

**LWUA
GROUND WATER
DATABANK**

LWUA GROUND WATER DATABANK

Presenter: CECILIO G. LANSANGAN

In 1978, the LWUA manual groundwater data bank was established. Data came from DPWH well logs, NIA, feasibility study reports and LWUA drilling reports.

There are drawbacks in the manual data bank like data entry is time consuming, the eligibility of the data depends on the encoder, retrieval of data is slow, hard to copy and correlation of data is difficult with the absence of spatial correlation, and its life is vulnerable to lost or damage since the data are in hard copy.

In 1991, the Local Water Utilities Administration (LWUA) implemented a UNDP-financed project, PHI/88/028, which was aimed at establishing a computerized countrywide groundwater data geographic information system - Philippine Groundwater Data Bank Geographic Information System (PGDB-GIS).

To institutionalize the activity, LWUA established the agency's computerized groundwater data bank upon completion of the project in 1994. The Research Division which is now Data Bank Division was tasked to maintain and manage the computerized LWUA Groundwater Data Bank.

The LWUA Groundwater Data Bank is continuously developed until such time that multi-users can simultaneously access the database on their own computer as clients where the database resides in a central computer as file server which is housed in the Research Division, now Data Bank Division.

In 2003, the databank can already be accessed online through the internet.

Full access to the database is restricted only to registered water district users through password authentication.

As part of the process of institutionalization, a water district version of the LWUA - Philippine Groundwater Data Bank (PGDB) was developed that can be installed locally to water districts. The Data Bank Division assists Water Districts in establishing their own groundwater data banking and monitoring system.

The groundwater data bank can be utilized as a tool in groundwater management for:

- rationalization of groundwater exploration,**
- more accurate assessment of groundwater potential,**

**planning of development,
protection and conservation
of groundwater resources
though the establishment of
a continuous monitoring
program for groundwater
levels, extraction rates and
water quality conditions.**

The groundwater databank program has been continuously improved and updated to make it capable of generating automated report-ready graphical and tabular outputs.

Interactive visual curves generated while entering data, as well as simultaneous numerical analysis on the quality of the data being entered in the databank with color indicators for water quality data exceeding permissible limits.

Hydrologic maps, cyclograms, cross-section, and other graphical outputs could also be generated using proprietary softwares.

A lot of outputs could be generated using only microsoft excel - it has a utility for exporting data to spreadsheet.

To date, the software has the capability of locating and geo-referencing the wells using Google Maps - making it in some aspect GIS capable and web-based.

Added features of the program are the inclusion of pumps, production-consumption parameters where pump replacements, settings and efficiencies could be monitored.

Unit cost of production per well source, production efficiency in cum/kwh, hours of operation per day and average consumption per service connection category are computed automatically.

With these kind of information, technical people in the water district could readily recommend with supporting outputs readily available for the management to decide if remedial measures are needed to be done.

The groundwater data bank consolidates all the available data pertaining to groundwater to make them useful information rather than just mere collected data and they will be forever there once they are entered.

The groundwater databank may also be a tool for the Well Maintenance Program of the water district and determination of NRW (Non-Revenue Water).

**WHAT DO YOU THINK
IS THE MOST
IMPORTANT THING
THAT THE WD CANNOT
LIVE WITHOUT?**

WD = f (WATER SOURCE)

$$WD = f(\text{WATER SOURCE})$$

**GROWTH OF WD IS DEPENDENT
ON THE QUANTITY/QUALITY OF
WATER SOURCE**

WATER SOURCES

WELLS

SPRINGS

SURFACE WATER

WATER SOURCES

WELLS
SPRINGS

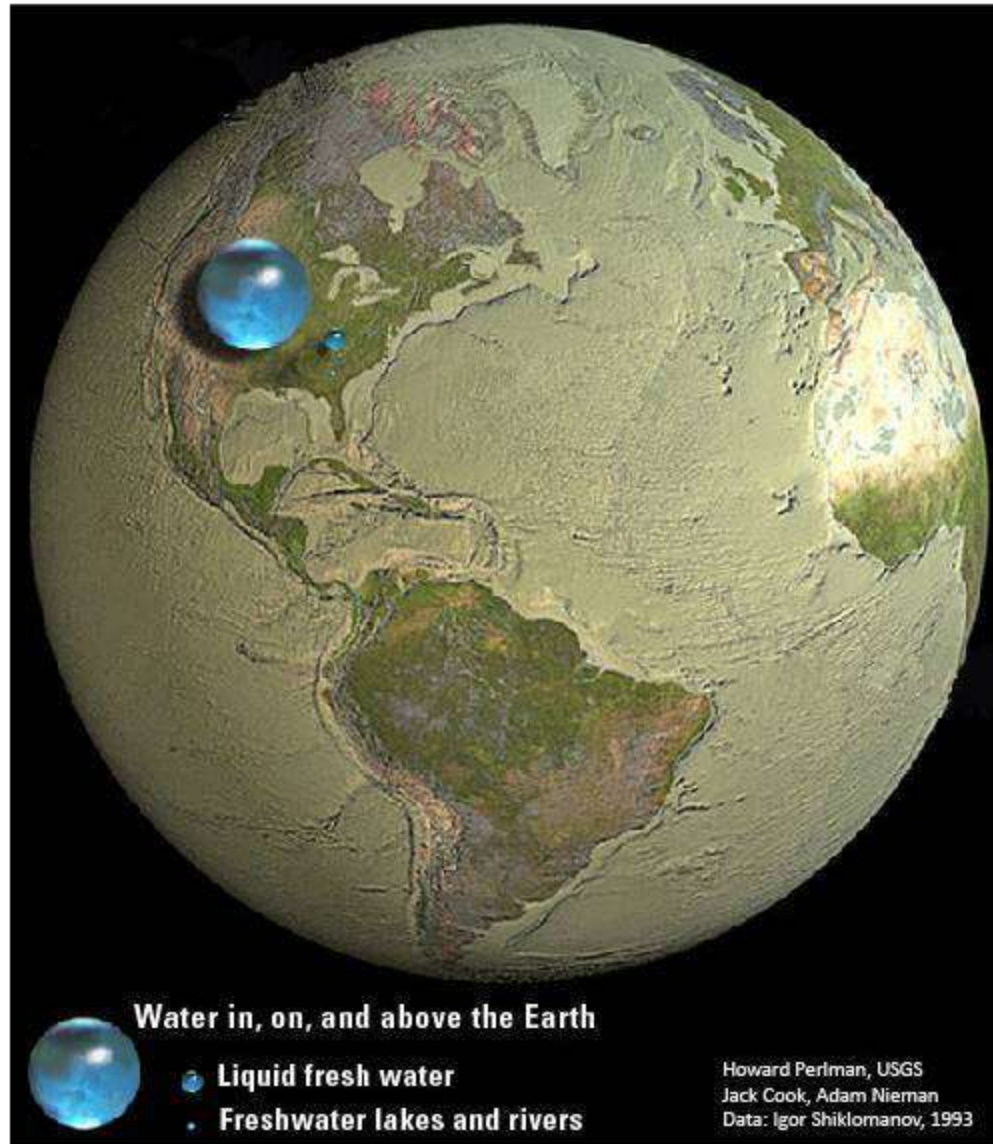
GROUNDWATER

SURFACE WATER

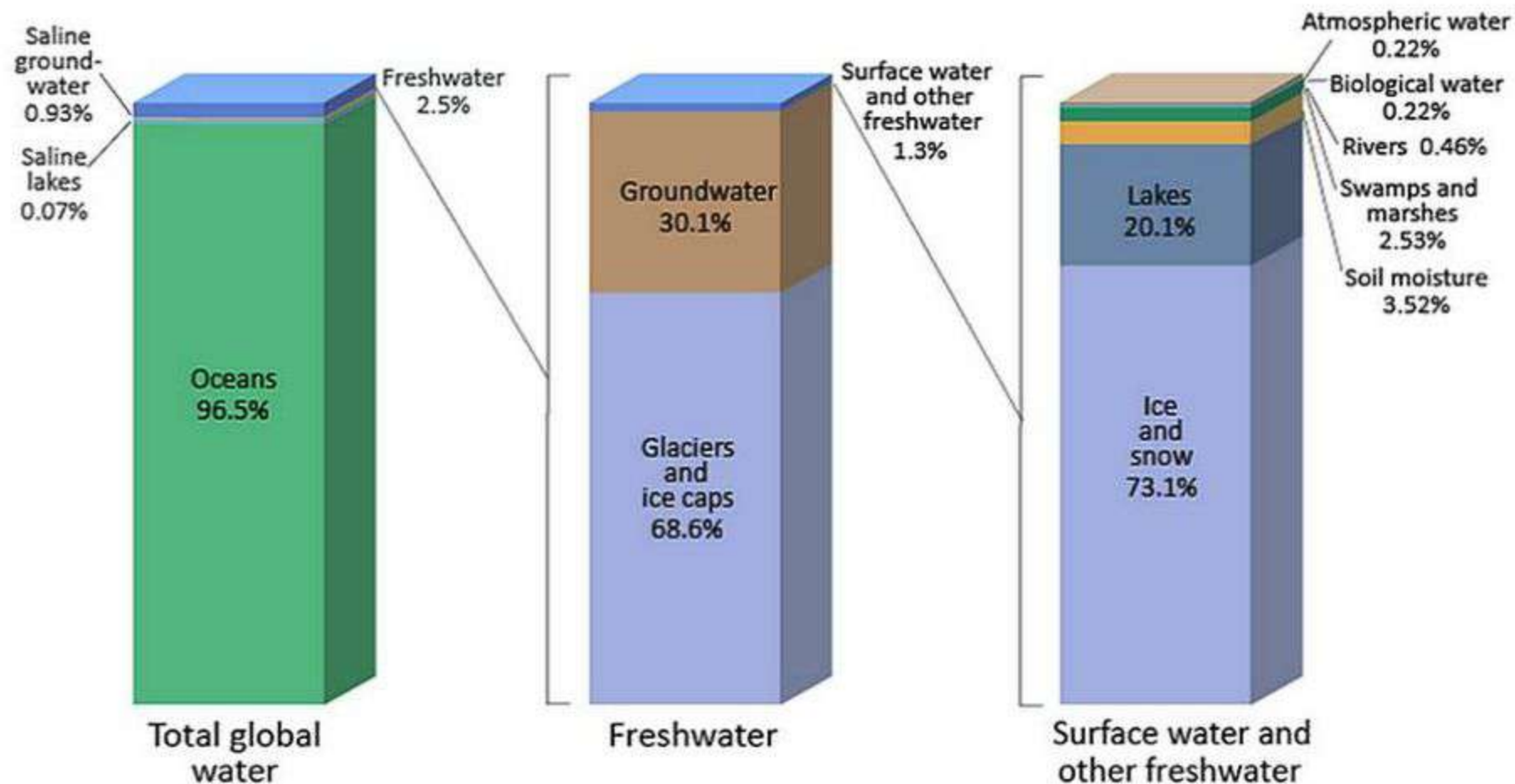
FACT:

**'WATER IS
EVERYWHERE'**

GLOBAL WATER

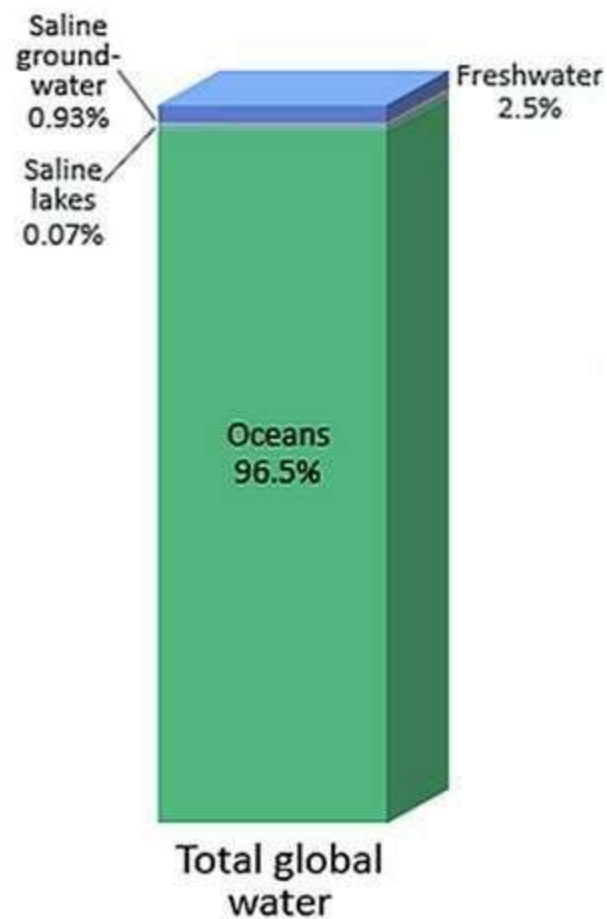


Distribution of Earth's Water



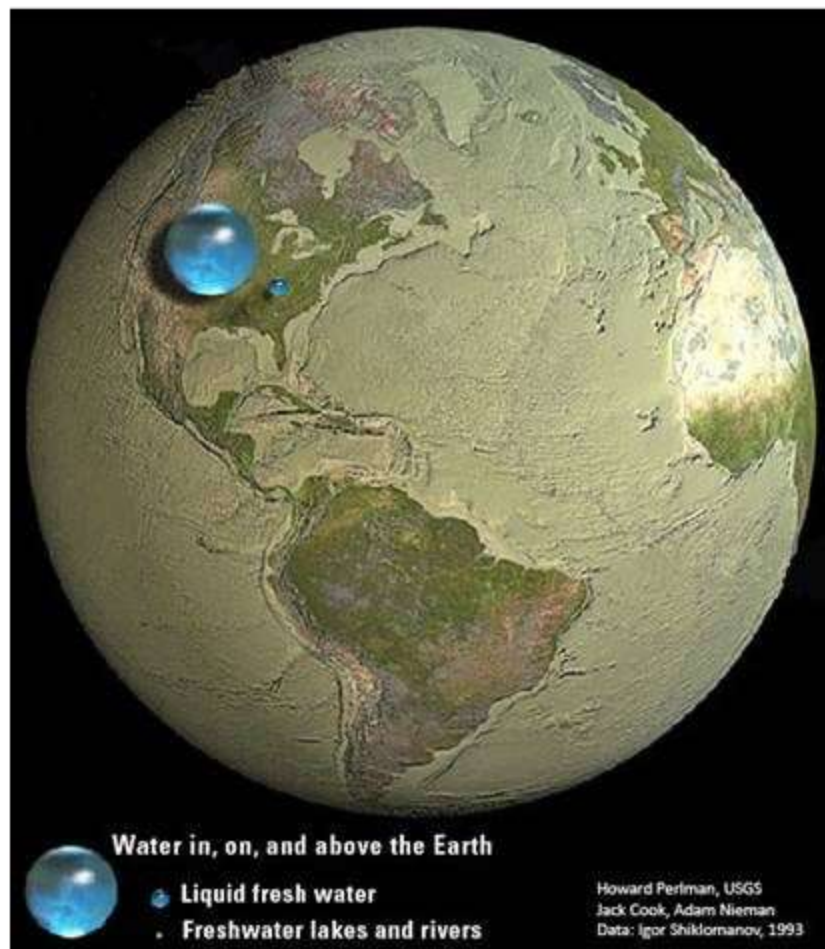
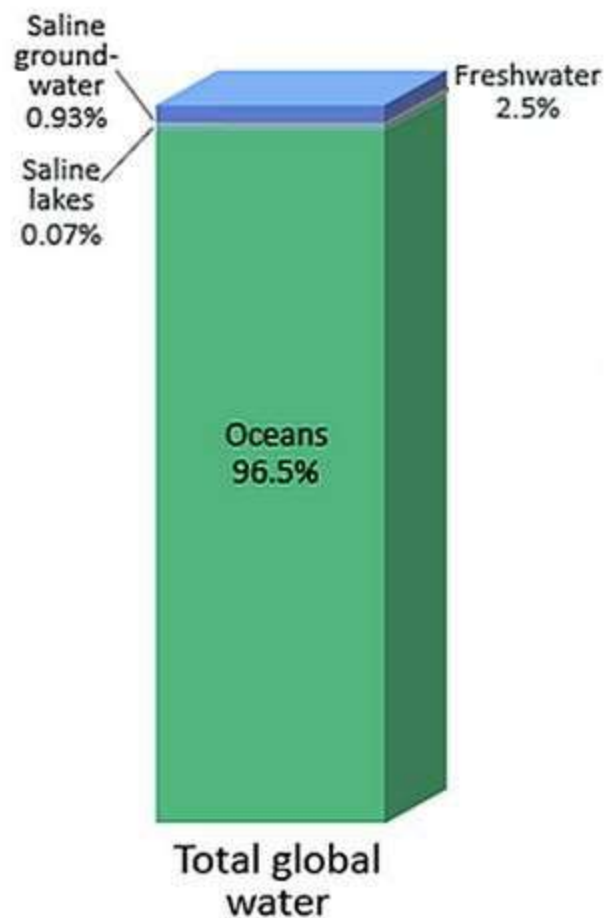
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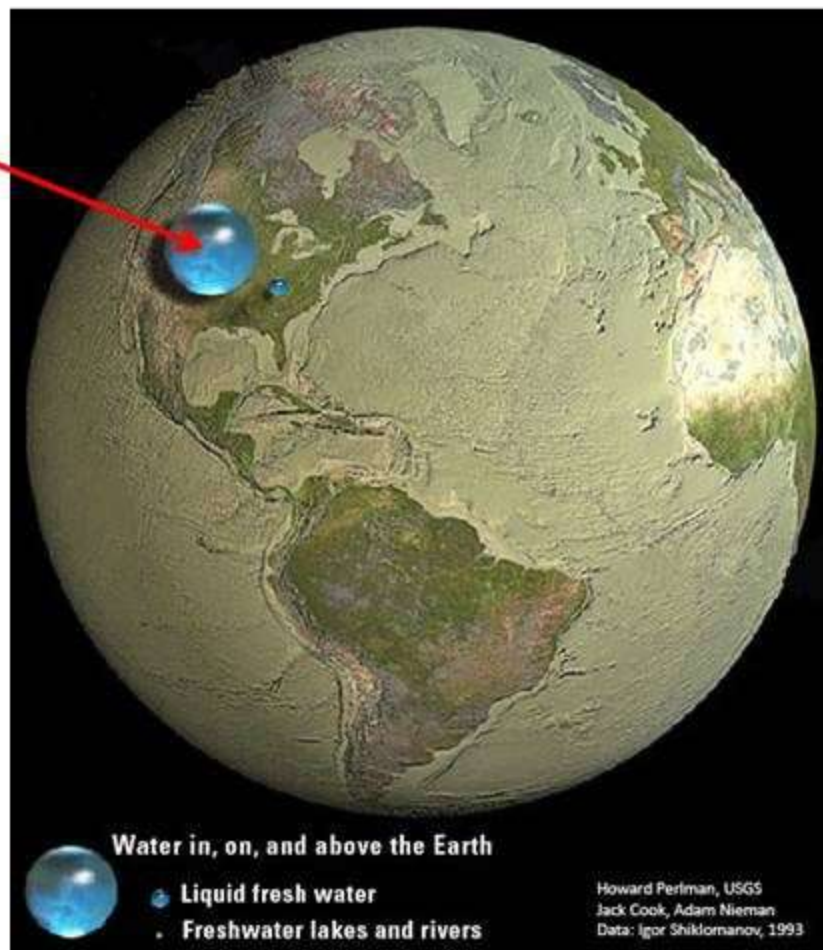
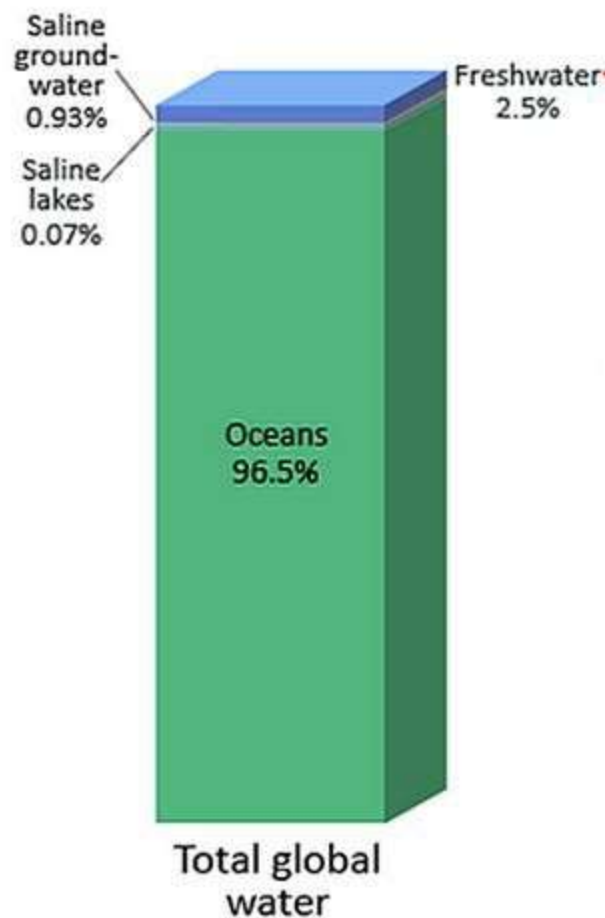
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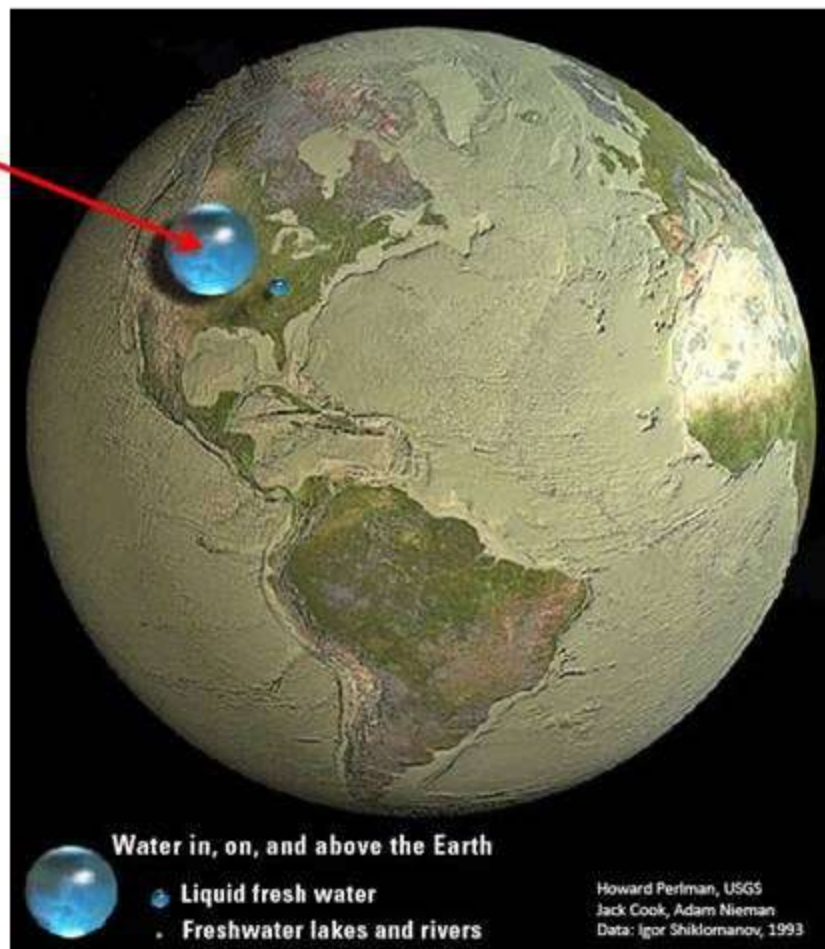
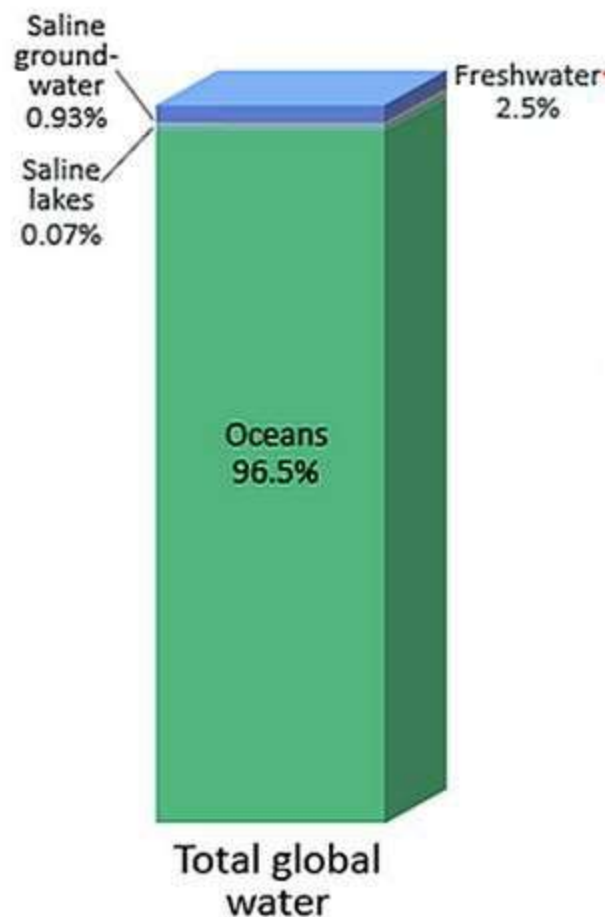
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Globally, Fresh Water is Only 2.5%

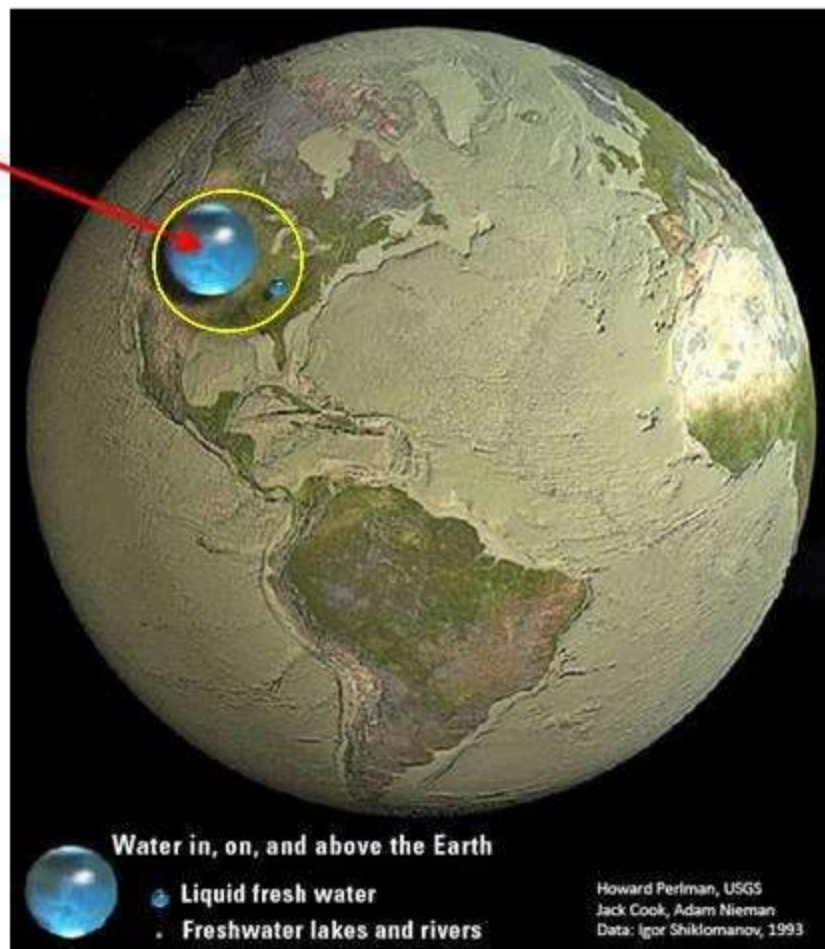
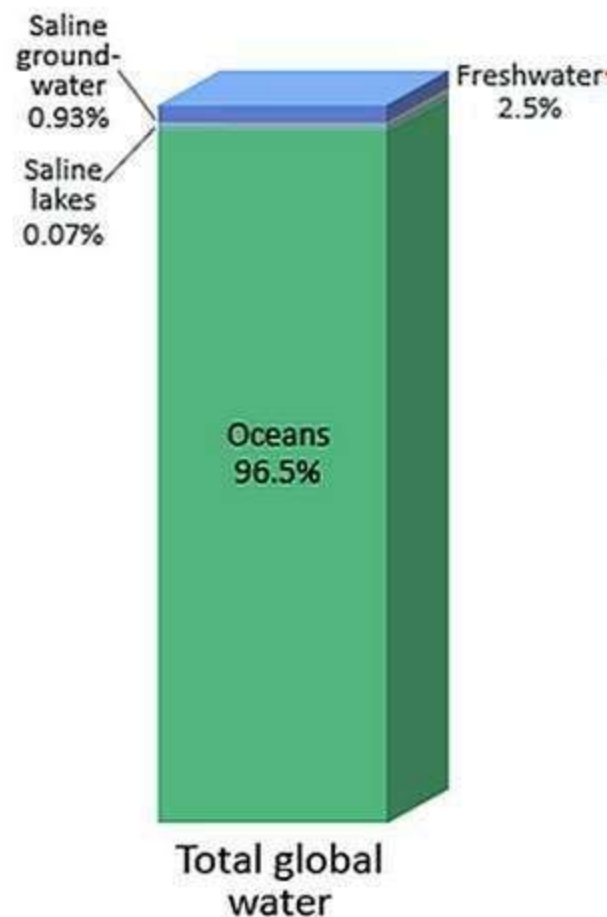
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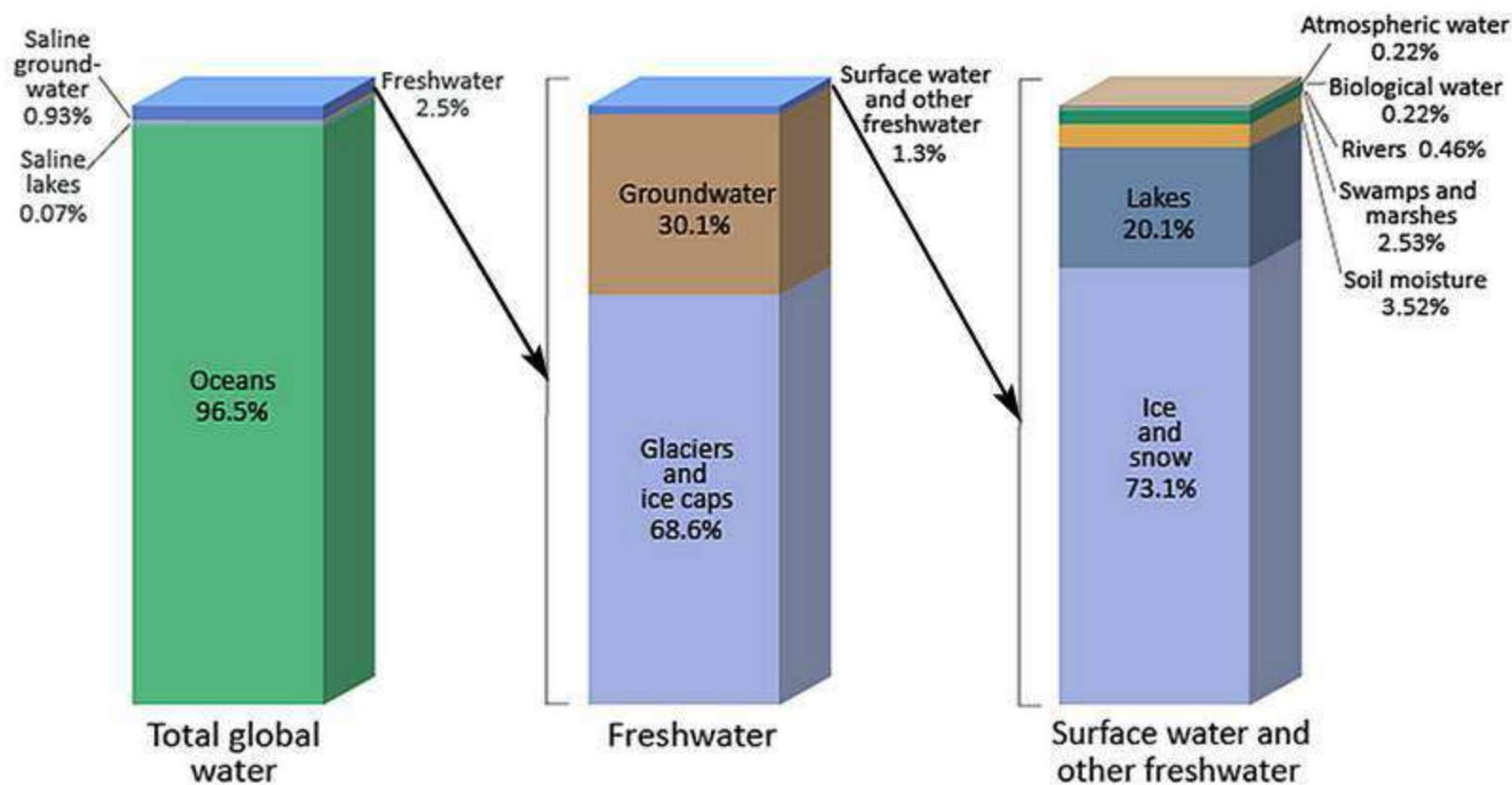
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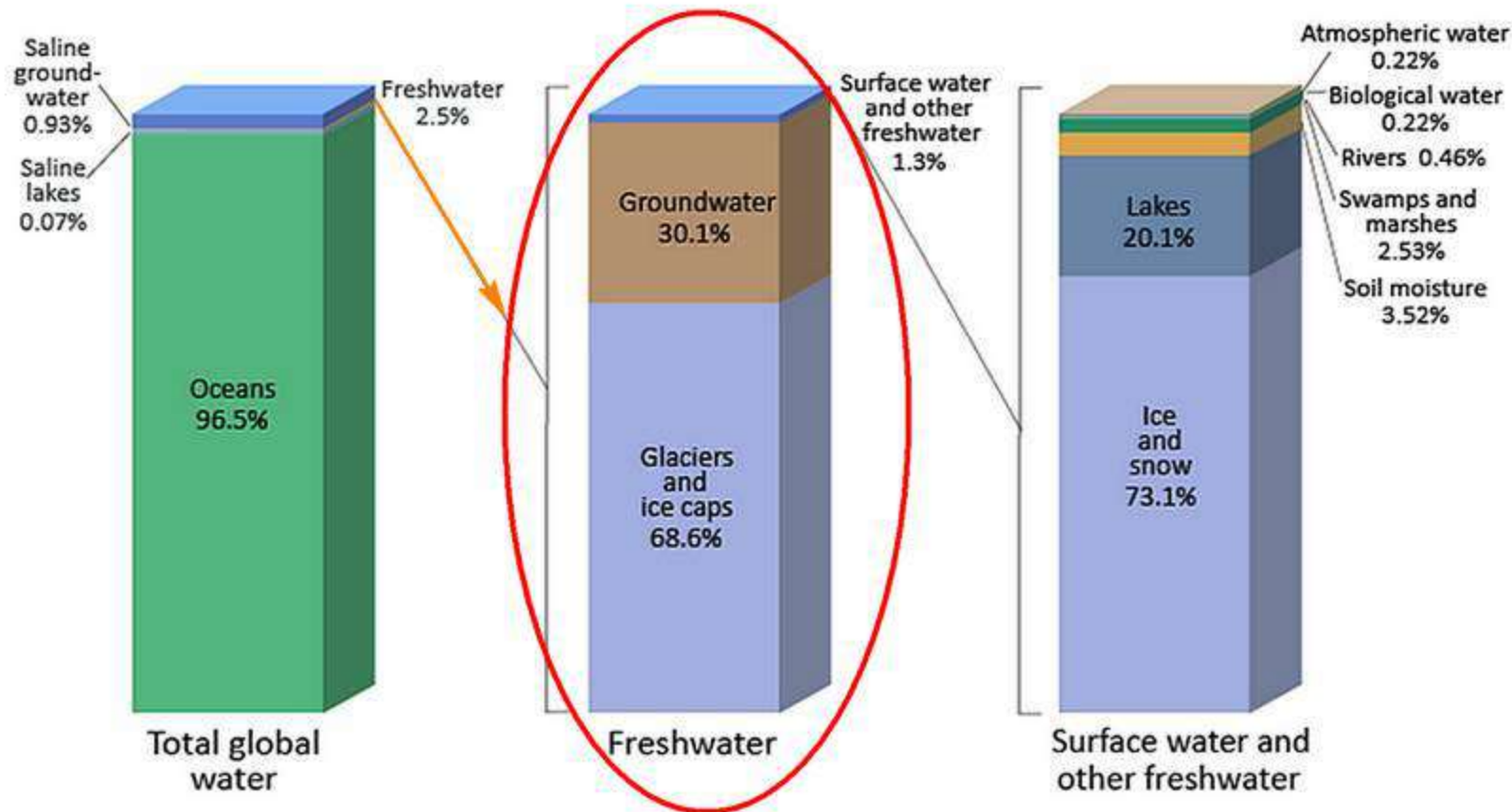
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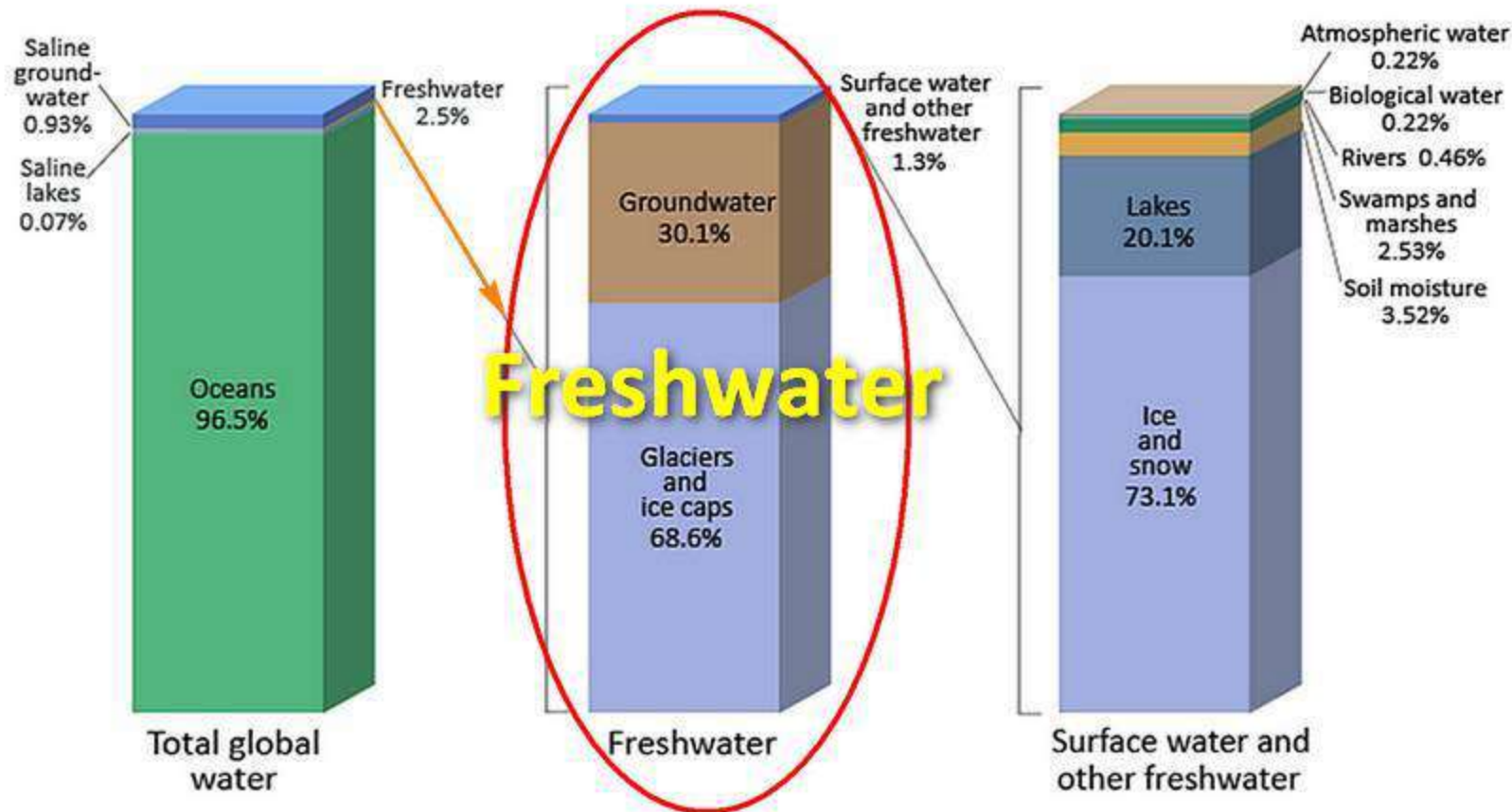
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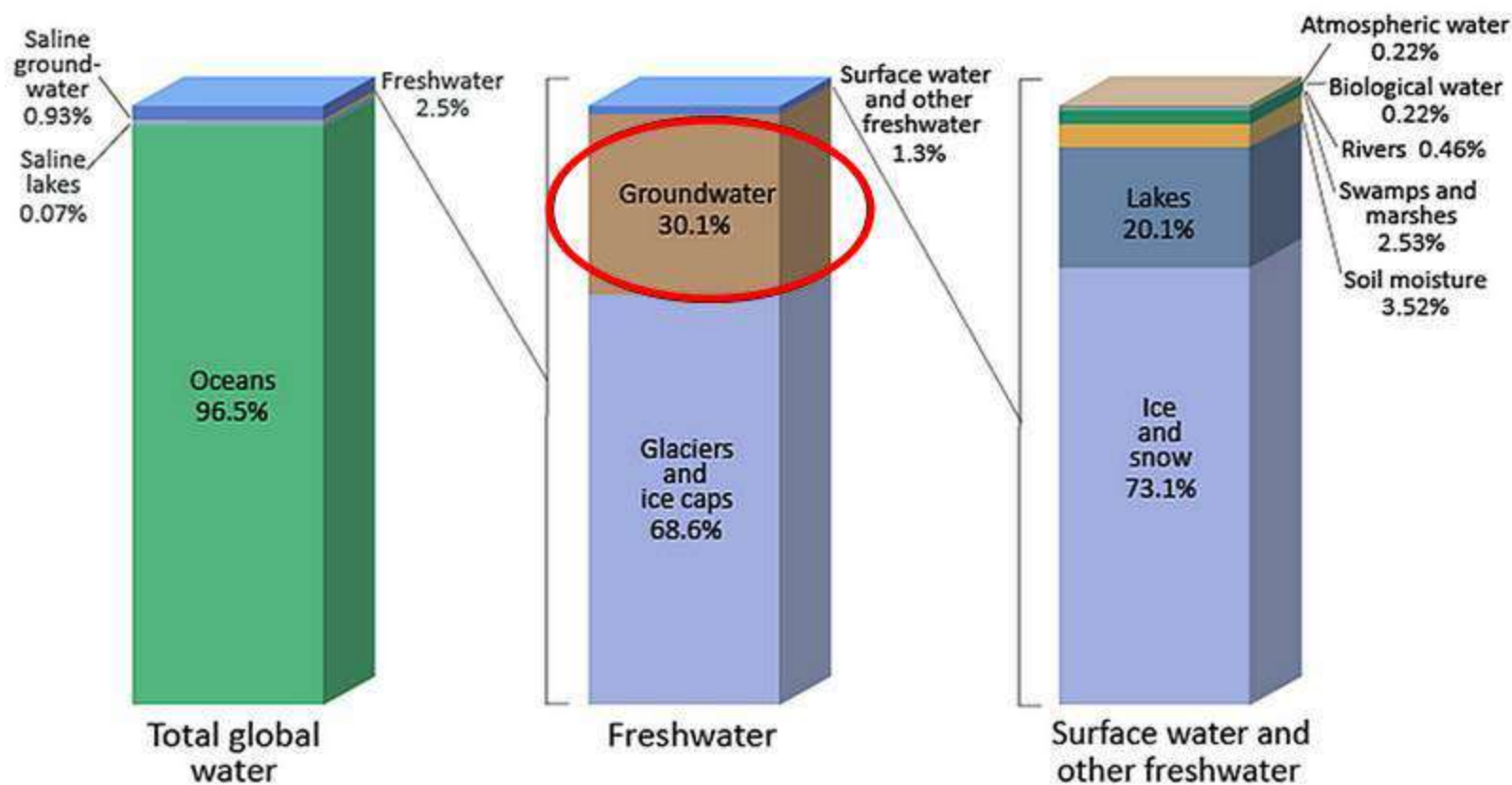
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GROUNDWATER = 30.1% OF 2.5% FRESH WATER = **0.75%** OF TOTAL GLOBAL WATER

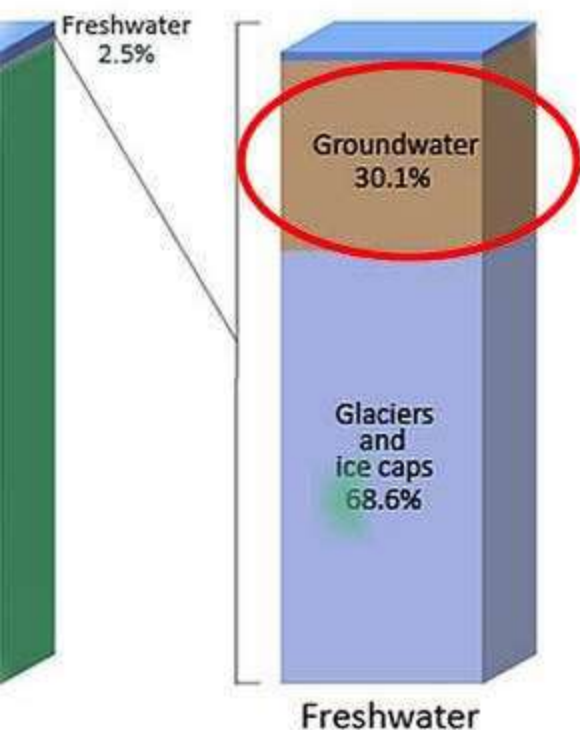
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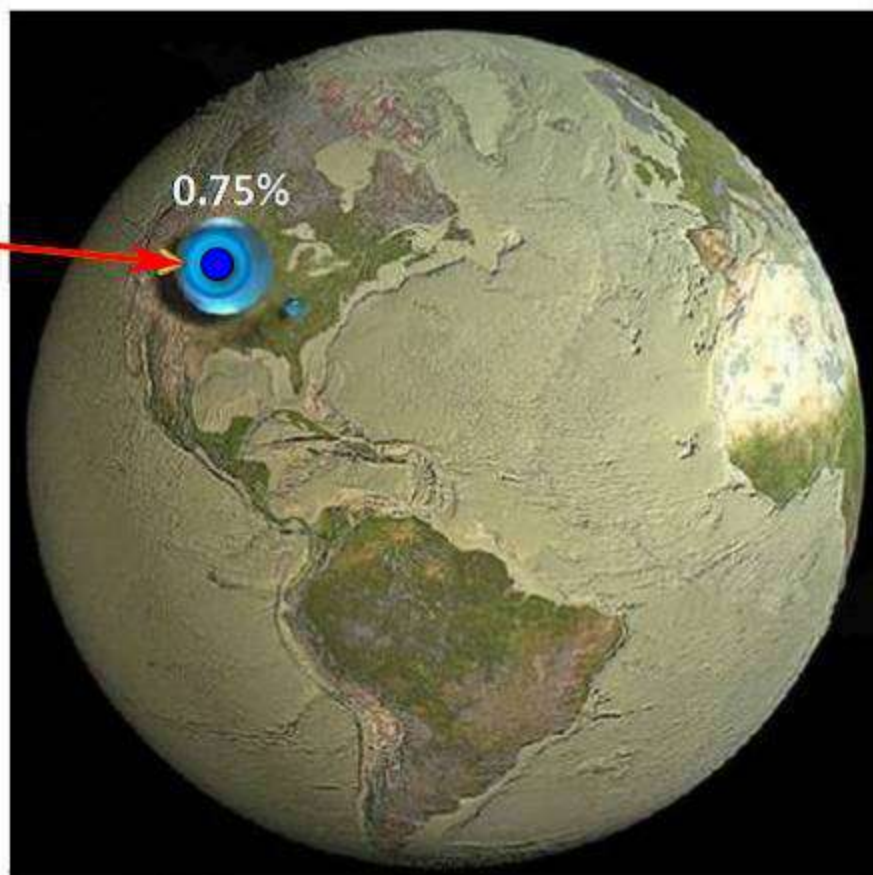
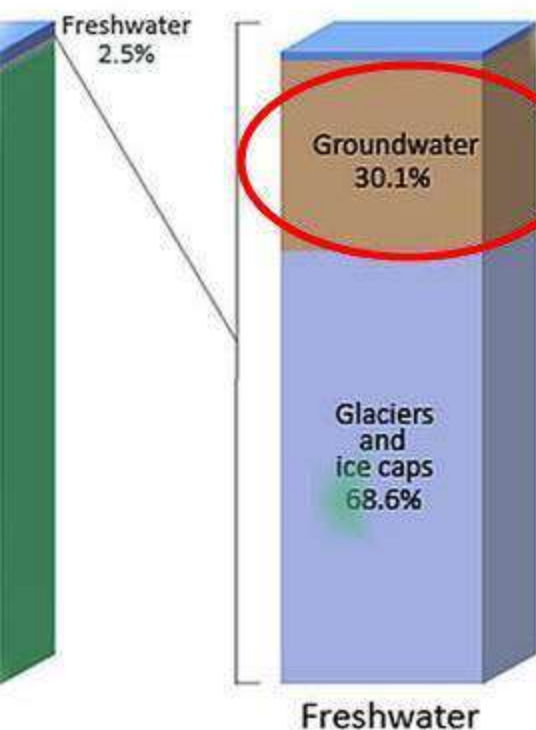
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Distribution of Earth's Water



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Distribution of Earth's Water



● 0.75% of Total Global Water

Therefore,
GROUNDWATER
has to be
managed properly

GOOD MANAGEMENT
=
GOOD GOVERNANCE

**GOOD GOVERNANCE
REQUIRES
GOOD INFORMATION
FOR
SOUND DECISION-MAKING**

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Therefore,
DATA IS NEEDED

BUT DATA ALONE IS NOT ENOUGH

**IT HAS TO BE COMPILED AND
ORGANIZED IN A CONTAINER THAT
MAY ALLOW THE POSSIBILITY OF
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**LWUA GROUNDWATER
DATABANK**

**DEVELOPED &
MANAGED BY THE
DATA BANK DIVISION
formerly
RESEARCH DIVISION**

LWUA Groundwater Databank

The LWUA Groundwater Databank is a **database** of wells, springs and a few surface sources of water districts and other private owners in the Philippines.

A **database** is a repository of information on one or more subjects that is organized in a way that facilitates local or remote information retrieval usually but not necessarily by a computer.

The bottom half of the slide features a decorative graphic of several concentric circles, resembling ripples on water, in a lighter shade of blue against the main background.

Sources of Data

Sources of data are from the manual groundwater databank, feasibility study reports, NWRB-NWIN database, Water District Groundwater Databank Reports, Water Districts monthly data and field surveys.

Sources of Data

1999 – 2015 – Research Division conducted 50 Groundwater Databank Reports of various Water Districts

Institutionalized groundwater data banking at the water district level by installing in the Water District a local databank to utilize the data bank as a **tool** in **groundwater management** and in **assessing groundwater availability** through the establishment of a continuing **monitoring program** for groundwater levels, extraction rates and water quality conditions.

LWUA Databank History

1978 – 1984 LWUA Manual Groundwater Databank

1991 – 1994 UNDP Phi/88/028 – establishment of a computerized countrywide groundwater data geographic information system – Philippine Groundwater Data Bank Geographic Information System (PGDB-GIS)

1994 - LWUA institutionalized the activity and established the agency's Groundwater Databank. The Research Division was tasked to maintain and manage the LWUA Groundwater Databank.

LWUA Databank History

1991 – 1994 UNDP PHI/88/028

1991 – 1992 Dbase III

- No Network
- DOS
- Problem with data management of different installations

1993 – 1999 Foxpro/Autocad/Microstation

- Network
- Fat Client
- Reduced problem with data management

LWUA Databank History

1994 – Institutionalization of PGDB through Research Division

1998 – 2001 SWEEO project – Water Resources Master plan of 30 Municipalities and Cities

1999 onwards Groundwater Databank Reports

1999 – 2004 Interbase/Delphi/Microstation – Win 98 Client/Server – No more problems in Data Integrity

LWUA Databank History

National Water Information Network (NWIN) Project
2000 – 2004 - Wide Area Network connecting the databases of
the some collection agencies

National Water Resources Board (NWRB) – central database

National Irrigation Administration (NIA)

Local Water Utilitilies Administration (LWUA)

National Economic and Development Authority (NEDA)

Bureau of Research and Standards (BRS)

Environmental Management Bureau (EMB)

Mines and Geosciences Bureau (MGB)

Philippines Atmospheric, Geophysical and Astronomical
Administration (PAGASA)

LWUA Databank History

2000 – 2004 NWIN Project

2003 – NWRB Seminar on Active Server Pages (ASP)

2003 – Databank access via Internet of NWIN-WAN

2004 – Firebird/Delphi/Microstation

2005 – Local internet publishing via DSL subscription

2011 – Addition of Well locations via Google Maps

2014 – Addition of GIS/Geoserver/Openlayers via International Atomic Energy Agency (IAEA) sponsored seminar

2015 – Listahang Tubig

Firebird RDBMS

Advantages

- Free, Open source SQL Relational Database Management System
- Runs on Windows, Linux, Mac OS X, Unix
- SQL-92 compliant – latest SQL standard
- Minimal database administration and maintenance
- Stored Procedures, Triggers
- Multiuser database access with user rights and privileges
- Network access – LAN, WAN, Internet
- Backup and restore – scheduled backups
- Small footprint – 10 Mb installer
- Install server and client software via Teamviewer in less than 10 minutes
- Data file is usually only one file which can be easily copied to another database location

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- Utilize the data bank as a **tool** in **groundwater management** in assessing groundwater availability and quality through the establishment of a continuing **monitoring program** for **groundwater levels**, **extraction rates** and **water quality** conditions.

FOR WHAT?

- To improve the collection and management of groundwater data for:
 - rationalization of groundwater exploration,
 - planning of development,
 - protection and conservation of water.

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GROUNDWATER MONITORING

Usually, the pump operators are the one doing the monitoring of Q, WLs & WQs.

$$GI = GO$$

Therefore, the pump operators must realize the importance of their role. So, they must have:

GROUNDWATER MONITORING

Usually, the pump operators are the one doing the monitoring of Q, WLs & WQs.

GI = GO

Therefore, the pump operators must realize the importance of their role. So, they must have:

- proper training (reading and documenting measurements – what to.., when to.. & how to..)
- dedication in the performance of their duties,
- Right motives.

WDs COULD HAVE THE FF:

STATIC DATA:

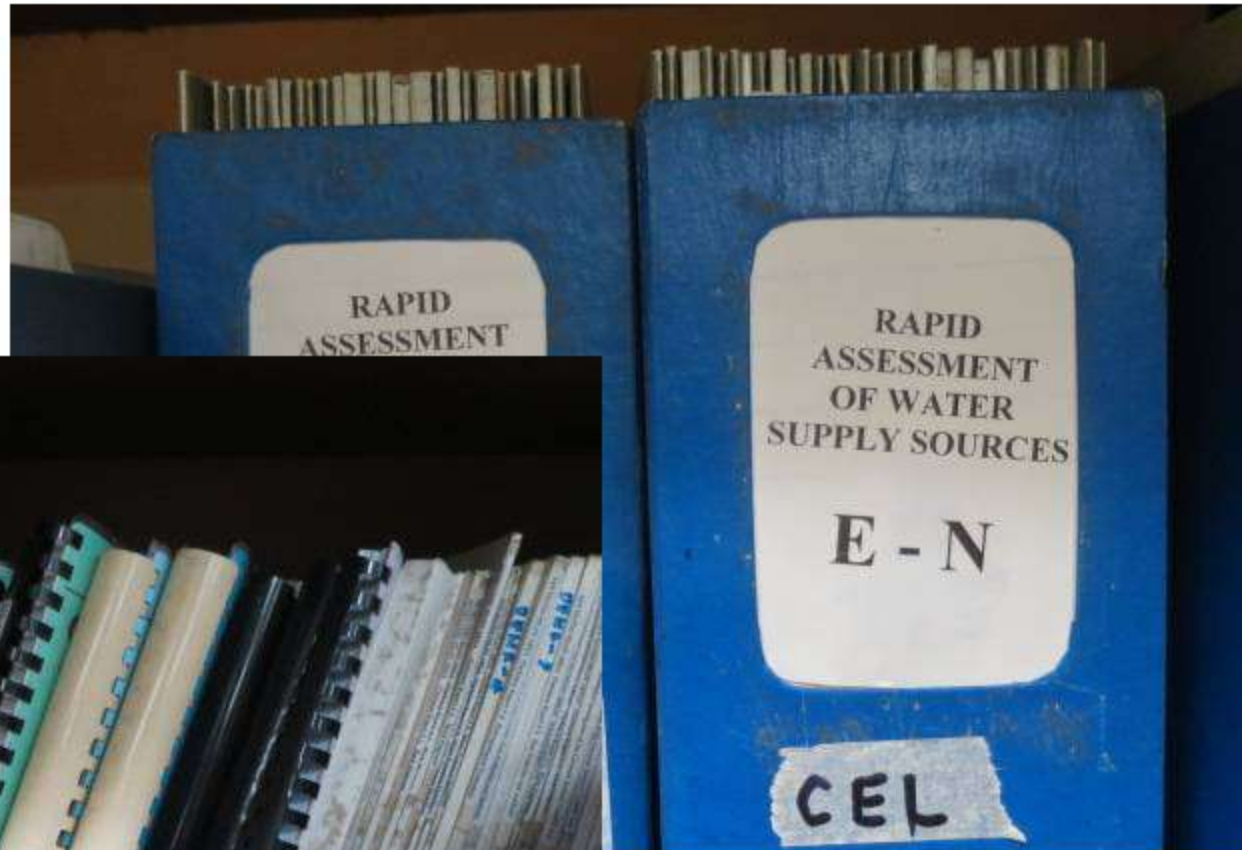
- FILES OF WELL DRILLING REPORTS
- FILES OF LAB. TEST RESULTS OF WATER SAMPLES
- PUMP DATA, ETC.

