



**THE HASHEMITE KINGDOM OF JORDAN**  
**MINISTRY OF WATER AND IRRIGATION**

**Water Information System  
(WIS)**

**Prepared by  
Ibtisam Al-Saleh**

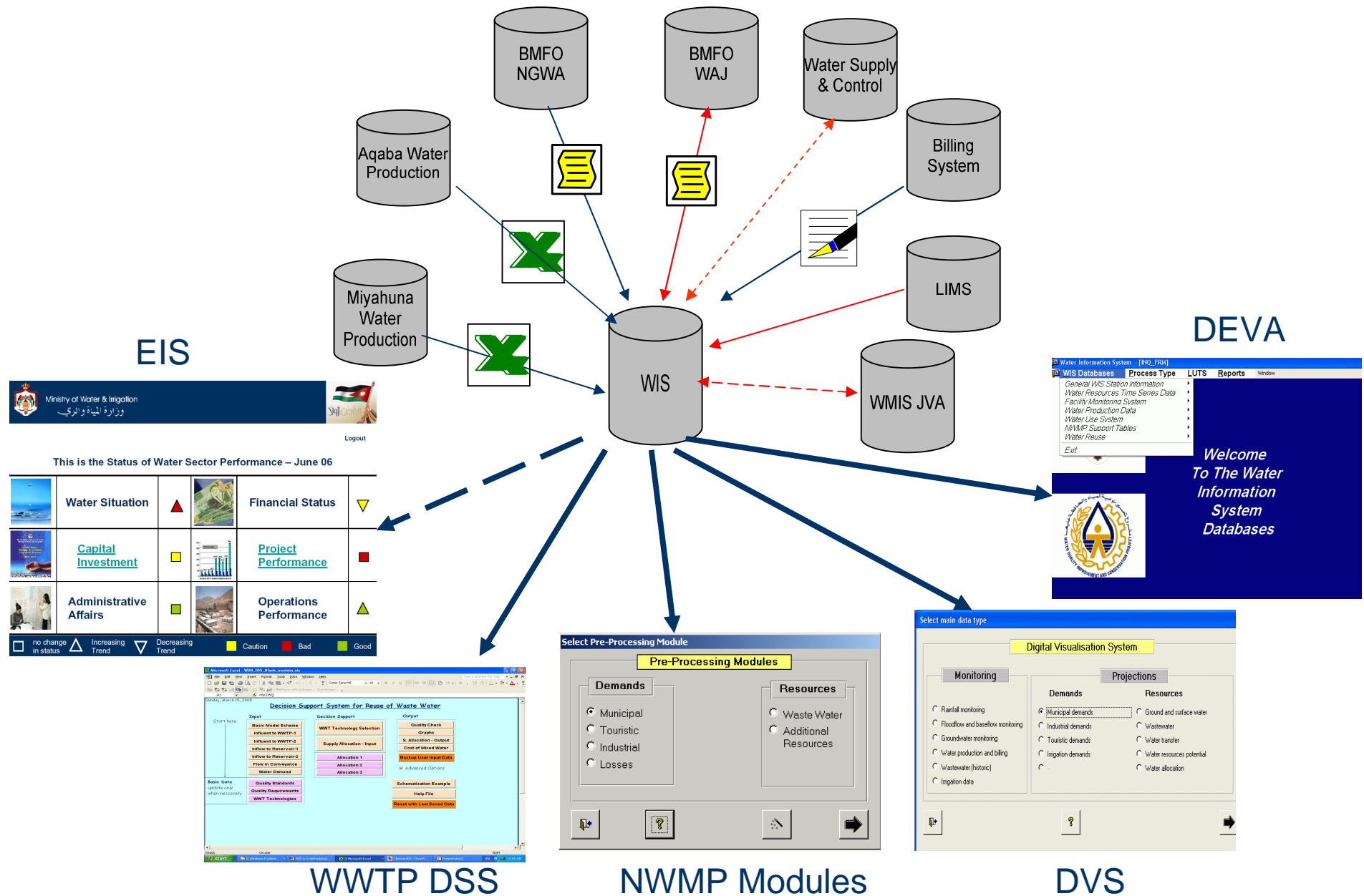
# What is WIS

- **WIS is a methodological framework, databases and tools to manage relevant water data and produce the digital NWMP.**
- **WIS is considered as the authorized source that provides water specialists with reliable data and information for water sector monitoring, management and planning.**
- **Collected raw water data from the field is stored in a centralized Oracle database, while spatial data is managed using GIS tools.**
- **Different applications and interfaces to store data and produce information products been developed using Oracle Developer as DEVA and visual basic for DVS and NWMP balancing modules.**

# **WIS Data Sets**

- 1. Water Resources Base Information**
- 2. Monitoring Wells & Springs Water Quality**
- 3. Water & WWTP Quality from LIMS**
- 4. WWTP field operation quality tests**
- 5. WWTP influent & effluent**
- 6. Monthly Water Production from wells & springs**
- 7. Daily Rainfall & Climatological readings**
- 8. Monitoring Wells Water Level**
- 9. Springs Discharge**
- 10. Surface Water Flow (Wadis)**
- 11. NWMP Modules Results (STPs)**
- 12. Waste Water Reuse**

# WISs in Water Sector



# Current Situation

- **WIS/DEVA user interface has been upgraded & deployed to Internet module on Oracle Application Server .**
- **New units to take care of WIS has been established:**
  - **WIS unit (business process and data flows) in MWI**
  - **Water Systems department under unified sector ICTU (service department).**

