

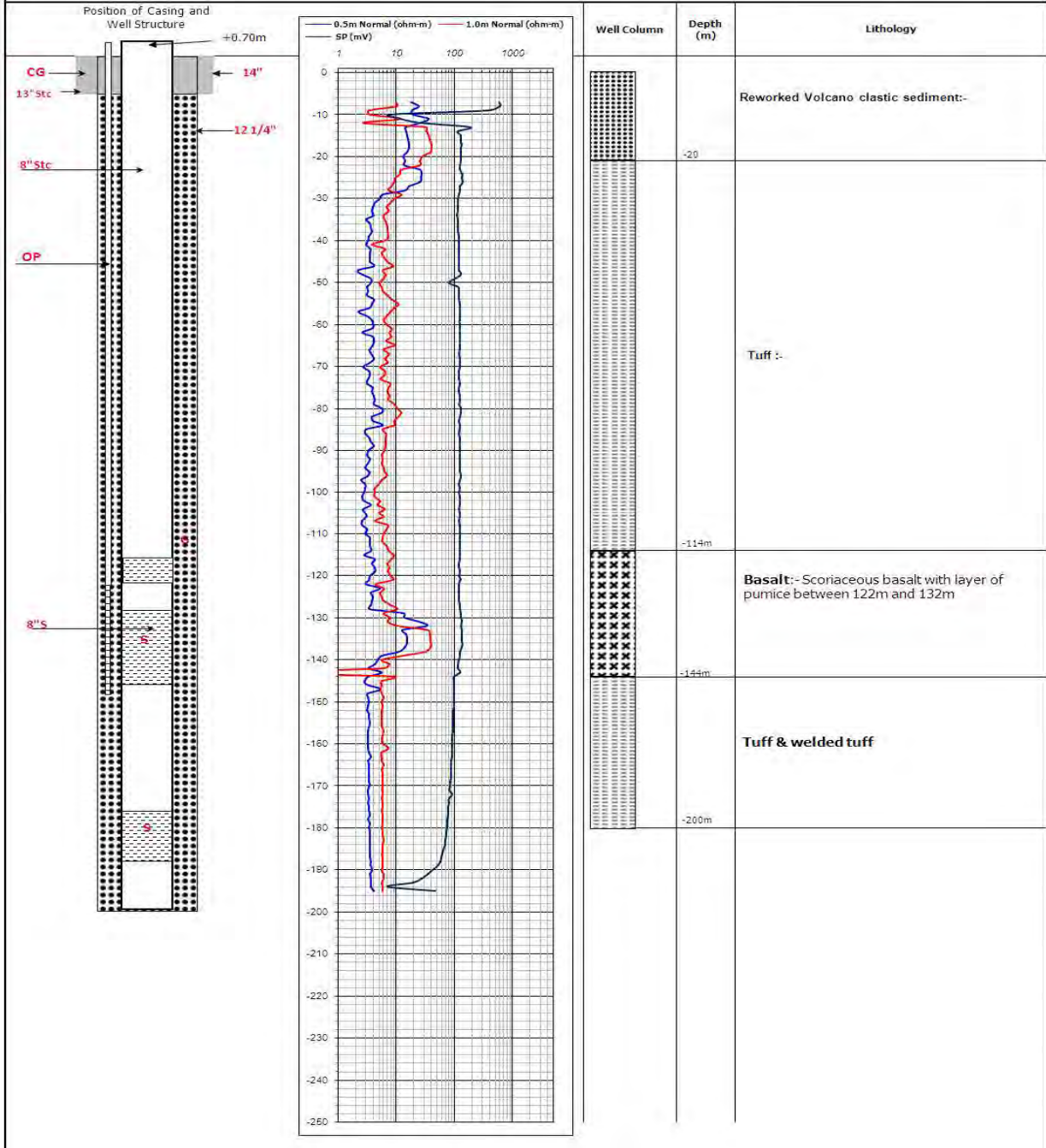
Appendix 7

References

Structure of Successful Test Well

Site No. Koshe Town BH-1

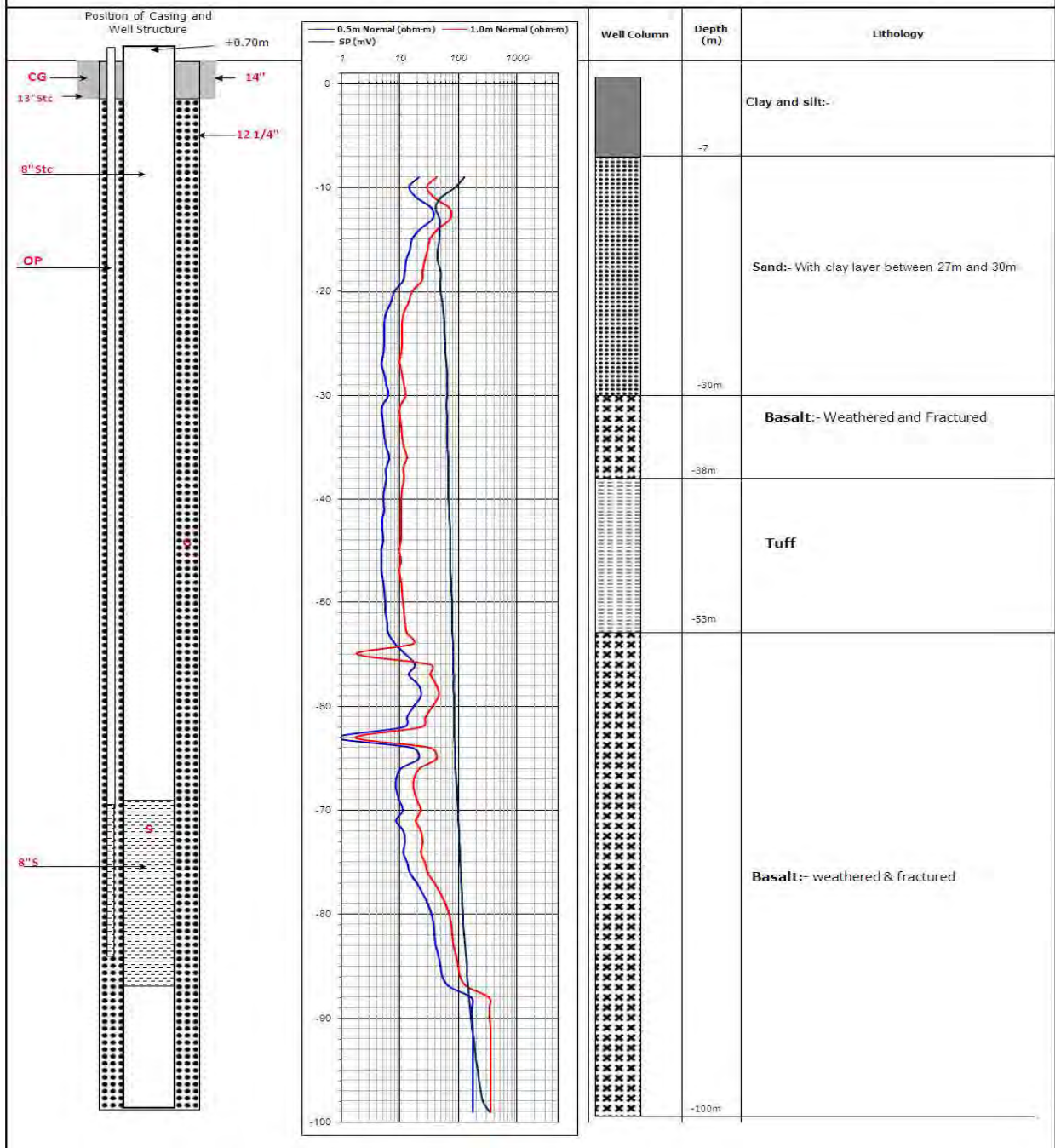
Well No. BH-1	Location Koshe	Coordinate (UTM) 447544	Altitude 1,797 m	Town Koshe	Zone Gurage	State SNNPR	Country Ethiopia
Date: from 21/09/13	to 3/11/2013	Drilling: Equipment Type Top 500	Method Mud Rotary	Well Type	Final Depth GL -200.0m	Diameter 0 to 10 14", 10m - 200m 12"	Casing Position +0.8 to 200m 8"
Casing Type: Steel	Size 8"	Inside Dia. 203.0mm	Outside Dia. 218.0mm	Joint Type Threaded	Screen Pipe: Steel	Material 8"	Diameter 203.0mm
8" Screen Position	116m - 122m	128m - 146m	176m - 188m	Installation depth: 170.0m	Total Length 36.0m	Total Length 170.0m	
Gravel Paking	Origin Basaltic	Gravel Size φ 4-6mm	Location	Volume 5.0 m ³	Development: Method Air	SWL (m) Air	DWL (m) 36.5 m
					SWL (m) 14.8 m	Discharge (litre/sec) 26.0 l/s	



SIMBOL:
 CG = Cement Grout
 OP = observation pipe
 G = Gravel
 BS = Bentonite sealed
 Stc = Steel Casing
 S = Screen
 P = Pump Position
 R = Reducer

Site No. Kella Town BH-1

Well No. BH-1	Location Kella	Coordinate (UTM) 444354 911784	Altitude 1.881 m	Town KELLA	Zone GURAGE	State S/WVPR	Country Ethiopia			
Date: from 19/11/2013	Date: to 3/12/2013	Drilling: Equipment Type Top 500	Method Mud Rotary	Well Type	Final Depth GL -99.0m	Diameter 0 to 6 1/4", 6m -99m 12"	Casing Position +0.8 to 99m 8"			
Casing Type: Steel	Size 8"	Inside Dia. 203.0mm	Outside Dia. 218.0mm	Joint Type threaded	Screen Pipe: Steel	Material 8"	Diameter 203.0mm	Slot Size 2.0mm	Joint Type Threaded	Total Length 18.0m
8" Screen Position 5.7m - 6.3m	6.9m - 8.7m		Open Rate	Joint Type Threaded	Installation depth: 8.4.0m	Total Length 8.4.0m				
Observation Pipe: Material GS	Diameter 3/4"	Slot Size								
Gravel Packing Origin Basaltic	Gravel Size ø 4-6mm	Location	Volume 5.0 m ³	Development: Method Air	SWL (m) Air	DWL (m) 42.8 m	SWL (m) 17.1 m	Discharge (litre/sec) 5.0 l/s		

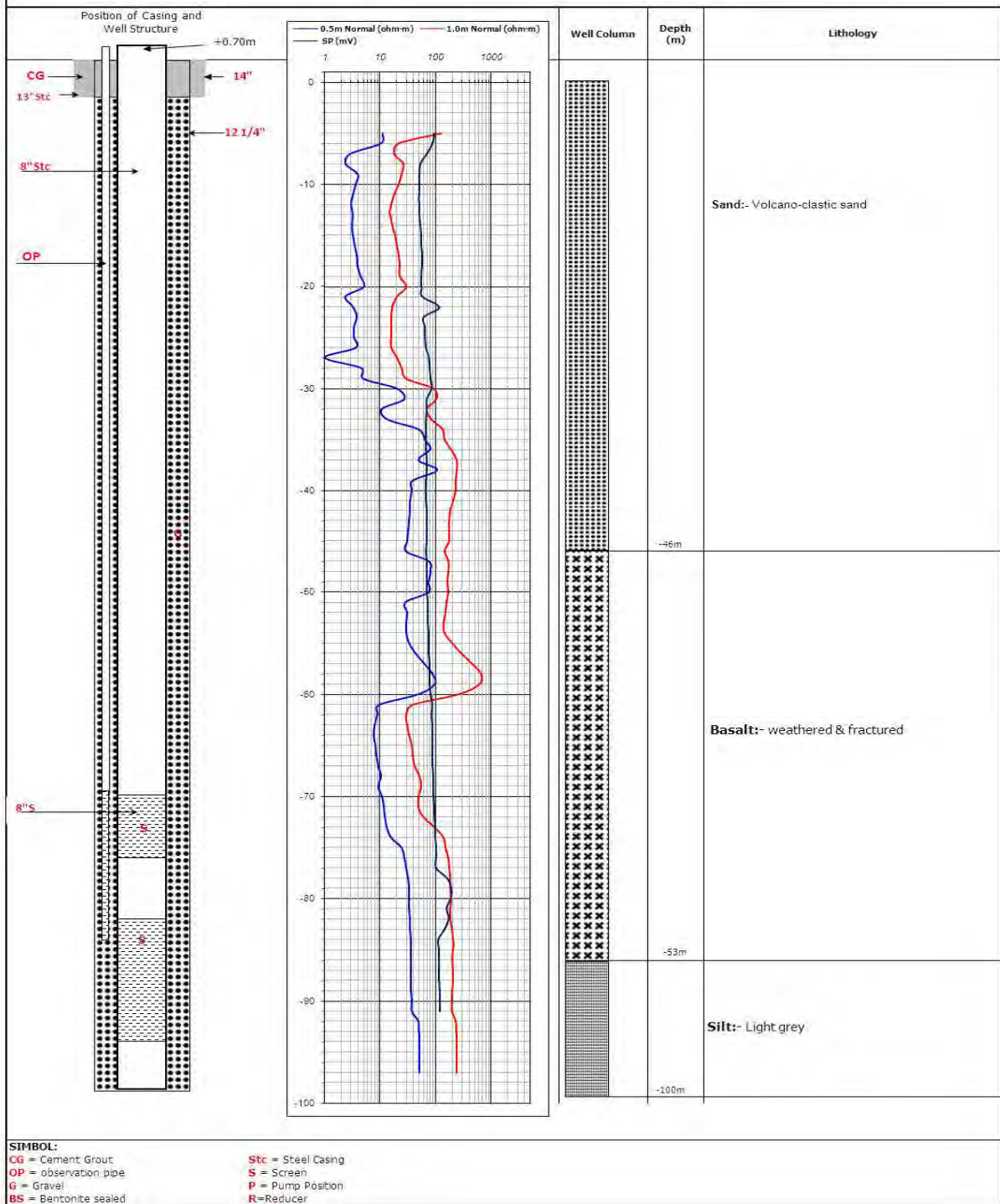


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BS = Bentonite sealed	R=Reducer

