

# **THE WATER AUTHORITY**

ANNUAL REPORT

1990



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*THE PORTFOLIO OF  
COMMUNICATION WORKS AND AGRICULTURE*

**THE WATER AUTHORITY  
Cayman Islands**

**ANNUAL REPORT  
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## Foreword



*Honourable Linford A Pierson JP  
Member for Communications, Works and  
Agriculture*

I have been intimately involved with, and a great supporter of the Water Authority since my coming into office in November 1988. I have observed the rewarding progress that has been made during this relatively short period. I am pleased that I have been in a position to make my contribution towards the success of this vitally important infrastructural sector.

1990 was an important year for the Water Authority, it was a year in which it reached full maturity and one in which the Government provided it with its very much deserved statutory independence. I am confident that the Board, under the chairmanship of Mr Derek Wight, has demonstrated its ability and capability to adequately manage the affairs of the Authority and to ensure that the best interests of this country are maintained. Under the guidance of the Board, and with the support of Government, the Authority has been able to expand its water supply distribution to include the whole of the George Town district as far east as Spotts Newlands and to commence the provision of a piped water supply in Cayman Brac. In addition it has expanded its sewerage works to connect new developments within the West Bay Beach drainage area. It is gratifying to see that at the end of the year the Authority achieved an operational profit in excess of CI\$800,000, and that this revenue was invested in new works to the benefit of the people of these islands. A very notable achievement for the first year of independent operation.


I would also like to comment on the other investment with which the Water Authority is actively involved, that of local staff. I was pleased to be invited to present the 1990 "Chairman's Annual Award" to Calvin Ramoon, a Caymanian, who looks after the Authority's sewage treatment works. What was obvious to me at the presentation ceremony was the large number of young Caymanians who have chosen a career with the Authority and the opportunities that the Authority offer. It is good to know that proper training and educational scholarships are available and that young Caymanians are benefitting from these facilities. This fits in well with the Authority's philosophy of developing an in-house expertise to carry out all its development work and avoids the use of often expensive consultants.

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1991 is likely to be another busy year for the Authority, there are active plans to expand the water supply to Bodden Town and I will of course be supporting this much needed development. I have sufficient confidence in the Water Authority to know that what they do will be well thought out and will be to the good of all.

The Government is grateful for the assistance rendered to it by the Authority, particularly during 1990 when it assisted greatly with the negotiations for Cayman Water Company's expansion to West Bay. We of course remain grateful for all the regulatory functions that the Authority perform, not least of which is their continued surveillance of our ground water resources. May I take this opportunity to thank the Chairman, members of the Board and staff of the Water Authority for their most valuable contribution to the Cayman Islands and to wish them much success in the years to come.

  
Linford A Pierson. JP



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## *Chairman's Report*

*The Year 1990*



The Water Authority has had many notable years during its short life, particularly those years of its rapid development from 1986 onwards. However I am pleased to report that in January 1990 it reached a point in its development when Government saw fit to allow it to proceed into full statutory independence. This is therefore the first year that commercial accounts have been produced.

It is also a year in which a major part of our water supply capital works was completed and a year in which we extended our operation to our sister island, Cayman Brac. It has been a year in which problems with one of our water suppliers has continued and one in which we have taken significant steps to alleviate this problem. This action dramatically changed our position from one of having insufficient water in the early part of the year when we were unable to meet the truckers full demand, to having a healthy surplus of water at the end of the year. We are ahead of the game and that is where we intend to remain. We believe that the teething troubles that we first experienced with the water supply are now behind us. The demand for our service continues to grow, the year commenced with 1,510 connections to the George Town supply, at the end of the year it had grown to 2,131, an increase of 621 or 41%. The total water sales has risen from 355,625 Cub m (93,885,000 gallons) to 571,014 cub m (150,747,696 gallons) an increase of 61%. It is encouraging to see that not only is the demand for the service growing but so is the per capita consumption, we believe that both these factors reflect favourably on the service provided by the Water Authority.

The West Bay Beach sewerage project has not been without its operational problems. Two major ones being the concrete corrosion and odour of a number of the pumping stations, and the poor operation of the control panels. Steps have been taken to address both these problems in early 1991. It is however encouraging to see that the revenue derived from the operation of the system is meeting costs and that the operational cost did in fact reduce over 1989. I am also pleased to report that the claim with the civil engineering contractor, Hadsphaltic International, was settled during the year, a settlement that was orders of magnitude less than the claim and resulting in the final cost of the works being substantially less than the next highest bidder.

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Being the first year in which commercial accounts have been kept no comparison to previous years is available. However for the first year of operation it is indeed most rewarding to be able to report an operational profit of approximately CI\$826,000.

My Board is grateful for the Government's invaluable assistance. The Water Authority acts as an arm of Government, considering the nature of our service it is right that Government has good control over our operation. We are expected to operate on a commercial basis and indeed are able to generate sufficient income to meet our expenses and return a profit and therefore are a good operation. However the fact that we lack any equity reflects badly on the balance sheet. It is Government's policy that its initial investment in the Authority should become a debt due and not be represented by equity. Therefore when considering the financial statements this fact should be borne in mind. Further it should also be remembered that the commercial side of the Water Authority is constrained by Government policy insofar as it prevents the raising of equity from shareholders. Therefore our present, capital intensive, development stage results in our having to borrow significant amounts of money and this again reflects badly on the balance sheet.

It is also worthy to note that the Authority, in its first year of operation, was able to finance, from its revenue and deposits, CI\$875,311 of its total capital expenditure of CI\$2,825,511. This situation will continue as the Water Authority will be developing for many more years to come. The capital works side of the Authority is important, the development of a design and implementation department within the Authority has meant that it can continue with its development in an ordered and cost effective manner, without the need to employ expensive consultants. An outline ten year sector development plan has been drawn up and it is expected to be finalized in 1991. This plan includes many areas of development that are presently giving concern to various sectors of the community, George Town sewerage for example.

I am pleased to report, that in the year, agreement was reached with the Cayman Water Company for them to provide a water supply to West Bay. The agreement is comprehensive and will serve the interests of the community. The Water Authority acting in its regulatory position will monitor the implementation and operation of the development.

I trust that you will enjoy reading this comprehensive report and the 1990 accounts of our operation. I take great pleasure in the outcome of the year and I take this opportunity to thank the Members of Government, the staff of the Authority for their efforts and assistance during the year. I also thank my fellow Board members for their invaluable contribution to the running of the Authority.



Derek B Wight  
Chairman

THE WATER AUTHORITY

1990 ANNUAL REPORT

**1. GENERAL**

The Water Authority gained its statutory independence on the 1st January 1990. Assets to the value of over CI\$19 Million were vested in the Authority. The total value of these assets were covered by loans, including one of over \$4 million assessed as being an amount owed to Government. At the beginning of the year the Authority held no equity or working capital.

Despite the onerous financial position the Authority was able to continue with its development, operate its works, make payment of all its debt service and end up the year with a profit of over \$700,000. However its cash flow position was such as to cause an overdraft position of over \$40,000 at the end of the year.

1990 saw the continued development of water supply, the extension to Spotts Newlands was complete by the end of the year, with a small amount of private agency work remaining outstanding and to be completed in the early part of 1991. Approval and funding was provided for the Cayman Brac water supply project and work commenced on this project. By the end of the year the majority of the materials were delivered, the reservoir site and building were complete. The civil engineering contractor is to commence laying the pipes in early 1991. It is anticipated that the system will be operational towards the middle of the 1991.