# WIS DEVA Tools

Entry Forms



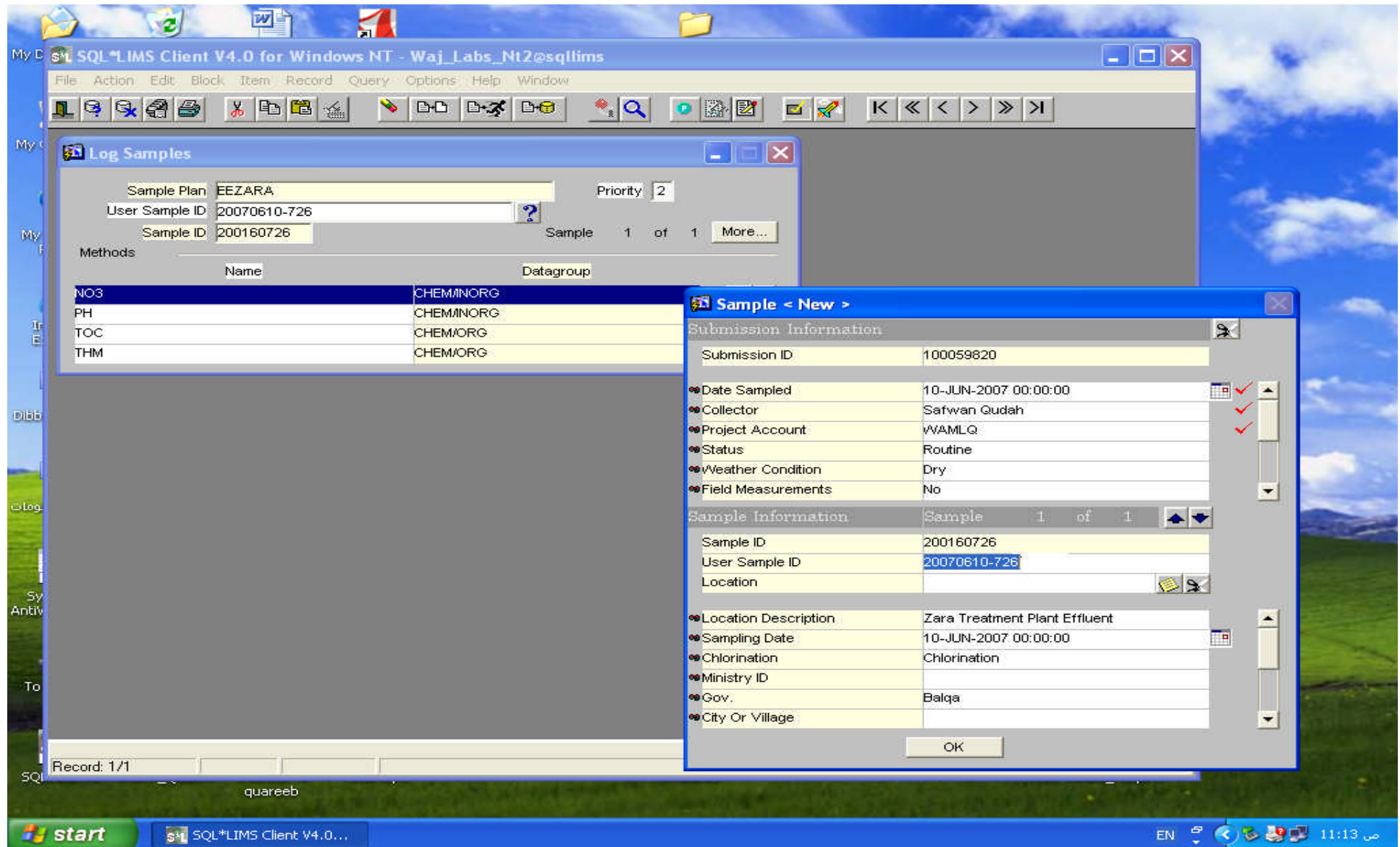
Query Forms




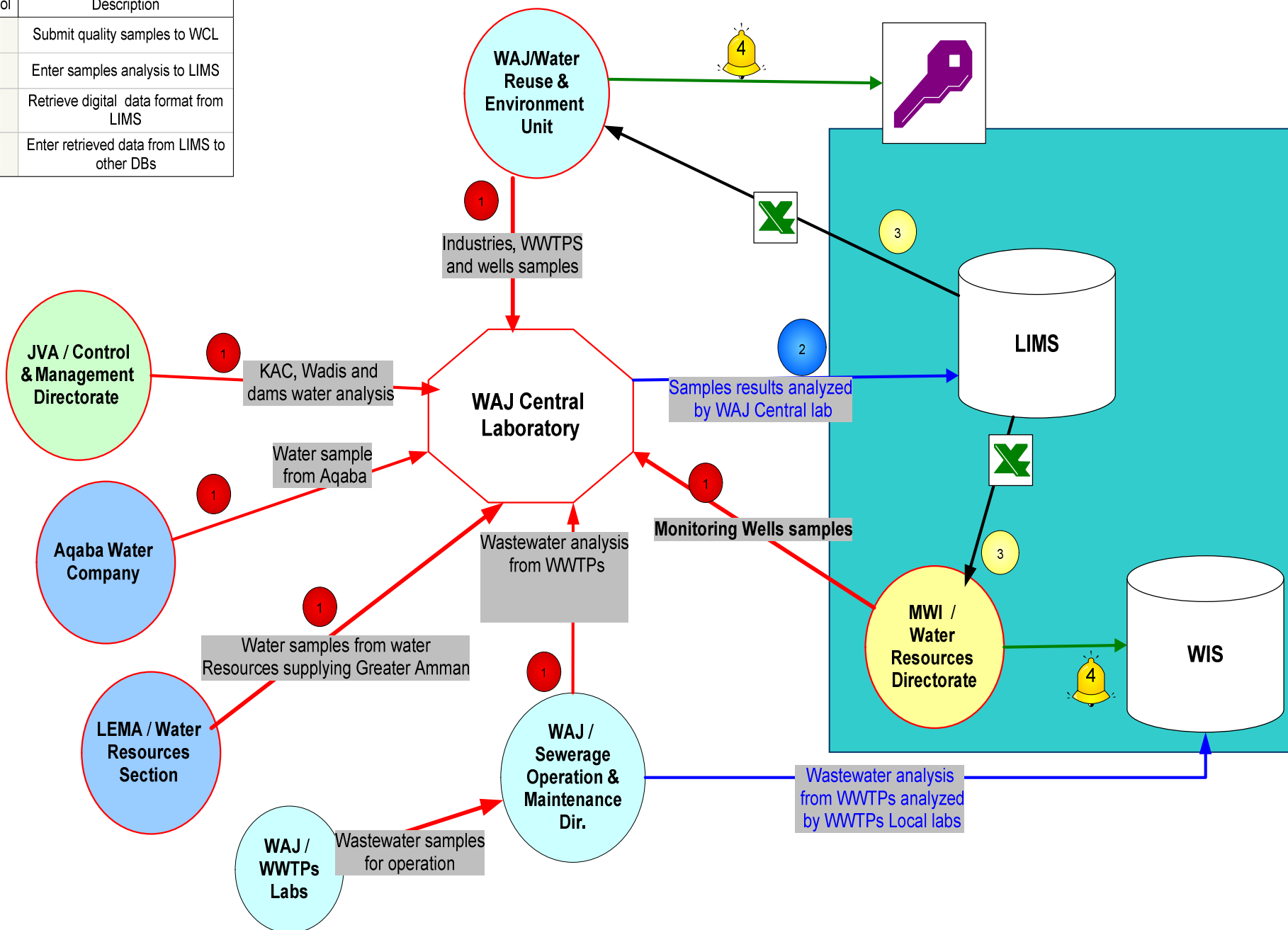
Reports



# SQL\*LIMS Application

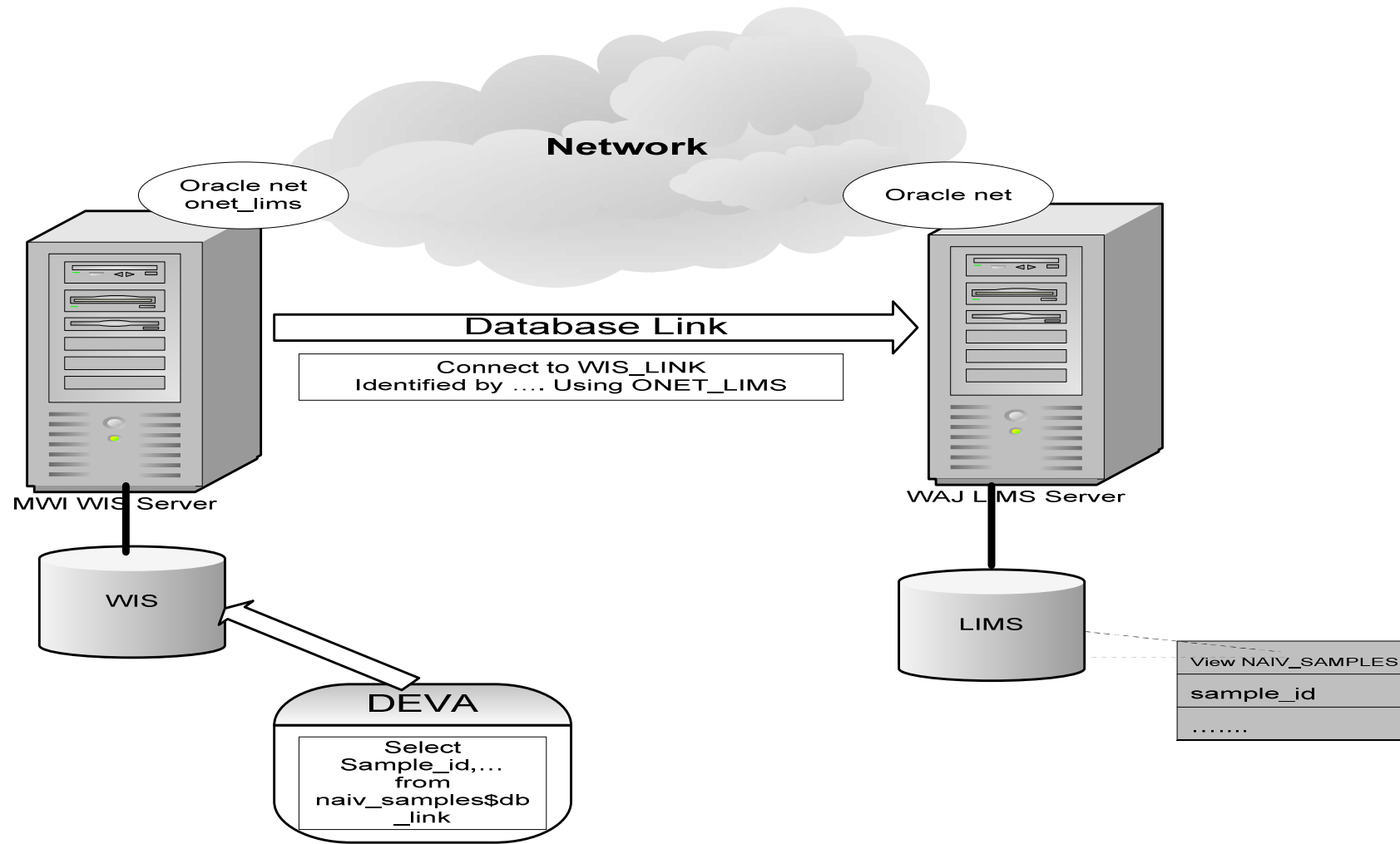


Legend	
Process Steps	
Symbol	Description
1	Submit quality samples to WCL
2	Enter samples analysis to LIMS
3	Retrieve digital data format from LIMS
	Enter retrieved data from LIMS to other DBs





# Current Situation



## Quality Data from LIMS For Ground Water

?

