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REPUBLIC OF KENYA



Mombasa Pipeline Board

*Report and Accounts
for
Financial Year Ending
30th June 1966*

657.3
MPB



MOMBASA PIPELINE BOARD,
P.O. BOX 30043,
NAIROBI, KENYA.

12th January 1967.

THE MINISTER FOR NATURAL RESOURCES,
GOVERNMENT OF KENYA,
P.O. BOX 30027,
NAIROBI.

Sir,

As required by Part IV, section 13 (4), of the Mombasa Pipeline Board Act No. 19 of 1957, I have the honour to submit the Report and Annual Accounts of the Board for the Financial Year ending 30th June 1966.

I have the honour to be,
Sir,
Your obedient servant,

V. G. MATTHEWS,
Chairman,
Mombasa Pipeline Board.

KENYA NATIONAL ASSEMBLY

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Call No: 6573 MPB



MOMBASA PIPELINE BOARD
REPORT AND ACCOUNTS FOR THE FINANCIAL YEAR
ENDED 30TH JUNE 1966

Constitution of the Board

During the year under review, the Board was constituted as follows:—

Chairman:

V. G. Matthews, Esq., C.M.G., O.B.E., B.Sc.

Secretary:

G. Stevenson, Esq., A.M.I.C.E., A.M.I.W.E., M.R.S.H., Acting Superintending Engineer (Water Supplies), Water Development Department, Nairobi, until 18th November 1965. Thereafter, R. Barrett, Esq., C.ENG., M.I.C.E., M.I.W.E., Director of Water Development, Government of Kenya, and Technical Adviser to the Board.

Members:

The Permanent Secretary, Ministry of Works and Communications, Entebbe, Uganda.

R. A. Collier, Esq., Chief Ports Manager, E.A.R. & H., Nairobi, (alternate Mr. W. W. Gow, from 8th May 1966).

Johnson Mweru, Esq.

Senator Rockie Mchinga.

Hon. A. H. Dingiria, M.P.

Councillor Isaac Kamau Ndirangu.

Senior Assistant Secretary, Ministry of Natural Resources, Nairobi.

Deputy Director (Agriculture), Ministry of Agriculture and Animal Husbandry, Nairobi.

Systems Operated

The installations operated by the Board remained substantially as recorded in the report for the year ended 30th June 1965. In brief, these are the Mzima/Mombasa pipeline with a capacity of 8,000,000 gallons *per diem*, piping water to Mombasa by gravity flow from the Mzima Springs 140 miles to the north west; the Mrere pipeline with a capacity of some 2,000,000 gallons *per diem*, piping water 27 miles from the Shimba Hills to Mombasa via Changamwe, and the North Mainland pipeline with a capacity of 225,000 gallons a day, which branches off from the Mzima-Mombasa pipeline just below Mazeras, and which supplies the Mainland north of the Tudor Creek as far as Shimo la Tewa.

In addition to the pipelines, there are three storage reservoirs at Mazeras on the Mzima system each with a capacity of 6,000,000 gallons and two storage tanks for the North Mainland system. These latter are at Nguu Tatu and have a combined capacity of 500,000 gallons. The service reservoirs are at Changamwe and here the waters of the Mrere and Mzima systems mix. This is the point of bulk sale by the Board to the Water Undertaker, i.e., the Director of Water Development.

There are a number of minor water supplies from connexions along the Mzima-Mombasa pipeline which are operated by the Director of Water Development. These supplies are listed in the "Statement of Water Supplies" in the accounts at the end of the report.

The layout of the systems is as shown in the plan at Schedule I.

While the Mombasa Pipeline Board administers the projects in accordance with the terms of the Mombasa Pipeline Board Act (No. 19 of 1957), and is responsible to the Minister for Natural Resources in this behalf, the actual operation and maintenance of the installations is undertaken by the Directorate of Water Development, Government of Kenya, acting as the Board's operating agents. The Board pays fees for these services calculated in accordance with an agreed formula.

Finance

(a) Capital Account

The capital at charge on 1st July 1965 was £5.271 million of which the Mzima system accounted for £5.020 million, the Mrere system for £55,119 and the North Mainland system for £196,345.

The capital is wholly borrowed or loan capital, the creditors being the Government of Kenya for all three projects, the Uganda Government for the Mzima project and the East African Railways and Harbours Administration, Messrs. Barclays Bank D.C.O., the National and Grindlays Bank, and the Standard Bank also in respect of the Mzima project only. The three Banks loaned as a consortium jointly, a total of £1,350,000 and repayment of capital and interest is guaranteed by the Government of Kenya. This loan is covered by an issue of registered bonds. The loans and guarantee by the Government of Kenya are secured by a debenture. The loan from the Uganda Government was made to the Kenya Government and reloaned by that Government to the Board. The amounts of each loan and the various rates of interest are as shown in the appended accounts.