DYNAMIC DATA FROM GROUNDWATER MONITORING:

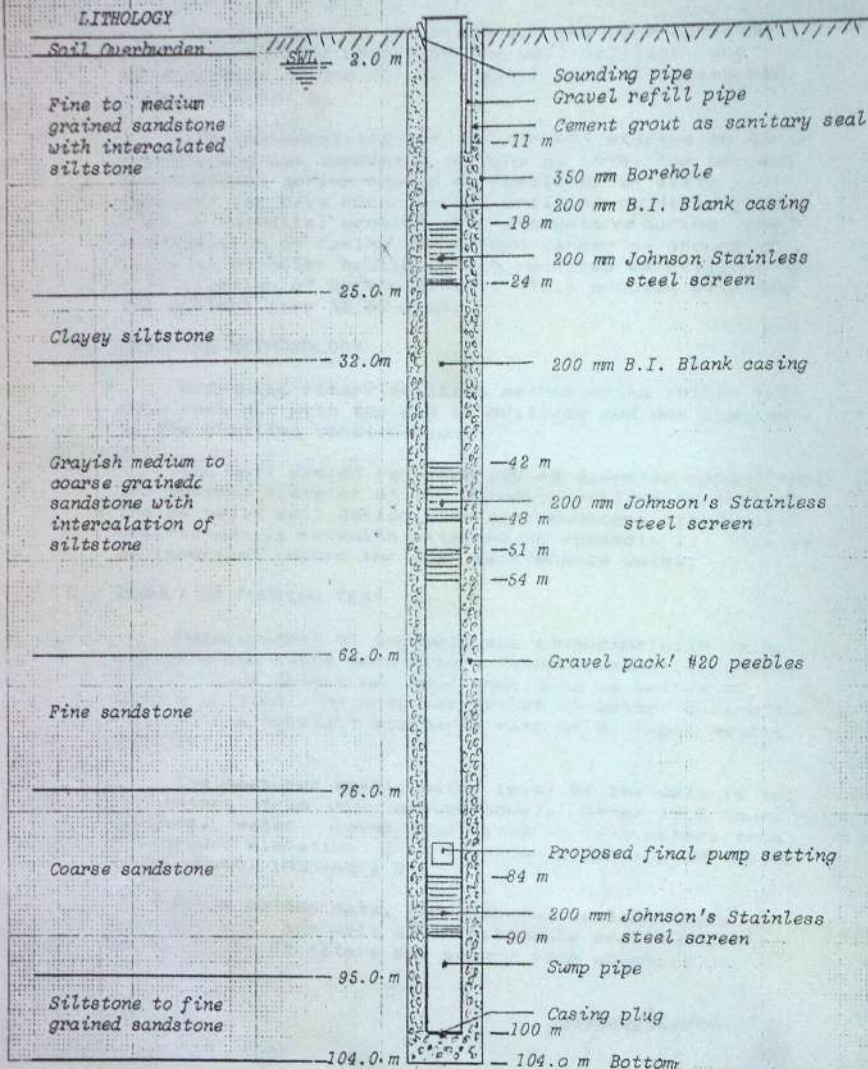
- PUMP OPERATORS' LOG BOOK.
- NUMERICAL DATA REGULARLY SUBMITTED ON DOCUMENT FORMAT REPORTS.

WDs COULD HAVE THE FF:

STATIC DATA:



AS BUILT WELL DESIGN OF CAYAMBANAN
DEEPWELL, URDANETA WATER DISTRICT



proposed

PS # 5

ILOCOS TRAINING AND REGIONAL MEDICAL CENTER

San Fernando City, La Union

REPORT OF PHYSICAL AND CHEMICAL ANALYSIS OF WATER

TO: URDANETA CITY WATER DISTRICT

Date Collected: April 25, 2005 Time: 9:10 AM Date Reported: May 10, 2005
 Date Submitted: April 25, 2005 Time: 1:30 PM Laboratory No.: 05-040
 Source: Pumping Station # 5
Anonas, Urdaneta City, Pangasinan

NSDW Permissible Limits

METHOD

PHYSICAL:

Color	<u>7.5 TCU</u>	5 TCU	Platinum Cobalt
Turbidity	<u>15.5 NTU</u>	5 NTU	Turbidimetric
Odor	<u>faint earthy</u>	Unobjectionable	Qualitative

CHEMICAL:

Alkalinity (as CaCO₃)

To phenolphthalein			Indicator
To methyl orange	<u>154.0 mg/L</u>		
Acidity	<u>24.0 mg/L</u>		Titration
Chloride	<u>24.0 mg/L</u>	250 mg/L	Argentometric
Total Hardness	<u>104.0 mg/L</u>	300 mg/L	EDTA Titration
Iron(Fe), Total	<u>1.075 mg/L</u>	1.0 mg/L	Phenanthroline
pH	<u>7.5</u>	6.5 - 8.5	Color Standard
Total Solids	<u>324.00 mg/L</u>	500 mg/L	Gravimetric
Fluoride (F)	<u>0</u>	1.0 mg/L	Alizarin Photometric
Nitrite (NO ₂)	<u>0</u>	3.0 mg/L	Diazotization
Residual Chloride	<u>0</u>	0.2 - 0.5 ppm	Orthotidine
Calcium (Ca)	<u>37.65 mg/L</u>		EDTA Titration
Magnesium	<u>2.44 mg/L</u>		Calculation
Manganese	<u>0</u>	0.5 mg/L	Persulfate
Sulfate	<u>34.0 mg/L</u>	250 mg/L	Turbidimetric
Silica	<u>77.0 mg/L</u>		Molybdesilicate

Meredith A. Rosuman
MEREDITH A. ROSUMAN
 Analyst

BRENDAL ROSUMAN MD, FPSP
 Head, Laboratory Department

DYNAMIC DATA

PS#8 JANUARY 2015 OPERATION

TIME	OFF ON	SUB-PUMP FLOW METER READING		Pressure psi	V _{avg} volts	I _{avg} amperes
		START	STOP			
4:55 4:54		4122851	4139417	40	250	52-50-47
5:05 5:04	0:10		4139501	4122884	48 41	50
5:43 5:42	0:38	4122884	4139501	45 39		50
6:52 6:20	1:09		4139600	4123113	33 40	
7:21 6:41	0:29	4123113	4139600	32 38		
8:57 7:42	1:36		4139865	4123433	36 37	
9:25 8:01	0:28	4123433	4139865	36 36		
10:27 8:49	1:02		4140048	4123638	37 38	
10:57 9:15	0:30	4123638	4140048	37 38		
12:07 10:07	1:10		4140223	4123866	38 38	
12:35 10:28	0:28	4123866	4140223	37 37		
13:38 11:16	1:03		4140246	4124072	39 39	
14:00 11:37	0:22	4124072	4140246	40 39		
14:28 12:23	0:28		4140399	4124164	30 39	
15:06 12:44	0:38	4124164	4140399	30 40		
15:30 1:29	0:24		4140549	4124243	30 40	
16:08 1:57	0:38	4124243	4140549	29 30		
16:33 2:25	0:25		4140647	4124347	38 30	
17:01 3:03	0:28	4124347	4140647	38 32		
17:50 3:26	0:49		4140725	4124502	37 32	
18:10 4:02	0:20	4124502	4140725	38 40		
18:57 4:49	0:47		4140881	4124658	38 39	
19:18 5:09	0:21	4124658	4140881	39 39		
20:04 5:50	0:46		4141014	4124806	42-33 38	
20:39 6:12	0:35	4124806	4141014	34 37		
21:04 6:56	0:25		4141160	4124886	34 39	
21:45 7:16	0:41	4124886	4141160	36 39		
22:00 7:59	0:15		4141304	4124938	20 40	50

8:36

4141304

32

8:58

4141384

34

9:40

4141384

34

10:00

SHUT DOWN

4141447

34-20

PS#8 JANUARY 2015 OPERATION

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9:40

4141384

34

10:00 SHUT DOWN

4141447

34-20

THESE **STATIC** AND **DYNAMIC DATA**
ARE HARD TO UNDERSTAND AND MAY
REQUIRE SO MUCH TIME AND GOOD
MENTAL PROCESSING TO
UNDERSTAND TO BE ABLE TO
FORMULATE MEASURES FOR GOOD
MANAGEMENT ON **WATER RESOURCES.**

THAT IS WHY WE DEVELOPED A
GROUNDWATER MANAGEMENT TOOL
TO CONVERT THESE MERE DATA INTO
INFORMATION, i.e.,

**PGDB GROUNDWATER
DATABANK**

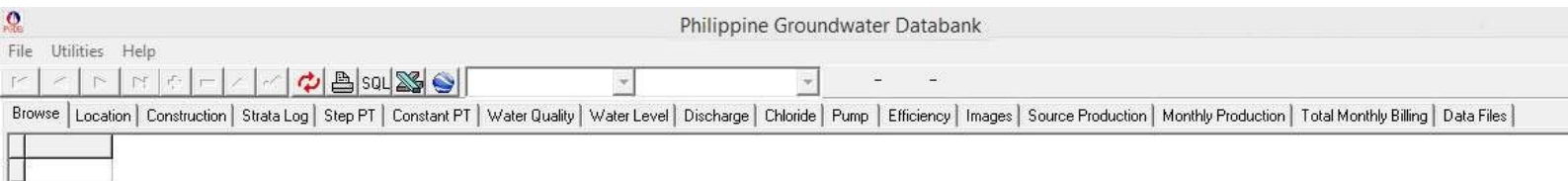
OR

**LWUA GROUNDWATER
DATABANK**

**The LWUA Groundwater
Databank was
continuously developed
to tailor-fit with the
needs of the WDs**

Reports generated by the Groundwater Databank software can provide the WD Management with good decision-making in line with the Government's thrust for GOOD GOVERNANCE.





Location Screen

Philippine Groundwater Databank

File Utilities Util Help

Tarlac Concepcion TAR-CON-1 PS 1-A St.Jude Village 1

Browse Location Construction Strata Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production

Well Info ☒ Locked

Map No Source No Source Type Basin

Local No Other Nos

Ground Elev. Elevation Accuracy

Owner ☒ WD ☐ Non-WD Operation ☒ Active ☐ Inactive ☐ Abandoned Standby

Water District (if WD owned) CCC Src No

Owner Well Field

Source of Information

Location Info

Longitude (DMS) Longitude (DDD) XPTM

Latitude (DMS) Latitude (DDD) YPTM

Location Accuracy

Munic CON

Egy. 001

Location

NWRB Water Permit

Water Permit No

Permit Date

Q Granted (L/s)

Q Actual Cap. (L/s)

Remarks

Entry Date Encoder Agency

	Well Depth	Case Diam	Strata	Q Cap	SDPT	CDPT	Chem	W Level	Disc	CL	Pump	Eff	Images
▶	1308	250	22	32	1	1	3	231	107		1	96	10

Construction Screen

Browse	Location	Construction	Strata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Efficiency	Images	Source
------------------------	--------------------------	------------------------------	----------------------------	-------------------------	-----------------------------	-------------------------------	-----------------------------	---------------------------	--------------------------	----------------------	----------------------------	------------------------	------------------------

Technical Data				Borehole		Casing		
Date Completed	Service Level	Ownership		Diameter (mm)	Depth (m)	Casing Type	Diameter (mm)	Bottom Depth (m)
6/16/1987	3	PUB		450	135	Steel	250	130.8
MP ab. Grd	SWL	Operating	Well Depth	200	175			
	3.14	Y	130.8					
Lifting Device								
Submersible Pump								
Well Type								
Deep Well								
Well Use								
Utility								

Entry Date	5/31/2007	Encoder	CGL	Agency	LWUA
------------	-----------	---------	-----	--------	------

Screen Type	Perforation Type	Slot Size	Scr Top	Scr Bot	Entry Date	Encoder	Agency
Stainless Steel	Wire Wound	60	31.8	34.8	5/31/2007	CGL	LWUA
Stainless Steel	Wire Wound	60	66.8	72.8	5/31/2007	CGL	LWUA
Stainless Steel	Wire Wound	60	81.8	84.8	5/31/2007	CGL	LWUA
Stainless Steel	Wire Wound	60	105.8	114.8	5/31/2007	CGL	LWUA
Stainless Steel	Wire Wound	60	124.8	127.8	5/31/2007	CGL	LWUA

Strata Log Screen

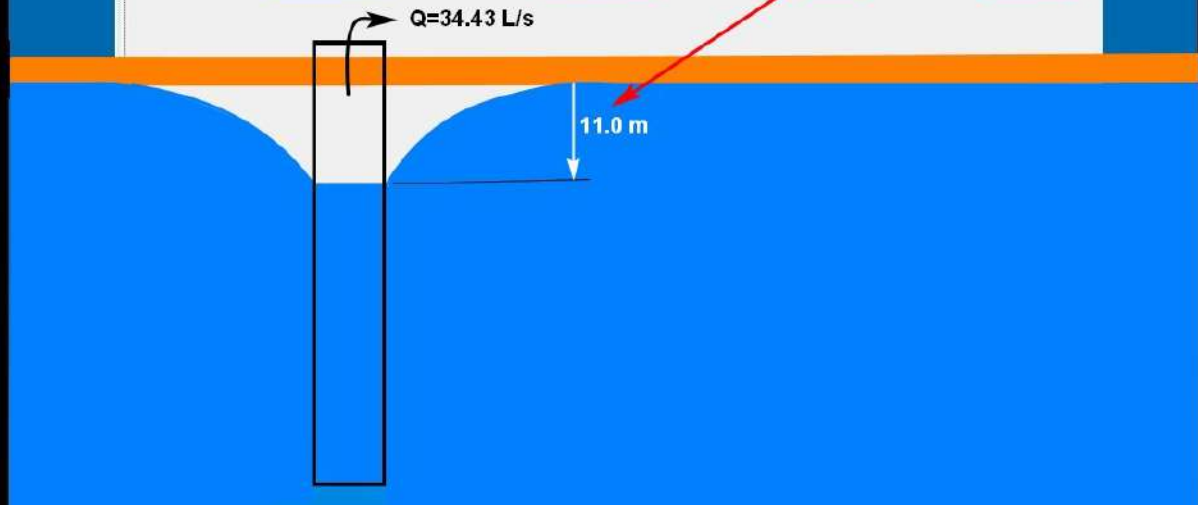
Browse	Location	Construction	Strata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Efficiency	Images	Source Production	Monthly Production	Total Monthly Billing	Data Files
Driller Hydrowells Inc.		Logs		Entry Date 5/31/2007												
Drilling Method [Dropdown]		Penetration [Dropdown]		Encoder CGL												
Described by Groundwater Specialist		Self Potential [Dropdown]		Agency LWUA												
Formation Code [Dropdown]		Resistivity [Dropdown]														
		Caliper [Dropdown]														
		[Dropdown]														
		[Dropdown]														
Depth Layer	Description	Major Component	Minor Component	Least Component	Code1	Code2	Code3	Pattern	Perm	Entry Date	Encoder	Agency				
6	Fine to medium sand	FINE SAND	MEDIUM SAND		S1	S2				5/31/2007	CGL	LWUA				
8	Adobe with gravel	ADOBE	GRAVEL		A	G				5/31/2007	CGL	LWUA				
11	Sand and gravel	SAND	GRAVEL		S	G				5/31/2007	CGL	LWUA				
14	Sand and gravel with adobe chips	SAND	GRAVEL	ADOBE	S	G	A			5/31/2007	CGL	LWUA				
20	Adobe with clay and gravel	ADOBE	CLAY	GRAVEL	A	C	G			5/31/2007	CGL	LWUA				
40	Grey clay with adobe chips	CLAY	ADOBE		C	A				5/31/2007	CGL	LWUA				
45	Bluish clay with adobe chips	CLAY	ADOBE		C	A				5/31/2007	CGL	LWUA				
50	Coarse sand and gravel with clay	COARSE SAND	GRAVEL	CLAY	S3	G	C			5/31/2007	CGL	LWUA				
68	Grey clay with sand, gravel and adobe chips	CLAY	SAND	GRAVEL	C	S	G			5/31/2007	CGL	LWUA				
72	Sand and gravel with adobe chips	SAND	GRAVEL	ADOBE	S	G	A			5/31/2007	CGL	LWUA				
74	Sand and gravel with adobe chips and clay	SAND	GRAVEL	ADOBE	S	G	A			5/31/2007	CGL	LWUA				
78	Sand and gravel with adobe chips	SAND	GRAVEL	ADOBE	S	G	A			5/31/2007	CGL	LWUA				
85	Grey sticky silty clay	CLAY/SILT (LOAM)			C					5/31/2007	CGL	LWUA				
88	Sand and gravel with adobe chips and clay	SAND	GRAVEL	ADOBE	S	G	A			5/31/2007	CGL	LWUA				
90	Sand and gravel with adobe chips and clay	SAND	GRAVEL	ADOBE	S	G	A			5/31/2007	CGL	LWUA				
95	Clay with sand, gravel and adobe chips	CLAY	SAND	GRAVEL	C	S	G			5/31/2007	CGL	LWUA				
98	Grey sticky silty clay	CLAY			C					5/31/2007	CGL	LWUA				
100	Clay with sand, gravel and adobe chips	CLAY	SAND	ADOBE	C	S	A			5/31/2007	CGL	LWUA				
121	Sand and gravel with clay	SAND	GRAVEL	clay	S	G	c			5/31/2007	CGL	LWUA				
123	Grey sticky silty clay	CLAY	CLAY/SILT (LOAM)		C	C				5/31/2007	CGL	LWUA				

Step Drawdown Pumping Test

Browse	Location	Construction	Strata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Efficiency	Images
Date	9/20/1986											
Done By			Num Step	5		Aquifer Loss B (sec/m2)	320		Projected Drawdown	11.0		51.4
Q Max (L/S)	34.43		Duration/step (min)	60		Well Loss Constant C (sec2/m5)	8780			10.4		48.6
Total Drawdown	21.48		Transmissivity (m2/sec*10^-3)			Drawdown (m) = BQ + CQ^2				21.4		
Specific Capacity (L/s/m)	1.60		Entry Date	5/31/2007		Encoder	CGL		Agency	LWLJA		

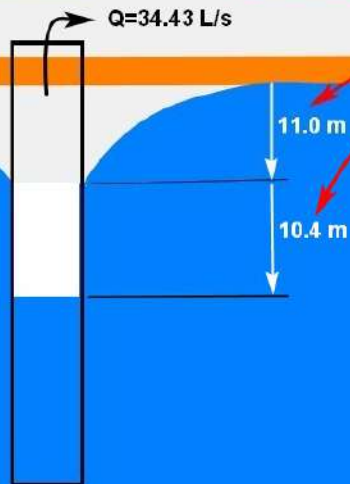
Step Drawdown Pumping Test

Browse Location Construction Static Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images										
Date	9/20/1986									
Done By				Num Step	5		Aquifer Loss B (sec/m ²)	320	Projected Drawdown	%
Q Max (L/S)	34.43			Duration/step (min)	60		Well Loss Constant C (sec ² /m ⁵)	8780	11.0	51.4
Total Drawdown	21.48			Transmissivity (m ² /sec*10 ⁻³)			Drawdown (m) = $BQ + CQ^2$	21.4	10.4	48.6
Specific Capacity (L/s/m)	1.60			Entry Date	5/31/2007		Encoder	2GL	Agency	LWJJA



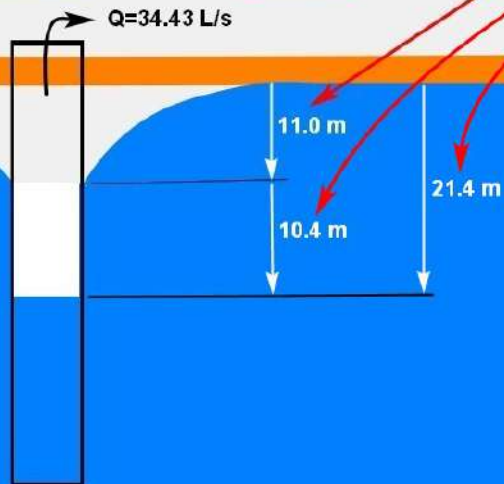
Step Drawdown Pumping Test

Browse Location Construction Static Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images										
Date	9/20/1986									
Done By			Num Step	5		Aquifer Loss B (sec/m ²)	320		Projected Drawdown	%
Q Max (L/S)	34.43		Duration/step (min)	60		Well Loss Constant C (sec ² /m ⁵)	8780		11.0	51.4
Total Drawdown	21.48		Transmissivity (m ² /sec*10 ⁻³)			Drawdown (m) = $BQ + CQ^2$			10.4	48.6
Specific Capacity (L/s/m)	1.60		Entry Date	5/31/2007					21.4	
						Encoder	23L		Agency	LWJJA



Step Drawdown Pumping Test

Browse Location Construction Static Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images										
Date	9/20/1986									
Done By			Num Step	5		Aquifer Loss B (sec/m ²)	320		Projected Drawdown	%
Q Max (L/S)	34.43		Duration/step (min)	60		Well Loss Constant C (sec ² /m ⁵)	8780		11.0	51.4
Total Drawdown	21.48		Transmissivity (m ² /sec*10 ⁻³)			Drawdown (m) = $BQ + CQ^2$			10.4	48.6
Specific Capacity (L/s/m)	1.60		Entry Date	5/31/2007		Encoder	23L		21.4	
						Agency	LWJJA			



Constant Drawdown Pumping Test

Browse	Location	Construction	Strata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Eff
Date	9/22/1986	Duration (min)	3720	Entry Date	5/31/2007						
Done By		Drawdown		Recovery		Encoder	CGL				
Q (L/S)	34.4	Transmissivity (m ² /sec*10 ⁻³)	1.9	2.2	Agency	LWUA					
Total Drawdown (M)	26	Specific Capacity (L/s/m)		Well Potential							

Constant Drawdown Pumping Test

Browse	Location	Construction	Strata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Eff
Date	9/22/1986	Duration (min)	3720	Entry Date	5/31/2007						
Done By		Drawdown		Recovery		Encoder	CGL				
Q (L/S)	34.4	Transmissivity (m ² /sec*10 ⁻³)	1.9		2.2	Agency	LWUA				
Total Drawdown (M)	26	Specific Capacity (L/s/m)	1.32	Well Potential	Medium						

Water Quality Screen

Browse	Location	Construction	Sirata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Efficiency	Images	So
Date Tested	4/2/2004	Acidity	Limits			Limits			Limits				
Temp C	29.6	NA+	200 mg/L			CO3-			CO2				
Turbidity	5 NTU	K+				HCO3-	250 mg/L	256	B	0.3 mg/L			
Color	5 TCU	CA++	75 mg/L	20		CL-	250 mg/L	40	PB	0.01 mg/L			
Odor	UnObiect	MG++	50 mg/L	10		SO4-	250 mg/L		SIO2				
PH	6.5 - 8.5	MN++	0.5 mg/L	0		NO3-	50 mg/L		FE	1.0 mg/L	1		
Conductivity	535	ZN++	5.0 mg/L			NO2-	3 mg/L		CH4				
Alkalinity	210	CU++	1.0 mg/L			PO4-			O2				
Hardness	300 mg/L	NH4+				F-	1.0 mg/L		H2S	0.05 mg/L			
TDS	500 mg/L												
TSS	5 NTU												
		CATIONS +	1.8564			BALANCE	-3.4671		Entry Date	5/31/2007			
		ANIONS -	5.3235			ERROR %	46.289		Encoder	CGL			
									Agency	LWUA			

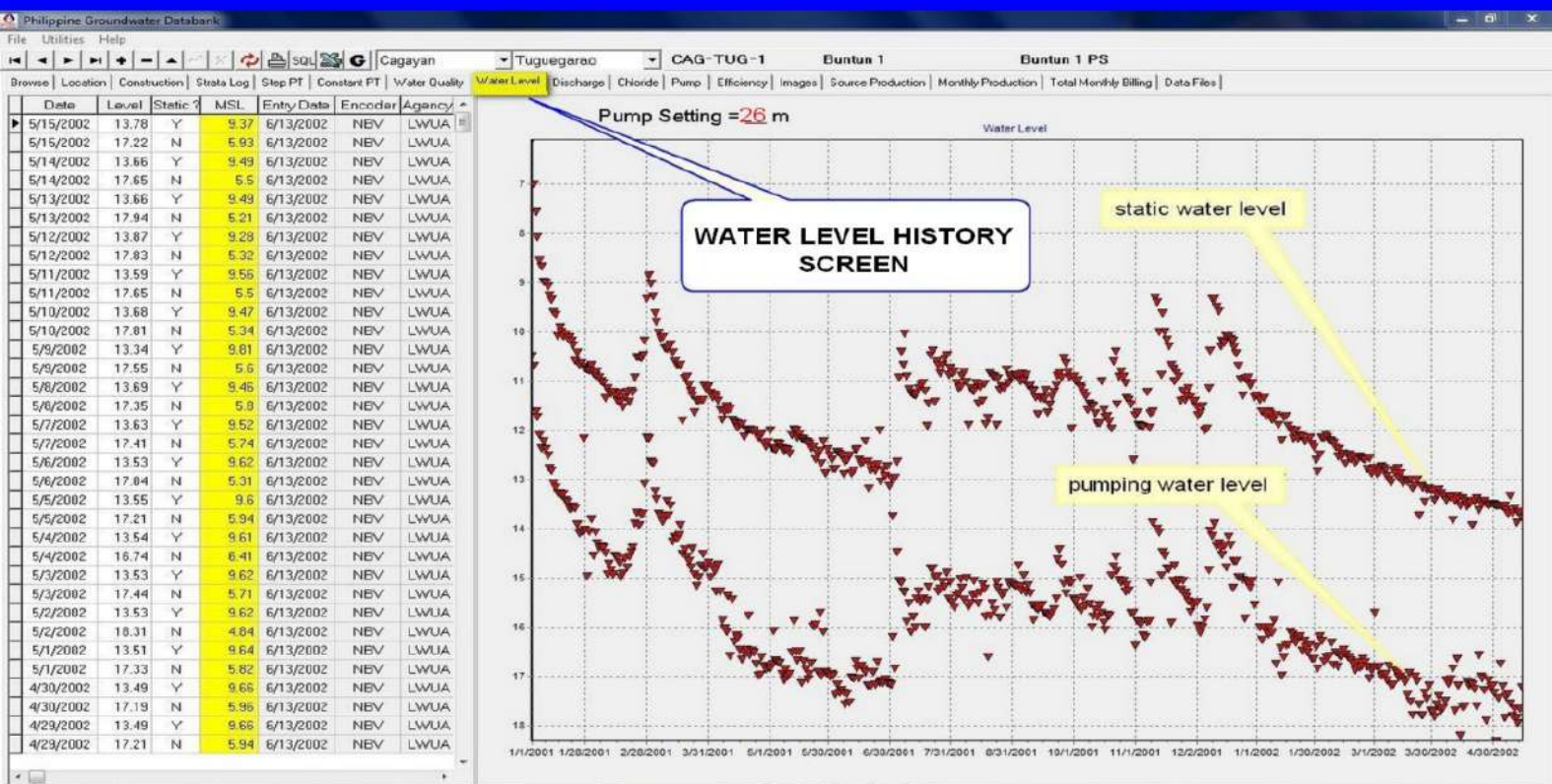
Date Tested	2/3/2003	Acidity	Limits			Limits			Limits				
Temp C	26.4	NA+	200 mg/L			CO3-		20	CO2				
Turbidity	5 NTU	K+				HCO3-	250 mg/L	198	B	0.3 mg/L			
Color	5 TCU	CA++	75 mg/L	32		CL-	250 mg/L	30	PB	0.01 mg/L			
Odor	UnObiect	MG++	50 mg/L	12		SO4-	250 mg/L		SIO2				
PH	6.5 - 8.5	MN++	0.5 mg/L	0.05		NO3-	50 mg/L		FE	1.0 mg/L	0.5		
Conductivity	490	ZN++	5.0 mg/L			NO2-	3 mg/L		CH4				
Alkalinity	196	CU++	1.0 mg/L			PO4-			O2				
Hardness	300 mg/L	NH4+				F-	1.0 mg/L		H2S	0.05 mg/L			
TDS	500 mg/L												
TSS	5 NTU												
		CATIONS +	2.6034			BALANCE	-1.4876		Entry Date	5/31/2007			
		ANIONS -	4.091			ERROR %	22.2216		Encoder	CGL			
									Agency	LWUA			

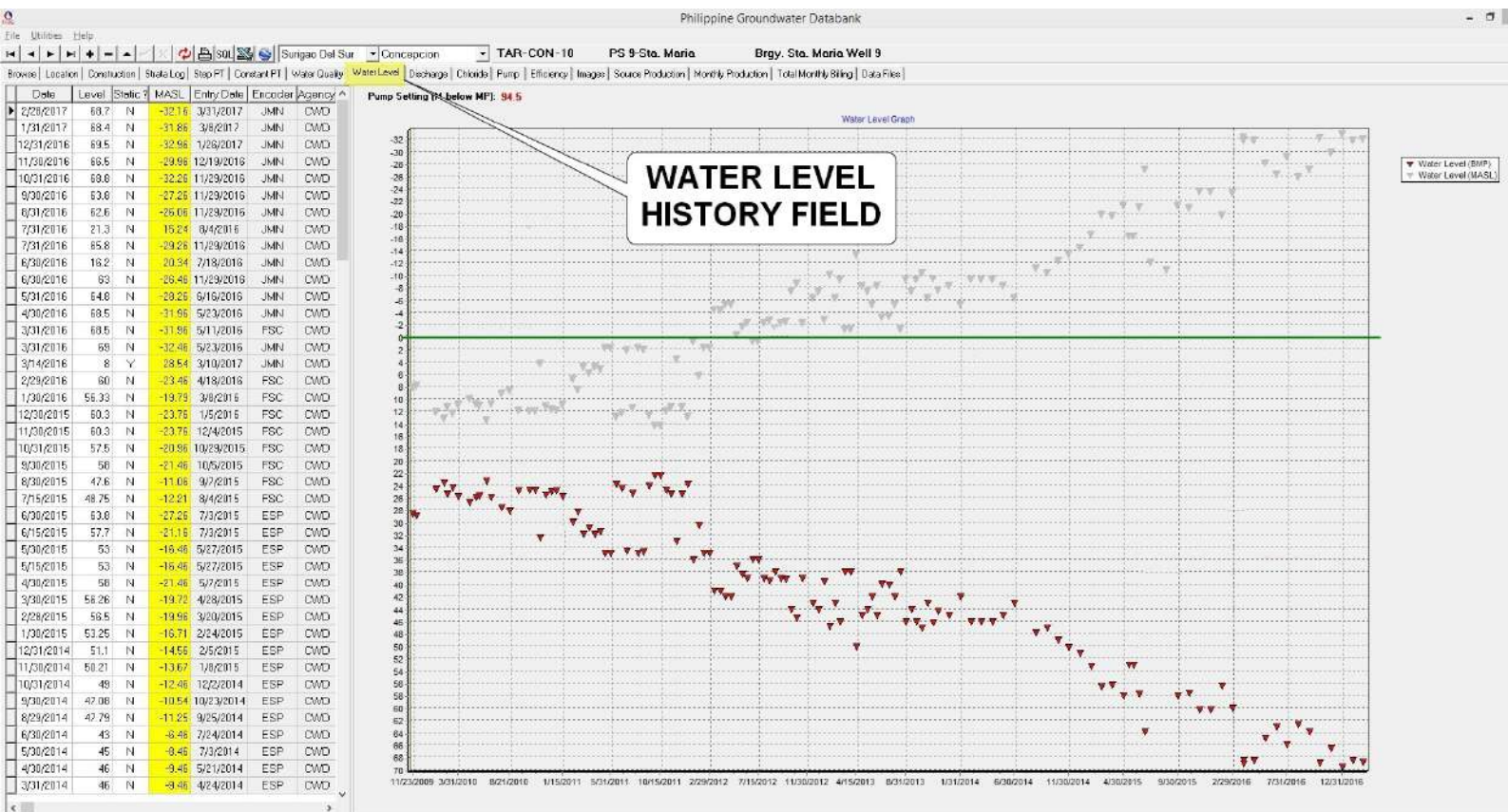
Water Quality Screen

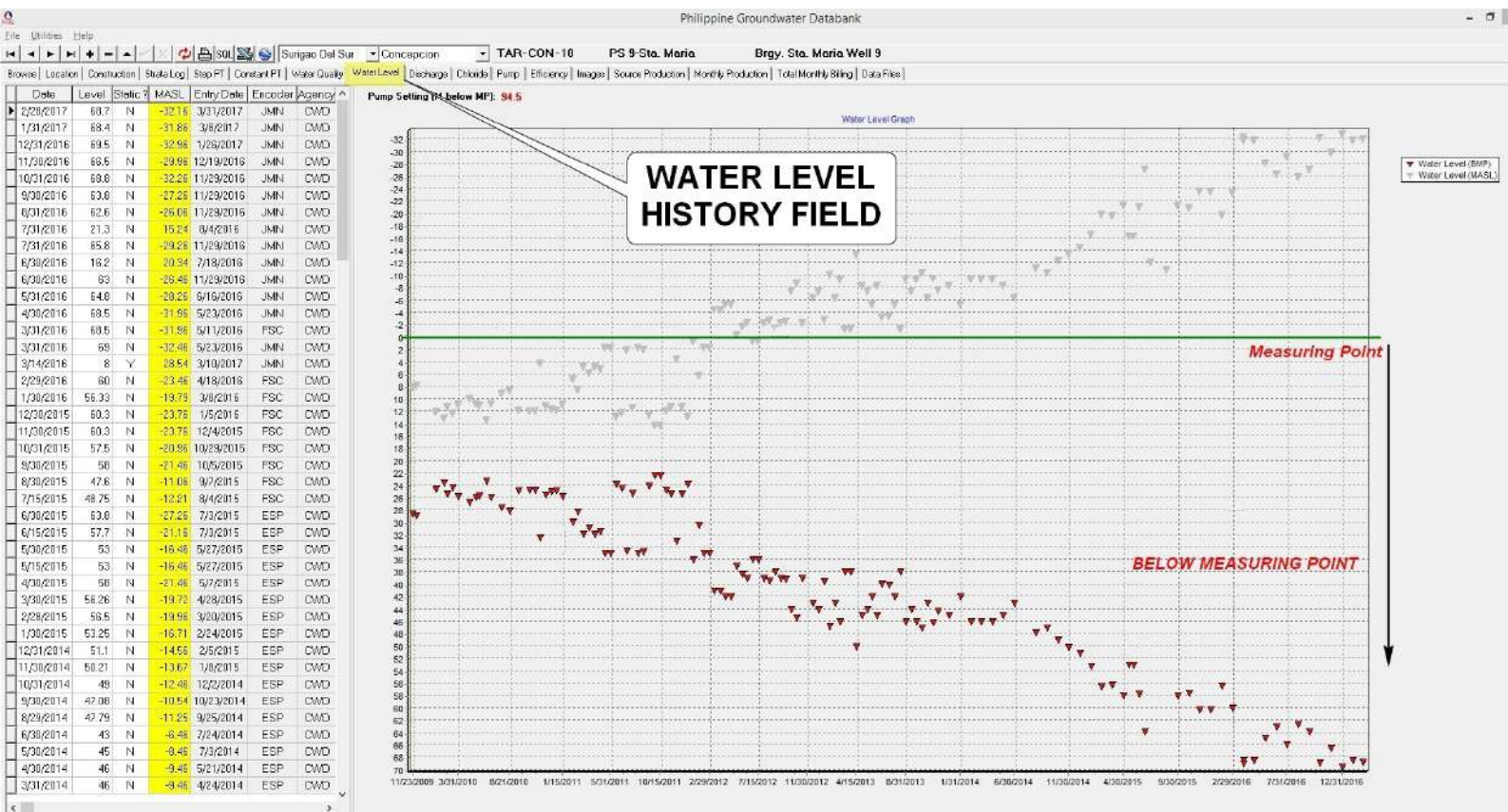
Browse	Location	Construction	Sirata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Efficiency	Images	So
Date Tested	4/2/2004	Acidity	Limits			Limits			Limits				
Temp C	29.6	NA+	200 mg/L			CO3-			CO2				
Turbidity	5 NTU	K+				HCO3-	250 mg/L	256	B	0.3 mg/L			
Color	5 TCU	CA++	75 mg/L	20		CL-	250 mg/L	40	PB	0.01 mg/L			
Odor	UnObiect	MG++	50 mg/L	10		SO4-	250 mg/L		SIO2				
PH	6.5 - 8.5	MN++	0.5 mg/L	0		NO3-	50 mg/L		FE	1.0 mg/L	1		
Conductivity	535	ZN++	5.0 mg/L			NO2-	3 mg/L		CH4				
Alkalinity	210	CU++	1.0 mg/L			PO4-			O2				
Hardness	300 mg/L	NH4+				F-	1.0 mg/L		H2S	0.05 mg/L			
TDS	500 mg/L								Entry Date	5/31/2007			
TSS	5 NTU								Encoder	CGL			
									Agency	LWUA			
		CATIONS +	1.8564			BALANCE	-3.4671						
		ANIONS -	5.3235			ERROR %	46.289						

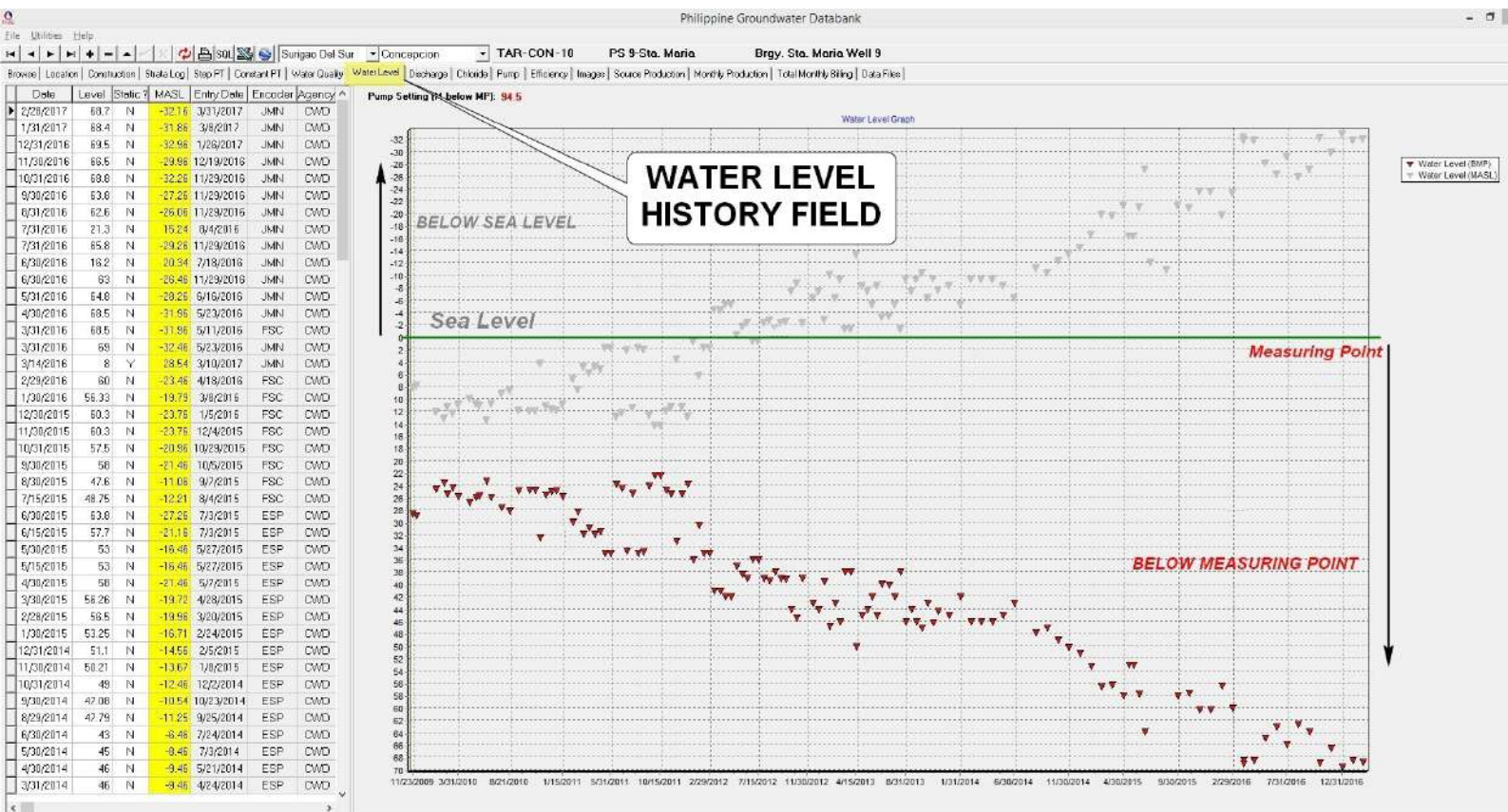
Date Tested	2/3/2003	Acidity	Limits			Limits			Limits				
Temp C	26.4	NA+	200 mg/L			CO3-		20	CO2				
Turbidity	5 NTU	K+				HCO3-	250 mg/L	198	B	0.3 mg/L			
Color	5 TCU	CA++	75 mg/L	32		CL-	250 mg/L	30	PB	0.01 mg/L			
Odor	UnObiect	MG++	50 mg/L	12		SO4-	250 mg/L		SIO2				
PH	6.5 - 8.5	MN++	0.5 mg/L	0.05		NO3-	50 mg/L		FE	1.0 mg/L	0.5		
Conductivity	490	ZN++	5.0 mg/L			NO2-	3 mg/L		CH4				
Alkalinity	196	CU++	1.0 mg/L			PO4-			O2				
Hardness	300 mg/L	NH4+				F-	1.0 mg/L		H2S	0.05 mg/L			
TDS	500 mg/L								Entry Date	5/31/2007			
TSS	5 NTU								Encoder	CGL			
									Agency	LWUA			
		CATIONS +	2.6034			BALANCE	-1.4876						
		ANIONS -	4.091			ERROR %	22.2216						

