal Bank of Canada, Grendon Holdings Inc., and The Beach House.

The monitoring recorded data such as noise levels, meteorological data, traffic counts, and activity surveillance data.

2.3. Ambient Air Quality Passive Monitoring Compilation Report

Air and Noise Pollution Section commenced the development of the Ambient Air Quality Passive Compilation Report, which is a comparison of the results from the three ambient air quality monitoring projects conducted between 2012 and 2015. The three ambient air quality projects were Bridgetown, Oistins/Speightstown, and Holetown and Two Rural Areas.

2.4. Air Quality Monitor AQT 420

The Air and Noise Pollution procured two Air Quality Monitors (AQT 420s) in 2019. The monitors can undertake measurements of gaseous pollutants (NO_2, SO_2, CO, and ozone O_3), particulates, and weather data such as temperature, relative humidity, and barometric pressure. The monitors will be used to establish semi-permanent monitoring stations across the island to identify trends in pollutant levels.

2.5. Looking Forward

The Air and Noise Pollution Control Section will be developing a gap analysis/audit of VMFs. The data collected will be used to develop guidelines for VMFs. Additionally, the Section will also be looking to continue monitoring the ambient air quality and noise pollution levels via specialized monitoring equipment at semi-permanent stations across the islands. This will assist in policy decisions and assist with improving public awareness.

3. Building Development Control

The Building Development Control Section (BDCS) is responsible for assessing development applications for conformance to the Health Services Act CAP. 44 and its attendant regulations. The section in 2019 consisted of eleven persons which included the Chief Buildings Development Officer, two Senior Buildings Development Officers, seven Building Development Officers, one Building Inspector, and a Draftsman Technician.

The main activities of the Section are as follows:

- Review applications for residential, commercial and industrial developments;
- Evaluate primary wastewater treatment systems;
- Offer technical advice to the Chief Town Planner through the Director on applications submitted to the Department;
- Provide technical advice concerning the investigation of building-related complaints; and
- Educate the public about varying aspects of building development.

3.1. Processing Applications

The Building Development Control Section received one thousand five hundred and thirty-six (1,536) applications during 2019. Figure 3 below shows the breakdown of applications received during the 2019 period.

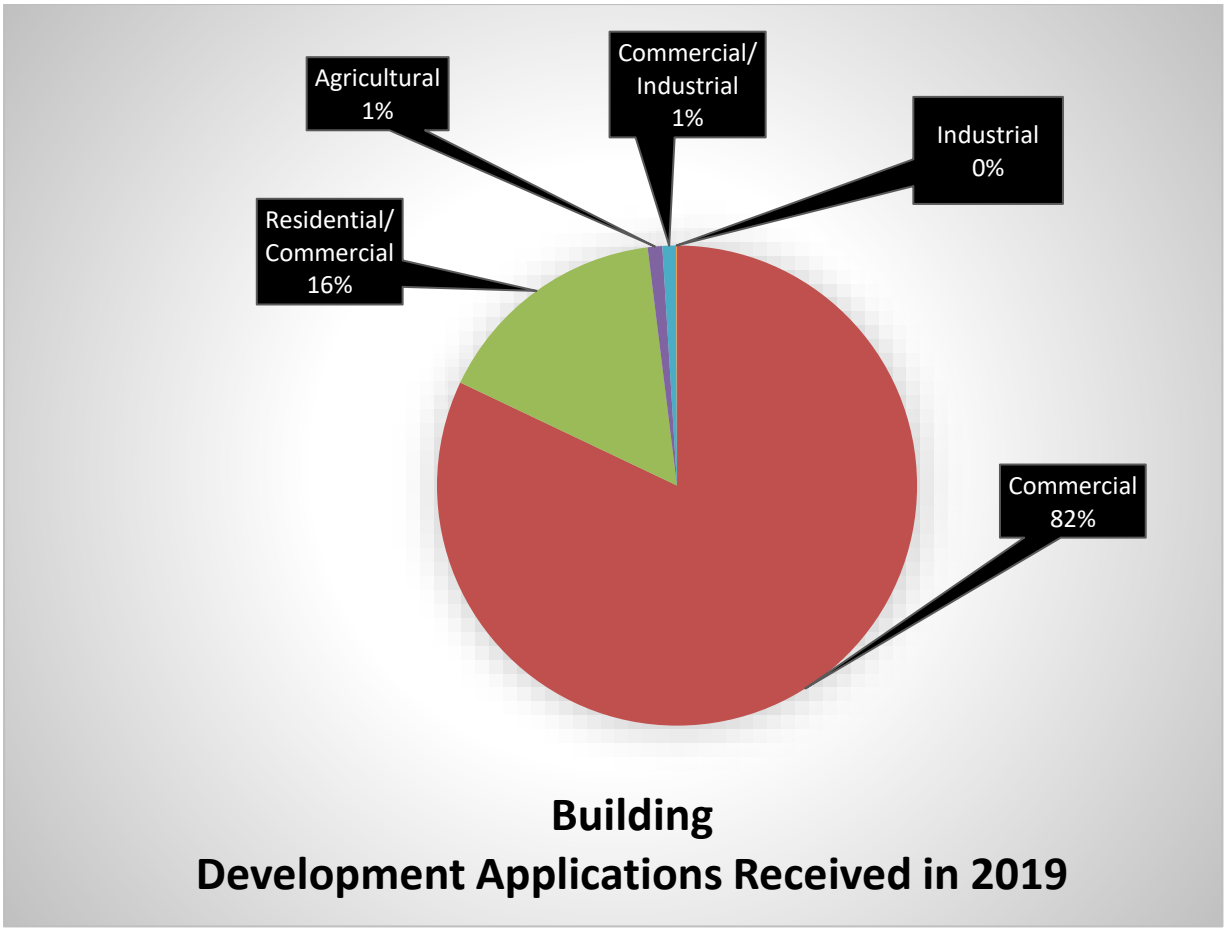

Figure 3: Applications received by the Department during 2019

As of January 1, 2019, two thousand seven hundred and five (2705) applications were brought forward from previous years. One thousand six hundred and forty (1,640) applications were processed in 2019 (0). Seventy-six percent (76%) of applications were approved with or without conditions, twenty-one percent (21%) were refused and the remainder were either acknowledged or withdrawn. There were no industrial or commercial/industrial applications processed during the period under review.

Table 1: Building Applications processed in 2019

Decision/Classification	**Approved**	**Approved with conditions**	**Refused**	**Acknowledged[1]**	**Withdrawn**	**Total**
Residential	1160	43	282	6	10	**1501**
Commercial	40	3	62	5	19	**129**
Residential/Commercial	4	1	2	0	1	**8**
Agriculture	0	1	1	0	0	**2**
Industrial	0	0	0	0	0	**0**
Commercial/Industrial	0	0	0	0	0	**0**
Total	**1204**	**48**	**347**	**11**	**30**	**1640**

[1] Acknowledged applications are those applications which the Health Services Building Regulations do not apply.

3.2. Inspection of septic tanks and filter beds

The Building Development Control Section undertakes inspections of primary wastewater systems, septic tanks, and filter beds, to determine if they have been constructed and designed appropriately. Thirteen (13) septic tanks were inspected during 2019 of these eight (8) were deemed satisfactorily constructed and five (5) were unsatisfactorily constructed. No filter beds were assessed during the same time frame.

3.3. Looking Forward

In 2020, the Building Development Section will continue with its primary task of processing building applications and related activities such as reviewing consultation files and inspecting waste disposal methods.

4. Environmental Impact Assessments

The Environmental Protection Department reviews development-related documents such as environmental impact assessments as a member of the Environmental Impact Assessment Review Panel. Other development related documents include terms of references (TORs), scoping studies, and monitoring reports. These documents are reviewed by the different sections of the Department including but not limited to the Environmental Technical Officers Section, ANPCS, and BDCS.

The Environmental Technical Officers Section consisted of a Senior Environmental Technical Officer, an Environmental Technical Officer, and a Technical Officer.

4.1. Development related documents Reviewed in 2019

In March 2019, the use of the E-Planning platform commenced and submissions to and from the Town Country and Development Planning Office were conducted electronically.

Table 2: List of development-related documents reviewed

TYPES OF DOCUMENT	NO. OF DOCUMENTS
Environmental Impact Assessment	5
Terms of Reference	5
Monitoring Plans	2
Environmental Scoping Studies	6
Consultation Files	31
Total	49

As shown in 0 above forty-nine (49) documents were submitted to the Department for review. Of these, the majority; thirty-one (31) were consultation files and the remaining eighteen (18) consisted of Environmental Impact Assessments (EIAs), five (5) Terms of Reference (ToR), two (2) Monitoring Plans, and six (6) Environmental Scoping Studies (ESS) were completed and returned to the Chief Town Planner. The documents reviewed related mostly to agricultural activity, renewable energy applications, and hotel and tourism development-related applications.

4.2. Looking Forward

Activities to be completed in 2020 are the continued review of development-related documents and submission of comments to the appropriate parties.

5. Marine Pollution Control

The Marine Pollution Control Section (MPCS) of the Environmental Protection Department is responsible for activities that may affect the marine environment. The functions of the MPCS are as follows:

- Responding to complaints or pollution incidents related to the marine environment;
- Monitoring and control of marine pollution;
- Conducting inspections of various sources to determine potential releases of pollutants;
- Oil spill contingency planning and response;
- Researching marine pollution issues and
- Preparing guidelines for various sectors and or activities aimed at reducing marine pollution.

The Marine Pollution Control Act CAP. 392A is used by the Department to manage activities related to marine pollution.

The MPCS in 2018 consisted of a Senior Marine Pollution Officer and a Marine Pollution Officer. The other two Marine Pollution Officer posts were vacant.

