

Annex 3-5: Environmental Monitoring Plan

3.5.1 Environmental Monitoring Plan 2006

(1) Basic Water Quality (14 DFEAs)

Environmental Monitoring (EMO) Plan

Re. No. 001 Damascus DFEA (28 / 2 / 2006)

Prepared by Ms. Reem Sadr Eddin

Sign: Director of Damascus DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Damascus DFEA in accordance with the Law No. 50. The Damascus DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Damascus Governorate.

2. Objectives of the Environmental Monitoring

- (1) Analyzing industrial waste water of different polluting factories.
- (2) Monitoring and analyzing the water of Barada River and its tributes within Jobar area and the surrounding area.

3. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	10 stations	1) Tanneries 2) Ihda Ashariyeh area 3) Textile company 4) Wella factory for shampoo 5) Fa factory for soap 6) Zamzam factory 7) Tillo factory 8) Javail factory 9) Metal coating factory 10) Halawani factory for halva	
B. River Water	3 stations	Tora tribute Dayani tribute Akrobani tribute	To cover Jobar area reaching to Bab Salam and Damascus citadel
C. Domestic Wastewater			
D. Others			

4. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) Tanneries	-once/ 2 months	- 6times
	2) Ihda Ashariyeh area	- once/ 2 months	- 6 times
	3) Textile company	- once/ 2 months	- 6 times
	4) Wella factory for shampoo	-once/ month	- 12 times
	5) Fa factory for soap	-once/ month	- 12 times
	6) Zamzam factory	-once/ month	- 12 times
	7) Tillo factory	-once/ month	- 12 times
	8) Javail factory	-once/ month	- 12 times
	9) Metal coating factory	-once/ month	- 12 times
	10) Halawani factory for halva	-once/ month -once/ month	- 12 times - 12 times
B. Municipal Wastewater	Tora tribute	- once/ month	- 12 times
	Dayani tribute	- once/ month	- 12 times
	Akrabani tribute	- once/ month	- 12 times

Number of samples per year is /138/

5. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Rivers & Lakes
Field Measurements			
(1)	pH	<input type="radio"/>	<input type="radio"/>
(2)	Water temp	<input type="radio"/>	<input type="radio"/>
(3)	TDS	<input type="radio"/>	<input type="radio"/>
(4)	EC	<input type="radio"/>	<input type="radio"/>
(5)	SS	<input type="radio"/>	<input type="radio"/>
(6)	DO	<input type="radio"/>	<input type="radio"/>
Lab Measurements			
(7)	COD	<input type="radio"/>	<input type="radio"/>
(8)	BOD5	<input type="radio"/>	<input type="radio"/>
(9)	NO3-	<input type="radio"/>	<input type="radio"/>
(10)	PO4 ³⁻	<input type="radio"/>	<input type="radio"/>
(11)	Cl-	<input type="radio"/>	<input type="radio"/>
(12)	NH3-N	<input type="radio"/>	<input type="radio"/>
(13)	Turbidity	<input type="radio"/>	<input type="radio"/>
(14)	Color	<input type="radio"/>	<input type="radio"/>

6. Analysis Method

Parameters	Analysis Method	Note
1) pH, temp.	Electrode method	
2)EC, TDS	Electrode method	
3) DO	Electrode method	
4) SS	Photometric method	
5) COD	Reactor digesting method	
6) BOD	Pressure sensor method	
7) NO ₃ -N	Cadmium reduction method	
8) PO ₄	Amino acid method	
9) Cl	Silver nitrate method	
10) NH ₃ -N	Salicilate method	
11) Turbidity	Niphilometric method	
12) Color	Platinum-cobalt method	

7. Record of Data and Publication

- (1)Record in DFEA
- (2)Record in the Directorate of Laboratories in GCEA
- (3)Record in Governorate
- (4)Data Book preparation
- (5)Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	in charge	Period	Note
1) Reem Sadr Eddin	Lab chief	Since the beginning of the project	
2) Inas Wippy	Water quality	Since the beginning of the project	
3) Iman Sulayman	Water quality	Since the beginning of the project	
4) Ranya Sulayman	Water quality	Since the beginning of the project	
5) Layla aL Durra	Water quality	Since the beginning of the project	

8.2 Others

Environmental Monitoring (EMO) Plan

Re. No. 001 Damascus Countryside DFEA (5/ 2/ 2006)

Prepared by. Ms. Mouna Juma`a

Sign: Director of DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the_Damascus Countryside DFEA in accordance with the Law No. 50. The Damascus Countryside_DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of_Damascus Countryside Governorate.

2. Objectives of the Environmental Monitoring

- (1) Industrial waste water
- (2) Domestic waste water used for irrigation
- (3) Underground water

3. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	Under ground water
1. Field Measurement						
(1)	EC	○	○			○
(2)	TDS	○	○			○
(3)	pH	○	○			○
(4)	DO	x	x			x
(5)	Temp.	○	○			○
(6)	Flow rate	○	○			○
2. Laboratory Analysis						
(1)	Color	x	x			○
(2)	SS	○	○			x
(3)	COD	○	○			○
(4)	BOD	○	○			○
(5)	NO ₃ -N	○	○			○
(6)	PO ₄	○	○			○
(7)	Cl	○	○			x
(8)	NH ₃ -N	○	○			○
(9)	Turbidity	x	x			○
(10)	Biological	○	○			○
(11)	Heavy metals	○	x			x

4 - Sampling Stations

Water Body	No. of Stations	Location	Note
A. Industrial Wastewater	46 stations in addition to emergency cases and complaints	1- Ashrafiet Sahnaya 2- Sahnaya 3- Harasta 4- Adra 5- Melaiha 6- Dai Salman 7- Drousha 8- Rihan 9- Hitaitat Turkuman 10- Mesraba 11- Khiyarat Danoun 12- Shifouniyeh 13- Hala 14- Adliyah	
B. Municipal Wastewater	1 stations	Sebaina	
C. Rivers and Lakes	1 stations	Mlaiha	
D. Seas and Coastal Areas			
E. Under ground water	2 stations 1 station	Shifouniyeh Rihan	The well of Shifouniyeh is used for dirking and the tow wells of Rihan are used for irrigation.

Location map is attached to the Arabic version

5 - Monitoring Period and Frequency

The period of environmental monitoring is from Jan 1st to Dec. 31, 2006 and the frequency is shown below.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) Bitar chemicals	4 months	3 times
	2) Al Bizreh for paints	4 months	3 times
	3) Bergli for paints	6 months	2 times
	4) Marini for cosmetics Sibal for biscuits	6 months	2 times
	5) Shaik Saed detergents Al Sharq dairy	6 months	2 times
	6) Rafeek Munla paints	4 months	3 times
	7) Sar for detergents Hajer for Glycerin	6 months	2 times
	8) Faez Kasas paints	6 months	2 times
	9) Ghassan Sukar detergents	4 months	3 times
	10) Amin Shehada paints	4 months	3 times
	11) Baba paints	4 months	3 times
	12) Ahmad Fallaha shampoo	4 months	3 times

	13) SSairawan detergents	6 months	2 times
	14) Mawlawi detergents	6 months	2 times
	15) Halabi shampoo	6 months	2 times
	16) Halal detergents	6 months	2 times
	17) Haboub detergents` raw materials	4 months	3 times
	18) Khan Shakour paints		
	19) Atriba for oxide compounds	6 months	2 times
	20) Shark for medicines	6 months	
	21) Inaya for fertilizers	4 months	3 times
	22) Oil processing	6 months	2 times
	23) Reema for cosmetics	6 months	3 times
	24) Aabdin for medicines	6 months	3 times
	25) Skaif for medicines	6 months	2 times
	26) Oil packing	6 months	2 times
	27) Adamco for medicines	6 months	2 times
	28) Zubi for dyes	6 months	2 times
	29) Haffar for chemicals	4 months	3 times
	30) Chemical dyes	6 months	2 times
	31) Hallak oil	6 months	2 times
	32) Wahbi dyes	6 months	2 times
	33) Khalil for medicines	6 months	2 times
	34) Nader Hallak for soap	6 months	2 times
	35) Aboud for tapes	6 months	2 times
	36) Nama for detergents	4 months	3 times
	37) Karim for metal oil	6 months	2 times
	38) Sankar for metal oil	6 months	2 times
	39) Hamoud for silicon	6 months	2 times
	40) Chemical dyes	6 months	2 times
	41) Jumaa for paste materials	6 months	2 times
	42) Azmeh for paints	4 months	3 times
	43) Solufan factory	6 months	2 times
	44) Madar detergents	6 months	2 times
	45) Bico paints	6 months	2 times
	46) Alf for metal oil	4 months	3 times
B. Municipal Wastewater	1- Sebaina channel	4 months	3 times
C. Rivers and Lakes	Barada river tribute	4 months	3 times
D. Seas and Coastal Areas			
E. Wells	1- Shaifouniyeh well of irrigation	6 months	2 times
	2- Shaifouniyeh well of drinking	6 months	2 times
	2- Rihan well for irrigation	6 months	2 times

6. Analysis Method

Parameters	Analysis Method	Note
1) pH	Electrode method	
2) Temp	Thermometer	
3) EC	Electrode method	
4) TDS	Electrode method	Water temp. by pH meter
5) DO	Electrode method	
6) Color	Platinum-cobalt APHA	
7) SS	Photometric method	
8) COD	Reactor digesting method	In addition to the incubator
9) BOD	Pressure sensor method	
10) NO ₃ -N	Cadmium reduction method	
11) PO ₄	Amino acid method	
12) Cl ⁻	Silver nitrate method	
13) NH ₃ -N	Salicilate method	
Turbidity	Niphilometric method	

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Muna Juma`a	Lab chief	Lab management & reagents	July 10, 2005 to	
2) Muneer Sarhan	staff	Equipment	June 12, 2005 to	
3) Aeda Halawik	staff	Computer & camera	March 15, 2005 to	Data management
4) Malek Sulayman	staff	Glassware	Aug. 3, 2005 to	
5) Ranya Qara`awi	staff	Air quality equipment	Feb. 8, 2006 to	
6) Shireen Awad	staff		Feb. 1, 2006 to	

8.2 Others

The staff of the lab. will carry out all works of the lab, such as pre-visit to sites, analysis, cleaning, and lab safety.

There is lack of lab facilities such as air conditioner, curtains, cases and staff.

End

Environmental Monitoring (EMO) Plan

Re. No. 001 Aleppo DFEA (14/ 2/ 2006)

Prepared by Ahmad Ahmad, Mouhammad Rashid, Mouhammad Hamadeh (Lab staff)

Sign: Director of Aleppo DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Aleppo DFEA in accordance with the Law No. 50. The Aleppo DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Aleppo Governorate.

2. Objectives of the Environmental Monitoring

- (1) Monitoring industrial waste water resulted from industrial establishments to check conformity to Syrian Standards.
- (2) Monitoring industrial waste water to know if it conforms to the Syrian Standards
- (3) Monitoring underground water used for drinking in two areas, one of which there are many industrial establishments and the other is with few industrial establishments.

3. Monitoring Stations

Water Body	No. of Stations	Location	Note
Industrial waste water	25 stations	Al Anis- Jandoul intersection	Dying factory
		Muhammad Ali Mallah- airport road	Dying factory
		Makki&Partners- Mansoura	Dying factory
		Obari- Zerba	Medicines
		Asia- Hraitan	Medicines
		Tadfi- Zerba	Sterilizers
		Astikano- Lairmon	Ice-cream factory
		Al Wais- Zerba	Starch factory
		Ka`aka- Mansoura	Dairy factory
		Abdullatif- Atareb	Olive mill
		Bisher Al Naser- Lairmon	Soft drink
		Sabouni- Ebed	Vegitable oil factory
		Abaji- Nakkarin	Detergents factory
		Boushra- Zahraa	Detergents factory
		Yousiko-Zerba	Artificial leather factory
		Khalid Hababa- Kafer Naha	Natural leather factory
		Omar Kattash- Ramousa	Tannery
		Dlaiwani- Ramousa	Tannery
		Riad Hraitani- Tayara	Metallic oil factory
		Ayman Tarakji- Zerba	Shoe polish factory
Solid waste composite-Bab road	Composite factory		
Sarkis Kiwanyan-Shakif	Ethyl alcohol factory		
Badinjki- Asal Khan	Paper factory		
Al Tahhan- Andan	Pesticide factory		
		Kallab& Kzaibra- Shamer	Pesticide factory
Underground water	2 stations	A well in south of Aleppo	Assan village
		A well in north of Aleppo	Kafer Hamzeh village

4. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Frequency	Times	Location	Note
Once / 4 months	3 times	Al Anis- Jandoul intersection	Dying factory
Once / 4 months	3 times	Muhammad Ali Mallah-airport road	Dying factory
Once / 4 months	3 times	Makki&Partners- Mansoura	Dying factory
Once / 4 months	3 times	Obari- Zerba	Medicines
Once / 4 months	3 times	Asia- Hraitan	Medicines
Once / 4 months	3 times	Tadfi- Zerba	Sterilizers
Once / 6 months	2 times	Astikano- Lairmon	Ice-cream factory
Once / 4 months	3 times	Al Wais- Zerba	Starch factory
Once / 4 months	3 times	Ka`aka- Mansoura	Dairy factory
Once / year	1 times	Abdullatif- Atareb	Olive mill
Once / 4 months	3 times	Bisher Al Naser- Lairmon	Soft drink
Once / 4 months	3 times	Sabouni- Ebed	Vegetable oil factory
Once / 4 months	3 times	Abaji- Nakkarin	Detergents factory
Once / 4 months	3 times	Boushra- Zahraa	Detergents factory
Once / 4 months	3 times	Yousiko-Zerba	Artificial leather factory
Once / 4 months	3 times	Khalid Hababa- Kafer Naha	Natural leather factory
Once / 4 months	3 times	Omar Kattash- Ramousa	Tannery
Once / 4 months	3 times	Dlaiwani- Ramousa	Tannery
Once / 4 months	3 times	Riad Hraitani- Tayara	Metallic oil factory
Once / 4 months	3 times	Ayman Tarakji- Zerba	Shoe polish factory
Once / 4 months	3 times	Solid waste composite-Bab road	Composite factory
Once / 4 months	3 times	Sarkis Kiwanyan-Shakif	Ethyl alcohol factory
Once / 4 months	3 times	Badinjki- Asal Khan	Paper factory
Once / 4 months	3 times	Al Tahhan- Andan	Pesticide factory
Once / 4 months	3 times	Kallab& Kzaibra- Shamer	Pesticide factory
Once / year	1 times	A well in south of Aleppo	Assan village
Once / year	1 times	A well in north of Aleppo	Kafer Hamzeh village

5. Parameters to be Analyzed and Monitored

Lab analysis	Field analysis	Location	Note
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Al Anis- Jandoul intersection	Dying factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Muhammad Ali Mallah-airport road	Dying factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Makki&Partners- Mansoura	Dying factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Obari- Zerba	Medicines

Lab analysis	Field analysis	Location	Note
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Asia- Hraitan	Medicines
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Tadfi- Zerba	Sterilizers
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Astikano- Lairmon	Ice-cream factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Al Wais- Zerba	Starch factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Ka`aka- Mansoura	Dairy factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Abdullatif- Atareb	Olive mill
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Bisher Al Naser- Lairmon	Soft drink
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Sabouni- Ebed	Vegitable oil factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Abaji- Nakkarin	Detergents factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Boushra- Zahraa	Detergents factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Yousiko-Zerba	Artificial leather factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Khalid Hababa- Kafer Naha	Natural leather factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Omar Kattash- Ramousa	Tannery
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Dlaiwani- Ramousa	Tannery
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Riad Hraitani- Tayara	Metallic oil factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Ayman Tarakji- Zerba	Shoe polish factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Solid waste composite- Bab road	Composite factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Sarkis Kiwanyan-Shakif	Ethyl alcohol factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Badinjki- Asal Khan	Paper factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Al Tahhan- Andan	Pesticide factory
SS- COD- BOD- PO4- Cl-NH3	pH-temp-TDS	Kallab& Kzaibra-Shamer	Pesticide factory
SS- COD- BOD- PO4- Cl-NH3- NO3- turbidity-color	pH-temp-TDS-EC-DO	underground well in south of Aleppo	Assan village
SS- COD- BOD- PO4- Cl-NH3- NO3- turbidity-color	pH-temp-TDS-EC-DO	underground well in north of Aleppo	Kafer Hamzeh village

6. Analysis Method

Parameters	Analysis Method	Note
1) pH	Electrode method	
2) Temp	Thermometer	
3) EC	Electrode method	
4) TDS	Electrode method	
5) DO	Electrode method	
6) Color	Platinum-cobalt APHA	
7) SS	Photometric method	
8) COD	Reactor digesting method	
9) BOD	Pressure sensor method	
10) NO3-N	Cadmium reduction method	
11) PO4	Amino acid method	
12) Cl-	Silver nitrate method	
13) NH3-N	Salicilate method	
14) Turbidity	Niphilometric method	

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	In charge	Period	Note
1) Ahmad Ahmad	Eng. Lab chief	Equipment & sampling tools	Jan 2006-Dec 2006	
2) Muhammad Rashid	Eng	Reagents & glassware	Jan 2006-Dec 2006	
3) Muhammad Hamadeh	Economist	Lab safety	Jan 2006-Dec 2006	

8.2 Others

Environmental Monitoring (EMO) Plan

Re. No. 001 Homs DFEA (8/ 2/ 2006)

Prepared by Chief of Central Lab

Sign: Director of Homs DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Homs DFEA in accordance with the Law No. 50. The Homs DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Homs Governorate.

2. Objectives of the Environmental Monitoring

- (1) Evaluating pollution resulted from industrial establishments and discharged into water bodies.
- (2) Evaluating the efficiency of treatment facilities of the industrial establishments.
- (3) Estimating the need for industrial establishments to construct treatment facility.
- (4) Evaluating pollution load to water bodies, rivers and underground water.
- (5) Evaluating the relation between the measured pollutants and the resulted health damages.

3. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	E. Others
1. Field Measurement						
	(1) pH, temp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
	(2) TDS, EC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
	(3) DO	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
2. Laboratory Analysis						
	Color, turbidity, SS, PO4, NO3, NO2, Cl, NH3, BOD, COD, SO4	Ions, BOD, COD	COD, BOD, NH3, NO3, PO4	Ions, BOD, COD, color, turbidity		Ions, Cl2

4. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	8 stations	1) fertilizers company, consists 3 factories: - Cilantro fertilizer factory - Ammonia fertilizer factory - TSP factory	
	6 stations	2) Refinery consists several oil products sections and a treatment facility	
	3 stations	3) military workshop	
	1 station	4) olive oil mill	
	2 stations	5) oil factory (Anbouba)	
	2 stations	6) oil factory (Jubran)	
	2 stations	7) oil factory (Farzat)	
	2 stations	8) dairy factory	
	2 stations	9) Tayba dairy	

Water Body	No. of Stations	Locations	Note
	2 stations 2 stations 2 stations 2 stations 2 stations 5 stations	10) Beverage factory 11) Ice-cream factory (Samba) 12) medicine factory (Midico) 13) dying factory (Jajeh) 14) textile factory 15) textile and dyes factory (Alamia) 16) Sugar company and its factories.	
B. Municipal Wastewater	2 stations 4 stations	1) sewage water treatment station 2) industrial area	
C. Rivers and Lakes	4-6 stations 6-8 stations	1) Katineh lake 2) Orontis river	
D. Seas and Coastal Areas			
E. Underground water	4-6 stations	Wells that supply drinking net of the city	

4. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	45 stations	- once/ 3 months	- 4 times
B. Municipal Wastewater	6 stations	- once/ 3 months	- 4 times
C. Rivers and Lakes	10 -14 stations	- once/ 3 months	- 4 times
D. Underground Water	4 -6 stations	- once/ 6 months	- 2 times
E. Others			

6. Analysis Method

Parameters	Analysis Method	Note
1) pH	Electrode method	
2) Temp	Thermometer	
3) EC	Electrode method	
4) TDS	Electrode method	
5) DO	Electrode method	
6) Color	Platinum-cobalt APHA	
7) SS	Photometric method	
8) COD	Reactor digesting method	
9) BOD	Pressure sensor method	
10) NO3-N	Cadmium reduction method	
11) PO4	Amino acid method	
12) Cl-	Silver nitrate method	
13) NH3-N	Salicilate method	
14) Turbidity	Niphilometric method	

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Muhammad Ali Husein	Lab chief	Analysis, measurements, result evaluation, solutions suggestion and work development		
2) Sanaa Mansour	Chief of water analysis section	Water quality		
3) Etidal Awad	Mobile lab	Mobile lab		
4) Rasha Jabour	Material storage	Water quality Data management		
5) Hiba Kassab	Air analyzer	Air quality		
6) Lubna Ahmad	Water analyzer	Water analyzer		
7) Nidaa Toghaji	Water analyzer	Water analyzer		

8.2 Others

Environmental Monitoring (EMO) Plan

Re. No. 001 Hama DFEA (15/ 2/ 2006)

Prepared by the staff of Hama DFEA ,

Sign: Director of Hama DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Hama DFEA in accordance with the Law No. 50. The Hama DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Hama Governorate.

