Nile Basin Initiative
Nile Trans boundary Environmental Action Project

Guidelines for Data Reporting Forms for Nile Basin Countries for Transboundary Water Quality Monitoring

July 2007

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FOREWORD

The Basin wide Water Quality Monitoring Component of the NTEAP has developed four Water Quality Operational Manuals which will assist in the transboundary water quality monitoring of the Nile Basin.
The four Manuals that have been developed are:

- **Simple Procedures for Water & Waste Water Sampling for Nile Basin Countries for Transboundary Water Quality Monitoring.**
- **Selected Common Standard Analytical Methods for Nile Basin Countries for Transboundary Water Quality Monitoring.**
- **Guidelines for Data Reporting Forms for Nile Basin Countries for Transboundary Water Quality Monitoring.**
- **Manual for On-Site Tests by Local Communities & Schools for Nile Basin Countries for Transboundary Water Quality Monitoring.**

The Manuals will also:

- *Promote basin wide networking on Water Quality Management, to ensure transboundary water quality assessment;*
- *Promote continued exchange of information on key transboundary parameters;*
- *Enhance continued awareness on water quality issues;*
- *Assist and enhance capacities for Water Quality Monitoring, and improve the understanding of transboundary Water Quality Management issues.*

The Manuals will promote good comparability of the water quality data produced, and also ensure data reporting consistency on a regional and international level, so that the analytical results produced can be compared on a level platform.

The NBI through NTEAP is proud to produce and launch these simply designed and user-friendly series of Manuals which will compliment the already on-going national water quality monitoring initiatives.

On behalf of the NBI, the NTEAP wishes to acknowledge with gratitude the technical and administrative support by the Regional Water Quality Working Group Members, the Consultant, the PMU Staff, the National Project Coordinators and Water Quality Lead Specialist for contributing to the development of these Manuals.

It is our hope that the users of these Manuals will find them beneficial, as a first step towards harmonizing transboundary water quality monitoring practices in the Nile basin countries.

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In the preparation of these Manuals, other sources of information such the Standard Methods for Water and Waste water Analysis by the American Water Works Association (AWWA), as well as other standard sources were referred to. All these sources are hereby acknowledged.
Our thanks go to all those persons and institutions that played a role in the compilation of this Manual.

CONTENTS

Abbreviations

AQC……Analytical Quality Control
ATC…….Automatic Temperature Compensation
BOD,……Biochemical Oxygen Demand
COD……Chemical Oxygen Demand),
DO ……..Dissolved Oxygen
EC……Electrical Conductivity
FAO…….Food &Agriculture Organisation
GPS ……Geographical Positioning System)
N…….Nitrogen,
NBI ……Nile Basin Initiative
NTEAP ……Nile Trans boundary Environmental Action Project
NTU…….Nephelometric Turbidity Units
OS……On site (analysis)
P……...Phosphorous
TDS……..Total Dissolved Solids
TSS…….Total Suspended Solids
UNOPS……United Nations Office for Project Services
µs/cm……...micro siemens/cm

BACKGROUND

The Nile Trans boundary Environmental Action Project (NTEAP) is one of seven projects under the Nile Basin Initiative Shared Vision Programme and is of five years duration. The main objective of the project is to provide a strategic environmental framework for the management if transboundary waters in the Nile Basin.

The basin wide Water Quality Monitoring Components is one of the five components of the NTEAP. This component's objectives include:

i. Initiate basin-wide dialogue on water quality.
ii. Improve capacities for monitoring and management of water quality.
iii. Provide a platform for the exchange and dissemination on information on key parameters.

This manual is one a series of four manuals which meets these objectives.

The other manuals are:

- Simple Procedures for Water & Waste Water Sampling for Nile Basin Countries for Transboundary Water Quality Monitoring

- Selected Common Standard Analytical Methods for Nile Basin Countries for Transboundary Water Quality Monitoring

- Manual for On-Site Tests by Local Communities & Schools for Nile Basin Countries for Transboundary Water Quality Monitoring.

