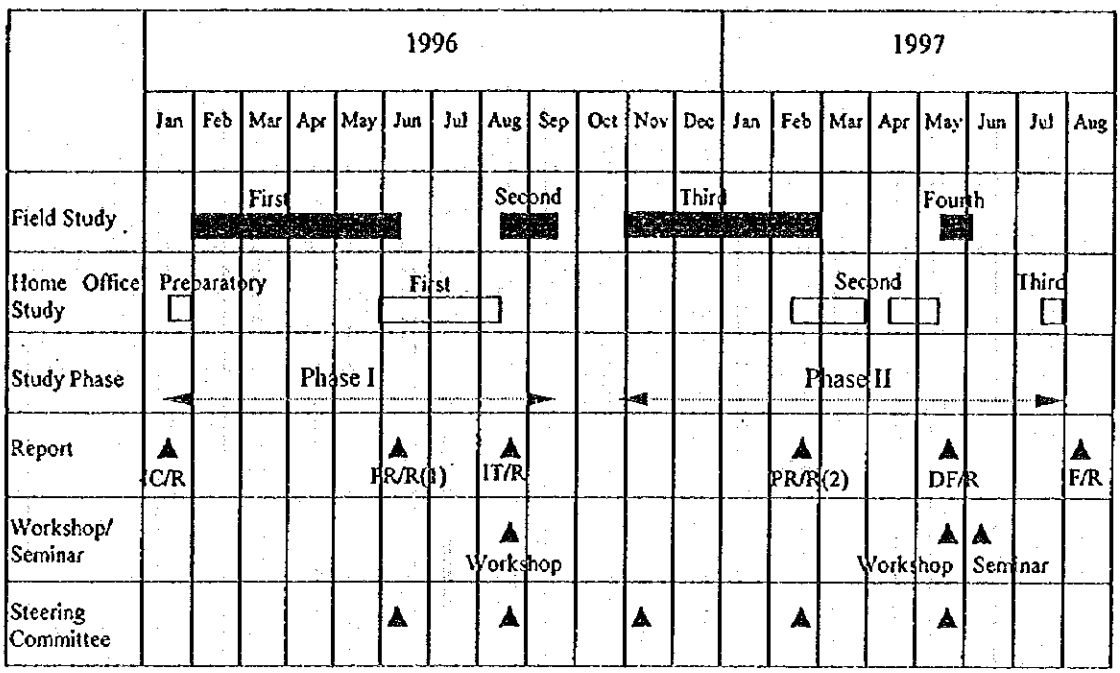
FIGURES



Note:
- IC/R: Inception Report
- PR/R: Progress Report
- IT/R: Interim Report
- DF/R: Draft Final Report
- F/R: Final Report

THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 1.4-1 Study Schedule
JAPAN INTERNATIONAL COOPERATION AGENCY	

ASSIGNMENT SCHEDULE

	Assignment	Name	1996 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1997 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1.	Leader	Yoshiharu MATSUMOTO																				
2.	Asst.Leader/ Water Resources Development Planner	Keiji SASABE																				
3.	Sabo/ Turbid Water Specialist	Susumu HONDA																				
4.	Industrial Wastewater Specialist	Sachio TAKAHASHI																				
5.	Sewage Specialist	Atushi MURAMATSU																				
6.	Water Quality Specialist	Akiko MUKADE																				
7.	Water Purification Specialist	Shoichi IMADO, Shuji ARAKAWA																				
8.	Legal and Institutional specialist	Valerio GUTIERREZ																				
9.	Economist	Naomichi ISHIBASHI																				
10.	Structure Design Engineer	Andrew DORMAN																				
11.	Environment Specialist	Kazuyoshi KAGEYAMA																				
12.	Geodetic Engineer	Masashi SUZUKI																				
13.	Coordinator	Tomoko SUZUKI																				
14.	Dam Planner	Hiroaki OSHIMA																				
15.	Geologist	Akira FUJINO																				

THE STUDY ON
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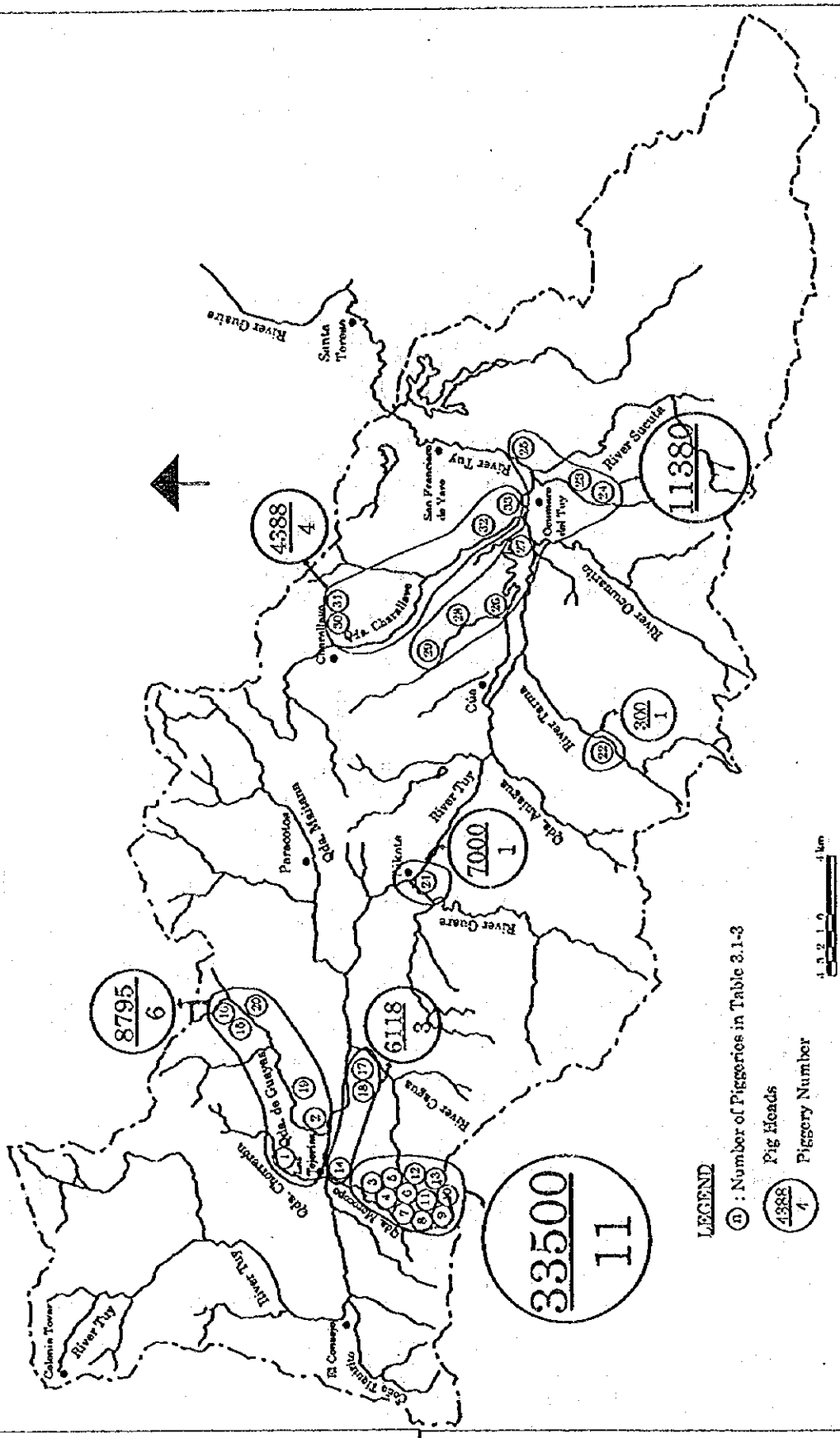
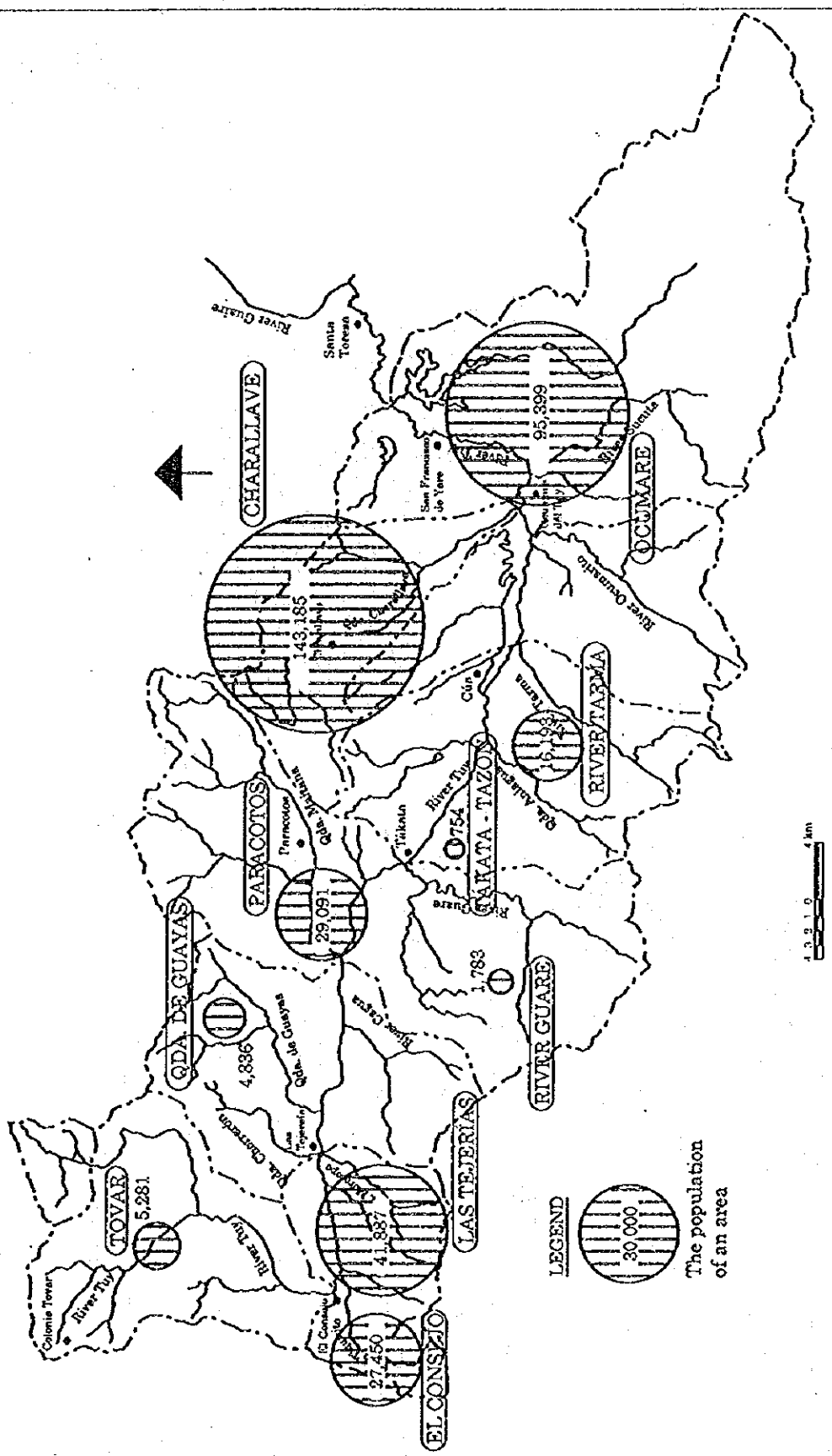
Fig. 1.4-2 Staffing Schedule