The capital in respect of both the Mrere pipeline and the North Mainland pipeline is being repaid from revenue by equated instalments of interest and capital, repayments in respect of the Mrere pipeline having commenced in 1958 and those in respect of the North Mainland project in December 1962. In respect of the Mzima system, it is proposed that final redemption of the loans shall be effected in 1995, the end year of the assumed 40-year life of the major asset. To cover the period between that year and the dates when the original loans fall due for payment, it is intended to negotiate renewal of the original loans or, to the extent necessary, to seek fresh ones. Capital repayment during the year was as follows:—

(a) Mzima system—Nil.

(b) Mrere system—£2,526.

(c) North Mainland system—£5,141.

Consequently, the capital remaining at charge at the end of the year on 30th June 1966 was £5.264 million made up as follows:—

(a) Mzima—£5.020 million.

(b) Mrere—£52,593.

(c) North Mainland—£191,204.

The £1,350,000 Loan from the Banks at 6½ per cent interest fell due for repayment on the 1st July 1965, that is, the first day of the year under review. As a result, however, of negotiations during the year ending 30th June 1965, the consortium agreed to renew the loan subject to repayment being made by ten annual equated instalments of capital and interest at 7 per cent.

Moreover, the first instalments, one third and one quarter respectively, of both the Uganda loan totalling £1,000,000, and of the East African Railways and Harbours Administration loan of £500,000, became due for repayment, the

Uganda instalment on 4th December 1965 and the E.A.R. & H. instalment on 31st December 1965. The Government of Uganda found itself unable to renew its loan. Consequently, in accordance with the understanding existing since the Board's inception, the Government of Kenya is making repayment as the instalments fall due, thus in effect increasing its capital credit to the Board by the amounts so repaid.

In the case of the Railways and Harbours' loan, the Administration was fortunately able to extend the loan until April 1968, in the first instance, with a possibility of further extension thereafter. Both the new capital credit from the Government of Kenya which is extended until July 1975, and the extended loan from the Railways and Harbours Administration are at 6 per cent, the original loans being at 4 per cent. Resulting from the great change in the money market in the decade 1956-1966, the terms of the new loans are considerably more onerous than the original. This possibility had been foreseen, and on a long-term assessment carried out in 1964, it was decided that the general bulk rate for water should be increased from 1st October 1964, from Sh. 3/60 to Sh. 4/10 per thousand gallons. This step has enabled the Board to meet the new situation without detriment to its financial viability.

(b) *Revenue Account*

The principal recurrent revenue of the Board naturally accrues from the bulk sale of water. Apart from certain unimportant exceptions, the Board's bulk-selling price has, since the 1st October 1964, been Sh. 4/10 per thousand gallons for Mombasa Island and district, and Sh. 4/50 in respect of the North Mainland. These rates represent an increase of 50 cts. per thousand gallons over the rate in force before the 1st October 1964, the increase being necessitated in the circumstances set out in the preceding paragraph under "Capital Account".

Both the consumption, and of course, revenue, continued to rise in the period under review, and below are set out the comparative figures for the year ended 30th June 1965, and for the year ended 30th June 1966:—

YEAR ENDED 30th JUNE 1965			
<i>Mombasa and district</i>		<i>North Mainland</i>	
<i>Consumption</i>	<i>Revenue</i>	<i>Consumption</i>	<i>Revenue</i>
<i>million gallons</i>	£	<i>million gallons</i>	£
1,902	377,977	158*	31,780*

YEAR ENDED 30th JUNE 1966			
<i>Mombasa and district</i>		<i>North Mainland</i>	
<i>Consumption</i>	<i>Revenue</i>	<i>Consumption</i>	<i>Revenue</i>
<i>million gallons</i>	£	<i>million gallons</i>	£
1,942	398,086	152	31,122

For the two systems together there is an overall increase from 2,060 million gallons to 2,094 million gallons. The increase would have been higher but for a decrease of six million gallons in the North Mainland system. This fall is accounted for by a drop of ten million gallons in consumption by the Bamburi Portland Cement Company, partially offset by an increase of four million gallons in consumption by the other North Mainland consumers.

Water supply revenue increased from £409,757 to £429,208 disclosing an increase of 5 per cent, a figure somewhat higher than the most recent (March 1964) long-term forecast.

* Amended from previous report by adjustment after the close of 1964/65 (See report for 1964/65 p. 4).

(c) *Expenditure*

The Board's outgoings fall under three headings—

- (i) The service charges and repayments on the outstanding capital loans.
- (ii) Fees paid to the Directorate of Water Development in respect of the operation and maintenance of the systems.
- (iii) The cost of the Board itself.

These for the year under review totalled respectively:—

£281,907.

£60,236.

£2,416.

Thus with a total revenue of £442,145, which is water supply revenue plus interest on the Research Fund and other miscellaneous revenue, and a total expenditure of £344,559 the year disclosed an operating surplus of £97,586.

This surplus being carried to the Reserve Fund brings that fund to a total of £310,411.