5.1. Complaints

0, below shows that a total of seven (7) complaints were received which were almost evenly split between those related to oil pollution and wastewater discharge.

Table 3: Complaints handled by the Marine Pollution Control Section

Type/Activity	Complaints Received	Investigations	Compliance visits	Regulatory Notices	Other Correspondence
Oil Pollution	**3**	-	-	-	-
Wastewater Discharge	**4**	-	-	1	-
Total	7	-	-	1	-

Along with the initial investigations, a regulatory notice was submitted to the offending operation.

5.2. Regulatory Inspections

Regulatory inspections are undertaken by the Department to determine the impacts of various activities on the environment. These activities are carried out by the MPCS, ANPCS, Solid and Hazardous Materials Section, and the Water Quality Section.

No regulatory inspections were conducted in 2019.

5.3. National Oil Spill Contingency Plan

The EPD conducts activities related to the management of oil pollution in Barbados. One of those activities is related to emergency response planning in the event of a large release of oil to the environment. The National Oil Spill Contingency Plan (NOSCP) is maintained by the EPD to ensure that measures are in place to deal with releases of hydrocarbons into the environment.

Activities conducted in 2019 regarding national oil spill preparedness and response included following as shown in the table below;

PERIOD	ACTIVITY
Jan-Mar	• Prepared re-equipment inventory update for stakeholders • Compiled cabinet paper for components of the NOSCP • Updated equipment list.
Apr-Jun	• Prepared and attended a National Oil Spill Response Committee (NOSRC) meeting
Jul-Sept	• Compiled and updated the work programme for the NOSRC. • Conducted a NOSRC meeting • Updated the NOSRC members' directory and updated the list of Trained Oil Spill Response Personnel
Oct-Dec	• Conducted two meetings of the NOSRC. • Requested sponsorship for the 2020 oil spill simulation exercise from private and statutory companies

5.4. Marine Litter Programme

The Marine Pollution Control Section coordinates a marine litter clean-up programme which involves an annual cleanup of a one-kilometre stretch of Morgan Lewis Beach and the collection of marine litter data. The campaign aims to promote public education on marine litter and collect data.

As part of the 2019 work-plan, the annual cleanup of Morgan Lewis Beach was conducted on September 21, 2019. There were 144 volunteers, who collected 81 bags of litter consisting of 5,062 items weighing approximately 1,031 lbs.

5.5. Looking Forward

The Marine Pollution Control Section in 2020, will develop guidelines for meat processing facilities to assist in improving the environmental performance of businesses in the sector. The section will also continue to update the Oil Spill Contingency Plan with its various components such as the oil spill response equipment inventory and the directory of members

of the National Oil Spill Response Committee among other appendices, to conduct the regular meetings and conduct training.

6. Multilateral Environmental Agreements

The Environmental Protection Department is responsible for the implementation of several multilateral environmental agreements (MEAs) and international policies which include the Strategic Approach to International Chemical Management (SAICM). The MEAs to which EPD is accountable include:

- Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region **(**Cartagena Convention) including the Oil Spill and Land-Based Sources of Marine Pollution Protocols,
- Basel Convention on the Transboundary Movement of Hazardous Wastes and their Disposal,
- The Stockholm Convention on Persistent Organic Pollutants (POPs) and
- Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons/Chemicals Weapons Convention (CWC).

The Environmental Protection Department is responsible along with the Ministry of Health for the implementation of programs arising out of the membership to the International Atomic Energy Agency (IAEA).

Several sections of the Department contribute to the management of the activities associated with the MEAs. These include the Environmental Technical Officers Section, ANPCS, Water Quality, Marine Pollution Control, and Solid Waste and Hazardous Materials Section.

6.1. Basel Convention

Environmental Protection Department is the focal point for the Basel Convention on the Transboundary Movement of Hazardous Wastes and their Disposal in Barbados. The Convention has an annual reporting requirement as stated in Article 13: Transmission of Information. The Annual Report for 2017 was approved and submitted to the Technical Secretariat in 2019. Additional activities were as follows; the

- Revised a Negotiating Brief for the Establishment of a Bilateral Agreement between USA and Barbados to incorporate comments from stakeholders.
- Reviewed Draft Principles on the Rights of Workers and Protection from Exposure to Toxic and Otherwise Hazardous Substances and prepared and submitted comments to the Ministry of Foreign Affairs and Foreign Trade.
- Prepared documentation for the establishment of a Bi-Lateral Agreement with the USA for the environmentally sound disposal of waste from Barbados to the Ministry of Foreign

Affairs and Foreign Trade for the negotiating process to be started. The establishment of a Bi-Lateral agreement would provide an alternative for the disposal of hazardous wastes from Barbados and also reduce the incidence of shipments of waste to the USA that contravene the Convention.

- The Department continued in aspects of Regional Project GEF 5558: Development POPs Communication Strategy, that pertained to the Basel Convention such as;

    - Hosting the GEF 5558 National Training Workshop on Public Awareness and Public Education Strategies on the disposal of Persistent Organic Pollutants (POPs) for Barbados.

- Started to facilitate the process for disposal of waste from the Barbados National Oil Company Limited.

6.2. Stockholm Convention

Concerning the implementation of the Stockholm Convention in Barbados, two projects funded by the Global Environment Facility (GEF) continued in 2019 which should facilitate further progress towards full implementation of the Convention. These projects were GEF 5558 Development and Implementation of a Sustainable Management Mechanism for POPs in the Caribbean and GEF 4881 Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the Latin American and Caribbean Region.

Other activities included a review of the proposed amendments to the Stockholm Convention, which will be considered at the 9th meeting of the Conference of Parties.

6.2.1. Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the Latin American and Caribbean Region (GEF 4881)

GEF 4881 is a regional 12 country project with an overall objective to "strengthen capacity for implementation of the revised POPs Global Monitoring Plan in the Latin America and Caribbean region, and create the conditions for sustainability of the networks". It has six components which include training, analysis of national GMP samples such as mother's milk and air samples, and enhancement of the quality of laboratory analysis for the presence of POPs.

During this period the following activities were undertaken under GEF 4881 project:

- Passive Monitoring- This involved the collection of air samples from 11 samplers using polyurethane disks. This aspect of the project commenced in December 2016 and continued until January 2019. Samples were collected and deployed quarterly and sent to the local laboratory (University of the West Indies) as well as Spain and Sweden for analysis. The fourth (4th) and final round of sampling for 2018 and the entirety of

the campaign were completed. The collected filters were shipped to Spain and Sweden for analysis.

- National Samples- During 2019, national samples consisting of fish, sediment, soil, water, egg yolks, and pork were collected, prepared, and shipped to Sweden and the Netherlands for analysis.

6.2.1. Continuing Regional Support for the POPs Global Monitoring Plan under the Stockholm Convention in the Latin American and Caribbean Region (GEF 5558)

GEF 5558 is a regional 9 country project, who are Member Parties of the Stockholm Convention to comply with and implement the convention in their respective countries by identifying and allocating human, institutional, and infrastructural resources to the following:

Barbados has chosen to participate in two of the four major objectives which are as follows;

1. Update the National Implementation Plan (NIPs), update legislation and enforcement mechanisms concerning the management of POPs, endorse better hazardous chemical management, and identification of alternatives, creation of a communications framework and public awareness for POPs, UPOPs and hazardous materials, and the development of POPs/UPOPs country-specific monitoring and a regional information management system.
2. Manage the consolidation of off-island disposal of PCBs in six Caribbean countries.

The department commenced the preparations for the hosting of the "Regional Results and Capacity Building Workshop for GEF 5558 Project Activity 2.1" scheduled to be held in Barbados

6.3. Strategic Approach to Chemicals Management

The Strategic Approach to Chemicals Management (SAICM) is a policy framework that seeks to promote chemical safety around the world. It was adopted on February 6, 2006, by the First International Conference on Chemical Management. Barbados has had four projects funded by the Quick Start Programme (QSP) which were:

- Updating a national chemicals management profile, developing a national SAICM capacity assessment, and holding a national SAICM priority setting workshop.
- Capacity Building for POPs analysis to support the Global Monitoring Plan of POPs for effectiveness evaluation under the Stockholm Convention.
- Strengthening capacities for SAICM implementation and supporting capacity building for the Globally Harmonized System of Classification and Labelling of Chemicals in Barbados.

- “Building Capacities to Strengthen the Management of Heavy Metals.” The full and final closure of the QuickStart Trust Fund.

It should be noted that QSP ended on December 31, 2019.

6.3.1. Strengthening capacities for SAICM implementation and supporting capacity building for the Globally Harmonized System of Classification and Labelling of Chemicals in Barbados

The activities conducted in 2019 were relegated to the development of a “man on the street” video which is currently in progress, which could be used as an educational tool to raise awareness about the GHS.

6.3.2. Building Capacities to Strengthen the Management of Heavy Metals

The project “Building Capacities to Strengthen the Management of Heavy Metals” commenced on April 28, 2018, with the signing of the agreement by the Permanent Secretary, Ministry of Environment and Drainage, and the representative of the SAICM Trust Fund. The one-year project involves the development of inventories of cadmium, lead, and mercury (CLM) using the mercury toolkit for mercury and using the toolkit as a guide to carry out the lead and cadmium inventories. The other components were training and environmental monitoring of cadmium, lead, and mercury.

To facilitate the development of the inventory of the cadmium, lead, and mercury, two project assistants were contracted from September 2018 to February 28, 2019. The activities conducted in 2019 were as follows;

- Finalized the inventories report on Cadmium, Lead and Mercury, final narrative report, and other project deliverables.
- Completed and submitted signed Grant-In Form UNITAR to facilitate the return of excess funding associated with the training provided.
- Finalized and submitted the final project deliverables to the project sponsors.
- Coordinated the return of unspent project funds to the United Nations Environment Programme (UNEP).