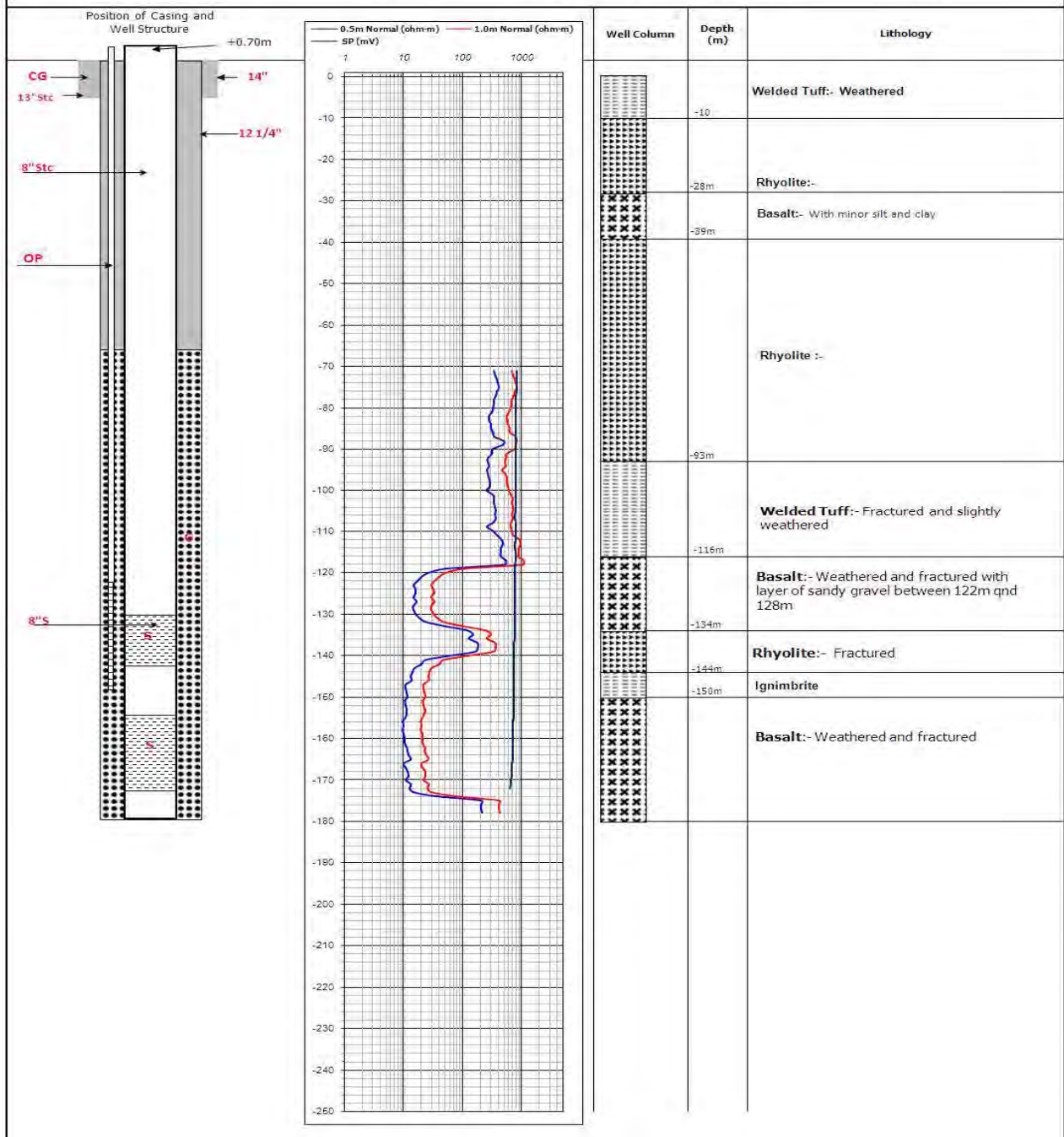
Site No. Kella Town BH-2

Well No. BH-2	Location Kella	Coordinate (UTM) 444697 911678	Altitude 1,891 m	Town KELLA	Zone Gurage	State SNNPR	Country Ethiopia	
Date: from 29/01/2014 to 23/02/2014	Drilling: Equipment Type: Top 500 Method: Mud Rotary	Well Type	Final Depth GL -100.0m	Diameter 0 to 6 14", 6m -100m 12"	Casing Position +0.8 to 100m 8"			
Casing Type: Steel	Size: 8"	Inside Dia.: 203.0mm	Outside Dia.: 216.0mm	Joint Type: threaded	Screen Pipe: Steel	Material: 8"	Diameter: 203.0mm	Slot Size: 2.0mm
8" Screen Position		64m - 76m	82m - 94m	Total Length: 24.0m				
Observation Pipe:	Material: GS	Diameter: 3/4"	Open Rate:	Joint Type: Threaded	Installation depth: 72.0m	Total Length: 72.0m		
Gravel Packing:	Origin: Basaltic	Gravel Size: ϕ 4-6mm	Location:	Volume: 5.0 m ³	Development: Method: Air	SWL (m): 52.8 m	DWL (m): 5.97 m	SWL (m): 5.97 m
				Discharge (litre/sec): 5.0 l/s				



Site No. Tiya BH-1

Well No. BH-1	Location Tiya	Coordinate (UTM) 456201 931924	Altitude 2,289 m	Town Tiya	Zone Gurage	State SNNPR	Country Ethiopia			
Date: from 11/10/2013	to 14/11/2013	Drilling: Equipment Type Top 300	Method DTH	Well Type	Final Depth GL -180.0m	Diameter 0 to 4' 1.2", 4m - 180m 12"	Casing Position +0.8 to 180m 8"			
Casing Type: Steel	Size 8"	Inside Dia. 203.0mm	Outside Dia. 216.0mm	Joint Type threaded	Screen Pipe: Steel	Material 8"	Diameter 203.0mm	Slot Size 2.0mm		
8" Screen Position	132m - 144m	156m - 174m					Joint Type Threaded	Total Length 30.0m		
Observation Pipe:	Material GS	Diameter 3/4"	Slot Size	Open Rate	Joint Type Threaded	Installation depth: 150.0m		Total Length 150.0m		
Gravel Packing	Origin Basaltic	Gravel Size 2-6mm	Location	Volume 5.0 m ³	Development: Air	Method Air	SWL (m) 123 m	DWL (m) 70 m	SWL (m) 70 m	Discharge (litre/sec) 2.0 /s

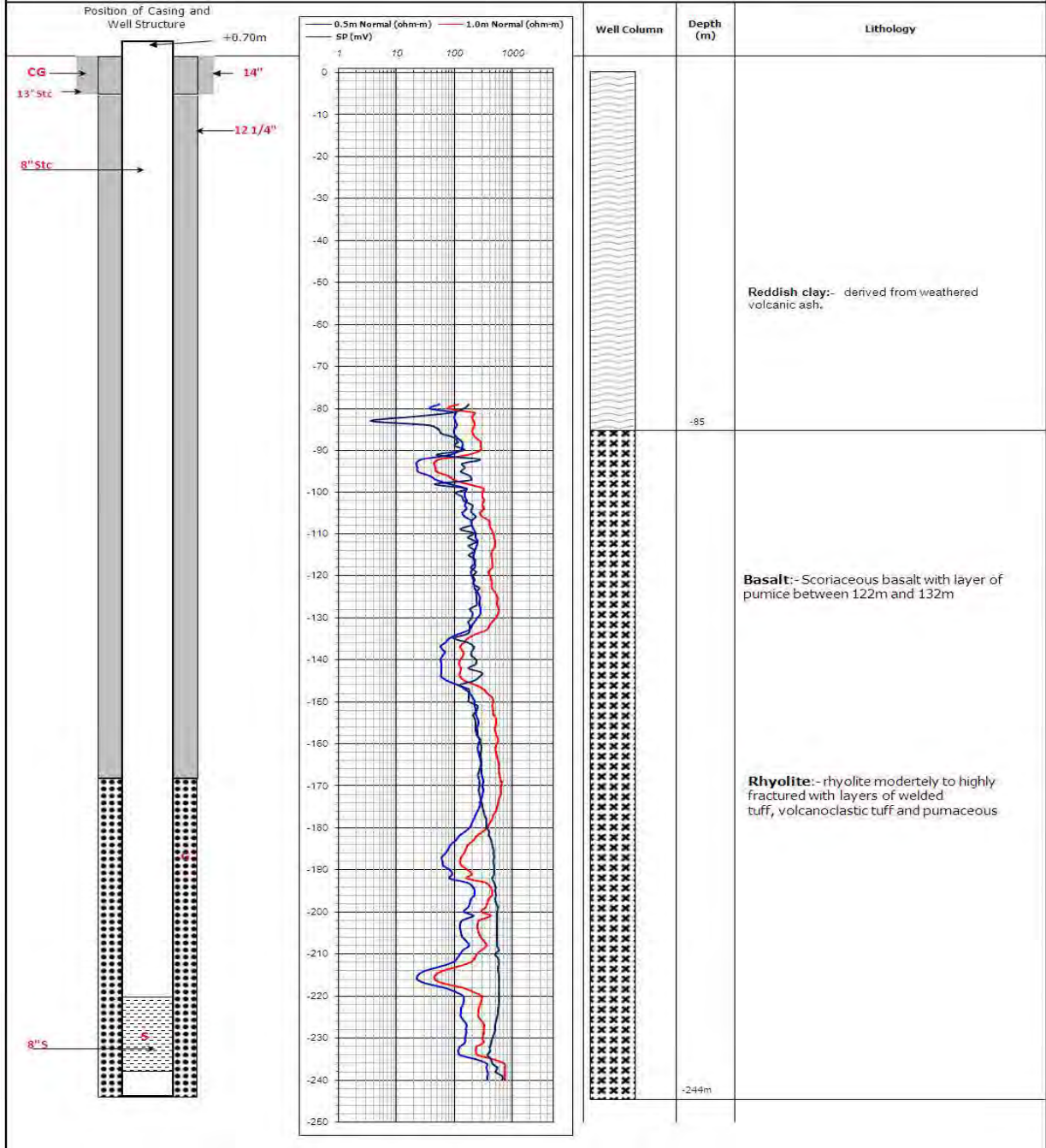


SIMBOL:

CG = Cement Grout	Stc = Steel Casing
OP = observation pipe	S = Screen
G = Gravel	P = Pump Position
BS = Bentonite sealed	R = Reducer

Site No. Adilo Town BH-1

Well No. BH-1	Location Adilo	Coordinate (UTM) 388335 E 797542 N	Altitude	Town Adilo	Zone Kembata	State SNNPR	Country Ethiopia	
Date: from 20/11/13	to 19/12/13	Drilling: Equipment Type TH-64	Method Mud Rotary	Well Type	Final Depth GL -244.0m	Diameter 0 to 10 14", 10m - 244m 12"	Casing Position +0.8 to 244m 8"	
Casing Type: Steel	Size 8"	Inside Dia. 203.0mm	Outside Dia. 218.0mm	Joint Type Threaded	Screen Pipe: Material Steel	Diameter 203.0mm	Slot Size 2.0mm	
8" Screen Position	220m - 238m						Joint Type Threaded	Total Length 18.0m
Observation Pipe:	Material GS	Diameter 3/4"	Slot Size	Open Rate	Joint Type Threaded	Installation depth:	Total Length	
Gravel Packing	Origin Basaltic	Gravel Size φ 4-8mm	Location	Volume 5.0 m ³	Development: Method Air	SWL (m) Air	DWL (m) 194.4 m	
						SWL (m) 193.8 m	Discharge (litre/sec) 5.0 l/s	



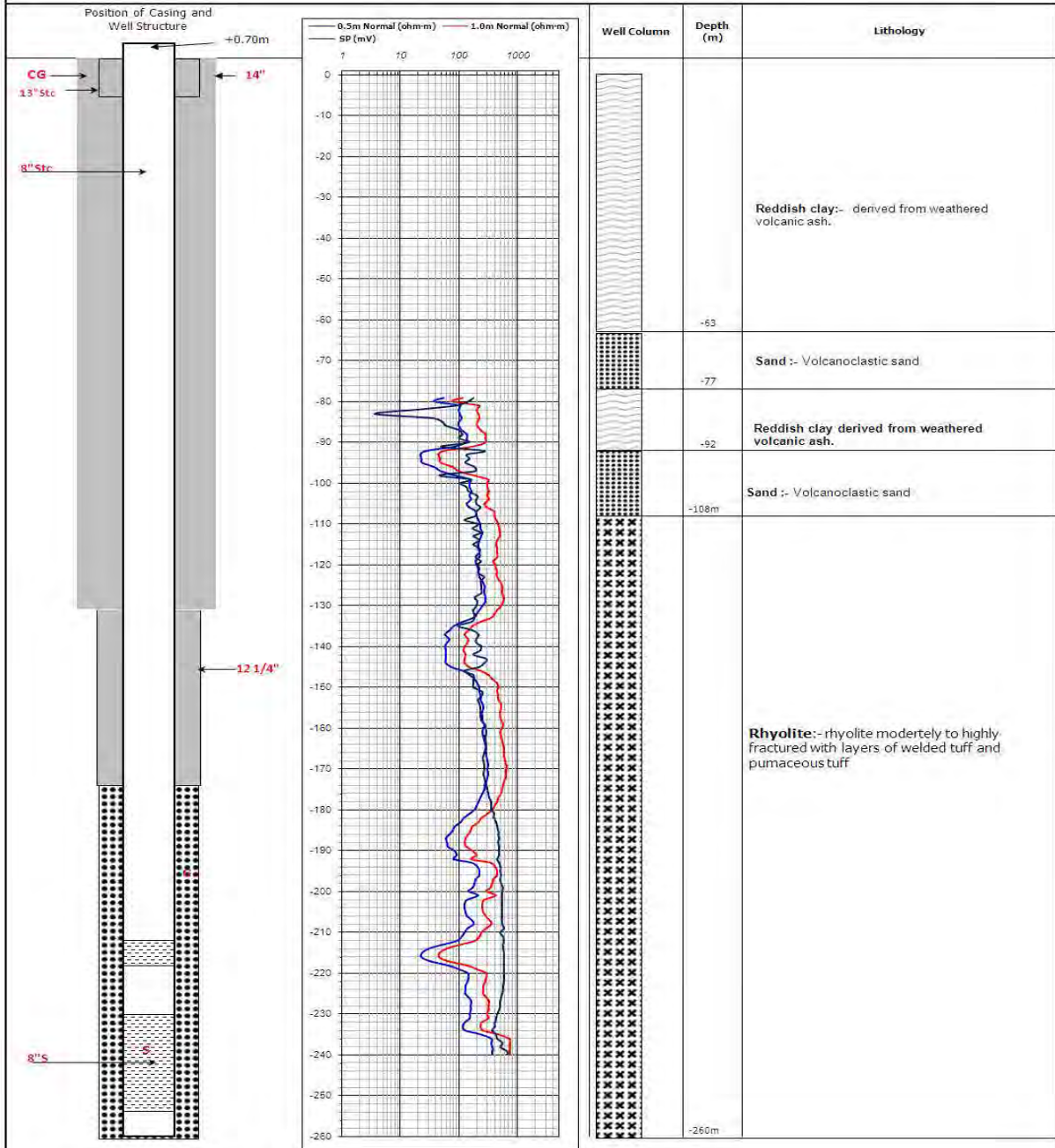
SIMBOL:

CG = Cement Grout
OP = observation pipe
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BS = Bantomite sealed