As was the case for the previous year, this level is above that required by the 1961 assessment—a long-term forecast made to determine the water charges necessary to ensure ability finally to repay from the Reserve Fund all outstanding capital not later than by 1995.

Operation of the Systems

(a) The Mzima System

The major pipeline serving Mombasa consists of a 130-mile-long prestressed concrete gravity pipeline from the source at Mzima to Mazeras Reservoirs. Along this length of pipeline there are ten break-pressure tanks, and the flow is controlled automatically by valves operating on the down-stream control principle.

The system, as designed, has been found to be unstable in operation producing surge and water hammer, and the year under review was characterized by a number of bursts in weakened sections of the pipe. An original assessment by the operating agents indicated that some enlargement of the break pressure tanks would have to be undertaken at an estimated cost of £100,000.

In November 1965, however, after further pipeline trials, the operating agents were able to recommend a much cheaper solution to the problem.

In June 1965, Messrs. Lupton and Gardner, the consulting engineers, were asked to advise on the problem, having regard to Mr. Lupton's special experience in valve selection and performance. In December 1965, Mr. Lupton made a personal inspection of the pipeline with the Director of Water Development, and it is reassuring to find that he entirely agreed with all the recommendations that had been made.

The principal contributory factor was found to be a malfunction of the control valves. In order to effect an improvement, it was necessary for the valves to be modified and provided with new float linkages so as to produce stable operation, and thus allow maximum carrying capacity of the pipeline.

It was further recommended that pressure-relief valves of the spring-disc type be installed at the break-pressure tanks, and other selected points along the pipeline, as an additional safety measure against the occurrence of water hammer.

The above proposals were approved by the Board at an estimated cost of £32,000.

The Mzima-Mombasa main pipeline was laid 10 to 12 years ago, much of it through aggressive soil, and through country subject to earth tremors.

A cathodic protection system using sacrificial anodes was adopted, and over the years this system has deteriorated, and it was found that a major programme of rehabilitation was necessary at an estimated cost of £5,000 per annum over a period of three years. It was also decided that, in view of the importance of the cathodic protection system to the safety of the pipes, a permanent maintenance gang should be established for constant duty on the pipeline. This maintenance gang involves a recurrent expenditure of £4,500 per annum.

In view of the importance, in the case of a long pipeline, of the engineer in charge being immediately aware that a burst has occurred in any section, the operating agents put up detailed proposals for a telemetry warning system for this purpose at an estimated cost of £5,000. This proposal was adopted by the Board.

The total cost of the rehabilitation programme, including a new store at Voi to House sluice valves, penstocks and other valuable spares and equipment, amounts to £57,000. Action by the operating agents on its implementation has been swift and effective. In addition, a new method of repairing bursts, involving the use of steel pipes and flexible couplings, has been introduced, greatly reducing the time and labour involved in repairing bursts. The temporary chlorination installation at Mazeras using tropical chloride of lime is also to be replaced by modern automatic gas chlorination equipment with chlorine residual control.

(b) The North Mainland Pipeline

This pipeline, which serves the Mombasa North Mainland, including the Nyali, Bamburi and Shimo la Tewa areas, is some 12 miles long from the connexion to the Mombasa pipeline below Mazeras to the storage reservoir at Nguu Tatu.

The country traversed by the pipeline is hilly, and contains several sections of black-cotton soil which are subject to considerable movement according to the climatic conditions.

During the year under review, there were several instances of damage from this cause, one incident being particularly severe when a landslide carried away a long section of the main. Access is often difficult, particularly in wet weather; but in all cases of damage to the pipeline, repairs were effected before serious inconvenience was caused to the consumers in the areas concerned.

Every effort is being made to improve the condition of the access road sufficiently to guarantee all-weather access.

(c) The Mrere Pipeline

The Mrere pipeline is served by springs in the Shimba Hills adjoining Mrere. The pipeline traverses the southern slopes of the Shimba Hills for a distance of some 27 miles before discharging into the Changamwe Service Reservoirs.

The pipeline was constructed in 1923, and naturally some deterioration in the condition of the steel pipes has taken place. At the same time, owing to abnormal weather conditions, and other factors, the access road along the Mrere pipeline has suffered major deterioration, and has caused serious concern by becoming virtually impassable in certain sections.

In view of the importance of this asset, plans for the rehabilitation of the installation, including the headworks, are being made by the operating agents.

The Board made an immediate allocation of £17,500 in respect of improvements to the access road, and the operating agents launched an emergency programme of work which included, realignment of the road in places, the provision of new bridges, and the reconstruction of the culverts and drainage system generally. The road has now been brought up to a higher standard than it has ever been. In terms of the short time factor alone, the Director and his staff deserve the appreciation of the Board for this first-class piece of work.

In addition, the Board has approved an expenditure of £9,500 for the initial rehabilitation of the pipeline itself.

(d) Mazeras Reservoirs

These comprise three storage reservoirs of 6,000,000 gallons each, making a total of 18,000,000 gallons reserve supply against a total demand below the reservoirs of some 5,000,000 gallons per day.