Location Id	WEIWLIC	Sample Id	200205215
Sample Location	Well	Mwi Station Id	
Project Account	WAMEO	Project Name	Water R&E Unit
Material Name	WATER		
Material Type	RAW WATER		
Source Type		Governorate	
End Use			
Treatment Stage	Raw water		
Sampling Date	19-JAN-2009	Sampling Time	15:00:00

Parameter Name	Analytical Method	Value	Units	Quality Remarks
Electrical Conductivity	Laboratory Method (Ref: CHI-EC-R004)	2610	Us/cm	
pH	Electrometric Method (Ref: CHI-PH-R003)	6.94	unit	
Calcium	Ion Chromatographic Method	257.31	mg/L	
Magnesium	Ion Chromatographic Method	74.66	mg/L	
Sodium	Ion Chromatographic Method	240.12	mg/L	

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Query Send to Excel Excel Chart of Avg

**Chart Options**

**Chart Options**

**Group By**

☐ Yearly Data

☒ Monthly Data

Average Quality of Selected Locations & Year  
Average Quality of Selected Location & Years

**Select Quality Parameter**

Total Solids (mg/L)

OK EXIT

# Select Quality Paramaters

Select the quality parameters to retrieve or  
The default from the database records

Select Excel Layout

☒ Pivot Format

☐ Tabular Format

Execute

Cancel

Microsoft Excel - Book1

Location ID	Location Name	Sample ID	Project Name	Station ID	Sampling Date	Sampling Time	Parameter	Value	Units
WEAWA23	Awajan No. 23 Well	200176639	Zarqa Gov. Water Adm.	AL2691	3-Jan-08	0:00:00	Chloride	306.72	mg/L
WEKAREM	Kareem Majali Well	200176756	Water Res. & Plan. / G. Water	CA1226	2-Jan-08	0:00:00	Chloride	414.29	mg/L
WESHEEH	Sheehan No.1 Well	200176757	Water Res. & Plan. / G. Water	CD3342	2-Jan-08	0:00:00	Chloride	108.28	mg/L
WEMAZR2	Mazraa No. 2 Well	200176758	Water Res. & Plan. / G. Water	CA1012	2-Jan-08	0:00:00	Chloride	264.48	mg/L
WESAF14	Safi No. 14 Well	200176759	Water Res. & Plan. / G. Water	CA1097	2-Jan-08	0:00:00	Chloride	500.2	mg/L
WEUMRU2	Umruq 2 Well	200176760	Water Res. & Plan. / G. Water	DA1020	2-Jan-08	0:00:00	Chloride	412.51	mg/L
WEZATA9	Zatari No.9 Well	200177213	Laboratories Dept./Quality	AL3376	7-Jan-08	0:00:00	Chloride	162.95	mg/L
WEALALB	Al Albait University Well	200177215	Laboratories Dept./Quality		7-Jan-08	0:00:00	Chloride	185.67	mg/L
WERYNTC	Rajaei and Yusri Naser Tahboub comp	200177548	Private Wells Lic. & Wat. Bas.		9-Jan-08	0:00:00	Chloride	69.23	mg/L
WEMSHIM	Mshaish Ibraheem Mghairbi Well	200177640	Private Wells Lic. & Wat. Bas.	AL2476	6-Jan-08	0:00:00	Chloride	2782.49	mg/L
WEAREGI	Aref Ghassab Issa Well	200177855	Private Wells Lic. & Wat. Bas.		16-Jan-08	0:00:00	Chloride	110.41	mg/L
WEUMJMA	Um Jmal No. 1 / KM 87 Well	200178356	Laboratories Dept./Quality	AL1490	24-Jan-08	0:00:00	Chloride	242.11	mg/L
WEFEIF2	Feifa No. 2 Well	200178455	Water Res. & Planning/spring	DA1010	25-Jan-08	0:00:00	Chloride	124.96	mg/L
WEQAT26	Qatranah No.26 Well	200178461	Laboratories Dept./Quality		24-Jan-08	0:00:00	Chloride	91.59	mg/L
WEQAT26	Qatranah No.26 Well	200178463	Drilling Dept./Pumping Test		25-Jan-08	0:00:00	Chloride	98.69	mg/L
WEQAT26	Qatranah No.26 Well	200178467	Laboratories Dept./Quality		23-Jan-08	0:00:00	Chloride	101.18	mg/L
WEBEER3	Beerain No. 3 (Shafa Badran 3) Well	200178492	Zarqa Gov. Water Adm.	AL3364	27-Jan-08	0:00:00	Chloride	152.65	mg/L
WEYARMO	Yarmouk Well	200178670	Water R&E Unit		28-Jan-08	0:00:00	Chloride	36.21	mg/L
WEAHMAF	Ahmad Fares Fandi Well	200178671	Water R&E Unit	AD1251	28-Jan-08	0:00:00	Chloride	383.4	mg/L
WEMAH45	Mahasi 5 Well	200178672	Water R&E Unit	AD1296	28-Jan-08	0:00:00	Chloride	430.62	mg/L
WESUL3A	Sultaneh No.3A Well	200179039	Water Res. & Plan. / G. Water	CD3311	29-Jan-08	0:00:00	Chloride	155.85	mg/L
WEHASA2	Hasa No.2 Well	200179040	Water Res. & Plan. / G. Water		29-Jan-08	0:00:00	Chloride	62.13	mg/L
WEABOU6	Abour No.6 Well	200179041	Water Res. & Plan. / G. Water	CF3030	29-Jan-08	0:00:00	Chloride	46.15	mg/L
WEJUTH5	Juthah No.5 Well	200179042	Water Res. & Plan. / G. Water		2-Feb-08	0:00:00	Chloride	72.07	mg/L
WESALEL	Salem and Elyyan Well	200179158	Water Res. & Plan. / G. Water	G 1380	29-Jan-08	0:00:00	Chloride	95.5	mg/L
WEJJKD4	Lajjoun KD4 Well	200179248	Laboratories Dept./Quality	CD3414	4-Feb-08	0:00:00	Chloride	112.54	mg/L
WEJJKD4	Lajjoun KD4 Well	200179392	Laboratories Dept./Quality	CD3414	5-Feb-08	0:00:00	Chloride	119.99	mg/L
WEJJKD4	Lajjoun KD4 Well	200179459	Laboratories Dept./Quality	CD3414	6-Feb-08	0:00:00	Chloride	127.8	mg/L
WEFEIF2	Feifa No. 2 Well	200179603	Water Res. & Planning/spring	DA1010	8-Feb-08	0:00:00	Chloride	116.44	mg/L
WEFEIF3	Feifa No. 3 Well	200179604	Water Res. & Planning/spring	DA1012	8-Feb-08	0:00:00	Chloride	87.33	mg/L
WEMDAVW	Madawwarah Well / Border	200179960	Laboratories Dept./Quality		13-Feb-08	0:00:00	Chloride	124.96	mg/L
WEHLAYY	Hlayyel Mirhej Khalaf Well	200180180	Private Wells Lic. & Wat. Bas.	AL2566	14-Feb-08	0:00:00	Chloride	495.58	mg/L
WEJJKD4	Lajjoun KD4 Well	200180452	Drilling Dept./Pumping Test		17-Feb-08	0:00:00	Chloride	111.77	mg/L