2. Objectives of the Environmental Monitoring

- (1) Monitoring the industrial waste water.
- (2) Monitoring the water quality of Orontis River.
- (3) Monitoring underground water
- (4) Following up complaints

3. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	E. Others
1. Field Measurement						
	(1) pH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
	(2) EC / TDS	<input type="radio"/>	<input type="radio"/>	-		<input type="radio"/>
	(3) DO	-	-	<input type="radio"/>		-
	(4) Water temp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
2. Laboratory Analysis						
	(1) Color	-	-	<input type="radio"/>		<input type="radio"/>
	(2) Turbidity	-	-	<input type="radio"/>		<input type="radio"/>
	(3) Cl-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
	(4) NO3-N	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
	(5) NH3-N	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
	(6) PO4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>
	(7) SS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-
	(8)COD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>

4. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	26 stations	1) Sami factory 2) Al Ras dairy factory 3) Salora factory 4) Zarabana factory 5) Hani dairy factory 6) Dairy factories within Hama city 7) Karnazi oil factory 8) Khodor Razzaq oil factory 9) Zuhour oil factory 10) Nawaer oil factory	

Water Body	No. of Stations	Locations	Note
		11) Al Safa oil factory 12) Al Nour oil factory 13) Umara oil factory 14) Ahliyeh company for oil 15) Fadel oil factory 16) Hama company for oil 17) Galvanizing factory 18) Wool factory 19) Cotton thread factory 20) Porcelain factory 21) Iron factory 22) Onion factory 23) Majd company for soft drinks 24) Cement factory 25) Al Zara station for power generating 26) Mhardeh station for power generating	
B. Municipal Wastewater	1 station	Swage water treatment station in Hama	
C. Rivers and Lakes	1 station	Orontis River	
D. Underground Water			As needed, such as complaints
E. Others			In case of complaints

Location map is attached to the Arabic version

5. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) Sami factory	once/ month	10 times
	2) Al Ras dairy factory	once/ month	10 times
	3) Salora factory	once/ month	10 times
	4) Zarabana factory	once/ month	10 times
	5) Hani dairy factory	once/ month	10 times
	6) Dairy factories within Hama city	once/ month	10 times
	7) Karnazi oil factory	once/ 2 months	5 times
	8) Khodor Razzaq oil factory	once/ 2 months	5 times
	9) Zuhour oil factory	once/ 2 months	5 times
	10) Nawaeer oil factory	once/ 2 months	5 times
	11) Al Safa oil factory	once/ 2 months	5 times
	12) Al Nour oil factory	once/ 2 months	5 times
	13) Umara oil factory	once/ 2 months	5 times
	14) Ahliyeh company for oil	once/ 2 months	5 times

	15) Fadel oil factory 16) Hama company for oil 17) Galvanizing factory 18) Wool factory 19) Cotton thread factory 20) Porcelain factory 21) Iron factory 22) Onion factory 23) Majd company for soft drinks 24) Cement factory 25) Al Zara station for power generating 26) Mhardeh station for power generating	once/ 2 months once/ month once/ 2 months once/ 2 months once/ 2 months once/ 2 months once/ month once/ 2 months once/ 2 months once/ 2 months once/ 2 months	5 times 10 times 5 times 5 times 5 times 10 times 5times 5 times 5 times 5 times
B. Municipal Wastewater	Swage water treatment station in Hama	Once/ month	10 times
C. Rivers and Lakes	Orontis River	Once/ month	10 times
D. Wells			
E. Complaints			

6. Analysis Method

Parameters	Analysis Method	Note
1) pH	Electrode method	
2) Temp	Thermometer	
3) EC	Electrode method	
4) TDS	Electrode method	
5) DO	Electrode method	
6) Color	Platinum-cobalt APHA	
7) SS	Photometric method	
8) COD	Reactor digesting method	
9) BOD	Pressure sensor method	
10) NO3-N	Cadmium reduction method	
11) PO4	Amino acid method	
12) Cl-	Silver nitrate method	
13) NH3-N	Salicilate method	
14) Turbidity	Niphilometric method	

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1)Rana Wardeh	Chem. Eng.	Lab chief	Jan 2006-Dec 2006	
2) Reem Qanbar	Chem. Eng.	Water quality		
3) Hiba Khouri	Chem. Eng.	Water quality		
4) Nameer Warar	Civil . Eng.	Water quality/ Data management		
5) Yusra Tayfour	Civil . Eng.	Water quality		

8.2 Others

Type	Station	Mar.				Apr.				May				Jun.				Jul.				Aug.				Sep.				Oct.				Nov.				Dec.				Total
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
Industrial Waste Water	Sami factory	•				•				•				•				•				•				•				•				•				•				10
	Al Ras dairy	•				•				•				•				•				•				•				•				•				•				10
	Salora dairy		•				•				•				•				•				•				•				•				•				•			10
	Rubana dairy		•				•				•				•				•				•				•				•				•				•			10
	Hani dairy			•				•				•				•				•				•				•				•				•				•		10
	Dairies within Hama			•				•				•				•				•				•				•				•				•				•		10
	Galvanizing factory			•				•				•				•				•				•				•				•				•				•		10
	Karnazi for oil		•				•				•				•				•				•				•				•				•				•			5
	Abdul Razzq for oil		•				•				•				•				•				•				•				•				•				•			5
	Zuhour for oil	•							•				•				•				•				•				•				•				•				•	5
	Nawaer for oil	•							•				•				•				•				•				•				•				•				•	5
	Safa for oil	•							•				•				•				•				•				•				•				•				•	5
	Nour for oil				•				•				•				•				•				•				•				•				•				•	5
	Umara for oil				•				•				•				•				•				•				•				•				•				•	5
	Ahliyeh for oil								•				•				•				•				•				•				•				•				•	5
	Fadel for oil								•				•				•				•				•				•				•				•				•	5
	Hama company for				•				•				•				•				•				•				•				•				•				•	5
	Onion factory				•				•				•				•				•				•				•				•				•				•	10
	Porcelain factory		•						•				•				•				•				•				•				•				•				•	5
	Wool factory			•					•				•				•				•				•				•				•				•				•	5
	Cotton thread factory			•					•				•				•				•				•				•				•				•				•	5
	Iron factory				•				•				•				•				•				•				•				•				•				•	5
	Cement factory				•				•				•				•				•				•				•				•				•				•	5
	Zara power station								•				•				•				•				•				•				•				•				•	5
		Muhardeh power station								•				•				•				•				•				•				•				•				•
	Majd for soft drinks								•				•				•				•				•				•				•				•				•	5
Sewage	Hama treatment station				•				•				•				•				•				•				•				•				•				•	10
Rivers	Orontis river				•				•				•				•				•				•				•				•				•				•	10

Ground Total of Sample Number **185**

Environmental Monitoring (EMO) Plan

Re. No. 001 Lattakia DFEA (8/ 2/ 2006)

Prepared b Ms. Amal Merhej

Sign: Director of Lattakia DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Lattakia DFEA in accordance with the Law No. 50. The Lattakia DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Lattakia Governorate.

2. Objectives of the Environmental Monitoring

- (1) Identifying and surveying pollution sources
- (2) Analyzing industrial and municipality waste water
- (3) Identifying the water quality of rivers and lakes
- (4) Identifying pollution indicators in the samples
- (5) Evaluating and inputting data

3. Parameters to be Analyzed and Monitored

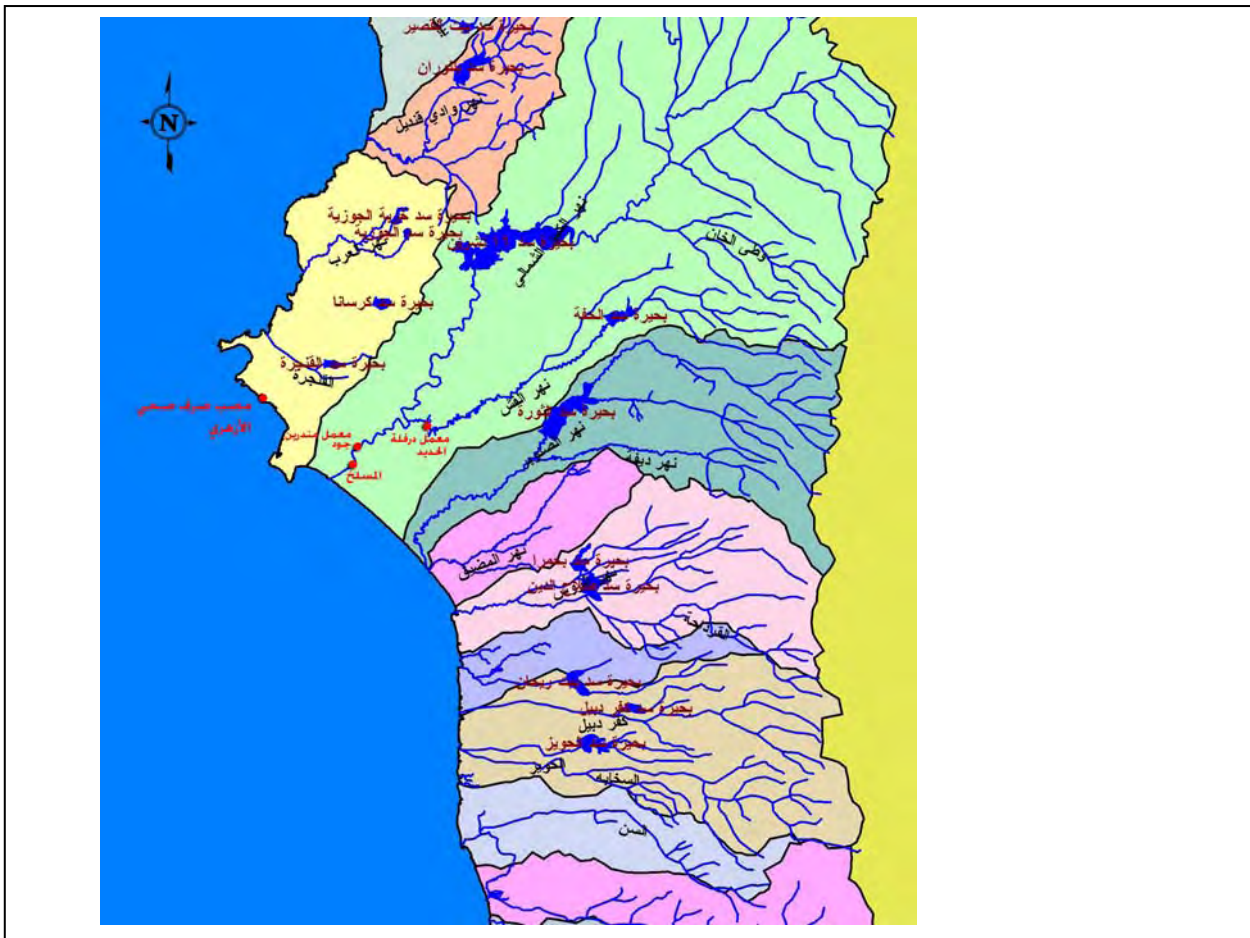
No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	E. Others
1. Field Measurement						
(1)	pH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(2)	Temperature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(3)	DO	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(4)	TDS/ EC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Laboratory Analysis						
(1)	Color	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(2)	COD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(3)	BOD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(4)	NO3-N	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(5)	PO4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(6)	Cl-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(7)	NH3-N	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(8)	SS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(9)	Turbidity	<input type="radio"/>	-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(10)	Flow rate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	7 stations	1) Joud for soft drink 2) Aluminum & engines factory 3) paper tissues factory	- Lattakia- Bassa - Aleppo road - Jableh- Sarhan

Water Body	No. of Stations	Locations	Note
		4) Ugarit for food processing 5) iron molding factory 6) Lattakia slaughterhouses 7) Jableh slaughterhouse	- Jableh- Katlabiyeh - Tartous high way - Yaroubiyeh - Jableh- Bsaisin
B. Municipal Wastewater	4 stations	1) Azhari 2) the harbor 3) southern coast road 4) Al Fayd	- Lattakia- Azhari - the harbor - Southern coast road - Jableh- Al Fayd
C. Rivers and Lakes	7 stations	1) Kabeer Shamali 2) Al Kash 3) Sharashir 4) Snobar 5) Baloran lake 6) 16 Tishreen 7) Safarkiyeh	- Lattakia - Duba - Sharashir - Snobar - north of Lattakia - east of Lattakia - Kardaha
E. Others	Complaints		

Location Map



5. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) Joud for soft drink	-once/ month	-12 times
	2) Aluminum & engines factory	-once/ month	-12 times
	3) paper tissues factory	-once/ month	-12 times
	4) Ugarit for food processing	-once/ month	-12 times
	5) iron molding factory	-once/ month	-12 times
	6) Lattakia slaughterhouses	-once/ month	-12 times
	7) Jableh slaughterhouse	-once/ month	-12 times
B. Municipal Wastewater	1) Azhari	-once/ month	-12 times
	2) the harbor	-once/ month	-12 times
	3) southern coast road	-once/ month	-12 times
	4) Al Fayd	-once/ month	-12 times
C. Rivers and Lakes	1) Kabeer Shamali	-once/ month	-12 times
	2) Al Sin ?	-once/ month	-12 times
	3) Sharashir	-once/ 2 months	- 6 times
	4) Snobar	-once/ 2 months	- 6 times
	5) Baloran lake	-once/ 2 months	- 6 times
	6) 6 Tishreen	-once/ 2 months	- 6 times
	7) Safarkiyeh	-once/ 2 months	- 6 times
E. Others	Complaints	-once/ month	-12 times

6. Analysis Method

Parameters	Analysis Method	Note
1) pH	Electrode method	Portable pH meter mg/l
2) Temp	Thermometer	Portable pH/ TDS meter mg/l
3) EC	Electrode method	Portable EC/TDS meter mg/l
4) TDS	Electrode method	Portable EC/TDS meter mg/l
5) DO	Electrode method	Portable DO meter mg/l
6) Color	Platinum-cobalt APHA	Portable colorimeter mg/l
7) SS	Photometric method	Portable colorimeter mg/l
8) COD	Reactor digesting method	Portable colorimeter mg/l
9) BOD	Pressure sensor method	OXI Top meter
10) NO3-N	Cadmium reduction method	Portable colorimeter mg/l
11) PO4	Amino acid method	Portable colorimeter mg/l
12) Cl-	Silver nitrate method	Digital titrator mg/l
13) NH3-N	Salicilate method	Portable colorimeter mg/l
14) Turbidity	Niphilometric method	Portable Turbidity meter

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Amal Merhej	Eng. -Lab chief	Water quality	Jan 2006-Dec 2006	
2) Sinan Deeb	Eng.	Water quality	Jan 2006-Dec 2006	
3) Rami Ali	Eng.	Water quality	Jan 2006-Dec 2006	
4) Hadeel Wanous	Chemist assistant	Water quality	Jan 2006-Dec 2006	
5) Suzan Shadoud	Chemist assistant	Water quality	Jan 2006-Dec 2006	
6) Adel Habib	Data management	Data management	Jan 2006-Dec 2006	

8.2 Others

Stations	Site	Feb				March				April				May				June				July				Aug				Sept				Oct				Dec				Jan			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
rivers	Al Kash	#			#				#				#				#				#				#				#				#				#				#				
	Al Shemali	#			#				#				#				#				#				#				#				#				#				#				
	Sharasheer			#								#								#								#												#					
	Snoubar			#								#								#								#												#					
lakes	Ballouran							#								#								#								#								#					
	Tishreen 16							#								#								#								#								#					
	Safarkieh			#								#								#								#								#									
factories	Joud	#			#				#				#				#				#				#				#				#				#				#				
	Aluminum	#			#				#				#				#				#				#				#				#				#				#				
	tissues			#				#				#				#				#				#				#				#				#				#					
	Ogaret			#				#				#				#				#				#				#				#				#				#					
	Drafaleh			#				#				#				#				#				#				#				#				#				#					
	Jableh slaughterhouse			#				#				#				#				#				#				#				#				#				#					
	Lattakia salughterhouse			#								#								#								#								#									
	southern corniche	#			#				#				#				#				#				#				#				#				#				#				
sewage	Azhari	#			#				#				#				#				#				#				#				#				#				#				
	Port	#			#				#				#				#				#				#				#				#				#				#				
	al Faid							#								#												#								#									
	Total of samples		174																																										

Environmental Monitoring (EMO) Plan

Re. No. 001 Deir ez Zor DFEA (7/ 2/ 2006)

Prepared by Mr Saher Abdullah

Sign: Director of DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Deir ez Zor DFEA in accordance with the Law No. 50. The Deir ez Zor DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Deir ez Zor Governorate.

2. Objectives of the Environmental Monitoring

- (1) Monitoring industrial waste water to check if it conforms to Syrian Standards
- (2) Monitoring municipal waste water to check if it conforms to Syrian Standards
- (3) Monitoring agricultural waste water channels to check if it conforms to Syrian Standards
- (4) Checking water quality of the river in certain points to measure the pollution
- (5) Emergencies (complaints)

3. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	3 stations	1) Sugar factory 2) Paper factory 3) Conserves factory	
B. Municipal Wastewater	1 station	Sewage water outlet	
C. Agricultural Wastewater	2 stations	Agricultural waste water channels	
D. Rivers	3 stations	Raw water of the river	- before entering the city - city center - after exiting the city
E. Others			

Location Map (attached with Arabic version)

4. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) Sugar factory	- 3 times during (june, july, aug., sept.)	4 times
	2) Paper factory	- once/ month (starting from March)	10 times
	3) Conserves factory	- once/ 6 months	2 times
B. Municipal	The main outlet	- once/ month	10 times

Water Body	Stations	Frequency	Times (Jan-Dec)
Wastewater		(starting from March)	
C. Agricultural Wastewater	Agricultural waste water channels	- once/ 3 months	4 times
C. Rivers and Lakes	1) entrance to the city 2) city center 3) exit from the city	- once/ 6 months (for 3 stations in the same day)	6 times
D. Seas and Coastal Areas			
E. Emergencies			35
Total			71 times

5. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	E. Others
1. Field Measurement						
(1)	pH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(2)	Water temp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(3)	Air temp.					
(4)	EC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(5)	TDS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(6)	DO	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
2. Laboratory Analysis						
(1)	Color	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(2)	SS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(3)	BOD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(4)	COD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(5)	NO3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(6)	NH3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(7)	PO4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(8)	Cl-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
(9)	Turbidity	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

6. Analysis Method

Parameters	Analysis Method	Note
1) pH	Electrode method	
2) Temp	Thermometer	
3) EC	Electrode method	
4) TDS	Electrode method	
5) DO	Electrode method	
6) Color	Platinum-cobalt APHA	
7) SS	Photometric method	
8) COD	Reactor digesting method	

Parameters	Analysis Method	Note
9) BOD	Pressure sensor method	
10) NO ₃ -N	Cadmium reduction method	
11) PO ₄	Amino acid method	
12) Cl ⁻	Silver nitrate method	
13) NH ₃ -N	Salicilate method	
14) Turbidity	Niphilometric method	

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Saher Abdullah	Agronomist	Lab chief	July, 2005 - now	
2) Omar Malla Ali	Agronomist	Water quality	Has not started yet	
2) Fathiyeh Muwaineh	Chemist	Water quality	July, 2005 - now	
3) Israa Hazza`a	Agronomist	Environmental awareness	July – Oct. 2005	off
4) Raniya Kalash	Agronomist	Environmental awareness	Feb. 2006	

8.2 Others

Station	Location	Jan				Feb				March				April				May				June				July				August				Sept.				Oct.				Nov.				Dec.							
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
Industrial waste-water	(7) km area (sugar)																				+																																
	Housainia (paper)								+				+				+				+																																
	Mayadin (conserves)												+																				+																				
Sewage	Harabesh								+				+				+				+																																
Agricultural waste-water	Mrei'iya								+												+																																
rivers	Before the city																				+																																
	In the city																				+																																
	After the city																				+																																
Total Samples		36 Samples																																																			

Environmental Monitoring (EMO) Plan

Re. No. 001 Idleb DFEA (8/ 1/ 2006)

Prepared by the staff of the lab

Sign: Director of Idleb DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Idleb DFEA in accordance with the Law No. 50. The Idleb DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Idleb Governorate.

2. Objectives of the Environmental Monitoring

- (1) Monitoring the industrial waste water resulted from industrial establishments, to support the environmental inspection activities when the lab is officially approved.
- (2) Monitoring Domestic waste water for the main cities in the governorate to see any change on it.
- (3) Monitoring the quality of underground water (wells) near the potential pollution sources, and to respond complains.
- (4) Monitoring the quality of some important natural resources (rivers, dams) .

3. Parameters to be Analyzed and Monitored

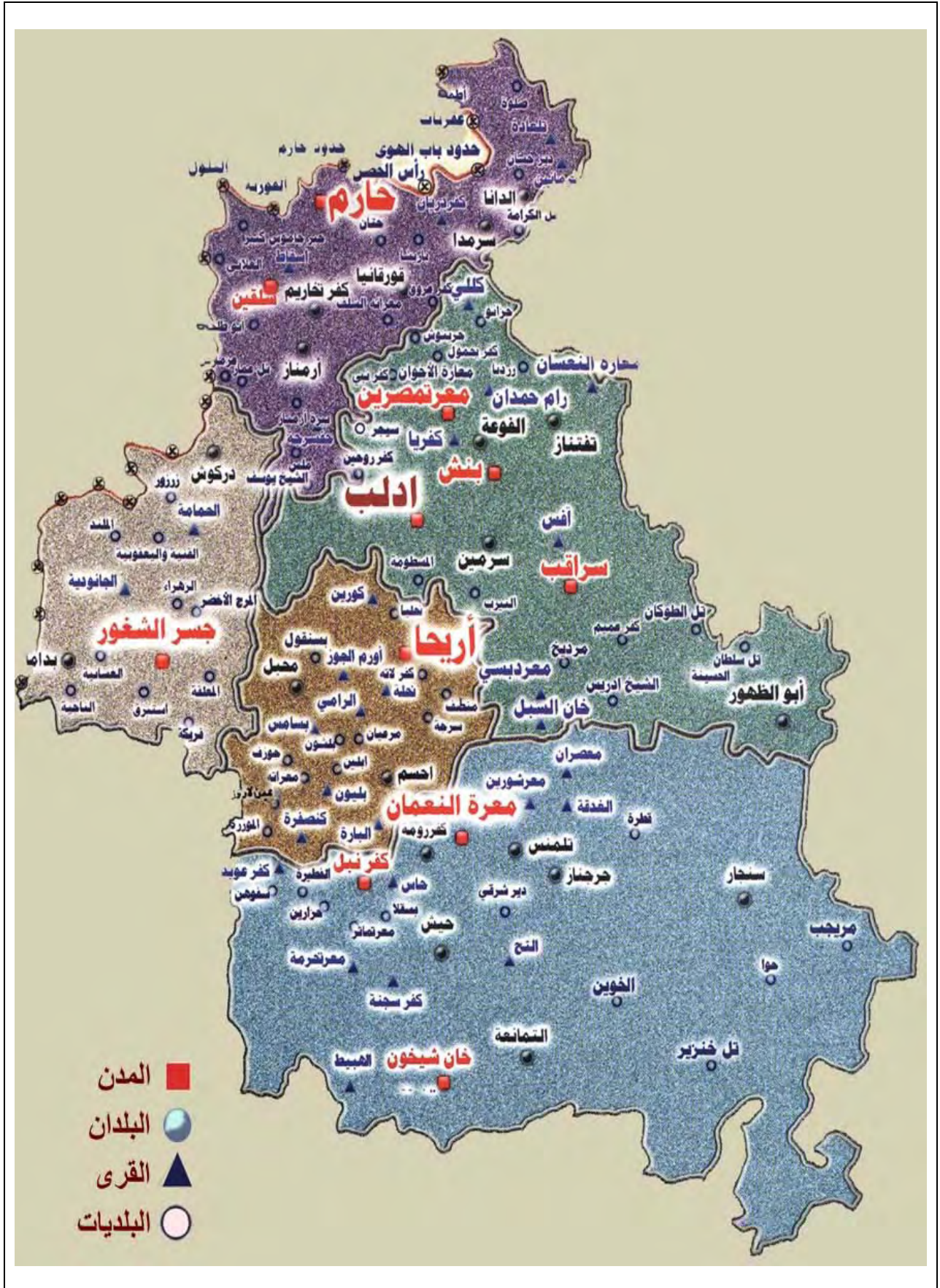
No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	E. Wells
1. Field Measurement						
	(1) pH	+	+	+		+
	(2) Temp.	+	+	+		+
	(3) EC	-	+	+		+
	(4) TDS	+	+	+		+
	(5) DO	-	-	+		-
2. Laboratory Analysis						
	(2) Color	-	-	+		+
	(2) SS	+	+	+		-
	(3) COD	+	+	+		+
	(4) BOD	+	+	+		+
	(5) NO3-N	-	+	+		+
	(6) PO4	+	+	+		+
	(7) Cl-	+	+	+		+
	(8) NH3-N	+	+	+		+
	(9) Turbidity	-	-	+		+

4. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	27 stations	1) 3 vegetable oil factories (Idleb, Saraqeb, Martamisrin) 2) 4 olive residue oil factories (Idleb,	Total of samples is 28 sample / year (one sample