Central DeSal continued to be unable to satisfy the terms of the Licence and during the year notice was served to terminate the agreement. They were unable to comply with the notice and at the end of the year the agreement was in abeyance subject to renegotiation. To ensure that sufficient water was available an agreement was entered into with Reliable Water (Cayman) for them to increase their capacity by a further 1,330 cub m per day. This additional plant was operational by the end of the year. Central DeSal have agreed to carry out a complete refurbishing of their plant and this work is scheduled for the early part of 1991.

In July an agreement was signed between the Government and Cayman Water Company allowing them to expand their franchise area to include the whole of the West Bay district. The agreement allowed that the whole of the area would receive a piped water supply within a period of three years after signing.

On the sewerage front, the serious concrete corrosion and control panel degradation of the West Bay Beach pumping stations continued. A decision was taken during the year to remedy both problems. An agreement was entered into with a US firm to redesign and replace the control panels, the replacement of the panels will commence early in 1991. Considerable investigatory work was carried out into the various methods that might be used to solve the concrete corrosion problem and it is anticipated that the work will be carried out in 1991.

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During the year three additional sewage pumping stations were constructed, at Thompson Shipping, the Airport and Governor's Harbour. The latter two stations were not operational at by the end of the year. The Airport pumping station has been constructed in association with a new treatment plant and was necessary to remove the problem of odour emanating from the existing treatment works which is located in close proximity to the arrivals section.

In July, and after protracted negotiations, an out of contract settlement was agreed with the civil engineering contractor of the West Bay Beach sewerage project. It was agreed to pay him a sum of \$750,000 as an ex gratia payment.

In July the George Town water supply works was officially opened by His Excellency the Governor, the complex was named the Red Gate Water Works. Also in September Hon Linford Pierson officiated at a ground breaking ceremony in Cayman Brac to initiate the commencement of the Cayman Brac Water supply project.

Nine board meetings were held during the year, one of which was held in Cayman Brac.

The members of the Authority at the 31st December 1990 were:

Chairman	Mr Derek B Wight
Members:	Deputy Financial Secretary Mr Woodward Terry B.Sc. LL.B. JP Attorney-at-Law
	Principal Secretary, Communication, Works and Agriculture Mr Kearny Gomez MBE
	Chief Environmental Health Officer Mr Walling Whittaker B.Sc
	Mr McKeeva Bush MLA
	Mr Harry Chisholm JP
	Mr Richard Flowers
	Mr Brainard Watler
	Mr Otto Watler
Secretary:	Director, Water Authority Mr R Beswick C Eng FICE FIWEM MASCE

## **2.0 ADMINISTRATION AND FINANCE**

### **2.1 Staffing**

The Staff complement as at 31st December 1990 was as follows:-

a.	Director	Mr R Beswick CEng FICE FIWEM MASCE
b.	Deputy Director	Mr F McTaggart BSc
c.	Project Manager	Mr T van Zanten MSc
d.	Water Supply Engineer	Mr H van Genderen MSc



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**Staffing Cont.**

e.	Accountant	Mrs H Jackson
f.	Senior Superintendent	Mr T Hill Master Plumber
g.	Senior Draughtsman	Ms C Seymour AAS
h.	Engineering Technician	Mr B Whittaker AAS
i.	Engineering Technician	Mr A Reid AAS
j.	Draughtsman	Mr G Welcome
k.	Operations Technician	Mr J Arch
l.	Operations Scientist	Ms G Frederick BSc
m.	Laboratory Technician	Mr J Parsons BSc MSc
n.	Water resources Supervisor	Mr V Rankine
o.	Water Resources Technician	Mr D Powery
p.	Graduate Research Assistant	Mr P Roderigues BSc MSc
q.	Executive Officer	Ms J Nicholas
r.	Customer Relations Officer	Ms C Levey
s.	Cashier	Mrs K Lazzari
t.	Clerical Officer	Ms E Arias
u.	Operator	Mr E Connolly
v.	Operator	Mr L Tivy
w.	Operator	Mr B Martinez
x.	Superintendent, Cayman Brac	Mr F Banks
y.	Foreman	Mr C Morgan
z.	Asst Operator	Mr C Ramoon
aa.	Asst Operator	Mr V Grant
bb.	Labourer	Mr S Campbell
cc..	Meter reader	Mr J Ebanks

**The following staff movements took place during the year:-**

Emily Arias joined the Authority as its Clerical Officer in October.

Karen Lazzari was promoted to its Cashier in October.

Cindy Levey joined the Authority in March as its Customer Relations Officer and Billing Clerk

Bunyan Whittaker and Tony Reid returned from their studies in June and took up positions as Engineering Technicians

Hannah Jackson was promoted from Treasury to join the Authority as its Accountant in January.

Burnstein Banks joined the Authority in October as its Superintendent-Cayman Brac.

James Ebanks joined the Authority in October as its meter reader.

Jason Arch joined the Authority in June as an Assistant Operator and was promoted to Operations Engineering Technician in November.

Michelle Pessoa left the Authority in September.

Clement Reid left the Authority in September to embark on a four years Bachelor's programme in Civil Engineering at FIT.

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Gene Parsons joined the Authority in July to work as its Laboratory Technician.

Yvete Scotland left the Authority in May.

### **2.2 Awards**

The Chairman introduced an award, to be known as the Chairman's Prize, to the member of staff who, during the year, had demonstrated outstanding effort and dedication to duty. The prize was awarded to Mr Clement Reid, engineering technician, who left in September to commence a four year Civil Engineering Bachelor's degree course at Florida Institute of Technology.

### **2.3 Training**

The Authority continues to promote the training of its local staff, both in-house and by encouraging overseas full time education and attendance of regional seminars and workshops.

Mr Tony Reid and Mr Bunyan Whittaker, engineering technicians, completed their studies at the Technical College of WACO, Texas. The course they completed is a two year Engineering Technicians Associate Degree and it was fully funded by UNDP under a Fellowship provided by the Regional Project, 'Water Resources and Management for Smaller Islands.'

The Authority completed its third year membership of the Caribbean Basin Water Management Project, a training project funded by CDB and CIDA, with each participating utility contributing a sum which is dependent on the size of the utility. The Authority contributed CI\$2,500 in 1990. The following participated in the following seminars and workshops:-

C Morgan and Elvet Connolly attended a one week water meter repair and maintenance workshop in Puerto Rico.

C Seymour and V Wright of PWD, attended a two week supervisory management workshop in St Lucia.

B Martinez attended the six week operator certification course at CAST Jamaica.

B Martinez attended a one week pump maintenance and repair workshop in Grenada.

G Parsons attended the one week laboratory management and practise workshop held in Cayman.

G Parsons attended a coastal pollution workshop funded by UNDP and held in Puerto Rico in November.

W Whittaker, of Environmental Health, attended a two week financial management and cost recovery workshop in Barbados.

A CBWMP Water Utilities' Laboratory Practices and Management workshop was organized by the Authority's Operations Scientist and held over a one week period in Cayman. There were approximately 30 participants from the Caribbean region in attendance.

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The Authority arranged, at the request of the CBWMP, a one week technical assistance programme on the design and operation of waste stabilization ponds for a six man delegation from St Lucia.

