

CWIP

**Audit of Grease Traps on Properties
Connected to the NWC's Negril
Wastewater System**

Coastal Water Quality Improvement Project

USAID Contract No. 532-C-00-98-00777-00

Audit of Grease Traps on Properties Connected to the NWC's Negril Wastewater System

January 24, 2000

Prepared by:

Denise Forrest
Environmental Management Systems Specialist

For the

Government of Jamaica's
Natural Resources Conservation Authority

And the

United States Agency for International Development

Implemented by:

Associates in Rural Development, Inc.
P.O. Box 1397
Burlington, Vermont 05402

Table of Contents

Acronyms.....	3
Acknowledgements.....	5
Introduction.....	7
Purpose.....	7
Approach.....	8
Organisation of the Report.....	9
Findings.....	9
Laundry.....	10
Conclusions.....	11
Recommendations.....	11
 Appendices	
Appendix A List of Properties Connected at Time of Audit	13
Appendix B Profile of Properties Audited	19

Acronyms

CR	Contract Result
CWIP	Coastal Water Quality Improvement Project
EMSS	Environmental Management Systems Specialist
EPA	Environmental Protection Area
IMA	Information Management Assistant
JHTA	Jamaica Hotel and Tourist Association
MOU	Memorandum of Understanding
MOW	Ministry of Water
NGO	Non-Governmental Organization
NAMC	Negril Advisory and Monitoring Committee
NEPT	Negril Area Environmental Protection Trust
NCC	Negril Chamber of Commerce
NCRPS	Negril Coral Reef Preservation Society
NRCA	Natural Resources Conservation Authority
NWS	Negril Wastewater System
NWC	National Water Commission
PPPS	Pollution Prevention and Policy Specialist
USAID	United States Agency for International Development

Acknowledgements

The execution of this project was facilitated by Mr. Percival Stewart Operations Manager, and Dean Williamson Environmental Engineer of the National Water Commission (NWC), Negril Wastewater, whom provided the information, the equipment and the personnel necessary to conduct the audit. Special thank yous go to Barrington Johnson and Herman McIntosh of the NWC who provided the invaluable manpower needed to access the traps.

We would also like to express our appreciation to the members of staff on the properties which were audited, for the time they took to show the systems and for the spirit of cooperation extended to the field team.

Finally, very special thanks to the CWIP team especially Natalie Holness our Information Management Assistant (IMA) for her invaluable help in the preparation of this report.

Introduction

Background

The Coastal Water Quality Improvement Project (CWIP) is a 6 - year bilateral development Initiative between the Government of Jamaica's Natural Resources Conservation Authority (NRCA) and the United States Agency for International Development (USAID). The project was implemented in January 1998, and comprises five main "Contract Result" programme activities:

- Support community-based initiatives to address environmental concerns (CR 1);
- Improve operations & maintenance of municipal wastewater systems (CR 2);
- Improve environmental practices of industry and commercial establishments (CR 3);
- Develop NGO partnerships to expand and standardise coastal water quality monitoring (CR 4);
- Improve co-ordination of coastal zone management activities among GOJ agencies, international donors, and NGOs (CR 5).

These five distinct, but interrelated activities are being carried out to ensure a synergy of interventions impacting on coastal zone management, wastewater management, and solid waste disposal.

Negril Advisory and Monitoring Committee

The Negril Wastewater System (NWS) was designed to provide a central wastewater treatment facility serving the needs of the Beach and West End areas in Negril. In recognition of the benefits of public private partnerships to assist with the overall management of the system as well as creating clear lines of communication the Negril Advisory and Monitoring Committee (NAMC) was formed in March 1999. In a Memorandum of Understanding (MOU) signed by the Ministry of Water (MOW), National Water Commission (NWC), the Negril Chamber of Commerce (NCC), the Jamaica Hotel and Tourist Association (JHTA), the Negril Coral Reef Preservation Society (NCRPS), the Negril Area Environmental Protection Trust (NEPT) and a citizen representative. The NAMC is mandated to work in partnership to ensure the efficient operation of the treatment system.

The NAMC requested that the Environmental Management Systems Specialist (EMSS) of CWIP perform an audit on properties connected to the NWS to determine the existence and status of grease traps (refer to appendix A). This request arose from problems being experienced at the sewage treatment pond and in some pumping stations due to grease build up. Grease adversely affects the biological performance of the ponds because it inhibits oxygen transfer. It also affects the operation of the pumps and creates a significant nuisance in terms of proper disposal of the material.

Purpose

This report presents the findings of an audit of grease traps on properties connected to the NWS.

Although the original request by the NAMC was to examine grease traps, the auditor decided to use the opportunity to investigate the number of properties connected to the system which

operated a laundry and the types of detergents used (that is low phosphate versus conventional detergents) in those operations. The interest in this area arose from the findings documented in the report entitled Rapid Assessment of Pollution Sources Impacting on the South Negril River¹ which identified high phosphate levels in sewage – a major source of these nutrients could be detergents. It was thought that that type of information would be useful in developing a ‘front end’ rather than or along with an ‘end of the pipe’ treatment strategy for phosphates.