Stc = Steel Casing
S = Screen
P = Pump Position
R = Reducer

Site No. Adilo Town BH-2

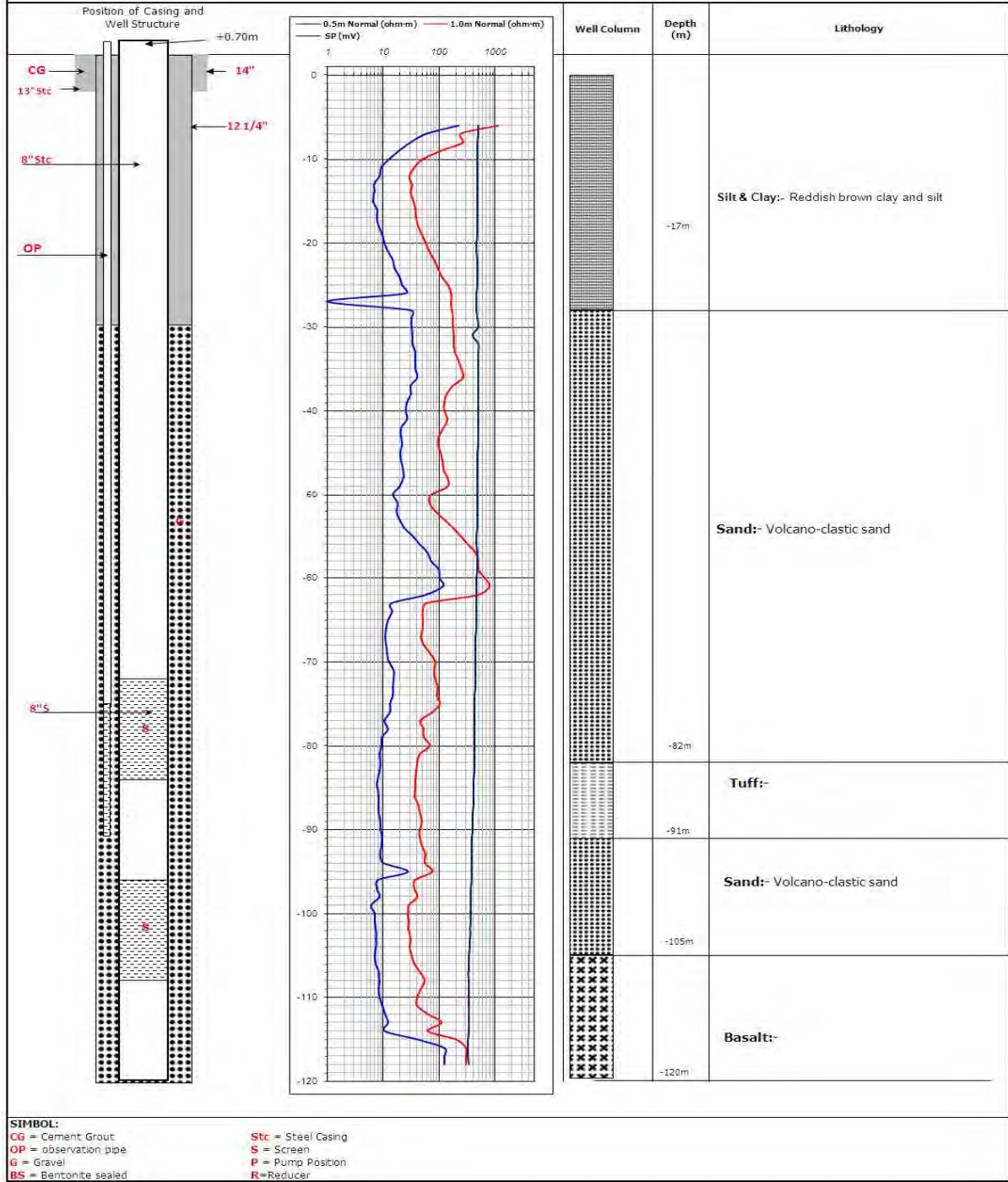
Well No. BH-2	Location Adilo	Coordinate (UTM) 387423 E 796781 N	Altitude 1,848 m	Town Adilo	Zone Kembata	State SNNPR	Country Ethiopia
Date: from 26/12/13	to 26/01/14	Drilling: Equipment Type TH-64	Method DTH	Well Type	Final Depth GL -260.0m	Diameter 0 to 132 1/4" 132m -260m 12"	Casing Position +0.8 to 260m 8"
Casing Type: Steel	Size 8"	Inside Dia. 203.0mm	Outside Dia. 216.0mm	Joint Type threaded	Screen Pipe: Material Steel	Diameter 203.0mm	Slot Size 2.0mm
8" Screen Position 213m - 218m	230m - 254m		Installation depth:		Total Length 30.0m	Total Length	
Observation Pipe: Material GS	Diameter 3/4"	Open Rate	Joint Type Threaded	Installation depth:		Total Length	
Gravel Packing Origin Basaltic	Gravel Size φ 4-6mm	Location	Volume 5.0 m³	Development: Method Air	SWL (m) 198.0 m	DWL (m) 197.7 m	SWL (m) 197.7 m
				Discharge (l/br/sec) 5.0 /s			



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R=Reducer

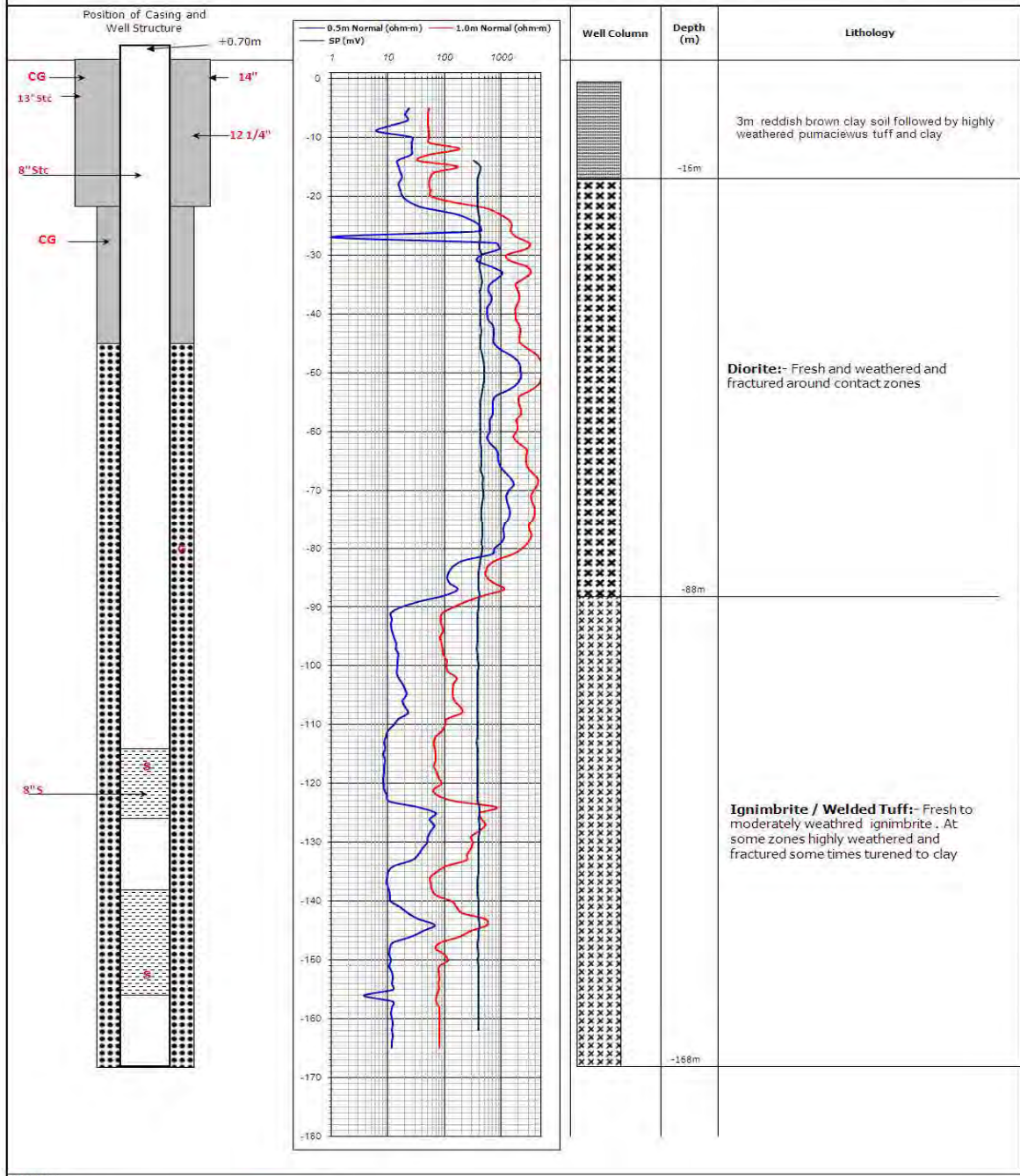
Site No. Teferi KelaTown BH1

Well No. BH-1	Location Teferi Kela	Coordinate (UTM) 433706 718369	Altitude 1,851 m	Town Teferi Kela	Zone Sidama	State SNNPR	Country Ethiopia
Date: from to 13/12/13 to 02/20/14	Drilling:	Equipment Type Top 300	Method Mud Rotary	Well Type	Final Depth GL -120.0m	Diameter 0 to 10 1/4", 10m -120m 12"	Casing Position +0.8 to 120m 8"
Casing Type:	Size 8"	Inside Dia. 203.0mm	Outside Dia. 216.0mm	Joint Type threaded	Screen Pipe:	Material 8"	Diameter 203.0mm
8" Screen Position	Material Steel	Slot Size 3/4"	Open Rate	Joint Type Threaded	Installation depth:	Discharge (litre/sec) 5.0 /s	Total Length 24.0m
Gravel Packing	Origin Basaltic	Gravel Size φ 4-8mm	Location	Volume 5.0 m ³	Development:	Method Air	Total Length 102.0m
					SWL (m) 47.6 m	DWL (m) 11.28 m	



Site No. Teferi KelaTown BH2

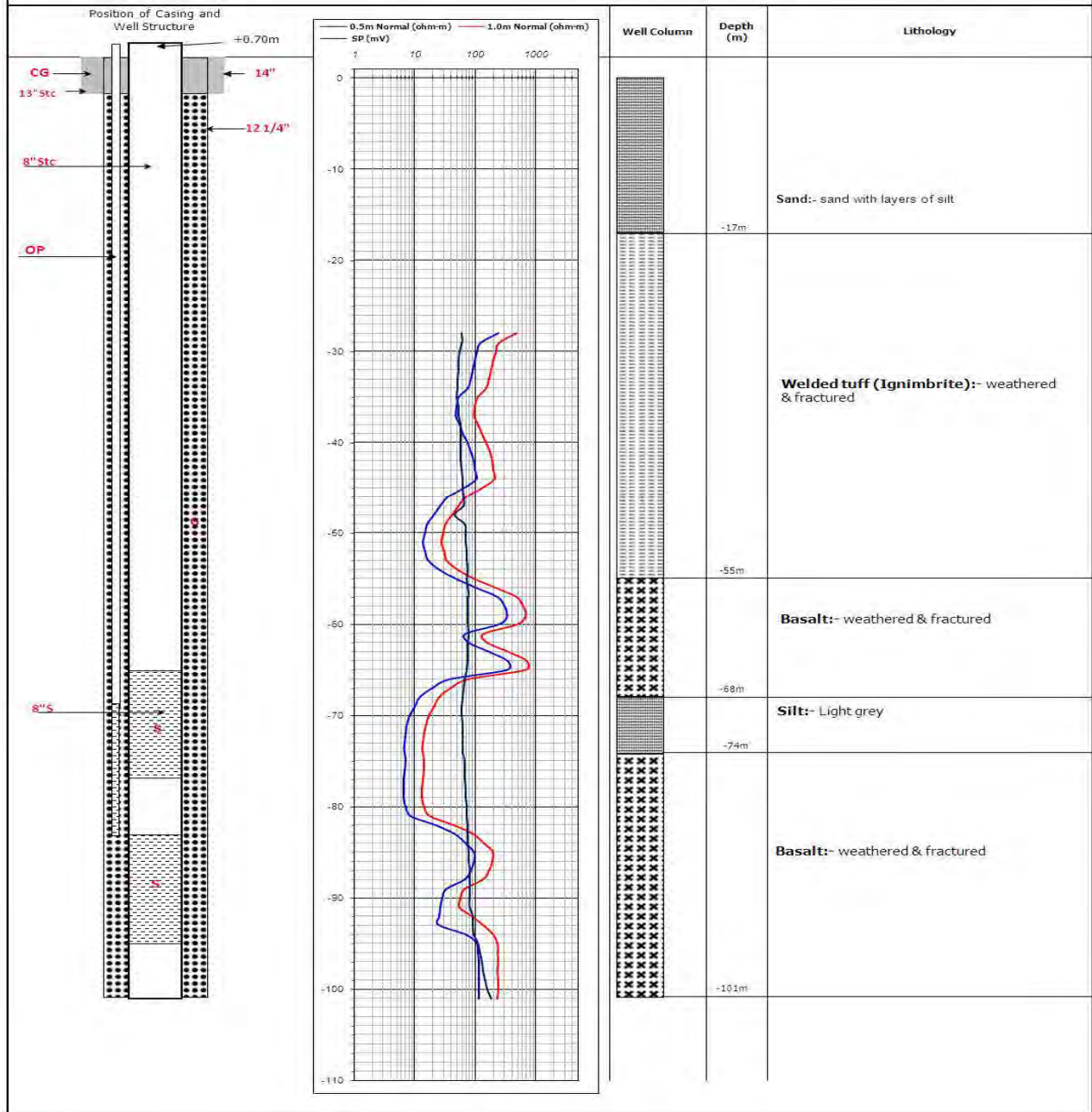
Well No. <i>BH-2</i>	Location <i>Teferi Kela</i>	Coordinate (UTM)	Altitude	Town <i>Teferi Kela</i>	Zone <i>Sidama</i>	State <i>SN/WR</i>	Country <i>Ethiopia</i>			
Date: from <i>22/2014</i> to <i>22/6/2014</i>	Drilling:	Equipment Type	Method <i>Mud Rotary</i>	Well Type	Final Depth <i>GL -168.0m</i>	Diameter <i>0 to 21 1/4" 21m -168m 12"</i>	Casing Position <i>+0.8 to 166.7 8"</i>			
Casing Type: <i>Steel</i>	Size <i>8"</i>	Inside Dia. <i>203.0mm</i>	Outside Dia. <i>216.0mm</i>	Joint Type <i>Threaded</i>	Screen Pipe: <i>Steel</i>	Material <i>8"</i>	Diameter <i>203.0mm</i>	Slot Size <i>2.0mm</i>	Joint Type <i>Threaded</i>	
8" Screen Position	<i>124m - 125m</i>	<i>138m - 156m</i>	Open Rate	Joint Type <i>Threaded</i>	Installation depth:		Total Length <i>30.0m</i>	Total Length		
Observation Pipe:	Material <i>GS</i>	Diameter <i>3/4"</i>	Slot Size							
Gravel Packing	Origin <i>Basaltic</i>	Gravel Size <i>4-8mm</i>	Location	Volume <i>5.0 m³</i>	Development: <i>Air</i>	Method <i>Air</i>	SWL (m) <i>Air</i>	DWL (m) <i>104.9 m</i>	SWL (m) <i>166.4 m</i>	Discharge (litre/sec) <i>4.0 l/s</i>