Water Level Screen

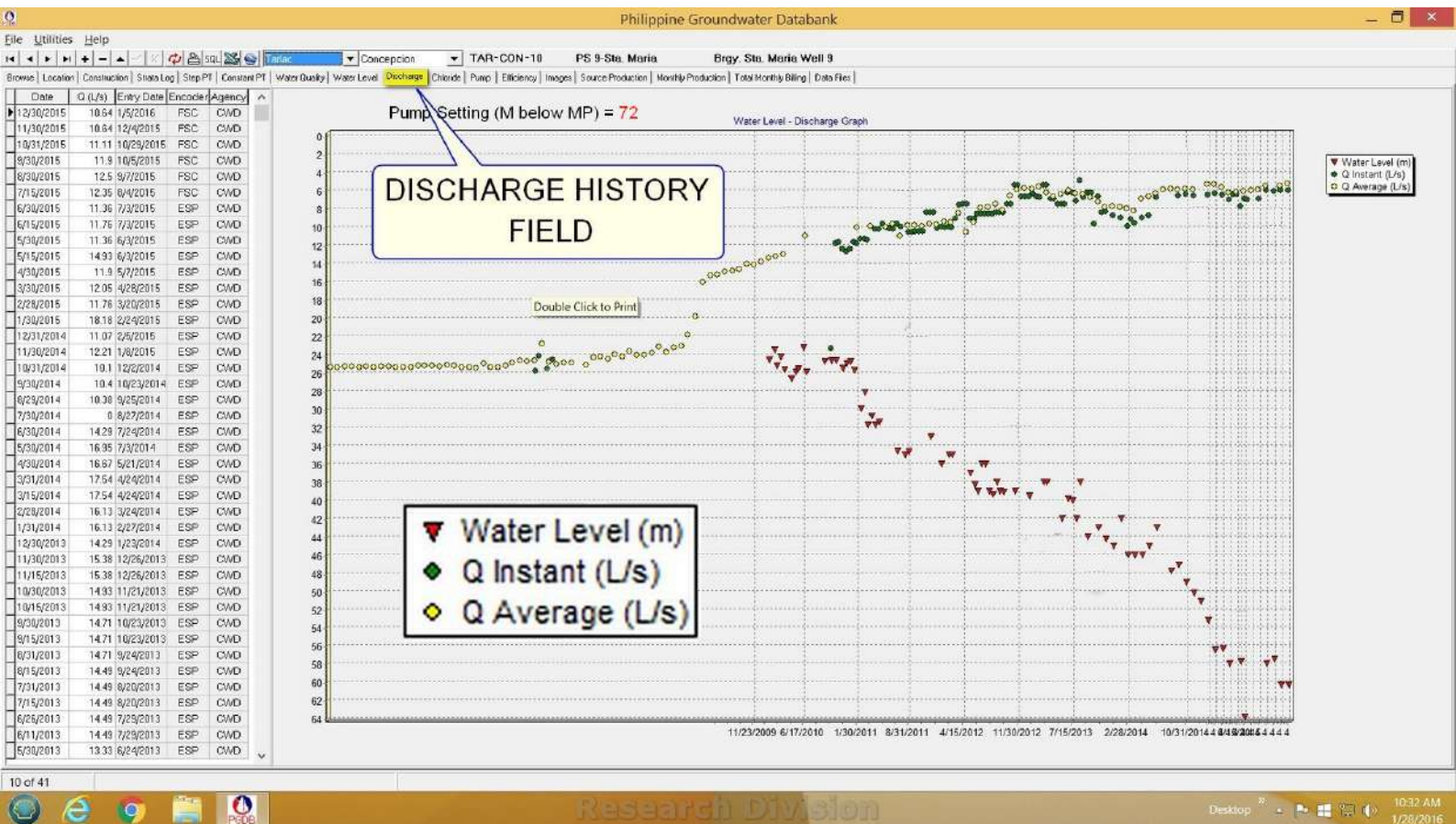


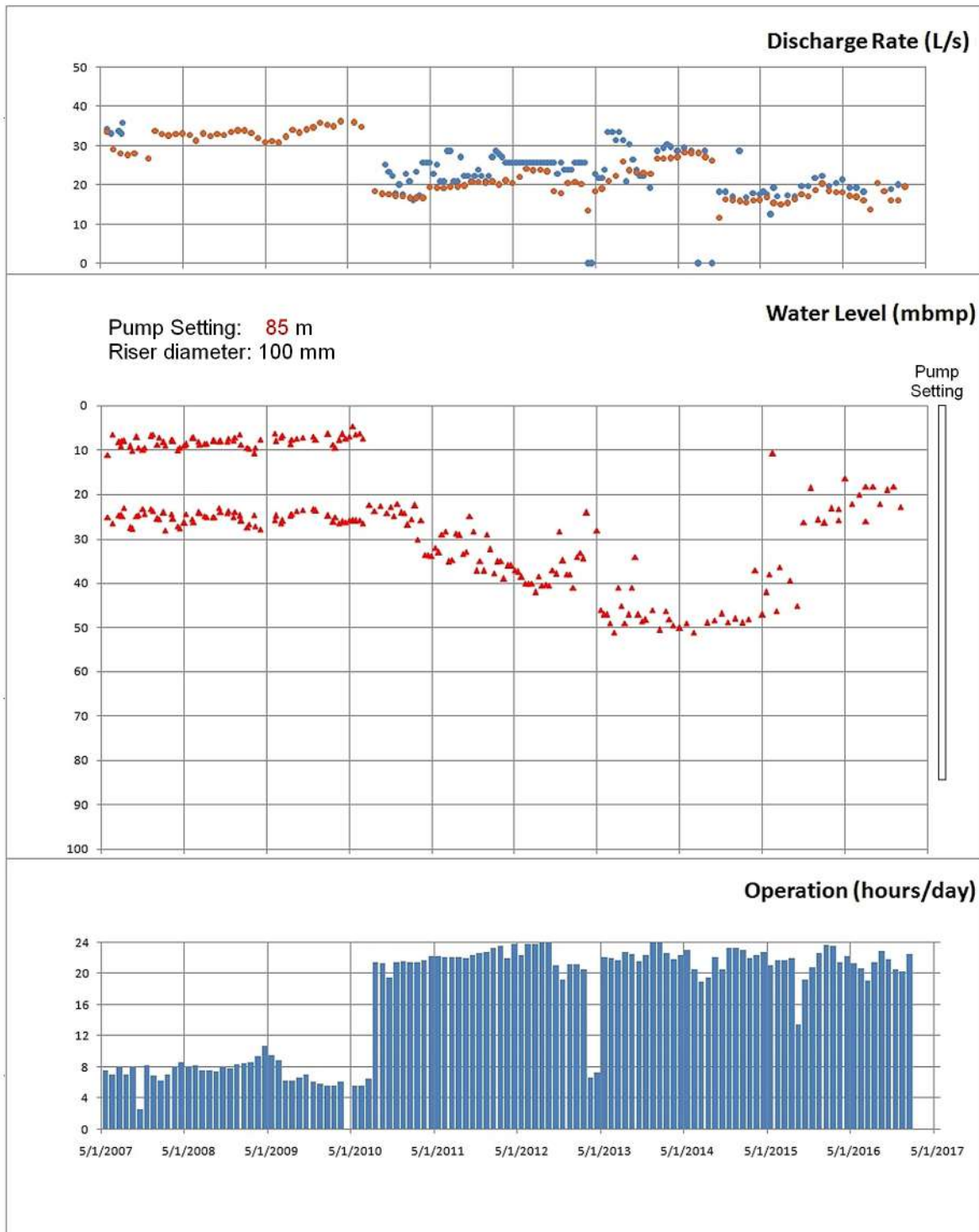




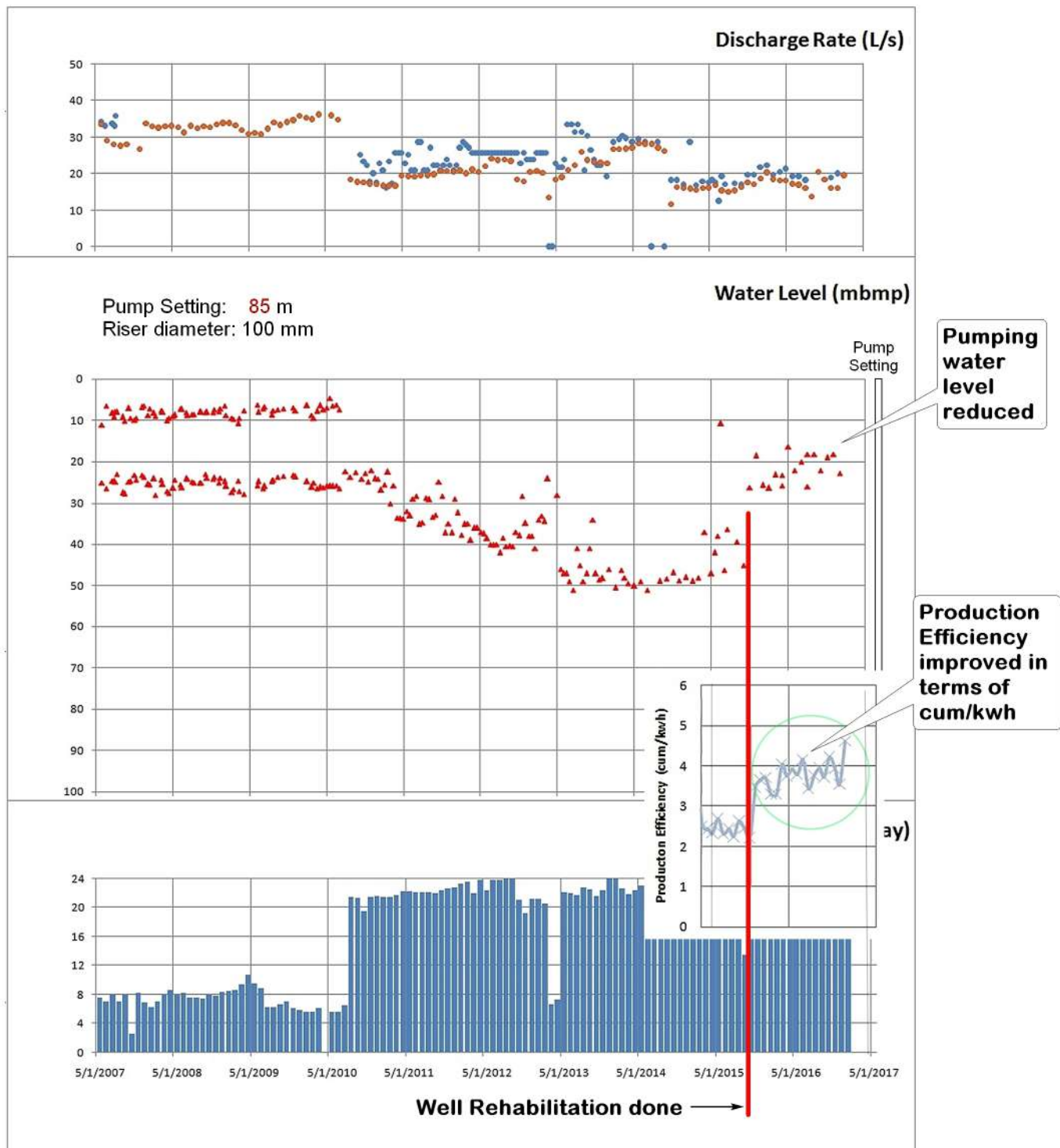




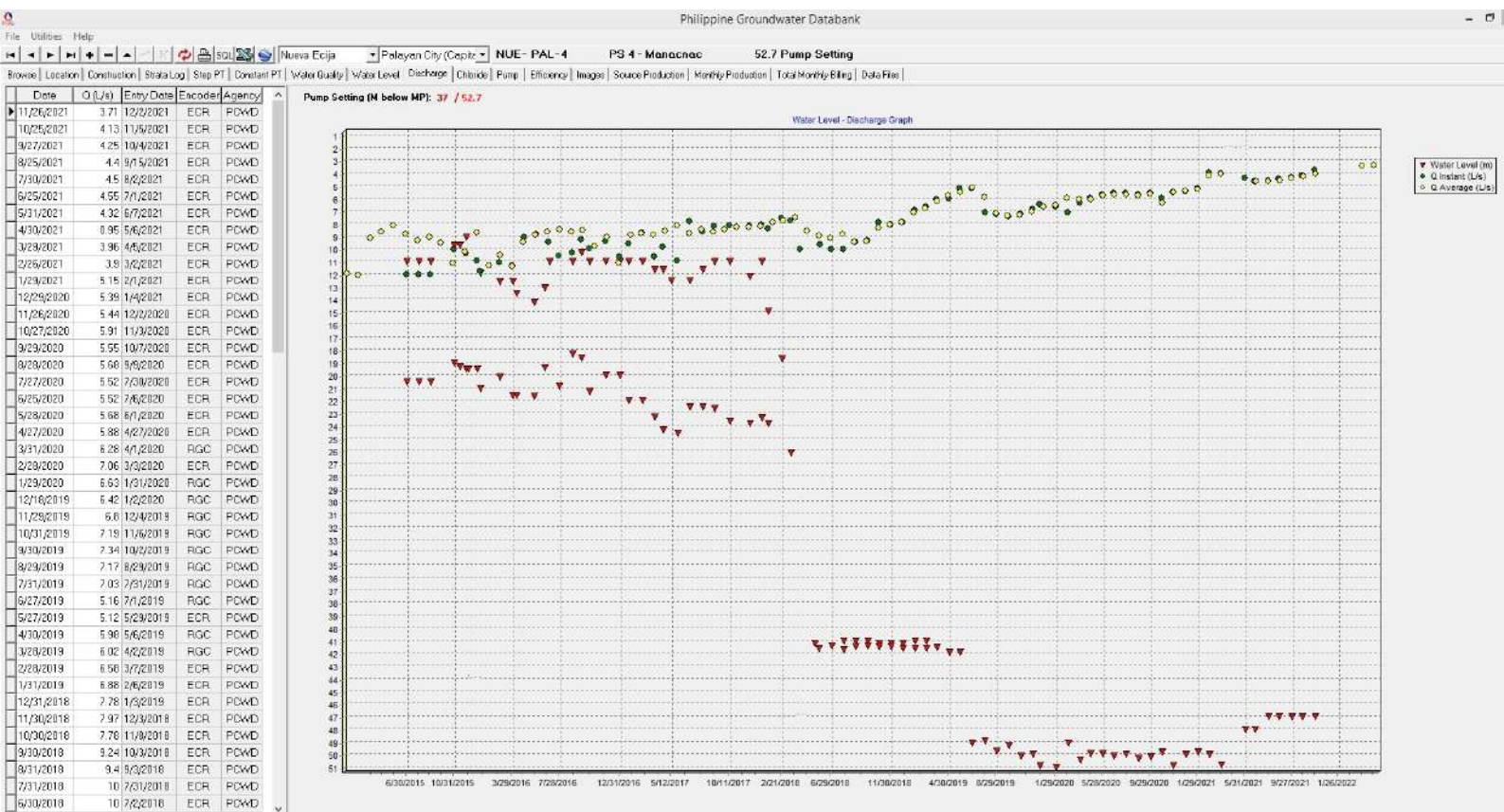




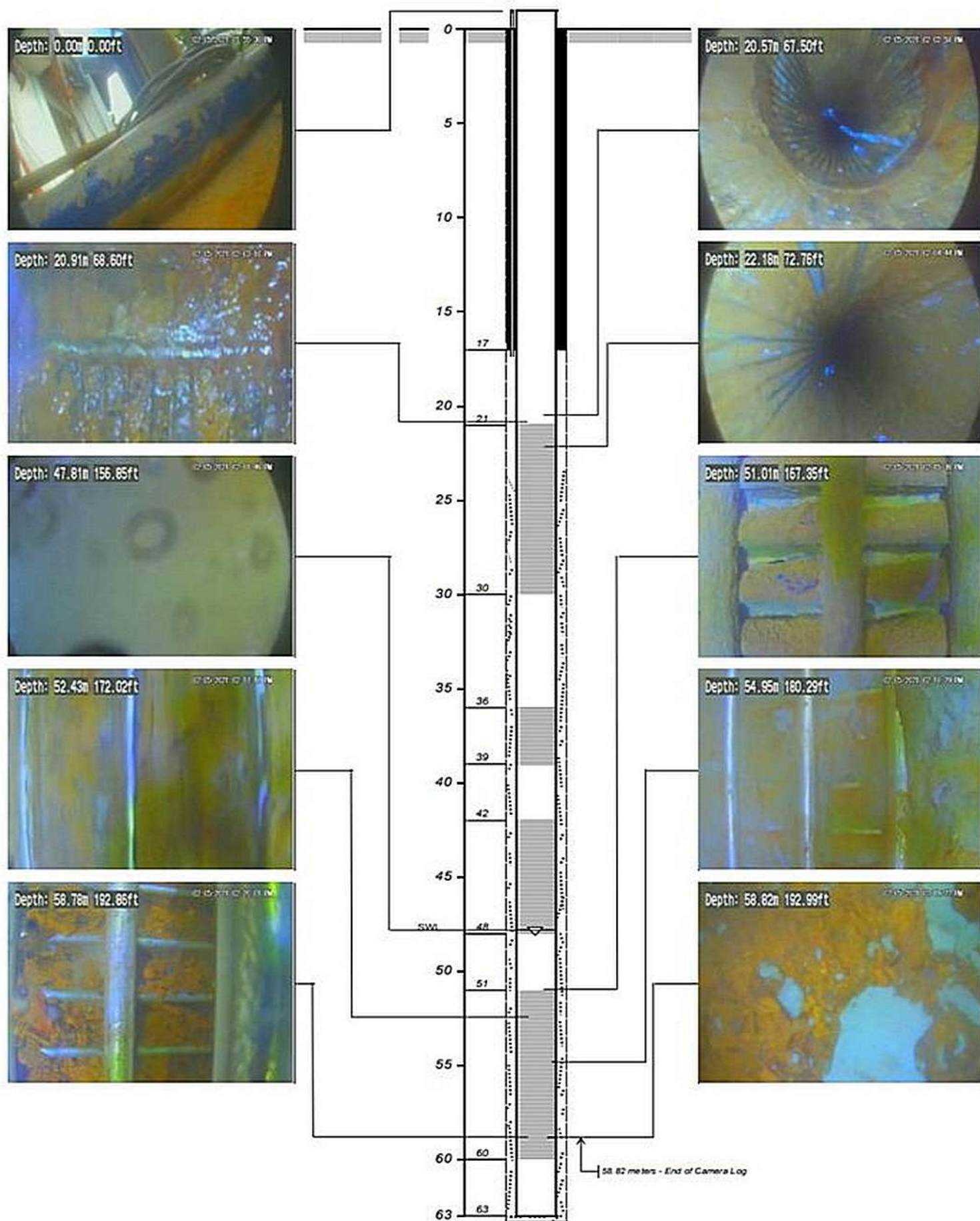
PS 4 - San Jose



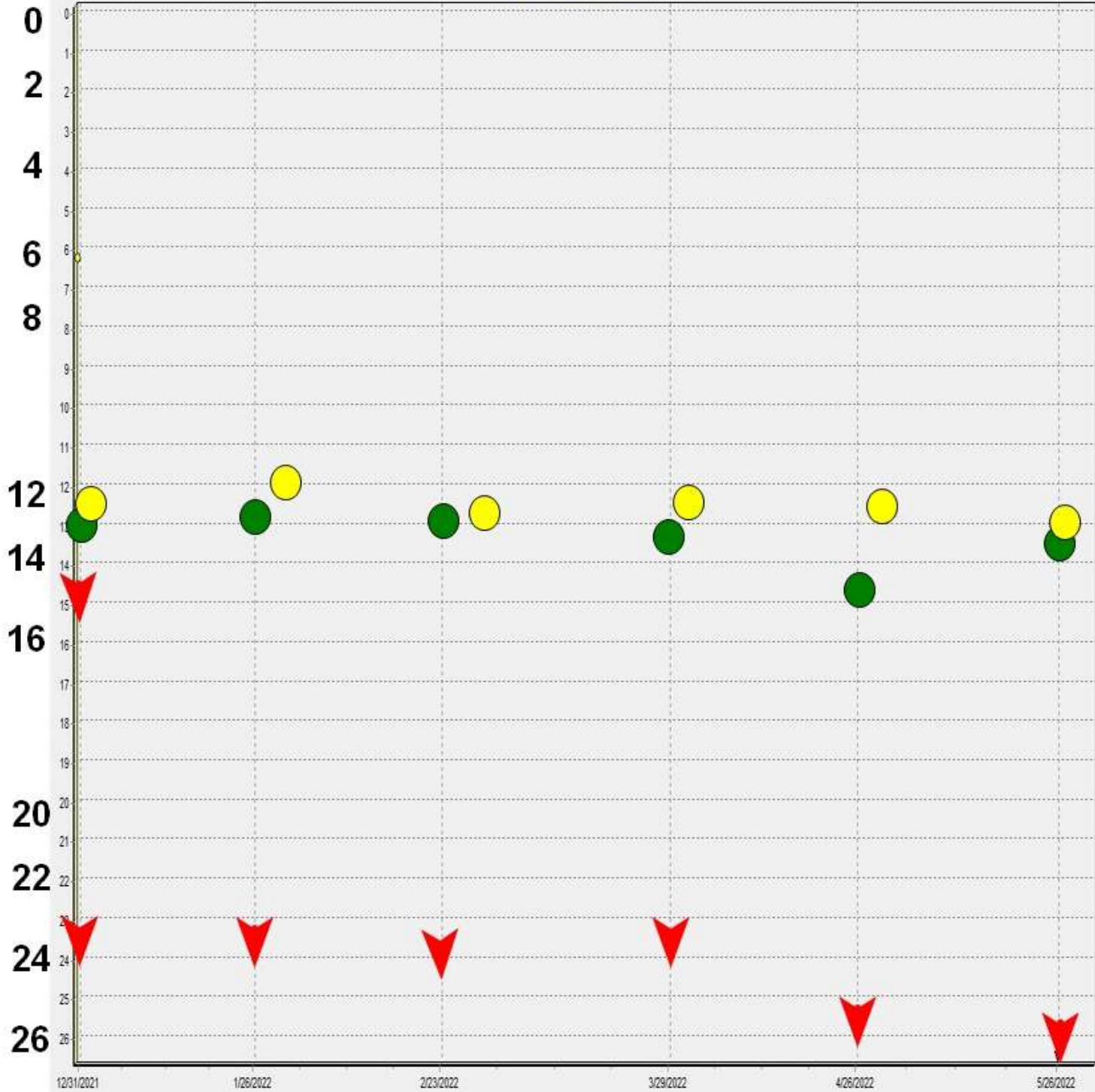
PS 4 - San Jose

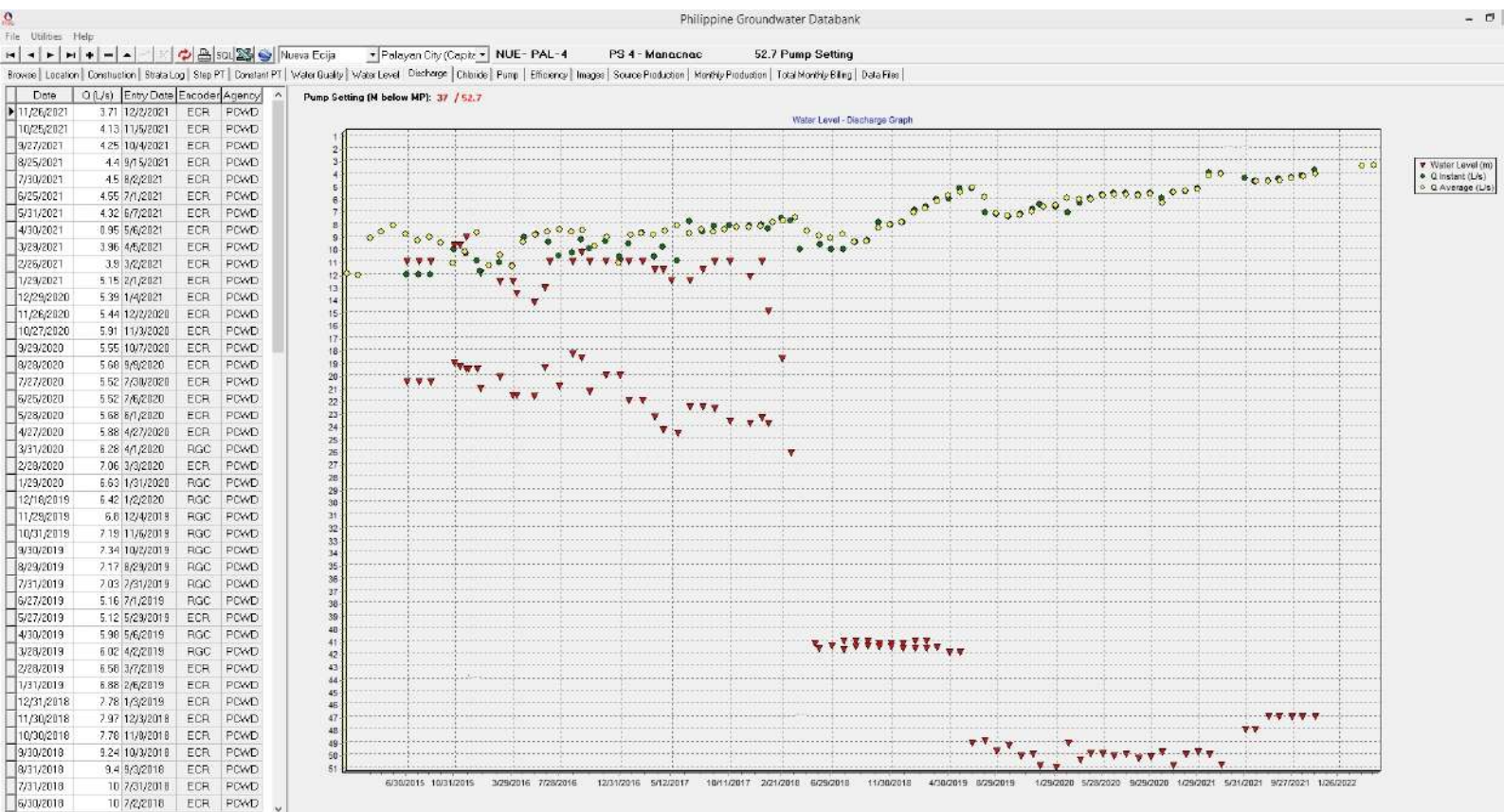


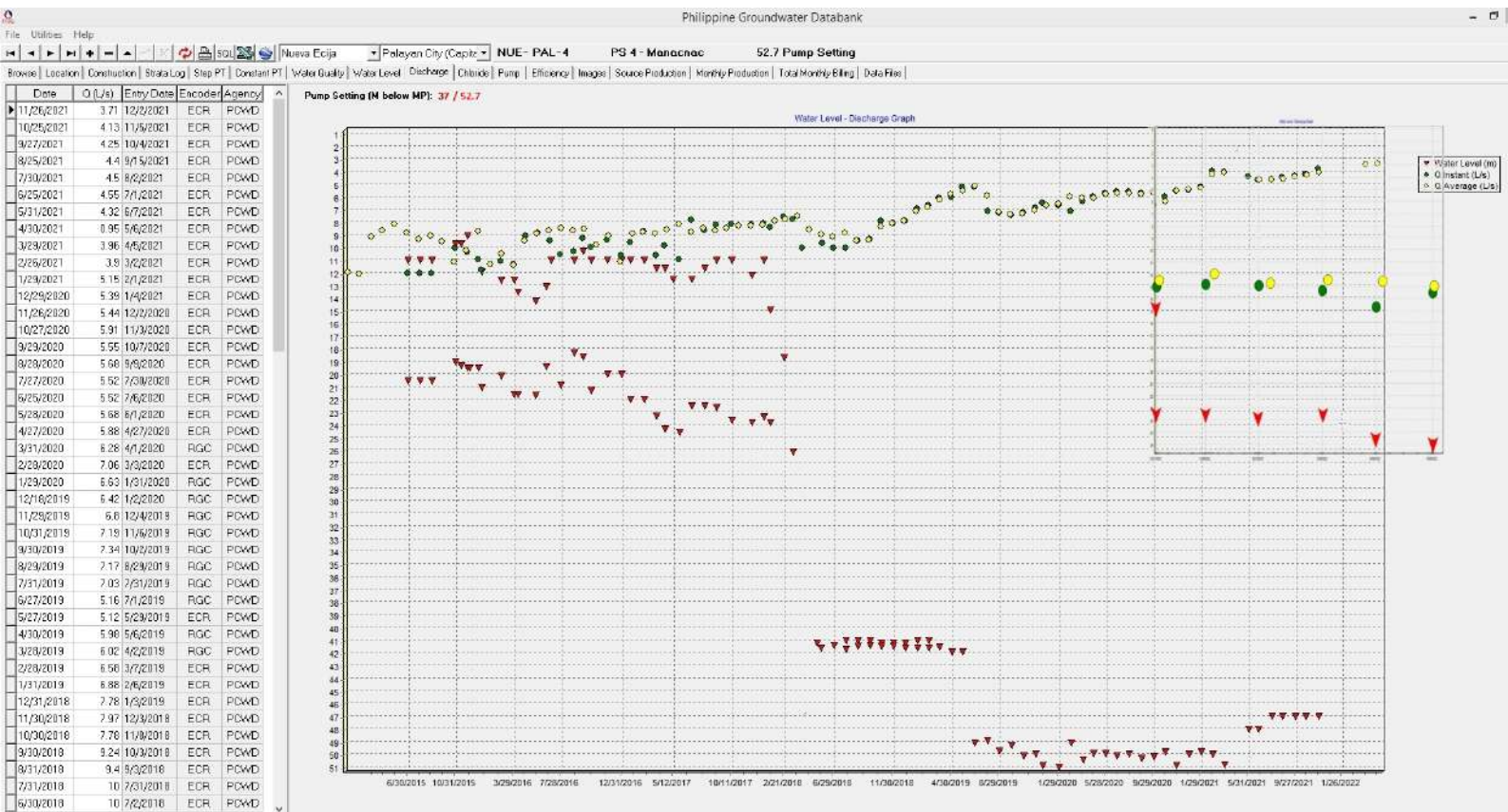
Design of Well No. 4 and Digital Photos



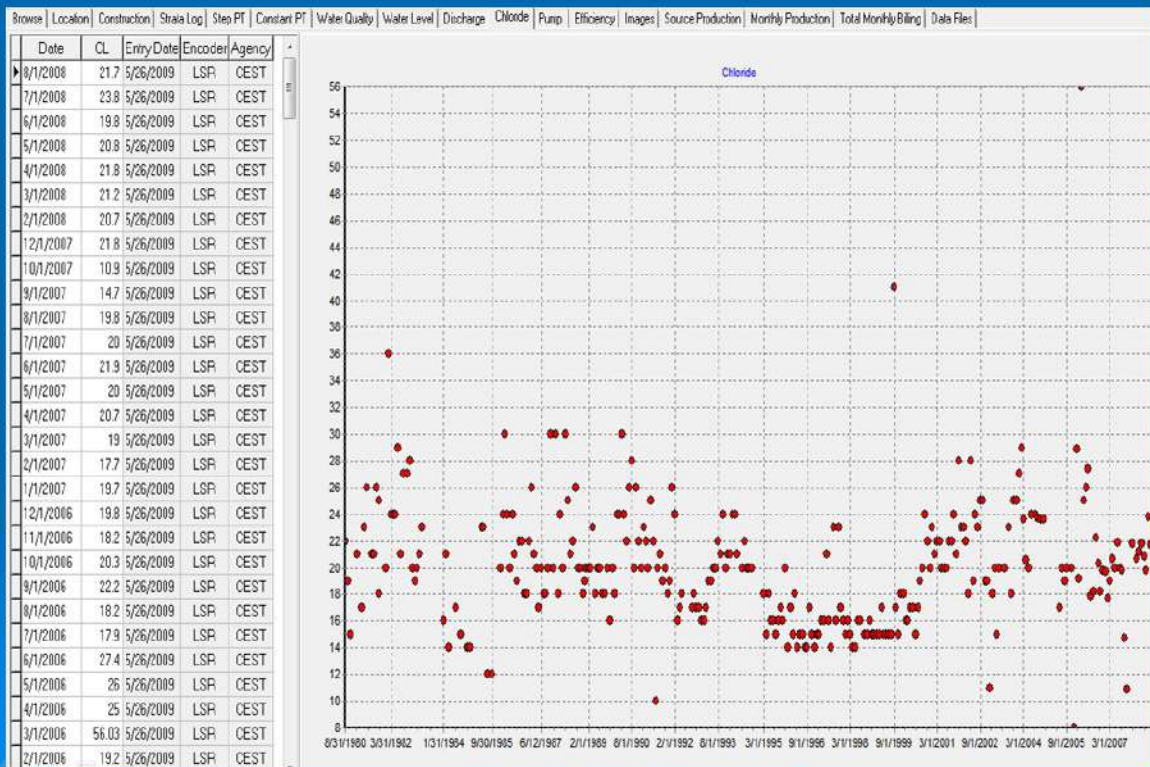
Water Level - Discharge Graph







Chloride Screen



Pump Screen

Browse	Location	Construction	Stats Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Efficiency	Images	Source Production	Monthly Production	Total Monthly Billing	Data File
Data No	HP	Phase	Brand	Model	Type	No of Riser	Riser Diam	Installed By	Date Installed	Setting	Entry Date	Encoder	Agency			
1	50	3	Franklin		SP	15	125				90	5/31/2007	CGL	LWUA		
2	54.3	3	Fleuger		SP	15	125	Gailborton	5/27/2007	90	5/31/2007	CGL	LWUA			

Philippine Groundwater Databank

File Utilities Help

Negros Occidenta La Carlota City NEC- LCC-5 Villa Caridad Subd. PS

Browse Location Construction Strata Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files

Date	Q L/s	L av	V av	Phase	PF	PSI	PWL	Frict Loss	TDH	IHP	WHP	Over_Eff	Motor_Eff	Pump_Eff	Entry Date	Encoder	Agency
7/17/2012	16.9	26	450	3	0.81	35	32	1					80		7/17/2012	B2P	LCWD
7/6/2011	13.15	20	450	3	0.72	16	28.5	1					80		7/6/2011	BVA	LCWD
7/5/2011	12.4	19	455	3	0.68	18	27	1					80		7/6/2011	BVA	LCWD
6/7/2011	13.7	20	450	3	0.71	10	31	1					80		6/7/2011	BVA	LCWD

**Efficiency
Screen**

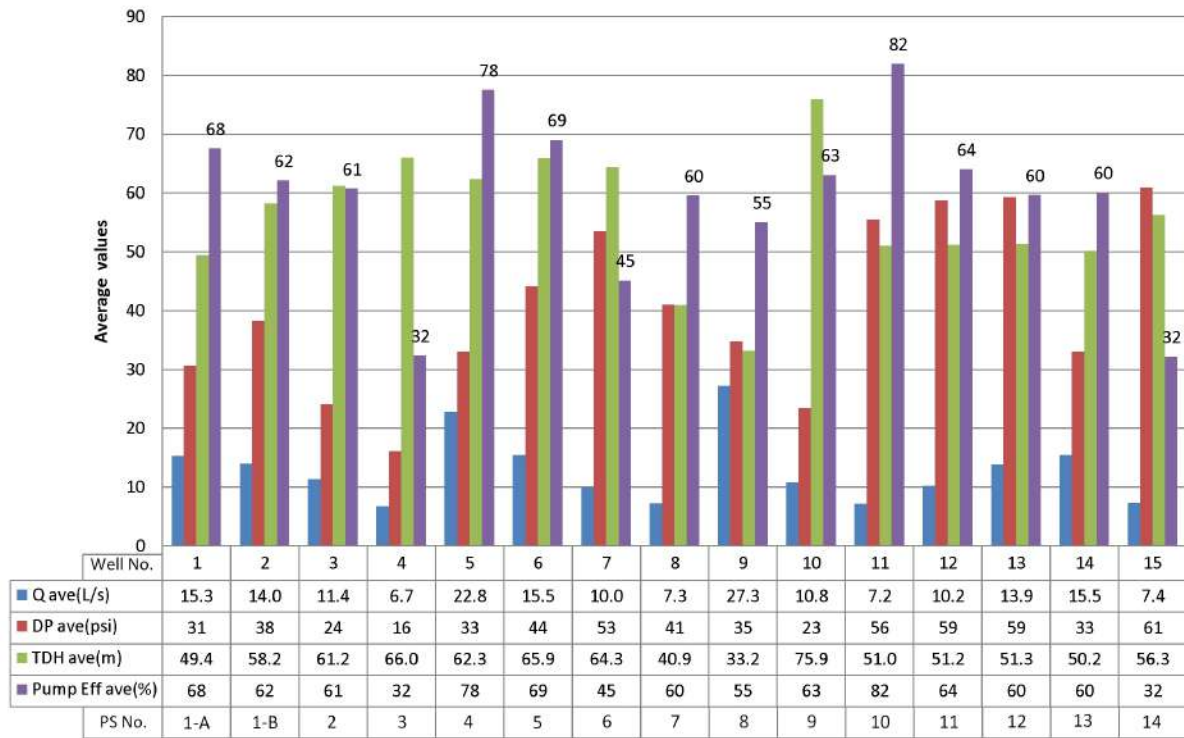
Research Division

File Utilities Help																		
◀ ▶ ⏪ ⏩ + - 🔍 🔄 🖨️ SQL 🌐 Negros Occidenta La Carlota City NEC- LCC-5 Villa Caridad Subd. PS																		
Browse Location Construction Strata Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files																		
	Date	Q L/s	L av	V av	Phase	PF	PSI	PWL	Frict Loss	TDH	IHP	WHP	Over_Eff	Motor_Eff	Pump_Eff	Entry Date	Encoder	Agency
▶	7/17/2012	16.9	26	450	3	0.81	35	32	1	57.6085	22.0042	12.7851	58.1%	80	72.63%	7/17/2012	B2P	LCWD
	7/6/2011	13.15	20	450	3	0.72	16	28.5	1	40.7496	15.0454	7.0369	46.77%	80	58.46%	7/6/2011	BVA	LCWD
	7/5/2011	12.4	19	455	3	0.68	18	27	1	40.6558	13.6489	6.6202	48.5%	80	60.63%	7/6/2011	BVA	LCWD
	6/7/2011	13.7	20	450	3	0.71	10	31	1	39.031	14.8367	7.022	47.33%	80	59.16%	6/7/2011	BVA	LCWD

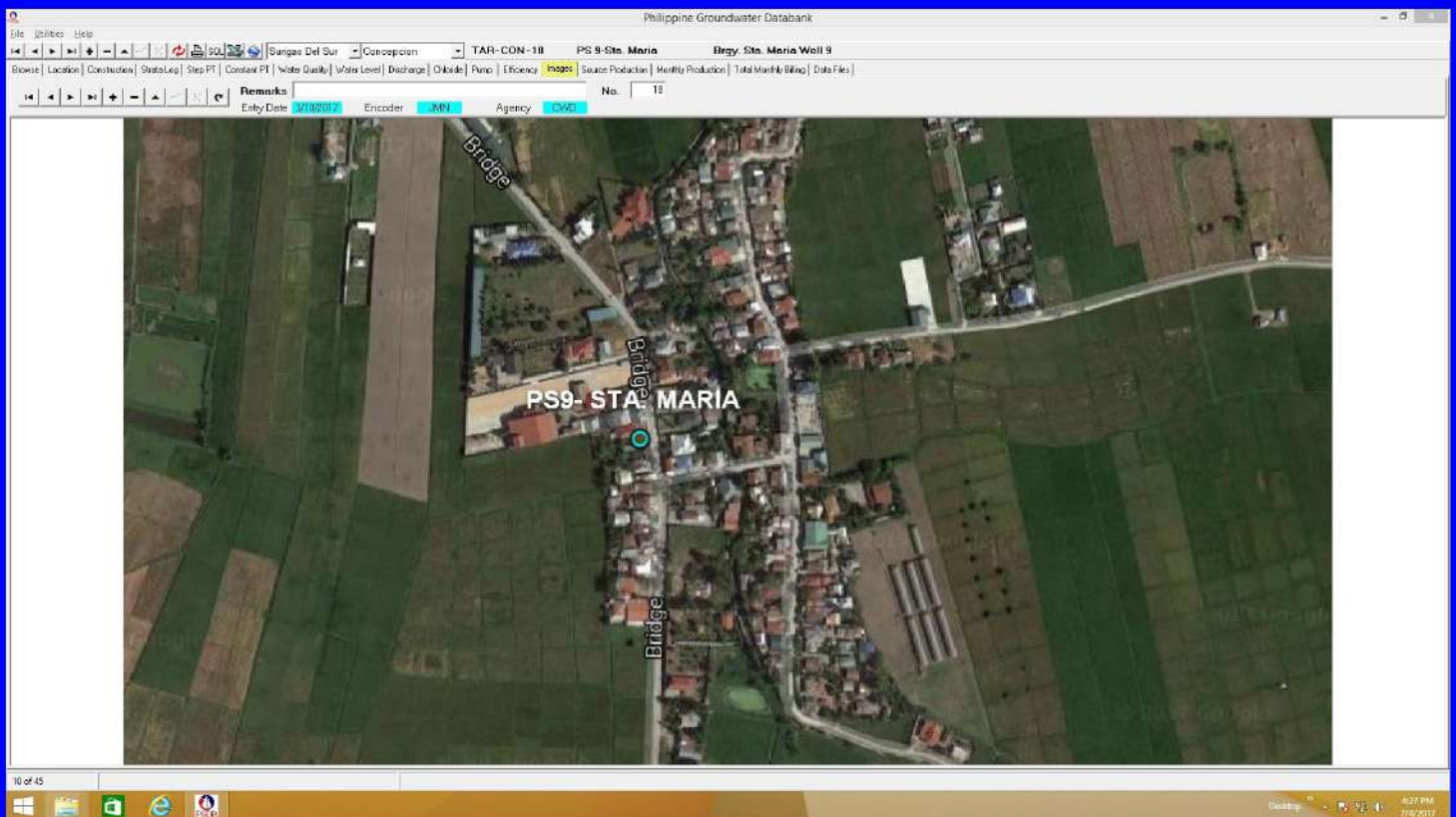
Pump Efficiency Field

The values in the yellow columns are automatically computed out of the data entered in each row. These data are measured on the pump station during operation.

Graph 4.8.1
Production Wells' Average Pump Efficiency Graph
 Concepcion Water District



Images Screen



Philippine Groundwater Databank

File Utilities Help

Surigao Del Sur Concepcion TAR-CON-10 PS 9-Sta. Maria Brgy. Sta. Maria Well 9

Brookside Location Construction Status Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files

Remarks No. 3

Entry Date 06/8/2016 Encoder JMN Agency CWD



06/02/2016 09:08

10 of 45

Desktop 4:28 PM 7/4/2017

Philippine Groundwater Databank

File Utilities Help

Surigao Del Sur Concepcion TAR-CON-4 PS 3-Jefmin Jefmin Well 3

Browse Location Construction Shale Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files

Remarks

Entry Date 5/30/2007 Encoder CCL Agency LNUJA No. 1



4 of 45

Desktop 4:35 PM 7/4/2017

Philippine Groundwater Databank

File Utilities Help

Surigao Del Sur Concepcion TAR-CON-4 PS 3-Jefmin Jefmin Well 3

Browse Location Construction Shale Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files

Remarks

Entry Date 5/30/2007 Encoder LGSJL Agency LMSJA No. 5



4 of 45

Desktop 4:57 PM 7/4/2017

Philippine Groundwater Databank

File Utilities Help

Surigao Del Sur Concepcion TAR-CON-11 PS 10-San Bartolome Brgy. San Bartolome 10

Browser Location Construction Shale Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files

Remarks

Entry Date: 06/8/2016 Encoder: JMN Agency: CWD No. 4



05/19/2016 10:31

11 of 43

Desktop 4:34 PM 7/4/2017

Philippine Groundwater Databank

File Utilities Help

Surigao Del Sur Concepcion TAR-CON-4 PS 3-Jefmin Jefmin Well 3

Brookside Location Construction Shale Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency **Images** Source Production Monthly Production Total Monthly Billing Data Files

Remarks

Entry Date: 5/30/2007 Encoder: CCL Agency: LNUJA No. 10



4 of 45

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Philippine Groundwater Databank

File Utilities Help

Surigao Del Sur Concepcion TAR-CON-5 PS 4-San Jose San Jose Well 4

Browse Location Construction Shale Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files

Remarks

Entry Date: 5/30/2007 Encoder: LCOL Agency: LNUJA No. 2



5 of 45

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Philippine Groundwater Databank

File Utilities Help

Surigao Del Sur Concepcion TAR-CON-5 PS 4 San Jose San Jose Well 4

Brookside Location Construction Status Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency **Images** Source Production Monthly Production Total Monthly Billing Data Files

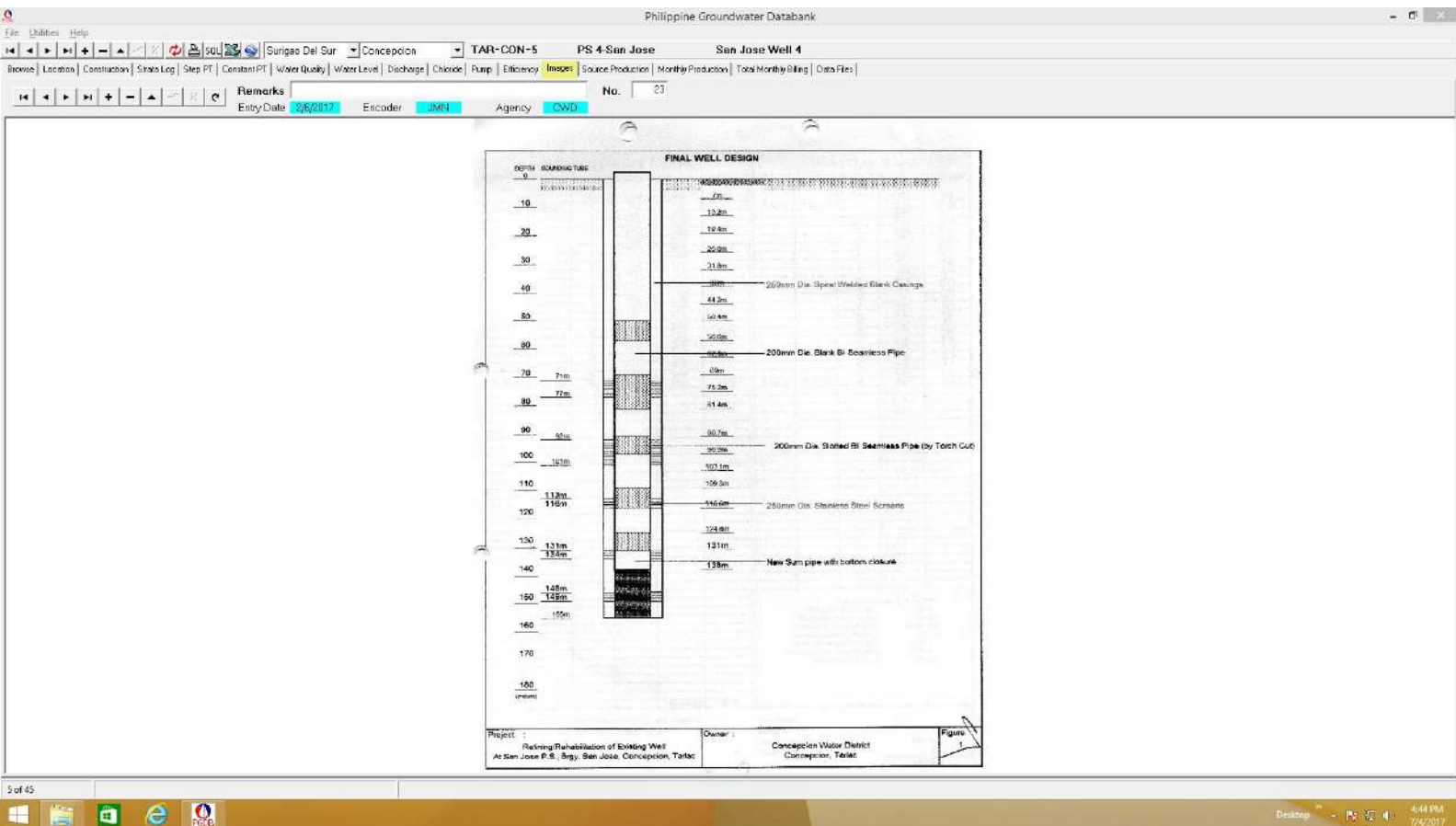
Remarks

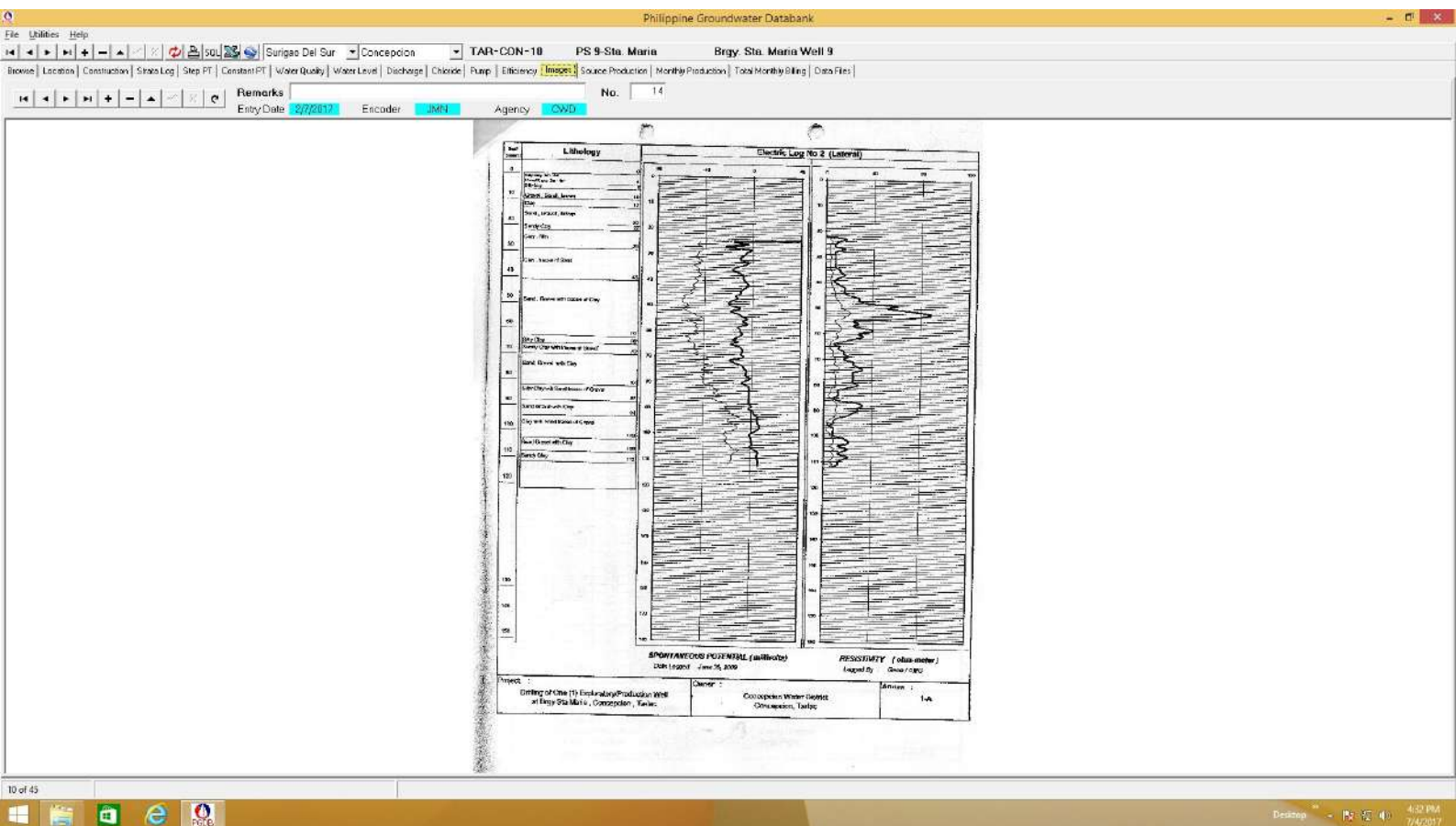
Entry Date: 5/30/2007 Encoder: OGL Agency: LMRJA No. 11

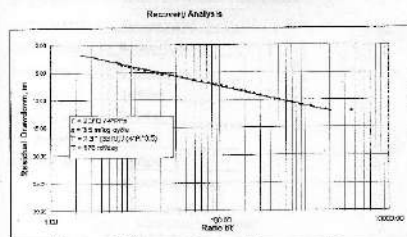
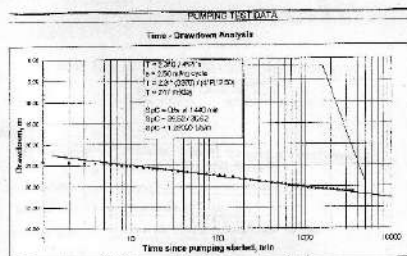


5 of 45

Desktop 4:42 PM 7/4/2017







Source Production Screen

Browse	Location	Construction	Strata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Efficiency	Images	Source Production
Date	Elect M3	Elect Hrs	Hrs/Day	Q (cum/hr)	Q (L/s)	KWH	Power Cost	Cost/KWH	KW/Hr	Cum/KWH	Cost/CUM		
Jul 2015	26,860	528.50	17.05	50.82	14.12	9,992	70,270.20	7.03	18.91	2.69	2.62		
Jun 2015	28,390	564.61	18.82	50.26	13.96	10,295	80,727.63	7.84	18.23	2.76	2.84		
May 2015	28,150	536.06	17.29	52.51	14.59	10,094	83,062.06	8.23	18.83	2.79	2.95		
Apr 2015	29,910	556.51	18.55	53.75	14.93	10,598	90,294.00	8.52	19.04	2.82	3.02		
Mar 2015	30,950	566.60	18.28	54.62	15.17	9,682	85,559.77	8.84	17.09	3.20	2.76		
Feb 2015	25,460	465.45	16.62	54.70	15.19	9,475	82,099.96	8.66	20.36	2.69	3.22		
Jan 2015	27,060	496.99	16.03	54.45	15.12	10,078	74,002.46	7.34	20.28	2.69	2.73		
Dec 2014	25,130	465.08	15.00	54.03	15.01	7,229	52,852.03	7.31	15.54	3.48	2.10		
Nov 2014	25,140	461.34	15.38	54.49	15.14	5,772	44,837.90	7.77	12.51	4.36	1.78		
Oct 2014	24,800	457.41	14.76	54.22	15.06	10,738	91,057.13	8.48	23.48	2.31	3.67		
Sep 2014	23,340	429.17	14.31	54.38	15.11	8,190	66,401.40	8.11	19.08	2.85	2.84		
Aug 2014	26,760	491.90	15.87	54.40	15.11	9,100	76,463.60	8.40	18.50	2.94	2.86		
Jul 2014	27,550	513.25	16.56	53.68	14.91	10,013	81,749.77	8.16	19.51	2.75	2.97		
Jun 2014	28,880	537.55	17.92	53.73	14.92	12,726	96,613.45	7.59	23.67	2.27	3.35		
May 2014	33,400	620.13	20.00	53.86	14.96	15,680	138,603.86	8.84	25.29	2.13	4.15		
Apr 2014	32,410	566.53	18.88	57.21	15.89	14,131	130,336.37	9.22	24.94	2.29	4.02		
Mar 2014	29,760	559.80	18.06	53.15	14.76	10,195	79,205.64	7.77	18.21	2.92	2.66		
Feb 2014	26,100	505.33	18.05	51.65	14.35	10,132	83,193.40	8.21	20.05	2.58	3.19		
Jan 2014	27,350	527.04	17.00	51.89	14.41	9,590	92,757.93	9.67	18.20	2.85	3.39		
Dec 2013	26,980	513.52	16.57	52.54	14.59	9,086	127,205.29	14.00	17.69	2.97	4.71		
Nov 2013	24,850	475.41	15.85	52.27	14.52	7,782	70,514.63	9.06	16.37	3.19	2.84		
Oct 2013	26,540	506.61	16.34	52.39	14.55	6,997	53,900.73	7.70	13.81	3.79	2.03		
Sep 2013	24,630	472.42	15.75	52.14	14.48	9,680	70,446.57	7.28	20.49	2.54	2.86		
Aug 2013	25,900	500.80	16.15	51.72	14.37	8,856	69,367.51	7.83	17.68	2.92	2.68		
Jul 2013	25,620	511.32	16.49	50.11	13.92	8,510	65,649.07	7.71	16.64	3.01	2.56		
Jun 2013	25,400	509.09	16.97	49.89	13.86	9,181	80,478.93	8.77	18.03	2.77	3.17		
May 2013	24,770	498.11	16.07	49.73	13.81	7,896	70,064.84	8.87	15.85	3.14	2.83		
Apr 2013	25,940	490.38	16.35	52.90	14.69	9,144	74,382.94	8.13	18.65	2.84	2.87		

Source Production Screen

Fuel Cost	Cost/CUM	Tot Q (cum)	Tot Hours	Hrs/Day	Q (cum/hr)	Q (L/s)	CL Cost	Other Costs	Total Cost	Cost/CUM	Entry Date	Encoder	Agency
506.08		26,860	528.50	17.05	50.82	14.12	20,869.20	0.00	91,725.48	3.41	9/7/2015	FSC	CWD
326.40		28,380	564.61	18.82	50.26	13.96	20,808.00	0.00	101,862.03	3.59	7/29/2015	ESP	CWD
0.00		20,150	536.06	17.29	52.51	14.59	22,134.00	0.00	105,196.06	3.74	7/3/2015	ESP	CWD
321.84		29,910	556.51	18.55	53.75	14.93	18,727.20	0.00	109,343.04	3.66	5/27/2015	ESP	CWD
697.68		30,950	566.60	18.28	54.62	15.17	17,183.60	0.00	103,441.05	3.34	4/28/2015	ESP	CWD
0.00		25,460	465.45	16.62	54.70	15.19	13,708.80	0.00	95,808.76	3.76	3/20/2015	ESP	CWD
0.00		27,060	496.99	16.03	54.45	15.12	16,020.80	0.00	90,023.26	3.33	2/24/2015	ESP	CWD
349.38		25,130	465.08	15.00	54.03	15.01	15,177.60	0.00	68,379.01	2.72	2/5/2015	ESP	CWD
831.39		25,140	461.34	15.38	54.49	15.14	13,090.00	0.00	58,759.29	2.34	1/8/2015	ESP	CWD
0.00		24,800	457.41	14.76	54.22	15.06	13,923.00	0.00	104,980.13	4.23	12/2/2014	ESP	CWD
878.85		23,340	429.17	14.31	54.38	15.11	13,566.00	0.00	80,846.25	3.46	10/23/2014	ESP	CWD
910.35		26,760	491.90	15.87	54.40	15.11	14,399.00	0.00	91,772.95	3.43	9/25/2014	ESP	CWD
2,718.45		27,550	513.25	16.56	53.68	14.91	14,422.80	0.00	98,891.02	3.59	8/27/2014	ESP	CWD
5,627.01		28,880	537.55	17.92	53.73	14.92	26,129.00	0.00	128,369.46	4.44	7/24/2014	ESP	CWD
111.62		33,400	620.13	20.00	53.86	14.96	30,987.60	0.00	169,703.08	5.08	7/3/2014	ESP	CWD
0.00		32,410	566.53	18.88	57.21	15.89	19,080.80	0.00	149,417.17	4.61	11/10/2014	CGL	LWUA
1,462.86		29,760	559.90	18.06	53.15	14.76	21,664.80	0.00	102,333.30	3.44	4/24/2014	ESP	CWD
0.00		26,100	505.33	18.05	51.65	14.35	19,420.80	0.00	102,614.20	3.93	3/24/2014	ESP	CWD
0.00		27,350	527.04	17.00	51.89	14.41	22,134.00	0.00	114,891.93	4.20	2/27/2014	ESP	CWD
1,441.12		26,980	513.52	16.57	52.54	14.59	21,420.00	0.00	150,066.41	5.56	1/23/2014	ESP	CWD
1,306.80		24,850	475.41	15.85	52.27	14.52	20,196.00	0.00	92,017.43	3.70	12/26/2013	ESP	CWD
14,724.68		26,540	506.61	16.34	52.39	14.55	22,134.00	0.00	90,759.41	3.42	11/21/2013	ESP	CWD
1,050.00		24,630	472.42	15.75	52.14	14.48	36,720.00	0.00	108,216.57	4.39	10/23/2013	ESP	CWD
1,415.88		25,900	500.80	16.15	51.72	14.37	22,766.40	0.00	93,549.79	3.61	9/24/2013	ESP	CWD
0.00		25,620	511.32	16.49	50.11	13.92	23,398.80	0.00	89,047.87	3.48	8/20/2013	ESP	CWD
0.00		25,400	509.09	16.97	49.89	13.86	23,256.00	0.00	103,734.93	4.08	7/29/2013	ESP	CWD
1,663.20		24,770	498.11	16.07	49.73	13.81	18,564.00	0.00	90,292.04	3.65	6/24/2013	ESP	CWD
726.30		25,940	490.38	16.35	52.90	14.69	12,240.00	0.00	87,349.24	3.37	5/23/2013	ESP	CWD

Monthly Production Screen

Browse Location Construction Strata Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files															
January 2015															
Local No	Min Code	Well No	Date	Elect M3	Elect Hrs	Hrs/Day	Q (cum/hr)	Q (L/s)	KWH	Power Cost	Cost/KWH	KW/Hr	Cum/KWH	Cost/CUM	
PS 1-A St.Jude Village 1	CON	1	Jan 2015	27,060	496.99	16.03	54.45	15.12	10,078	74,002.46	7.34	20.28	2.69	2.73	
PS 1-B-St. Jude Well 1-B	CON	2	Jan 2015	25,950	544.21	17.56	47.68	13.25	9,547	70,107.59	7.34	17.54	2.72	2.70	
PS 2-St.Jude Village 2	CON	3	Jan 2015	18,590	511.59	16.50	36.34	10.09	6,895	50,633.26	7.34	13.48	2.70	2.72	
PS 3-Jetmin	CON	4	Jan 2015	13,886	746.90	24.09	18.59	5.16	13,626	100,119.05	7.35	18.24	1.02	7.21	
PS 4-San Jose	CON	5	Jan 2015	40,625	711.86	22.96	57.07	15.85	16,760	123,118.28	7.35	23.54	2.42	3.03	
PS 5-Macabade	CON	6	Jan 2015	26,390	661.00	21.32	39.92	11.09	9,920	72,922.08	7.35	15.01	2.66	2.76	
PS 6-San Nicolas Balas	CON	7	Jan 2015	15,400	397.68	12.83	38.72	10.76	7,920	58,244.83	7.35	19.92	1.94	3.78	
PS 7-Tinang Well	CON	8	Jan 2015	6,344	607.65	19.60	10.44	2.90	2,246	16,605.44	7.39	3.70	2.82	2.62	
PS 8-Caluluen Well	CON	9	Jan 2015	8,230	80.68	2.60	102.01	28.34	2,537	18,652.65	7.35	31.45	3.24	2.27	
PS 9-Sta. Maria	CON	10	Jan 2015	19,981	566.89	18.29	35.25	9.79	9,265	68,115.27	7.35	16.34	2.16	3.41	
PS 10-San Barolome	CON	11	Jan 2015	9,990	744.04	24.00	13.43	3.73	4,088	30,833.59	7.54	5.49	2.44	3.09	
PS 11-St. John Well	CON	12	Jan 2015	21,600	743.72	23.99	29.04	8.07	8,244	62,090.27	7.53	11.08	2.62	2.87	
PS 12-Sta. Monica	CON	13	Jan 2015	11,950	559.04	18.03	21.38	5.94	5,506	41,498.15	7.54	9.85	2.17	3.47	
PS 13-Rosepaik	CON	14	Jan 2015	32,590					9,765	73,529.50	7.53		3.34	2.25	

Monthly Production Screen

PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files														
Fuel Cost	Cost/CUM	Tot Q (cum)	Tot Hours	Hrs/Day	Q (cum/hr)	Q (L/s)	CL Cost	Other Costs	Total Cost	Cost/CUM	Entry Date	Encoder	Agency	
0.00		27,060	496.99	16.03	54.45	15.12	16,020.80	0.00	90,023.26	3.33	2/24/2015	ESP	CWD	
0.00		25,950	544.21	17.56	47.68	13.25	15,177.60	0.00	85,285.19	3.29	2/24/2015	ESP	CWD	
0.00		18,590	511.59	16.50	36.34	10.09	10,961.60	0.00	61,594.86	3.31	2/24/2015	ESP	CWD	
0.00		13,886	746.90	24.09	18.59	5.16	21,080.00	0.00	121,199.05	8.73	2/24/2015	ESP	CWD	
861.00		40,625	711.86	22.96	57.07	15.85	23,800.00	0.00	147,779.28	3.64	2/24/2015	ESP	CWD	
861.00		26,390	661.00	21.32	39.92	11.09	21,080.00	0.00	94,863.08	3.59	2/24/2015	ESP	CWD	
0.00		15,400	397.68	12.83	38.72	10.76	15,300.00	0.00	73,544.83	4.78	2/24/2015	ESP	CWD	
861.00		6,344	607.65	19.60	10.44	2.90	2,748.62	0.00	20,215.06	3.19	2/24/2015	ESP	CWD	
0.00		8,230	80.68	2.60	102.01	28.34	2,040.00	0.00	20,692.65	2.51	2/24/2015	ESP	CWD	
0.00		19,981	566.89	18.29	35.25	9.79	19,040.00	0.00	87,155.27	4.36	2/24/2015	ESP	CWD	
861.00		9,990	744.04	24.00	13.43	3.73	14,400.00	0.00	46,094.59	4.61	2/24/2015	ESP	CWD	
0.00		21,600	743.72	23.99	29.04	8.07	10,880.00	0.00	72,970.27	3.38	2/24/2015	ESP	CWD	
0.00		11,950	559.04	18.03	21.38	5.94	12,240.00	0.00	53,736.15	4.50	2/24/2015	ESP	CWD	
0.00		32,590					10,540.00	0.00	84,069.50	2.58	2/24/2015	ESP	CWD	



File Utilities Help

Navigation icons: Back, Forward, Home, Search, Print, SQL, etc.

TAR-CON-1

PS 1-A St.Jude Village 1

St. Jude Vill Well 1

Browse Location Construction Strata Log Step PT Constant PT Water Quality Water Level Discharge Chloride Pump Efficiency Images Source Production Monthly Production Total Monthly Billing Data Files

January 2022

Local No	Mun Code	Well No	Date	Elect M3	Elect Hrs	Hrs/Day	Q (cum/hr)	Q (L/s)	KWH	Power Cost	Cost/KWH	KW/Hr	Cum/KWH	Cost/CUM
PS 1-A St.Jude Village 1	CON	1	Jan 2022	45,130	659.53	21.28	68.43	19.01	13,563	146,764.70	10.82	20.56	3.33	3.25
PS 1-B-St. Jude	CON	2	Jan 2022	27,020	599.16	19.33	45.10	12.53	8,120	87,870.20	10.82	13.55	3.33	3.25
PS 2-St.Jude Village 2	CON	3	Jan 2022	21,550	608.24	19.62	35.43	9.84	6,476	70,081.52	10.82	10.65	3.33	3.25
PS 3-Jefmin	CON	4	Jan 2022	8,838	313.62	10.12	28.18	7.83	4,995	54,119.79	10.83	15.93	1.77	6.12
PS 4-San Jose	CON	5	Jan 2022	40,080	749.77	24.19	53.46	14.85	9,280	100,474.48	10.83	12.38	4.32	2.51
PS 5-Macabacle	CON	6	Jan 2022	24,610	743.98	24.00	33.08	9.19	17,480	189,181.25	10.82	23.50	1.41	7.69
PS 6-San Nicolas Balas	CON	7	Jan 2022	17,800	743.50	23.98	23.94	6.65	14,560	157,593.01	10.82	19.58	1.22	8.85
PS 7-Tinang	CON	8	Jan 2022	10,472	743.55	23.99	14.08	3.91	3,916	42,447.26	10.84	5.27	2.67	4.05
PS 8-Caluluan	CON	9	Jan 2022	14,113	152.20	4.91	92.73	25.76	2,840	30,807.20	10.85	18.66	4.97	2.18
PS 9-Sta. Maria	CON	10	Jan 2022	13,070	510.98	16.48	25.58	7.11	1,056	11,423.69	10.82	2.07	12.38	0.87
PS 10-San Bartolome	CON	11	Jan 2022	24,203	741.88	23.93	32.62	9.06	9,140	96,447.38	10.55	12.32	2.65	3.98
PS 11-St. John	CON	12	Jan 2022	43,590	744.76	24.02	58.53	16.26	11,821	124,713.16	10.55	15.87	3.69	2.86
PS 12-Sta. Monica	CON	13	Jan 2022	27,516	741.21	23.91	37.12	10.31	5,967	62,994.47	10.56	8.05	4.61	2.29
PS 13 Rosepark	CON	14	Jan 2022	31,520	672.00	21.68	46.90	13.03	13,021	137,364.76	10.55	19.38	2.42	4.36
PS 14-Sta. Rosa	CON	15	Jan 2022	32,063	572.49	18.47	56.01	15.56	12,265	12,265.00	1.00	21.42	2.61	0.38
PS 15-Montecelio	CON	16	Jan 2022	24,494	491.40	15.85	49.85	13.85	11,760	124,070.05	10.55	23.93	2.08	5.07
PS 16-TALIMUNDOC SM	CON	17	Jan 2022	43,820	739.30	23.85	59.27	16.46	16,200	170,880.97	10.55	21.91	2.70	3.90

Local No	Mun Code	Well No	Date	Elect M3	Elect Hrs	Hrs/Day	Q (cum/hr)	Q (L/s)	KWH	Power Cost	Cost/KWH	KW/Hr	Cum/KWH	Cost/CUM
PS 1-A St.Jude Village 1	CON	1	Jan 2022	45,130	659.53	21.28	68.43	19.01	13,563	146,764.70	10.82	20.56	3.33	3.25
PS 1-B-St. Jude	CON	2	Jan 2022	27,020	599.16	19.33	45.10	12.53	8,120	87,870.20	10.82	13.55	3.33	3.25
PS 2-St.Jude Village 2	CON	3	Jan 2022	21,550	608.24	19.62	35.43	9.84	6,476	70,081.52	10.82	10.65	3.33	3.25
PS 3-Jefmin	CON	4	Jan 2022	8,838	313.62	10.12	28.18	7.83	4,995	54,119.79	10.83	15.93	1.77	6.12
PS 4-San Jose	CON	5	Jan 2022	40,080	749.77	24.19	53.46	14.85	9,280	100,474.48	10.83	12.38	4.32	2.51
PS 5-Macabacle	CON	6	Jan 2022	24,610	743.98	24.00	33.08	9.19	17,480	189,181.25	10.82	23.50	1.41	7.69
PS 6-San Nicolas Balas	CON	7	Jan 2022	17,800	743.50	23.98	23.94	6.65	14,560	157,593.01	10.82	19.58	1.22	8.85
PS 7-Tinang	CON	8	Jan 2022	10,472	743.55	23.99	14.08	3.91	3,916	42,447.26	10.84	5.27	2.67	4.05
PS 8-Caluluan	CON	9	Jan 2022	14,113	152.20	4.91	92.73	25.76	2,840	30,807.20	10.85	18.66	4.97	2.18
PS 9-Sta. Maria	CON	10	Jan 2022	13,070	510.98	16.48	25.58	7.11	1,056	11,423.69	10.82	2.07	12.38	0.87
PS 10-San Bartolome	CON	11	Jan 2022	24,203	741.88	23.93	32.62	9.06	9,140	96,447.38	10.55	12.32	2.65	3.98
PS 11-St. John	CON	12	Jan 2022	43,590	744.76	24.02	58.53	16.26	11,821	124,713.16	10.55	15.87	3.69	2.86
PS 12-Sta. Monica	CON	13	Jan 2022	27,516	741.21	23.91	37.12	10.31	5,967	62,994.47	10.56	8.05	4.61	2.29
PS 13 Rosepark	CON	14	Jan 2022	31,520	672.00	21.68	46.90	13.03	13,021	137,364.76	10.55	19.38	2.42	4.36
PS 14-Sta. Rosa	CON	15	Jan 2022	32,063	572.49	18.47	56.01	15.56	12,265	12,265.00	1.00	21.42	2.61	0.38
PS 15-Montecelio	CON	16	Jan 2022	24,494	491.40	15.85	49.85	13.85	11,760	124,070.05	10.55	23.93	2.08	5.07
PS 16-TALIMUNDOC SM	CON	17	Jan 2022	43,820	739.30	23.85	59.27	16.46	16,200	170,880.97	10.55	21.91	2.70	3.90

wrong entry

Total Monthly Billing Screen

Browse	Location	Construction	Strata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Efficiency	Images	Source Production	Monthly Production	Total Monthly Billing	Data Files			
	Date	Elect M3	Elect Hrs	Hrs/Day	Q (cum/hr)	Q (L/s)	KWH	Power Cost	Cost/KWH	KW/Hr	Cum/KWH	Genset M3	Genset Hrs	Hrs/Day	Q (cum/hr)	Q (L/s)	Fuel Cost	Cost/Ltr	Diesel Ltrs
	Jul 2015	286,708	534.42	17.24	536.48	149.02	109,112	839,274.06	7.69	204.17	2.63		0.00				17,466.00	30.64	570
	Jun 2015	289,950	524.47	17.48	552.84	153.57	115,842	913,578.63	7.89	220.87	2.50		0.00				8,640.00	32.00	270
	May 2015	300,484	524.15	16.91	573.28	159.24	108,341	896,689.75	8.28	206.70	2.77		0.00			0.00	1,950.00	32.50	60
	Apr 2015	298,064	505.92	19.53	508.71	141.31	116,585	999,081.50	8.57	198.98	2.56		0.00				7,152.00	29.80	240
	Mar 2015	295,039	579.04	18.68	509.53	141.54	104,066	923,018.94	8.87	179.72	2.84		0.00				10,903.50	30.29	360
	Feb 2015	250,688	499.04	17.82	502.34	139.54	101,436	882,943.69	8.70	203.26	2.47		0.00			0.00	0.00		
	Jan 2015	278,586	503.94	16.26	552.82	153.56	116,397	860,472.44	7.39	230.97	2.39		0.00			0.00	3,444.00	28.70	120
	Dec 2014	280,729	498.07	16.07	563.63	156.57	108,932	801,648.81	7.36	218.71	2.58		0.00			0.00	11,931.00	33.14	360
	Nov 2014	262,493	507.83	16.93	516.89	143.58	86,274	673,522.94	7.81	169.89	3.04		0.00			0.00	13,182.50	37.69	350
	Oct 2014	251,346	500.24	16.14	502.45	139.57	115,894	986,073.50	8.53	231.68	2.17		0.00			0.00	11,685.00	39.05	299
	Sep 2014	287,574	492.54	16.42	583.86	162.18	118,084	962,241.31	8.15	239.74	2.44		0.00			0.00	12,537.00	41.79	300
	Aug 2014	296,531	531.96	17.16	557.43	154.84	101,721	859,598.44	8.45	191.22	2.92		0.00			0.00	18,165.00	43.25	420
	Jul 2014	280,216	518.80	16.74	540.12	150.03	96,750	794,661.94	8.21	186.49	2.90		0.00			0.00	34,972.50	43.18	810
	Jun 2014	276,454	519.33	17.31	532.33	147.87	102,405	778,312.50	7.60	197.19	2.70		0.00			0.00	53,010.00	44.18	1,200
	May 2014	278,124	546.19	17.62	509.21	141.45	110,545	978,004.88	8.85	202.39	2.52		0.00			0.00	227.80	56.95	4
	Apr 2014	300,685	547.94	18.26	548.75	152.43	113,709	337,864.22	2.97	207.52	2.64		0.00			0.00	0.00		
	Mar 2014	301,185	545.12	17.58	552.51	153.47	95,836	745,389.25	7.78	175.81	3.14		0.00			0.00	31,605.00	45.15	700
	Feb 2014	238,029	487.24	17.40	488.52	135.70	92,466	760,068.31	8.22	189.78	2.57		0.00			0.00	0.00		
	Jan 2014	285,965	522.65	16.86	547.15	151.98	98,136	949,773.56	9.68	187.77	2.91		0.00			0.00	1,338.00	44.60	30
	Dec 2013	276,982	517.29	16.69	535.45	148.74	97,937	1,371,682.00	14.01	189.33	2.83		0.00			0.00	28,813.50	45.74	630
	Nov 2013	270,070	500.80	16.69	539.28	149.80	88,374	801,324.75	9.07	176.47	3.06		0.00			0.00	10,470.00	43.63	240
	Oct 2013	268,122	490.88	15.83	546.21	151.72	86,822	669,305.63	7.71	176.87	3.09		0.00			0.00	204,350.50	43.85	4,660
	Sep 2013	258,105	479.66	15.99	538.10	149.47	99,006	721,041.75	7.28	206.41	2.61		0.00			0.00	8,312.50	43.75	190
	Aug 2013	274,051	503.15	16.23	544.67	151.30	98,586	772,736.19	7.84	195.94	2.78		0.00			0.00	25,346.00	43.70	580
	Jul 2013	254,917	491.71	15.86	518.43	144.01	93,534	722,077.38	7.72	190.22	2.73		0.00			0.00	0.00		
	Jun 2013	256,686	494.45	16.48	519.13	144.20	101,365	889,078.56	8.77	205.01	2.53		0.00			0.00	2,517.00	41.95	60
	May 2013	259,369	508.94	16.42	509.63	141.56	91,273	810,520.50	8.88	179.34	2.84		0.00			0.00	36,031.00	39.59	910
	Apr 2013	244,135	455.95	15.20	535.44	148.73	98,834	739,504.63	8.14	199.22	2.69		0.00			0.00	60,928.50	40.35	1,510

Total Monthly Billing Screen

Construction	Strata Log	Step PT	Constant PT	Water Quality	Water Level	Discharge	Chloride	Pump	Efficiency	Images	Source Production	Monthly Production	Total Monthly Billing	Data Files				
Total Cost	Cost/CUM	Date	Res. Conn	Govt Conn	Comm Conn	Total Conn	Res Cons	Govt Cons	Comm Cons	Other Cons	Total Cons	Res Unit	Gov Unit	Com Unit	Tot Unit	NRW	Unaccd	
1,106,688.69	3.86	Jul 2015	10,893	0	462	11,355	222,986	0	9,765	4,365	237,116	20.5		21.1	20.5	17.04%	15.53%	
1,164,188.58	4.08	Jun 2015	10,874	0	459	11,333	233,731	0	9,228	4,276	247,235	21.5		20.1	21.4	14.20%	12.71%	
1,156,038.38	3.85	May 2015	10,793	0	457	11,250	245,500	0	9,092	4,378	258,970	22.7		19.9	22.6	16.76%	15.13%	
1,263,633.45	4.24	Apr 2015	10,675	0	453	11,128	237,405	0	8,256	5,438	251,099	22.2		18.2	22.1	17.48%	15.66%	
1,174,111.07	3.98	Mar 2015	10,569	0	454	11,023	237,034	0	9,217	5,413	251,664	22.4		20.3	22.3	23.38%	21.58%	
1,074,366.32	4.23	Feb 2015	10,450	0	451	10,901	197,748	0	8,109	5,194	211,051	18.9		18.0	18.9	16.62%	14.90%	
1,059,225.07	3.80	Jan 2015	10,377	0	453	10,830	204,064	0	8,133	3,410	215,607	19.7		18.0	19.6	20.40%	19.11%	
1,010,248.44	3.60	Dec 2014	10,287	0	458	10,745	222,993	0	8,319	3,791	235,103	21.7		18.2	21.5	20.49%	19.08%	
660,285.39	3.28	Nov 2014	10,231	0	452	10,683	206,732	0	8,388	4,110	219,230	20.2		18.6	20.1	17.47%	15.95%	
1,175,807.13	4.68	Oct 2014	10,163	0	445	10,608	209,686	0	8,485	3,854	222,025	20.6		19.1	20.6	15.94%	14.41%	
1,163,990.81	4.05	Sep 2014	10,127	0	435	10,562	196,207	0	8,209	3,818	208,234	19.4		18.9	19.4	27.56%	26.23%	
1,072,046.69	3.62	Aug 2014	10,103	0	435	10,538	203,564	0	8,655	3,858	216,077	20.1		19.9	20.1	28.47%	26.52%	
1,004,206.69	3.58	Jul 2014	10,103	0	438	10,541	202,920	0	9,085	7,723	219,728	20.1		20.7	20.1	24.04%	21.29%	
1,036,895.00	3.75	Jun 2014	10,050	0	432	10,482	205,199	0	8,503	7,699	221,401	20.4		19.7	20.4	20.27%	17.54%	
1,204,164.93	4.33	May 2014	10,000	0	430	10,430	218,667	0	8,457	7,389	234,513	21.9		19.7	21.8	18.89%	16.22%	
530,376.72	1.76	Apr 2014	9,934	0	426	10,360	215,818	0	8,218	7,495	231,531	21.7		19.3	21.6	25.79%	23.30%	
985,806.50	3.27	Mar 2014	9,845	0	423	10,268	213,259	0	8,987	7,449	229,695	21.7		21.2	21.6	31.58%	29.11%	
930,584.51	3.91	Feb 2014	9,794	0	419	10,213	181,814	0	8,086	7,431	197,331	18.6		19.3	18.6	18.97%	15.85%	
1,141,543.81	3.99	Jan 2014	9,746	0	419	10,165	187,803	0	8,035	7,435	203,273	19.3		19.2	19.3	27.98%	25.36%	
1,613,027.75	5.82	Dec 2013	9,672	0	417	10,089	207,795	0	8,283	7,561	223,639	21.5		19.9	21.4	25.75%	23.19%	
1,021,847.25	3.78	Nov 2013	9,630	0	412	10,042	186,980	0	8,257	6,625	201,862	19.4		20.0	19.4	26.67%	24.28%	
1,085,856.38	4.05	Oct 2013	9,595	0	411	10,006	192,541	0	8,322	6,272	207,135	20.1		20.2	20.1	27.01%	25.18%	
974,086.75	3.77	Sep 2013	9,584	0	410	9,994	182,634	0	7,929	3,500	194,063	19.1		19.3	19.1	25.13%	23.78%	
1,028,971.58	3.75	Aug 2013	9,583	0	411	9,994	188,604	0	7,236	3,500	199,400	19.7		17.8	19.6	27.48%	26.20%	
973,366.77	3.82	Jul 2013	9,539	0	402	9,941	193,454	0	8,127	3,500	205,081	20.3		20.2	20.3	21.00%	19.73%	
1,162,516.25	4.53	Jun 2013	9,455	0	393	9,848	192,921	0	8,254	3,000	204,175	20.4		21.0	20.4	18.99%	17.83%	
1,121,980.88	4.33	May 2013	9,399	0	393	9,792	207,032	0	7,651	3,000	217,683	22.0		19.5	21.9	17.55%	16.39%	

Outputs

Printing of Graphical and tabular standard outputs

Exporting to Excel

The screenshot shows the 'Philippine Groundwater Databank' application window. It features a menu bar (File, Utilities, Util, Help) and a toolbar with icons for file operations and data management. Below the toolbar is a tabbed interface with tabs for 'Browse', 'Location', 'Construction', 'Strata Log', 'Step PT', 'Constant P', 'Water Quality', 'Water Level', and 'Dis'. The 'Location' tab is active, displaying a form with the following sections:

- Well Info:** Includes fields for 'Map No' (31654), 'Source No' (1), 'Source Type' (Well), and 'Basin'. There is also a 'Locked' checkbox.
- Local No:** Includes fields for 'PS 1-A St. Jude Village' and 'St. Jude Vill Well 1'.
- Ground Elev.:** Includes a field for '38.32' and a dropdown for 'Elevation Accuracy'.
- Location Info:** Includes fields for 'Longitude (DMS)' (120°38'55.93"), 'Latitude (DMS)' (15°19'37.40"), and 'Location Accuracy'.