The report contains:

- A description of the conditions of the grease traps including a photographic record as well as comments on the maintenance of the traps.
- A inventory of the properties with a laundry and the type of detergents
- The major sources contributing to grease in the NWS.
- Recommendations for action

Approach

The audit was conducted over a three (3) day period from November 9 to 11 1999. The investigations involved visits to thirty-seven sites during which interviews were carried out, grease traps examined, laundry and laundry detergents inspected and manholes connecting properties to the NWC’s system inspected. The properties visited were selected from a list (refer to appendix B) provided by the NWC.

Of the properties on the NWC list eight (8) businesses were excluded from consideration because of the nature of the operation. These were (i) Times Square, (ii) Time Trend Financial Company, (iii) Negril Fire Station, (iv) Daley’s Liquor Store, (v) Negril Yoga Center, (vi) Ray’s Water Sport, (vii) Kings Plaza, and, (viii) Myrie Gate Shopping Center. The same approach was used for properties in which work was in progress of which there were six sites (refer to Appendix B).

The NWC listed sixty- nine (69) properties from which fourteen (14) were eliminated from consideration for the audit. Of the remaining properties fifty-five (55) properties, thirty-seven (37) or 67% of the sites were audited. These were all located along the beach.

On the basis on the field results profiles (refer appendix C) were developed for thirty-four (34) the properties visited. These profile provide the following information:

- The existence of a grease trap(s);
- The maintenance regime;
- The use of chemicals in cleaning;
- Method of disposal of solids (grease);
- A photographic record;
- The existence of a laundry; and
- Type of detergent used in the laundry.

No profiles were prepared for the Negril Aerodrome, The Petcom Station, and, the Craft Market because of the nature of those operations.

¹ CWIP Report July 30, 1999

The findings of the audit were then used to identify areas of action to prevent and or reduce the grease problem affecting the NWS.

Organisation of the Report

The report has been organized with the description of the approach, the findings, conclusions and recommendations in the main body of the document. Details on each property have been provided as profiles and are found in appendix C. The profiles have arranged in alphabetical order.

Findings

Grease Traps

Maintenance

The detail profiles of the condition of each of the grease traps inspected are found in Appendix C. Table 1 summaries the condition of the traps at the time of the audit in terms of the level of maintenance and the use of chemicals. The results show that in most of the cases that is, in fifteen (15) properties the level of maintenance was fair. In thirteen cases (13), maintenance practices were good and in six (6) poor. Of the six poor maintained systems, all were hotels of which two Couples and Hedonism accounted for 522 rooms (large hotels) while the remaining were in the region of 197 rooms. In summary of the total of seven hundred and nineteen (719) rooms found in hotels with poorly maintained systems represent 32% of the rooms in the entire survey.

Design

In general the designs varied between one, two, or three chamber traps. On the larger properties the designs were usually in accordance with best engineering practice. While on the smaller sites the type of design and level of workmanship was highly variable.

The use of elbow in the discharge chamber was often overlooked.

Chemical Usage

Very few properties (four 4) used chemical in the cleaning of the grease traps. The application of chemicals for cleaning was practiced mainly on the larger properties maybe because of affordability. The chemicals used ranged from deodorizers, disinfectants to emulsifiers.

Disposal/ Recycling

The disposal of the grease is a major concern for some of the properties. In nine (9) cases (27%) vegetable oil is recovered from the deep fryers and reused prior to reaching the grease traps. In this process the recovered vegetable oil stored in drums and collected by a private firm called Rico. Other properties should be encouraged to take part in the recycling programme as part of a strategy to reduce the grease that reaches the grease traps.

The grease that is removed from the traps poses a difficult problem for disposal. In all but two cases contractors take the grease to the solid waste disposal site. The others bury the waste.

Laundry

All but four of the establishments audited did not have a laundry. Of those who did 39% used low phosphate detergents (refer Table1).

Table 1 A summary of the status of grease trap maintenance and an inventory of chemical usage in the laundries.

