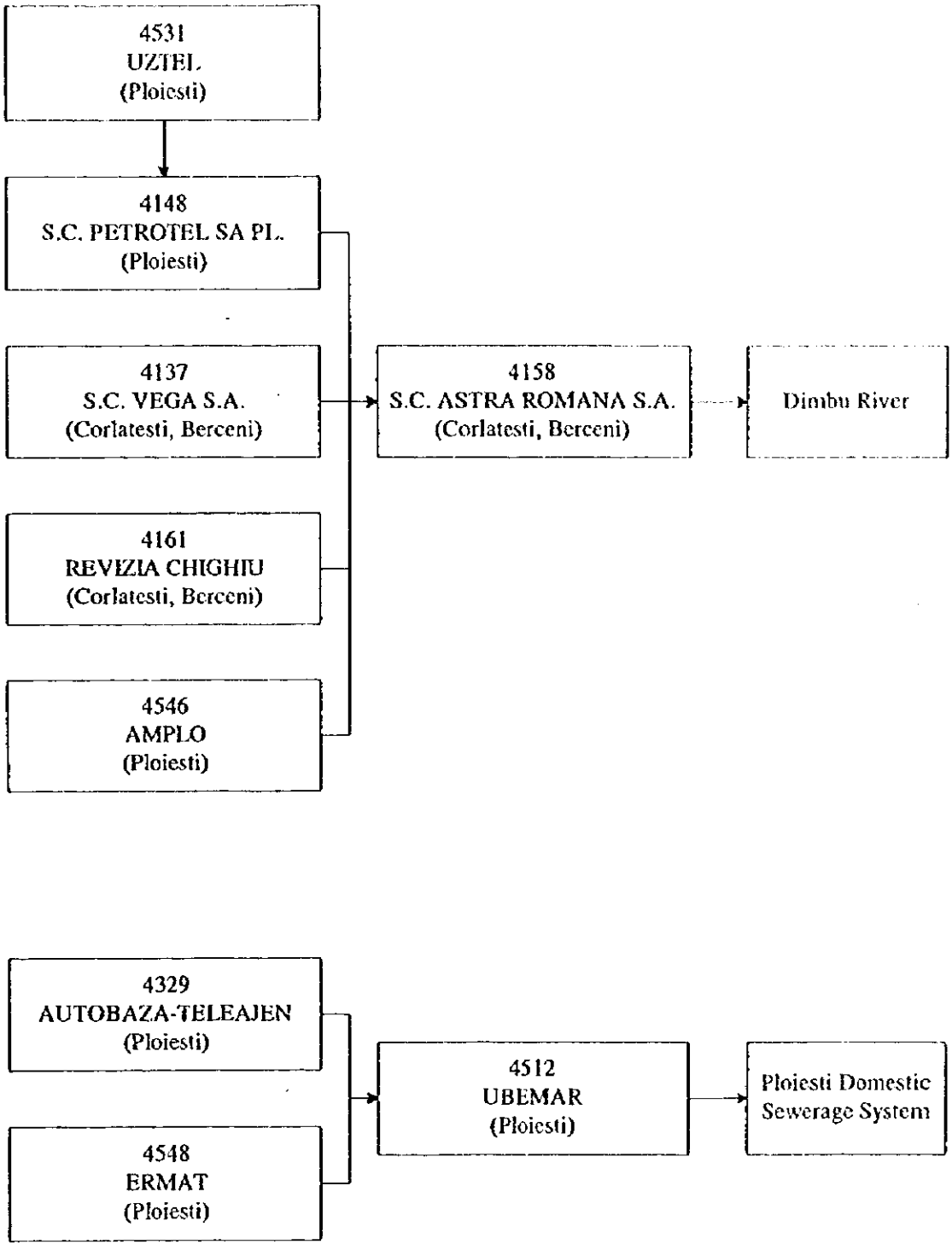
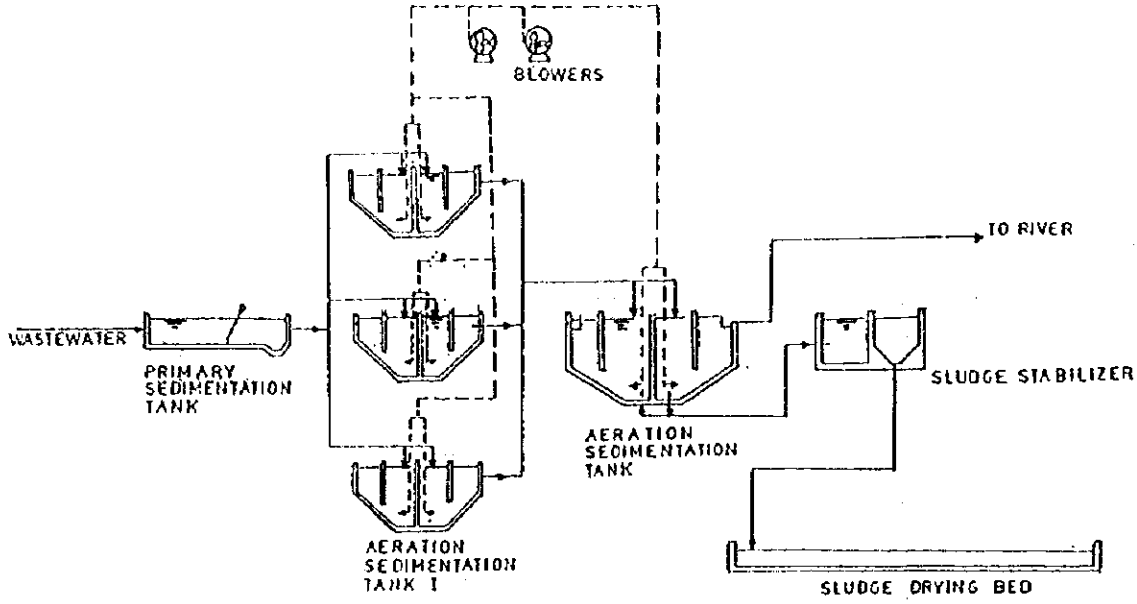
FIGURES



STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	**Fig. E.1.1 Industrial Sewerage System**
JAPAN INTERNATIONAL COOPERATION AGENCY	



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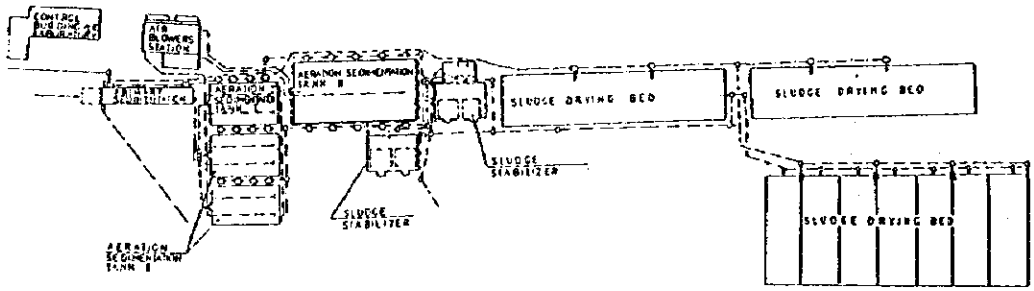
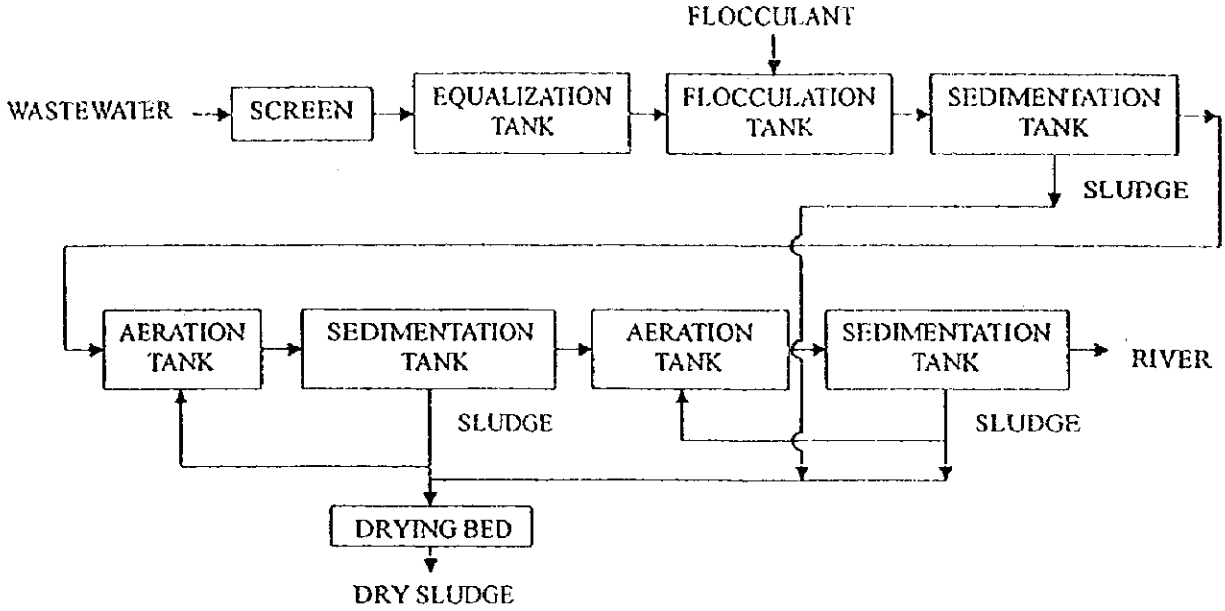


LAYOUT

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	**Fig. E.2.1 Wastewater Treatment Plant in BERE AZUGA(4006)**



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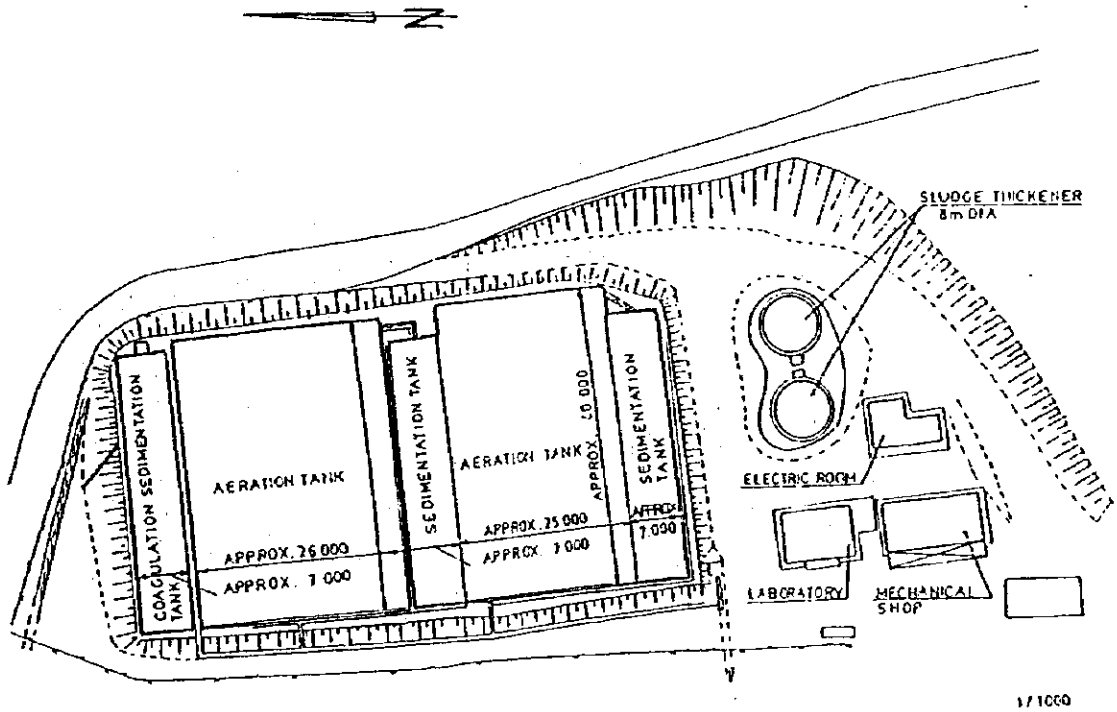
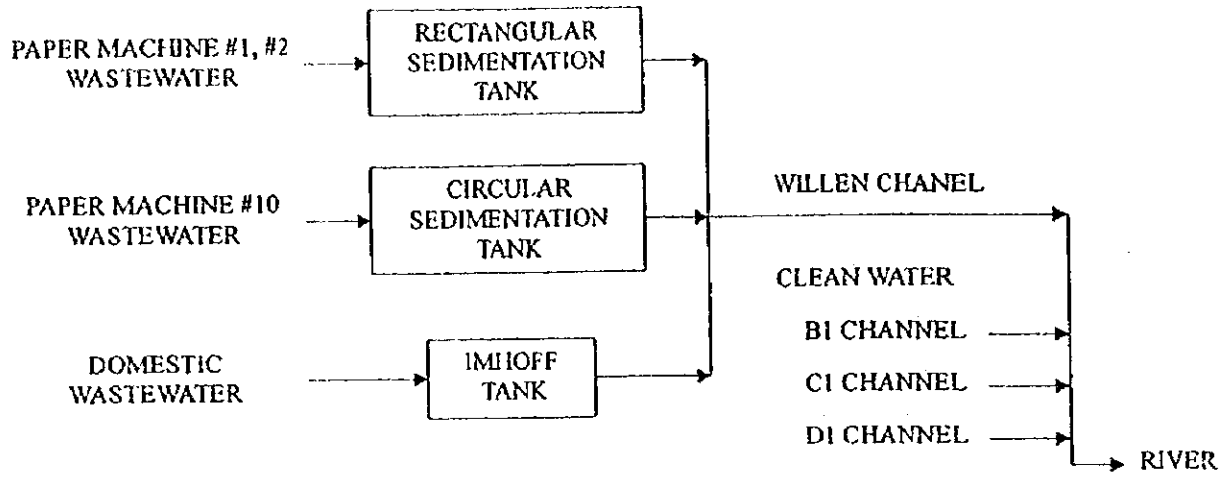


LAYOUT

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	**Fig. E.2.2 Wastewater Treatment Plant in POSTAV AZUGA (4007)**



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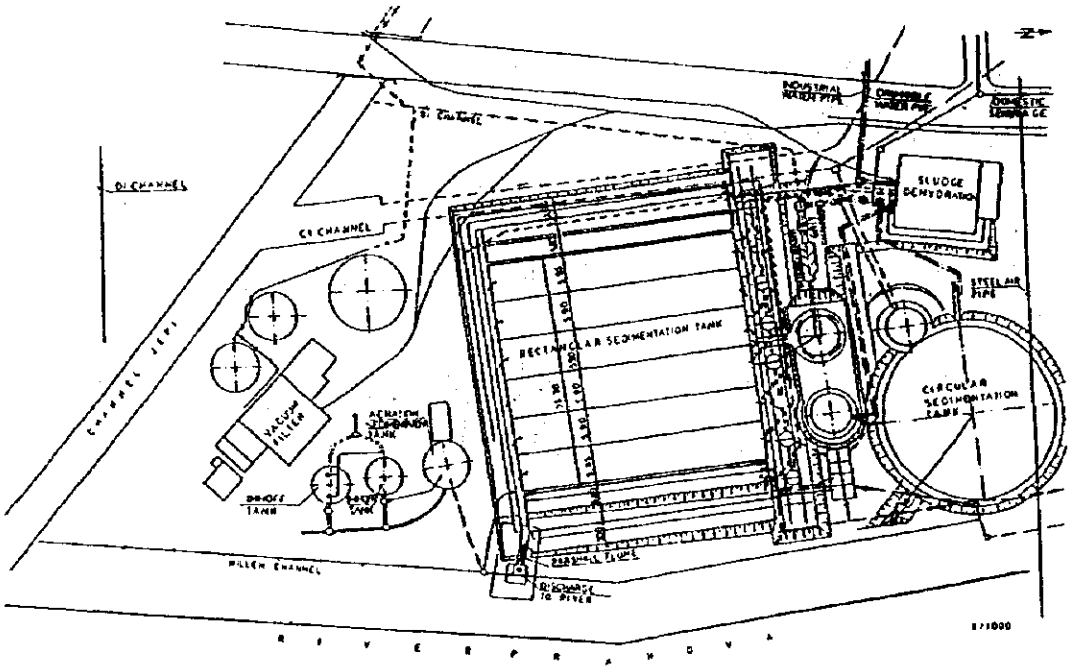
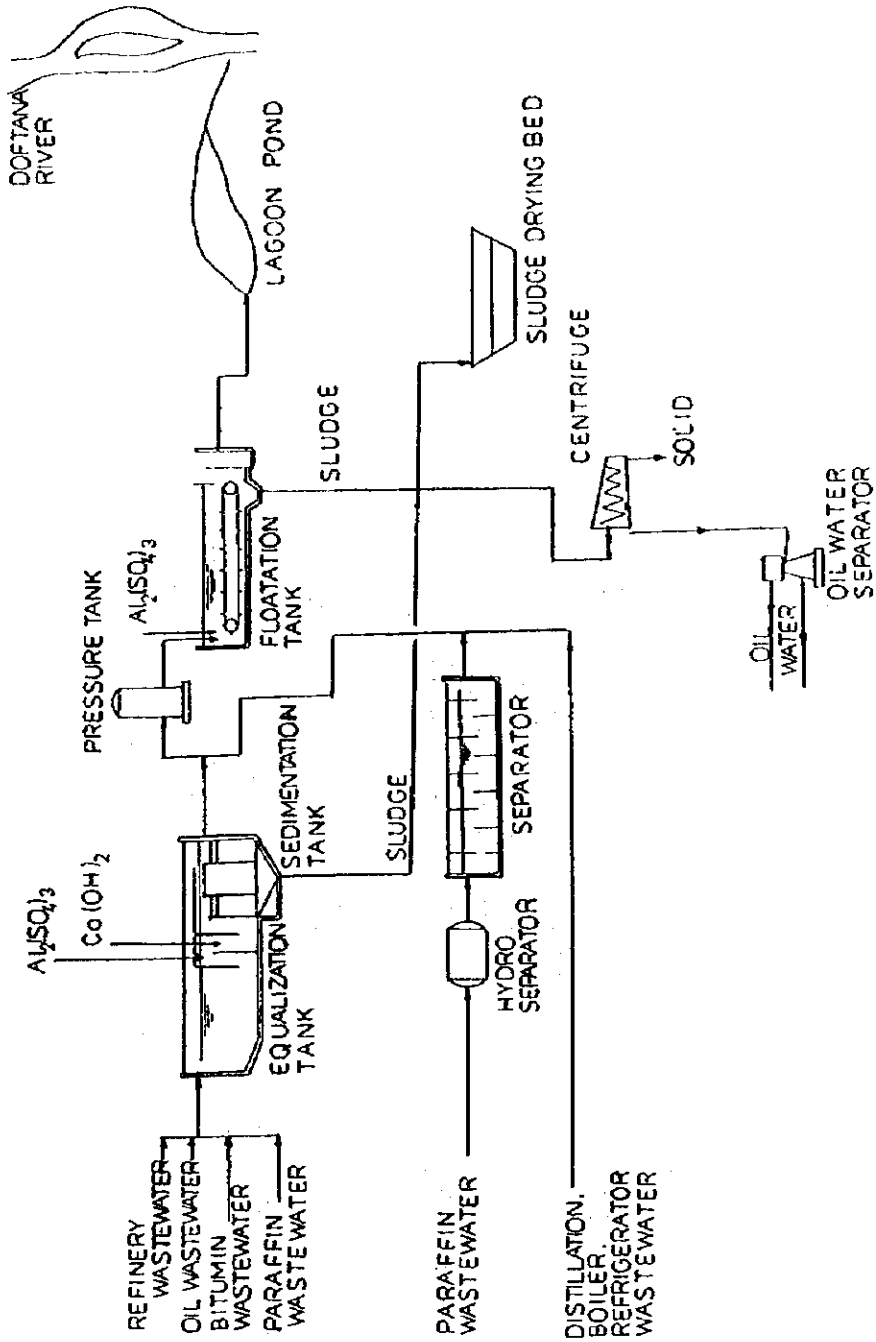
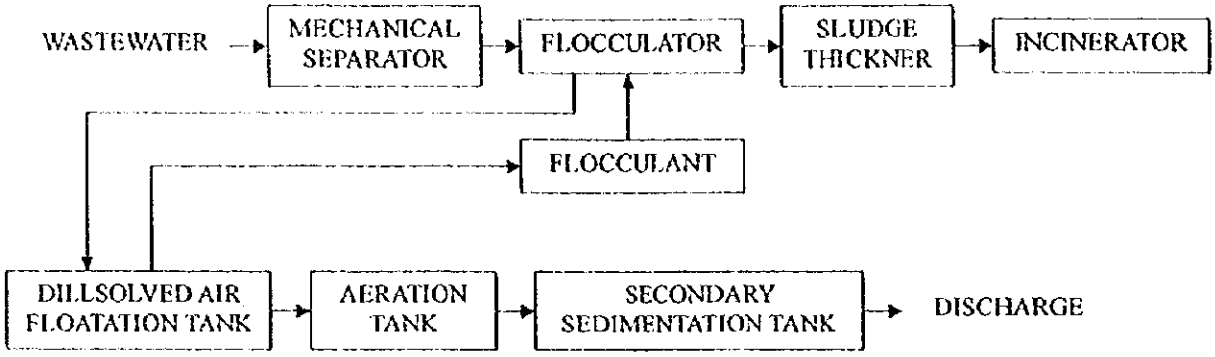


LAYOUT

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	**Fig. E.2.3 Wastewater Treatment Plant in HARTIA BUSTENI (4014)**
JAPAN INTERNATIONAL COOPERATION AGENCY	



STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	**Fig. E.2.4** **Wastewater Treatment Plant in S.C.STEAUA ROMANA S.A. (4035)**
JAPAN INTERNATIONAL COOPERATION AGENCY	



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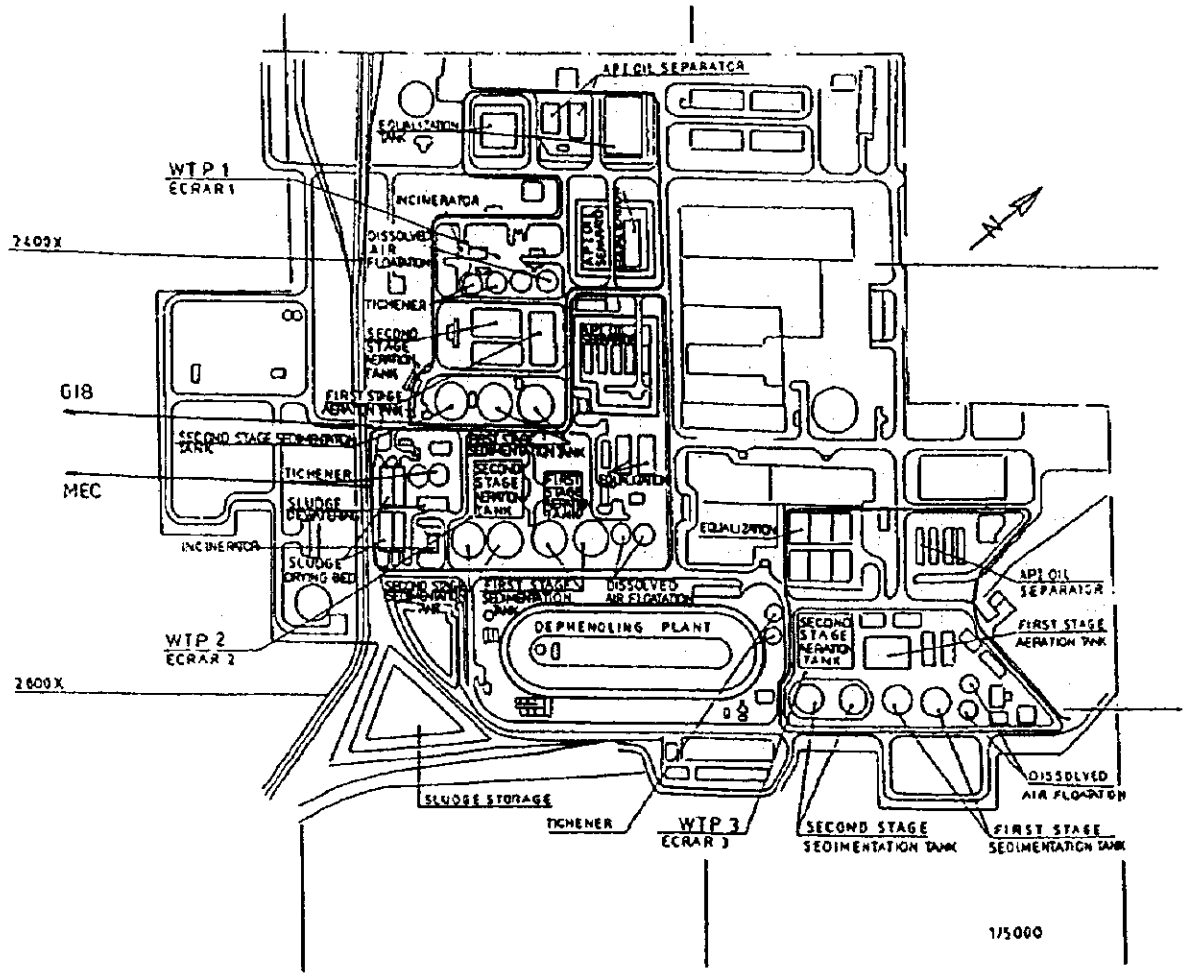
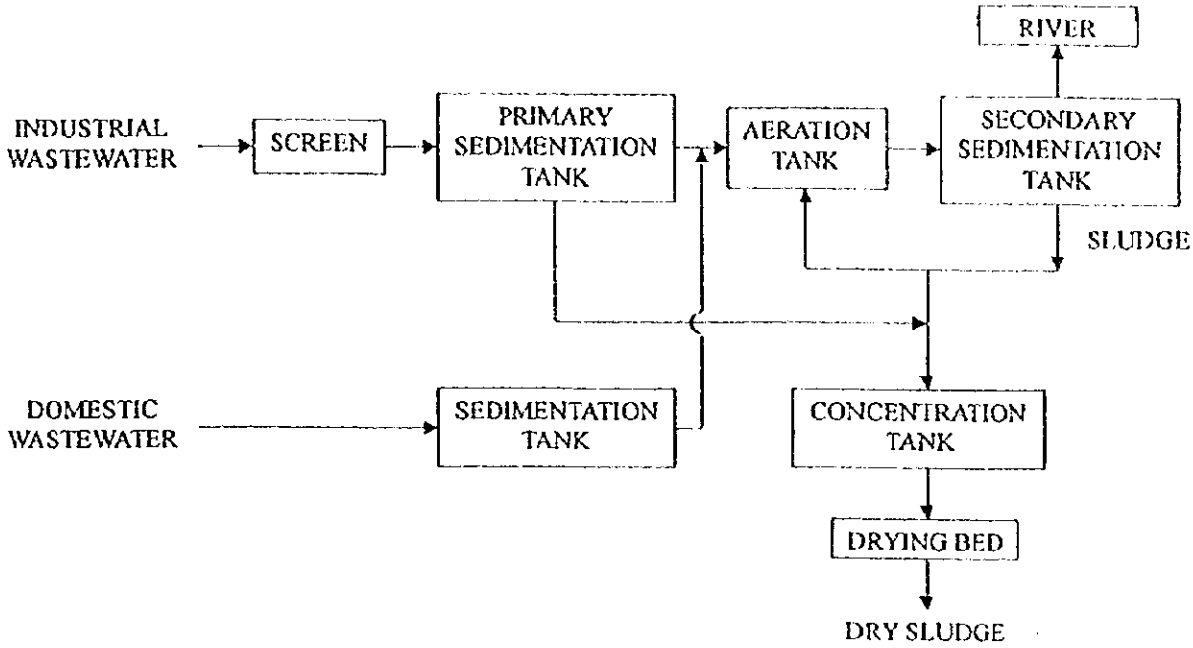


LAYOUT

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	**Fig. E.2.5 Wastewater Treatment Plant in S.C. PETROBRAZI S.A. (4051)**