In the period under review, the reservoirs were the subject of careful examination by the operating agents, and the leak in the construction joints of one of the tanks, which has concerned the Board for some years, and which was referred to in the 1964/1965 report, was successfully repaired.

(e) Changamwe Reservoirs

The Board's service reservoirs at Changamwe have a total capacity of 6,500,000 gallons, and it is here that the Mzima water coming from the north west and the Mrere water coming from the south are mixed.

The water from these reservoirs is sold in bulk to the Water Undertaker, i.e., the Director of Water Development, for distribution to individual consumers. The installations operated successfully throughout the year.

(f) Secondary Water Supplies

These secondary water supplies are listed in the "Statement of Water Supplied" in the Appendix to this report. They operated successfully throughout the year.

(g) New Developments

Whilst, during the year under review, there was no major change in the installations of the Board, the Board, nevertheless, discussed and agreed an extension of its supplies from the Mzima pipeline to Sokoke just north of Kilifi. This scheme, at an estimated cost of £300,000, has been designed by the Director of Water Development to provide water to the densely populated Coast hinterland between Mazeras and Sokoke, to the Sokoke, Roka and other settlement areas, and also to replace the existing unsatisfactory water supply to Kilifi Township. The locations of Rabai, Ruruma, Kaloleni and Chonyi will also be amongst those commanded by the proposed new system. The installation of the supply will bring much benefit to the area concerned, as at present, the populace rely on springs, streams, wells, dams and rainwater for their requirements. All the present sources of supply are untreated and diseases such as gastro-enteritis are rife. The installation of a good-quality water supply will not only benefit the existing population, but will encourage further development, including the development of such tourist potential as the area may have. At the end of the year under review, negotiations were in hand to secure the necessary finance.

V. G. MATTHEWS,
Chairman,
Mombasa Pipeline Board.

**CERTIFICATE OF THE CONTROLLER AND AUDITOR-GENERAL,
KENYA, ON THE ACCOUNTS OF THE MOMBASA PIPELINE BOARD
FOR THE YEAR ENDED 30TH JUNE 1966**

Revenue Account	..	..	..	..	..	Statement No. 1
Net Revenue Account	..	..	..	..	..	Statement No. 2
Net Revenue Appropriation Account				..	..	Statement No. 3
Capital Account	..	..	..	..	..	Statement No. 4
Balance Sheet	..	..	..	..	..	Statement No. 5
Statement of Water Supplied	..	..	..	..	..	Statement No. 6

The above accounts have been examined in accordance with Section 13 of the Mombasa Pipeline Board Act, (Cap. 373). I have obtained all the information and explanations I have required and I certify, as a result of my audit, that in my opinion the above accounts are correct.

Nairobi,
10th December 1966.

D. E. BARNETT,
Controller and Auditor-General.

NET REVENUE ACCOUNT FOR THE YEAR ENDED 30th JUNE 1966

	1964/65	1964/65	INCOME	1964/65	INCOME	£ s. cts.
£ s. cts.	£ s. cts.	£ s. cts.	By Balance brought from Revenue Account	£ s. cts.	By Balance brought from Revenue Account	£ s. cts.
84,258 15 74	362,938 14 02		.. .. .		.. .. .	369,669 8 28
40,000 0 00	2,139 13 05		INTEREST RECEIVED:	2,139 13 05	Reserve Fund	2,139 13 50
20,000 00 00	2,955 1 13		.. .. .	2,955 1 13	Cash Balances	7,683 13 95
101,875 0 00	5,094 14 63					9,823 7 45
2,301 17 60						
12,499 7 15						
—						
260,935 0 49	274,240 5 42					
2,428 7 97						
4,834 7 15						
7,262 15 12						
135,675 13 51						
99,835 13 04						
£503,709 2 16	£ 515,168 9 24			£ 515,168 9 24		£ 515,168 9 24

	1964/65	1964/65	INCOME	1964/65	INCOME	£ s. cts.
£ s. cts.	£ s. cts.	£ s. cts.	By Balance brought from Revenue Account	£ s. cts.	By Balance brought from Revenue Account	£ s. cts.
260,935 0 49	274,240 5 42		.. .. .		.. .. .	369,669 8 28
2,428 7 97			INTEREST RECEIVED:	2,139 13 05	Reserve Fund	2,139 13 50
4,834 7 15			.. .. .	2,955 1 13	Cash Balances	7,683 13 95
7,262 15 12						9,823 7 45
135,675 13 51						
99,835 13 04						
£503,709 2 16	£ 515,168 9 24			£ 515,168 9 24		£ 515,168 9 24