Thank You

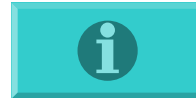
# Entry Forms

- On-line Validation Procedures
- List of Values & LUTs
- Automatic Data Field Calculations
- Security



# Query Forms

- Table Based Query



- Dynamic Queries



## Monthly Water Production Values For Ground Water

<b>Agency Code</b>	WAJ	<b>Agency Name</b>	Water Authority of Jordan
<b>Station ID</b>	AB1000	<b>Station Name</b>	WALEED MOHAMMAD KHAZAR
<b>Palestine North</b>	1218850	<b>Palestine East</b>	212150
<b>Jordan North</b>	604537.313	<b>Jordan East</b>	374104.906
<b>Operator Name</b>	Region Office of Ramtha		
<b>Last Operated By</b>	Region Office of Ramtha		
<b>Water Uses</b>	Irrigation	<b>Year</b>	2006

Month	Production (m <sup>3</sup> /month)	Measurement Method	Comments
1	1273	Metered - Monthly data	Entered from Excel File Reviewed by Ayman
2	1273	Metered - Monthly data	Entered from Excel File Reviewed by Ayman
3	1273	Metered - Monthly data	Entered from Excel File Reviewed by Ayman
4	1273	Metered - Monthly data	Entered from Excel File Reviewed by Ayman
5	1273	Metered - Monthly data	Entered from Excel File Reviewed by Ayman
6	1273	Metered - Monthly data	Entered from Excel File Reviewed by Ayman
7	1273	Metered - Monthly data	Entered from Excel File Reviewed by Ayman
8	1273	Metered - Monthly data	Entered from Excel File Reviewed by Ayman
9	1273	Metered - Monthly data	Entered from Excel File Reviewed by Ayman