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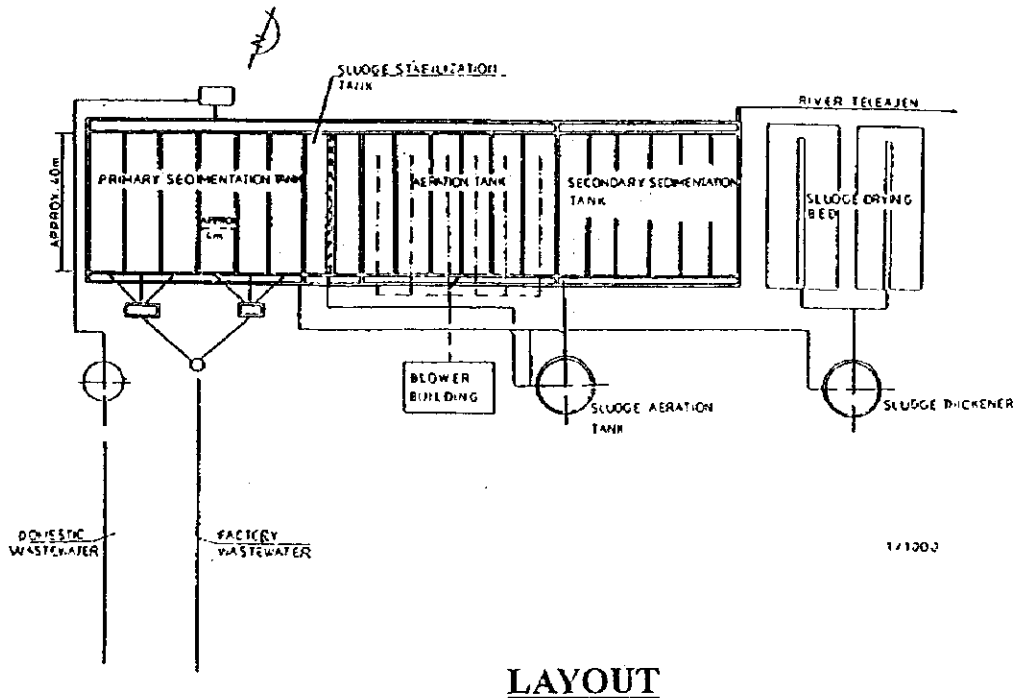
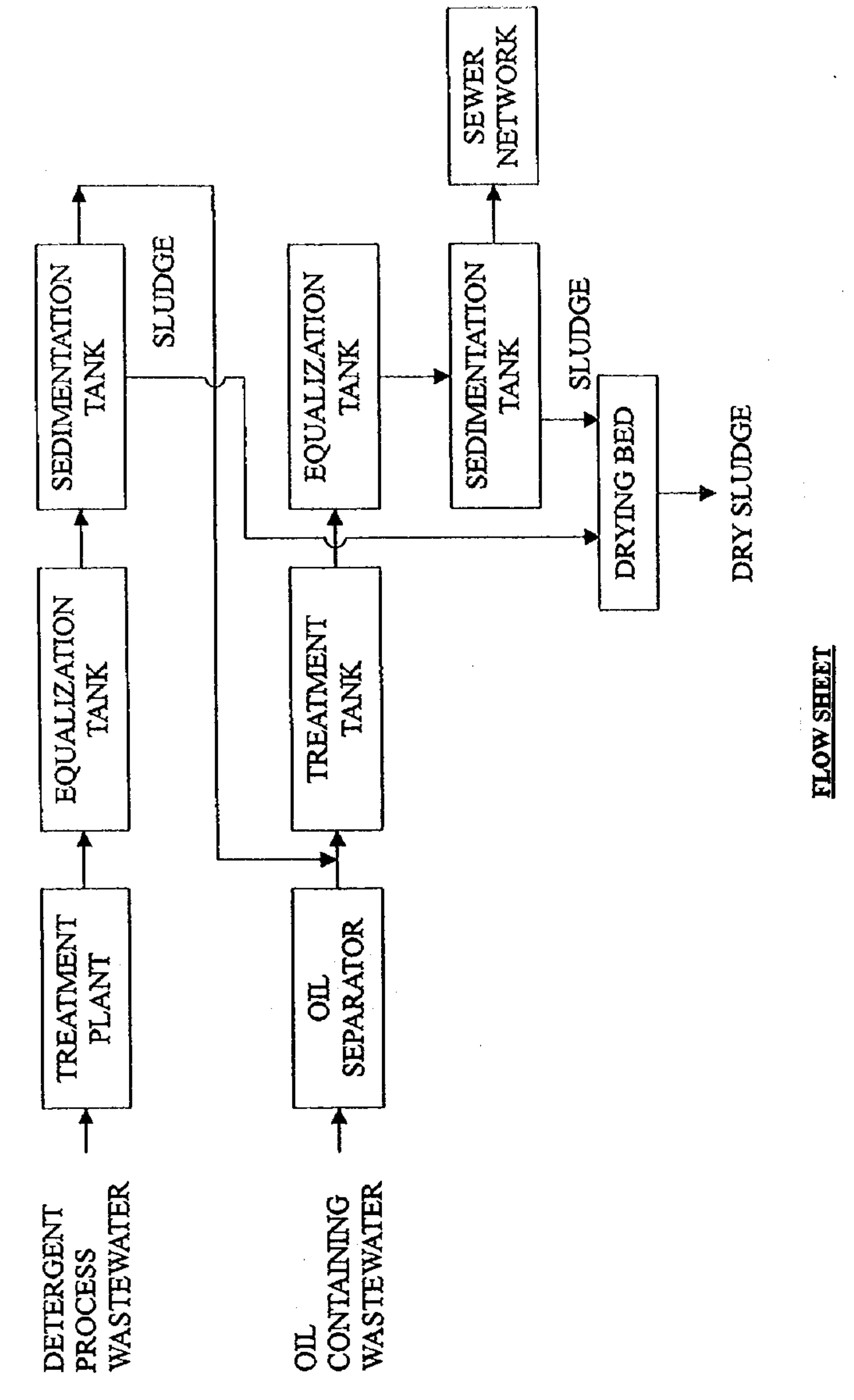
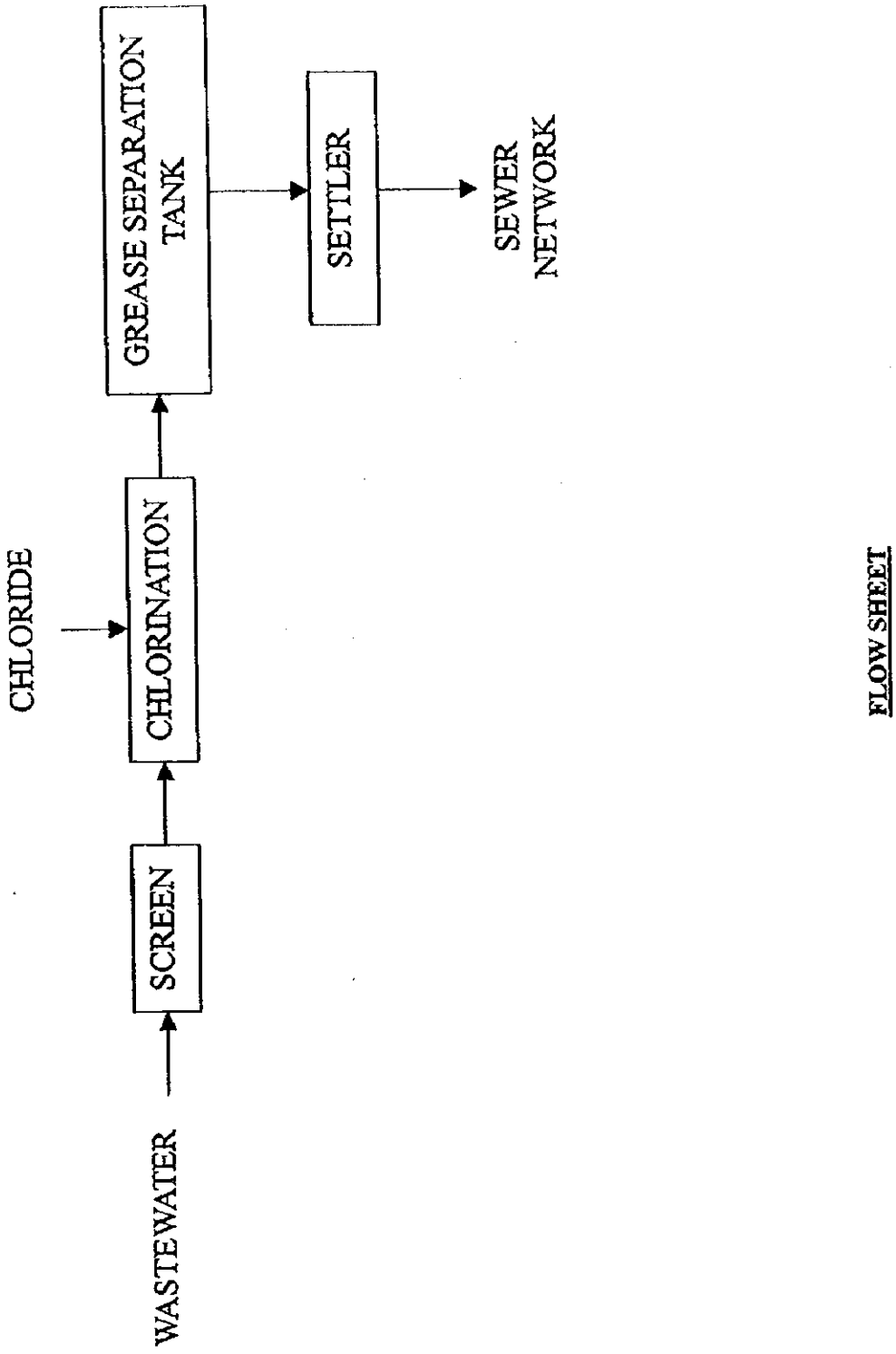


LAYOUT

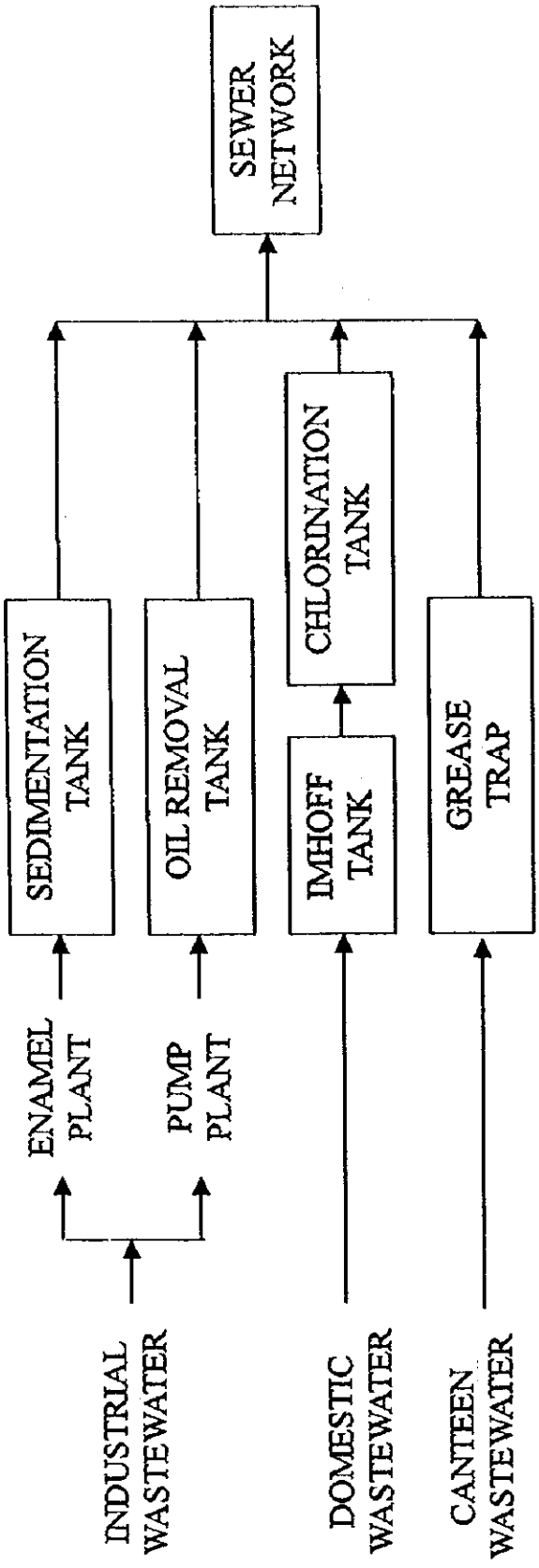
STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	**Fig. E.2.6** **Wastewater Treatment Plant in S.C. CAHIRO S.A. (4102)**



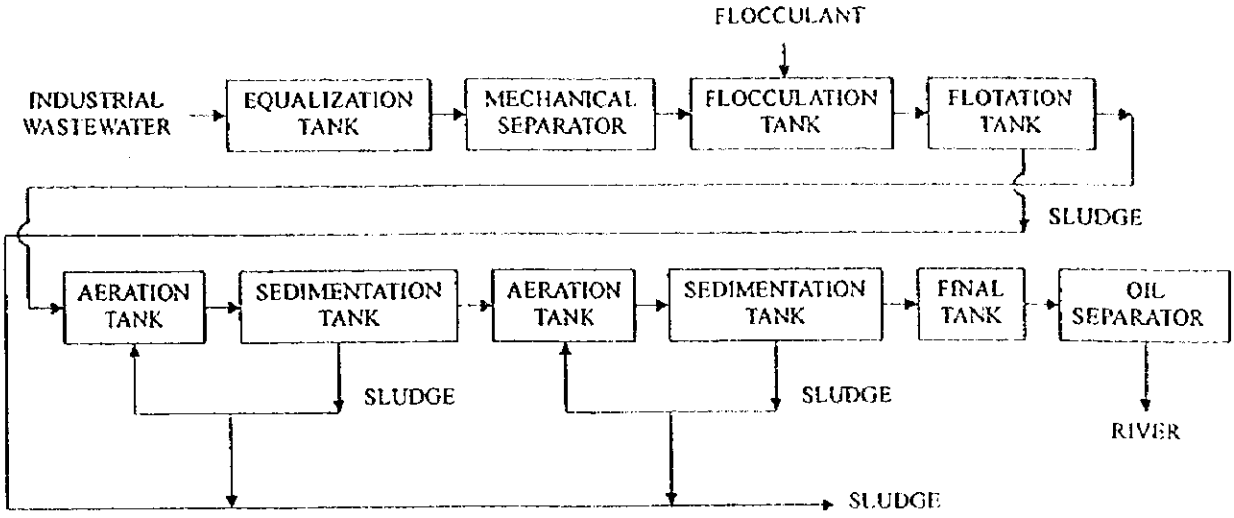
STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	**Fig. E.2.7**	**Wastewater Treatment Plant in S.C. DERO LEVER PLOIESTI (4124)**
JAPAN INTERNATIONAL COOPERATION AGENCY		



STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	Fig. E.2.8 Wastewater Treatment Plant in I.N.C.A.F. PLOIESTI (4143)
JAPAN INTERNATIONAL COOPERATION AGENCY	



STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. E.2.9 Wastewater Treatment Plant in FEROEMAIL PLOIESTI (4146)



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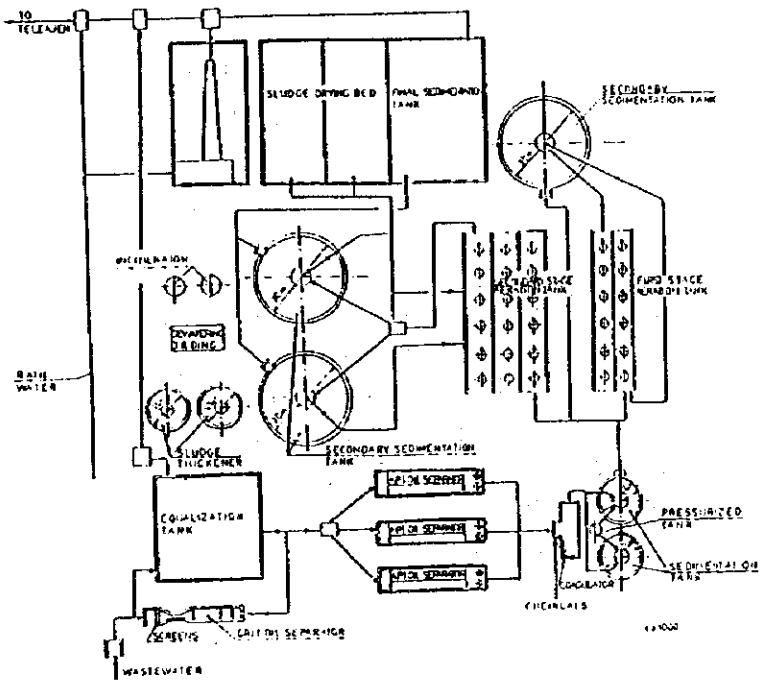
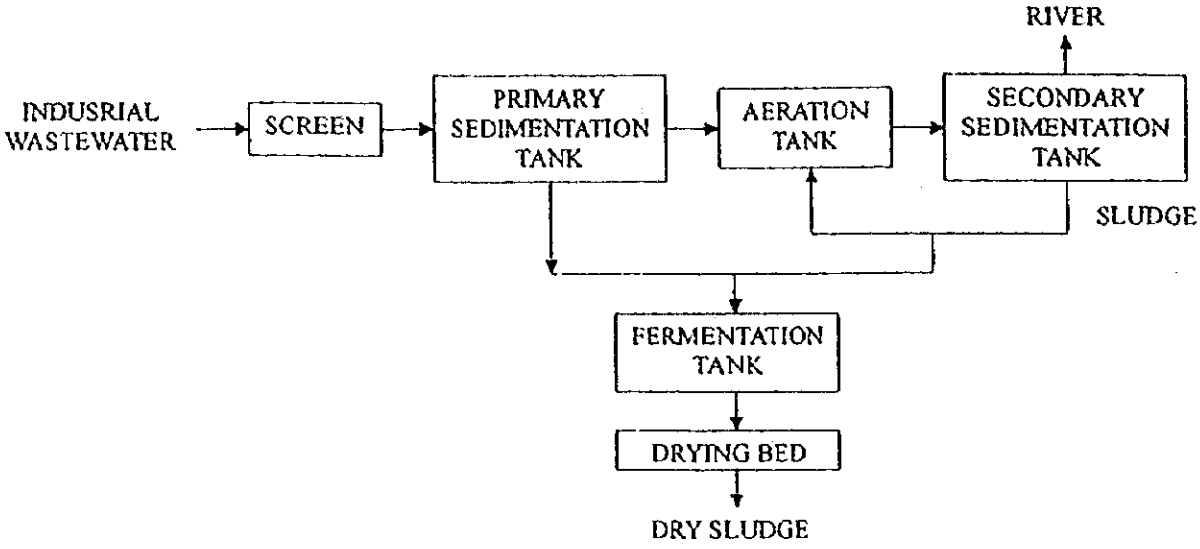


LAYOUT

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. E.2.10 Wastewater Treatment Plant in S.C. PETROTEL S.A. PLOIESTI (4148)



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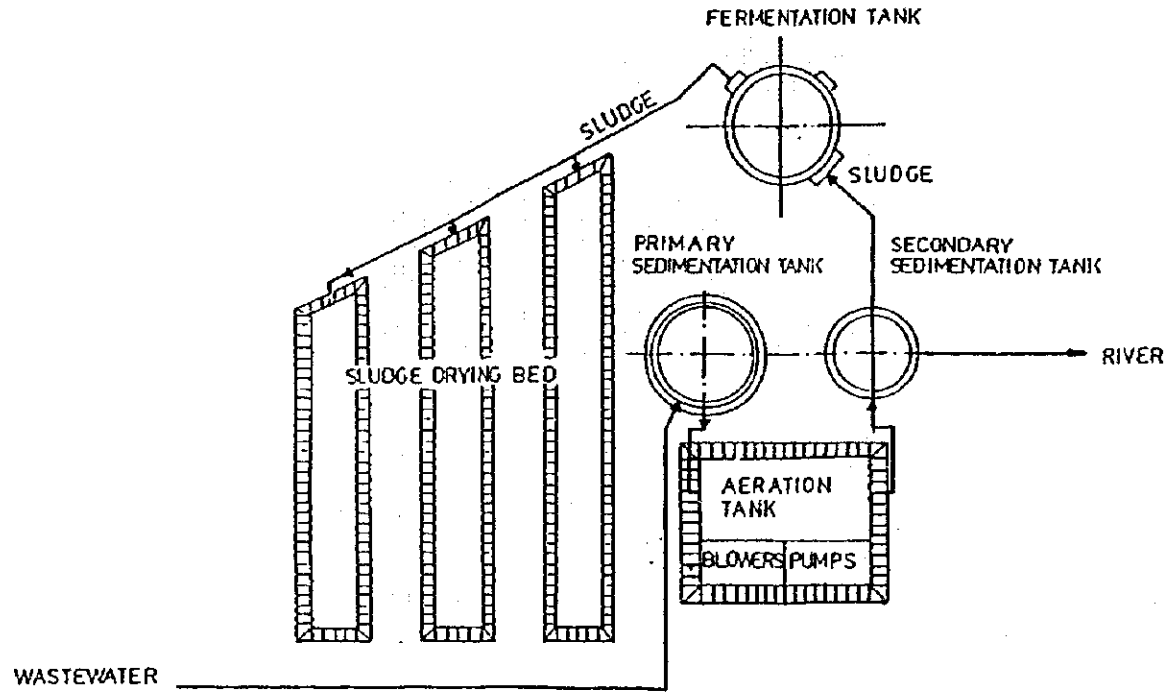
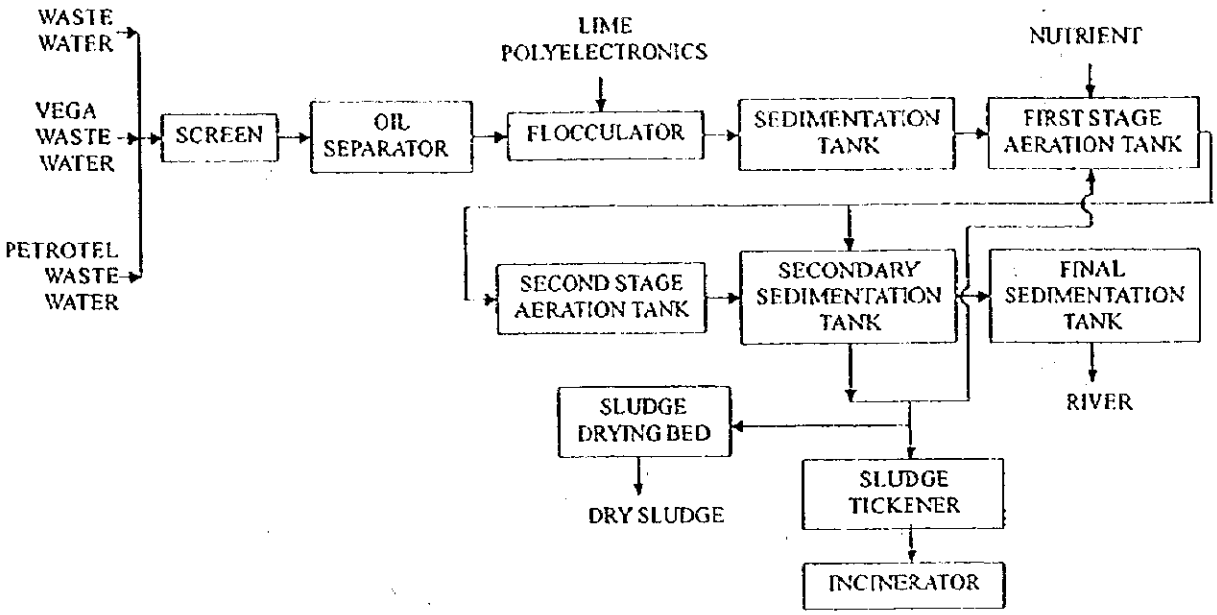


LAYOUT

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	**Fig. E.2.11** **Wastewater Treatment Plant in MATIZOL (4150)**