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 R=Reducer

Site No. Mitto Town

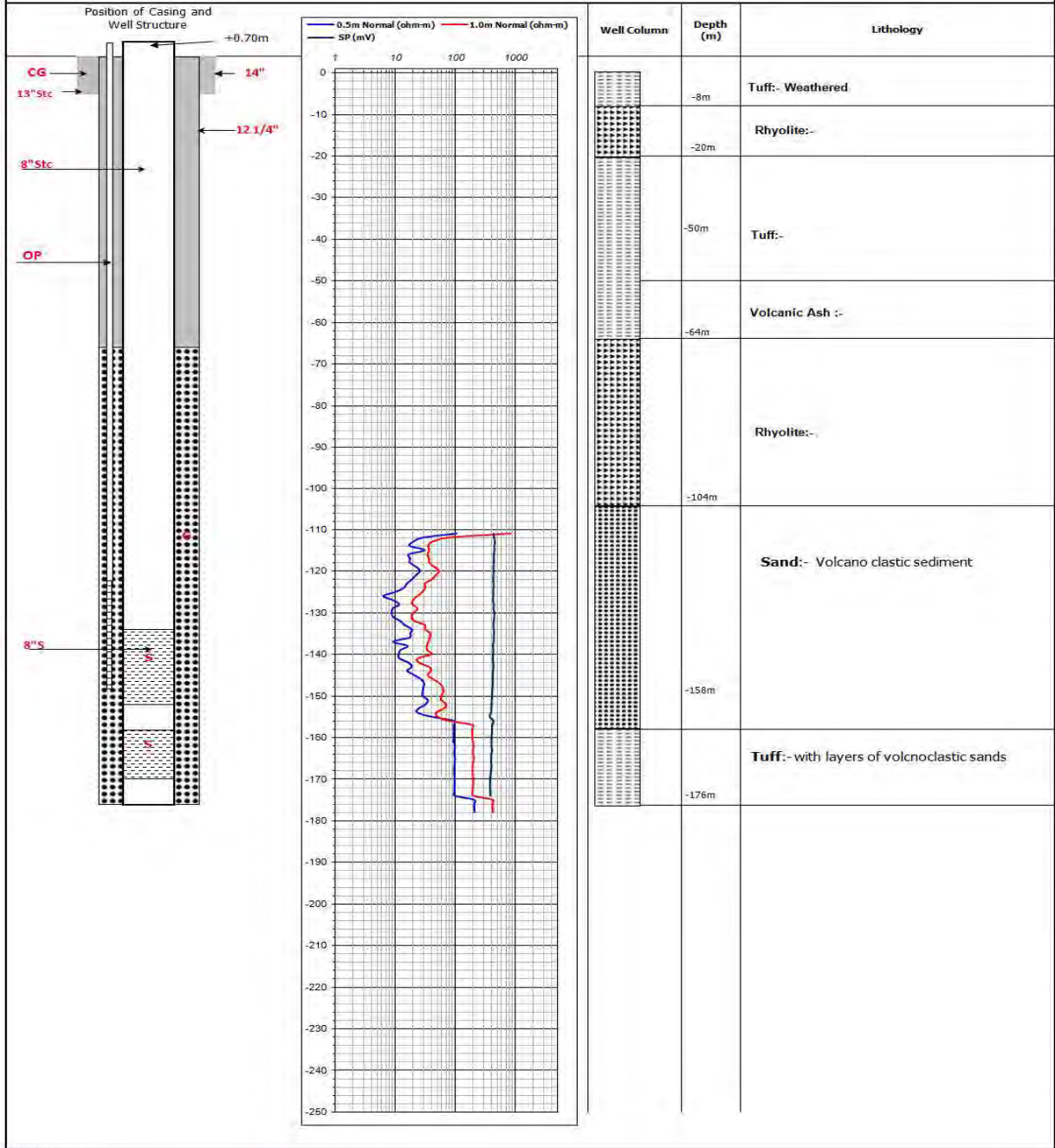
Well No. Brt-1	Location Mitto	Coordinate (UTM) 428498 E 849345 N	Altitude 1,285 m	Town Mitto	Zone SITe	State SNNPR	Country Ethiopia			
Date: from 8/2/2013	to 27/12/2013	Drilling: Equipment Type Top 500	Method Mud Rotary	Well Type	Final Depth G1 -10.0m	Diameter 0 to 6" 14", 6m -10.1m 12"	Casing Position +0.8 to 10.1m 8"			
Casing Type: Steel	Size 8"	Inside Dia. 203.0mm	Outside Dia. 218.0mm	Joint Type threaded	Screen Pipe: Steel	Material 8"	Diameter 203.0mm	Slot Size 2.0mm	Joint Type Threaded	Total Length 18.0m
8" Screen Position 48m - 54m		Diameter 66m - 84m		Open Rate	Joint Type Threaded	Installation depth: 84.0m	Total Length 84.0m			
Observation Pipe: GS	Material GS	Diameter 3/4"	Slot Size	Open Rate	Joint Type Threaded	Installation depth: 84.0m	Total Length 84.0m			
Gravel Packing	Origin Basaltic	Gravel Size 4-6mm	Location	Volume 5.0 m ³	Development: Air	SWL (m) 36.3 m	DWL (m) 29.30 m	SWL (m) 29.30 m	Discharge (litre/sec) 14.3 l/s	



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 G = Gravel
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 Stc = Steel Casing
 S = Screen
 P = Pump Position
 R = Reducer

Site No. Alem Gebeya BH-1

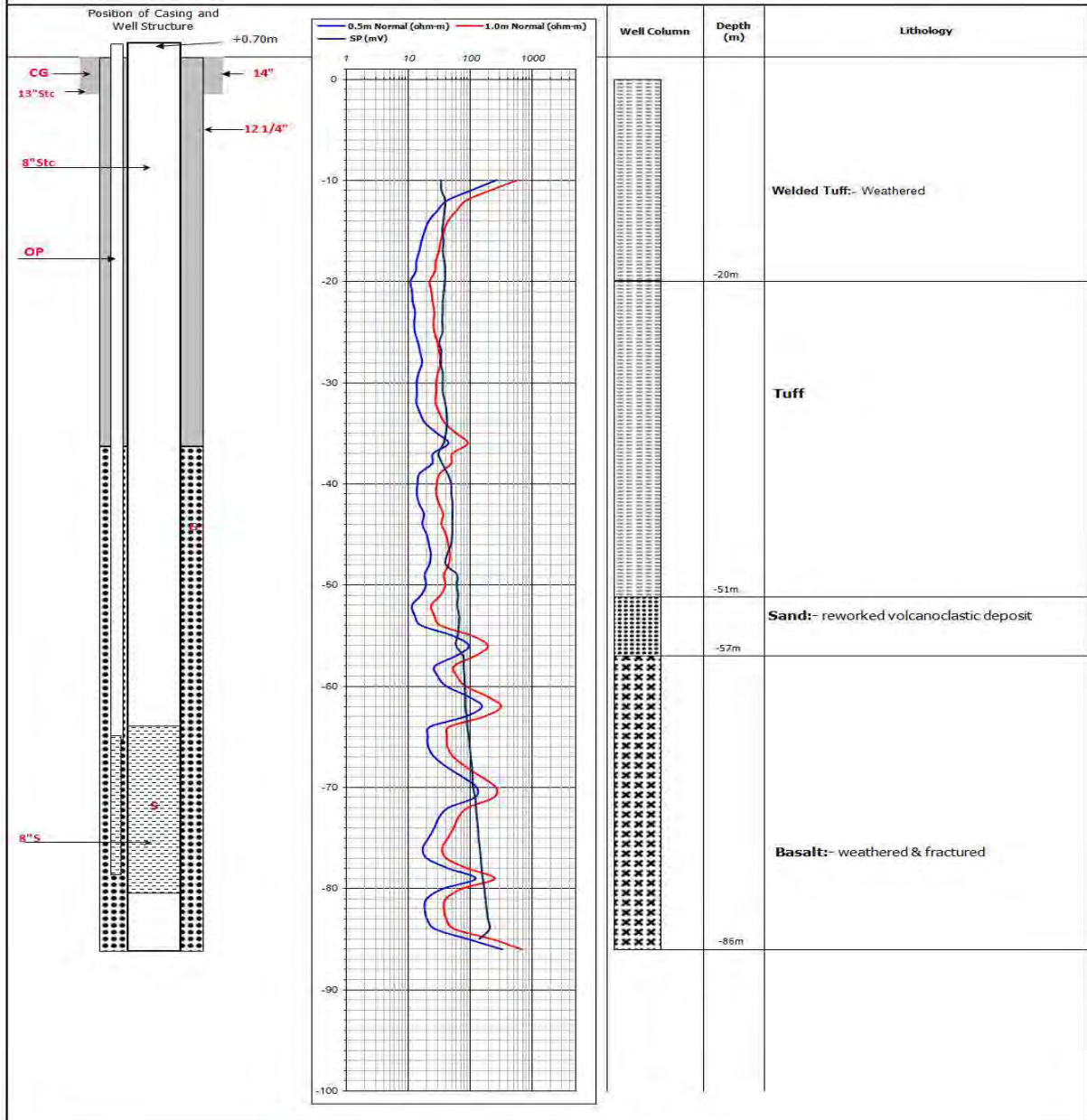
Well No. BH-1	Location Alem Gebeya	Coordinate (UTM) 408434 E 835749 N	Altitude 1,877 m	Town Tiya	Zone Gurage	State SNNPR	Country Ethiopia	
Date: from 24/10/13	to 19/02/14	Drilling: Equipment Type Top500	Method DTH	Well Type	Final Depth GL -176.0m	Diameter 0 to 4 1/2", 4m - 176m 12"	Casing Position +0.8 to 176m 8"	
Casing Type: Steel	Size 8"	Inside Dia. 203.0mm	Outside Dia. 218.0mm	Joint Type threaded	Screen Pipe: Material Steel	Diameter 8"	Slot Size 2.0mm	Joint Type Threaded
8" Screen Position 134m - 152m			158m - 170m					Total Length 30.0m
Observation Pipe: Material GS	Diameter 3/4"		Open Rate	Joint Type Threaded	Installation depth: 150.0m			Total Length 150.0m
Gravel Paking Origin Basaltic	Gravel Size # 2-6mm	Location	Volume 5.0 m ³	Development: Method Air	SWL (m) 122 m	DWL (m) 110 m	SWL (m) 110 m	Discharge (litre/sec) 9.7 l/s



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 BS = Bentonite sealed
 Stc = Steel Casing
 S = Screen
 P = Pump Position
 R = Reducer

Site No. Humbo (Tebela) Town BH-1

Well No. BH-1	Location Humbo	Coordinate (UTH) 353208 749924	Altitude 1,599 m	Town Humbo	Zone Wolaita	State SNWPR	Country Ethiopia			
Date: from 29/11/13	to 9/12/2014	Drilling: Equipment Type Top 300	Method DTH	Well Type GL -86.0m	Final Depth 0 to 6 14", 6m -86m 12"	Diameter 203.0mm	Casing Position 40.8 to 86m 8"			
Casing Type: Steel	Size 8"	Inside Dia. 203.0mm	Outside Dia. 218.0mm	Joint Type threaded	Screen Pipe: Steel	Material 8"	Diameter 203.0mm	Slot Size 2.0mm	Joint Type Threaded	Total Length 28.0m
8" Screen Position 64m - 82m										
Observation Pipe: Material GS	Diameter 3/4"	Slot Size	Open Rate	Joint Type Threaded	Installation depth: 78.0m	Total Length 28.0m				
Gravel Paking Origin Basalt/c	Gravel Size 4-6mm	Location	Volume 5.0 m ³	Development: Method Air	SWL (m) 35.6 m	DWL (m) 11.1 m	SWL (m)	Discharge (litre/sec) 34.5 /s		

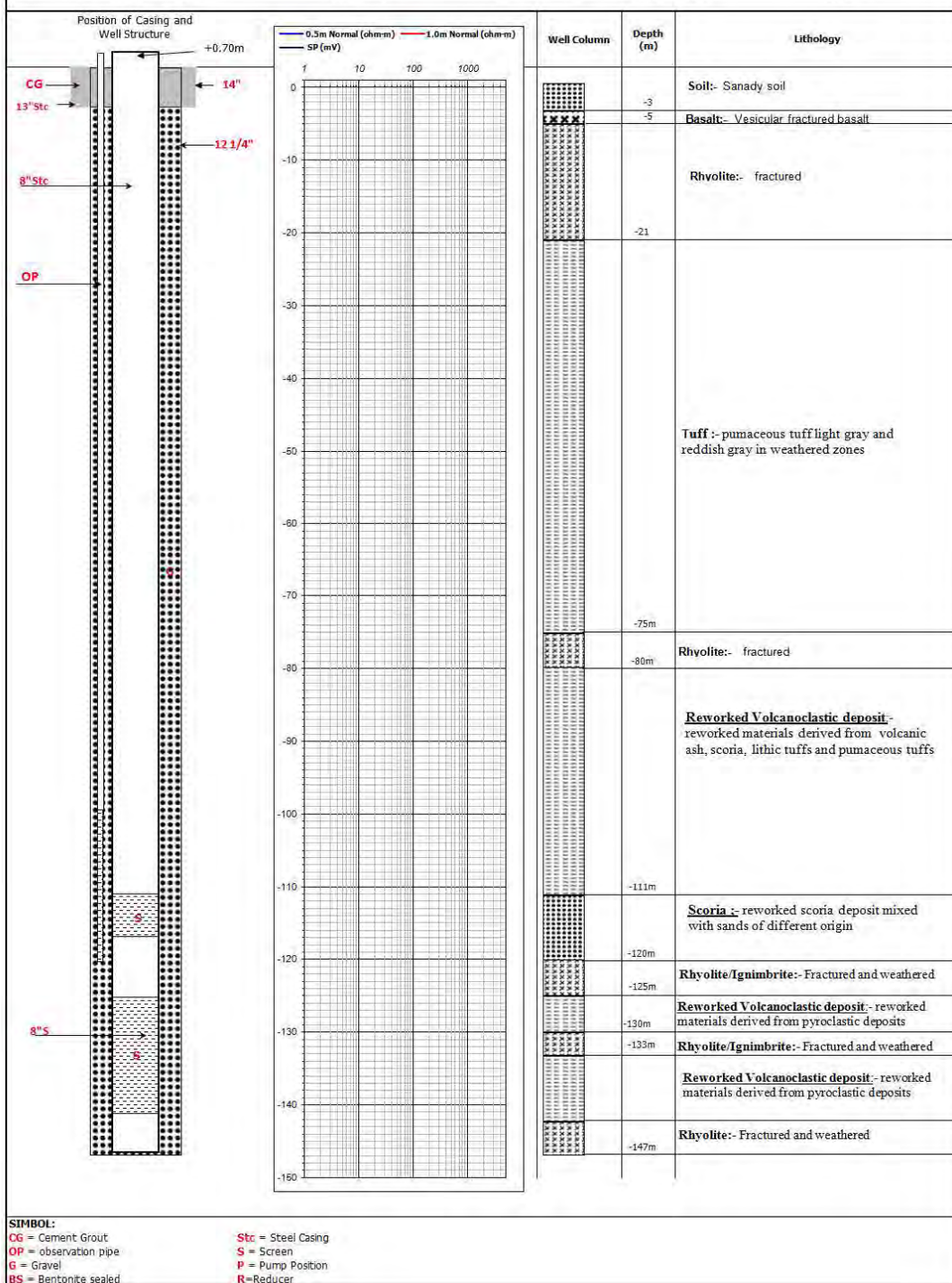


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OP = observation pipe	S = Screen
G = Gravel	P = Pump Position
BS = Bentonite sealed	R=Reducer

Site No. Kibet Town BH-1

Well No. BH-1	Location Kibet	Coordinate (UTM) 427136 E 888297 N	Altitude 2,083 m	Town Kibet	Zone Site	State SNWPR	Country Ethiopia
Date: from 18/09/2013	to 30/09/2013	Drilling: Equipment Type Top 500 Mud Rotary	Method Mud Rotary	Well Type	Final Depth GL -147.0m	Diameter 0 to 6: 14" - 147m 12"	Casing Position +0.8 to -147m 8"
Casing Type: Steel	Size 8"	Inside Dia. 203.0mm	Outside Dia. 218.0mm	Joint Type threaded	Screen Pipe: Steel	Material 8"	Diameter 203.0mm
6" Screen Position 111m - 117m		123m - 141m		Total Length 24.0m		Joint Type Threaded	
Observation Pipe: Material GS	Diameter 3/4"	Slot Size	Open Rate	Joint Type Threaded	Installation depth: 120.0m	Total Length 120.0m	
Gravel Packing Origin Basaltic	Gravel Size # 4-6mm	Location	Volume 5.0 m ³	Development: Method Air	SWL (m) 87.0 m	DWL (m) 78.0 m	Discharge (litre/sec) 13.1/l/s



