BASIC SURVEY FOR CONSTRUCTION OF BOREHOLE DATABASE IN AFRICAN COUNTRIES

USERS' MANUAL FOR BOREHOLE DATASET OF GRANT AID COOPERATION PROJECTS

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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) EARTH SYSTEM SCIENCE CO., LTD.

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1. Outline of Borehole Dataset constructing work

1.1. Project included in Borehole Dataset

The project list contained in the Borehole Dataset is shown in Table 1-1. Project ID is the symbol to identify the project that the borehole was constructed, and id given to each project. However, if a project is separated to plural phases and it is impossible to identify how many boreholes were drilled in each phase, there are several phases in the project, one ID is given to such project. Therefore, the number of Project ID is less than the number of each phase counted based on the E/N.

The locations of these boreholes are shown in Figure 1-1.

Country	Voor	Droject	Number	
Country	Teal	Tioject	of wells	
Angola	2001	PROJECT FOR WATER SUPPLY IN LUANDA PROVINCE (PHASE II)	7	
Benin	1988	PROJET POUR L'EXPLOITATION DES EAUX SOUTERRAINES (PHASE II)	135	
Benin	nin 1992 PROJET POUR L' EXPLOITATION DES EAUX SOUTERRAINES (PHASE III)			
Benin	1995	PROJET POUR L'EXPLOITATION DES EAUX SOUTERRAINES (PHASE IV)	415	
Benin	2005	PROJET D'APPROVISIONNEMENT EN EAU POTABLE DANS LA REGION RURALE (PHASE V)	293	
Benin	2009	DE L'ETUDE DU CONCEPT DE BASE POUR LE PROJET D'APPROVISIONNEMENT EN EAU POTABLE DANS LA REGION RURALE (PHASE VI)	15	
Benin	2009	PROJET D' APPROVISIONNEMENT EN EAU POTABLE DANS LA REGION RURALE (PHASE VI)	176	
Benin	2016	DE L'ETUDE DU PLAN DE BASE SUR LE PROJET D'APPROVISIONNEMENT EN EAU POTABLE PAR L'EXPLOITATION DES EAUX SOUTERRAINES DES COMMUNES DE GLAZOUÉ ET DE DASSA-ZOUMÉ	20	
Burkina Faso	1998	PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN VUE DE L'ERADICATION DU VER DE GUINEE (T-1)	90	
Burkina Faso	1999	PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN VUE DE L'ERADICATION DU VER DE GUINEE (T-2)	249	
Burkina Faso	2000	PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN VUE DE L'ERADICATION DU VER DE GUINEE (T-3)	130	
Burkina	2009	PROJET DE L'APPROVISIONNEMENT EN EAU POTABLE DANS LE PLATEAU CENTRAL ET LE CENTRE SUD (T-1)	130	
Burkina	2010	PROJET DE L'APPROVISIONNEMENT EN EAU POTABLE DANS LE PLATEAU CENTRAL ET LE CENTRE SUD (T. 2)	204	
Burkina Faso	2011	PROJET DE L'APPROVISIONNEMENT EN EAU POTABLE DANS LE PLATEAU CENTRAL ET LE CENTRE SUD (T-3)	100	
Burkina Faso	2012	PROJECT FOR CONSTRUCTION OF THE HEALTH AND SOCIAL PROMOTION CENTERS	33	
Burkina Faso	2013	PROJET DE L'APPROVISIONNEMENT EN EAU POTABLE DANS LE PLATEAU CENTRAL ET LE CENTRE SUD (PHASE2, T-1)	159	
Burkina Faso	2014	PROJET DE L'APPROVISIONNEMENT EN EAU POTABLE DANS LE PLATEAU CENTRAL ET LE CENTRE SUD (PHASE2, T-2)	264	
Burkina Faso	2015	PROJET DE L'APPROVISIONNEMENT EN EAU POTABLE DANS LE PLATEAU CENTRAL ET LE CENTRE SUD (PHASE2, T-3)	161	
Cameroon	1995	PROJECT FOR RURAL WATER SUPPLY (T-2)	14	
Cameroon	1996	PROJECT FOR RURAL WATER SUPPLY (T-3)	16	
Cameroon	2006	PROJET D'HYDRAULIQUE RURAL (PHASE IV, T-1)	101	
Cameroon	2007	PROJET D'HYDRAULIQUE RURAL (PHASE IV, T-2)	138	
Cameroon	2012	PROJECT FOR RURAL WATER SUPPLY (T-1)	70	
Cote d'Ivoire	1997	PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN MILIEU RURAL (T-2)	92	
Cote d'Ivoire	1998	LE PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN MILIEU RURAL (T- 3)	293	

Table 1-1 Projects stored in the Borehole Dataset

Country	Year	Project	Number of wells			
Cote d'Ivoire	2015	PROJECT ON HUMAN RESOURCE DEVELOPMENT FOR STRENGTHENING LOCAL ADMINISTRATION IN CENTRAL AND NORTHERN AREAS	46			
Cote d'Ivoire	1992, 1993, 1993	, PROJET HYDRAULIQUE VILLAGEOISE DANS LA REGION DU NORD				
Eswatini	1997	RURAL WATER SUPPLY PROJECT	154			
Eswatini	2001	BASIC DESIGN STUDY PROJECT FOR RURAL WATER SUPPLY (PHASE 2)	15			
Eswatini	2002	PROJECT FOR RURAL WATER SUPPLY (PHASE 2)	111			
Ethiopia	2005	PROJECT FOR THE WATER SUPPLY IN SOUTHERN NATIONS; NATIONALITIES AND PEOPLE' REGIONAL STATE (T-1)	144			
Ethiopia	2006	PROJECT FOR THE WATER SUPPLY IN SOUTHERN NATIONS; NATIONALITIES AND PEOPLE' REGIONAL STATE (T-2)	199			
Ethiopia	2008	PROJECT FOR RURAL WATER SUPPLY IN OROMIA REGION (T-1)	31			
Ethiopia	2008	PROJECT FOR RURAL WATER SUPPLY IN TIGRAY REGION	122			
Ethiopia	2009	PROJECT FOR RURAL WATER SUPPLY IN OROMIA REGION (T-2)	41			
Ethiopia	2010	PROJECT FOR RURAL WATER SUPPLY IN OROMIA REGION (T-3)	6			
Ethiopia	2011	PROJECT FOR KUKAL WATER SUPPLY IN OROMIA REGION (1-4)	13			
Gambia	2004, 2005, 2006	PROJECT FOR INTEGRATED WATER USE (PHASE II)	26			
Ghana	2000	PROJECT FOR RURAL WATER SUPPLY (PHASE IV)	178			
Ghana	1990, 1991	PROJECT FOR RURAL WATER SUPPLY (PHASE II)	247			
Guinea	1999	PROJET D'APPROVISIONNEMENT RURAL EN EAU POTABLE DE LA GUINEE MARITIME (T-1)	17			
Guinea	2000	PROJET D'APPROVISIONNEMENT RURAL EN EAU POTABLE DE LA GUINEE MARITIME (T-2)	125			
Guinea	2001	PROJET D'APPROVISIONNEMENT RURAL EN EAU POTABLE DE LA GUINEE MARITIME (T-3)	115			
Kenya	2006	PROJECT FOR RURAL WATER SUPPLY (PHASE I)	78			
Kenya	2011	SECOND PREPARATORY SURVEY ON THE PROJECT FOR RURAL WATER SUPPLY IN BARINGO COUNTY	10			
Kenya	2011	PROJECT FOR RURAL WATER SUPPLY (PHASE2)	73			
Kenya	2014, 2015	PROJECT FOR RURAL WATER SUPPLY IN BARINGO COUNTY	135			
Lesotho	1995	WATER SUPPLY AND SANITATION PROJECT FOR PRIMARY SCHOOLS (STAGE-1)	134			
Lesotho	1996	WATER SUPPLY AND SANITATION PROJECT FOR PRIMARY SCHOOLS (STAGE-2)	67			
Madagascar	2000	PROJET DE L'EXPLOITATION DES EAUX SOUTERRAINES DANS LA REGION SUD-OUEST (PHASE II, T-1)	11			
Madagascar	2003	PROJET DE L'EXPLOITATION DES EAUX SOUTERRAINES DANS LA REGION SUD-OUEST (PHASE II, T-3)	67			
Madagascar	2004	PROJET DE L'EXPLOITATION DES EAUX SOUTERRAINES DANS LA REGION SUD-OUEST (PHASE II, T-4)	83			
Malawi	1992	MCHINJI GROUNDWATER DEVELOPMENT PROJECT (T-1)	112			
Malawi	1993	MCHINJI GROUNDWATER DEVELOPMENT PROJECT (T-2)	110			
Malawi	1997	RURAL WATER SUPPLY PROJECT IN THE WEST OF MZIMBA DISTRICT (T-2)	295			
Malawi Malawi	1998 2006	KURAL WATER SUPPLY PROJECT IN THE WEST OF MZIMBA DISTRICT (T-3) PROJECT FOR THE GROUNDWATER DEVELOPMENT IN LILONGWE WEST (T-	148 24			
Malawi	2007	2) PROJECT FOR THE GROUNDWATER DEVELOPMENT IN LILONGWE WEST (T-	129			
Malawi	2010	PROJECT FOR SELECTED MARKET CENTRES AND RURAL WATER SUPPLY IN MCHINII AND KASUNGU DISTRICT	12			
Malawi	2011	BASIC DESIGN STUDY PROJECT FOR GROUNDWATER DEVELOPMENT IN MWANZA AND NENO	5			
Malawi	2011	PROJECT FOR GROUNDWATER DEVELOPMENT IN MWANZA AND NENO	123			

