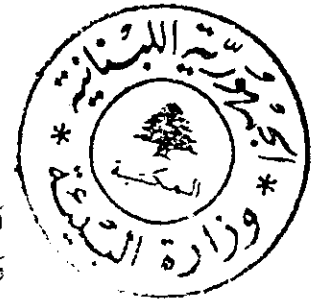


REPUBLIC OF THE LEBANON

MINISTRY OF ENVIRONMENT

الجمهورية اللبنانية

مكتب وزير الدولة لشؤون التنمية الإدارية
مركز مشاريع ودراسات القطاع العام



2022

**PROTECTION AND REMEDIATION OF RIVERS AND
RIVER LANDSCAPES IN THE
REPUBLIC OF LEBANON
VOLUME TWO
(TERMS OF REFERENCE)**

Prepared by

Republic of Lebanon
Office of the Minister of State for Administrative Reform
Center for Public Sector Projects and Studies
(C.P.S.P.S.)

Klaus-Dieter Wolz

On behalf of
**TRANSTEC/FICHTNER CONSORTIUM
SECTOR IMPLEMENTATION UNIT 3**

April 1998

REPUBLIC OF LEBANON



TERMS OF REFERENCE

FOR

CONSULTANCY SERVICES

FOR RIVER PROTECTION AND

REMEDICATION IN LEBANON

-

REMEDICATION OF NAHR IBRAHIM

AND UPPER LITANI RIVER AREA

Ministry of the Environment
Beirut, Lebanon

April 1998

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Terms of Reference for Consultancy Services

1. INTRODUCTION

Human activities are degrading the environment and quality of life in the rivers and river valleys all over Lebanon. Partially the rivers as well as their surrounding areas are highly polluted. Some of the rivers and river landscapes are today disturbed for ever by human activities.

Not only the rivers themselves are polluted by urban waste water effluents from industry and settlements; the river banks and the surrounding areas are often polluted or disturbed by waste disposal, stone quarries, buildings and extensive agriculture.

As there are in the moment definitely no treatment of liquid effluents from industry or of sewage out of settlements in most areas of the Lebanon, the majority of these effluents are either discharged to surface waters, coastal waters or to the subsoil or used for irrigation.

Due to this practice, large parts of Lebanon's water bodies are polluted.

With the aim of changing this situation in future, the Office of H.E. Minister of the Environment, Mr Akram Chehayeb, and the Sector Implementation Unit SIU#3 had prepared the following guidelines:

- Guidelines for the Protection and Remediation of Rivers and River Landscapes in the Republic of Lebanon
- Guidelines for the Treatment of urban waste water of the Republic of Lebanon.

These guidelines together with MoE Decision No. 52/1 form the basis for establishing a program of river protection.

2. DESCRIPTION OF THE PROJECT

The Consultant on behalf of the MoE and the SIU#3 has prepared the TOR for the implementation and improvement of the guidelines for river protection.

This TOR covers, starting from the existing situation, all aspects of river protection and remediation and can be implemented and approved over two stages and within a given time frame.

1. The guidelines will be implemented in a first phase. During this phase, the quality and flow of the main Lebanese rivers have to be measured and evaluated and a river pollution map with a classification of pollution has to be established according to standardized methods for classifying river water qualities. In addition, the main elements that constitute a river landscape have to be analyzed and classified, an inventory of land use has to be prepared and a computerized waste water register of all relevant waste water discharges has to be set up.

MoEs personnel shall be trained on the stage of the above tools. During this training period, initial data shall also be collected and evaluated.

A phased program for the protection and remediation of Lebanese rivers has to be developed, the costs for short, medium and long-term scenarios have to be estimated and MoE personnel will be assisted and trained in elaborating a program for controlling waste water discharge into rivers.

2. In a second step as case studies, an in-depth engineering program for two typical river landscapes (Nahr Ibrahim as a rural area and the upper Litani River) has to be developed on the basis of the guidelines and the work accomplished in stage 1. This engineering program has to lead to recommendations and projects for the remediation of Nahr Ibrahim and the upper Litani River.

During stage 2, a detailed site evaluation of the project area together with the catchment area must be carried out and the program formulated in stage 1 has to be approved.

The individual remediation projects, including cost estimates, ecological and economic feasibility, preparation and evaluation of tender documents have to be handled. In addition to these remediation projects, further necessary projects for implementation by the dischargers in industry and the communities have to be formulated and the dischargers assisted with regard to process selection.

MoE personnel has to be assisted and trained in the formulation of regulations/decrees, in the approval of permitting documents and in the formulation of licenses for discharging waste water as well as for constructing and operating waste water treatment plants.

The whole program has to ensure that the guidelines, together with additional measurements and investigations are implemented in a river management master plan and approved for the remediation of two typical area in Lebanon.

3. AVAILABLE DATA

The following information is available to the Consultant as part of the TOR:

- a. Map with main rivers of the Lebanon
- b. MoE Decision No. 52/1
- c. Guidelines for the protection and remediation of rivers and river landscapes in the Republic of Lebanon
- d. Guidelines for the treatment of urban waste water of the Republic of Lebanon.

A lot of different feasibility studies, master plans, environmental impact assessments and measurements of river water flows are available at different organisations. The actuality of the reports and measurements in most cases is not given. The collection and approval of these reports and, if necessary, the improvement of the data base forms part of the work which have to be included in the offer.

4. SERVICES REQUIRED

The consultancy services required will be divided into two phases:

Phase 1:

- baseline survey of the project area and its rivers
- elaboration of a river pollution map with river characterization concerning flow and quality
- implementation of an inventory of landuse and computerized waste water discharge register
- elaboration of a staged program for river protection and remediation
- Preparation of specification and intensive training courses in all aspects of river protection and remediation.

Phase 2:

- development of an in-depth engineering and training program for the remediation and protection of a selected area (Nahr Ibrahim and upper Litani River)
- detail site evaluation and investigation of the selected area
- determination and execution of individual remediation subprojects including:
- feasibility design
- preparation and evaluation of tender documents
- assistance during contract negotiations.
- assistance and training of MoE's personnel

The total offer for the consultancy services must be divided into two parts according to the phases 1 and 2.

4.1 General remarks

The services described in this section are of general nature and will apply to all aspects of the Consultants involvement.

All Consultants shall compulsorily visit the project area and shall meet MoE to deepen their understanding of the project and its constraints.

The Consultant must include in his technical offer a detailed written program for the execution of his duties.

The Consultant shall carry out his duties in consultation with and to the satisfaction of the Client as the work progresses which includes besides others:

- investigation and collection of available data, drawings and plans relating to the project area
- supervision of surveys, analysis, tests and other additional investigations required for the consultancy service

- consultation with authorities and individuals affected by the project or by the execution of the works for a subproject.

The cost of all additional investigation and analysis shall be considered in the offer.

The Consultant must submit final reports, monthly and quarterly progress reports to the Client concerning the execution of his duties. The information submitted shall include progress on the major activities, problems encountered and measures to be taken to solve them as well as the financial status of the project.

4.2 Specific requirements

The consultancy services shall comprise, but not be limited to the following tasks. Special attention has to be paid to meet the aim of the Guidelines for River Protection and Urban Waste Water Treatment, which form also part of the TOR.

4.2.1 Phase 1

Baseline survey

The first phase of the study shall be concerned with the collection and review of existing information on water pollution and land use in the project area. The findings of this baseline survey shall be presented in a concise, preliminary report that will serve as background information for the next steps.

The consultant shall execute the following specific tasks:

- Collection and evaluation of all analytical data available on the water of the rivers and their tributaries and effluents discharged by waste water treatment plants
- Assessment of all relevant, existing studies and reports related to water quality of the Lebanese rivers
- Inventory of existing and planned waste water treatment plants in the catchment area of the rivers which discharge their effluents into the Lebanese rivers
- Review of all relevant legislation and regulations at the national, provincial and local levels concerned with the quality and utilization of river water
- Field visit to and visual survey of the Lebanese rivers
- Improvement and actualization of existing map.
- Field visits to waste water treatment plants to assess their operation and problems
- Field visits to major industries to assess their effluent and waste management practices and problems
- Field visits to agricultural areas in the river basins to assess their potential contribution to groundwater and River pollution
- Field visits to dump sites and authorities or industries responsible for their management and maintenance to determine potential water pollution problems
- Discussions with environmental departments of provincial and local authorities to obtain information on
 - pollutions problems regarding the rivers and their surroundings
 - utilization plans for river water.

River pollution map

The Consultant shall prepare a river pollution map to characterize the present quality situation of the Lebanese rivers and to document the present flow of the Lebanese rivers.

Based on chemical and/or microbiological parameters the Consultant implements a quality category system which allows on the basis of chemical and/or microbiological analysis an assignment of each river or different parts of a river to a quality degree.

Based on these assignments a river pollution map or better "river quality map" has to be drawn up by the Consultant.

For this step it has to be pointed out that the Consultant has to prepare the classification system with the different quality categories or degrees. The classification system will be approved and finally confirmed by the Client. After confirmation, the Consultant has to define an investigation program in which the number and types of analysis will be determined.

Furthermore, the investigation program shall define each location where and in which turn river water samples have to be collected and the flow of the main Lebanese rivers has to be measured. The collection of the samples and the execution of the analysis and measurements forms part of the consultants contract as the number and type of the analysis can not be fixed at that stage of the project, the consultant has to submit in his proposal detailed prices for the collection and analyses of the necessary parameters. He also has to include as amount of 50,000.00 USD for sampling and executing of the analysis. The analysis will be paid on the basis of the actual number.

The Consultant shall proceed in the following with the evaluation of the results of the analysis which will lead to the river pollution map and an inventory of river flows.

For the classification of the river quality a common and practice-proofed classification system has to be used and adjusted to the specific conditions of the Lebanese rivers and the main pollution sources.

Inventory of landuse

The Consultant shall elaborate and implement a landuse inventory to catalogize the land within the river catchment areas with special view to their utilization. Special regard shall be paid to use a common and practice-proofed system for the nomenclature which should be preliminarily described in the technical proposal.