Property	No. of Rooms	Maintenance status	Chemical cleaning	Laundry	Type of detergent
Bar - B- Barn	24	Good	No	No	N/A
Beaches	225	Good	Yes	Yes	Low phosphate
Charella Inn	49	Fair	No	Yes	Low phosphate
Coco La Palm	41	Fair	No	No	N/A
Coral Seas	32	Fair	No	Yes	Conventional detergent
Cosmos	N/A	Good	No	No	N/A
Couples	242	Poor	Yes	Yes	Low phosphate
Crystal Waters	9 units	Good	No	Yes	Low phosphate
Daniel's Beach	75	Poor	No	Yes	Conventional detergent
Errol's Sunset Cafe	7	Poor	No	No	N/A
Foot Prints	30	Good	No	Yes	Low phosphate
Grand Lido	210	Fair	No	Yes	Low phosphate
Hedonism	280	Poor	No	Yes	Low phosphate
Legends	25	Fair	No	No	N/A
Margaritaville	N/A	Good	No	No	N/A
Marineers Inn	91	Poor	No	Yes	Conventional detergent
Mariposa	14	Fair	No	Yes	Conventional detergent
Merill I & II	80	Fair	No	Yes	Conventional detergent
Native Son	11	Good	No	Yes	Conventional detergent
Negril Cabins	85	Good	No	Yes	Low phosphate
Negril Gardens	66	Good	No	Yes	Low phosphate
Negril Tree House	70	Fair	No	Yes	Low phosphate
Paradise View	31	Poor	No	Yes	Conventional detergent
Past Time	17	Fair	No	Yes	Conventional detergent

Property	No. of Rooms	Maintenance status	Chemical cleaning	Laundry	Type of detergent
Poicinans	125	Fair	Yes	Yes	Low phosphate
Point Village	256	Good	No	Yes	Low phosphate
Rondell Villas	16	Good	No	Yes	Low phosphate
Sandals Negril	223	Good	Yes	Yes	Low phosphate
Seascape	17	-	-	Yes	Conventional detergent
Shields Villas	34	-	-	Yes	Conventional detergent
Silver Sands	31	Fair	No	Yes	Conventional detergent
Swept Away	134	Good	No	Yes	Conventional detergent
Yellow Bird	30	Good	No	Yes	Conventional detergent

Conclusions

The following are the main conclusions of the audit.

- At the time of the audit 39% of the grease traps have a good maintenance regime, 45% fair, and 16% poor.
- Five properties comprising 32% of the audited rooms appear to be the main sources of grease.
- Recycling of vegetable oil prior to release to the grease traps is a feasible option for reducing the grease, which impacts the NWS.
- Very few properties routinely use chemicals in the cleaning of grease traps.
- Disposal of grease poses a major challenge.
- Most of the laundries (60%) properties used conventional detergents.

Recommendations

The NWC should consider a series of steps to combat the problem of the grease affecting the NWS.

The first step which could be done almost immediately, is to work with the six properties who have been identified as the main sources of grease to help the to correct the problem. The

persons interviewed were very receptive to being advised on ways to improve the status of the grease trap. In one case, Couples, the Chief Engineer undertook to improve the maintenance regime immediately.

The second step could be to work with those properties (2), which had no traps to encourage them to install traps. Here again the operators appeared to be receptive and if provided with drawings and some technical advice should install grease traps.

Finally, the NWC should develop, document used to disseminate a comprehensive source control programme, which should include but not be limited to technical advice/requirements related to:

- (i) Grease traps design and maintenance;
- (ii) The use of chemicals including encouraging the use of low phosphate detergent;
- (iii) The recycling vegetable oil;
- (iv) Gray water options;
- (v) Manhole maintenance; and
- (vi) Other area affecting performance of the facility

Such a programme will help the NWC to better control the quality of influent arriving at the ponds and improve the effectiveness of the treatment process.

APPENDIX A

List of Properties Connected at Time of Audit

Name of Properties	Owner	Date Received	Date Connected	No. of Connect(s)	Comment
Alfred's Ocean Palace	Alfred Arthurs	Feb. 4, 1999	Apr. 2, 1999	1	Applications and drawings received, engineer's investigation done, work completed <i>Absence of Contractor</i>
Aqua Moon	Bon Swedlow	Jan. 26, 1999	Mar. 26, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Bar-B-Barn Hotel	Etha Thompson	May 11, 1999	Jul. 8, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Bar-B-Barn Village	John Thompson	May 27, 1999		1	Application received
Beach House Villas	George Halos	Apr 2, 1999		1	Applications and drawings received, engineer's investigation done
Beaches Negril	Stewart	Dec, 28, 1988	Feb. 28, 1999	2	Applications and drawings received, engineer's investigation done, work completed
Blue Castle Cave					Work in progress
Cecil Tate	Cecil Tate	Mar. 12, 1999	To be checked	1	Applications and drawings received, engineer's investigation done
Charela Inn	Daniel Grizzle	Jan. 8, 1999	Mar. 22, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Chippewa Village	John Babcock	May 28, 199		1	Applications and drawings received, engineer's investigation done, internal connection completed, NWC lateral to be installed
Coco la Palm	Cantiene	Dec. 18, 1998	Dec. 30, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Coral Sea Beach Resort	Rickie Jackson	Mar. 28, 1999	May 25, 1999	1	Applications and drawings received, engineer's investigation done