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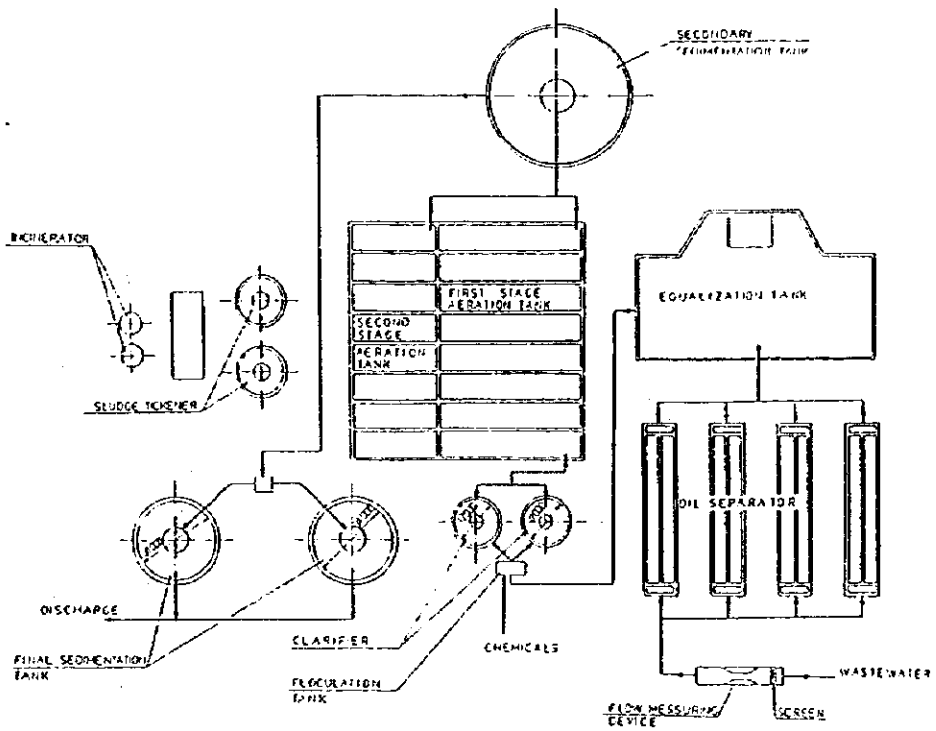
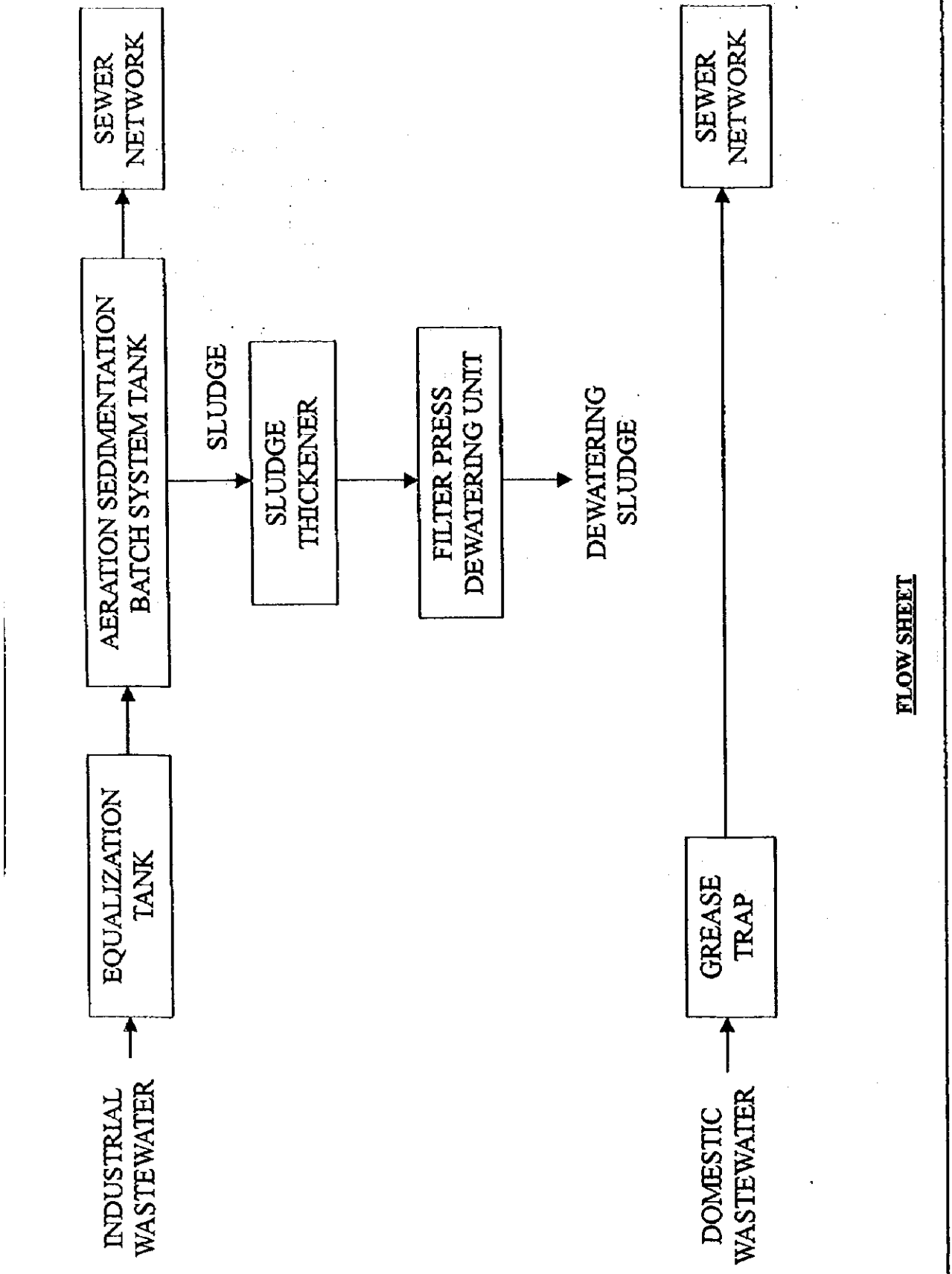
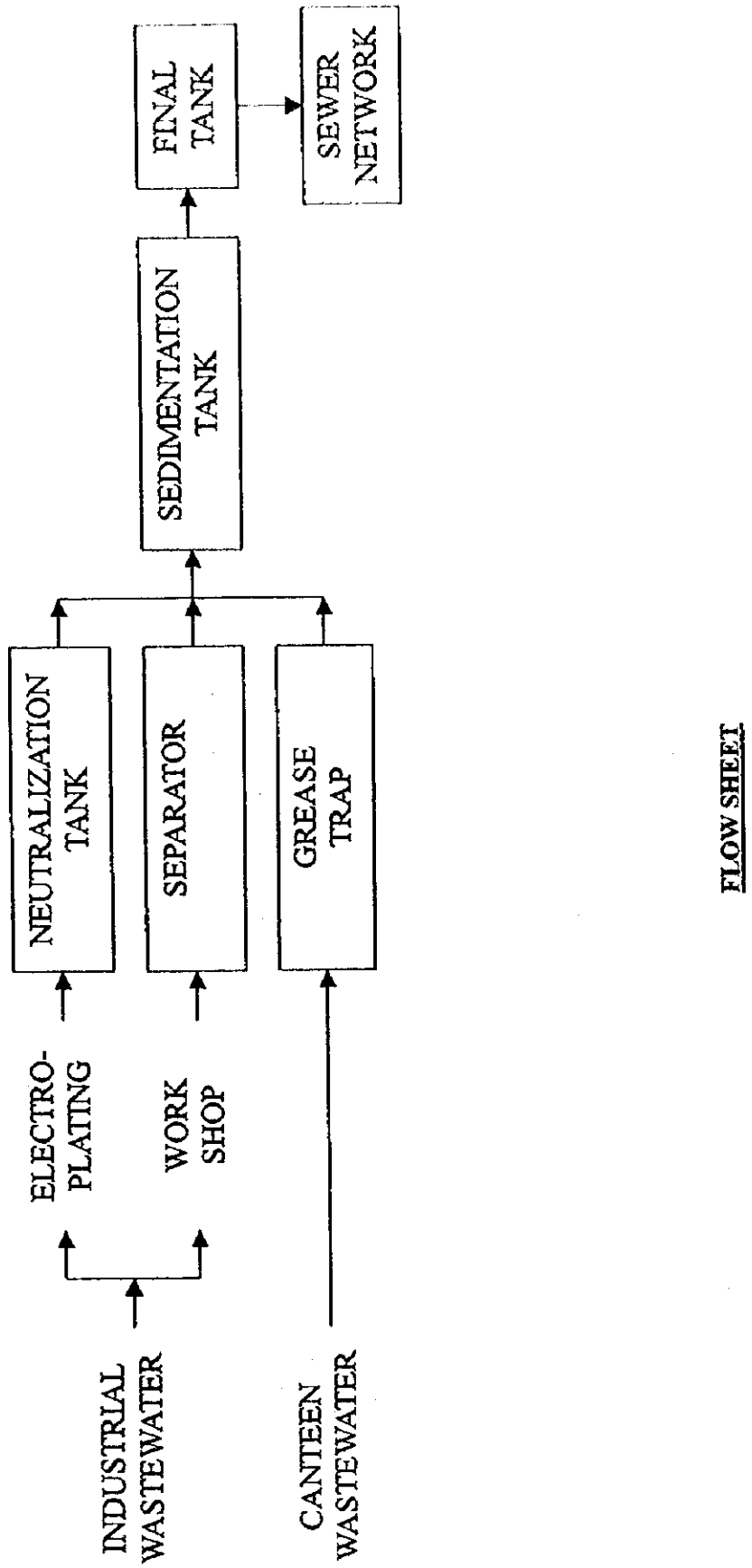


LAYOUT

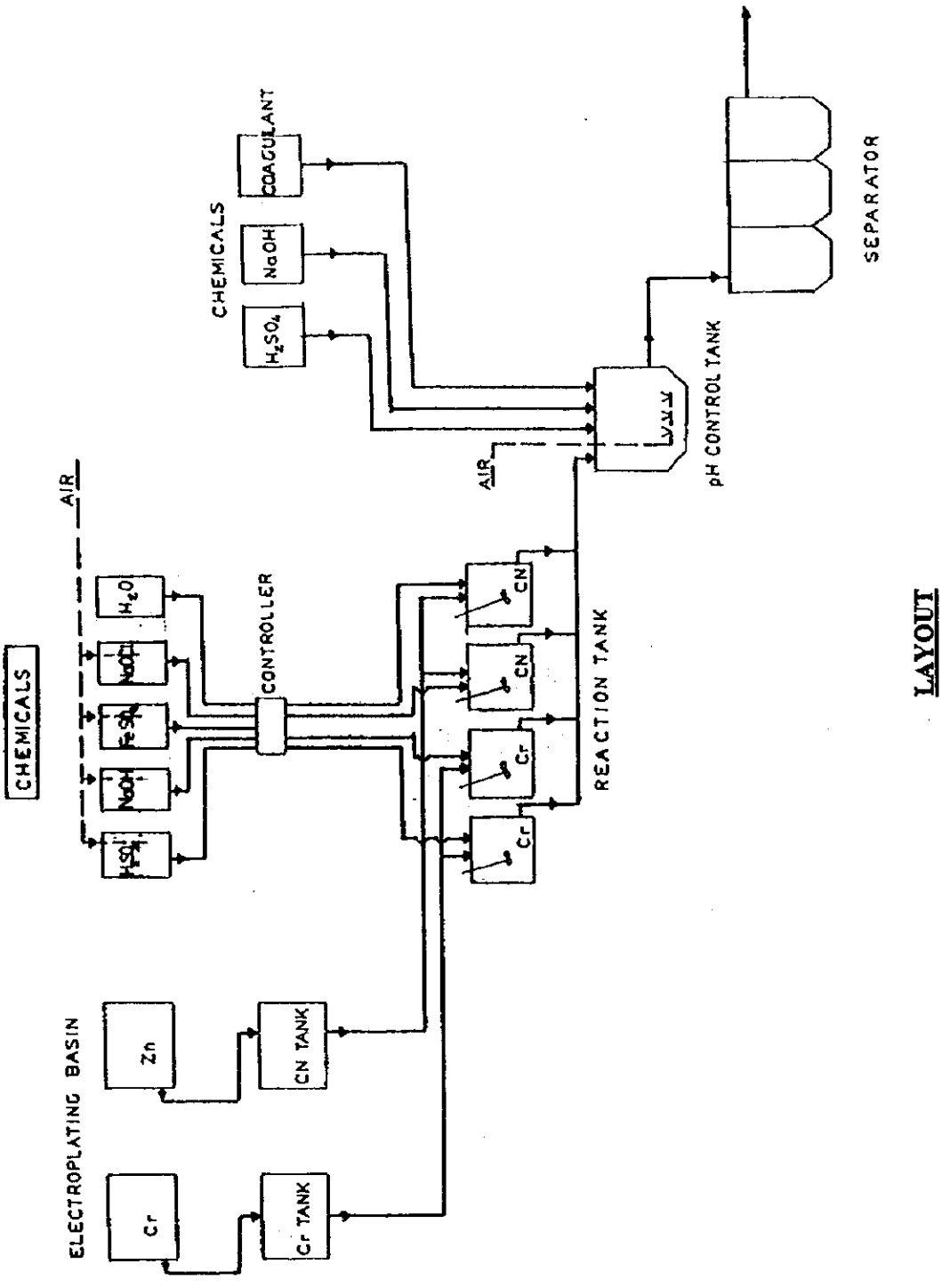
STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	Fig. E.2.12 Wastewater Treatment Plant in S.C. ASTRA ROMANA S.A. (4158)
JAPAN INTERNATIONAL COOPERATION AGENCY	



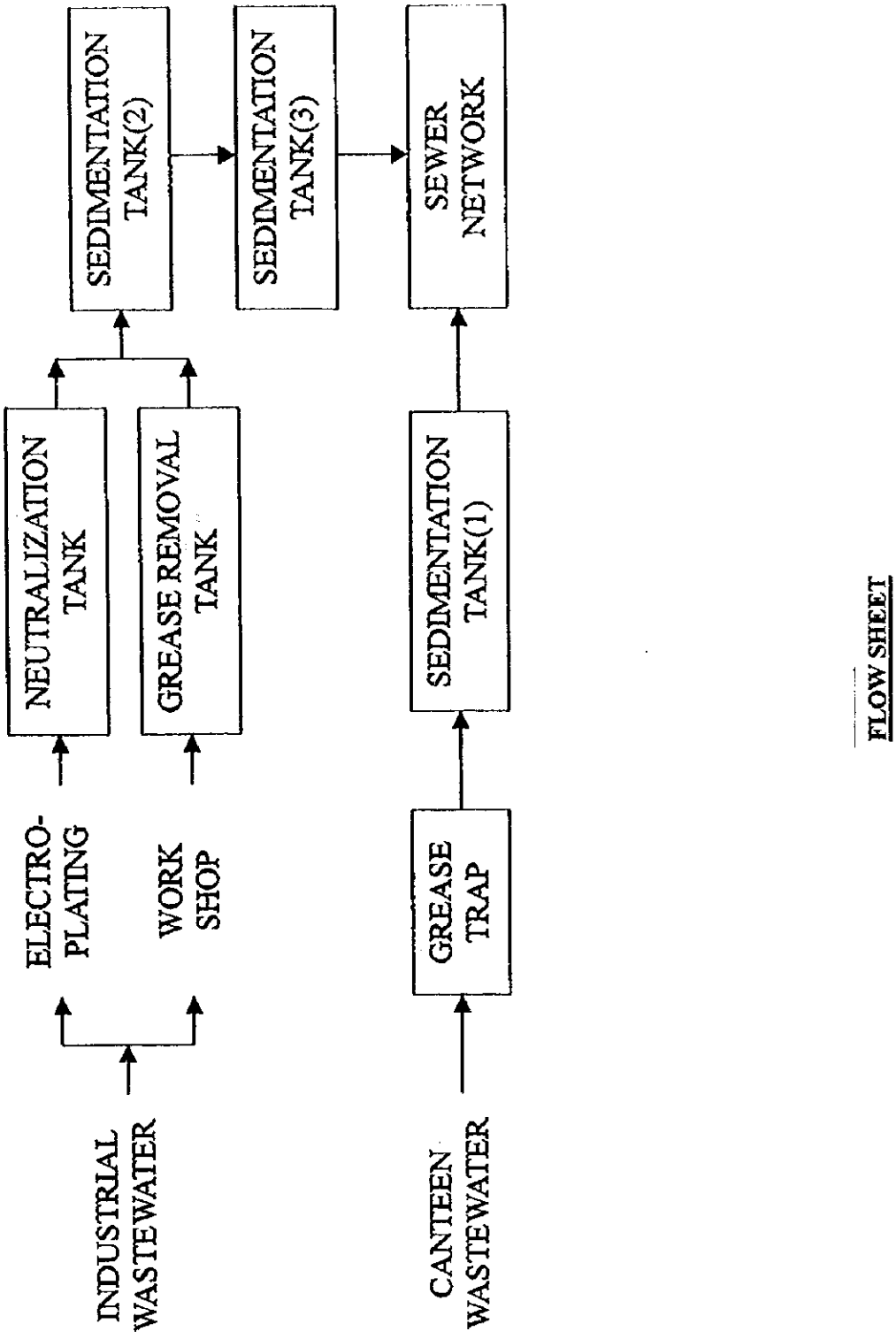
STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	**Fig. E.2.13 Wastewater Treatment Plant in COCA COLA (4311)**
JAPAN INTERNATIONAL COOPERATION AGENCY	



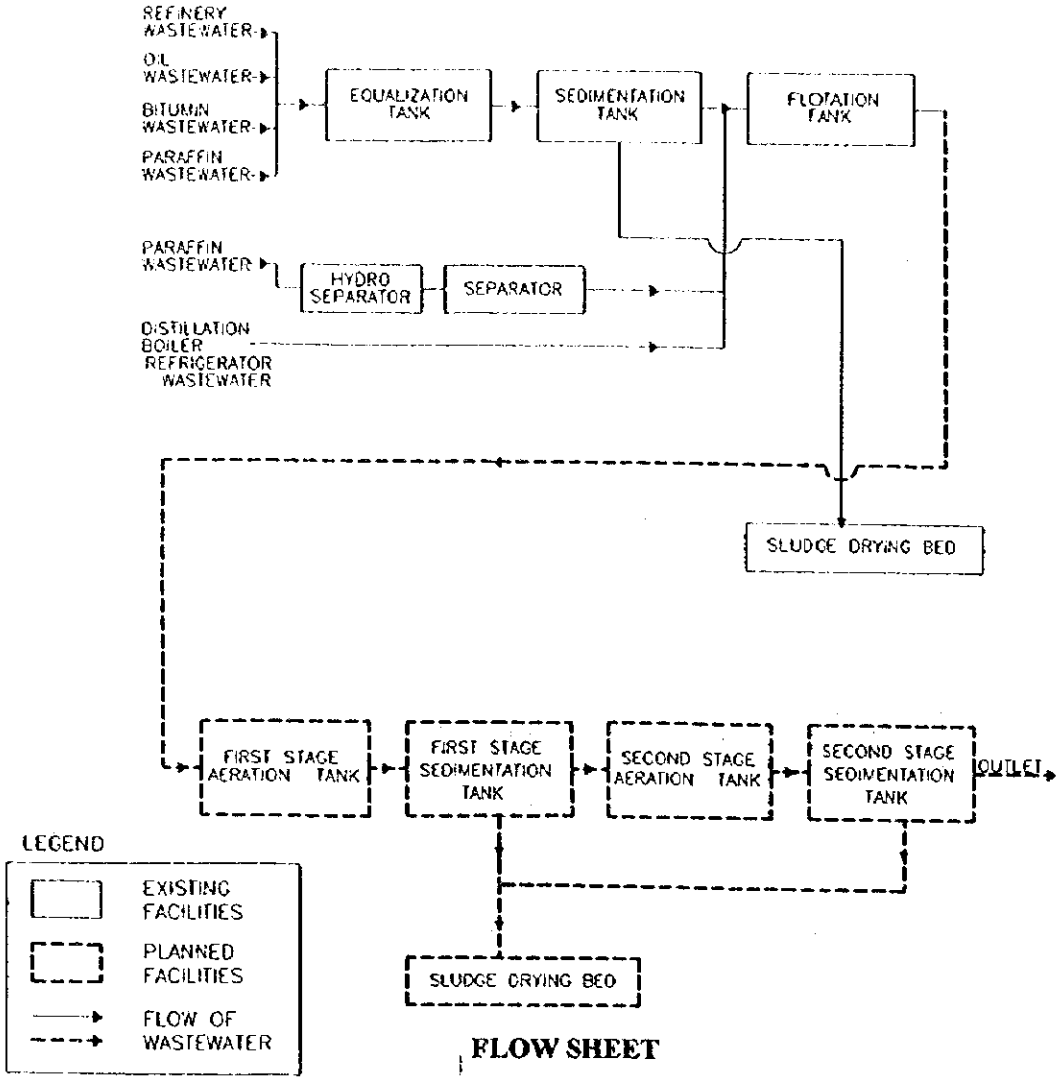
STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	Fig. E.2.14 Wastewater Treatment Plant in ELECTROUTILAJ (4554)
JAPAN INTERNATIONAL COOPERATION AGENCY	



STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	Fig. E.2.15 Wastewater Treatment Plant in NEPTUN CAMPINA (4559)
JAPAN INTERNATIONAL COOPERATION AGENCY	



STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	**Fig. E.2.16** **Wastewater Treatment Plant in I.R.A. CAMPINA (4575)**
JAPAN INTERNATIONAL COOPERATION AGENCY	



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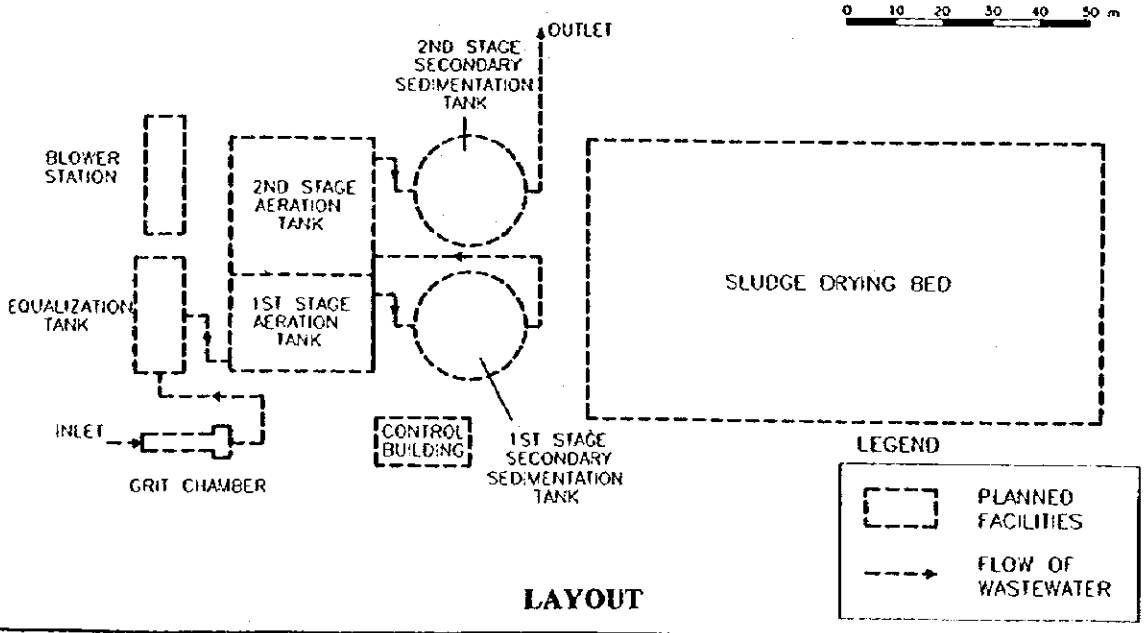
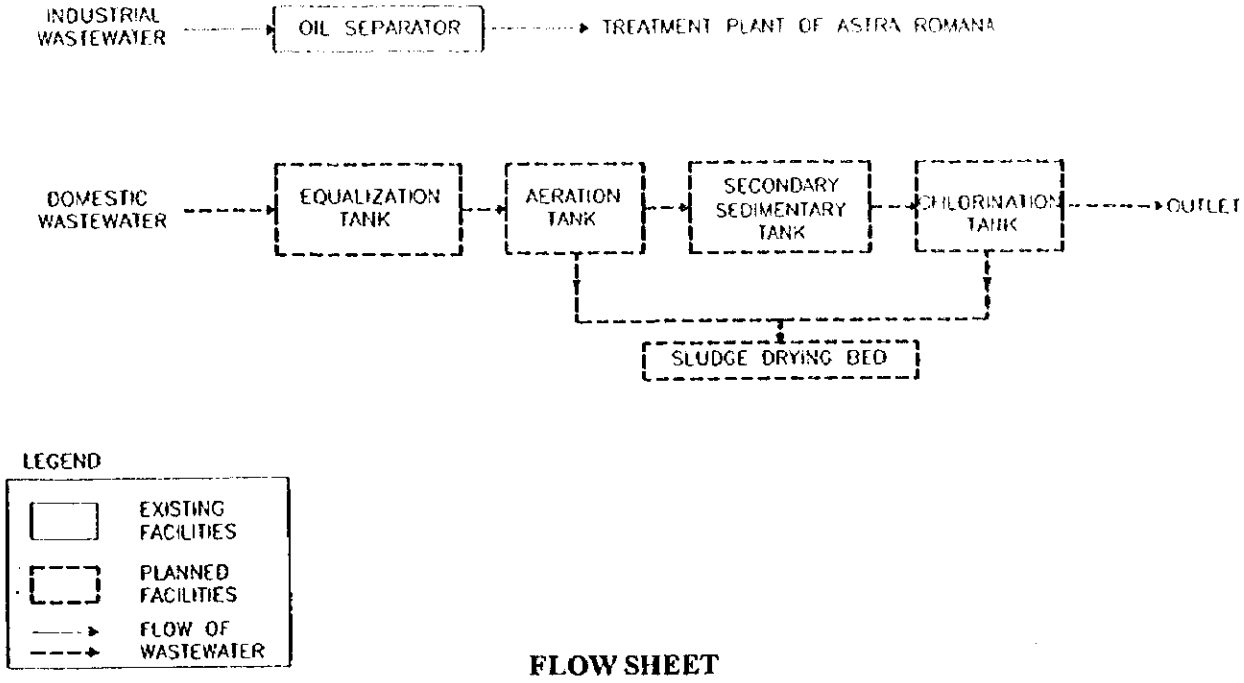


LAYOUT

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	Fig. E.4.1	**Extension Plan of Wastewater Treatment Plant in S.C. STEAUA ROMANA S.A. (4035)**
JAPAN INTERNATIONAL COOPERATION AGENCY		



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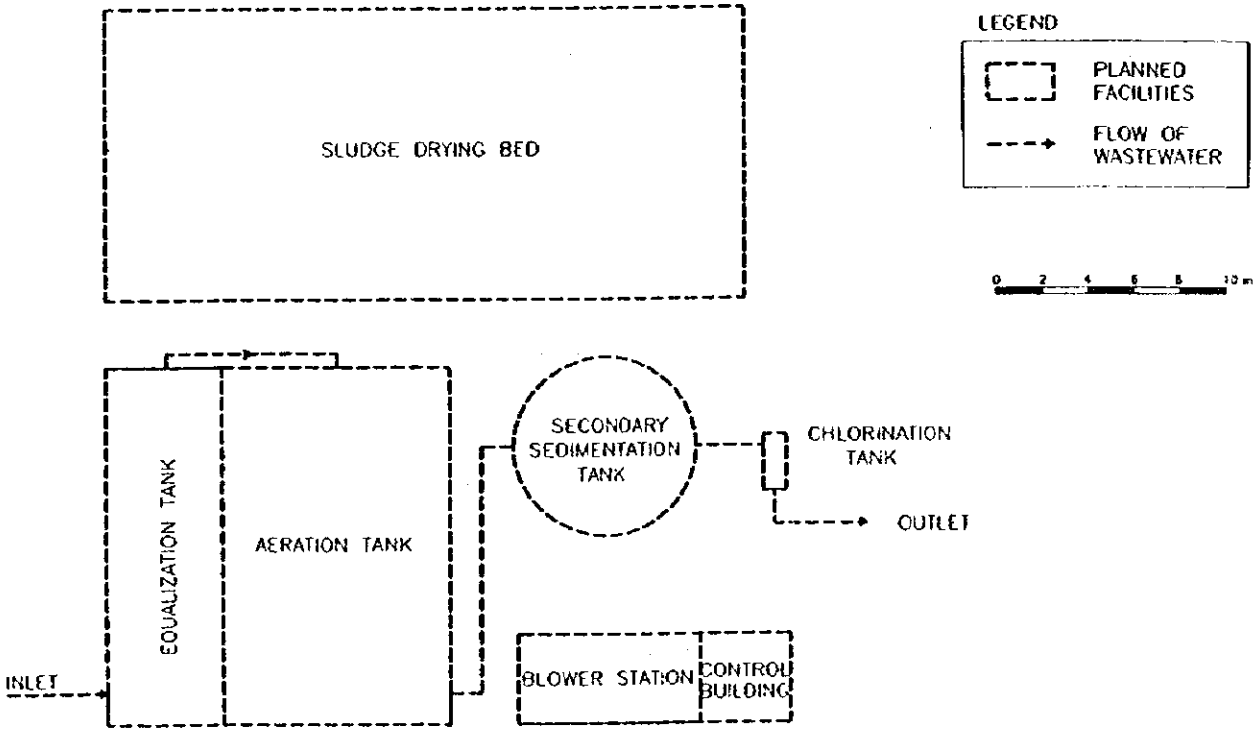
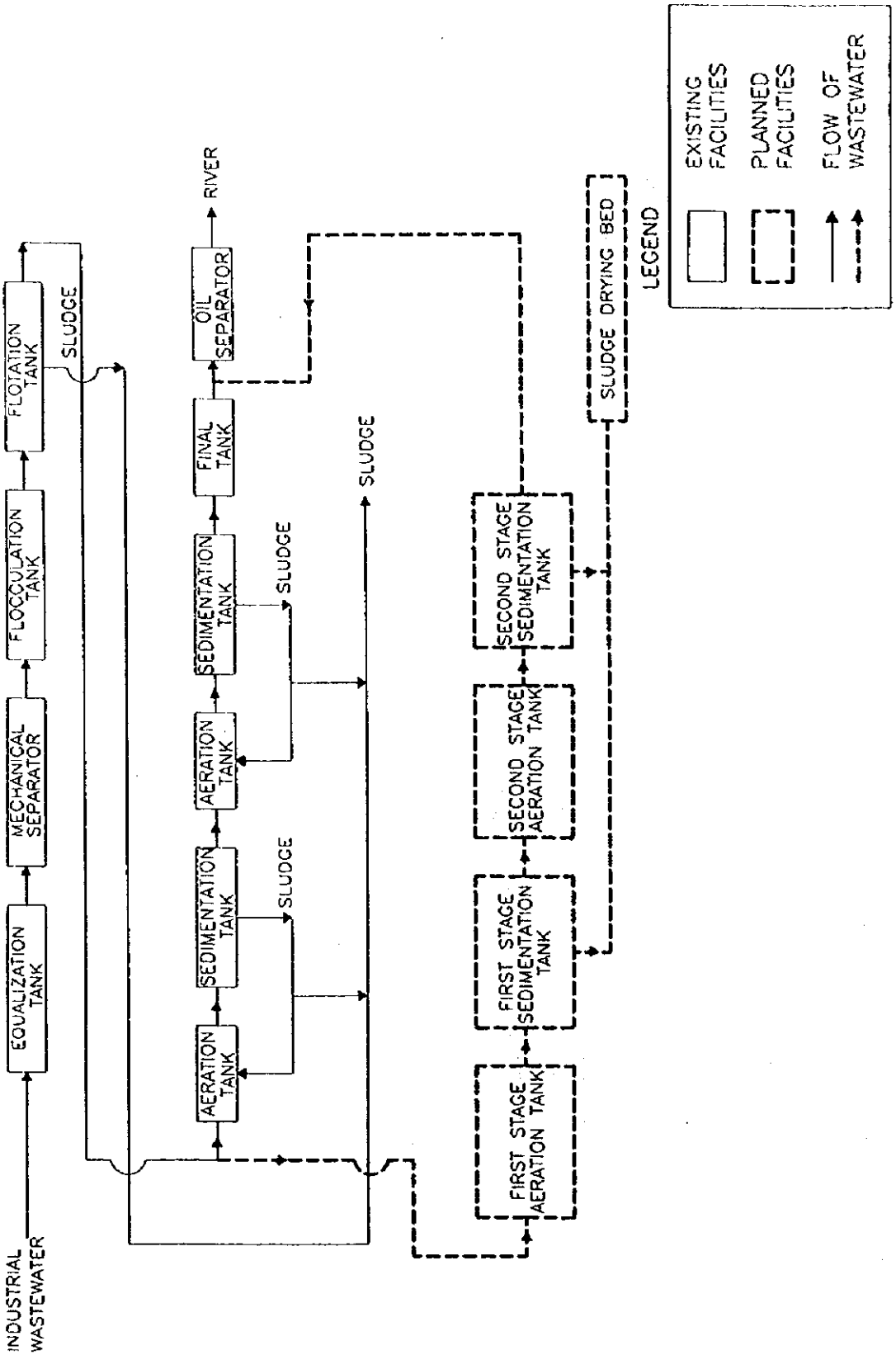