The inventory shall complement the baseline study and shall give information about the utilization of the river basins and, for example, the agricultural practices and waste dumps in areas which affect river water quality.

After approval of the inventory system and nomenclature, the Consultant shall visit and investigate the river areas to evaluate and assess the utilization of the surrounding areas and to finalize the landuse inventory.

Waste water discharge register

The Consultant will deliver and implement a computerized waste water discharge register as an inventory of all discharges of waste water into Lebanese rivers.

Therefore it is necessary to undertake an additional site visit to identify and characterize the waste water streams discharging into the rivers. Furthermore, the location (with their coordinates) shall be determined. If measurements or analysis of the waste water streams are given in other studies, reports or data sheets, they have to be checked and verified and shall additionally be attached to the characterization of the pollution source.

All the data collected in the field shall be handled and consumed by the means of a computer software program which shall at least fulfill the following requirements:

- centralized data storage with the possibility to access from different locations
- possibility to combine data of different technical areas (not only waste water)
- interfaces to existing systems, to Geographical Information Systems (GIS) and the possibility to export the results in standardized data formats as MS-Excel or MS-Word.

The software shall have the facilities to be extended to an indirect waste water discharge register to control the pollutants discharging into the waste water treatment plants. As well the facility to handle and control rural waste water disposals like septic tanks, etc. shall be given with this software.

Together with the proposal references for the software have to be shown.

Staged river remediation and protection program

Based on the findings of the previous steps, the Consultant shall elaborate a staged program for river remediation and protection. This will include, but not be limited to:

- analysis and integration of all data and relevant information
- presentation of data showing relevant facts such as
 - source of pollutants (expressed in percent)
 - projected changes in water pollution levels over time
 - other data of relevance
- visual presentation of data and projections in form of maps and graphs
- identification of potential pilot projects as investment opportunities to evaluate and/or demonstrate the utilization of technologies which have the potential to increase the efficiency or reduce the overall cost of concerted efforts aimed at restoring and protecting the Lebanese rivers
- preparation of a staged program providing detailed information on the contribution of pollution to the Lebanese river water of
 - waste water treatment plants over time
 - industry
 - river mud
 - agriculture over time

- other sources such as waste dumps
- elaboration of technological approaches suitable for the restoration of the rivers themselves, costs, investment projections and implementation schemes to be included
- necessity for pollution abatement actions at point pollution sources, such as in industry; description of recommend technologies; related costs, investment projections and implementation schemes to be included
- cost projections on the overall implementation of the staged program
- identification of training needs and training of MoE's personnel in all aspects of river remediation and protection..

4.2.2 Phase II

The aim of the second phase is to implement the staged program developed in the first phase for the selected project area of Nahr Ibrahim and the upper Litani River.

To meet this aim, the Consultant has to elaborate the economically, socially and technologically most advantageous concept to restore the upper Litani River to a high (and still to be defined) class of the defined water quality standards and to rehabilitate the Nahr Ibrahim which is currently been polluted by different sources.

The classification of the river quality, carried out for all Lebanese rivers during the first phase, will give first information of river Litani's quality and Nahr Ibrahim. Additional measurement and analysis required by the Consultant shall be defined during the first phase and have to include in the water analysis and measurements during the elaboration of the river pollution map.

The evaluation of all analysis shall be carried out by the Consultant to evaluate the quality status of the Litani River and Nahr Ibrahim.

Furthermore, the Consultant shall investigate the river catchment areas in more detail to identify and assess both types of pollution sources, point and diffuse ones.

Based on these findings, the Consultant shall draw up and formulate a technical concept and alternatives to remediate the Litani River and Nahr Ibrahim (as case studies for two typical Lebanese river landscapes). After approval by MoE individual subprojects have to be identified by the Consultant and shall be developed to feasible design or programs, including technical, ecological and economic engineering, cost estimates and implementation schedules. This program shall also allow to be used in later for other Lebanese rivers.

Typical subprojects to be developed by the Consultant shall include:

- remediation measures for Nahr Ibrahim (waste and mud removal, renaturation of stone quarries water management, etc.)
- remediation measures for the upper Litani River (optimization of the course of the river, abatement of river areas which are not run through by the water, etc.)

- technical consultancy for the authorities to erect and/or optimize waste water treatment plants
- technical consultancy for the authorities to establish and implement the river protection guidelines by the means of controlling the industrial discharges
- technical consultancy for the main industries to inform and advise them in pretreating the waste water to fulfill the requirements of future legislation.

The consultancy services shall include the preparation of tender documents, bid evaluation, assistance during contract negotiations. For the remediation measures for the Litani River and Nahr Ibrahim. It always have to be taken into consideration, the results of these case studies also shall be used in future for other rivers.

Handling the waste water sources, the consultant shall assist MoE and the relevant authorities with technical consultancy to establish new guidelines and regulatory framework. This shall include institutional strengthening and technical assistance and will lead to the elaboration of "Terms of Reference" for design of waste water disposal and treatment facilities (treatment plants and sewer systems).

This includes as well assistance and training of authorities personnel in

- formulation of regulations/decrees for waste water discharge
- approval of permitting documents
- formulation of licenses for discharge and as well for the erection and operation of waste water facilities such as waste water treatment plants and sewer systems.

Furthermore, technical assistance shall be provided to extend the waste water register and to establish this medium as an "Environmental Information System".

4.3 Time schedule

The consultancy service is expected to start in July 1998 It has to be finalized within 14 months (including reviews).

The estimated duration of each phase will be the following:

- Phase 1: appr. 8-9 months
- Phase 2: appr. 8 months.

Both phases can overlap during a period of max 5 months.

4.4 Required manpower input

The following fields and profiles should be covered by the expatriate and/or national experts of the Consultant:

- **Project manager** senior sanitary engineer (or ecologist) with broad knowledge and experience of waste water treatment concepts and planning and operation (at all levels of technology), of environmental problems, and of managing work groups

- in similar projects with international financing requirements (overseas experience outside home language countries indispensable)
- **Ecologist/water quality specialist** for land and water use, with practical experience in water quality monitoring
 - **Limnological and hydrobiological expert**, experience in investigation of lakes and rivers and experienced in remediation measures for the rehabilitation of lakes and rivers
 - **Waste water discharge register expert** experiences in implementation and establishment of waste water discharge register, training and maintenance of the software program, good working knowledge of English
 - **Specialists** in particular treatment issues, for example aeration systems, waste water and sludge management, machinery and control and monitoring equipment
 - **Sanitary engineer** with broad experience in waste water, mainly treatment engineering and works tendering, good working knowledge of English
 - **Specialist for industrial waste water** and sludge treatment machinery, reuse and disposal
 - **Economist** senior level, with broad experience of economic aspects in water/waste water projects, of guiding junior professional staff, and of international financing requirements, good working knowledge of English
 - **Engineers** for general sewage treatment planning and design, and specialists for machinery and control and monitoring systems, with experience in the relevant structural engineering
 - engineer for industrial process planning and industrial waste water treatment
 - hydrologist/water resources and watershed management expert
 - expert for reuse of treated effluent and sludge in agriculture
 - specialist in environmental law and regulations
 - others to be identified and justified.

5. GENERAL INFORMATION

5.1 Technology transfer and training

As already mentioned, maximum local participation in the design and implementation of the project is encouraged by the Client and this aspect will be considered in the evaluation of bids. It is, however, necessary that certain activities will have to be performed by a foreign joint venture partner who will also provide expert inputs where required. A further consideration in the evaluation of bids will also be the extent to which the foreign partner carry out this work in Lebanon to ensure the transfer of knowledge as far as it is practicable.

Regarding the training of MoE's personnel it will be the responsibility of the consultant to compile the necessary information and training materials and to coordinate and arrange for MoE's personnel to be instructed in all aspects of river protection. The Consultant will provide one qualified foreign person who will assist MoE's personnel during specialized and intensive training courses over the whole phase 2 and additional for 20 (twenty) calendar days after finalization of his Contract. The cost involved for above 20 days period will be for the

Consultant's account and he must provide for all possible fees and disbursements in his financial offer.

Together with his proposal the Consultant has to provide a detailed description of the training course. The training program shall include but not be limited to the following courses:

- general aspects of river protection
- national and international guidelines
- data collection (water sampling and water analyses)
- implementation and use of computerized waste water discharge registers
- river classification
- data collection for and preparation of landuse inventories
- use and benefits of GIS systems for river remediation
- possibilities of waste water treatment in the main industries of Lebanon
- project management of the implementation of urban waste water treatment plants
- formulation of licenses for waste water discharge and for the erection and operation of waste water facilities

5.2 Payment of fees

Payment of fees and incidental expenses to the Consultant will be made on the completion and approval of specifically identified services, which are as follows:

1 st installment:	30% of amount upon award of contract
2 nd installment:	20% of amount upon start of phase 2
3 rd installment:	20% of amount after completion and approval of the first phase
4 th installment:	25% of amount after completion and approval of the second phase
5 th installment:	5% of amount upon completion of activities.

All fees will be paid in US\$.

5.3 Basis of evaluation of Consultants proposal

Evaluation of bids will be based on the system known as the two envelope system. Consultants are required to submit their proposals in two sealed envelopes. The first shall contain the technical proposal, exclusive of price, which should contain at least the information required under chapter 6.

The second envelope shall contain the proposed prices for the services. The cost of the Consultant services will be agreed on a fixed sum remuneration structure. The agreed figure will cover all Consultant services required as detailed in the TOR and shall include all salaries and allowances to personnel, charges by authorities, fees, taxes, duties, overhead costs, training and administrative expenses as well as all direct expenses.

The Consultant's offer shall specify the basis of calculation (i.e. unit cost, quantities, mark-up percentages, taxes, foreign and local cost components, etc.) of all prices (main categories, personnel, transport, office, supplies, special investigations, subcontractors, etc.).

The Consultant is, however, required to provide a breakdown of the fixed sum and to detail at least the following rates and expenses:

- the number of man-months required for each category of worker
- the man-month rate for each category of work
- direct reimbursable expenses.