6.4. Chemical Weapons Convention

Preparation of a National Implementation Policy for the CWC in Barbados has commenced. This policy will deal with the requirements for the implementation of the CWC in Barbados and the strategies to be used to achieve full implementation.

Barbados participated in several activities associated with CWC:

- The Annual Report under Article X of the Chemical Weapons Convention was completed and submitted to the Permanent Secretary for onward submission to the OPCW Technical Secretariat through the Ministry of Foreign Affairs and Foreign Trade.
- Prepared several Cabinet Papers on the following;
    - The Development of a National Training Course for Emergency Response.
    - Cabinet Paper and Cabinet Brief for Barbados' representation at the 21st Annual National Authorities Meeting – November 5 -7, 2019.
- Facilitated nominations for the training of officers from the Barbados Fire Service to participate in training courses hosted by the OPCW.
- Represented Barbados at the National Authorities Meeting held in Mexico City, Mexico from June 4-6, 2019.
- The EPD prepared correspondence to stakeholders for information for the Annual Report under article X of the CWC.

6.5. International Atomic Energy Agency

At the 59th International Atomic Energy Agency (IAEA) General Conference in September 2015, Barbados' application for membership to the IAEA was approved by the Plenary. As part of the membership to IAEA, Barbados has undertaken several activities.

Prepared a Cabinet Papers for the following activities:

- The IAEA Advisory Mission and National Training Course on Orphan Sources – February 2019
- Barbados' participation in the Final Coordination Meeting for Projects RLA 9081 and RLA 9082, however, there was no representation by Barbados at these meetings.
- Assisted with the preparation of the National Policy Paper.
- Participated in the IAEA Regional Training Course on Drafting a Coordinated National Radiological Emergency Plan in Vienna, Austria May 13-17, 2019.
- Made preparations for the IAEA Advisory Mission and Training Course to be held in September 2019 in Barbados.
- Meeting with Regional Coordinator, Ms Saskia Frater-Smith – July 3, 2019
- Coordinated and participated in the following IAEA Advisory Missions
    - to review the Regulatory Infrastructure for Radiation Safety held in Barbados during the period September 2- 5, 220

- The IAEA Advisory Mission to develop a National Radiological Emergency Plan – Dec. 2-6, 2019
- The Expert Mission to Barbados Water Authority to discuss Water Quality Monitoring Project – Oct. 3, 2019.

7. Solid Waste and Hazardous Materials Section

The Solid Waste and Hazardous Materials (SWHM) Section is responsible for the management of solid waste and hazardous substances in Barbados. The Derelict Section which deals with the proper removal of derelict houses and vehicles, as well as asbestos abatement, is a part of the SWHM Section.

The main section consists of the Senior Environmental Protection Officer and one Environmental Protection Officer post which was vacant in 2019. While the Derelict Section consists of the Senior Environmental Inspector and two Environmental Inspectors.

7.1. Inspection of Landfill and Disposal Sites

No inspections of the Mangrove Landfill and other disposal sites were conducted during 2019. This was to facilitate the removal of derelict cars and buildings.

7.2. Complaints

The SWHM Section investigates complaints dealing with the improper disposal of waste and hazardous materials and also the indiscriminate use and handling of hazardous materials. During 2019, there were two (2) complaints received and investigated by the SHWM Section.

7.3. Advice on the disposal of hazardous wastes

The Solid Waste and Hazardous Materials Section received and processed twenty-six (26) requests for disposal advice during 2019, an increase from 2018.

7.4. Management of Radioactive Materials

Forty (40) applications for the importation of radioactive materials were received and processed by the Solid Waste and Hazardous Materials Section during 2019. The majority of the applications came from the Queen Elizabeth Hospital and Nuclear Medicine.

7.5. Review of Pesticide Applications

In 2019, eleven (11) applications for the importation of pesticides were received and six (6) applications were addressed by the end of the year.

7.6. Identification and Removal of Derelict Buildings & Vehicles

In 2019, the SHWM identified one hundred and twenty-seven (127) structures and one thousand four hundred and ninety-two (1492) derelict vehicles during the period. Of these, approximately thirty-three (33) buildings were removed for $ 88, 819.88, and eight hundred and thirteen (813) vehicles comprising of cars and vans at a total cost of $ 86, 700.00.

7.7. Environmental Sound Disposal of Asbestos

The department facilitated twenty-seven (26) requests for permission to remove asbestos-containing materials, which were processed, approved, and monitored by officers of the Department in 2019. Additionally, two (2) investigation of complaints regarding asbestos-containing materials were conducted.

In the case of fiberglass, thirty-four (34) fiberglass disposal requests were facilitated along with three (3) personal watercraft disposal requests in 2019.

7.8. Looking Forward

The SWHM section plans to continue the identification and removal of derelict buildings and vehicles. Additionally, the Section plans to continue; planned inspections of government-owned landfills and recycling preparation operations and the regulation of the Sustainable Barbados Recycling Centre based on available resources.

8. Public Awareness and Education

The Environmental Protection Department undertakes several environmental awareness-raising and education activities. This includes the summer internship programme and the EnviroFocus Newsletter among others.

8.1. EnviroFocus Newsletter

Issue #18 of the EnviroFocus Newsletter was completed in 2019 and circulated in February 2019. The Newsletter contained articles dealing with radiation safety, illegal dumping, and chemical management, the value of recycling, and chemical weapons. It also featured an article about the experiences of the participants of the 2018 Summer Internship Programme.

8.2. Internship Programme

The Environmental Protection Department accepted six interns, two from the following institutions; the Barbados Youth Service, Barbados Community College, and the University of the West Indies, to participate in the annual summer internship programme. The interns spent time with the majority of the sections within the Department and thus were able to experience the different duties of each section. The interns also participated in the reorganizing and cataloguing of the EPD File Registry, conducted public education initiatives via public interaction surveys, conducted desktop research, prepared reports on their activities, and conducted PowerPoint presentations to the EPD staff at the end of their internship.

8.3. Public Education and Outreach

The Environmental Protection Department participated in the Barbados Association of Guidance Counselors Career Showcase and the UWI Science and Technology Festival both of which were held in March 2019.

Additional public awareness activities engaged in were:

- The Blue Carbon Ecosystem Tour, which was done in conjunction with the Coastal Zone Management Unit and the National Botanical Gardens. The tour aimed to sensitize the general public on the ecologically diverse areas along the coastline of Barbados, their economic importance, and their role in combating the effects of climate change. Approximately ninety (90) participants including the Minister of Environment and National Beautification the Honorable Trevor Prescod, visited three coastal ecological

treasures. The locations visited were Long Pond, St. Andrew, the Chancery Lane Swamp, and the Graeme Hall Swamp both located in Christ Church.

- Public education Interactions with students at the International Museum Day at Folkstone Marine Park in May 2019.
- Public education Interactions at the Small Island Future Fest (SIFF) which was held 28th - 29th June 2019 at Pelican Village, Bridgetown. SIFF is the flagship initiative of the Global Environmental Facility (GEF) Small Grants Programme (SGP) implemented by UNDP in collaboration with the Future Centre Trust (FCT) and the BlueGreen Initiative (BGI). The festival evolved from the well known National Green Knowledge Fairs which took place in 2016 at the Lloyd Erskine Sandiford Conference Centre and in 2017 at Queen's Park, Bridgetown. The festival aimed to promote messages of environmental sustainability innovatively and inclusively. It will be a showcase of science, visual and culinary arts, fashion, film, poetry, music, dance, theatre, and examples of sustainable living.

8.4. Adopt a School Programme

The EPD conducted a tour of the Caribbean Institute of Meteorology and Hydrology with students of the Graydon Sealy Secondary School on June 25, 2019. Approximately, thirty-five (35) students attended the tour, which highlighted the functions of the CIMH in monitoring weather and also the work that they do research air pollution, which was the theme for World Environment Day 2019.

8.5. Looking Forward

The internship programme will continue in 2020 as well as the finalization of and preparation of Issue 19 and 20 of the Envirofocus Newsletter respectively. Due to budget cuts, work on the EPD´s 50th Anniversary activities and the Adopt a School Programme will be limited. Other initiatives include the development of a Citizen Science Programme, public education interactions, and relaunching the departmental website.

9. Water Quality

The Environmental Protection Department is responsible for the management of groundwater and nearshore water quality. This responsibility for sampling is shared between the Water Quality Section (WQS) and MPCS. Water quality monitoring and reporting for both marine and groundwater is normally done by the WQS. The Water Quality Section is staffed by a Senior Environmental Protection Officer, two Environmental Protection Officers, and one Environmental Inspector.

9.1. Complaints

The Water Quality Section investigated two (2) complaints and three (3) regulatory notices were served.

9.2. Groundwater Monitoring Programme

The Groundwater Monitoring Programme is used to determine whether any pollutants may be negatively impacting the potable water supply. These pollutants may be microbiological or chemical.

Table 4: Sampling frequency by Catchment

Area	Frequency/monthly
Belle Catchment	1st Tuesday
Hampton Catchment	2nd Tuesday
West Coast Catchment	3rd Tuesday
Springs	4th Tuesday

0 above, shows the sampling schedule for the groundwater monitoring programme which is carried out in conjunction with the Barbados Water Authority.

Two hundred and eighty (280) samples were taken during 2019 which consisted of ninety-five (95) samples from the Belle Catchment, eighty (80) from Hampton, Springs forty-nine (49), and fifty-six (56) as well from the West Coast Catchment.

Samples were analyzed for twenty-one (21) microbiological and physicochemical parameters and compared to the World Health Organization (WHO) Guidelines for Drinking-water Quality.