Water Body	No. of Stations	Locations	Note
		Martamisrin, Armanaz, Selqin) 3) Sugar factory (Jiser Shogour) 4) 2 paint factoris (Idleb, Telmens) 5) 3 dairy factories (Balsh, Qiniyeh, Hass) 6) soft drink factory (Jiser Shogour) 7) 2 detergent factories (Idleb) 8) 2 conserves factories (Idleb) 9) 3 pickle factories (martamisrin, Idleb) 10) power generating station (jiaer Shogour) 11) 2 tanneries (Muatet Numan) 12) 3 olive oil mills (Idleb)	/ year from each station except sugar factory 2 samples / year
B. Municipal Wastewater	5 station (2 potential)	1) Idleb municipal waste water (Near Al Fahad gas station) 2) waste water in Ariha (Ariha – Idleb road) 3) Maarra waste water 4) Jiser Shogour waste water 5) Salqin waste water 6) others to be determined later	Total samples is 10 samples (2 samples / year from each station)
C. Rivers and Lakes	7 stations	1) Orantes river: 2 locations, before and after Jiser city 2) Orantes river: before Turkish boarder 3) Orantes river: (one) after Darkoush town. 4) Balaa dam (Balaa) 5) Zainiyeh river (Zainiyeh) 6) Abyad river (before connecting with Orantes river at Janoudiyeh.	Total samples is 12 samples / year
D. Seas and Coastal Areas			
E. Others	4 stations (2 potential like dump site in Jiser Shogour)	1) 2 wells near central dump site of Idleb (Hammoud well – Haboush well) 2) 2 wells in the discharge point of municipal waste water of Idleb and Aleppo cities (near Sabha swamp) 3) Other wells and surface water according to complains (Magara village wells ..)	Total is 4 samples / year + 2 potential

Location Map



5. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) vegetable oil factories (3 stations)	-once/ year for each	-1 times
	2) olive residue oil factories (4 stations)	- once/ year	-1 times
	3) sugar factory (1 station)	- twice/ year	- 2 times
	4) paint factories (2 stations)	- once/ year	-1 times
	5) dairy factories (3 stations)	- once/ year	-1 times
	6) soft drink factory (1 station)	- once/ year	-1 times
	7) detergent factories (2 stations)	- once/ year	-1 times
	8) conserves factories (2 stations)	- once/ year	-1 times
	9) pickle factories (3 stations)	- once/ year	-1 times
	10) power generation station (1 station)	- once/ year	-1 times
	11) tanneries (2 stations)	- once/ year	-1 times
	12) olive oil mills (3 stations)	- once/ year	-1 times
B. Municipal Wastewater	1) Idleb waste water	- once/ 6 m	- 2 times
	2) Ariha waste water	- once/ 6 m	- 2 times
	3) Maara waste water	- once/ 6 m	- 2 times
	4) Jiser Shogour waste water	- once/ 6 m	- 2 times
	5) Salqin waste water	- once/ 6 m	- 2 times
	6) other potentials	- once/ 6 m	- 2 times
C. Rivers and Lakes	1) Orantes river: 2 stations, before & after Jiser city	- once/ 6m/station	- 2 times
	2) Orantes river: before Turish boarder	- once/ year	- 2 times
	3) Orantes river: 1 station after Darkoush town	- once/ 6m/station	- 2 times
	4) Zainiyeh river	- once/ year	- 1 times
	5) Balaa dam (Balaa)	- once/ year	- 1 times
	6) Abyad river (Janoudiyeh)	- once/ year	- 1 times
D. Seas and Coastal Areas			
E. Others: wells near potential pollution sources or complains	1) 2 wells near central dump site of Idleb (Hammoud well – Haboush well)	- once/ year	- 1 times
	2) 2 wells in the discharge point of municipal waste water of Idleb and Aleppo cities (near Sabha swamp)	- once/ year	- 1 times
	3) Other wells and sites according to complains (Magara village wells ..)	- not determined	

5. Analysis Method

Parameters	Analysis Method	Note
1) pH	Electrode method	
2) Temp	Thermometer	
3) EC	Electrode method	
4) TDS	Electrode method	
5) DO	Electrode method	
6) Color	Platinum-cobalt APHA	
7) SS	Photometric method	
8) COD	Reactor digesting method	
9) BOD	Pressure sensor method	
10) NO ₃ -N	Cadmium reduction method	
11) PO ₄	Amino acid method	
12) Cl ⁻	Silver nitrate method	
13) NH ₃ -N	Salicilate method	
14) Turbidity	Niphilometric method	

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Samir Da`aboul	Lab chief Chemical eng.	Water quality + lab management	From the beginning of the project	
2) Mustafa Dughaim	Staff Chemical eng.	Water quality	From the beginning of the project	
3) Ayman Qahwaji	Staff Agronomist	Water quality + Data management	Beginning of 2006	
4) Iyad Al Hussien	Staff Nutrition Eng.	Water quality + Env. awareness	Beginning of 2006	

8.2 Others: Comments on the Plan:

- 1- Total number samples in the plan is 53 sample + potential samples (2 – 4 samples)
- 2- The staff is not completely devoted for the lab work, so the plan was established according to the time for the available for the lab staff.
- 3- Most of industrial establishments in Idleb governorate are small ones, so the discharged waste water is not much and it is directly connected to the municipality waste water system, so some times there is no outlet available for sampling and since this plan will be the first plan, it will be flexibly implemented according to actual situation.
- 4- The frequency of sampling for some natural sources (rivers, dams..) will be few, because there are other organizations that monitor them.
- 5- New sampling stations could be included in the plan or in the next plan, especially industrial waste water stations, because the industrial investments are gradually growing in the governorate.

End

Type	Station	Feb.				Mar.				Apr.				May				Jun.				Jul.				Aug.				Sep.				Oct.				Nov.				Dec.				Total
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
Industrial Waste Water	Veg oil					•	•	•																																						3
	Olive oil		•			•	•																																			4				
	Sugar factory													•																								•				2				
	Paints																																					•				2				
	Dairy									•												•																				3				
	Soft drink																									•																1				
	Detergent													•																								•				2				
	Conserves																																					•				2				
	Pickles																																					•				3				
	Elect. Station																																					•				1				
	Tanning									•																												•				2				
	Oils press																																					•	•	•		3				
Sewage	Idleb city			•																																		•				2				
	Ariha city																																					•				2				
	Al ma'raa city																																					•				2				
	Aljiser city																																					•				2				
	Salkin city																																					•				2				
Rivers	Orantos river before and after Al jiser city																																					•	•			4				
	Orantos river before Turkish boarders																																					•				2				
	Orantos river after Darkoush town																																					•				2				
	Zae'nieh river																																					•				1				
	Al bal'aa dam																																					•				1				
	White river																																					•				1				

Environmental Monitoring (EMO) Plan

Re. No. 001 Hassakeh DFEA (day/ month/ 2006)

Prepared by Nawaf Uthman

Sign: Director of Hassakeh DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Hassakeh DFEA in accordance with the Law No. 50. The Hassakeh DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Hassakeh Governorate.

2. Objectives of the Environmental Monitoring

- (1) Monitoring rivers (Jakjak river in Hassakeh city, Jakjak river in Kamishli city, Khabour river)
- (2) Monitoring lakes (Basel Assad lake)
- (3) Monitoring domestic wastewater near Beiruti bridge.
- (4) Emergencies (complaints, studing discharging system of establishments.etc)

3. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater			
B. Municipal Wastewater	1 station	near Beiruti bridge	
C. Rivers and Lakes	4 stations	1) Khabour river 2) Jakjak river in Hassakeh 3) Jakjak river in Kamishli 4) Basel Assad lake	
D. Seas and Coastal Areas			
E. Others			

Location Map is attached

4. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater			
B. Municipal Wastewater	Beiruti bridge	- twice/ month	- 22 times
C. Rivers and Lakes	1) Khabour river 2) Jakjak river in Hassakeh 3) Jakjak river in Kamishli (Sefan) 4) Jakjak river in Kamishli	- twice/ month - twice/ month - once/ month - once/ month	- 22 times - 22 times - 2 times - 2 times

Water Body	Stations	Frequency	Times (Jan-Dec)
	(Harte Tay) 5) Basel Assad lake	- twice/ month	- 22 times
D. Seas and Coastal Areas			
E. Emergencies			- 30 times

5. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	E. Others
1. Field Measurement						
(1)	pH		<input type="radio"/>	<input type="radio"/>		
(2)	EC, TDS		<input type="radio"/>	<input type="radio"/>		
(3)	DO		-	<input type="radio"/>		
(4)	Water temp.		<input type="radio"/>	<input type="radio"/>		
(5)	Air temp.		<input type="radio"/>	<input type="radio"/>		
2. Laboratory Analysis						
(1)	Color		-	<input type="radio"/>		
(2)	SS		<input type="radio"/>	<input type="radio"/>		
(3)	COD		<input type="radio"/>	<input type="radio"/>		
(4)	BOD		<input type="radio"/>	<input type="radio"/>		
(5)	NO3-N		<input type="radio"/>	<input type="radio"/>		
(6)	NH3-N		<input type="radio"/>	<input type="radio"/>		
(7)	PO4		<input type="radio"/>	<input type="radio"/>		
(8)	Cl-		<input type="radio"/>	<input type="radio"/>		
(9)	Turbidity		-	<input type="radio"/>		

6. Analysis Method

Parameters	Analysis Method	Note
1) pH, temp.		
2) EC, TDS	Portable EC/ TDS meter mg/l	
3) DO	Portable DO meter mg/l	
4) SS	Portable colorimeter mg/l	
5) COD	COD enactoe mg/l	
6) BOD		
7) NO3-N	Portable colorimeter mg/l	
8) PO4	Portable colorimeter mg/l	
9) Cl	Digital titrator mg/l	
10) NH3-N	Portable colorimeter mg/l	
11) Turbidity	Portable turbidity	
12) Color	Portable colorimeter mg/l	

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Nawaf Uthman	Lab chief	Lab management	12 July, 2005	
2) Georg Shaabo	Staff	Water quality	12 July, 2005	
3) Aysar Binyamin	Staff	Water quality	12 July, 2005	
4) Imad Meslet	Staff	Data management	12 July, 2005	

8.2 Others

Station	Location	Feb.				Mar.				Apr.				May				June				July				Aug.				Sep.				Oct.				Nov.				Dec.			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Khabour river	Mjarjaa				+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+
Jakjak river	Al Harbi			+			+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+
Jakjak river	Sifan Harat Tay				+																+																								
Basel Assad lake	Al Sayd				+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+				
Sewage	Beirut bridge			+			+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+		+				
Total		88																																											
Emerg.		30																																											
Ground Total		118																																											

Environmental Monitoring (EMO) Plan

Re. No. 001 Rakka DFEA (13/ 2/ 2006)

Prepared by Mr. Abdullatif Ja`alouk

Sign: Director of Rakka DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Rakka DFEA in accordance with the Law No. 50. The Rakka DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Rakka Governorate.

2. Objectives of the Environmental Monitoring

- (1) Monitoring industrial waste water.
- (2) Monitoring municipal waste water to know if it conforms to the Syrian standards and pollution conditions.
- (3) Monitoring rivers to know the effect ion of pollutants.
- (4) Monitoring underground water.
- (5) Complaints and emergencies.

3. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	5 stations	1) Sugar factory 2) Olive mills 3) Ojaili establishment 4) Small factories in the city 5) Soft drink factory	
B. Municipal Wastewater		1) Outlet of the sewage water 2) Sewage water treatment station in Sabkha 3) The rest of treatment stations when they start to operate.	
C. Rivers and Lakes		1) Al Assad lack 2) Al Ba`ath dam lack 3) Ekairshi lack 4) Euphrates river 5) Jallab river	
E. Others		1) Agricultural waste water 2) Wells 3) Complaints	

Location Map

Location map is attached.

4. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) Sugar factory 2) Olive mills 3) Ojaili establishment 4) Small factories in the city 5) Soft drink factory	- Seasonal - Seasonal - Semi-seasonal - Semi-seasonal (according to complaints) - Semi-seasonal	- 3 times - 2 times - 2 times - 2 times - 2 times
B. Municipal Wastewater			- 2 times
C. Rivers and Lakes	1) Al Assad lack 2) Al Ba`ath dam lack 3) Ekairshi lack 4) Euphrates river 5) Jallab river	- Semi-seasonal - Semi-seasonal - Semi-seasonal - once/ month and half - once/ 4 month	- 2 times - 2 times - 2 times - 8 times (2 at the bridge, 4 after Jallab, 2 at Madan) - 3 times
D. Seas and Coastal Areas			
E. Others	1) Agricultural waste water 2) Wells 3) Complaints	- Semi-seasonal - Semi-seasonal - according to complaints	- 2 times - 2 times

5. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	E. Others
1. Field Measurement						
	(1) EC, TDS	-	-	-	-	-
	(2) Temp.	-	-	-	-	-
	(3) DO	-	-	-	-	-
	(4) pH	-	-	-	-	-
2. Laboratory Analysis						
	All parameters and analysis available in the lab.					

6. Analysis Method

Parameters	Analysis Method	Note
1) pH	Electrode method	
2) Temp	Thermometer	
3) EC	Electrode method	
4) TDS	Electrode method	
5) DO	Electrode method	
6) Color	Platinum-cobalt APHA	
7) SS	Photometric method	
8) COD	Reactor digesting method	
9) BOD	Pressure sensor method	
10) NO ₃ -N	Cadmium reduction method	
11) PO ₄	Amino acid method	
12) Cl ⁻	Silver nitrate method	
13) NH ₃ -N	Salicilate method	
14) Turbidity	Niphilometric method	

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Shamsa Al Jasem	Eng.			
2) Nizam Al Ahmad	Eng.			
3) Mustafa Al A`abo	Eng.			
4) Thani Al Abid	staff			
5) Abdullatif Ja`alouk	Staff			

8.2 Others

Location Map

Sampling Plan in Rakka DFEA

Month	1 st Week	2 nd Week	3 rd Week	4 th Week
January	-----	-----	Sewage water	Euphrate river, after sewage outlet
February	Al Assad lack	Al Ba`ath lack	Euphrate river, at the bridge	Euphrate river, after Jallab
March	Ojaili establishment	Shuayb Ziker	Jallab river	Drinking water
April	Sabkha treatment station	Euphrate river, at Madan	Sewage water	Euphrate river, after slaughterhouse
May	Euphrate river, after Jallab	Small factories within the city	Soft drink factory	Underground water
June	Al Assad lack	Sugar factory	Euphrate river, after sewage outlet	Jallab river
July	Euphrate river, after Jallab	Sewage water	Soft drink factory	Sugar factory
August	Underground water	Euphrate river, at the bridge	Sugar factory	Shuayb Ziker
October	Drinking water	Small factories within the city	Ojaili establishment	Jallab river
November	Olive extracting mills	Euphrate river, after Jallab	Euphrate river, after slaughterhouse	Euphrate river, at Madan
December	Sewage water	Olive extracting mills	Al Ba`ath lack	Underground water

Sampling Station	Station Cod	Sampling Frequency
Al Assad lack	001	2
Al Ba`ath lack	002	2
Euphrate river, at the bridge	003	2
Euphrate river, after slaughterhouse	004	2
Sewage water	005	4
Euphrate river, after sewage outlet	006	2
Jallab river	007	3
Euphrate river, after Jallab	008	4
Euphrate river, at Madan	009	2
Drinking water	010	2
Sugar factory	020	3
Soft drink factory	021	2
Ojaili establishment	022	2
Olive extracting mills	023	2
Small factories within the city	030	2
Underground water	050	2
Al Sabkha treatment station	060 – 061	1
Complaints	080	-

Environmental Monitoring (EMO) Plan

Re. No. 001 Sweida DFEA (day/ month/ 2006)

Prepared by Mrs. Umayma Al Sha`ar

Sign: Director of Sweida DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Sweida DFEA in accordance with the Law No. 50. The Sweida DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Sweida Governorate.

2. Objectives of the Environmental Monitoring

- (1) Protecting human health by limiting pollution.
- (2) Determining water quality in the governorate
- (3) Responding any kind of emergency cases or complaints.
- (4) Increasing experience in EIA
- (5) Obtaining accurate measurements for the pollutants and to be able to evaluate them.

3. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	E. Others
1. Field Measurement						
(1)	pH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>
(2)	EC, TDS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>
(3)	DO	-	-	<input type="radio"/>	-	<input type="radio"/>
(4)	Temp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>
2. Laboratory Analysis						
(1)	Color	-	-	<input type="radio"/>	-	<input type="radio"/>
(2)	SS	-	-	<input type="radio"/>	-	<input type="radio"/>
(3)	COD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>
(4)	BOD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>
(5)	NO ₃ -N	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>
(6)	NH ₃ -N	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>
(7)	PO ₄	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>
(8)	Cl-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-	<input type="radio"/>
(9)	Turbidity	-	-	<input type="radio"/>	-	<input type="radio"/>

4. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	5 stations	1) Grape extraction factory 2) Jabal factory for juice 3) Shahba dairy factory 4) Detergents factory 5) olive extracting mills	No treatment facility No treatment facility No treatment facility No treatment facility No treatment facility

Water Body	No. of Stations	Locations	Note
		(Thala, Shahba, Niser, Rasas, new Thula)	
B. Municipal Wastewater	4 stations	Sewage water of Sweida city- Sewage water of Salkhad- random sewage (1), random sewage (2),	
C. Rivers and Lakes	10 Dams	Roum, Sahwat Khudur, Jabal Arab, Tayba, Ghayda, Hunran, Mushannaf shamali, Mushannaf Janoubi, Jwaylin, Sahwat Balata	
D. Seas and Coastal Areas			
E. Others	Springs + wells	20 springs, 5 wells	

Location Map

Location map is prepared but could not be attached because the size is too big.

5. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) Grape extraction factory 2) Jabal factory for juice 3) Shahba dairy factory 4) Detergents factory 5) olive extracting mills (Thala, Shahba, Niser, Rasas, new Thala)	- 5 times/ month, 5 sequence days -5 times/ month, 5 sequence days -5 times/ month, 5 sequence days -5 times/ month, 5 sequence days -5 times/ month, 5 sequence days	- 5 times - 5 times - 5 times - 5 times - 5 times
B. Municipal Wastewater	Sewage water of Sweida city- Sewage water of Salkhad- random sewage (1), random sewage (2),	- once/ year	- 1 time for each station
C. Rivers and Lakes	Al Roum, Sahwa, Jabal Arab, Tayba, Ghayda, Hubran, Mushanaf Shamali, Mushanaf Janoubi, Jwaylin, Sahwat Balata	- once/ 3 months	- 4 times for each dam.
D. Seas and Coastal Areas			
E. Others	Springs (Bader, Khawabi, Mousa, Rasfa, Mekabiyeh, Mwalakat Sala, Keram&Zaroura, Dair Ajoz, Ras Al Ein, Shakara, Homa, A`ara, Tanouriyeh, Mazra`a, Um Kasab, Ein Sekhneh, Ein	- once/ year	- 1 time for each spring or well.

Water Body	Stations	Frequency	Times (Jan-Dec)
	Bardeh, Gharbiyeh, Fajfajiyat, Habki) Wells (Jrin, Sahwat Balata, Zira`a, Salakhed, A`afineh)		

Note: 3 samples will be collected each time.

6. Analysis Method

Parameters	Analysis Method	Note
1) pH, temp.		Electrode method
2)EC, TDS	Portable EC/ TDS meter mg/l	Electrode method
3) DO	Portable DO meter mg/l	Electrode method
4) SS	Portable colorimeter mg/l	Photometric method
5) COD	COD enactoe mg/l	Reactor digesting method
6) BOD		Pressure sensor method
7) NO3-N	Portable colorimeter mg/l	Cadmium reduction method
8) PO4	Portable colorimeter mg/l	Amino acid method
9) Cl	Digital titrator mg/l	Silver nitrate method
10) NH3-N	Portable colorimeter mg/l	Salicilate method
11) Turbidity	Portable turbidity	Niphilometric method
12) Color	Portable colorimeter mg/l	Platinum-cobalt method

7. Record of Data and Publication

(1)Record in DFEA

- Check list
 - Field record (width, depth, velocity)
 - Field measurement record
 - Lab analysis record
 - Problems of equipment record
 - Lab safety record
 - Reagents and glassware record
 - Solid and liquid wastes treatment record
- (2)Record in the Directorate of Laboratories in GCEA
- (3)Record in Governorate
- (4)Data Book preparation
- (5)Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Umayma Al Sha`ar	Lab chief	Lab + staff		
2) Thayer Hamzeh	Staff	Sampling		
3) Raghad Abu Hasson	Staff	Reagents and glassware		
4) Samer Masri	Staff	Lab safety		

5)	Amal Sweidan	Staff	Equipment & spare parts		
6)	Hana Abu Zaidan	Staff	Solid waste management (in future)		
7)	Mirvat Al Safadi	Staff	Data management		

8.2 Others

Environmental Monitoring (EMO) Plan

Re. No. 001 Dara`a DFEA (day/ month/ 2006)

Prepared by Eng. Muhammad Al Hariri

Sign: Director of Dara`a DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Dara`a DFEA in accordance with the Law No. 50. The Dara`a DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Dara`a Governorate.