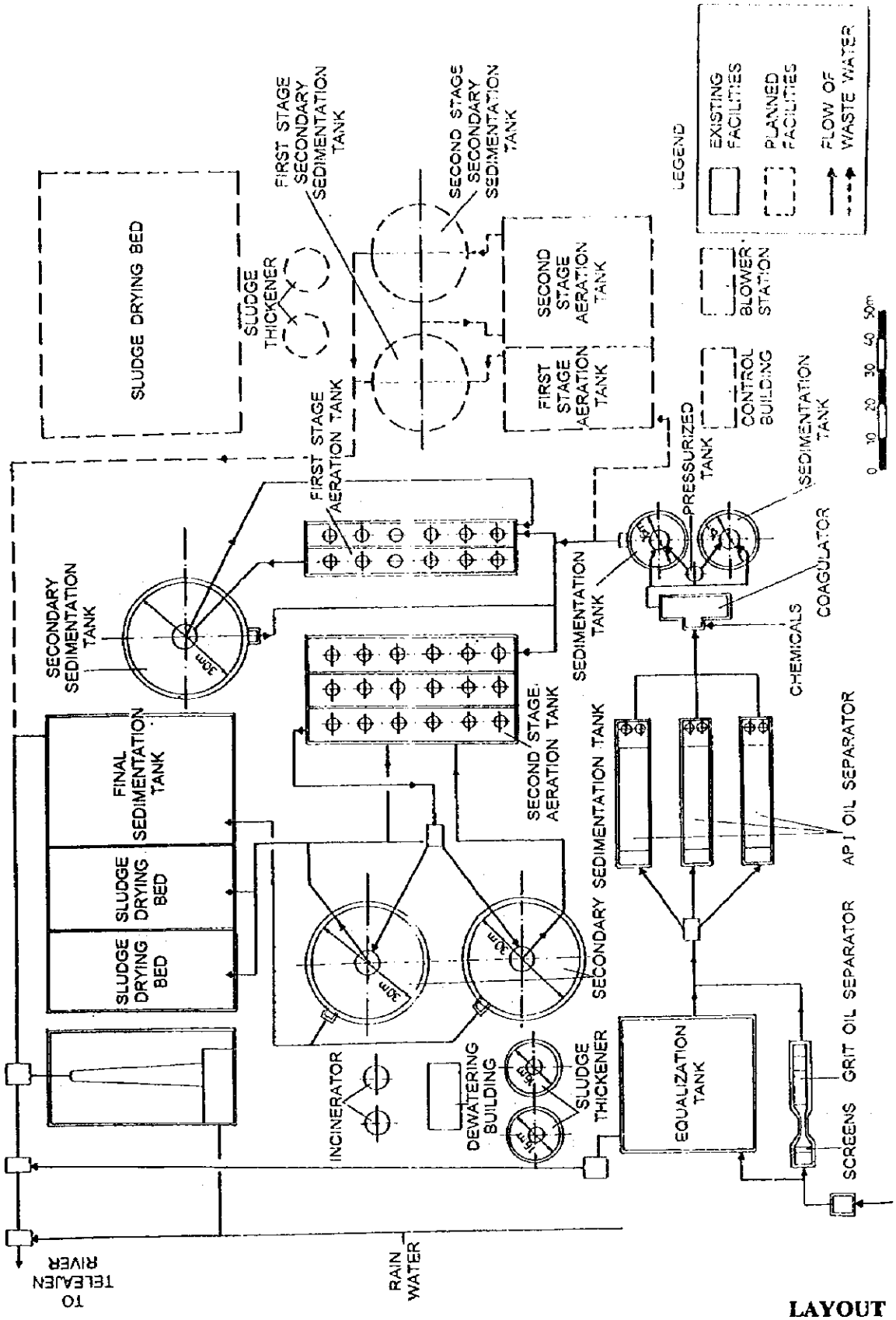
LAYOUT

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	Fig. E.4.2 Extension Plan of Wastewater Treatment Plant in S.C. VEGA S.A. (4137)
JAPAN INTERNATIONAL COOPERATION AGENCY	

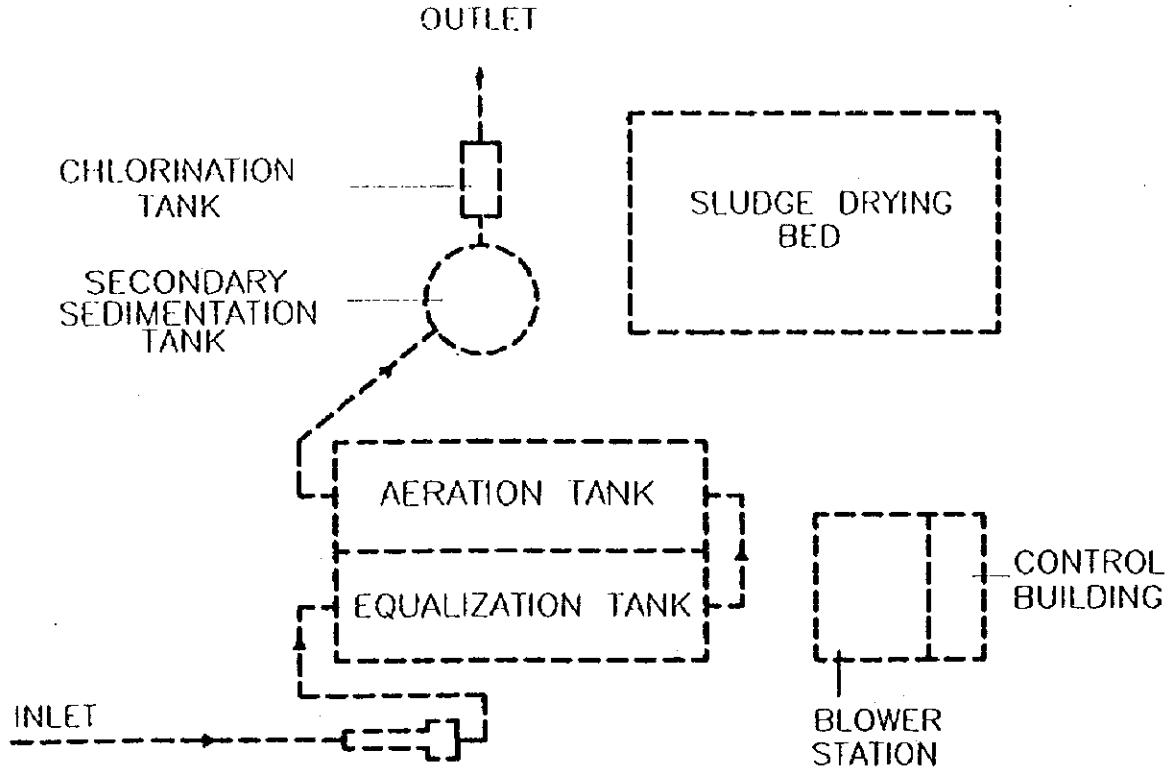


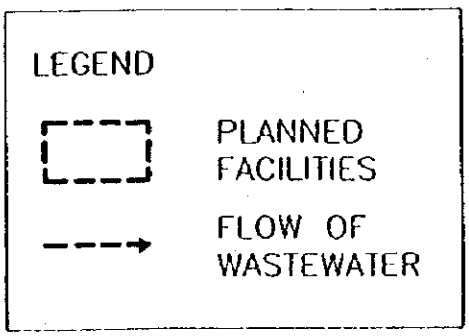
FLOW SHEET

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	Fig. E.4.3 Extension Plan of Wastewater Treatment Plant in S.C. PETROTEL S.A. PLOIESTI (4148) (1/2)
JAPAN INTERNATIONAL COOPERATION AGENCY	



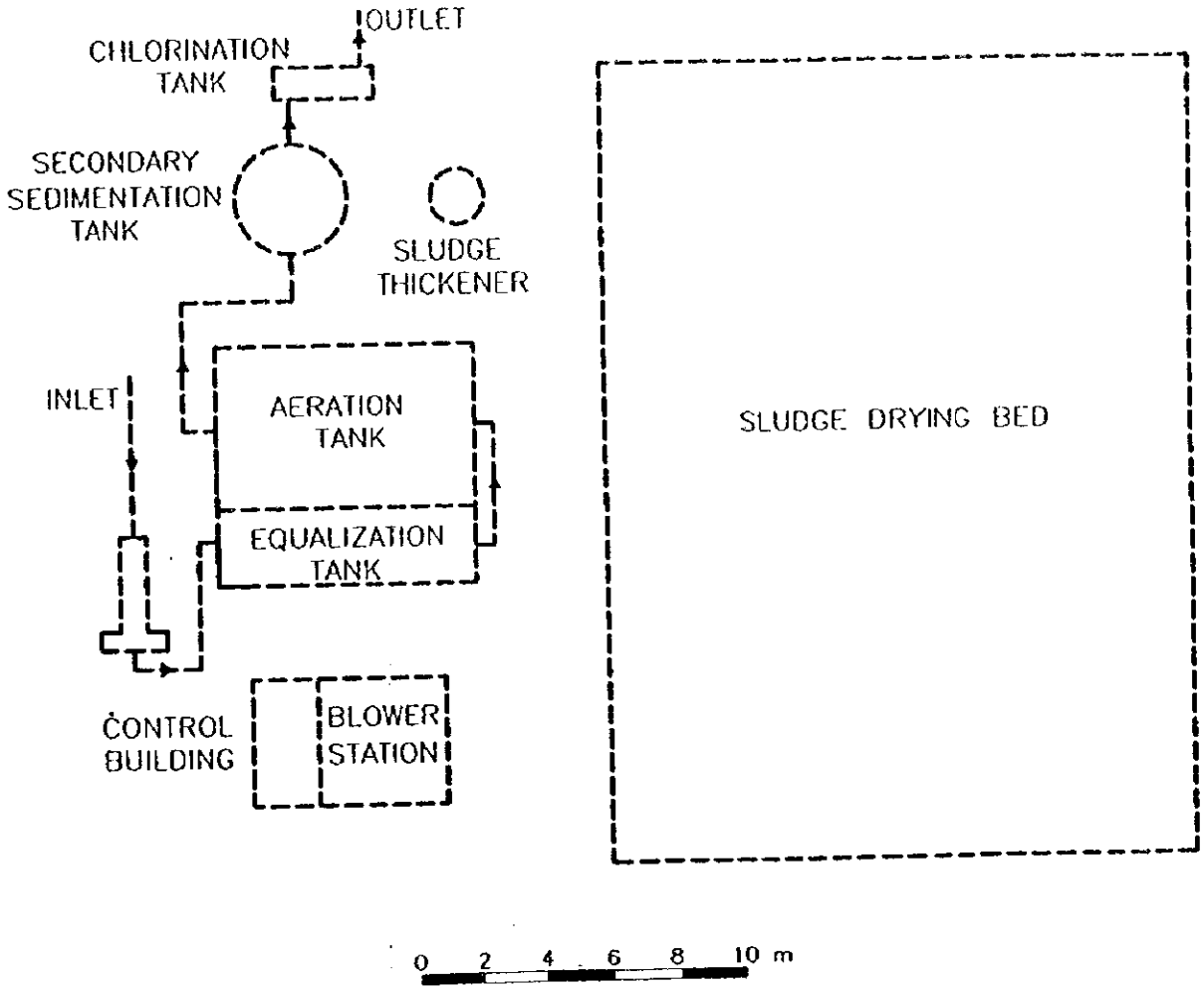
STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	Fig. E.4.3	Extension Plan of Wastewater Treatment Plant in S.C. PETROTEL S.A. PLOIESTI (4148) (2/2)
JAPAN INTERNATIONAL COOPERATION AGENCY		





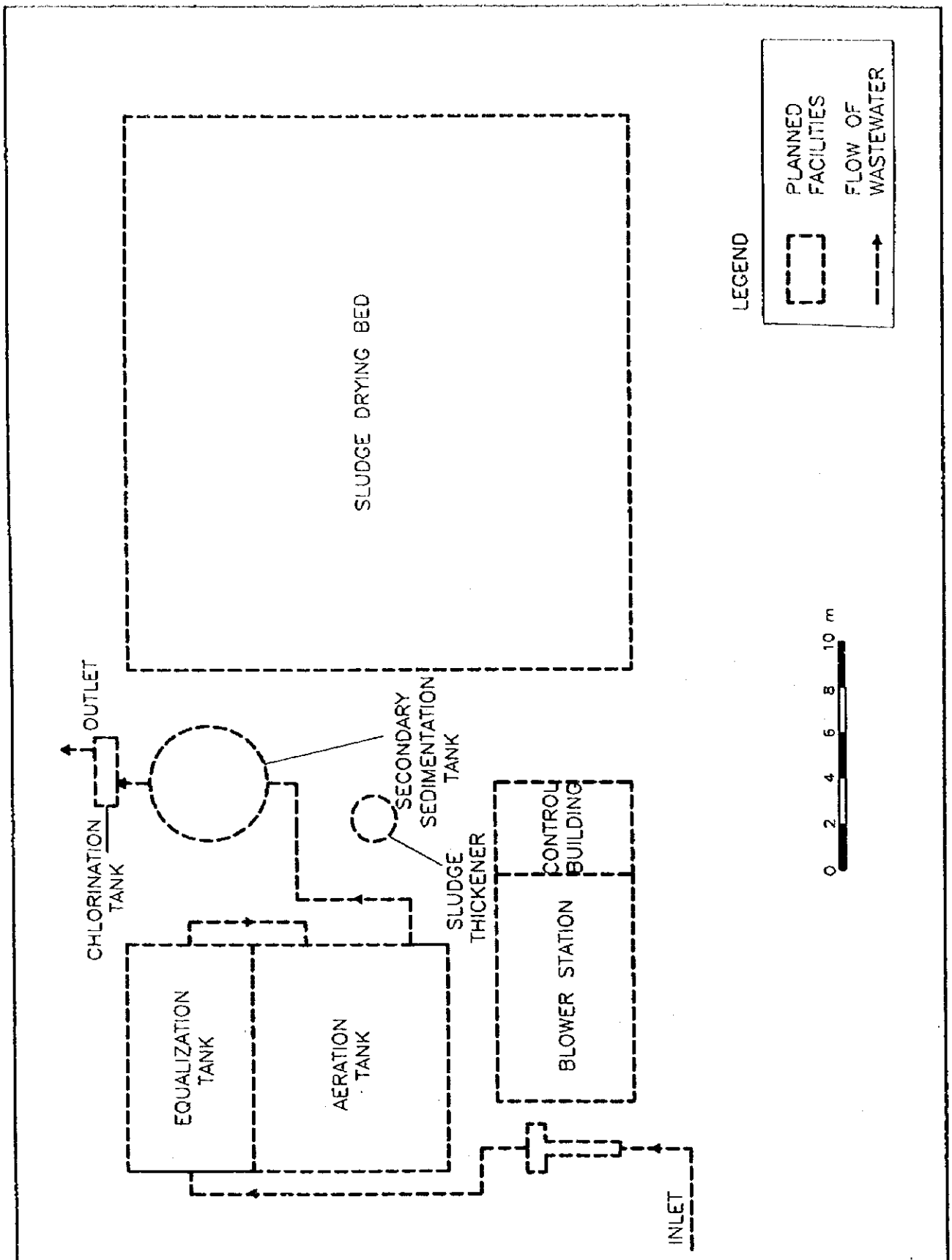
100 m^3/d

STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	**Fig. E.4.4** **Extension Plan of Wastewater Treatment Plant for Hotel / Restaurant**

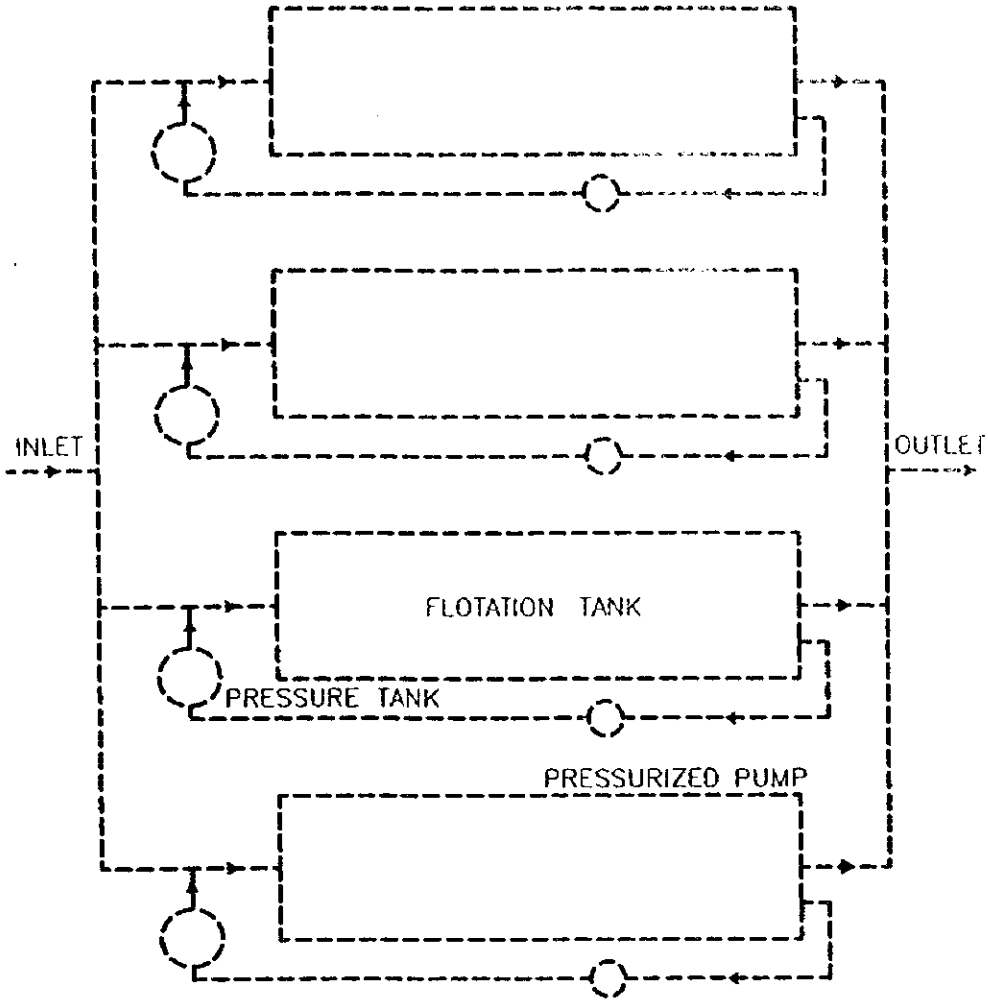


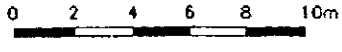
200 m^3/d

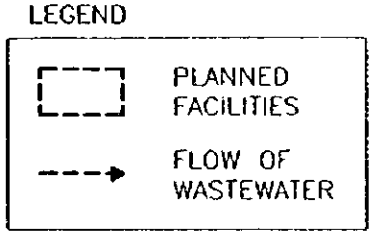
STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN	**Fig. E.4.5** **Extension Plan of Wastewater Treatment Plant in LIVESTOCK**
JAPAN INTERNATIONAL COOPERATION AGENCY	



STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	**Fig. E.4.6** **Extension Plan of Wastewater Treatment Plant in ELECTROUTILAJ (4554)**







STUDY ON THE MASTER PLAN FOR WATER ENVIRONMENT MANAGEMENT ON THE PRAHOVA RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	**Fig. E.4.7** **Extension Plan of Wastewater Treatment Plant in F.E. PLOIESTI (4047)**

ATTACHMENT

QUESTIONNAIRE ON INDUSTRIAL WASTEWATER TREATMENT

(PLEASE FILL THE BLANK)

Date _____

Respondent _____

1.BASIC INFORMATION

1) the company and factory name :

2) ownership :

3) address :

4) area of the factory (m^2) :

5) tel :

6) fax :

2. OUTLINE OF THE FACTORY

1) major products :

2) outline of production process (description or flowsheet)

3) annual sales amount

fiscal year	1995	1996
annual sales amount (lei/year)		

4) annual production of each major products :

5) major raw materials :

6) annual consumption of each major raw materials :

7) total employees in the factory :

8) working hours per day :

9) working day per week :

3.WATER USE

1) water source and quantity

water source	quantity (m^3/day)
water supplied from Romanian Waters	
well water	
river water	
total	

2) purpose of using water

purpose	unit	quantity	recycle quantity	recycle ratio (%)
boiler	m^3/day			
raw material				
cooling				
washing				
others				
total				

4. WASTEWATER

1) effluent quantity each process and receiving body

production process	process 1	process 2	process 3
discharge quantity (m^3/day)			
into the river (m^3/day)			
into the sewer pipe (m^3/day)			

Please describe each production process.

2) wastewater treatment plant

a) Have you already installed any treatment plant ? yes/no

b) If the treatment plant exists, describe the followings:

i) type of the treatment plant :

ii) treatment plant capacity (m^3/day) :

iii) flow sheet :

iv) completion year :

3) quality of the wastewater

parameter	unit	Inlet to the treatment plant (if exists)	Outlet from the factory or treatment plant
temperature	℃		
pH			
BOD	mg/l		
COD (Mn/Cr)	mg/l		
SS	mg/l		
Electricity conductivity	mS/cm		
Oil	mg/l		
Heavy metals	mg/l		
Any others	mg/l		

5. USE OF CHEMICAL

If you have been using or stocking the following chemicals, please check the mark.

Oil, Acid, Alkali, Phenol, Cd, CN, P. Pb, Cr^{6+}, As, Hg, PCB, Trichloroethylene, Tetrachloroethylene,

6. ANY OTHER COMMENTS

THANK YOU VERY MUCH FOR YOUR COOPERATION WITH ANSWERING THIS QUESTIONNAIRE

APPENDIX F

MONITORING SYSTEM AND ACCIDENTAL WATER POLLUTION

APPENDIX F

MONITORING SYSTEM AND ACCIDENTAL WATER POLLUTION

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ACHAPTER I EXISTING MONITORING SYSTEM

1.1 General

Chapter I describes mainly data monitoring methods, availability of data and data filing on flow rate and water quality for the river water and effluent from pollutant sources in the Prahova River System. During the study, database of the Romanian Waters, Prahova Office was analyzed and the necessary improvement has been made as described in Chapter II. Therefore, coding system of the rivers and the pollutant source used in the database of the Romanian Waters are also explained in this chapter.

1.2 River System

1.2.1 Code for River System

The Prahova River System under the JICA Study is one of the tributaries of the Ialomita River which joins to the Danube River. The code of the river system of Romania has been determined and used widely. According to this coding system, the code of the Ialomita River is 11 and that for the Prahova main river is 120.

Each of the tributaries has code number increasing from the upstream to the downstream. Table F.1.1 tabulates the code for rivers consisting of the Prahova River System and Fig. F.1.1 indicates the location of rivers composing the Prahova River System. The codes of the main tributaries are: 120.1 for the Azuga, 120.9 for the Doftana, 120.13 for the Teleajen, 120.16 for the Cricovul Sarat and 120.13.14 for the Dimbu. Period "." is necessary to be included in the code, for example, to distinguish 120.11 for the Poenari and the 120.1.1 for the Unghia Mare.

1.2.2 River Flow Rate

There are twelve (12) staff gauge water level gauging stations located in the Prahova River System mentioned above. These stations are operated by the Romanian Waters Prahova Office. Location of the stations is indicated in Fig. F.1.2 and Table F.1.2 tabulates the period of the observation for each station among which the oldest record dates back to 1951. Observation is made three (3) times a day and converted to the flow rate using the rating curve which is made from the discharge measurement.

The National Institute of Meteorology and Hydrology (NIMH) under the Romanian Waters compiles all of these hydrological data as the National Hydrological Database.

In addition, the hydrological data on dam operation such as reservoir water level, inflow and outflow discharge for two (2) dams in the Prahova River Basin is available at each dam operation office.

1.2.3 River Water Quality

The water quality of the Prahova River System is monitored by the Romanian Waters Prahova Office at sixteen (16) monitoring points as indicated in Fig.F.1.2. The monitoring points can be classified into two (2) types, namely national level and local level monitoring points. At the national level monitoring points, monitoring is made once a month, while at the local level points, it is made every two (2) month.

Number of parameters monitored at both of the national level and local level monitoring points is determined basically based on the water quality as follows.

At the points in the clean water river section, 20 parameters consisting of general parameters are monitored. For the points located in rather polluted sections, 27 parameters are monitored, including heavy metals, extracted substances (oil) and detergents in addition to the general parameters. In the most polluted sections, S^{2-} is measured in addition to 27 parameters to analyze anaerobic condition of the section.

The parameters observed at each of station are tabulated in Table F.1.3. In addition to the 20 parameters, 10 more parameters are observed in some sections as indicated in Table F.1.4. The Romanian Waters Prahova Office keeps these water quality data for the Prahova River System from 1993 in which the Romanian Waters was established.

1.3 Water User

1.3.1 Code for Water User

Romanian Waters Prahova Office keeps inventory data of water user, which uses water of the Prahova County more than 0.2 l/s and discharges its wastewater into the Prahova County.

At present, 344 water users including five (5) Hydrotechnical Systems under the Romanian Waters, which are taking water and supply to the local public service companies, are registered in King II database (which is explained in 1.5) of the Romanian Waters, Prahova Office. The names of these water users are listed in Table F.1.5 together with their code number, name of towns where the pollutant sources are located and source type. The source type is classification from view point of pollution and classified into three (3) types, namely sewerage, factory and livestock farm.

1.3.2 Flow Rate of Effluent from Water User

King II Database contains monthly actual flow rate data of water users which discharge their effluent into rivers, domestic sewerage system or industrial sewerage system. In this database, location, category of activity, w/ and w/o treatment plant and discharging point/type of effluent channel are stored in addition to the actual monthly flow rate.

In 1997, there were 164 water users in the Prahova River Basin discharging their wastewater through 189 effluent channels; namely 13 to river w/o treatment, 73 to river w/ treatment, 82 to domestic sewerage system, 7 to industrial sewerage and 14 to underground.

1.3.3 Water Quality of Effluent from Water User

Romanian Waters Prahova Office monitors water quality of effluent from the water users based on water quality monitoring plan. Table F.1.6 indicates 1997 Water Quality Monitoring Plan. The frequency of the monitoring and parameters to be monitored are decided from the permitted flow rate (annual average) and the activities of the water users.

In 1997 the monitoring was made at 109 outlets of 100 pollutant sources. The frequency of monitoring changed from once a month for water user with flow rate more than 100 L/sec, to once a year for those with low flow rate less than 10 L/sec. The average frequency was 5.2 times a year. Regarding number of parameters, maximum number of parameters observed in

one outlet was 21, and minimum was 10, while the average was 16.5 parameters.

The Romania Waters Prahova Office keeps water quality of effluent from the pollutant sources in its jurisdiction including the Prahova River System since 1993.

1.4 Laboratory

Through the inventory study it is found that water quality analysis for water quality management of drinking water and sewage is made by water supply and sewerage companies under municipalities and towns. In order to check ability of those laboratories, the equipment and number of staff were surveyed and ranked by a criteria (Table F.1.7) based on the equipment which they own. Tables F.1.8 and F.1.9 tabulate the laboratories of the companies in the Prahova River Basin

In the Prahova River Basin, there are 16 local public service companies which supply drinking water and operate sewerage system. Out of these 16 companies, 5 companies own laboratories for the drinking water and four (4) laboratories are ranked "C", while regarding the sewage, 6 companies possess laboratories all of which are ranked "C".

The Romanian Waters Prahova Office has three (3) laboratories at each of its purification plant for drinking water and one (1) laboratory for the sewage and river water at Ploiesti Office. Out of those laboratories, two (2) laboratories for the drinking water and that for the river water/effluent are ranked "B", while one (1) remained laboratory falls into the rank "C".