9.3. Chlorides

The wells in the West Coast catchment had higher chloride levels compared to the other catchments (Figure 4). The Whim Public Supply (P.S) had the highest concentration of chlorides for 2019 with a value of 375.75 mg/L which also exceeded the WHO guideline value of 250 mg/L. Additionally, all of the other West Coast Wells (Alleynedale, Ashton Hall, Carlton Colleton, and Haymans) exceeded the WHO Guidelines.

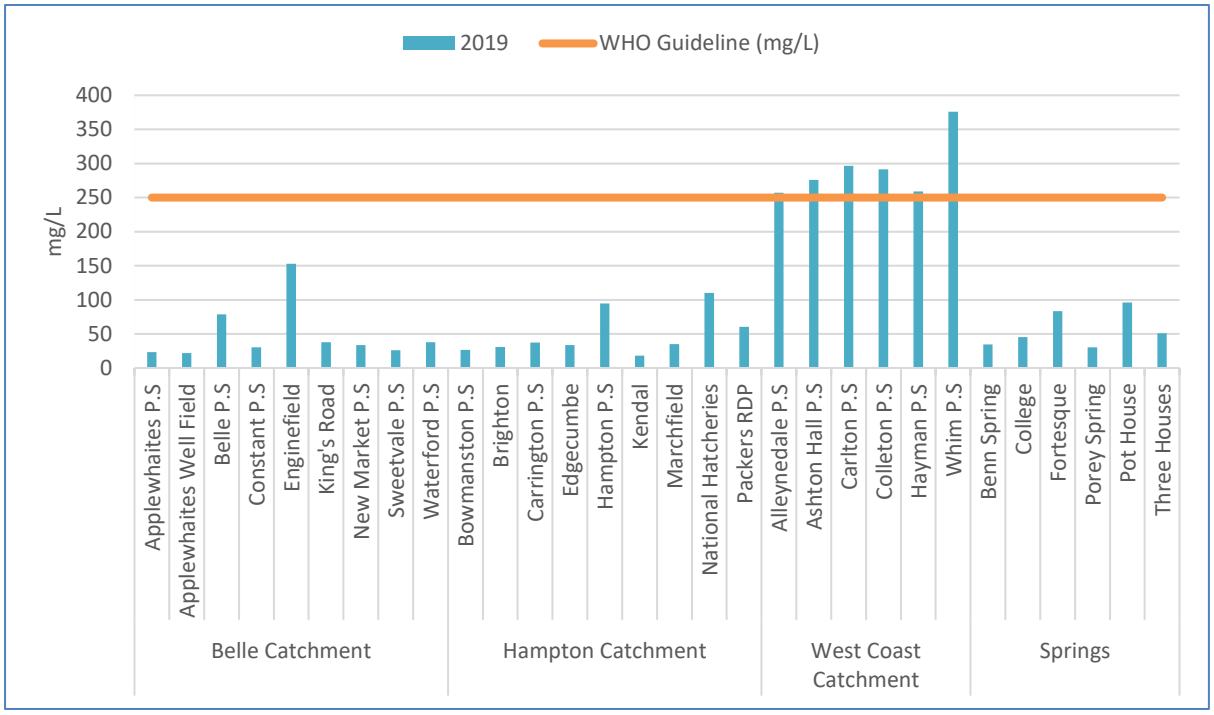

Figure 4: Average chloride concentration for public supply sources in 2019

Figure 5 shows that in 2019 the chloride concentrations for the wells in the West Coast catchment exceeded the concentrations presented in 2017 and 2018. The highest levels were observed at Trents. All of the West Coast supply locations chloride concentrations exceeded the WHO Guideline of 250 mg/L, during 2019.

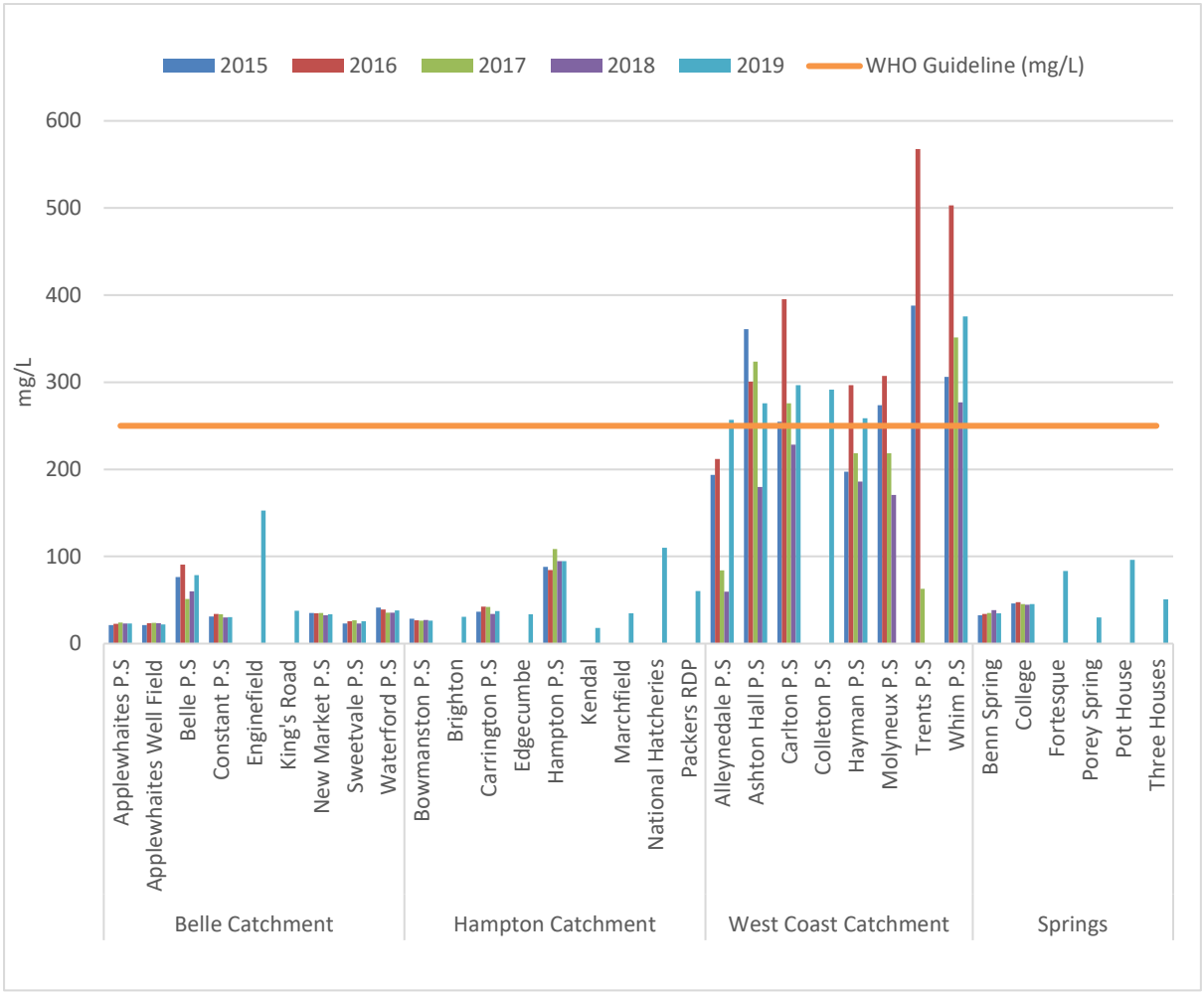

Figure 5: Average chloride concentrations for supply sources from 2015 to 2019

9.4. Nitrate expressed as Nitrogen (Nitrate-N)

All the potable water sources were below the guideline value of 10.0 mg/L (Figure 6). The highest value was from Ashton Hall P.S which was a value of 8.73 mg/L an increase from the previous year.

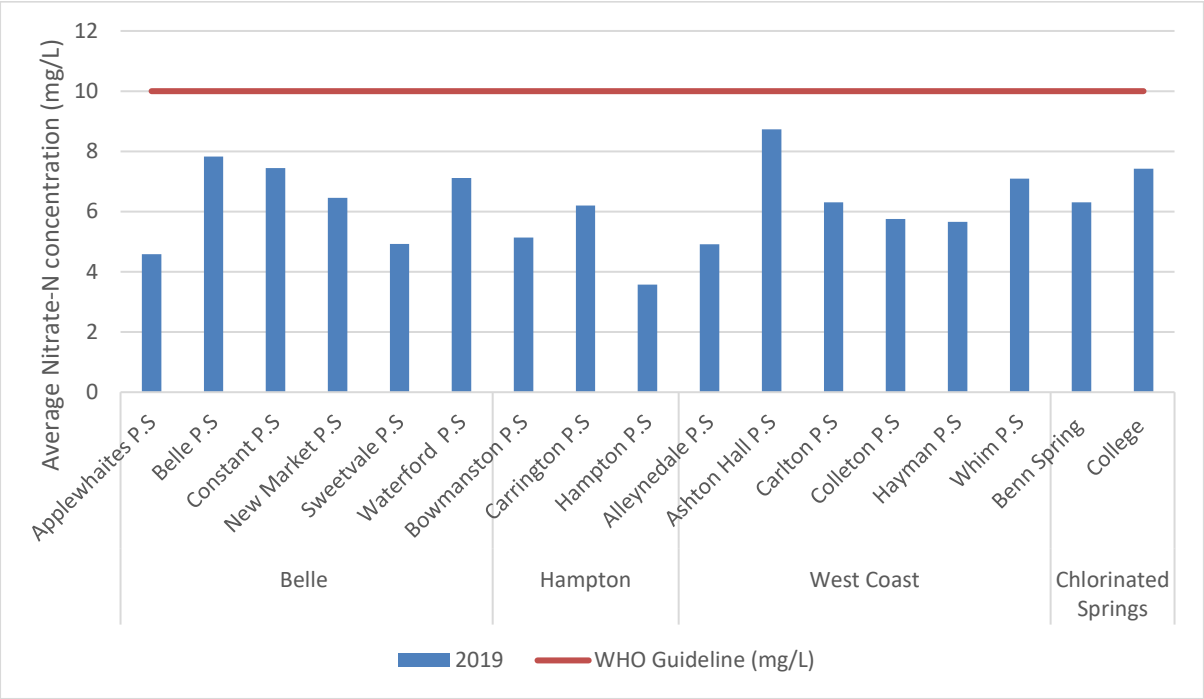

Figure 6: Average Nitrate-N concentration for the public supply sources in 2019

None of the public supply sources has exceeded the guideline of 10 mg/L during the six years (Figure 7). Values peaked during 2016 but an overall decrease was observed for the period 2017-2019. However, a comparison of the West Coast wells showed an increase in levels in 2019 compared to 2018.