Results of Water Quality Analysis

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 ድርጅት ባቦራቶሪ ከገበያው
 ንዑስ የሥራ ሂደት
 የውሃ ጥራት ክፍል



Water Works Design and
 Supervision Enterprise Laboratory
 Service Sub Process

Water Quality Section

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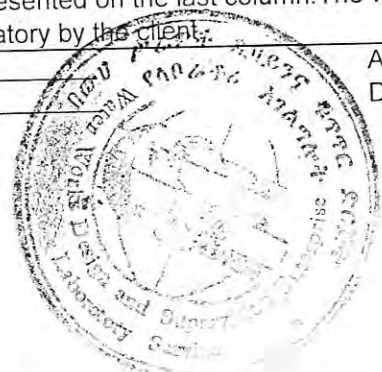
SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
 Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

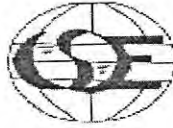
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LOCATION	Gurage Zone				
DATE OF COLLECTION	14/6/2013				
DATE RECEIVED	17/6/2013				
CLIENTS ID.NO.	KOSHE 01				
LAB.ID NO.	2371/2005				
Colour (app)	Colourless				
Odor	Odourless				
Taste	Tasteless				7.0
Turbidity (NTU)	0.37				
Total Solids 105°C (mg/l)	432.00				1776.0
T. Dissolved Solid 105°C (mg/l)	420.00				
Electrical Conductivity (µS/cm)	732.00				
pH	7.48				6.5-8.5
Ammonia (mg/l NH ₃)	0.14				2.0
Sodium (mg/l Na)	136.00				358.0
Potassium (mg/l K)	17.00				
Total Hardness (mg/l Ca CO ₃)	70.00				392.0
Calcium (mg/l Ca)	20.00				
Magnesium (mg/l Mg)	4.80				
Total Iron (mg/l Fe)	0.03				0.4
Manganese (mg/l Mn)	0.03				0.13
Fluoride (mg/l F)	1.77				3.0
Chloride (mg/l Cl)	10.01				533.0
Nitrite (mg/l NO ₂)	0.01				6.0
Nitrate (mg/l NO ₃)	0.57				50.0
Alkalinity (mg/l CaCO ₃)	370.00				
Carbonate (mg/l CO ₃)	Nil				
Bicarbonate (mg/l HCO ₃)	451.40				
Sulphate (mg/l SO ₄)	3.54				483.0
Phosphate (mg/l PO ₄)					
Copper (mg/l Cu)	0.001				5.0
Aluminum (mg/l Al)	0.006				0.4
Chromium (mg/l Cr)	0.002				0.1
Boron (mg/l B)	0.114				0.3
Lead (mg/l)	Nil				
Total Coliform Per 100 ml					
Fecal Coliform Per 100 ml					

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013



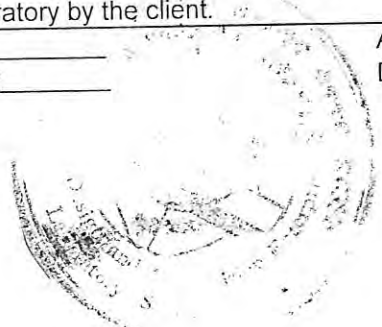


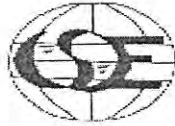
SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS				
Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers				
SOURCE OF SAMPLE	Well			Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Gurage Zone			
DATE OF COLLECTION	15/6/2013			
DATE RECEIVED	17/6/2013			
CLIENTS ID.NO.	KELLA			
LAB.ID NO.	2375/2005			
Colour (app)	Colourless			
Odor	Odourless			
Taste	Tasteless			
Turbidity (NTU)	Nil			7.0
Total Solids 105 ^o C (mg/l)	386.00			
T. Dissolved Solid 105 ^o C(mg/l)	380.00			1776.0
Electrical Conductivity (µS/cm)	573			
p ^H	6.40			6.5-8.5
Ammonia (mg/l NH ₃)	0.19			2.0
Sodium (mg/l Na)	18.50			358.0
Potassium (mg/l K)	4.70			
Total Hardness (mg/l Ca CO ₃)	250.00			392.0
Calcium (mg/l Ca)	81.60			
Magnesium (mg/l Mg)	11.04			
Total Iron (mg/l Fe)	0.03			0.4
Manganese (mg/l Mn)	0.04			0.13
Fluoride (mg/l F)	0.51			3.0
Chloride (mg/l Cl)	10.92			533.0
Nitrite (mg/l NO ₂)	0.01			6.0
Nitrate (mg/l NO ₃)	12.42			50.0
Alkalinity (mg/l CaCO ₃)	160			
Carbonate (mg/l CO ₃)	Nil			
Bicarbonate (mg/l HCO ₃)	195.2			
Sulphate (mg/l SO ₄)	133.23			483.0
Phosphate (mg/l PO ₄)				
Copper(mg/l Cu)	0.008			5.0
Aluminum(mg/l Al)	0.002			0.4
Chromium(mg/l Cr)	0.005			0.1
Boron(mg/l B)	0.057			0.3
Lead (mg/l)	Nil			
Total Coliform Per 100 ml				
Fecal Coliform Per 100 ml				

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013





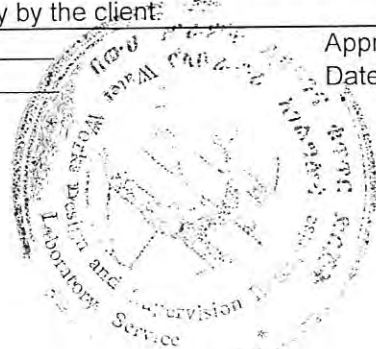
SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Gurage Zone				
DATE OF COLLECTION	17/6/2013				
DATE RECEIVED	17/6/2013				
CLIENTS ID.NO.	TIYA				
LAB.ID NO.	2378/2005				—
Colour (app)	Colourless				—
Odor	Odourless				—
Taste	Tasteless				—
Turbidity (NTU)	0.37				7.0
Total Solids 105°C (mg/l)	212.00				—
T. Dissolved Solid 105°C (mg/l)	200.00				1776.0
Electrical Conductivity (µS/cm)	354.00				—
pH	6.60				6.5-8.5
Ammonia (mg/l NH ₃)	0.20				2.0
Sodium (mg/l Na)	11.50				358.0
Potassium (mg/l K)	7.70				—
Total Hardness (mg/l Ca CO ₃)	160.00				392.0
Calcium (mg/l Ca)	47.20				—
Magnesium (mg/l Mg)	10.08				—
Total Iron (mg/l Fe)	0.05				0.4
Manganese (mg/l Mn)	0.01				0.13
Fluoride (mg/l F)	0.63				3.0
Chloride (mg/l Cl)	5.46				533.0
Nitrite (mg/l NO ₂)	0.01				6.0
Nitrate (mg/l NO ₃)	0.67				50.0
Alkalinity (mg/l CaCO ₃)	184.00				—
Carbonate (mg/l CO ₃)	Nil				—
Bicarbonate (mg/l HCO ₃)	224.48				—
Sulphate (mg/l SO ₄)	0.33				483.0
Phosphate (mg/l PO ₄)	—				—
Copper (mg/l Cu)	0.006				5.0
Aluminum (mg/l Al)	0.002				0.4
Chromium (mg/l Cr)	0.001				0.1
Boron (mg/l B)	0.107				0.3
Lead (mg/l)	Nil				—
Total Coliform Per 100 ml	—				—
Fecal Coliform Per 100 ml	—				—

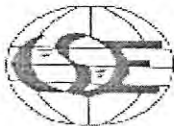
REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
Date: 17/6/2013

Approved by: [Signature]
Date: 05/07/2013



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Water Works Design and
 Supervision Enterprise Laboratory
 Service Sub Process

Water Quality Section

P.O.Box 2561

Addis Ababa

Tel. 251 - 116 - 18 55 16/61 45 01

Fax. 251 - 116 - 61 53 71/61 08 98

e-mail w.w.d.s.e@ethionet.et

SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS

Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Sodo				
DATE OF COLLECTION	13/6/2013				
DATE RECEIVED	14/6/2013				
CLIENTS ID.NO.	ADILO				
LAB.ID NO.	2367/2005				
Colour (app)	Colourless				
Odor	Odourless				
Taste	Tasteless				
Turbidity (NTU)	0.37				7.0
Total Solids 105 ⁰ C (mg/l)	190.00				
T. Dissolved Solid 105 ⁰ C(mg/l)	180.00				1776.0
Electrical Conductivity (µS/cm)	313				
p ^H	6.95				6.5-8.5
Ammonia (mg/l NH ₃)	0.14				2.0
Sodium (mg/l Na)	32.00				358.0
Potassium (mg/l K)	9.90				
Total Hardness (mg/l Ca CO ₃)	92.00				392.0
Calcium (mg/l Ca)	20.00				
Magnesium (mg/l Mg)	10.08				
Total Iron (mg/l Fe)	0.03				0.4
Manganese (mg/l Mn)	0.02				0.13
Fluoride (mg/l F)	0.65				3.0
Chloride (mg/l Cl)	3.64				533.0
Nitrite (mg/l NO ₂)	0.01				6.0
Nitrate (mg/l NO ₃)	0.78033				50.0
Alkalinity (mg/l CaCO ₃)	160				
Carbonate (mg/l CO ₃)	Nil				
Bicarbonate (mg/l HCO ₃)	195.2				
Sulphate (mg/l SO ₄)	0.22				483.0
Phosphate (mg/l PO ₄)					
Copper(mg/l Cu)	0.004				5.0
Aluminum(mg/l Al)	0.002				0.4
Chromium(mg/l Cr)	0.006				0.1
Boron(mg/l B)	0.079				0.3
Lead (mg/l)	Nil				
Total Coliform Per 100 ml					
Fecal Coliform Per 100 ml					

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013



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Water Works Design and
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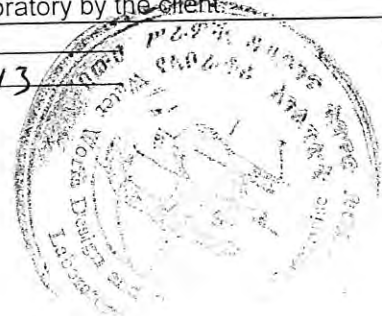
e-mail w.w.d.s.e@ethionet.et

SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS				
Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers				
SOURCE OF SAMPLE	Well			Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Sodo			
DATE OF COLLECTION	12/6/2013			
DATE RECEIVED	14/6/2013			
CLIENTS ID.NO.	TEFERI KELLA			
LAB.ID NO.	2370/2005			
Colour (app)	Colourless			
Odor	Odourless			
Taste	Tasteless			
Turbidity (NTU)	0.37			7.0
Total Solids 105 °C (mg/l)	230.00			
T. Dissolved Solid 105 °C (mg/l)	220.00			1776.0
Electrical Conductivity (µS/cm)	381.00			
p ^H	7.36			6.5-8.5
Ammonia (mg/l NH ₃)	0.16			2.0
Sodium (mg/l Na)	52.00			358.0
Potassium (mg/l K)	3.90			
Total Hardness (mg/l Ca CO ₃)	74.00			392.0
Calcium (mg/l Ca)	18.40			
Magnesium (mg/l Mg)	6.72			0.4
Total Iron (mg/l Fe)	0.03			0.13
Manganese (mg/l Mn)	0.02			3.0
Fluoride (mg/l F)	0.86			533.0
Chloride (mg/l Cl)	3.64			6.0
Nitrite (mg/l NO ₂)	0.01			50.0
Nitrate (mg/l NO ₃)	0.40			
Alkalinity (mg/l CaCO ₃)	204.00			
Carbonate (mg/l CO ₃)	Nil			
Bicarbonate (mg/l HCO ₃)	248.88			
Sulphate (mg/l SO ₄)	0.11			483.0
Phosphate (mg/l PO ₄)				
Copper (mg/l Cu)	0.005			5.0
Aluminum (mg/l Al)	0.002			0.4
Chromium (mg/l Cr)	0.002			0.1
Boron (mg/l B)	0.007			0.3
Lead (mg/l)	Nil			
Total Coliform Per 100 ml				
Fecal Coliform Per 100 ml				

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS

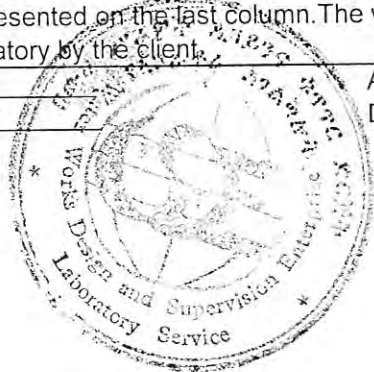
Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

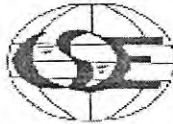
SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte Zone				
DATE OF COLLECTION	15/6/2013				
DATE RECEIVED	17/6/2013				
CLIENTS ID.NO.	DALOCHA				
LAB.ID NO.	2377/2005				
Colour (app)	Colourless				
Odor	Odourless				
Taste	Tasteless				
Turbidity (NTU)	0.4				7.0
Total Solids 105 ⁰ C (mg/l)	220.00				
T. Dissolved Solid 105 ⁰ C(mg/l)	210.00				1776.0
Electrical Conductivity (µS/cm)	358.00				
p ^H	6.83				6.5-8.5
Ammonia (mg/l NH ₃)	0.12				2.0
Sodium (mg/l Na)	49.00				358.0
Potassium (mg/l K)	9.40				
Total Hardness (mg/l Ca CO ₃)	62.00				392.0
Calcium (mg/l Ca)	18.40				
Magnesium (mg/l Mg)	3.84				
Total Iron (mg/l Fe)	0.03				0.4
Manganese (mg/l Mn)	0.01				0.13
Fluoride (mg/l F)	1.45				3.0
Chloride (mg/l Cl)	5.46				533.0
Nitrite (mg/l NO ₂)	0.02				6.0
Nitrate (mg/l NO ₃)	0.91				50.0
Alkalinity (mg/l CaCO ₃)	180.00				
Carbonate (mg/l CO ₃)	Nil				
Bicarbonate (mg/l HCO ₃)	219.60				
Sulphate (mg/l SO ₄)	0.22				483.0
Phosphate (mg/l PO ₄)					
Copper(mg/l Cu)	0.002				5.0
Aluminum(mg/l Al)	0.002				0.4
Chromium(mg/l Cr)	0.001				0.1
Boron(mg/l B)	0.086				0.3
Lead (mg/l)	Nil				
Total Coliform Per 100 ml					
Fecal Coliform Per 100 ml					