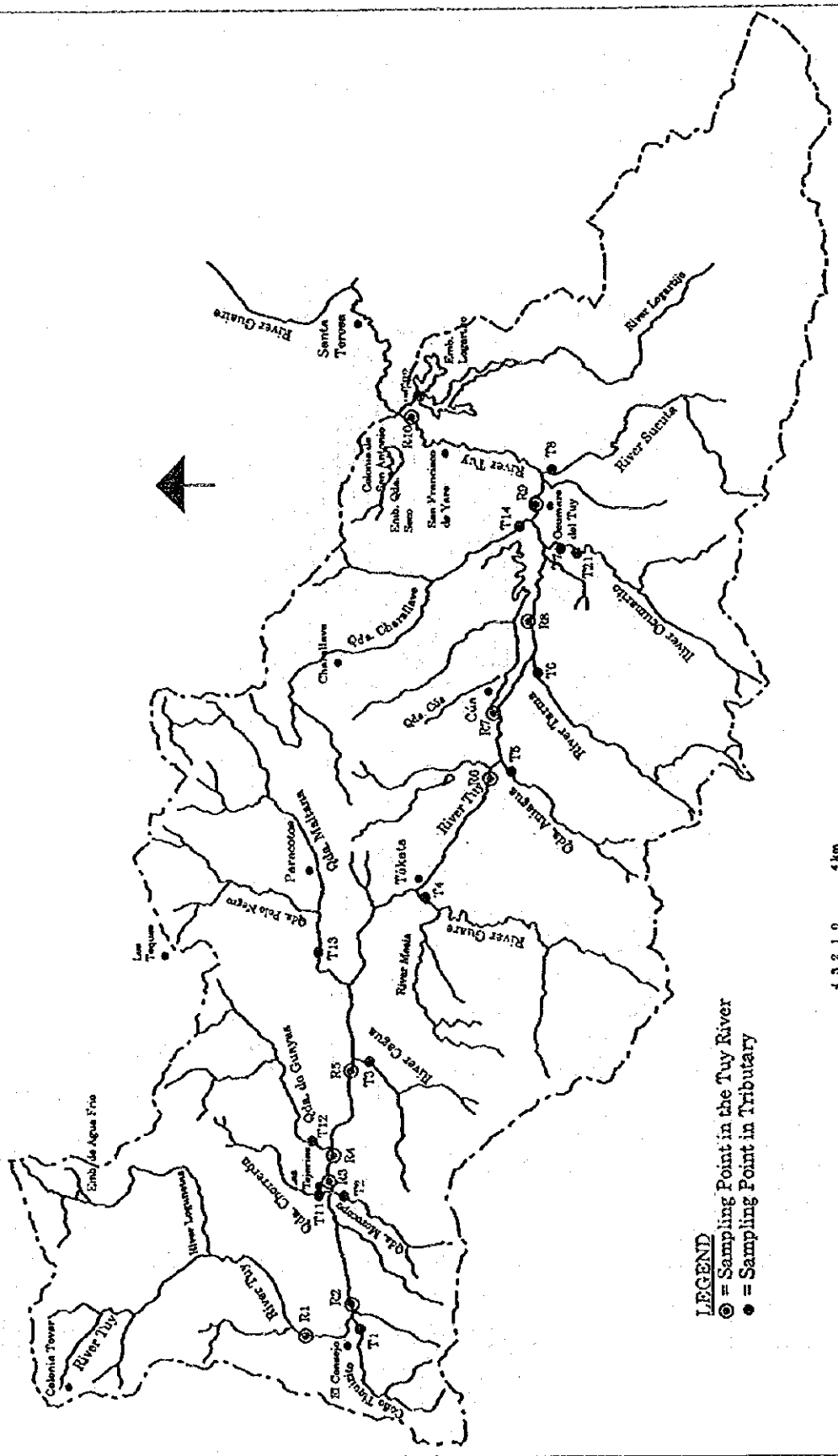
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.1-1 Distribution of Factory and Employee Numbers by Food and Non-food Factories
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.1-2 Distribution of Piggeries and Pig Heads
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.1-3 Human Population in Area
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE STUDY ON
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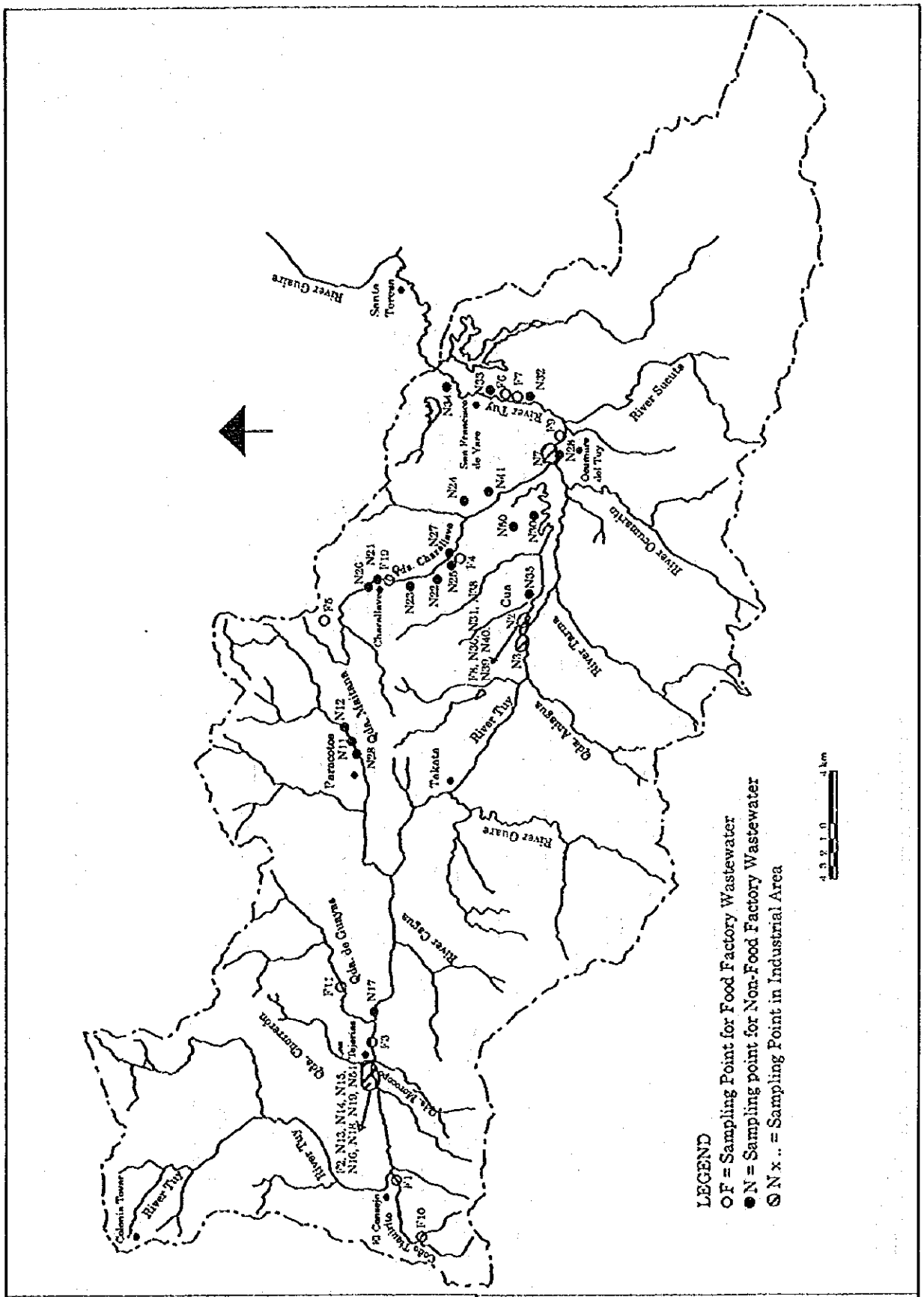
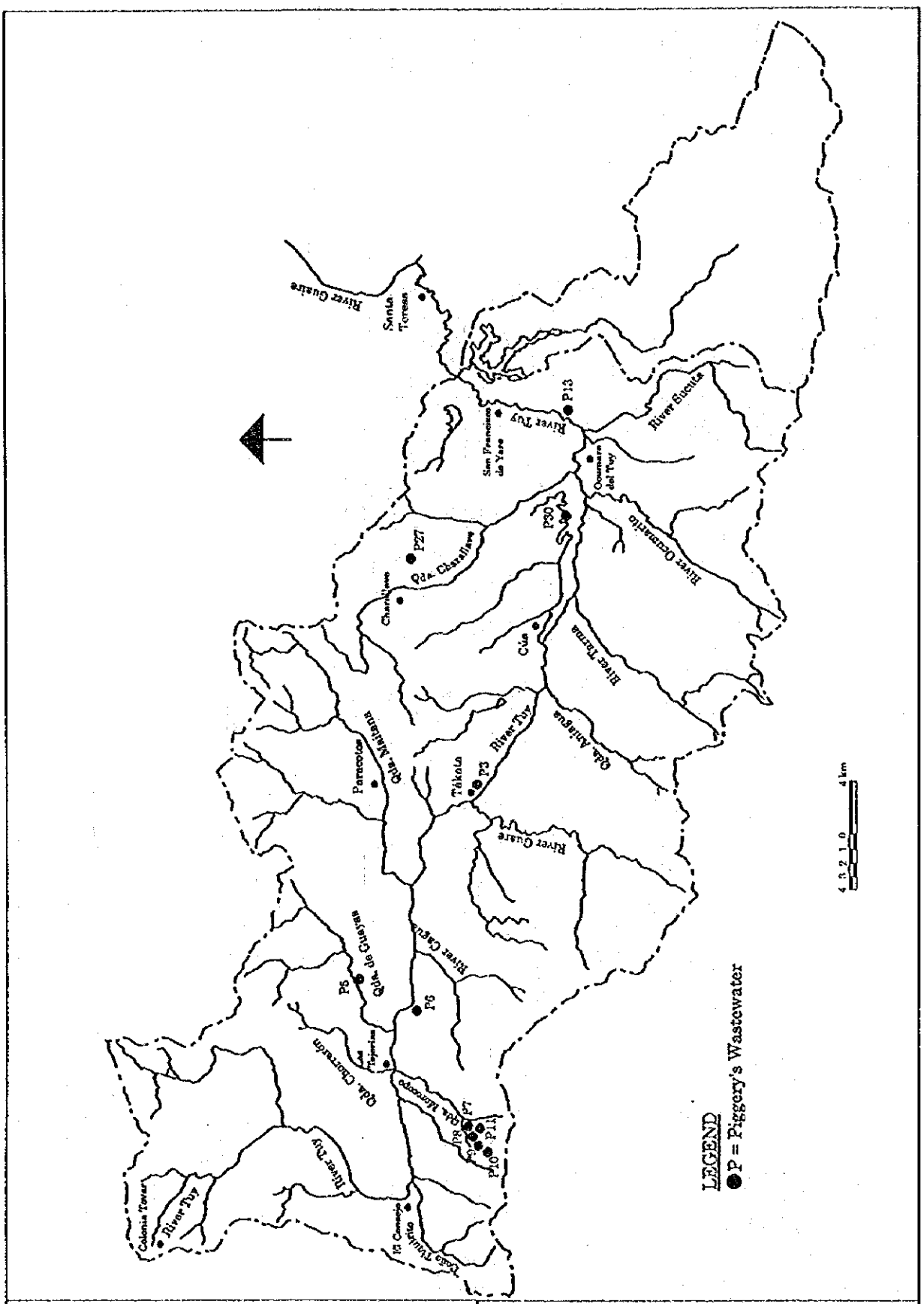
JAPAN INTERNATIONAL COOPERATION AGENCY

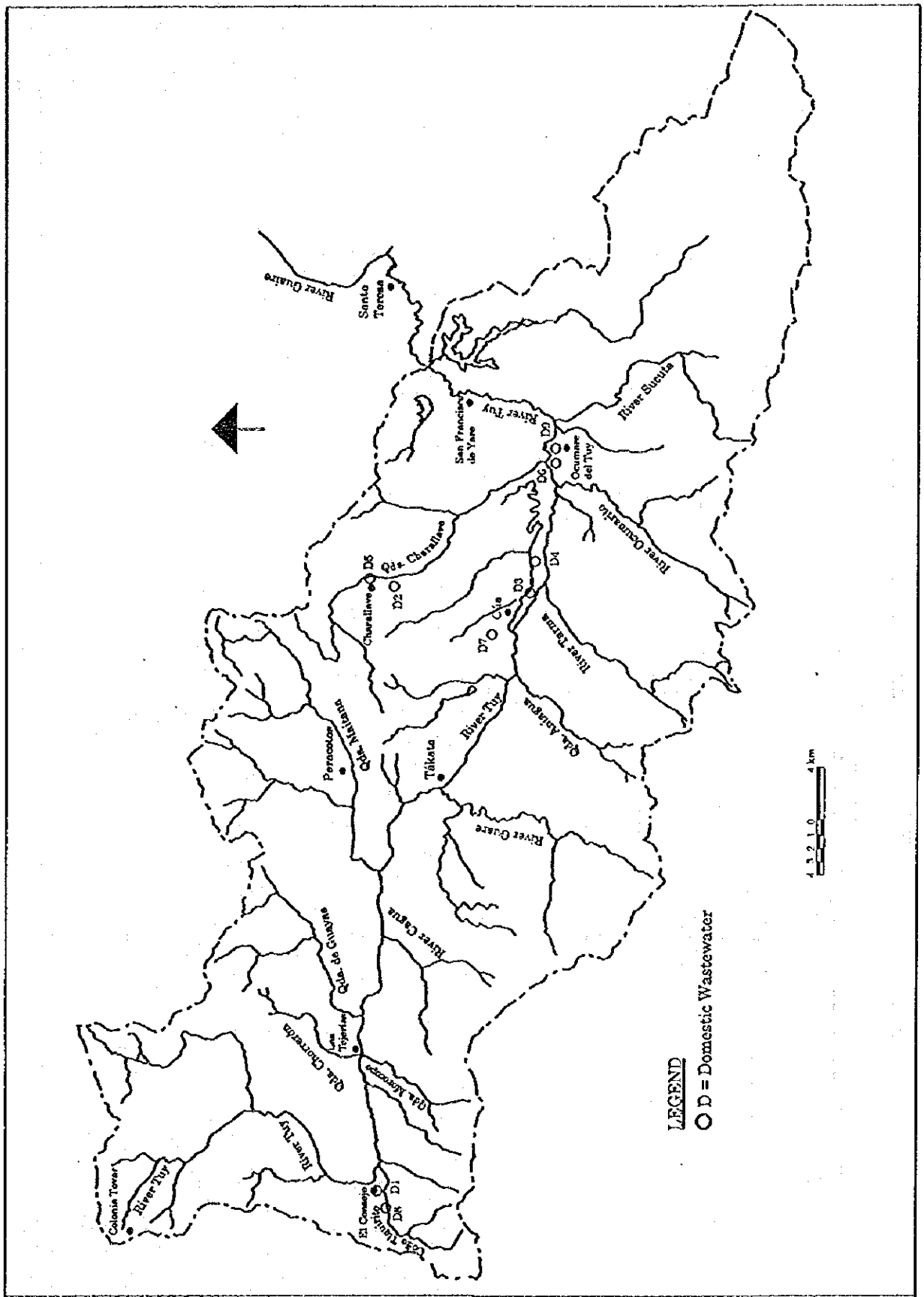
Fig. 2.2-1 (1/4) Sampling Points on the Tuy River and Tributaries