Name of Properties	Owner	Date Received	Date Connected	No. of Connect(s)	Comment
Cosmo's Restaurant	Cosmo Brown	Jan 12, 1999	Feb, 12, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Couples Negril	Issa Group	Nov. 1998	Dec. 1998	2	Connections made on line # 1. Regional Manager informed in December 1998
Crystal Water (Sea) Crystal Water (Land)	Edward Coalsingh	Jun 7, 1999	Jun 22, 1999 Jun. 29, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Daley's Liquor Store	Maurice Daley	May 18, 1999	Jun. 13, 1999	1	Applications and drawings received, engineer's investigation done, work completed <i>Absence of Contractor</i>
Daniel Bean Village Resort	Karl Phillips	Mar. 4m 1999	Apr. 8m 1999	1	Applications and drawings received, engineer's investigation done, work completed <i>Absence of Contractor</i>
Drumville Cove	A. W. Drummond	May 11, 1999		1	Applications and drawings received
Errol Sunset Café	Errol Blair	Jun. 15m 1999		1	Applications and drawings received, engineer's investigation done
Footprints Hotel	Foote	Feb. 4, 1999	Apr. 26, 1999	1	Applications and drawings received, engineer's investigation done, work completed <i>Absence of Contractor</i>
Golden Sunset	Ray Arthurs	Jan. 21, 1999	To be checked	1	Applications and drawings received, engineer's investigation done, work completed
Grand Lido (East) Grand Lido (West)	Great Resorts Ltd.	Feb. 26, 1999	Mar. 12, 1999 Mar. 31, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Home Sweet Home	Charles Rosley	Jul. 20, 1999		1	Applications and drawings received, engineer's investigation done, work completed
Honeyhill					Work in progress
Idle a While	Lee Issa	Dec. 2, 1999	Mar. 25, 1999	1	Applications and drawings received, engineer's investigation done, work completed

Name of Properties	Owner	Date Received	Date Connected	No. of Connect(s)	Comment
Jamaica Taboo	Karl Blythe	Mar. 9, 1999	May 27, 1999	1	Applications received, engineer's investigation done
Kings Plaza	Landsfield McKenzie	Feb. 10, 1991	May 31, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Kuyaba					Work in progress
Lazy Daze					Applications and drawings received, engineer's investigation done, work completed
Legend	Absera Maurice	Mar. 4, 1999	Mar. 31, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Margaritaville	Ian Dear	Feb. 24, 1999	May 31, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Mariner's Negril Beach Club	David Wallace	Jun. 21, 1999		1	Applications and drawings received, engineer's investigation done
Maripose	Luigi T. Travaine	Feb. 12, 1999		1	Applications and drawings received, engineer's investigation done
Merrills Resort Merrills Unicy	Michael Grandison	Dec. 28, 1998	Jan. 6, 1999 Mar. 26, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Myrie Gate Shopping Centre	Jacqueline Hutchinson	May 21, 1999		1	Applications and drawings received
Native Son Villas	Wesley Burton	May 5, 1999	May 28, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Negril Aerodrome	Airports Authority of Jamaica	May 3, 1999	May 4, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Negril Cabins	M. Bell	Dec. 1998	Jan. 20, 1988	2	Application and drawings received, engineer's Investigation done
Negril Electoral Office					Work completed
Negril Fire Station	Fire Services Commission	Mar. 12, 1999	To be checked	1	Applications and drawings received, engineer's investigation done, work completed

Name of Properties	Owner	Date Received	Date Connected	No. of Connect(s)	Comment
Negril Gardens	Friends Group International	Jul. 12m 1999		1	Applications and drawings received, engineer's investigation done, work completed
Negril Tree House	Jimmy Jackson	Feb. 12, 1999	Apr. 23, 1999	1	Applications and drawings received, engineer's investigation done, work completed <i>Absence of Contractor</i>
Negril Yoga Center					Applications and drawings received, engineer's investigation done, work completed
Out Past Time	Nord Rerrie	Feb. 25, 1999	Apr. 15, 1999	1	Applications and drawings received, engineer's investigation done, work completed <i>Absence of Contractor</i>
Paradise View	M. Mulla	Feb. 10, 1999	Apr. 13, 1999	1	Applications and drawings received, engineer's investigation done, work completed <i>Absence of Contractor</i>
Paul Maragh	Paul Marah	Jul. 15, 1999		1	Applications and drawings received, engineer's investigation done
Pearl Forrester	Peral Forrester	May 19, 1999	To be checked	1	Applications and drawings received, engineer's investigation done, work in progress
Petcom Service Station	Petroleum Corporation of Jamaica	Feb. 1, 1999	Mar. 11, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Ray's Water Sport	Newton Johnson	May 5, 1999	To be checked	1	Applications and drawings received, engineer's investigation done
Rocky Edge (Big M Hardware)		Apr. 27, 1999	May 12, 1999	1	Applications and drawings received, engineer's investigation done, work completed <i>Absence of Contractor</i>
Rondel Village	John Wright	Mar. 10, 1999		1	Applications and drawings received, engineer's investigation done
Sandals Negril	Sandals Resort International	Feb. 12, 1999	Mar. 31, 1999	1	Applications and drawings received, engineer's investigation done, work completed