2. Objectives of the Environmental Monitoring

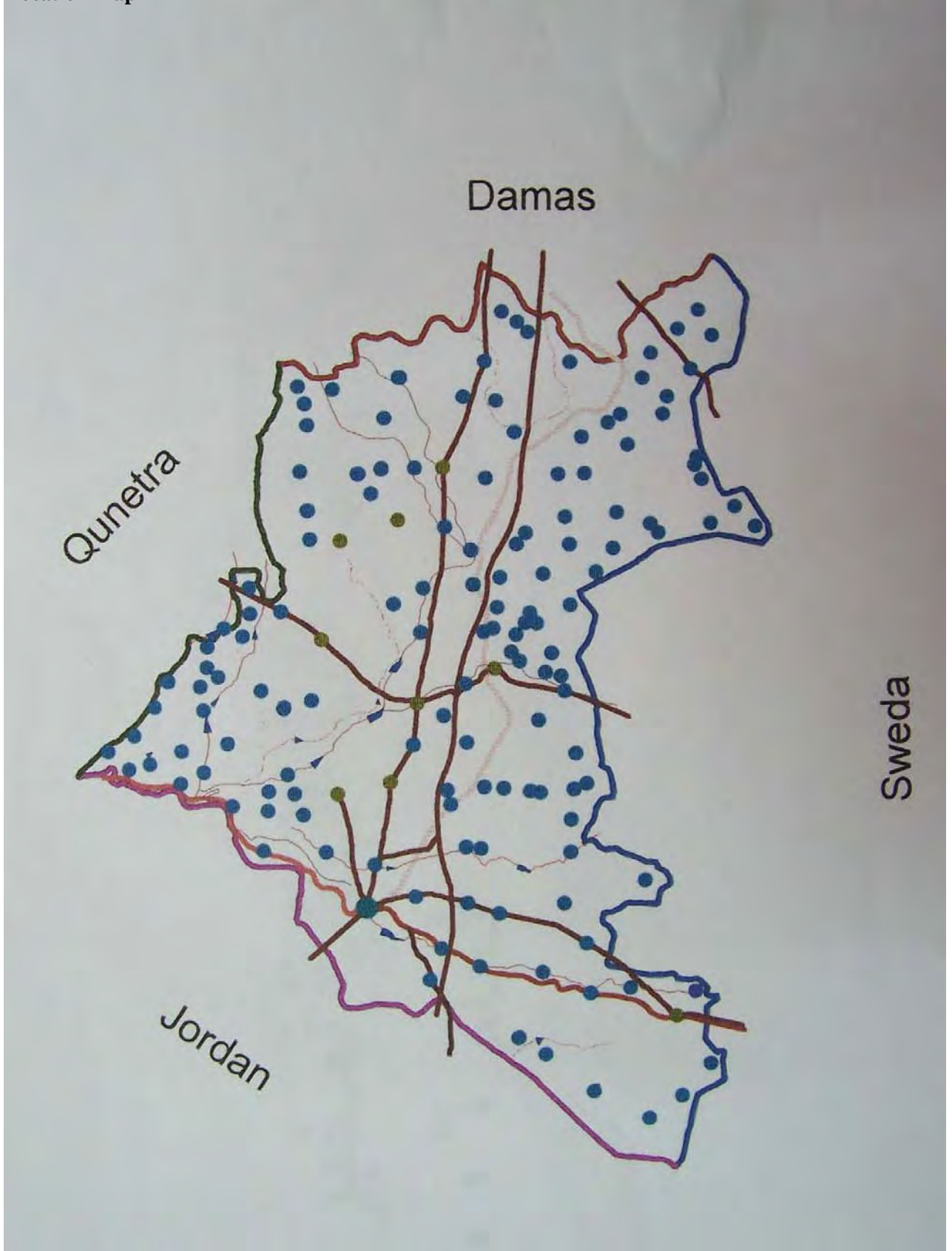
- (1) Monitoring industrial waste water resulted from factories (if they conform to Syrian standards)
- (2) Monitoring lakes and dams, and dam water used for irrigation
- (3) Monitoring springs used for drinking to check the effects of pollutants on them
- (4) Evaluation of results

3. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	19 stations	1- Tishreen olive mill 2- Jahmani olive mill 3- Syrian-German olive mill 4- Kasabra olive mill 5- Iman olive mill 6- Veterinerian medicines factory (2 factories) 7- Nameh for cartoon 8- Ankhel for conserves 9- Dael for conserves 10- Starch factory 11- Naema for sesame sauce 12- Glin dairy 13- Dara`a cow farm 14- Libyan company cow Farm 15- Hirak for pickles 16- Dara`a slaughterhouse 17- Dara`a dump site (nearest well) 18- organic fertilizers factory(nearest well)	
B. Municipal Wastewater	4 station	1-Ebtah Dam 2- Edwan Dam 3- Tafas Dam 4- Dara`a Dam	
C. Rivers and Lakes	1 stations	1- Mezaireeb lake	
D. Others	6 stations	1- Asha`ari spring 2- Sanamain well 3- Maraba well 4- Gharya Gharbi well	

Water Body	No. of Stations	Locations	Note
		5- Shaik Misin well 6- Qaniyeh well	

Location Map



4. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1- Tishreen olive mill	1	
	2- Jahmani olive mill	1	
	3- Syrian-German olive mill	1	
	4- Kasabra olive mill	1	
	5- Iman olive mill	1	
	6- Veterinerian medicines Factory (2 factories)	2	
	7- Nameh for cartoon	2	
	8- Ankhel for conserves	1	
	9- Dael for conserves	3	
	10- Starch factory	3	
	11- Naema for sesame sauce	2	
	12- Glin dairy	3	
	13- Dara`a cow farm	2	
	14- Libyan company cow Farm	2	
	15- Hirak for pickles	2	
	16- Dara`a slaughterhouse	2	
	17- Dara`a dump site (nearest well)	3	
	18- organic fertilizers factory(nearest well)	2	
B. Municipal Wastewater	1-Ebtah Dam	2	
	2- Edwan Dam	2	
	3- Tafas Dam	2	
	4- Dara`a Dam	2	
C. Rivers and Lakes	1- Mezaireeb lake	3	
E. Emergencies	1- Asha`ari spring	2	
	2- Sanamain well	1	
	3- Maraba well	1	
	4- Gharya Gharbi well	1	
	5- Shaik Misin well	1	
	6- Qaniyeh well	1	

5. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Rivers and Lakes	D. Seas and Coastal Areas	E. Others
1. Field Measurement						
(1)	pH	○	-	○	○	
(3)	Air temp	○	○	○	○	
(4)	Water temp.	○	○	○	○	
(5)	DO	-	-	○	-	
2. Laboratory Analysis						
(1)	Color		-	○		
(2)	SS	○	○	○	-	
(3)	COD	○	○	○	○	
(4)	BOD	○	○	○	○	
(5)	NO ₃ -N	○	○	○	○	
(6)	NH ₃ -N	○	○	○	○	
(7)	EC	○	○	○	○	
(7)	PO ₄	○	○	○	○	
(8)	Cl-	○	○	○	○	
(9)	Turbidity	-	-	○	○	
(10)	Flow rate	○	○	○	-	

6. Analysis Method

Parameters	Analysis Method	Note
1) pH, temp.		Electrode method
2) EC, TDS	Portable EC/ TDS meter mg/l	Electrode method
3) DO	Portable DO meter mg/l	Electrode method
4) SS	Portable colorimeter mg/l	Photometric method
5) COD	COD enactoe mg/l	Reactor digesting method
6) BOD		Pressure sensor method
7) NO ₃ -N	Portable colorimeter mg/l	Cadmium reduction method
8) PO ₄	Portable colorimeter mg/l	Amino acid method
9) Cl	Digital titrator mg/l	Silver nitrate method
10) NH ₃ -N	Portable colorimeter mg/l	Salicilate method
11) Turbidity	Portable turbidity	Niphilometric method
12) Color	Portable colorimeter mg/l	Platinum-cobalt method

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Muhammad Hariri	Lab chief	Water quality	Jan. 2006 - Dec.2006	
2) Ahmad Kiblawi	Staff	Water quality	Jan. 2006 -	
3) Diya Shubat	Staff	Water quality	Dec.2006	
4) Yousef Shadayda	Staff	Water quality	Jan. 2006 -	
5) Fathiyeh Ahmad	Staff	Water quality	Dec.2006	
6) Atiya Zawayda	Staff	Data management	Jan. 2006 -	

8.2 Others

Environmental Monitoring (EMO) Plan

Re. No. 001 Tartous DFEA (15/ 2/ 2006)

Prepared by Mrs. Rudayna Al Ali,

Sign: Director of Tartous DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Tartous DFEA in accordance with the Law No. 50. The Tartous DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Tartous Governorate.

2. Objectives of the Environmental Monitoring

- (1) Identifying the water quality in the selected water resources.
- (2) Monitoring water bodies existing in the governorate regularly.
- (3) Monitoring industrial waste water resulted from factories and determining the resulted pollution.

3. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	2 stations	1) Oil refining factory 2) Fat factory	Considering discharging time.
B. Municipal Wastewater			
C. Rivers and Lakes	10 stations	1) Al Husain River (3 stations) 2) Marqiyeh River (3 stations) 3) Al Abrash River (4 stations)	Considering the accessibility to sampling stations
D. Springs	4 stations	1) Dairoun spring 2) Kraf's spring 3) Abu Awad spring 4) Jakra spring	Serves / 17 / villages Serves / 9 / villages Serves / 11 / villages Serves / 9 / villages
E. Dams	1 station	1) Khalifa dam	

Location Map

Location map is attached.

4. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) Oil refining factory 2) Fat factory	once/ 6 month once/ 6 month	-4 times
B. Rivers	1) Husain river: a: Uwainiyeh b: Braikiyeh c: Zara 2): Markiyeh river:	once/ 3 month once/ 3 month once/ 3 month	9 times 6 times

Water Body	Stations	Frequency	Times (Jan-Dec)
	a: near Kadmous restaurant b: Kurkufti 3): Al Abrash river: a: Al Saisniyeh b: Zok Barakat- Ain Mury c: Tawanin d: Heder Zahiyeh	once/ 3 month once/ 3 month once/ 3 month once/ 3 month once/ 3 month once/ 3 month	12 times
C. Springs	1) Dairoun spring 2) Ain Krafs 3) Abu Awad spring 4) Jakra spring	once/ 2 month once/ 2 month once/ 2 month once/ 2 month	8 times
D. Dams	1) Khalifa dam	once/ 6 month	2 times
E. Others	Complaints		According to received complaints

5. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Spring Water	C. Rivers and Lakes	D. Dams	E. Others
1. Field Measurement						
1	pH	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	DO	<input type="radio"/>	x	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	EC / TDS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	Water temp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Laboratory Analysis						
1	Color	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	SS	<input type="radio"/>	x	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	COD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	BOD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	NO3-N	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	PO4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	Cl-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	NH3-N	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	Turbidity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Analysis Method

Parameters	Analysis Method	Note
1) pH	Electrode method	
2) Temp	Thermometer	
3) EC	Electrode method	
4) TDS	Electrode method	
5) DO	Electrode method	
6) Color	Platinum-cobalt APHA	
7) SS	Photometric method	
8) COD	Reactor digesting method	
9) BOD	Pressure sensor method	
10) NO ₃ -N	Cadmium reduction method	
11) PO ₄	Amino acid method	
12) Cl ⁻	Silver nitrate method	
13) NH ₃ -N	Salicilate method	
14) Turbidity	Niphilometric method	

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	Position	in charge	Period	Note
1) Rudayna Al Ali	Chem. Eng.	Lab chief	20 Feb – 31 Dec 2006	
2) Amira Emran	Chemist	Data management	20 Feb – 31 Dec 2006	
3) Dalal Ibrahim	Chemist	Water quality	20 Feb – 31 Dec 2006	
4) Lama Harfoush	Chem. Eng.	Water quality	20 Feb – 31 Dec 2006	
5) Suhayla Butros	Chem. Eng.	Water quality	20 Feb – 31 Dec 2006	
6) Samaher Abdul Rahman	Chem. Eng. assistant	Water quality	20 Feb – 31 Dec 2006	

8.2 Others

Some stations could be changed according to circumstances of field work

Station	Location	Jan				Feb				March				April				May				June				July				August				Sept.				Oct.				Nov.				Dec.			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Husain river	Uwainiyeh									+																																							
	Braikiyeh													+																																			
	Jourat Jawamis																																																
Markiyeh river	Kadmous																																																
	Kurkufti																																																
	Karim																																																
Abrash river	Saisniyeh																																																
	Bushrael																																																
	Twanin																																																
Springs	Dairoun																																																
	Krafs																																																
	Abu Awad																																																
	Jakra																																																
Dams	Kalifa																																																
Factories	v. oil refinery																																																
	Fat factory																																																
Total Samples		42 Samples																																															

Environmental Monitoring (EMO) Plan

Re. No. 001 Quneitra DFEA (/ / 2006)

Prepared by Mr. Ali Ibrahim, Mr. Majed Zaitoun

Sign: Director of Quneitra DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Quneitra DFEA in accordance with the Law No. 50. The Quneitra DFEA has the right to execute this EMO Plan under the authorization by the Minister of MOLAE and the Governor of Quneitra Governorate.

2. Objectives of the Environmental Monitoring

- (1) Monitoring industrial waste water to confirm if it conforms to the Syrian standards.
- (2) Monitoring municipal waste water to confirm if it conforms to the Syrian standards.
- (3) Monitoring lakes and dams to confirm the effects of pollutants on them.
- (4) Monitoring underground water (wells) to evaluate the effect of pollutants.
- (5) Emergencies and complaints.

3. Monitoring Stations

Water Body	No. of Stations	Locations	Note
A. Industrial Wastewater	3 stations	1) Safa olive oil mill 2) Starch factory 3) Organic fertilizer factory	
B. Municipal Wastewater	1 station	Domestic waste water in Wadi Raggad	
C. Lakes and Dams	3 stations	1) Rwaihina 2) Braika 3) Ghadir Bustan	
D. Underground water	3 stations	1) Farmer Union 2) Ein Al Bayda 3) Fawar spring	

Location Map

Location map is attached.

4. Monitoring Period and Frequency

The EMO period is from 1st January 2006 to 31st December 2006. The EMO frequency of each station is summarized in Table hereunder.

Water Body	Stations	Frequency	Times (Jan-Dec)
A. Industrial Wastewater	1) Safa olive oil mill 2) Starch factory 3) Organic fertilizer factory	-once/ 4 months - once/ 3 months - once/ 3 months	- 3 times - 4 times - 4 times
B. Municipal Wastewater	Domestic waste water in Wadi Raggad	- once/ 3 months	- 4 times

Water Body	Stations	Frequency	Times (Jan-Dec)
C. Lakes and Dams	Rwaihina, Braika, Ghadir Bustan	-once/ 4 months	- 9 times
D. Underground Water	Farmer Union, Ein Al Bayda, Fawar spring	- once/ 3 months	-12 times
No. of Samples			36 times

5. Parameters to be Analyzed and Monitored

No.	Parameters	A. Industrial Wastewater	B. Municipal Wastewater	C. Lakes and Dams	D. Underground Water	E. Others
1. Field Measurement						
(1)	pH	○	○	○	○	
(2)	Water temp	○	○	○	○	
(3)	TDS	○	○	○	○	
(4)	EC	○	○	○	○	
(5)	SS	○	○	○	△	
(6)	DO	△	△	○	△	
2. Laboratory Analysis						
(7)	COD	○	○	○	○	
(8)	BOD5	○	○	○	○	
(9)	NO3-	○	○	○	○	
(10)	PO4 ³⁻	○	○	○	○	
(11)	Cl-	○	○	○	○	
(12)	NH3-N	○	○	○	○	
(13)	Turbidity	△	△	○	○	
(14)	Color	△	△	○	○	
(15)	Flow rate	○	○	*	*	

6. Analysis Method

Parameters	Analysis Method	Note
1) pH, temp.	Electrode method	Portable pH meter mg/l
2) EC, TDS	Electrode method	Portable EC/TDS meter mg/l
3) DO	Electrode method	Portable DO meter mg/l
4) SS	Photometric method	Portable colorimeter mg/l
5) COD	Reactor digesting method	Portable colorimeter mg/l
6) BOD	Pressure sensor method	Pressure sensor method
7) NO3-N	Cadmium reduction method	Portable colorimeter mg/l
8) PO4	Amino acid method	Portable colorimeter mg/l
9) Cl	Silver nitrate method	Digital Titrator mg/l
10) NH3-N	Salicilate method	Portable colorimeter mg/l
11) Turbidity	Niphilometric method	Portable Turbidity meter
12) Color	Platinum-cobalt method	Portable colorimeter mg/l

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

Name	in charge	Period	Note
1) Hamzeh Sulayman	Director	Jan 2006-Dec 2006	
2) Ali Ibrahim	Water quality + data management	Jan 2006-Dec 2006	
3) Majed Zaitoun	Water quality + data management	Jan 2006-Dec 2006	

8.2 Others

- 1- Lack of gas for the car.
- 2- Budget is not enough.
- 3- Bad weather conditions.
- 4- Sudden car break-downs.

Annex 3-5: Environmental Monitoring Plan

3.5.2 Environmental Monitoring Plan 2007

(1) Basic Water Quality (14 DFEAs)

Damascus DFEA

Environmental Monitoring Plan 2007

Damascus:(1/4/2007) No. 001

Prepared by: Reem Sadriddeen

Director of Damascus DFEA:
Bassam Kheir Bek

1. Logical basis:

Damascus DFEA prepared this EMP according to the law No. 50. Damascus DFEA has the right to implement this plan under the authorization by Minister of MOLAE and Damascus Governor.

2. Objectives of Environmental Monitoring

- 1- Analyzing industrial wastewater for many factories that polluted wastewater
- 2- Monitoring & analyzing Barada River and its distributaries within Jobar Area
- 3- Sampling stations:

remarks	locations	No. of stations	Water body
	1) Tanning houses 2) Ehda Ashartyeh 3) Alkhomeasieh 4) Wella 5) Hayat soap 6) Zamzam 7) Jallab 8) Galvanization /Kaboon/ 9) Dye house /Bab Sharki/ 10) Diary factory /Ghoota/ 11) Glysolid factory /lotion/ 12) Dietetics factory /Aleen/	12	Industrial wastewater
		-----	Domestic wastewater
	Tora Da'iaee Akrabani	3	Rivers and Lakes
		-----	Sees and coastal regions
	Quality samples Samples coming from other DFEAs	2	others

3. Monitoring duration and frequency

Duration of this EMP is from January 1 to December 31 2007,
frequency shown below:

No. of times	frequency	stations	Water body
6 times • 6 times • 6 times • 6 times • 6 times • 6 times • 6 times • 6 times • 6 times • 6 times • 12 times • 6 times • 6 times •	Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 2 months • Once / 1 month • Once / 2 months • Once / 2 months •	1) Tanning houses 2) Ehda Ashartyeh 3) Alkhomasieh 4) Wella 5) Hayat soap 6) Zamzam 7) Jallab 8) Galvanization /Kaboon/ 9) Dye house /Bab Sharki/ 10) Dairy factory /Ghoota/ 11) Glysolid factory /lotion/ 12) Dietetics factory /Aleen	Industrial wastewater
			Domestic wastewater
12 times • 12 times • 12 times •	Once / 1 month • Once / 1 month • Once / 1 month •	Tora Da'iaee Akrobani	Rivers and Lakes
			Sees and coastal regions
12 times • •	For circles / year •	quality samples Samples sent from other DFEAs	others

4. Parameters have to be monitored and analyzed:

Lakes and Rivers	Industrial wastewater	parameters	No.
1- field measures			
	+	+	PH
	+	+	DO
	+	+	EC/TDS
	+	+	temperature
2- lab measures			
		color	
	+	+	SS
	+	+	COD
	+	+	BOD
	+	+	NO3-N
	+	+	PO4
	+	+	CL
	+	+	NN3-N
	+	+	U;HVM

5. Analysis method:

Remarks	Analysis method	Parameters
	Electrode method	1- PH
	Thermometer	2- water temperature
	Platinum -cobalt APHA	3- color
	Electrode method	4- TDS

	Membrane electrode method	5- DO
	Photometric method	6- SS
	Reactor digesting method	7- COD
	Cadmium reduction method	8- NO ₃ – N
	Salicilate method	9- NH ₃ – N
	Amino acid method	10- PO ₄ ⁺³
	Silver nitrate method	11- CL ⁻
	Pressure sensor method	12 BOD ₅ -
	Electrode method	13- EC-
	Niphilometric method	14- turbidity

7. Data and publication records:

- a. Record in DFEA
- b. Record in the directorate of labs at GCEA
- c. Record in the Governorate
- d. Preparing data book
- e. Annual report (to be prepared and published)

remarks	Duration	In charge with	background	stuff
	From the beginning of the project	Water quality	Chemist, Lab chief	Reem Sadriddeen
	From the beginning of the project	Water quality	Chemist	Inas Webbi
	From the beginning of the project	Water quality	Chemist	Iyman Sulayman
	From the beginning of the project	Water quality	Civil engineer	Rania Sulayman
	From the beginning of the project	Water quality	agronomist	Leila Aldurra
	From July 2007	Water quality	Mechanical engineer	Ameera Alhamwi

At last, our DFEA has achieved a remarkable advance in the field of Environmental monitoring, as - (in the past) - we were depending on visual monitoring or getting help from other approved labs
The number of Chemists who received training from JICA Expert Team increased to become 21 members for water & air quality, public awareness, and atomic absorption. We are seeking to certify our lab and activate its role: to assist environmental inspectors work and train them on interpretation of Environmental monitoring data, and use these data to apply the low 50 for Environmental safety.

3- Environmental Monitoring Plan 2007

No. 001 Damascus countryside DFEA february/5/2007

Prepared by Eng. Muna Jumaa

Director of Damascus Countryside DFEA

3-1. Parameters to be monitored and analyzed:

In addition to the parameters mentioned in 2006 EMP, we added:

- Oil separation test
- using spectrophotometer equipment for making lab analyses

3-2. sampling stations

remark	locations	No. of stations	Water body
	1- Ashrafiyet Sohnaya 2- Sohnaya 3- Harasta 4- Adra 5- Mayda'a 6- Deir Salman 7- Drousha 8- Alrayhan 9- Hatitet Alturkman 10-Misraba 11-Khyaret Dannoun 12-Shifonyeh 13-Hala 14-Aladliyah	46 stations plus complains	1- industrial wastewater

3-3. Monitoring duration and frequency:

EMP duration is from first of January to 31st of December 2007, frequency shown below:

No. of times	frequency	stations	Water body
1	One year	1- Ahmad Burghli	1- industrial wastewater
1	One year	2- Abdeen dyes	
2	6 months	3- Rawas	
2	6 months	4- Alaqsa for oil	
2	6 months	5- Kassas paints	
1	One year	6- M. Imad Bola	
2	6 months	7- Da'bool & Sadat Detergents	
1	One year	8- Syral	
1	One year	9- French Bell	
2	6 months	10-Hager Glycerin	
2	6 months	11-Al Arabia manufacturing & marketing	

1	One year	12-nestle	
1	One year	13-Alhadeeth medicine	
2	6 months	14-Nazeer Kais paints	
1	One year	15-Damascus Countryside yeast	
2	6 months	16-Tammouz Canned food	
1	One year	17-Sukkar chemical	
1	One year	18-Alareek oil filling	
2	6 months	19- Alkubtan cheese	
2	6 months	20-Sabbagh pesticides	
2	6 months	21-Alrawas Chemicals	
2	6 months	22-Debs board	
1	One year	23-Alzayed medicine	
1	One year	24- AlAalamyeh string	
1	One year	25- Almanar printing & packaging	
2	6 months	26-Somar canned meat	
2	6 months	27-Alwatanyya batteries	
2	6 months	28-Unifarma medicines	
1	One year	29-Madar detergents	
1	One year	30-Middle East chemicals	
1	One year	31-Tameco medicine	
1	One year	32-Arar for oil sweetening	
1	One year	33-Midfarm medicines	
1	One year	34-Hammami paints	
2	6 months	35-Imaduddin Khatib paints	
1	One year	36-Alarabyeh Almuttahide fertilizers	
1	One year	37-Almara'ee diary	
1	One year	38-Alfanniyeh for printing and packaging	
1	One year	39-Barada beer	
1	One year	40-Alhadithe conserved food	
1	One year	41-Ruba medicines	
1	One year	42-Ghassan Sukkar detergents	
1	One year	43-Abu Ghone oil mixing	
1	One year	44-Alwatanyeh ceramic	
1	One year	45-Alsouryeh diary	
2	6 months	46-Amir Hakmoor pains	
1	One year	47-M. Adnan Ma'took medicine	
1	One year	48-Firas Adam medicines	
2	6 months	49-Alsourieh medicines	
2	6 months	50-Ahmad Subhi Tukle diary	
2	6 months	51-Kamal Tabakfin diary	

1	One year	52-Imaduddin Halabi dyes	
2	6 months	53-General Company diary	
2	6 months	54-Jamal Abdulkarim dyes	
2	6 months	55-Upico paints	
2	6 months	56-Alsalfane	
2	6 months	57-Zannouibia ceramic	
2	6 months	58-Alreef ceramic	
2	6 months	59-Bashar Da'bool detergents	
2	6 months	60-Walid Da'bool detergents	
2	6 months	61-Ziade&Sukkar pesticides	
2	6 months	62-Alsharq tissues	
2	6 months	63-Alhadeethe for protecting plants	
2	6 months	64-Alwatanyyeh for protecting plants	
2	6 months	65-Albahra dye house	
2	6 months	66-Zakareya dye house	
2	6 months	67-Bilal Da'bool mineral oil	
2	6 months	68-Khalil Ramzi medicines	
2	6 months	69-kabbani medicines	
2	6 months	70-Almahayni medicines	
2	6 months	71- Veterinary medicines Co.	
2	6 months	72-Albahri medicines	
2	6 months	73-Alnamaa' detergents	
2	6 months	74-Alwazeer detergents	
2	6 months	75-Ammoura Aluminum	
2	6 months	76-Sar detergents	
2	6 months	77-Bashar Almankoosh diary	
1	One year	78-Sheikh Alard	
2	6 months	79-Naser Alsoos	
2	6 months	80-M.Hisham Kasm veterinary medicines	
2	6 months	81-Alhuda veterinary medicines	
1	One year	82-Akdima veterinary medicines	
2	6 months	83-Hamdan Tu'me medicines	
2	6 months	84-Awad Ammoura mineral oil	
2	6 months	85-Amer Malas dyes	
2	6 months	86-M.Salem Da'bool veterinary medicines	
1	One year	87-Alazme paints	
2	6 months	88-Raja'a Rustom veterinary	

		medicines	
2	6 months	89-Ammar A'ishe detergents	
2	6 months	90-Sawki Kasoota veterinary medicines	
2	6 months	91-Alsha'er chemicals	
2	6 months	92-Sheikh Alsroojyyeh	
2	6 months	93-M.Hallak Sons for soap	
2	6 months	94-Ayyash Board	
2	6 months	95-Altawfeek board	
2	6 months	96-Sifco veterinary medicines	
2	6 months	97-Alsharq for halva	
2	6 months	98-Halal detergents	
2	6 months	99-M.Osama Habboub detergents	
2	6 months	100-Antwan Naseef veterinary medicines	
2	6 months	101-Majico medicines	
1	One year	102-Yahia Mnajjed medicines	
2	6 months	103-RAfik Almunla detergents	

3-4. the stuff:

remarks	The period	In charge with	background	name
	2007/1/1 from ----- to	Chief of lab	Chemical Engineer	Eng. Muna Jumaa
	2007/1/1 from ----- to	Data management	chemist	Eng. Assistant Dana Tahhan
	2007/1/1 from ----- to	Data management	Textile engineer	Eng. Ali Shawish
	2007/1/1 from ----- to	Lab analyses	chemist	Eng. Assistant Malek Suleiman
	2007/1/1 from ----- to	Lab analyses	chemist	Eng. Assistant Rania Kara'awi
	2006/7/3 from ----- to	Lab analyses	agronomist	Eng. Lina yousef
	2006/9/ from ----- to	Lab analyses	petrochemical	Eng. Nadir Taim
	2006/9/6 from ----- to	Lab analyses	agronomist	Eng. Muna Sroujy
	2007/1/1 from ----- to	Lab analyses	agronomist	Eng. Ammar Hasan

Hama DFEA

Environmental Monitoring Plan 2007

No. 001 Hama DFEA 1/2/2007

Prepared by:

Eng. Reem Kanbar

Eng. Rana Warde

Eng. Yusra Tayfour

Eng. Yasmeeen Haidar

Eng. Siham Ibrahim

Signature of the director of Hama DFEA

1. Logical basis:

Hama DFEA prepared this EMP according to the law No. 50.