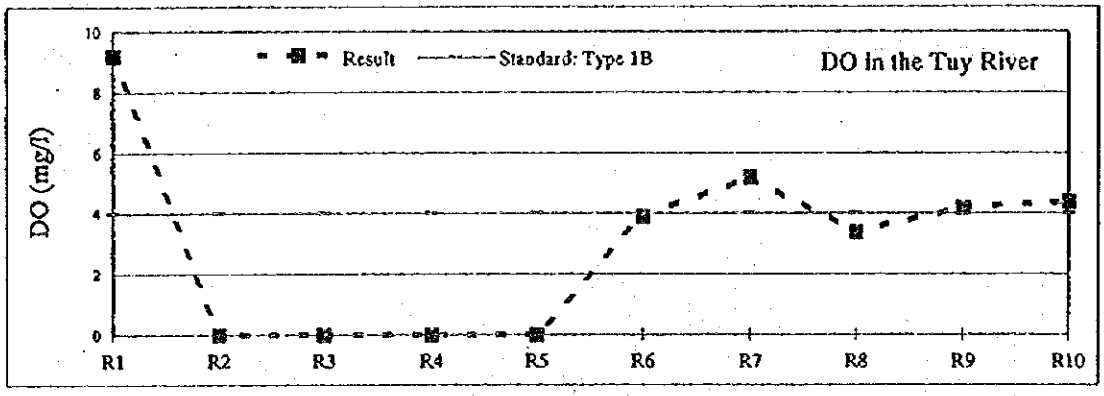
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-1 (2/4) Sampling Points on the Tuy River and Tributaries
JAPAN INTERNATIONAL COOPERATION AGENCY	

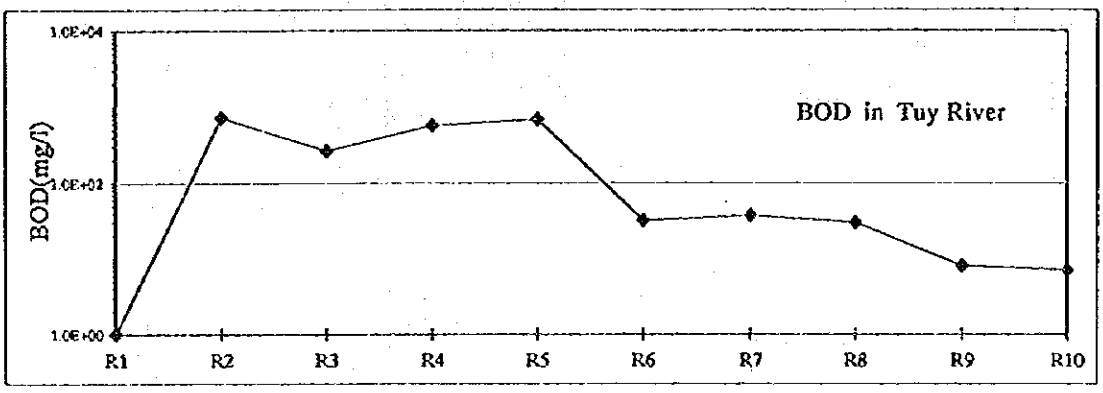


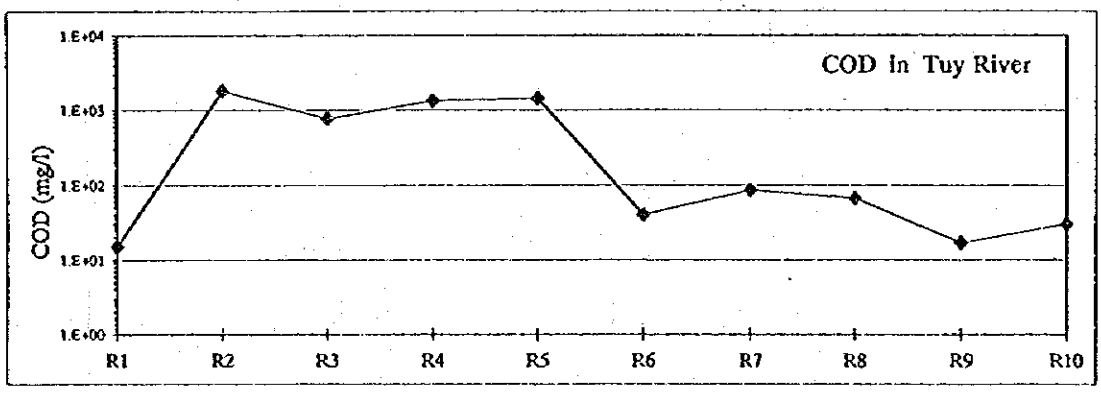
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-1 (3/4) Sampling Points on the Tuy River and Tributaries
JAPAN INTERNATIONAL COOPERATION AGENCY	

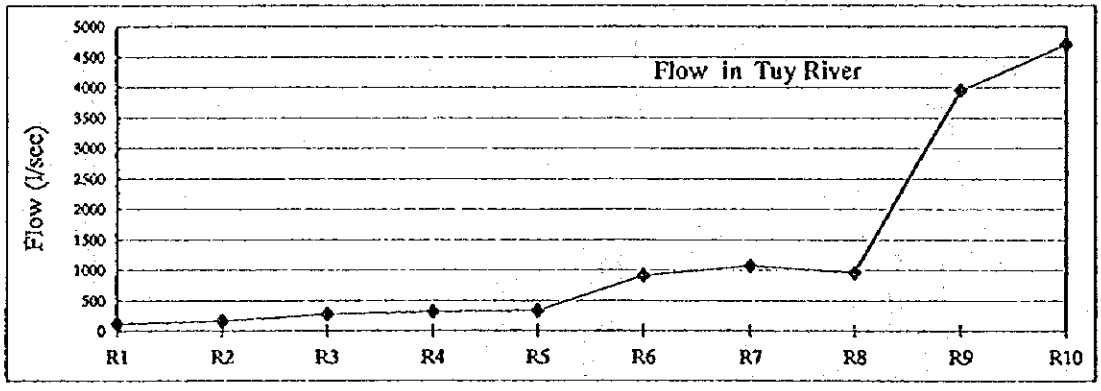


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-1 (4/4) Sampling Points on the Tuy River and Tributaries
JAPAN INTERNATIONAL COOPERATION AGENCY	

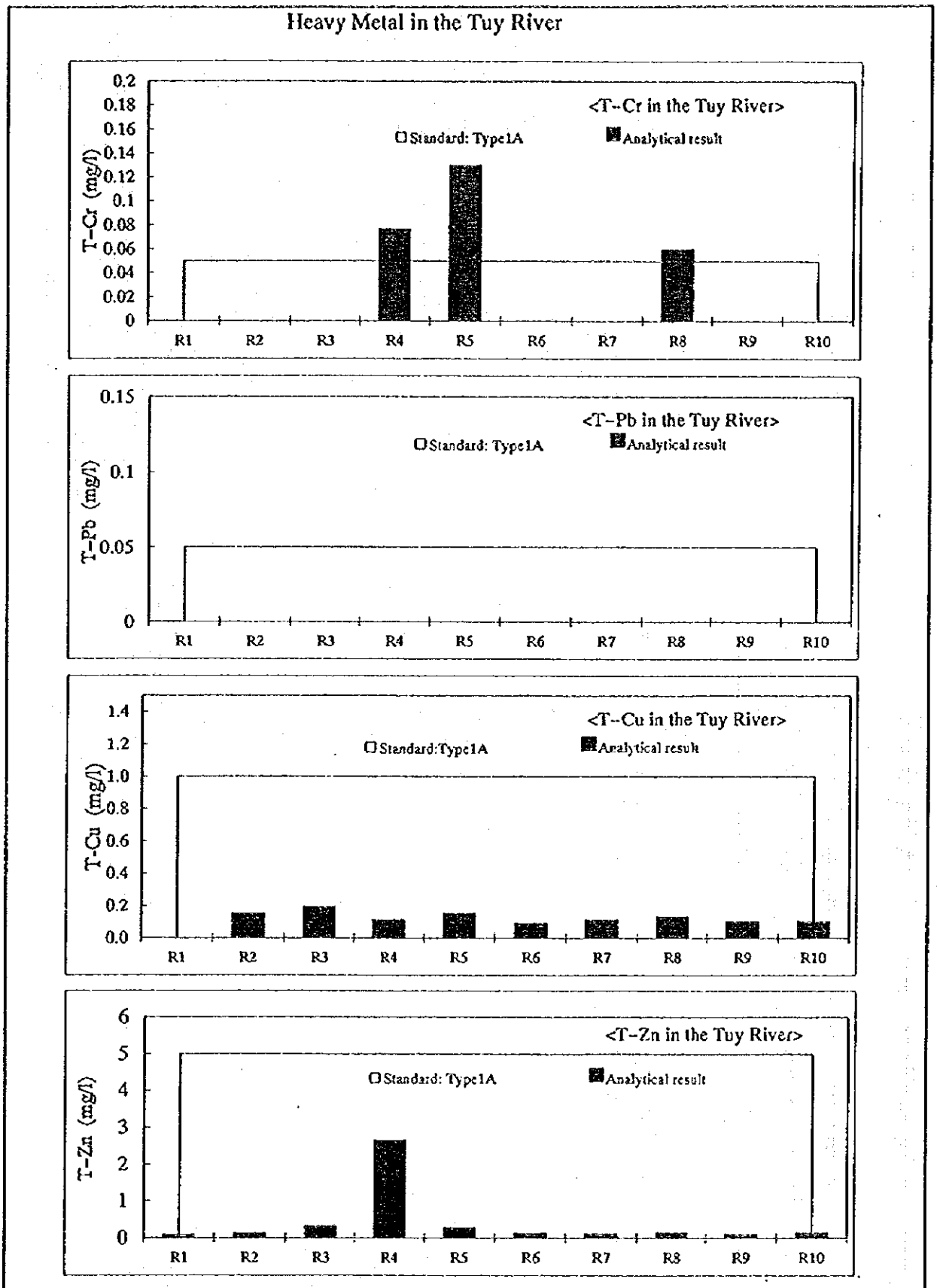






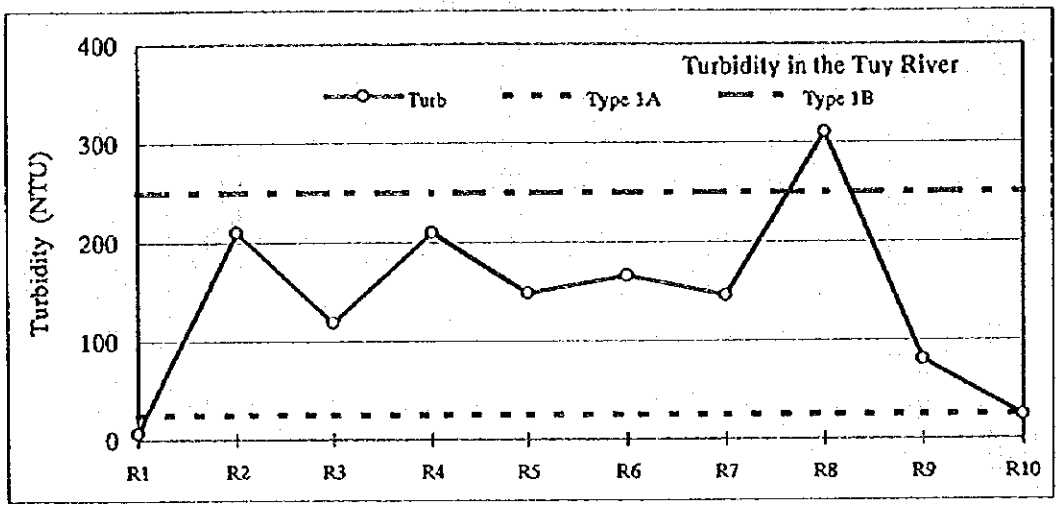


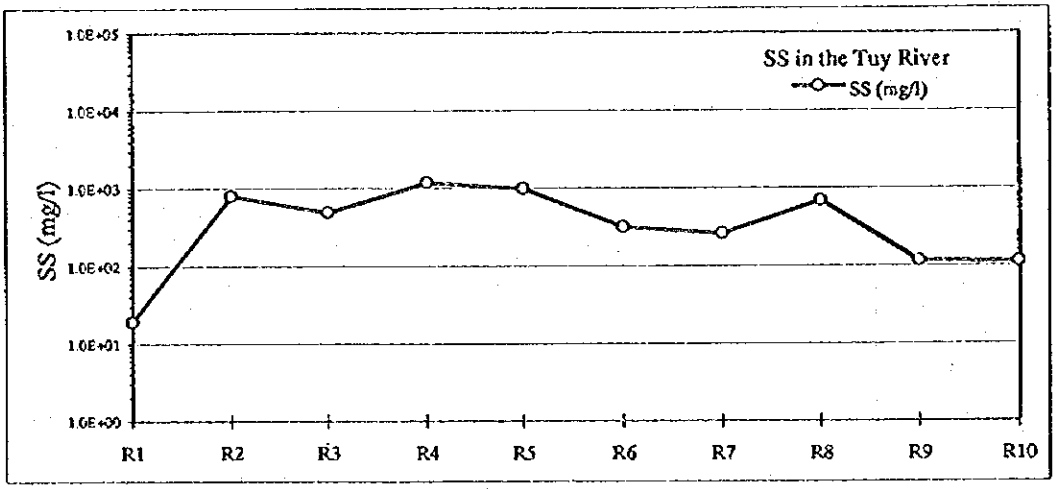
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-2 Organic Pollution in the Tuy River
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-3 Heavy Metals in the Tuy River
JAPAN INTERNATIONAL COOPERATION AGENCY	