Red arrows point from the text boxes to specific icons in the toolbar: one to the printer icon (linked to 'Printing of Graphical and tabular standard outputs'), one to the Excel icon (linked to 'Exporting to Excel'), and one to the Google Maps icon (linked to 'Google Maps location of wells').

Google Maps location of wells

Outputs that can be readily generated

The screenshot displays a software window with a menu bar (File, Utilities, Help) and a toolbar. Below the toolbar is a tabbed interface with tabs for Browse, Location, Construction, Strata Log, Step PT, Constant PT, Water Quality, Water Level, and Discharge. The 'Location' tab is active, showing two main sections: 'Well Info' and 'Location Info'.

Well Info

Map No	Source No	Source Type	Basin
32664	14	Well	

Local No: ps-14,brgy.manacnac,p Other Nos: 96.5 pump seting

Ground Elev.: 46.87 Elevation Accuracy: Google Map

Owner

☒ WD ☐ Non-WD

Operation

☒ Active ☐ Inactive ☐ Abandoned ☐ Standby

Water District (if WD owned) CCC Src No

Location Info

Longitude (DMS): 121°03'29.64"

Latitude (DMS): 15°31'49.33"

Location Accuracy: Google Maps

Munic: Palayan

Bgy: Manacnac

Location: Manacnac

Outputs that can be readily generated

The screenshot displays a software window with a menu bar (File, Utilities, Help) and a toolbar containing various icons. The 'Well Info' tab is active, showing fields for Map No (32664), Source No (14), Source Type (Well), Local No (ps-14, brgy. manacnac), and Other Nos (96.5 pump seting). The 'Location Info' tab is also visible, showing fields for Bgy. (Manacnac) and Location (Manacnac). A yellow callout box points to the 'Print' icon in the toolbar, with the text 'Printing of Graphical & Tabular Standard Outputs'.

Well Info				Location Info	
Map No	Source No	Source Type	Basin	Latitude (DMS)	Longitude (DMS)
32664	14	Well			
Local No	Other Nos				
ps-14, brgy. manacnac	96.5 pump seting				
Ground Elev.	Elevation Accuracy				
46.87	Google Map				
Owner		Operation		Bgy.	
☒ WD ☐ Non-WD		☒ Active ☐ Inactive ☐ Abandoned ☐ Standby		Manacnac	
Water District (if WD owned)		CCC	Src No	Location	
				Manacnac	

Outputs that can be readily generated

Click to generate & print

The screenshot displays a software window with a menu bar (File, Utilities, Help) and a toolbar. A yellow callout bubble points to a printer icon in the toolbar, labeled 'Click to generate & print'. Below the toolbar is a tabbed interface with tabs: Browse, Location, Construction, Strata Log, Step PT, Constant PT, Water Quality, Water Level, and Discharge. The 'Location' tab is active, showing two main sections: 'Well Info' and 'Location Info'.

Well Info

Map No	Source No	Source Type	Basin
32664	14	Well	

Local No: ps-14.brgy.manacnac.p
Other Nos: 96.5 pump seting

Ground Elev.: 46.87
Elevation Accuracy: Google Map

Owner
☒ WD
☐ Non-WD

Operation
☒ Active
☐ Inactive
☐ Abandoned
☐ Standby

Water District (if WD owned):
CCC: Src No:

Location Info

Longitude (DMS): 121°03'29.64"
Latitude (DMS): 15°31'49.33"
Location Accuracy: Google Maps

Munic: Palayan
Bgy: Manacnac
Location: Manacnac

PHILIPPINE GROUNDWATER DATABASE WELL RECORD

PGDB No : CAG-TUG-1

Buntun 1

LOCATION DATA

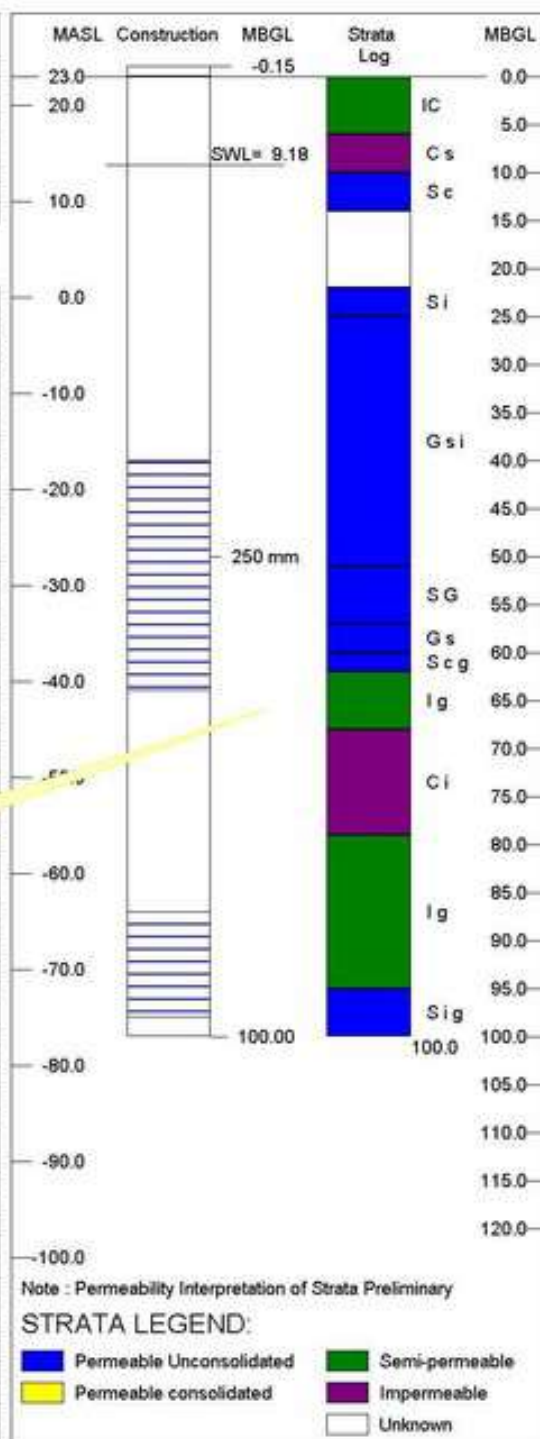
LOCATION DATA							
Map No	33724	Source	LWUA FS REPORT		Local No	Buntun 1	
Other No	Buntun 1 PS			Basin			
Longitude	121°41'52.20"	X PTM	574.062	X MM	420.67	Basin Area	
Latitude	17°36'51.20"	Y PTM	1948.206	Y MM	252.89	Loc. Meth.	OLM
Prov. Code	CAG - Cagayan			Gr. Elev.	23.0	Accuracy	MR
Addr/Owner	Buntun				Tuguegarao City WD		
Mun. Code	TUG - Tuguegarao			Year	2000	Population	120,645
Bgy. Code	015 - Buntun					Population	2,734
Remarks							

WELL CONSTRUCTION DATA

WELL CONSTRUCTION DATA												
Borehole		Casing		Bot		Screen		Slot	Top	Bot		
Depth	(mm)	o(mm)	Type	(mbg)	Type	Perf	(mm)	(mbg)	(mbg)			
19.0	500	250	ST	100.0	ST	HP		40.0	64.0			
43.0	450					HP		87.0	98.0			
91.0	400											
100.0	250											
Comp. Date		5/31/1980		Level		3		Ownership		PUB	Type	DW
Operating		Y		Lifting Device		VA		Use		UTI		
MP ab. Ground (m)		0.15		Static WL (mbmp)		9.33		MSL				13.8

STRATA LOG DATA

Driller	Form.	F. Area	Drill. Method	Logs	Described by
Depth (mbg)	Code	Brief Description of Penetrated Strata			Perm. Class
6.0	IC	brown silty clay			
10.0	C s	brown sandy clay			
14.0	S c	brown clayey sand			
22.0		sandy clayey			
25.0	S i	gray silty sand			
51.0	G s i	sandy silty gravel			
57.0	S G	sand and gravel			
60.0	G s	gravel with sand			
62.0	S c g	clayey sand with gravel			
68.0	I g	silt with gravel			
79.0	C i	silty clay with fine sand			
95.0	I g	silt with gravel			
100.0	S i g	silty sand with fine gravel			



PHILIPPINE GROUNDWATER DATABASE WELL RECORD

PGDB No : CAG-TUG-1

Buntun 1

STEP DRAWDOWN PUMPING TEST

Date	5/21/1980	By		No Steps / Duration (min)	3 /
Q Max (L/s)			60.00	Transmissiv. (m ² /sec*10 ⁻³)	
Total Spec. Drawd. (m)				Aquifer Loss Coef. B (sec/m ²)	38.82
Specific Capacity (L/s/m)				Well Aquifer Loss Coef. C (sec/m ⁵)	212

CONSTANT DRAWDOWN PUMPING TEST

Date	5/21/1980	By		Drawdown Transmissiv. (m ² /sec*10 ⁻³)	53.09
Discharge (L/s)			55.00	Recovery Transmissiv. (m ² /sec*10 ⁻³)	
Total Drawdown. (m)				Specific Capacity (L/s/m)	
Well Potential		Excellent			

WATER QUALITY ANALYSIS (PPM or mg/l)

Date Tested	05/14/02	pH		TDS	193.20	TSS		ODOR	
Color		Ca++		NH4+		NO3-		CO2	
Cond. μ S/CM	386.00	Mg++		Zn++		NO2-		H2S	
Temp $^{\circ}$ C	25.00	Mn++		Cu++		CO3--		CH4	
Turbidity		Fe++		HCO3-		PO4---			
Alkalinity		Na+		SO4--		F-			
T. Hardness		K+		Cl-		SiO2-			

This is part of the standard well record output out of the data entered in the databank

WATER QUALITY ANALYSIS (PPM or mg/l)

Date Tested	01/01/91	pH	7.40	TDS		TSS		ODOR	
Color		Ca++	37.00	NH4+		NO3-		CO2	
Cond. μ S/CM	352.00	Mg++	9.00	Zn++		NO2-		H2S	
Temp $^{\circ}$ C		Mn++		Cu++		CO3--		CH4	
Turbidity	1.30	Fe++	0.02	HCO3-		PO4---		O2	
Alkalinity		Na+		SO4--	8.00	F-		B	
T. Hardness	129.00	K+		Cl-	11.00	SiO2-		Pb	

GROUNDWATER LEVELS HISTORY

Date	GW Level BMP (m)	SWL?	GW Level MSL	Date	GW Level BMP (m)	SWL?	GW Level MSL
05/15/02	13.78	Y	9.37	05/02/02	13.53	Y	9.62
05/15/02	17.22	N	5.93	05/02/02	18.31	N	4.84
05/14/02	13.66	Y	9.49	05/01/02	13.51	Y	9.64
05/14/02	17.65	N	5.50	05/01/02	17.33	N	5.82
05/13/02	13.66	Y	9.49	04/30/02	13.49	Y	9.66
05/13/02	17.94	N	5.21	04/30/02	17.19	N	5.96
05/12/02	13.87	Y	9.28	04/29/02	13.49	Y	9.66
05/12/02	17.83	N	5.32	04/29/02	17.21	N	5.94
05/11/02	13.59	Y	9.56	04/28/02	13.53	Y	9.62
05/11/02	17.65	N	5.50	04/28/02	17.07	N	6.08
05/10/02	13.68	Y	9.47	04/27/02	13.49	Y	9.66
05/10/02	17.81	N	5.34	04/27/02	17.90	N	5.25
05/09/02	13.34	Y	9.81	04/26/02	13.44	Y	9.71
05/09/02	17.55	N	5.60	04/26/02	17.27	N	5.88
05/08/02	13.69	Y	9.46	04/25/02	13.52	Y	9.63
05/08/02	17.35	N	5.80	04/25/02	17.04	N	6.11
05/07/02	13.63	Y	9.52	04/24/02	13.45	Y	9.70
05/07/02	17.41	N	5.74	04/24/02	17.00	N	6.15
05/06/02	13.53	Y	9.62	04/23/02	13.62	Y	9.53
05/06/02	17.84	N	5.31	04/23/02	16.56	N	6.59
05/05/02	13.55	Y	9.60	04/22/02	13.39	Y	9.76
05/05/02	17.21	N	5.94	04/22/02	17.61	N	5.54
05/04/02	13.54	Y	9.61	04/21/02	13.44	Y	9.71
05/04/02	16.74	N	6.41	04/21/02	17.26	N	5.89
05/03/02	13.53	Y	9.62	04/20/02	13.94	Y	9.21
05/03/02	17.44	N	5.71	04/20/02	17.16	N	5.99

**Philippine Groundwater Database
Monthly Production-Consumption Data
Concepcion Water District
April 2016**

Source	Elect CUM	Hours /Day	Q L/s	Genset CUM	Hours /Day	Q L/s	Prodn CUM	Hours /Day	Q L/s	KWH	Cost /KWH	CUM /KWH	Power Cost	Fuel Cost	CL Cost	Other Costs	Total Cost	Cost /CUM
PS 1-A St. Jude Village	35,250	19.97	16.34				35,250	19.97	16.34	12,826	7.80	5.50	99,981	690	10,464		111,135	3.15
PS 1-B-St. Jude Well 1	5,220	9.34	5.18				5,220	9.34	5.18	1,866	7.80	3.11	14,543	100	1,522		16,163	3.10
PS 2-St. Jude Village 2	24,000	23.74	9.36				24,000	23.74	9.36	8,628	7.80	3.79	67,260	464	7,040		74,764	3.12
PS 3-Jefmin	12,133	23.97	4.69				12,133	23.97	4.69	13,320	7.79	2.42	103,803	1,896	26,610		132,309	10.91
PS 4-San Jose	43,506	22.25	18.10				43,506	22.25	18.10	11,600	7.79	3.39	90,410	1,254	9,440		101,104	2.32
PS 5-Macabacale	28,860	18.64	14.33				28,860	18.64	14.33	10,240	7.79	3.04	79,821	1,254	17,700		98,775	3.42
PS 6-San Nicolas Balas	18,130	24.43	6.87				18,130	24.43	6.87	12,840	7.79	2.60	100,065	1,254	7,000		108,319	5.97
PS 7-Tinang Well	11,964	19.57	5.66				11,964	19.57	5.66	2,536	7.82	2.59	19,835	627	2,660		23,122	1.93
PS 8-Caluluan Well	10,720	3.60	26.97				10,720	3.60	26.97	2,537	7.79	2.62	19,754		3,250		23,004	2.15
PS 9-Sta. Maria	25,531	23.95	9.87				25,531	23.95	9.87	13,373	7.79	2.68	104,216	1,896	20,355		126,467	4.95
PS 10-San Bartolome	15,670	24.35	5.96				15,670	24.35	5.96	4,816	7.80	2.61	37,588	627	7,375		45,590	2.91
PS 11-St. John Well	18,390	24.00	7.09				18,390	24.00	7.09	6,558	7.80	2.65	51,151	1,254	3,540		55,945	3.04
PS 12-Sta. Monica	18,600	22.24	7.73				18,600	22.24	7.73	6,872	7.80	2.63	53,596	1,294	7,670		62,520	3.36
PS 13 Rosepark	37,730	22.88	15.27				37,730	22.88	15.27	12,245	7.79	2.86	95,433	1,254	46,140		142,827	3.79
PS 14 Sta. Rosa	17,535	23.69	6.85				17,535	23.69	6.85	8,285	7.80	2.65	64,599		4,720		69,319	3.95
	323,239	18.67	160.30				323,239	18.67	160.30	128,542	7.80	2.65	1,002,055	13,824	175,486		1,191,365	3.69
	323,239	18.67	160.30				323,239	18.67	160.30	128,542	7.80	2.51	1,002,055	13,824	175,486		1,191,365	3.69

SERVICE CONNECTIONS					WATER CONSUMPTION (CUM)						UNIT CONSUMPTION (CUM/mo)					Non Rev Water %	Unacctd Water %
Res'l	Govt	Comm	Bulk	Total	Res'l	Govt	Comm	Bulk	Others	Total	Res'l	Govt	Comm	Bulk	Total		
11,696	0	481	0	12,177	255,307	0	9,219		5,277	269,803	21.8		19.2		21.7	18.16	16.53

**Philippine Groundwater Database
Total Monthly Production-Consumption Data
Concepcion Water District**

		Elect	Hours	Q	Genset	Hours	Q	Prodn	Hours	Q		Cost	Cum	Power	Fuel	CL	Other	Total	Cost
	Date	CUM	/Day	L/s	CUM	/Day	L/s	CUM	/Day	L/s	KWH	/KWH	/KWH	Cost	Cost	Cost	Costs	Cost	/CUM
Apr	2016	323,239	18.67	160.30				323,239	18.67	160.30	128,542	7.80	2.51	1,002,055	13,824	175,486		1,191,365	3.69
Mar	2016	335,046	18.80	159.72				335,046	18.80	159.72	123,279	7.84	2.72	966,036	7,848	180,126		1,154,010	3.44
Feb	2016	311,228	18.85	158.18				311,228	18.85	158.18	131,024	7.79	2.38	1,020,835	2,400	167,971		1,191,206	3.83
Jan	2016	328,642	17.94	164.14				328,642	17.94	164.14	123,104	7.37	2.67	906,713	1,221	251,079		1,159,013	3.53
Dec	2015	323,113	17.31	167.29				323,113	17.31	167.29	121,229	6.92	2.67	839,124	3,126	267,589		1,109,839	3.43
Nov	2015	305,858	17.65	160.45				305,858	17.65	160.45	120,656	6.83	2.54	824,141	1,569	259,980		1,085,690	3.55
Oct	2015	299,776	16.96	158.43				299,776	16.96	158.43	114,528	7.39	2.62	846,637	17,906	303,749		1,168,291	3.90
Sep	2015	275,694	16.32	156.37				275,694	16.32	156.37	109,360	7.57	2.52	828,182	13,214	225,640		1,067,035	3.87
Aug	2015	287,824	17.55	146.96				287,824	17.55	146.96	107,777	7.95	2.67	856,541	13,560	232,869		1,102,969	3.83
Jul	2015	286,708	17.24	149.02				286,708	17.24	149.02	109,112	7.69	2.63	839,274	17,466	237,629		1,094,369	3.82
Jun	2015	289,950	17.48	153.57				289,950	17.48	153.57	115,842	7.89	2.50	913,579	8,640	261,970		1,184,189	4.08
May	2015	300,484	16.91	159.24				300,484	16.91	159.24	113,968	8.27	2.64	942,976	1,950	257,399		1,202,325	4.00
Apr	2015	298,064	19.53	141.31				298,064	19.53	141.31	116,585	8.57	2.56	999,082	7,152	257,400		1,263,633	4.24
Mar	2015	295,039	18.68	141.54				295,039	18.68	141.54	104,066	8.87	2.84	923,019	10,904	240,189		1,174,111	3.98
Feb	2015	250,688	17.82	139.54				250,688	17.82	139.54	111,436	8.70	2.25	969,544		191,423		1,160,967	4.63
Jan	2015	278,586	17.82	140.09				278,586	17.82	140.09	116,397	7.39	2.39	860,472	3,444	195,309		1,059,225	3.80
Dec	2014	280,729	17.60	142.95				280,729	17.60	142.95	108,932	7.36	2.58	801,649	11,931	196,669		1,010,248	3.60
Nov	2014	277,543	19.79	129.86				277,543	19.79	129.86	94,274	7.80	2.94	735,728	14,321	204,180		954,229	3.44
											7.77	2.58							3.80

SERVICE CONNECTIONS						WATER CONSUMPTION (CUM)						UNIT CONSUMPTION (CUM/mo)						Non Rev	Unacctd
Date	Res'l	Govt	Comm	Bulk	Total	Res'l	Govt	Comm	Bulk	Others	Total	Res'l	Govt	Comm	Bulk	Total	Water	%	Water %
Apr 2016	11,696		481		12,177	255,307		9,219		5,277	269,803	21.8		19.2		21.7	18.16		16.53
Mar 2016	11,577		482		12,059	249,595		8,989		14,738	273,322	21.6		18.6		21.4	22.82		18.42
Feb 2016	11,501		474		11,975	215,459		8,668		17,457	241,584	18.7		18.3		18.7	27.99		22.38
Jan 2016	11,452		477		11,929	222,769		9,540		16,995	249,304	19.5		20.0		19.5	29.31		24.14
Dec 2015	11,363		476		11,839	237,590		10,176		12,572	260,338	20.9		21.4		20.9	23.32		19.43
Nov 2015	11,301		481		11,782	224,553		10,630		8,921	244,104	19.9		22.1		20.0	23.11		20.19
Oct 2015	11,080		472		11,552	227,874		10,005		6,925	244,804	20.6		21.2		20.6	20.65		18.34
Sep 2015	10,960		464		11,424	211,039		9,320		8,123	228,482	19.3		20.1		19.3	20.07		17.12
Aug 2015	10,922		463		11,385	222,187		9,432		5,460	237,079	20.3		20.4		20.3	19.53		17.63
Jul 2015	10,893		462		11,355	222,986		9,765		5,431	238,182	20.5		21.1		20.5	18.82		16.92
Jun 2015	10,874		459		11,333	233,731		9,228		4,365	247,324	21.5		20.1		21.4	16.21		14.70
May 2015	10,793		457		11,250	245,500		9,092		4,276	258,868	22.7		19.9		22.6	15.27		13.85
Apr 2015	10,675		453		11,128	237,405		8,256		4,378	250,039	22.2		18.2		22.1	17.58		16.11
Mar 2015	10,569		454		11,023	237,034		9,217		5,438	251,689	22.4		20.3		22.3	16.54		14.69
Feb 2015	10,450		451		10,901	197,748		8,109		5,413	211,270	18.9		18.0		18.9	17.88		15.72
Jan 2015	10,377		453		10,830	204,064		8,133		5,194	217,391	19.7		18.0		19.6	23.83		21.97
Dec 2014	10,287		458		10,745	222,993		8,319		3,410	234,722	21.7		18.2		21.5	17.60		16.39
Nov 2014	10,231		452		10,683	206,732		8,388		3,791	218,911	20.2		18.6		20.1	22.49		21.13
												20.7		19.7		20.6	20.74		18.16

**Philippine Groundwater Database
Total Monthly Production-Consumption Data
Concepcion Water District**

		Elect	Hours	Q	Genset	Hours	Q	Prodn	Hours	Q		Cost	Cum	Power	Fuel	CL	Other	Total	Cost
	Date	CUM	/Day	L/s	CUM	/Day	L/s	CUM	/Day	L/s	KWH	/KWH	/KWH	Cost	Cost	Cost	Costs	Cost	/CUM
Apr	2016	323,239	18.67	160.30				323,239	18.67	160.30	128,542	7.80	2.51	1,002,055	13,824	175,486		1,191,365	3.69
Mar	2016	335,046	18.80	159.72				335,046	18.80	159.72	123,279	7.84	2.72	966,036	7,848	180,126		1,154,010	3.44
Feb	2016	311,228	18.85	158.18				311,228	18.85	158.18	131,024	7.79	2.38	1,020,835	2,400	167,971		1,191,206	3.83
Jan	2016	328,642	17.94	164.14				328,642	17.94	164.14	123,104	7.37	2.67	906,713	1,221	251,079		1,159,013	3.53
Dec	2015	323,113	17.31	167.29				323,113	17.31	167.29	121,229	6.92	2.67	839,124	3,126	267,589		1,109,839	3.43
Nov	2015	305,858	17.65	160.45				305,858	17.65	160.45	120,656	6.83	2.54	824,141	1,569	259,980		1,085,690	3.55
Oct	2015	299,776	16.96	158.43				299,776	16.96	158.43	114,528	7.39	2.62	846,637	17,906	303,749		1,168,291	3.90
Sep	2015	275,694	16.32	156.37				275,694	16.32	156.37	109,360	7.57	2.52	828,182	13,214	225,640		1,067,035	3.87
Aug	2015	287,824	17.55	146.96				287,824	17.55	146.96	107,777	7.95	2.67	856,541	13,560	232,869		1,102,969	3.83
Jul	2015	286,708	17.24	149.02				286,708	17.24	149.02	109,112	7.69	2.63	839,274	17,466	237,629		1,094,369	3.82
Jun	2015	289,950	17.48	153.57				289,950	17.48	153.57	115,842	7.89	2.50	913,579	8,640	261,970		1,184,189	4.08
May	2015	300,484	16.91	159.24				300,484	16.91	159.24	113,968	8.27	2.64	942,976	1,950	257,399		1,202,325	4.00
Apr	2015	298,064	19.53	141.31				298,064	19.53	141.31	116,585	8.57	2.56	999,082	7,152	257,400		1,263,633	4.24
Mar	2015	295,039	18.68	141.54				295,039	18.68	141.54	104,066	8.87	2.84	923,019	10,904	240,189		1,174,111	3.98
Feb	2015	250,688	17.82	139.54				250,688	17.82	139.54	111,436	8.70	2.25	969,544		191,423		1,160,967	4.63
Jan	2015	278,586	17.82	140.09				278,586	17.82	140.09	116,397	7.39	2.39	860,472	3,444	195,309		1,059,225	3.80
Dec	2014	280,729	17.60	142.95				280,729	17.60	142.95	108,932	7.36	2.58	801,649	11,931	196,669		1,010,248	3.60
Nov	2014	277,543	19.79	129.86				277,543	19.79	129.86	94,274	7.80	2.94	735,728	14,321	204,180		954,229	3.44
											7.77	2.58							3.80

SERVICE CONNECTIONS						WATER CONSUMPTION (CUM)						UNIT CONSUMPTION (CUM/mo)						Non Rev	Unacctd
Date	Res'l	Govt	Comm	Bulk	Total	Res'l	Govt	Comm	Bulk	Others	Total	Res'l	Govt	Comm	Bulk	Total	Water	%	Water %
Apr 2016	11,696		481		12,177	255,307		9,219		5,277	269,803	21.8		19.2		21.7	18.16		16.53
Mar 2016	11,577		482		12,059	249,595		8,989		14,738	273,322	21.6		18.6		21.4	22.82		18.42
Feb 2016	11,501		474		11,975	215,459		8,668		17,457	241,584	18.7		18.3		18.7	27.99		22.38
Jan 2016	11,452		477		11,929	222,769		9,540		16,995	249,304	19.5		20.0		19.5	29.31		24.14
Dec 2015	11,363		476		11,839	237,590		10,176		12,572	260,338	20.9		21.4		20.9	23.32		19.43
Nov 2015	11,301		481		11,782	224,553		10,630		8,921	244,104	19.9		22.1		20.0	23.11		20.19
Oct 2015	11,080		472		11,552	227,874		10,005		6,925	244,804	20.6		21.2		20.6	20.65		18.34
Sep 2015	10,960		464		11,424	211,039		9,320		8,123	228,482	19.3		20.1		19.3	20.07		17.12
Aug 2015	10,922		463		11,385	222,187		9,432		5,460	237,079	20.3		20.4		20.3	19.53		17.63
Jul 2015	10,893		462		11,355	222,986		9,765		5,431	238,182	20.5		21.1		20.5	18.82		16.92
Jun 2015	10,874		459		11,333	233,731		9,228		4,365	247,324	21.5		20.1		21.4	16.21		14.70
May 2015	10,793		457		11,250	245,500		9,092		4,276	258,868	22.7		19.9		22.6	15.27		13.85
Apr 2015	10,675		453		11,128	237,405		8,256		4,378	250,039	22.2		18.2		22.1	17.58		16.11
Mar 2015	10,569		454		11,023	237,034		9,217		5,438	251,689	22.4		20.3		22.3	16.54		14.69
Feb 2015	10,450		451		10,901	197,748		8,109		5,413	211,270	18.9		18.0		18.9	17.88		15.72
Jan 2015	10,377		453		10,830	204,064		8,133		5,194	217,391	19.7		18.0		19.6	23.83		21.97
Dec 2014	10,287		458		10,745	222,993		8,319		3,410	234,722	21.7		18.2		21.5	17.60		16.39
Nov 2014	10,231		452		10,683	206,732		8,388		3,791	218,911	20.2		18.6		20.1	22.49		21.13
												20.7		19.7		20.6	20.74		18.16

**Philippine Groundwater Database
Total Monthly Production-Consumption Data
Concepcion Water District**

	Elect	Hours	Q	Genset	Hours	Q	Prodn	Hours	Q		Cost	Cum	Power	Fuel	CL	Other	Total	Cost	
Date	CUM	/Day	L/s	CUM	/Day	L/s	CUM	/Day	L/s	KWH	/KWH	/KWH	Cost	Cost	Cost	Costs	Cost	/CUM	
Apr 2016	323,239	18.67	160.30				323,239	18.67	160.30	128,542	7.80	2.51	1,002,055	13,824	175,486		1,191,365	3.69	
Mar 2016	335,046	18.80	159.72				335,046	18.80	159.72	123,279	7.84	2.72	966,036	7,848	180,126		1,154,010	3.44	
Feb 2016	311,228	18.85	158.18				311,228	18.85	158.18	131,024	7.79	2.38	1,020,835	2,400	167,971		1,191,206	3.83	
Jan 2016	328,642	17.94	164.14				328,642	17.94	164.14	123,104	7.37	2.67	906,713	1,221	251,079		1,159,013	3.53	
Dec 2015	323,113	17.31	167.29				323,113	17.31	167.29	121,229	6.92	2.67	839,124	3,126	267,589		1,109,839	3.43	
Nov 2015	305,858	17.65	160.45				305,858	17.65	160.45	120,656	6.83	2.54	824,141	1,569	259,980		1,085,690	3.55	
Oct 2015	299,776	16.96	158.43				299,776	16.96	158.43	114,528	7.39	2.62	846,637	17,906	303,749		1,168,291	3.90	
Sep 2015	275,694	16.32	156.37				275,694	16.32	156.37	109,360	7.57	2.52	828,182	13,214	225,640		1,067,035	3.87	
Aug 2015	287,824	17.55	146.96				287,824	17.55	146.96	107,777	7.95	2.67	856,541	13,560	232,869		1,102,969	3.83	
Jul 2015	286,708	17.24	149.02				286,708	17.24	149.02	109,112	7.69	2.63	839,274	17,466	237,629		1,094,369	3.82	
Jun 2015	289,950	17.48	153.57				289,950	17.48	153.57	115,842	7.89	2.50	913,579	8,640	261,970		1,184,189	4.08	
May 2015	300,484	16.91	159.24				300,484	16.91	159.24	113,968	8.27	2.64	942,976	1,950	257,399		1,202,325	4.00	
Apr 2015	298,064	19.53	141.31				298,064	19.53	141.31	116,585	8.57	2.56	999,082	7,152	257,400		1,263,633	4.24	
Mar 2015	295,039	18.68	141.54				295,039	18.68	141.54	104,066	8.87	2.84	923,019	10,904	240,189		1,174,111	3.98	
Feb 2015	250,688	17.82	139.54				250,688	17.82	139.54	111,436	8.70	2.25	969,544		191,423		1,160,967	4.63	
Jan 2015	278,586	17.82	140.09				278,586	17.82	140.09	116,397	7.39	2.39	860,472	3,444	195,309		1,059,225	3.80	
Dec 2014	280,729	17.60	142.95				280,729	17.60	142.95	108,932	7.36	2.58	801,649	11,931	196,669		1,010,248	3.60	
Nov 2014	277,543	19.79	129.86				277,543	19.79	129.86	94,274	7.80	2.94	735,728	14,321	204,180		954,229	3.44	
											7.77	2.58							3.80

SERVICE CONNECTIONS						WATER CONSUMPTION (CUM)						UNIT CONSUMPTION (CUM/mo)						Non Rev	Unacctd
Date	Res'l	Govt	Comm	Bulk	Total	Res'l	Govt	Comm	Bulk	Others	Total	Res'l	Govt	Comm	Bulk	Total	Water	%	Water %
Apr 2016	11,696		481		12,177	255,307		9,219		5,277	269,803	21.8		19.2		21.7	18.16		16.53
Mar 2016	11,577		482		12,059	249,595		8,989		14,738	273,322	21.6		18.6		21.4	22.82		18.42
Feb 2016	11,501		474		11,975	215,459		8,668		17,457	241,584	18.7		18.3		18.7	27.99		22.38
Jan 2016	11,452		477		11,929	222,769		9,540		16,995	249,304	19.5		20.0		19.5	29.31		24.14
Dec 2015	11,363		476		11,839	237,590		10,176		12,572	260,338	20.9		21.4		20.9	23.32		19.43
Nov 2015	11,301		481		11,782	224,553		10,630		8,921	244,104	19.9		22.1		20.0	23.11		20.19
Oct 2015	11,080		472		11,552	227,874		10,005		6,925	244,804	20.6		21.2		20.6	20.65		18.34
Sep 2015	10,960		464		11,424	211,039		9,320		8,123	228,482	19.3		20.1		19.3	20.07		17.12
Aug 2015	10,922		463		11,385	222,187		9,432		5,460	237,079	20.3		20.4		20.3	19.53		17.63
Jul 2015	10,893		462		11,355	222,986		9,765		5,431	238,182	20.5		21.1		20.5	18.82		16.92
Jun 2015	10,874		459		11,333	233,731		9,228		4,365	247,324	21.5		20.1		21.4	16.21		14.70
May 2015	10,793		457		11,250	245,500		9,092		4,276	258,868	22.7		19.9		22.6	15.27		13.85
Apr 2015	10,675		453		11,128	237,405		8,256		4,378	250,039	22.2		18.2		22.1	17.58		16.11
Mar 2015	10,569		454		11,023	237,034		9,217		5,438	251,689	22.4		20.3		22.3	16.54		14.69
Feb 2015	10,450		451		10,901	197,748		8,109		5,413	211,270	18.9		18.0		18.9	17.88		15.72
Jan 2015	10,377		453		10,830	204,064		8,133		5,194	217,391	19.7		18.0		19.6	23.83		21.97
Dec 2014	10,287		458		10,745	222,993		8,319		3,410	234,722	21.7		18.2		21.5	17.60		16.39
Nov 2014	10,231		452		10,683	206,732		8,388		3,791	218,911	20.2		18.6		20.1	22.49		21.13
												20.7		19.7		20.6	20.74		18.16

**Philippine Groundwater Database
Total Monthly Production-Consumption Data
Concepcion Water District**

	Elect	Hours	Q	Genset	Hours	Q	Prodn	Hours	Q		Cost	Cum	Power	Fuel	CL	Other	Total	Cost	
Date	CUM	/Day	L/s	CUM	/Day	L/s	CUM	/Day	L/s	KWH	/KWH	/KWH	Cost	Cost	Cost	Costs	Cost	/CUM	
Apr 2016	323,239	18.67	160.30				323,239	18.67	160.30	128,542	7.80	2.51	1,002,055	13,824	175,486		1,191,365	3.69	
Mar 2016	335,046	18.80	159.72				335,046	18.80	159.72	123,279	7.84	2.72	966,036	7,848	180,126		1,154,010	3.44	
Feb 2016	311,228	18.85	158.18				311,228	18.85	158.18	131,024	7.79	2.38	1,020,835	2,400	167,971		1,191,206	3.83	
Jan 2016	328,642	17.94	164.14				328,642	17.94	164.14	123,104	7.37	2.67	906,713	1,221	251,079		1,159,013	3.53	
Dec 2015	323,113	17.31	167.29				323,113	17.31	167.29	121,229	6.92	2.67	839,124	3,126	267,589		1,109,839	3.43	
Nov 2015	305,858	17.65	160.45				305,858	17.65	160.45	120,656	6.83	2.54	824,141	1,569	259,980		1,085,690	3.55	
Oct 2015	299,776	16.96	158.43				299,776	16.96	158.43	114,528	7.39	2.62	846,637	17,906	303,749		1,168,291	3.90	
Sep 2015	275,694	16.32	156.37				275,694	16.32	156.37	109,360	7.57	2.52	828,182	13,214	225,640		1,067,035	3.87	
Aug 2015	287,824	17.55	146.96				287,824	17.55	146.96	107,777	7.95	2.67	856,541	13,560	232,869		1,102,969	3.83	
Jul 2015	286,708	17.24	149.02				286,708	17.24	149.02	109,112	7.69	2.63	839,274	17,466	237,629		1,094,369	3.82	
Jun 2015	289,950	17.48	153.57				289,950	17.48	153.57	115,842	7.89	2.50	913,579	8,640	261,970		1,184,189	4.08	
May 2015	300,484	16.91	159.24				300,484	16.91	159.24	113,968	8.27	2.64	942,976	1,950	257,399		1,202,325	4.00	
Apr 2015	298,064	19.53	141.31				298,064	19.53	141.31	116,585	8.57	2.56	999,082	7,152	257,400		1,263,633	4.24	
Mar 2015	295,039	18.68	141.54				295,039	18.68	141.54	104,066	8.87	2.84	923,019	10,904	240,189		1,174,111	3.98	
Feb 2015	250,688	17.82	139.54				250,688	17.82	139.54	111,436	8.70	2.25	969,544		191,423		1,160,967	4.63	
Jan 2015	278,586	17.82	140.09				278,586	17.82	140.09	116,397	7.39	2.39	860,472	3,444	195,309		1,059,225	3.80	
Dec 2014	280,729	17.60	142.95				280,729	17.60	142.95	108,932	7.36	2.58	801,649	11,931	196,669		1,010,248	3.60	
Nov 2014	277,543	19.79	129.86				277,543	19.79	129.86	94,274	7.80	2.94	735,728	14,321	204,180		954,229	3.44	
											7.77	2.58							3.80

SERVICE CONNECTIONS						WATER CONSUMPTION (CUM)						UNIT CONSUMPTION (CUM/mo)						Non Rev	Unacctd
Date	Res'l	Govt	Comm	Bulk	Total	Res'l	Govt	Comm	Bulk	Others	Total	Res'l	Govt	Comm	Bulk	Total	Water	%	Water %
Apr 2016	11,696		481		12,177	255,307		9,219		5,277	269,803	21.8		19.2		21.7	18.16		16.53
Mar 2016	11,577		482		12,059	249,595		8,989		14,738	273,322	21.6		18.6		21.4	22.82		18.42
Feb 2016	11,501		474		11,975	215,459		8,668		17,457	241,584	18.7		18.3		18.7	27.99		22.38
Jan 2016	11,452		477		11,929	222,769		9,540		16,995	249,304	19.5		20.0		19.5	29.31		24.14
Dec 2015	11,363		476		11,839	237,590		10,176		12,572	260,338	20.9		21.4		20.9	23.32		19.43
Nov 2015	11,301		481		11,782	224,553		10,630		8,921	244,104	19.9		22.1		20.0	23.11		20.19
Oct 2015	11,080		472		11,552	227,874		10,005		6,925	244,804	20.6		21.2		20.6	20.65		18.34
Sep 2015	10,960		464		11,424	211,039		9,320		8,123	228,482	19.3		20.1		19.3	20.07		17.12
Aug 2015	10,922		463		11,385	222,187		9,432		5,460	237,079	20.3		20.4		20.3	19.53		17.63
Jul 2015	10,893		462		11,355	222,986		9,765		5,431	238,182	20.5		21.1		20.5	18.82		16.92
Jun 2015	10,874		459		11,333	233,731		9,228		4,365	247,324	21.5		20.1		21.4	16.21		14.70
May 2015	10,793		457		11,250	245,500		9,092		4,276	258,868	22.7		19.9		22.6	15.27		13.85
Apr 2015	10,675		453		11,128	237,405		8,256		4,378	250,039	22.2		18.2		22.1	17.58		16.11
Mar 2015	10,569		454		11,023	237,034		9,217		5,438	251,689	22.4		20.3		22.3	16.54		14.69
Feb 2015	10,450		451		10,901	197,748		8,109		5,413	211,270	18.9		18.0		18.9	17.88		15.72
Jan 2015	10,377		453		10,830	204,064		8,133		5,194	217,391	19.7		18.0		19.6	23.83		21.97
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Nov 2014	10,231		452		10,683	206,732		8,388		3,791	218,911	20.2		18.6		20.1	22.49		21.13
												20.7		19.7		20.6	20.74		18.16

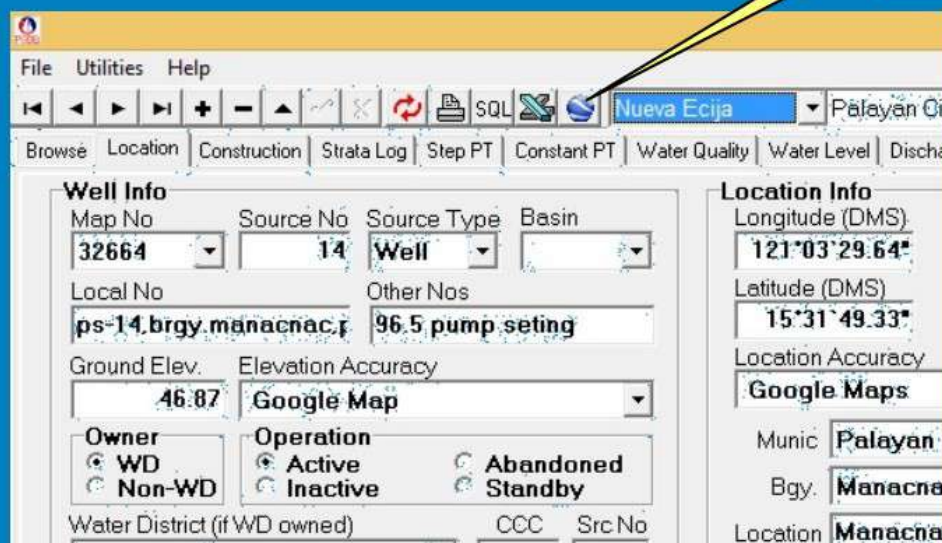
**Philippine Groundwater Database
Total Monthly Production-Consumption Data
Concepcion Water District**

	Elect	Hours	Q	Genset	Hours	Q	Prodn	Hours	Q		Cost	Cum	Power	Fuel	CL	Other	Total	Cost	
Date	CUM	/Day	L/s	CUM	/Day	L/s	CUM	/Day	L/s	KWH	/KWH	/KWH	Cost	Cost	Cost	Costs	Cost	/CUM	
Apr 2016	323,239	18.67	160.30				323,239	18.67	160.30	128,542	7.80	2.51	1,002,055	13,824	175,486		1,191,365	3.69	
Mar 2016	335,046	18.80	159.72				335,046	18.80	159.72	123,279	7.84	2.72	966,036	7,848	180,126		1,154,010	3.44	
Feb 2016	311,228	18.85	158.18				311,228	18.85	158.18	131,024	7.79	2.38	1,020,835	2,400	167,971		1,191,206	3.83	
Jan 2016	328,642	17.94	164.14				328,642	17.94	164.14	123,104	7.37	2.67	906,713	1,221	251,079		1,159,013	3.53	
Dec 2015	323,113	17.31	167.29				323,113	17.31	167.29	121,229	6.92	2.67	839,124	3,126	267,589		1,109,839	3.43	
Nov 2015	305,858	17.65	160.45				305,858	17.65	160.45	120,656	6.83	2.54	824,141	1,569	259,980		1,085,690	3.55	
Oct 2015	299,776	16.96	158.43				299,776	16.96	158.43	114,528	7.39	2.62	846,637	17,906	303,749		1,168,291	3.90	
Sep 2015	275,694	16.32	156.37				275,694	16.32	156.37	109,360	7.57	2.52	828,182	13,214	225,640		1,067,035	3.87	
Aug 2015	287,824	17.55	146.96				287,824	17.55	146.96	107,777	7.95	2.67	856,541	13,560	232,869		1,102,969	3.83	
Jul 2015	286,708	17.24	149.02				286,708	17.24	149.02	109,112	7.69	2.63	839,274	17,466	237,629		1,094,369	3.82	
Jun 2015	289,950	17.48	153.57				289,950	17.48	153.57	115,842	7.89	2.50	913,579	8,640	261,970		1,184,189	4.08	
May 2015	300,484	16.91	159.24				300,484	16.91	159.24	113,968	8.27	2.64	942,976	1,950	257,399		1,202,325	4.00	
Apr 2015	298,064	19.53	141.31				298,064	19.53	141.31	116,585	8.57	2.56	999,082	7,152	257,400		1,263,633	4.24	
Mar 2015	295,039	18.68	141.54				295,039	18.68	141.54	104,066	8.87	2.84	923,019	10,904	240,189		1,174,111	3.98	
Feb 2015	250,688	17.82	139.54				250,688	17.82	139.54	111,436	8.70	2.25	969,544		191,423		1,160,967	4.63	
Jan 2015	278,586	17.82	140.09				278,586	17.82	140.09	116,397	7.39	2.39	860,472	3,444	195,309		1,059,225	3.80	
Dec 2014	280,729	17.60	142.95				280,729	17.60	142.95	108,932	7.36	2.58	801,649	11,931	196,669		1,010,248	3.60	
Nov 2014	277,543	19.79	129.86				277,543	19.79	129.86	94,274	7.80	2.94	735,728	14,321	204,180		954,229	3.44	
											7.77	2.58							3.80

SERVICE CONNECTIONS						WATER CONSUMPTION (CUM)						UNIT CONSUMPTION (CUM/mo)					Non Rev	Unacctd
Date	Res'l	Govt	Comm	Bulk	Total	Res'l	Govt	Comm	Bulk	Others	Total	Res'l	Govt	Comm	Bulk	Total	Water %	Water %
Apr 2016	11,696		481		12,177	255,307		9,219		5,277	269,803	21.8		19.2		21.7	18.16	16.53
Mar 2016	11,577		482		12,059	249,595		8,989		14,738	273,322	21.6		18.6		21.4	22.82	18.42
Feb 2016	11,501		474		11,975	215,459		8,668		17,457	241,584	18.7		18.3		18.7	27.99	22.38
Jan 2016	11,452		477		11,929	222,769		9,540		16,995	249,304	19.5		20.0		19.5	29.31	24.14
Dec 2015	11,363		476		11,839	237,590		10,176		12,572	260,338	20.9		21.4		20.9	23.32	19.43
Nov 2015	11,301		481		11,782	224,553		10,630		8,921	244,104	19.9		22.1		20.0	23.11	20.19
Oct 2015	11,080		472		11,552	227,874		10,005		6,925	244,804	20.6		21.2		20.6	20.65	18.34
Sep 2015	10,960		464		11,424	211,039		9,320		8,123	228,482	19.3		20.1		19.3	20.07	17.12
Aug 2015	10,922		463		11,385	222,187		9,432		5,460	237,079	20.3		20.4		20.3	19.53	17.63
Jul 2015	10,893		462		11,355	222,986		9,765		5,431	238,182	20.5		21.1		20.5	18.82	16.92
Jun 2015	10,874		459		11,333	233,731		9,228		4,365	247,324	21.5		20.1		21.4	16.21	14.70
May 2015	10,793		457		11,250	245,500		9,092		4,276	258,868	22.7		19.9		22.6	15.27	13.85
Apr 2015	10,675		453		11,128	237,405		8,256		4,378	250,039	22.2		18.2		22.1	17.58	16.11
Mar 2015	10,569		454		11,023	237,034		9,217		5,438	251,689	22.4		20.3		22.3	16.54	14.69
Feb 2015	10,450		451		10,901	197,748		8,109		5,413	211,270	18.9		18.0		18.9	17.88	15.72
Jan 2015	10,377		453		10,830	204,064		8,133		5,194	217,391	19.7		18.0		19.6	23.83	21.97
Dec 2014	10,287		458		10,745	222,993		8,319		3,410	234,722	21.7		18.2		21.5	17.60	16.39
Nov 2014	10,231		452		10,683	206,732		8,388		3,791	218,911	20.2		18.6		20.1	22.49	21.13
												20.7		19.7		20.6	20.74	18.16

Outputs that can be readily generated

**Click to go
to Google
for location**



The screenshot shows a software window with a menu bar (File, Utilities, Help) and a toolbar. A yellow callout bubble points to a globe icon in the toolbar, labeled "Click to go to Google for location". Below the toolbar is a tabbed interface with tabs: Browse, Location, Construction, Strata Log, Step PT, Constant PT, Water Quality, Water Level, and Discharge. The "Location" tab is active, showing two main sections: "Well Info" and "Location Info".