As this kind of project will be done the first time in Lebanon for the evaluation of the technical proposal the qualification of local and foreign companies and of local and foreign staff will be evaluated together. The experience with similar projects in other parts of the world is more relevant for the evaluation than the number of projects handled in Lebanon.

5.4 Consulting fees

The domestic rate includes all costs accruing in connection with the assignment of the expert in the company's headquarters.

The domestic rate includes staff costs, ancillary staff costs and overheads.

The overheads include office costs, normal telecommunication costs, holiday times, profit and risk.

All time costs of personnel refer to the actual period of the service.

Domestic rates are defined as monthly lump-sum payment for the actual project activity including necessary travel time. For fractions of months 1/30 of the monthly lump-sum will be calculated for each calendar day.

Analysis will be paid according to the number and parameters which have been analyzed and agreed with the client. They will be paid with the rates agreed in the contract.

5.5 Program

It is expected that the Consultant for the project will be appointed during September 1998. The duration of the project is estimated to run for 14 calendar months.

The Consultant who is successful must, when appointed for the project, submit a detailed design program for approval within one month of the signing of the Agreement.

5.6 Closing date for submission

Two copies of the Consultant's submission must be prepared and submitted to:

Republic of Lebanon
Ministry of Environment
PO Box 70-1091
Antelias, Lebanon

and must reach the above office in sealed envelopes before 12:00 (Lebanese time) on and must be marked "Confidential" and also show the name of the project.

6. INFORMATION TO BE INCLUDED

The following information must be included in the Consultant's bid:

- details of Consultant's organization, project control and financial control
- organization and managerial method proposed for the execution of the work
- qualifications and experience of the project manager and of all personnel holding key positions in the execution of the work and/or in the implementation of the project
- proposed contact person for the Client
- size and responsibilities of project staff
- qualifications and experience of project staff
- local and foreign resources
- technical approach to the project
- detailed written program for the execution of duties
- availability of project resources
- backup staff and resources available
- approach and commitment to technology transfer
- details of joint venture agreement (responsibilities, local participation, foreign involvement, venue from which work will be carried out)
- proposed comments and/or improvements (if any) to the Terms of Reference.

APPENDIX 1

Main Rivers of Lebanon

APPENDIX 2

Institutions with Responsibility for River Protection and River Management

Appendix 2: Institutions with responsibility for river protection and river management

Organization	Responsibility
Ministry of Hydraulic and Electrical Resources (MHER)	<ul style="list-style-type: none"> • Overall responsibility for drainage, maintenance of waterways and monitoring of groundwater • General responsibility for water management; supervision of water authorities • Undertakes water development projects where autonomous authorities have no resources • Provides technical assistance for operations and management in the water sector and for the implementation of rehabilitation programs • Responsible for developing water resources, and for the design and implementation of infrastructure facilities • The approval of the MHER is required for expenditure on rehabilitation/development costs by water authorities
Ministry of Public Health (MPH)	<ul style="list-style-type: none"> • Able to recommend action to prevent pollution of water sources • Responsible for control of pollution at water intake points • Responsible for carrying out water sampling and analysis • Responsible for maintaining statistics on water-borne diseases • Provides technical assistance for water authorities in connection with installation, maintenance and operation of water quality-related equipment (e. g. chlorinators) • Review and approval of sewerage and drainage schemes
Ministry of the Environment (MoE)	<ul style="list-style-type: none"> • Monitoring of pollution from waste water activities • Monitoring of pollution from dumping sites • Responsible for the monitoring of waste collection and waste management • Responsible for the monitoring of nature conservation and land use • Responsible for the monitoring of industrial pollution • Definition of standards and technical conditions/specification for the construction of waste water treatment plants. • Nature conservation by monitoring the environmental equilibrium (Water, Air, Soil, Forest, Seashores, River banks, Marine and Terrestrial Fauna and Flora). • Definition of steps and standards to be followed by the industry and settlements in order to protect the environment.

Ministry of the Environment MoE (Cont'd)	<ul style="list-style-type: none"> • Classification of sites and prepare laws and regulations for protecting these by declaring "Protected Areas" • Definition and listing of chemicals and pesticides to be banned from import and/or produced.
Ministry of Industry	<ul style="list-style-type: none"> • Responsible for industrial pollution Control. • Responsible for industrial settlements in accordance with the MoE. • Responsible for the development of new industrial areas
Council for Development and Reconstruction (CDR)	<ul style="list-style-type: none"> • Provision of technical and financial assistance for various authorities • Deciding on the institution (public, private sector) to implement infrastructure projects. • Undertake and supervise all large scale development projects. • Responsible for approving sewerage networks and funding 50% of such networks
Ministry of Transport	<ul style="list-style-type: none"> • Responsible for roads along rivers (land use)
Department of Antiquities	<ul style="list-style-type: none"> • Responsible for cultural heritage
Ministry of Agriculture	<ul style="list-style-type: none"> • Responsible for land use • Responsible for defining and listing pesticides to be used or banned. • Responsible for agriculture and forests
National Litani Office (ONL)	<ul style="list-style-type: none"> • Responsible for planning and management of the Litani basin
Ministry of Tourism	<ul style="list-style-type: none"> • Responsible for tourism and the development of recreational areas
Autonomous Water Authorities (numbering 23 with 209 water and/or irrigation boards)	<ul style="list-style-type: none"> • Responsible for provision of drinking and/or irrigation water for consumers • Duty to operate and maintain infrastructure facilities provided by MHER • In Tripoli and Beirut, authorities have delegated power to implement water supply works up to a certain level • Responsible for maintenance of roadside ditches used for irrigation (shared with Ministry of Public Works or farmers; no clear delimitation of responsibilities)
Municipalities	<ul style="list-style-type: none"> • Responsible for provision and maintenance of sewer and drainage systems • Responsible for funding 50% of construction costs of sewerage networks

APPENDIX 3

Form of Agreement

**Articles and Conditions
of Agreement
for
the Provisions of
Consulting Engineering Services**

ARTICLES OF AGREEMENT

made on the day of 1998

between

Republic of Lebanon
Ministry of Environment

herein represented by in his capacity as

.....

of

PO Box 70-1091
Antelias
Lebanon

hereinafter referred to as the "**Employer**"

and

duly authorized representative of

.....
.....

hereinafter referred to as the "**Consultant**"

WHEREAS the Employer is desirous that consulting services should be rendered for the

River Protection and Remediation in Lebanon –
Remediation of Lake Karaoun and Upper Litani River Area

hereinafter referred to as the "**Project**"

the Consultant has submitted a technical and financial proposal for these

services dated; hereinafter referred to as the "**Proposal**".

IN WITNESS WHEREOF the parties hereto have set their hand in the presence of the
subscribing witnesses:

at

on this day of 1998

AS WITNESSES

1.

2.

For and on behalf of the
EMPLOYER

at

on this day of 1998

AS WITNESSES

1.

2.

For and on behalf of the
CONSULTANT

NOW IT IS HEREBY AGREED as follows:

The Employer and Consultant will abide by the Conditions of Agreement.

CONDITIONS OF AGREEMENT

Article 1

GENERAL PROVISIONS

1.1 Ruling Language

This Agreement is made in English, which shall be considered to be the "Ruling Language". All correspondence between the parties, reports, studies, technical data, certificates and all documents pertaining to the Project shall be in English.

1.2 Governing Law

This Agreement is subject to the laws of the Republic of Lebanon.

1.3 Assignment

The Consultant shall not have the right to assign or transfer the benefits and the obligations of this Agreement or any parts thereof without the prior consent of the Employer.

The consent of the Employer is not required for the assignment of any monies due or to become due under this Agreement.

1.4 Assistance

The Consultant may call for the assistance of other Consultants or experts provided that prior and written approval of the Employer is obtained.

1.5 Sub-Contracts

Any sub-contract to be made by the Consultants shall be made only to such extent and with such duly qualified specialists and entities as shall be approved in writing in advance by the Employer. In any event the Consultant shall be responsible and liable for the services rendered by the sub-contractor.

1.6 Modifications and amendments

Should circumstances arise which call for modifications or amendments of this Agreement, these shall be made by mutual consent given in writing.

1.7 Entry into force

This Agreement enters into force upon the date of its signing by both parties.

1.8 Commencement date

The Consultant shall commence the services within fourteen (14) calendar days after the entry into force of this Agreement.

1.9 Measurements system and standards

Drawings, plans and calculations will be based on the SI or equivalent approved.

1.10 Partial invalidity

The invalidity of any one provision of this Agreement shall not affect the validity of the remaining provisions. Any discrepancy resulting as a consequence shall be filled by a provision consistent with the purpose of this Agreement.

Article 2

PARTS OF AGREEMENT

The following documents shall be deemed to form and be read and construed as integral parts of this Agreement:

- Annexure A: Terms of Reference
- Annexure B: Time Schedule/Working Program
- Annexure C: List
- Annexure D: Financial Proposal
- Annexure E: Advance Payment Guarantee
- Annexure F: Technical Proposal
- Annexure G: Power of Attorney
- Annexure H: Performance Bond



Article 3

OBLIGATIONS OF THE CONSULTANT

3.1 Standard of services

The Consultant shall in all professional matters act as a faithful adviser to the Employer. The Consultant shall exercise all reasonable skill, care and diligence in the execution of his duties under this Agreement. He shall carry out the services in conformity with sound professional practices and in accordance with scientific and generally accepted engineering standards.

3.2 Scope of services

The consultancy services required, entail the following:

- Phase 1:**
- baseline survey of the project area and its rivers
 - elaboration of a river pollution map with river characterization concerning flow and quality
 - implementation of an inventory of landuse and computerized waste water discharge register
 - elaboration of a staged program for river protection and remediation
- Phase 2:**
- development of an in-depth engineering and training program for the remediation and protection of selected areas (Nahr Ibrahim and upper Litani River)
 - detail site evaluation and investigation of the selected area
 - determination and execution of individual remediation subprojects including:
 - feasibility design
 - preparation and evaluation of tender documents
 - Assistance during contract negotiations
 - assistance and training of MoE's personnel

Further details of the services required are contained in the Terms of Reference, which are an integral part of this agreement.