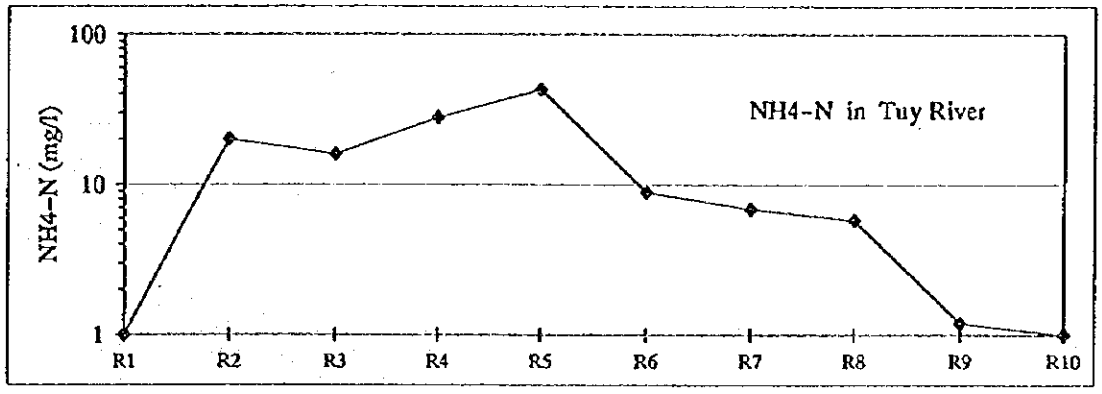
Turbidity & SS in the Tuy River

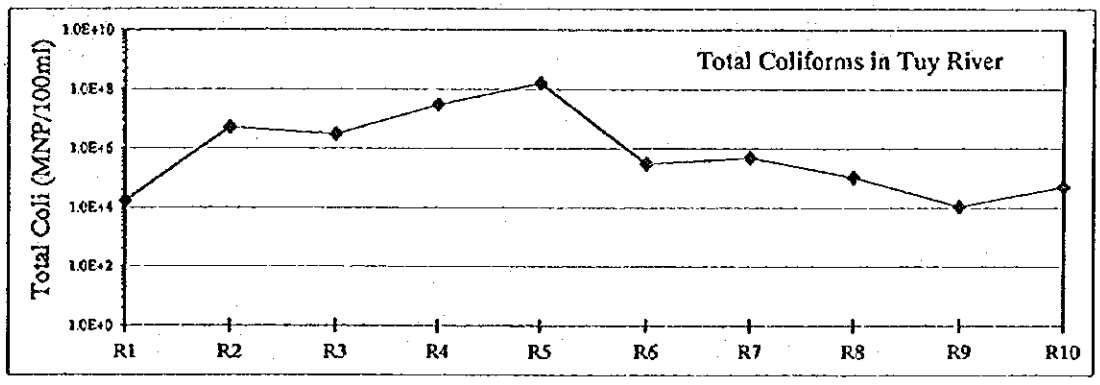


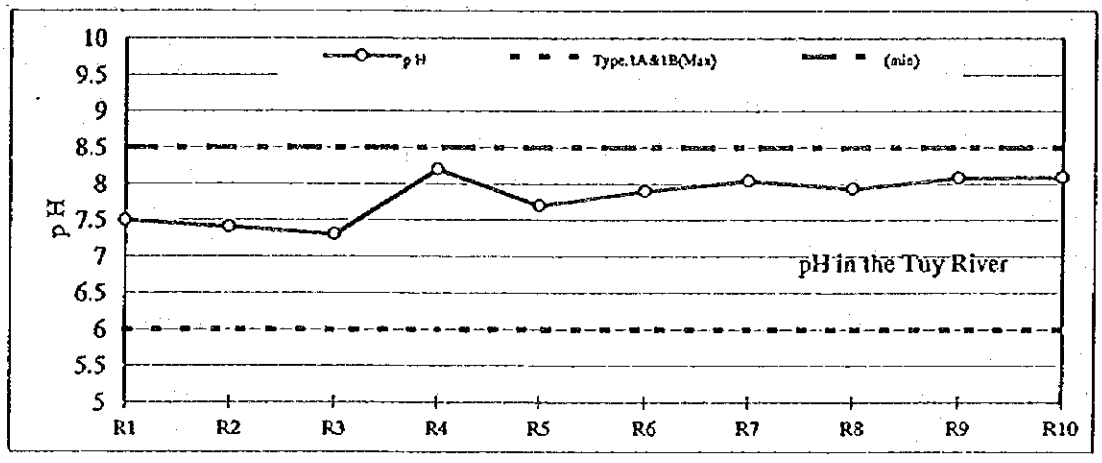


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-4 Turbidity and SS of the Tuy River
JAPAN INTERNATIONAL COOPERATION AGENCY	

Other Qualities in the Tuy River

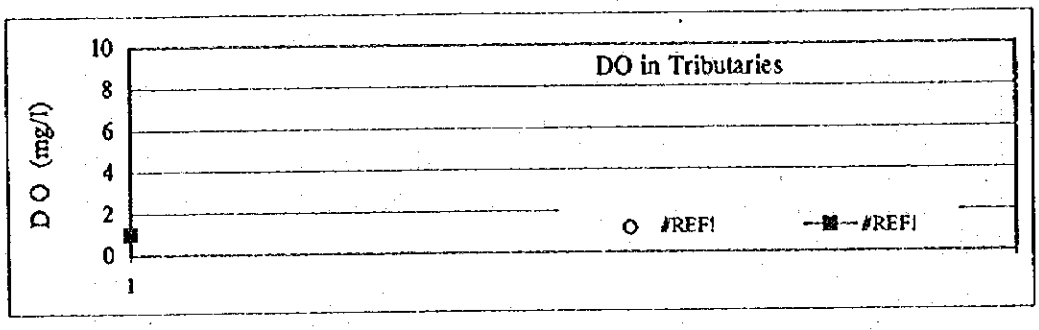


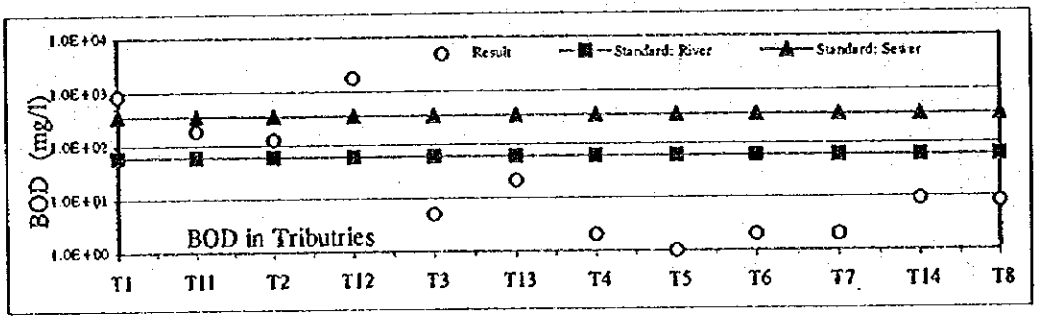


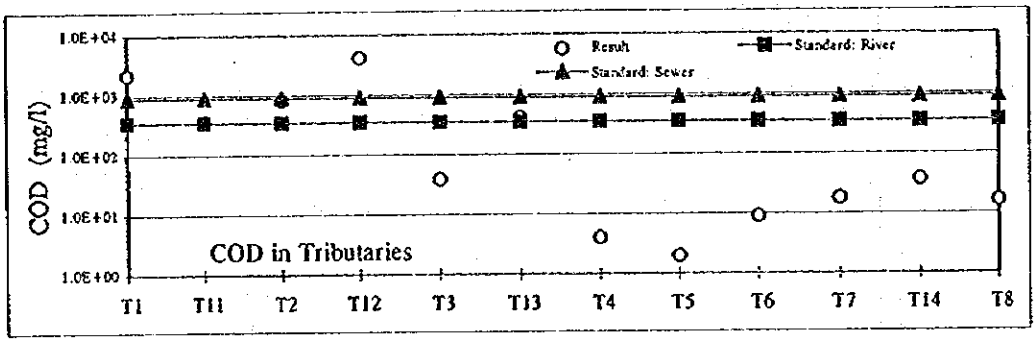


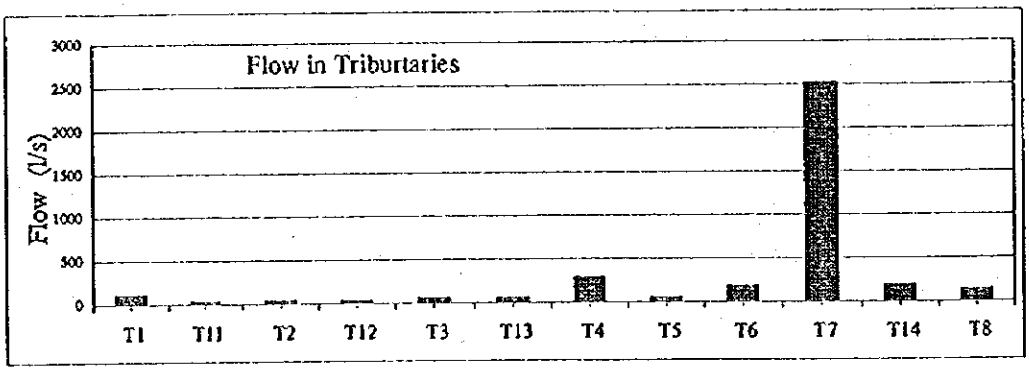
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-5 Other Water Qualities of the Tuy River

Organic Pollution in the Tributries

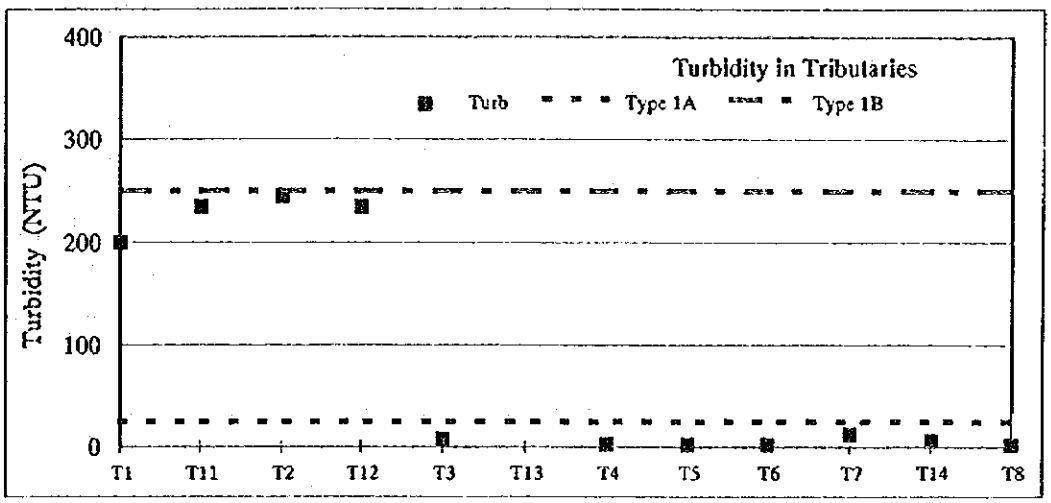


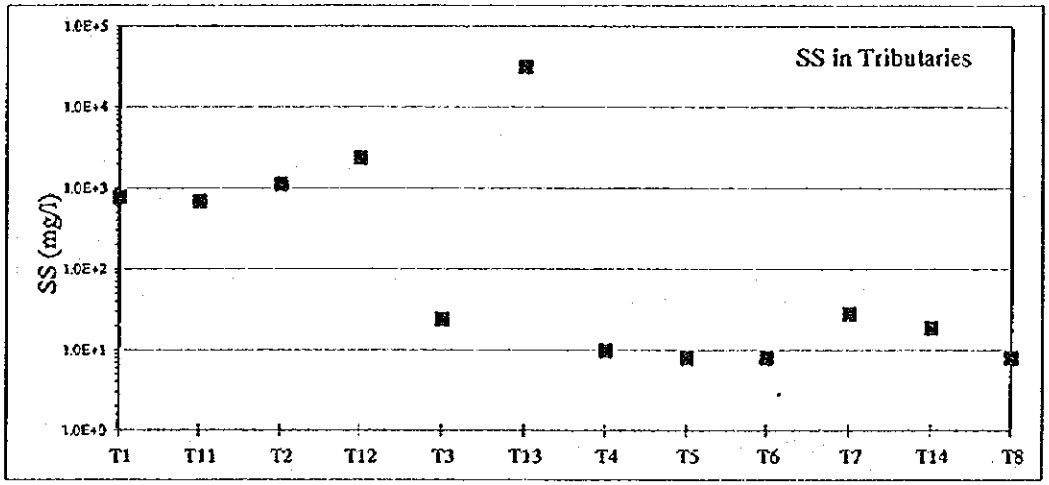






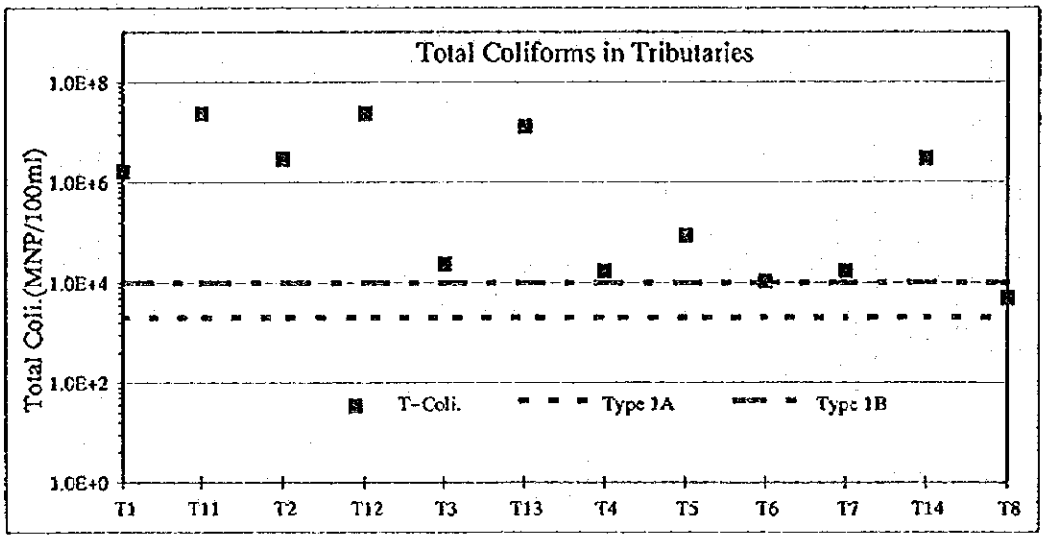
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-6 Organic Pollution in the Tributaries
JAPAN INTERNATIONAL COOPERATION AGENCY	