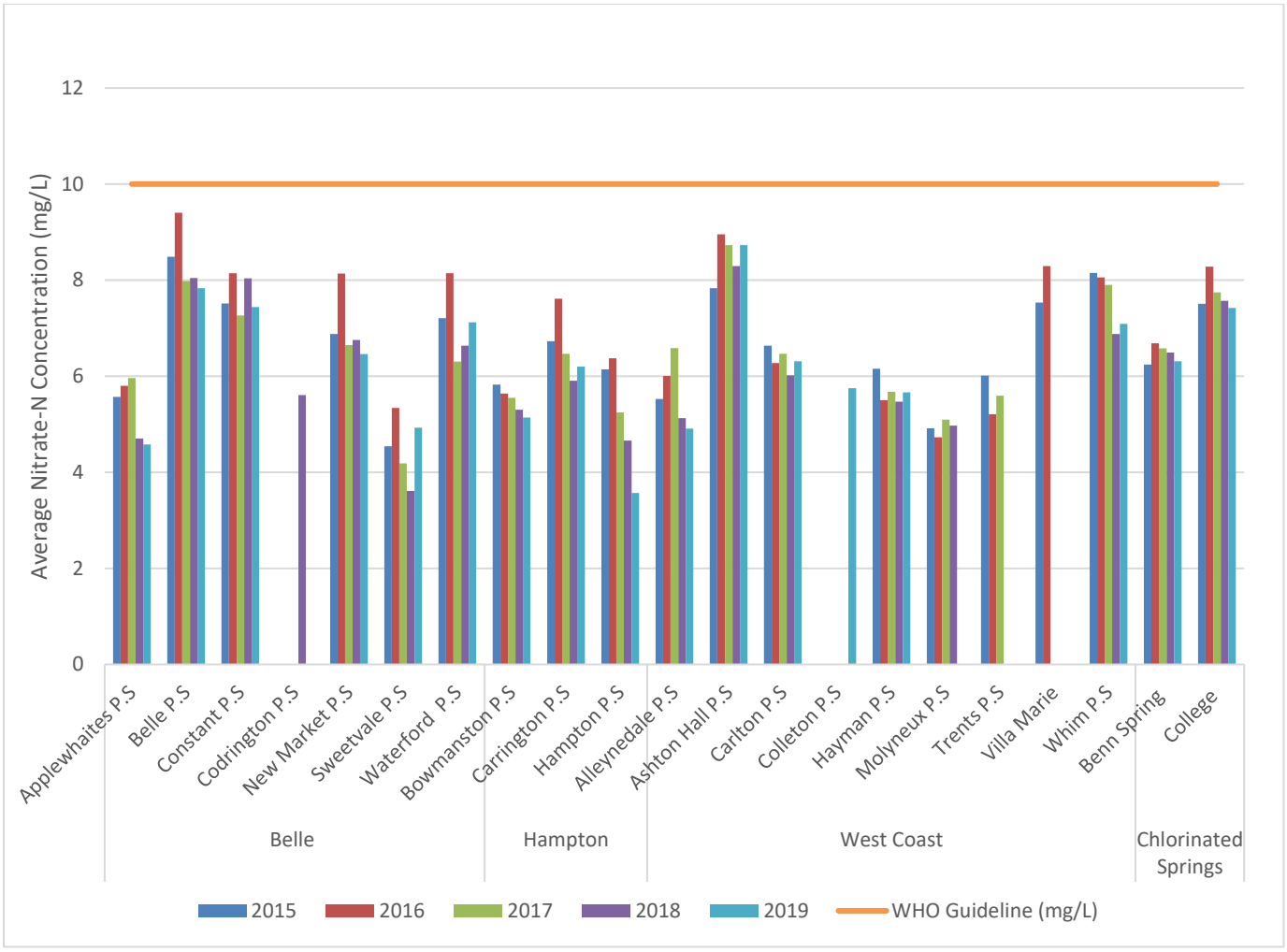

Figure 7: Average Nitrate-N concentrations for the public supply sources from 2015 to 2019

9.5. Sulphates

Figure 9 shows that none of the public supply sources has exceeded the guideline value of 500 mg/l. This was also the case for the six years of 2014 to 2019 as shown in Figure 9.

Figure 8: Average Sulphate concentration in public supply sources in 2019

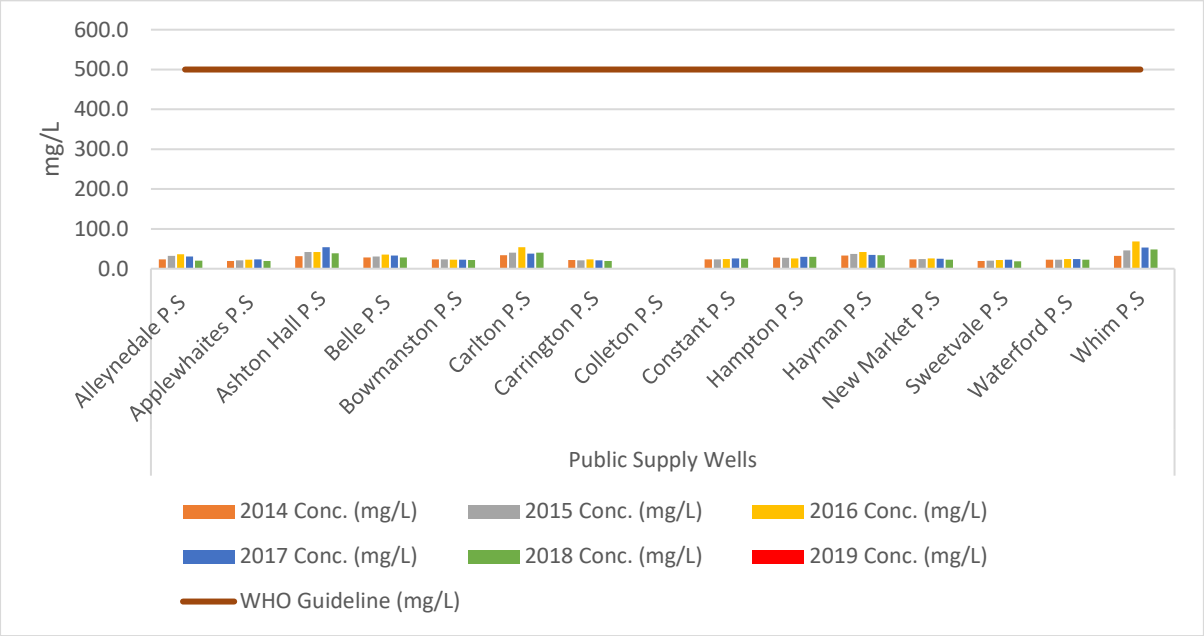

Figure 9: Average sulphate concentrations for public supply sources in 2014-2019

9.6. Total Dissolved Solids

Six (6) public supply wells exceeded the guideline value of 600 mg/L for total dissolved solids which were Alleynedale P.S (857 mg/L) P.S, Ashton Hall P.S (719 mg/L), Carlton (804 mg/L), Colleton (682 mg/L) and the highest which was the Whim P.S with 1068 mg/L (0). The wells in the west coast catchment generally had a higher concentration of total dissolved solids which may be due to the ongoing drought in Barbados and the wider region.

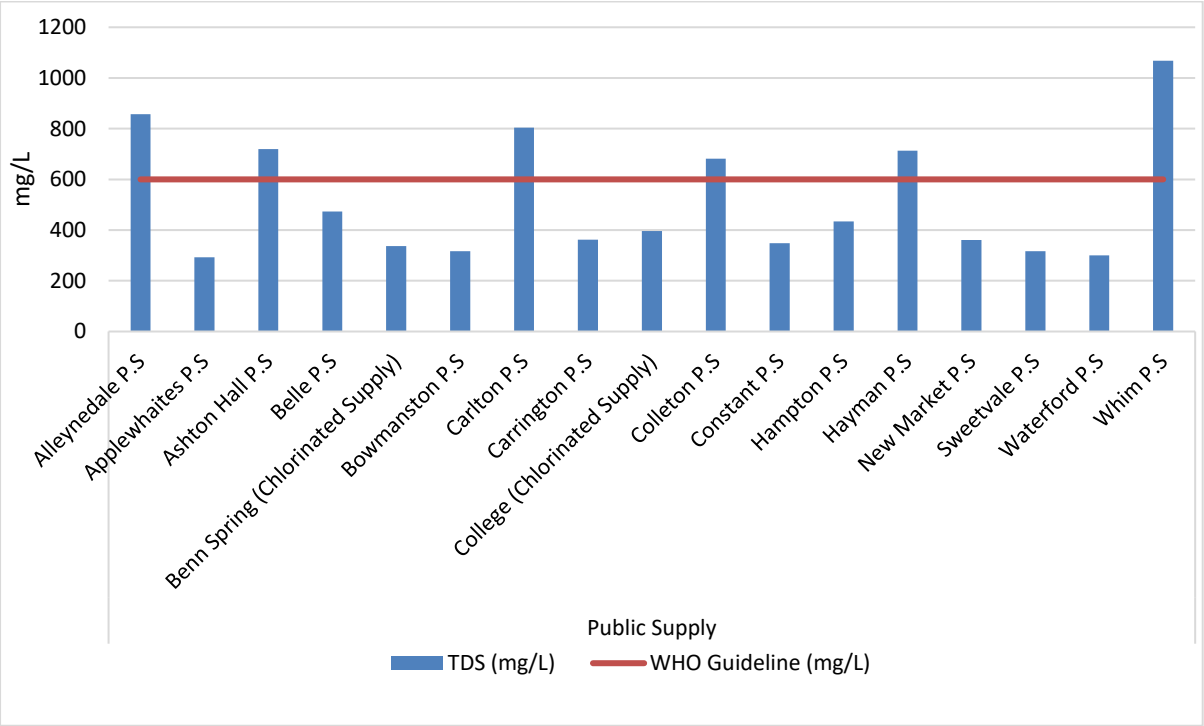

Figure 10: Total Dissolved Solids of public supply sources in 2019

Figure 11 shows that the TDS concentrations in 2019 at the majority of the public supply sources were higher than those levels recorded in 2018, except for Applewhaites, Benn Spring, Bowmanston, New Market, and Waterford where the levels remained relatively stable to the previous year.