	1964/65	1964/65	INCOME	1964/65	INCOME	£ s. cts.
£ s. cts.	£ s. cts.	£ s. cts.	By Balance brought from Revenue Account	£ s. cts.	By Balance brought from Revenue Account	£ s. cts.
260,935 0 49	274,240 5 42		.. .. .		.. .. .	369,669 8 28
2,428 7 97			INTEREST RECEIVED:	2,139 13 05	Reserve Fund	2,139 13 50
4,834 7 15			.. .. .	2,955 1 13	Cash Balances	7,683 13 95
7,262 15 12						9,823 7 45
135,675 13 51						
99,835 13 04						
£503,709 2 16	£ 515,168 9 24			£ 515,168 9 24		£ 515,168 9 24

NET REVENUE APPROPRIATION ACCOUNT FOR THE YEAR ENDED 30th JUNE 1966

EXPENDITURE		1964/65		INCOME		
	£	s.	cts.	£	s.	cts.
To Balance at 1st July 1965	701,064	2	40	99,835	13	04
Balance brought from Net Revenue Account	135,675	13	51	736,904	2	87
	£836,739	15	91	£872,579	16	38
				By Transfer from Net Revenue Account	..	..
				Balance at 30th June 1966	..	..
					£872,579	16 38

**LOAN REDEMPTION FUND
STATEMENT OF FUND FOR THE YEAR ENDED 30th JUNE 1966**

EXPENDITURE		1964/65		INCOME		
	£	s.	cts.	£	s.	cts.
Balance at 30th June 1966	1,085,405	8	08	Balance at 1st July 1965	..	..
	£1,085,404	8	08	Transfer from Net Revenue Account	..	..
					£949,729	14 57
					135,675	13 51
					£1,085,405	8 08

STATEMENT OF INVESTMENTS AT 30th JUNE 1966

Nature of Stock	Amount of Stock	Cost Price	Quotation (Middle Market Value)	Market Value at 30th June 1966
	£	£	%	£
Savings Bonds 1960/70 3%	24,647	20,738	85½	21,073
Nyasaland 1971/78 4½%	3,263	3,229	67½	2,203
Conversion Stock 1969 3½%	1,258	1,201	91½	1,154
Funding Stock 1966/68 3%	40,311	34,088	92½	37,187
	£69,481	59,258		61,618

CAPITAL ACCOUNT FOR THE YEAR ENDED 30th JUNE 1966

EXPENDITURE	Assets as at 1st July 1965	Expenditure during year	Total to 30th June 1966	INCOME	Loans as at 1st July 1965	Received during year	Total to 30th June 1966
	£ s. cts.	£ s. cts.	£ s. cts.		£ s. cts.	£ s. cts.	£ s. cts.
To ASSETS:							
Mzimba and Mrere Instal-							
lations	5,085,572 9 76	8,858 0 15	5,094,430 9 91		1,350,000 0 00	—	1,350,000 0 00
North Mainland Scheme	209,621 3 64	—	209,621 3 64		1,000,000 0 00	—	666,666 0 00
					500,000 0 00	—	500,000 0 00
Total Assets	5,295,193 13 40	8,858 0 15	5,304,051 13 55	By LOANS RAISED:	2,170,000 0 00	—	2,170,000 0 00
				Bank Loans	70,277 0 00	—	70,277 0 00
Balance of Capital Account			4,475 10 02	Uganda Loan	210,000 0 00	—	210,000 0 00
				Kenya Loan—North Mainland Scheme	—	—	333,334 0 00
				Kenya Loan—Uganda Repayment	5,300,277 0 00	—	5,300,277 0 00
				Total Loans Raised	3,731 0 57	—	3,731 0 57
				CAPITAL RECEIPTS:	1,589 0 00	—	1,589 0 00
				Sale of Assets	2,750 0 00	—	2,750 0 00
				Recovery of Damaged Valves	180 3 00	—	180 3 00
				Contribution from the Admiralty for the North Mainland Scheme	8,250 3 57	—	8,250 3 57
				Refund of Consultant's Fees	—	—	—
				Total Capital Receipts	£ 5,308,527 3 57	—	£ 5,308,527 3 57

BALANCE SHEET AS AT 30th JUNE 1966

	LIABILITIES		ASSETS		
1964/65	£	s. cts.	1964/65	£	s. cts.
CAPITAL ACCOUNT:					
Loans:					
Outstanding	5,271,463	19 30		5,295,193	13 40
Redeemed—				13,333	10 17
Kenya Loan, Mrere Supply	15,158	7 91			
Kenya Loan, North Main-	13,654	12 79			
land Scheme			5,300,277		0 00
Capital Receipts					
	5,300,277	0 00			
	8,250	3 57			
	5,308,527	3 57		5,308,527	3 57
REVENUE ACCOUNT:					
Loans Redemption Fund as	814,054	1 06		736,904	2 87
at 1st July 1965				59,258	8 34
Add: Provision for 1965/66..	135,675	13 51		37,386	11 05
Sundry Creditors	949,729	14 57			
Cash due to Capital Account	39,893	6 05		24,407	8 53
	13,333	10 17		145,000	0 00
				169,407	8 53
				£6,539,568	12 57
				£6,311,483	14 36
CAPITAL ACCOUNT:					
Capital Expenditure as per Capital Account					5,304,051
Cash due from Revenue Account					4,475
					10 02
REVENUE ACCOUNT:					
Net Revenue Appropriation Account					774,994
Investments:					59,258
Crown Agents*					8 34
Sundry Debtors..					43,713
Cash:					9 59
At Bank					253,075
On Deposit with Cereals					9 80
and Sugar Finance Cor-					
poration ..					100,000
					0 00
					353,075
					9 80
					£6,539,568
					12 57

*The Middle Market Value of these Investments on 30th June 1966, was £61,618-11-3d.