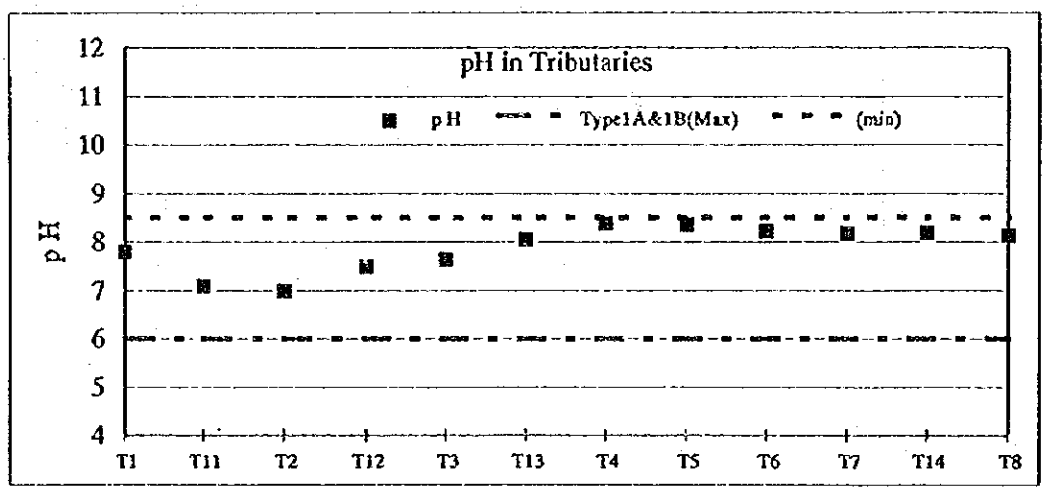




THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-7 Turbidity and SS of the Tributaries

Other Qualities in Triburtaries

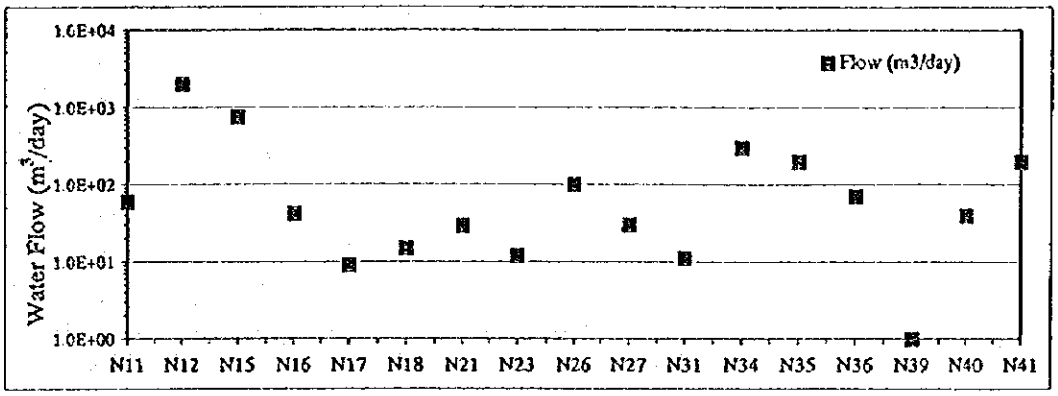




THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-8 Other Water Qualities of the Tributaries
JAPAN INTERNATIONAL COOPERATION AGENCY	

Water Quality in Non-food Factory Wastewater

< Water Flow >



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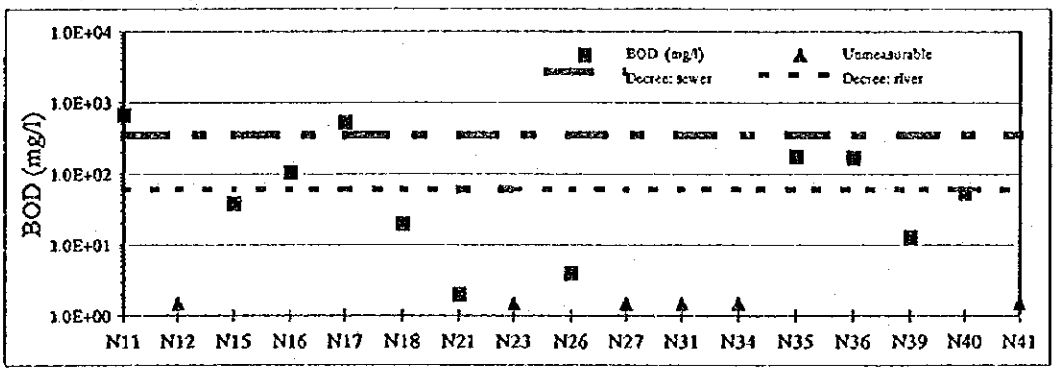

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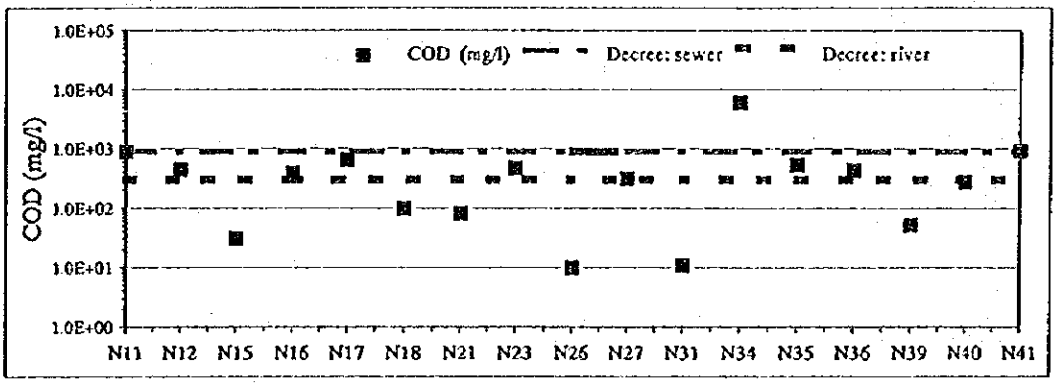

THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-9 Pollution from Non-food Factories (1/4)

Water Quality in Non-food Factory Wastewater

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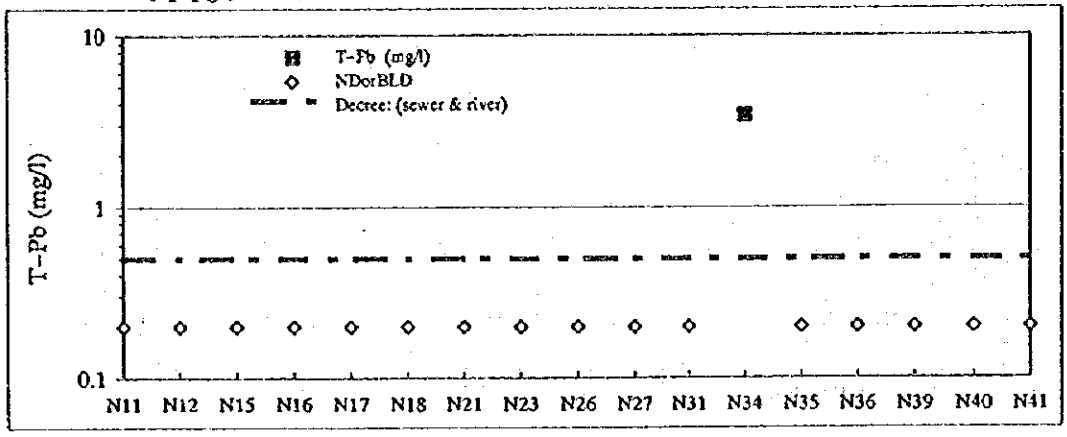

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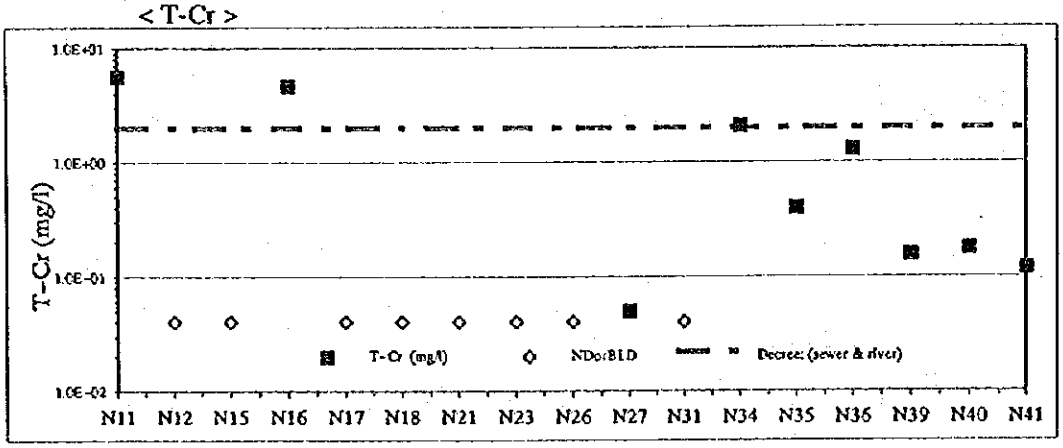

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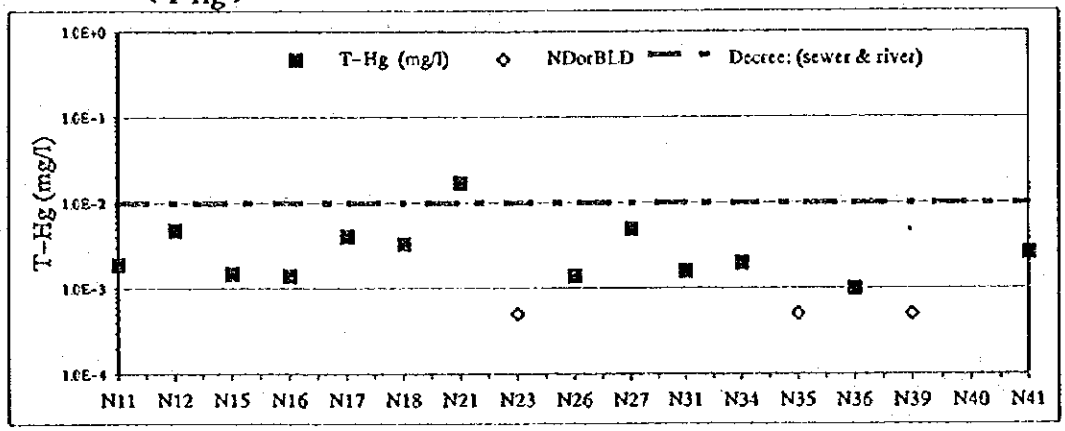

THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-9 Pollution from Non-food Factories (2/4)

Water Quality in Non-food Factory Wastewater

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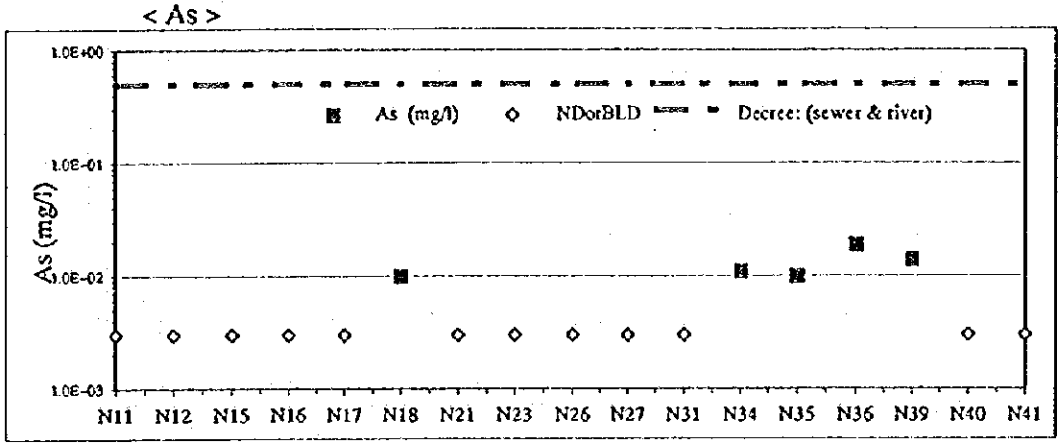

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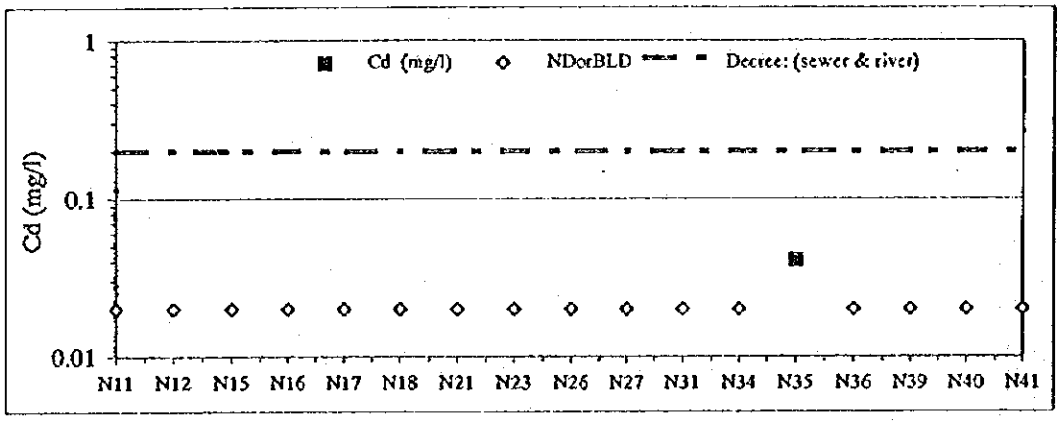