Country	Year	Project	Number of wells
Malawi	2012	PROJECT FOR SELECTED MARKET CENTRES AND RURAL WATER SUPPLY IN MCHINJI AND KASUNGU DISTRICT	334
Mali	1999	LE PROJET D'ALIMENTATION EN EAU POTABLE DANS LES CERCLES DE KATI, KOULIKORO ET KANGABA (T-1)	106
Mali	2000	LE PROJET D'ALIMENTATION EN EAU POTABLE DANS LES CERCLES DE KATI, KOULIKORO ET KANGABA (T-2)	139
Mali	2003	PROJET D'APPROVISIONNEMENT EN EAU POTABLE DANS LES REGIONS DE KAYES, SEGOU ET MOPTI (T-1)	38
Mali	2004	PROJET D'APPROVISIONNEMENT EN EAU POTABLE DANS LES REGIONS DE KAYES, SEGOU ET MOPTI (T-2)	135
Mali	2005	PROJET D'APPROVISIONNEMENT EN EAU POTABLE DANS LES REGIONS DE KAYES, SEGOU ET MOPTI (T-3)	129
Mali	2009	PROJET D'ALIMENTATION EN EAU POTABLE DANS LA RÉGION DE SIKASSO	187
	1993.	PROJET POUR L'HHYDRAULIOUE VILLAGEOISE VISANT A L'ERADICATION	
Mali	1993, 1994	DU VER DE GUINEE	717
Mauritania	1997	LE PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN VUE DE L'ERADICATION DU VER DE GUINEE (PHASE 1)	28
Mauritania	1998	LE PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN VUE DE L'ERADICATION DU VER DE GUINEE (PHASE 2, T-1)	92
Mauritania	1999	LE PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN VUE DE L'ERADICATION DU VER DE GUINEE (PHASE 2, T-2)	150
Mauritania	2000	LE PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN VUE DE L'ERADICATION DU VER DE GUINEE (PHASE 2, T-3)	93
Mauritania	2004	PROJET D'APPROVISIONNEMENT EN ÉAU POTABLE DANS LA REGION AUSTRALE (T-1)	17
Mauritania	2005	PROJET D'APPROVISIONNEMENT EN EAU POTABLE DANS LA REGION AUSTRALE (TRANCH 2)	24
	1993		
Mauritania	~	PROJET D'HYDROULIIQUE RURALE DU CENTRE-SUD MAURITANEN	232
Mozambique	1996	PROJECT FOR THE DEVELOPMENT OF RURAL DRINKING WATER SUPPLY IN GAZAPROVINCE (T-1)	30
Mozambique	1996	PROJECT FOR THE DEVELOPMENT OF RURAL DRINKING WATER SUPPLY IN GAZAPROVINCE (T-2)	178
Mozambique	2000	PROJECT FOR GROUNDWATER DEVELOPMENT FOR RURAL WATER SUPPLY IN ZAMBEZIA PROVINCE (T-1)	26
Mozambique	2001	PROJECT FOR GROUNDWATER DEVELOPMENT FOR RURAL WATER SUPPLY IN ZAMBEZIA PROVINCE (T-2)	86
Mozambique	2002	PROJECT FOR GROUNDWATER DEVELOPMENT FOR RURAL WATER SUPPLY IN ZAMBEZIA PROVINCE (T-3)	59
Niger	1987	PROJECT FOR RURAL WATER SUPPLY (T-1)	25
Niger	1988	PROJECT FOR RURAL WATER SUPPLY (T-2)	82
Niger	1990	PROJET D'EXPLOITATION DES EAUX SOUTERRAINES	108
Niger	1990	PROJET DE REHABILITATION DE LA REGION DE OUALLAM EN REPUBLIQUE	18
Niger	1991	PROJET NOLK (1-1) PROJET DE REHABILITATION DE LA REGION DE OUALLAM EN REPUBLIQUE DU NICEP (T. 2)	51
Niger	1992	PROJET DE REHABILITATION DE LA REGION DE OUALLAM EN REPUBLIQUE	38
Niger	1994	PROJET DE REHABILITATION DE LA REGION DE OUALLAM EN REPUBLIQUE	17
Niger	1995	PROJECT DE REHABILITATION DE LA REGION DE OUALLAM EN REPUBLIQUE	46
Niger	1996	PROJET DE REHABILITATION DE LA REGION DE OUALLAM EN REPUBLIQUE	22
Niger	1997	PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN VUE DE	19
		DEKADICATION DU VER DE GUINEE (T-1)	-
Niger	1998	DU VER DE GUINEE (T-2)	106