F. M. D'SOUZA,
Senior Accountant.
Mombasa Pipeline Board.
25th October 1966.

V. G. MATTHEWS,
Chairman.
Mombasa Pipeline Board.
25th October 1966.

STATEMENT OF WATER SUPPLIED

1964/65		CONSUMER		1965/66		Total Value of Water Supplied £ s. cts.
Number of Gallons	Amount £ s. cts.	Number of Gallons	Rate per 1,000 Gallons Sh.	Number of Gallons	Amount £ s. cts.	
MINISTRY OF NATURAL RESOURCES:						
1,632,411,400	324,564 0 54	Mombasa .. .. .	.. .. .	1,690,843,700	346,622 19 20	
24,934,700	4,983 1 22	Voi .. .. .	.. .. .	25,891,700	5,307 16 05	
16,129,300	3,213 18 38	Mariakani .. .. .	.. .. .	14,510,000	2,974 11 00	
5,479,100	1,085 16 66	Kwale .. .. .	.. .. .	5,394,200	1,105 16 10	
4,918,500	979 8 70	Mazaras .. .. .	.. .. .	3,370,700	690 19 90	
29,353,400	6,451 15 25	North Mainland Water Supply .. .. .	.. .. .	45,026,000	10,130 17 00	367,094 7 15
	—	Kinango .. .. .	.. .. .	1,274,700	261 7 90	
MINISTRY OF WORKS:						
4,956,200	987 10 72	Road Construction Unit—Provincial Engineer—Mombasa-Ndara .. .. .	.. .. .	—	—
3,009,200	541 13 12	Bachuma .. .. .	.. .. .	1,996,800	409 6 90	
1,126,000	230 17 69	Voi .. .. .	.. .. .	67,400	13 16 30	423 3 20
	—	Mackinnon Road .. .. .	.. .. .		
EAST AFRICAN RAILWAYS AND HARBOURS:						
21,113,600	4,215 8 51	Maungu .. .. .	.. .. .	11,693,400	2,397 3 00	
15,997,500	3,177 12 83	Mackinnon Road .. .. .	.. .. .	15,987,300	3,277 7 90	
25,241,500	5,009 19 10	Samburu .. .. .	.. .. .	23,183,600	4,752 12 75	
226,900	46 10 29	Manyani .. .. .	.. .. .	492,200	100 18 00	10,528 1 65

STATEMENT OF WATER SUPPLIED—(Contd.)

1964/65		1965/66		CONSUMER	Number of Gallons	Rate per 1,000 Gallons	Amount	Total Value of Water Supplied
Number of Gallons	Amount	£	s. cts.					
64,842,700	12,870 0 32	188 6 80	4-10	PRISONS DEPARTMENT:	68,442,000	4-10	14,030 12 10	18,883 19 35
24,495,100	5,364 7 45	36 4 20	4-50	Manyani Camp	21,570,500	4-50	4,853 7 25	
		25 18 78		Shimo-la-Tewa				
1,883,400	188 6 80	25 18 78	2-00	COUNTY COUNCIL OF KWALE:	703,200	2-00	70 6 40	
362,100	36 4 20		2-00	Samburu	378,200	2-00	37 16 40	
127,800	25 18 78		4-10	Mwanda	121,300	4-10	24 17 30	
				Kasameni				
166,400	56 5 00		4-10	MRS. B. DANEU	341,900	4-10	81 7 00	133 0 10
3,307,600	658 4 51		4-10	KENYA NATIONAL PARKS	3,469,300	4-10	711 4 10	81 7 00
				MINISTRY OF AGRICULTURE AND ANIMAL HUSBANDRY:				711 4 10
678,300	135 8 43		4-10	Bachuma	720,600	4-10	147 14 50	147 14 50
275,100	82 3 15		6-00	MAYJI GOVIND & Co.	146,600	6-00	43 19 60	43 19 60
117,900	34 7 15		6-00	KANWAR STORE	72,900	6-00	21 17 40	21 17 40
94,100	19 5 81		4-10	KENYA NATIONAL YOUTH SERVICE	665,800	4-10	136 9 75	136 9 75
74,516,800	14,835 1 43		4-10	EAST AFRICAN OIL REFINERIES LTD.	72,130,900	4-10	14,790 18 65	14,790 18 65
			2-00	TAITA RANCHING Co.	749,600	2-00	74 19 20	74 19 20
37,084,500	6,953 6 88		3-75	BRITISH STANDARD PORTLAND CEMENT Co. LTD.	27,408,700	3-75	5,139 2 60	5,139 2 60
58,433,700	10,956 6 38		3-75	NYALI LIMITED	58,495,800	3-75	10,967 19 25	10,967 19 25
				KISAUNI LIMITED	164,000		30 15 05	30 15 05
2,051,284,600	£407,702 19 30				2,095,333,000		£ 429,208 18 55	