Cathy Seymour completed a part time Numeracy and Statistics course run by the Government Training Unit

Juliette Nicholas and Hannah Jackson are both in their second year of a part time course executed by the Government Training Unit in association with the UK Association of Accounting Technicians and it leads to a formal accounting technicians qualification.

#### **2.4 Finance**

1990 was the first year of statutory independence and in contrast to previous years the accounts have been kept separate and apart from the Government accounts. The financial statements and explanatory notes are located at the of this report, from pages 21(a) to 21(i).

#### **2.5 Water Authority Assets**

At the end of 1989 the Water Authority assets, both fixed and current were valued at CI\$17,691,985. The liabilities were assessed at CI\$291,181 and the long term debt with borrowing institutions was CI\$13,528,455. The policy of Government is that the difference between the assets and the sum of the liabilities and long term debt is their equity in the Authority which becomes an interest free loan that is payable over a period of twenty years. This debt payable to Government is therefore CI\$3,872,349. The 31st December 1990 position is shown in the financial statements at the end of this report.

#### **2.6 Drawing Office**

The drawing office is now completely staffed by young Caymanians, two of whom have returned from Texas State Technical Institute with Associate Degrees in civil engineering. The Senior Draughtsperson, Cathy Seymour, is now supervising the Drawing Office.

The drawing office is now computerizing all civil engineering drawings, very little manual drafting is carried out.

The initial survey work for the Cayman Brac water supply project and the proposed water supply extension to Pease Bay was carried out and the sections plotted.

The proofs for the Hydrogeological maps of the Cayman Islands were checked and the maps produced in the middle of the year.

The first part of the year was spent updating the as-built drawings for the water supply extension.

### **3.0 WATER RESOURCES**

#### **3.1 Monitoring**

The comprehensive ground water monitoring programmes established in 1985 remained operational throughout the year. There has been no indication of any general deterioration trend of the water resource in either Lower Valley or East End. Indeed the higher seasonal rainfall experienced during 1989 and 1990 combined with the Authority's measures taken to reduce the abstraction from the well fields has produced a significant improvement in the quality of the ground water being abstracted.

### Lower Valley and East End domestic well monitoring

32 domestic wells in the Lower Valley area were routinely tested for bacteria and total dissolved solids contamination, once during the dry season and again during the wet season. The following are the results of this monitoring:

	<u>Dry Season - March 1990</u>	<u>Wet Season - July 1989</u>
<u>Lower Valley</u>		
Total Coliform	24% of samples > 10 colonies/100ml	28% of samples >10 col/100ml
Faecal Coliform	21% of sample > 0 colonies/100ml	25% of sample >0 col/ 100ml
TDS	0% of sample TDS > 1000mg/l	0% sample with TDS > 1000 mg/l

### 3.2 Water Resource Licencing

In compliance with its statutory obligation the Water Authority has approved and granted the following licences and permits:-

Discharge Permits	351 No
Ground water abstraction Licences	46 No
Canal Permits	0 No
Quarry Permits	0 No

The collection of revenue from this licencing and permitting continues to be handled by the Building Control Section of the Planning Department, who coordinate with the Authority for the issuance of the permits.

Control continued to be exercised on the construction of deep wells and monitoring was carried out on commercial abstraction licences which had been issued for large abstractions.

### 3.3 Rainfall distribution

The following summarizes the rainfall figures for 1987, 1988, 1989 and 1990 and annual averages over the indicated period.

<u>Station</u>	<u>Annual Average</u>		<u>Annual Total</u>			
	<u>period</u>	<u>mm</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Driftwood Village	84-90	1066	050	1632	823	844
Tortuga Club	67-90	967	938	1078	880	1004
Furtherland Farms	84-90	936	827	894	1052	-----
East End Village	85-90	1056	913	1459	1022	960
Frank Sound	84-90	1055	888	1565	945	1041
Bodden Town	67-90	1211	1159	1600	984	1252
Lower Valley	84-90	1279	1261	1648	1186	1261
Savannah	84-90	1319	1392	1668	1269	1245
Prospect Park	84-90	1299	1444	1550	1265	1275
South Sound	84-90	1415	698	1556	1371	1404
Airport	67-90	1328	1541	1468	1301	1399
West Bay	73-90	1046	1039	1556	949	1050
<b>Island Wide Average</b>		<b>1165</b>	<b>1179</b>	<b>1473</b>	<b>1087</b>	<b>1158</b>

The island wide average in Grand Cayman was 1158mm (45.59 inches), less than the average for the record periods, although most parts of the country experienced a wetter than normal dry season. The distribution throughout the island was somewhat irregular, the Eastern Districts being slightly drier than the Western Districts.

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#### 4.0 QUALITY CONTROL AND RELATED MATTERS

##### 4.1 Laboratory

The laboratory completed its second full year in its upgraded form under the management of the Operations Scientist, Gelia Frederick. Throughout the year additional funds were made available to further upgrade the facility to enhance its capability. The following new equipment was purchased:

Bausch and Lomb Binocular Microscope  
Hach dissolved oxygen meter and probe

The major activities of the laboratory continue to be:

- Quality control of the George Town, Lower Valley and East End water supply;
- Research and monitoring of the West bay Beach sewage treatment works;
- Monitoring of the Lower Valley and East End water resources; and
- Development and implementation of in-house training programmes.

In July the laboratory technician left and was replaced by Mr Gene Parsons who took over the post on a temporary basis until the end of the year when he was due to commence on a project with the Natural Resources Unit.

The laboratory, through its Scientist, Ms Gelia Frederick organized a regional workshop for the Caribbean Basin Water management project. This workshop is described in section 2.2.

The laboratory is supporting two important research projects both of which are described in section 4.2.

A number of papers have been produced by or in conjunction with the laboratory and these are described in section 4.5.

##### Monitoring Programme

The laboratory continues to operate its comprehensive quality monitoring programme of both sewage treatment and water supply.

##### Sewage Treatment Works

Weekly monitoring of the performance of the sewage treatment works continued during 1990. To assist with the research studies the sampling date was varied from month to month to determine variances in loading.

The following is a summary of the operational performance of the treatment works:

	BOD mg/l	%age removal	Faecal log/100ml	%age removal
Incoming Composite sewage	103.5		$3.32 \times 10^8$	
Pond 1.1 and 1.2	38.0	63	$1.69 \times 10^5$	99.95
Pond 2.1	29.0	72	$2.78 \times 10^4$	99.992
Pond 2.2	25.4	75	$7.35 \times 10^3$	99.998

The electrical conductivity ranged from 8,100  $\mu\text{S}/\text{cm}$  to 16,800  $\mu\text{S}/\text{cm}$ , the average being 11,956. A significant decrease in electrical conductivity was observed in October following the routine repair of a number of leaks.

### George Town Water Supply

Monitoring of the distribution system continued. Seven sampling taps were installed throughout the area. Regular monitoring of chlorine residual, bacteria and conductivity through out the distribution is to commence in January 1991. This monitoring is in addition to the present regular monitoring of the water as it enters and leaves the reservoirs.

The laboratory received and attended to a number of queries that resulted in forty one checks being made. None of the samples taken showed any bacteriological contamination and in all cases the chlorine residual was adequate.