Country	Year	Project	Number of wells
Niger	2005	PROJET D'APPROVISONMENT EN EAU POTABLE EN VUE DE L'ERADICATION DU VER DE GUINEE DANS LA REGION DE ZINDER (T-2)	55
Niger	2006	PROJET D'APPROVISONMENT EN EAU POTABLE EN VUE DE L'ERADICATION DU VER DE GUINEE DANS LA REGION DE ZINDER (T-3)	130
Niger	2009, 2010	PROJET D' APPROVISIONNEMENT EN EAU POTABLE EN VUE DE L' ÉRADICATION DU VER DE GUINÉE DANS LA RÉGION DE TILLABÉRI (T-2, 3)	240
Senegal	2004	PROJET D'APPROVISIONNEMENT EN EAU EN MILIEU RURAL (T-1)	7
Senegal	2005	PROJET D'APPROVISIONNEMENT EN EAU EN MILIEU RURAL (T-2)	8
Senegal	2009	PROJET D'APPROVISIONNEMNET EN EAU POTABLE DANS LA RÉSION DE TAMBACOUNDA	21
Senegal	2015	PROJET DE L'APPROVISIONNEMENT EN EAU POTABLE ET DE L'AMÉLIORATION DES CONDITIONS D'HYGIÈNE DANS LES ZONES RURALES	5
South Africa	2003	PROJECT FOR RURAL WATER SUUPLY AND PROVISION OF SANITATION IN EASTERN CAPE (T-1)	23
Tanzania	1996	PROJECT FOR IMPROVEMENT OF WATER SUPPLY AND MEDICAL SERVICE IN REFUGEES AFFECTED AREAS OF KAGERA REGION (T-1)	70
Tanzania	1997	PROJECT FOR IMPROVEMENT OF WATER SUPPLY AND MEDICAL SERVICE IN REFUGEES AFFECTED AREAS OF KAGERA REGION (T-2)	61
Tanzania	2004	BASIC DESIGN STUDY PROJECT FOR WATER SUPPLY DEVELOPMENT AROUND THE METROPOLITAN AREA	10
Tanzania	2004	PROJECT FOR RURAL WATER SUPPLY IN LINDI AND MTWARA REGIONS (T-2)	155
Tanzania	2005	PROJECT FOR RURAL WATER SUPPLY IN LINDI AND MTWARA REGIONS (T-3)	79
Tanzania	2006	PROJECT FOR ZANZIBAR URBAN WATER SUPPLY DEVELOPMENT	7
Tanzania	2007	DETAIL DESIGN STUDY PROJECT FOR WATER SUPPLY DEVELOPMENT AROUND THE METROPOLITAN AREA	24
Tanzania	2007	PROJECT FOR ZANZIBAR URBAN WATER SUPPLY DEVELOPMENT (PHASE 2)	6
Tanzania	2008	PROJECT FOR WATER SUPPLY DEVELOPMENT AROUND THE METROPOLITAN AREA	21
Tanzania	2009	PROJECT FOR RURAL WATER SUPPLY IN MWANZA AND MARA REGIONS	64
Tanzania	2007	PROJECT OF RURAL WATER SUPPLY IN TABORA REGION	16
Tanzania	2011	STUDY ON WATER RESOURCES MANAGEMENT AND DEVELOPMENT IN WAM/RUVU BASIN	19
	2012		
Tanzania	~	PROJECT OF RURAL WATER SUPPLY IN TABORA REGION	261
Togo	1085	PROJET DU DEVELOPPEMENT DES EAUX SOUTERRAINES (T.1)	3
Togo	1986	PROJET DU DEVELOPPEMENT DES EAUX SOUTERRAINES (T-1)	98
Togo	1000	$PROJECT EOR GROUNDWATER DEVELOPMENT (T_1)$	24
Togo	1991	PROJECT FOR GROUNDWATER DEVELOPMENT (T-1)	175
Togo	1997	PROJECT FOR OROUTED WITHER DEVELOTION (1 2)	37
Togo	1998	PROJET D'APPROVISIONNEMENT EN EAU POTABLE EN MILIEU RURAL (T-2)	587
Тодо	2010	RAPPORT DE L'ETUDE PREPARATOIRE (DEUXIEME) SUR LE PROJET D'APPROVISIONNEMENT EN EAU POTABLE ET ASSAINISSEMENT EN MILIEU	14
Togo	2011	RUKAL ET SEMI-URBAIN DANS LES REGIONS MARITIME ET SAVANES PROJET D'APPROVISIONNEMENT EN EAU POTABLE ET ASSAINISSEMENT EN MILIEU RURAL ET SEMI-URBAIN DANS LES RÉGIONS MARITIME ET	141
Uganda	1997	SAVANES PROJECT FOR RURAL WATER SUPPLY (PHASE I)	60
Uganda	1997	PROJECT FOR RURAL WATER SUPPLY (PHASE 2, T-2)	218
Uganda	1999	PROJECT FOR RURAL WATER SUPPLY (PHASE 2, T-1)	172
Uganda	1999	PROJECT FOR RURAL WATER SUPPLY (PHASE 2, T-3)	193
Uganda	2003	PROJECT FOR RURAL WATER SUUPLY (PHASE II, T-1)	77
Uganda	2004	PROJECT FOR RURAL WATER SUUPLY (PHASE II, T-2)	110
Uganda	2010	DEVELOPMENT STUDY ON WATER RESOURCES DEVELOPMENT AND MANAGEMENT FOR LAKE KYOGA BASIN	20
Uganda	2012	PREPARATORY SURVEY PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION	10
Uganda	2013	PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RESETTLED INTERNALLY DISPLACED PERSONS IN ACHOLI SUB-REGION	101

Country	Year	Project	Number of wells
Uganda	2015	PREPARATORY SURVEY PROJECT FOR RURAL WATER SUPPLY PHASE III IN LAKE KYOGA BASIN, EASTERN UGANDA	20
Uganda	2017	PROJECT FOR RURAL WATER SUPPLY IN LAKE KYOGA BASIN, EASTERN UGANDA	1
Zambia	1985	GROUND WATER DEVELOPMENT PROJECT	51
Zambia	1988	PROJECT FOR GROUNDWATER DEVELOPMENT IN SOUTHERN PROVINCE	48
Zambia	1991	PROJECT FOR RURAL WATER SUPPLY DEVELOPMENT (T-1)	20
Zambia	1992	PROJECT FOR RURAL WATER SUPPLY DEVELOPMENT (T-2)	112
Zambia	1993	PROJECT FOR RURAL WATER SUPPLY DEVELOPMENT (T-3)	52
Zambia	1994	PROJECT FOR RURAL WATER SUPPLY DEVELOPMENT (T-4)	63
Zambia	1994	URGENT WATER SUPPLY PROJECT IN SATELLITE AREA OF LUSAKA (T-2)	4
Zambia	1994	URGENT WATER SUPPLY PROJECT IN SATELLITE AREA OF LUSAKA (T-3)	2
Zambia	1994	URGENT WATER SUPPLY PROJECT IN SATELLITE AREA OF LUSAKA (T-4)	2
Zambia	1997	SOUTHERN PROVINCE WATER SUPPLY PROJECT (PHASE II, T-2)	195
Zambia	1997	RURAL WATER SUPPLY PROJECT IN BINGA DISTRICT (T-1)	8
Zambia	1998	PROJECT FOR CONSTRUCTION OF BASIC SCHOOLS IN LUSAKA (T-1)	4
Zambia	1998	RURAL WATER SUPPLY PROJECT IN BINGA DISTRICT (T-2)	41
Zambia	1999	PROJECT FOR CONSTRUCTION OF BASIC SCHOOLS IN LUSAKA (T-2)	4
Zambia	2000	PROJECT FOR GROUNDWATER DEVELOPMENT AND SANITAION IMPROVEMENT IN DROUGHT PRONE RURAL AREAS (T-2)	252
Zambia	2001	PROJECT FOR GROUNDWATER DEVELOPMENT AND SANITAION IMPROVEMENT IN DROUGHT PRONE RURAL AREAS (T-3)	204
Zambia	2004	PROJECT FOR GROUNDWATER DEVELOPMENT AND SANITAION IMPROVEMENT IN NORTHERN PROVINCE (T-1)	84
Zambia	2005	PROJECT FOR GROUNDWATER DEVELOPMENT AND SANITAION IMPROVEMENT IN NORTHERN PROVINCE (T-2)	173
Zambia	2010	PROJECT FOR GROUNDWATER DEVELOPMENT IN LUAPULA PROVINCE (PHASE 2)	312
Zimbabwe	2014	PROJECT FOR GROUNDWATER DEVELOPMENT IN LUAPULA PROVINCE (PHASE 3)	268
Zimbabwe	2007, 2008	PROJECT FOR GROUNDWATER DEVELOPMENT IN LUAPULA PROVINCE	280