3.3 Time schedule and penalties

The total contract period for the Consultant's services will be 14 consecutive months after commencement date. Of the 14 months approximately 6 months are required for Phase 1 and approx. 8 months for phase 2. Both phases can overlap for 5 month in the maximum. While the remainder will constitute Phase 2. Any modification of the above mentioned time schedule due to a reasonable request by either party shall be mutually agreed upon in writing.

Where the Consultant fails to fulfill any of the services under this Agreement within the agreed time framework for reasons for which he is responsible, the Employer shall be entitled to apply a penalty of 0.25% of the Contract Sum for every week of delay up to a maximum amount of 5% of the Contract Sum.

The Employer shall not be entitled to apply any further penalties as a result out of delays by the Consultant beyond those for which penalties have already been applied.

3.4 Reports and information

The Consultant shall submit to the Employer monthly and quarterly reports on the progress of the services in accordance with the Memo for Progress Reports (Appendix 5). These reports will cover a brief description of the progress of the various activities to date and will indicate whether the work is progressing according to schedule. Should the work fall behind schedule for any reason, the Consultant should indicate what steps will be taken to rectify the position. A possible valid reason for an extension of the time should be reported (in writing) in time in order that an agreement can be reached thereon. This report must be submitted within one week of the expiry of the month to which the report pertains.

The Consultant will inform the Employer without delay about extraordinary circumstances arising during the performance of the services and about all matters requiring the consent of the Employer. Furthermore, the Consultant shall furnish to the Employer such information related to the services as the Employer reasonably may from time to time request.

Except when otherwise agreed upon, all progress and completion reports required from the Consultant and described in this Agreement must be submitted in triplicate.

3.5 Books and records

The Consultant shall keep accurate and systematic records in respect of the services in such form and detail as is customary in his profession and shall permit the Employer to inspect the same and make copies thereof during the duration of the Agreement.

3.6 Consultant's staff

The Consultant shall appoint only competent, experienced and reliable staff for the execution of the services. The list of the staff members selected is to be attached in Annexure C.

The Employer reserves the right to require the Consultant to recall or replace any of the latter's staff members whose services do not meet their requirements. In case of illness and absence from work of any of the Consultant's staff members in excess of one month, the Consultant shall replace the staff member with another staff member of at least an equivalent qualification. In any event replacement of professional staff shall not be made without the prior approval of the Employer.

Where special technical advice or assistance, which was not foreseen at the commencement of the project, is required, the Consultant may with the prior

written agreement of the Employer arrange for the provision of such services at the cost of the Employer.

When the Consultant elects to withdraw or replace any of his staff during the contract period, the cost shall be borne by the Consultant.

3.7 Responsibilities of the Consultant

The Consultant will obtain written approval from the Employer in all cases where alterations to the design or to the cost of the works during the construction period are required or for any variations, omissions from or additions to contracts.

In terms of the Contract between the Employer and the Contractor, the Consultant will carry out his duties as the Engineer who has to act as the adjudicator, and the limitations of his powers in this respect are defined by the terms of the Contract.

All notices, instructions, requests, claims or other communications by the Employer, Contractor or Consultant shall be made by or through the Consultant.

The Consultant will take all reasonable steps to ensure that the Works are carried out according to the Contract and will fully inform the Employer of any failure on the part of the Contractor to fulfill the Conditions of the Contract of which the Consultant may become aware.

Article 4

OBLIGATIONS OF THE EMPLOYER

4.1 Information

The Employer shall furnish all pertinent data, documentation and information available to him and shall give such assistance as shall reasonably be required by the Consultant for the carrying out of his duties under this Agreement.

4.2 Transport

The Employer will not be obliged to provide or place at the disposal of the Consultant any transport, vehicles, office accommodation or technical equipment. Everything required by the Consultant for the proper execution of his duties in terms of this Agreement shall be arranged and provided by the Consultant.

4.3 Office and technical equipment

The Employer will not be obliged to provide or place at the disposal of the Consultant any office or technical equipment. Everything required by the consultant for the proper Execution of his duties in terms of this Agreement shall be arranged and provided by the Consultant.

4.4 Assistance

The Consultant must make his own arrangements for all customs clearance, work and residence permits, entry and exit visas, travel documents and all other authorizations required in terms of existing laws and regulations which govern the activities of expatriate workers and their belongings. Where the assistance of the Employer is required to finalize such matters this will be provided as far as possible and in good faith. The Employer, however, bears no responsibility for ensuring the satisfactory conclusion of any of the required arrangements.

The Employer shall make all the necessary arrangements to ensure that the Consultant has ready entry and access to the site of Works and such other places as may be necessary to enable the Consultant to perform his duties.

The Employer shall designate in writing a person to act as his representative with respect to the Works. This person shall act as the contact person between the Employer and Consultant and will receive information on behalf of the Employer from the Consultant.

4.5 Approval

The Employer, shall - if so required - give its decision and/or approval on all drawings, reports, studies, substitution of Consultant's staff etc. as soon as possible, but not later than fourteen (14) calendar days after the date of submission so as not to delay the work of the Consultant.

The Employer shall approve final payment, as provide for in Clause 5.2 after termination of the Consultant's services duly rendered in accordance with the Agreement, but not later than thirty (30) calendar days after such termination.

Article 5

REMUNERATION, TERMS AND METHOD OF PAYMENT

5.1 Remuneration

For the services to be rendered by the Consultant under this Agreement the Employer shall pay the sum ofUS\$ consisting of:

contract feeUS\$

reimbursablesUS\$

A detailed cost breakdown is shown in the attached Annexure D which constitutes an integral part of this Agreement.

5.2 Terms of Payment

The Consultant's remuneration shall be paid as follows:

US\$	advance payment, due within thirty (30) calendar days after Entry into Force of this Agreement, against advance payment guarantee as per Annexure E .
US\$	of amount upon start phase 2.
US\$	of amount after completion and approval of the first phase. With that payment the advance payment guarantee will expire.
US\$	of amount after completion and approval of the second phase
US\$	as final payment (5% of the contract fee) upon termination of the services and their approval by the Employer.

Consultant invoices shall be addressed to the Employer which will, after verification of the invoice pay the amount due directly to the Consultant.

Bank guarantees shall be made out in the name of the Employer, which will receive the original of the guarantee.

5.3 Method of payment

To be finalized and agreed upon by both parties.

5.4 Revision of prices

The rates quoted in Annexure are applicable until 19; after which date these rates shall subject to adjustment in case the official level of prices and salaries has increased. The adjustment will then be according to the provisions made in Annexure D - Financial Proposal.

5.5 Alterations or modifications to designs

In the event of circumstances arising which could not have been reasonably foreseen by the Consultant or in the event of the Employer modifying the design requirements necessitating alterations to complete designs or alterations to designs in progress and which also require the alterations or remarking of any specification, drawings or other documents prepared in whole or in part by the Consultant, the whole of the cost of revising, amending or reproducing such designs, drawings or documents to bring the work up to the stage at which it was before being modified, shall be subjected to additional payment, calculated on a time and cost basis based on rates quoted in the financial proposal which forms Annexure (D) of this Agreement.

Article 6

LIABILITY OF THE CONSULTANT

- 6.1 The Consultant is liable for the consequences of all errors and omissions on his part or on the part of his employees to the extent and with the limitations referred to hereunder.
- 6.2 The liability of the Consultant for negligence shall be limited to the amount of the Contract Sum.
- 6.3 The liability of the Consultant shall terminate upon the Employer's final acceptance of the Consultant's services.
- 6.4 The liability for consequential damages is excluded.

Article 7

INSURANCE

7.1 Insurance to be provided by the Consultant

During the performance of the services, the Consultant will take out, carry and maintain the following insurances, insuring himself with the limits shown for the respective items:

- a) Workmen's Compensation Insurance or similar insurance to cover his expatriate and local personnel engaged in the performance of the services, in accordance with applicable laws and regulations.
- b) Equipment Insurance to cover the loss or physical damage to all equipment, office furniture and equipment owned by the Consultant and insured under "All Risk" conditions with a limit not to exceed the actual value of the equipment.

The Employer will be furnished with satisfactory evidence that the foregoing insurance is in effect and such evidence shall provide that the Employer will be given written notice thirty (30) calendar days prior to cancellation of such insurance. The cost of such insurance shall be borne by the Consultant.

Article 8

FORCE MAJEURE

- 8.1 In the event of Force Majeure-unforeseeable events beyond the control of the parties – preventing either party to meet its obligations under this Agreement, it is agreed that if notice of such situation is given to the other party within fourteen (14) calendar days after the occurrence of Force Majeure, the contractual obligations as far as affected by such event shall be suspended for as long as the inability continues owing to such situation. In the event of Force Majeure, the Consultant shall be entitled to an extension adequate to the delay caused by such Force Majeure.
- 8.2 The Consultant shall be compensated for losses and damage resulting from Force Majeure. The extent of compensation shall be negotiated between the parties. Failure to agree on a compensation shall be treated as a dispute.
- 8.3 If Force Majeure continues longer than ninety (90) calendar days, either party may terminate this Agreement by a written notice given within thirty (30) calendar days.

Article 9

TERMINATION OF THE AGREEMENT

9.1 Termination by Employer

The Employer may terminate this Agreement at any time upon written notice of not less than thirty (30) calendar days whenever for any reason the Employer shall determine that such termination is in the best interests of the Employer. Upon receipt of such notice, the Consultant shall take immediate steps to bring the services to a close in a prompt and orderly manner and shall deliver to the Employer all reports, designs and other documents elaborated up to that date.

9.2 Termination by Consultant

If any amounts due and payable to the Consultant under this Agreement have not been paid within sixty (60) calendar days after the receipt of the invoice, the Consultant may at his option terminate this Agreement upon thirty (30) calendar days' notice in writing to the Employer.