GPk 5164—450—2/67

SCHEDULE I

MINISTRY OF NATURAL RESOURCES

WATER DEVELOPMENT DEPARTMENT
HEAD OFFICE

MOMBASA PIPELINE BOARD

PLAN OF INSTALLATIONS

SCALE : AS SHOWN

FIGURED DIMENSIONS ONLY TO
BE TAKEN FROM THIS DRAWING

CHECKED BY G. OFULA DATE 23.11.66

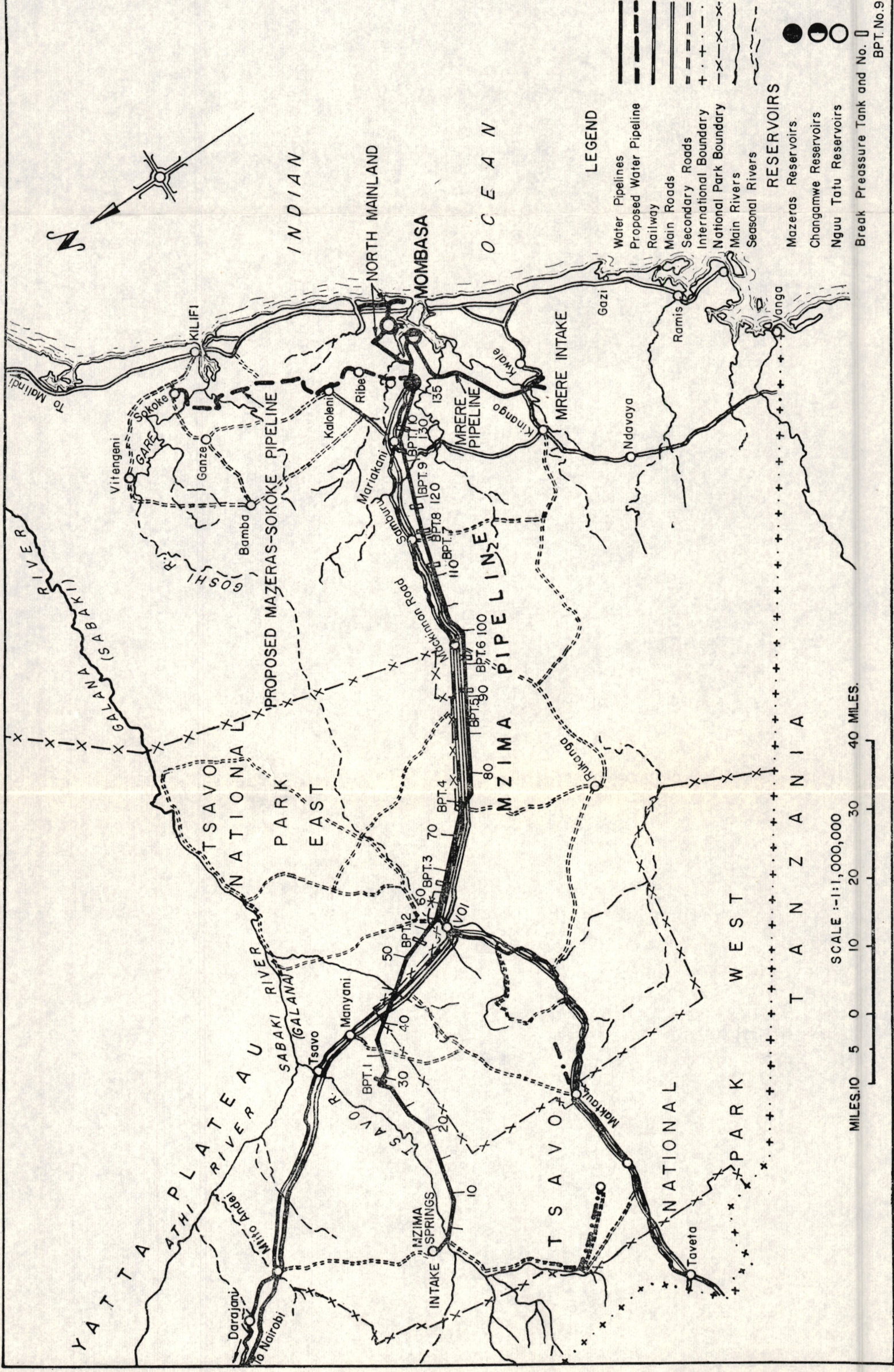
REFERENCE DRAWINGS

DRG. No. DESCRIPTION

G. W. Engdale 23.11.66
AG. SUPT. ENGINEER
URBAN WATER SUPPLIES DATE

A. Baroti 23/11/66
DIRECTOR DATE

DRG. No. M 41/10



LEGEND

- Water Pipelines
- Proposed Water Pipeline
- Railway
- Main Roads
- Secondary Roads
- International Boundary
- National Park Boundary
- Main Rivers
- Seasonal Rivers