Guidelines for Data Reporting Forms for Nile Basin Countries for Transboundary Water Quality Monitoring

INTRODUCTION

A great amount of resources are employed in taking samples, especially if the sampling point is located a distance from the laboratory. These forms are therefore designed to maximise the information obtained. This manual proposes templates for three important forms for the water samplers. To supplement these, examples of the application of the forms are also shown to assist the user.

The main purposes of the forms are to:

i. Record the information in a standard format to ensure consistency between all member countries.
ii. Serve as a checklist for the sampler.
iii. Record the information in a format, using codes that can be easily downloaded on a database- individual comments and descriptions by the sampler are minimised.

1) On site Monitoring Form

The On-Site Monitoring Template Form is designed to ensure that the sampler notes all the important sampling information. It has been designed such that most of the information is recorded as standard abbreviated codes, rather than descriptions. This enables the information to be transferred to a database in a format that the computer can process in order to produce meaningful information.

The form records six main categories:

i. Time of sampling,
ii. Sampler,
iii. Types of bottles,
iv. Sampling techniques as detailed in the “Manual for Water Sampling for Transboundary Monitoring”,
v. Location,
vi. Field Test results.

2) On-site Environmental Monitoring Form

Whilst the sample is taken, the Environmental Form should also be applied. This is designed to provide information of the surroundings, highlighting aspects that affects the quality of the water, such as anthropogenic activities and hydrology. This data is useful for calculating correlations between the environmental aspects and water quality. Furthermore, it allows the sampler to note any problems, either with the sampling or the local communities such that improvements could be made to the sampling scheme.

3) Chain of Custody

In order for the samples can be tracked, a template for the Chain of Custody form is included. This form ensures that the water manager and the laboratory staff know exactly the number of bottles submitted, the required analysis and the date they were submitted. This form is a requirement for international laboratory accreditation.

Template Form for On-site Water Monitoring

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Example

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Code Keys

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ON- SITE WATER MONITORING FORM

Sampling Details	Units / Options	Results					
Date	DD/MM/YYYY						
Time (24 Hour Notation)	HH:MM						
Sampler							
Number & Types of bottles & Containers & Preservation	Key 1	No	Type Key 1	Colour Key 1	Size ml	Storage Key1	Preserv. Key 1
Laboratory Reference No.							
Types of sample							
Sampling: Type & procedures	Key 4	Type		Procedure		From	
Meteorological Conditions:		Air Temp. °C	Average Yearly Air Temp. °C	24 hrs previous rainfall mm	Average Yearly Rainfall mm		
Sample Site Details							
Location Name							
Source ID Number							
GPS Point	Long. & Latitude						
Map number							
Village (V), Town (T), or City (C), Rural (R)							

On -Site Water Quality Details Field Tests	Units or Options	Sample
.pH	pH Units	
Electrical Conductivity	µs/cm	
Turbidity	NTU	
Dissolved Oxygen	% Saturation	
Nitrates	mg/l NO3	
Phosphate	mg/l PO4	
Temperature	°C	
Ammonia	mg/l NH4	
Odour	Key 3	
Appearance	Key 2	
Colour	Key 5	

Key 1=Sampling Bottles							
Type		**Colour**		**Transportation Storage**		**Preservative or Sampling Treatment**	
Glass	G	Amber	A	Boxed	B	Ammonium Hydroxide	AH
Plastic	P	Clear	C	Cool Box	CB	Hydrochloric Acid	HA
Sterilised Glass	SG	Opaque	OP	Refrigerated	R	Nitric Acid	NA
Sterilised Plastic	SP	Translucent	T	None	0	Organic Solvent	OS
						Sodium Hydroxide	SH
						Other	OT

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Example only: ON- SITE WATER MONITORING FORM