Projects with Additional Information only

Country	Year	Project Name	Number of wells
Benin	2015	PROJET D'APPROVISIONNEMENT EN EAU POTABLE PAR L'EXPLOITATION DES EAUX OUTERRAINES DES COMMUNES DE GLAZOUÉ ET DE DASSA- ZOUMÉ	4
Uganda	2021	BASIC SURVEY FOR CONSTRUCTION OF BOREHOLE DATABASE OF AFRICAN COUNTRIES	



Figure 1-1 Location of the boreholes contained in the Dataset

1.2. Folders and files constituting the Dataset

The Borehole Dataset is a folder as shown in Figure 1.3. The folder consists of Borehole Dataset MS Excel files and five (5) folders. Borehole Dataset MS Excel files is composed of seven (7) sheets: Borehole Information, Additional Information, Update Information, Latest Information, Project Information, Local Administrative Division and Project Extraction sheets. Five (5) folders are geological column folder (GC), geophysical survey folder (GS), map folder (MAP), photo folder (PHOTO) and pumping test folder (PT).



Figure 1-2 Structure of folders and a file in Borehole Dataset

1.3. Information contained in the Borehole Dataset MS Excel File

The information contained in the Borehole Dataset MS Excel File is given below.

1.3.1. Information about well locations, drilling, pumping tests, and facilities

Data related to borehole location (coordinates), drilling results, pumping test, water quality analysis, facilities installed to the borehole are stored in the Borehole Information sheet. In case of that the stored boreholes were newly surveyed: pumping test, water quality analysis or measurement of coordinates, such data are stored in Additional information sheet, Update information sheet or Latest Information sheet. Table 1-2 shows the items of data related to borehole location, drilling results pumping test and facilities.

The field name indicates the data stored in the column by one name. The item name contains large, medium, and small classifications in the column, therefore it is not suitable as a name when using the Borehole Information sheet for other tool or software, such as GIS. The field name should be used in such case.

			1		
	Item	Content	Field Name	Notation	Notation when data is unknown
					or not existing
	Project ID	Project identification name	Project_ID	ISO country code & three digits number	
	Borehole ID	Borehole identification name	Borehole_ID	Project ID & three digits number	
	ISO Country code	ISO Alpha-3 Country Code	ISO_Country_ code	Three-letter uppercase alphabet	
	ISO Country number	ISO numeric country code	ISO_Country_ no	Three digits number	
	Country	Name of country	Country		
	Local Level 1		L_level_1	-	
	Local Level 2	1	L_level_2	1	
	Local Level 3	Local administrative	L level 3	Uppercase alphabet	··_"
	Local Level 4	division name of	L level 4		
	Local Level 5	each level	L level 5		
	Local Level 6		L level 6	1	
ц	Borehole No. in the project	Borehole ID used in each project	Bore_no	Half-width alphanumerical text	٠٠_››
informati	Registered Borehole No.	Production well number registered with relevant agency	Reg_bore_no	Half-width alphanumerical text	دد_ی
inc	Latitude	Latitude or longitude of well or village	Lat	4 digits after the decimal point	
ole locatic	Longitude		Long	in degrees Minus (-) notation for south latitude and west longitude	«_»
Boreh	Altitude	Altitude of well or village	Altitude	Integer	··_"
	UTM Zone	Borehole or village	UTM_Zone	Half-width alphanumerical text	ss 22
	UTM X	coordinates III 0 I M	UTM_X	T .	· · · · · · · · · · · · · · · · · · ·
	UTM Y	coordinate system	UTM_Y	Integer	
	Coordinate Collected point	Drilling point or village	Coordinate point	Half-width alphanumerical text	··_·"
	Accuracy	Value according to the accuracy of latitude and longitude	Lat_long _accuracy	Integer in m unit	"_"
	Map	Link to map image	Map_link	"IMAGE" with relative hyperlink function	··_·"
	Positive or Negative Borehole	Successful or failed well	Success_fail_ well	"Success" or "Fail"	"Unknown" in case of unsure
Borehole Information	Reason for Negative	Reason for failure	Reason _negative	Half-width alphanumerical text	"-" for successful well, "Unknown" if the reason for failure is unknown
	Positive or Negative Quality	Whether the water quality meets the standard	WQ_positive /negative	"Pass" or "Fail" or "Possible with condition"	"-"in case of dry well or no water quality data
	Remarks	Information on artesian well or with	Remarks	Half-width alphanumerical text	Blank if there is no information to describe

Table 1-2 Items for well location, drilling, pumping test and facilities

		Item		Content	Field Name	Notation	Notation when data is unknown or not existing
	i			iron removal device, etc.			
	N	ew constr Rehabilit	uction / ation	New construction well or rehabilitation well	New/rehabili	"New Construction" or "Rehabilitation"	"Unknown" in case of unsure
	'sical ey	Present/Absent		Presence or absence of geophysical survey data	Gs_present /absent	"Present" or "Absent"	
	eophy Surv	Surv	vey Data	Link to geophysical survey image	Gs_image _link	"IMAGE" with relative hyperlink function	···"
	0	Sur	vey No.	ID number of geophysical survey	Gs_survey_no	Half-width alphanumerical text	
		Drilling	Date	Starting date of drilling	Drill_date	"dd/mmm/yyyy" MS Excel format	"Unknown" in case of unsure
	lling	Bi	t Туре	Bit type of finishing drilling hole such as DTH, Tricone, etc.	Bit_type	Half-width alphanumerical text	"Unknown" in case of unsure
	ng dri rehole	Drilling	g Diameter	Diameter of finishing drilling	Drill_dia	Number with unit (inches, rarely with m)	"Unknown" in case of unsure
	inishi bo	Drilli	ng Liquid	Drilling liquid of finishing drilling	Drill_liquid	Half-width alphanumerical text	"Unknown" in case of unsure
	ц	Drill	ed Depth	Drilled depth	Drill_depth	One digit after the decimal point in m	"Unknown" in case of unsure
		Drilling	Rate	Presence or absence of drilling rate in geological column image	Drill_rate	"Present" or "Absent"	
	Water V	Strike De Vater Lost	epth or Mud Depth	Presence or absence of depth of water strike or water lost in geological column image	Water_strike_ depth	"Present" or "Absent"	"Absent" for dry well
	Water	Yield by	Air Lifting	Discharge by airlift while developing borehole	Yield_air_lift	One digit after the decimal point in m3/h	"-" for dry well, "Unknown" in case of unsure
	Acc	eptable Yi	ield or not	Whether the discharge is acceptable or not	Yield_accept_ not	"Pass" or "Fail"	"Unknown" in case of unsure
		Inst	allation	Whether casing was installed or not	Case_install	"Installed" or "Not Installed"	"Unknown" in case of unsure
		Material		Material of casing	Case_material	Half-width alphanumerical text	"-" for not installed, "Unknown" in case of unsure
	Casing	Diameter Size		Outer diameter of casing	Case_dia	Number with unit (inches, rarely with m)	"-" for not installed, "Unknown" in case of unsure
		Installed Depth		Installed depth of casing	Case_depth	One digit after the decimal point in m	"-" for not installed, "Unknown" in case of unsure
		Тор	Тор	From the top to the	Scr_1_top	One digit after the decimal	"-" for no
		Screen	Bottom	bottom, the top and	Scr_1_bottom	point in m	screen,
			Top	bottom of the	Scr_2_top	-	"Unknown" in