RESERVOIRS

- Mazeras Reservoirs
- Changamwe Reservoirs
- Nguu Tatu Reservoirs
- Break Pressure Tank and No. 1

SCALE 1:1,000,000
MILES 0 5 10 20 30 40 MILES.
BPT. No. 9

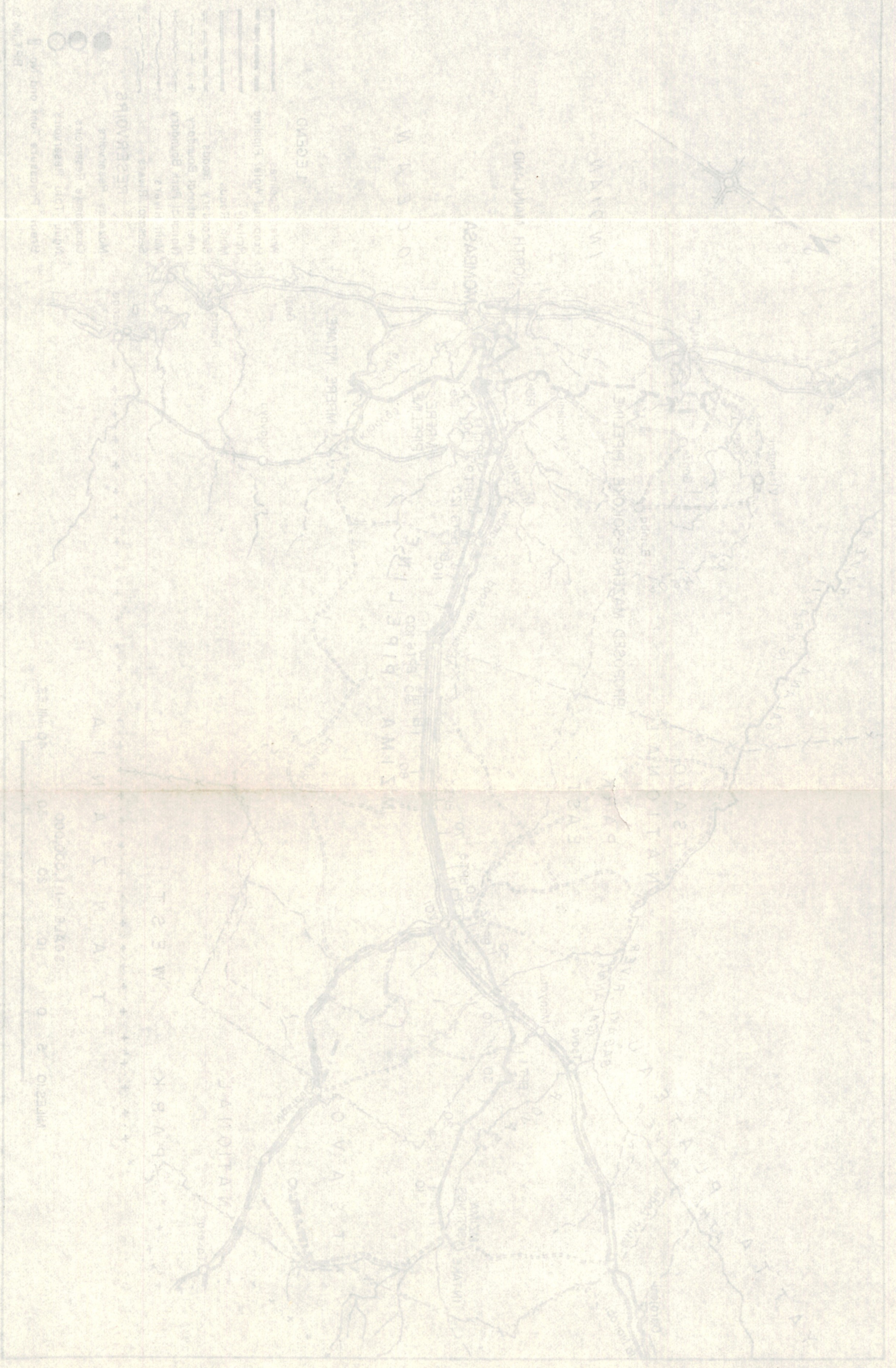
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BY: [Signature]
PROJECT: [Signature]

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SHEET NO: [Blank]

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DATE: [Blank]

PROJECT TITLE: [Blank]
DRAWN BY: [Blank]

SCALE: [Blank]



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