9.3 Consequence of Termination

- a) If termination is not due to a default of the Consultant, the Consultant shall be entitled to receive the remuneration due up to the date of termination and reimbursement for such cost incurred prior to the date of termination and reimbursement for any loss and damage incidental to the termination.
- b) If termination is due to a default of the Consultant, the Employer is entitled to ask for payment for damage resulting from such default.

Article 10

SPECIAL PROVISIONS

10.1 Conduct

During the validity of this Agreement, the Consultant and his expatriate staff and employees shall not interfere in affairs of a political or religious nature within or concerning Lebanon.

10.2 Confidential treatment

All documents, reports, estimates, technical data and information shall be treated as confidential and shall not, without the written approval of the other party, be made available to any third party.

10.3 Notices

The Employer's and the Consultant's addresses shall be as follows and all communications shall be directed to these addresses:

Employer: Name: Republic of Lebanon
Ministry of Environment
Address: PO Box 70-1091
Antelias - Lebanon
Tel: (01) 52 22 22
Fax: (01) 52 45 55

Consultant: Name:
Address:
Tel:
Fax:

10.4 Copyright

The Ownership and Copyright of all reports, designs, calculations, drawings and specifications as prepared by the Consultant for the execution of his duties under this Agreement, will resort solely with the Employer. The Employer will be entitled either directly or indirectly, to make use of such reports, designs, calculations, drawings and specifications as he deems fit. The Consultant, however, will be released from all responsibility if such information or designs are used in ensuing works undertaken by the Employer. The Consultant will have the right to make use of such information and designs with the prior consent of the Employer.

The Copyright of all the information supplied by the Employer shall be with the MoE. The Consultant may not use this information for his own purposes except for the design of the project. Publications are not allowed without the written approval of the MoE.

10.5 Property in documents and equipment

All studies, reports and relevant data, such as maps, diagrams, plans, statistics and supporting material submitted to the Employer shall be the property of the Employer. Equipment purchased in connection with the services by the Consultant and fully paid by the Employer shall be handed over to the Employer on termination of the services.

10.6 Reimbursements

All reimbursements, insurance payments, guarantee payments or other payments, if any, shall be made to account no with the
[.....]

Article 11

SETTLEMENT OF DISPUTES

Any disputes arising out of or in connection with the Agreement should be settled amicably between both parties.

In default of amicable agreement, the dispute shall be finally settled under the Rules of Conciliation and Arbitration of the International Chamber of Commerce in Paris, by one arbitrator appointed in accordance with the said rules.

ANNEXURE A
TERMS OF REFERENCE

ANNEXURE B

TIME SCHEDULE OF ACTIVITIES

ANNEXURE C

LIST AND CV'S OF PROFESSIONAL STAFF

ANNEXURE D

FINANCIAL PROPOSAL

ANNEXURE E

FORM – ADVANCE PAYMENT GUARANTEE

ADVANCE PAYMENT GUARANTEE

In consideration of the Contract dated
between ("Employer")
and ("Consultant")
for (i.e. study, supervision)
at a contract sum of
and as it is a condition of this contract that % of the Contract Sum being an
amount of
has to be paid as advance payment against presentation of an advance payment guarantee,

We, the undersigned Bank, waiving all objections and defenses hereby irrevocably and
independently guarantee to pay to the Employer without delay on his first written demand an
amount up to the extent of

.....
(amount of advance payment)

(in words:)

against his written declaration that the Consultant has refused or failed to perform his
contractual obligations.

This guarantee shall come into force as soon as the advance payment has been credited to the
Consultant's account and shall be reduced automatically according to the mobilization cost
paid and the value of services rendered by the Consultant.

In case of any claim under this guarantee, payment will be effected to Republic of Lebanon,
Ministry of Environment (account number) - of the Employer.

This guarantee shall expire on (date) by which date we must have
received any claim by registered letter, cable or fax.

It is understood that the Employer will return this guarantee to us on expiry or settlement of a
claim or claims hereunder.

.....
Date

.....
Bank

ANNEXURE F
TECHNICAL PROPOSAL

ANNEXURE G
POWER OF ATTORNEY

ANNEXURE H

PERFORMANCE BOND

PERFORMANCE BOND

Republic of Lebanon

Standard form of a Performance Bond

Office of the Minister of State for Administrative Reform
Center for Public Sector Projects and Studies
(C.P.S.P.S.)

Letter by the guarantor to the Client:

Onyou concluded with
("Contractor") a contract for
(project, subject matter of Contract) at a price of
.....

According to the provisions of the Contract the Contractor is obliged to provide a Perform-
ance Bond in the order of per cent of the Contract price.

We, the undersigned(bank, insurance company), waiving
all objections and defenses under the afore mentioned contract, hereby irrevocably and in-
dependently guarantee to pay on your first written demand any amount up to a total of
.....

(in words:)

against your written declaration that the Contractor has failed to perform the afore mentioned
Contract.

In the event of any claim under this guarantee, payment will be effected to Republic of
Lebanon, Ministry of Environment (account number) with
for account of the Client.

This guarantee shall expire not later than, by which date we
must have received any claims by registered letter, telegram, telex or fax.

It is understood that the Employer will return this guarantee to us on expiry or settlement of a
claim or claims hereunder.

.....
Date

.....
Bank

APPENDIX 4

Memo for Progress Reports

MEMO FOR PROGRESS REPORTS

The reports on the progress of the project to be submitted monthly and quarterly by the Consultant shall include at least the following points.

1. List of project measures

Progress made in the period under report; any changes in planning, reasons for this.

2. Assignment of the Consultants

Award of Contract; kind of services rendered and activities of personnel assigned to the project site.

3. Award of Contracts for goods and services

Bidding procedures; deadlines; results and evaluation of bids; award of contracts.

4. Goods and services provided

(broken down according to the list of project measures stated under item 1 above)

Supplies: Kind and quantity, delivery dates, guarantees; accept-ance at factory; acceptance at project site.

Transport: Kind and volume; duration; insurances; storage at construction site.

Construction: Kind and scope of work; equipment; labour input; acceptances.

Assembly: Kind and scope of work; equipment; labour input; suppliers' labour input; practical and theoretical training of the staff of the Project Executing Agency.

Putting into operation: Final acceptances; test runs; operating results; staff training; repairs/replacements.

5. Adherence to time schedule

Comparison of targets with actual values; reasons for changes in time schedule; description of effects on the progress of the Project.

6. State of accounts and disbursements

for the goods and services stated in the list specified under item 1 above.

7. Adherence to cost and financing schedule

Comparison of targets with actual values; proposed financing of cost increases, if any.

APPENDIX 5

Program of Work

APPENDIX 6

Project Cost Breakdown Form

PROJECT COST BREAKDOWN FORM

1. Staff Costs

1.1 Personnel of Lebanese Counterpart (US\$)

Project Responsibility and Name		Time Spent Offices (Months)	Office Tariff	Office Costs	Time Spent on Project (Months)	Project Tariff	Project Costs	Total Personnel Cost
1.	Name	.....	.....	.....	.....	.....	.....	.....
2.	Name	.....	.....	.....	.....	.....	.....	.....
3.	Name	.....	.....	.....	.....	.....	.....	.....
Total								.....

1.2 Staff Costs

1.2.1 Personnel of Foreign Counterpart (US\$)

Project Responsibility and Name		Home Office Tariff (Monthly)	Foreign Allowance	Foreign Accommodation Costs	Foreign Tariff (Monthly)
1.	Name				
2.	Name				
3.	Name				

1.2.2 Total Costs (US\$)

Project Responsibility and Name		Time Spent in Home Offices (Months)	Home Office Tariff	Home Office Costs	Time Spent in Foreign Project Office (Months)	Foreign Tariff	Foreign Costs	Total Personnel Cost
1.	Name							
2.								
3.								
Total								

1.3 Summary of Staff Costs

Staff Description	Total Costs in US\$
1. Personnel of Lebanese Counterpart	
1. Personnel of Foreign Counterpart	
Total Staff Costs	

2. Travel and Transport Costs

2.1 Air and Air Incidental Expenses

Responsibility and Name		Number of Flights Abroad	Cost per Flight	Air Fare Abroad and Return	Lump Sum Air Incidental Expenses	Total Flight Costs Abroad	Total Air Expenses (US\$)
Function	Name						
1.	
2.	
3.	
Total Air and Air Incidental Costs							

2.2 Other Travel Expenses (US\$)

Detail of Expenses	Months	Kilometers per Month	Tariff per Kilometer	Expenses per Month	Total Costs US\$
1. Sedan					
2. Public Transport (Bus, Taxis, etc.)					
Total Travel Expenses					

2.3 Summary of Travel and Transport Costs

Detail of Costs	Total Costs in US\$
2.1 Air and air incidental expenses	
2.2 Other travel expenses	
Total Staff Costs	

3. Office Costs (US\$)

Detail of Costs	Months	Cost per Month	Total Costs (US\$)
Rental of project office			
Running and maintenance costs			
Stationary expenses			
Telecommunication services			
Typing services			
Postal services			
Photocopying services			
Plan reproduction services			
Computer services			
Document binding services			
General office expenses			
		Total	

4. Procurement Costs and Rental of Equipment, Special Investigation and Subcontract Costs (US\$) (refer to terms of agreement)

Detail of Equipment	Number	Unit Cost	Total Costs (US\$)
Software for Discharge register Sampling and Analysis PC's Pentium 266, 32MB RAM 3.2 GB Hard Disk	2 Licenses 2	See 4.1	50,000.00 *
Total			

* The analysis will be paid according the number of samples and the parameters analyzed with the rates given in 4.1 special investigation – analysis.