The monthly breakdown of analyses performed is as follows:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
STW	27	15	20	19	25	20	17	24	14	24	32	19	
GTWS	46	49	40	27	8	62	33	47	42	50	24	31	
LVR	15	12	38	6	9	6	15	12	9	40	22	9	
EER	15	12	12	6	3	3	15	12	9	15	12	9	
Private	9	15	8	2	2	11	17	7	11	6	8	3	
Queries	14	10	6	2	0	0	2	0	0	5	2	0	
Gov	2	2	1	0	0	0	10	0	0	0	0	2	
Totals	128	115	124	62	47	102	108	102	85	140	100	73	1188

Over the year the following routine samples were taken and analyzed:

Sewage Treatment Works	256
George Town Water Supply	459
Lower Valley reservoir	193
East End reservoir	123
Private testing	99
Queries	41
Government	17
<b>Total</b>	<b>1188</b>

### 4.2 Research

Ms Gelia Frederick, the Operations Scientist, continued her collaborative M Phil, with the University of Surrey. Her supervisor, Dr B Lloyd, visited towards the beginning of October to monitor the progress of the research. The theme of the research was modified slightly to compensate for problems experienced with the salinity of the sewage. During her study period in UK she attended a IAWPRC Health related microbiology conference in Tübingen, West Germany, where she presented a paper. During the same period she also attended courses in analytical quality control, water quality control, data management, environmental virology and biological monitoring.

Mr Paulino Rodrigues, the graduate research assistant continued with his second year, during which he expanded his data collection to include other parameters that effect the performance of waste stabilization ponds. His supervisor, Mr K V Ellis made a second visit in the middle of the year to review progress on the research. Mr Rodrigues submitted his first year progress report to his University's Director of Research and subsequently approval was given for him to continue into his second year. The parasitological analysis that is being carried out with the cooperation of the Hospital is progressing satisfactorily and should be complete in the middle of 1991 at which time it is anticipated that a joint paper will be written to describe the work.

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### **4.3 Papers and Reports**

The Operations Scientist prepared and presented a paper entitled "Operation, performance and problems experienced with waste stabilization ponds in Grand Cayman." at the International Water Pollution Control Institution's conference held in Tubingen, West Germany. This paper is to be published in a Pergamon press publication in February 1991.

The Operations Scientist prepared and presented a paper on the Cayman Islands waste stabilization ponds at the 19th Annual Caribbean Water and Waste Water Engineer's conference held in Dominica.

The Cayman Islands' maps for the UNESCO Hydrogeological Atlas of the Caribbean were completed and printed and are now available to the general public.

A report was prepared to assess the feasibility of extending the water supply from Spotts Newlands to Pease Bay and was submitted to Government for their consideration.

A report establishing a pollution monitoring programme for the Hog Stay Bay area was completed by the Authority in cooperation with Natural Resources Unit and Environmental Health Department.

The following Papers were prepared by the University of Alberta in cooperation with the Water Authority:

#### **Full Journal Papers**

- Jones B and Hunter I G; Coral to rhodolites to microbialites - a community replacement succession indicative of regressive conditions. *Plaios*
- Jones B; General Terrestrial Oncoids, Cayman Islands, British West Indies. *Canadian Journal of Earth Sciences*.
- Tongpenyai B and Jones B; Application of Image Analysis for delineating Modern Carbonate facies changes through time: Grand Cayman, Western Caribbean Sea. *Marine Geology*.
- Pleydell S M, Jones B, Longstaffe F J and Baadsgaard H 1990; Dolomitization of the Oligocene-Miocene Bluff Formation on Grand Cayman, British West Indies. *Canadian Journal of Earth Sciences*.
- Jones B and Hunter IG 1990; Pleistocene paleogeography and sea levels on the Cayman Islands, British West Indies. *Coral Reefs*.
- Jones B 1990; Tunicate spicules and their syntaxial overgrowth: examples from the Pleistocene Ironshore Formation, Grand Cayman, British West Indies.

#### **Contribution to conference proceedings**

- Ng Kwok-Choi and Jones B 1990; Chemical and stable isotope characteristics of ground water on Grand Cayman. *Tropical Hydrology and Caribbean Water Resources*.
- Jones B and Hunter IG; Sedimentology of the late Pleistocene Ironshore Formation on Grand Cayman. *Transaction of the 12th Caribbean Geological Conference*.

- Jones B Hunter I G and Ng Kwok-Choi. Geological evolution of the Oligocene-Miocene Bluff Formation, Grand Cayman. Transaction of the 12th Caribbean Geological Conference.
- Ng Kwok-Choi and Jones. Porosity and permeability development in the Oligocene-Miocene Bluff Formation, Grand Cayman. Transaction of the 12th Caribbean Geological Conference.

## 5.0 WATER SUPPLY - OPERATIONS

### 5.1 Lower Valley well field facility

The Lower Valley well field has completed its seventh full year of production. The well field has been pumping for 76% of the year, 3% less than 1989.

Rationing of the supply has been necessary on various occasions during the year, most notably during the dry season, although the demand has not fluctuated greatly from season to season.

The following table indicates various performance criteria of the well field and compares them to the previous years. There has been a 9% reduction in production over the previous year at this facility. The increased rainfall during 1989 and 1990, coupled with the reduction in abstraction has allowed the well field to improve in quality quite dramatically.

Year	Hours Run	Average Pumping Rate Cub m/hour	Quantity Produced Cub m	Power KwH per Cub m	%age Loss	Month Max Cub m	Production Min Cub m	Total Sold Cub m
1986	6,810	8.68	59,146	2.03	7.94	7,033	2,386	55,716
1987	8,421	7.15	60,159	2.28	4.94	5,459	3,965	57,744
1988	7,884	6.16	48,564	2.35	5.60	4,770	2,692	45,989
1989	6,945	7.08	49,177	2.33	5.38	5,054	2,146	48,256
1990	6,635	6.70	44,480	2.33	8.79	5,380	2,086	44,944

### Lower Valley well field performance

The water quality remains within the World Health Organization's standards and improved on the 1989 figures, with a total dissolved solids ranging between 583 ppm to 864ppm, depending on the time of the year and position of the tide.

The total quantity of water produced since commencement of the well field operation is 373,931 Cub m (98,717,784Gallons).

### 5.2 East End Wellfield facility.

The East End well field has completed its fifth full year of production. The well field has been pumping for 12% of the year, 48% less than 1989. The reduced demand on the well field reflects the ability of the George Town supply to meet the trucked demand.

The following table indicates the various performance criteria of the well field and compares them to the previous year.



Year	Hours Run	Average Pumping Rate Cub m/hour	Quantity Produced Cub m	Power Kwh per Cub m	%age Loss	Month Max Cub m	Production Min Cub m	Total Sold Cub m
1986	603	14.72	8,877	0.46	1.03	1,760	339	4,191
1987	2,712	14.00	37,973	0.47	1.37	6,401	1,244	29,263
1988	3,134	14.00	43,879	0.45	1.36	7,183	529	33,815
1989	3,564	17.50	62,359	0.40	7.00	11,293	954	57,973
1990	1,086	17.87	19,408	0.43	1.00	2,624	952	19,074

#### East End well field performance

The water remains within the World Health Organization's standards, with a total dissolved solids ranging between 322 ppm to 428ppm, the water being higher quality than Lower Valley because of the larger lens.

The total quantity of water produced since commencement of the well field operation is 172,162 Cub m (45,450,768US Gallons).