In Tables F.1.8 and F.1.9, two (2) laboratories with rank "A" are included which own advanced equipment. The first one is ICIM (Environmental Engineering Research Institute) under the MWFEP and the other is ICPT (Cimpina Institute for Oil Research and Technology) under the private company PETROM R.A. which is in charge of all Romanian oil reservoir and some gas platforms. These two (2) laboratories conducted analyses of river water and treated water during the leakage of oil from oil pipeline explained in Chapter II.

1.5 Data Filing System

1.5.1 Computer System and Data Transmission

Fig. F.1.3 indicates computer network in Romanian Waters Prahova Office and Fig. F.1.4 shows national data transmission network. All the data related to the water management including water quality data are processed by the computers in the Water Management Section and sent to the Romanian Waters Headquarter through data modem of the computer in the Dispatchers Section using the DOS software. The Information Office indicated in Fig.F.1.3 is directly under the Buzao Branch and collects all data made in the Ploiesti Office.

1.5.2 Database

The King II Database System was developed for water supply and wastewater management of the Romanian Waters. This system was completed in 1994 and is used by all branches and offices including the Prahova Office. The FOX PRO database software for the water management of its jurisdiction is used for the King II Database System. In Prahova Office, the Water Management Section inputs all data and operates/maintains the database.

The database contains 14 files as mentioned below.

(1) Information about consumers and/or pollution sources (infban.dbf)

This table contains data of user, code, location, usage, category of usage (industry, sewerage, and livestock farm), hydrographic basin, recycling degree, necessary volume of water, supplied volume of water, etc.

(2) Intake:

(a) Surface (capsup.dbf)

Surface intake data have hydrographic basin, river name, river, type of intake, annual working days, daily working hours, medium, maximum and minimum flow rate, etc.

(b) Underground (capsub.dbf)

This table has fields of location, hydrographic basin, name of the water, type of the water source, intake type, purpose of the water usage, flow rate, annual working days, daily working hours, etc.

(c) Network (capret.dbf)

This is related to water supply from the water network system under the Romanian Waters and municipalities/towns. Data of location, hydrographic basin, network quality, type of the water source, flow rate, annual working days, daily working hours, etc. are included in the Network table.

(3) Water Treatment Plant (tratare.dbf)

This table is for the location, purpose of water usage, water treatment method, water treatment technology, flow rate, etc. In the Ploiesti Office, no data is installed to the table.

(4) Water Distribution Plant (distribu.dbf)

Tank characteristics such as length and height, network characteristics, etc are planned to included in the table, however, this table is not used in the Ploiesti Office.

(5) Water Purification Plants (epur.dbf)

Water purification plants table has data of the location, intake network characteristics, type of purification plant, type of discharged water, but in the Ploiesti Office, this table is neither prepared.

(6) Wastewater Discharge (restitu.dbf)

This table is for the wastewater discharge from the sewerage, factories and livestock farms and includes the location, hydrographic basin, discharge type (surface or network), discharged water type, etc.

(7) Water Quality (calitr.dbf)

This file contains no data at present. It has fields for the values of the flow rate, measurement date, permitted water quality, recorded (actual) water quality.

In stead of this file, the Romanian Waters records the water quality of the factories, sewerage companies and the livestock farms in Excel Files to calculate the maximum, minimum and average concentration for each parameter.

(8) Monthly Recorded Volume

(a) Intake

(i) Surface (volics.dbf)

(ii) Underground (volicf.dbf)

(iii) Network (volic.dbf)

Each table contains flow rate, yearly working days, daily working hours, monthly intake volume, etc.

(b) Discharge

(i) Surface (volirs.dbf)

(ii) Network (volirr.dbf)

These tables include Monthly / yearly discharged water volume, maximum volume of discharged water in an hour, discharged water type, purification degree, etc.

(9) Necessary volume

This file does not exist in the database. The file is supposed to contain data about the ratio between the water quantity which the consumers consider to need and the actual quantity they consumed.

(10) Flow rate measurement (debitmet.dbf)

This file, which is planned to contain data on the measuring devices and the consumes used, is not used in the Ploiesti Office at present.

(11) Pumps (ppomp.dbf)

This file contains no data and is not used at present in the Ploiesti Office. This file is for the data on the water pumps which the consumers use to collect water.

1.5.3 GIS

In the Romanian Waters Headquarter, CARIS GIS software is introduced and being tested to evaluate/assess the effectiveness or usability of the GIS in the field and activities for the water resources management. The Database Office, the Romanian Waters Headquarter digitized and input data only one sheet with scale of 1:100,000 for evaluation/assessment. At present, extension of coverage areas and official use of CARIS GIS software for the water resources management have not been decided.

1.5.4 Other Data Filing

The water quality data for rivers are input at each branch and office including the Prahova Office and then all the data are collected from the branches/offices and stored in the Romanian Waters Headquarter. The software for this purpose is made using the language PASCAL. Therefore, to obtain text data and use in other software, special program written in PASCAL needs to be prepared by a programmer good at PASCAL software.

The water quality data for the Prahova River System since 1993 up to the present have been input and are kept by the Prahova Office in the file prepared by the PASCAL.

In Prahova Office, water quality data for effluent from pollutant sources are being input, using Excel software. Out of data observed and kept in the Ploiesti Office, only 30 % of data can be input in computer.

CHAPTER II IMPROVEMENT OF MONITORING SYSTEM

2.1 General

Chapter II describes the improvement plan of existing monitoring and data filing system of the Romanian Waters Prahova Office in consideration of the study results explained in Chapter I.

Regarding data filing system, new database system is under preparation and will be installed in the computer of "Water Management Authorization" of the Romanian Waters Prahova Office by the end of the study.

2.2 Improvement of Water Quality Monitoring

2.2.1 Objective of Water Quality Monitoring

Romania has issued water quality standards since the early 1960's. Quality standard for surface water STAS 4706/88 remains the same as established in 1988. In case of effluent limits in waste water discharge, the new standards were established in November 1997 by the NTPA – 001 for wastewater discharging into rivers and NTPA – 002 for wastewater discharging into sewerage system.

The objective of the water quality monitoring is to monitor whether water quality of the surface water and/or waste water is lower and higher than the limits of the corresponding standards mentioned above through the periodical observation to be conducted by the Romanian Waters as the basis of the water quality management in the Prahova River Basin.

2.2.2 Improvement of Periodical Observation

Table F.2.1 tabulates number of parameters and their concentration limits stipulated in STAS 4706/88, NTPA-001 and NTPA-002.

(1) Surface Water

The water quality of the Prahova River System will be monitored at present sixteen (16)-monitoring points, all of which are judged to be important to evaluate the water quality of the Prahova River System. However, the parameters to be monitored will be increased to 51 in accordance with the STAS 4706/88 with frequency of once a month.

In addition to the above, reservoir water quality monitoring will be continued at seven (7) points for each of the Paltinu and the Maneciu reservoirs. Number of the parameters is same as those for surface water and with the frequency of once a month.

(2) Wastewater

In the improvement plan, monitoring will be conducted with a frequency of once a month to all the effluent channels of all the industrial/agricultural establishments, which discharge their wastewater to rivers and/or sewerage system. The number of effluent channels are 168 and out of them, 86 channels are to rivers and 82 channels to sewerage systems.

Considering characteristics of wastewater in respective activities, industrial and agricultural establishments are broadly classified into five (5) groups and parameters to be observed are recommended for each groups as tabulated in Table F.2.2.

The sewerage systems in the Basin receive some industrial wastewater in addition to human waste. Then, the necessary monitoring parameters of the sewerage effluents vary depending on the industrial activities covered by the sewerage system. The monitoring parameters of the sewerage effluents are obtained by combining the parameters of the industrial groups given in Table F.2.2. The proposed combination of parameter groups for each sewerage are shown below.

Sewerage	Combination of Group No.	Sewerage	Combination of Group No.
Predeal	5	Slanic	5
Azuga	4, 5	Valenii de Monte	2, 5
Busteni	5	Boldesti Scaieni	2, 4, 5
Sinaia	2, 3, 5	Urlati	3, 4, 5
Breaza	2, 5	Ploiesti	2, 3, 4, 5
Cimpina	2, 4, 5	Floresti	2, 5
Baicoi	2, 4, 5	Maneciu	5
Plopeni	2, 5		

2.2.3 Laboratory

In order to monitor the water quality stipulated in STAS 4706/88, NTPA-001 and NTPA-002, equipment listed in Table F.2.3 are necessary to be purchased so to analyze with high accuracy and a new laboratory of one-story shown in Fig. F.2.1 is planned to be constructed at the back of the Romanian Waters Prahova Office. This laboratory consists of eight (8) rooms (864 m2), which accommodate the equipment described above as well as warehouse/garages (120 m2) for three (3) vehicles.

2.3 Improvement of Data Filing System

2.3.1 Problems of Existing King II and Other Data Filing System

King II database system, which is used broadly in the headquarter and regional branch offices of Romanian Waters, has several problems as tabulated below.

(1) The software for the King II database is FOX-PRO Ver. II which runs under DOS and not under the WINDOWS and is so old-fashioned that programmers who maintain the system and reference books which explain the software can hardly be found,

(2) The data stored in the King II database are hard to be exported to other application software such as MS Excel and MS Word for analysis and circulation because of the data compatibility of the FOX-PRO Ver. II.

(3) Data is designed directly to input to tables of the King II database that causes input errors as well as takes time to input data

(4) Master data such as name of water users are recorded with other data such as permitted discharge data in the same table of the King II database.

(5) Name of water users and rivers is directly input to some tables of the King II database. However, due to the Romanian alphabet, same municipalities and/or rivers have different spelling in database like "Cimpina" and "Campina" which are identified to be different in the computer software.

In addition to the King II database, wastewater quality data stored in a computer has the following problems.

(1) The wastewater data is stored using the MS Excel just to obtain the average, maximum and minimum concentration of the year.

(2) Therefore, this is not database and cannot be used in any other purposes and any applications.

Regarding the PASCAL software to record river water quality data, this application software is judged to be complete with high quality function including making graphs. Therefore, it is recommended to use this software and small a program to export data in the form of text file ahs been completed so that data can be used in other application software.

2.3.2 Improved Water Management Database Software

In consideration of problems of the existing King II database, water management database software has been newly established by the JICA Study Team during the second field survey.

(1) Basic Concepts of Improvement of King II Data Base

Basic concepts to improve the King II database are tabulated hereunder which is decided through the discussions with database experts in the Romanian Waters considering the problems mentioned above.

(a) Database software "MS Access 97" for Windows 95 is used for the new database which is widely used and is easy to import data from and export data to "MS Excel" and "MS Word".

(b) Mater data will be separately recorded in tables from other data for easy maintenance.

(c) "Menu", input forms and report forms are prepared in consideration of actual daily works so as to easily input data for anybody and to avoid mistakes as much as possible.

(d) Code of water user and river are used more often so as to avoid mistake or confusion in spelling.

(e) All wastewater quality data which are kept by the Romanian Waters in the form of the Excel file or just on papers will be input into a wastewater quality table of the new database.

(f) The FOX-PRO's "dbf" files for all tables are designed to be created from the "Menu" mentioned above in consideration of data compatibility with King II database in Headquarter and regional branch offices.

(2) Structure of New Water Management Database System

(a) Menu

Fig. F.2.2 indicates main menu for new water management database system. Following existing King II Database, the works of the new database can be classified into (i) Water Supply/Discharge, (ii) Irrigation System and (iii) Pisciculture System. From the main menu, user selects one of the works to be done and then proceeds the deeper structure of the menu. Figs. F.2.3, F.2.4 and F.2.5 show contents of menu for these three (3) works.

For Water Supply/Discharge, the works are further separated into (i) Master Table Input/Edit, (ii) Quantity Data Input/Edit, (iii) Quality Data Input/Edit, (iv) Creation of DBF file, and (v) Report.

Fig. F.2.6 explains the flow of water quantity data processing. The data such as monthly water volume are input to data table through "Forms" using "Query" to indicate information in master table such as water user name. When data is output in "Report" and/or exported in the DBF file, table with same format with King II database is created through "Macro".

Fig. F.2.7 shows the flow of water quality data processing in which similar "Form", "Query", "Report" and "Macro" are prepared. For the water quality data analysis, graph and three (3) types of summary table are also prepared.

As far as Irrigation System and Pisciculture System are concerned, the works can be separated into (i) Master Table Input/Edit, (ii) Quantity Data Input/Edit, (iii) Creation of DBF file, and (iv) Report.

(b) Table

Table F.2.4 tabulates all the tables included in (i) Water Supply/Discharge, (ii) Irrigation System and (iii) Pisciculture System. Tables can be classified into (i) master table, (ii) data table and (iii) DBF table. All the tables in King II are included in new database system as master table or data table but excluding redundant fields. Master table contains information, which are seldom changed such as user code, name, address, permitted volume and so on, while data tables record monthly data and other variable data. DBF tables have same fields with the King II Database and used to export data.

In addition to these tables, the new database has four (4) tables related to water quality data analysis as shown in Figs. F.2.8 (table MASTER_QITEM), F.2.9 (Tables D_QUALITY_DATE & D_QUALILTY_DATA) and F.2.10 (Table DATA_QUALITYA). Table MASTER_QITEM records effluent limits stipulated in NTPA-001 and 002 and used in graphs of water quality so as to easily find factories, the effluent of which exceeds the standards. Tables D_QUALITY_DATE & D_QUALILTY_DATA records code of water user, date of observation and water quality concentration data as shown in Table F.2.4. Table DATA_QUALITYA is a work table to input data and to store related data to Tables D_QUALITY_DATE & D_QUALILTY_DATA

(c) Query

Table F.2.5 indicates query of new database system. Query is used in new database system, (i) to display information of different tables in "Forms", (ii) to make DBF tables by deleting old data from and adding new data to DBF tables, and (iii) to process and display water quality data.

(d) Form

List of prepared forms is indicated in Table F.2.6. Form is used in new database (i) to input data to master tables (Fig. F.2.11) and data tables (Fig. F.2.12), (ii) to select water user, parameter and/or date so as to display (Figs. F.2.13 to F.2.16) or print water quality data (Fig. F.2.17) and (iii) to display selected water quality data in the form of graph or summary table.

(e) Report

Table F.2.7 tabulates reports prepared for new database. Figs. F.2.18 and F.2.19 are samples of reports for master table and data table, respectively. Fig. F.2.10 is report of water quality data record.

2.4 Cost for Improvement of Monitoring System

2.4.1 Purchase and Construction Cost

The purchase cost and construction cost related to the improvement of monitoring system consist of purchase cost for laboratory equipment, vehicles and furniture as well as the building construction cost and these costs are estimated based on the market prices.

The total purchase cost is US$ 1.4 million and purchase cost of respective items are tabulated in Fig.F.2.2.

The construction cost of the laboratory is estimated as follows.

Item	Area (m^2)	Unit Price (US$/$m^2$)	Total (1000 US$)
1 story Building	864	500	432
Garage and Warehouse	120	300	36
Total	984		468

The total purchase cost and construction cost related to the laboratory is estimated to be US$ 1.8 million as tabulated below.

Item	Cost (US$ 1,000)
Purchase Cost	1,356
Construction Cost	468
Total	1,824

2.4.2 O&M Cost

The O&M cost related the laboratory is composed of man-power cost and consuming material cost.

The number of personnel who is related to the monitoring system in the Romanian Waters Prahova Office is listed below.

Department	Existing	Plan
Laboratory	15	25
Water Management Authorization: Permits/Licenses	10	15
Driver	0	3

Annual man-power cost covering all the personnel for the plan will be US$ 61.0 thousand, while annual consuming material cost is US$ 33.9 thousand (0.25 % of purchase cost), totaling US$ 94.9 thousand.

CHAPTER III ACCIDENTAL RIVER WATER POLLUTION

3.1 General

This chapter explained the results of accidental river water pollution. At first, past accidental pollution is described based on the records which are kept by the Romania Waters Prahova Office. Then, existing information system and preparedness for accidental pollution are presented.

Then, considering the location of major industrial/agricultural establishments, characteristics of water use in the Prahova River Basin as well as the cause of past accidental pollution, measures to prevent or reduce accidental pollution is discussed.

3.2 Accidental Pollution Records in The Past

In the Prahova River System, the accidental river water pollution has occurred several times and caused serious damage to the inhabitants. Table F.3.1 tabulates 18 accidental pollution records from 1989 to the present summarized from documents and/or letters kept by the Romanian Waters Prahova Office.

The accidental pollution in the Prahova River System can be classified into two (2) types. The first type is leakage and/or spill of hazardous substances and the other is leakage of oil from oil pipeline from Ploiesti City to Brasov City which runs along the Doftana River of the Prahova River System.

Out of 18 accidental pollution records mentioned above, the first type is seven (7) and the remaining 11 accidents are related to the leakage from the oil pipelines. The first type accidents occurred inside or near to the Ploiesti City where a lot of refineries locate. The spilled or leaked substances were mostly petroleum and its products. In most cases, river water was not contaminated due to prompt actions including installation in the outlet and/or channel connecting to river of dam of soil and/or oil fence from straw fixed to the wooden piles.

The second type accidents further can be classified into two (2) types in consideration of their causes. Out of second type accidents of 11 cases, four (4) cases are leakage related to breakdown of facilities of pipeline including damage of pipeline due to landslide. For these accidents, also prompt countermeasures such as installation of oil fence and/or soil dam were taken and damages occurred only in the limited area.

In all the accidental pollution experienced in the Prahova River Basin, most serious accidents are caused by leakage of diesel oil from the pipeline due to the corrosion which occurred in 1989, 1992, 1995 (3 times), 1997 and 1998.

The pipeline is owned by PETROTRANS located in Ploiesti City and put into service in 1980 to carry the diesel oil from Ploiesti to Brasov. The pipeline is 128.3 km long, with a diameter of 12 inch 3/4 (32.4 cm) and wall thickness 8.4 mm. The pipeline is buried 1 – 2 m in the ground. In order to convey diesel oil from Ploiesti to Brasov, four (4) pumping stations are installed with capacity of 180 m3/hr.

In three (3) cases of 1989, 1992 and the first accident in 1995, the leakage was occurred from crack made on the pipeline installed upstream of the Paltinu Dam. In the two (2) accidents excluding the 1989 case, the leaked oil was prevented from reaching the reservoir by the

construction of small dams. In the 1989 case, the leaked oil entered into the reservoir but diesel oil could float on the surface of the reservoir and be burnt by fire so that no pollution occurred in the downstream.

The leakage of the second and the third cases in 1995 occurred from the cracks made on the pipeline between the Paltinu Dam and the Voila Purification Plant. In this portion, the pipeline is buried in the sloped hill located in the left bank and the leaked oil reached the Doftana River from the underground after expanded in the ground.

Because of this flow condition of oil, measures to prevent from oil inflow to the river was hard to be taken. Therefore, the oil pollution continued and the Voila Purification Plant under the Romanian Waters stopped drinking water supply for long period.

The period of suspending drinking water was from March 7 1995 to May 24 1995 for the second accident in 1995 and from December 27 1995 to July 31 1996 for the third accident in 1995.

Affected towns due to the suspension of the drinking water supply were Cimpina (Population 41,000), Breaza (19,000), Cornu (4,000), Banesti (5,700), Telega (3,000) Floresti (5,500), Moreni (14,500), Baicoi (14,000) and Ploiesti (125,300) totaling population of 232,000. Out of these towns, the drinking water could be supplied from the Maneciu Dam. However, in other towns where the water is supplied from only the Voila Purification Plant, the drinking water supply was completely stopped for the period mentioned above.

In 1997, it is said that the leakage from the PETROTRANS oil pipeline were occurred two (2) times near Valea Doftana Village. However, the Romanian Waters Prahova Office has no information on these accidents.

Fig. F.3.1 shows the past accidental pollution map which indicates the Prahova River System, the water supply network, the PETROTRANS oil pipeline, affected town and the points where accident occurred with number of pages of Table F.3.1.

3.3 Information System and Preparedness for Accidental Pollution

In accordance with Water Law Article 23, water users are obliged to establish an office and assign its chief for the prevention and control of accidental pollution, to take urgent measures to eliminate the causes and effects and to immediately notify the Romanian Waters. In case of accidental pollution, the Romanian Waters immediately warns the water users and the public administration authorities downstream to take water protection and damage minimization measures.

Also in accordance with Water Law Article 23, water users are obliged to prepare and apply their own plans for the prevention and control of accidental pollution. The preparation of the plans is carried out in accordance with a frame-methodology established by Ministry Order 278/1997.

In accordance with the Ministry Order 278/1997, in order to elaborate the plans of prevention and control of accidental pollution, the water user settled by the Romanian Waters is obliged to make up an inventory and settle the activities, places, installation (critical points) that can produce accidental pollution.

In case of the PETROTRANS, an inspection team is established to patrol the pipeline condition

under the office for the prevention and control of accident pollution. In case that the action team finds leakage of diesel oil, the office dispatches necessary personnel with materials and equipment which are prepared in accordance with Ministry Order 278/1997 and inform to the Romanian Waters.

The Romanian Waters dispatches engineer(s) to the accident point and gives necessary advises to eliminate the cause of the accident.

3.4 Location of Major Industrial/Agricultural Establishments

Fig. F.3.2 indicates location of major industrial/agricultural establishments and sewerage in the Prahova River Basin together with their activities. Table F.3.1 shows name of establishments corresponding to Fig. F.3.2 and name of toxic substances, which may flow out from the establishments and cause accidental pollution. Data/information of toxic substances, which are stored in respective establishments, are not obtained and therefore, toxic substances in Table F.3.2 are estimated from activity of each establishment.

3.5 Measures for Accidental Pollution

The characteristics of water use in the Prahova River Basin are as follows:

(1) Drinking water is taken at Voila Intake of the Doftana River and the Valenii de Munte Intake of the Teleajen River, both of which are located in the upper reaches and conveyed through water pipelines to large cites and towns which are located in middle or downstream such as Cimpina, Baicoi, Boldesti Scaieni and Ploiesti.

(2) Drinking water for other towns located upper reaches such as Azuga, Busteni and Sinaia is taken from tributaries with clean water and not from the Prahova River main cource.

(3) Water taken at the middle and lower reaches including the Nedelea Intake is used for industrial water and/or irrigation water and not for drinking.

As understood from the Fig. F.3.2, all the industrial/agricultural establishments are located in the downstream of the intake points for drinking water and thus, present information system, preparedness and measures taken in the past accidents such as construction of dams in rivers are judged to be sufficient considering that no serious damages are reported as tabulated in Table F.3.1.

However, the accident pollution from the oil pipeline of PETROTRANS is different from accidents caused by industrial/agricultural establishments, since the pipeline is installed along the Doftana River, which is the source of drinking water, and thus this accidents pollution affects more than 200, 000 inhabitants living in the large cities/towns, which actually occurred in 1995.

The leakage of oil was first found in 1989 and since then recorded seven (7) times including latest one, on July10, 1998. The oil pipeline is buried in the slope of monitions/hills along the Doftana River and leaked oil percolates in the soil to the river channel. This type of the flow is hard to be noticed, but the inspection team of the PETROTRANS fortunately found oil leakage in five (5) cases before the leaked oil reached and entered to the river channels.

The cause of the leakage is hole or crack made on the pipeline due to corrosion and frequency

of leakage will increase more in the future and consequently, the oil pipeline along the Doftana River from the Voila Intake to the upper end of the Paltinu Reservoir should be urgently rehabilitated and/or reinstalled. Regarding oil leakage from the oil pipeline upstream of the Paltinu Reservoir, the influence is not so serious compared with the downstream portion, hence, the strengthening of leakage watching by the action team is proposed.

Besides the rehabilitation and/or reinstallation of the oil pipeline, applicability of an oil detector is considered. This measure is to install sensor (s) which can detect oil floating in the surface of river water and gate of intake to the Voila Purification Plant is closed in case that the oil is detected.

Fig.F.3.3 shows one type of oil detector, which floats on the surface and detects oil by the change of electric conductivity. When oil is detected, a lamp mounted on the detector is on and message of oil detection can be sent to any places through wire between the detector and bank and then telephone system. However, considering thin flow of the oil floating on the river surface and moreover, not all the surface, this type of detectors may be used as supplementary measure, if it can be applied.

3.6 Replacement Cost of Existing Oil Pipeline

The cost of accident pollution measures consists of replacement cost of existing oil pipeline. The portion of oil pipeline which should be replaces is total 15.67 km, from the Voila Intake to the Paltinu Dam (8.12 km) and from the Paltinu Dam to the end of the reservoir (7.55 km). The total replacement cost of the oil pipeline with the length of 15.67 km with diameter of 12 3/4 inch is estimated to be US$ 4,701 thousand (unit cost US$ 300/m).

REFERENCES

1) Ministerul Mediului (Ministry of Environment), "Atlasul Cadastrului Apelor Din Romania (Water Cadastral Atras of Romania) ", 1992 (in Romanian)

TABLES

Table F.1.1 Code for Prahova River System

Code	Name
120	Prahova
120.1	Azuga
120.1.1	Unghia Mare
120.1.2	Limbasel
120.1.a	Valea Turcului
120.1a	Valea Fetei
120.2	Valea Cerbului
120.3	Zamora
120.4	Valea Rea
120.5	Peles
120.6	Izvorul Dorului
120.7	Valea Beliei
120.7.1	Talea
120.8	Cimpea (Cimpina)
120.9	Doftana
120.9.1	Musita
120.9.1.1	Manole
120.9.1.1.1	Valea Calda
120.9.10	Purcaru
120.9.2	Neagra
120.9.3	Orjogoaia
120.9.4	Prislop
120.9.5	Negras
120.9.5.1	Cucioaia
120.9.6	Ernieresa
120.9.7	Florei
120.9.8	Paltinoasa
120.9.9	Secaria
120.10	Viroaga
120.11	Poenari
120.12	Viisoara
120.13	Teleajen
120.13.1	Gropsoarele
120.13.10	Bughea
120.13.11	Varbilau
120.13.11.1	Alunis
120.13.11.1.1	Bertea
120.13.11.2	Slanic
120.13.11.2.1	Tariceanca
120.13.12	Telega (Mislea)
120.13.12.1	Mislei
120.13.12.2	Runc(Runcu)
120.13.12.3	Doftanet
120.13.12.4	Cosmina
120.13.12.4.1	Luparia
120.13.13	Iazul Morilor Teleajen
120.13.13.1	Bucovel
120.13.13.1.1	Ciuciuneasca
120.13.13.a	Lipanesti
120.13.14	Dimbul (Dimbu)
120.13.14.1	Valea Larga
120.13.15	Ghighiu
120.13.16	Piriul Rece
120.13.16a	Soava
120.13.17	Leaotul
120.13.2	Stina
120.13.3	Bobu
120.13.4	Carpen
120.13.5	Telejenel
120.13.6	Valea Mare
120.13.7	Crasna
120.13.8	Drajna
120.13.8.1	Ogretineanca
120.13.9	Stilpul
120.13.9a	Gura Vitioarei
120.14	Vitman
120.15	Tuianca
120.16	Cricovul Sarat
120.16.1	Lapos
120.16.2	Salcia
120.16.3	Chiojdeanca
120.16.4	Matita
120.16.4.1	Lopanta (Lopatna)
120.16.4.2	Saratel
120.16.4.2.1	Tulburea
120.16.4.2.2	Baltesti
120.16.4.a	Tulburea
120.16.5	Saratica
120.16.6	Varbila
120.16.7	Cring
120.17	Maia

Table F.1.2 List of Water Level Gauge Station

Code	Station Name	River Name	Catchment Area (km2)	Year Started	Remarks
111204	Busteni	Prahova	130	1993	
111210	Cimpina	Prahova	476	1962	
111215	Prahova	Prahova	984	1957	
111220	Adincata	Prahova	3682	1951	
111405	Azuga	Azuga	83	1953	Between 1957 & 59 stopped
111505	Busteni	Valea Cerbului	26	1958	
111605	Tesila	Doftana	288	1959	
111705	Cheia	Teleajen	39	1966	
111710	Gura Vitioarei	Teleajen	491	1959	
111715	Moara Domneasca	Teleajen	1434	1955	
111805	Valbilau	Slanic	42	1969	
112105	Ciorani	Cricovul Sarat	596	1966	

Table F.1.3 List of Water Quality Monitoring Point

Code	Point Name	River Name	Observation Frequency (times/year)	Number of Parameters	Name of Water Level Gauge Station
11180	Predeal	Prahova	12	20	
11190	Azuga	Azuga	6	20	
11195	amonte Sinaia	Prahova	6	27	
11200	Cornu	Prahova	12	27	Cimpina
11217	Nedelea	Prahova	6	27	
11220	Prahova Tinosu	Prahova	12	28	Prahova HOS
11205	amonte Traisteni	Doftana	6	20	
11230	Cheia	Teleajen	12	20	Cheia
11240	Gura Vitioarei	Teleajen	12	27	Gura Vitoarei
11250	Goga	Dimbul (Dimbu)	6	28	
11260	Moara Domneasca	Teleajen	12	28	Moara
11270	Gherghita	Prahova	6	28	
11275	Sangeru	Cricovul Sarat	12	20	
11280	Ciorani	Cricovul Sarat	12	28	Ciorani
11290	Adincata	Prahova	12	27	
11300	Cosiereni	Ialomital	12	27	

Table F.1.4 Parameters Observed for River Water and Effluent from Pollutant Sources

No.	Parameter	Parameter in Romanian	National Standard	River	Pollutant Source	No.	Parameter	Parameter in Romanian	National Standard	River	Pollutant Source
1	temperature		x	x		31	Ni^{2+}		x	x	x
2	pH	pH	x	x (A)	x	32	Zn^{2+}		x	x	x
3	SS	susp.	x	x (A)	x	33	Hg^{2+}		x	x	x
4	BOD_5	CBO5	x	x (A)	x	34	Ag^{+}		x		
5	COD_{Mn}	CCO-Mn	x	x (A)	x	35	F^{-}	Fluoruri	x	x (B)	x
6	CODcr		x	x	x	36	$M0^{2+}$		x		x
7	NH_4^{+}	amoniu	x	x (A)	x	37	Se^{2+}		x		
8	T-N		x			38	Mn^{2+}		x	x	
9	NO_3^{-}	azotati	x	x (A)	x	39	Mg^{2+}		x	x (A)	x
10	NO_2^{-}	azotiti	x	x (A)	x	40	Co^{2+}		x		
11	H_2S	sulfuri	x		x	41	CN^{-}	cianuri	x	x (B)	x
12	S_2^{-}		x	x (C)		42	Cl_2		x		x
13	SO_3^{2-}		x			43	Cl^{-}	cloruri	x	x (A)	x
14	SO_4^{2-}	sulfati	x	x (A)	x	44	residue at 105°C	rez. Fix.	x	x (A)	x
15	C_6H_5OH	fenoli	x	x	x	45	total bacteria coliform		x		
16	extracted substracts	extr.	x	x (B)	x	46	fecal bacteria coliform		x		
17	petrolic products		x			47	fecal streptococi		x		
18	PO_4^{3-}	fosfati	x	x (A)	x	48	salmonella		x		
19	T-P	fosfor	x	x		49	conductivity	cond.		x (A)	x
20	detergents	deterg	x	x (B)	x	50	alkality	alc.		x (A)	x
21	As		x			51	acidity	acid.			x
22	Al^{3+}		x		x	52	DO	o2. Diz.		x (A)	x
23	Ca^{2+}		x	x (A)	x	53	Discharge			x	
24	Pb^{2+}		x	x	x	54	Na^{+}	sodimum		x (A)	
25	Cd^{2+}		x	x (B)	x	55	HCO_3^{-}	bicarb		x (A)	x
26	T-Cr	Cr	x	x (B)	x	56	hardness total	durit total		x (A)	x
27	Cr^{3+}		x		x	57	hardness temp	durit temp		x	x
28	Cr^{6+}		x		x	58	hardness permanent	durit p		x	x
29	T-Fe (Fe^{2+}+Fe^{3+})		x	x (B)	x	59	K^{+}			x (A)	x
30	Cu^{2+}		x	x	x						

Note In river monitoring, (A) is parameters observed in clean water,
(B) for those added in polluted water, and
(C) for those added in most polluted water.