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Query

Send to Excel

Excel Chart of Production

Exit

### Chart Options

**Chart Options**

**Group By**

☒ **Yearly Data** Yearly Water Production for selected Water Uses & \

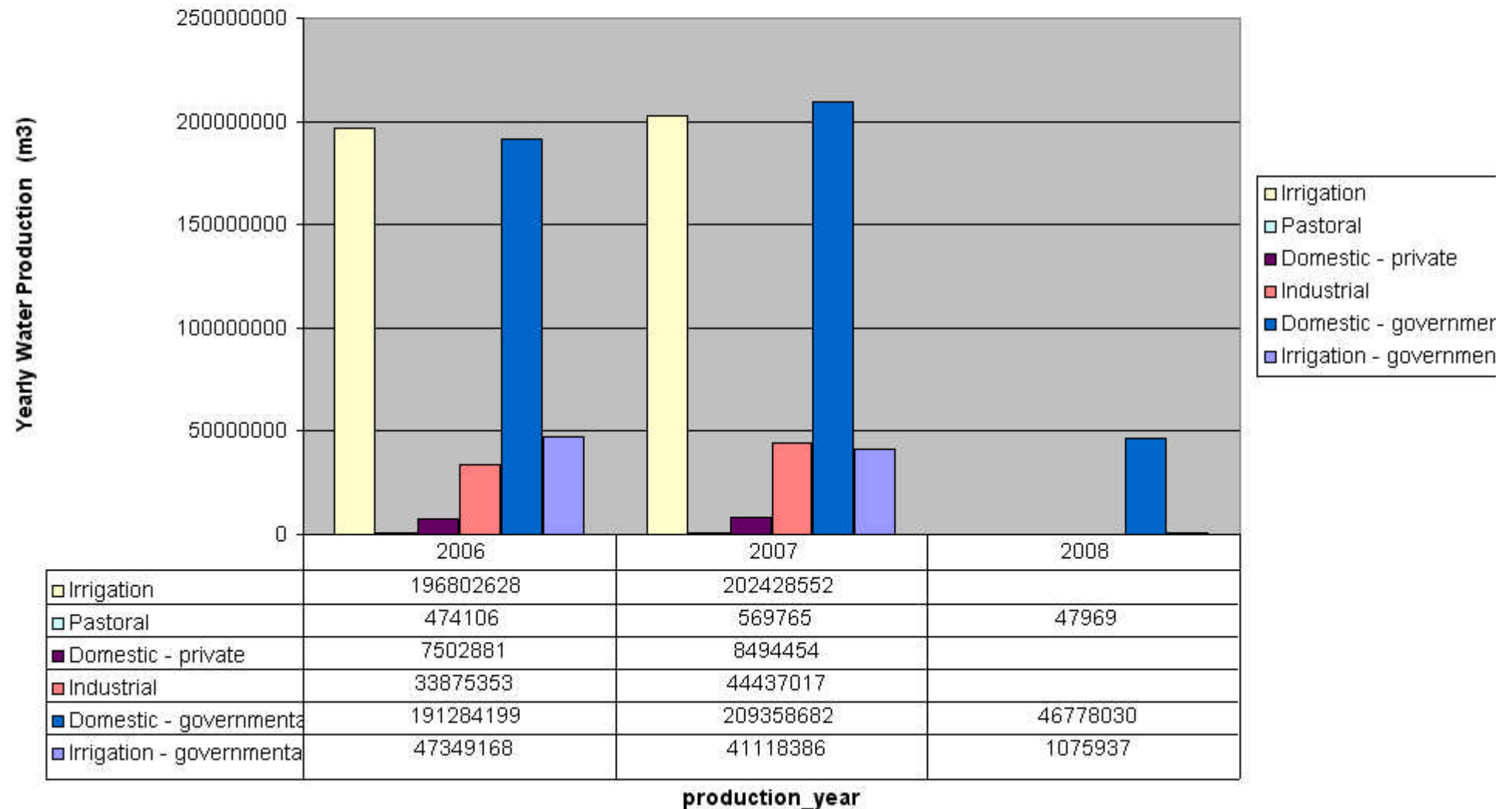
☐ **Monthly Data**

OK EXIT

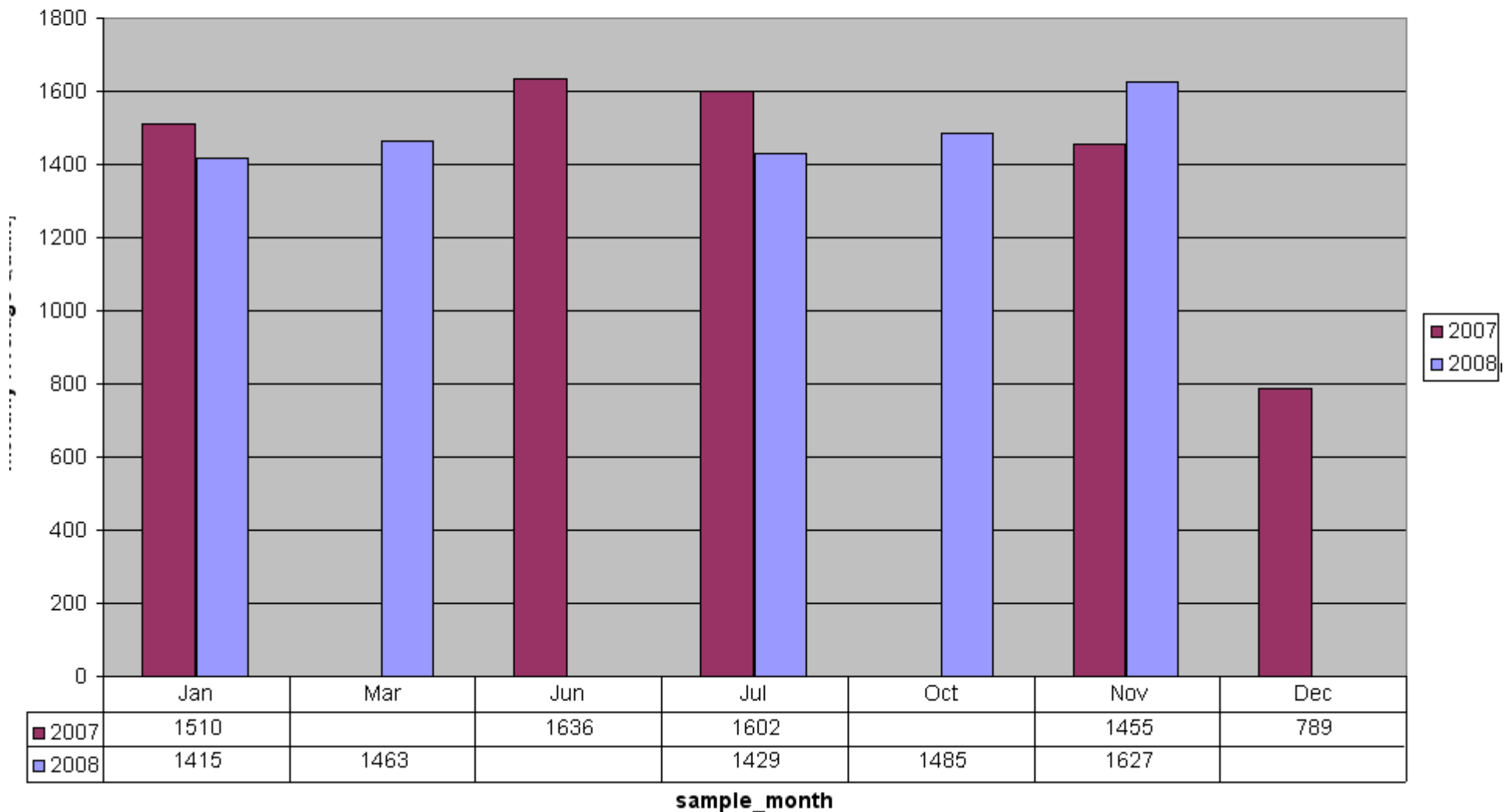




Yearly Water Production (m3)



Monthly Average Quality for Awajan No. 23 Well(WEAWA23) for Electrical Conductivity (Us/cm)



Water Information System - [DEMO\_WINDOW]

Window

Dynamic Query Builder for Water Information

List of Information

View for QA/QC Sample Analysis  
View for Monitoring Station Fixed Equipment  
View for Wells Aquifers Pumping Test  
View for Drinking Water Standards  
View for Water Quality Keys for Monitoring Wells an  
View for Wells Geological Formation Master Keys  
View for Well Aquifer Summary  
View for Water QA/QC Keys  
View for Production Flowmeters  
View for Station Water Uses

List of Information Items

TEST\_DATE  
AQUIFER\_TEST\_TYPE  
PUMP\_TYPE  
ENGINE  
DISCHARGE\_MSRMNT\_METHOD  
RISING\_MAIN  
PUMP\_SETTING  
ORIFICE  
DISCHARGE\_PIPE  
FLOW\_METER  
YIELD

