

1 Introduction

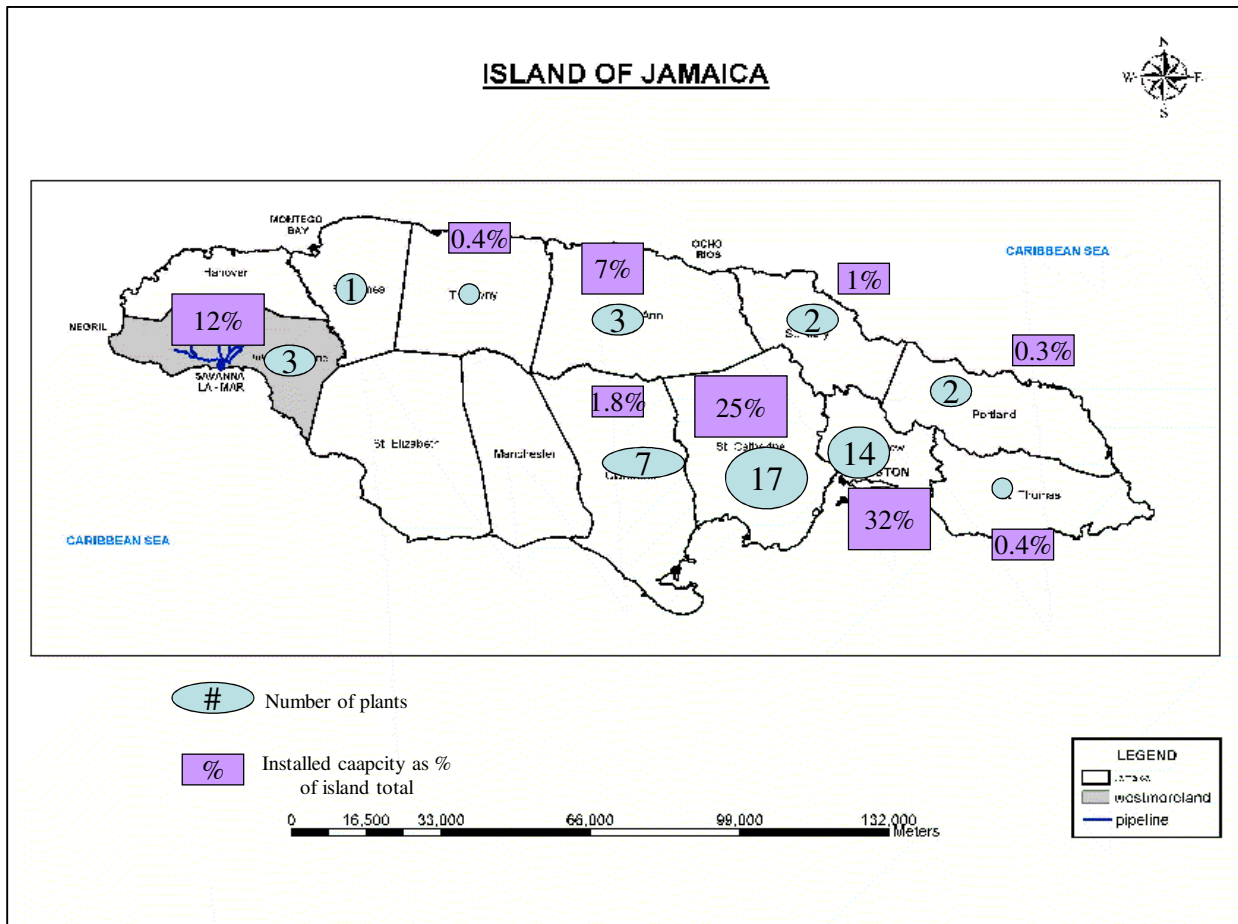
Existing Wastewater Systems

National Water Commission collects and treats sewage for about 25% of Jamaica's population. It operates some sixty-eight sewage treatment facilities; most of these were constructed in tandem with housing developments and then turned over to NWC.

Sewerage facilities are mainly located in urban areas of the country. In Kingston and St. Andrew where most of the population reside, sewerage services are provided to some 32% of the population. In the adjoining parish of St. Catherine, it is estimated that about 25% of the population has access to central sewerage. However, in the densely populated area of south-east St. Catherine area, over 90% of the population is connected to NWC sewerage.

Figure 1.1 below graphically represents the sewerage situation across the country

Figure 1.1 – NWC Sewerage by Parish



It should be noted that although there are sixty eight plants, the installed treatment capacity of five of these facilities account for almost 70% of the total. These five larger facilities are the Soapberry, Greater Portmore, Negril, Montego Bay and Ocho Rios plants; these were constructed within the last fifteen years. The Soapberry facility, which is in the process of being transferred to NWC, is the largest. The effluent discharges from these plants are generally good.