#### 5.3 Cayman Water Company.

The Cayman Water Company experienced a better year than 1989 and commissioned a new 650,000 Gallon per day reverse osmosis plant. The name plate capacity at the end of 1990 was 1,325,000 US Gallons per day.

The following table indicates various of their operating parameters and compares them to 1989.

	1990	1989	Variance 1990 to 1989
Water Produced (US Gall)	186,819,220	168,414,980	+11%
Total Water Sold(US Galls)	172,686,551	153,701,610	+12%
Pipeline Sales(US Galls)*1	165,391,151	150,244,396	+8%
Truckers Sales(US Galls)	7,295,400	3,457,214	+111%
Average Month Sales(US Galls)	14,390,546	12,808,467	+11%
Fuel Adjustment Factor Av	\$0.71	\$2.35	-70%
Average water price pipeline	\$18.16	\$19.80	+5%
Average water price trucker	\$15.71	\$17.35	+6%
Total Royalty Payment	\$223,773.55	\$195,869	+14%
Unaccounted for water	7.56%	8.74%	-1.17%

#### 5.4 Water Truckers

The following companies continue to provide a trucking service:-

H.A. Bodden  
Eden's Water Service  
C.L. Flowers and Sons  
Wilford Ryan  
Thompson Water Service  
Brasely McLean

Five of the companies drew water from East End, five from Lower Valley, all six from the George Town reservoir and one from two private wells situated on Walkers Road. For a part of the year water was also drawn from the Treasure Island and Hyatt Hotels when other

sources were insufficient to meet the need and an estimate of the quantities from these sources is included in the table below.

The total quantity of water drawn by the truckers expressed in US gallons was as follows:-

	1988	1989	1990
Water Company	2,275,603	3,457,214	7,295,400
Lower Valley	12,133,150	12,861,024	11,864,799
East End	8,927,212	15,304,872	5,033,169
George Town Reservoir	32,000,000	7,802,362	14,797,234
Walkers Road	2,190,000	2,790,162	103,752
Other Sources		12,000,000	0
<b>Total</b>	<b>57,527,965</b>	<b>54,215,634</b>	<b>39,094,354</b>

This equates to an average daily trucked demand of 107,108 US Gallons, representing a 28% reduction over 1989. There is no doubt that the truckers sales has reduced due to the extensive provision of a piped distribution.

#### 5.5 George Town Water Supply

The George Town water distribution experienced a period of rapid growth during 1990. Average daily distribution flows have risen from 900 cub m (238,000 US gals) per day in January to 1,750 cub m (462,000 US gals) per day in December. This rapid growth was due in the main to the expansion of the piped distribution to include Selkirk Drive, Prospect Park, Spotts, and Spotts Newlands, in addition to the greater availability of water to meet the full demand of the truckers.

Reliable Water-Cayman began providing water from their new RW-5 sea water reverse osmosis plant in January under an agreement that was signed in 1989. The plant has operated most satisfactorily throughout the year and has provided water with a total dissolved solids (TDS) content ranging from 130 to 150 ppm, which is within the contracted limit set at 200 ppm. The Reliable Water RW-2 plant was shut down from February until September for redesign and reconstruction in preparation for installation in Cayman Brac. Following two months of on-line testing it was agreed that the redesign had been successful. It is anticipated that the RW-2 will be needed in Grand Cayman during the Central DeSal shut down which is scheduled for February 1991.

Unfortunately the Central DeSal plant continued to experience problems and at no time was it able to produce the daily minimum quantity of 1,250 cub m (330,000 US gals). In July, after giving the required notice, the Licence with Central DeSal was terminated on the ground that Central DeSal was in breach of its duty under the Licence. An arrangement was negotiated with Central DeSal whereby the existing Licence would be voided subject to re-negotiation and they would be given penalty free time to put their plant back in proper working order, provided that they kept the plant operating in its present condition whilst the Authority make other arrangements to procure an additional source of water. To this end the Authority entered into a supplementary agreement with Reliable Water-Cayman for them to expand their existing plant by an additional 1,330 cub m (351,000 US Gals) per day. Reliable agreed to provide this volume of water by the end of January 1991, at which time Central DeSal would shut down for six weeks of extensive repair.

The Authority commenced to operate its newly completed 4,540 cub m (1.2 Million US gal) reservoir and trucker's terminal at Red Gate Lane in March. An updated chlorination system was commissioned to coincide with the Reliable Water plant expansion.

A new distribution pumping system was installed during November to provide adequate and more constant pressure at all parts of the expanded distribution. New, more efficient pumps sets were fitted in addition to control valves and pipe work. The existing control system was redesigned and rewired.

**George Town Customers:**

	<b>1990</b>	<b>1989</b>	<b>1988</b>
Residential	1820	1263	687
Commercial	264	203	132
Public Authority	39	36	23
Truckers	8	8	10
<b>Total</b>	<b>2131</b>	<b>1510</b>	<b>842</b>

**1990 Average monthly sales per customer (cub m)**

Month	Residential	Commercial	Public Authority	Trucker
Jan	12.52	40.99	73.93	538.40
Feb	13.54	57.87	113.68	920.11
Mar	14.30	53.22	119.28	761.95
Apr	15.56	53.51	111.98	1363.11
May	16.89	51.05	110.17	1008.54
Jun	13.98	52.29	93.24	526.44
Jul	13.28	52.25	87.50	440.46
Aug	13.97	55.32	80.59	542.16
Sept	14.33	46.17	85.58	520.83
Oct	13.72	46.33	105.73	515.00
Nov	12.33	41.10	129.95	291.76
Dec	12.27	44.15	84.95	417.21

**Total water sales (cub m)**

	<b>1990</b>	<b>1989</b>	<b>1988</b>
Residential	322,373	183,054	75,653
Commercial	140,689	109,570	54,117
Public Authority	45,184	33,446	15,798
Truckers	62,768	29,553	120,807
<b>Total</b>	<b>571,014</b>	<b>355,625</b>	<b>266,374</b>

**Unaccounted for water**

The average monthly unaccounted for water was 5.29% of the gross production, a reduction of 1.23% over 1989, with a high of 9.09% in March and a low of -1.48% in May. The negative loss results from the timing of the sales meter readings as compared to the production meters. This loss is considered acceptable, especially as large quantities of water were used for flushing and testing newly constructed lines.

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### Water Prices

The prices of water increased to the following at the 1st January 1990:

<b>Ground Water</b>	\$2.00 per Cub m	(\$7.58 per 1000 US Galls)
<b>Desalinated Water</b>		
Residential first 12 Cub m per month	\$3.50 per Cub m	(\$13.26 per 1000 US Galls)
over 12 Cub m per month	\$4.20 per Cub m	(\$15.91 per 1000 US Galls)
Public Authority	\$3.80 per Cub m	(\$14.39 per 1000 US Galls)
Commercial	\$4.20 per Cub m	
Trucker	\$3.50 per Cub m	

Meter rental Charge payable monthly and varies from \$3.50 to \$40.00 depending on the size of meter.

Minimum monthly charge is payable and is made up of the meter rental charge plus the cost of 4 Cub m of water and therefore varies for the type of customer and the meter size.

## 6.0 SEWERAGE - OPERATIONS

### 6.1 West Bay Beach Sewerage

The sewerage system completed another year of successful operation and was modestly expanded to include a small pumping station at the remodelled Thompson shipping building on Eastern Avenue. Towards the end of the year construction also commenced on the new sewage pumping station to service the greater part of Governor's Sound. Both these pumping stations were constructed with funds provided by the property owners and the Authority has taken on the responsibility of operating and maintaining them after commissioning.