Name of Properties	Owner	Date Received	Date Connected	No. of Connect(s)	Comment
Sandi San	Monica Kelly	Jan. 11, 1999		1	Applications and drawings received, engineer's investigation done, work completed
Sea Gem					Work in progress
Seascape Resort	Robin McFaden	May 3, 1999	May 29, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Shields Villas	Neville Shields	Mar. 4m 1999		1	Applications, engineer's investigation done, work completed
Silver Sands Hotel	Maisie James	Feb. 10, 1999	To be checked	1	Applications and drawings received, engineer's investigation done
Sunquest Cottages	E. Chong	Apr. 6, 1999		1	Applications received, engineer's investigation done
Sunrise	Dennis Survis	Jun. 29, 1999		1	Applications and drawings received, engineer's investigation done
Thatch Walk	Reynolds				Work in Progress
Three C's Restaurant	Cliff Reynolds				Work completed
Time Square (opposite De Bus)	Omi Katarena	Jan. 7, 1999	Jan. 14, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Time Trend Financial Co.	Gifford Morrel	Ref. 22m 1999	To be checked	1	Applications and drawings received, engineer's investigation done, work completed
Travellers Beach Resort	Winston Wellington	Jun 24, 1999		1	Applications and drawings received, engineer's investigation done
UDC Craft Market	Ritchie	Feb. 12, 199	Feb. 19, 1999	1	Applications and drawings received, engineer's investigation done, work completed
West Port Cottages	Joseph	May 11, 1999	Jun. 8, 1999	1	Applications and drawings received, engineer's investigation done, work completed
Willowgate Resort	Madge Smith-Blake	Mar. 4, 1999		1	Applications and drawings received, engineer's investigation done
Winners Sport Bar/Restaurant					Applications and drawings received, engineer's investigation done, work completed

Name of Properties	Owner	Date Received	Date Connected	No. of Connect(s)	Comment
Yellow Bird Sea Tel	Richard Lerach	Apr. 24, 1999	May 29, 1999	1	Applications and drawings received, engineer's investigation done, work completed

Profile on Properties Connected

NWC Wastewater System Grease Traps Audit November 1999

General Information

Name of Property: Bar-B-Barn
 Number of Rooms: 24
 Date Visited: November 11, 1999
 Person(s) Interviewed: Rose-Marie Caton – Front Office Supervisor

Inspection Report

Grease Traps Present: Yes No
 Condition of the Trap at the time of Inspection: Poor Fair Good
 Use of chemicals for cleaning: Yes No
 Method of Disposal: Solids (grease) goes into the garbage.
 Laundry on site: Yes No
 Type of chemicals used: N/A

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system appeared to be adequately designed. Grease trap services the main kitchen. Maintenance program appears to be very good, maintenance personnel very conscientious.

Photographic Record:



Set up of grease trap.

General Information

Name of Property: Beaches Negril
Number of Rooms: 225
Date Visited: November 10, 1999
Person(s) Interviewed: Eudel Taylor – Assistant Chief Engineer
Ashley Thompson – Chief Engineer

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No Deodorizer
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other
Every two Days

Design Comments:

The system appeared to be adequately designed. Excellent maintenance program. Deep clean pump sumps two times per year. Use Rico to reduce fat arriving at grease traps, grease collected from deep fryers and recycled.

Photographic Record:



View of Beaches grease trap first two chambers.



Discharge chamber.

General Information

Name of Property: Charela Inn
Number of Rooms: 49
Date Visited: November 10, 1999
Person(s) Interviewed: Roy (Maintenance)

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system appeared to be adequately designed. Maintenance schedule needs to be tightened.

General Information

Name of Property: Coco La Palm
Number of Rooms: 41
Date Visited: November 10, 1999
Person(s) Interviewed: Bruno Contreni – General Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids (grease) removed by contractor.
Laundry on site: Yes No
Type of chemicals used: N/A

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system does not appear to be adequately designed. Maintenance program is inconsistent. However, the visit increased awareness of the manager of the importance of maintenance of the grease trap and there was a promise to step up maintenance efforts.

Photographic Record:



Grease trap serving the kitchen.

General Information

Name of Property: Coral Seas
Number of Rooms: 32
Date Visited: November 11, 1999
Person(s) Interviewed: Clover McKenzie – Front Office Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solid waste system and removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Conventional detergents.

Maintenance Schedule

Daily Weekly Monthly Other
2 times per month

Design Comments:

Two chamber grease trap which serves the kitchen. More frequent maintenance required. Elbow required in discharge chamber.

Photographic Record:



View of pipe from kitchen leading into grease trap.