There are therefore many small wastewater treatment facilities operated by NWC. Unfortunately, many of these small plants are malfunctioning and therefore ineffective in providing the required level of treatment. Some have fallen into disrepair and are in urgent need to be rehabilitated. In some cases, they were not designed to meet the current effluent standards that have been stipulated by the National Environment and Planning Agency (NEPA).

New Wastewater Systems

On-site wastewater disposal facilities are the main types of sanitation systems used by Jamaicans. These include soak-away-pits, tile fields, evapo-transpiration beds; these may or may not be associated with septic tanks. Pit latrines are still used by some residents, mainly in rural communities.

The lacks of central sewerage in major towns has constrained the level of development in some of these areas and have introduce public health and environment risks that need to be addressed. It is planned to provide central sewerage facilities in the major town of Jamaica. This is in keeping with the Water Sector Policy which originally targeted achieving this by 2020. It is intended to provide central sewerage in major towns to support national development and ameliorate the impact of improper sewage disposal.

NWC Sewerage Service Improvement Plans

NWC plans to implement its Sewerage Services Improvement Plans under three broad categories:

(a) Consolidation –

- i. rehabilitate malfunctioning wastewater treatment plants to at least operate at their original design levels;
- ii. extend sewer networks which are associated with functioning treatment plants, to networks associated with malfunctioning

plants and thereby allow wastewater that normally flows to these malfunctioning plants to be redirected to be properly treated; the malfunctioning plants can then be decommissioned and retired.

- iii. Re-configure existing sewerage to allow the reduction in the number of wastewater treatment plants

(b) Extension –

- i. *Extend sewer network to new areas; this will primarily be done in Kingston and St. Andrew*

(c) New Systems –

- i. *The construction of new wastewater systems in major towns*

2 Overall Sewerage Programme

Set out in figure 2.1 is the draft schedule for the implementation of NWC Sewerage projects over the next fourteen years. The projects in Category 1 are priority projects that are to be completed within the next five years. While the draft schedule is subject to change, it is not expected that much change will be made to the Category 2 projects, where implementation is expected to commence by 2014.

The schedule and grouping of projects in Categories 3 to 5 are shown, with implementation tentatively set to commence after 2015.

Draft Scheduling of Sewerage Projects

Category	Projects	Implementation Period
1	<ul style="list-style-type: none"> •Rehabilitation of under performing WWTP •KSA (extending sewer network) •Portmore •Greater Spanish Town •Old Harbour •May Pen 	2011 - 2016
2	<ul style="list-style-type: none"> • KSA (extension of Soapberry; extending sewer network) •Port Maria •Port Antonio •Montego Bay (extension of the network) •Falmouth •Savannah La Mar 	2014 - 2019
3	<ul style="list-style-type: none"> •Buff Bay •Annotto Bay •Runaway Bay •St. Ann's Bay •Mandeville 	2017 – 2022
4	<ul style="list-style-type: none"> •Morant Bay •Lucea •Black River •Santa Cruz 	2019 – 2024
5	<ul style="list-style-type: none"> •Oracabessa •Linstead 	2022 – 2025

3 Rehabilitation of Wastewater Treatment Plants

1.1 State of Existing Wastewater Plants

Information on the NWC operated wastewater treatment plants are presented in table 3.1 below.