Several major areas of weakness in the system were identified during the course of the year. Following on from this a decision was made to replace all the existing sewage pumping station control panels. The replacement was initiated late in the year and a US company, Polytron, was contracted to carry out the redesign, construction and commissioning of the controls to better survive the aggressive atmosphere caused by the abundance of sewer gas (Hydrogen Sulphide). It is anticipated that this work will be complete in the first half of 1991.

Further investigation was carried out on the concrete corrosion and odour prevalent at a number of the pumping stations resulting from the large volumes of Hydrogen Sulphide. Staff made exploratory visits to Tampa to see first hand how the problem is solved there. A decision was made to address both these problems and funds have been voted in the 1991 budget.

The sewage treatment works has recovered from the problems that occurred in 1989 and early 1990. It has not been necessary to operate the mechanical aerators since March, this has resulted in large cost savings on electricity.

High salinity of the effluent continues to preclude its use for irrigation. A number of leaks have been found in the gravity sewer following a routine survey carried out in August. The majority of these leaks were repaired by direct labour. However further research is being carried out on investigation and repair techniques prior to the continuation of the work.

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## 6.2 Sewerage Statistics

	1990	1989	
Total sewage treated	801,831	509,769	cub m
Average Daily Flow	2,197	1,397	cub m
Number of Septage loads	877	760	Loads
Pumping Stations' electricity	155,016	103,012	KwH
	0.193	0.20	KwH per Cub m
Treatment Works electricity	104,400	67,920	KwH
	0.13	0.13	KwH per Cub m
Aspirators' electricity	49,140	66,300	KwH
	0.061	0.13	KwH per Cub m
<b>Total</b>	<b>0.385</b>	<b>0.46</b>	<b>KwH per Cub m</b>
Total number of connections	232	Increase of 43 over 1989	
Total Sewerage Fee charged	\$1,320,964		
Average cost per connection	\$474.48	per month	
Total number of septage customers	4		
Total Septage Fee charged	\$26,310		
Average cost per customer	\$548.13	per month	

## 7.0 NEW WORKS

### 7.1 West Bay Beach Sewerage Project

In June a sum of CI\$6,193,231.01 was agreed as the final account for the civil engineering contract. Additionally, settlement was reached in July on the dispute between the civil engineering contractor, Hadsphatic International, and the Employer. A sum of CI\$750,000 was paid as an ex-gratia payment in lieu of their claim amounting to some CI\$9.0 Million plus. This settlement followed considerable negotiation and the taking of advice from leading UK Counsel, Mr Donald Keating QC.

A serious sewerage problem that existed on a part of the Governor's Sound development was rectified by the construction of a new pumping main to replace one that was defunct and the replacement of a pumping station that was in a similar condition.

### 7.2 George Town Sewerage

On-site sewage and disposal within the environs of George Town remains a serious concern of both the Water Authority and the Environmental Health department. Towards the end of the year agreement was made between the Natural Resources Unit, Environmental Health department and the Water Authority to carry out a twelve month coastal water quality monitoring programme of the Hog Sty Bay area. It was hoped that this programme would identify the situation with respect to any contamination of Hog Sty Bay and provide a document with which Government could make some qualified decisions.

Collection of data necessary to facilitate the preparation of a pre-feasibility report on the sewerage of central and north George Town, commenced in June. Work on the report commenced and it is anticipated that the report will be completed in the first part of 1991.

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### **7.3 George Town Water Supply**

The extension of the water supply system from Red Bay to Spotts Newlands and all properties en-route was substantially complete by the end of the year. A number of developers of sub-divisions contracted with the Authority for the provision of a water supply to and within their developments. The cost of this work was met by the developers.

The problem of late application for connection continued during the year, resulting in considerable disruption to the contractor's programme and additional cost. The additional cost is passed on to the applicant.

In January, a rate increase, calculated in accordance with the conditions of contract, was given to the civil engineering contractor. The average increase in rates was approximately 3.3%.

The following work was carried out and completed in the year:

- The second one million gallon glass fibre reservoir;
- Main transmission line between Selkirk Drive and Spotts Newlands;
- Distribution to Prospect Park;
- Distribution to Spotts Newlands sub division;
- Main transmission line between Tropical Gardens and Selkirk Drive;
- Transmission main Crewe Road, between Tropical Gardens and South Sound intersection;
- Transmission main Thomas Russell Way and Elgin Avenue.

Agency Work - funded by developers

- Port Authority, Container depot Airport Industrial Estate;
- Patrick's Island;
- Community College;
- Templeton Sub-division;
- Old Crewe Road Sub-division.

### **7.4 Cayman Brac Water Supply**

In July Government gave approval to provide the first phase of a public water supply to the West End of Cayman Brac. Government provided the CI\$1,053,000, to cover the cost of this project, and required that after a moratorium period of 5 years the Authority repay the funds over a period of 15 years at an interest rate of 8%.

The materials for the project were ordered in August and the majority had arrived by the end of the year.

Work on the reservoir and building site commenced in September and was completed in October at which time the construction of the steel frame building to house the reverse osmosis plant and office commenced. The building was substantially completed at the end of the year.

In September the Authority employed Mr Burnstein Banks to be its Operations Supervisor in Cayman Brac. He will assist with the supervision of the works construction and then supervise its operation.

### **7.5 West Bay Water Supply**

In July, Government provided Cayman Water Company with a revised franchise agreement allowing the company to supply water to the district of West Bay. The revised agreement requires that the whole of West Bay is supplied with a piped water supply within a period of three years commencing from July 1990. The agreement also fixes prices to those of the Water Authority and provides for other controls not included in the previous agreement.

Although Cayman Water Company initially had hoped that the project would commence in October 1990 they have since revised their plans and are now looking at October 1991 as the date by which works will commence.

### **7.6 Direct Labour Works**

The direct labour force has throughout the year developed to the point whereby it is carrying out capital works and has gained sound experience in the construction of pumping stations, laying of pipelines and the installation of water and sewer connections. This is in addition to the routine monitoring and preventative maintenance programme.

## **8.0 WATER AND SEWERAGE OPERATORS**

During the year the following new Licences were approved by the Plumber's Examination Board:-

	<b>1990 Licences issued</b>	<b>Total number issued to 31st Dec 90</b>
Apprentice	4No	37No
Journeyman	2No	88No
Master	0No	23No

The Chairman of the Board continued to strengthen the series of teaching aids for plumbers and these were made available to the trade to assist with examinations and to generally upgrade the standard of plumbing on the Island.

The Plumber's Examination Board met on four occasions to assess applications and this year practical and theoretical examinations were held on four occasions to determine applicants' ability.

The Board consists of the following members:

Chairman	Senior Superintendent Water Authority (Mr Thomas Hill)
Members	Chief Environmental Health Officer (Mr Walling Whittaker) Mr Nigel Miller Plumbing Inspectors (Mr Arthur Arch, Mr George Feese)
Secretary and Member	Chief Building Control Officer Mr Roger Gough

## **9.0 UNITED NATIONS**

The Smaller Islands Water Resources, development and Management project of which the Water Authority was a member ceased to exist as of September.