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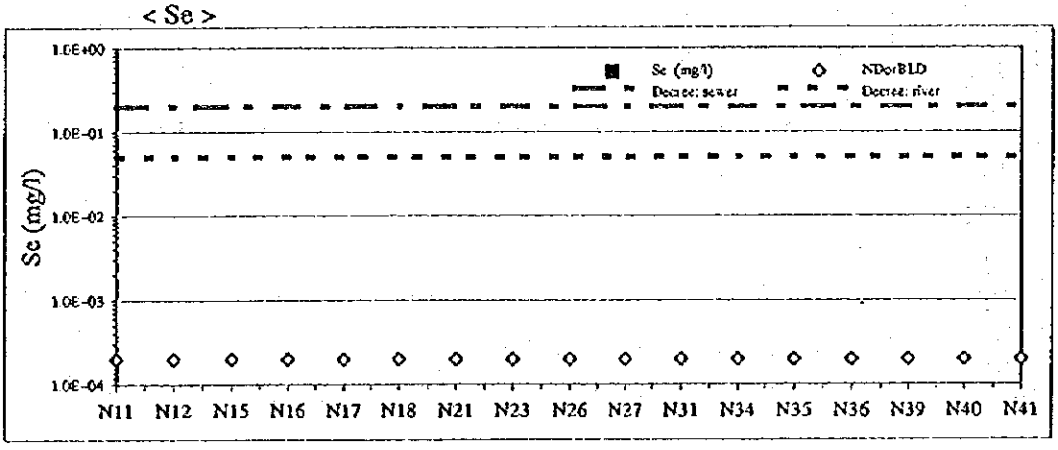
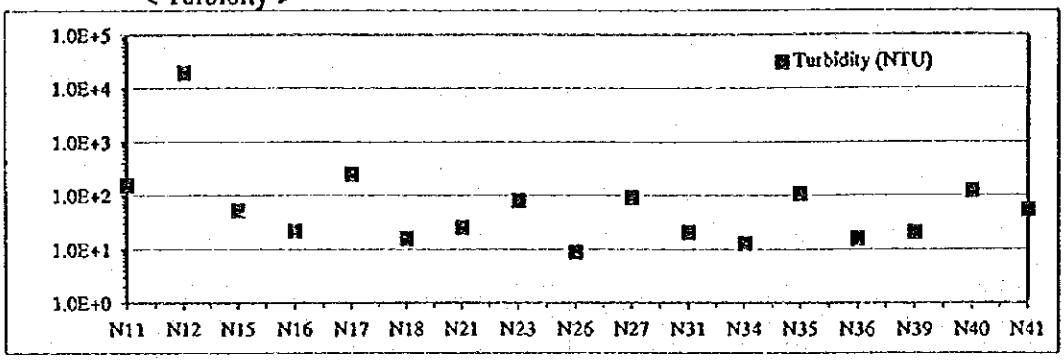


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-9 Pollution from Non-food Factories (3/4)

Water Quality in Non-food Factory Wastewater

< Turbidity >



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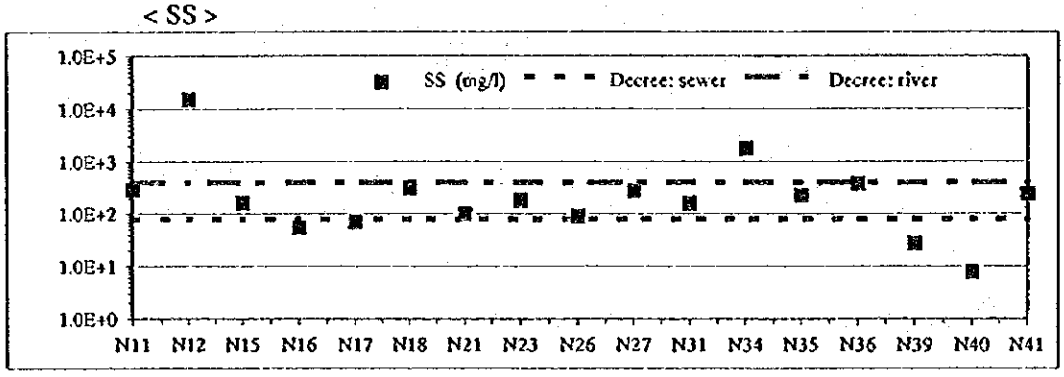

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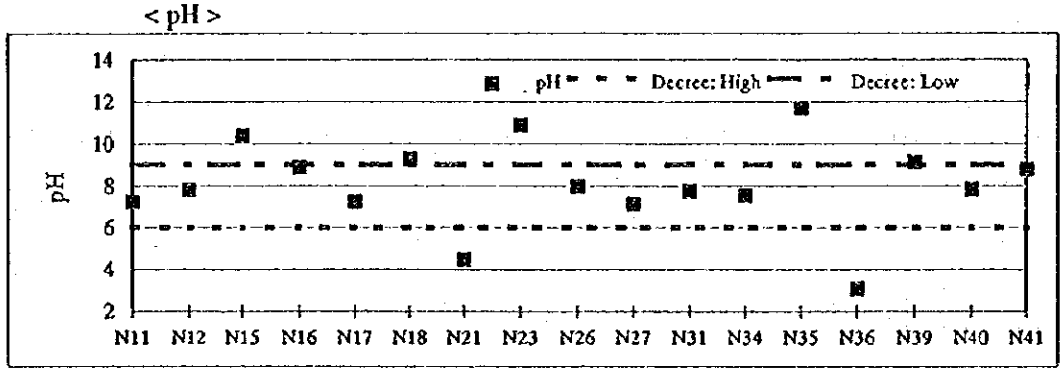

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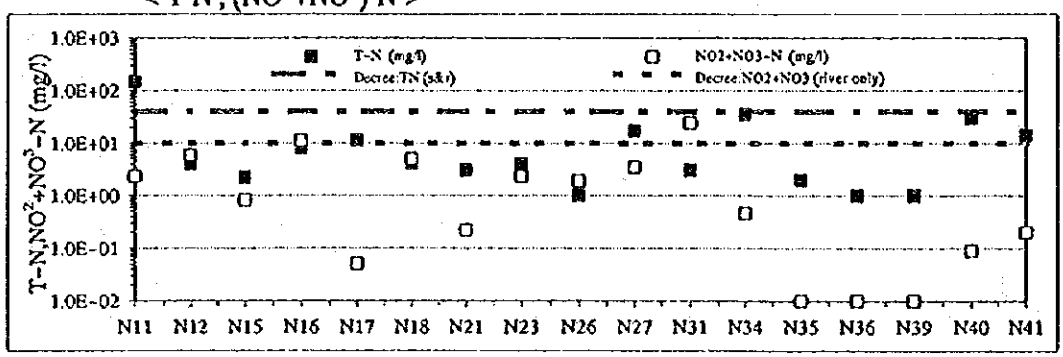
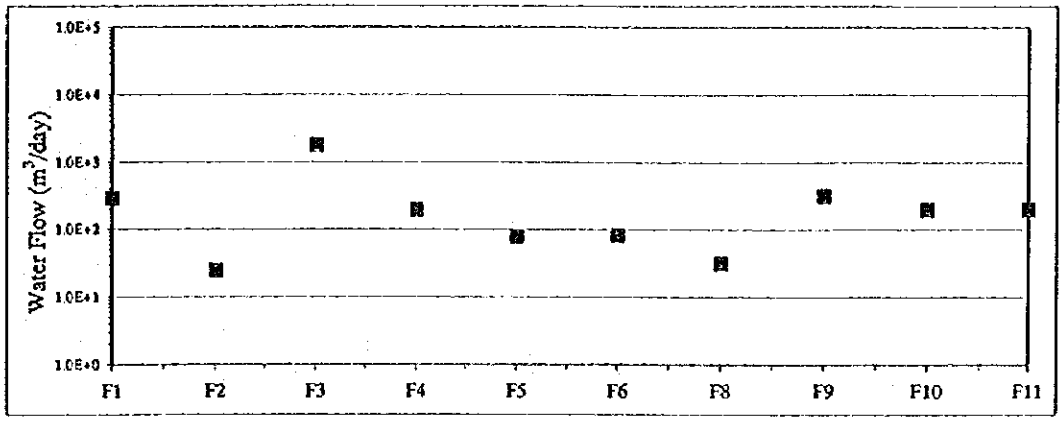


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-9 Pollution from Non-food Factories (4/4)

Water Quality in Food Factory Wastewater

< Water Flow >



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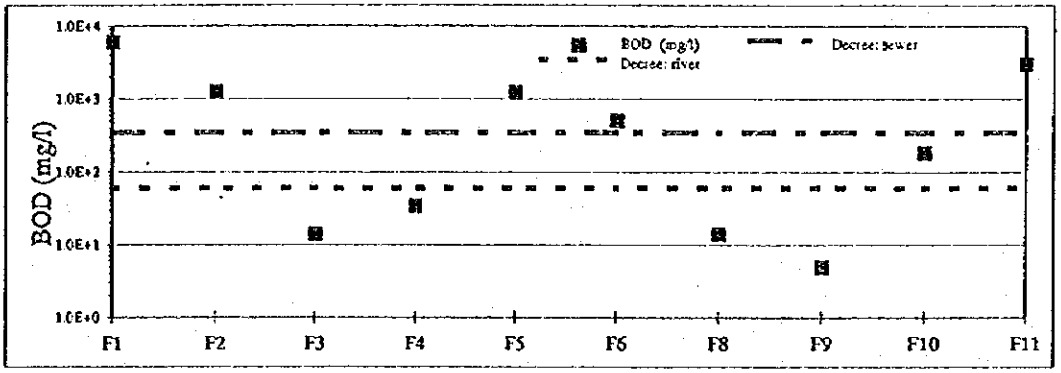

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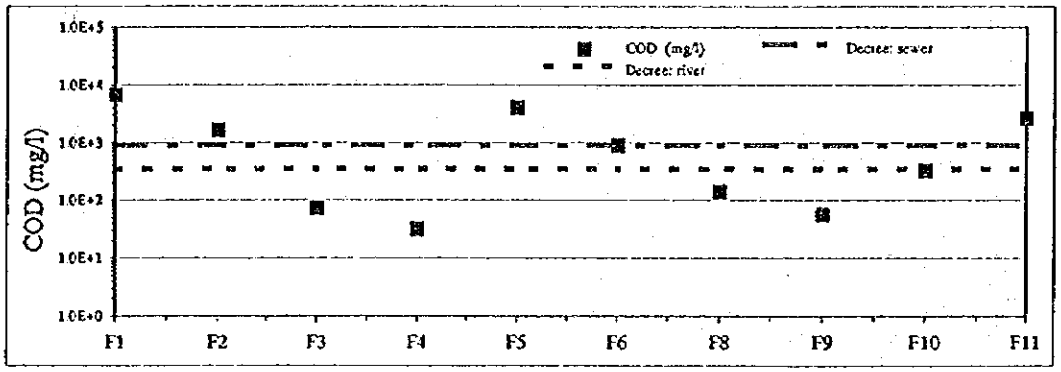
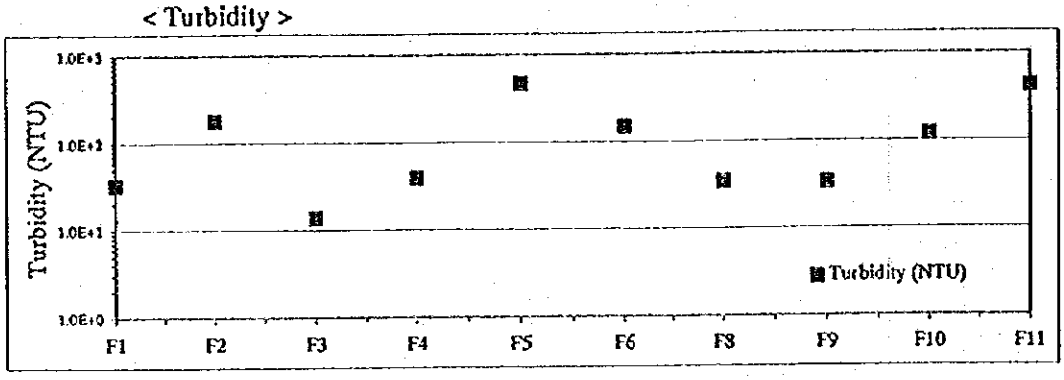


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-10 Pollution from Food Factories (1/2)

Water Quality in Food Factory Wastewater

< Turbidity >



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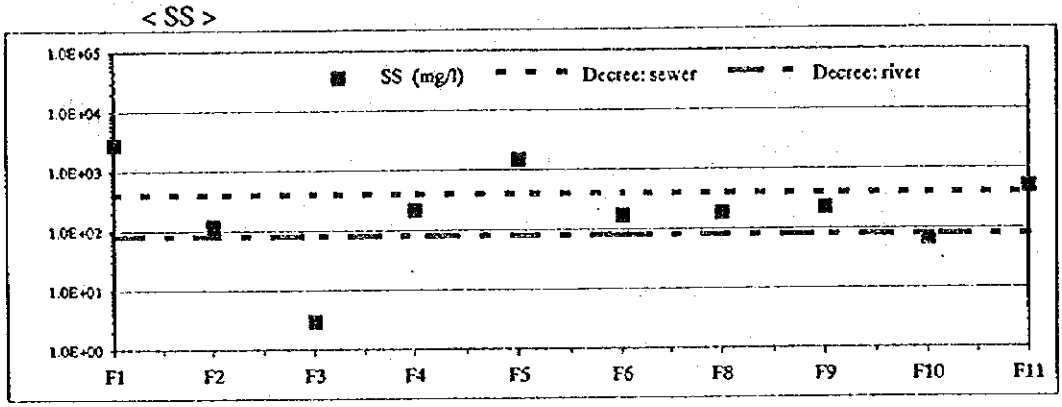