Well Info

Map No	Source No	Source Type	Basin
32664	14	Well	

Local No: ps-14.brgy.manacnac.p
Other Nos: 96.5 pump seting

Ground Elev.: 46.87
Elevation Accuracy: Google Map

Owner
☒ WD
☐ Non-WD

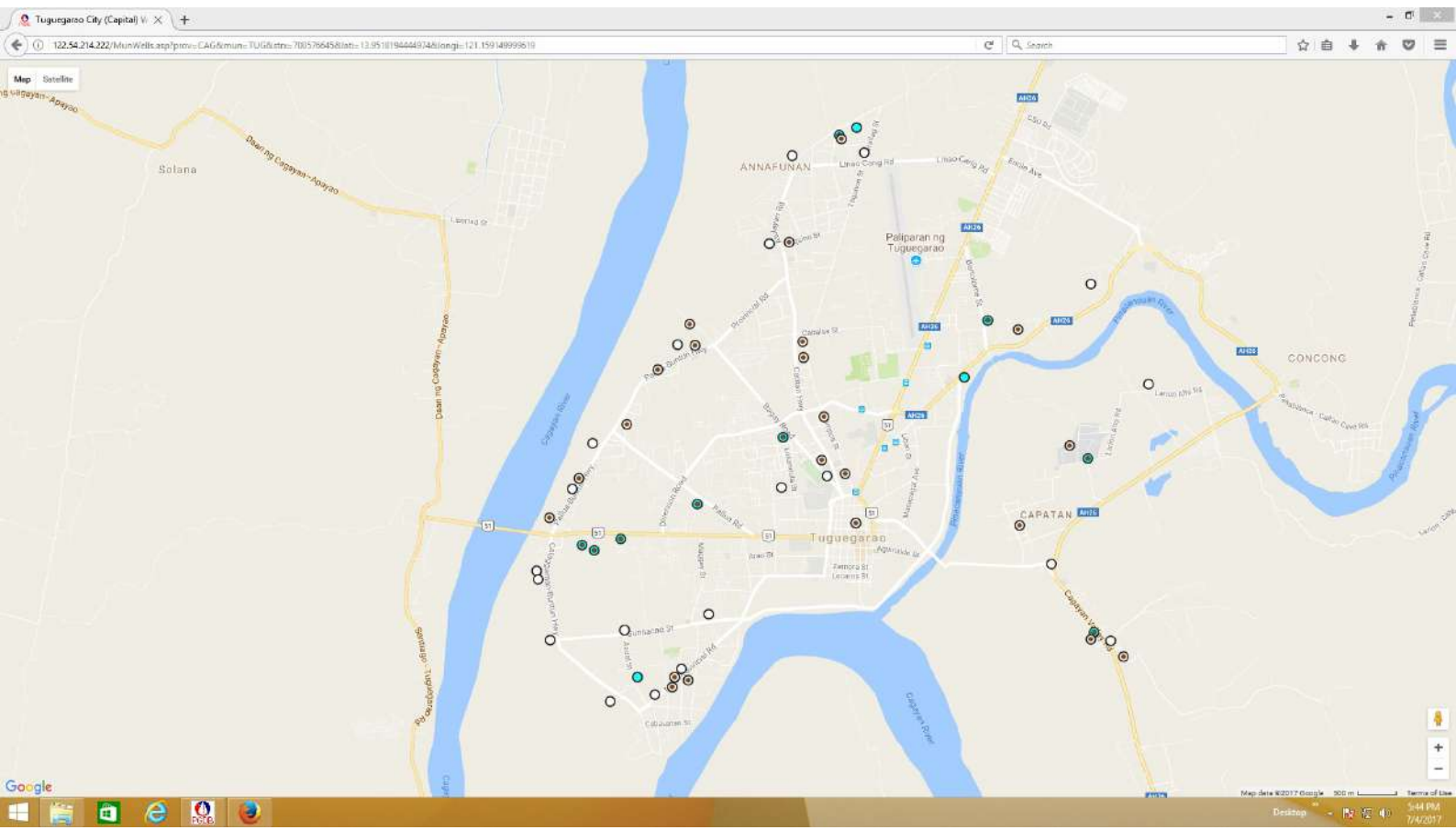
Operation
☒ Active
☐ Inactive
☐ Abandoned
☐ Standby

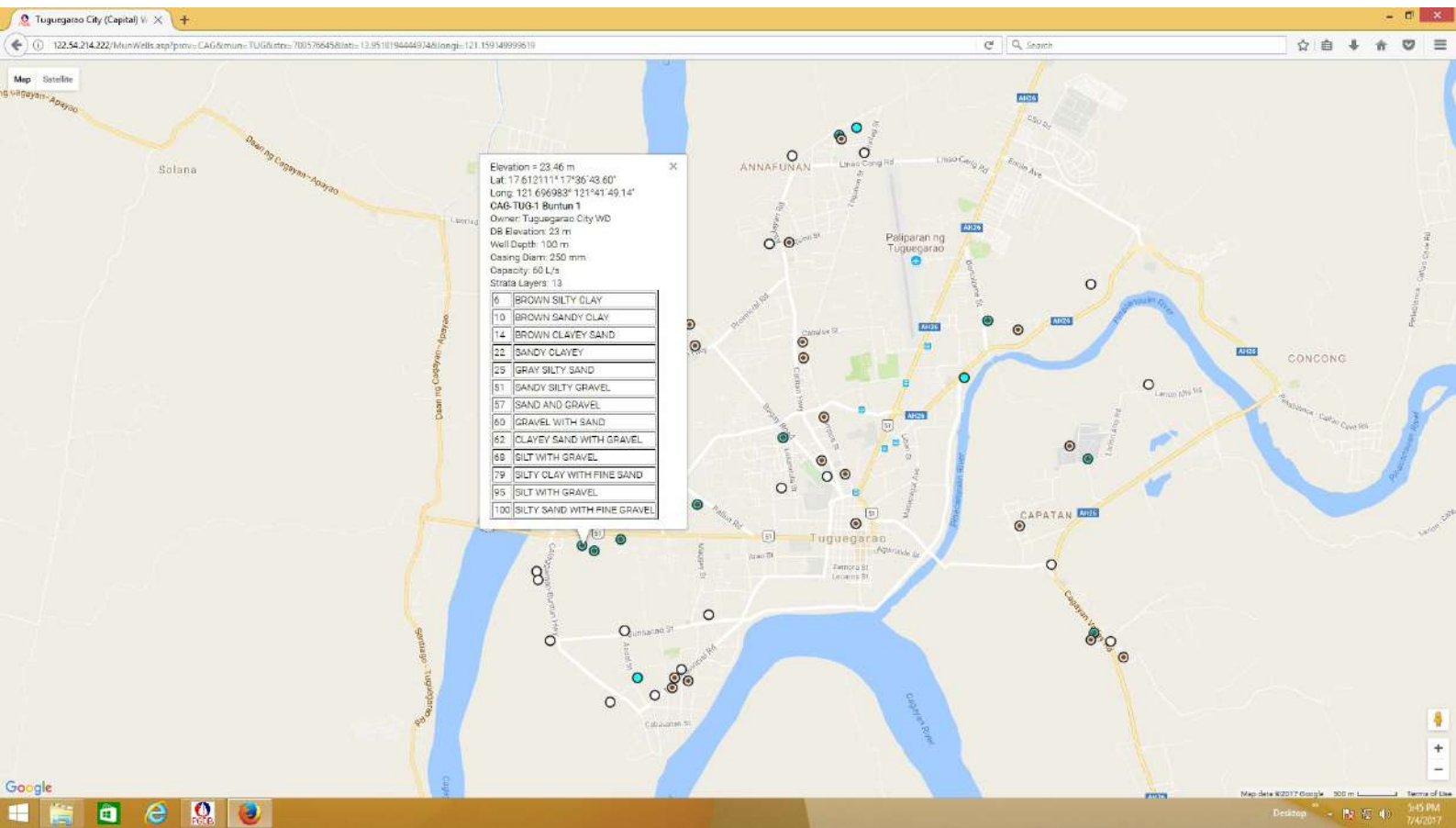
Water District (if WD owned):
CCC: Src No:

Location Info

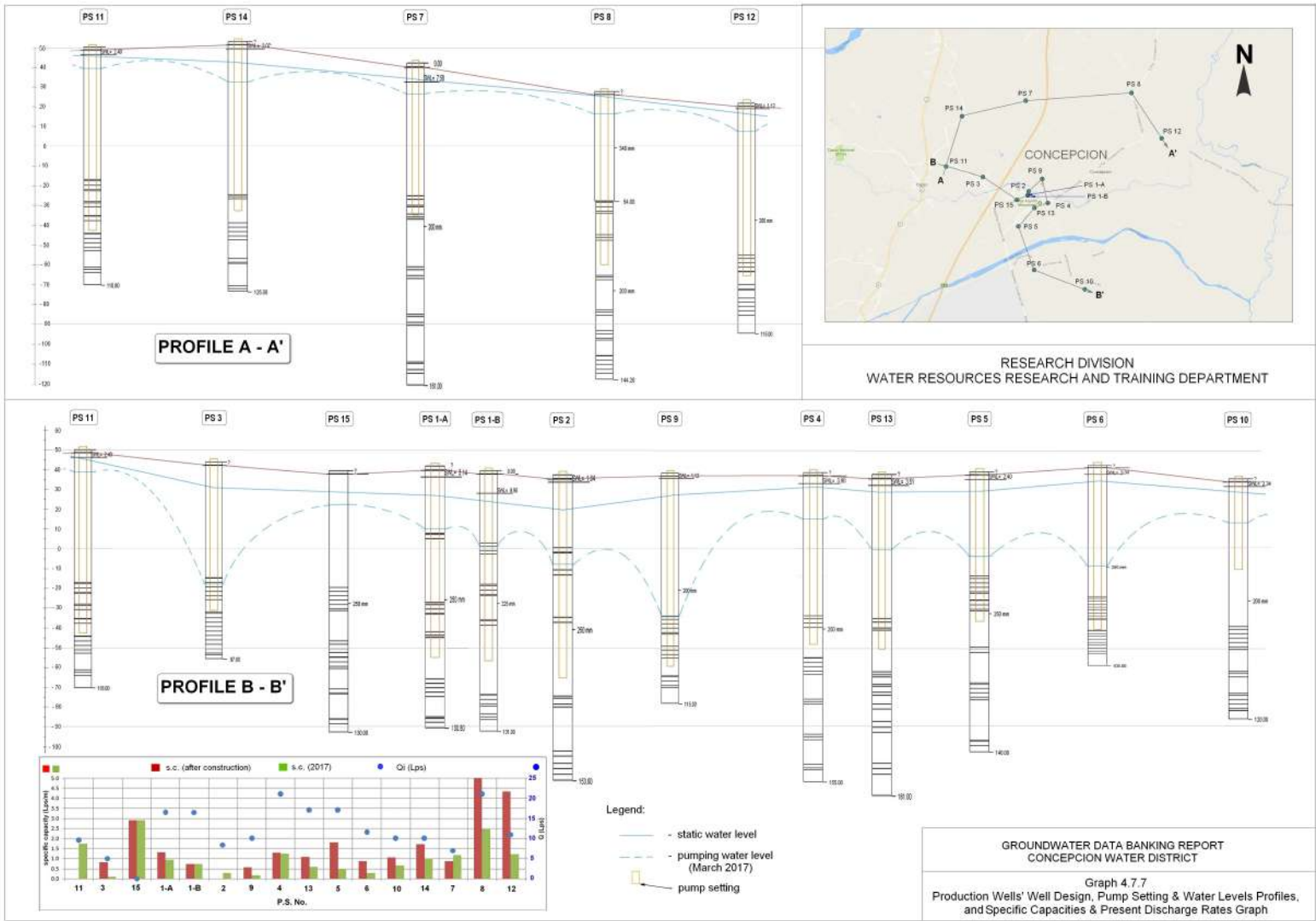
Longitude (DMS): 121°03'29.64"
Latitude (DMS): 15°31'49.33"
Location Accuracy: Google Maps

Munic: Palayan
Bgy: Manacnac
Location: Manacnac

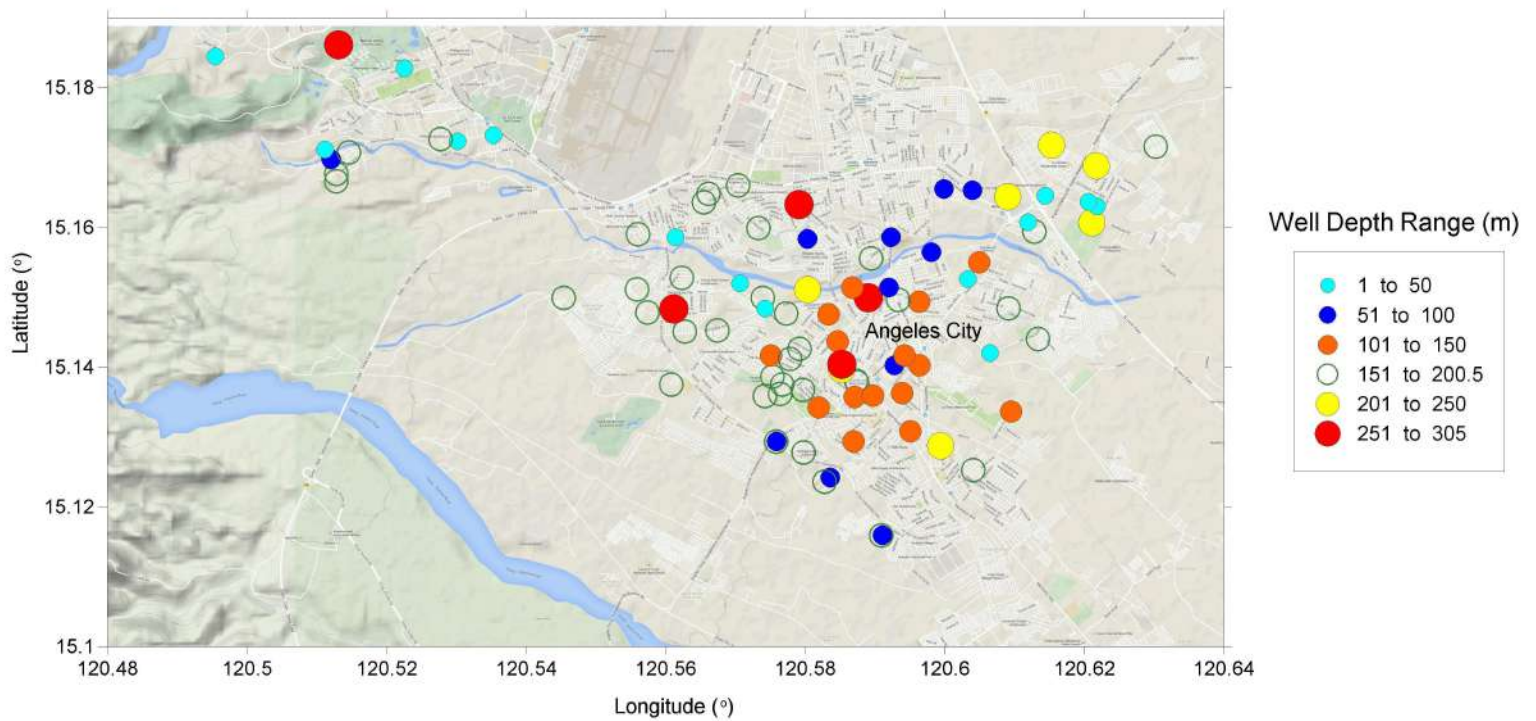




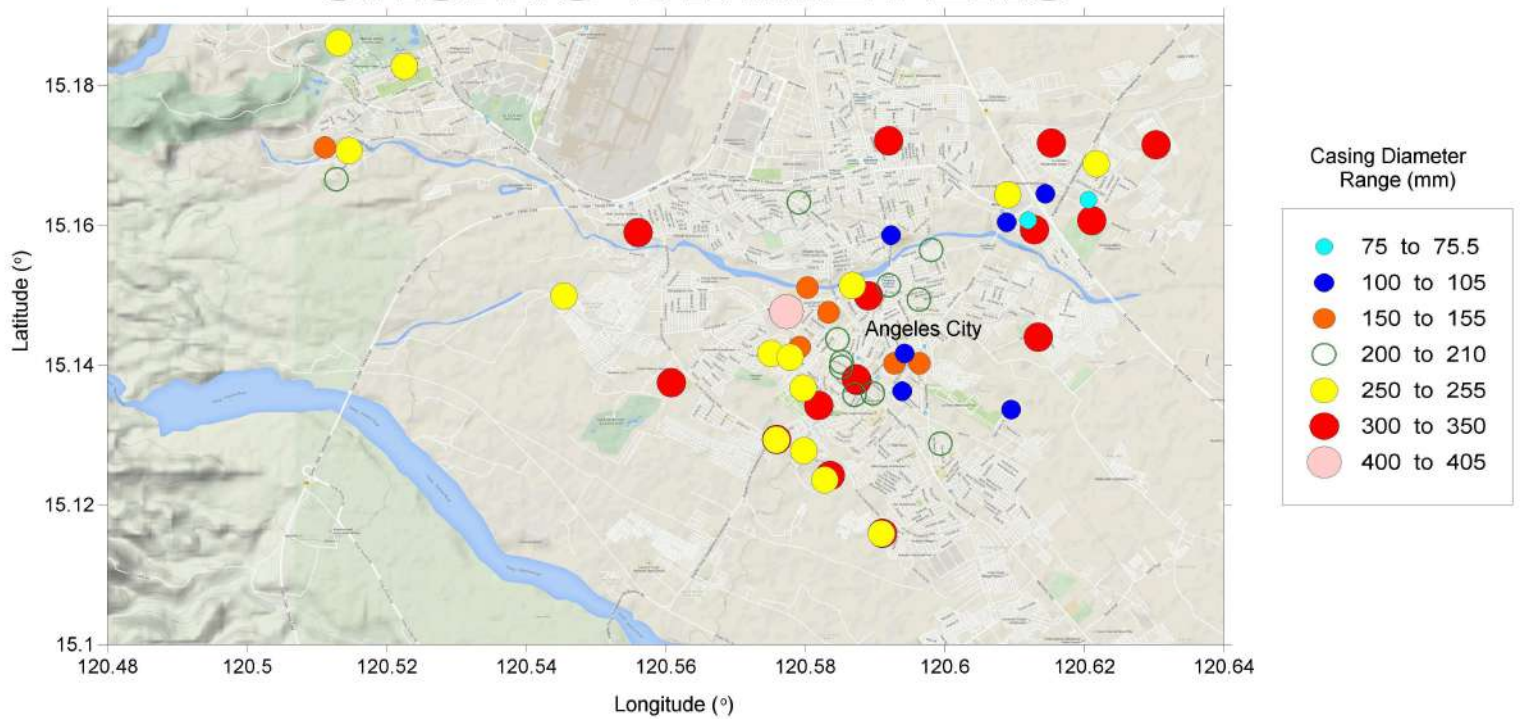
**SAMPLE OUTPUTS
GENERATED FROM
GROUNDWATER
DATA BANKING
REPORTS**



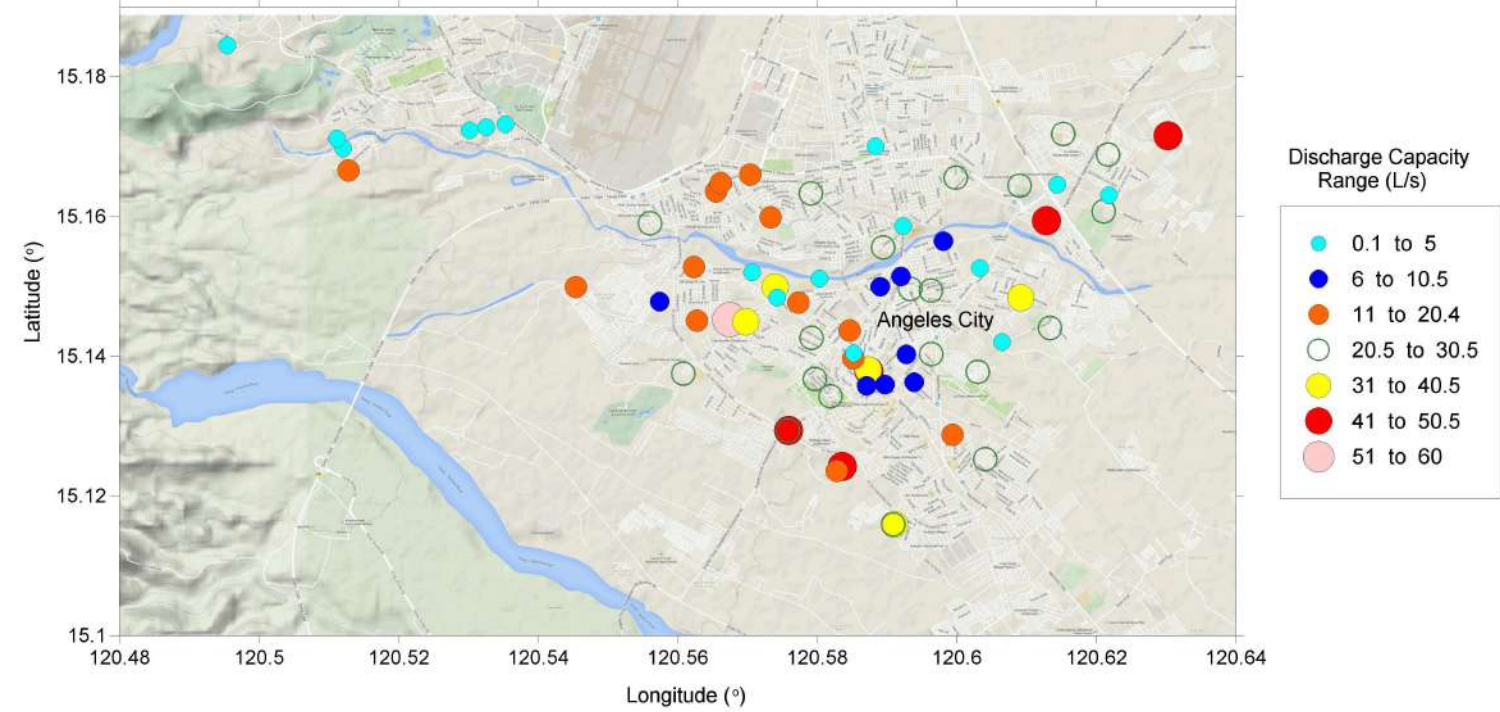
WELL DEPTHS

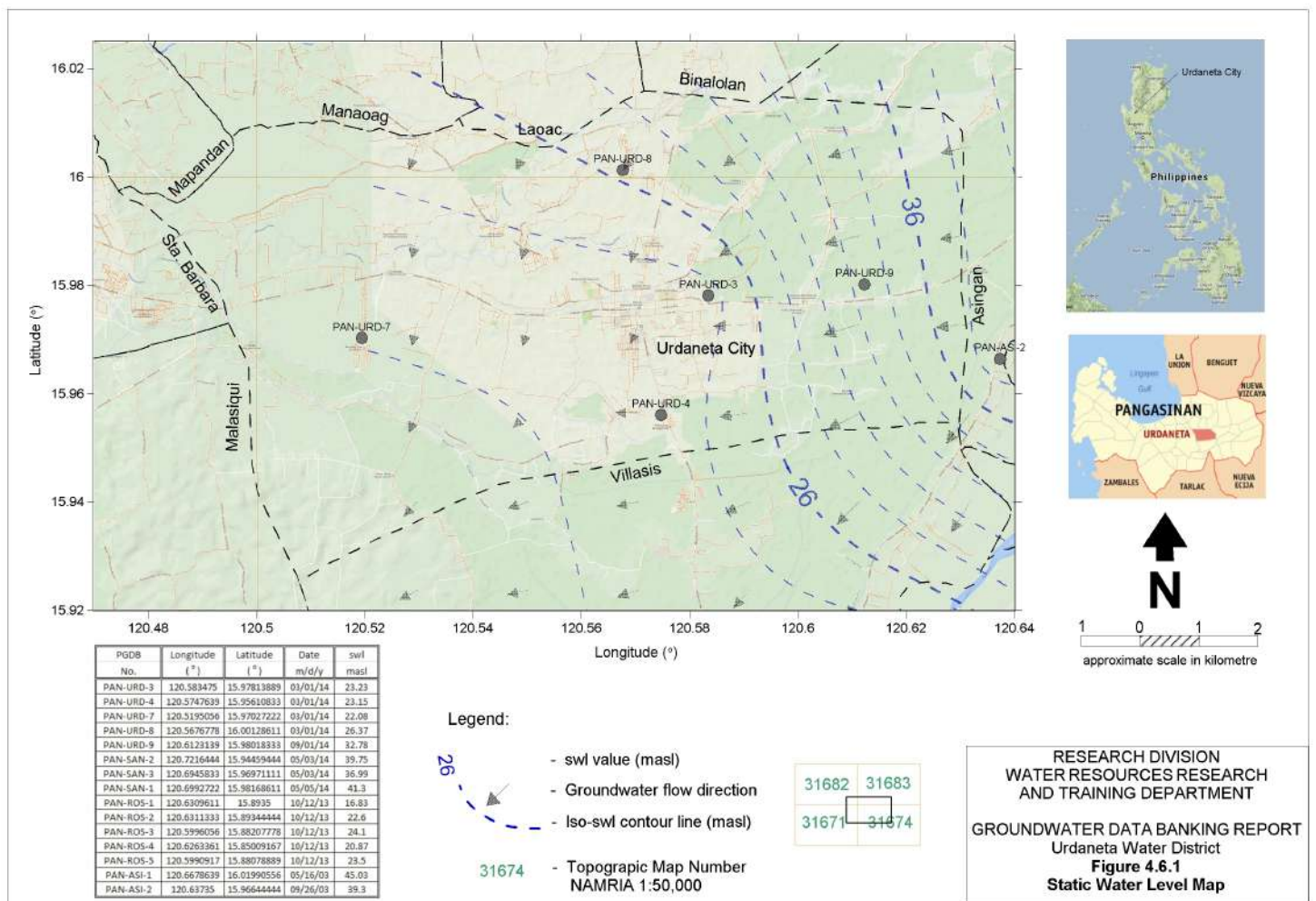


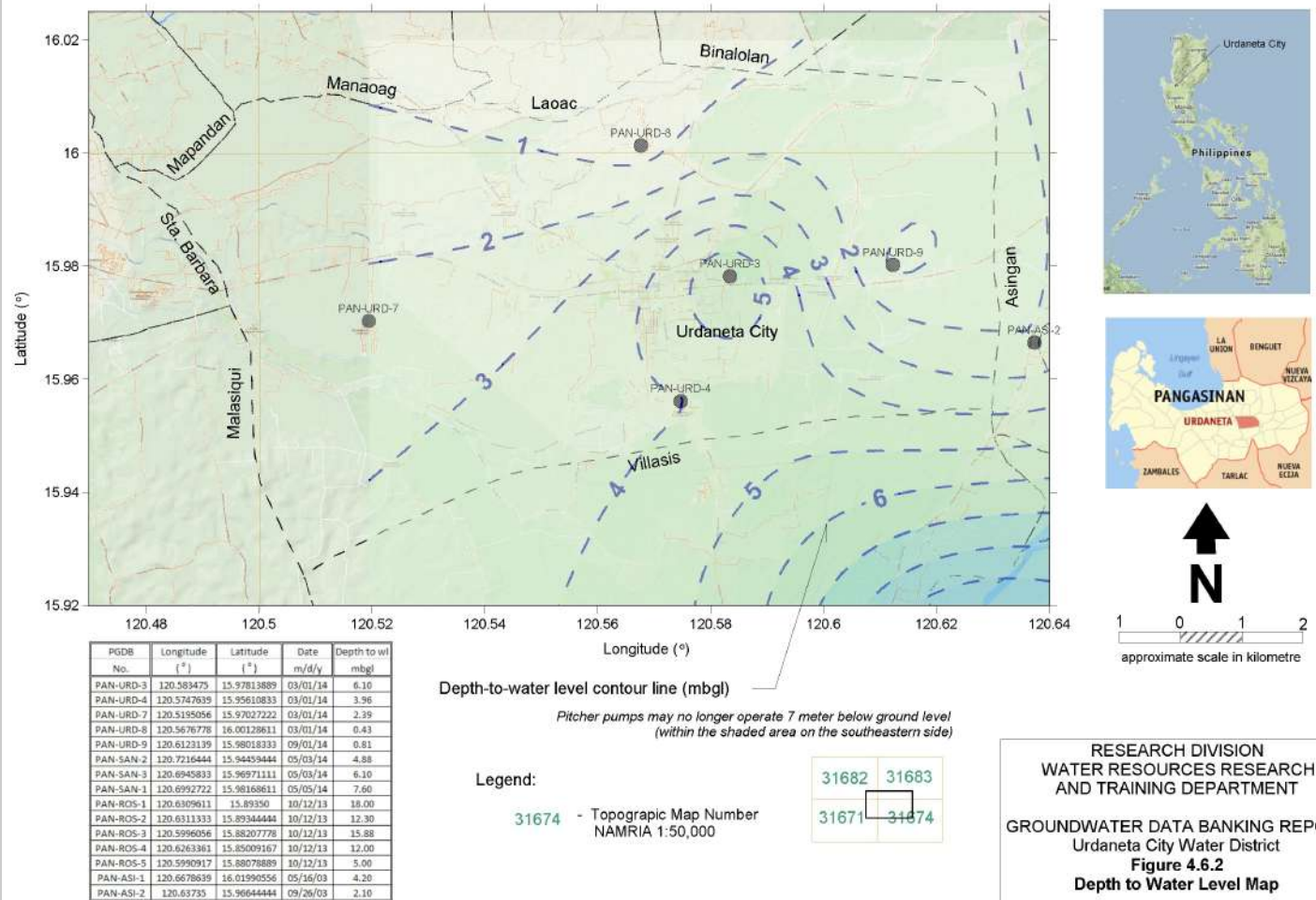
CASING DIAMETERS

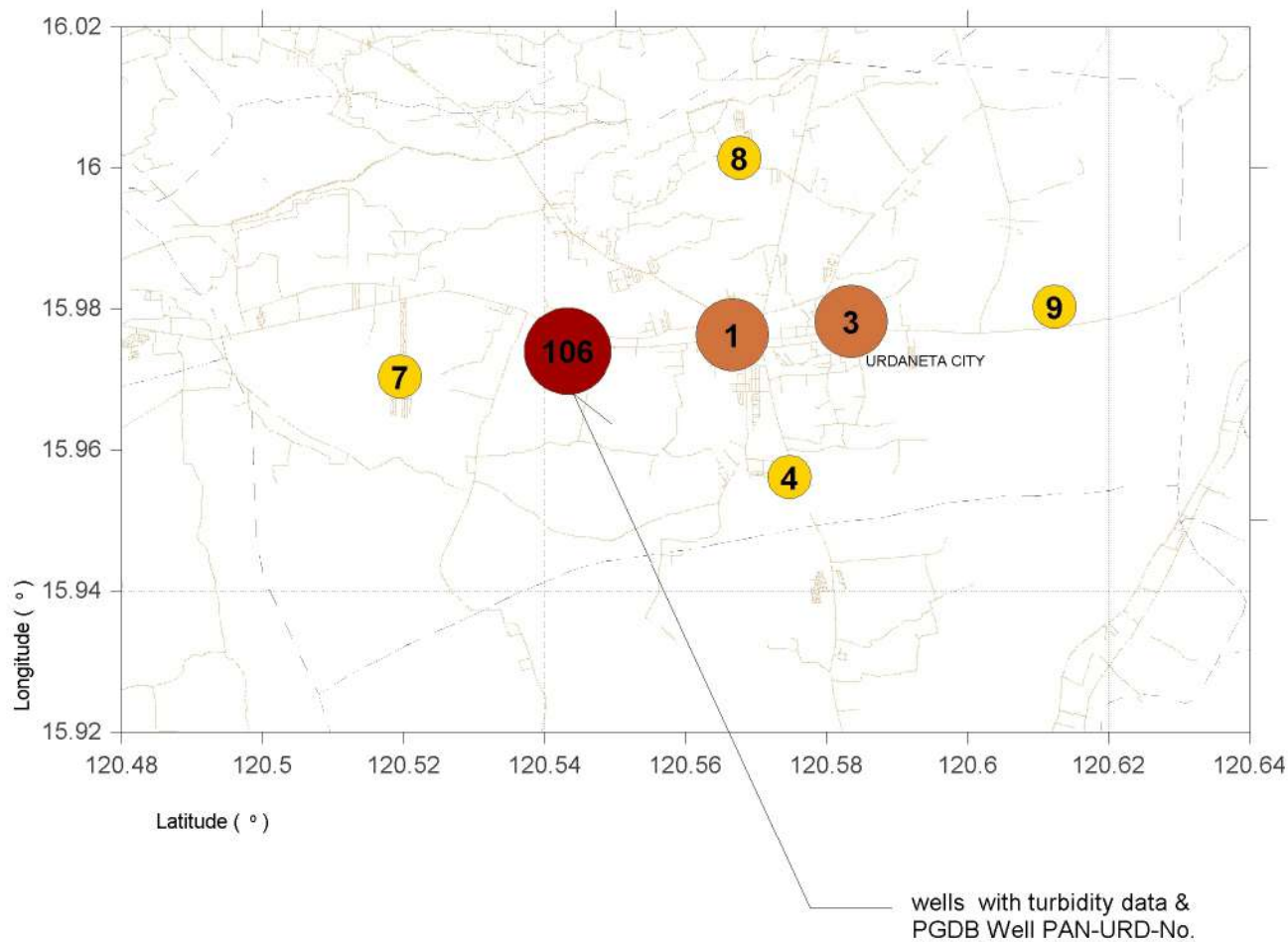


DISCHARGE CAPACITIES









PGDB Well No.	Longitude (°)	Latitude (°)	Date (m/d/y)	Turbidity (NTU)
PAN-URD-1	120.5666944	15.9762611	1/1/1990	3.9
PAN-URD-3	120.5834750	15.9781389	1/1/1991	3.8
PAN-URD-4	120.5747639	15.9561083	6/18/2013	1
PAN-URD-7	120.5195056	15.9702722	6/18/2013	1
PAN-URD-8	120.5676778	16.0012861	6/18/2013	1
PAN-URD-9	120.612314	15.980183	11/20/2013	0.4
PAN-URD-106	120.5432611	15.9739500	1/1/1991	10.8

Permissible Limit = 5

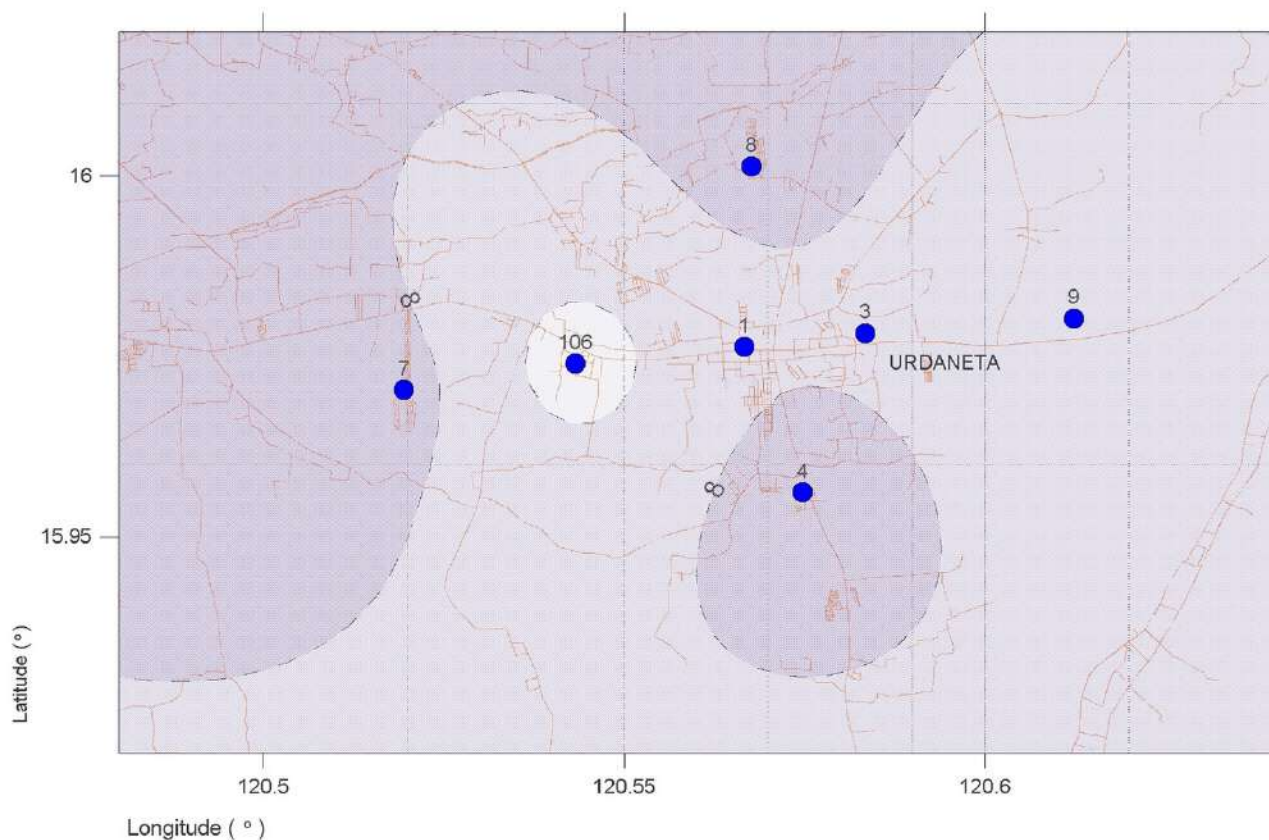
Turbidity range (NTU)



RESEARCH DIVISION
WATER RESOURCES RESEARCH
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GROUNDWATER DATA BANKING REPORT
Urdaneta City Water District

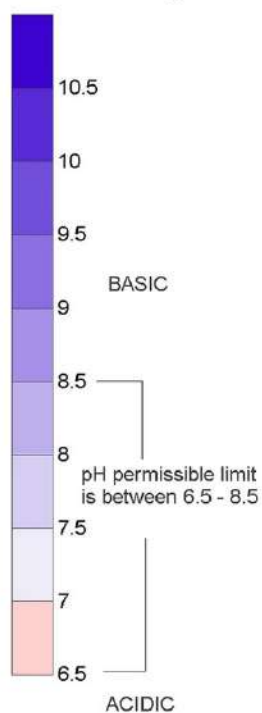
Figure 4.6.7
Turbidity Maps



Legend:

- - well with pH measurement & PGDB Well PAN-URD-No.
- - iso-pH contour line (basic to acidic)

pH Color Scale Range

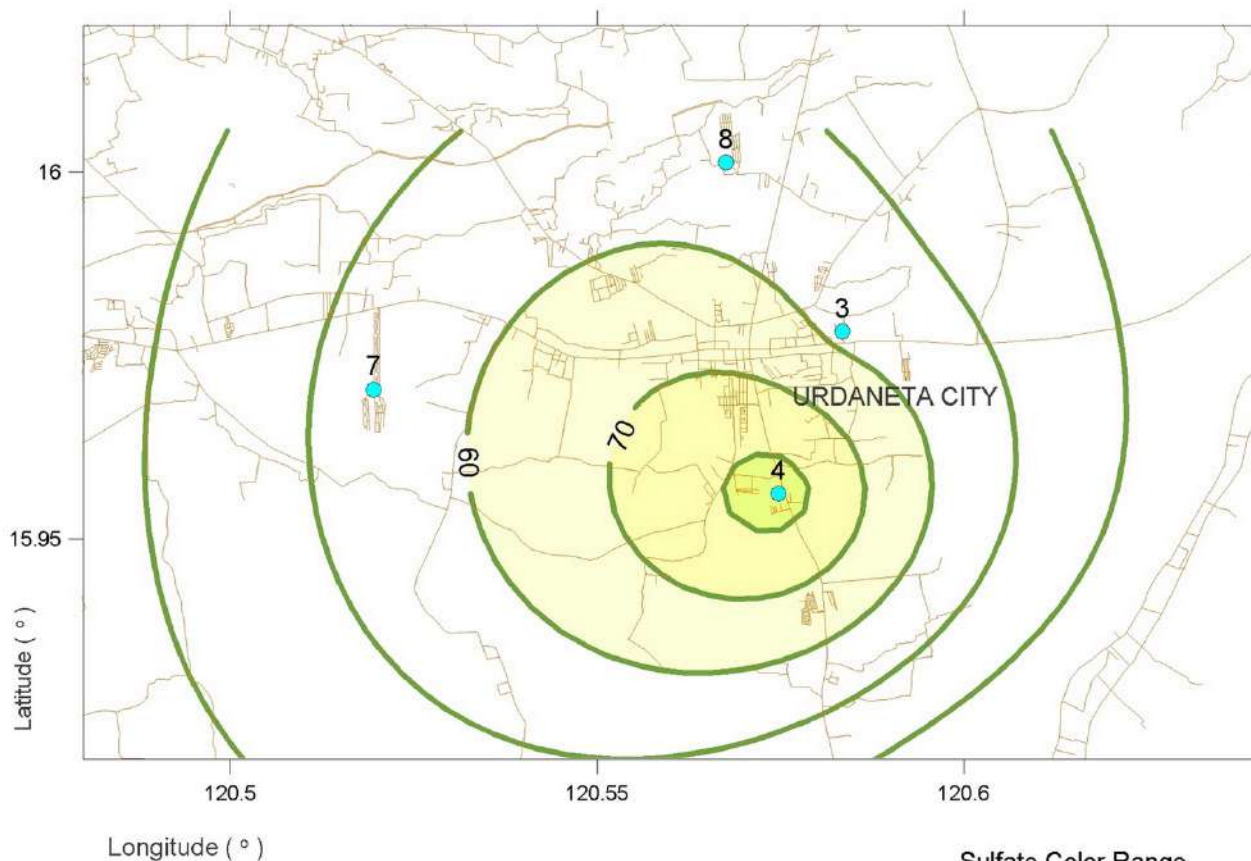


PGDB Well No.	Longitude (°)	Latitude (°)	Date (m/d/y)	pH
PAN-URD-1	120.5666944	15.9762611	1/1/1990	7.9
PAN-URD-3	120.5834750	15.9781389	1/1/1991	7.88
PAN-URD-4	120.5747639	15.9561083	6/18/2013	8.31
PAN-URD-7	120.5195056	15.9702722	6/18/2013	8.2
PAN-URD-8	120.5676778	16.0012861	6/18/2013	8.2
PAN-URD-9	120.6123139	15.9801833	11/20/2013	7.54
PAN-URD-106	120.5432611	15.9739500	1/1/1991	7.2

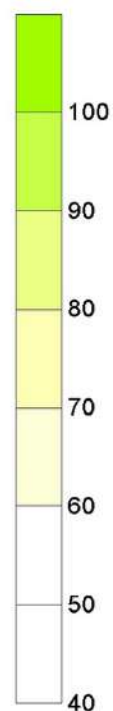
Permissible limit = 6.5 - 8.5

RESEARCH DIVISION
WATER RESOURCES RESEARCH
AND TRAINING DEPARTMENT
GROUNDWATER DATA BANKING REPORT
Urdaneta City Water District

Figure 4.6.9
pH Map



Sulfate Color Range
Scale (mg/l)



PGDB Well No.	Longitude (°)	Latitude (°)	Date (m/d/y)	SO4 (mg/L)
PAN-URD-3	120.5834750	15.9781389	6/17/2014	57.29
PAN-URD-4	120.5747639	15.9561083	6/17/2014	85.92
PAN-URD-7	120.5195056	15.9702722	6/17/2014	53.96
PAN-URD-8	120.5676778	16.0012861	6/17/2014	54.79

Sulfate Permissible Limit = 250 mg/L

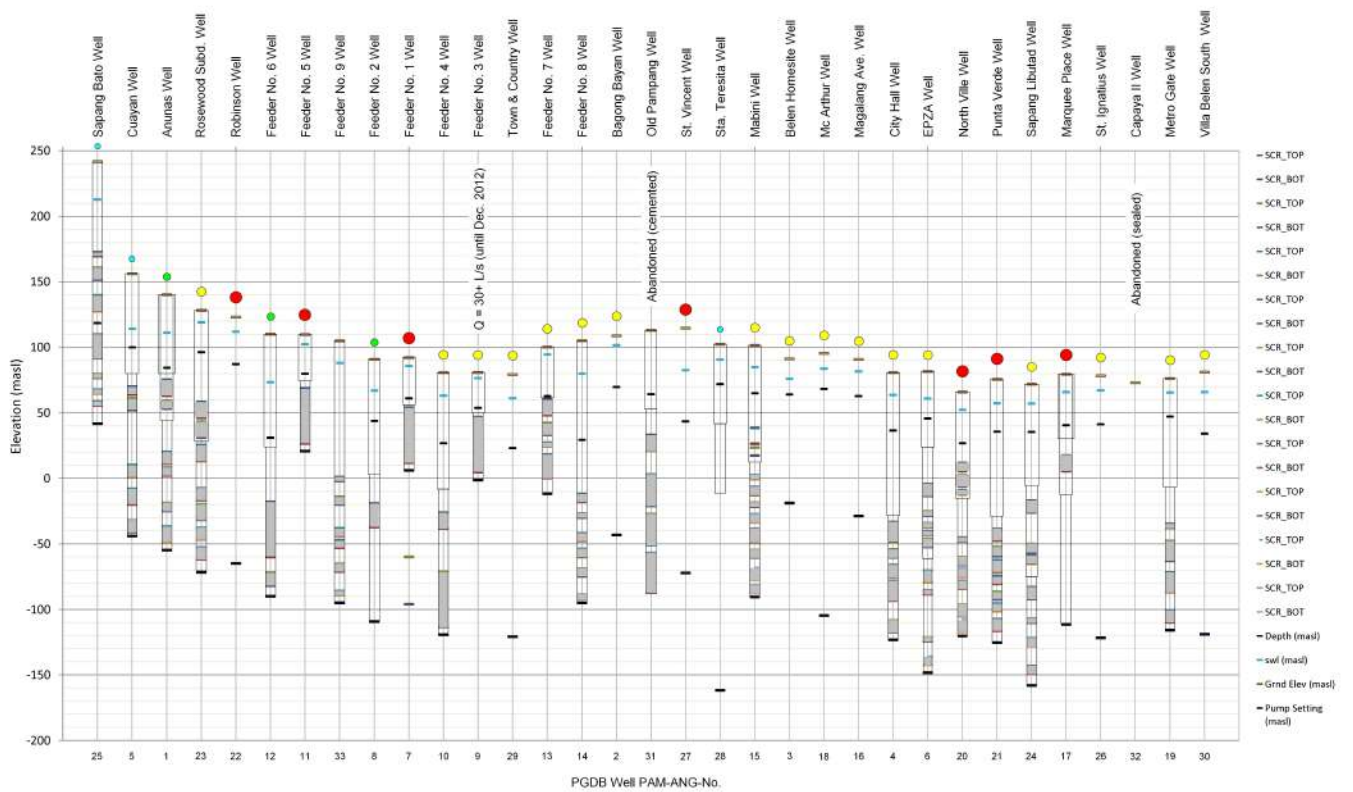
Legend:

- - Well with sulfate measurement
- - Iso-sulfate contour line in mg/L

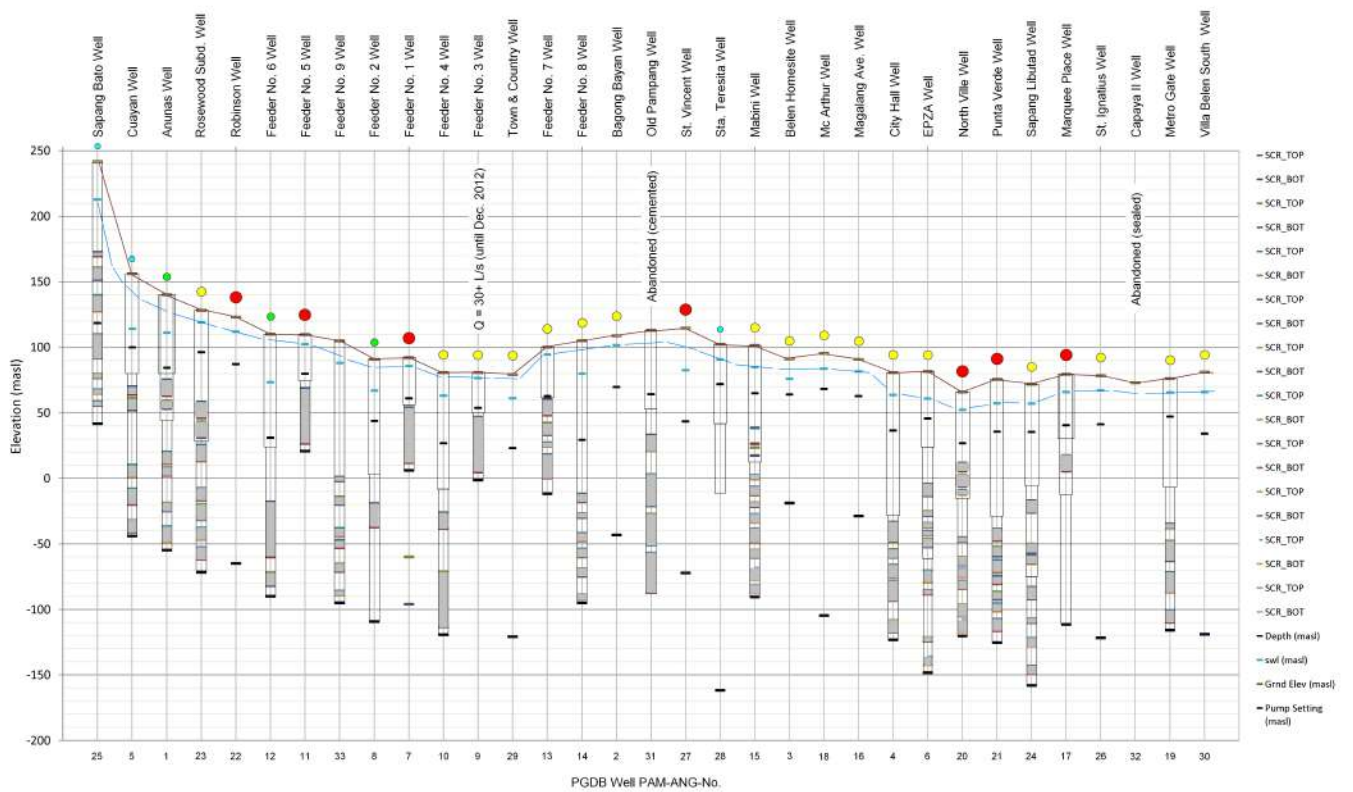
28

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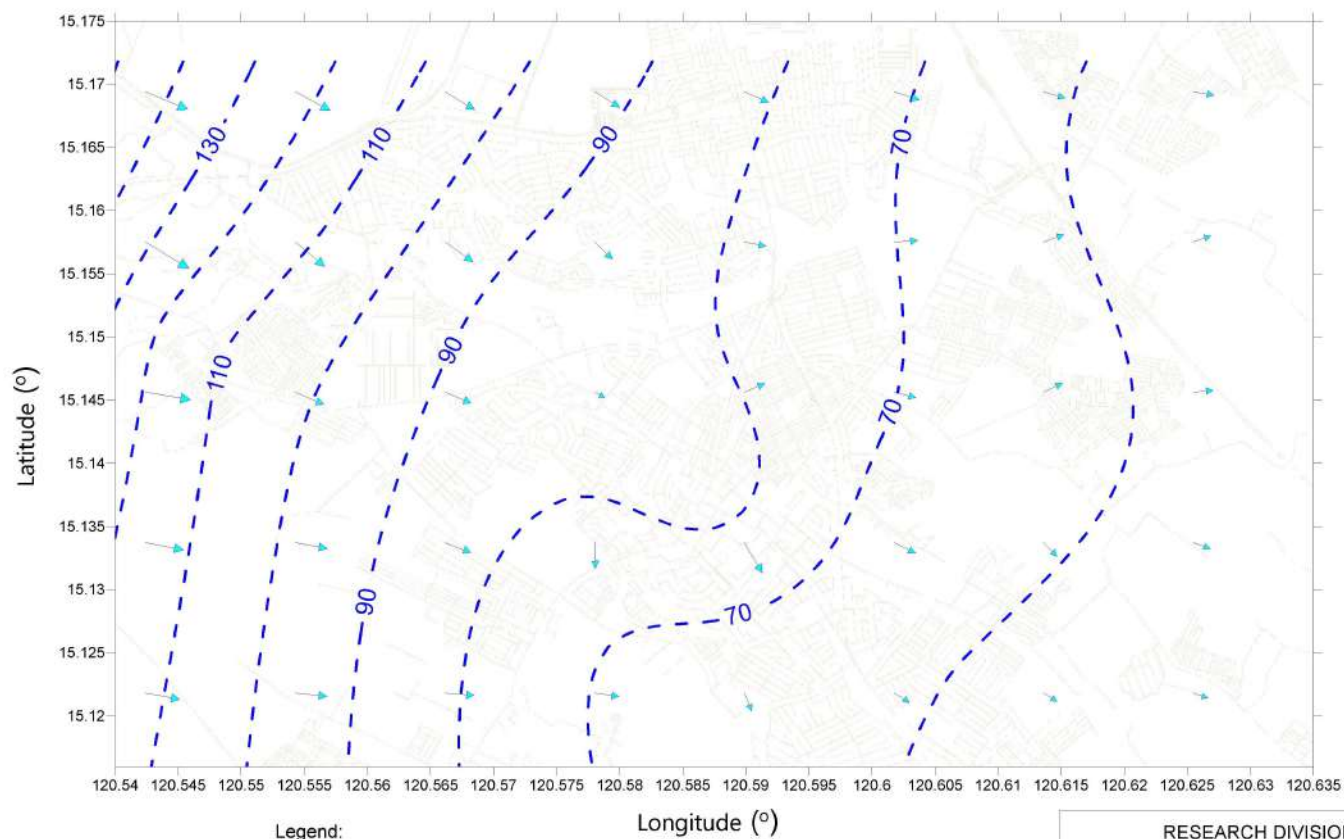
Figure 4.6.12
Sulfate Map



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Graph 4.7.6
Production Wells' Well Design, Present Discharge Rate Range
and Pump Setting Graph



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ANGELES CITY WATER DISTRICT
Graph 4.7.6
Production Wells' Well Design, Present Discharge Rate Range
and Pump Setting Graph

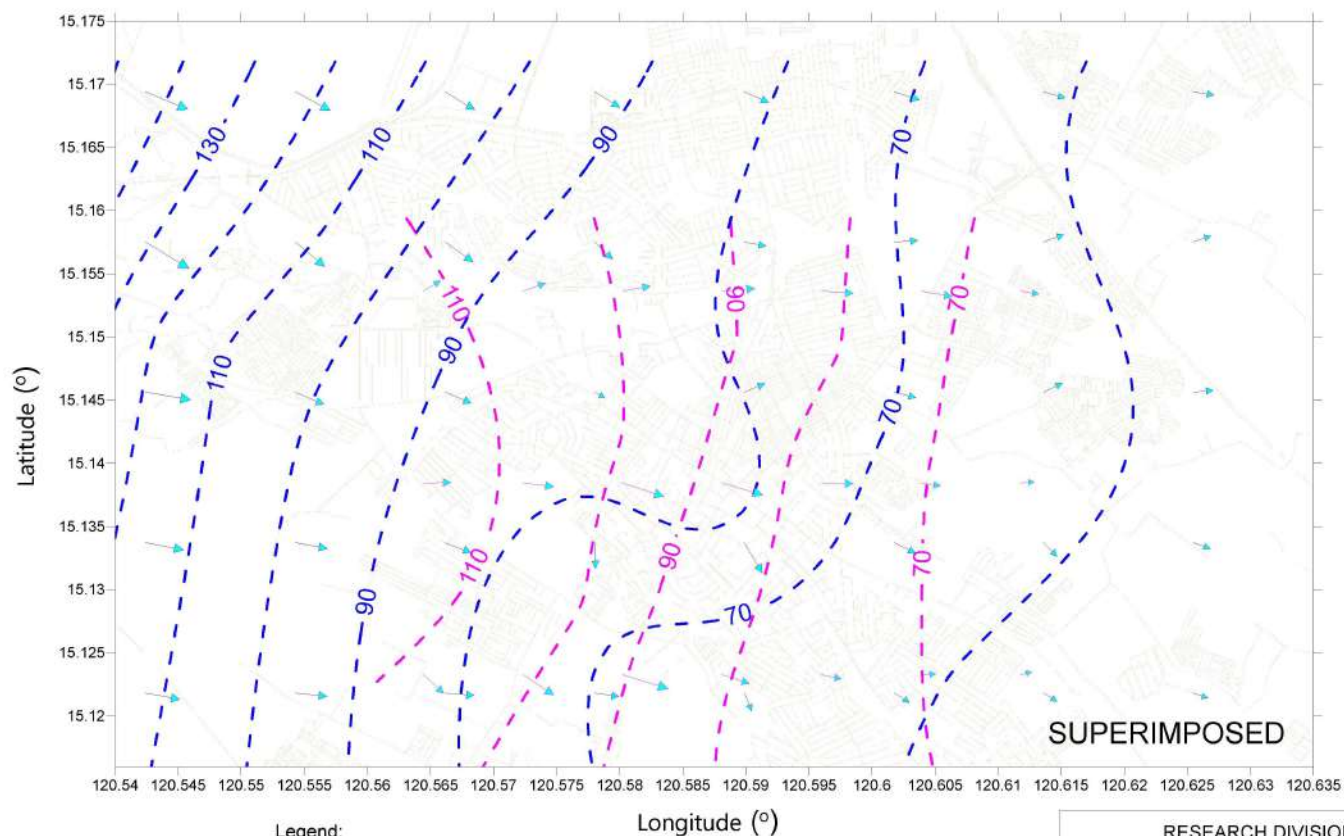


Legend:

- 7 - PGDB Well PAM-ANG- No.
- - Well with swl data for the generation of contour line (Aug. 2015)
- - swl contour line for the upper aquifer system (masl)
- - swl contour line generally for the deeper aquifer system (masl)
- - Groundwater flow direction

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FIGURE 4.6.1
STATIC WATER LEVEL MAPS
August 2015



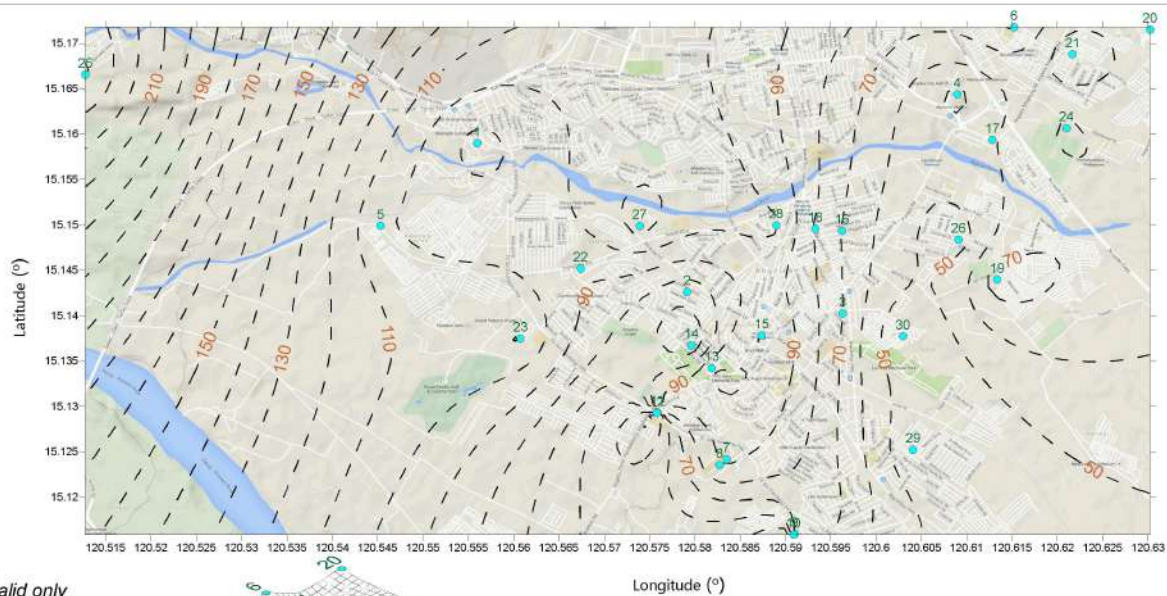
Legend:

- 7 - PGDB Well PAM-ANG- No.
- - Well with swl data for the generation of contour line (Aug. 2015)
- - swl contour line for the upper aquifer system (masl)
- - swl contour line generally for the deeper aquifer system (masl)
- - Groundwater flow direction

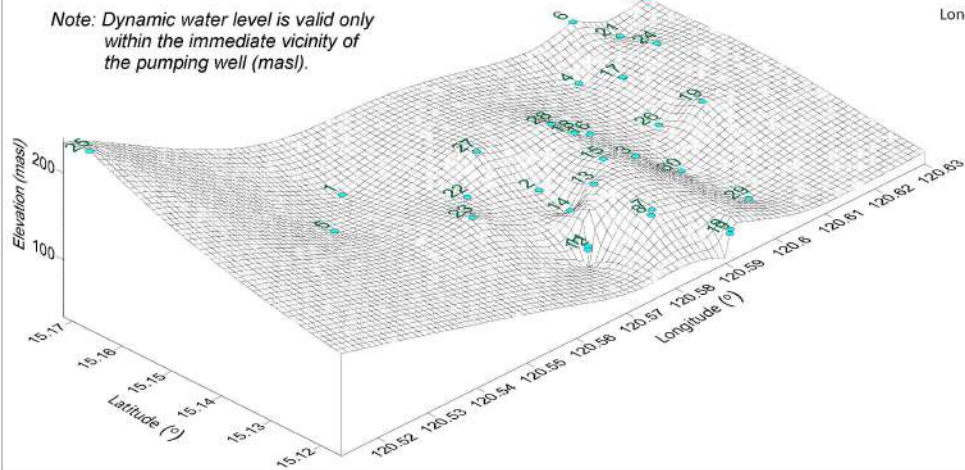
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GROUNDWATER DATA BANKING REPORT
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FIGURE 4.6.1
 STATIC WATER LEVEL MAPS
 August 2015

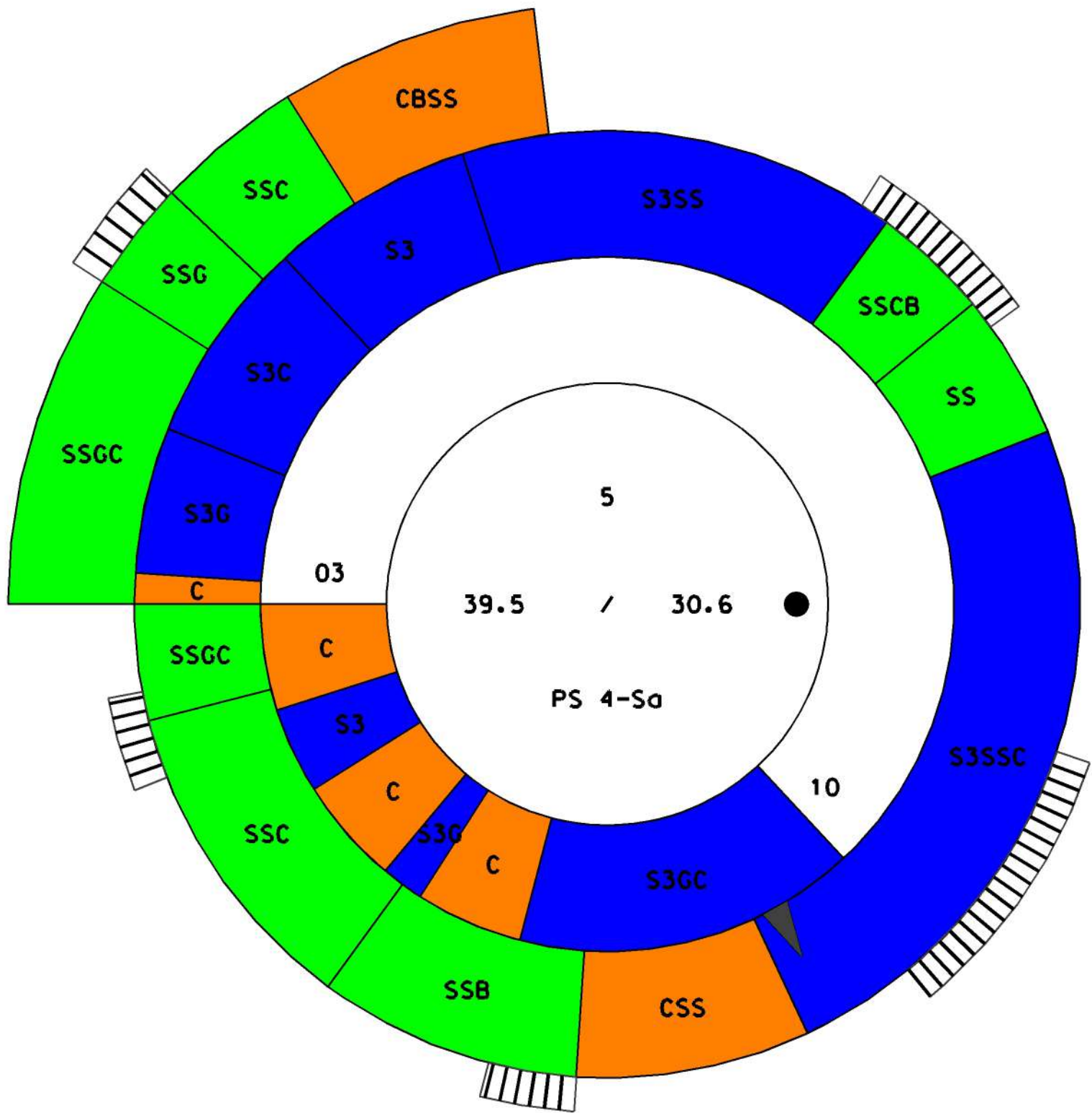


Note: Dynamic water level is valid only within the immediate vicinity of the pumping well (masl).