Item				Content	Field Name	Notation	Notation when data is unknown or not existing
		2nd	Bottom	screen, their	Ser 2 bottom		case of unsure
		Screen	Dottolli	respective positions	Sel_2_bottom		depth
		3rd	Тор	(depths)	Scr_3_top		
		Screen	Bottom		Scr_3_bottom		
		4th	Тор	-	Scr_4_top		
		Screen	Bottom		Scr_4_bottom		
		5th	Тор	-	Scr_5_top		
		Screen	Bottom	-	Scr_5_bottom		
		Screen	Bottom		Scr_6_top		
		7th	Top	-	Scr. 7 top		
		Screen	Bottom		Scr 7 bottom		
		8th	Top		Scr 8 top		
		Screen	Bottom		Scr 8 bottom		
		9th	Top		Scr 9 top	•	
		Screen	Bottom		Scr 9 bottom		
		10th	Тор		Scr_10_top		
		Screen	Bottom		Scr_10_bottom		
		11th	Тор		Scr_11_top		
		Screen	Bottom		Scr_11_bottom		
							0.0 for no
				Sum of the lengths	Scr total	One digit after the decimal	screen,
		Total Sc	creen Length	of the screens	length	point in m	"Unknown" in
					Ū.	-	case of unsure
				Presence or absence			lengui
	Geological Column			of glaciological column	Geo_co_prese nt/absent	"Present" or "Absent"	
	logging	Logg	ging data	Presence or absence of logging image in glaciological column image	Log_present /absent	"Present" or "Absent"	
	ole	Item 1		Logging parameter	Log_name_1		e
	reh	Item 2		such as	Log_name_2	Half-width alphanumerical	«» »»
	Bc	Item 3 Item 4		"Resistivity", "SP",	Log_name_3	text	-
				"Gamma" etc.	Log_name_4		
	surement	Measure	ement Level	Water level measurement reference such as "Ground Level", "Casing Top", "Super Structure"	Measur_level	Alphanumerical text	"Unknown" for unsure reference
	Level Me	Height f I	rom Ground Level	Height from ground to measurement reference	Height_from_ ground	Two digits after the decimal point in m	"Unknown" for unsure reference
	Water]	Natural	water level	Static water level	WL_natural	Two digits after the decimal point in m	"-" for dry well, "-" for unsure level and "@" for artesian well
		Column I	mage	Link to geological	Column	"IMAGE" with relative	۰۰_٫٫
┝──┤			~	Column image	_1mage_11nk	"dd/mmm/unur" MS Errest	"" for re
Pu m	Т	est Startir	ng Date	pumping test	Pt_date	format	- for no pumping test,

	Item			Content	Field Name	Notation	Notation when data is unknown or not existing
							"Unknown" for
			Discharging Rate	Discharge of 1 st step draw-down pumping test	Pt_1_discharge	Two digits after the decimal point in m3/h	"-" for no
		1 st step	Pumping Time	Pumping time of 1st step draw-down pumping test	Pt_1_time	Integer in minutes	"Unknown" for unsure
			Dynamic Water Level	Dynamic water level of 1st step draw- down pumping test	Pt_1_dd_wl	Two digits after the decimal point in m	data
			Discharging Rate		Pt_2_discharge		
		2nd step	Pumping Time		Pt_2_time		
			Dynamic Water Level		Pt_2_dd_wl		
	3 rd step		Discharging Rate		Pt_3_discharge		
		3rd step	Pumping Time		Pt_3_time		
			Dynamic Water Level		Pt_3_dd_wl		
			Discharging Rate		Pt_4_discharge		
	n Test	4 th step	Pumping Time		Pt_4_time		
	v Dow		Dynamic Water Level		Pt_4_dd_wl		
	o Drav		Discharging Rate		Pt_5_discharge		
	Stel	5 th step	Pumping Time	Measurement data of the second and	Pt_5_time		
			Dynamic Water Level	subsequent stages of pumping test	Pt_5_dd_wl	Same as above	Same as above
			Discharging Rate		Pt_6_discharge		
		6 th step	Pumping Time		Pt_6_time		
			Dynamic Water Level		Pt_6_dd_wl		
			Discharging Rate		Pt_7_discharge		
		7 th step	Pumping Time		Pt_7_time		
			Dynamic Water Level		Pt_7_dd_wl		
	8 th step	Discharging Rate		Pt_68discharge			
		Pumping Time		Pt_8_time			
			Dynamic Water Level		Pt_8_dd_wl		
		9 th step	Discharging Rate		Pt_9_discharge		

		Item		Content	Field Name	Notation	Notation when data is unknown or not existing
			Pumping Time Dynamic		Pt_9_time Pt_9_dd_wl		
	est	Starting	Water Level	Water level when pumping test started	Pt_c_s_wl	Two digits after the decimal point in m	Same as above
	mt Rate Te	Discha Pump Draw D	arging Rate Ding Time Down Level	Same as step draw- down pumping test	Pt_c_discharge Pt_c_time Pt_c_dd_wl	Same as step draw-down pumping test	Same as step draw-down pumping test
	Consta	Specifi	ic Capacity	Specific capacity of continuous pumping test	Pt_c_s_c	Two digits after the decimal point in m3/h/m	"-" for unsure
	cover Test	Measur	ement Time	Period of recovery test	Pt_r_time	Same as continuous pumping	Same as continuous
	Rec y	Recov	ered Water Level	Water level just after recovery test	Pt_r_wl	test	pumping test
	sis	Transmis	sibility	Transmissibility coefficient of continuous pumping test	Pt_c_transm	Exponential form with two decimal places in m2/min	"-" for no pumping test
	Test Analy:	Pern	neability	Permeability coefficient of continuous pumping test	Pt_c_perme	Exponential form with two decimal places in cm/sec	"-" for no pumping test
	Pumping	Trans	missibility	Transmissibility coefficient of recovery test	Pt_r_transm	Exponential form with two decimal places in m2/min	"-" for no pumping test
		Pern	neability	Permeability coefficient of recovery test	Pt_r_perme	Exponential form with two decimal places in cm/sec	"-" for no pumping test
		Analyzed	Data	Presence or absence of pumping test image	Pt_image_pres ent/absent	"Present" or "Absent"	
	F	ump Test	Image	Link to pumping test image	Pt_image_link	"IMAGE" with relative hyperlink function	··_·"
		Тур	9	Type of pump such as "Hand or foot pump", "Submersible"	Pump_type	Alphanumerical text	"-" for no pump installation, "Unknown" for unsure pump type
du		Mode	el	Model of pump	Pump_model	Alphanumerical text	"-" for no pump installation, "Unknown" for unsure pump model
Pu		Specific	ation	Specification of pump, such as its diameter	Pump_dia	Alphanumerical text	"-" for no pump installation, "Unknown" for unsure pump specification
		Installed	Depth	Installation depth of pump	Pump_depth	One digits after the decimal point in m	"-" for no pump installation, "Unknown" for unsure pump depth