4.1 Special Investigation – Analysis

Parameters	Price Per Units \$
BOD ₂	
BOD ₅	
O ₂	
NH ₄ -N	
NO ₂ -N	
NO ₃ -N	
o-P	
COD	
Fe	
Mn	
Mg	
Ca	
Pb	
Ni	
Cr	
Cu	
Other heavymetals	
Indication – Organizems (Per organism)	
Conductivity	
pH	
Suspend Solids	
Temperature	
E-Coli	
Total Coliforms	

5. Grand Total Cost (US\$)

Detail of Costs	Total Costs in US\$
1. Staff costs	
2. Travel and transport costs	
3. Office costs	
4. Procurement costs and rental equipment, special investigation and subcontract costs	
Total Costs	

APPENDIX 7

GUIDELINES FOR THE PROTECTION AND REMEDICATION OF RIVER LANDSCAPES IN THE REPUBLIC OF LEBANON

1. The treated waste water shall be assumed to conform to the relevant parameters if, for each relevant parameter considered individually, samples of the water show that it complies with the relevant parametric value in the following way:
 - i) for the parameters specified in Table 1 and Article 2 (7), a maximum number of samples which are allowed to fail the requirements, expressed in concentrations and/or percentage reductions in Table 1 and Article 2 (7), is specified in Table 3;
 - ii) for the parameters of Table 1 expressed in concentrations, the failing samples taken under normal operating conditions must not deviate from the parametric values by more than 100 %. For the parametric values in concentration relating to total suspended solids deviations of up to 150 % may be accepted;
 - iii) for those parameters specified in Table 2 the annual mean of the samples for each parameter shall conform to the relevant parametric values.
1. Extreme values for the water quality in question shall not be taken into consideration when they are the result of unusual situations such as those due to heavy rain.

Table 1: Requirements for discharges from urban waste water treatment plants subject to Articles 4 and 5 of the Guideline. The values for concentration or for the percentage of reduction shall apply.

<i>Parameters</i>	<i>Concentration</i>	<i>Minimum percentage of reduction (1)</i>	<i>Reference method of measurement</i>
Biochemical oxygen demand (BOD ₅ at 20 °C) without nitrification (2)	25 mg/l O ₂	70-90 40 under Article 4 (2)	Homogenized, unfiltered, undecanted sample. Determination of dissolved oxygen before and after five-day incubation at 20 °C ± 1 °C, in complete darkness. Addition of a nitrification inhibitor
Chemical oxygen demand (COD)	125 mg/l O ₂	75	Homogenized, unfiltered, undecanted sample Potassium dichromate
Total suspended solids	35 mg/l (3) 35 under Article 4 (2) (more than 10000 p.e.) 60 under Article 4 (2) (2000-10000 p.e.)	90 (3) 90 under Article 4 (2) (more than 10000 p.e.) 70 under Article 4 (2) (2000-10000 p.e.)	- Filtering of a representative sample through a 0,45 micrometer filter membrane. Drying at 105 °C and weighing - Centrifuging of a representative sample (for at least five minutes with mean acceleration of 2800 to 3200 g), drying at 105 °C and weighing

- (1) Reduction in relation to the load of the influent.
- (2) The parameter can be replaced by another parameter: total organic carbon (TOC) or total oxygen demand (TOD) if a relationship can be established between BOD₅ and the substitute parameter.
- (3) This requirement is optional.

Analyses concerning discharges from lagooning shall be carried out on filtered samples; however, the concentration of total suspended solids in unfiltered water samples shall not exceed 150 mg/l.

Table 2: Requirements for discharges from urban waste water treatment plants to sensitive areas which are subject to eutrophication as identified in Appendix II.A (a). One or both parameters may be applied depending on the local situation. The values for concentration or for the percentage of reduction shall apply.

<i>Parameters</i>	<i>Concentration</i>	<i>Minimum percentage of reduction (1)</i>	<i>Reference method of measurement</i>
Total phosphorus	2 mg/l P (10000 - 100000 p. e.) 1 mg/l P (more than 100000 p. e.)	80	Molecular absorption spectrophotometry
Total nitrogen (2)	15 mg/l N (10000 - 100000 p. e.) 10 mg/l N (more than 100000 p. e.) (3)	70-80	Molecular absorption spectrophotometry

- (1) Reduction in relation to the load of the influent.
- (2) Total nitrogen means: the sum of total Kjeldahl-nitrogen (organic N + NH₃), nitrate (NO₃)-nitrogen and nitrite (NO₂)-nitrogen.
- (3) Alternatively, the daily average must not exceed 20 mg/l N. This requirement refers to a water temperature of 12° C or more during the operation of the biological reactor of the waste water treatment plant. As a substitute for the condition concerning the temperature, it is possible to apply a limited time of operation, which takes into account the regional climatic conditions. This alternative applies if it can be shown that paragraph 1 of Appendix I.D is fulfilled.

Table 3

<i>Series of samples taken in any year</i>	<i>Maximum permitted number of samples which fail to conform;</i>
4-7	1
8-16	2
17-28	3
29-40	4
41-53	5
53-67	6
68-81	7
82-95	8
96-110	9
111-125	10
126-140	11
141-155	12
156-171	13
172-187	14
188-203	15
204-219	16
220-235	17
236-251	18
252-268	19
269-284	20
285-300	21
301-317	22
318-334	23
335-350	24
351-365	25

CRITERIA FOR IDENTIFICATION OF SENSITIVE AND LESS SENSITIVE AREAS

I. Sensitive areas

A water body must be identified as a sensitive area if it falls into one of the following groups:

- (i) Natural freshwater lakes, other freshwater bodies, estuaries and coastal waters which are found to be eutrophic or which in the near future may become eutrophic if protective action is not taken.

The following elements might be taken into account when considering which nutrient should be reduced by further treatment:

- a) lakes and streams reaching lakes/reservoirs/closed bays which are found to have a poor water exchange, whereby accumulation may take place. In these areas, the removal of phosphorus should be included unless it can be demonstrated that the removal will have no effect on the level of eutrophication. Where discharges from large agglomerations are made, the removal of nitrogen may also be considered;
 - b) estuaries, bays and other coastal waters which are found to have a poor water exchange, or which receive large quantities of nutrients. Discharges from small agglomerations are usually of minor importance in those areas, but for large agglomerations, the removal of phosphorus and/or nitrogen should be included unless it can be demonstrated that the removal will have no effect on the level of eutrophication;
- (ii) Surface freshwaters intended for the abstraction of drinking water which could contain more than the concentration of nitrate laid down under the relevant provisions of a Lebanese guideline concerning the quality required of surface water intended for the abstraction of drinking water if action is not taken;
 - (iii) Areas where further treatment than that prescribed in Article 4 of this Guideline is necessary to fulfil other Guidelines.

II. Less Sensitive areas

A marine water body or area can be identified as a less sensitive area if the discharge of waste water does not adversely affect the environment as a result of morphology, hydrology or specific hydraulic conditions which exist in that area.

When identifying less sensitive areas, the risk that the discharged load may be transferred to adjacent areas where it can cause detrimental environmental effects shall be taken into account

The following element shall be taken into consideration when identifying less sensitive areas:

Open bays, estuaries and other coastal waters with a good water exchange and not subject to eutrophication or oxygen depletion or which are considered unlikely to become eutrophic or to develop oxygen depletion due to the discharge of urban waste water.

INDUSTRIAL SECTORS

1. Milk-processing
2. Manufacture of fruit and vegetable products
3. Manufacture and bottling of soft drinks
4. Potato-processing
5. Meat industry
6. Breweries
7. Production of alcohol and alcoholic beverages
8. Manufacture of animal feed from plant products
9. Manufacture of gelatin and of glue from hides, skin and bones
10. Malt-houses
11. Fish-processing industry

Guideline for the Protection and Remediation of Rivers and River Landscapes in the Republic of Lebanon

Human activities are degrading the environment and quality of life in the rivers and river valleys all over Lebanon. Partially the rivers and the surrounding areas are today disturbed forever by human activities.

- The Lebanese rivers are highly polluted by:
 - industrial discharges,
 - direct or indirect discharges of sewage from human settlements and
 - leachate from waste disposal,
 - diffuse flows from agricultural used areas contaminated with fertilizers and pesticides.
- The surrounding landscapes of the rivers and especially the river valleys and the river mouths are partially disturbed or polluted by:
 - industry
 - uncontrolled settlements,
 - landfills,
 - stone quarries and
 - sand spilling

In order to combat pollution of rivers and threatening of river landscapes in Lebanon, principles must be defined within a framework of guidelines

This Guidelines deals with the protection and remediation of Lebanese rivers and the river landscape:

- The Lebanese rivers have to be kept free from pollution,
- The current state of the rivers has to be improved and future pollution shall be avoided.
- Characteristic river landscapes has to be prevented from uncontrolled urbanization and from industrial settlements,
- Unique river landscapes has to be restored and managed as protected areas,
- The urgency of these tasks has to be subject to all further actions.

Part I General Guidelines

Article 1

- (1) This Guideline concerns the protection of rivers and their landscapes
The objective of this guideline is to protect the rivers and their surrounding areas from pollution, disturbance of the river valleys and to save them for future generations as natural as possible.
- (2) Protection in the sense of this guideline means:
 - (i) the Lebanese rivers have to be kept free from pollution,
 - (ii) the further pollution of the rivers has to be prevented and their current state has to be improved,
 - (iii) characteristic river landscapes has to be prevented from uncontrolled urbanization and from industrial settlements,
 - (iv) unique river landscapes has to be restored and managed as protected areas.

Article 2

- (1) All involved parties shall cooperate in the protection of the rivers and their landscapes to prevent their pollution and the pollution of their drainage areas.
- (2) They shall in so doing in particular endeavor:
 - (i) to enable use to be made of the river, in particular the obtaining of supplies of drinking water from the rivers or from bank-filtered waters, the agricultural use of the waters and sediments and the use for recreation;
 - (ii) to achieve as natural as possible an ecosystem with a healthy diversity of species;
 - (iii) to avoid as much as possible the construction of buildings along the river banks outside the existing settlements in order to protect the natural landscape for nature conservation and recreation;
 - (iv) to reduce substantially the pollution of the Sea from the drainage areas of the rivers.

- (3) The involved parties shall determine the tasks to be carried out as a priority in the form of work programs with timetables. These programs shall provide, inter alia, proposals for the application of:
 - (i) state-of-the-art techniques for the reduction of emissions and for measures to reduce pollution from various sources,
 - (ii) nature conservation plans
 - (iii) zoning plans for the limitation of houses, industry and agricultural usage of land in protected areas

Article 3

Measurements and investigations for the evaluation of the quantity as well as quality of the waters, sediments and effluents have to be carried out by the Ministry of Environment in coordination with concerned Ministries and institutions.