Hama DFEA has the right to implement this plan under the authorization by Minister of MOLAE and Hama Governor.

2. Objectives of Environmental Monitoring:

- 1) Monitoring industrial wastewater
- 2) Monitoring Al Asi River
- 3) Following up complaints

3. Parameters have to be monitored and analyzed:

Wells	Seas	Rivers and Lakes	Domestic wastewater	Industrial wastewater	Parameters	No.
1- Field measurements						
O		O	O	O	PH	1
		O			DO	2
O			O	O	EC -TDS	3-4
O		O	O	O	Water temperature	5
2-Lab analyses						
O		O			color	6
		O	O	O	SS	7
O		O	O	O	COD	8
O		O	O	O	BOD ₅	9
O		O	O	O	NO ₃ ⁻	10
O		O	O	O	PO ₄ ⁻³	11
O		O	O	O	CL ⁻	12
O		O	O	O	NH ₃ - N	13
O		O			Turbidity	14

4. Sampling Stations:

remark	locations	No. of stations	Water body
	1- Sami factory 2- Al-Ras Diary 3- Sallora factory 4- Robana factory 5- Al-Hani factory 6- Nada factory for soft drink 7- Kernazi Oil Factory 8- Kheder Abdulrazzak oil factory 9- Al-Zouhour oil factory 10- Al- Nawa'eer oil Factory 11- Al- Safa oil factory 12- Al- Nour oil factory 13- Al- Omara oil Factory 14- Al- Ahlieh oil factory 15- Al- Fadel Oil Factory 16- Hama Oil Company 17- Sheizar factory for soft drink 18- Wool factory 19- Ceramic Factory 20- Iron Factory 21- Onion Factory 22- Al-Majd company for soft drink 23- Cement Factory 24- Azzara power plant 25- Mohardeh power plant	25	Industrial wastewater
	Hama wastewater treatment plant	1	Domestic water
	Orantes river	1	Rivers and Lakes
As needed- like in case of well pollution			wells
			complaints

Location map



5. Monitoring duration and frequency

Duration of this EMP is from February 1st to December 31st 2007, frequency shown below:

المرات (شباط كانون الأول)	التواتر	locations	Water body
11	Once / month	1- Sami factory	Industrial wastewater
11	Once / month	2- Al-Ras Diary	
11	Once / month	3- Sallora factory	
11	Once / month	4- Robana factory	
11	Once / month	5- Al-Hani factory	
5	Once / 2 months	6- Nada factory for soft drink	
6	Once / 2 months	7- Kernazi Oil Factory	
4	Once / 3 months	8- Kheder Abdulrazzak oil factory	
6	Once / 2 months	9- Al-Zouhour oil factory	
4	Once / 3 months	10- Al- Nawa'eer oil Factory	
4	Once / 3 months	11- Al- Safa oil factory	
5	Once / 2 months	12- Al- Nour oil factory	
5	Once / 2 months	13- Al- Omara oil Factory	
5	Once / 2 months	14- Al- Ahlieh oil factory	
5	Once / 2 months	15- Al- Fadel Oil Factory	
6	Once / 2 months	16- Hama Oil Company	
5	Once / 2 months	17- Sheizar factory for soft drink	
5	Once / 2 months	18- Wool factory	
6	Once / 2 months	19- Ceramic Factory	
6	Once / 2 months	20- Iron Factory	
4	From Aug. to Nov.	21- Onion Factory	
5	Once / 2 months	22- Al-Majd company for soft drink	
5	Once / 2 months	23- Cement Factory	
6	Once / 2 months	24- Azzara power plant	
5	Once / 2 months	25- Mohardeh power plant	
11	Once / month	Hama wastewater treatment plant	Domestic water
11	Once / month	Orantes river	Rivers and Lakes
			wells
			complaints

6. Analysis method:

Remarks	Analysis method	Parameters
	Electrode method	1- PH
	Thermometer	2- water temperature
	Platinum -cobalt APHA	3- color
	Electrode method	4- TDS
	Membrane electrode method	5- DO
	Photometric method	6- SS
	Reactor digesting method	7- COD
	Cadmium reduction method	- NO ₃ – N8
	Salicilate method	- NH ₃ – N9
	Amino acid method	- PO ₄ ⁺³ 10
	Silver nitrate method	- CL 11
	Pressure sensor method	BOD ₅ - 12
	Electrode method	- EC- 13
	Niphilometric method	14- turbidity

7. Data and publication records:

- Record in DFEA
- Record in the directorate of labs at GCEA
- Record in the Governorate
- Preparing data book

e. Annual report (to be prepared and published)

8. Other remarks:

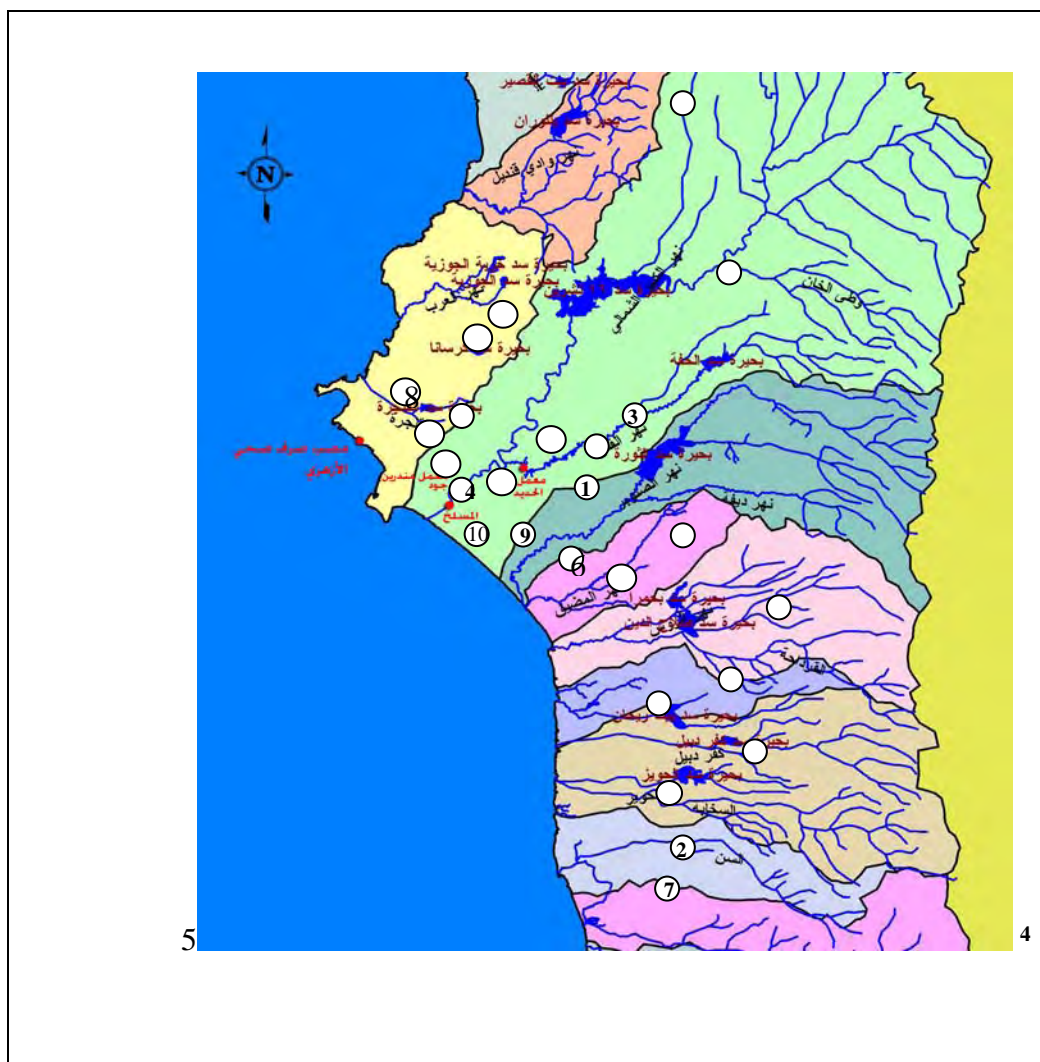
responsible staff: 8.1

remarks	Duration	In charge with	background	name
	January 1 to December 31	Lab chief	Chem. Eng.	Rana Warde
	January 1 to December 31	Data management	Chem. Eng.	Reem Kanbar
	January 1 to December 31	Basic water analysis + lab safety	Chem. Eng.	Hiba Khouri
	January 1 to December 31	basic water analysis & Data mng.	Civil Eng. Env.	Nameer Warrar
	January 1 to December 31	basic water analysis	Civil Eng. Env.	Yusra Tayfour
	January 1 to December 31	basic water analysis	Civil Eng. Env.	Yasmeen Haidar
			Civil Eng. Env.	Siham Suleiman

3. Sampling stations:

Remarks (locations)	Name Of stations	No. of stations	Water body
<ul style="list-style-type: none"> - Beginning of Hoffa street - Ktailbieh - Daba - Aleppo way - Zheriiat (Lat-Dam way) - Mafrak Aljawwiyeh - Jable- Arab Almalek - North of Lattakia - Alhanadi - Alhanadi 	<ul style="list-style-type: none"> 1- Jud factory for soft drink 2- Ogarit factory 3- Jud Iron factory 4- Aluminum factory 5- Asko iron factory 6- Alrabee' volatile oil 7- Almotawasset Tissues 8- Al'Arjoom factory 9- Shamsi company 10- Zen for granite 	10	1. Industrial water
<ul style="list-style-type: none"> - Lattakia- Alazhari - The Port - Southern Corniche 	<ul style="list-style-type: none"> 11- Alazhari 12- Port 13- Southern Corniche 	3	2. domestic water
<ul style="list-style-type: none"> - Lattakia - Alsanawbar - Damascus way (Alsharasheer) - Damascus Way (Bseiseen) - Albarjan - Daba - Kurdaha - Balloran -north of Lat.- - east of Lattakia - south of Jable 	<ul style="list-style-type: none"> 14- Alkabeer Alshamali River –reference point- 15- at the bridge of Lattakia-Tartous way 16- before the mouth 17- Alsanawbar River 18- Alsharasheer River before the mouth 19- Abu Burgul river –at the mouth- 20- Alsin River after joining with Abu Ba'ra River 21- Alkash River 22- Alsafarkieh Lake 23- Balloran Lake 24- 16th October Lake 25- Alsin Lake 	12	3. rivers ad lakes
		complains	4. others

4. Location map



5. Analysis method

Remarks (equipment)	Analysis method	parameters
(14-1) pH meter	Electrode method	pH
		Temperature
DO meter	Electrode membrane method	DO
TDS/EC meter	Electrode method	TDS/EC
Colorimeter(DR/890)	Platinum-cobalt	Color
Colorimeter(DR/890) DRB200-1	Reactor digesting method	COD
OXiTop	Pressure sensor method	BOD
Colorimeter(DR/890)	Cadmium reduction method	NO3-
Colorimeter(DR/890)	Amino acid method	PO4
Digital Titrator (Model I6900)	Silver nitrate method	Cl
Colorimeter(DR/890)	Salicilate method	NH3-N
Colorimeter(DR/890)	Photometric method	SS
2100p portable Turbidity	Niphilometric method	turbidity

6. Monitoring duration and frequency:

Duration of environmental monitoring is from January 1st to December 31st 2007, and frequency is summarized in the table below

No. of times	frequency	stations	Water body
12	Once / month	1- Jud factory for soft drink	1. Industrial water
6	Once / two months	2- Ogarit factory	
4	4 times/year	3- Jud Iron factory	
4	4 times/year	4- Aluminum factory	
4	4 times/year	5- Asko iron factory	
4	4 times/year	6- Alrabee' volatile oil	
4	4 times/year	7- Almotawasset tissues	
4	4 times/year	8- Al'Arjoom factory	
4	4 times/year	9- Shamsi company	
4	4 times/year	10- Zen for granite	
12	Once / month	11- Alazhari	2. domestic water
12	Once / month	12- Port	
12	Once / month	13-Southern Corniche	
2	Twice/year	14- Alkabeer Alshamali River -reference point-	3. rivers ad lakes
4	4 times/year	15- at the bridge of Lattakia-Tartous way	
4	4 times/year	16- before the mouth	
4	4 times/year	17- Alsanawbar River	
4	4 times/year	18- Alsharasheer River before the mouth	
4	4 times/year	19- Abu Burgul River -at the mouth-	
4	4 times/year	20- Alsin River after joining with Abu Ba'ra River	
4	4 times/year	21- Alkash River	
2	Twice/year	22- Alsafarkieh Lake	
4	4 times/year	23- Balloran Lake	
4	4 times/year	24- 16 th October Lake	
2	Twice/year	25- Alsin Lake	
12	Once / month	complains	4. others

7. Data and publications records

- a. Record in DFEA
- b. Record in the directorate of labs at GCEA
- c. Record in the Governorate
- d. Preparing data book
- e. Annual report (must be prepared and published)

8. Other remarks:

8.1 responsible stuff

period	In charge of	background	name
1-1-2007 to 31-12-2007	Water analysis	Engineer/lab chief	Eng.Aamal Mrhej
1-1-2007 to 31-12-2007	Water analysis	engineer	Eng. Sinan Dib
1-1-2007 to 31-12-2007	Water analysis	Chemical institute	Hadeel Wannous
1-1-2007 to 31-12-2007	Water analysis	Chemical institute	Suzan Shaddoud
1-1-2007 to 31-12-2007	Water analysis	Chemical engineer	Eng. Yamen Salman
1-1-2007 to 31-12-2007	Water analysis	Chemical engineer	Eng. Thaer Mohammad
1-1-2007 to 31-12-2007	Water analysis	Civil engineer	Eng. Rana Soufi
1-1-2007 to 31-12-2007	Water analysis	Civil engineer	Eng. Maya Yaseen
1-1-2007 to 31-12-2007	Data management	informatics engineer	Eng. Bana Awad
1-1-2007 to 31-12-2007	Data management	Data Management	Adel Habib

8.2 others

The EMP for Deir Ezzor DFEA 2007

The EMP for Deir Ezzor DFEA 2007 was prepared by the laboratory staff in accordance with the environmental law No 50 and the have the right to implement it by special authorization of the Minister of MOLAE and Governor of Deir Ezzor.

Objectives of the EMP

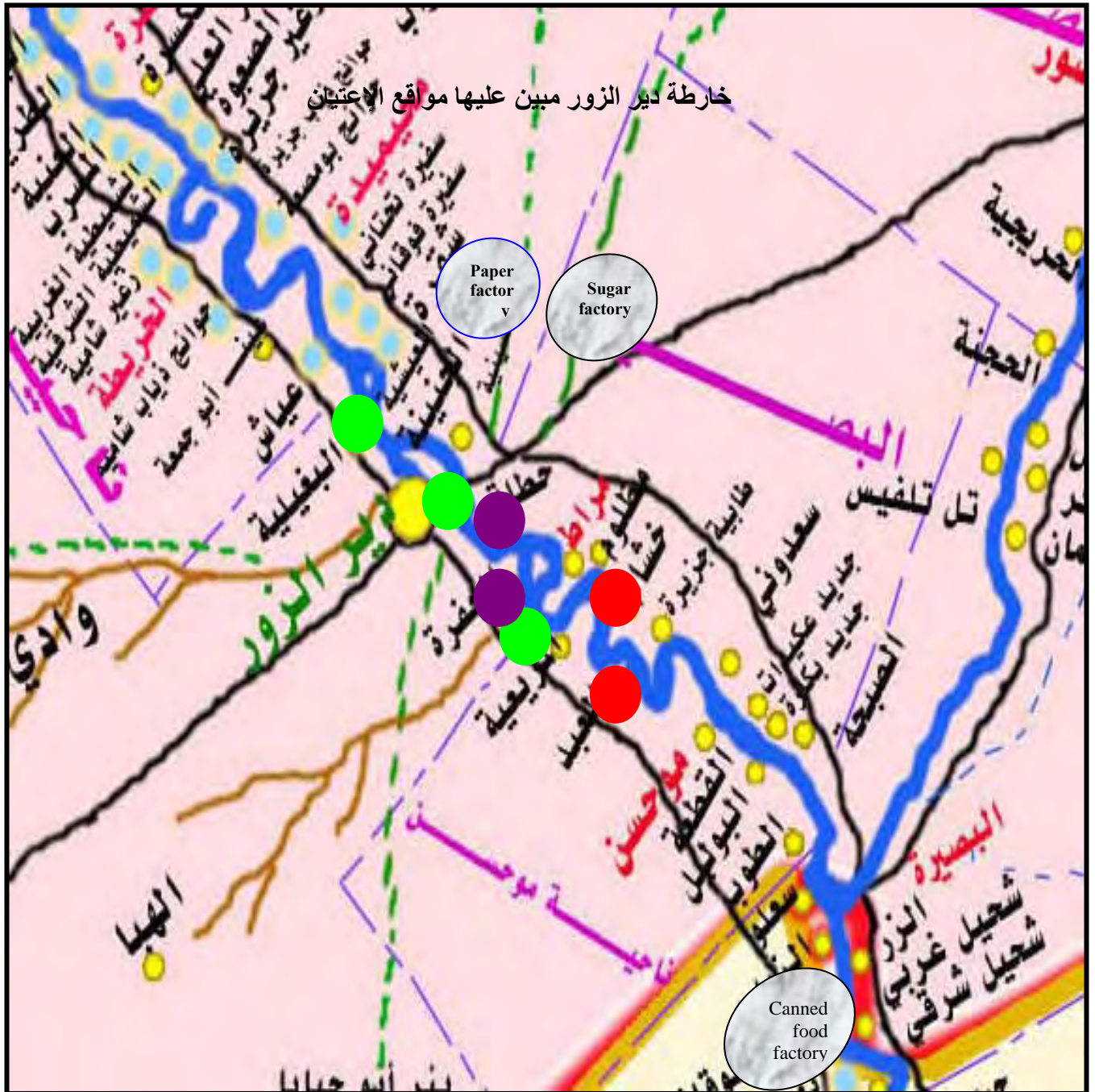
Monitoring most of the pollution sources located on the Euphrates River mostly the followings:

- (1 monitoring the industrial waste water to check the water quality and comparing with the Syrian standards.
- (2 Monitoring the water quality of the sewerage and comparing with the Syrian standards and regulations.
- (3 Monitoring the water quality for the Agricultural waste water canals to compare it with the Syrian regulations and standards.
- (4 Checking the raw water of the river in specific points to measure the pollution
- (5 Emergencies (complaints)

Monitoring stations:

Location	Type	No. of Stations	Water body
- Deir Ezzor 7 km area - Deir Ezzor Alhosainieh - Deir Ezzor Almiadien - Deir Ezzor 7 km area	- Sugar factory - Paper factory - Canned food factory -Yarns and textile factory	4	1- industrial waste water
- Deir Ezzor Harabesh - Deir Ezzor	- main sewerage outlet - Hawika area outlet	2	2- Municipal waste water
- Dier Ezzor Almrzieh - Dier Ezzor Al abed	Agricultural waste water canal Agricultural waste water canal	5	3- Rivers
- before the entrance of the city - inside the city - after the city	Raw water from the river directly		
			4- Emergencies

Site map



Deir Ezzor Map with Sampling Stations

Sampling stations for agriculture waste water



Sampling stations for raw water



Sampling stations for sewage



Duration of the Monitoring and Frequency

The environmental monitoring plan started since 1st March 2007 till 31st Dec 2007 with frequency as mentioned in the table below:

No.	symbol	frequency	Stations	Water body
8	Dez-I-001	8/ year	1- Paper factory	1- Industrial waste water
4	Dez-I-002	4/ year	2- Sugar Factory	
2	Dez-I-003	2/ year	3- Canned Food Factory	
3	Dez-I-004	3/year	4- Textile and yarns factory	
5	Dez-D-001	5/ year	1- Main outlet for sewerage	2- Municipal waste water
5	Dez-D-002	5/ year	2- Hawika area outlet	
5	Dez-R-001	5/ year	Agriculture waste water canal (Al mrieieh)	3- River, Lakes and ponds
4	Dez-R-002	4/ year	Agriculture waste water canal (A lAbed)	
2	Dez-R-003	2/ year	- before entering the city	
2	Dez-R-004	2/ year	- in the city center	
2	Dez-R-005	2/ year	- after exit of the city	
35	Dez-C-00?			4- Emergencies
77				Total

Standards analysis:

Standards analysis will be done about 10% of the total number of samples which will be analyzed in 2007 plan or when required.

parameters should be analyzed

Others	Rivers and lakes	Municipal waste water	Industrial waste water	Parameter	No
	0	0	0	PH	1
	0	0	0	Water Temperature	2
				Air Temperature	3
	0	0	0	EC	4
	0	0	0	TDS	5
	0		0	DO	6
	0		0	Color	7
	0	0	0	SS	8
	0	0	0	BOD	
	0	0	0	COD	9
	0	0	0	NO3	10
	0	0	0	Nh3	11
	0	0	0	PO4	12
	0	0	0	CL-	13
	0		0	Turbidity	14

Analysis methods for parameters as mentioned in 2006 EMP as followings:

Notes	Analysis method	Parameter
	Electrode method	PH
	Thermometer	Water Temp
		Air Temperature
	Electrode method	EC
	Electrode method	TDS
	Membrane electrode method	DO
	Platinum -cobalt APHA	Color
	Photometric method	SS
	Pressure sensor method	BOD
	Reactor digesting method	COD
	Cadmium reduction method	NO3
	Salicilate method	NH3
	Amino acid method	PO4
	Silver nitrate method	CL-
	Niphilometric method	Turbidity

Table of the required materials for the laboratory 2007:

Required quantity	Unit	Usage	Reagent	
1	500 ml	Calibration of ph	ph4.01	1
1	500 ml		ph7.00	
1	500 ml		ph10.00	
1	100 ml	Calibration of EC-TDS	180 ms / cm	2
1	100 ml		1000 ms / cm	
1	100 ml		18000 ms / cm	
1	Standard bottle	Turbidity calibration	0.1ntu	3
1	Standard bottle		20 ntu	
1	Standard bottle		100 ntu	
1	Standard bottle		800 ntu	
10	tests/pk25	COD analysis	COD reagents	4
2	tests/pk100	NO3-N analysis	NO3-N reagents	5
2 Amino acid	tests/pk100	PO4 analysis	PO4 reagents	6
No. / 4 / 14396	tests/set100	Chlorine analysis	Chlorine reagents	7
2	25 ml	BOD estimation	Nitrification inhibitor	8
2	cspsules/bottle50	BOD estimation	seeds	9

Reagents of low detection limits

Required quantity	unit	usage	reagent	
5	tests/pk25	COD analysis	COD reagents	1
2	tests/pk100	NO3-N analysis	NO3-N reagents	2
2	tests/pk100	PO4 analysis	PO4 reagents	3
3	tubes/pk 50	NH3 - N analysis	NH3 -N reagents	4

Environmental Monitoring Plan 2007

No. 002 Idleb DFEA (8th Feb 2007)

The Environmental Monitoring Plan was prepared by the Laboratory Chief Eng. Sameer Da'boul

Signature: Director of Idleb DFEA

1. logical base

this environmental monitoring plan was prepared by Idleb DFEA in Idleb Governorate in accordance with Law No. 50

Idleb DFEA has the right to implement the Environmental Monitoring Plan authorized by the Minister of MOLAE and Governor of Aleppo.