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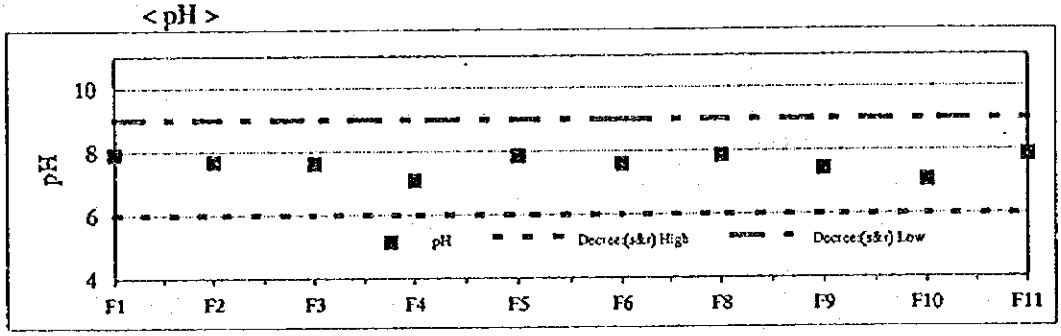

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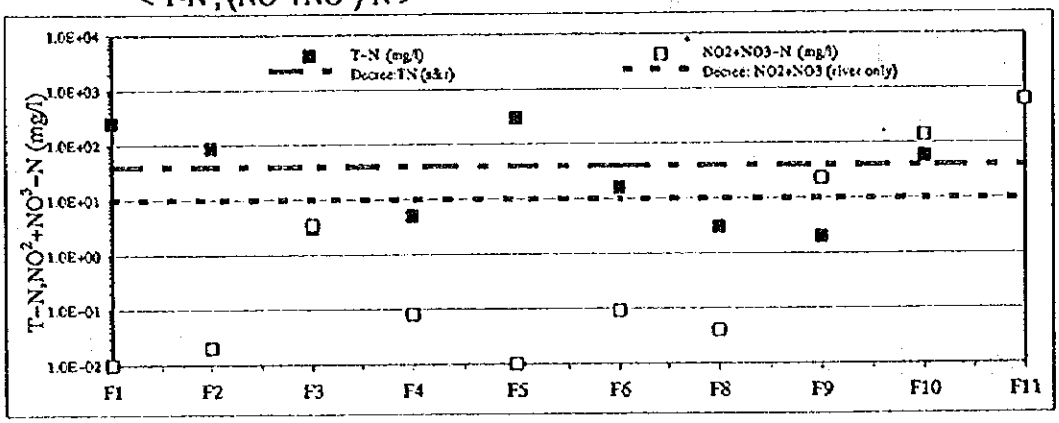

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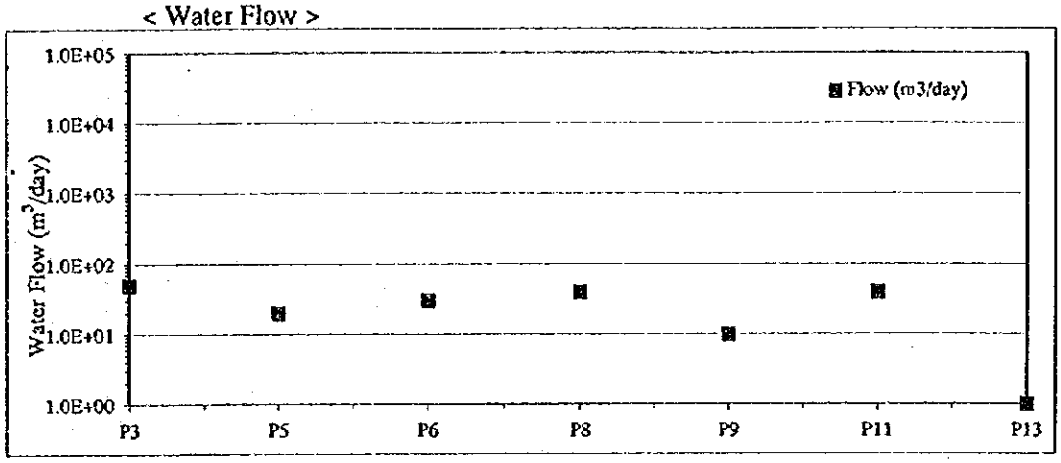
IN THE REPUBLIC OF VENEZUELA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 2.2-10 Pollution from Food Factories (2/2)

Water Quality in Piggery Wastewater

< Water Flow >



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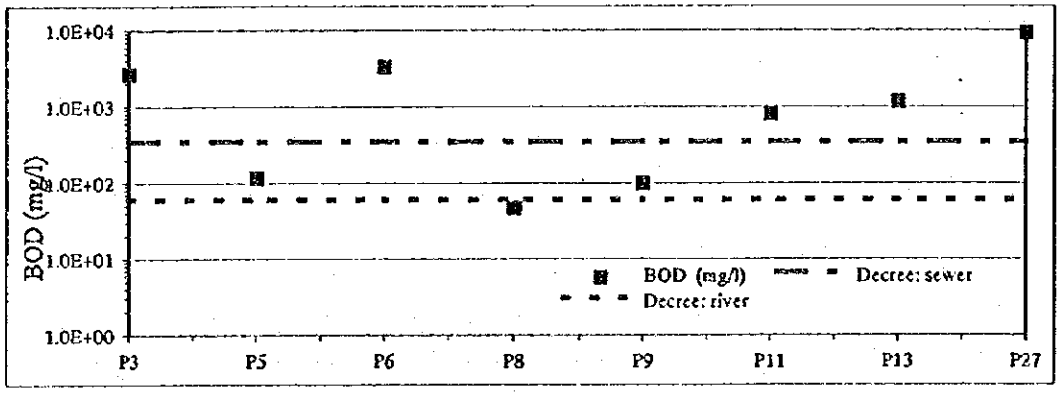

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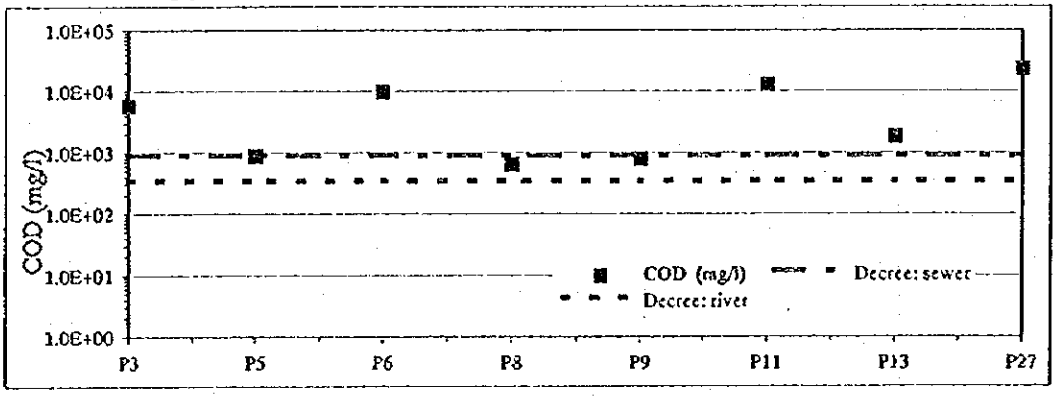
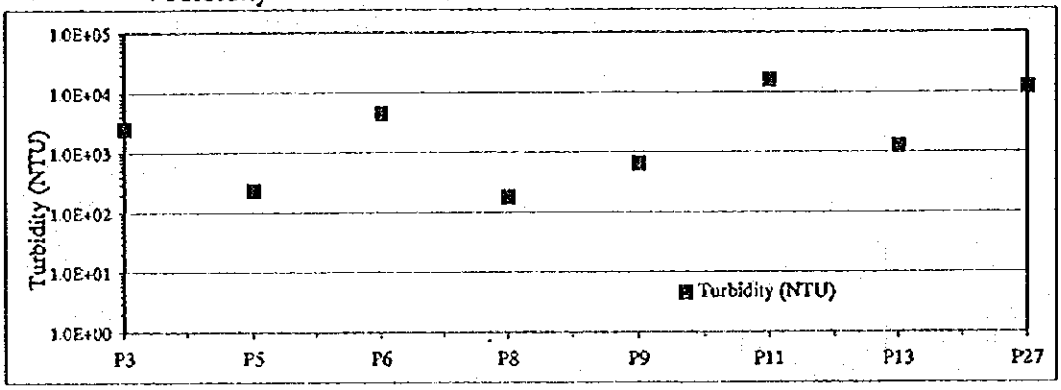


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-11 Pollution from Piggeries (1/2)

Water Quality in Piggery Wastewater

< Turbidity >



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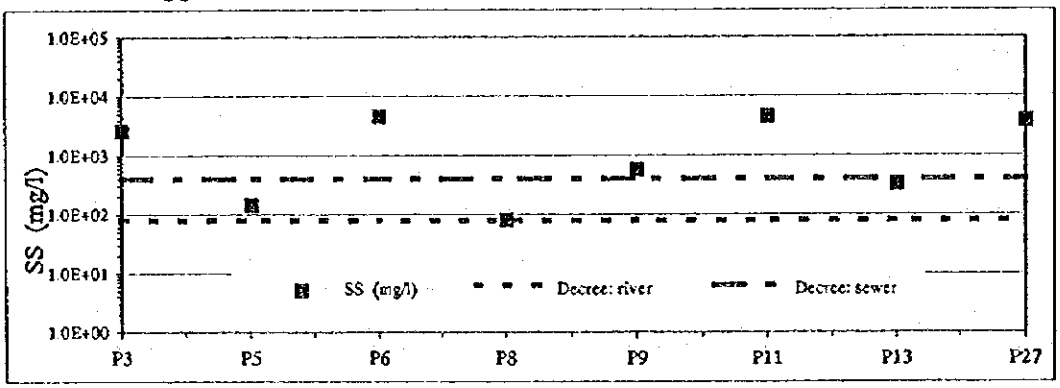

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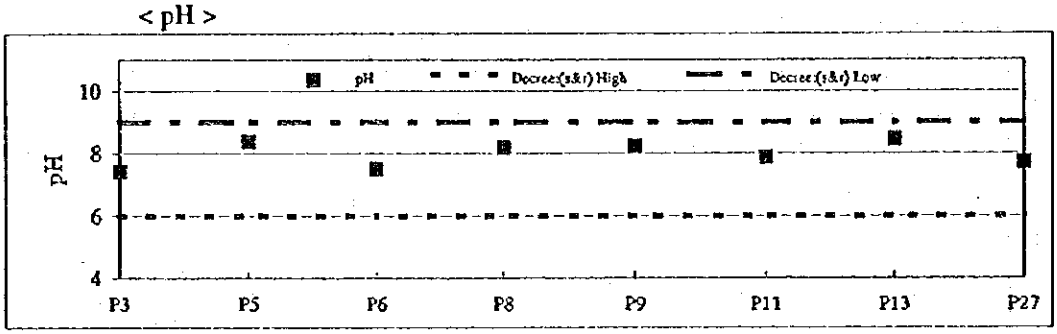
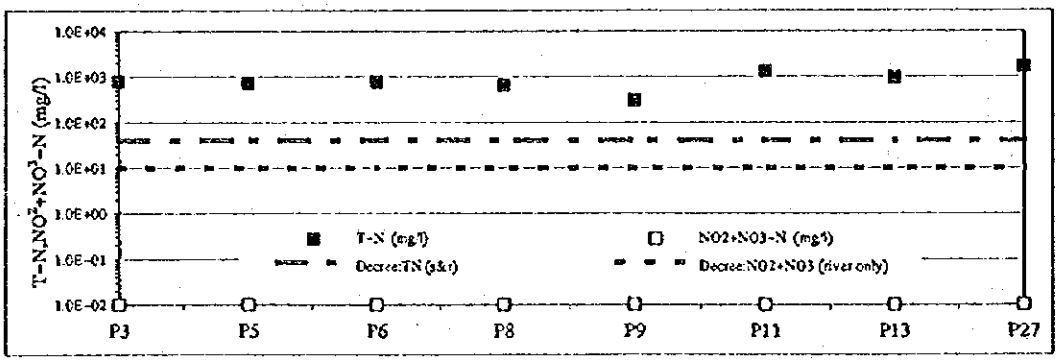
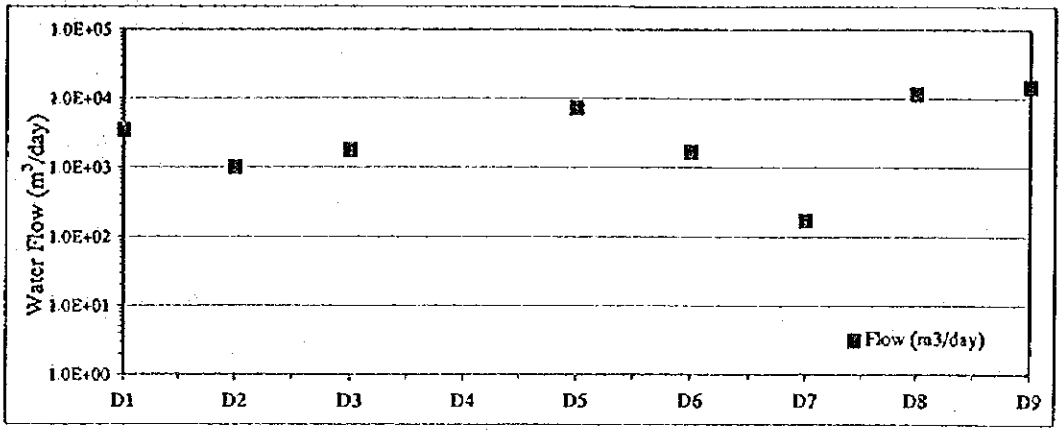




THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-11 Pollution from Piggeries (2/2)