Set of the two chamber grease trap.

General Information

Name of Property: Cosmos Restaurant
Number of Rooms: N/A
Date Visited: November 10, 1999
Person(s) Interviewed: Mr. Cosmo Brown

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: N/A

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

*The system appeared to be adequately designed. System very well maintained.
Elbow required in discharge chamber.*

Photographic Record:



View of two chamber grease trap at Cosmos.

General Information

Name of Property: Couples Negril
Number of Rooms: 242
Date Visited: November 9, 1999
Person(s) Interviewed: Ricardo Bowleg – Resident Manager
Anthony Bedasse – Chief Engineer

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No Emulsifier used three times a week
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system appeared to be adequately designed. One set of grease trap serves the property. Maintenance appears very inadequate. There is to be a reliance on chemical usage versus physical cleaning of the system. Disposal of solids (grease) a major concern.

Photographic Record:



Overview of the grease trap system at Couples.



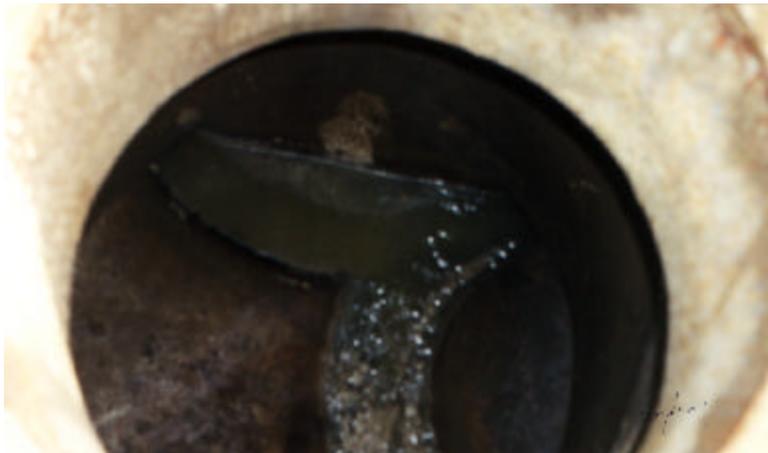
Inlet chamber of the grease trap.



Outlet chamber of the grease trap.



Drums used to store the grease to be removed from property.



Manhole linking Couples Negril to NWC sewer.



A partial view of a section of Couples laundry.

General Information

Name of Property: Crystal Waters
Number of Rooms: 9 units
Date Visited: November 10, 1999
Person(s) Interviewed: -

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solid waste system and removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Conventional detergent.

Maintenance Schedule

Daily Weekly Monthly Other
Every 3 weeks

Design Comments:

A grease trap is connected to each of the 9 units. Maximum occupancy 38 people relatively low occupancy levels. Maintenance schedule seems consistent with grease build up.

Photographic Record:



Grease trap to set up for each house.

General Information

Name of Property: Daniel's Beach
Number of Rooms: 75
Date Visited: November 10, 1999
Person(s) Interviewed: Donnette Campbell – Assistant Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Discharged to wetlands.
Laundry on site: Yes No
Type of chemicals used: Conventional detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

System is covered so prevents maintenance, a check of pipes showed them to be clogged with grease. Very poorly maintained. Need to examine design and assess for maintenance purposes.

Photographic Record:



Grease trap inaccessible, covered with concrete.

General Information

Name of Property: Foote Prints
Number of Rooms: 30
Date Visited: November 10, 1999
Person(s) Interviewed: Audrey Foote (Owner)

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Bury grease.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

Grease trap serves main kitchen. Design not optimal but doing the job. Elbow needed in discharge chamber.

Photographic Record:



Overall view of the grease trap.



Close up of discharge chamber.

General Information

Name of Property: Grand Lido
Number of Rooms: 210
Date Visited: November 9, 1999
Person(s) Interviewed: John Williams – Chief Engineer

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other
2 times per month

Design Comments:

The system appeared to be adequately designed. Three sets of grease traps in place serving the main kitchen. Cleaning done by contractor. Fats going to grease traps reduced by recycling oil from fryer to Rico.

Photographic Record:



Close view of the two chamber grease traps in serving Hedonism's main kitchen.

One of the grease traps in the Grand Lido kitchen.



Another grease trap in kitchen area.

General Information

Name of Property: Hedonism
Number of Rooms: 280
Date Visited: November 9, 1999
Person(s) Interviewed: Raphael Edwards – Assistant Chief Engineer
Noel Golding – Chief Engineer

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system appeared to be adequately designed. Maintenance program contracted to outsider and effected once per month. Maintenance poor. Problems with disposal of solids (grease).

Photographic Record:



View of the grease trap at Hedonism.



View of the grease trap at Hedonism.