	Item	Content	Field Name	Notation	Notation when data is unknown or not existing
	Platform	Presence or absence of platform of well	Platform	"Present" or "Absent"	"Unknown" for unsure
llity	Constructional Purpose	Purpose of well	Level_1 /level_2	Alphanumerical text	"-" for negative well
Fac	Holder	Holder of well	Holder_well	Alphanumerical text	"Unknown" for unsure owner
	Image	Link to photo of facility	Photo_link	"IMAGE" with relative hyperlink function	··"

1.3.2. Parameters for Water Quality

The Borehole Information Sheet also stores water quality data of boreholes. The water quality parameters, data notations (sign / number), field names and units of the water quality parameters are shown in Table 1-3.

Item		Sign / Number Field Name		Unit	Number of digits after the decimal point
Data Present o	or not	"Present" or "Absent"	WQ_present/absent		
Color	UCV	Sign	S-Clr_UCV		
COIOI	UCV	Number	Clr_UCV	UCV	0
Color maDt/l	maDt/l	Sign	S-Clr_Pt		
Color hight/l	IngPt/1	Number	Clr_Pt	mg/L	1
Turkidity	NTU	Sign	S-Turbidity		
Turbialty	NIU	Number	Turbidity	NTU	0
Odor		Text	Odor		
Taste		Text	Taste		
Temperatu	re	Number	Temperature	°C	1
pН		Number	pН		1
Oxidation- reduction Potential	ORP	Number	ORP	mV	0
Conductivi	ty	Number	Conductivity	mS/m	0
Total Dissolved		Sign	S-TDS		
Solid	TDS	Number	TDS	mg/L	0
	TT I	Sign	S-T_Hard		
Total Hardness	TH	Number	T_Hard		0
A1 .	4.1	Sign	S-Al		
Aluminum	Al	Number	Al	mg/L	2
. .	NUL	Sign	S-NH4		
Ammonium	INH4	Number	NH4	mg/L	2
т	Г	Sign	S-Fe		
Iron	ге	Number	Fe	mg/L	2
F1 1	Б	Sign	S-F		
Fluoride	Г	Number	F	mg/L	1
М	м	Sign	S-Mn		
Manganese	Mn	Number	Mn	mg/L	2
Niturta	NO	Sign	S-NO3		
Initrate	NO ₃	Number NO3		mg/L	1
Nitrite	NO ₂	Sign	S-NO2		

Table 1-3Items for Water Quality

Item		Sign / Number	Field Name	Unit	Number of digits after the decimal point
		Number	NO2	mg/L	2
Dissolved	DO	Sign	S-DO		
Oxygen	DO	Number	DO	mg/L	1
	D	Sign	S-P		
Phosphorus	Р	Number	Р	mg/L	2
	DO 3	Sign	S-PO4		
Phosphate	PO ₄ ³⁻	Number	PO4	mg/L	2
a 1'		Sign	S-Na		
Sodium	Na	Number	Na	mg/L	1
	_	Sign	S-Zn	Ŭ	
Zinc	Zn	Number	Zn	mg/L	1
	_	Sign	S-Ca		
Calcium	Са	Number	Ca	mg/L	0
		Sign	S-Mg	6	
Magnesium	Mg	Number	Mg	mg/L	0
		Sign	S-K		
Potassium	K	Number	K	mg/L	1
		Sign	S-HCO3	ing 2	-
Bicarbonates	HCO ₃ -	Number	HCO3	mø/L	0
		Sign	S-CO3	ing/L	0
Carbonate	CO3 ⁻	Number	<u> </u>	mg/L	1
		Sign	<u> </u>	ing/L	1
Chloride	Cl-	Number		mg/I	0
		Sign	<u>S-SO4</u>	iiig/L	0
Sulfate	SO4 ²⁻	Number	<u>SO4</u>	mg/I	0
		Sign	S- Alkalinity	iiig/L	0
Alkalinity		Number	Alkalinity	mg/I	0
		Nulliber	Aikainiity	French	0
TAC		Number	TAC	Degree	0
		Sign	S-Pb	8	
Lead	Pb	Number	Pb	mg/L	3
		Sign	S-Pd	8	
Palladium	Pd	Number	Pd	mg/L	3
		Sign	S-Hg	6	
Mercury	Hg	Number	Но	mg/L	4
		Sign	S-Se	ing 2	
Selenium	Se	Number	Se	mg/L	3
		Sign	S-As	ing 2	
Arsenic	As	Number	As	mg/L	3
		Sign	S-B	8	-
Boron	В	Number	B	mg/L	2
		Sign	S-Cd	ing 2	_
Cadmium	Cd	Number	Cd	mø/L	3
		Sign	S-Cu	ing 2	
Copper	Cu	Number	Cu	mg/L	2
		Sign	S-Cr		-
Chromium	Cr	Number	Cr	mg/L	2
Sevivalent		Sign	S-Cr6	<u>6</u> , 12	
Chromium	Cr_6^+	Number	Cr6	mg/L	3
General		Sign	S-Gen hacteria	mg/L	5
Bacteria		Number	Gen hacteria	/100mL	0
Total Coliform		Sign	S-T coli	, 10011112	V
roun comonn	1	Sign	5 1_001		

Item		Sign / Number	Field Name	Unit	Number of digits after the decimal point		
		Number	T_Coli	/100mL	0		
Erest Californi		Sign	S-F-coli				
Facal Coliform		Number	F-coli	/100mL	0		

1.3.3. Information items for project

The Borehole Information Sheet also stores the information related to each project: Items of such information are shown in Table 1-4. Those information is also stored in the Project Information Sheet.

	Item	Content
	Project_ID	Project ID
	Project Name	Name of project
	Consultant	Name of consultant
	Contractor	Name of contractor
	Year Submitted Report	Year when report was submitted.
	Construction Works Started	Date when construction works started.
	Construction Works Finished	Date construction works finished.
	Drilled Boreholes	Number of drilled boreholes
	Positive Boreholes	Number of positive boreholes
Project	Negative Boreholes	Number of negative boreholes
Information	Q'ty of Negative Yield	Number of negative yield boreholes
information	Q'ty of Negative quality	Number of negative water quality boreholes
	Q'ty of Boreholes the reason for	Number of boreholes whose reason for rejection is not
	rejection is not knowable	knowable.
	Success Rate	Success Rate (%)
	Q'ty of Rehabilitation	Number of rehabilitated boreholes
	Remarks	Remarks
		Year of the construction completion. If the
	Vear of finalization	construction completion year is unknown, the project
	Tear of finalization	report submission year is used, and if it is unknown,
		the E / N year is used.
Registration	Date of registration	Date of registration
record of	Project/Work Name	Project/Work Name
dataset	Project/Work Name	Project/Work Name

Table 1-4 Information items for project

1.3.4. Information about updated information

In the Borehole Information Sheet, information of one (1) borehole is principally in one (1) raw of the sheet. After the information is stored in the Borehole Dataset, if additional information in the same borehole is obtained, such data is entered in the Update Information Sheet. This is the case when a pumping test, water quality analysis, borehole rehabilitation, etc. are newly performed after the borehole is constructed. The items on the Update Information Sheet are the same as the Borehole Information Sheet but a link is added to access the data on the Borehole Information Sheet for the same borehole. In order to show explicitly the updating date of registration, project/work name and executing agency/organization are entered in the Borehole Information Sheet as the history of the record.