Objectives of the Environmental Monitoring

- 1) Monitoring the discharges from the industrial activities to support the environmental inspection when the lab is officially accredited.
- 1) Monitoring the discharges of the sewerage of the main cities at the governorate to search for any sensible changes (new pollution source)
- 2) Monitoring the water quality of the ground water (wells) nearby expected pollution sources or depending on request from the decision makers or a complaint.
- 3) Monitoring water quality of natural resources, (Rivers, reservoirs) in some important locations.
- 4) Acquiring the practical and scientific expertise in the field of the sample analysis, data interpretation and Environmental Monitoring.

2. parameters should be analyzed and Monitored

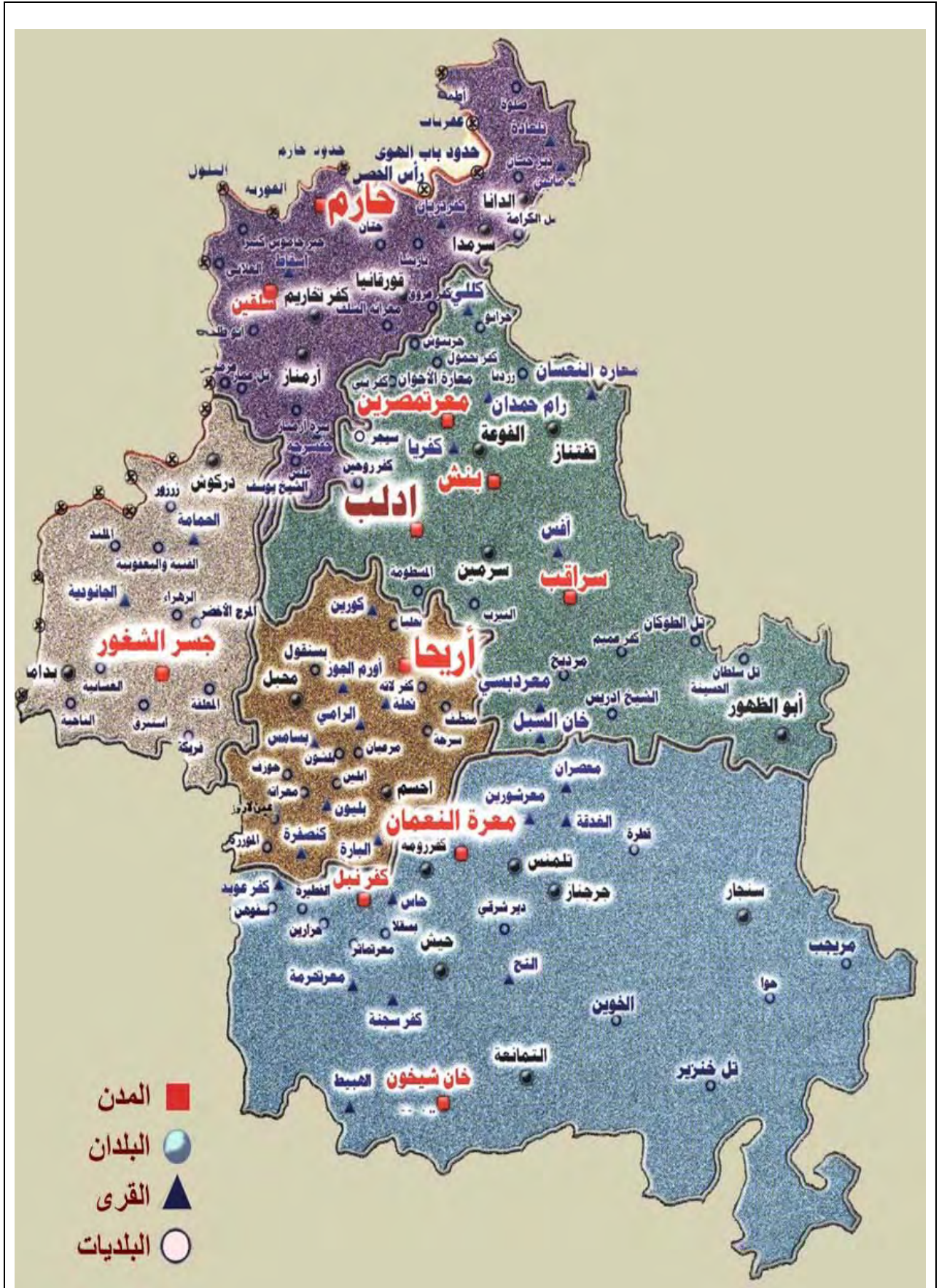
Others ground water wells	Sea and costal areas	Rivers and lakes	Municipal waste water	Industrial waste water	parameters	No
-1 field measurments						
+		+	+	+	PH	1

+		+	+	+	temp	2
+		+	+	-	EC	3
+		+	+	+	TDS	4
-		+	-	-	DO	5
-2 Laboratory analysis						
+		+	-	-	COLOR	1
-		+	+	+	SS	2
+		+	+	+	CODcr	3
+		+	+	+	BOD5	4
+		+	+	-	NO3-N	5
+		+	+	+	PO4	6
+		+	+	+	CL-	7
+		+	+	+	NH3-N	8
+		+	-	-	TUR	9

3. Monitoring Stations

Notes	locatio	No. of stations	Water body
Total number of samples 28 sample per year one sample from each station except Sugar Factory 2 samples per year	<ol style="list-style-type: none"> 1) Oil plants factories 4 (Idleb 1, Saraqeb 2, Ma'r Tamsareen 1) 2) Sugar Factory 1 (Jisr Alshougur) 3) Dairy Factories 3 one of the following factories (Bensh, Arihia, Idleb, Ezmarin, Alfou'a, Termanin) 4) Caned food factories 3 (Idleb2, Ariha 1) 5) Pixels factories 3 (Mar tamsareen, Idleb, Bensh) 6) Zaizoun Thermal plant 1 (Jisr Alshoughour) 7) olive extracting mills 3 (Idleb) 8) Grain mills 4 (Idleb 3, Saraqeb 1) 9) Industrial Area in Idleb 10) Other establishment 4 (new not categorized, complaints) 	27 stations	1- Industrial waste water
Total number of samples 5 + 1 expected	<ol style="list-style-type: none"> 1) Idleb sewerage (next to Alfahd petrol station) 2) Ariha Sewerage (Ariha Idleb road) 	5 stations	2- Municipal waste water

	<ul style="list-style-type: none"> 3) Marr'at Sewerage 4) Jisr Alshoughour 5) silkeen 6) others to be set later 		
Total number of samples 12 in the year	<ul style="list-style-type: none"> 1) Orantes river 2 before and after Jisr Alshoughour city 2) Orantes river before Turkish border (Ezmarin) 3) Orantes river 2 before and after Darkoush town 4) Al Balla'a Dam 5) Aldweisat Basin 6) Al Zo'ainieh river 7) Al ayyad river (before connecting with Orantes river – Aljanoudieh) 	7 stations	3- rivers and lakes
	Non		4- Sea and costal areas
5 samples annually + 5 expected	<ul style="list-style-type: none"> 1) Ein Alzarka spring 2) Gathering basin of Ein Alzarka. 3) 2 ground water wells near the Idleb Landfill site (Hammoud well, Habboush well) 4) ground water wells 1 near the final discharging point of the sewerage of Idleb and Aleppo (near Alsiha pond) 	5 stations + 5 expected depending on request or complaint	5- Others



the duration of the Environmental Monitoring Plan is from 1st Jan to 31st Dec 2007 and the frequency of it is shown in the table below:

Times (Jan-Dec)	frequency	stations	Water body
1 time	Once a year for each station	(1 plant oil factories 4 stations	1- Industrial Waste Water
2 times	twice a year for each station	(2 Sugar factory one station	
1 time	Once a year for each station	(3 Dairy factories 3 stations	
2 time	Once a year for each station	(8 Caned food factories 3 stations	
1 time	Once a year for each station	(9 Pixels factories 3 stations	
1 time	Once a year for each station	(10 Zaizoun Thermal plant 1 station	
1 time	Once a year for each station	(12 Olive extracting mills 3 stations	
1 time	Once a year for each station	(13 grain mills 4 (Idleb 3, Sarakeb 1)	
1 time	Once a year for each station	(14 Industrial area in Idleb	
1 time	Once a year for each station		
- 1 time - 1 time -1 time - 1 time - 1time	- once each 6 months - once each 6 months - once each 6 months - once each 6 months - once each 6 months	1- Idleb Sewerage 2- Ariha Sewerage 3- Ma'rrat sewerage 4- Jisr Ashougour sewerage 5- Silkeen sewerage 6 others (expected)	
- 1 time - 1 time - 1 time - 1 time - 1 time - 1 time	- once a year / station - once a year / station - once each six months - once a year - once a year - once a year	1 Orantes river 2 stations before and after Jisr Alshoughour 2 Orantes River before the Turkish border 3 Orantes River 2 stations before and after Darkoush town 4 Alzouainieh River (Alzouaineh) 5 Al bal'a Basin 6 Alabyyad river (Aljanoudieh)	3- Rivers and Lakes
		Not available	4 seas and costal areas

1 time	2 time /year for each station	1 Ein Alzarka spring	5- others : wells nearby expected pollution sources or depending on complaints
1 time	2 time /year for each station	2 Ein Alzarka gathering basin	
1 time	1 time /year for each station	3 wells 2 near Idleb landfill site (Hammoud well, Habboush well)	
1 time	1 time /year	4 wells 1 in the final discharge of the sewerage of both Aleppo and Idleb cities (near Siha pond Area)	
1 time	1 time /year	5 expected stations 5 due to request or compalints	

4. Analysis Method

Notes	Analysis method	Parameters
	Electrode method	PH
	Thermometer	Temp
	Electrode method	EC
	Electrode method	TDS
	Membrane electrode method	DO
	Platinum -cobalt APHA	COLOR
	Photometric method	SS
	Reactor digesting method	CODcr
	Pressure sensor method	BOD5
	Cadmium reduction method	NO3-N
	Amino acid method	PO4
	Silver nitrate method	CL-
	Salicilate method	NH3-N
	Niphilometric method	TUR

5. Data Records and Publications

- 1) Record at DFEA
- 2) Record at the directorate of laboratories at GCEA
- 3) Record at the Governorate
- 4) Arrangement of Data book
- 5) Annual Report should be prepared and published

6. other notes

10.1 Responsible Staff

Note	Item	Responsibility	Position	Name
-------------	-------------	-----------------------	-----------------	-------------

	Since the beginning of the project	Laboratory Chief	Chemical Engineer	Eng. Samir Da\boul
	Since the beginning of the project	Analyzer	Chemical Engineer	Eng. Mostapha Aldghayyem
	Beginning 2006	Analyzer+ public awareness	Agronomist	Eng. Eyad AlHousien
	Beginning 2007	Data management	Computer engineer	Eng. Qais Abazli

10.2 Others: Important Notes to the plan

- 1- Total number of the samples mentioned in the plan 44 sample + 10 undefined expected samples
- 2- The staff is not fully assigned for the laboratory work, so the plan was put due to the maximum time for the laboratory staff.
- 3- In Idleb Governorate most of the industrial activities are small scale and seasonal and their waste water are little and connected directly to the public sewerage, so we cant find some times sampling points, for this reason the plan should be flexible when implementation according to the current situation.
- 4- Any new sampling stations will be noted if possible within this plan or in the next coming plans and especially the sampling stations for the industrial waste water because e the industrial investment is developing rapidly.

Environmental Monitoring Plan 2007 in Hasakeh DFEA until July 2007

Notes	July					June					May					April					March					February				January	Month Station					
	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	4	3	2	1							
			+					+					+					+					+					+								Khabour 1
			+					+					+					+					+					+								Khabour 2
			+					+					+					+					+					+								Jaghjagh 1
		+																													+					Jaghjagh 2
																												+								The Lake
																																				Emergency

+: Assumed date for sampling

Khabour 1: sampling location of Khabour River before combining with Jaghjagh River in Hasakeh

Khabour 2: sampling location of Khabour River ...after combining with Jaghjagh River in Hasakeh

Jaghjagh 1: sampling location of Jaghjagh River before combining with Khabour River in Hasakeh

Jaghjagh 2: sampling location of Jaghjagh River in Al Kamishli City

Lake: sampling location of Basel Alasad Lake South of Hasakeh

Lab chief: Eng. Nawaf Osman

EMP 2007 (Rakka DFEA)

Week 4	Week 3	Week 2	Week 1	Month
Euphrates where leaving Rakka	Euphrates at Rakka entrance	Alba'th lake	Alasad lake	Fbruary
Euphrates after discharging wastewater of Al-Thawra	Euphrates after discharging wastewater of Rakka	Domestic wastewater in Al-Thawra	Domestic wastewater in Rakka	March
Agricultural wastewater canal before the governorate	Agricultural wastewater Jallab	Agricultural wastewater Shu'aib Alzokr	Euphrates after Jallab	April
Drinking water	Alkarama TSP	Slaughter discharge	Ain Alarous spring	May
Alna'eem factory	Diary factory industrial wastewater	Al'ojaili Est. industrial wastewater	Wells water	June
Alba'th lake	Alasad lake	Sugar factory	Soft drink factory	July
Domestic wastewater in Al-Thawra	Domestic wastewater in Rakka	Euphrates where leaving Rakka	Euphrates at Rakka entrance	August
Sugar factory	Euphrates after Jallab	Euphrates after discharging wastewater of Al-Thawra	Euphrates after discharging wastewater of Rakka	September
Ain Alarous spring	Agricultural wastewater canal before the governorate	Agricultural wastewater Jallab	Agricultural wastewater Shu'aib Alzokr	October
Drinking water	Alkarama TSP	olive press	Slaughter discharge	November
olive press	Diary factory industrial wastewater	Al'ojaili Est. industrial wastewater	Wells water	December

EMP for 2007:

The numbers of samples in 2007 are /74/distributed as the following:

- 6.1.1. Eight wells with low frequencies during the year for each.
- 6.1.2. Four springs with low frequencies during the year for each.
- 6.1.3. Ten dams with low frequencies during the year for each.
- 6.1.4. Five factories with three frequencies during the year for each.
- 6.1.5. Five presses with low frequencies during the year for each.
- 6.1.6. Domestic water with six frequencies.

The following table shows the locations in EMP2007 with frequencies:

Numbers of times	Frequency	Stations	Body water
5 times	-5 times a month 5sequent days	1)Distillation factory	1.Industrial waste water
5 times	-5 times a month 5sequent days	2)Aljabel factory juice	
Once	Once (Can be increased according to the productivity)	3) Shahba factory milk	
Once	-3 times a month 3sequent days	4)Detergent factory	
3 times	Twice a month 3 sequent days	5)Alrayan factory	
Twice	Twice a month 2 sequent days	6)Olive presses (Abo Hassan-Hamzeh- Alneser- Alharfoush – Aljolan)	
Once per three months	4 times inside city	Asweida waste	2)Domestic waste water
Once per six months	Twice	Random waste	
Once per six months	Twice	Alrom- Sahwat Alkheder –Jabal Alarab-Alteba-Algeda-Hebran- Almashnaf Alshamali- Almashnaf Aljanobi –Jwelen-Sahwat Blata.	3)Dams
Once per six months	Twice per year	Wells (Ein Bader-Ein Mousa-Ara) Wells (Wlga-Alsweida-Alzerraa- Almashfa-Saleem-Kanaker-Samee-Majadel)	4)Wells and springs

Notice: As for wells and springs, we choose two frequencies for each location, one in summer and the other in winter in order to get an idea about pollution and the causes of it.

Sweida DFEA

Environmental Monitoring plan 2007

Sampling method	Using sampling car	Sampling collectors 's names	Field record	Field remarks	Time &date	Target sampling location	Station
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	5/2/2007 9:00 am	Ground water	Welga well
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	7/2/2007 9:00 am	Ground water	Alsweida well
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	12/2/2007 9:00 am	Ground water	Almashfa well
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	14/2/2007 9:00 am	Surface water	Salkhad well
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	19/2/2007 9:00 am	Domestic waste water	Wastewater well
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	21/2/2007 9:00 am	Surface water	Heran well
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	26/2/2007 9 صباحا	Industrial waste water	Alshahba factory for milk
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	5/3/2007 9:00 am	Ground water	Saleem well

Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	7/3/2007 9:00 am	Industrial waste water	Alrayan factory
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	12/3/2007 9:00 am	Industrial waste water	Alrayan factory
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	14/3/2007 9:00 am	Industrial waste water	Alrayan factory
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	19/3/2007 9:00 am	Industrial waste water	Rwaisini factory Sahwat Alkhder dam
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	21/3/2007 9:00 am	Surface water	Sahwat Alkheder dam
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	26/3/2007 9:00 am	Domestic waste water	Outside waste water
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	4/2/2007 9:00 am	Surface water	Alroom well
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	4/4/2007 9:00 am	Surface water	Jabal Alarab well

Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	9/4/2007 9:00 am	Surface water	South &north Almanshaf dam
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	11/4/2007 9:00 am	Ground water	Ean Albared spring
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	16/4/2007 9:00 am	Ground water	Ean Mousa Spring
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	18/4/2007 9:00 am	Ground water	Aurra spring
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	23/4/2007 9:00 am	Surface water	Alteeba dam
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	1/5/2007 9:00 am	Domestic waste water	Domestic waste water(city)
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	3/5/2007 9:00 am	Ground water	Shakkara spring
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	8/5/2007 9:00 am	Ground water	Kanaker spring
Random	Sampling car is used permanently	Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	10/5/2007 9:00 am	Surface water	Sahwat Alblata dam

Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	15/5/2007 9:00 am	Ground water	Saami wel
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	17/5/2007 9:00 am	Ground water	Mjadel well
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	4/6/2007 9:00 am	Surface water	Sahwat Alblata dam
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	6/6/2007 9:00 am	Surface water	Alheran well
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	11/6/2007 9:00 am	Ground water	Welga well
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	13/6/2007 9:00 am	Ground water	Almashfa well
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	18/6/2007 9:00 am	Surface water	Algida well

Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	20/6/2007 9:00 am	Ground water	Alzeraa well
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	2/7/2007 9:00 am	Surface water	Alroom well
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	4/7/2007 9:00 am	Surface water	Jabal Alarab well
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	9/7/2007 9 صباحا	Surface water	South & north Almanshaf dam
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	11/7/2007 9:00 am	Ground water	Sleem well
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	16/7/2007 9:00 am	Surface water	Alteeba wel
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	18/7/2007 9:00 am	Ground water	Ean Mousa well

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Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	1/8/2007 9:00 am	Domestic waste water	Domestic waste water(city)
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	6/8/2007 9:00 am	Ground water	Aean bader spring
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	8/8/2007 9:00 am	Ground water	Welga well
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	18/8/2007 9:00 am	Ground water	Sweida well
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	15/8/2007 9:00 am	Surface water	Salkhed dam
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	20/8/2007 9:00 am	Ground water	Mejadel dam
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	3/9/2007 9:00 am	Industrial waste water	Aljabal juice factory
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	2007/9/5 9:00 am	Industrial waste water	Aljabal juice factory

Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	10/9/2007 9:00 am	Industrial waste water	Aljabal juice factory
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	12/9/2007 9:00 am	Industrial waste water	Aljabal juice factory
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	17/9/2007 9:00 am	Industrial waste water	Aljabal juice factory
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	19/9/2007 9:00 am	Domestic waste water	Outer waste water

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Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	2007/10/1 9:00 am	Industrial waste water	Distillation factory
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	2007/10/3 9:00 am	Industrial waste water	Distillation factory
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	2007/10/8 9:00 am	Industrial waste water	Distillation factory

Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	2007/10/10 9:00 am	Industrial waste water	Distillation factory
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	2007/10/15 9:00 am	Industrial waste water	Distillation factory
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	2007/10/17 9:00 am	Industrial waste water	Hamzeh press
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	2007/10/22 9:00 am	Industrial waste water	Hamzeh press
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	2007/10/24 9:00 am	Industrial waste water	Alniser press
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	2007/10/29 9:00 am	Industrial waste water	Alniser press
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	2007/11/5 9:00 am	Industrial waste water	Alharfoosh press
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	2007/11/7 9:00 am	Industrial waste water	Alharfoosh press
Random	Sampling car is used permanently	Humam Abo Raid Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	2007/11/12 9:00 am	Industrial waste water	Abo Hassan press

Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	2007/12/14 9:00 am	Industrial waste water	Abo Hassan press
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	2007/11/19 9:00 am	Industrial waste water	Aljolan press
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	2007/11/21 9:00 am	Industrial waste water	Aljolan press
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	2007/11/26 9:00 am	Industrial waste water	Domestic waste water(city)
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	2007/12/3 9:00 am	Ground water	Kanaker well
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	2007/12/5 9:00 am	Ground water	Alzerraa well
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	2007/12/10 9:00 am	Surface water	Algeza dam
Random	Sampling car is used permanently	Eng. Bashar algarmakani Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	2007/12/12 9:00 am	Surface water	Sahwat Ablata dam

Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Amal Swaidan	Results record of water quality	Rainy days will make up later	2007/12/17 9:00 am	Ground water	Samee well
Random	Sampling car is used permanently	Mr. Samer Almasri Ms. Hana Abu Zaidan	Results record of water quality	Rainy days will make up later	2007/12/22 9:00 am	Ground water	Aurra spring
Random	Sampling car is used permanently	Eng. Humam Abo Raid Ms. Ragad Abou Hasson	Results record of water quality	Rainy days will make up later	2007/12/24 9:00 am	Ground water	Shakarra spring

Environmental Monitoring Plan

No: 001 Dara'a DFEA 27/1/2007

Prepared by: Lab stuff

Director
Eng. Fatima AlHariri

1- Logical Framework:

This EMP prepared by Dara'a DFEA according to the law No. 50.