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS

Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte Zone				
DATE OF COLLECTION	15/6/2013				
DATE RECEIVED	17/6/2013				
CLIENTS ID.NO.	MITTO				
LAB.ID NO.	2376/2005				
Colour (app)	Colourless				
Odor	Odourless				
Taste	Tasteless				
Turbidity (NTU)	Nil				7.0
Total Solids 105 °C (mg/l)	278.00				
T. Dissolved Solid 105 °C (mg/l)	270.00				1776.0
Electrical Conductivity (µS/cm)	429.00				
pH	7.09				6.5-8.5
Ammonia (mg/l NH ₃)	0.19				2.0
Sodium (mg/l Na)	58.00				358.0
Potassium (mg/l K)	10.00				
Total Hardness (mg/l Ca CO ₃)	126.00				392.0
Calcium (mg/l Ca)	28.00				
Magnesium (mg/l Mg)	13.44				
Total Iron (mg/l Fe)	0.03				0.4
Manganese (mg/l Mn)	0.03				0.13
Fluoride (mg/l F)	0.74				3.0
Chloride (mg/l Cl)	7.28				533.0
Nitrite (mg/l NO ₂)	0.01				6.0
Nitrate (mg/l NO ₃)	3.31				50.0
Alkalinity (mg/l CaCO ₃)	226.00				
Carbonate (mg/l CO ₃)	Nil				
Bicarbonate (mg/l HCO ₃)	275.72				
Sulphate (mg/l SO ₄)	0.89				483.0
Phosphate (mg/l PO ₄)					
Copper (mg/l Cu)	0.004				5.0
Aluminum (mg/l Al)	0.002				0.4
Chromium (mg/l Cr)	0.005				0.1
Boron (mg/l B)	0.064				0.3
Lead (mg/l)	Nil				
Total Coliform Per 100 ml					
Fecal Coliform Per 100 ml					

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
 Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte Zone				
DATE OF COLLECTION	14/6/2013				
DATE RECEIVED	17/6/2013				
CLIENTS ID.NO.	TORRA 01				
LAB.ID NO.	2374/2005				
Colour (app)	Colourless				
Odor	Odourless				
Taste	Tasteless				
Turbidity (NTU)	0.37				7.0
Total Solids 105°C (mg/l)	612.00				
T. Dissolved Solid 105°C(mg/l)	600.00				1776.0
Electrical Conductivity (µS/cm)	971.00				
p ^H	7.19				6.5-8.5
Ammonia (mg/l NH ₃)	0.15				2.0
Sodium (mg/l Na)	180.00				358.0
Potassium (mg/l K)	22.00				
Total Hardness (mg/l Ca CO ₃)	130.00				392.0
Calcium (mg/l Ca)	48.00				
Magnesium (mg/l Mg)	2.40				0.4
Total Iron (mg/l Fe)	0.03				0.13
Manganese (mg/l Mn)	0.04				3.0
Fluoride (mg/l F)	1.64				533.0
Chloride (mg/l Cl)	23.66				6.0
Nitrite (mg/l NO ₂)	0.01				50.0
Nitrate (mg/l NO ₃)	1.18				
Alkalinity (mg/l CaCO ₃)	474.00				
Carbonate (mg/l CO ₃)	Nil				
Bicarbonate (mg/l HCO ₃)	578.28				
Sulphate (mg/l SO ₄)	36.55				483.0
Phosphate (mg/l PO ₄)					
Copper(mg/l Cu)	0.001				5.0
Aluminum(mg/l Al)	0.002				0.4
Chromium(mg/l Cr)	0.004				0.1
Boron(mg/l B)	0.129				0.3
Lead (mg/l)	Nil				
Total Coliform Per 100 ml					
Fecal Coliform Per 100 ml					

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
 Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

SOURCE OF SAMPLE	Well			Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte Zone			
DATE OF COLLECTION	14/6/2013			
DATE RECEIVED	17/6/2013			
CLIENTS ID.NO.	TORRA 02			
LAB.ID NO.	2373/2005			
Colour (app)	Colourless			
Odor	Odourless			
Taste	Tasteless			
Turbidity (NTU)	0.37			7.0
Total Solids 105 ^o C (mg/l)	628.00			
T. Dissolved Solid 105 ^o C(mg/l)	620.00			1776.0
Electrical Conductivity (µS/cm)	1002.00			
p ^H	7.48			6.5-8.5
Ammonia (mg/l NH ₃)	0.17			2.0
Sodium (mg/l Na)	166.00			358.0
Potassium (mg/l K)	21.00			
Total Hardness (mg/l Ca CO ₃)	122.00			392.0
Calcium (mg/l Ca)	46.40			
Magnesium (mg/l Mg)	1.44			
Total Iron (mg/l Fe)	0.03			0.4
Manganese (mg/l Mn)	0.03			0.13
Fluoride (mg/l F)	1.63			3.0
Chloride (mg/l Cl)	28.21			533.0
Nitrite (mg/l NO ₂)	0.02			6.0
Nitrate (mg/l NO ₃)	0.80			50.0
Alkalinity (mg/l CaCO ₃)	456.00			
Carbonate (mg/l CO ₃)	Nil			
Bicarbonate (mg/l HCO ₃)	556.32			
Sulphate (mg/l SO ₄)	51.94			483.0
Phosphate (mg/l PO ₄)				
Copper(mg/l Cu)	0.005			5.0
Aluminum(mg/l Al)	0.006			0.4
Chromium(mg/l Cr)	0.007			0.1
Boron(mg/l B)	0.150			0.3
Lead (mg/l)	Nil			
Total Coliform Per 100 ml				
Fecal Coliform Per 100 ml				

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
Client/Project:AG CONSULT, Consulting Hydrogeologist and Engineers

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Sodo				
DATE OF COLLECTION	13/6/2013				
DATE RECEIVED	14/6/2013				
CLIENTS ID.NO.	SANKURA				
LAB.ID NO.	2369/2005				—
Colour (app)	Colourless				—
Odor	Odourless				—
Taste	Tasteless				—
Turbidity (NTU)	0.4				7.0
Total Solids 105 ^o C (mg/l)	408.00				—
T. Dissolved Solid 105 ^o C(mg/l)	400.00				1776.0
Electrical Conductivity (µS/cm)	640.00				—
p ^H	7.82				6.5-8.5
Ammonia (mg/l NH ₃)	0.15				2.0
Sodium (mg/l Na)	105.0				358.0
Potassium (mg/l K)	13.00				—
Total Hardness (mg/l Ca CO ₃)	136.00				392.0
Calcium (mg/l Ca)	44.00				—
Magnesium (mg/l Mg)	6.24				—
Total Iron (mg/l Fe)	0.03				0.4
Manganese (mg/l Mn)	0.04				0.13
Fluoride (mg/l F)	1.63				3.0
Chloride (mg/l Cl)	5.46				533.0
Nitrite (mg/l NO ₂)	0.02				6.0
Nitrate (mg/l NO ₃)	0.44				50.0
Alkalinity (mg/l CaCO ₃)	338.00				—
Carbonate (mg/l CO ₃)	Nil				—
Bicarbonate (mg/l HCO ₃)	412.36				—
Sulphate (mg/l SO ₄)	0.22				483.0
Phosphate (mg/l PO ₄)	—				—
Copper(mg/l Cu)	0.005				5.0
Aluminum(mg/l Al)	0.002				0.4
Chromium(mg/l Cr)	0.004				0.1
Boron(mg/l B)	0.114				0.3
Lead (mg/l)	Nil				—
Total Coliform Per 100 ml	—				—
Fecal Coliform Per 100 ml	—				—

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
Date: 5/7/2013

Approved by: [Signature]
Date: 05/7/2013





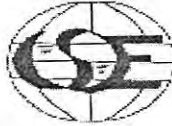
SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS				
Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers				
SOURCE OF SAMPLE	Well			Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte Zone			
DATE OF COLLECTION	25/6/2013			
DATE RECEIVED	17/6/2013			
CLIENTS ID.NO.	KIBET-01			
LAB.ID NO.	2372/2005			
Colour (app)	Colourless			
Odor	Odourless			
Taste	Tasteless			
Turbidity (NTU)	0.37			7.0
Total Solids 105°C (mg/l)	316.00			
T. Dissolved Solid 105°C (mg/l)	300.00			1776.0
Electrical Conductivity (µS/cm)	486.00			
p ^H	6.50			6.5-8.5
Ammonia (mg/l NH ₃)	0.15			2.0
Sodium (mg/l Na)	41.00			358.0
Potassium (mg/l K)	10.10			
Total Hardness (mg/l Ca CO ₃)	176.00			392.0
Calcium (mg/l Ca)	62.40			
Magnesium (mg/l Mg)	4.80			
Total Iron (mg/l Fe)	0.03			0.4
Manganese (mg/l Mn)	0.03			0.13
Fluoride (mg/l F)	0.59			3.0
Chloride (mg/l Cl)	7.28			533.0
Nitrite (mg/l NO ₂)	0.02			6.0
Nitrate (mg/l NO ₃)	12.25			50.0
Alkalinity (mg/l CaCO ₃)	226.00			
Carbonate (mg/l CO ₃)	Nil			
Bicarbonate (mg/l HCO ₃)	275.72			
Sulphate (mg/l SO ₄)	4.87			483.0
Phosphate (mg/l PO ₄)				
Copper (mg/l Cu)	0.005			5.0
Aluminum (mg/l Al)	0.002			0.4
Chromium (mg/l Cr)	0.001			0.1
Boron (mg/l B)	0.114			0.3
Lead (mg/l)	Nil			
Total Coliform Per 100 ml				
Fecal Coliform Per 100 ml				

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
 Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte Zone				
DATE OF COLLECTION	15/6/2013				
DATE RECEIVED	17/6/2013				
CLIENTS ID.NO.	KIBET 02				
LAB.ID NO.	2379/2005				
Colour (app)	Colourless				
Odor	Odourless				
Taste	Tasteless				
Turbidity (NTU)	Nil				7.0
Total Solids 105 ⁰ C (mg/l)	266.00				
T. Dissolved Solid 105 ⁰ C(mg/l)	260.00				1776.0
Electrical Conductivity (µS/cm)	455.00				
p ^H	6.65				6.5-8.5
Ammonia (mg/l NH ₃)	0.19				2.0
Sodium (mg/l Na)	33.50				358.0
Potassium (mg/l K)	9.30				
Total Hardness (mg/l Ca CO ₃)	166.00				392.0
Calcium (mg/l Ca)	49.60				
Magnesium (mg/l Mg)	10.08				
Total Iron (mg/l Fe)	0.04				0.4
Manganese (mg/l Mn)	0.01				0.13
Fluoride (mg/l F)	0.63				3.0
Chloride (mg/l Cl)	6.37				533.0
Nitrite (mg/l NO ₂)	0.02				6.0
Nitrate (mg/l NO ₃)	6.01				50.0
Alkalinity (mg/l CaCO ₃)	222.00				
Carbonate (mg/l CO ₃)	Nil				
Bicarbonate (mg/l HCO ₃)	270.84				
Sulphate (mg/l SO ₄)	1.77				483.0
Phosphate (mg/l PO ₄)					
Copper(mg/l Cu)	0.004				5.0
Aluminum(mg/l Al)	0.002				0.4
Chromium(mg/l Cr)	0.006				0.1
Boron(mg/l B)	0.007				0.3
Lead (mg/l)	Nil				
Total Coliform Per 100 ml					
Fecal Coliform Per 100 ml					

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013



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Water Works Design
 Supervision Enterprise Laboratory
 Service Sub Process

Water Quality Section

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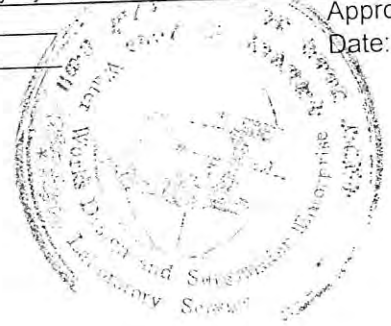
SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
 Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte Zone				
DATE OF COLLECTION	15/6/2013				
DATE RECEIVED	17/6/2013				
CLIENTS ID.NO.	LAKE				
LAB ID NO.	2381/2003				
Colour (app)	Colourless				
Odor	Odourless				
Taste	Tasteless				7.0
Turbidity (NTU)	0.73				
Total Solids 105°C (mg/l)	300.00				1776.0
T. Dissolved Solid 105°C (mg/l)	280.00				
Electrical Conductivity (µS/cm)	438.00				6.5-8.5
pH	8.56				2.0
Ammonia (mg/l NH ₃)	0.19				358.0
Sodium (mg/l Na)	47.00				
Potassium (mg/l K)	12.00				392.0
Total Hardness (mg/l Ca CO ₃)	150.00				
Calcium (mg/l Ca)	33.60				
Magnesium (mg/l Mg)	15.84				0.4
Total Iron (mg/l Fe)	0.04				0.13
Manganese (mg/l Mn)	0.02				3.0
Fluoride (mg/l F)	0.55				533.0
Chloride (mg/l Cl)	10.01				6.0
Nitrite (mg/l NO ₂)	0.02				50.0
Nitrate (mg/l NO ₃)	0.46				
Alkalinity (mg/l CaCO ₃)	236.00				
Carbonate (mg/l CO ₃)	36.00				
Bicarbonate (mg/l HCO ₃)	214.72				483.0
Sulphate (mg/l SO ₄)	0.29				
Phosphate (mg/l PO ₄)					5.0
Copper (mg/l Cu)	0.005				0.4
Aluminum (mg/l Al)	0.004				0.1
Chromium (mg/l Cr)	0.002				0.3
Boron (mg/l B)	0.007				
Lead (mg/l)	Nil				
Total Coliform Per 100 ml					
Fecal Coliform Per 100 ml					

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: [Signature]
 Date: 5/7/2013

Approved by: [Signature]
 Date: 05/07/2013





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS

Client/Project: AG CONSULT, Consulting Hydrogeologist and Engineers

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Sodo				
DATE OF COLLECTION	13/6/2013				
DATE RECEIVED	14/6/2013				
CLIENTS ID.NO.	TEBELLA				
LAB.ID NO.	2368/2005				
Colour (app)	Colourless				
Odor	Odourless				
Taste	Tasteless				
Turbidity (NTU)	0.37				7.0
Total Solids 105 °C (mg/l)	172.00				
T. Dissolved Solid 105 °C (mg/l)	160.00				1776.0
Electrical Conductivity (µS/cm)	260.00				
pH	6.90				6.5-8.5
Ammonia (mg/l NH ₃)	0.14				2.0
Sodium (mg/l Na)	15.00				358.0
Potassium (mg/l K)	4.90				
Total Hardness (mg/l Ca CO ₃)	104.00				392.0
Calcium (mg/l Ca)	29.60				
Magnesium (mg/l Mg)	7.20				
Total Iron (mg/l Fe)	0.03				0.4
Manganese (mg/l Mn)	0.02				0.13
Fluoride (mg/l F)	0.52				3.0
Chloride (mg/l Cl)	2.73				533.0
Nitrite (mg/l NO ₂)	0.01				6.0
Nitrate (mg/l NO ₃)	2.17				50.0
Alkalinity (mg/l CaCO ₃)	138.00				
Carbonate (mg/l CO ₃)	Nil				
Bicarbonate (mg/l HCO ₃)	168.36				
Sulphate (mg/l SO ₄)	0.22				483.0
Phosphate (mg/l PO ₄)					
Copper (mg/l Cu)	0.001				5.0
Aluminum (mg/l Al)	0.002				0.4
Chromium (mg/l Cr)	0.002				0.1
Boron (mg/l B)	0.100				0.3
Lead (mg/l)	Nil				
Total Coliform Per 100 ml					
Fecal Coliform Per 100 ml					

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) presented on the last column. The water sample was collected and submitted to our laboratory by the client.