Table F.1.5 List of Water Users (1)

Code	Name of Pollutant Source	Name of Town	SourceType
4001	S.G.C.L. FILIPESTII DE PADURE	Filipestii de Padure	Sewerage
4002	MINA FILIPESTII DE PADURE	Filipestii de Padure	Factory
4003	SPITALUL FILIP.TG.	Filipestii de Targ	Factory
4004	SINTERREF AZUGA	Azuga	Factory
4004	SINTERREF AZUGA	Azuga	Factory
4005	SCOALA AJUTATOARE FILIPESTII DE TIRG	Filipestii de Targ	
4006	BERE AZUGA	Azuga	Factory
4007	POSTAV AZUGA	Azuga	Factory
4008	A.D.P.P. AZUGA	Azuga	Sewerage
4009	STIAZ AZUGA	Azuga	Factory
4010	SPITALUL AZUGA	Azuga	Factory
4011	A.D.P.P. BUSTENI	Busteni	Sewerage
4012	SANATORIUL T.B.C. BUSTENI	Busteni	Factory
4013	CABANA GURA DIHAM	Azuga	Factory
4014	HARTIA BUSTENI	Busteni	Factory
4016	CERBUL SINAIA	Sinaia	Factory
4017	S.E.P.P.L. CIMPINA	Cimpina	Factory
4017	S.E.P.P.L. CIMPINA	Cimpina	Factory
4018	A.D.P.P.SINAIA	Sinaia	Sewerage
4019	S.C.ALPIN S.A. COTA 1400	Sinaia	Factory
4020	SALSI SINAIA	Sinaia	Factory
4021	MEFIN SINAIA	Sinaia	Factory
4022	S.G.C.L. BOLDESTI	Scaieni	Sewerage
4025	SEPPL PLOIESTI SEC. COMARNIC	Posada	Factory
4026	A.D.P.P.. COMARNIC	Comarnic	Factory
4027	PRESCON COMARNIC	Comarnic	Factory
4028	CIVITAS BREAZA	Breaza	Sewerage
4029	HIDROJET BREAZA	Breaza	Factory
4030	U.M.02525 BREAZA	Breaza	Factory
4031	S.C. PETROUTILAJ CIMPINA S.A.	Cimpina	
4032	R.A.G.C.P.CIMPINA	Cimpina	Factory
4033	S.C. CONCORDIA S.A.	Cimpina	Factory
4034	R.A.G.C.L. CAMPINA	Cimpina	Sewerage
4035	S.C.STEAUA ROMANA SA	Cimpina	Factory
4036	A.R.R.A. FILIALA PLOIESTI S.H. PALTINU		
4037	S.P. BAICOI	Baicoi	Factory
4037	S.P. BAICOI	Baicoi	Factory
4039	VICTORIA FLORESTI	Floresti	Factory
4039	VICTORIA FLORESTI	Floresti	Factory

Code	Name of Pollutant Source	Name of Town	SourceType
4041	S.G.C.L. BAICOI	Baicoi	Sewerage
4042	AVICOLA PLOIESTI-Blejoi Farm	Blejoi	Livestock
4642	AVICOLA PLOIESTI-Blejoi Farm	Blejoi	Livestock
4045	A.R.R.A. FILIALA PLOIESTI S.H. NEDELEA		
4046	GRUP SCOLAR NEDELEA		
4047	F.E. PLOIESTI	Pisculesti	Factory
4050	A.R.R.A. FILIALA PLOIESTI S.H. TINOSU	Tinosu	
4051	S.C. PETROBRAZI S.A.	Ploiesti	Factory
4052	SOCIETATEA DE INDUSTRIE MICA PRAHOVA	Brazi	
4053	S.C. SERPLO S.A. PLOIESTI	Tataram	Livestock
4056	S.C. SEPRA S.A..	Barcanesti	Livestock
4059	IAS PUCHENI	Pucheni	Livestock
4060	SPITALUL PLOIESTI SECTIA PUCHENI	Ploiesti	
4070	SOCIETATEA AGRICOLA INFRATIREA	Cioranii de Jos	Livestock
4071	S.C. AGROMEC CIORANI S.A.	Ciorani	Livestock
4071	S.C. AGROMEC CIORANI S.A.	Ciorani	Livestock
4075	PENITENCIARUL TG.NOU	T.G. Nou	Factory
4076	U.M. 01991 TG. NOU	T G. Nou	Factory
4080	AVICOLA	Lolotasca	Livestock
4082	COMPORSA STANCESTI	Stancesti	Livestock
4085	CABANA MUNTELE ROSU		
4086	NERGA MANECIU SECTOR CHEIA	Cheia	Sewerage
4087	U.M. 01035 CHEIA	Cheia	Factory
4088	NERGA MANECIU SECTOR MANECIU	Maneciu Ungureni	Sewerage
4089	S.E.P.P.L. MANECIU	Maneciu Ungureni	Factory
4091	S.C. CHIMFOREX BUCOV	Bucov	Factory
4092	SPIT. T.B.C. DRAJNA	Drajna	Factory
4093	CONSERVE VALENI	Valenii de Munte	Factory
4094	PROLA-PLOIESTI	Ploiesti	Factory
4095	STICLOVAL VALENI	Valenii de Munte	Factory
4098	AGROMEC MAGURELE	Magurele	Factory
4099	SCHELA BOLDESTI	Scaieni	Factory
4099	SCHELA BOLDESTI	Scaieni	Factory
4100	U.M. PLOPENI	Plopeni	Factory
4100	U.M. PLOPENI	Plopeni	Factory
4101	GES SCAIENI	Scaieni	Factory
4101	GES SCAIENI	Scaieni	Factory
4102	S.C. CAHIRO S.A.	Scaieni	Factory
4103	SOCERAM BUCOV	Bucov	Factory

Table F.1.5 List of Water Users (2)

Code	Name of Pollutant Source	Name of Town	SourceType
4103	SOCERAM BUCOV	Bucov	Factory
4104	S.C.PROMIN S.A.	Blejoi	Factory
4105	OFICIUL DE REPRODUCTIE SI SELECTIE A ANI	Blejoi	Livestock
4106	REAL PLEASA	Pleasa	Factory
4107	CHIMFOREX PLEASA	Pleasa	Factory
4108	COMPORSA STANCESTI	Pleasa	Livestock
4109	EXTRAPAN SEDIU	Pleasa	
4112	ARPACOR	Bucov	Factory
4114	UM 01394 BUCOV	Bucov	
4115	I.C.V.V.VALEA CALUGAREASCA	Valea Calugareasca	Factory
4116	AGROZOOTEHNICA	Poenarii Burchii	Livestock
4117	S.C.ROMFOSFOCHIM SA	Valea Calugareasca	Factory
4121	S.C. AGROINDUSTRIALA COMANACU FARM		Livestock
4123	SANCA GHERGHITA	Gherghita	Livestock
4124	SOCIETATEA DERO S.A.	Ploiesti	
4126	S.C. AGROINDUSTRIALA FANARI FARM		
4127	GOSCOM SLANIC	Slanic	Sewerage
4129	PRIMARIA BANESTI	Banesti	Sewerage
4132	INTEX	Paulesti	Factory
4133	STATIA PECO 2,KM.6	Ploiesti	Factory
4134	DERO PLOIESTI	Ploiesti	Factory
4135	CERAMICA PLOIESTI	Ploiesti	Factory
4136	S.C VINALCOOL S.A PRAHOVA	Ploiesti	Factory
4136	S.C VINALCOOL S.A PRAHOVA	Ploiesti	Factory
4136	S.C VINALCOOL S.A PRAHOVA	Ploiesti	Factory
4137	S.C. VEGA S.A.	Corlatesti	Factory
4137	S.C. VEGA S.A.	Corlatesti	Factory
4138	PROGRESUL PLOIESTI	Ploiesti	Factory
4139	EXTRAPAN SEDIU	Ploiesti	Factory
4139	EXTRAPAN SEDIU	Ploiesti	Factory
4140	SECTIA L6 PLOIESTI	Ploiesti	Factory
4141	24 IANUARIE	Ploiesti	Factory
4142	PROGRESUL SECTIA PIGMENTI	Ploiesti	Factory
4143	I.N.C.A.F. PLOIESTI	Ploiesti	Factory
4143	I.N.C.A.F. PLOIESTI	Ploiesti	Factory
4144	S.C. CIPROM MECTA	Ploiesti	Factory
4146	FEROEMAIL PLOIESTI	Ploiesti	Factory
4147	DACIA PLOIESTI	Ploiesti	Factory
4148	S.C.PETROTEL SA PL.	Ploiesti	Factory

Code	Name of Pollutant Source	Name of Town	SourceType
4148	S.C.PETROTEL SA PL.	Ploiesti	Factory
4149	PETROTRANS PLOIESTI	Ploiesti	Factory
4149	PETROTRANS PLOIESTI	Ploiesti	Factory
4150	MATIZOL	Berceni	Factory
4151	U.M. 01959 BERCENI	Berceni	Factory
4153	DOROBANTUL PLOIESTI	Ploiesti	Factory
4155	DEPOULC.F.R.-SEDIU	Ploiesti	Factory
4156	UZUC PLOIESTI	Ploiesti	Factory
4158	S.C. ASTRA ROMANA SA	Corlatesti	Factory
4159	FORADEX PLOIESTI	Ploiesti	Factory
4160	UPETROM PLOIESTI	Ploiesti	Factory
4160	UPETROM PLOIESTI	Ploiesti	Factory
4161	REVIZIA GHIGHIU	Corlatesti	Factory
4161	REVIZIA GHIGHIU	Corlatesti	Factory
4162	R.A.G.C. PLOIESTI	Ploiesti	Sewerage
4165	S.I.A. MIZIL	Mizil	Factory
4166	MANASTIREA SUZANA	Cheia	Factory
4168	AUTOBAZA 1 PLOIESTI	Ploiesti	Factory
4169	PROLA-SEDIU	Ploiesti	Factory
4170	INFRATIREA	Ciorani	Livestock
4171	S.C. BOVING S.A.BARCANESTI	Barcanesti	Livestock
4172	PRIMARIA BLEJOI	Blejoi	Sewerage
4177	S.C. CONETACS S.A.	Mizil	Factory
4178	I.A.S. TOHANI	Tohani	Livestock
4178	I.A.S. TOHANI	Tohani	Livestock
4179	VINALCOOL TOHANI	Tohani	Factory
4180	AVICOLA	Vadu Sapat	Factory
4182	RELAXA MIZIL	Mizil	Factory
4183	U.M. 02616	Mizil	Factory
4185	ST. C.F.R. MIZIL	Mizil	Factory
4188	MINA CEPTURA	Ceptura	Factory
4190	S.C. EXPLOATARE LUCRARI IMBUNATATIRI F	Ploiesti	
4191	PRIMARIA COCORASTII MISLII	Cocorastii Mislii	Sewerage
4194	UNITATEA MILITARA 0235 CIORANI	Ciorani	
4195	PROGRESUL SECTIA OXIGEN	Ploiesti	Factory
4205	COMPORSA BERCENI FARM	Berceni	Livestock
4206	S.C.P.P. MAGURELE	Magurele	Factory
4209	PREFABRICATE BLEJOI	Blejoi	Factory
4211	U.M. VALENII DE MUNTE-SECTIA IZVOARE	Valenii de Munte	Factory

Table F.1.5 List of Water Users (3)

Code	Name of Pollutant Source	Name of Town	SourceType
4212	A.R.R.A. FILIALA PLOIESTI S.H. VALENI		
4213	VULTURUL COMARNIC	Comarnic	Factory
4214	PRIMARIA ALBESTI	Albesti-Paleologu	Sewerage
4216	POMICOLA BAICOI	Baicoi	Livestock
4217	VIDELMAR SEDIU	Albesti-Paleologu	Factory
4218	CABANA C.DORULUI	Sinaia	Factory
4219	CABANA VIRFUL CU DOR	Sinaia	Factory
4220	COMPLEX IZVORUL RECE	Sinaia	Factory
4221	CIPROM VEST	Ploiesti	Factory
4222	BOVILACT	Tomsani	
4223	CONSERVE MAGURELE	Magurele	Factory
4224	CERES BUDA		Livestock
4225	TABERE SUZANA	Sinaia	Factory
4229	PRIMARIA PAULESTI.	Paulesti	Sewerage
4230	PRIMARIA STOENESTI	Stoenesti	Sewerage
4231	AGROZOOTEHNICA DRAGNESTI	Draganesti	Livestock
4234	COMPORSA NEDELEA		Livestock
4235	SCHELA DE PRODUCTIE PETROLIERA MOREN		
4239	SECTIA EXTERIOARA CIORANI	Ciorani	Factory
4244	COMPORSA		
4248	R.A.G.C.L. VALEA CALUGAREASCA	Valea Calugareasca	Factory
4250	PRIMARIA BRAZI	Brazi	Livestock
4254	EDILCONST S.A.	Cimpina	Factory
4255	CONSILIUL LOCAL BRAZI	Brazi	Sewerage
4257	U.M.01532	Paulesti	Factory
4258	SOCIETATEA COMERCIALA AGROMEC DRAG	Draganesti	Livestock
4259	PRIMARIA PUCHENI	Pucheni	Sewerage
4260	PRIMARIA POTIGRAFU	Potigrafu	Sewerage
4261	PRIMARIA DUMBRAVESTI	Dumbravesti	Sewerage
4270	S.C. AGROINDUSTRIALA CERES S.A.		Livestock
4273	COPIMEX BRAZI	Brazi	Livestock
4275	A.R.R.A. FILIALA PLOIESTI S.H. MANECIU	Manesti	
4278	BOVING CEPTRA	Ceptura	Livestock
4280	S.N.C. NINI MACELARUL		
4282	INCAF - MIZIL.	Mizil	Livestock
4286	VINALCOOL CEPTURA		
4292	S.C. PETROUTILAJ S.A	Cimpina	Factory
4292	S.C. PETROUTILAJ S.A	Cimpina	Factory
4292	S.C. PETROUTILAJ S.A	Cimpina	Factory

Code	Name of Pollutant Source	Name of Town	SourceType
4294	CONSILIUL LOCAL BORDENI	Boldesti-Scaieni	Sewerage
4296	S.C.TOHANI S.A.	Vadu Sapat	Livestock
4298	UNIT. TERIT. 440	Gura Vitioarei	Factory
4301	S.G.C.L. FLORESTI	Floresti	Sewerage
4302	S.C. INSPET S.A.	Ploiesti	Factory
4305	INDUSTRIE MICA MOARA DE MOZAIC	Ploiesti	Factory
4305	INDUSTRIE MICA MOARA DE MOZAIC	Ploiesti	Factory
4306	PROLA-MIZIL.	Mizil	Factory
4307	TRANSPORT VALENII DE MUNTE	Valenii de Munte	Factory
4308	SOCIETATEA COMERCIALA ANTECO S.A.	Ploiesti	Factory
4310	U.M.01562	Magurele	Factory
4311	COCA COLA PLOIESTI	Ploiesti	Factory
4314	TROMET	Ploiesti	Factory
4315	ATLAS GIP PLOIESTI	Ploiesti	Factory
4315	ATLAS GIP PLOIESTI	Ploiesti	Factory
4316	U.M. 01819	Crangul Lui Bot	Factory
4317	APEVITA PREDEAL	Predeal	Sewerage
4318	PRAHOVEANA PLOIESTI	Ploiesti	Factory
4319	BASTI PLOIESTI	Ploiesti	Factory
4320	FORADEX SCAIENI	Boldesti-Scaieni	Factory
4321	S.C. VALDEN S.A.	Valenii de Munte	Factory
4322	T.C.I. PLOIESTI	Brazi	Factory
4323	AGROMEC MIZIL	Mizil	Factory
4324	S.C. UMERVA S.A.	Ploiesti	Factory
4325	U.M. 01899 PLOIESTI	Ploiesti	Factory
4326	DELTA DESIGN S.A. COMPLEX DE AGREMENT	Bucov	
4327	S.C. ROVIT S.A.	Valea Calugareasca	Livestock
4328	EDILCONST	Cimpina	Factory
4329	AUTOBAZA-TELEAJEN	Ploiesti	Factory
4330	AUTOBAZA 6 CALATORI	Ploiesti	Factory
4331	INTERNATIONAL SINAIA	Sinaia	Factory
4332	U.M.01907	Paulesti	Factory
4341	ASOCIATIA VINATORILOR SI PESCARILOR SP	Ploiesti	
4342	COMPLEX MUZEAL POSADA	Posada	Factory
4343	CONPET SECTIA SIRT	Ploiesti	Factory
4344	ANCOSTAR PLOIESTI	Ploiesti	Factory
4345	S.C. TRANSAGROSERV S.R.L. PLOIESTI		Livestock
4348	ROMSILVA R.A.- OCOL SILVIC AZUGA	Azuga	
4349	S.C. ROMPESCO S.A.	Ploiesti	

Table F.1.5 List of Water Users (4)

Code	Name of Pollutant Source	Name of Town	SourceType
4350	AGROCOM PLOIESTI	Ploiesti	Factory
4358	R.A.T.C.PLOIESTI	Ploiesti	Factory
4359	AGRICOM		Livestock
4361	ARTA METALULUI BOLDESTI	Boldesti-Scaieni	Factory
4363	I.N.C.A.F.ABATORUL VALENI	Valenii de Munte	Factory
4364	VIN.V.CALUGAREASCA	Valea Calugareasca	Factory
4366	CES BLEJOI	Blejoi	Factory
4368	PRIMARIA V.DOFTANEI	Valea Doftanei	Factory
4369	CABANA BABELE	Busteni	Factory
4370	CABANA CARAIMAN	Busteni	Factory
4371	SOCOM COVART	Comarnic	
4372	ROVIT- VALEACALUGAREASCA-CARLATESTI	Corlatesti	Livestock
4374	S.G.C.L.URLATI	Albesti-Paleologu	Sewerage
4375	PRIMARIA VALEA DOFTANEI	Valea Doftanei	Sewerage
4377	COMPOSA		Livestock
4379	F-CA DE OTET MIZIL	Mizil	Factory
4380	CERES SEDIU	Ploiesti	Factory
4382	F-CA DE SAMPANIE SC VINALCOOL	Azuga	Factory
4383	VINALCOOL VALENII DE MUNTE	Valenii de Munte	Factory
4384	VINALCOOL BOLDESTI	Boldesti-Scaieni	Factory
4392	VINALCOOL POIANA CIMPINA	Poiana Cumpina	
4397	PRIMARIA SECARIA	Sotrile	Sewerage
4410	SPITAL SLANIC	Slanic	
4500	MUNTENIA FILIPESTI	Filipestii de Padure	Factory
4501	EXPLOATAREA MINIERA FILIPESTII DE PADU	Filipestii de Padure	
4504	SANATORIUL TBC FLORESTI	Floresti	
4506	R.A.G.C.L. VALENI	Valenii de Munte	Sewerage
4507	CAMINUL DE BATRINI MISLEA	Scorteni	Factory
4509	PRIMARIA MAGURELE	Magurele	Sewerage
4510	S.C.FRANCO FERARI S.A.		
4511	EXTRAPAN FORMATIA 22	Valenii de Munte	Factory
4512	UBEMAR	Ploiesti	Factory
4513	UM 01808 PLOIESTI	Ploiesti	
4515	SPITAL HEPATITA BAICOI	Baicoi	Factory
4516	COVORUL POPULAR	Telega	
4517	POLIGON P.S.I.BOLDESTI UM 0443	Boldesti-Scaieni	Factory
4518	AVICOLA PLOIESTI- ABATOR SCAIENI	Scaieni	Livestock
4520	VINALCOOL VARBILAU	Varbilau	Factory
4521	VINALCOOL BALTESTI		
4522	MOTEL VADU CERBULUI	Sinaia	
4524	LICEUL BARCANESTI	Barcanesti	Factory
4525	FILATURA MIZIL	Mizil	Factory
4529	VINALCOOL POSESTI	Posesti	Factory
4530	RULMENTI GREI	Ploiesti	Factory
4531	UZTEL	Ploiesti	Factory
4532	SALINA SLANIC	Slanic	Factory
4533	S.C. FLACARA S.A.	Ploiesti	Factory
4534	REMIZA CAMPINA	Cimpina	Factory
4535	STATIA SOL CHEIA	Cheia	Factory
4536	S.C.V.PRAHOVEI CIMPINA	Cimpina	Factory
4538	TURNATORIA CAMPINA	Cimpina	Factory
4539	FILATURA URLATI	Albesti-Paleologu	Factory
4540	S.C. INTRETINERE SI REPARATII AUTO PLOIES	Ploiesti	Factory
4541	MONTANA	Sinaia	Factory
4543	S.C.BREAZA S.A. CIMPINA	Cimpina	Factory
4544	CARAIMAN	Busteni	Factory
4545	PALACE	Sinaia	Factory
4546	AMPLO	Ploiesti	Factory
4547	CABLUL ROM.PLOIESTI	Ploiesti	Factory
4548	ERMAT	Ploiesti	Factory
4549	BAZ.APROV.FLORESTI	Floresti	Factory
4550	PETROS PLOIESTI	Ploiesti	Factory
4551	SOCIETATEA COMERCIALA APASCO S.A.MAN	Maneciu	Factory
4551	SOCIETATEA COMERCIALA APASCO S.A.MAN	Maneciu	Factory
4552	F.S.H.BAICOI	Baicoi	Factory
4554	ELECTROUTILAJ	Cimpina	Factory
4555	S.C. PETROS S.A.	Cimpina	Factory
4556	AGROMEC BARCANESTI	Barcanesti	Livestock
4557	FORAJ SONDE PLOIESTI	Baicoi	Factory
4558	STEROM CAMPINA	Cimpina	Factory
4559	NEPTUN CAMPINA	Cimpina	Factory
4560	CAMEXIP	Baicoi	Factory
4561	CITRICIM CAMPINA	Cimpina	Factory
4563	S.C. PALTINU S A. CIMPINA	Cimpina	Factory
4564	SPITAL BAICOI	Baicoi	Factory
4565	SC.PROF.BREAZA	Breaza	Factory
4566	GR.SC.CIMPINA	Cimpina	Factory
4566	GR.SC.CIMPINA	Cimpina	Factory

Table F.1.5 List of Water Users (5)

Code	Name of Pollutant Source	Name of Town	SourceType
4567	AGENTIA DE GOSPODARIRE COMUNALA SI L		
4568	U.M.1065	Negoiesti	Factory
4571	ANTECO PLOIESTI	Ploiesti	Factory
4572	ANTECO SECTIA CAMPINA	Cimpina	Factory
4575	S.C. COSERTRANS S.A.CIMPINA	Cimpina	
4576	S.C. STARBER S.A.	Cimpina	Factory
4577	S.C. AGROS SCAIENI	Boldesti-Scaieni	Livestock
4578	S.G.C.L. PLOPENI	Plopeni	Sewerage
4580	S.C.ENERGOPETROL S.A.	Cimpina	Factory
4583	S.C.ELECTROMONTAJ S.A.	Cimpina	Factory
4585	U.M. 01958 CIUPERCEASCA	Paulesu	Factory
4589	U.M. VALENI FAGET	Faget	Factory
4590	U.M. VALENI SECIU	Valeni de Munte	Factory
4591	SPITAL BREAZA	Breaza	Factory
4593	SPITAL VOILA	Cimpina	Factory
4594	SPITAL ORAS CIMPINA	Cimpina	Factory
4595	S.C. TELEFERICUL S.A. ZONA BUSTENI	Busteni	Factory
4597	CENTRUL EUROPEAN DE CULTURA SINAIA	Sinaia	
4598	U.M.0865 SCOALA DE JANDARMI	Cimpina	Factory
4600	I.N.C.A.F.ABATOR CAMPINA	Cimpina	Factory
4601	PROLA-BUSTENI	Busteni	Factory
4602	S.C.TAM S.A.	Ploiesti	Factory
4603	R.A.G.C.L. URLATI	Albesti-Paleologu	Sewerage
4604	CONPET ST. POMPE URLATI	Albesti-Paleologu	Factory
4605	PECO STATIA NR.1 HIPODROM	Ploiesti	Factory
4606	PECO STATIA NR.3 BUCOV	Ploiesti	Factory
4607	PECO STATIA 51 CINA	Ploiesti	Factory
4608	PECO STATIA 27 VEST	Ploiesti	Factory
4609	FRIGORIFER PLOIESTI	Ploiesti	Factory
4627	SHELL ROMANIA S.R.L.	Ploiesti	Factory
4632	DIONISOS CEPTURA	Ceptura	Livestock
4643	S.C. EXTRAPAN S.A. - MOARA PRAHOVA	Ploiesti	Factory

Table F.1.6 Water Quality Monitoring Plan for Pollutant Sources in 1997 (1)