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*Water Authority-Cayman*

*Financial Statements*

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CAYMAN ISLANDS

**Water Authority of the Cayman Islands****CERTIFICATE AND REPORT OF THE AUDITOR GENERAL****To the Financial Secretary**

I certify that I have examined the financial statements on pages (b) to (i) of the Water Authority of the Cayman Islands for the year ending 31st December 1990 in accordance with the provisions of Section 8(7) of The Water Authority Law, 1982, Section 8F(i) of The Water Authority (Amendment) Law, 1987 and Section 44(1) of the Public Finance and Audit Law, 1985.

In my opinion the financial statements give a true and fair view of the state of affairs of the Water Authority of the Cayman Islands at 31st December 1990 and its operation and cash flows for the year then ended.

I have no observations to make on these financial statements.

*Nicholas Treen*

Nicholas Treen  
Auditor General

9th August 1991

## Water Authority-Cayman

### Balance Sheet

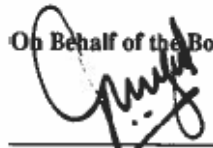
As At 31st December 1990


(Stated in Cayman Islands Dollars)

	Notes	\$
<b>CURRENT ASSETS</b>		
Cash on Hand		200
Cash at Bank		48,760
Accounts Receivable		441,629
Office and Lab Supplies	6	8,902
		<u>499,491</u>
<b>FIXED ASSETS</b>		
Land	4	565,264
Water Supply System	4	8,318,044
Sewerage System	4	9,578,743
Machinery and Equipment	4	596,578
Office Furniture and Equipment	4	88,956
Vehicles	4	59,120
Construction in Progress	5	437,177
		<u>19,643,882</u>
<b>Total Assets</b>		<u><b>20,143,373</b></u>
<b>CURRENT LIABILITIES</b>		
Overdrawn Bank Account		93,145
Accounts Payable		89,588
Customer Deposits		298,241
Government Advance	13	200,000
		<u>680,974</u>
<b>LONG TERM LIABILITIES</b>		
Loans Payable	3	19,092,022
<b>Total Liabilities</b>		<u><b>19,772,996</b></u>
<b>Net Assets and Liabilities</b>		<u><b>370,377</b></u>
<b>Represented By:</b>		
Reserve for Foreign Currency Fluctuations	7	(456,218)
General Reserve		826,595
<b>Total Reserves</b>		<u><b>\$370,377</b></u>

See accompanying notes to financial statements

On Behalf of the Board

  
Derek B Wight  
Chairman

  
Richard G B Beswick  
Director

8th August 1991

## Water Authority-Cayman

### Statement of Income and Expenses

For the Year Ended 31st December 1990

(Stated in Cayman Islands Dollars)

	Notes	\$
<b>INCOME</b>		
Sales		4,790,925
Deposit Interest		55,781
Miscellaneous		17,050
<b>Total Operating Income</b>		<u>4,863,756</u>
<b>EXPENSES</b>		
<i>Administrative</i>		
Salaries		191,862
Wages		10,200
Staff Training and Benefits		25,207
Office and Lab Supplies		25,326
Licences and Dues		9,816
Telephone and Utilities		11,188
Insurance		29,388
Repairs and Maintenance		1,212
Bad Debt Expenses		6,227
Depreciation Expense	4	37,372
Miscellaneous		19,989
<b>Total Administrative Expenses</b>		<u>367,787</u>
<i>Operating</i>		
Salaries		293,364
Wages		100,216
Water Purchase		1,458,099
Repairs and Maintenance		37,356
Supplies		46,875
Electricity		88,077
Depreciation Expense	4	412,951
Lease Expense	12	6,250
Loan Interest		1,205,772
Miscellaneous		20,414
<b>Total Operating Expenses</b>		<u>3,669,374</u>
<b>Total Administrative and Operating Expenses</b>		<u>4,037,161</u>
<b>Net Profit</b>		<u>\$826,595</u>

See accompanying notes to financial statements

## Water Authority-Cayman

### Statement of Cash Flow

**For the Year Ended 31st December 1990**

(Stated in Cayman Islands Dollars)

	\$
<b>OPERATING ACTIVITIES</b>	
Net Income for Year	826,595
<i>Add Items Not Affecting Working capital</i>	
Depreciation	450,323
<i>Net Change in Non-Cash Working Capital Balance Relating to Operations</i>	
Increase in Accounts Receivable	(324,274)
Increase in Customer Deposits	21,872
Increase in Accounts Payable	77,628
<b>Cash Provided by Operating Activities</b>	<b><u>1,052,144</u></b>
<b>INVESTING ACTIVITIES</b>	
Cost of fixed assets purchased	(2,388,334)
Construction in Progress	(437,177)
<b>Cash Applied to Investing Activities</b>	<b><u>(2,825,511)</u></b>
<b>FINANCING ACTIVITIES</b>	
Repayment of Long Term Debt	(515,000)
Proceeds of Long Term Debt	1,950,200
<b>Cash Provided by Financing Activities</b>	<b><u>1,435,200</u></b>
Decrease in Cash During the Year	(338,167)
Bank Balance at the Beginning of the Year	293,982
<b>Bank balance at the End of the Year</b>	<b><u>(\$44,185)</u></b>

## Water Authority-Cayman Islands

### Notes to Financial Statements

31st December 1990

(stated in Cayman Islands dollars)

#### 1. Background Information

The Water Authority of the Cayman Islands ("the Water Authority") is a statutory body established on January 1st 1990 under the Water Authority Law (Law 10 of 1982), as amended.

The Water Authority is principally engaged in the management of water supply and sanitation affairs of the Cayman Islands including the provision of public water supplies, sewerage systems and the management, development and protection of water resources.

#### 2. Significant accounting policies

The significant accounting policies adopted by the Water Authority in these financial statements are as follows:

##### (a) Basis of accounting

The financial statements of the Water Authority are prepared on an accruals basis, except for contributions to capital expenditure from private individuals which is treated as income in the year of collection (see note 8 below).

##### (b) Depreciation

Depreciation is provided on all tangible fixed assets, other than land, on a straight line basis at rates calculated to write off the cost of valuation of each asset evenly over its expected useful life as follows;

Water and Sewerage systems	50 years
Machinery and Equipment	10 years
Office Furniture	10 years
Office Equipment	5 Years
Vehicles	5 Years

##### (c) Foreign currency translation

Assets and liabilities denominated in currencies other than Cayman Islands dollars are translated exchange rates in effect at the balance sheets dates. Revenue and expense transactions denominated in currencies other than Cayman Islands dollars are translated at exchange rates ruling at the time of those transactions. Gains and losses on exchange are credited or charged in the Statements of Income and Expenses.

Due to the volatility of exchange rates, realised and unrealised gains and losses on the translation of foreign currency loans are transferred to a reserve for exchange fluctuations for foreign currency loans and the net gain or loss will be recognized as income when the loans are completely repaid. (see note 7)

**Notes to Financial Statements (cont...)**

**31st December 1990**  
(stated in Cayman Islands dollars)

**3. Loans Payable**

The following is a schedule of the loans payable:

	\$
<i>Barclays Bank</i>	
- Sewerage	3,120,000
- Water Supply	2,375,000
<i>Caribbean Development Bank</i>	
-Sewerage	5,705.955
- Water Supply	2,312,500
<i>Cayman Islands Government</i>	
- Grand Cayman	4,622,349
- Cayman Brac	<u>500,000</u>
<b>Total</b>	<b><u>\$18,635,804</u></b>

The Barclays Bank sewerage and water supply loans are to be repaid over a period of ten years at 1.25% over 3 month LIBOR. Repayment commenced in quarterly installments in March 1989 and September 1990 on the respective loans.