General Information

Name of Property: Legends
Number of Rooms: 25
Date Visited: November 11, 1999
Person(s) Interviewed: Lorna Rhoden - Supervisor

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection:
Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solid waste system and removed by contractor.
Laundry on site: Yes No
Type of chemicals used: N/A

Maintenance Schedule

Daily Weekly Monthly Other Every other day

Design Comments:

*Design is not conventional could be improved, however, the system works.
Reduce oil going to system by recycling, that is, sending oil to Rico*

Photographic Record:



First chamber.



Grease trap arrangement.

General Information

Name of Property: Margaritaville
Number of Rooms: -
Date Visited: November 10, 1999
Person(s) Interviewed: Tomy Locke – Maintenance Supervisor

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Bury grease.
Laundry on site: Yes No
Type of chemicals used: N/A

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

Grease trap serves the kitchen. Design not optimal but effective given the maintenance schedule. Elbow needed in discharge chamber.

Photographic Record:



View of grease trap arrangement (two chamber).

General Information

Name of Property: Marineer's Inn
Number of Rooms: 91
Date Visited: November 11, 1999
Person(s) Interviewed: Wayne Brown – Maintenance Supervisor

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Uncertain.
Laundry on site: Yes No
Type of chemicals used: Conventional detergents.

Maintenance Schedule

Daily Weekly Monthly Other
Twice per week

Design Comments:

Could not inspect chamber because top could not be lifted. However, system was clogged which suggests poor maintenance. The design needs to be reconsidered certainly from the point of view of access for maintenance.

Photographic Record:



View of grease trap arrangement (cover very heavy and difficult to remove).



Grease trap backing up indicating the need for cleaning.

General Information

Name of Property: Mariposa
Number of Rooms: 14
Date Visited: November 10, 1999
Person(s) Interviewed: Vivian Reid – Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: -

Maintenance Schedule

Daily Weekly Month Other

Design Comments:

The system appeared to be adequately designed except for elbow in discharge chamber. Reasonably maintained. Relatively low grease usage because of method of meal preparation (Italian) and small kitchen.

Photographic Record:



View of the three chamber grease trap.

General Information

Name of Property: Merrill I & II
Number of Rooms: 80
Date Visited: November 11, 1999
Person(s) Interviewed: Michael Grimes – Operation Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Conventional detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

There is occasional sand infiltration into the system. Maintenance efforts need to be effort needs to be tightened. Recycle some of vegetable oil by supplying used grease to Rico

Photographic Record:



Drum to store recycled grease.



Grease trap inlet on Merill I



Grease trap inlet on Merrill II

General Information

Name of Property: Native Son
Number of Rooms: 11
Date Visited: November 10, 1999
Person(s) Interviewed: Herma Mighty – Office Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solid waste system and removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Conventional detergents.

Maintenance Schedule

Daily Weekly Monthly Other
Every 3 weeks

Design Comments:

***Each apartment complex (total of 4) has a kitchen and its own grease trap.
Maintenance program appear adequate given the operation.***

Photographic Record:



Typical grease trap serving each apartment building within the complex.

General Information

Name of Property: Negril Cabins
Number of Rooms: 85
Date Visited: November 9, 1999
Person(s) Interviewed: Raynor Mills – Operations Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system appeared to be adequately designed. Two sets of grease traps in place. One which serves the main kitchen and the other the dish washing unit.

Photographic Record:



View of grease trap serving the main kitchen.



Closer view of 3 chamber grease traps serving the main kitchen.

General Information

Name of Property: Negril Gardens
Number of Rooms: 66
Date Visited: November 11, 1999
Person(s) Interviewed: -

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solid waste system and removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system appeared to be adequately designed. Two sets of grease traps in place. One which serves the main kitchen and the other the beach grill. Maintenance program effective. Recycle vegetable oil as part of Rico recycling program.

Photographic Record:



Grease trap system serving kitchen.



Grease and sand trap system serving bar grill.



Closer view of the grease and sand trap.

General Information

Name of Property: Negril Tree House
Number of Rooms: 70
Date Visited: November 10, 1999
Person(s) Interviewed: Philip Lindo – Maintenance Supervisor

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

Design need to be reviewed and simplified, maintenance could be improved.

Photographic Record:



View of one of the two grease traps on the property.



The second grease trap.



Manhole tying in to NWC system on the property



Closer view of manhole.

General Information

Name of Property: Paradise View
Number of Rooms: 31
Date Visited: November 10, 1999
Person(s) Interviewed: Norda Stephens – Receptionist

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Uncertain
Laundry on site: Yes No
Type of chemicals used: Conventional detergent.

Maintenance Schedule

Daily Weekly Monthly Other ✓

Design Comments:

Poorly designed system needs upgrading.

Photographic Record:



A view of grease trap system.



Outlet clogged.

General Information

Name of Property: Past Time
Number of Rooms: 17
Date Visited: November 9, 1999
Person(s) Interviewed: Lloyd Williams – Maintenance Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Uncertain
Laundry on site: Yes No
Type of chemicals used: Conventional detergent.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

Design could be upgraded. Maintenance program needs to be structured.