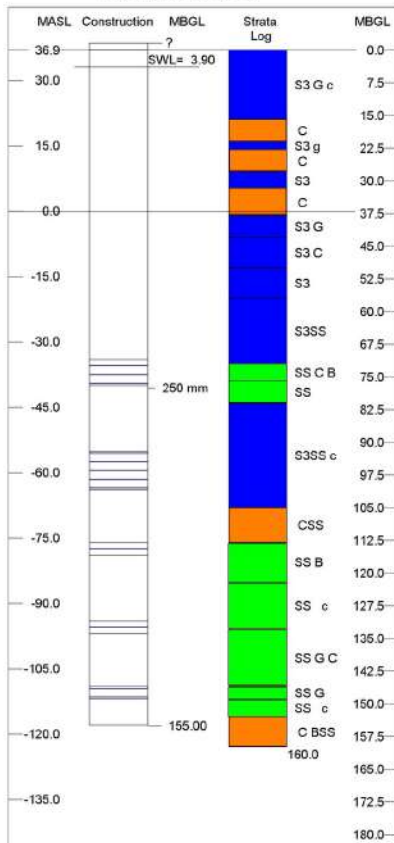


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FIGURE 4.6.3
DYNAMIC WATER LEVEL MAP
August 2015



STRATA LOG

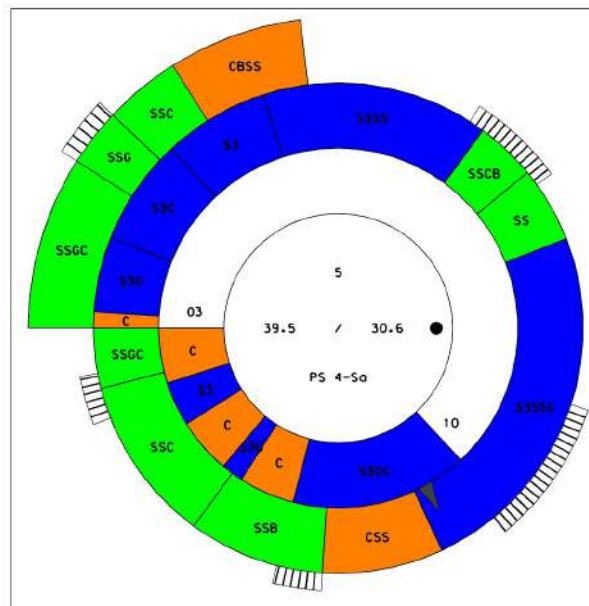


Note : Permeability Interpretation of Strata Preliminary

STRATA LEGEND:

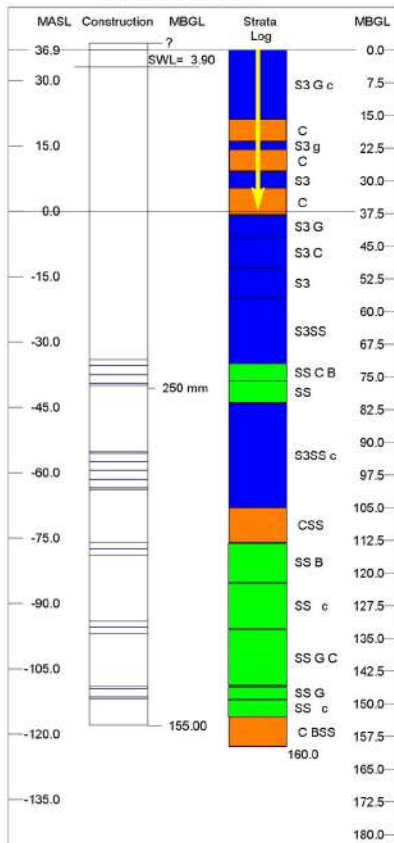
Permeable Unconsolidated	Semi-permeable
Permeable consolidated	Impermeable
	Unknown

CYCLOGRAM



...kanoapornkiet_cyclo.dgn Jun 13 2017 10:03:48

STRATA LOG

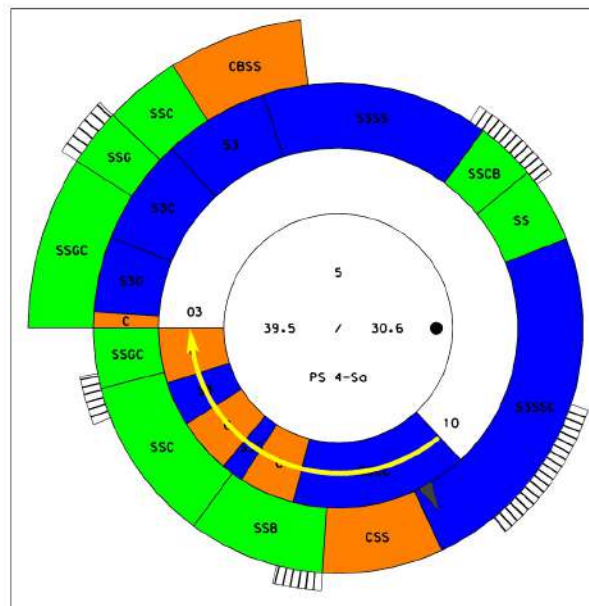


Note : Permeability Interpretation of Strata Preliminary

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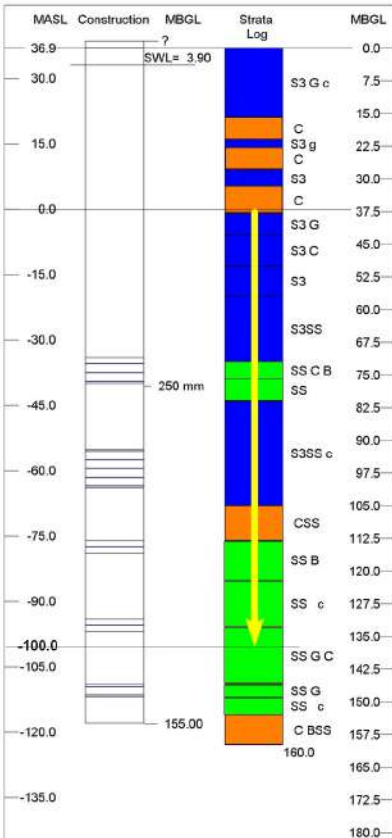
■ Permeable Unconsolidated	■ Semi-permeable
■ Permeable consolidated	■ Impermeable
■ Unknown	

CYCLOGRAM



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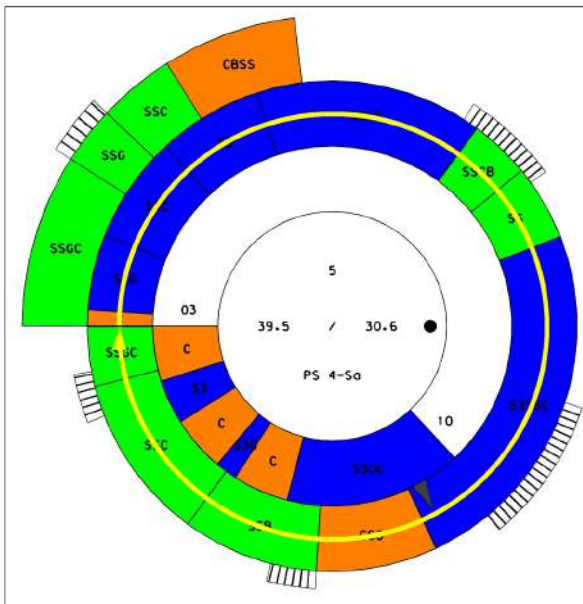


Note : Permeability Interpretation of Strata Preliminary

STRATA LEGEND:

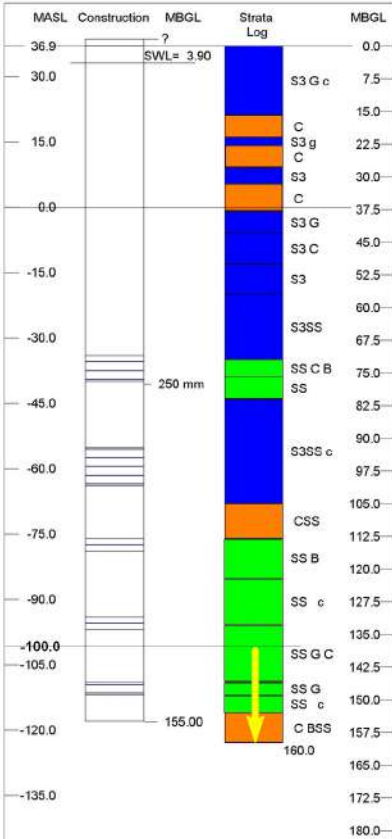
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 Permeable consolidated	 Impermeable
	 Unknown

CYCLOGRAM



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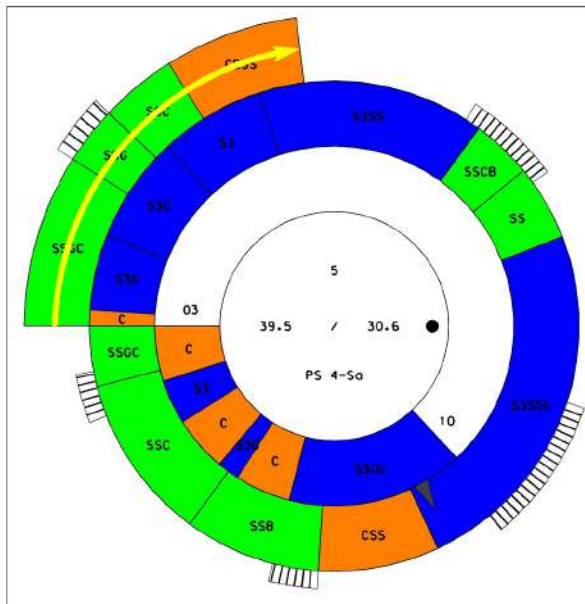


Note : Permeability Interpretation of Strata Preliminary

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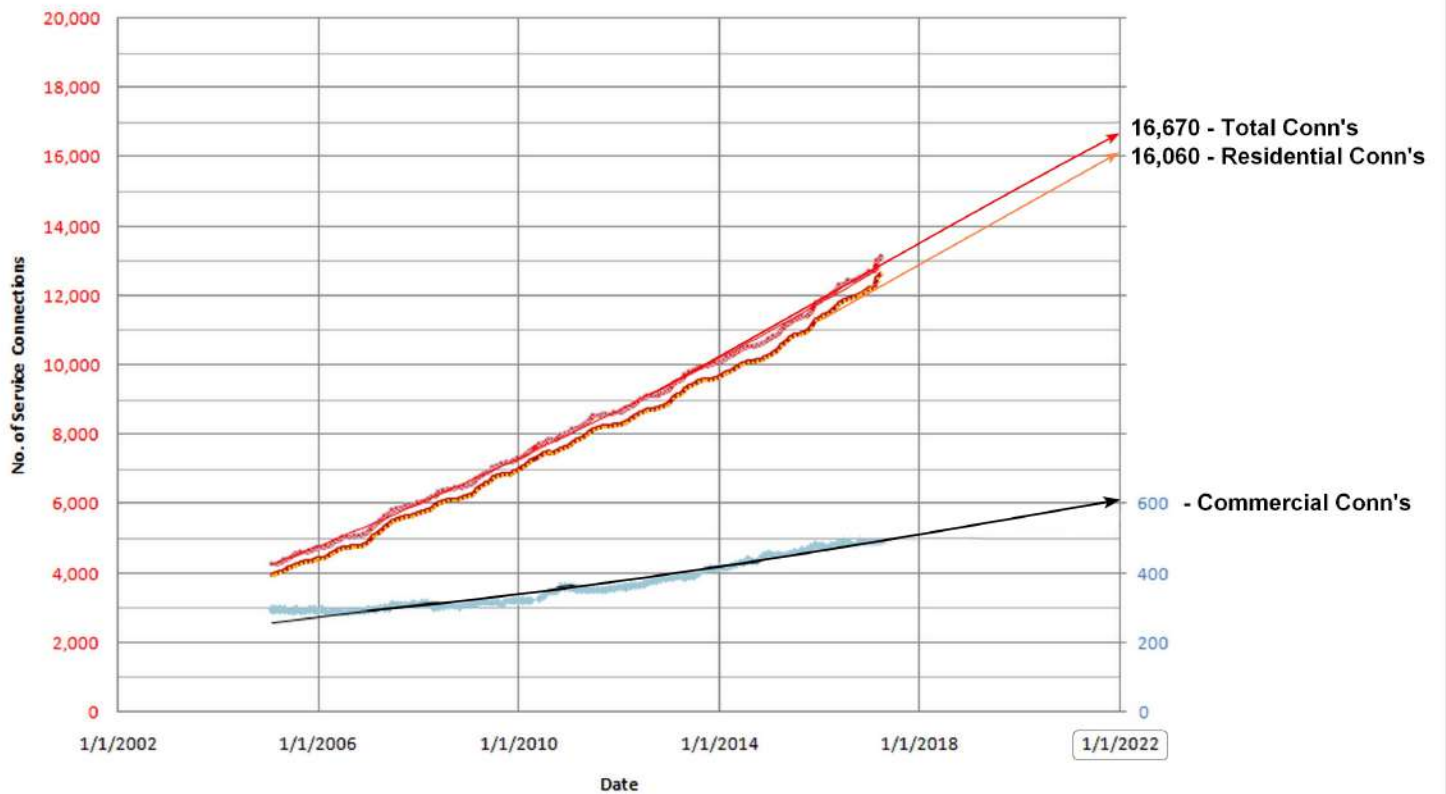
- | | |
|--|--|
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| Permeable consolidated | Impermeable |
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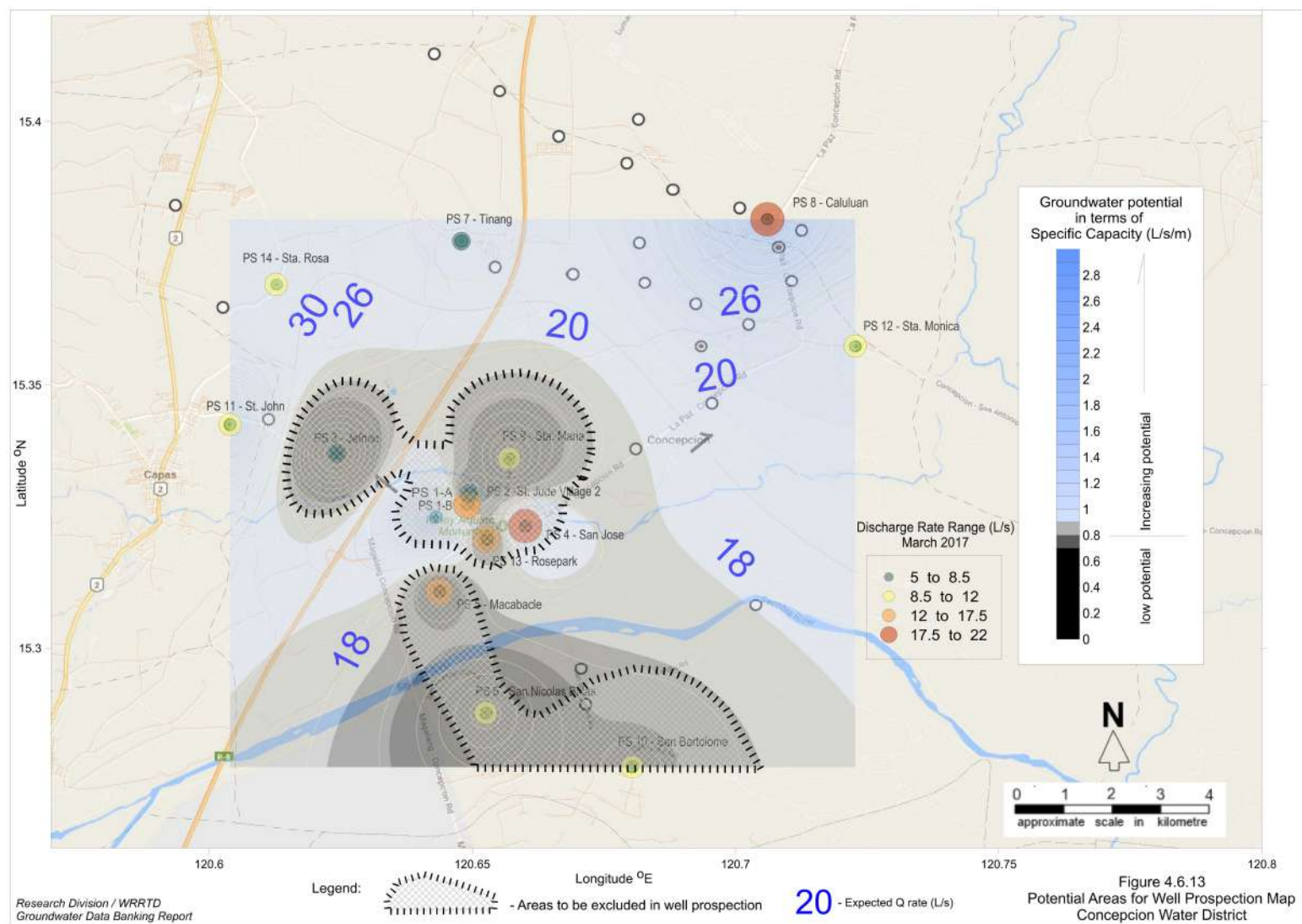
CYCLOGRAM

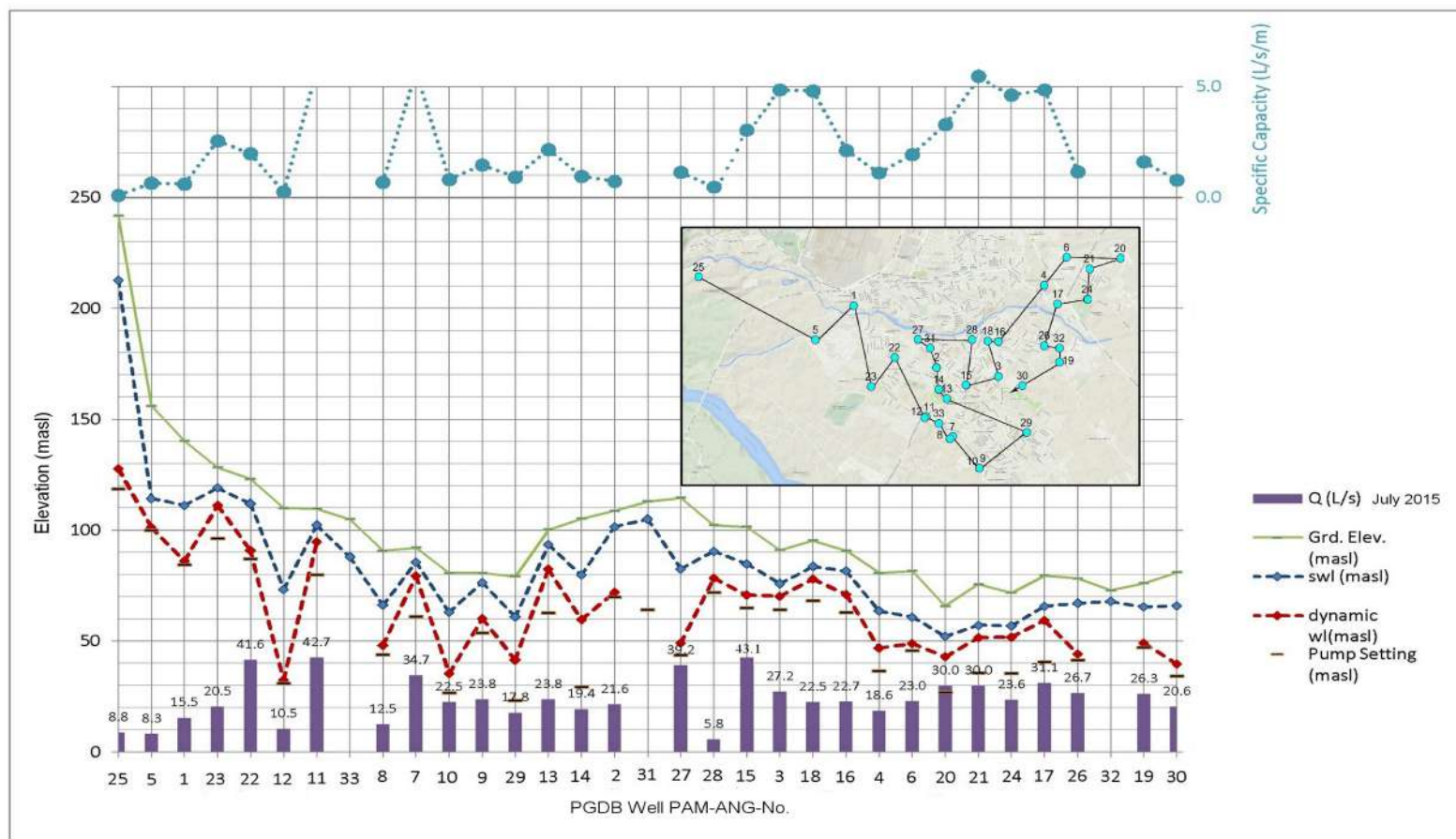


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Graph 4.9.1
Service Connections History and Projection Graph
Concepcion Water District



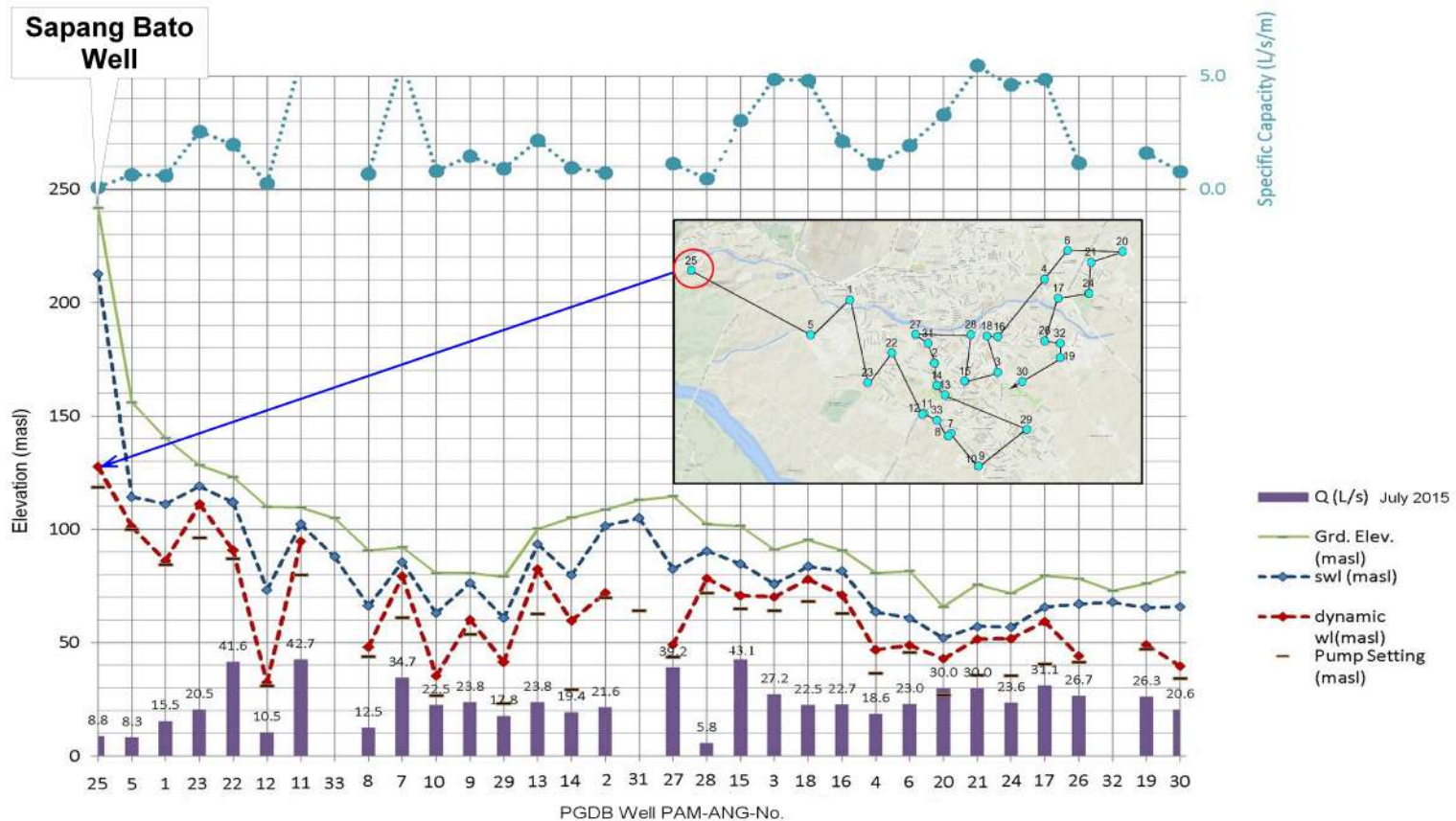




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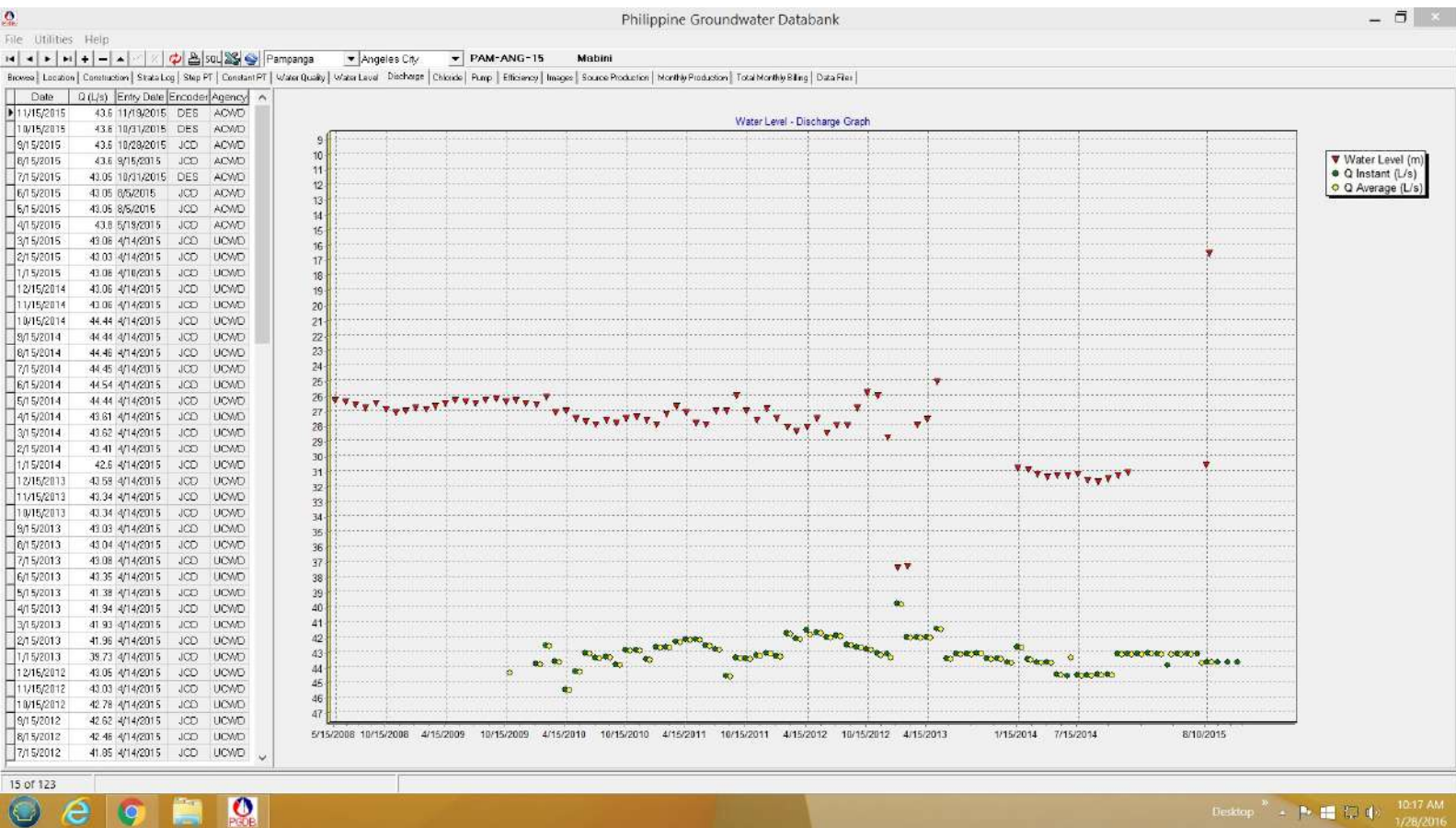
Graph 4.7.7
 Production Wells' Water Levels,
 Discharge Rate, Pump Setting
 and Specific Capacity Graph

Sapang Bato Well

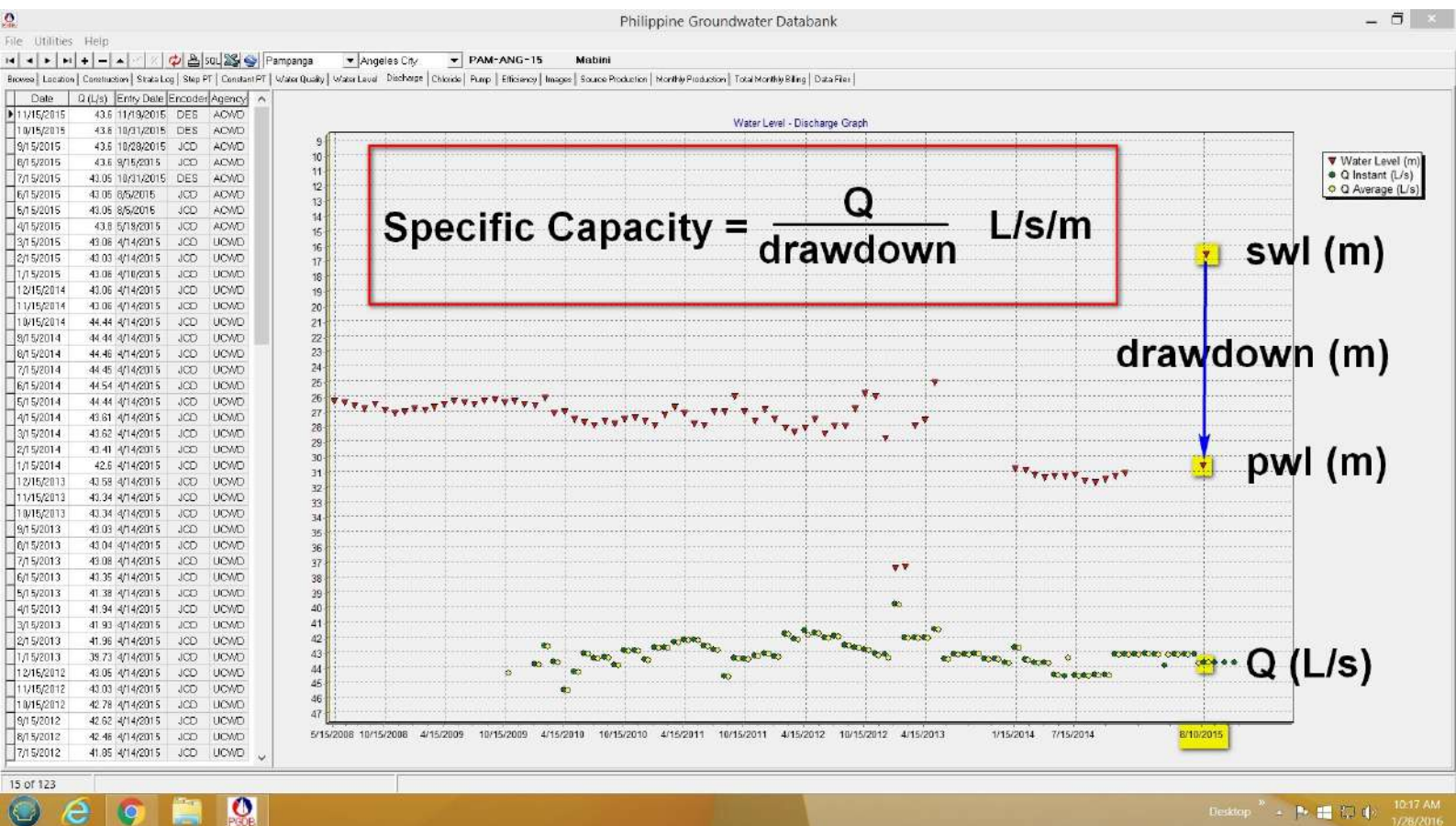


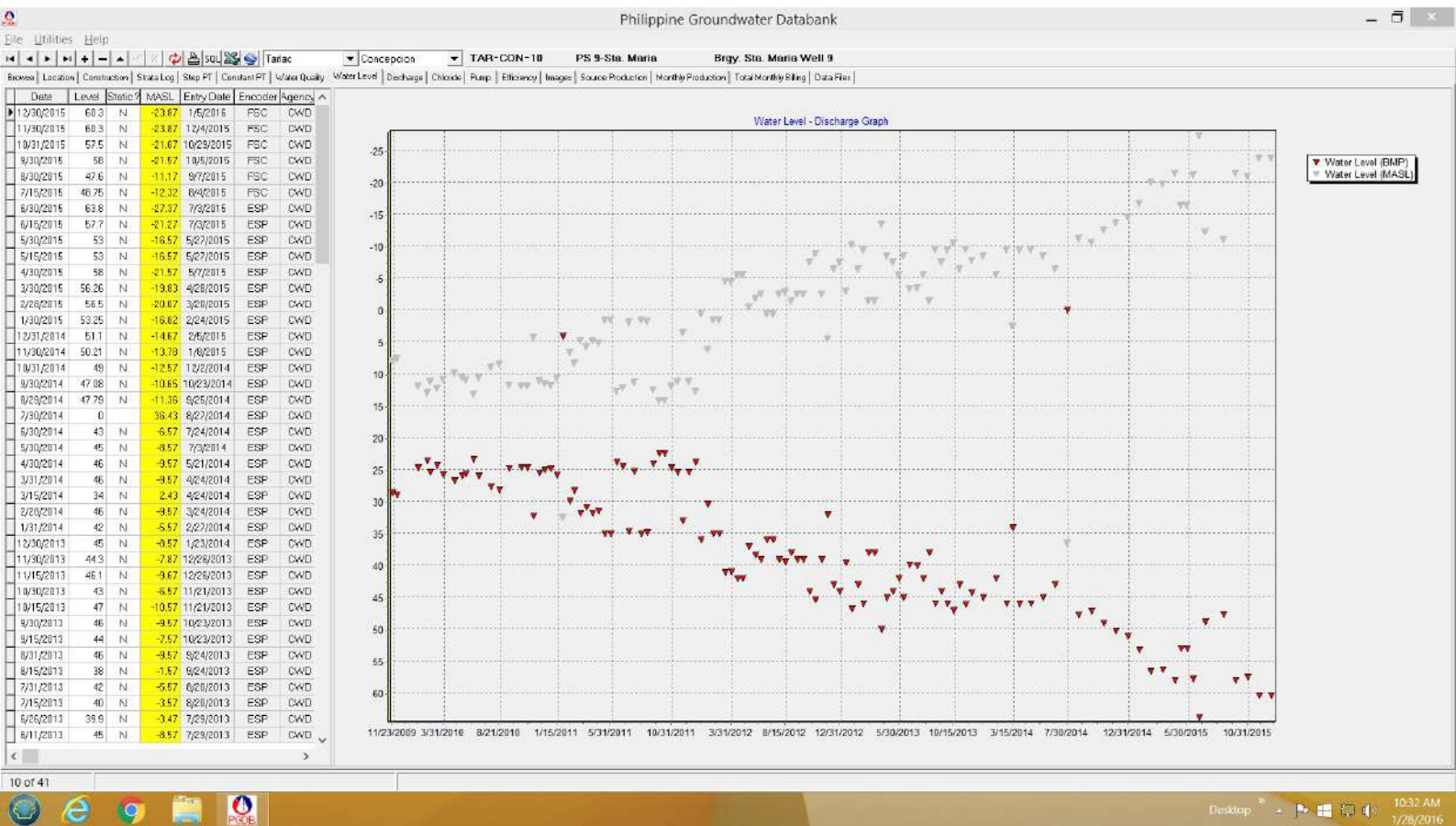
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TRAINING DEPARTMENT
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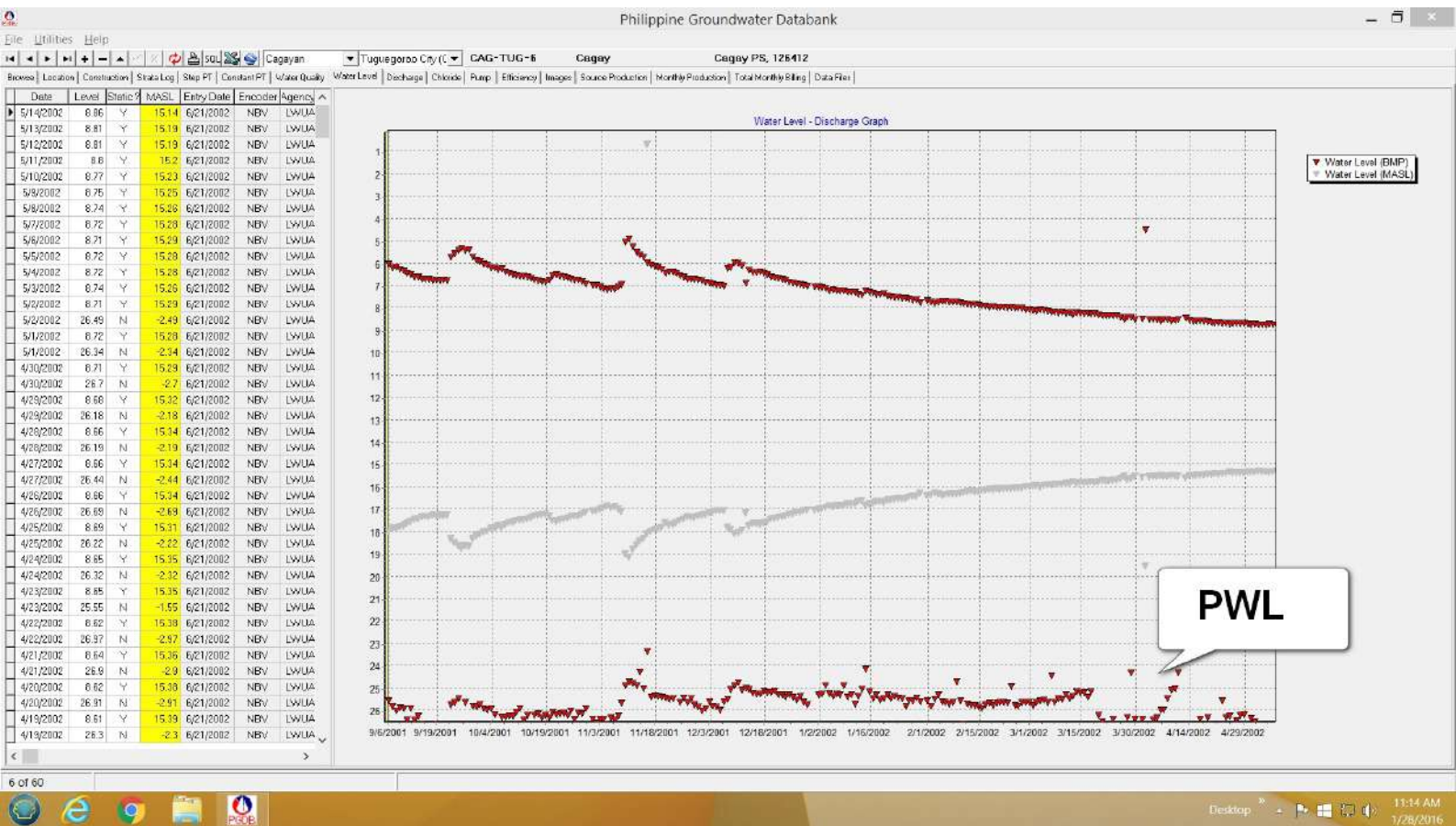
Graph 4.7.7
Production Wells' Water Levels,
Discharge Rate, Pump Setting
and Specific Capacity Graph

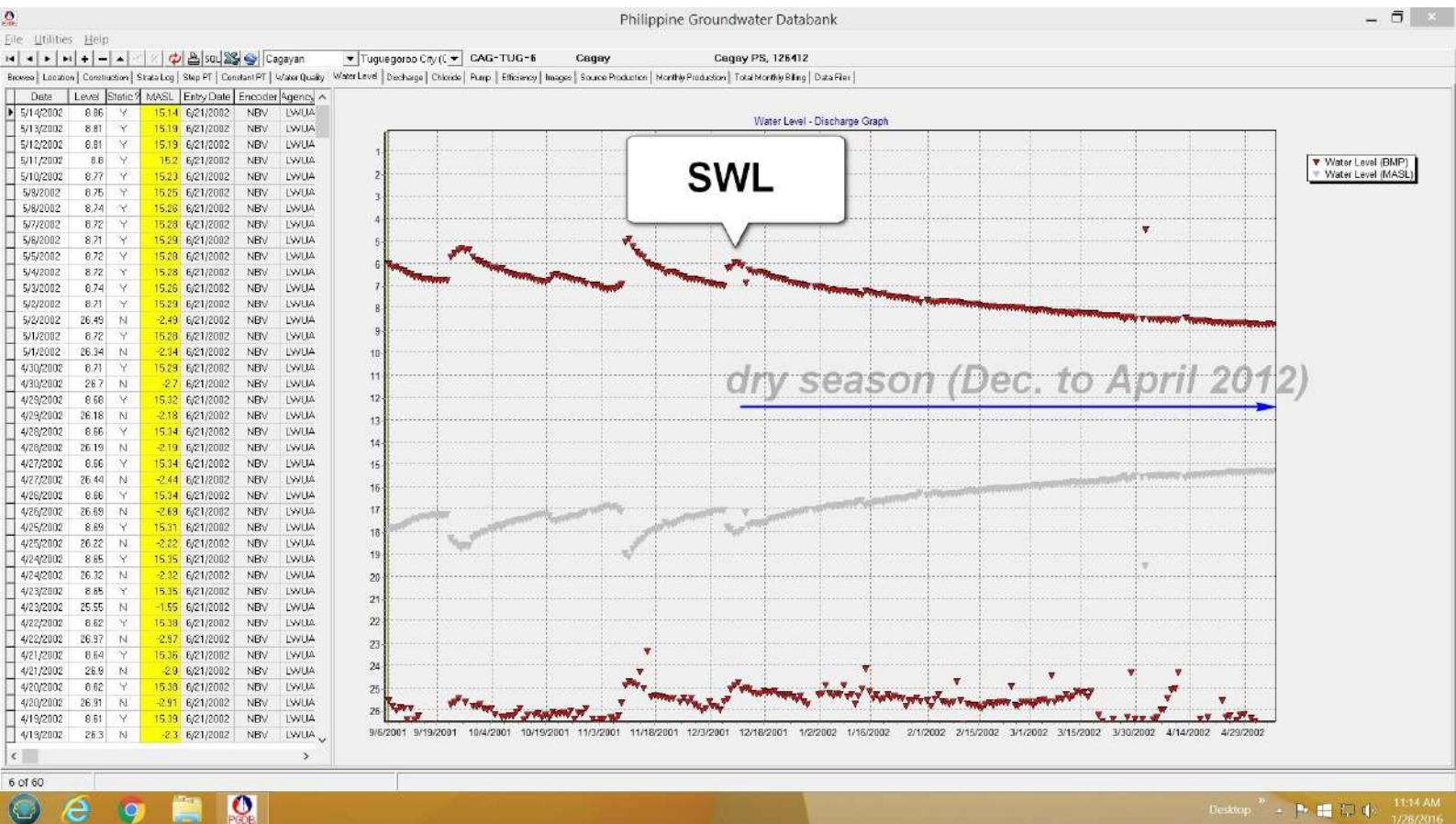


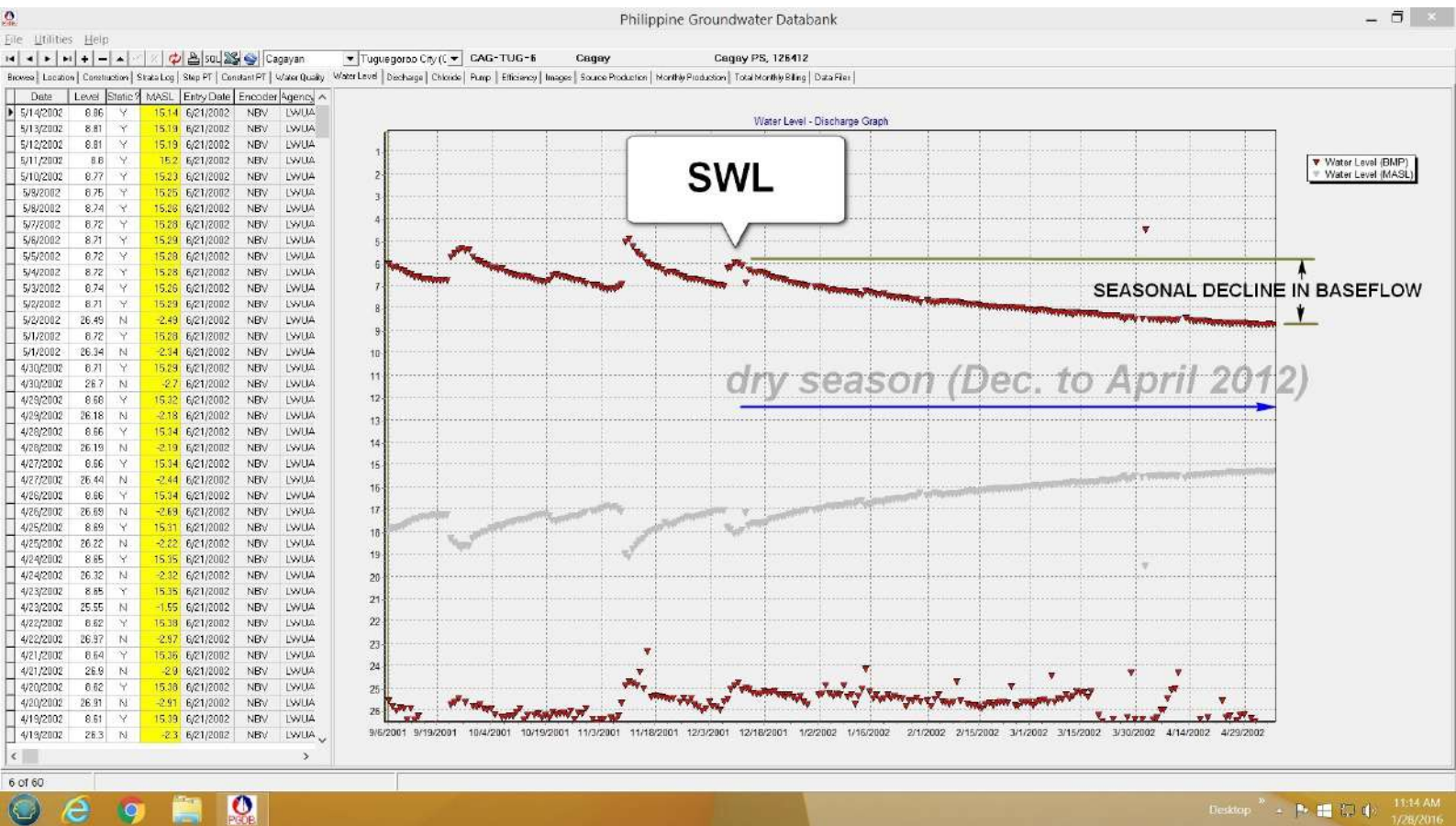


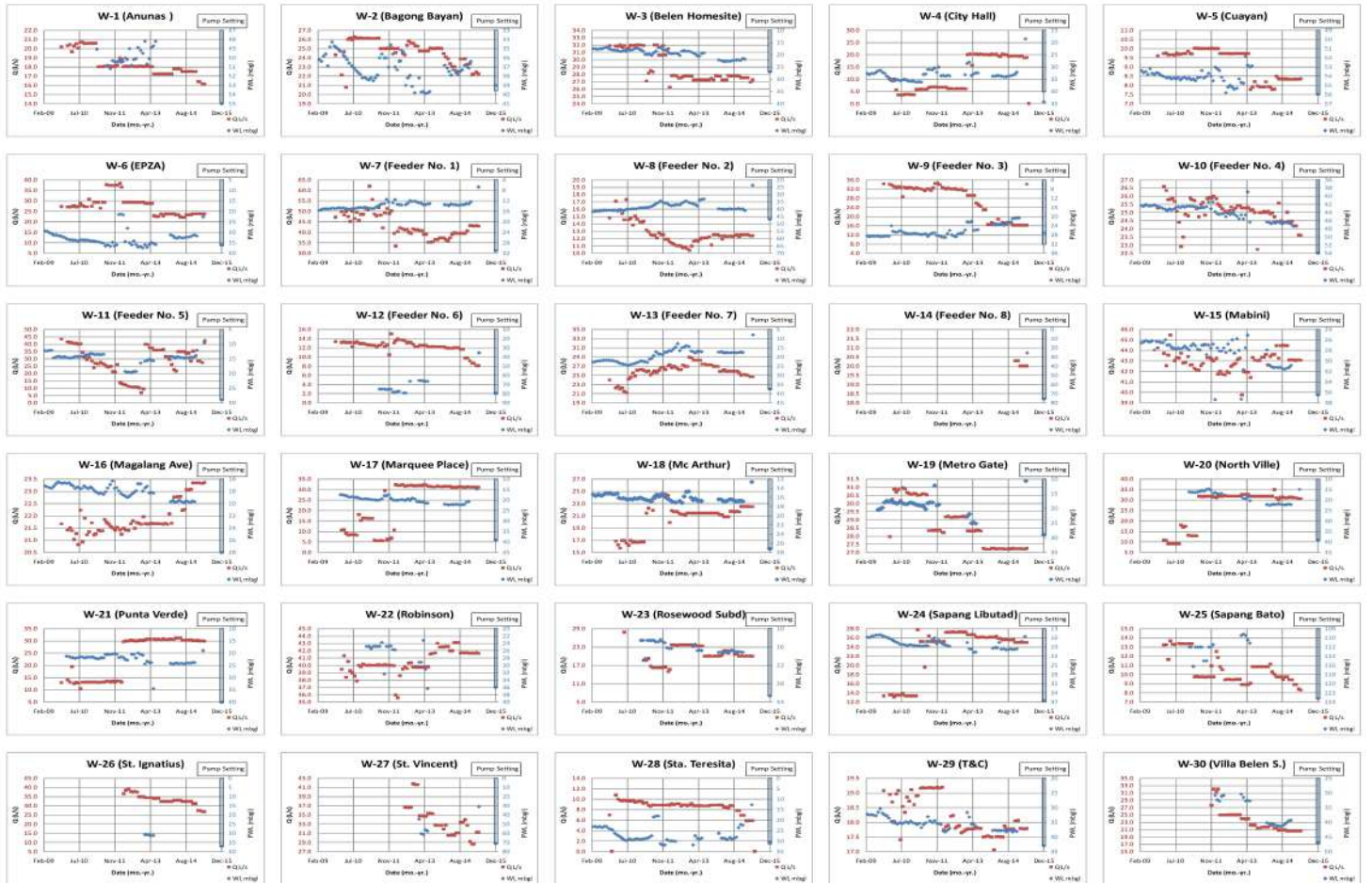




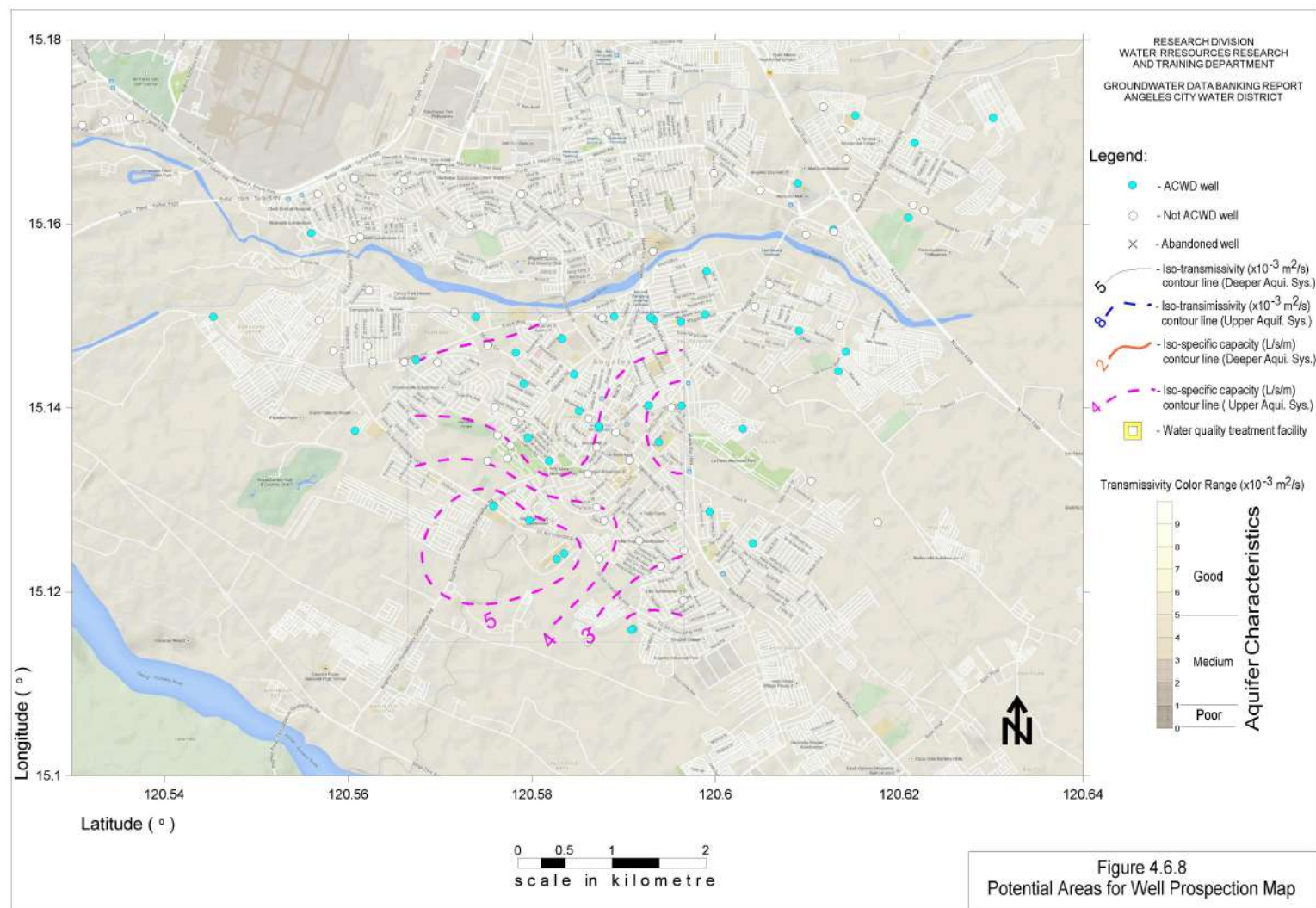












UPPER AQUIFER SYSTEM SPECIFIC CAPACITY MAP

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Legend:

- - ACWD well
- - Not ACWD well
- × - Abandoned well
- - Iso-transmissivity ($\times 10^{-3} \text{ m}^2/\text{s}$) contour line (Deeper Aquif. Sys.)
- - Iso-transmissivity ($\times 10^{-3} \text{ m}^2/\text{s}$) contour line (Upper Aquif. Sys.)
- - Iso-specific capacity (L/s/m) contour line (Deeper Aquif. Sys.)
- - Iso-specific capacity (L/s/m) contour line (Upper Aquif. Sys.)
- - Water quality treatment facility

Transmissivity Color Range ($\times 10^{-3} \text{ m}^2/\text{s}$)