DeletePrintColumn NameColumn HeaderLengthDecimalsTable NameCon

X

✓

AQUIFER\_TEST\_TYPE\_DESC

AQUIFER\_TEST\_TYPE\_DESC

40

VIEW\_AQUIFER\_TESTS

Conditions

X

✓

STATION\_ID

STATION\_ID

10

VIEW\_AQUIFER\_TESTS

Conditions

VIEW\_AQUIFER\_TESTS LIKE 'AB %'

X

✓

YIELD

YIELD

5

0

VIEW\_AQUIFER\_TESTS

Conditions

X

Conditions

Clear all selections

Next

Exit

Water Information System - [DEMO\_WINDOW]

Window

Query Builder Results

Generated Select Statement

Select VIEW\_AQUIFER\_TESTS.AQUIFER\_TEST\_TYPE\_DESC  
"AQUIFER\_TEST\_TYPE\_DESC" VIEW\_AQUIFER\_TESTS.STATION\_ID  
"STATION\_ID" VIEW\_AQUIFER\_TESTS.YIELD "YIELD" From  
VIEW\_AQUIFER\_TESTS STATIONS\_VIEW where  
[STATIONS\_VIEW.station\_type\_code = 3 And

Screen Preview

Output To Excel File

Back

Query Output

AQUIFER_TEST_TYPE_DESC	STATION_ID	YIELD
Constant Yield	AB1000	46
Constant Yield	AB1001	52
Constant Yield	AB1010	62
Constant Yield	AB1012	42
Constant Yield	AB1018	46
Constant Yield	AB1020	127
Constant Yield	AB1024	
Constant Yield	AB1026	50
Constant Yield	AB1028	35
Constant Yield	AB1030	65
Constant Yield	AB1032	75
Constant Yield	AB1036	56
Constant Yield	AB1040	80
Constant Yield	AB1042	15
Constant Yield	AB1044	58
Constant Yield	AB1046	54
Constant Yield	AB1048	55
Constant Yield	AB1050	100
Constant Yield	AB1052	110
Constant Yield	AB1054	250
Constant Yield	AB1056	280
Constant Yield	AB1058	100

Record 1/1

Record: 2/3

# Reporting

Developer/2000 Reports Designer for Windows 95 / NT - [sw\_det1: Previewer]

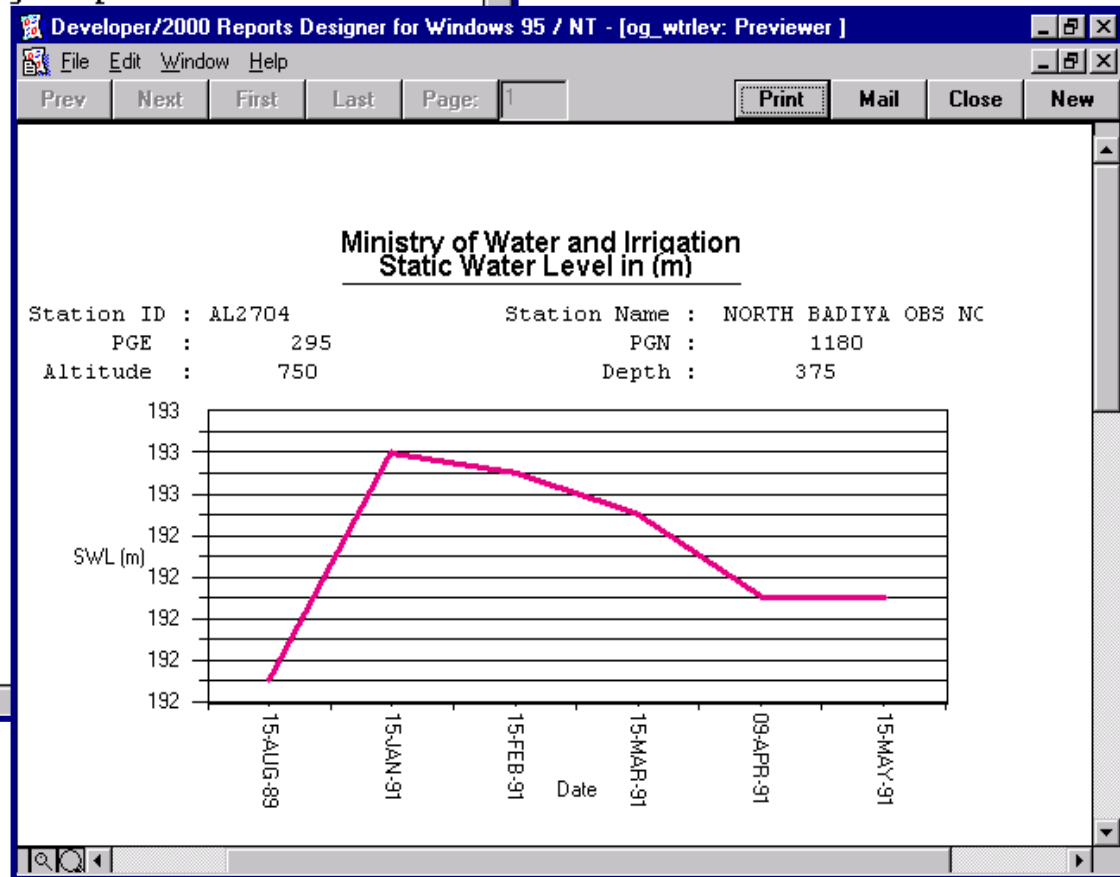
File Edit Window Help

Prev Next First Last Page: 1 Print Mail Close New

Date : 23 MAR 1999 Daily Discharge Report page : 1

Agency : WAJ

Date	Discharge
01-OCT-81	.026
02-OCT-81	.026
03-OCT-81	.026
04-OCT-81	.026
05-OCT-81	.026
06-OCT-81	.026
07-OCT-81	.026
08-OCT-81	.026
09-OCT-81	.026
10-OCT-81	.026
11-OCT-81	.026
12-OCT-81	.026
13-OCT-81	.026
14-OCT-81	.026
15-OCT-81	.026
16-OCT-81	.026