Photographic Record:



Grease trap arrangement at Past Time.

General Information

Name of Property: Poinciana Beach Resort
Number of Rooms: 125
Date Visited: November 10, 1999
Person(s) Interviewed: Angelito Jamao – Maintenance Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No Deodorizer
Method of Disposal: Solid waste system and removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other Every other day

Design Comments:

The system appeared to be adequately designed in most areas (except staff kitchen). Four sets of grease traps in place serving the main kitchen, beach grill, Caribbean Grill and staff kitchen. Recycles vegetable oil in Rico program. Maintenance could be improved.

Photographic Record:



View of the main grease trap at Poinciana showing the main valve.



Closer view of the chambers.



Grease trap serving the beach grill area.



Grease trap serving the staff kitchen.



Property connection to NWC sewer.

General Information

Name of Property: Point Village
Number of Rooms: 256
Date Visited: November 9, 1999
Person(s) Interviewed: Nicheman Foster – Maintenance Supervisor

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system appeared to be adequately designed. Good maintenance practices. Reduce grease going to the traps as vegetable oil from deep fryers supplied to Rico.

Photographic Record:



Three chamber grease trap at Point Village.



The drum used to store grease for recycling.



Content of the drum.

General Information

Name of Property: Rondel Village
Number of Rooms: 16
Date Visited: November 10, 1999
Person(s) Interviewed: Caroline Wright – Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

Not connect to NWC system at the time of the audit.

General Information

Name of Property: Sandals Negril
Number of Rooms: 223
Date Visited: November 9 ,1999
Person(s) Interviewed: Richard May – Environmental Officer
Mark Gregg – Chief Engineer

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No Deodorizer and disinfectant
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

***The system appeared to be adequately designed. Good maintenance practices.
Part of the vegetable oil recycling program.***

Photographic Record:



View of the grease trap at Sandals Negril.



View of the grease trap at Sandals Negril – (equipment used to skim).

General Information

Name of Property: Sandi San
Number of Rooms: 43
Date Visited: November 11, 1999
Person(s) Interviewed: Mr. Dixon

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Low phosphate detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system appeared to be adequately designed. Maintenance adequate, vegetable oil recycled in Rico program.

Photographic Record:



Grease trap set up at the hotel.



Closer view of outlet chamber.

General Information

Name of Property: Seascape
Number of Rooms: 17
Date Visited: November 11, 1999
Person(s) Interviewed: Jackey Soley - Receptionist

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: N/A
Use of chemicals for cleaning: N/A
Method of Disposal: N/A
Laundry on site: Yes No
Type of chemicals used: Conventional detergents.

Maintenance Schedule

N/A

Design Comments:

General Information

Name of Property: Shield's Negril Villas
Number of Rooms: 34
Date Visited: November 11, 1999
Person(s) Interviewed: Shawn Shields - Manager

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: N/A
Use of chemicals for cleaning: N/A
Method of Disposal: N/A
Laundry on site: Yes No
Type of chemicals used: Conventional detergents.

Maintenance Schedule

N/A

Design Comments:

General Information

Name of Property: Silver Sands
Number of Rooms: 31
Date Visited: November 10, 1999
Person(s) Interviewed: Shermaine Walker

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Conventional detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

System not well designed. Maintenance needs to be improved (Okay now given very low occupancy). Storm water may be infiltrating system at manhole prior to entrance to NWC system.

Photographic Record:



View of grease trap system (two chambers abandoned).



Closer view of grease trap chamber.

General Information

Name of Property: Swept Away
Number of Rooms: 134
Date Visited: November 10, 1999
Person(s) Interviewed: Dalton Davis – Chief Engineer

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No
Method of Disposal: Solids removed by contractor.
Laundry on site: Yes No
Type of chemicals used: Conventional detergents.

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

The system appeared to be adequately designed. Two sets of grease traps in place for each main kitchen.

Photographic Record:



Grease traps located on beach side of the property (north).



Closer view of the grease trap inlet chamber with screen.



Grease trap at the morass side of property (south).

General Information

Name of Property: Yellow Bird
Number of Rooms: 30
Date Visited: November 11, 1999
Person(s) Interviewed:

Inspection Report

Grease Traps Present: Yes No
Condition of the Trap at the time of Inspection: Poor Fair Good
Use of chemicals for cleaning: Yes No (Deoderizer)
Method of Disposal: Solids go into garbage.
Laundry on site: Yes No
Type of chemicals used: Conventional detergents

Maintenance Schedule

Daily Weekly Monthly Other

Design Comments:

Photographic Record:



A view of the typical grease trap arrangement for each apartment



Manhole connecting system to the NWC sewer.



Closer view of manhole construction.



Manhole construction at ground level.

CWIP

Coastal Water Quality Improvement Project