Code	Name of Pollutant Source	Name of Outlet	Town Name	Permitted FlowRate	Frequency	Number of Parameters
4004	SINTERREF AZUGA		Azuga	4.1	2	15
4006	BERE AZUGA		Azuga	22.0	12	16
4007	POSTAV AZUGA		Azuga	30.4	12	19
4008	A.D.P.P. AZUGA		Azuga	50.0	12	17
4009	STIAZ AZUGA		Azuga	2.7	4	17
4010	SPITALUL AZUGA		Azuga	1.8	1	17
4011	A.D.P.P. BUSTENI		Busteni	90.0	12	17
4012	SANATORIUL T.B.C. BUSTENI		Busteni	1.5	1	17
4013	CABANA GURA DIHAM		Azuga	0.1	1	14
4014	HARTIA BUSTENI		Busteni	551.0	12	15
4017	S.E.P.P.L. CIMPINA		Cimpina	1.4	2	19
4017	S.E.P.P.L. CIMPINA		Cimpina	0.3	1	19
4018	A.D.P.P.SINAIA		Sinaia	103.0	12	20
4019	S.C.ALPIN S.A. COTA 1400		Sinaia	1.5	1	17
4022	S.G.C.L. BOLDESTI		Scaieni	40.0	12	17
4025	SEPPL PLOIESTI SEC. COMARNI		Posada	2.0	1	15
4026	A.D.P.P., COMARNIC		Comarnic	0.4	1	17
4028	CIVITAS BREAZA		Breaza	31.7	12	17
4034	R.A.G.C.L. CAMPINA		Cimpina	144.0	12	20
4035	S.C.STEAUA ROMANA SA		Cimpina	137.0	12	18
4039	VICTORIA FLORESTI	Evacuare G2	Floresti	135.7	12	20
4039	VICTORIA FLORESTI	Evacuare G1	Floresti	60.5	12	18
4041	S.G.C.L. BAICOI		Baicoi	25.0	12	17
4047	F.E. PLOIESTI	Brazi Poscule	Pisculesti	32.5	12	18
4047	F.E. PLOIESTI	Gib I	Pisculesti	149.0	12	18
4047	F.E. PLOIESTI	Gib II	Pisculesti	121.0	12	18
4051	S.C. PETROBRAZI S.A.	canal GIB	Ploiesti	2000.0	12	15
4051	S.C. PETROBRAZI S.A.	canal MBC	Ploiesti	28.0	12	15
4053	S.C. SERPLO S.A. PLOIESTI		Tatarani	0.3	1	16
4056	S.C. SEPRA S.A.,		Barcanesti	2.5	1	16
4075	PENITENCIARUL TG.NOU		T.G. Nou	2.0	1	17
4076	U.M. 01991 TG. NOU		T.G. Nou	0.5	1	14
4082	COMPORSA STANCESTI		Stancesti	5.3	12	16
4085	CABANA MUNTELE ROSU			0.5	1	14
4088	NERGA MANECIU SECTOR MAN		Maneciu Ungur	10.5	12	17
4089	S.E.P.P.L. MANECIU		Maneciu Ungur	0.9	1	19
4095	STICLOVAL VALENI		Valenii de Munt	0.2	1	17
4098	AGROMEC MAGURELE		Magurele	0.3	1	16
4100	U.M. PLOPENI		Plopeni	7.0	4	21
4102	S.C. CAHIRO S.A.		Scaieni	179.0	4	14
4103	SOCERAM BUCOV	Evacuare 1	Bucov	7.2	1	14
4103	SOCERAM BUCOV	Evacuare 2	Bucov	2.1	1	14
4106	REAL PLEASA		Pleasa	11.3	4	17
4109	EXTRAPAN SEDIU	Morile Pleasa	Pleasa	4.5	2	16
4112	ARPACOR		Bucov	21.3	4	17
4114	UM 01394 BUCOV		Bucov	4.4	2	16
4115	I.C.V.V.VALEA CALUGAREASC		Valea Calugare	1.4	1	17
4117	S.C.ROMFOSFOCHIM SA		Valea Calugare	890.0	12	20
4123	SANCA GHERGHITA		Gherghita	4.5	12	17
4127	GOSCOM SLANIC		Slanic	11.9	4	17
4132	INTEX		Paulesti	0.3	1	18
4137	S.C. VEGA S.A.		Corlatesti	61.7	12	17
4138	PROGRESUL PLOIESTI		Ploiesti	30.4	4	16
4139	EXTRAPAN SEDIU	Romatia 5	Ploiesti	2.0	2	16
4141	24 IANUARIE	Evacuare 1	Ploiesti	1.5	2	13
4141	24 IANUARIE	Evacuare 2	Ploiesti	2.6	2	13
4144	S.C. CIPROM MECTA		Ploiesti	1.4	1	19
4147	DACIA PLOIESTI		Ploiesti	17.3	4	14
4148	S.C.PETROTEL SA PL.		Ploiesti	568.2	12	15
4149	PETROTRANS PLOIESTI		Ploiesti	1.5	2	13
4150	MATIZOL		Berceni	35.0	4	14
4151	U.M. 01959 BERCENI		Berceni	1.3	1	16
4158	S.C. ASTRA ROMANA SA		Corlatesti	300.9	12	15
4162	R.A.G.C. PLOIESTI		Ploiesti	1641.0	12	20
4166	MANASTIREA SUZANA		Cheia	0.7	1	17
4177	S.C. CONETACS S.A.		Mizil	37.6	12	19
4179	VINALCOOL TOHANI		Tohani	0.7	1	12
4183	U.M. 02616		Mizil	10.0	4	18
4209	PREFABRICATE BLEJOI		Blejoi	3.3	2	15
4211	U.M. VALENII DE MUNTE-SECTI		Valenii de Munt	1.9	4	18
4213	VULTURUL COMARNIC		Comarnic	12.5	4	18
4223	CONSERVE MAGURELE		Magurele	2.7	2	18
4225	TABERE SUZANA		Sinaia	1.0	1	16
4248	R.A.G.C.L. VALEA CALUGAREA		Valea Calugare	610.0	12	17
4257	U.M.01532		Paulesti	0.1	1	16
4273	COPIMEX BRAZI		Brazi	4.3	2	20
4286	VINALCOOL CEPTURA			3.1	2	17
4292	S.C. PETROUTILAJ S.A	Sediu	Cimpina	34.0	12	11

Table F.1.6 Water Quality Monitoring Plan for Pollutant Sources in 1997 (2)

Code	Name of Pollutant Source	Name of Outlet	Town Name	Permitted FlowRate	Frequency	Number of Parameters
4292	S.C. PETROUTILAJ S.A	Secua Tractoa	Cimpina	17.0	12	10
4296	S.C.TOHANI S.A.		Vadu Sapat	0.5	1	17
4298	UNIT. TERIT. 440		Gura Vitioarei	0.3	1	16
4301	S.G.C.L. FLORESTI		Floresti	30.0	12	17
4316	U.M. 01819		Crangul Lui Bot	15.2	4	18
4317	APEVITA PREDEAL		Predeal	64.0	12	17
4363	I.N.C.A.F.ABATORUL VALENI		Valenii de Munt	0.2	1	16
4364	VIN.V.CALUGAREASCA		Valea Calugare	0.0	1	19
4364	VIN.V.CALUGAREASCA		Valea Calugare	0.1	1	17
4366	GES BLEJOI	sec. Bleioi	Bleioi	1.4	1	15
4374	S.G.C.L.URLATI		Albesti-Paleolo	23.7	12	17
4392	VINALCOOL POIANA CIMPINA		Poiana Campin	0.0	1	17
4410	SPITAL SLANIC		Slanic	0.8	1	15
4501	EXPLOATAREA MINIERA FILIP		Filipestii de Pad	29.0	12	17
4504	SANATORIUL TBC FLORESTI		Floresti	0.3	1	17
4506	R.A.G.C.L. VALENI		Valenii de Munt	85.0	12	17
4507	CAMINUL DE BATRINI MISLEA		Scorteni	1.6	1	18
4512	UBEMAR		Ploiesti	4.8	2	13
4513	UM 01808 PLOIESTI		Ploiesti	1.0	1	16
4517	POLIGON P.S.I.BOLDESTI UM 04		Boldesti-Scaieni	0.1	1	17
4520	VINALCOOL VARBILAU		Varbilau	1.5	4	17
4521	VINALCOOL BALTESTI			0.8	1	17
4522	MOTEL VADU CERBULUI		Sinaia	0.1	1	15
4529	VINALCOOL POSESTI		Posesti	2.0	2	17
4532	SALINA SLANIC		Slanic	0.6	1	17
4535	STATIA SOL CHEIA		Cheia	0.0	1	17
4566	GR.SC.CIMPINA		Cimpina	1.2	2	15
4568	U.M.1065		Neeoiesti	1.0	1	16
4578	S.G.C.L. PLOPENI		Plopeni	98.0	12	17
4591	SPITAL BREAZA		Breaza	0.7	1	18
4593	SPITAL VOILA		Cimpina	2.4	1	17

Table F.1.7 Ranking of Laboratory for Sewage and Drinking Water

	Rank A	Rank B	Rank C
Space	- Enough	- Two rooms and one for balances	- One room
Equipment	- Gas chromatograph - Incubator (one for BOD (20 C), one for microbiological analysis (37 C) - Water purification device - Direct reading balance - Atomic absorption spectrometer - Glass washing device - Autoclave - Vacuums pump - Oil contents analyzer - BOD track - Other equipment mentioned right	- Titration device - Water boiling device for COD - Gas burner - Digestion device - Conductivity meter - pH meter - Spectrometer - Stirrer magnetic - Water bath - Microscope - Other equipment mentioned right	- Balance (simple one) - Drier - Distillation apparatus - Water purification device - Glass instrument (flask, beaker, measuring cylinder, vessel for dissolved oxygen analysis, desiccator, liquid separation device, pipette) - Filter - Various reagents - Ceramic plate

Table F.1.8 Laboratory for Drinking Water in the Prahova River Basin

Name of Town	Com-pany Code	Agency/Company Name	Rank	No. of Room	No. of Staff	Main Equipment
Maneciu		Manaciu Laboratory, Romanian Waters Authority	C	2	- Engineer 1 - Worker 6	Incubator Balance Drier Distillation apparatus
Valenii de Munte		Valenii de Munte Laboratory, Romanian Waters Authority	B	4	- Engineer 4 - Workers 12	Autoclave Incubator Spectrometer pH meter Microscope Water bath Balance Conductivity meter Drier
Cimpina		Paltinu Laboratory, Romanian Waters Authority	B	6	- Engineer 6 - Workers 20	Same as those in Valenii de Munte Laboratory
Bucuresti		ICIM, MWFEP		Build-ing		
Cimpina		ICPT,		Build-ing		
Cimpina	4032	R.A.G.C.P.CIMPINA	C	3	- Engineer 1 - Worker 5	Balance Drier Distillation apparatus Spectrometer
Ploiesti	4162	R.A.G.C. PLOIESTI	C	4	- Engineer 3 - Worker 13	Balance Drier Distillation apparatus Water bath Autoclave
Azuga	4008	A.D.P.P. AZUGA	No Laboratory			
Baicoi	4041	S.G.C.L. BAICOI	No Laboratory			
Boldesti-Scaieni	4022	S.G.C.L. BOLDESTI	C		- Engineer 1	
Breaza	4028	CIVITAS BREAZA	C		- Engineer 1 - Worker 1	
Busteni	4011	A.D.P.P. BUSTENI	No Laboratory			
Comarnic	4026	A.D.P.P.. COMARNIC				
Plopeni	4578	S.G.C.L. PLOPENI	No Laboratory			
Sinaia	4018	A.D.P.P.SINAIA	B	10	- Engineer 1 -Biologist - Assistant 6	Incubator Water purification device pH meter Spectrometer Drier Distillation apparatus Water bath Microscope
Slanic	4127	GOSCOM SLANIC	No Laboratory			
Urlati	4603	R.A.G.C.L. URLATI	No Laboratory			
Valenii de Munte	4506	R.A.G.C.L. VALENI	No Laboratory			
Maneciu	4088	NERGA MANECIU SECTOR MANECIU	No Laboratory			
Cheia	4086	NERGA MANECIU SECTOR CHEIA	No Laboratory			
Predeal	4317	APEVITA PREDEAL	No Laboratory			

Table F.1.9 Laboratory for Sewerage in the Prahova River Basin

Name of Town	Com-pany Code	Agency/Company Name	Rank	No. of Room	No. of Staff	Main Equipment
Ploiesti		Romanian Waters Authority CBBH (Laboratory for Water Analysis)	B	4	- Engineer 6 - Assistant 2 - Worker 5	Incubator Conductivity meter pH meter Microscope Spectrometer Distillation apparatus Water bath Balance Drier
Bucuresti		ICIM, MWFEP	A	Build-ing		
Cimpina		ICPT,	A	Build-ing		
Cimpina	4032	R.A.G.C.P.CIMPINA	C	3	- Engineer 1 - Worker 2	Balance Drier Distillation apparatus Water bath pH meter Spectrometer
Ploiesti	4162	R.A.G.C. PLOIESTI	C	4	- Engineer 1 - Worker 7	Balance Drier Distillation apparatus Water bath
Azuga	4008	A.D.P.P. AZUGA	No Laboratory			
Baicoi	4041	S.G.C.L. BAICOI	No Laboratory			
Boldesti-Scaieni	4022	S.G.C.L. BOLDESTI	C		- Engineer 1	Balance Drier Distillation apparatus
Breaza	4028	CIVITAS BREAZA	C		- Engineer 1 - Worker 1	Drier Distillation apparatus pH-meter
Busteni	4011	A.D.P.P. BUSTENI	No Laboratory			
Comarnic	4026	A.D.P.P.. COMARNIC	No Laboratory			
Plopeni	4578	S.G.C.L. PLOPENI	No Laboratory			
Sinaia	4018	A.D.P.P.SINAIA	C		- Engineer 1 - Assistant 4	Conductivity meter Spectrometer Drier Distillation apparatus Water bath
Slanic	4127	GOSCOM SLANIC	No Laboratory			
Urlati	4603	R.A.G.C.L. URLATI	C		- Assistant 1	Balance Drier Water bath Distillation meter
Valenii de Munte	4506	R.A.G.C.L. VALENI	No Laboratory			
Maneciu	4088	NERGA MANECIU SECTOR MANECIU	No Laboratory			
Cheia	4086	NERGA MANECIU SECTOR CHEIA	No Laboratory			
Predeal	4317	APEVITA PREDEAL	No Laboratory			

Table F.2.1 Parameters to Be Observed under Romanian Standards (1/2)

Parameter	Admissible Value: Surface Water*1 I	Surface Water*1 II	Surface Water*1 III	Wastewater: To River *2	Wastewater: To Sewerage *3	Equipment
Color		Colorless				-
Odor		Odorless				-
pH		6.5~8.5		6.5~8.5	6.5~8.5	10
Ammonium(ionised NH_4^+), mg/l	1	3	10	2	30	7
Ammonia (non-ionised NH_3), mg/l	0.1	0.3	0.5			7
Nitrate(NO_3^-), mg/l	10	30		25		3, 7
Nitrite (NO_2^-), mg/l	1	3		1		7
Total Nitrate (T-N)				10		7, 18
Calcium (Ca^{2+}) , mg/l	150	200	300	300		3, 4
Chlorine(free residual Cl_2), mg/l		0.005		0.1	1	15
Chloride (Cl^-), mg/l	250	300	300	500		3, 15
Carbon Dioxide(free), mg/l		50				15
Phenol(steam extraction,(C_6H_5OH), mg/l	0.001	0.02	0.05	0.1	30	7, 18
Iron(total) (Fe^{2+}+Fe^{3+}), mg/l	0.3	1	1	5		4
Phosphorus (T-P), mg/l		0.1		1	5	7
Phosphates (PO_4^{3-})				4		3, 7
Hydrogen Sulfide(H_2S) and sulfide (S^{2-}),mg/l	present	present	0.1	0.1	0.5	7
Sulfides (SO_3^{2-})				1	10	3, 7
Magnesium (Mg^{2+}), mg/l	50	100	200	100	1	4
Manganese (Mn^{2+}), mg/l	0.1	0.3	0.8	1		4
Dissolved Oxygen (DO), mg/l	6	5	4			15
Petroleum products , mg/l		0.1		1		13
Substance extracted by Petroleum Ether, mg/l				5	20	3, 7
Total dissolved solids, mg/l	750	1000	1200			13
Sodium (Na^+), mg/l	100	200	200			4
BOD, mg/l	5	7	12	20	300	8,14
$COD_{(Mn)}$, mg/l	10	15	25	40		16
$COD_{(Cr)}$, mg/l	10	20	30	70	500	28
Sulfate (SO_4^{2-}), mg/l	200	400	400		400	7
Silver (Ag^+), mg/l		0.01		0.1		4
Arsenic (As), mg/l		0.01		0.1		4
Aluminum (Al^{3+}), mg/l				8		7
Barium , mg/l		1				4
Cadmium (Cd^{2+}) ,mg/l		0.003		0.1	0.1	4
Cyanide (CN^-), mg/l		0.01		0.05	0.5	7, 8
Cobalt (Co^{2+}), mg/l		1		1		4, 7
Chromium hexavalent (Cr^{6+}), mg/l		0.5		0.1	0.1	4, 7
Chromium trivalent (Cr^{3+}), mg/l		0.05		1	1	4
Copper (Cu^{2+}), mg/l		0.05		0.1	0.1	7

Table F.2.1 Parameters to Be Observed under Romanian Standards (2/2)

Parameter			Admissible Value: Surface Water*1 and Groundwater I	II	III	Wastewater: To River *2	To Sewerage *3	Equipment
Anionic Detergents, mg/l				0.5		0.5	30	7
Fluoride (F), mg/l				0.5		0.5		1, 2, 3
Polycyclic aromatic hydrocarbons, mg/l				0.0002				4
Mercury (Hg^{2+}), mg/l				0.001		0.005		4
Molybdenum (MO^{2+}), mg/l				0.05		0.1		4
Nickel (Ni^{2+}), mg/l				0.1		0.1	1	1, 2, 3
Pesticides	herbicides	triazine, mg/l		0.001				1, 2, 3
		trizinone, mg/l		0.001				1, 2, 3
		toluidine, mg/l		0.001				1, 2, 3, 24
	insecticides	organochorine mg/l		0.0001				1, 2, 3
		organophosphorus, mg/l		not present				1, 2, 3, 24
		organometallic, mg/l		not present				1, 2, 3, 24
	nitro-derivatives,mg/l			not present				1, 2, 3, 24
Lead (Pb^{2+}), mg/l				0.05		0.2	0.5	4
Selenium (Se^{2+}), mg/l				0.01		0.1		4
Zinc (Zn^{2+}), mg/l				0.03		0.5	1	4
Total Coliforms, nr./100 m				100000		1 million		34, 35
Total Suspended Solids (SS)						60	300	20,31
Residue, mg/l						2000		20,27,31
Fecal Coliform, nr./100 m						10000		35
Fecal Streptococci, nr. /100 m						5000		35
Salmonella, nr. /100m						N.D.		35
				51		44	21	

Note *1: STAS 4706/88, *2 : NTPA-001, *3 : NTPA-002

Table F.2.2 Parameters to Be Observed by Activities

Groupe	Code	Activity	Characteristics of Wastewater	to River			to Domestic Sewerage System		
				No. of Channels	No. of Common Parameters	No. of Additional Parameters	No. of Channels	No. of Common Parameters	No. of Additional Parameters
1	0141 0143B 0143C 05A 05B	Agricultural Activities Irrigation (Flowers) Irrigation (Wine) Fish Farming Fish Farming (Clean Water)	Organic substances, fertilizer and pesticide	5	13 (pH, NH_4^+, NO_3^-, NO_2^-, T-N, Cl^-, T-P, PO_4^{3-}, BOD, $COD_{(Mn)}$, $COD_{(Cr)}$, SS, and Residue)	4 (Iron, Mn^{2+}, Al^{3+}, Mg^{2+})	0	6 (pH, NH_4^+, T-P, BOD, $COD_{(Cr)}$, SS)	2 (Mg^{2+}, SO_4^{2-})
2	11 14 23 24 25 29 60 63	Crude Oil Extraction Mining/Quarrying Petroleum Refinery Chemicals/Chemical Products Rubber/Plastic Products Machinery/Equipment Land Transport Transport Activities	Substances related to oil	21	13	12 (Phenol, Iron, H_2S (S_2^-), Petroleum products, Subtances extracted by petroleum ether, Cd^{2+}, CN^-, Pb^{2+}, Cr^{6+}, Cr^{3+}, Hg, F^-)	36	6	9 (Phenol, H^2S (S2$^-$), Substances extracted by petroleum ether, Cd^{2+}, CN^-, Pb^{2+}, Cr^{6+}, Cr^{3+}, $SO4^{2-}$)
3	012A 012B 15 21	Livestock Farm Livestock Farm (Small) Food/Beverage Paper/Paper Products	High organic substances including inorganic substances	12	13	10 Phenol, Cd^{2+}, CN^-, Pb^{2+}, Cr^{6+}, Cr^{3+}, Hg, Iron, H^2S (S^{2-}), Substance extracted by petroleum ether	8	6	8 (Phenol, Cd^{2+}, CN^-, Pb^{2+}, Cr^{6+}, Cr^{3+}, H^2S (S^{2-}), Substance extracted by petroleum ether
4	17 19 20 26 27 28 31 36 40A 45 85	Textiles Tanning/Dressing Leather Wood Non-Metallic Mineral Products Basic Metals Metal Products Fabricated Electrical Machinery/Apparatus Furniture Electricity/Gas/Water Supply Construction Health/Social Work	Heavy metals and toxic substance	27	13	21 (Phenol, Iron, Mn^{2+}, SO_3^{2-}, Ag^+, As, Al^{3+}, Cd^{2+}, CN^-, Co^{2+}, Cr^{6+}, Cr^{3+}, Cu^{2+}, F^-, Hg^{2+}, MO^{2+}, Ni^{2+}, Pb^{2+}, Mg^{2+}, Se^{2+}, Zn^{2+})	25	6	11 (Phenol, SO_3^{2-}, Cd^{2+}, CN^-, Cr^{6+}, Cr^{3+}, Cu^{2+}, Ni^{2+}, Pb^{2+}, Mg^{2+}, Zn^{2+})
5	51 55 64 75 80 92	Wholesale Trade/Commission Trade Hotel/Restaurant Post/Telecommunication Public Administration/Defense Education Recreational/Cultural/Sportin	Organic substances and coliform	21	13	10 (Ca^{2+}, Cl_2, Anionic detergents, Iron, Mn^{2+}, Mg^{2+}, Total coliforms, Fecal coliforms, Fecal streptococci, Salmonella)	13	6	4 (Cl_2, Anionic detergents, SO_4^{2-}, Mg^{2+})

Table F.2.3 List of Equipment for Water Quality Monitoring

No.	Description	Location	Unit	Unitprice (US$)	Amount (US$)
Laboratory Equipment					
1	Ordinary gas chromatograph	A	2	21,200	42,400
2	Gas chromatograph MS	A	1	212,010	212,010
3	Liquid chromatograph	A	1	106,010	106,010
4	Atomic absorption spectrometers	A	2	42,400	84,800
5	Device for radioactivity analysis	A	1	70,670	70,670
6	TOC meter	A	1	21,200	21,200
7	UV-VIS spectrometer	B	2	17,670	35,340
8	Incubator for BOD(20C)-large size	B	1	17,670	17,670
9	Distillation apparatus	B	5	2,120	10,600
10	pH-meters	B	10	1,410	14,100
11	Glass washing device	B	1	350	350
12	Vacuum pump	B	5	1,410	7,050
13	Oil contents analyzer	B	5	17,670	88,350
14	BOD track with 6 bottles	B	5	7,070	35,350
15	Titration device	B	3	7,070	21,210
16	Water boiling device for COD	B	2	7,070	14,140
17	Gas burner	B	10	140	1,400
18	Digestion device				
	for cyanides	B	20	7,070	141,400
	for phenols	B	10	7,070	70,700
	for ordinary	B	5	3,530	17,650
19	Conductivity-meter	B	2	1,410	2,820
20	Drier large size	B	2	3,530	7,060
21	Glass instrument(flask, beaker, measuring cylinder, vessel for dissolved oxygen analysis, desiccator, liquid separation device, pipette)	B	100	70	7,000
22	Ceramic plate	B	1	3,530	3,530
23	Various reagents	B	1	14,130	14,130
24	Rotary evaporator	B	1	2,120	2,120
25	Muffle	B	1	3,530	3,530
26	Sand baths	B	5	1,410	7,050
27	Water baths large size(10 places)	B	4	1,410	5,640
28	Hot plate	B	2	710	1,420
29	Treatment system for waste water coming from	B	1	24,730	24,730
30	Technical balance	C	2	710	1,420
31	Direct reading analytical balances	C	5	1,060	5,300
32	Portable checker	D	5	3,530	17,650
33	Device for flow rate measurement	D	1	3,530	3,530
34	Autoclave	E	5	1,410	7,050
35	Incubator for microbiological analysis(37C)-middle size	E	1	3,530	3,530
	Sub-total				1,129,910
Others					
1	Furniture				
	Large size table (4m x 2m)		5	1,410	7,050
	Middle size table (2m x 1m)		13	710	9,230
	Locker for 3 persons		6	710	4,260
	Desk & chair		18	1,060	19,080
	Meeting table		3	1,060	3,180
	Chair		15	350	5,250
2	Large refrigerators		4	2,120	8,480
3	Air condition facilities		1	21,200	21,200
4	Microscope		2	7,070	14,140
5	DATA processor		2	14,130	28,260
6	4WD Vehicle w/ air conditionor & radio communication device		3	35,340	106,020
	Sub-total				226,150
	Total				1,356,060

Table F.2.4 List of Tables in Water Management Database

SYSTEM	NAME	Explanation
WATER SUPPLY/ DISCHARGE	MASTER_INFBAN	Information about Water users
	MASTER_CAPRET	Characteristics of intake from the networks
	MASTER_CAPSUB	Characteristics of underground intakes
	MASTER_CAPSUP	Characteristics of surface intakes
	MASTER_QITEM	Information about water quality parameter and code number (Fig F.2.8)
	MASTER_RESTITU	Characteristics of water discharging points
	DATA_VOLICF	Data on manthly volumes (underground,intakes)
	DATA_VOLICR	Data on manthly volumes (network,intakes)
	DATA_VOLICS	Data on manthly volumes (surface,intakes)
	DATA_VOLIRR	Data on manthly volumes (network,discharge)
	DATA_VOLIRS	Data on manthly volumes (surface,discharge)
	D_QUALITY_DATE	Code of water user and date of water quality observation (Fig. F.2.9)
	D_QUALITY_DATA	Data on water quality (Each channel, each paremeter) (Fig. F.2.9)
	DATA_QUALITYA	Data on water quality (Each channel, all paremeters) (Fig. F.2.10)
	DATA_GRAPH	Work table for water quality graph
	DATA_PIVOT	Work table for summary table
	DBF_INFBAN	Print and export table (same data of KING II INFBAN)
	DBF_CAPRET	Print and export table (same data of KING II CAPRET)
	DBF_CAPSUB	Print and export table (same data of KING II CAPSUB)
	DBF_CAPSUP	Print and export table (same data of KING II CAPSUP)
	DBF_RESTITU	Print and export table (same data of KING II RESTITU)
	DBF_VOLICF	Print and export table (same data of KING II VOLICF)
	DBF_VOLICR	Print and export table (same data of KING II VOLICR)
	DBF_VOLICS	Print and export table (same data of KING II VOLICS)
	DBF_VOLIRR	Print and export table (same data of KING II VOLIRR)
	DBF_VOLIRS	Print and export table (same data of KING II VOLIRS)
IRRIGATION SYSTEM	MASTER_INFIRG	Information about Irrigation systems
	MASTER_CSUBIR	Characteristics of underground intakes
	MASTER_CSUPIR	Characteristics of intake from the networks
	MASTER_CSURIR	Characteristics of surface intakes
	MASTER_EVACIRG	Characteristics of water discharging points
	DATA_VILICF	Data on manthly volumes (underground,intakes)
	DATA_VILICR	Data on manthly volumes (network,intakes)
	DATA_VILICS	Data on manthly volumes (surface,intakes)
	DBF_INFIRG	Print and export table (same data of KING II INFIRG)
	DBF_CSUBIR	Print and export table (same data of KING II CSUBIR)
	DBF_CSUPIR	Print and export table (same data of KING II CSUPIR)
	DBF_CSURIR	Print and export table (same data of KING II CSURIR)
	DBF_EVACIRG	Print and export table (same data of KING II EVACIRG)
	DBF_VILICF	Print and export table (same data of KING II VILICF
	DBF_VILICR	Print and export table (same data of KING II VILICR)
	DBF_VILICS	Print and export table (same data of KING II VILICS)
PISCICULTURE	MASTER_INFPIS	Information about A P
	DATA_VPLIC	Data on manthly volumes (intakes)
	DATA_VPLIR	Data on manthly volumes (discharge)
	DBF_INFPIS	Print and export table (same data of KING II INFPIS)
	DBF_VPLIC	Print and export table (same data of KING II VIPLIC)
	DBF_VPLIR	Print and export table (same data of KING II VPLIR)