- General WIS Station Information* ▶
- Water Resources Time Series Data* ▶
- Facility Monitoring System* ▶
- Water Production Data* ▶
- Water Use System* ▶
- NWMP Support Tables* ▶
- Water Reuse* ▶

*Exit*

*Welcome  
To The Water  
Information  
System  
Databases*



## Select Pre-Processing Module

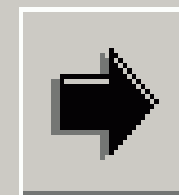
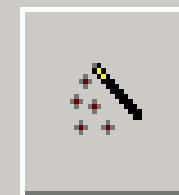
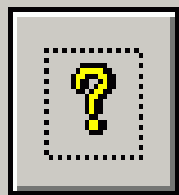
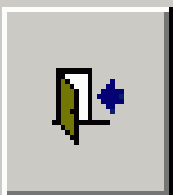
### Pre-Processing Modules

#### Demands

- ☒ Municipal
- ☐ Touristic
- ☐ Industrial
- ☐ Losses

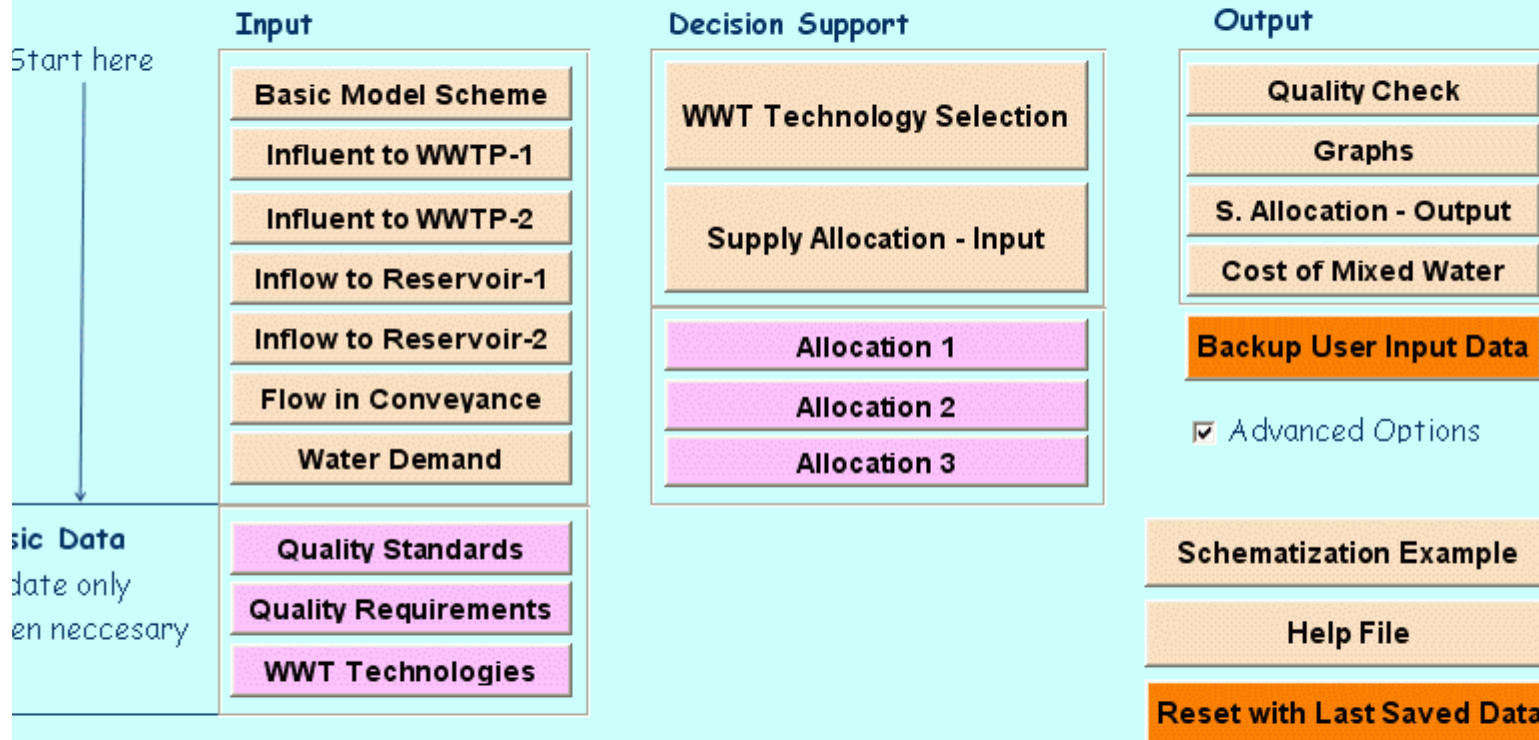
#### Resources

- ☐ Waste Water
- ☐ Additional Resources



day, March 15, 2009

## Decision Support System for Reuse of Waste Water



## Select main data type

### Digital Visualisation System

#### Monitoring

- ☐ Rainfall monitoring
- ☐ Floodflow and baseflow monitoring
- ☐ Groundwater monitoring
- ☐ Water production and billing
- ☐ Wastewater (historic)
- ☐ Irrigation data

#### Projections

##### Demands

- ☒ Municipal demands
- ☐ Industrial demands
- ☐ Touristic demands
- ☐ Irrigation demands
- ☐ -

##### Resources

- ☐ Ground and surface water
- ☐ Wastewater
- ☐ Water transfer
- ☐ Water resources potential
- ☐ Water allocation







Ministry of Water & Irrigation  
وزارة المياه والري



Logout

## This is the Status of Water Sector Performance – June 06

	Water Situation			Financial Status	
	<u>Capital Investment</u>			<u>Project Performance</u>	
	Administrative Affairs			Operations Performance	



no change  
in status



Increasing  
Trend



Decreasing  
Trend



Caution



Bad



Good