Checked by: Tesfayohannes
Date: 5/7/2013

Approved by: [Signature]
Date: 05/07/2013





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS

Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Gurage Zone				
DATE OF COLLECTION	26/11/2013				
DATE RECEIVED	29/11/2013				
CLIENTS ID.NO.	Tiya				
LAB.ID NO.	923/2006				-
Colour (app)	Colourless				-
Odor	Odorless				-
Taste	Tasteless				-
Turbidity (NTU)	Trace				7.0
Total Solids 105 °C (mg/l)	244.00				-
T. Dissolved Solid 105 °C (mg/l)	240.00				1776.0
Electrical Conductivity (µS/cm)	398.00				-
p ^H	7.60				6.5-8.5
Ammonia (mg/l NH ₃)	0.29				2.0
Sodium (mg/l Na)	25.00				358.0
Potassium (mg/l K)	7.90				-
Total Hardness (mg/l Ca CO ₃)	172.00				392.0
Calcium (mg/l Ca)	44.00				-
Magnesium (mg/l Mg)	14.88				-
Total Iron (mg/l Fe)	0.07				0.4
Manganese (mg/l Mn)	0.03				0.13
Fluoride (mg/l F)	0.86				3.0
Chloride (mg/l Cl)	6.37				533.0
Nitrite (mg/l NO ₂)	0.04				6.0
Nitrate (mg/l NO ₃)	0.74				50.0
Alkalinity (mg/l CaCO ₃)	214.00				-
Carbonate (mg/l CO ₃)	Nil				-
Bicarbonate (mg/l HCO ₃)	261.08				-
Sulphate (mg/l SO ₄)	0.22				483.0
Phosphate (mg/l PO ₄)	-				-
Copper (mg/l Cu)	0.005				5.0
Aluminum (mg/l Al)	0.008				0.4
Chromium (mg/l Cr)	Trace				0.1
Boron (mg/l B)	0.072				0.3

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature] Processed By [Signature] Checked by: [Signature] Approved by: [Signature]
 Date: 23-12-2013 Date 23/12/2013 Date 24/12/13 Date 24/12/13



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Water Works Design and Supervision
Enterprise Laboratory Service Sub
Process

Water Quality Section

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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS

Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Gurage Zone				
DATE OF COLLECTION	30/12/2013				
DATE RECEIVED	2/1/2014				
CLIENTS ID.NO.	Koshe				
LAB.ID NO.	1196/2006				—
Colour (app)	Colourless				—
Odor	Odorless				—
Taste	Tasteless				—
Turbidity (NTU)	Trace				7.0
Total Solids 105 °C (mg/l)	470.0				—
T. Dissolved Solid 105°C(mg/l)	460.0				1776.0
Electrical Conductivity (µS/cm)	750				—
p ^H	7.97				6.5-8.5
Ammonia (mg/l NH ₃)	1.53				2.0
Sodium (mg/l Na)	138.00				358.0
Potassium (mg/l K)	8.60				—
Total Hardness (mg/l Ca CO ₃)	70.00				392.0
Calcium (mg/l Ca)	16.80				—
Magnesium (mg/l Mg)	6.72				—
Total Iron (mg/l Fe)	0.17				0.4
Manganese (mg/l Mn)	0.06				0.13
Fluoride (mg/l F)	1.14				3.0
Chloride (mg/l Cl)	5.46				533.0
Nitrite (mg/l NO ₂)	Trace				6.0
Nitrate (mg/l NO ₃)	0.08				50.0
Alkalinity (mg/l CaCO ₃)	410.00				—
Carbonate (mg/l CO ₃)	Nil				—
Bicarbonate (mg/l HCO ₃)	500.20				—
Sulphate (mg/l SO ₄)	0.33				483.0
Phosphate (mg/l PO ₄)	0.49				—
Copper(mg/l Cu)	Trace				5.0
Aluminum(mg/l Al)	0.012				0.4
Chromium(mg/l Cr)	0.002				0.1
Boron(mg/l B)	0.063				0.3

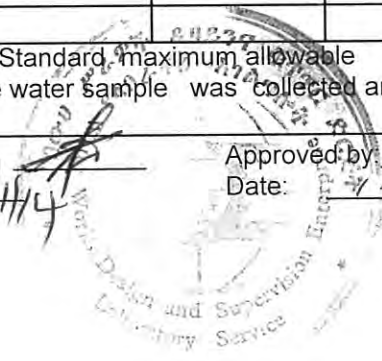
REMARK:- The test result can be compared with the Ethiopian Standard, maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature]
Date: 17/1/14

Processed By: [Signature]
Date: 17/1/14

Checked by: [Signature]
Date: 17/1/14

Approved by: [Signature]
Date: 17/1/14





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Gurage Zone				
DATE OF COLLECTION	2/1/2014				
DATE RECEIVED	9/1/2014				
CLIENTS ID.NO.	Kella				
LAB.ID NO.	1221/2006				—
Colour (app)	Colourless				—
Odor	Odorless				—
Taste	Tasteless				—
Turbidity (NTU)	Trace				7.0
Total Solids 105 °C (mg/l)	388.00				—
T. Dissolved Solid 105°C(mg/l)	380.00				1776.0
Electrical Conductivity (µS/cm)	570.00				—
p ^H	7.12				6.5-8.5
Ammonia (mg/l NH ₃)	0.24				2.0
Sodium (mg/l Na)	21.50				358.0
Potassium (mg/l K)	7.00				—
Total Hardness (mg/l Ca CO ₃)	264.00				392.0
Calcium (mg/l Ca)	84.00				—
Magnesium (mg/l Mg)	12.96				—
Total Iron (mg/l Fe)	0.10				0.4
Manganese (mg/l Mn)	Trace				0.13
Fluoride (mg/l F)	0.61				3.0
Chloride (mg/l Cl)	3.64				533.0
Nitrite (mg/l NO ₂)	Trace				6.0
Nitrate (mg/l NO ₃)	1.73				50.0
Alkalinity (mg/l CaCO ₃)	212.00				—
Carbonate (mg/l CO ₃)	Nil				—
Bicarbonate (mg/l HCO ₃)	258.64				—
Sulphate (mg/l SO ₄)	114.90				483.0
Phosphate (mg/l PO ₄)	—				—
Copper(mg/l Cu)	0.033				5.0
Aluminum(mg/l Al)	Trace				0.4
Chromium(mg/l Cr)	0.001				0.1
Boron(mg/l B)	0.065				0.3
Zinc (mg/l)	—				15

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature] Processed By: [Signature]
Date: 12/01/14 Date: 12/1/14

Checked by: [Signature] Approved by: [Signature]
Date: 12/01/14 Date: 12/01/14





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS

Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Wolaita				
DATE OF COLLECTION	19/1/2014				
DATE RECEIVED	28/1/2014				
CLIENTS ID.NO.	Humbo				
LAB.ID NO.	1431/2006				-
Colour (app)	Colourless				-
Odor	Odorless				-
Taste	Tasteless				-
Turbidity (NTU)	Trace				7.0
Total Solids 105 ^o C (mg/l)	216.00				-
T. Dissolved Solid 105 ^o C(mg/l)	210.00				1776.0
Electrical Conductivity (µS/cm)	352.00				-
P ^H	6.88				6.5-8.5
Ammonia (mg/l NH ₃)	0.14				2.0
Sodium (mg/l Na)	35.50				358.0
Potassium (mg/l K)	8.90				-
Total Hardness (mg/l Ca CO ₃)	108.00				392.0
Calcium (mg/l Ca)	27.20				-
Magnesium (mg/l Mg)	9.60				-
Total Iron (mg/l Fe)	0.03				0.4
Manganese (mg/l Mn)	Trace				0.13
Fluoride (mg/l F)	0.58				3.0
Chloride (mg/l Cl)	3.64				533.0
Nitrite (mg/l NO ₂)	0.02				6.0
Nitrate (mg/l NO ₃)	0.74				50.0
Alkalinity (mg/l CaCO ₃)	180.00				-
Carbonate (mg/l CO ₃)	Nil				-
Bicarbonate (mg/l HCO ₃)	219.60				-
Sulphate (mg/l SO ₄)	0.22				483.0
Phosphate (mg/l PO ₄)	0.22				-
Copper(mg/l Cu)	Trace				5.0
Aluminum(mg/l Al)	0.002				0.4
Chromium(mg/l Cr)	0.001				0.1
Boron(mg/l B)	0.120				0.3

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: JMS Processed By: Teklu
Date: 04-02-2014 Date: 4/2/14

Checked by: [Signature] Approved by: [Signature]
Date: 5/2/14 Date: 5/2/14





SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS

Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte				
DATE OF COLLECTION	23/1/2014				
DATE RECEIVED	28/1/2014				
CLIENTS ID.NO.	Mito				
LAB.ID NO.	1432/2006				-
Colour (app)	Colourless				-
Odor	Odorless				-
Taste	Tasteless				-
Turbidity (NTU)	Trace				7.0
Total Solids 105 ^o C (mg/l)	272.00				-
T. Dissolved Solid 105 ^o C(mg/l)	260.00				1776.0
Electrical Conductivity (µS/cm)	430.00				-
p ^H	7.56				6.5-8.5
Ammonia (mg/l NH ₃)	0.15				2.0
Sodium (mg/l Na)	53.00				358.0
Potassium (mg/l K)	10.00				-
Total Hardness (mg/l Ca CO ₃)	118.00				392.0
Calcium (mg/l Ca)	22.40				-
Magnesium (mg/l Mg)	14.88				-
Total Iron (mg/l Fe)	0.04				0.4
Manganese (mg/l Mn)	Trace				0.13
Fluoride (mg/l F)	1.96				3.0
Chloride (mg/l Cl)	7.28				533.0
Nitrite (mg/l NO ₂)	0.02				6.0
Nitrate (mg/l NO ₃)	4.14				50.0
Alkalinity (mg/l CaCO ₃)	214.00				-
Carbonate (mg/l CO ₃)	Nil				-
Bicarbonate (mg/l HCO ₃)	261.08				-
Sulphate (mg/l SO ₄)	0.33				483.0
Phosphate (mg/l PO ₄)	0.26				-
Copper(mg/l Cu)	0.007				5.0
Aluminum(mg/l Al)	Trace				0.4
Chromium(mg/l Cr)	Trace				0.1
Boron(mg/l B)	0.240				0.3

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature] Processed By: [Signature] Checked by: [Signature] Approved by: [Signature]
 Date: 04-02-2014 Date: 04/02/2014 Date: 5/2/14 Date: 5/2/14





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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
 Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silite Zone			
DATE OF COLLECTION	4/2/2014			
DATE RECEIVED	10/2/2014			
CLIENTS ID.NO.	Kibet No 1			
LAB.ID NO.	1525/2006			
Colour (app)	Colourless			
Odor	Odorless			
Taste	Tasteless			
Turbidity (NTU)	Trace			7.0
Total Solids 105°C (mg/l)	312.00			
T. Dissolved Solid 105°C(mg/l)	300.00			1776.0
Electrical Conductivity (µS/cm)	467.00			
p ^H	6.69			6.5-8.5
Ammonia (mg/l NH ₃)	0.21			2.0
Sodium (mg/l Na)	33.00			358.0
Potassium (mg/l K)	8.70			
Total Hardness (mg/l Ca CO ₃)	184.00			392.0
Calcium (mg/l Ca)	63.20			
Magnesium (mg/l Mg)	6.24			
Total Iron (mg/l Fe)	0.02			0.4
Manganese (mg/l Mn)	0.06			0.13
Fluoride (mg/l F)	0.58			3.0
Chloride (mg/l Cl)	6.37			533.0
Nitrite (mg/l NO ₂)	0.06			6.0
Nitrate (mg/l NO ₃)	19.12			50.0
Alkalinity (mg/l CaCO ₃)	230.00			
Carbonate (mg/l CO ₃)	Nil			
Bicarbonate (mg/l HCO ₃)	280.60			
Sulphate (mg/l SO ₄)	2.77			483.0
Phosphate (mg/l PO ₄)	0.19			
Copper(mg/l Cu)	0.0198			5.0
Aluminum(mg/l Al)	Trace			0.4
Chromium(mg/l Cr)	0.010			0.1
Boron(mg/l B)	0.233			0.3
Zinc (mg/l)				

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature]
 Date: 17/02/14

Processed By: [Signature]
 Date: 17/2/14

Checked by: [Signature]
 Date: 17/2/14

Approved by: [Signature]
 Date: 17/2/14



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Water Works Design and Supervision
 Enterprise Laboratory Service Sub
 Process
 Water Quality Section

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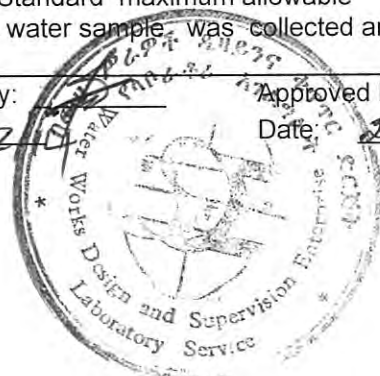
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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS				
Client/Project: TAM Geo-Engineering P.L.C.				
SOURCE OF SAMPLE	Well			Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Gurage			
DATE OF COLLECTION	15/2/2014			
DATE RECEIVED	19/2/2014			
CLIENTS ID.NO.	Kela No-2			
LAB.ID NO.	1604/2006			-
Colour (app)	Colourless			-
Odor	Odorless			-
Taste	Tasteless			-
Turbidity (NTU)	Trace			7.0
Total Solids 105 °C (mg/l)	288.00			-
T. Dissolved Solid 105°C(mg/l)	280.00			1776.0
Electrical Conductivity (µS/cm)	422.00			-
p ^H	6.57			6.5-8.5
Ammonia (mg/l NH ₃)	0.16			2.0
Sodium (mg/l Na)	33.00			358.0
Potassium (mg/l K)	5.50			-
Total Hardness (mg/l Ca CO ₃)	164.00			392.0
Calcium (mg/l Ca)	47.20			-
Magnesium (mg/l Mg)	11.04			-
Total Iron (mg/l Fe)	0.07			0.4
Manganese (mg/l Mn)	0.01			0.13
Fluoride (mg/l F)	1.06			3.0
Chloride (mg/l Cl)	7.28			533.0
Nitrite (mg/l NO ₂)	0.02			6.0
Nitrate (mg/l NO ₃)	1.01			50.0
Alkalinity (mg/l CaCO ₃)	180.00			-
Carbonate (mg/l CO ₃)	Nil			-
Bicarbonate (mg/l HCO ₃)	219.60			-
Sulphate (mg/l SO ₄)	44.54			483.0
Phosphate (mg/l PO ₄)	0.24			-
Copper(mg/l Cu)	0.020			5.0
Aluminum(mg/l Al)	0.008			0.4
Chromium(mg/l Cr)	0.006			0.1
Boron(mg/l B)	0.006			0.3

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature] Processed By: [Signature]
 Date: 25/2/14 Date: 25/2/14