Table F.2.5 List of Query in Water Management Database

SYSTEM	NAME	Explanation
WATER SUPPLY/ DISCHARGE	QUERY_INFBAN	For data input to INFBAN table
	QUERY_CAPRET	For data input to CAPRET table
	QUERY_CAPSUB	For data input to CAPSUB table
	QUERY_CAPSUP	For data input to CAPSUP table
	QUERY_QITEM	For data input data to QITEM table
	QUERY_QUALITYA	For data input to QUALITYA table
	QUERY_RESTITU	For data input to RESTITU table
	QUERY_VOLICF	For data input to VOLICF table
	QUERY_VOLICR	For data input to VOLICR table
	QUERY_VOLICS	For data input to VOLICS table
	QUERY_VOLIRR	For data input to VOLIRR table
	QUERY_VOLIRS	For data input to VOLIRS table
	Q_QUALITY_EDIT	For data update/edit to D_QUALITY_DATA table
	QUERY_GRAPH	Data processing for water quality graph
	QUERY_PIVOT1	Data processing for water quality summary
	QUERY_PIVOT2	ditto
	QUERY_PIVOT3	ditto
	ADD_DBF_INFBAN	Add data to DBF_INFBAN for pirnting and/or export
	ADD_DBF_CAPRET	Add data to DBF_CAPRET for printing and/or export
	ADD_DBF_CAPSUB	Add data to DBF_CAPSUB for printing and/or export
	ADD_DBF_CAPSUP	Add data to DBF_CAPSUP for printing and/or export
	ADD_DBF_RESTITU	Add data to DBF_RESTITU for printing and/or export
	ADD_DBF_VOLICF	Add data to DBF_VOLICF for printing and/or export
	ADD_DBF_VOLICR	Add data to DBF_VOLICR for printing and/or export
	ADD_DBF_VOLICS	Add data to DBF_VOLICS for printing and/or export
	ADD_DBF_VOLIRR	Add data to DBF_VOLIRR for printing and/or export
	ADD_DBF_VOLIRS	Add data to DBF_VOLIRS for printing and/or export
	CLEAR_DBF_INFBAN	Delete old data from DBF_INFBAN before adding data for printing and/or export
	CLEAR_DBF_CAPRET	Delete old data from DBF_CAPRET before adding data for printing and/or export
	CLEAR_DBF_CAPSUB	Delete old data from DBF_CAPSUB before adding data for printing and/or export
	CLEAR_DBF_CAPSUP	Delete old data from DBF_CAPSUP before adding data for printing and/or export
	CLEAR_DBF_RESTITU	Delete old data from DBF_RESTITU before adding data for printing and/or export
	CLEAR_DBF_VOLICF	Delete old data from DBF_VOLICF before adding data for printing and/or export
	CLEAR_DBF_VOLICR	Delete old data from DBF_VOLICR before adding data for printing and/or export
	CLEAR_DBF_VOLICS	Delete old data from DBF_VOLICS before adding data for printing and/or export
	CLEAR_DBF_VOLIRR	Delete old data from DBF_VOLIRR before adding data for printing and/or export
	CLEAR_DBF_VOLIRS	Delete old data from DBF_VOLIRS before adding data for printing and/or export
	Q_QUALITY_DATA01～60	Query for water quality editing
	REPORT_QUALITYA	Making table of selected water quality data from DATA_QUALITYA table for printing using REPORT_QUALITYA
IRRIGATION SYSTEM	QUERY_INFIRG	For data input to INFIRG
	QUERY_CSUBIR	For data input to CSUBIR
	QUERY_CSUPIR	For data input to CSUPIR
	QUERY_CSURIR	For data input to CSURIR
	QUERY_EVACIRG	For data input to EVACIRG
	QUERY_VILICF	For data input to VIRICF
	QUERY_VILICR	For data input to ViLICR
	QUERY_VILICS	For data input to VILICS
	ADD_DBF_CSUBIR	Add data to DBF_CSUBIR for printing and/or export
	ADD_DBF_CSUPIR	Add data to DBF_CSUPIR for printing and/or export
	ADD_DBF_CSURIR	Add data to DBF_CSURIR for printing and/or export
	ADD_DBF_EVACIRG	Add data to DBF_EVACIRG for printing and/or export
	ADD_DBF_INFIRG	Add data to DBF_INFIRG for printing and/or export
	ADD_DBF_VILICF	Add data to DBF_VILICF for printing and/or export
	ADD_DBF_VILICR	Add data to DBF_VILICR for printing and/or export
	ADD_DBF_VILICS	Add data to DBF_VILICS for printing and/or export
	CLEAR_DBF_CSUBIR	Delete old data from DBF_CSUBIR before adding data for printing and/or export
	CLEAR_DBF_CSUPIR	Delete old data from DBF_CSUPIR before adding data for printing and/or export
	CLEAR_DBF_CSURIR	Delete old data from DBF_CSURIR before adding data for printing and/or export
	CLEAR_DBF_EVACIRG	Delete old data from DBF_EVACIRG before adding data for printing and/or export
	CLEAR_DBF_INFIRG	Delete old data from DBF_INFIRG before adding data for printing and/or export
	CLEAR_DBF_VILICF	Delete old data from DBF_VILICF before adding data for printing and/or export
	CLEAR_DBF_VILICR	Delete old data from DBF_VILICR before adding data for printing and/or export
	CLEAR_DBF_VILICS	Delete old data from DBF_VILICS before adding data for printing and/or export
PISCICULTURE SYSTEM	QUERY_INFPIS	For data input to INFPIS
	QUERY_VPLIC	For data input to VPLIC
	QUERY_VPLIR	For data input to VPLIR
	ADD_DBF_INFPIS	Add data to DBF_INFPIS for printing and/or export
	ADD_DBF_VPLIC	Add data to DBF_VPLIC for printing and/or export
	ADD_DBF_VPLIR	Add data to DBF_VPLIR for printing and/or export
	CLEAR_DBF_INFPIS	Delete old data from DBF_INFPIS before adding data for printing and/or export
	CLEAR_DBF_VPLIC	Delete old data from DBF_VPLIC before adding data for printing and/or export
	CLEAR_DBF_VPLIR	Delete old data from DBF_VPLIR before adding data for printing and/or export

Table F.2.6 List of Forms in Water Management Database

SYSTEM	NAME	PROC
WATER SUPPLY/ DISCHARGE	QUERY_INFBAN	Data input/edit to INFBAN (Fig. F.2.11)
	QUERY_CAPRET	Data input/edit to CAPRET
	QUERY_CAPSUB	Data input/edit to CAPSUB
	QUERY_CAPSUP	Data input/edit to CAPSUP
	QUERY_VOLICF	Data input/edit to VOLICF (Fig. F.2.12)
	QUERY_VOLICR	Data input/edit to VOLICR
	QUERY_VOLICS	Data input/edit to VOLICS
	QUERY_VOLIRR	Data input/edit to VOLIRR
	QUERY_VOLIRS	Data input/edit to VOLIRS
	Q_QUALITY_INPUT_ALL	Data (water quality) input to DATA_QUALITYA (Fig. 2.12)
	Q_QUALITY_EDIT	Data (water quality) update/edit of D_QUALITY_DATA (Fig. 2.13)
	SELECT_GRAPH	Selection of Water User, etc, for graph (Fig. 2.14)
	FORMS_GRAPH	Screen to indciate graph (Fig. 2.14)
	SELECT_PIVOT1	Selection of water user,parameter and date for summary table form 1 (Fig. F.2.15
	SELECT_PIVOT2	Selection of water user and date for summary table 2 (Fig. F.2.16)
	SELECT_PIVOT3	Selection of date for summary table 3 (Fig. F.2.17)
	FORMS_PIVOT	Screen to indicate summary table
	SELECT_REPORT_QULITYA	Selection of code and data for print of water quality data record (F.2.18)
IRRIGATION SYSTEM	QUERY_INFIRG	Data input/edit to INFIRG
	QUERY_CSUBIR	Data input/edit to CSUBIR
	QUERY_CSUPIR	Data input/edit to CSUPIR
	QUERY_CSURIR	Data input/edit to CSURIR
	QUERY_EVACIRG	Data input/edit to EVACIRG
	QUERY_VILICF	Data input/edit to VILICF
	QUERY_VILICR	Data input/edit to VILICR
	QUERY_VILICS	Data input/edit to VILICS
PISCICOLE SYSTEM	QUERY_INFPIS	Data input/edit to INFPIS
	QUERY_VPLIC	Data input/edit to VPLIC
	QUERY_VPLIR	Data input/edit to VPLIR

Table F.2.7 List of Reports in Water Management Database

SYSTEM	NAME	Explanation
WATER SUPPLY/ DISCHARGE	DBF_INFBAN	Report of INFBAN (Fig. 2.19)
	DBF_CAPRET	Report of CAPRET
	DBF_CAPSUB	Report of CAPSUB
	DBF_CAPSUP	Report of CAPSUP
	DBF_RESTITU	Report of RESTITU
	DBF_VOLICF	Report of VOLICF (Fig. 2.20)
	DBF_VOLICR	Report of VOLICR
	DBF_VOLICS	Report of VOLICS
	DBF_VOLIRR	Report of VOLIRR
	DBF_VOLIRS	Report of VOLIRS
	R_QUALITY_LIST NO.5	Report of selected water quality data reacord (Fig. F.2.21)
IRRIGATION SYSTEM	DBF_INFIRG	Report of INFRG
	DBF_CSUBIR	Report of CSUBIR
	DBF_CSUPIR	Report of CSUPIR
	DBF_CSURIR	Report of CSURIR
	DBF_EVACIRG	Report of EVACIRG
	DBF_VILICF	Report of VILICF
	DBF_VILICR	Report of VILICR
	DBF_VILICS	Report of VILICS
PISCICUTRE SYSTEM	DBF_INFPIS	Report of INFPIS
	DBF_VPLIC	Report of VPLIC
	DBF_VPLIR	Report of VPLIR

Table F.3.1 Accidental Pollution Record (1)

Accidental Pollution Record

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AccNo	
PollutantCode	4149
Name of Factory	PETROTRANS PLOIESTI
DateStarted	89/06/19 7:00:00
DateEnded	
RiverAffected	Vilusceiul Cerbului
Location	400m upstream of the Paltinu Dam
Latitude	45 deg 15.012 min
Longitude	25 deg 44.641 min
Substances	Diesel Oil
Cause	Leakage of oil from crack appeared on oil pipeline
DamageAmount	None
DamageCondition	Leaked oil entered the reservoir but this was burnt and no damage was caused
DamageToWaterSupply	None
Penalty	None
Action Taken	Straw dam was constructed and crack was covered by steel metal

Accidental Pollution Record

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AccNo	
PollutantCode	4149
Name of Factory	PETROTRANS PLOIESTI
DateStarted	92/01/01
DateEnded	
RiverAffected	
Location	150m upstream of Paltinu dam
Latitude	45 deg 14.406 min
Longitude	25 deg 44.377 min
Substances	Diesel Oil
Cause	Leakage of oil from crack
DamageAmount	None
DamageCondition	Oil did not reached the reservoir
DamageToWaterSupply	None
Penalty	None
Action Taken	Straw dam was constructed to prevent from flowing into the reservoir. The crack was covered by the metal.

Table F.3.1 Accidental Pollution Record (2)

Accidental Pollution Record

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AccNo	
PollutantCode	4031
Name of Factory	S.C. PETROBRAZI S.A.
DateStarted	93/07/05
DateEnded	
RiverAffected	Prahove
Location	Pieoulesti bridge
Latitude	44 deg 31.142 min
Longitude	26 deg 0.539 min
Substances	Sulphide(S2+)
Cause	One pump was damaged
DamageAmount	N.A.
DamageCondition	N.A.
DamageToWaterSupply	None
Penalty	250,000 lei
Action Taken	None

Accidental Pollution Record

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AccNo	
PollutantCode	4047
Name of Factory	F.E. PLOIESTI
DateStarted	93/09/30 8:00:00
DateEnded	93/09/30 9:00:00
RiverAffected	Prahova
Location	Pieoulesti bridge
Latitude	44 deg 31.142 min
Longitude	26 deg 0.535 min
Substances	Oil fuel
Cause	Fossile of fuel oil pipeline, near to opening point of domestic sewer system
DamageAmount	N.A.
DamageCondition	N.A.
DamageToWaterSupply	None
Penalty	250,000 lei
Action Taken	Straw oil fence was installed to collect oil

Table F.3.1 Accidental Pollution Record (3)

Accidental Pollution Record

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AccNo	
PollutantCode	4149
Name of Factory	PETROTRANS PLOIESTI
DateStarted	95/01/01
DateEnded	
RiverAffected	
Location	3 km upstream of the Paltinu Dam
Latitude	45 deg 16.53 min
Longitude	25 deg 43.867 min
Substances	Diesel Oil
Cause	Leakage of oil from the oil pipeline
DamageAmount	
DamageCondition	Oil was stoped by straw dams before it flew into the reservoir.
DamageToWaterSupply	None
Penalty	
Action Taken	Straw dam construction

Accidental Pollution Record

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AccNo	
PollutantCode	4149
Name of Factory	PETROTRANS PLOIESTI
DateStarted	95/03/07 20:00:00
DateEnded	95/05/24
RiverAffected	Doftana
Location	Downstream of Paltinu Lake and Upstream of Voiiu Purification Plant
Latitude	45 deg 13.433 min
Longitude	25 deg 43.883 min
Substances	Diesel oil
Cause	Leakage of oil from two (2) corrosion points of the pipeline which was found on March 16.
DamageAmount	90,269,420 lei
DamageCondition	
DamageToWaterSupply	Stop of drinking water supply to Cimpina, Breaza, Comu, Baneasi, Telega, Floresti, Moreni, Baicoi for the period mentioned above and shortage of dringking water in Ploiesti for the same period.
Penalty	470137 lei as fine
Action Taken	The PETROTRANS stoped the pump for pipeline and shut the gates, replaced the broken pipe section of 20 m. Romanian Waters deviated the riverocurse to prevent from inflow of leaked oil.

Table F.3.1 Accidental Pollution Record (4)

Accidental Pollution Record

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AccNo	
PollutantCode	4137
Name of Factory	S.C. VEGA S.A.
DateStarted	95/06/15 3:00:00
DateEnded	95/06/15 8:00:00
RiverAffected	Dimbu
Location	Downstream of RAGC Ploiesti discharging point
Latitude	44 *deg* 57.271 *min*
Longitude	26 *deg* 1.338 *min*
Substances	Petroleum products
Cause	Overflow at the wastewater treatment due to heavy rainfall
DamageAmount	N.A.
DamageCondition	Limited area
DamageToWaterSupply	None
Penalty	1,000,000 lei
Action Taken	Installation of straw oil fence just upstream of the junction with the Teleajen River

Accidental Pollution Record

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AccNo	
PollutantCode	4343
Name of Factory	CONPET SECTIA SIRT
DateStarted	95/08/04 13:30:00
DateEnded	95/08/04 18:00:00
RiverAffected	Recea Spring
Location	Upstream junction with Teleajen
Latitude	44 *deg* 50.92 *min*
Longitude	26 *deg* 9.196 *min*
Substances	Crude oil
Cause	Crude oil pipeline broke due thieves
DamageAmount	N.A.
DamageCondition	Limited area only
DamageToWaterSupply	None
Penalty	No
Action Taken	Straw oil fence and soil dam was constructed to collect oil.

Table F.3.1 Accidental Pollution Record (5)

Accidental Pollution Record

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AccNo	
PollutantCode	4158
Name of Factory	S.C. ASTRA ROMANA SA
DateStarted	95/09/01 8:00:00
DateEnded	95/09/01 11:00:00
RiverAffected	Dimbu and Teleajen
Location	Downstream of Ploiesti City
Latitude	44 deg 55.594 min
Longitude	26 deg 3.662 min
Substances	Petroleum products
Cause	Overflow due heavy rain at the wastewater treatment where wastewater from VEGA flows into and thus the VEGA discharged petroleum products directly in the Dimbu River.
DamageAmount	None
DamageCondition	Small due to high dilution by heavy rainfall
DamageToWaterSupply	None
Penalty	None
Action Taken	Both company installed straw oil fence after rain stoped.

Accidental Pollution Record

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AccNo	
PollutantCode	4051
Name of Factory	S.C. PETROBRAZI S.A.
DateStarted	95/11/29 10:00:00
DateEnded	95/11/29 12:30:00
RiverAffected	Prahova
Location	Pieculesti bridge
Latitude	44 deg 51.139 min
Longitude	26 deg 0.48 min
Substances	Biological sludge & petroleum
Cause	Accident (Human mistake) and one valve damaged
DamageAmount	N.A.
DamageCondition	Limited area
DamageToWaterSupply	None
Penalty	250,000 lei to the person
Action Taken	Pollutant replaces valve.

Table F.3.1 Accidental Pollution Record (6)

Accidental Pollution Record

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AccNo	
PollutantCode	4149
Name of Factory	PETROTRANS PLOIESTI
DateStarted	95/12/27 14:00:00
DateEnded	96/07/31
RiverAffected	Doftana
Location	Downstream of Paltinu Lake and upstream of Voiiu Purification Plant.
Latitude	45 *deg* 13.155 *min*
Longitude	25 *deg* 44.154 *min*
Substances	Diesel oil
Cause	Leakage of oil from the crack appeared on the pipe
DamageAmount	N.A.
DamageCondition	
DamageToWaterSupply	Water supply was stopped from 12/27 14:00 to 28 12:00, then drinking water was not supplied to Cimpina, Breaza, Cornu, Baneasi, Telega, Floresti, Moreni, Baicoi for 7 months and shortage of drinking water in Ploiesti due to oil mixture.
Penalty	None
Action Taken	The crack was covered by the metal. No other measures was taken.

Accidental Pollution Record

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AccNo	
PollutantCode	4047
Name of Factory	F.E. PLOIESTI
DateStarted	96/12/30
DateEnded	97/02/10
RiverAffected	Prahova
Location	Common chennel (GIB II) from S.C. Petrobrazi and F.E. Ploiest
Latitude	44 *deg* 51.142 *min*
Longitude	26 *deg* 0.535 *min*
Substances	Approx. 30 t. of Oil fuel
Cause	Fuel track dischareged the oil fuel directly to soil and then to common chennel
DamageAmount	
DamageCondition	River water quality did not be affected.
DamageToWaterSupply	None
Penalty	3,000,000 lei
Action Taken	

Table F.3.1 Accidental Pollution Record (7)

Accidental Pollution Record

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AccNo	
PollutantCode	4137
Name of Factory	S.C. VEGA S.A.
DateStarted	97/04/26 17:15:00
DateEnded	97/04/26 18:45:00
RiverAffected	Dimbu
Location	Ploiesti City Area
Latitude	44 *deg* 57.271 *min*
Longitude	26 *deg* 1.338 *min*
Substances	n-hexane & volitatile substance
Cause	Accident (Pump was broken)
DamageAmount	N.A.
DamageCondition	Some 10 houses were burnt down.
DamageToWaterSupply	None
Penalty	4,000,000
Action Taken	Fire solved the problem

Accidental Pollution Record

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AccNo	
PollutantCode	4037
Name of Factory	S.P. BAICOI
DateStarted	97/06/14 6:00:00
DateEnded	97/06/22 12:30:00
RiverAffected	Runou
Location	Bordem Village Area
Latitude	45 *deg* 6.759 *min*
Longitude	25 *deg* 51.015 *min*
Substances	Crude oil and salt water
Cause	One valve was broken and approx. 5t crude oil was discharged into the Runou River.
DamageAmount	N.A.
DamageCondition	Limited Area
DamageToWaterSupply	None
Penalty	
Action Taken	Construction of soil dam

Table F.3.1 Accidental Pollution Record (8)

Accidental Pollution Record

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AccNo	
PollutantCode	4149
Name of Factory	PETROTRANS PLOIESTI
DateStarted	97/07/13
DateEnded	
RiverAffected	Doftana
Location	Vaiea Doftana
Latitude	45 deg 11.127 min
Longitude	25 deg 45.164 min
Substances	Diesel Oil
Cause	Leakage of oil from cracks on the pipelines
DamageAmount	
DamageCondition	
DamageToWaterSupply	None
Penalty	
Action Taken	Coverage of cracks by metal

Accidental Pollution Record

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AccNo	
PollutantCode	4037
Name of Factory	S.P. BARCOI
DateStarted	97/09/09 16:00:00
DateEnded	97/09/30 12:30:00
RiverAffected	Runcu
Location	Bordeni Village Area
Latitude	deg min
Longitude	deg min
Substances	Crude oil and salt water
Cause	Fissure of pipeline due to a landslide
DamageAmount	N.A.
DamageCondition	Limited Area
DamageToWaterSupply	None
Penalty	835,102 lei
Action Taken	Installation of soil dam for crude oil

Table F.3.1 Accidental Pollution Record (9)

Accidental Pollution Record

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AccNo	
PollutantCode	4149
Name of Factory	PETROTRANS PLOIESTI
DateStarted	97/11/19
DateEnded	
RiverAffected	Doftana
Location	Upstream of Valea Doftana Village
Latitude	45 deg 21.062 min
Longitude	25 deg 43.615 min
Substances	Diesel oil
Cause	Leakage of oil from the crack appeared on the pipe
DamageAmount	None
DamageCondition	Limited Area
DamageToWaterSupply	None
Penalty	
Action Taken	Coverage of cracks by metal

Accidental Pollution Record

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AccNo	
PollutantCode	4149
Name of Factory	PETROTRANS PLOIESTI
DateStarted	98/07/10
DateEnded	97/07/13
RiverAffected	Doftana
Location	5km lower from the Basin Boundary
Latitude	45 deg 25.49 min
Longitude	25 deg 45.864 min
Substances	Diesel oil
Cause	Leakage of oil from the crack appeared on the pipe
DamageAmount	None
DamageCondition	Limited Area
DamageToWaterSupply	None
Penalty	
Action Taken	Coverage of cracks by metal

Table F.3.2 Major Establishments and Toxic Substances which may cause Accidental Pollution

Code	Name of Establishment	Municipality	Activity Code	Activity	River	Distance * (km)	Possible Toxic Substances
4004	SINTERREF AZUGA	Azuga	26	Non-Metallic Mineral Products	Azuga	17.8	Cd, CN, Cr6+
4006	BERE AZUGA	Azuga	15	Food/Beverage	Prahova	7.9	Phenol
4007	POSTAV AZUGA	Azuga	17	Textiles	Azuga	20.5	Oil, Cd, CN, Pb, Cr6+, Hg, Alkali
4008	A.D.P.P. AZUGA	Azuga	41A1	Water Supply (Drinking)	Azuga		
4010	SPITALUL AZUGA	Azuga	85	Health/Social Work	Prahova	10.0	Cd, CN, Pb, Cr6+, Hs, Hg, Phenol, acid, alkali
4011	A.D.P.P. BUSTENI	Busteni	41A1	Water Supply (Drinking)	Prahova		
4014	HARTIA BUSTENI	Busteni	21	Paper/Paper Products	Prahova	12.6	acid, alkali
4018	A.D.P.P.SINAIA	Sinaia	41A1	Water Supply (Drinking)	Prahova		
4022	S.G.C.L. BOLDESTI	Boldesti-Scaieni	41A1	Water Supply (Drinking)	Teleajen	66.0	
4028	CIVITAS BREAZA	Breaza	41A1	Water Supply (Drinking)	Prahova	42.4	
4032	R.A.G.C. POIANA CIMPINA	Poiana Campina	41A1	Water Supply (Drinking)	Prahova		
4034	R.A.G.C. L CIMPINA	Cimpina	41A3	Water Supply	Prahova		
4035	S.C.STEAUA ROMANA SA	Cimpina	23	Petroleum Refinery	Doftana	42.2	Oil, Cd, Pb, Cr6+, As, Hg, Phenol, acid, alkali
4039	VICTORIA FLORESTI	Floresti	23	Petroleum Refinery	Prahova		Oil, Cd, Pb, Cr6+, As, Hg, Phenol, acid, alkali
4041	S.G.C.L. BAICOI	Baicoi	41A1	Water Supply (Drinking)	Dimbu		
4047	F.E. PLOIESTI	Brazi (Pisculesti)	40A	Electricity/Gas/Water Supply	Prahova	98.6	
4051	S.C. PETROBRAZI S.A.	Ploiesti	23	Petroleum Refinery	Prahova	98.9	Oil, Cd, Pb, Cr6+, As, Hg, Phenol, acid, alkali
4082	COMPORSA STANCESTI	Aricestii Rahtivani	012A	Livestock Farm	Prahova		Cd, CN, Pb, Cr6+, As, Hg, Phenol
4086	NERGA MANECIU SECTOR CHEIA	Maneciu (Cheia)	41A1	Water Supply (Drinking)			
4088	NERGA MANECIU SECTOR	Maneciu (Maneciu	41A1	Water Supply (Drinking)	Teleajen	27.6	
4101	GES SCAIENI	Boldesti-Scaieni	20	Wood	Teleajen	68.8	
4102	S.C. CAHIRO S.A.	Boldesti-Scaieni	21	Paper/Paper Products	Teleajen	68.9	acid, alkali
4103	SOCERAM BUCOV	Bucov	45	Construction	Teleajen	73.4	Oi., Cd, Pb, Cr6+, Alkali
4106	REAL PLEASA	Bucov (Pleasa)	27	Basic Metals	Teleajen	72.9	Phenol, acid, CN, Pb, Cr6+
4112	ARPACOR	Bucov	24	Chemicals/Chemical Products	Teleajen	74.6	Oil, Cd, Pb, Cr6+, As, Hg, Phenol, acid, alkali
4117	S.C.ROMFOSFOCHIM SA	Valea Calugareasca	24	Chemicals/Chemical Products	Teleajen	86.8	
4123	SANCA GHERGHITA	Gherghita	012B	Livestock Farm (small)			Cd, CN, Pb, Cr6+, As, Hg, Phenol
4127	GOSCOM SLANIC	Slanic	41A1	Water Supply (Drinking)	Slanic	7.2	
4137	S.C. VEGA S.A.	Berceni	23	Petroleum Refinery	Dimbu	26.6	Oil, Cd, Pb, Cr6+, As, Hg, Phenol, acid, alkali
4141	24 IANUARIE	Ploiesti	29	Machinery/Equipment	Dimbu	27.3	Cd, CN, Cr6+, As, Hg, Phenol, acid, alkali,
4143	I.N.C.A.F. PLOIESTI	Ploiesti	15	Food/Beverage			Phnol
4147	DACIA PLOIESTI	Ploiesti	28	Metal Products Fabricated	Dimbu		Cd, CN, Cr6+, As, Hg, Phenol, acid, alkali,
4148	S.C.PETROTEL SA PL.	Ploiesti	23	Petroleum Refinery	Teleajen	80.3	Oil, Cd, Pb, Cr6+, As, Hg, Phenol, acid, alkali
4150	MATIZOL	Berceni	45	Construction	Iazul		Cd, CN, Cr6+
4158	S.C. ASTRA ROMANA SA	Berceni	23	Petroleum Refinery	Dimbu	33.0	Oil, Cd, Pb, Cr6+, As, Hg, Phenol, acid, alkali
4162	R.A.G.C. PLOIESTI	Ploiesti	41A1	Water Supply (Drinking)	Dimbu	33.5	
4292	S.C. PETROUTILAJ S.A	Cimpina	29	Machinery/Equipment	Prahova	50.2	Oil, Cd, Pb, Cr6+, As, Hg, Phenol, acid, alkali
4317	APEVITA PREDEAL	Predeal	41A3	Water Supply	Prahova	7.1	
4374	S.G.C.L.URLATI	Albesti-Paleologu	41A1	Water Supply (Drinking)	Cricovul	44.0	
4506	R.A.G.C.L. VALENI	Valenii de Munte	41A1	Water Supply (Drinking)	Teleajen	46.8	
4532	SALINA SLANIC	Slanic	14	Mining/Quarrying	Slanic	1.9	
4577	S.C. AGROS SCAIENI	Boldesti-Scaieni	012A	Livestock Farm	Teleajen		Cd, CN, Pb, Cr6+, As, Hg, Phenol
4578	S.G.C.L. PLOPENI	Plopeni	41A1	Water Supply (Drinking)	Teleajen		

Note: Measured from the river head.