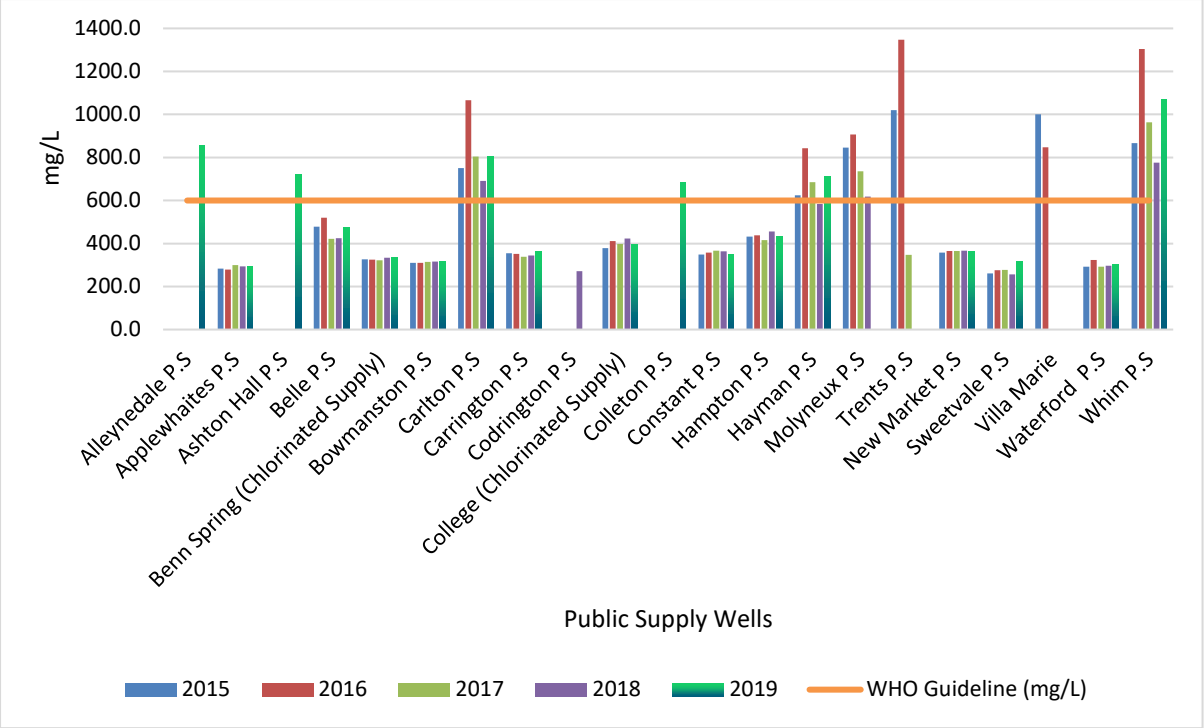

Figure 11: Concentrations of TDS from 2015 to 2019 in potable water sources

9.7. Faecal Coliform

There were no recorded exceedances of the WHO guideline level of 0 CFU/100 ml for Fecal Coliform detected in samples for 2019 at both the springs and public supplies. Exceedances were observed in a couple of the agricultural supply sources.

9.8. Monitoring of Natural Springs

Local springs are monitored as part of the Groundwater Monitoring Programme, as these water sources are utilized for a variety of purposes by the public for bathing, recreation and agricultural purposes on a small scale.

9.8.1 Chlorides

For Chlorides, all of the non-chlorinated springs i.e. Fortesque, Porey Springs, Pothouse, and Three Houses chloride concentrations were below the WHO guideline values of 250 mg/L.

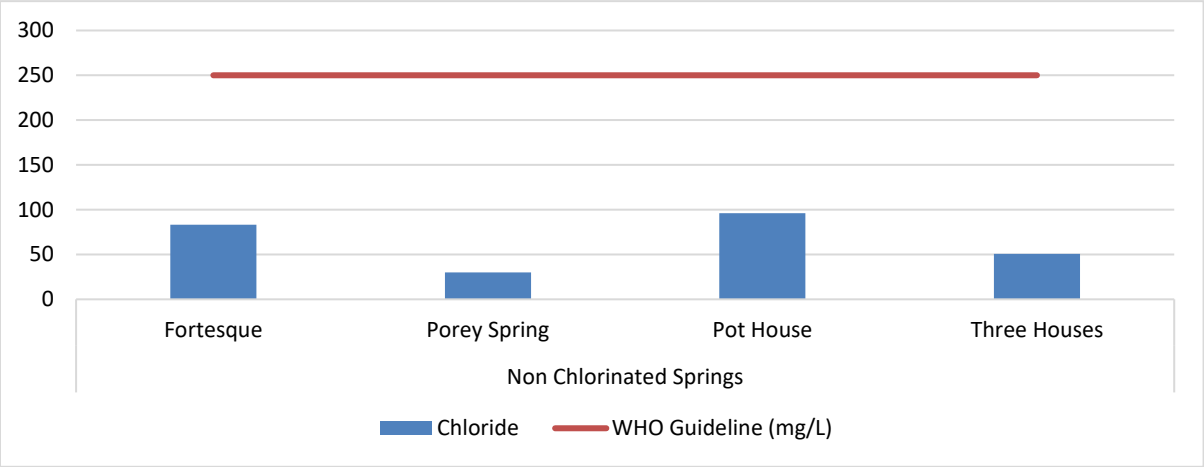

Figure 12: Average chloride levels at non-chlorinated springs 2019

9.8.2 Nitrate expressed as Nitrogen (Nitrate-N)

None of the springs exceeded the guideline value of 10 mg/L in 2019 as shown in Figure 13. It must be noted that the average Nitrate-N concentration for Fortesque in 2019 was 9.72 mg/L reduced from10.5 mg/L in 2018.

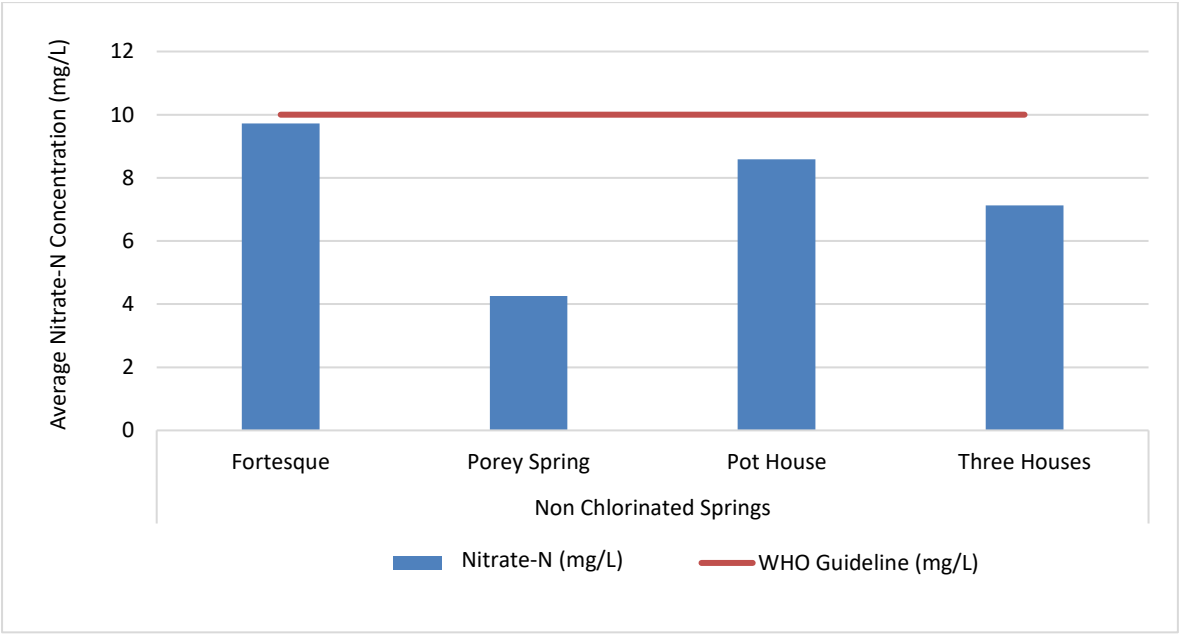

Figure 13: Average Nitrate-N concentration for springs in 2019

9.9. Widescreen Water Quality Monitoring

Biannual monitoring of groundwater potable supply sources was carried out on May 21st, 2019 and October 22nd, 2019. On the May 21st occasion, sampling was undertaken at 6 sites which were Belle, Hampton, Bowmanston, Alleynedale Ashton Hall, and Constant. On October 22nd, Belle, Hampton, Bowmanston, Alleynedale, Haymans, and Constant were sampled.