Sampling Details	Units / Options	Results					
Date	DD/MM/YYYY						
Time (24 Hour Notation)	HH:MM						
Sampler							
Number & Types of bottles & Containers & Preservation	Key 1	No	Type Key 1	Colour Key 1	Size ml	Storage Key1	Preserv. Key 1
		1	**G**	**A**	**2500**	**CB**	
		1	**G**	**C**	**2500**	**CB**	
		2	**SG**	**C**	**250**	**CB**	
		1	**P**	**T**	**1000**	**CB**	**NA**
Laboratory Reference No.		**N153**					
Types of sample		**River**					
Sampling: Type & procedures	Key 4 :	Type		Procedure		From	
		G		**CD**		**BK**	
Meteorological Conditions:		Air Temp. °C	Average Yearly Air Temp. °C		24 hrs previous rainfall mm		Average Yearly Rainfall mm
		24	**25**		**3**		**56**
Sample Site Details		**Kasese sampling point 1**					
Location Name		**River Rukoki- Railway Bridge**					
Source ID Number		**PSP014**					
GPS Point	Long. & Latitude	**34001, 25006**					
Map number		**5G**					
Village (V), Town (T), or City (C), Rural (R)		**T**					

On -Site Water Quality Details Field Tests	**Units or Options**	**Sample**
. pH	pH Units	**6.9**
Electrical Conductivity	µs/cm	**478**
Turbidity	NTU	**29**
Dissolved Oxygen	% Saturation	**38**
Nitrates	mg/l NO3	**4**
Phosphate	mg/l PO4	**0.6**
Temperature	°C	**11**
Odour	Key 3	**E2**
Appearance	Key 2	**SC**
Colour	Key 5	BN
Others		

Key 1=Sampling Bottles							
Type		**Colour**		**Transportation Storage**		**Preservative or Sampling Treatment**	
Glass	G	Amber	A	Boxed	B	Ammonium Hydroxide	AH
Plastic	P	Clear	C	Cool Box	CB	Hydrochloric Acid	HA
Sterilised Glass	SG	Opaque	OP	Refrigerated	R	Nitric Acid	NA
Sterilised Plastic	SP	Translucent	T	None	0	Organic Solvent	OS
						Sodium Hydroxide	SH
						Other	

KEYS FOR DATA FORMS

Key 2	
Appearance	**Code**
Clear	0
Slightly Cloudy/Turbid	SC
Moderately Cloudy/Turbid	MC
Very Cloudy /Turbid	VC

Key 5	
Colour	**Code**
Colourless	0
Brown	BN
Grey	GY
White	W
Black	BK
Green	GN
Blue	BU
Other	OT

Key 3			
Odour	**Code**	**Intensity**	**Code**
Earthy	E	No Odour	0
Musty	M	Very Slight	1
Oily	OL	Slight	2
Petrol	PT	Medium	3
Diesel	D	Strong	4
Sewage	S	Very Strong	5
Woody	W		
Soapy	S		
Milky	M		
Sweet	S		
Phenol	PN		
Organic Solvent	OS		
Ammonia	A		
Chlorine	C		
Hydrogen Sulphide	HS		
Other (Specify	OT		

Key 4: Sampling					
Type		Procedure		From	
Composite Sample	CS	Cable Dipped	CD	Bank	BK
Grab Sample	GS	Depth Sampler (Depth m)	DSR	Boat	BT
		Direct Sample	DSE	Waded	WD

Template Form for On-site Environmental Monitoring

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Example

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ON- SITE ENVIRONMENTAL CONDITIONS FORM

Environmental Details					
Possible sources of pollution and their distances.	Key 6	Name	Type	Distance to Water Source Km	Distance to Sampling Point Km
Geological Stratum					
Hydrogeology					
Hydrology	Key 7	Level	Velocity m/sec	Flow rate l/sec	
Flora Description					
Fauna Description					
Topography					
Recommendations					
Further environmental samples or investigations					
Additional sampling or analytical equipment, staff, vehicle modifications					
Alternative sampling points					
Alternative routes					
Additional Comments					
Problems in sampling, roads, local community.					
Observations e.g. new developments, changes in environment, health problems of local community- from local health inspector.					