Checked by: [Signature] Approved by: [Signature]
 Date: 26/2/14 Date: 26/2/14



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Water Works Design and Supervision
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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS				
Client/Project: TAM Geo-Engineering P.L.C.				
SOURCE OF SAMPLE	Well			Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte			
DATE OF COLLECTION	18/2/2014			
DATE RECEIVED	19/2/2014			
CLIENTS ID.NO.	Alem gebeya			
LAB.ID NO.	1606/2006			
Colour (app)	Colourless			
Odor	Odorless			
Taste	Tasteless			
Turbidity (NTU)	Trace			7.0
Total Solids 105 ^o C (mg/l)	472.00			
T. Dissolved Solid 105 ^o C(mg/l)	460.00			1776.0
Electrical Conductivity (µS/cm)	706.00			
p ^H	7.10			6.5-8.5
Ammonia (mg/l NH ₃)	0.12			2.0
Sodium (mg/l Na)	109.00			358.0
Potassium (mg/l K)	11.90			
Total Hardness (mg/l Ca CO ₃)	160.00			392.0
Calcium (mg/l Ca)	45.60			
Magnesium (mg/l Mg)	11.04			
Total Iron (mg/l Fe)	0.16			0.4
Manganese (mg/l Mn)	0.09			0.13
Fluoride (mg/l F)	2.04			3.0
Chloride (mg/l Cl)	5.46			533.0
Nitrite (mg/l NO ₂)	0.05			6.0
Nitrate (mg/l NO ₃)	0.25			50.0
Alkalinity (mg/l CaCO ₃)	384.00			
Carbonate (mg/l CO ₃)	Nil			
Bicarbonate (mg/l HCO ₃)	468.48			
Sulphate (mg/l SO ₄)	0.44			483.0
Phosphate (mg/l PO ₄)	0.12			
Copper(mg/l Cu)	0.040			5.0
Aluminum(mg/l Al)	0.010			0.4
Chromium(mg/l Cr)	0.004			0.1
Boron(mg/l B)	0.025			0.3

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature] Processed By [Signature] Checked by: [Signature] Approved by: [Signature]
 Date: 25/2/14 Date 25/2/14 Date 26/2/14 Date: 26/2/14



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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS					
Client/Project: TAM Geo-Engineering P.L.C.					
SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Silte				
DATE OF COLLECTION	13/2/2014				
DATE RECEIVED	19/2/2014				
CLIENTS ID.NO.	Mito				
LAB.ID NO.	1605/2006				-
Colour (app)	Colourless				-
Odor	Odorless				-
Taste	Tasteless				-
Turbidity (NTU)	Trace				7.0
Total Solids 105 ^o C (mg/l)	270.00				-
T. Dissolved Solid 105 ^o C(mg/l)	260.00				1776.0
Electrical Conductivity (µS/cm)	420.00				-
p ^H	7.33				6.5-8.5
Ammonia (mg/l NH ₃)	0.11				2.0
Sodium (mg/l Na)	46.50				358.0
Potassium (mg/l K)	9.60				-
Total Hardness (mg/l Ca CO ₃)	132.00				392.0
Calcium (mg/l Ca)	33.60				-
Magnesium (mg/l Mg)	11.52				-
Total Iron (mg/l Fe)	0.04				0.4
Manganese (mg/l Mn)	0.01				0.13
Fluoride (mg/l F)	1.12				3.0
Chloride (mg/l Cl)	4.55				533.0
Nitrite (mg/l NO ₂)	0.01				6.0
Nitrate (mg/l NO ₃)	3.07				50.0
Alkalinity (mg/l CaCO ₃)	210.00				-
Carbonate (mg/l CO ₃)	Nil				-
Bicarbonate (mg/l HCO ₃)	256.20				-
Sulphate (mg/l SO ₄)	0.22				483.0
Phosphate (mg/l PO ₄)	0.17				-
Copper(mg/l Cu)	0.026				5.0
Aluminum(mg/l Al)	0.006				0.4
Chromium(mg/l Cr)	0.007				0.1
Boron(mg/l B)	0.051				0.3

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature] Processed By: [Signature] Checked by: [Signature] Approved by: [Signature]
 Date: 25/2/14 Date: 25/2/14 Date: 26/2/14 Date: 26/2/14



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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
 Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Sidama Zone				
DATE OF COLLECTION	19/2/2014				
DATE RECEIVED	25/2/2014				
CLIENTS ID.NO.	Teferi Kela				
LAB.ID NO.	1622/2006				
Colour (app)	Colourless				-
Odor	Odorless				-
Taste	Tasteless				-
Turbidity (NTU)	2.92				7.0
Total Solids 105 ^o C (mg/l)	216.00				-
T. Dissolved Solid 105 ^o C(mg/l)	200.00				1776.0
Electrical Conductivity (µS/cm)	302.00				-
p ^H	6.97				6.5-8.5
Ammonia (mg/l NH ₃)	0.16				2.0
Sodium (mg/l Na)	51.50				358.0
Potassium (mg/l K)	8.30				-
Total Hardness (mg/l Ca CO ₃)	50.00				392.0
Calcium (mg/l Ca)	12.80				-
Magnesium (mg/l Mg)	4.32				-
Total Iron (mg/l Fe)	0.32				0.4
Manganese (mg/l Mn)	0.01				0.13
Fluoride (mg/l F)	0.70				3.0
Chloride (mg/l Cl)	5.46				533.0
Nitrite (mg/l NO ₂)	0.13				6.0
Nitrate (mg/l NO ₃)	4.66				50.0
Alkalinity (mg/l CaCO ₃)	158.00				-
Carbonate (mg/l CO ₃)	Nil				-
Bicarbonate (mg/l HCO ₃)	192.76				-
Sulphate (mg/l SO ₄)	0.78				483.0
Phosphate (mg/l PO ₄)	0.26				-
Copper(mg/l Cu)	0.05				5.0
Aluminum(mg/l Al)	Trace				0.4
Chromium(mg/l Cr)	0.011				0.1
Boron(mg/l B)	Trace				0.3

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: FMS
 Date: 4/3/2014

Processed By: Teferi
 Date: 4/3/14

Checked by: [Signature]
 Date: 04/03/14

Approved by: [Signature]
 Date: 04/03/14



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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
 Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Wolaita				
DATE OF COLLECTION	3/3/2014				
DATE RECEIVED	3/3/2014				
CLIENTS ID.NO.	Adilo No-1				
LAB.ID NO.	1682/2006				
Colour (app)	Colourless				—
Odor	Odorless				—
Taste	Tasteless				—
Turbidity (NTU)	Trace				7.0
Total Solids 105 ⁰ C (mg/l)	196.00				—
T. Dissolved Solid 105 ⁰ C(mg/l)	186.00				1776.0
Electrical Conductivity (µS/cm)	289.00				—
P ^H	6.72				6.5-8.5
Ammonia (mg/l NH ₃)	0.15				2.0
Sodium (mg/l Na)	33.50				358.0
Potassium (mg/l K)	9.80				—
Total Hardness (mg/l Ca CO ₃)	86.00				392.0
Calcium (mg/l Ca)	23.20				—
Magnesium (mg/l Mg)	6.72				—
Total Iron (mg/l Fe)	0.06				0.4
Manganese (mg/l Mn)	Trace				0.13
Fluoride (mg/l F)	0.71				3.0
Chloride (mg/l Cl)	8.19				533.0
Nitrite (mg/l NO ₂)	0.01				6.0
Nitrate (mg/l NO ₃)	0.36				50.0
Alkalinity (mg/l CaCO ₃)	150.00				—
Carbonate (mg/l CO ₃)	Nil				—
Bicarbonate (mg/l HCO ₃)	183.00				—
Sulphate (mg/l SO ₄)	0.19				483.0
Phosphate (mg/l PO ₄)	0.65				—
Copper(mg/l Cu)	0.013				5.0
Aluminum(mg/l Al)	0.014				0.4
Chromium(mg/l Cr)	0.007				0.1
Boron(mg/l B)	0.042				0.3

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: *[Signature]*
 Date: 07/03/14

Processed By: *[Signature]*
 Date: 7/3/14

Checked by: *[Signature]*
 Date: 10/03/14

Approved by: *[Signature]*
 Date: 13/3/14



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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well				Ethiopian Standard maximum allowable Concentration (mg/l)
LOCATION	Wolaita				
DATE OF COLLECTION	3/3/2014				
DATE RECEIVED	3/4/2014				
CLIENTS ID.NO.	Adilo No-2				
LAB.ID NO.	1683/2006				
Colour (app)	Colourless				—
Odor	Odorless				—
Taste	Tasteless				—
Turbidity (NTU)	Trace				7.0
Total Solids 105 ⁰ C (mg/l)	198.00				—
T. Dissolved Solid 105 ⁰ C(mg/l)	190.00				1776.0
Electrical Conductivity (µS/cm)	295.00				—
p ^H	6.75				6.5-8.5
Ammonia (mg/l NH ₃)	0.21				2.0
Sodium (mg/l Na)	36.50				358.0
Potassium (mg/l K)	10.10				—
Total Hardness (mg/l Ca CO ₃)	92.00				392.0
Calcium (mg/l Ca)	24.00				—
Magnesium (mg/l Mg)	7.68				—
Total Iron (mg/l Fe)	0.11				0.4
Manganese (mg/l Mn)	Trace				0.13
Fluoride (mg/l F)	0.70				3.0
Chloride (mg/l Cl)	6.37				533.0
Nitrite (mg/l NO ₂)	0.01				6.0
Nitrate (mg/l NO ₃)	0.42				50.0
Alkalinity (mg/l CaCO ₃)	156.00				—
Carbonate (mg/l CO ₃)	Nil				—
Bicarbonate (mg/l HCO ₃)	190.32				—
Sulphate (mg/l SO ₄)	0.19				483.0
Phosphate (mg/l PO ₄)	0.27				—
Copper(mg/l Cu)	0.020				5.0
Aluminum(mg/l Al)	0.018				0.4
Chromium(mg/l Cr)	0.009				0.1
Boron(mg/l B)	0.036				0.3

REMARK:- The test result can be compared with the Ethiopian Standard maximum allowable concentration (mg/l) indicated on the last column. The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature]
Date: 07/03/14

Processed By: [Signature]
Date: 7/13/14

Checked by: [Signature]
Date: 10/03/14

Approved by: [Signature]
Date: 10/13/14



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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
 Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well			
LOCATION	Alemgeheya			
DATE OF COLLECTION	21/3/2014			
DATE RECEIVED	24/3/2014			
CLIENTS ID.NO.	Alemgebeya 8hr			
LAB.ID NO.	1997/2006			
Colour (app)	Colourless			
Odor	Odorless			
Taste	Tasteless			
Turbidity (NTU)	Trace			
Total Solids 105 °C (mg/l)	468.00			
T. Dissolved Solid 105 °C(mg/l)	460.00			
Electrical Conductivity (µS/cm)	723.00			
pH	7.27			
Ammonia (mg/l NH ₃)	0.34			
Sodium (mg/l Na)	113.00			
Potassium (mg/l K)	12.90			
Total Hardness (mg/l Ca CO ₃)	160.00			
Calcium (mg/l Ca)	51.20			
Magnesium (mg/l Mg)	7.68			
Total Iron (mg/l Fe)	0.05			
Manganese (mg/l Mn)	0.00			
Fluoride (mg/l F)	1.57			
Chloride (mg/l Cl)	5.46			
Nitrite (mg/l NO ₂)	0.01			
Nitrate (mg/l NO ₃)	1.17			
Alkalinity (mg/l CaCO ₃)	386.00			
Carbonate (mg/l CO ₃)	Nil			
Bicarbonate (mg/l HCO ₃)	470.92			
Sulphate (mg/l SO ₄)	0.19			
Phosphate (mg/l PO ₄)	0.27			
Copper(mg/l Cu)	0.033			
Aluminum(mg/l Al)	0.006			
Chromium(mg/l Cr)	Trace			
Boron(mg/l B)	0.040			
Zinc (mg/l)	0.128			

REMARK:- The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature]
 Date: 09/04/14

Processed By: [Signature]
 Date: 9/4/14

Checked by: [Signature]
 Date: 9/4/14

Approved by: [Signature]
 Date: 9/04/14



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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well			
LOCATION	Alemgeheya			
DATE OF COLLECTION	22/3/2014			
DATE RECEIVED	24/3/2014			
CLIENTS ID.NO.	Alemgebeya 24hr			
LAB.ID NO.	1998/2006			
Colour (app)	Colourless			
Odor	Odorless			
Taste	Tasteless			
Turbidity (NTU)	Trace			
Total Solids 105 °C (mg/l)	490.0			
T. Dissolved Solid 105 °C(mg/l)	480.0			
Electrical Conductivity (µS/cm)	737.00			
pH	7.2			
Ammonia (mg/l NH ₃)	0.32			
Sodium (mg/l Na)	112.00			
Potassium (mg/l K)	16.00			
Total Hardness (mg/l Ca CO ₃)	180.00			
Calcium (mg/l Ca)	56.00			
Magnesium (mg/l Mg)	9.60			
Total Iron (mg/l Fe)	0.07			
Manganese (mg/l Mn)	0.00			
Fluoride (mg/l F)	1.36			
Chloride (mg/l Cl)	6.37			
Nitrite (mg/l NO ₂)	0.09			
Nitrate (mg/l NO ₃)	2.33			
Alkalinity (mg/l CaCO ₃)	390.00			
Carbonate (mg/l CO ₃)	Nil			
Bicarbonate (mg/l HCO ₃)	475.80			
Sulphate (mg/l SO ₄)	0.19			
Phosphate (mg/l PO ₄)	0.21			
Copper(mg/l Cu)	0.0132			
Aluminum(mg/l Al)	0.014			
Chromium(mg/l Cr)	Trace			
Boron(mg/l B)	0.030			
Zinc (mg/l)	0.115			

REMARK:- The water sample was collected and submitted to our laboratory by the client.

Tested by: [Signature]
Date: 09/04/14

Processed By: [Signature]
Date: 9/04/14

Checked by: [Signature]
Date: 9/04/14

Approved by: [Signature]
Date: 9/04/14



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SELECTED PHYSIO CHEMICAL AND BACTERIOLOGICAL WATER ANALYSIS RESULTS
Client/Project: TAM Geo-Engineering P.L.C.

SOURCE OF SAMPLE	Well			
LOCATION	Sidama			
DATE OF COLLECTION	15/6/2014			
DATE RECEIVED	26/6/2014			
CLIENTS ID.NO.	BH-2 Teferi Kella			
LAB.ID NO.	2823/2006			
Colour (app)	Colourless			
Odor	Odorless			
Taste	Tasteless			
Turbidity (NTU)	Trace			
Total Solids 105 °C (mg/l)	248.00			
T. Dissolved Solid 105 °C(mg/l)	240.00			
Electrical Conductivity (µS/cm)	396.00			
p ^H	7.64			
Ammonia (mg/l NH ₃)	0.32			
Sodium (mg/l Na)	63.00			
Potassium (mg/l K)	4.00			
Total Hardness (mg/l Ca CO ₃)	66.00			
Calcium (mg/l Ca)	16.80			
Magnesium (mg/l Mg)	5.76			
Total Iron (mg/l Fe)	0.02			
Manganese (mg/l Mn)	Trace			
Fluoride (mg/l F)	1.38			
Chloride (mg/l Cl)	10.01			
Nitrite (mg/l NO ₂)	0.002			
Nitrate (mg/l NO ₃)	0.45			
Alkalinity (mg/l CaCO ₃)	198.00			
Carbonate (mg/l CO ₃)	Nil			
Bicarbonate (mg/l HCO ₃)	241.56			
Sulphate (mg/l SO ₄)	0.33			
Phosphate (mg/l PO ₄)	0.19			
Copper(mg/l Cu)	0.040			
Aluminum(mg/l Al)	0.002			
Chromium(mg/l Cr)	Trace			
Boron(mg/l B)	0.119			

REMARK:- The water sample was collected and submitted to our laboratory by the client.

Tested by: *[Signature]*
Date: 27/6/14

Processed By: *[Signature]*
Date: 27/6/14

Checked by: *[Signature]*
Date: 27/5/14

Approved by: *[Signature]*
Date: 27/5/14

