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Joint Baseline Survey

Inter-laboratory Benchmarking

*21 September 2010
Saint Georges Hotel*





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Objectives

- Establish and test procedures for inter-laboratory benchmarking for the Transboundary monitoring
- Identify any issues in the laboratories which allow for the appropriate support to be provided
- Provide training which will stand the participants in good stead for the implementation of the Transboundary monitoring program
- Start the process of developing trust in the data





Participating Laboratories

- Namibia
 - Namwater
- Lesotho
 - Department of Water Affairs
 - Water and Sewage Authority
 - National University of Lesotho
- Botswana
 - Department of Water Affairs
 - Geological Surveys
- South Africa
 - Department of Water Affairs
- Independent Laboratory – Water Laboratory
- **Total of 8 laboratories**





Overview of process

- 10 of the 12 transboundary sites selected
- Pre-sampling training and equipment check
- Collect a sample at each site for each lab
- Sample sent to lab and split at lab to give two samples for each
- Two samples are tested for each site for identified WQ variables
- A spiked sample will be prepared by SABS and sent to laboratories (10 +1 for each lab – with split 22 samples all together per lab)
- Results sent to Orasecom/GTZ teams for assessment





Locate the Sites

- Need GPS co-ordinates and maps
- GPS
- Might adjust position of site based on accessibility





Equipment/personnel needed

- Sampler from each member state
- JBS team member – trainer/supervisor
- 10 L plastic bucket with handle (Should have more than one) – JBS
- Waders/gum boots - JBS
- Plastic rod/stick to stir sample - JBS
- Rope – JBS
- Life Jacket - JBS
- De-ionised water - JBS
- Eight 1 L plastic bottles for each site – Water Lab
- Funnel/Beaker
- Cooler Boxes with ice packs – JBS
- Labels and permanent markers – JBS
- Sample data sheets
- **ASSUMPTION THAT SAMPLE WILL GET TO LABS WITHIN 24 to 48 HOURS**





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What will happen on site?

- On site training of samplers
- In field measurements
- Collection of a sample
- Split into 8 – one for each lab
- Label sample and store
- Get into logistics system





Infield measurements

- Probes for EC, pH and temperature
- Calibrate with standard solutions
- Test and record readings
- Record site observations
- Rinse instruments and store





Water Sample Data Sheet

Sampling Point

Co-ordinates Latitude.....
Longitude.....

Date of sampling

Time of Sampling

Contact Person

Telephone

Purpose of sampling
.....
.....
.....

Water body

Flowing or standing water
.....

Analyses required:

Major organic ions.....

Microbiological.....

Organic.....

Other (specify).....

Sample depth below surface
.....

On-site observations:

Odour Present/Absent

Color Normal/Abnormal.....

Appearance of water
.....

Temperature of water°C

pH of waterpH units

Conductivity of watermS/m

Preservation added:

Yes/no.....

If so, what preservative

OTHER INFORMATION

Water flowing yes/no

Flow measurement (if available)

Rainfall (if available)

Weather

General notes/other observations
.....
.....
.....





Collection of Sample

- Depends on site
 - Wade in and collect 10 L with bucket if shallow and velocities are low – need to rinse bucket with water to be sampled – step carefully
 - If deep then use bucket and rope to collect sample - need to rinse bucket with water to be sampled
- Stir sample and pour into the 8 bottles





Labelling of bottles

- Site ID
- Date/Time sampled
- Parameters to be tested – pH, EC, TDS, SS, Total Alkalinity, Ca, Mg, K, Na, Cl, SO₄, F, NH₄, NO₃-NO₂, PO₄
- Preservatives – No
- In field filtration – No
- Laboratory – One of LDWA, LWS, LNU, BDWA, BGS, SADWA, NAMWATER, WATERLAB
- Samplers names





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Storage

- Into Cooler box and into logistics system – chain of custody
- Spiked sample will be introduced – Labelling NB
- Rinse bucket, stirring rod and funnel – de-ionised water





Example of chain of custody

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CHAIN OF CUSTODY DOCUMENTATION - WATER

Project Number: 12571		Quote/Order No.:		Invoice and reports to be sent to:		 Golder Associates PO Box 6001 Halfway House, 1685 Thundershore Park, Mtuka Close, Midrand Phone: (011) 254 4800 Fax: (011) 315 0317									
Short Title: Water Quality		Lab Name: UIS		<input checked="" type="checkbox"/> PO Box 6001 <input type="checkbox"/> _____ Halfway House 1685											
Golder Contact: Russy Goga		Lab Contact: Rogell Basson													
Golder E-mail: rrogell@golder.co.za		Telephone: (011) 665 4591		Lab Address:											
Comments/Special Instructions: Please contact me if you require clarification and please refer to the fax.						ANALYSIS REQUIRED									
SAMPLE ID	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	CONTAINER/PRESERVATIVE	SALINITY (ppt)	N CONTAINERS	POSSIBLE HIGH CONCENTRATION	TCLP	Acid Rain	ICP MS	Remarks				
Metalogy Sed. Sedim				Plastic bag	-	1	-	✓	✓	✓	please refer to the fax				
SIGNATURE		COMPANY		DATE		TIME		SIGNATURE		DATE		TIME		Method of Shipment	
RELEASED BY: Russy Goga		Golder		16/04/10		9:30		RELEASED BY:						Shipping Ref	
RECEIVED BY: Rogell Basson		UIS		16/04/2010		10:00		RECEIVED BY:		[Signature]					
RELEASED BY:								To Be Filled Out By Analysing Laboratory		LAB BATCH NUMBER					
RECEIVED BY:								Security Seal		Chilled		Bill to:			
RELEASED BY:								Suitable Containers		Frozen		Address:			
RECEIVED BY:								Cool Box		Ambient					

WHITE: Golder Copy YELLOW: Lab Copy PINK: Lab Returns with Final Report

Golder Form No. QA_BQ-015 - Revision 10 - Date 9/08/05 Copy of Chain of Custody - Water



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At the Lab

- Receive sample – Time and date – chain of custody
- Split sample into two 500 mL samples
- Put into laboratory testing system
- Test within 10 days
- Results to JBS/GTZ team





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Results

- Plot out on Youden Plot to compare labs
- Prepare report
- Communicate and discuss





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THANK YOU