Samples were tested for several parameters including but not limited to metals, semi-volatiles, volatiles, persistent organic pollutants, and radionuclides.

Both Allendale and Ashton Hall public supply stations (650 mg/L) exceeded the WHO guideline value for total dissolved solids of 600 mg/L during the dry season monitoring session. During the wet season sampling in October, the TDS levels at Allendale P.S were double that of the guideline value at 1200 mg/L and Haymans P.S exceeded the guidelines with 790 mg/L. The Belle P.S. exceeded the US EPA standard of 500 mg/L with a value of 510 mg/L.

Although there are no discernible health impacts associated with high concentrations of chlorides in drinking water, levels above **200-300** mg/L can impact the taste. During May 2019, chloride levels at both Alleynedale and Ashton Hall were in the approximately 220 mg/L at both locations. During October, levels at Haymans and Alleynedale were 330 mg/L and 580 mg/L respectively.

9.10. Nearshore Water Quality Monitoring

The Environmental Protection Department conducts sampling of marine water to ensure that the quality of water is safe for recreational purposes and also to protect the nearshore environment. 0 shows the beaches sampled as part of the nearshore monitoring programme.

Table 5: List of beaches samples by Catchment

West Coast Beaches	Number of Samples taken
Batts Rock	73
Brandons	86
Brighton	83
Coach House	76
Heywoods	86
Holetown	202
Mullins	156
Paradise	71
TOTAL	**895**

South Coast Beaches	Number of Samples taken
Accra	114
Amaryllis	183
Brownes	270
Dover	116
Graveyard	68
Miami	121
Pebbles	259
Silver Sands	32
Welches	29
Worthing	149
TOTAL	**1341**

In 2019, a total of two thousand two hundred and thirty-nine (2, 239) nearshore water samples were analyzed. One thousand, three hundred and forty-one (1,341) samples were analyzed for South Coast beaches and eight hundred and ninety-five (895) samples from West Coast beaches.

9.10.1. Microbiological Analysis

For both catchments, two thousand two hundred and thirty-six (2,236) were tested for microbiological parameters such as enterococci, faecal coliforms, and faecal streptococcus. growth.

Table 6: Marine Quality Parameters and Proposed Ambient Standards

Parameter	Standard

Enterococci	The geometric mean of a minimum of 5 samples should not exceed 35 colonies/100ml in any 30 days.
Faecal Coliform	The geometric mean of a minimum of 5 samples should not exceed 200 colonies/ 100ml in any 30 days. AND No more than 10% of samples exceed 400 colonies/100ml

South Coast Catchment

There were no exceedances of the standard for enterococci or faecal coliform during 2019 routine sampling.

West Coast Catchment

There were no instances in which the microbiological standards were exceeded on the West Coast during 2019.

9.10.2. Physico-Chemical and Nutrient Analysis

0, shows the guideline values for the Physico-chemical parameters sampled and analyzed for in the nearshore monitoring programme.

Table 7: Parameters and the standard values

Parameter	**Ambient Water Quality Standard**
Total Nitrogen	0.1 mg/L
Total Phosphorous	0.015 mg/L
pH	7.0 - 8.7
Total Suspended Solids (TSS)	5 mg/L
Turbidity	1.5 NTU

South Coast Catchment

For the South Coast Catchment, the average value for the total phosphorus exceeded the standard value (0), and the total suspended solids (TSS) was slightly above the guideline value. pH was within the range of recommended values.

The annual averages for all the beaches for total nitrogen exceeded the standard, with Silver Sands Site 1 having the highest average (1.1 mg/l). This site also had a maximum value of 1.87 mg/L.

Concerning TSS, three (3) out of ten (10) sites exceeded the standard. These were Graveyard Site 3, Silver Sands Site 1, and Welches. The highest average was at Welches (10.4 mg/L) and also the maximum value (25 mg/L).

At Worthing Site 2 the annual average turbidity values (1.66 NTU) were greater than the standard. Worthing Site 2 recorded the maximum turbidity value of 3.08 NTU.

Table 8: Average values for Physico-chemical parameters for the South Catchment for 2019

	Total Phosphorus/ mg/L	TSS/ mg/L	pH	Turbidity/ NTU	Total Nitrogen/ mg/ L
No. of samples	63	63	99	78	62
Average	0.06	5.05	8.13	0.98	0.42
Maximum	0.31	10.4	8.49	3.08	1.87
Minimum	0.05	2.13	4.52	0.03	0.1
Ambient Water Quality Standard	**0.015**	**5**	**7.0 - 8.7**	**1.5**	**0.0.1**

Table 9 shows that annual averages for Total Phosphorus and Total Nitrogen for the West Coast Catchment exceeded the standards for those parameters. Total Suspended Solids (TSS) and pH were within the limits for those parameters.

Concerning turbidity, Batts Rock Site 1 (1.70 NTU), Brighton (2.11 NTU), Coach House (3.52 NTU) Heywoods Site 2 (3.02 NTU), and Paradise Site 1 (1.85 NT) annual average exceeded the turbidity standard of 1.5 NTU.

Concerning total phosphorus, the detection limit is 0.05 mg/L which is higher than the standard.

Table 9: Average values for Physico-chemical parameters for the West Coast Catchment for 2019

	Total Phosphorus/ mg/L	***TSS/ mg/L***	***pH***	***Turbidity/ NTU***	***Total Nitrogen/ mg L***
No. of samples	57	53	71	57	57
Average	0.07	3.42	8.00	0.87	0.30
Maximum	0.15	19.00	8.39	3.52	1.61
Minimum	0.05	2.00	6.87	0.11	0.06
Ambient Water Quality Standard	**0.015 mg/L**	**5 mg/L**	**7.0 - 8.7**	**1.5 NTU**	**0.1 mg/L**

9.11. South Coast Special Sampling

Due to issues with the South Coast Sewage System special sampling was conducted at Worthing, Amaryllis, Boardwalk, Accra, and Sandy Beach sites in 2019. This sampling was conducted in response to discharges of wastewater to the nearshore at Worthing, via the sluice gate. In total, one thousand, one hundred (1100) nearshore water samples were analyzed as shown in Table 10.

Table 10:South Coast Special Sampling location and number of samples analyzed

South Coast Beaches	Number of Samples taken
Accra	182
Amaryllis	268
Boardwalk	243
Sandy Beach	188
Worthing	219
TOTAL	**1100**

The EPD conducted daily sampling for the first week of January 2019. After a decision to open the sluice gate, sampling was conducted three to four times a week from the second week in January through to the end of March 2019. As microbiological levels improved with the commissioning of the temporary outfalls at Worthing beach, from April through to December 31st, 2019 sampling was conducted once a week. Also, from November 2019 onwards, the department reverted to the regular South Coast sampling sites and the Boardwalk and Sandy beach sites were no longer sampled.

A total of 1100 samples were collected and analyzed for both Fecal Coliform and Enterococci through the special sampling in 2019. Faecal Coliform concentrations ranged from a minimum of <1 to 320 Colony Forming Units (CFU) per 100ml for the entire period. In 2019 there were no failures of the Faecal Coliform Geometric mean Criterion which is as follows:

US EPA 1976 Faecal Coliform Criterion - Geometric mean of a minimum of 5 samples should not exceed 200 Colony Forming Units (CFU)/100ml in any 30 days.

Enterococci concentrations ranged from a minimum of <1 to a maximum of 382 CFU/100ml for 2019. The United States Environmental Protection Agency (US EPA) and Health Canada SSM criteria for Enterococci in marine recreational waters were the two criteria used for enterococci and are listed below:

- A Single Sample Maximum (SSM) of 104 CFU/100ml should not be exceeded at designated beach areas (US EPA)
- Single-sample maximum concentration: ≤ 70 enterococci/100 mL (Health Canada)

They were three failures of the US EPA enterococci criteria and six failures of the Health Canada criteria in 2019 (see Table 1).

Table 11 Beaches that failed Enterococci Criteria in 2019

DATE	US EPA STANDARD (104 CFU/100ml)	HEALTH CANADA (70 CFU/100ml)
2018-12-24 to 2019-01-02	Boardwalk 2, Accra 2	Amaryllis1, Boardwalk 2, Accra 2
2019-01-28 to 2019-02-03	None	Boardwalk 1
2019-02-10 to 2019-02-17	Boardwalk 2	Boardwalk 2
2019-07-24	None	Worthing 1

In 2019 they were no failures of the US EPA 1976 Enterococci Geometric mean Criterion which is as follows:

Enterococci Criterion - Geometric mean of a minimum 5 samples were not greater than 35 CFU/100 ml in any 30-day interval

10. Training, Conferences, Seminars, and Workshops

The staff of the Department participated in several local and overseas training activities during 2019 (Appendix Table 12 and Table 13). Most notable of these was The IAEA National Training Course on Orphan Sources and, the GEF 5558 National Training Workshop- Public Awareness and Public Education Strategies on Persistent Organic Pollutants (POPs) for Barbados.

The IAEA National Training Course on Orphan Sources was held on September 9-12, 2019, at upstairs L.V. Harcourt Lewis Building and was conducted by representatives of the International Atomic Energy Agency. The course was attended by officers of the EPD and representatives from the Royal Barbados Police Force (RBPF), Labour Department, Ministry of Health and Wellness, the Queen Elizabeth Hospital, Barbados Fire Service, and Department of Emergency Management and the Barbados Fire Service. The training aimed to provide training in the identification and handling of Orphan sources of radioactive material.