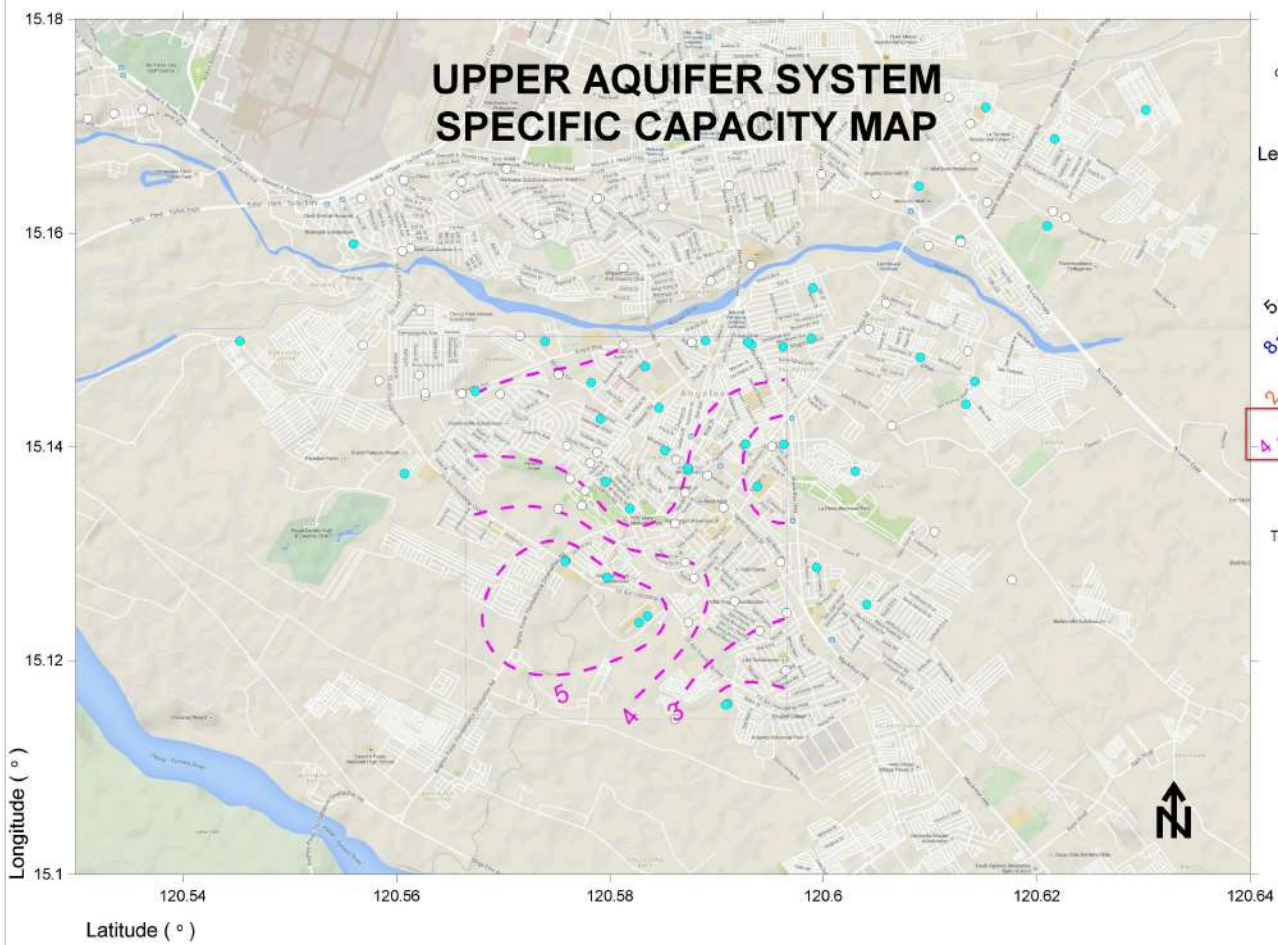
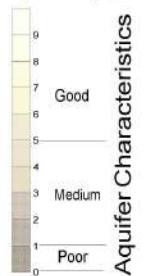
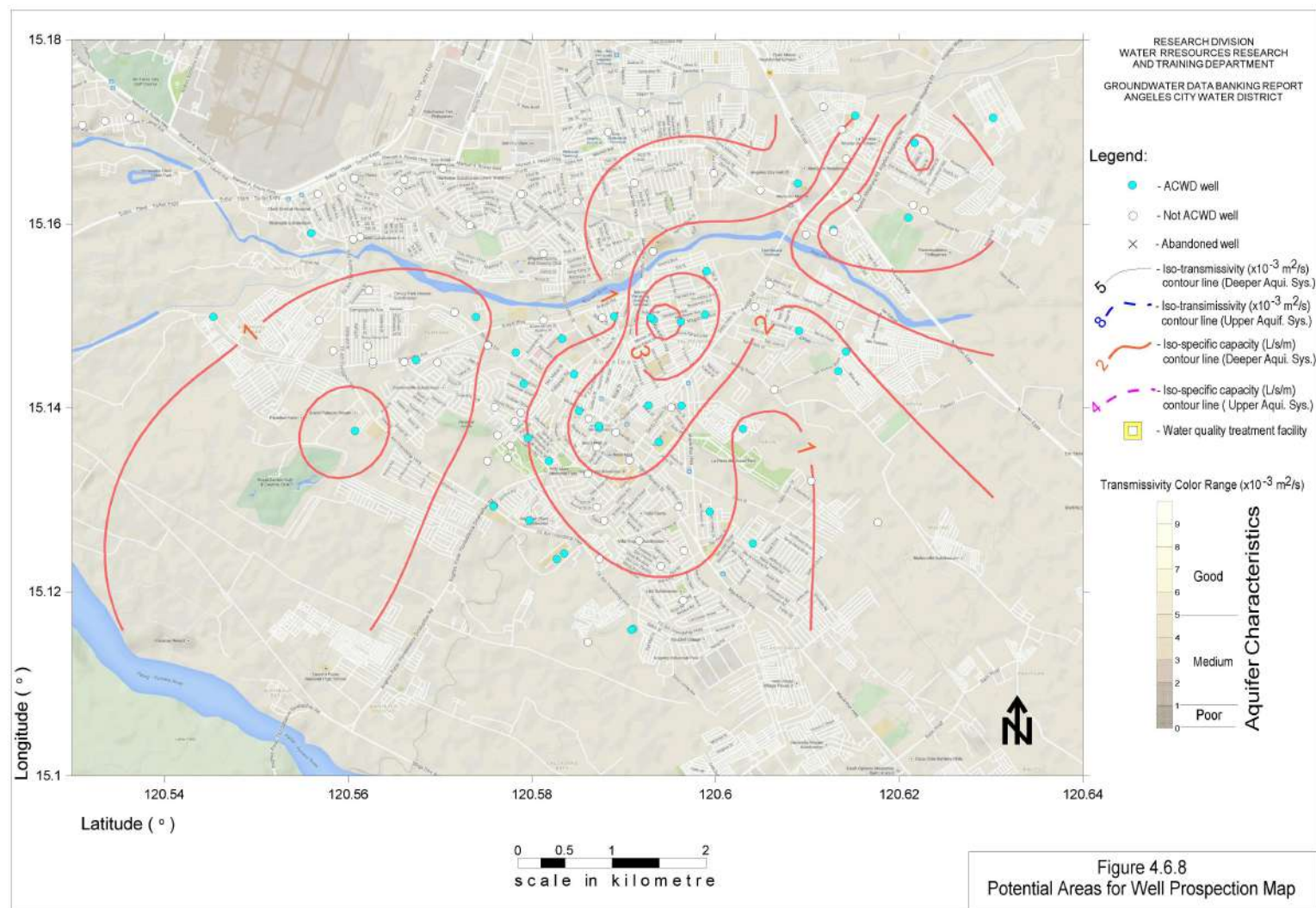
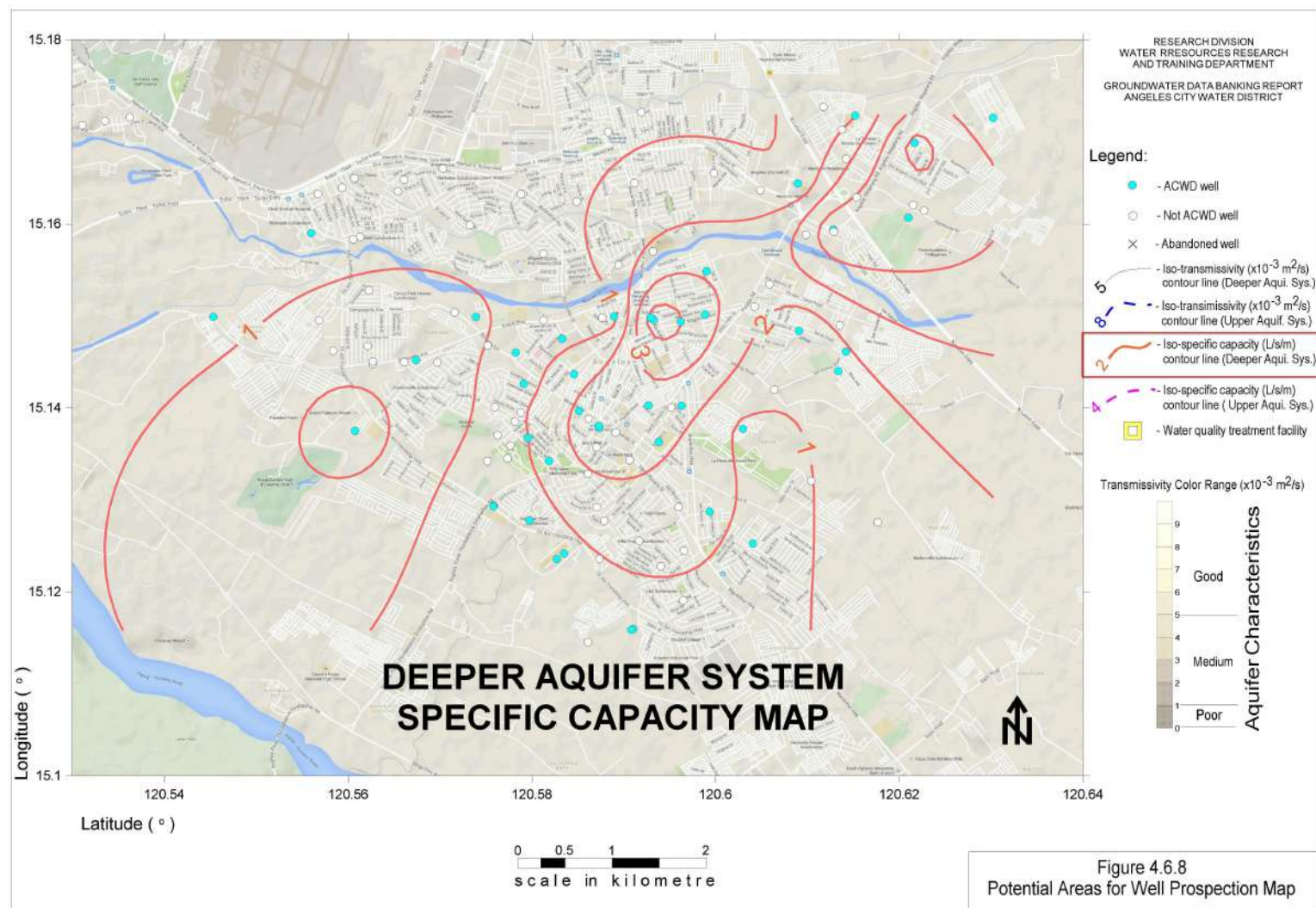
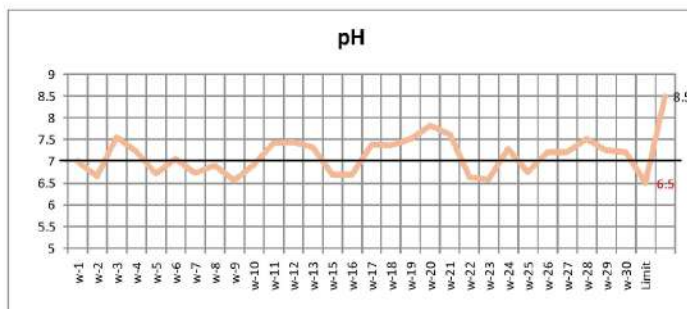
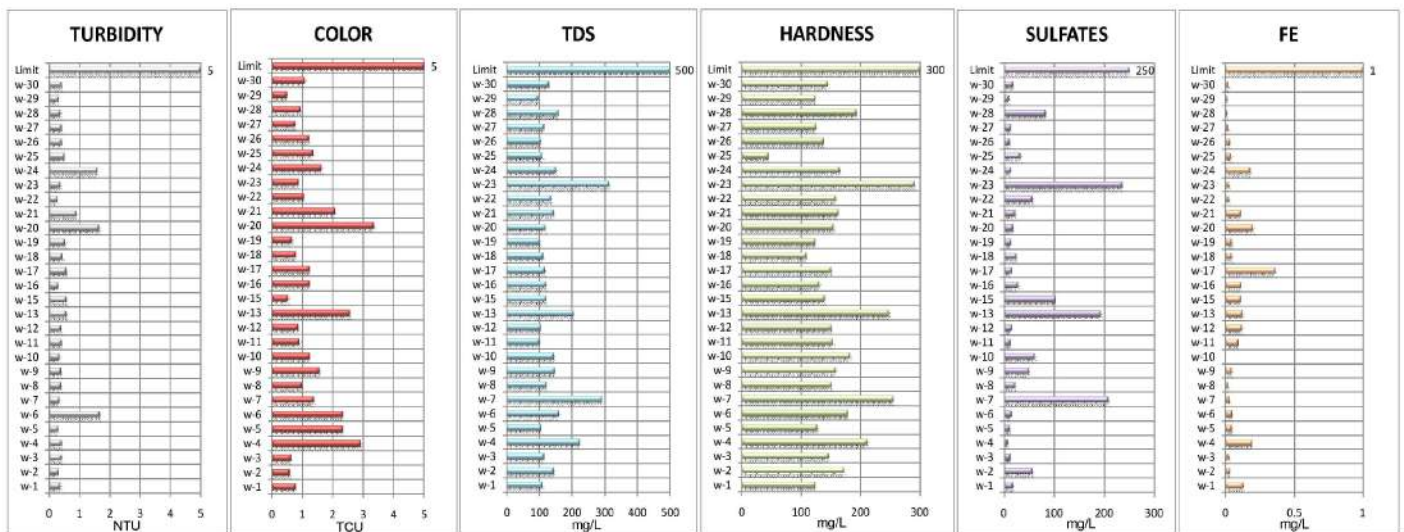


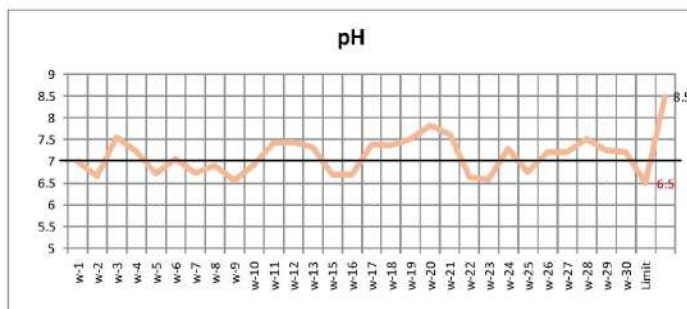
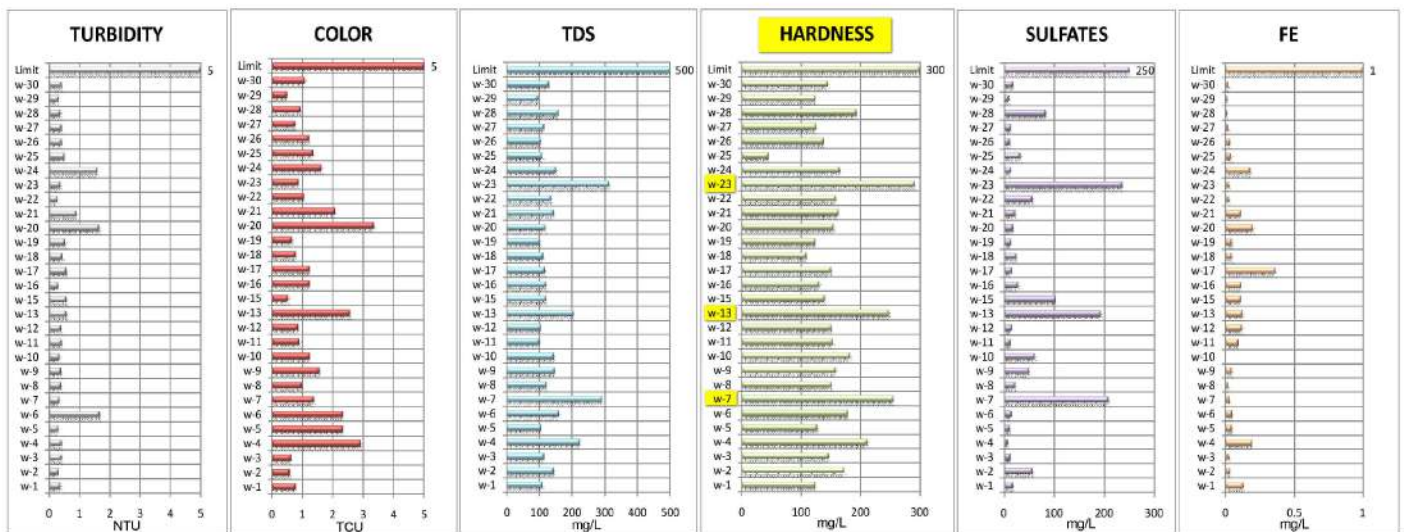
Figure 4.6.8
Potential Areas for Well Prospection Map



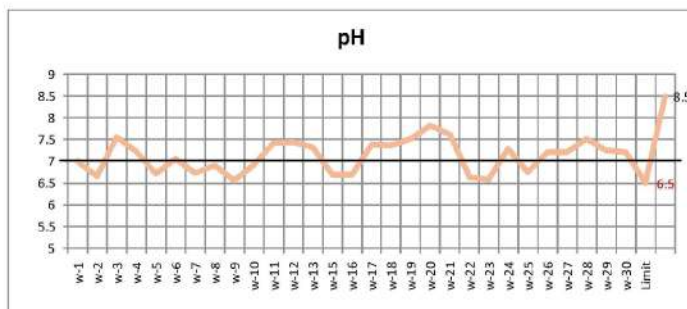
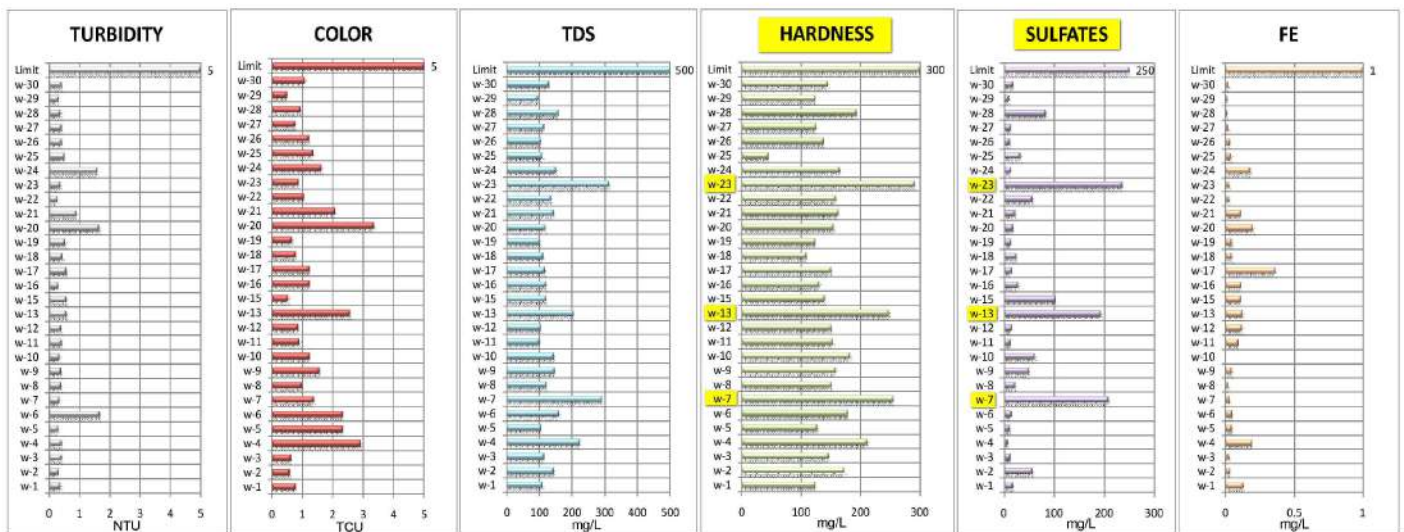




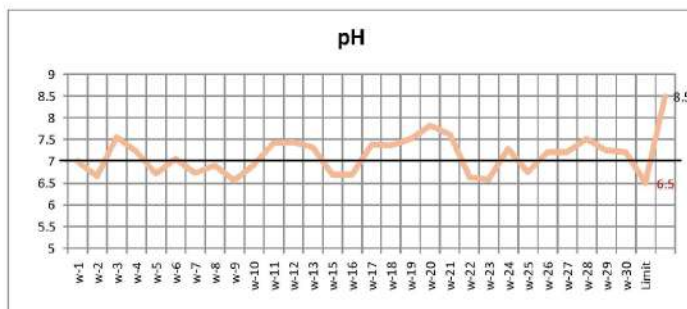
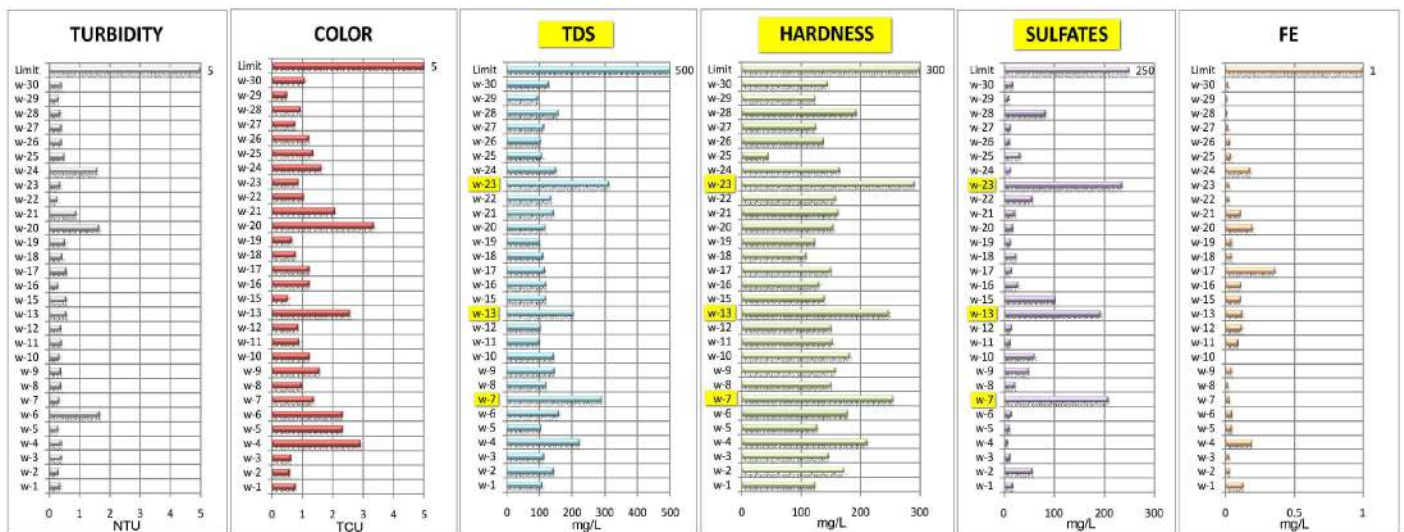
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Graph 4.7.9
Production Wells' Water Quality
After Treatment Graphs



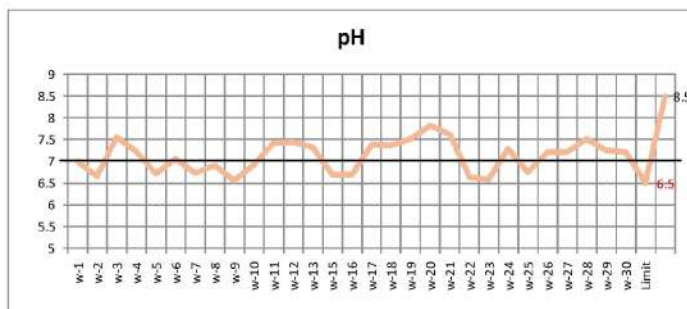
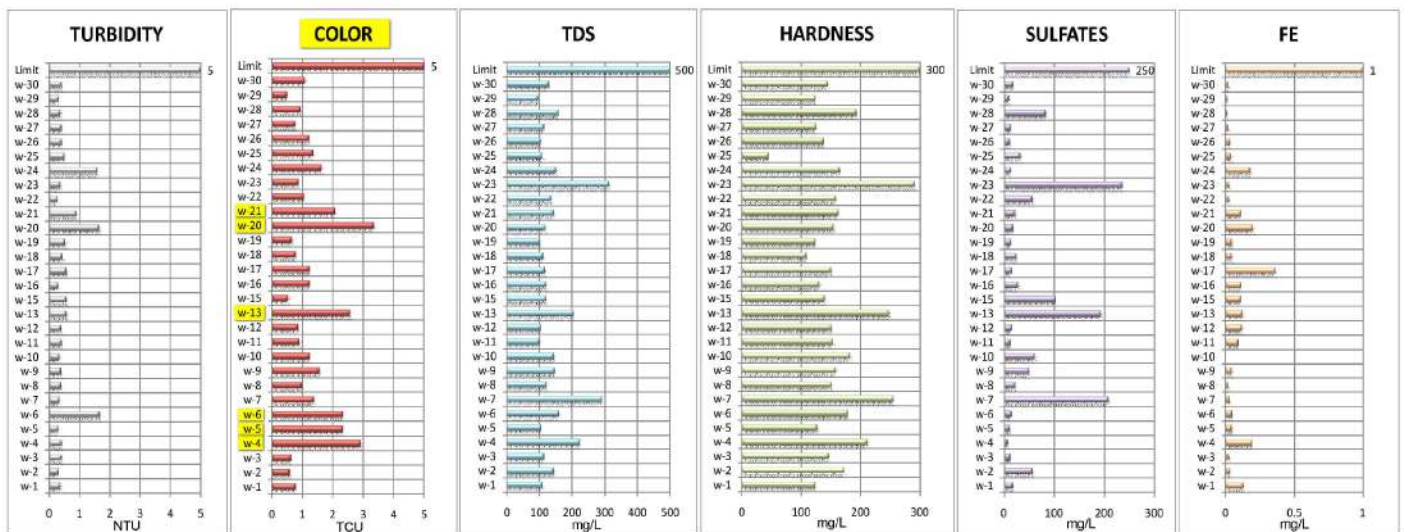
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Graph 4.7.9
Production Wells' Water Quality
After Treatment Graphs



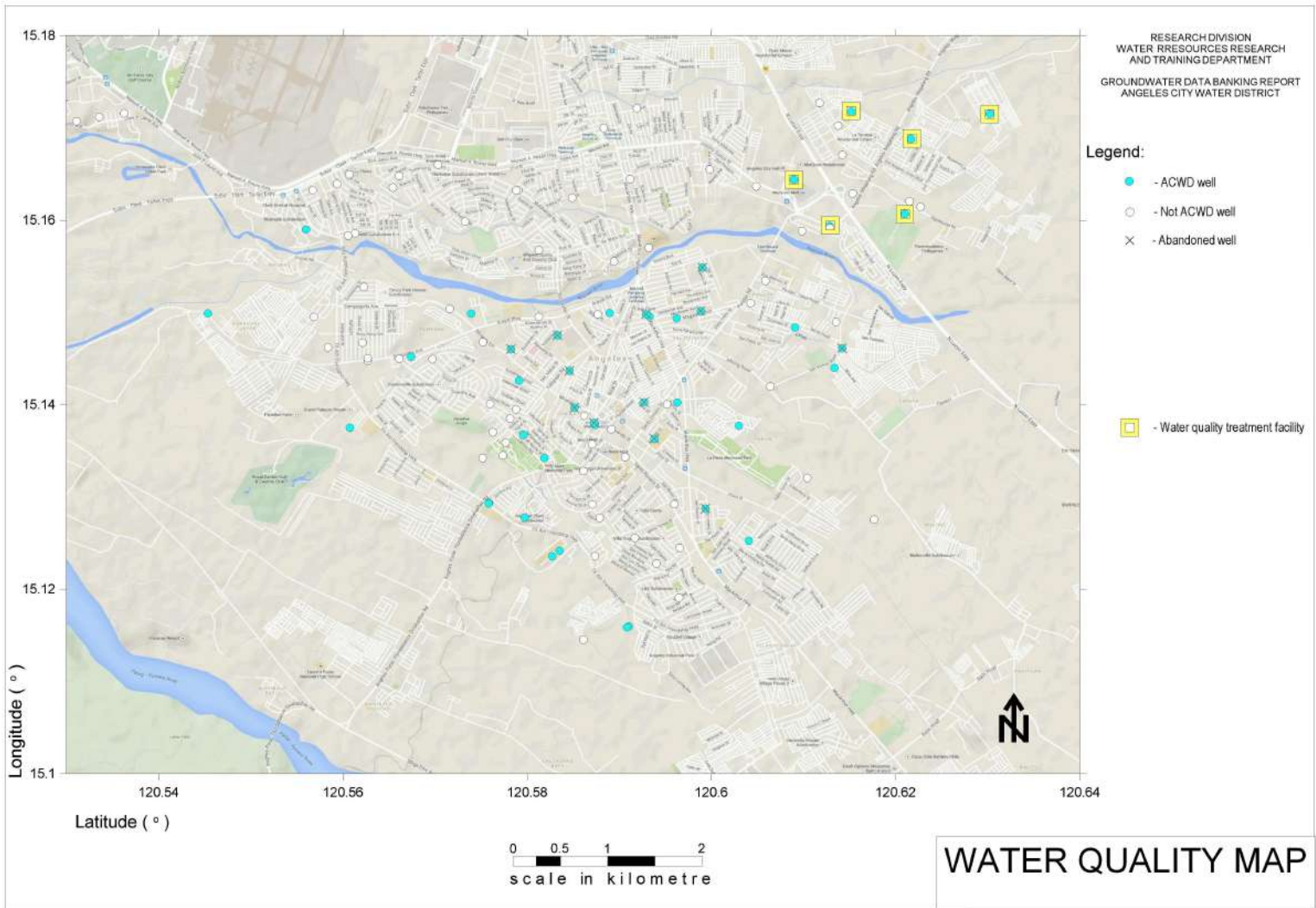
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Angeles City Water District
Graph 4.7.9
Production Wells' Water Quality
After Treatment Graphs

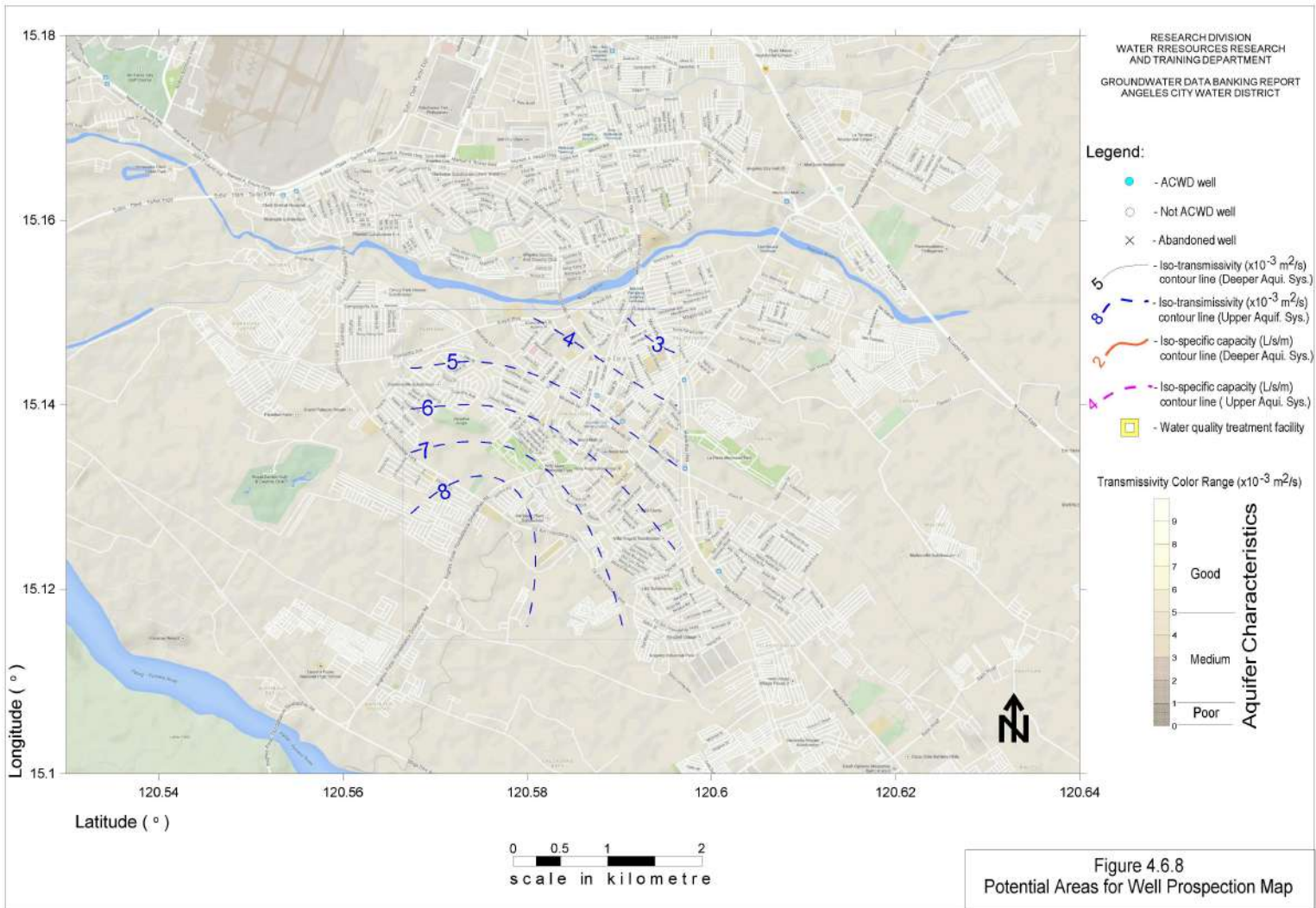


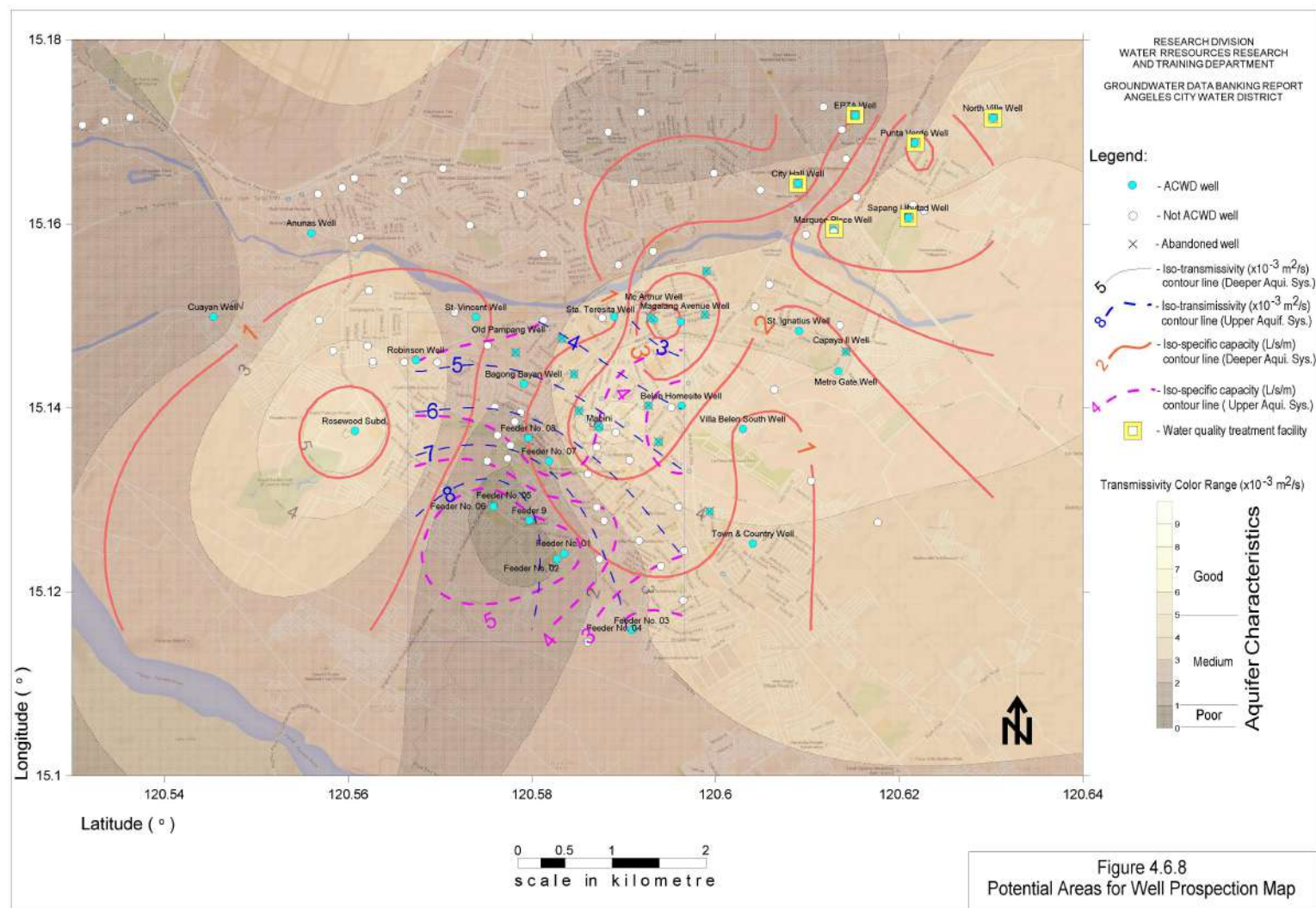
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Graph 4.7.9
Production Wells' Water Quality
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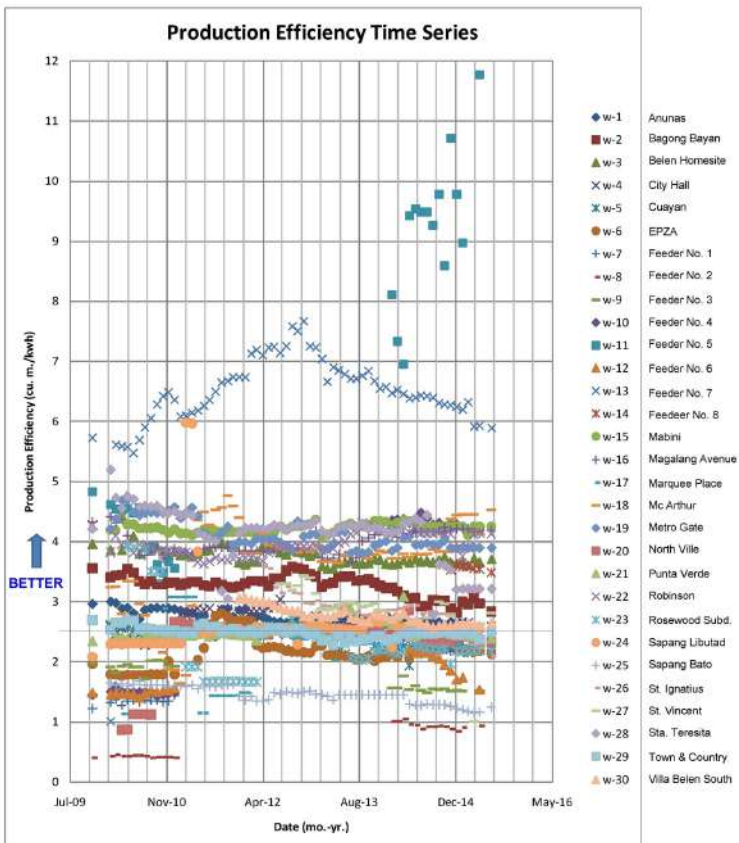
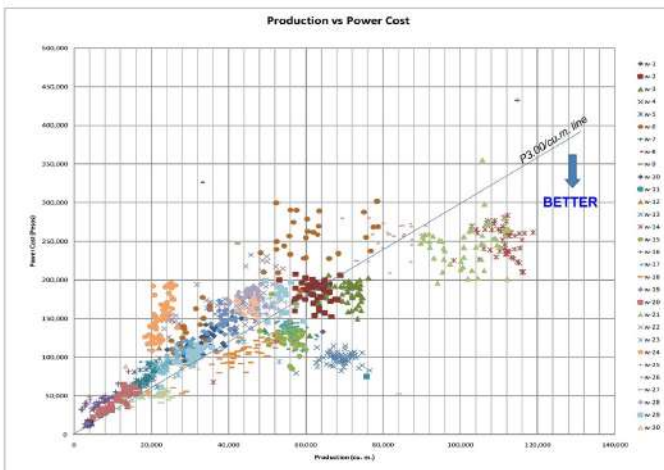
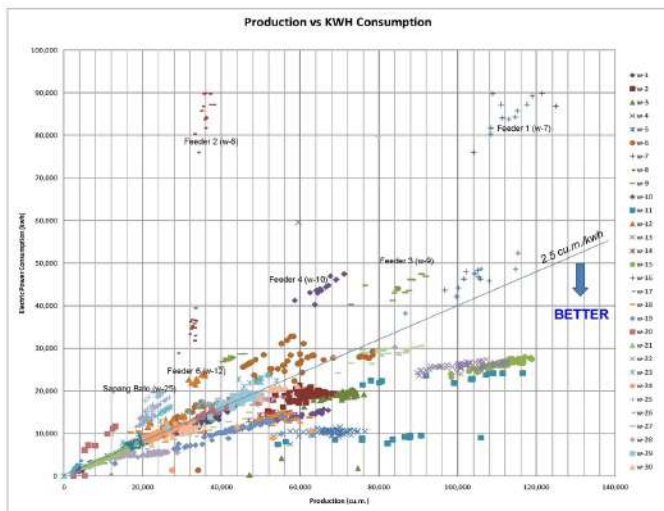


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Angeles City Water District
Graph 4.7.9
Production Wells' Water Quality
After Treatment Graphs



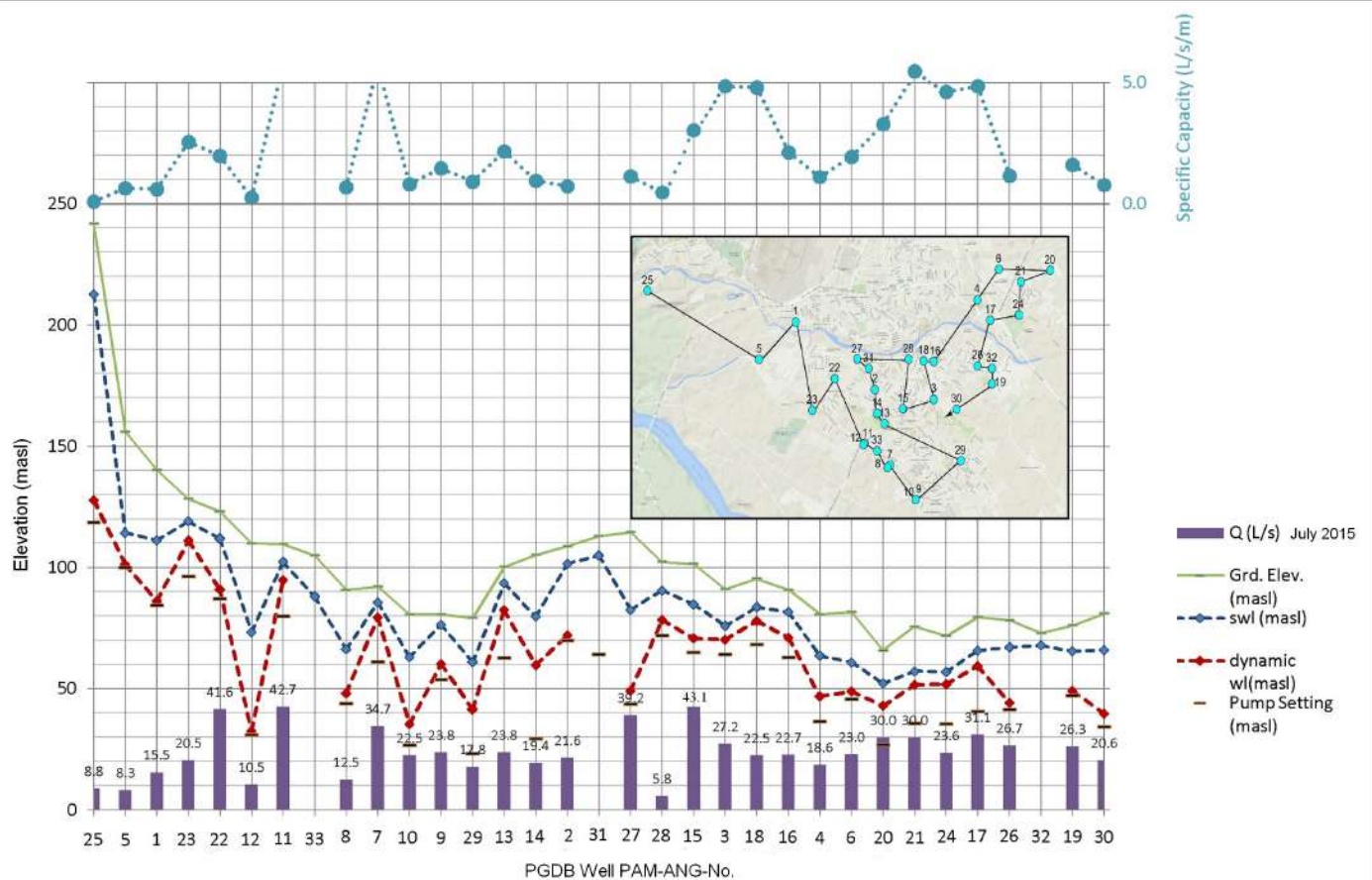






Note: Some wells may have relatively lower production efficiencies as to their true values due to integrated power cost/consumption not related to the production of water.

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Graph 4.7.4
Production, Power Cost, Power Consumption
and Time Series of Production Efficiency Graphs



Graph 4.7.7
Production Wells' Water Levels,
Discharge Rate, Pump Setting
and Specific Capacity Graph



PGDB Well PAM-ANG- No.	Local No./ Other No.	Ave. Prod. Hrs/day	Reserved Hrs/day	Ave. Discharge July 2015 (L/s)	Available Drawdown Aug 2015 (m)	Specific Capacity		Transmis- sivity (x10 ³ m ² /s)	Prod'n Efficiency (cum/kwh)		Production Cost (Peso/m ³)	Pump Efficiency (%)
		←	→	→	→	2015 (L/s/m)	Theore- tical * (L/s/m)		measured	computed **		
1	Anunas	20	4	15.5	1.7	0.6	1.0	2.8	2.5		3.96	65
2	B. Bayan	24	0	21.6	2.4	0.7			3.0		3.36	76
3	Belen Hmst	24	0	27.2	6.2	4.9			3.7		2.73	57
4	City Hall	2	22	18.6	10.4	1.1			2.6	4.5	4.32	66
5	Cuayan	20	4	8.3	1.4	0.6	0.7	1.5	2.2		3.70	63
6	EPZA	14	10	23	3.3	1.9	3.5	1.4	2.2	3.0	4.38	47
7	Feeder #1	24	0	34.7	18.5	5.7	5.5	7.6		7.0		54
8	Feeder #2	24	0	12.5	4.3	0.7		0.8		3.1		53
9	Feeder #3	24	0	23.8	6.5	1.5		6.9		1.8		46
10	Feeder #4	24	0	22.5	8.8	0.8	1.6	2.9		3.0		72
11	Feeder #5	24	0	42.7	15.1	5.8		8.8		9.6		34
12	Feeder #6	24	0	10.5	1.6	0.3	0.5	0.3		1.4		53
13	Feeder #7	24	0	23.8	19.8	2.2			5.9		1.68	64
14	Feeder #8	24	0	19.4	30.4	1.0	0.8	1.2	3.5		2.81	75
15	Mabini	23	1	43.1	5.9	3.1	4.3	5.6	4.2		2.40	75
16	Magalang Ave	4	20	22.7	8.2	2.1		2.3	4.1		2.34	61
17	Marquee Place	24	0	31.1	18.9	4.9			2.2	4.0	5.46	59
18	Mc Arthur	14	10	22.5	9.9	4.8			4.1		2.22	41
19	Metro Gate	12	12	26.3	2.0	1.6	4.8	4.0	3.9		2.35	60
20	North Ville	4	20	30	16.3	3.3	8.0	3.8	2.3	4.1	4.06	66
21	Punta Verde	24	0	30	16.0	5.4			2.4	4.3	4.35	65
22	Robinson	24	0	41.6	3.8	2.0	3.2	4.7	4.1		2.46	72
23	Rosewood Sub	10	14	20.5	14.8	2.6	3.0	6.4	2.2		4.67	48
24	Sapa Libutad	24	0	23.6	16.5	4.6	8.1	4.2	2.5	4.5	4.01	40
25	Sapang Bato	14	10	8.8	9.3	0.1		0.7	1.2		8.67	61
26	St. Ignatius	24	0	26.7	2.9	1.2			2.2		4.31	63
27	St. Vincent	24	0	39.2	5.6	1.1			2.6		3.58	83
28	Sta. Teresita	24	0	5.83	6.5	0.5			3.2		3.16	67
29	T & C Well	24	0	17.77	5.3	0.9			2.4		4.11	71
30	Villa Belen S	24	0	20.55	5.6	0.8			2.6		3.57	62

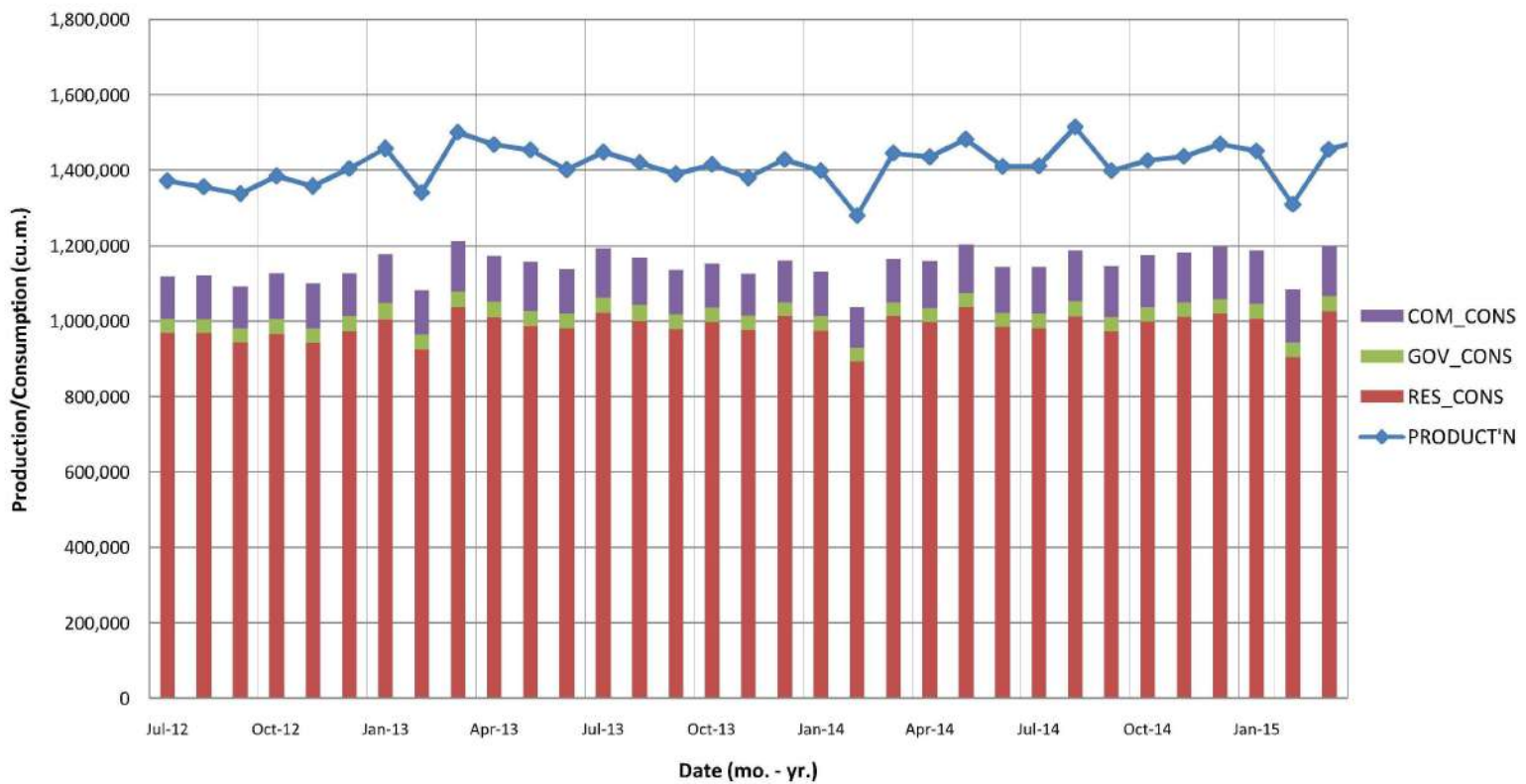
Upper Aquifer System
Deeper Aquifer System

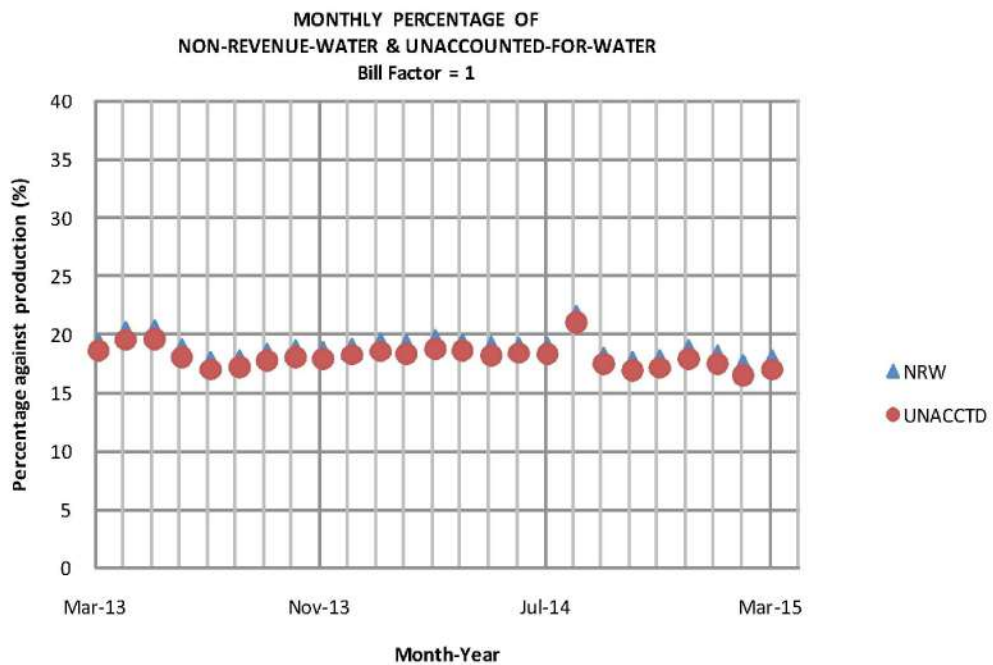
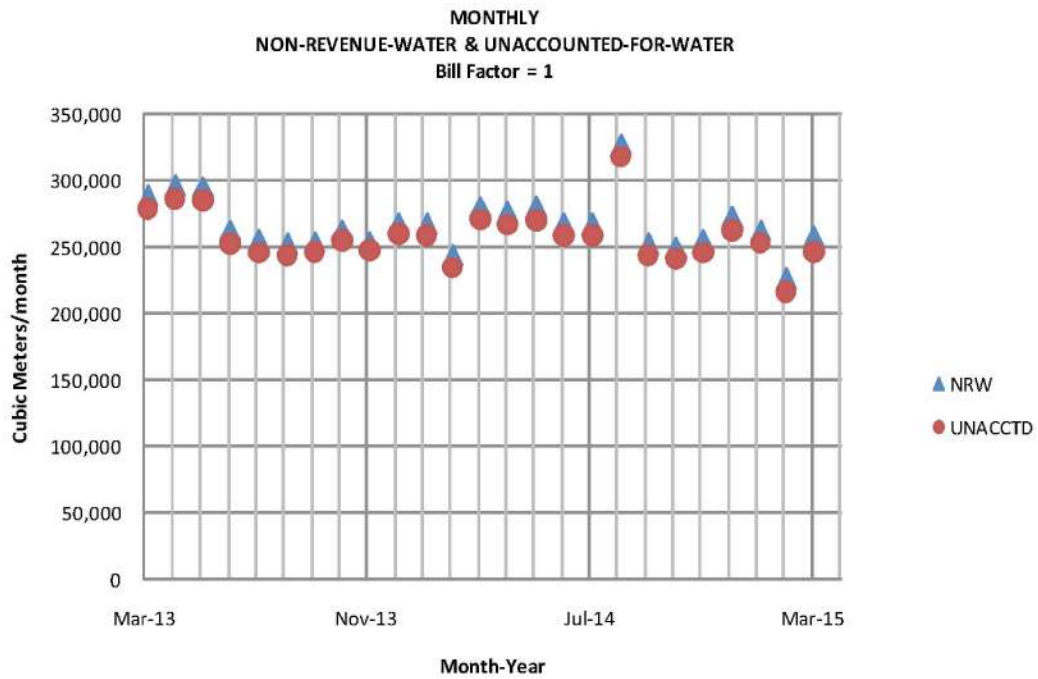
* - Theoretical Specific Capacity = $Q/(BQ+CQ^2)$ from Step-Drawdown Analysis for $Q_{July\ 2015}$

• - mixed power use other than pumping

** - based from April 2015 production and estimated kwh due to pumping in Table 4.8.3

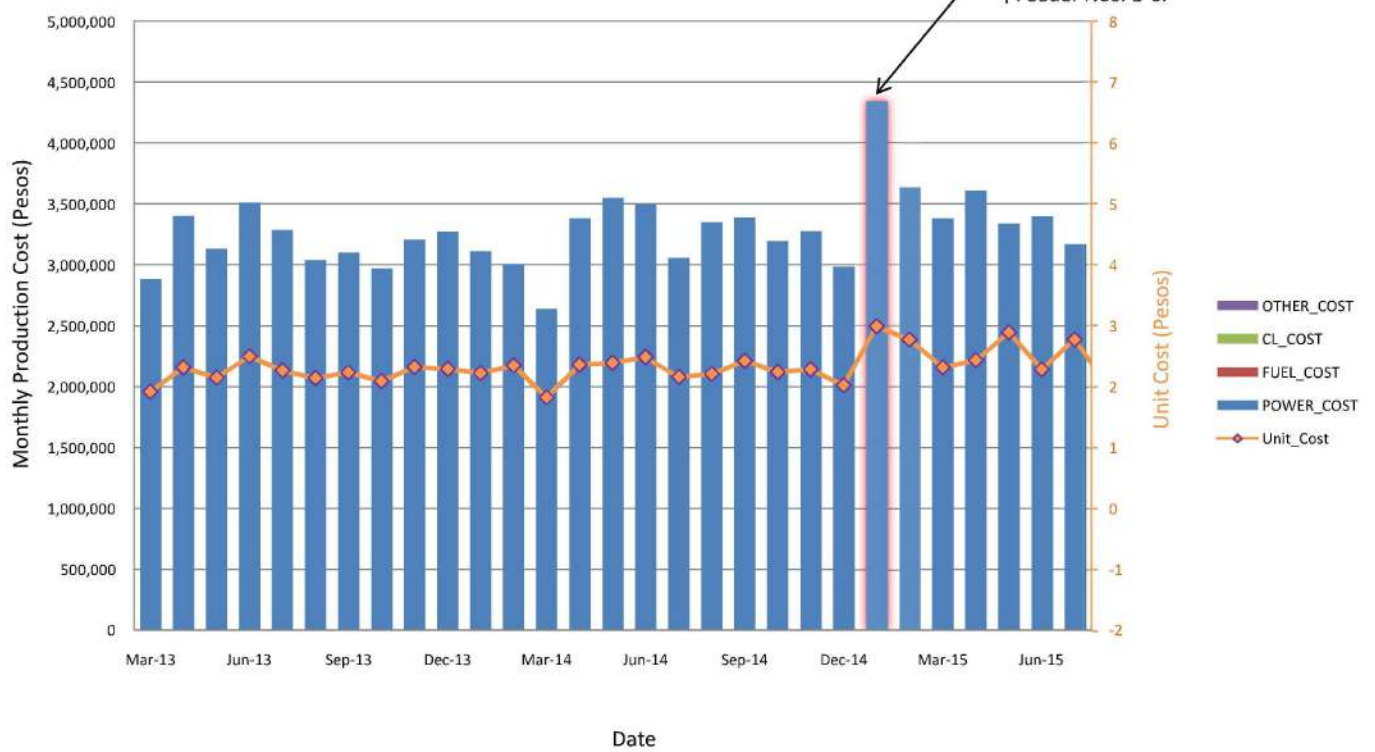
Graph 4.9.2
Monthly Production-Consumption History Graph
Bill Factor = 1
Angeles City Water District





Monthly Production Cost-Unit Cost History Graph

only month with complete production costs entries for all production wells. The rests are all lacking production costs for Feeder Nos. 1-6.