Key 6 Possible Sources of Pollution	
Farming Crops	FC
Farming Livestock	FL
Industry	I
Mining	M
Sewerage	S
Waste	W
Natural Fluoride	NF
Natural Arsenic	NA
Other	OT

Key 7=: Water Level Categories	
Level	**Code**
Flood	F
Very High	VH
High	H
Medium	M
Low	L
Dry	D

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Example only: ON- SITE ENVIRONMENTAL CONDITIONS FORM

Environmental Details				
Possible sources of pollution and their distances.	Key 6	Name	Type	Distance to Km Sampling Point Km
		Kasese Mine	**M**	**5**
		Gumbo Farm	**FC**	**10**
Geological Stratum				
Hydrogeology				
Hydrology	Key 7	Level **M**	Velocity m/sec **1.5**	Flow rate l/sec **200,000**
Flora Description	**Sparse Grassland**			
Fauna Description	**Farm cattle & normal wildlife**			
Topography	**Hilly**			

Recommendations	
Further environmental samples or investigations	**Further Mining being developed.**
Additional sampling or analytical equipment, staff, vehicle modifications	**The dip sampling cable is frayed and must be renewed.**
Alternative sampling points	**2 Km upstream is closer to the mine.**
Alternative routes	
Additional Comments	
Problems in sampling, roads, local community.	**The Head of the Mines would like copies of the results.**
	3 Photos were taken of the mine.
Observations e.g. new developments, changes in environment, health problems of local community- from local health inspector.	**The local Heath Inspector stated that there was an outbreak of Diarrhoea last month.**

Key 6:Possible Sources of Pollution	
Pollution Source	**Code**
Farming Crops	FC
Farming Livestock	FL
Industry	I
Mining	M
Sewerage	S
Waste	W
Natural Fluoride	NF
Natural Arsenic	NA
Other	OT

Key 7=: Water Level Categories	
Level	**Code**
Flood	F
Very High	VH
High	H
Medium	M
Low	L
Dry	D

Template for Chain of Custody Form

&

Example

Water Quality Laboratory

CHAIN OF CUSTODY FORM

I acknowledge the receipt from _____ of _____water samples for the analysis of:

_____

_____

There are _____bottles for each sample, as follows:

_____ bottle(s) for_____analysis
_____ bottle(s) for_____analysis
_____ bottle(s) for_____analysis
_____ bottle(s) for_____analysis
_____ bottle(s) for_____analysis

A total of _____ bottles for all the samples.

_____

Signed:_____

Name:_____Position: _____

Date:_____

The Laboratory Reference Numbers for the samples are:

_____

_____

Comments:_____

_____

_____

_____

Example Water Quality Laboratory

Example only:CHAIN OF CUSTODY FORM

I acknowledge the receipt from ___**DWD**_____ of ____**5**_____water samples for the analysis of:

Nitrate, Phosphate, DO, Physiochemical, Faecal Colifoms,& Heavy Metals_____

There are _____**4**_____bottles for each sample as follows:

1 X 2.5l Glass _____bottle(s) for **NO3 ,PO4 & Physiochemical ---** analysis
1 X 1l PP Plastic (Acidified with % HNO3) bottle(s) for **Heavy Metals** _____analysis
1 X 250ml Sterile glass_____bottle(s) for _**Faecal Coliforms**_____analysis
1 X 250 ml glass _____bottle(s) for___**DO**_____ _____analysis
_____ -_____ bottle(s) for_____ _____analysis

A total of _20_____ bottles for all the samples.

Signed:_____

Name:_**T. Gumbo**_____Position: **Laboratory Technician**___

Date:___**23.6.05**_____

The Laboratory Reference Numbers for the samples are:
___**S23 to S27**_____

Comments: **1 set of samples reference S24 were very turbid, & brown coloured**_____