Dara'a DFEA has the right to implement this plan authorized by Minister of MOLAE and Dara'a Governor.

2- Environmental Monitoring objectives:

1- Monitoring industrial wastewater resulted from factories (whether it is corresponding with Syrian Standards).

2- Monitoring lakes, dams, and dams used for irrigation.

3- Monitoring drinking water springs to identify the effects of pollutants.

4- Result evaluation.

3- Monitoring Stations:

remarks	locations	No. of stations	Water body
	1- Tishreen press 2- Jasem press 3- Syrian-German press 4- Alkasabra press 5- Alsafa press 6- Veterinary medicines factory 7- Agricultural medicines factory 8- Inkhel for conserves factory 9- Da'el for conserves factory 10- Strach factory 11- Alna'eeme sesame sauce 12- Jilleen diaries 13- Dar'a cow farm 14- Lybian cow farm company 15- Alherak pickles 16- Albasheer buiscits 17- Natural fertilizer factory (nearest well) 18- Carbonated water factory	18	1- industrial wastewater
	1- Ibt'a' dam 2- Uduan dam 3- Tafas dam 4- Dara'a dam	4	lakes
	1- Almzerim	1	
	1- Al'ash'ari springs 2- Alma well 3- Ma'raba well 4- Algharieh Algharbi well 5- Sheikh miskeen well (Tall Hamad) 6- Alqinie well	6	Underground water

4 – location map:

5- Monitoring duration and frequency:

EMP is from first of January to 31st of December 2007, frequency shown below:

From Jan. to Dec.	frequency	Locations	Water body
	2	Tishreen press	a- Industrial wastewater
	2	Jasem press	
	2	Syrian-German press	
	2	Alkasabra press	
	1	Alsafa press	
	2	Veterinary medicines factory	
	2	Agricultural medicines factory	
	2	Carbonated water factory	
	2	Inkhel for conserves factory	
	1	Da'el for conserves factory	
	2	Strach factory	
	2	Alna'eeme sesame sauce	
	1	Jilleen diaries	
	1	Dar'a cow farm	
		Lybian cow farm company	
		Alherak pickles	
	2	Ibta' dam	b- Lakes
	2	Uduan dam	
	2	Tafas dam	
	2	Dara'a dam	
	4	Almzerim	
	2	Al'ash'ari springs	c- underground water
	2	Alma well	
	2	Ma'raba well	
	2	Algharieh Algharbi well	
	2	Sheikh miskeen well (Tall Hamad)	
	2	Alqinie well	
	1	Dar'a dump (nearest well)	
	2	Natural fertilizer factory (nearest well)	

6- Parameters to be monitored and analyzed:

Others	Sees and coastal reigons	Lakes and oceans	Domestic water	Industrial wastewater	Parameters	No.
1- field mesurements						
	☺	☺	△	☺	PH	1
	☺	☺	☺	☺	Air temperature	2
	☺	☺	☺	☺	Water temperature	3
	△	☺	△	△	DO	4
2- lab mesurements						
	△	☺	☺	☺	SS	5
	☺	☺	☺	☺	COD	6
	☺	☺	☺	☺	BOD	7
	☺	☺	☺	☺	NO ₃ -	8
	☺	☺	☺	☺	PO ₄ -	9
	☺	☺	☺	☺	CL-	10
	☺	☺	☺	☺	NH ₃ -N	11
	☺	☺	☺	☺	EC	12
	☺	☺	△	△	Turbidity	13
	△	☺	☺	☺	Flowrate	14

7- Analysis Method:

Remarks (name of equipment)	Analysis Method	Parameters
PH meter (SENSION1)	Electrode method	PH
		Temperature
DO meter	Electrode membrane method	DO
EC & TDS meter	Electrode method	TDS & EC
COLORMETER (DR890)	Platinum -cobalt APHA	COLOR
DRB- 200 & COLORMETER (DR890)	Reactor digesting method	COD
OXITOP	Pressure sensor method	BOD
COLORMETER (DR890)	Cadmium reduction method	NO ₃ ⁻
COLORMETER (DR890)	Amino acid method	PO ₄
DIGITAL TITRATOR	Silver nitrate method	CL ⁻
COLORMETER (DR890)	Salicilate method	NH ₃ -N
COLORMETER (DR890)	photometric method	SS
2100P TURBIDIMETER	Niphilometric method	Turbidity

8- Data and publications records:

- a. Record in DFEA
- b. Record in the directorate of labs at GCEA
- c. Record in the Governorate
- d. Preparing data book
- e. Annual report (must be prepared and published)

9- Other remarks:

9.1 responsible stuff:

remarks	Duration	In charge with	background	name
	January-Decembar 2007	Basic Water Quality Analysis	Eng. /lab chief	Eng. Mohammed Hariri
	January-Decembar 2007	Basic Water Quality Analysis	Engineer	Eng. Ahmad Kabalawi
	January-Decembar 2007	Basic Water Quality Analysis	Engineer	Eng. Dia'a Shbat
	January-Decembar 2007	Basic Water Quality Analysis	Engineer	Eng. Yousef Alshadayide
	January-Decembar 2007	Basic Water Quality Analysis	Chem. Eng.	Eng. Assistant Fathyieh Ahmad
	January-Decembar 2007	Data Management	Engineer	Eng. Atyie Alzawaideh
	January-Decembar 2007	Basic Water Quality Analysis	Engineer	Eng. Mohammed Aba Zeid

10- Samples distribution during the plan period:

Notes	December				November				October				September				August				July				June				May				April				March				February				January				Sampling station	Kind of Discharge
	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1		
	*				*																																								Tishreen press	Industrial Wastewater				
	*				*																																				Jasem press									
		*				*																																			Syrian-German press									
			*				*																																		Alkasabra press									
								*																																	Alsafa press									
											*																								*						Agricultura I medicines factory									
												*																			*										Veterinary medicines factory									
										*																						*									Albasheer biscuits									
												*												*																	Inkhel for conserves									
														*		*																									Da'el for conserves									
																								*																	Strach factory									

Environmental Monitoring Plan 2007

No. 002 Tartus DFEA (10/1/2007)
Prepared by: eng. Rudaina Al-Ali

signature of director of Tartus DFEA

1. Logical basis:

Tartus DFEA prepared this EMP according to the law No. 50.
Tartus DFEA has the right to implement this plan under the authorization by Minister of MOLAE and Tartus Governor.

2. Objectives of Environmental Monitoring

- 1) Identifying water quality assessment in the selected water recourses
- 2) Monitoring water Bodies in the governorate periodically.
- 3) Monitoring pollution recourses and try to control them
- 4) Increasing Environmental Awareness using monitoring data

3. Monitoring duration and frequency

Duration of this EMP is from January 1 to December 31 2007, frequency shown below:

No. of times	frequency	stations	Water body
8	2 times a year 2 times a year 2 times a year 2 times a year	1- oil refining factory 2- fat factory 3- soap factory (taltermos) 4- Abdulmajeed Khawanda oil press (Karkafti)	<u>Industrial wastewater</u>
12	3 times/year 3 times/year 3 times/year 3 times/year	1- Aloaineye 2- Albreikie 3- Alzara 4- Alsawaqi	<u>Rivers</u> 1- Alhosain river
9	3 times/year 3 times/year	1- near Alkadmous restaurant 2- karkafti 3- Alsorani	2- Marqiyeh river
12	3 times/year 3 times/year	1- Alsesnieh 2- Zok Barakat- Ein Meri	3- Al-Abrash river
3	3 times/year	3- Ein Albarde 4- Hakr Zahie- Wadi Aladidie	4- Alkabeer Aljanoubi River
3	3 times/year	1- Almadhale	5- Alarous River
8	2 times a year 2 times a year 2 times a year 2 times a year	Baneyas ALsheikh Hasan Alshamamees ALsheikh Badr	<u>springs</u>
4	2 times a year 2 times a year	Dam body	<u>dams</u> 1- Albasel Dam 2- Alsorani Dam
6	3 times a year 3 times a year	1- Albasel Lake 2- Alsorani Lake	<u>Lakes</u>
Depending on complains	–	complains	<u>others</u>

4. Sampling stations

remarks	locations	No. of stations	Water body
Considering Discharging times	Jammase	1	<u>1-industrial waste water</u> 1-vegetable oil refining factory
	Jammase	1	2- fat factory
	Taltermos	1	3- Soap factory
	Karkafti	1	4- Abdulmajeed Khawanda oil press
Considering the possibility of reaching sampling stations Alkareem location was excluded because it is difficult to reach	Aloaineye- Albreikie - Alzara- Alsawaqi	4	<u>Rivers</u> 1- Alhosain river
	near Alkadmous restaurant- karkafti- Alsorani	3	2- Marqiyeh river
	Alsesnieh- Hakr Zahie- Altwanin- Zok Barakat	4	3- Al-Abrash river
<u>No. of villages get benefits from the spring</u>	Baneyas Alkafroon Alshamamees ALsheikh Badr	5 1 1 1	<u>springs</u> 1- Baneyas 2- ALsheikh Hasan 3- Alshamamees 4- ALsheikh Badr
	Dam body Dam body	1 1	<u>dams</u> 1- Albasel Dam 2- Alsorani Dam

5 Parameters have to be monitored and analyzed:

Complains	Dams	Springs	Rivers	Industrial wastewater	Parameters	No.
1- Field measurements						
O	O	O	O	O	PH	1
O	O	X	O	O	DO	2
O	O	O	O	O	EC –TDS	3-4
O	O	O	O	O	Water temperature	5
2-Lab analyses						
O	O	O	O	O	color	6
O	O	X	O	O	SS	7
O	O	O	O	O	COD	8
O	O	O	O	O	BOD ₅	9
O	O	O	O	O	NO ₃ ⁻	10
O	O	O	O	O	PO ₄ ⁻³	11
O	O	O	O	O	CL ⁻	12
O	O	O	O	O	NH ₃ - N	13
O	O	O	O	O	Turbidity	14

6. Analysis method:

Remarks	Analysis method	Parameters
	Electrode method	1- PH
	Thermometer	2- water temperature
	Platinum -cobalt APHA	3- color
	Electrode method	4- TDS
	Membrane electrode method	5- DO
	Photometric method	6- SS
	Reactor digesting method	7- COD
	Cadmium reduction method	8- NO ₃ – N
	Salicilate method	9- NH ₃ – N
	Amino acid method	10- PO ₄ ⁺³
	Silver nitrate method	11- CL ⁻
	Pressure sensor method	12 BOD ₅
	Electrode method	13- EC-
	Niphilometric method	14- turbidity

7. Data and publication records:

- Record in DFEA
- Record in the directorate of labs at GCEA
- Record in the Governorate
- Preparing data book
- Annual report (to be prepared and published)

8. Other remarks:

8.1 responsible stuff:

remarks	Duration	In charge with	background	name
	January 1 to December 31	Lab chief	Chem. Eng.	Rudayna Al Ali
	January 1 to December 31	Data management	chemist	Amira Emran
	January 1 to December 31	Basic water analysis + lab safety	chemist	Dalal Ibrahim
	January 1 to December 31	basic water analysis	Chem. Eng.	Lama Harfoush
maternity	January 1 to December 31	basic water analysis + equipment management	Chem. Eng.	Suhayla Butros
	January 1 to December 31	basic water analysis	Chem. Eng. assistant	Samaher Abdul Rahman
	January 1 to December 31	basic water analysis	Chem. Eng.	Manal Ajamyie

8.2 others: some stations could be changed according to circumstances of fieldwork

Quneitra Environmental Monitoring Plan 2007

No. 002 Quneitra DFEA (10/1/2007)

Prepared by: Majed Zeitun, Ali Ibrahim
Quneitra DFEA

signature of director of

1. Logical basis:

Tartus DFEA prepared this EMP according to the law No. 50.

Tartus DFEA has the right to implement this plan under the authorization by Minister of MOLAE and Tartus Governor.

2. Objectives of Environmental Monitoring

- 1) Identifying water quality assessment in the selected water recourses
- 2) Monitoring water Bodies in the governorate periodically.
- 3) Monitoring pollution recourses and try to control them
- 4) Increasing Environmental Awareness using monitoring data

3. Monitoring duration and frequency

Duration of this EMP is from January 1 to December 31 2007, frequency shown below:

No. of times	frequency	stations	Water body
3	Once every 4 months	1) Alsafa olive press	<u>Industrial wastewater</u>
4	Once every 3 months	2) Starch factory	
4	Once every 3 months	3) bio-fertilizers	
3	Once every 4 months	4) diary factory	
4	Once every 3 months	Rukad valley Domestic wastewater	<u>Domestic wastewater</u>
3	Once every 4 months	1) Rwaihenieh	<u>lakes</u>
3	Once every 4 months	2) Kodana	
3	Once every 4 months	3) Ghadeer Albustan	
4	Once every 3 months	1) Farmers Union	<u>wells</u>
4	Once every 3 months	2) Alsakhr spring	
4	Once every 3 months	3) Alfawar Spring	
39			total

4. Sampling stations

remarks	stations	No. of stations	Water body
	1) Alsafa olive press 2) Starch factory 3) bio-fertilizers 4) diary factory	4	<u>Industrial wastewater</u>
	Rukad valley Domestic wastewater	1	<u>Domestic wastewater</u>
	1) Rwaihenieh 2) Kodana 3) Ghadeer Albustan	3	<u>lakes</u>
	1) Farmers Union 2) well of Alsakhr spring 3) Alfawar Spring	3	<u>wells</u>

5 Parameters have to be monitored and analyzed:

others	wells	lakes	Domestic wastewater	Industrial wastewater	Parameters	No.
	○	○	○	○	PH	1
	○	○	○	○	Water temperature	2
	○	○	○	○	TDS	3
	○	○	○	○	EC	4
	△	○	○	○	SS	5
	△	○	△	△	DO	6
	○	○	○	○	COD	7
	○	○	○	○	BOD ₅	8
	○	○	○	○	NO ₃ ⁻	9
	○	○	○	○	PO ₄ ³⁻	10
	○	○	○	○	Cl ⁻	11
	○	○	○	○	NH ₃ -N	12
	○	○	△	△	Turbidity	13
	○	○	△	△	Color	14
	*	*	○	○	Flow rate	15

△ : analysis is not necessary

6. Analyses methods:

Equipment	Analysis method	Parameters	No.
sensION1 Portable pH meter	Electrode method	pH	1
Thermometer		Water temperature	2
Colorimeter (DR/890)	Platinum -cobalt APHA	Color	3
sensION5 Portable EC & TDS meter	Electrode method	TDS	4
sensION6 Portable DO meter	Membrane electrode method	DO	5
Colorimeter (DR/890)	Photometric method	SS	6
Reactor (DRB 200-1) & Colorimeter (DR/890)	Reactor digesting method	COD _{Cr}	7
Colorimeter (DR/890)	Cadmium reduction method	NO ₃ -N	8
Colorimeter (DR/890)	Salicilate method	NH ₃ -N	9
Colorimeter (DR/890)	Amino acid method	PO ₄ ³⁺	10
Digital Titrator (Model 16900)	Silver nitrate method	Cl ⁻	11
OXiTop	Pressure sensor method	BOD ₅	12
sensION5 Portable EC & TDS meter	Electrode method	EC	13
2100P Portable Turbidity	Niphilometric method	turbidity	14

7. Data and publication records:

- a. Record in DFEA
- b. Record in the directorate of labs at GCEA
- c. Record in the Governorate
- d. Preparing data book
- e. Annual report (must be prepared and published)

8. Other remarks:

8.1 responsible stuff:

remarks	Duration	In charge with	background	name
	1/1 – 31/12	Lab	The director	Hamze Suleiman
	1/1 – 31/12	Basic water analysis	Agronomist	Ali Ibrahim
	1/1 – 31/12	Basic water analysis & Data management	Chemist	Majed Zeitun

8.2 others

- 1- Budget is not enough
- 2- Bad weather conditions
- 3- Stuff is not enough

Some locations may change according to work circumstances

Annex 3-5: Environmental Monitoring Plan

3.5.2 Environmental Monitoring Plan 2007

(2) Heavy Metal (7 DFEAs)

Sampling Schedule of Metal Analysis

Name of DFEA Aleppo

برنامج الاعتيان لتحليل المعادن

Samples No.	Name	Date		2007						2008					
		yyyy	mm	7	8	9	10	11	12	1	2	3	4	5	6
		dd													
1	Marwan Al Olabi dying fact				a										
2	Sokar dying factory							a							
3	Barakat medicine Factory					a									
4	Ka'keh dairy factory					a									
5	Al Samoor factory						a								
6	Abagee for chemicals						a								
7	Imad Lotfi paper factroy							a							
8	Molar Ice-cream factory				a										
9	Mineral oil factory								a						
10	Melting and coating factroy								a						
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															

Legend

الرموز

- a : All 14 items (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Sb, Zn)
 b :
 c :
 d :
 e :

Sampling Schedule of Metal Analysis

Name of DFE/ D A M _____

برنامج الاعتيان لتحليل المعادن

Samples No.	Name	Date		2007						2008					
		yyyy	mm	7	8	9	10	11	12	1	2	3	4	5	6
		dd													
1	ihda'ashareea					a				a			a		
2	wella						a				a			a	
3	dappaghat					a				a			a		
4	fa						a				a			a	
5	alarabi washing car						a				a			a	
6	khomasia					a				a			a		
7	bab sharqi dying								a			a			a
8	gallab								a			a			a
9	zamzam								a			a			a
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															

Legend

الرموز

- a : All 14 items (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Sb, Zn)
 b :
 c :
 d :
 e :

Sampling Schedule of Metal Analysis

Name of DFEA Hasakeh

برنامج الاعتيان لتحليل المعادن

Samples No.	Name	Date		2007						2008					
		yyyy	mm	7	8	9	10	11	12	1	2	3	4	5	6
		dd													
1	Taban spring					a						a			
2	Bassel Al Assad lake					a						a			
3	The enterance of Al Khabo					a						a			
4	The enterance of Al Jag Ja					a						a			
5	Al Khabour river before the					a						a			
6	Al Jag Jag at the outlet of					a						a			
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															

Legend

الرموز

- a : All 14 items (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Sb, Zn)
- b :
- c :
- d :
- e :

Sampling Schedule of Metal Analysis

Name of DFEA Idleb

برنامج الاعتيان لتحليل المعادن

Samples No.	Name	Date		2007						2008					
		yyyy	mm	7	8	9	10	11	12	1	2	3	4	5	6
		dd													
1	Sugar factory- Jeser Shou			a		a						a			
2	Idleb zoon waste water				a		a								
3	Al Asi river before Jeser S			a		a						a			
4	Al Asi river after Jeser Shd			a		a						a			
5	Idleb sewage				a		a								
6	Glass factory- Jeser Shou			a											
7	Unspecified samples														
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															

Legend

الرموز

- a : All 14 items (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Sb, Zn)
- b :
- c :
- d :
- e :

Sampling Schedule of Metal Analysis

Name of DFEA Rakka

برنامج الاعتيان لتحليل المعادن

Samples No.	Name	Date		2007						2008					
		yyyy	mm	7	8	9	10	11	12	1	2	3	4	5	6
		dd													
1	Sugar factory					a									
2	olive press factory								a						
3	sewage										a				
4	agriculture waste water											a			
5	Soda factory														a
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															

Legend

الرموز

- a : All 14 items (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Sb, Zn)
 b :
 c :
 d :
 e :

Sampling Schedule of Metal Analysis

Name of DFEA Sweida

برنامج الاعتيان لتحليل المعادن

Samples No.	Name	Date		2007						2008					
		yyyy	mm	7	8	9	10	11	12	1	2	3	4	5	6
		dd													
1	Sewage					a									
2	Al Jabal juice factory					a									
3	Alcohol factory						a								
4	Al Rayan factory						a								
5	Waste water of Sweida hos						a								
6	Areeka spring							a							
7	Mzerib water							a							
8	Al Room dam							a							
9	Habran dam							a							
10	Ein mousa spring							a							
11	E'ra well							a							
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															

Legend

الرموز

- a : All 14 items (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Sb, Zn)
- b :
- c :
- d :
- e :

Sampling Schedule of Metal Analysis

Name of DFEA Tartous

برنامج الاعتيان لتحليل المعادن

Samples No.	Name	Date		2007						2008					
		yyyy	mm	7	8	9	10	11	12	1	2	3	4	5	6
		dd													
1	Al Shekh Badr spring			a											
2	Ein Al Za'roor spring			a											
3	Al Soorani lake			a											
4	Al Soorani dam			a											
5	Al Abrash river-Ein Mere'				a										
6	Al Shekh Hasan spring				a										
7	Th stream of Al Shekh Has				a										
8	Markieh river- near Al Kod							a							
9	Al Hsen river- Karkafte							a							
10	Khawandah press factory							a							
11	Al Basel dam					a									
12	Al Basel lake					a									
13	Al Sesnieh					a									
14	Al Hsen river- Al Barbakieh						a								
15	Al Hsen river- Al Ewinieh						a								
16	Al Hsen river- Al Zarah						a								
17	Vegetation oil refinery- Al				a										
18	Al Arous river- Al Tale'i								a						
19	Al Ward river-Al Madhaleh								a						
20															
21															
22															
23															
24															
25															

Legend

الرموز

- a : All 14 items (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Sb, Zn)
 b :
 c :
 d :
 e :

Annex 3-5: Environmental Monitoring Plan

3.5.2 Environmental Monitoring Plan 2007

(3) Air Quality (Damascus, Homs, Aleppo)

Environmental Monitoring (EMO) Plan

Re. No. 001 Damascus DFEA (2007/06/23)

Prepared by Ms. Oaima Younes

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Damascus DFEA in accordance with the Law No. 50.