Water Data Bank
WD Locations
WD Information
WD Directory
WD Water Rates
Production and Consumptions
Population

This web site aims to disseminate information related to LWUA's Data Bank Division's functions and provide a venue for the water supply sector professionals to communicate and interact.

DATA BANK DIVISION

The Data Bank Division is under the Technical Assistance Department (TAD) of the Local Water Utilities Administration (LWUA) whose functions are:

- Manage and maintain the agency's computerized water resources data bank
- Undertake groundwater assessment reports for various water districts
- Implement groundwater data banking and monitoring program of water districts
- Maintain the agency's technical specification standards and planning methodology manuals

Postal address

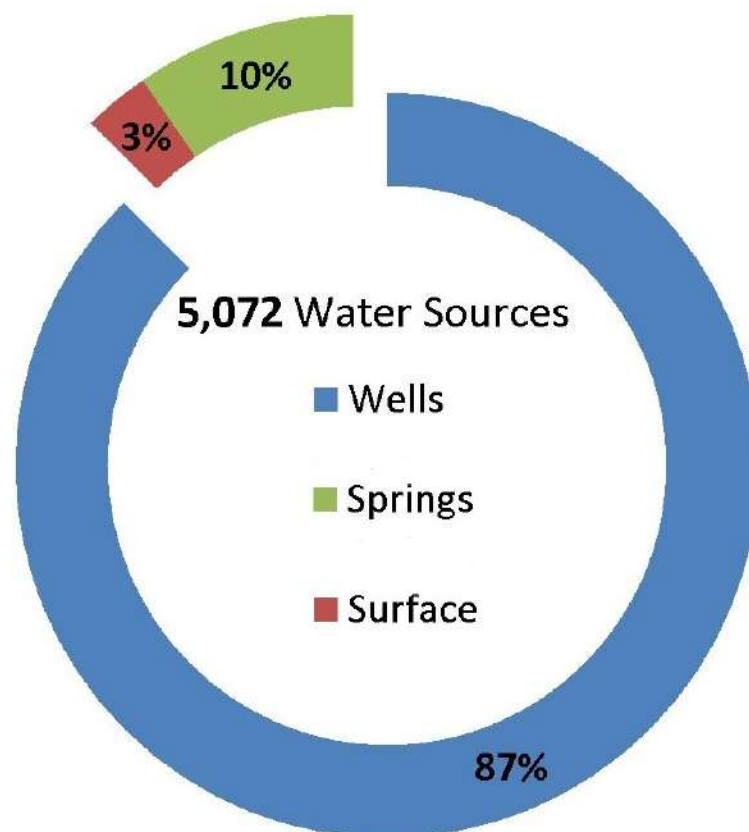
LWUA Bldg. Katipunan Road Balara, Quezon City, Philippines

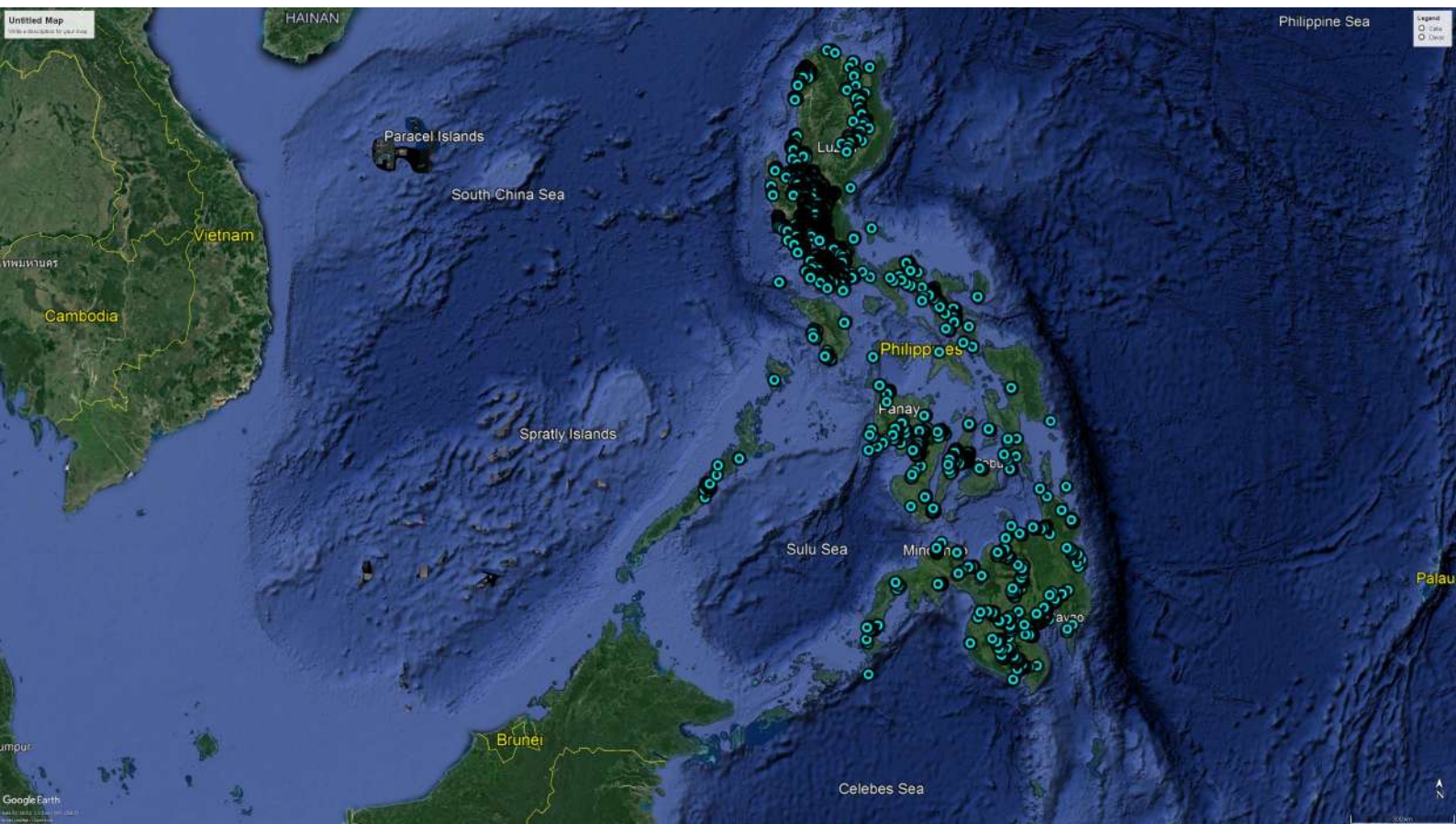
Electronic mail

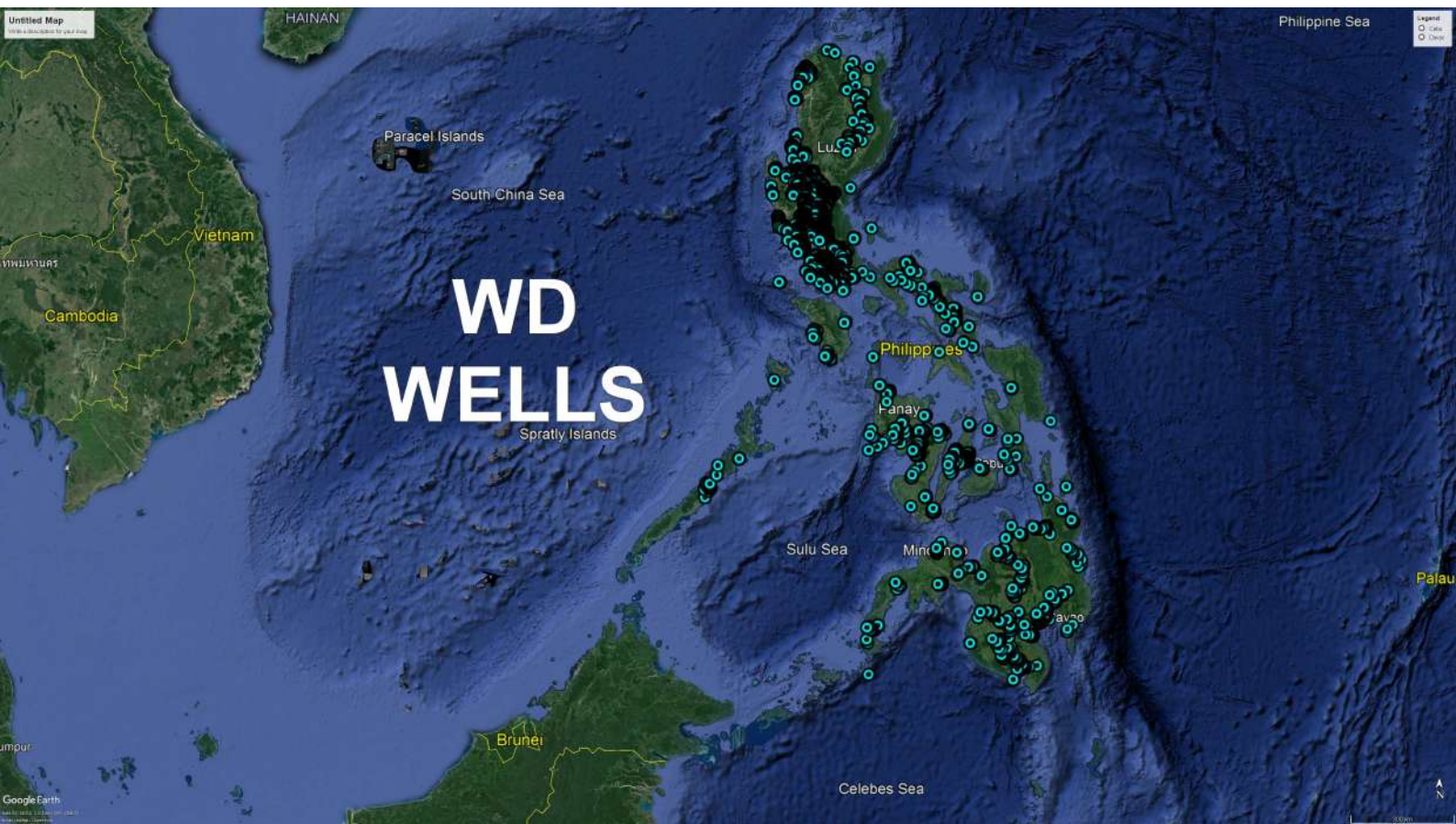
Send mail to databank.tad@lwua.gov.ph for questions or comments.

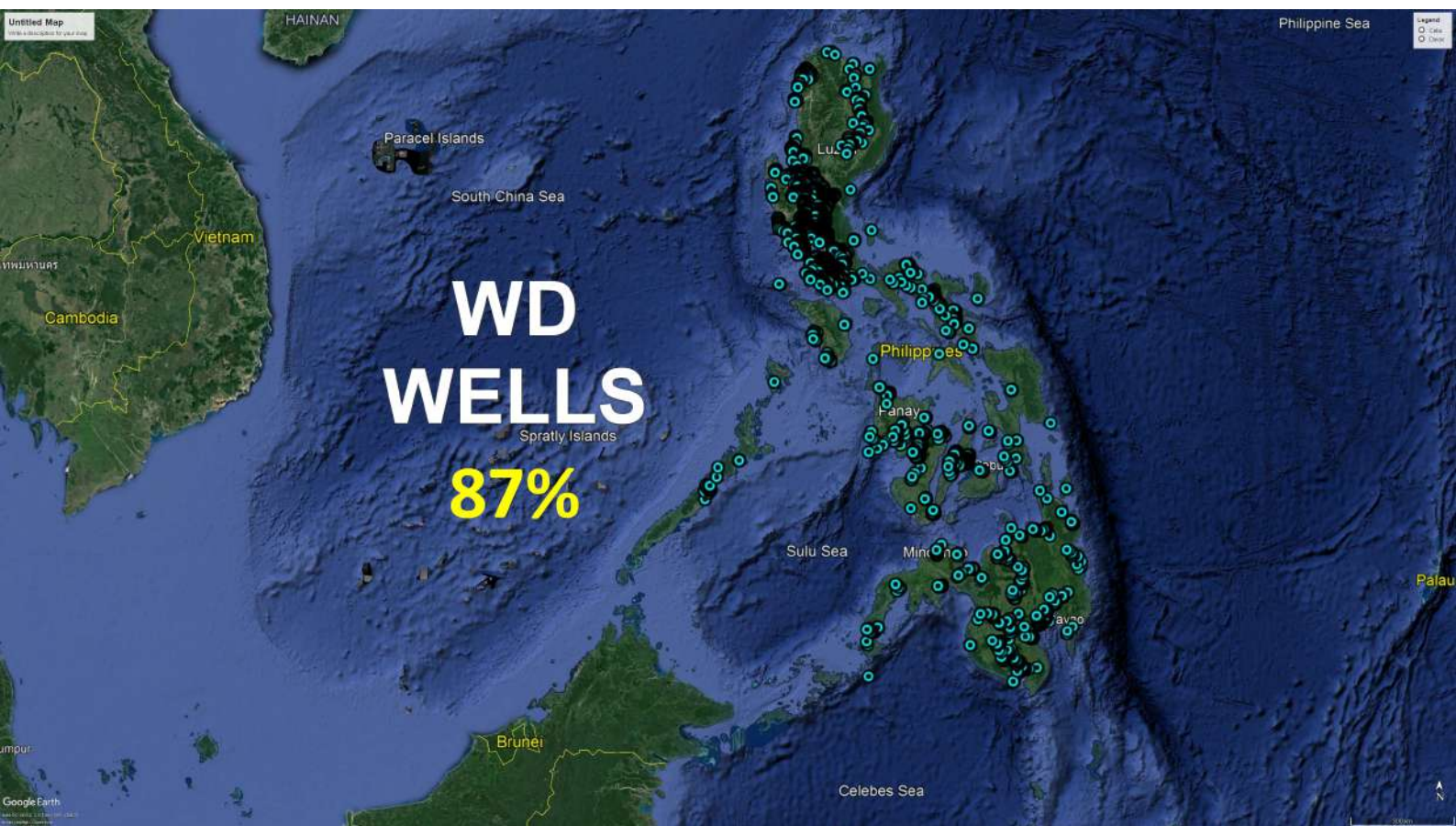
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WDs' Water Sources

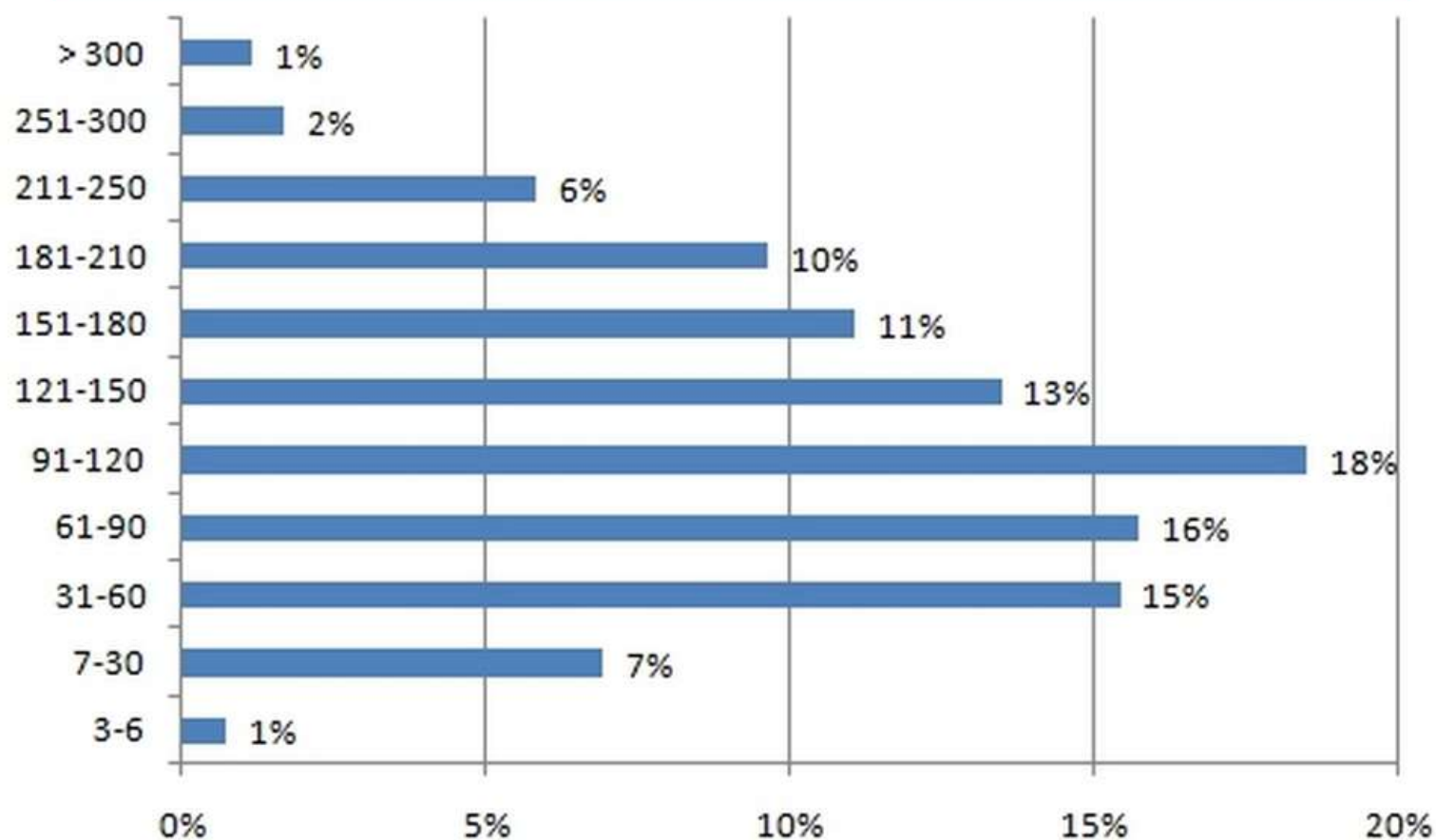




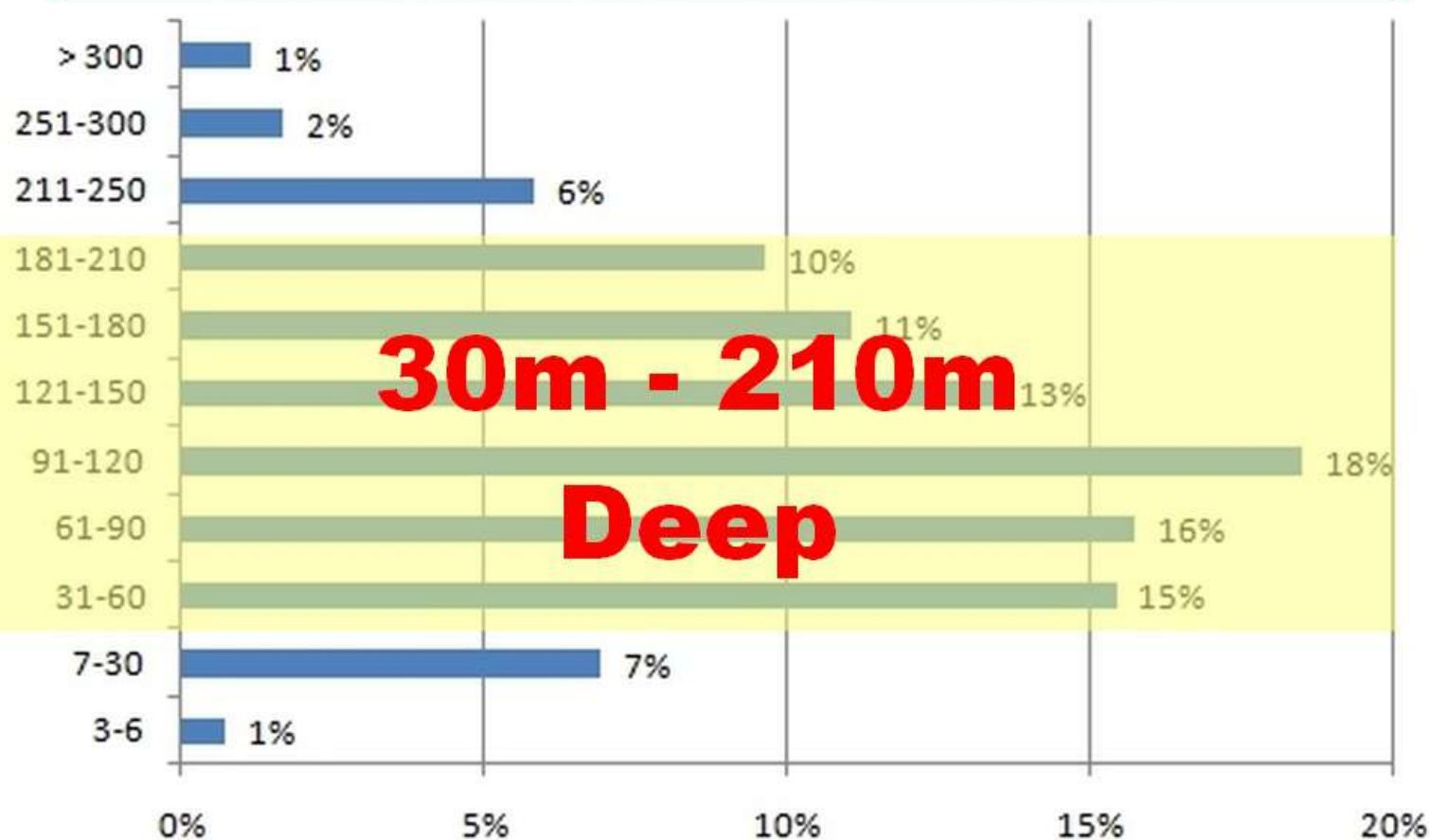




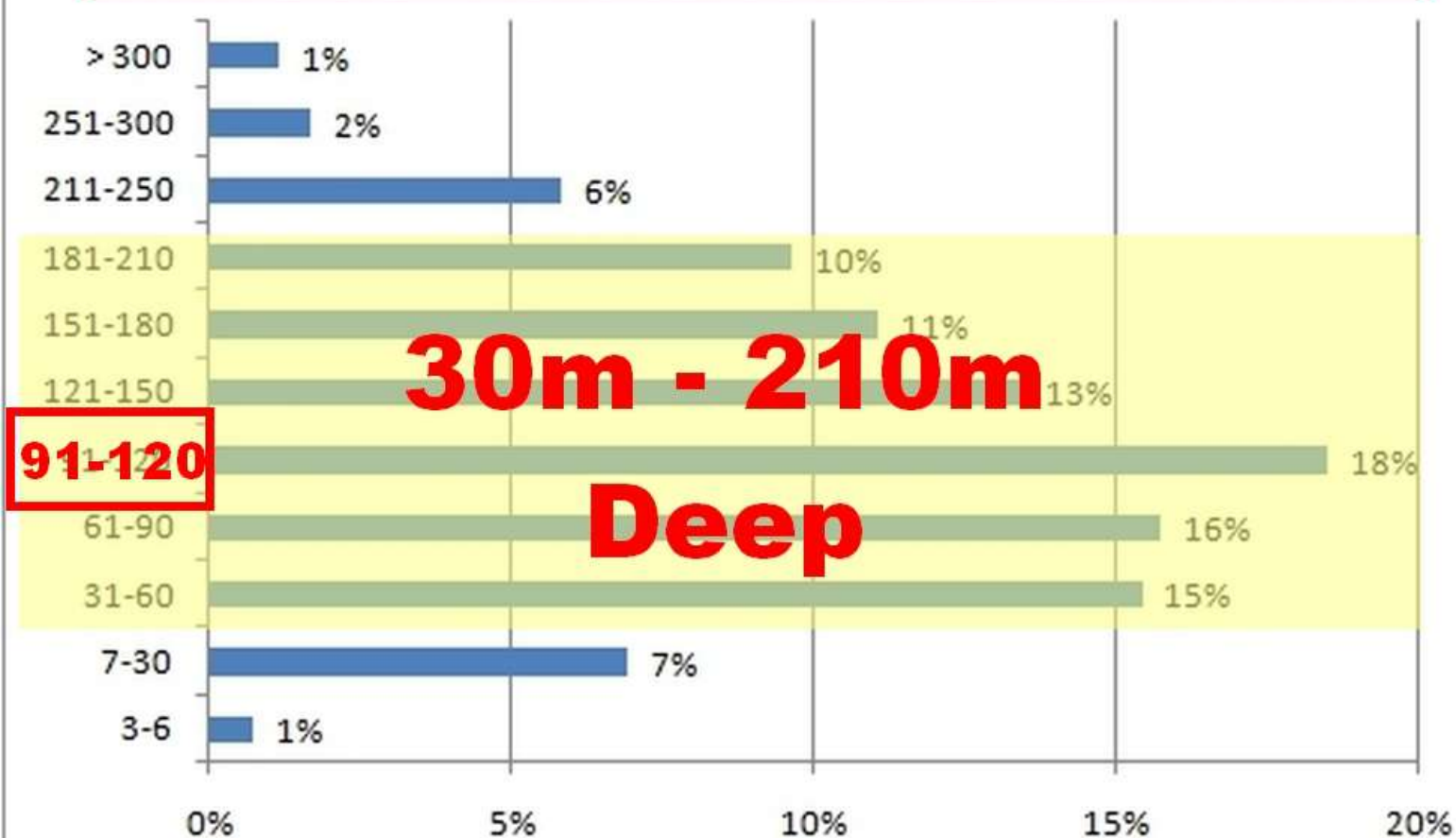
% of WD Wells' Depth Range (Metres)

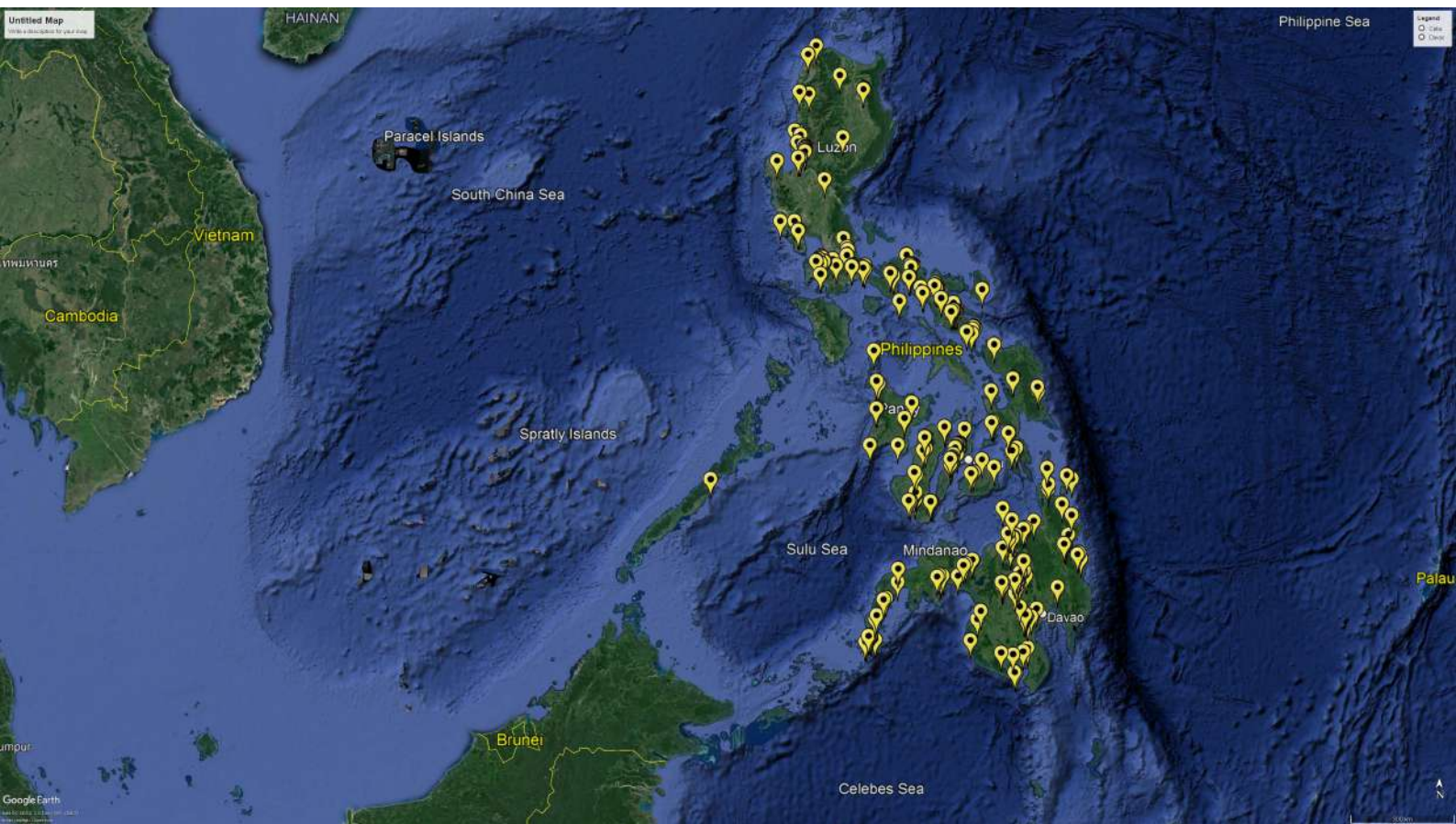


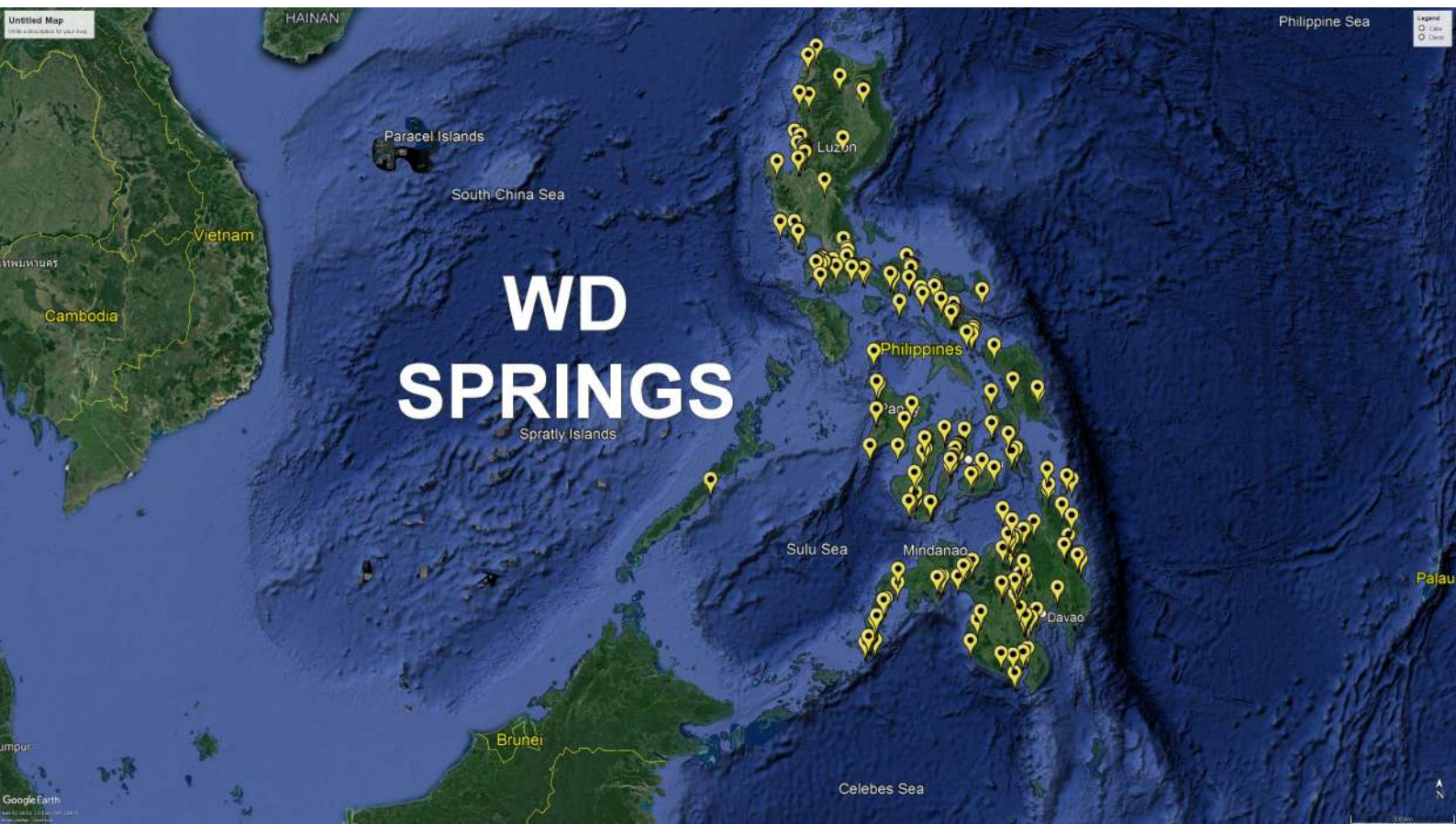
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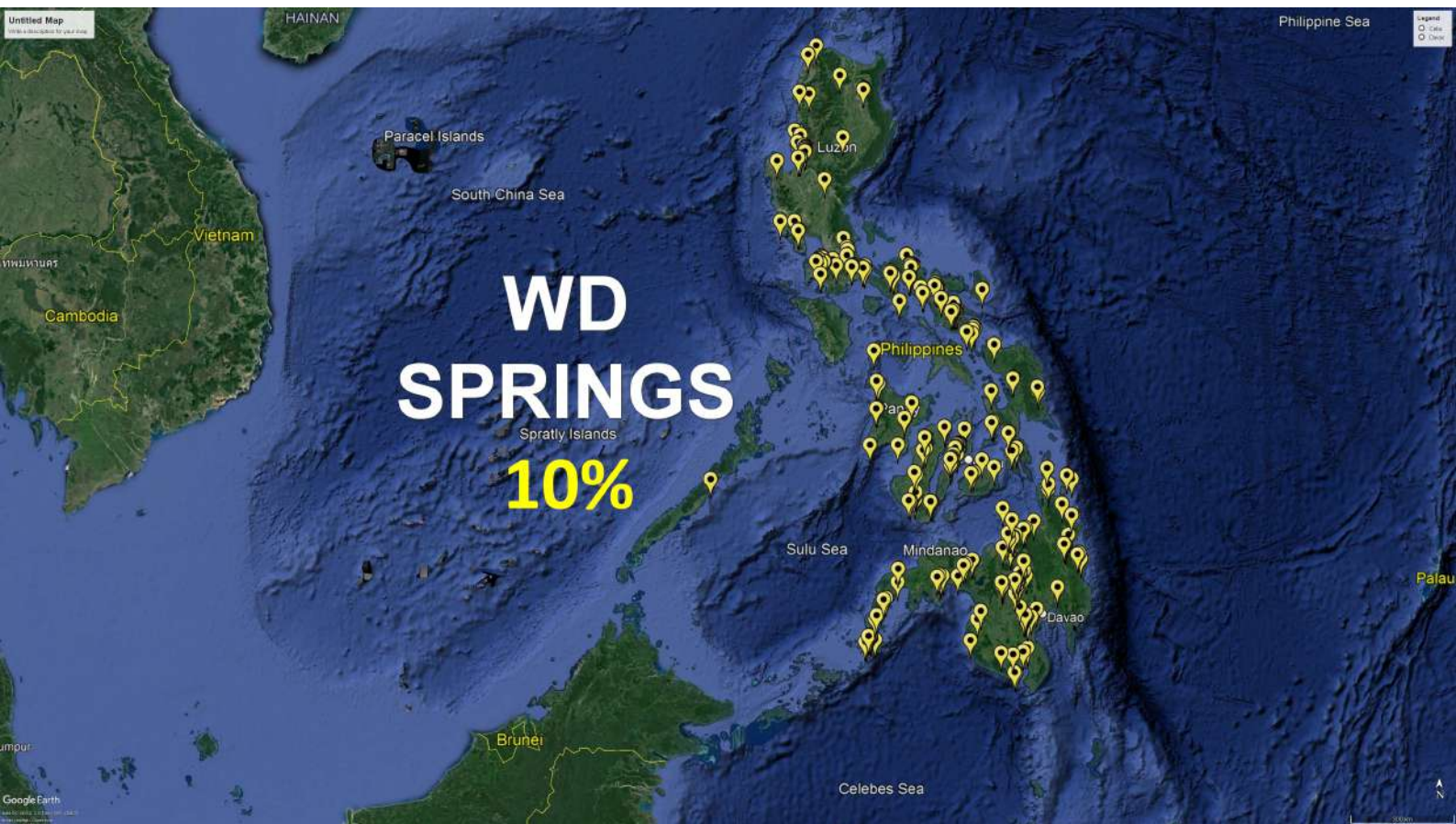


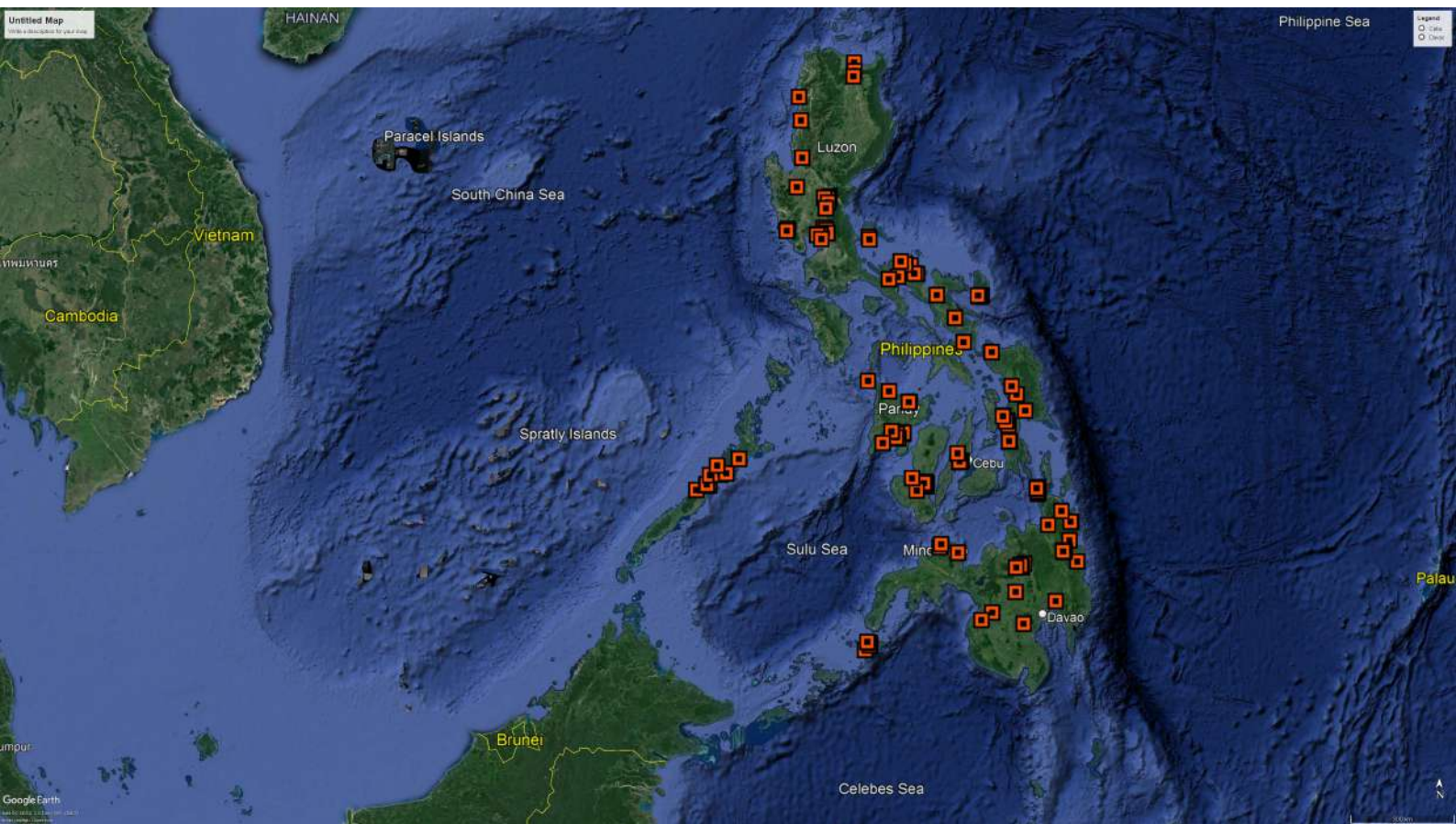
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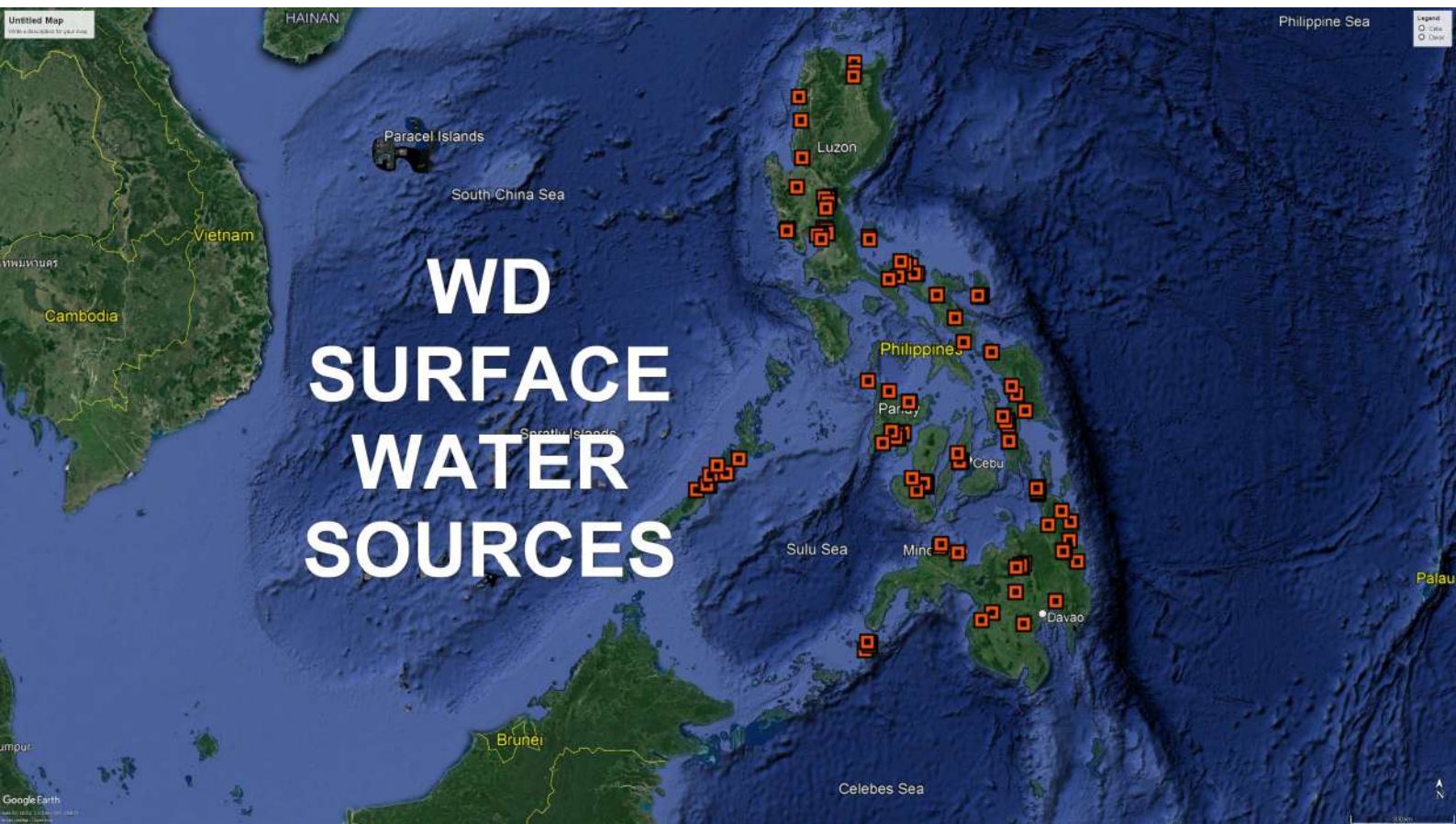


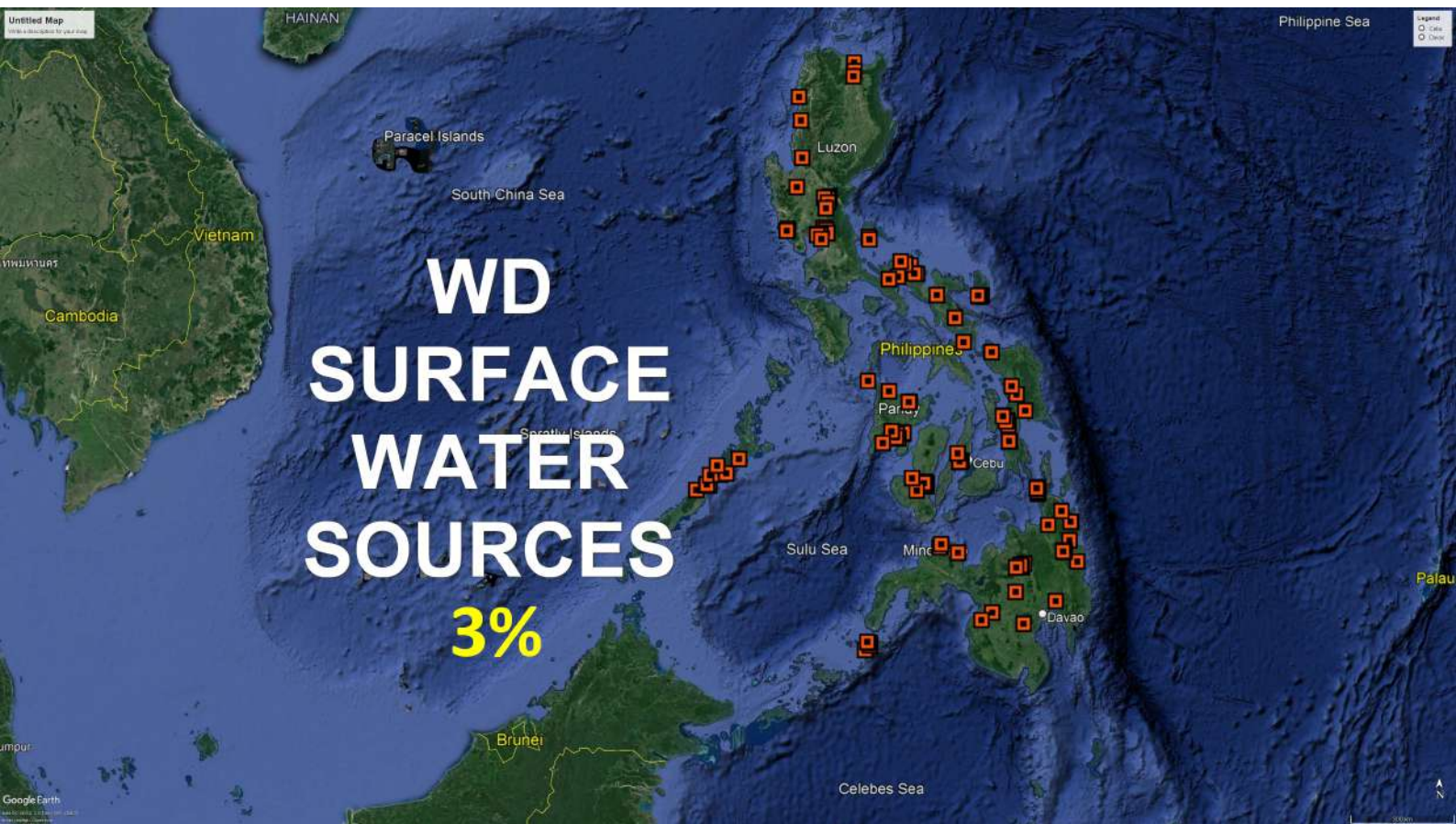


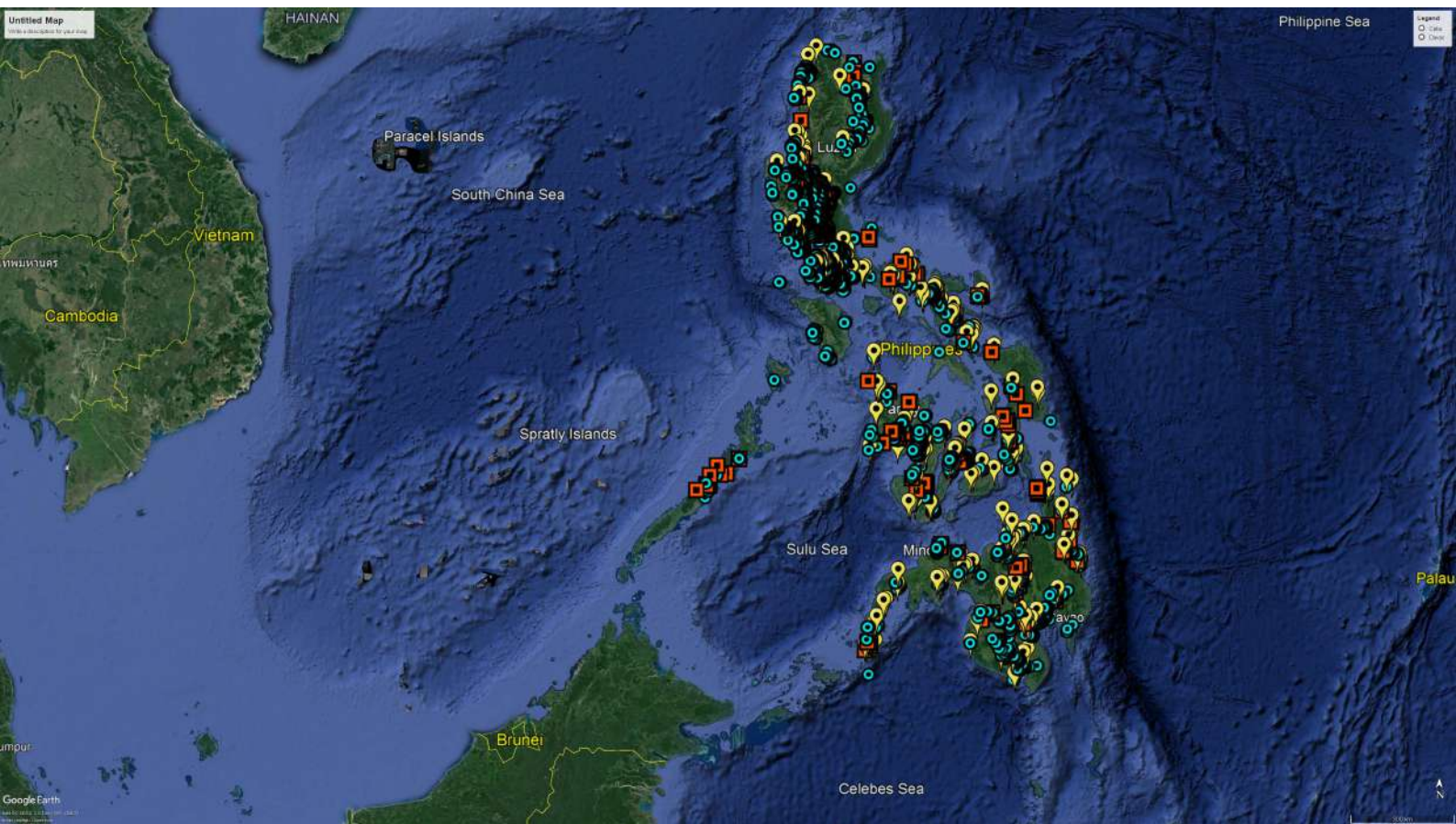


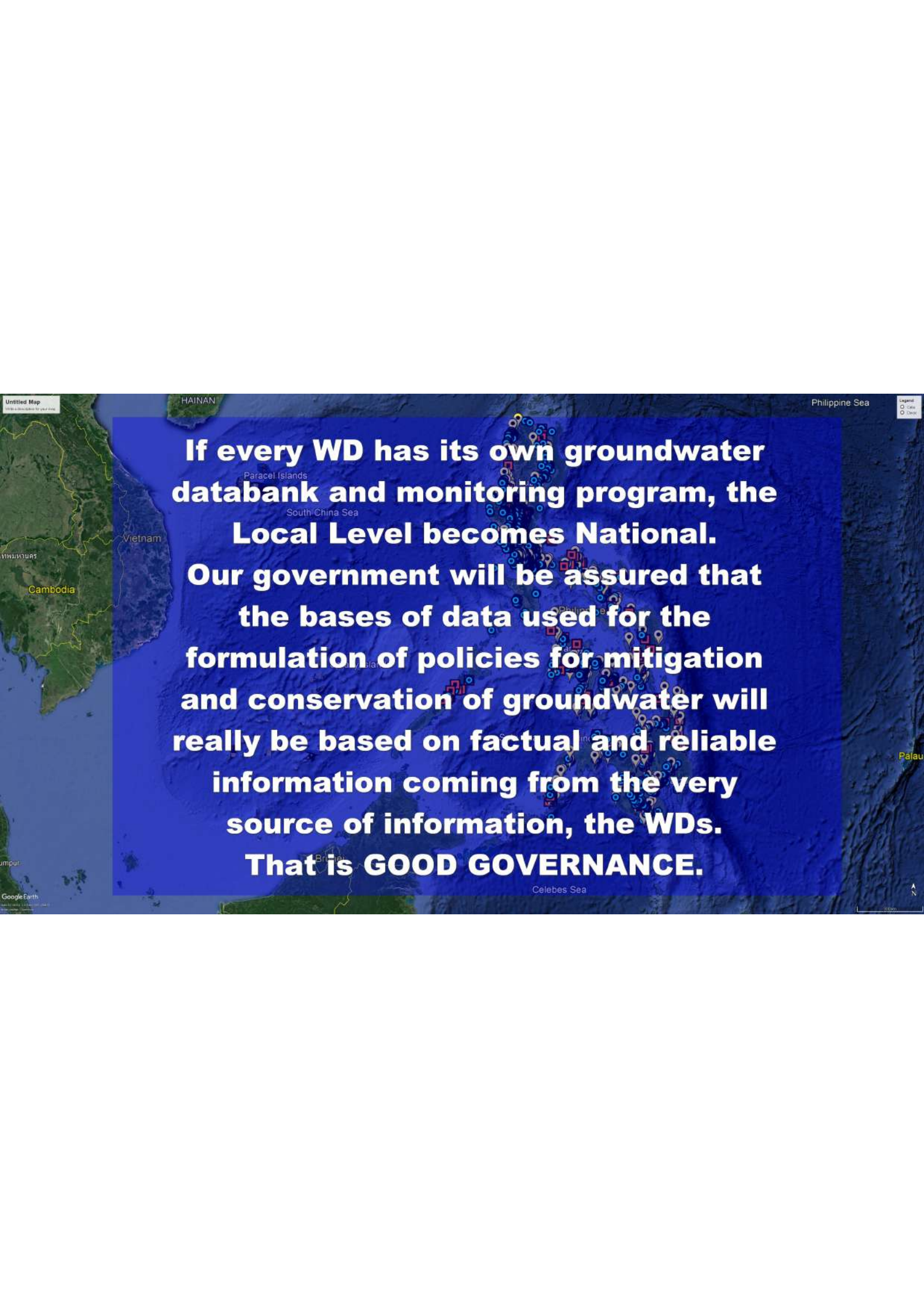












**If every WD has its own groundwater
databank and monitoring program, the
Local Level becomes National.
Our government will be assured that
the bases of data used for the
formulation of policies for mitigation
and conservation of groundwater will
really be based on factual and reliable
information coming from the very
source of information, the WDs.
That is GOOD GOVERNANCE.**

A satellite map of Southeast Asia is shown in the background. A large, semi-transparent blue rectangle is overlaid on the map, containing white text. The text is a message of gratitude to Water Districts (WDs) for their role in groundwater management. The map shows parts of Hainan, Vietnam, Cambodia, and the Philippines. Labels for 'HAINAN', 'Vietnam', 'Cambodia', 'Palau', 'Philippine Sea', and 'Celebes Sea' are visible. A 'Google Earth' logo is in the bottom left corner.

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