Article 4

For the purposes of river protection it is necessary to implement programs for urban waste water collection and treatment and guidelines for specific quality objectives for the waters and for the classification of the rivers.

Article 5

Protective measures to prevent water pollution resulting from accidents have to be developed by the Ministry of Environment in coordination with concerned ministries and line institutions.

Article 6

- (1) The main elements that constitute a river landscape have to be analyzed and classified and an inventory of land-use on the main river basins has to be prepared.
- (2) The hydrological situation in the river areas has to be described and the main influencing factors has to be recorded.
- (3) Documents regarding the ecological importance of the various biotope elements of the waters and proposals regarding the improvement of conditions for aquatic and coastal communities have to be prepared.
- (4) Planned and existing types of utilization of the waters, which may have serious regional repercussions including hydraulic structures and regulation of the waters, have to be investigated.

Article 7

Zoning plans and nature conservation plans for the surrounding areas of the main rivers including staged action plans for measures to be taken for the implementation of these plans have to be developed.

Article 8

- (1) In accordance with legislation framework principles, a water committee for the monitoring of environmental matters should be formed. It shall be chaired by a leading representative of the MoE.
- (2) This water committee shall assist the Lebanese Government in all water and river related questions. Its responsibility shall include the approval and review of the activities as described in the Articles of this guideline and of all other guidelines prepared in the fulfilling of this guideline as well as in the drafting of water related legislation.
- (3) One or more of the representatives shall submit to the committee a draft of the measures to be taken. The committee shall deliver its opinion on the draft within a time limit that the chairman may lay down according to the urgency of the matter. The opinion shall be delivered by a simple majority. The votes of the representatives within the committee shall be weighted in the manner which has to be set out in the first meeting of the committee.
- (4) The Government shall adopt the measures envisaged if they are in accordance with the opinion of the relevant ministry.

Article 9

The involved parties shall inform the governmental water committee of all the basic matters required for the water committee to fulfil its tasks and of the measures taken and the total resources used therefor. The water committee may submit proposals to the involved parties regarding improvements

Article 10

- (1) Any Activity or settlement should be subject to an EIA/EIS report.
- (2) Coastal area management programs and river management programs shall be merged.

Article 11

The responsible governmental parties shall prepare the basic matters required for the implementation of penalties for the pollution or disturbance for rivers and their surrounding areas

Part II Activities

Article 1

In order to fulfill the Guidelines given in part I the following activities have to be taken for the protection and remediation of rivers and their surrounding landscapes.

Article 2

- (1) For the evaluation of the existing situation a joint program of measurements and investigations to demonstrate the quantity as well as quality of the waters, sediments and effluents has to be developed.
- (2) Surveys showing major point sources of discharges of harmful materials (discharge charts and wastewater register) from industry, settlements and other sources like landfills have to be prepared and water pollution from diffuse sources has to be estimated and extrapolated.

Article 3

- (1) A staged program for urban waste water collection and treatment according to the risks and effects to the receiving waters and the quantity and pollution of the discharge has to be developed.
- (2) Specific quality objectives taking account of the requirements with regard to the use of the waters, the particular conditions of the river course and the natural aquatic communities have to be developed.
- (3) Standardized methods for the classification of river water qualities has to be compiled.

Article 4

- (1) Programs for the design and construction of waste water treatment plants for the reduction of discharges of harmful materials from the point sources of both settlements and industry as well as programs for the reductions of pollution from diffuse sources have to be implemented including timetables and cost assessments.

Article 5

Protective measures such as emergency basins and oil separators to prevent water pollution resulting from accidents in industry and on the roads in the river valleys have to be developed.

Article 6

- (1) The main elements that constitute a river landscape have to be analyzed and classified and an inventory of land-use on the main river basins has to be prepared.
- (2) The hydrological situation in the river areas has to be described and the main influencing factors has to be recorded.
- (3) Documents regarding the ecological importance of the various biotope elements of the waters and proposals regarding the improvement of conditions for aquatic and coastal communities have to be prepared.
- (4) Planned and existing types of utilization of the waters, which may have serious regional repercussions including hydraulic structures and regulation of the waters, have to be investigated.

Article 7

Zoning plans and nature conservation plans for the surrounding areas of the main rivers including staged action plans for measures to be taken for the implementation of these plans have to be developed.

APPENDIX 8

GUIDELINES FOR THE TREATMENT OF URBAN WASTE WATER FOR THE REPUBLIC OF LEBANON

Guideline concerning Urban waste water treatment in the Republic of Lebanon

In order to combat pollution of waters in Lebanon the

Guideline for the Protection and remediation of Rivers and River Landscapes in the Republic of Lebanon

was prepared.

In order to fulfill this Guideline which deals with the treatment of Urban Waste Water was prepared.

The following points are essential for the environment:

- To prevent the environment from being adversely affected by the disposal of insufficiently-treated urban waste water, there is a general need for secondary treatment of urban waste water;
- In sensitive areas it can be necessary to require more stringent treatment; whereas in some less sensitive areas a primary treatment could be considered appropriate;
- Industrial waste water entering collecting systems as well as the discharge of waste water and disposal of sludge from urban waste water treatment plants should be subject to general rules or regulations and/or specific authorizations;
- Discharges from certain industrial sectors of biodegradable industrial waste water not entering urban waste water treatment plants before discharge to receiving waters should be subject to appropriate requirements;
- The recycling of sludge arising from waste water treatment should be encouraged; whereas the disposal of sludge to surface waters should be phased out;
- Monitoring of treatment plants, receiving waters and the disposal of sludge is necessary to ensure that the environment is protected from the adverse effects of the discharge of waste waters;
- Information on the disposal of waste water and sludge have to be made available to the public in the form of periodic reports;

Article 1

This Guideline concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors.

The objective of the Guideline is to protect the environment from the adverse effects of the above mentioned waste water discharges.

Article 2

For the purpose of this Guideline:

1. 'urban waste water' means domestic waste water or the mixture of domestic waste water with industrial waste water and/or run-off rain water;
2. 'domestic waste water' means waste water from residential settlements and services which originates predominantly from the human metabolism and from household activities;
3. 'industrial waste water' means any waste water which is discharged from premises used for carrying on any trade or industry, other than domestic waste water and run-off rain water;
4. 'agglomeration' means an area where the population and/or economic activities are sufficiently concentrated for urban waste water to be collected and conducted to an urban waste water treatment plant or to a final discharge point;
5. 'collecting system' means a system of conduits which collects and conducts urban waste water;
6. 'One(1) p.e. (population equivalent)' means the organic biodegradable load having a five-day biochemical oxygen demand (BOD₅) of 60 g of oxygen per day;
7. 'primary treatment' means treatment of urban waste water by a physical and/or chemical process involving settlement of suspended solids, or other processes in which the BOD₅ of the incoming waste water is reduced by at least 20 % before discharge and the total suspended solids of the incoming waste water are reduced by at least 50 %;
8. 'secondary treatment' means treatment of urban waste water by a process generally involving biological treatment with a secondary settlement or other process in which the requirements established in Table I of Annex I are respected;
9. 'appropriate treatment' means treatment of urban waste water by any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of this and other Lebanese Guidelines;
10. 'Sludge' means residual sludge, whether treated or untreated, from urban waste water treatment plants;

11. 'eutrophication' means the enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned;
12. 'estuary' means the transitional area at the mouth of a river between fresh-water and coastal waters.
13. 'coastal waters' means the waters outside the low-water line or the outer limit of an estuary.

Article 3

1. All agglomerations have to be provided with collecting systems for urban waste water,

at the latest by 31 December 2010 for those with a population equivalent (p.e.) of more than 15000, and

at the latest by 31 December 2015 for those with a p.e. of between 2000 and 15000.

For urban waste water discharging into receiving waters which are considered 'sensitive areas' as defined under Article 5, collection systems have to be provided at the latest by 31 December 2005 for agglomerations of more than 10000 p.e.

Where the establishment of a collecting system is not justified either because it would produce no environmental benefit or because it would involve excessive cost, individual systems or other appropriate systems which achieve the same level of environmental protection shall be used.

2. Collecting systems described in paragraph 1 shall satisfy the requirements of Appendix I (A). These requirements may be amended in accordance with the procedure laid down in Article 8 of the Guideline for the Protection and Re-mediation of Rivers and River Landscapes .

Article 4

1. All urban waste water entering collecting systems shall before discharge be subject to secondary treatment or an equivalent treatment as follows:

- at the latest by 31 December 2010 for all discharges from agglomerations of more than 15000 p.e.,
- at the latest by 31 December 2015 for all discharges from agglomerations of between 10000 and 15000 p.e.,

- at the latest by 31 December 2015 for discharges to fresh-water and estuaries from agglomerations of between 2000 and 10000 p.e.
2. Urban waste water discharges to waters situated in high mountain regions (over 1500 m above sea level) where it is difficult to apply an effective biological treatment due to low temperatures may be subjected to treatment less stringent than that prescribed in paragraph 1, provided that detailed studies indicate that such discharges do not adversely affect the environment.
 3. Discharges from urban waste water treatment plants described in paragraphs 1 and 2 shall satisfy the relevant requirements of Appendix I.B. These requirements may be amended in accordance with the procedure laid down in Article 8 of the Guideline for the Protection and Re-mediation of Rivers and River Landscapes .
 4. The load expressed in p.e. shall be calculated on the basis of the maximum average weekly load entering the treatment plant during the year, excluding unusual situations such as those due to heavy rain.