2. Objectives of the Environmental Monitoring

- (1) Grasp the present circumstances of environment
- (2) Evaluate the effect from Stationary sources(factory) , and Mobile sources(cars)
- (3) Guidance and control toward factories, technical support
- (4) Improve the environmental consciousness for the people and the persons concerned in the factory, by publication monitoring result
- (5) Reflection to traffic plan
- (6) Grasp the concentration of wide area air pollution
- (7) Evaluate the relation between environmental pollution and it's effect on the health
(accumulation of next data is necessary)

3. Monitoring Stations

The air quality monitoring plan doesn't hold in measurement of stationary sources

Measuring object	No. of measuring points	Locations	Note
A. Industrial region area Food plant Textile plant Chemical plant	(2 points)	Near the factory	
B. Mobile sources area 1) Arterial road 2) Planned subway line.	(7 points) 1) 1 point 2) 6 points	1) City roads 2) Traffic points	Arterial road
C. Area source zone 1) Residence zone 2) Commercial zone 3) Animals	(4 points) 1) 2 points 2) 1 point 3) 1 point	1) Center and surroundings 2) Center 3) Surroundings	Representative point in region
D. Weather condition in Damascus	(3 points) 1) Downtown 2) Damascus DFEA 3) WRIC ^{*1)}	1) Center of Damascus 2) Suburb area 3) Topographical conditions area	Continuous monitoring
E. Others 1) Large area 2) Dust fall	1) 25 points 2) 7 points	Whole area of Damascus Whole area of Damascus	4 times 12 times

*1) Water Resources Information Center (WRIC) of Ministry of Irrigation

4. Monitoring Period and Frequency

The EMO period is from 1st January 2008 to 31st December 2008. The EMO frequency of each station is summarized in Table hereunder.

(※Air quality analysis is planned after supply training materials)

Measuring object	No. of measuring points	Frequency	Times (Jan-Dec)
A. Industrial region Food plant Textile plant Chemical plant	(2 points)	1) once/ 1-2 month	1) 8 times
B. Mobile sources 1) Arterial road 2) Planned subway line.	(7 points) 1) 1 point 2) 6 points	1) once/ 3 months 2) once/ month	1) 4 times 2) 11 times
C. Area source 1) Residence zone 2) Commercial zone 3) Animals	(4 points) 1) 2 points 2) 1 point 3) 1 point	1) once/ 3 months 1) once/ 3 months 1) once/ 3 months	1) 4 times 2) 4 times 3) 4 times
D. Weather condition in Damascus	(3 points) 1) Downtown 2) Damascus DFEA 3) WRIC ^{*1)}	One data/ hr (24 data/ day)	Continuous monitoring
E. Others 1) Large area 2) Dust fall	1) 25 points 2) 7 points	-Each season (four times/year) Once/ month	1) 4 times 2) 12 times

5. Parameters to be Analyzed and Monitored

The monitor of the ambient air is targeted.

No.	Parameters	A. Industrial region	B. Mobile sources	C. Area source	D. Others Large area
1. Field Measurement					
	(1) TSP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(2) SPM	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(3) NO, NO ₂ , NO _x	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	(4) SO ₂	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	(5) O ₃ (O _x)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(6) NH ₃	<input type="radio"/>			
	(7) Dust fall: Dissoluble and insoluble substance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
2. Laboratory Analysis					
	(1) Pb	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(2) Zn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(3) Cd	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(4) Cu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(5) Cr	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(6) Fe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(7) Mn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
3. Weather continuous monitoring					
	(1) Wind Direction			<input type="radio"/>	
	(2) Wind Velocity			<input type="radio"/>	
	(3) Temperature			<input type="radio"/>	
	(4) Humidity			<input type="radio"/>	
	(5) Solar Radiation			<input type="radio"/>	

Note: Field Measurement is mainly sampling. Most elements are analyzed with the laboratory.

6. Analysis Items and Method

Parameters	Analysis Method	Note
Air quality		
(1) TSP	Gravimetric method	Balance of reciprocal sensibility 0.1mg
(2) SPM	Gravimetric method	Balance of reciprocal sensibility 0.1mg
(3) NO, NO ₂ , NO _x	Saltzman method	Passive sampler and Bubbling method with impinger
(4) SO ₂	Pararosaniline method	Passive sampler and Bubbling method with impinger
(5) O ₃ (O _x)	KI Absorptiometry (O _x)	
(6) NH ₃	Nessler's method	Spectrophotometer
(7) Dust fall	Dust jar, Gravimetric method	Balance of reciprocal sensibility 0.1mg
(8) Heavy metals	Atomic absorption spectrophotometer	
Weather		
(1) Wind Direction	Synchronized and potentiometer	Wind direction anemometer
(2) Wind Velocity	Power generation type or pulse type	Wind Velocity anemometer
(3) Temperature	Platinum resistance method	Compulsion ventilation method
(4) Humidity	Capacitance method	Compulsion ventilation method
(5) Solar Radiation	Thermocouple method	Pyran thermocouple

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

(Always, participant)

Name	Specialization	Responsibility	Note
1) Ms. Omaima Younes	Civil engineer, department of environment	Air quality Analysis (head of air division)	
2) Ms. Feryal AlHusaini	Agricultural engineer	Air quality Analysis (head of biological diversity division)	
3) Ms. Rafah Zaghmout	Chemistry Institute, department of technology	Air Quality Analysis	
4) Ms. Hiba Adra	Civil engineer, department of environment	Air Quality Analysis	
5) Mr. Almuthanna Ghanem	PhD in biological chemistry	Data management chief	

8.2 Others

End

The Schedule of the Plan

(Damascus DFEA)

Measuring object	Parameters	Jan.			Feb.			Mar.			Apr.			May			Jun.			Jul.			Aug.			Sep.			Oct.			Nov.			Dec.		
		10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30			
A. Industrial region (2) Food plants, Textile plant and chemical plant	(1) TSP				1			1			1			1			1			1			1			1			1			1					
	(2) SPM (PM10)				1			1			1			1			1			1			1			1			1			1					
	(3) NO, NO2, NOx				1			1			1			1			1			1			1			1			1			1					
	(4) SO2				1			1			1			1			1			1			1			1			1			1					
	(5) O3 (Ox)				1			1			1			1			1			1			1			1			1			1					
	(7) NH3				1			1			1			1			1			1			1			1			1			1					
	(8) PM10(Low-Vol)																																				
	B. Mobile sources (7) 1) Arterial road 2) Planned subway line.	(1) TSP				1			1	2		1			1	2		1			2		1	1		2		1	2		1	1		2			
(2) SPM (PM10)					1			1	2		1			1	2		1			2		1	1		2		1	2		1	1		2				
(3) NO, NO2, NOx					3			1	3		3			1	3		3			3		3	3		3		3	3		3	1	3		3			
(4) SO2					3			1	3		3			1	3		3			3		3	3		3		3	3		3	1	3		3			
(5) O3 (Ox)								1						1						1					1						1						
(7) NH3																																					
(8) PM10(Low-Vol)																																					
C. Area source (4) 1) Residence zone 2) Commercial zone 3) Animals		(1) TSP					3				1			3			1			3			1			3			3			1					
	(2) SPM (PM10)					3				1			3			1			3			1			3			3			1						
	(3) NO, NO2, NOx					3				1			3			1			3			1			3			3			1						
	(4) SO2					3				1			3			1			3			1			3			3			1						
	(5) O3 (Ox)					3				1			3			1			3			1			3			3			1						
	(7) NH3					1					1			1					1			1			1			1			1						
	(8) PM10(Low-Vol)																																				
	D. Others a) Large area (Using passive sampler) b) Dust fall (Using Dust jar)	(1) NO, NO2, NOx					25						25						25					25						25							
(2) SO2						25						25						25					25						25								
Dissoluble and		7			7			7			7			7			7			7			7			7			7			7					
Total samples				7			84			30			34			80			15			44			80			19			32			78			17
Laboratory Analysis (Heavy metals)	Pb	0		0	1	3	0	2	1	0	1	3	0	2	1	0	0	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0	
	Zn	0		0	1	3	0	2	1	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0
	Cd	0		0	1	3	0	2	1	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0
	Cu	0		0	1	3	0	2	1	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0
	Fe	0		0	1	3	0	2	1	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0
	Mn	0		0	1	3	0	2	1	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0
	Cr	0		0	1	3	0	2	1	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0	1	3	0	2	1	0	0	0	0
Total of number of components				0			28			21			28			21			0			28			21			0			28			21			0
Weather stations (3)	(1) Wind Direction	Weather continuous monitoring (24 data/ day)																																			
	(2) Wind Velocity	Weather continuous monitoring (24 data/ day)																																			
	(3) Temperature	Weather continuous monitoring (24 data/ day)																																			
	(4) Humidity	Weather continuous monitoring (24 data/ day)																																			

Total Samples
8
8
8
8
8
8
0
22
22
40
40
4
0
0
16
16
16
16
16
4
0
100
100
84
544

28
28
28
28
28
28
28
28
196

8760×3
8760×3
8760×3
8760×3

8760 × 3

Environmental Monitoring (EMO) Plan

Re. No. 001 Homs DFEA (2007/06/26)

Prepared by Mr. Muhammad Ali Alhusein

Sign: Director of DFEA

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Homs DFEA in accordance with the Law No. 50.

2. Objectives of the Environmental Monitoring

- (1) Grasp the present circumstances of environment
- (2) Evaluate the effect from Stationary sources(factory) , and Mobile sources(cars)
- (3) Guidance and control toward factories, technical support
- (4) Improve the environmental consciousness for the people and the persons concerned in the factory, by publication monitoring result
- (5) Reflection to traffic plan
- (6) Grasp the concentration of wide area air pollution
- (7) Evaluate the relation between environmental pollution and it's effect on the health
(accumulation of next data is necessary)

3. Monitoring Stations

The air quality monitoring plan doesn't hold in measurement of stationary sources.

Measuring object	No. of Stations	Locations	Note
A. Stationary source area Refinery area Chemical plant area	(2 stations)	near the factory and surroundings area	
B. Mobile sources area	(2 stations)	City roads and traffic points	Arterial road
C. Area source zone 1) Residence zone 2) Commercial zone 3) Clean region	(3 stations) 1) 1 station 2) 1 station 3) 1 station	Center and surroundings	Representative point in region
D. Weather condition in Homs	(3 points) 1) Homs muhafaza 2) Hikma hospital 3) Kattina	1) Center of Homs 2) Entrance of Homs 3) Industrial area	Continuous monitoring
E. Others 1) Large area 2) Dust fall	1) 25 points 2) 4 points	Whole area of Homs Whole area of Homs	4 times 12 times

4. Monitoring Period and Frequency

The EMO period is from 1st January 2008 to 31st December 2008. The EMO frequency of each station is summarized in Table hereunder.

Measuring object	Stations	Frequency	Times (Jan-Dec)
A. Stationary source Refinery Chemical plant	(2 stations)	Once/ month	12 times
B. Mobile sources	(2 stations)	Once/ month	12 times
C. Area source 1) Residence zone 2) Commercial zone 3) Clean region	(3 stations) 1) 1 station 2) 1 station 3) 1 station	Once/ month Once/ month Once/ month s	12 times 12 times 12 times
D. Weather condition in Homs	(3 points) 1) Homs muhafaza 2) Hikma hospital 3) Kattina	One data/ hr (24 data/ day)	Continuous monitoring
E. Others 1) Large area 2) Dust fall	1) 25 points 2) 4 points	-Each season (four times/year) Once/ month	4 times 12 times

5. Parameters to be Analyzed and Monitored

The monitor of the ambient air is targeted.

No.	Parameters	A. Stationary source	B. Mobile sources	C. Area source	D. Others Large area
1. Field Measurement					
(1)	TSP	Refinery Chemical plant Cement factory	City roads	Industrial and residential areas	
(2)	SPM	=	=	=	
(3)	NO, NO ₂ , NO _x	Refinery Chemical plant	City roads	Residential areas	○
(4)	SO ₂	factories	City roads	Residential areas	○
(5)	O ₃ (O _x)		City roads	○	
(6)	Dust fall: Dissoluble and insoluble substance	○		○	
2. Laboratory Analysis					
(1)	Pb	○	○	○	
(2)	Zn	○	○	○	
(3)	Cd	○	○	○	
(4)	Cu	○	○	○	
(5)	Cr	○	○	○	
(6)	Fe	○	○	○	
(7)	Mn	○	○	○	
3. Weather continuous monitoring					
(1)	Wind Direction	At the A/B/C/D sources and at the points which definite as measuring stations			
(2)	Wind Velocity	=			
(3)	Temperature	=			
(4)	Humidity	=			
(5)	Solar Radiation	=			

Note: Field Measurement is mainly sampling. Most elements are analyzed with the laboratory.

6. Analysis Items and Method

Parameters	Analysis Method	Note
Air quality		
(1) TSP	Gravimetric method	Balance of reciprocal sensibility 0.1mg
(2) SPM	Gravimetric method	Balance of reciprocal sensibility 0.1mg
(3) NO, NO ₂ , NO _x	Saltzman method	Passive sampler and Bubbling method with impinger
(4) SO ₂	Pararosaniline method	Passive sampler and Bubbling method with impinger
(5) O ₃ (Ox)	KI Absorptiometry (Ox)	Spectrophotometer
(6) HF (Fluorine compound)	Alizarin complexone method	Spectrophotometer
(7) Dust fall	Dust jar, Gravimetric method	Balance of reciprocal sensibility 0.1mg
(8) Heavy metals	Atomic absorption spectrophotometer	
Weather		
(1) Wind Direction	Synchronized and potentiometer	Wind direction anemometer
(2) Wind Velocity	Power generation type or pulse type	Wind direction anemometer
(3) Temperature	Platinum resistance method	Compulsion ventilation method
(4) Humidity	Capacitance method	Compulsion ventilation method
(5) Solar Radiation	Thermocouple method	Pyran thermocouple

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

(Usually, participant)

Name	Position	Responsibility	Note
1) Mr. Muhammad Ali Alhusein (chemist)	Lab chief	<u>all environmental analysis and controlling activities</u>	
2) Ms. Rash Romia	Chemical engineer	<u>Air Quality Analysis chief</u> / Water Quality	
3) Ms. Itidal ALawad	Petrochemical engineer/ Petroleum dept.	<u>Air Quality/</u> Water Quality Analysis (Mobile lab chief)	
4) Ms. Sana Mansour	Chemist	Water Quality chief / Air Quality	
5) Ms. Aeda Hlawik	Chemical engineer Assistant	Data management / Air Quality Analysis	
6) Ms. Rasha Jabbour	Chemical engineer assistant.	Data management	
7) Ms. Nesreen Toameh	Chemical engineer Assistant	<u>Air quality</u>	
8) Mr. Mahmoud Al yousef	Chemical engineer.	<u>Air Quality</u>	
9) Mr. Kusai Alyousef	Chemical engineer.	<u>Air quality</u>	
10) Ahmad Kaffa	Chemical engineer	<u>Air quality</u>	

8.2 Others

End

The Schedule of the Plan

(Homs DFEA)

Measuring object	Parameters	Jan.			Feb.			Mar.			Apr.			May			Jun.			Jul.			Aug.			Sep.			Oct.			Nov.			Dec.			Total Samples		
		10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30						
A. Industrial region Refinery and Chemical plant	(2) (1) TSP			2			2			2			2			2			2			2			2			2			2			2			2	24		
	(2) (2) SPM (PM10)			2			2			2			2			2			2			2			2			2			2			2			2	24		
	(3) NO, NO2, NOx			2			2			2			2			2			2			2			2			2			2			2			2	24		
	(4) SO2			2			2			2			2			2			2			2			2			2			2			2			2	24		
	(5) O3 (Ox)			1			1			1			1			1			1			1			1			1			1			1			1	12		
	(6) HF																																					0		
	(7) NH3																																					0		
	(8) PM10(Low-Vol)						2						2						2						2						2						2			2
B. Mobile sources 1) Arterial road	(2) (1) TSP			1			1			1			1			1			1			1			1			1			1			1			1	12		
	(2) (2) SPM (PM10)			1			1			1			1			1			1			1			1			1			1			1			1	12		
	(3) NO, NO2, NOx			2			2			2			2			2			2			2			2			2			2			2			2	24		
	(4) SO2			2			2			2			2			2			2			2			2			2			2			2			2	24		
	(5) O3 (Ox)																																					0		
	(6) HF																																					0		
	(7) NH3																																					0		
	(8) PM10(Low-Vol)																																					0		
C. Area source 1) Residence zone 2) Commercial zone 3) Clean region	(3) (1) TSP			2			2			2			2			2			2			2			2			2			2			2			2	24		
	(2) SPM (PM10)			2			2			2			2			2			2			2			2			2			2			2			2	24		
	(3) NO, NO2, NOx			3			3			3			3			3			3			3			3			3			3			3			3	36		
	(4) SO2			3			3			3			3			3			3			3			3			3			3			3			3	36		
	(5) O3 (Ox)			1			1			1			1			1			1			1			1			1			1			1			1	12		
	(6) HF																																					0		
	(7) NH3																																					0		
	(8) PM10(Low-Vol)			2						2						2						2						2						2				12		
D. Others a) Large area (Using passive sampler)	(1) NO, NO2, NOx						25						25						25						25						25						25	100		
	(2) SO2						25						25						25						25						25						25	100		
b) Dust fall (Using Dust jar)	Dissoluble and insoluble substance			4			4			4			4			4			4			4			4			4			4			4			4	48		
Total samples				32			82			32			32			82			32			32			82			32			82			32			32	584		
Laboratory Analysis (Heavy metals)	Pb	0	1	3	0	3	1	0	3	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	3	1	0	48		
	Zn	0	1	3	0	3	1	0	3	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	3	1	0	48		
	Cd	0	1	3	0	3	1	0	3	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	3	1	0	48		
	Cu	0	1	3	0	3	1	0	3	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	3	1	0	48		
	Fe	0	1	3	0	3	1	0	3	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	3	1	0	48		
	Mn	0	1	3	0	3	1	0	3	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	3	1	0	48		
	Cr	0	1	3	0	3	1	0	3	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	3	1	0	48		
Total of number of components				28			28			28			28			28			28			28			28			28			28			28			28	336		
Weather stations (3)	(1) Wind Direction	Weather continuous monitoring (24 data/ day)																										8760 × 3												
	(2) Wind Velocity	Weather continuous monitoring (24 data/ day)																										8760 × 3												
	(3) Temperature	Weather continuous monitoring (24 data/ day)																										8760 × 3												
	(4) Humidity	Weather continuous monitoring (24 data/ day)																										8760 × 3												
	(5) Solar Radiation	Weather continuous monitoring (24 data/ day)																										8760 × 3												

Environmental Monitoring (EMO) Plan

Re. No. 001 Aleppo DFEA (2007/06/28))

Prepared by Mr. Ilia wasel

1. Rationale

This Environmental Monitoring (EMO) Plan is prepared by the Aleppo DFEA in accordance with the Law No. 50.

2. Objectives of the Environmental Monitoring

- (1) Grasp the present circumstances of environment
- (2) Evaluate the effect from Stationary sources(factory) , and Mobile sources(cars)
- (3) Guidance and control toward factories, technical support
- (4) Improve the environmental recognition for the people and the persons concerned in the factory, by publication of monitoring result.
- (5) Reflection to traffic plan
- (6) Grasp the concentration of wide area air pollution
- (7) Evaluate the relation between environmental pollution and it's effect on the health (accumulation of next data is necessary)

3. Air Quality Monitoring Stations

Measuring object	No. of Monitoring Stations	Locations	Note
A. Stationary source area Chemical plant Cement factor Food plant	(4 stations)	Near the places	
B. Mobile sources area Arterial road	(1 station)	City roadst	
C. Area source zone 1) Residence zone 2) Commercial zone 3) BG zone	(3 stations) 1) 1 stations 2) 1 stations 3) 1 stations	1) Center 2) Center 3) Surroundings	Representative point in region
D. Weather condition	(3 points) 1) Downtown 2) Dying Factory 3) Water Treatment Factory	Center of Aleppo North Side South Side	Continuous monitoring
E. Others 1) Large area 2) Dust fall	1) 25 points 2) 4 points	Whole area of Aleppo Whole area of Aleppo	4 times 12 times

4. Monitoring Period and Frequency

The EMO period is from 1 January, 2008 to 31st December 2008. The EMO frequency of each station is summarized in Table hereunder.

Measuring object	Stations	Frequency	Times (Jan-Dec)
A. Stationary source area Chemical plant Cement factor Food plant	(4 stations)	1) Once/2 months	1) 6 times
B. Mobile sources area Arterial road	(1 station)	1) Once/ month	1) 10 times
C. Area source zone 1) Residence zone 2) Commercial zone 3) BG zone	(3 stations) 1) 1 stations 2) 1 stations 3) 1 stations	1) Once/2-3 months 2) Once/2-3 months 3) Once/2-3 months	1) 3-4 times 2) 3-4 times 3) 3-4 times
D. Weather condition	(3 points) 1) Downtown 2) Dying Factory 3) Water Treatment Factory	One data/ hr (24 data/ day)	Continuous monitoring
E. Others 1) Large area 2) Dust fall	1) 25 points 2) 4 points	-Each season (four times/year) Once/ month	4 times 12 times

5. Parameters to be Analyzed and Monitored

The monitor of the ambient air is targeted.

No.	Parameters	A. Stationary source	B. Mobile sources	C. Area source	D. Others Large area
1. Field Measurement					
	(1) TSP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(2) SPM	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(3) NO, NO ₂ , NO _x	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	(4) SO ₂	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	(5) O ₃ (O _x)		<input type="radio"/>	<input type="radio"/>	
	(6) Dust fall: Dissoluble and insoluble substance	<input type="radio"/>		<input type="radio"/>	
2. Laboratory Analysis (After introducing AAS)					
	(1) Pb	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(2) Zn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(3) Cd	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(4) Cu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(5) Cr	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(6) Fe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(7) Mn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(8) Ca	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	(9) V	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
3. Weather continuous monitoring					
	(1) Wind Direction			<input type="radio"/>	
	(2) Wind Velocity			<input type="radio"/>	
	(3) Temperature			<input type="radio"/>	
	(4) Humidity			<input type="radio"/>	
	(5) Solar Radiation			<input type="radio"/>	

Note: Field Measurement is mainly sampling. Most elements are analyzed with the laboratory.

6. Analysis Items and Method

Parameters	Analysis Method	Note
Air quality		
(1) TSP	Gravimetric method	Balance of reciprocal sensibility 0.1mg
(2) SPM	Gravimetric method	Balance of reciprocal sensibility 0.1mg
(3) NO, NO ₂ , NO _x	Saltzman method	Passive sampler and Bubbling method with impinger
(4) SO ₂	Pararosaniline method	Passive sampler and Bubbling method with impinger
(5) O ₃ (O _x)	KI Absorptiometry (O _x)	
(6) HF (Fluorine compound)	Alizarin complexone method	Spectrophotometer
(7) Dust fall	Dust jar, Gravimetric method	Balance of reciprocal sensibility 0.1mg
(8) Heavy metals	Atomic absorption spectrophotometer	
Weather		
(1) Wind Direction	Synchronized and potentiometer	Wind direction anemometer
(2) Wind Velocity	Power generation type or pulse type	Wind direction anemometer
(3) Temperature	Platinum resistance method	Compulsion ventilation method
(4) Humidity	Capacitance method	Compulsion ventilation method
(5) Solar Radiation	Thermocouple method	Pyran thermocouple

7. Record of Data and Publication

- (1) Record in DFEA
- (2) Record in the Directorate of Laboratories in GCEA
- (3) Record in Governorate
- (4) Data Book preparation
- (5) Annual Report to be prepared and published

8. Other Remarks

8.1 Staff in charge:

(Always, participant)

Name	Position	in charge	Note
1) Ilia Wasel	Civil engineer/ Environment Dept.	Air quality analysis Data management	
2) Dunia Ghareib	Civil engineer/ Environment Dept.	Air quality analysis	
3) Khuloud Owayed	Civil engineer/ Environment Dept.	Air quality analysis	
4) Mr. Mahmoud Hasan Ismail	Chemical engineer/ Environment Dept.	Air quality analysis	

8.2 Others

End

