

**DETERMINATION/ASSESSMENT OF
POLLUTION LEVEL OF LANZU RIVER IN BIDA
TOWN**

BY

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PGD/GEO/2000/99/83

**A THESIS SUBMITTED TO THE DEPARTMENT OF
GEOGRAPHY IN THE PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE AWARD OF P.G.D IN
ENVIRONMENTAL MANAGEMENT.**

**FEDERAL UNIVERSITY OF TECHNOLOGY
MINNA, NIGER STATE.**

APRIL, 2001

A DEDICATION

This is my first attempt to complete a work such as this under the title of a book. I am sure that I have not done it perfectly, but I have done it with a great deal of care and I hope that I have done it with a great deal of honesty.

I dedicate this work to my immediate Son (ALIU IBRAHIM). I am sure that he will be proud of it. I also dedicate it to the staff of the department for their contribution to the work. I also dedicate it to my colleagues at Niger State Polytechnic Zungeru, Malumfari. I hope that they will be proud of it.

I would like to thank you for your interest in this work. I am sure that you will find it interesting. I am sure that you will find it useful. I am sure that you will find it helpful. I am sure that you will find it valuable. I am sure that you will find it worthwhile. I am sure that you will find it profitable. I am sure that you will find it rewarding. I am sure that you will find it satisfying. I am sure that you will find it enjoyable. I am sure that you will find it fun. I am sure that you will find it interesting. I am sure that you will find it useful. I am sure that you will find it helpful. I am sure that you will find it valuable. I am sure that you will find it worthwhile. I am sure that you will find it profitable. I am sure that you will find it rewarding. I am sure that you will find it satisfying. I am sure that you will find it enjoyable. I am sure that you will find it fun.

Above all, I express my profound gratitude to Almighty God for His mercy and His love. I am sure that He will be proud of it. I am sure that He will be pleased with it. I am sure that He will be happy with it. I am sure that He will be satisfied with it. I am sure that He will be content with it. I am sure that He will be pleased with it. I am sure that He will be happy with it. I am sure that He will be satisfied with it. I am sure that He will be content with it.

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1.9 DESCRIPTION OF STUDY AREA

Lanzu River is located at the southern part of the G.R.A and north west of Bida. The River is about 5km from Federal Polytechnic Campus with its source from Zion hill, it is meandering in shape along the coast with many tributary joining it, and has a water level of about 0.3m ranging to 0.8m depths and a width of about 1.0 – 1.5m along the direction of flow. The river flows with an average speed of 30cm/sec depending on the level or height as the water flows.

The river looks clearer at the source and flows as spring from a calcium base sippage with a steady flowing current and at different distance along the river. The clarity change due to other tributaries joining it. And at various instances a film of silvery yellow coating substance are observed on the surface of the river, assumed to be metallic film in which iron is suspected.

The riverbank completely covered with green vegetation such as, algae and spirogyra. It is also noticed that about 95 – 100 meters from the source is wide and large enough to support aquatic life animals, such as fish, frog and snails inside the water.

desirable to limit the chloride concentration in water (Twort A.C. et al, 1974).

v. *Nitrate.*

Small amount of nitrate ion are present in all water. High amount of nitrate alone can mean that a single contamination has taken place. It is likely that the main contribution toward the nitrate content of well or ground water will come from application of nitrogenous fertilizer o land, together with production of nitrate within the soil from natural processes and contribution from sewage effluent. Until 1945 that the significant of nitrate in water as a hazard to health was realized (Shinsky, 1983) reported that nitrate could be reduced to nitrite in the stomach of infants of less than one year old.

The resultant disease known as methaemoglobinaemia is due to production of methaemoglobin from haemoglobin with resulting cyanosis. The formations of methaemoglobin occur when the nitrate combines with haemoglobin in the blood. It coagulates the blood.

Medical opinion now accepts that high nitrate content water constitutes a hazard to the health of infants of less than one year old. Water with nigh nitrate concentration would be usually be heavily polluted and bacteriologically unacceptable.

vi. *Phosphorus.*

Pure water contains phosphate in amount not exceeding 0.1ppm. They into water refuse and especially urine. Phosphate content is the surest indication of facial pollution. Algae growth prompted by excess phosphate can cause undesirable tastes and odour rendering the water aesthetically unpleasant (Tel, 1984).

III. The vapor of the metal atoms or molecules containing the metal atom were those excited by the thermal energy of the flame resulting in emission of specter.

Detailed results of the analysis are given in the Appendix. The results are also summarized in the following tables. The various points where the samples were taken were marked A, B, C along the river course.

TABLE 4.1: SUMMARIZED RESULT OF QUALITY OF LARBE RIVER AT POINT A

PARAMETER	MINIMUM	MEAN	MAXIMUM
pH	6.90	7.10	7.30
Conductivity at 27°C (µmhos/cm)	59	91	94
Residue (ppm)	25	34	42
Nitrate (ppm)	10	41	50
Chloride (ppm)	154	185	240
Calcium (ppm)	21.5	24.0	27.00

TABLE 4.2: SUMMARIZED RESULT OF QUALITY OF LARBE RIVER AT POINT B

PARAMETER	MINIMUM	MEAN	MAXIMUM
pH	7.40	7.90	8.30
Conductivity at 27°C	93	110	100
Residue (ppm)	234	280	315
Nitrate (ppm)	5.0	11.0	13.0
Chloride (ppm)	18.90	21.50	23.70
Calcium (ppm)	24.80	28.0	29.50

also monitor activities going on along Rivers such as Lanza. It is to achieve the objective of the World Health Organization.

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Chloride (CL)	200	600
Magnesium + Sodium Sulphate	500	1.000
Phenolic compounds (as Phenols)	0.001	0.002
Carbon chloroform extracts (CCE, Organic pollutants)	0.2*	0.5
Anionic detergents	0.2	1.0
Mineral oil	0.01	0.3

* Concentrations greater than 0.2 mg/dm³ indicate the necessity for further analysis to determine the causative agent.

Radionuclides – gross B activity

30pci/L

Caliform bacteria

10/100ml

BOD

6

COD

10.0

PH

6.5-9.2

Total hardness (as CaCO_3)

500

Total dissolved solids

1,500

* Highly toxic + Hazardous to health (1 Pci= 1^{10} curie)