1.3.5. Local administrative division of each country

The local administrative divisions of borehole locations are shown as local levels 1 to 6 in the Borehole Information Sheet. Since names of local administrative divisions, such as "region" or "district" differ from country to country, names used in each country are shown in the Local Administrative Division Sheet as shown in Table 1-5. In case that the name is changed after construction, it is recorded separately for each period as shown in Table 1-5.

			Local	administrativ	e divisions			
Administrativ e division ID	Country	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Period
L_BFA01	BURKINA FASO	Region	Province	Department/ Commune	Village	Site name	—	—
L_CIV01	COTE D'IVOR	District	Region	Department	Sub- prefecture	Commune /Regional council	Village	—
L_ETH01	ETHIOPIA	Region	Zone	Districts (woreda)	Kebeles ("neighborh oods").	Village	Site name	_
L_KEN01	KENYA	County	Sub- County	Ward	Village	-	-	After 2013
L_KEN02	KENYA	County	District	Division	Location	Sub Location	Village	Before 2013

 Table 1-5
 Item of Local Administrative Division Sheet

2. Utilization of Borehole dataset

2.1. Preparation for analysis _ Focal point of data copy

For utilizing Borehole Dataset such as processing and analysis of data, it is recommended create a copy of data on another files or folders in order to avoid unexpected data loss or overwriting on the data.

(1) Copying of the whole Excel book files of the dataset

In case that the copy of the dataset file is created in the same folder oh which hierarchy is same as the Image Data Folders, hyperlinks to the Image Data Folders input on the dataset are effectively work. However, if the copy of the dataset file is saved in another folder of the Image Data Folders, hyperlinks would not work (Refer to 2.3).

(2) Copying of only certain Excel sheet of the dataset

In case of coping the whole sheet to new sheet, it should be noted if merged cells are remaining.

When coping a certain sheet by using "sheet tab" respectively, it should be assured to place a check mark on the check box "Create a copy" as shown in Figure 2-1. If it is not checked, the original sheet would move to another sheet.



Figure 2-1 Attention of coping with sheet tab

(3) In case of copying of a certain part of sheet

It should be kept in mind that those data value and name of item are not out of alignment on the Excel sheet when it is pasted.

2.2. How to use Filter function

The dataset is handled on the Excel sheet. On the Excel sheet, boreholes are lined up in the row direction and name of item are in the column direction. In the process of data, shortened item names are placed for easily handling. The shortened item names are called "Field Name" (Refer to Figure 2-2).

		C	olumn		⇒																	
	1	A	В	C	D	E	F	G	н	1	J	К	L	М	N	0	Р	Q	R	S	т	L.
	1					井戶位置情報																
	3	Project JD	Б	ISO国記号	BC国番号	国名	地方レベル 1	地方レベル 2	地方レベル 3	地方レベル 4	地方レベル 5	地方レベル 6	ブロジェクト 内番号	登録井戸醫号	韓原	経度	地表高度	υτκον->	UTMX	UTMY	座標取得	緯度経历
	5		5										Lo	cation								
Field n	an	ne	D	ISO_Country_code	ISO_Country_no	Country	Local Leve 1	Local Leve 2	Local Leve 3	Local Leve 4	Local Leve 5	Local Leve 6	Borehole No. in This Project	Registered Boreholen No.	Latitude	Longitude	Altitude	UTM Zone	υтміх	UTMY	Coordinate Collected Point	Acci
															° de me	° ciarma	m					
	9																					
	9	Project_ID 💌	Borehole, 💌	150,Country.cod 💌	ISO_Country_n 💌	Count 👻	L.level 🔻	L Jevel 🔻	L level 💌	L level 🔻	Ljevel 🔻	L level 🔻	Bore, 🔻	Regitore r 💌	Lat 👻	Long 👻	Altituc 👻	UTM,Zot 👻	UTM -	UTM 👻	Coordinate_poir 💌	Lat_long
Row	9	Project JD 💌 AGC002	Borehole, 💌	ISO_Country.cod ▼ AGO	BO_Country,n ▼ 24	Count 👻	Ljevel 🔻	Ljevel 🔻	Ljevel 🔻	Ljevel ▼ -	Ljevel 🔻	EENFICA I	Bore, 💌	Regione_r 💌	Lat 🔻	Long 💌	Altitud 👻	UTM/Zor 👻	UTM -	UТМ(▼ -	Coordinate,poir 💌	Lat_long SC
Row	10	Project_ID - AG0002 AG0002	Borehole, * AG0002001 AG0002002	AGO AGO	BO,Country,n + 24 24	Count - ANGOLA ANGOLA	LJevel 🔻 LUANDA LUANDA	Ljevel 🔻 TALATONA	Elevel -	L,level ▼ -	EENFICA I EETA TANGUE	EENFICA II CHENDOVA VA	Bore, V W1 W2	Regione r 💌	Lat 💌 -6.9667 -9.1197	Long - 13.1567 13.2734	Altituc 💌 55 115	UTM,Zot + -	∪тм(▼ - -	- -	Coordinate.polr * Village Village	Lat,long 50
Row	9 10 12	Project JD 👻 AGC002 AGC002 AGC002	Borehole, ¥ AGC002001 AGC002002 AGC002003	B0,Caurtry.cod = AG0 AG0 AG0	BD_Country,n ¥ 24 24 24	Count - ANGOLA ANGOLA ANGOLA	LJevel - LUANDA LUANDA LUANDA	Ljevel - TALATONA -	Ljevel -		Ljevel V EENFICA I EITA TANGUE EITA TANGUE	EENFICA II OHENDOVA VA OHENDOVA	Bore, V M W2 W3	Regilione,r 💌 - -	Lat - -6.9667 -9.1197 -9.1197	Long v 13.1567 13.2734 13.2734	Altitue	- - -	UTM - - -	UTM - - -	Coordinate.poir v Village Village Village	Lat, long 50 50 50
Row	9 10 12 13	Project JD v AGC002 AGC002 AGC002 AGC002	Bonehole ▼ AG0002001 AG0002002 AG0002002 AG0002002 AG0002002 AG0002002	AGO AGO AGO AGO AGO	B0,00untry,n ▼ 24 24 24 24 24	Count + ANGOLA ANGOLA ANGOLA ANGOLA	LJevel V LUANDA LUANDA LUANDA LUANDA	Ljevel - TALATONA - -	EBNFICA - -		EENFICA I EENFICA I EITA TANQUE EITA TANQUE	EENFICA II OHENDOVA VA OHENDOVA VA OHENDOVA VA	Bore, V M W2 W3 W4	Regbore √ ▼ - - -	Lat v -0.9007 -9.1197 -9.1197 -9.1197	Long - 13.1567 13.2734 13.2734 13.2734	Altitue - 55 115 112 118	- - -	UTM - - - -	UTM *	Coordinate.poir v Village Village Village Village Village	Lat, long SC SC SC SC
Row	9 10 12	AGC002 AGC002 AGC002 AGC002 AGC002	Borehole v AGO002001 AGO002002 AGO002003 AGO002004 Borehole	AGO AGO AGO AGO AGO AGO AGO AGO	24 24 24 24 24 24 24 24 24 Additona	Count - ANGOLA ANGOLA ANGOLA ANGOLA	LJevel - LUANDA LUANDA LUANDA LUANDA nation	Llevel TALATONA	ENFICA - - te_Inform	L, level ¥	EENFICA I EENFICA I TANQUE EITA TANQUE EITA TANQUE EITA TANQUE Lates	EENFICA II OHENDOVA VA OHENDOVA VA OHENDOVA VA	Bore, * M W2 W3 W4 nation	Regbore v - - - Project_	Lat - -8.9687 -8.1197 -9.1197 -9.1197 Informa	Lon + 13.1567 13.2734 13.2734 13.2734 13.2734	Altitu = 55 115 112 118 Local_	- - - administr	итм + - - ativ	UTM + - - -	Coordinate_polif v Village Village Village Village Village Village Village Village	Lat, long 50 50 50 50