Table 3.1 – List of Existing Wastewater Plants

No.	Parish	NAME	CAPACITY (MLD)	TYPE OF SYSTEM	LEVEL TREATMENT
1	KSA	Boone Hall	0.40	Cont. Stab.	Tertiary
2	KSA	Grove Manor	0.25	Ext. Aeration	Secondary
3	KSA	Elleston Flats	1.10	Cont. Stab.	Secondary
4	KSA	Acadia	0.22	Ext. Aeration	Secondary
5	KSA	Hughenden	0.15	Cont. Stab.	Secondary
6	KSA	Whitehall Avenue	0.35	Ext. Aeration	Secondary
7	KSA	College Green	0.26	Ox. Ditch	Secondary
8	KSA	Bay Farm Villa	0.44	Cont. Stab.	Secondary
9	KSA	Port Royal	0.05	Tile field	Secondary
10	KSA	East Prospect	0.32	Aer. Lag.	Secondary
11	KSA	Spring Field	0.05	Primary + Cl ₂	Primary
12	KSA	Yallahs	0.26	Stab. Ponds	Secondary
13	KSA	Harbour View	4.40	Cont. Stab.	Secondary
14	KSA	Red Hills Pen	0.31	Ext. Aeration	Secondary
15	St. Catherine	Independence City	13.50	Cont. Stab.	Secondary
16	St. Catherine	Bridgeport	7.60	Cont. Stab.	Secondary
17	St. Catherine	Ensom City	3.80	Ext. Aer.	Secondary
18	St. Catherine	Horizon Park	1.90	Ox. Ditch	Secondary
19	St. Catherine	Twickenham Park #1	0.95	Ext. Aer.	Secondary
20	St. Catherine	Twickenham Park #2		Ox. Ditch	Tertiary
21	St. Catherine	Hamilton Gardens	0.76	Ox. Ditch	Secondary
22	St. Catherine	Charlemont	0.61	Ox. Ditch	Secondary
23	St. Catherine	Nightingale Grove	0.38	Ox. Ditch	Secondary
24	St. Catherine	Red Ground	0.17	Ox. Ditch	Secondary
25	St. Catherine	Tawes Pen	0.24	Ext. Aer.	Secondary
26	St. Catherine	Ebony Vale	0.27	Aer. Lagoons	Secondary
27	St. Catherine	Lime Tree Grove	0.38	Aer. Lagoons	Secondary
28	St. Catherine	Blackwood Gardens	0.57	Stab. Ponds	Secondary
29	St. Catherine	Eltham Park	2.30	Ox. Ditch	Secondary
30	St. Catherine	Claremont	1.10	Ox. Ditch	Secondary
31	St. Catherine	Dela Vega City	0.50	Stab. Ponds	Secondary
32	St. Catherine	Old Harbour Villa	0.32	Stab. Ponds	Secondary
33	St. Catherine	Greater Portmore	13.60	Stab. Ponds	Tertiary
34	St. Catherine	Knollis	0.11	Sand Filter & Septic Tank	Primary
35	St. Catherine	Caymanas Gardens	0.10	Stab. Ponds	Secondary
36	St. Catherine	Innswood		Ox. Ditch	Secondary
37	St. Catherine	New Harbour Village		Ox. Ditch	Secondary
38	St. Catherine	Aviary		Ox. Ditch	Secondary

Table 3.1 – List of Existing Wastewater Plants (cont'd)

No.	Parish	NAME	CAPACITY (MLD)	TYPE OF SYSTEM
39	Clarendon	Lionel Town	1.32	Aer. Lagoon
40	Clarendon	Hayes I	0.32	Aer. Lagoon
41	Clarendon	Hayes II	0.88	Stab. Ponds
42	Clarendon	Crofts Hill	0.20	Ox. Ditch
43	Clarendon	Paisley Pen	0.20	Ox. Ditch
44	Clarendon	Bushy Park	0.66	Aer. Lagoon
45	Clarendon	Mineral Heights	1.54	Cont. Stab.
46	Clarendon	New Bowens	0.42	Stab. Ponds
47	Clarendon	New Bowens I	0.42	Stab. Ponds
48	Clarendon	Longville	1.00	Ox. Ditch
49	Clarendon	Pridee	0.40	Stab. Ponds
50	Portland	Anchovy	0.22	Ox. Ditch
51	Portland	Woodstock	0.22	Ox. Ditch
52	St. Mary	Stockholm	0.18	Ox. Ditch
53	St. Mary	Boscobel		Tile Field
54	Westmoreland	Llandilo Housing		Oxidation Ditch
55	Westmoreland	Shewrsbury		Extended Aeration
56	Westmoreland	Negril	11.00	Waste Stabilisation Ponds
57	St. James	Montego Bay	45.00	Waste Stabilisation Ponds
58	Trelawny	Vanzie Lands		Oxidation Ditch
59	St. Ann	Ocho Rio	11.00	Oxidation Ditch
60	St. Ann	Moneague Housing		Oxidation Ditch
61	St. Ann	Steer Town		Oxidation Ditch

As is seen in table 3.1, various types of treatment technologies are used by NWC in the treatment of wastewater; these include aerated lagoon, contact stabilization, extended aeration, oxidation ditch and waste stabilization pond. The NWC prefers the use of waste stabilization ponds as this has proven to consistently produce effluent of acceptable quality, requires minimal energy and the skill level required is not as demanding as that for the more mechanical type facilities such as the contact stabilization plants.

The National Environment and Planning Agency (NEPA) is the environment regulator and monitors the quality of effluent discharged from wastewater treatment plants (WTPs). In March 2003 NEPA established new standards for effluent discharge under its National Sewage Effluent Regulation. The Sewage Effluent Regulations speaks to raising

the standards with regards to some parameters for facilities which were constructed later than January 1st 1997; those facilities that were constructed prior to that date will be required to at least meet the old effluent standards.

Information on the state of some of these facilities and the requirement to rehabilitate them to meet the NEPA standards are presented in appendix 1.

The majority of NWC's sewage treatment plants were designed to meet the old Ministry of Health's (MOH) effluent standards for wastewater discharge. In order to meet the new standards, it will be necessary for NWC to make significant investment in the upgrading or replacement of those plants that were not designed to meet the new standards.