The GEF 5558 National Training Workshop- Public Awareness and Public Education Strategies on Persistent Organic Pollutants (POPs) for Barbados. The workshop on November 14, 2019, upstairs L.V. Harcourt Lewis Building and was attended by three officers of the EPD and representatives of various stakeholder agencies and departments. The focus of the workshop was to present to stakeholders a public education and awareness toolkit and national communications implementation plan for persistent organic pollutants in Barbados.

Appendix

Table 12: Local training

Name of Course/Activity	Location & Date/Period	Aim/Objectives(s)	Officer(s) in Attendance
E-Planning Training	2019/01/15	Training in the use of the E-planning platform	CBO K. Barrow SBDO A. Deane BDO C. Taylor BDO H. Clarke BDI C. Layne BDO E. Harper BDO S. Chase BDI J.Nembhard TO A. Reeves
Online Registry System Training	2019/02/11	Training provides by the Data Processing Department in the use of an Online Registry System.	DDIR L. Senhouse SETO P. Pile TO A. Reeves

Principles for Reviewing Environmental Impact Assessments - Edition 5	Online	This course is designed to provide practical guidance to professionals involved in the review and evaluation of Environmental Impact Assessments. It is aimed at professionals who participate in the process of reviewing proposed projects, policies, or programs and/or those working on environmental protection and management, social or natural sciences, public management, etc. and who review and evaluate the results of Environmental Impact Assessments (EIAs) carried out by others. It is intended to apply to a range of legal, institutional, and cultural scenarios and to be used by reviewers from any country where Environmental Impact Assessments are conducted.	SETO (ag) P. Pile
Online course in Biodiversity in Environmental Impact Assessment-BEIA Edition 4", offered by the IDB.	Online July 2- Aug 12, 2019	This course provides a knowledge base on accepted good practices for the effective incorporation of biodiversity into the process of Social and Environmental Impact Assessment (EISA). These good practices have been created to ensure that the biodiversity information included in EISAs provides a precise and adequate analysis of the impact on biodiversity, providing a basis for the development of effective mitigation measures to ensure that these impacts are handled in an appropriate manner	ETO J. Yearwood

The IAEA National Training Course on Orphan Sources	EPD, Dalkeith, St. Michael September 9-12, 2019	To provide training in the identification and handling of Orphan sources of radioactive material	ETO J. Yearwood SEPO T. Armstrong SBDO (ag) G. Clarke SEI N. Cummins El D. Forde
Introduction to Microsoft Excel	MLD. Tower II, Warrens St. Michael Sept 23-26, 2019	To provide participants with basic knowledge and skill in MS. Excel	EPO (ag.) P. Fergusson
Online course in "Meaningful Stakeholder Engagement" in the context of the EIA process, which was offered by the IDB.	Online Sept 24-Nov 4, 2019	This five-week online course offers an overview of the principles and content that should be present for a consultation process to be considered "meaningful". Since it is not feasible to discuss every possible circumstance in detail, the course reflects on principles and gives overall guidance, rather than a standard blueprint or "one size fits all" approach. Broadly, the course addresses three aspects of how consultation is approached in IDB policies and how good practice has evolved.	TO A. Reeves

Incident Command Training hosted by the Barbados National Oil Company Limited.	29th October to 1st November 2019, BNOCL Headquarters, Woodbourne, St. Michael	Two 2-day sessions on the 29th October- 30th October 2019 and 31st October to 1st November 2019. Each session comprises a classroom session on Day 1 and an Exercise on Day 2. The first session was an oil spill exercise and the second session was a Liquid Natural Gas (LNG) spill exercise. The objectives of the exercises were to test the: • Emergency Response Process & Organizational Structure • Oil Spill Response Effectiveness • Information Management & Communication Effectiveness	ETO P. Pile DDIR(ag)- L. Senhouse SMPO(ag) –A-Eversley

IWEco Training Workshop: Building Capacity at the National Project Level in the areas of Environmental Monitoring, Community Engagement, and Citizen Science	5-7 November 2019 The Blue Horizon Hotel, St. Michael, Barbados	The overall aim of the workshop will be to promote the uptake and utilization of the key subject areas with a multifaceted training approach including technical presentations, group activities and guided practical exercises to improve capacity among IWEco countries in the following areas: • Environmental monitoring collection, storage, and purpose. The tailoring of monitoring exercises to suit local contexts and needs to address challenges in reporting and existing data gaps. • Community engagement and the process of working collaboratively to drive positive environmental and behavioural changes to promote sustainable environmental management. • Citizen Science and an introduction to the Community Based Resource Assessment (CBRA) Toolkit to empower citizens to serve as environmental stewards, increase overall environmental literacy and generate a broad base of support for and interaction with IWEco project activities across the region.	Marine Pollution Officer, T. Williams

The GEF 5558 National Training Workshop- Public Awareness and Public Education Strategies on Persistent Organic Pollutants (POPs) for Barbados.	EPD, Dalkeith St. Michael November 14, 2019	The purpose of the workshop is to present to stakeholders a public education and awareness toolkit and national communications implementation plan for persistent organic pollutants in Barbados.	Director (ag) A. Headley Deputy Director (Ag) L. Senhouse Environmental Technical Officer (ag) J. Yearwood
Website training	November—14-15th 2019	Training to upload and maintain content on the website.	SEPO Armstrong, SMPO Eversley, SET Chapman, CBDO Deane, DDIr Senhouse, SETO Pile, ETO Yearwood, SEI Cummins, EI Griffith, CO Howell, SBDO Clarke, SBO Forde, and BDO Layne

Table 13:Overseas workshops and Training

Name of Course/Activity	Location & Date/Period	Objectives(s)	Officer(s) in Attendance
RAC-REMPEITC Caribe Sub-Regional Level II Workshop on the Oil Pollution Response Convention and the Implementation of an Incident Management System in	St. Kitts March 11th-14th, 2019	To train spill managers and incident commanders in the tactical aspects of spill preparedness and response, in addition to the application of incident management systems to assist the effective coordination of a spill response.	Marine Pollution Officer T. Williams
The Maritime Technology Cooperation Centre Caribbean (MTCC) workshop.	March 18-19th 2020, Trinidad	• To provide a platform for partnerships aimed at reducing emissions and enhancing energy-efficient methods in the marine domain at a global level and specifically in the Caribbean region. • Identify environmentally friendly and sustainable technologies available to the Caribbean region • Enhance awareness and uptake of environmentally sound	Senior Environmental Technician (ag.) S. McAllister

		technologies available to the Caribbean region • Provide advisory and market development services for technology adopters and suppliers • Monitor regional energy efficiency needs and aligns training programmes to meet those needs	
Regional Workshop on Developing a Legal/Regulatory Basis for United Nation Sanctions Enforcement	Kingston Jamaica March 26th - 27th, 2019	• To increase the understanding of participating CARICOM Member States about UN sanction designed to prevent trade in chemical, biological, radiological and nuclear materials and technology • To assist participants in developing national legislation	Senior Environmental Pollution Officer (ag.) T. Armstrong
Strategic Planning Session for Marine Litter Management in the Wider Caribbean Region	Miami, FL, USA March 25th 29th 2019	To develop a strategic outline for Marine Litter Management	Senior Marine Pollution Officer (ag) A. Eversley

A study tour to wind farms in Jamaica.	Jamaica, 28th May – 1st June 2019	This study tour sought to give the Barbadian team further information on wind energy, exposure to operational wind farms, and allow for the exchange of information concerning the regulatory processes surrounding wind farms.	Senior Environmental Technician (.ag.) L. Chapman
The IAEA Regional Training Course on Drafting a Coordinated National Radiological Emergency Plan	Vienna, Austria May 13-17, 2019		Senior Environmental Pollution Officer T. Armstrong
IMO Regional Workshop on Exercise Programs and Design,	Belmopan, Belize May 14-17, 2019	The workshop will provide training in designing and coordinating oil spill exercises which is a critical aspect of the Barbados National Oil Spill Response Team	Senior Marine Pollution Officer (ag) A. Eversley
IAEA/EVT1804220 Regional Training Course on Basic Radiation Protection for End-Users and Regulators	May 27-31, 2019 Antigua	Covers the safety and security of radiation sources in radiology, nuclear medicine, radiotherapy, industrial radiography, industrial irradiators, nuclear gauges, and well logging following the requirements of international safety standards.	Technical Officer, A. Reeves

Global Environment Facility – Caribbean Expanded Constituency Workshop	St. Lucia. May 28th -31st, 2019	To provide updates to the changes to the GEF and understanding of what is now required to receive funding to fulfil Barbados' obligations under the various MEAs to which Barbados is a party such as the Stockholm Convention on Persistent Organic Pollutants.	Environmental Technical Officer, J. Yearwood
The OPCW Chemical Safety Seminar	Costa Rica from July 15-18, 2019.	Participants were provided with updated information inter alia, current practices and concepts relating to the safety and security management, modern safety and security strategies, current models on chemical safety and security policies, current trends in safety and security management strategies in the chemical industries and chemical site security management and safety and security culture. Best practices from the chemical industry were presented.	Senior Environmental Technical Officer (ag) P. Pile
IAEA/RLA9082-1804224 Regional Training Course on	Cuba, September 2 to 13, 2019.	Provided EPD with training to enhance its technical knowledge and skills to	Technical Officer, A. Reeves

Notification, Authorization, Inspection, and Enforcement		facilitate the rapid implementation required under the IAEA Statute.	
The IAEA Inter-Regional Training Course for Radiation Safety Information Management System Coordinators,	September 23-27, 2019 in Austria.	a) To initiate familiarization of national coordinators with RASIMS2 b) To familiarize participants with the technical aspect of RASIMS2 c) To initiate the input of information on national radiation safety infrastructures in the new platform d) Allow participants to gain experience in the RASIMS 2 system e) Show changes /improvements to the RASIMS system f) To obtain feedback from users on the use of the system	Senior Environmental Pollution Officer, T. Armstrong