Figure 2-2 Structure of dataset sheet and field name

By using filter function, narrowing down of data becomes available. How to active the filter function is described below.

① Setting filter function

Open the Borehole Information Sheet and select the area including "field name" and data. Click "Data" tab and select "Filter", then ∇ symbol appears as shown in Figure 2-3.



Figure 2-3 Setting filter function

② Narrowing down data with filter function

When click the symbol " \bigtriangledown ", pulldown of all registered data appear (Figure 2-3). If one (1) data in the pulldown is checked, only clicked data is shown and unchecked data is hide.

For example, to show only success borehole in Uganda, check mark to "Uganda" from field name of "Country" and select "Success" from "Success fail borehole" (Figure 2-4).

1	A	В	C	D	E	F	G	Н	1	J	ĸ								
2 3 4	ProjectJD	a di	15011127	ISO I SO	團名	地方レベル1	地方レベルミ	地方レベルる	地方レベル4	地方レベルる 地方	ote								
5 6 7		D	ISO_Country_code	180,Country,no	Cli Country	ick 🗸		untry	Local Lava	Local Leve 5 Local	Leve G								
8																			
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Figure 2-4 Example of data extract with filter function

\bigcirc Clare the narrowing down

In order to clear the narrowed down, click on "Clear" as shown in Figure 2-5. By this process, only narrowed result is cleared and filter function is being kept.



Figure 2-5 Clear narrowing down

2.3. Hyperlink of image data

In the dataset, image data of map, geology column, physical test image, pump test image and photo are registered if those data exist and available. Click on "IMAGE" then the pdf file of image data appears (Figure 2-6).

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Figure 2-6 Open image file on the dataset

The image files mentioned above are saved in the same folders as the folder in which the dataset files are saved. Careful attention should be paid to following issue: If any change is made on folder hierarchy and/or name of folders and files, the hyperlink would not work. Refer to Figure 2-7.



Figure 2-7 Folder hierarchy of dataset file and image file

2.4. Function of pivot table

By using function of pivot table, information registered in dataset is shown as table, chart and graph in order to utilize data analysis.

① Creating table

Click on "Insert" tab and "Table", then select data area for creating pivot table. Data area shall

include field name on the top row and place check mark on "My table has headers" as shown in Figure 2-8.

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Figure 2-8 Select area of table

Click "Table design" tab and name the table name on the bar. For example, let put "Source_tb" as the table name (Figure 2-9).

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Figure 2-9 Setting of table name

② Creating pivot table

Click on "Insert" tab and "Pivot Table", then input the name of table on the bar "Table/Range". Choose "New worksheet" for placing pivot table (Figure 2-10).

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Figure 2-10 Creating pivot table

③ Creating aggregate table with pivot table

In order to create a table, select the target item of the pivot table. For example, to aggregate the number of boreholes in a country, enter "Country" into "Rows" and "Values", then the aggregate table is created: The numbers of borehole in the countries are shown.

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Figure 2-11 Creating aggregate table with pivot table

④ Creating graph with pivot table

In order to create a graph from the aggregate table set in ③ above, click any cell inside of the aggregate table, "Pivot Table Analyze" tab and "Pivot Graph" (Figure 2-12). Select the type of the graph in "Insert Graph" window and click "OK", then the graph is created (Figure 2-13).

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Figure 2-12 Creating graph with pivot table



Figure 2-13 Example of created graph

2.5. Integrate updated information into old information

The Update Information Sheet includes only data of boreholes which were surveyed at the site directly. Even though those borehole information such as coordinates and local administrative division are revised, Borehole Information Sheet is not allowed to be overwritten except for new registration of data of newly drilled boreholes. Therefore, to reflect update information into Borehole Information Sheet, it is required to create a new sheet to integrate them.

The Latest Information Sheet is revised information of Borehole Information Sheet about coordinates and local administrative division overwritten by excerpting from the Update Information Sheet. Additionally, the Latest Information Sheet includes new information related to current pump model, functionality of handpump or submersible pump. Therefore, the current situation of boreholes are confirmed by the Latest Information Sheet.

Regarding the method to reflect the latest information is highly recommended be improved depending on the purpose of utilization.

2.6. Import into GIS (Geo Information System)

In the borehole dataset, borehole coordinates are registered with world geodetic system 1984 (WGS 84). Therefore, it is possible to plot borehole locations on a map by converting from the Excel file into the CSV file and inputting into GIS. The method for input data into GIS is stated below. Here, explanation is made using QGIS as a GIS software.

① Data converting to CSV file

The name of data items must be stated on the top row of the sheet in the CSV file to load by QGIS. Data would not be loaded properly if the top row cells are merged or blank. The field name works as item name. Open the sheet which is going to be plotted and remove redundant rows upper than field name and make the field name on the top row of the sheet (Figure 2-14).

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Figure 2-14 Remove redundant row to convert to CSV file

Save as "CSV UTF-8(Comma delimited)" as shown in Figure 2-15.



Figure 2-15 Converting into CSV file

② Plotting point data with QGIS

Open QGIS, select "Layer" tab, "Add Layer" and "Add Delimited Text Layer" as shown in Figure 2-16.



Figure 2-16 Adding CSV layer with QGIS

Select the CSV file name saved in ① above and set geometry Definition. Select the field name of Longitude and Latitude for X and Y field respectively. Then select "WGS84" in CRS, because

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geometry CRS is standardized with world geodetic system 1984 (WGS 84) (Figure 2-17).

Figure 2-17 Setting of CSV file and coordinate field

Click on "Add", then point data is plotted on the QGIS window as shown in Figure 2-18.



Figure 2-18 Example of Plotting on QGIS

2.7. Note on use of power query function

The Borehole Information Sheet includes approximately 17,000 borehole data. If power query function of Excel is applied on this sheet, it is going to behave worse and is not practical due to data stacking. Therefore, it is strongly recommended excerpt only needed data and separate into new several files or sheets according to data use.