Article 5

1. For the purposes of paragraph 2 less sensitive areas according to the criteria laid down in Appendix II. shall be identified by 31 of December 1999.
2. Urban waste water entering collecting systems shall before discharge into sensitive areas be subject to more stringent treatment than that described in Article 4, by 31 December 2005 at the latest for all discharges from agglomerations of more than 10000 p.e.
3. Discharges from urban waste water treatment plants described in paragraph 2 shall satisfy the relevant requirements of Appendix I B. These requirements may be amended in accordance with the procedure laid down in Article 8 of the Guideline for the Protection and Re-mediation of Rivers and River Landscapes .
4. Alternatively, requirements for individual plants set out in paragraphs 2 and 3 above need not apply in sensitive areas where it can be shown that the minimum percentage of reduction of the overall load entering all urban waste water treatment plants in that area is at least 75% for total phosphorus and at least 75 % for total nitrogen.
5. Discharges from urban waste water treatment plants which are situated in the relevant catchment areas of sensitive areas and which contribute to the pollution of these areas shall be subject to paragraphs 2, 3 and 4.
6. The identification of sensitive areas has to be reviewed at intervals of no more than four years.
7. Areas identified as sensitive following review under paragraph 6 shall within seven years meet the above requirements.

Article 6

1. For the purposes of paragraph 2, less sensitive areas according to the criteria laid down in Appendix II. can be identified by 31 of December 1999.
2. Urban waste water discharges from agglomerations of between 10000 and 150000 p.e. to coastal waters and those from agglomerations of between 2000 and 10000 p.e. to estuaries situated in areas described in paragraph 1 may be subjected to treatment less stringent than that prescribed in Article 4 providing that:

such discharges receive at least primary treatment as defined in Article 2 (7) in conformity with the control procedures laid down in Appendix I D,

comprehensive studies indicate that such discharges will not adversely affect the environment.

3. It has be ensured that the identification of less sensitive areas is reviewed at intervals of not more than four years.
4. It has be ensured that areas no longer identified as less sensitive shall within seven years meet the requirements of Articles 4 and 5 as appropriate.

Article 7

It has to be ensured that, by 31 December 2015, urban waste water entering collecting systems shall before discharge be subject to appropriate treatment as defined in Article 2 (9) in the following cases:

for discharges to fresh-water and estuaries from agglomerations of less than 2000 p.e.,

for discharges to coastal waters from agglomerations of less than 10000 p.e.

Article 8

1. In exceptional cases due to technical problems and for geographically defined population groups, a special request for a longer period for complying with Article 4 may be submitted.
2. This request, for which grounds must be duly put forward, shall set out the technical difficulties experienced and must propose an action program with an appropriate timetable to be undertaken to implement the objective of this Guideline.
3. Only technical reasons can be accepted and the longer period referred to in paragraph 1 may not extend beyond 31 December 2015.
4. A governmental commission shall examine this request and take appropriate measures in accordance with the procedure laid down in Article 8 of the Guideline for the Protection and Re-mediation of Rivers and River Landscapes .

5. In exceptional circumstances, when it can be demonstrated that more advanced treatment will not produce any environmental benefits, discharges into less sensitive areas of waste waters from agglomerations of more than 150000 p.e. may be subject to the treatment provided for in Article 6 for waste water from agglomerations of between 10000 and 150000 p.e.
6. In such circumstances, the relevant documentation shall be submitted to a governmental commission. The commission will examine the case and take appropriate measures in accordance with the procedure laid down in Article 8 of the Guideline for the Protection and Re-mediation of Rivers and River Landscapes .

Article 9

It should be ensured that the urban waste water treatment plants built to comply with the requirements of Articles 4, 5, 6 and 7 are designed, constructed, operated and maintained to ensure sufficient performance under all normal local climatic conditions. When designing the plants, seasonal variations of the load shall be taken into account.

Article 10

1. It should be ensured that, before 31 December 1998, the discharge of industrial waste water into collecting systems and urban waste water treatment plants is subject to prior regulations and/or specific authorizations by the competent authority or appropriate body.
2. Regulations and/or specific authorization shall satisfy the requirements of Appendix I C. These requirements may be amended in accordance with the procedure laid down in Article 8 of the Guideline for the Protection and remediation of Rivers and River Landscapes .
3. Regulations and specific authorization shall be reviewed and if necessary adapted at regular intervals.

Article 11

1. Treated waste water shall be reused whenever appropriate. Disposal routes shall minimize the adverse effects on the environment.
2. Competent authorities or appropriate bodies shall ensure that the disposal of waste water from urban waste water treatment plants is subject to prior regulations and/or specific authorization.
3. Prior regulations and/or specific authorization of discharges from urban waste water treatment plants made pursuant to paragraph 2 within agglomerations of 2000 to 10000 p.e. in the case of discharges to fresh waters and estuaries, and of 10000 p.e. or more in respect of all discharges, shall contain conditions to satisfy the relevant requirements of Appendix I B. These requirements may be amended in accordance with the procedure laid

down in Article 8 of the Guideline for the Protection and remediation of Rivers and River Landscapes .

4. Regulations and/or authorization shall be reviewed and if necessary adapted at regular intervals.

Article 12

1. It should be ensured that by 31 December 2010 biodegradable industrial waste water from plants belonging to the industrial sectors listed in Appendix III which does not enter urban waste water treatment plants before discharge to receiving waters shall before discharge respect conditions established in prior regulations and/or specific authorization by the competent authority or appropriate body, in respect of all discharges from plants representing 4000 p.e. or more.
2. By 31 of December 1998 requirements appropriate to the nature of the industry concerned for the discharge of such waste water shall be set.

Article 13

Sludge arising from waste water treatment shall be re-used whenever appropriate. Disposal routes shall minimize the adverse effects on the environment.

Competent authorities or appropriate bodies shall ensure that before 31 December 2000 the disposal of sludge from urban waste water treatment plants is subject to general rules or registration or authorization.

It shall be ensured that by 31 December 2005 the disposal of sludge to surface waters by dumping from ships, by discharge from pipelines or by other means is phased out.

Until the elimination of the forms of disposal mentioned in paragraph 3, it shall be ensured that the total amount of toxic, persistent or bioaccumulable materials in sludge disposed of to surface waters is licensed for disposal and progressively reduced.

Article 14

1. Competent authorities or appropriate bodies shall monitor:
 - discharges from urban waste water treatment plants to verify compliance with the requirements of Appendix I.B in accordance with the control procedures laid down in Appendix I.D,
 - amounts and composition of sludges disposed of to surface waters.
2. Competent authorities or appropriate bodies shall monitor waters subject to discharges from urban waste water treatment plants and direct discharges as described in Article 12 in cases where it can be expected that the receiving environment will be significantly affected.

3. In the case of a discharge subject to the provisions of Article 6 and in the case of disposal of sludge to surface waters, Competent authorities or appropriate bodies shall monitor and carry out any other relevant studies to verify that the discharge or disposal does not adversely affect the environment.
4. Guidelines on the monitoring referred to in paragraphs 1, 2 and 3 may be formulated in accordance with the procedure laid down in Article 8 of the Guideline for the Protection and remediation of Rivers and River Landscapes .

Article 15

Every two years the relevant authorities or bodies shall publish situation reports on the disposal of urban waste water and sludge in their areas. These reports shall be transmitted to the governmental commission.

REQUIREMENTS FOR URBAN WASTE WATER

I) Collecting systems (1)

Collecting systems shall take into account waste water treatment requirements.

The design, construction and maintenance of collecting systems shall be undertaken in accordance with the best technical knowledge not entailing excessive costs, notably regarding:

- volume and characteristics of urban waste water,
- prevention of leaks,
- limitation of pollution of receiving waters due to storm water overflows.

I) Discharge from urban waste water treatment plants to receiving waters ¹

1. Waste water treatment plants shall be designed or modified so that representative samples of the incoming waste water and of treated effluent can be obtained before discharge to receiving waters.
2. Discharges from urban waste water treatment plants subject to treatment in accordance with Articles 4 and 5 shall meet the requirements shown in Table 1.
3. Discharges from urban waste water treatment plants to those sensitive areas which are subject to eutrophication as identified in Appendix II.A (a) shall in addition meet the requirements shown in Table 2 of this Appendix
4. More stringent requirements than those shown in Table 1 and/or Table 2 shall be applied where required to ensure that the receiving waters satisfy any other relevant Guidelines.
5. The points of discharge of urban waste water shall be chosen, as far as possible, so as to minimize the effects on receiving waters.

¹ Given that it is not possible in practice to construct collecting systems and treatment plants in a way such that all waste water can be treated during situations such as unusually heavy rainfall, measures shall to be taken to limit pollution from storm water overflows. Such measures could be based on dilution rates or capacity in relation to dry weather flow, or could specify a certain acceptable number of overflows per year.

D) Industrial waste water

Industrial waste water entering collecting systems and urban waste water treatment plants shall be subject to such pre-treatment as is required in order to:

- protect the health of staff working in collecting systems and treatment plants,
- ensure that collecting systems, waste water treatment plants and associated equipment are not damaged,
- ensure that the operation of the waste water treatment plant and the treatment of sludge are not impeded,
- ensure that discharges from the treatment plants do not adversely affect the environment, or prevent receiving water from complying with other Guidelines,
- ensure that sludge can be disposed of safely in an environmentally acceptable manner.

D) Reference methods for monitoring and evaluation of results

1. A monitoring method has to be applied which corresponds at least with the level of requirements described below.

Alternative methods to those mentioned in paragraphs 2, 3 and 4 may be used provided that it can be demonstrated that equivalent results are obtained.

2. Flow-proportional or time-based 24-hour samples shall be collected at the same well-defined point in the outlet and if necessary in the inlet of the treatment plant in order to monitor compliance with the requirements for discharged waste water laid down in this Guideline.

Good international laboratory practices aiming at minimizing the degradation of samples between collection and analysis shall be applied.

3. The minimum annual number of samples shall be determined according to the size of the treatment plant and be collected at regular intervals during the year:

- 2000 to 9999 p. e.: 12 samples during the first year.

Four samples in subsequent years, if it can be shown that the water during the first year complies with the provisions of the Guideline; if one sample of the four fails, 12 samples must be taken in the year that follows.

- 10000 to 49999 p. e.: 12 samples.
- 50000 p. e. or over: 24 samples.