The Caribbean Development Bank sewerage and water supply loans are to be repaid over 15 years at variable interest rates (4% - 8.3%). Repayment commences in quarterly installments in June 1991 and March 1992 on the respective loans.

The Cayman Islands Government loans for Grand Cayman is interest free and is to be repaid in bi-annual installments over a period of twenty five years commencing in June 1992. The Cayman Islands Government loan for Cayman Brac has a moratorium on interest until repayments commence and then attract interest at a fixed rate of 8%, over a period of 15 years commencing in March 1995.

**4. Fixed Assets**

The assets recorded at the start of the year are those which the Government of the Cayman islands have agreed to be vested in the Water Authority (Section 59 of the Water Authority Law, Law 10 of 1982 as amended)

<b>Cost</b>	<b>Land</b>	<b>Water Supply</b>	<b>Sewerage</b>	<b>Other Assets</b>	<b>Total</b>
	\$	\$	\$	\$	\$
Start of year	565,264	7,231,808	9,277,154	194,468	17,268,694
Add in Year	---	1,525,141	805,673	57,520	2,388,334
End of Year	<u>565,264</u>	<u>8,756,949</u>	<u>10,082,827</u>	<u>251,988</u>	<u>19,657,028</u>
<b>Accum Depreciation</b>					
Charge for Year	---	191,861	221,090	37,372	450,323
At end of Year	---	<u>191,861</u>	<u>221,090</u>	<u>37,372</u>	<u>450,323</u>
<b>Net Book Value</b>					
End of Year	<u>\$565,264</u>	<u>8,565,088</u>	<u>9,861,737</u>	<u>214,616</u>	<u>19,206,705</u>

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Notes to Financial Statements (cont...)

31st December 1990  
(stated in Cayman Islands dollars)

5. **Construction in Progress**  
During the year ended 31st December 1990 the Water Authority commenced work on the Cayman Brac Water Supply Project, which at the year end had not been completed. On completion these assets, estimated at \$1,053,000, will be depreciated on a straight line basis at normal rates of depreciation.
6. **Office and Laboratory Supplies**  
An amount of \$8,902 was entered in the accounts at the beginning of the year to cover the value of materials held in inventory. This position has not changed during the year. All materials purchased for the capital projects were costed against construction in progress and not entered into inventory. All materials purchased locally for operations were costed as an operational expense as none were entered to the store. During 1991 the computerized purchasing and inventory data base will be operational and the 1991 accounts will show a complete and up to date inventory.
7. **Reserve for foreign currency fluctuations**  
On January 1st 1990 total loans owed by the Water Authority were \$17,400,803 of which \$5,705,955 referred to the CBD Sewerage Loan, on which repayment has not yet commenced. Due to currency fluctuations, and taking into account exchange rates applicable to date of the balance sheet, the balance due on this loan now stands at \$6,162,173, an increase of \$456,218. This amount has been set aside in a reserve account.
8. **Other Income**  
Other Income includes a sum of \$373,035 contributed from private individuals to fund capital works which were taken over by the Water Authority. The relevant expenses have been capitalized as water and sewerage works.
9. **Other Operating Expenses**  
During the year the Cayman Islands Government provided at no charge to the Authority, administrative office accommodation, legal and a limited amount of personnel services. Also during the year, the Water Authority provided at no charge to the Government availability and use of water for fire fighting, disposal of septage collected by the Environmental Health department, free sewerage service to a number of indigent persons in the Watler's Road area, supervision of ground water resources, administration of Plumbers Examination Board, consultative services for development control and water at a reduced Public Authority rate.
10. **Pension**  
The Authority employs a number of staff who are seconded civil servants of the Cayman Islands Government. In respect of these staff the Authority pays to Government the pension contribution and Government will bear all and any pension liability due to these staff members.



**Notes to Financial Statements (cont...)**

**31st December 1990**  
(stated in Cayman Islands dollars)

- 11. West Bay Beach Sewerage Project Civil Engineering Contract Settlement**  
The civil engineering contractor for the West Bay Beach Sewerage Project, Hadsphaltic International, claimed from Government an additional cost in excess of \$9 Million, whilst this claim was rigourously denied by the Authority a settlement of \$750,000 was reached and these monies were put against the Government Loan and costed to the Sewerage system.
- 12. Leases**  
Property is leased in Lower Valley on which is situated the ground water reservoir and treatment works, the annual cost (\$6,250) of this lease is treated as an operational cost.
- 13. Government Advance**  
Government advanced the Authority a sum of \$200,000 as working capital, this sum is shown as an advance but it will eventually be added to the total net vested assets following approval of this course of action by Government.
- 14. Sales**  
As this is the first year of independent operation of the Water Authority as a Statutory Body Sales include income collected in 1990 for services provided during 1989 whilst the Water Authority was a Government department. The revenues amounted to \$239,076 in 1990.

## Water Authority-Cayman

### Schedule of Income and Expenses

For The Year Ended 31st December 1990

	Notes			
	Water	Sewerage	Other	Total
<i>Income</i>	\$	\$	\$	\$
Sales	2,721,742	1,464,894	604,289	4,790,925
Deposit Interest	***	***	55,781	55,781
Miscellaneous	***	***	17,050	17,050
<b>Total Income</b>	<b>2,721,742</b>	<b>1,464,894</b>	<b>677,120</b> <sup>8</sup>	<b>4,863,756</b>
 <i>Expenses</i>				
Administrative				
Salaries	85,400	87,933	18,529	191,862
Wages	5,100	5,100		10,200
Staff Training and Benefits	11,724	11,724	1,759	25,207
Office and Lab Supplies	12,663	12,663	***	25,326
Licences and Dues	5,594	5,594	***	11,188
Telephone and Utilities	4,908	4,908	***	9,816
Insurance	14,694	14,694	***	29,388
Repairs and Maintenance	506	706	***	1,212
Bad Debt Expenses	554	5,673	***	6,227
Depreciation Expense	18,686	18,686	***	37,372
Miscellaneous	8,816	8,816	2,357	19,989
<b>Total Administrative Expense</b>	<b>168,645</b>	<b>176,497</b>	<b>22,645</b>	<b>367,787</b>
Operating				
Salaries	208,447	84,917	***	293,364
Wages	55,048	45,168	***	100,216
Water Purchase	1,458,099	***	***	1,458,099
Repairs and Maintenance	7,460	29,896	***	37,356
Supplies	21,715	25,160	***	46,875
Electricity	35,433	52,644	***	88,077
Depreciation Expense	191,861	221,090	***	412,951
Lease Expense	6,250	***	***	6,250
Loan Interest	428,745	777,027	***	1,205,772
Miscellaneous	10,819	9,595	***	20,414
<b>Total Operating Expense</b>	<b>2,423,877</b>	<b>1,245,497</b>	<b>***</b>	<b>3,669,374</b>
<b>Total Administrative and Operating Expense</b>	<b>2,592,522</b>	<b>1,421,994</b>	<b>22,645</b>	<b>4,037,161</b>
<b>Net Profit</b>	<b>\$129,220</b>	<b>\$42,900</b>	<b>\$654,475</b>	<b>\$826,595</b>

See accompanying notes to financial statements