Water Quality in Domestic Wastewater

< Water Flow >



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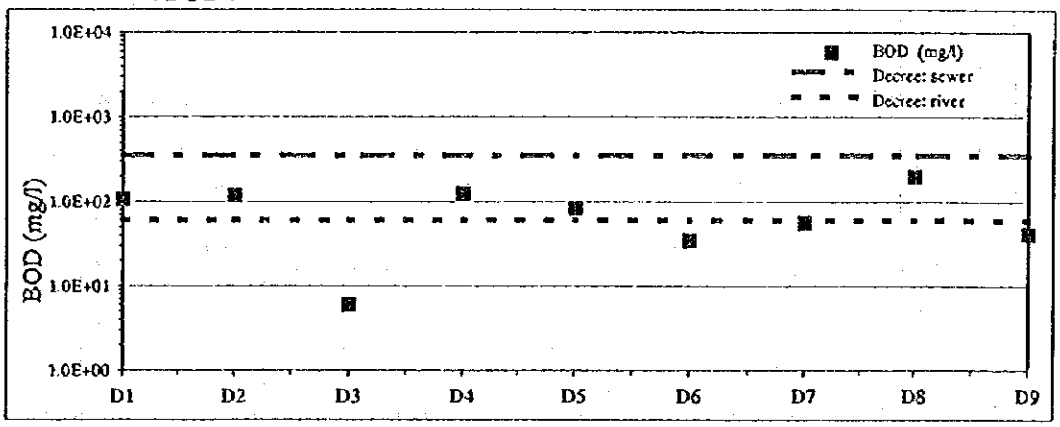

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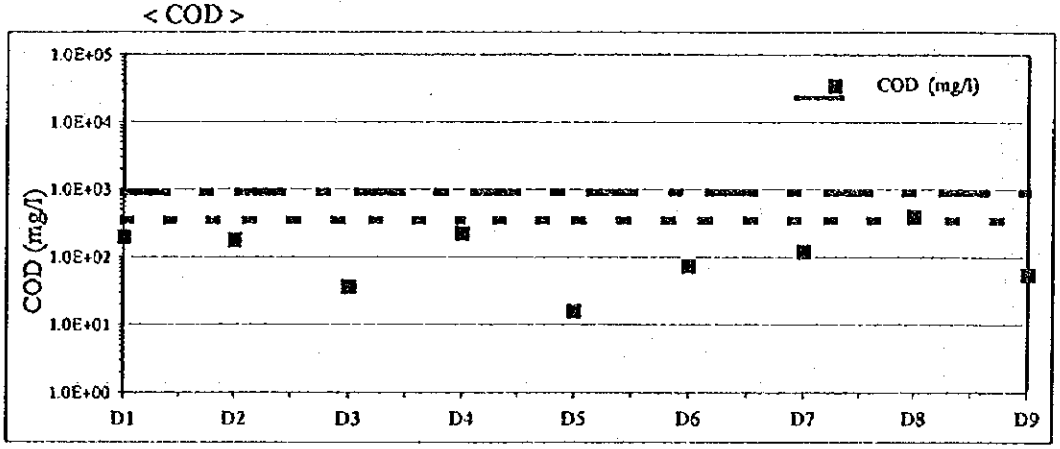
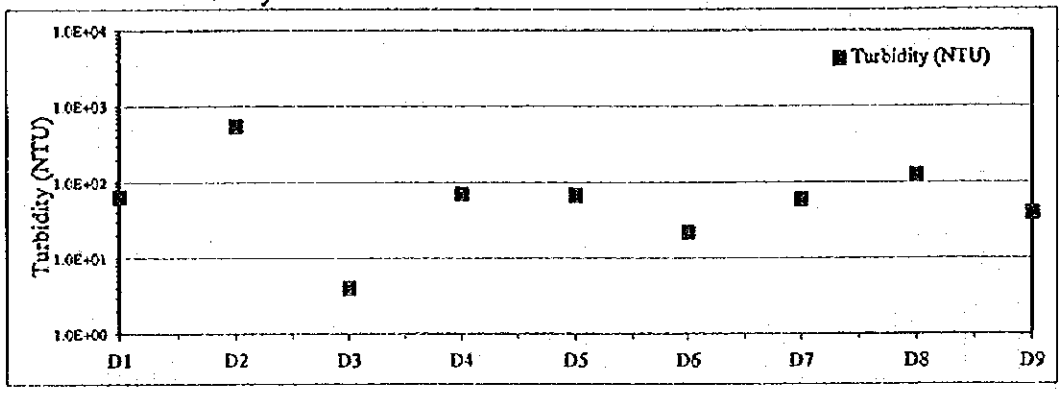


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-12 (1/2) Water Qualities of Domestic Wastewater

Water Quality in Food Factory Wastewater

< Turbidity >



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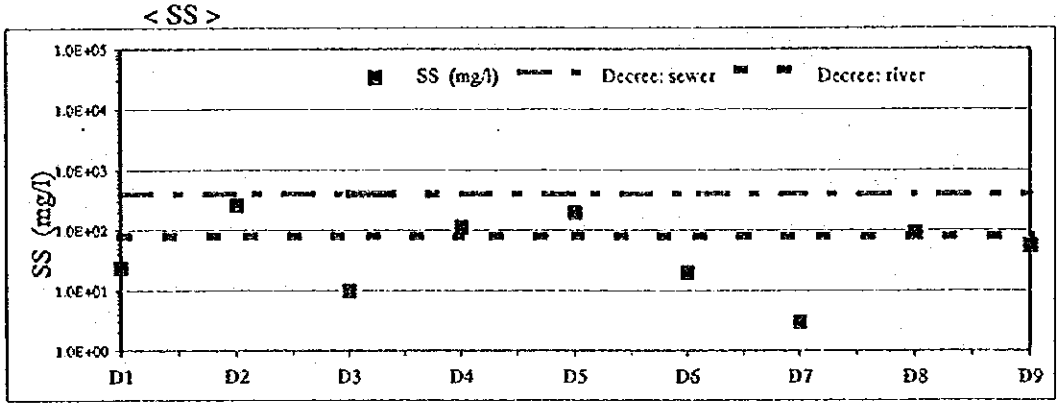

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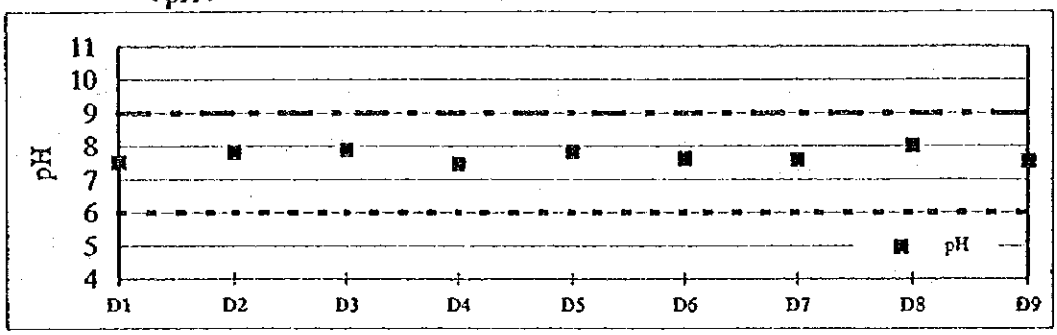

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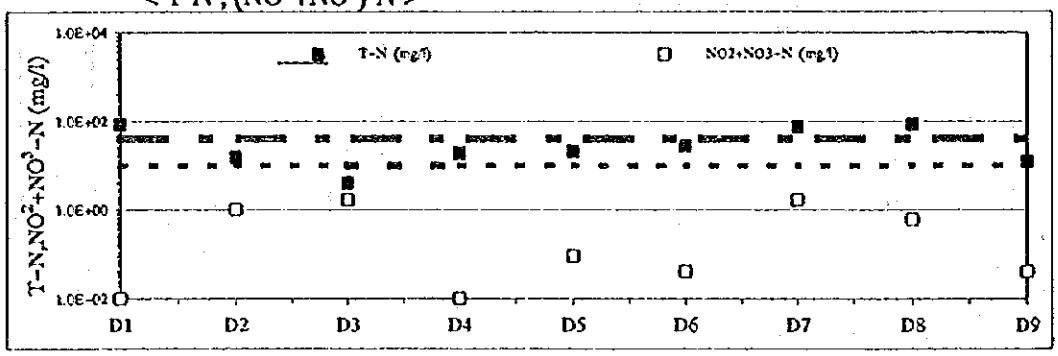
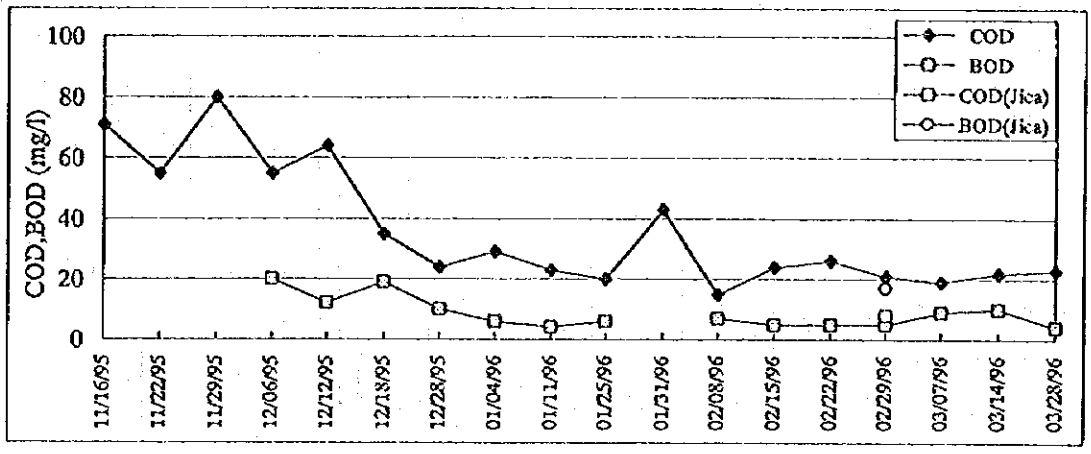
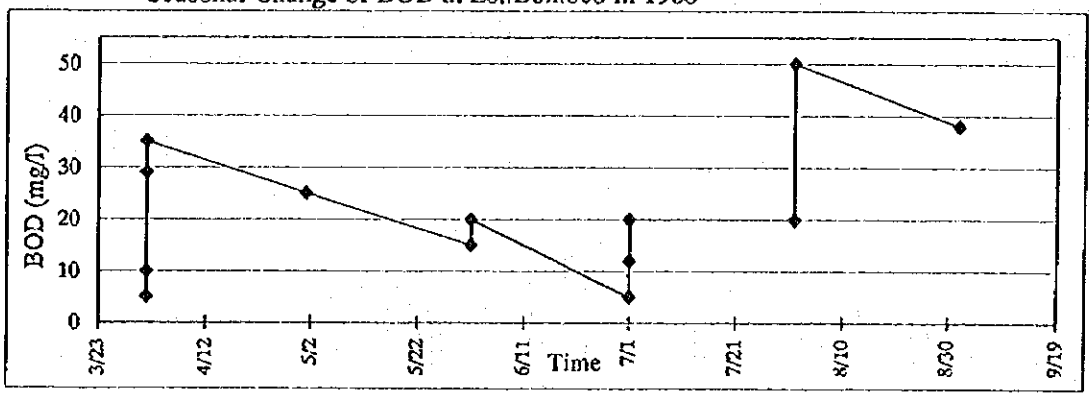


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-12 Water Qualities of Domestic Wastewater (2/2)

Water Quality in Tuy River (Puente Ocumare) from GTZ Data

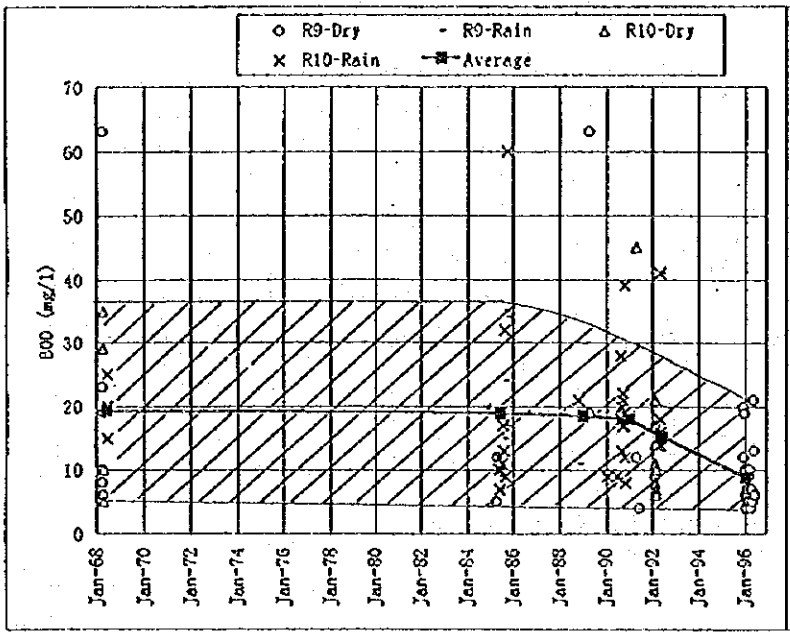


Seasonal Change of BOD at Est.Bombeo in 1968

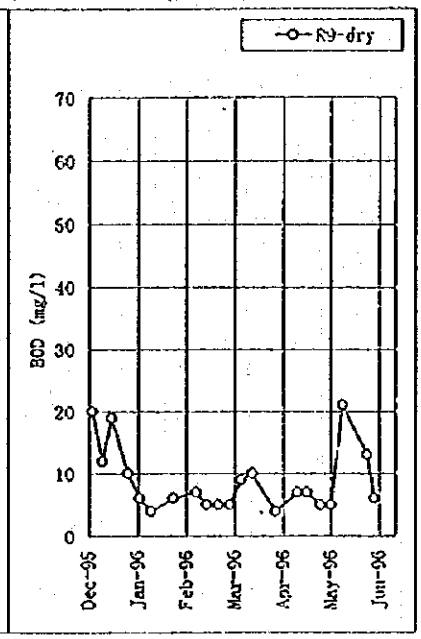


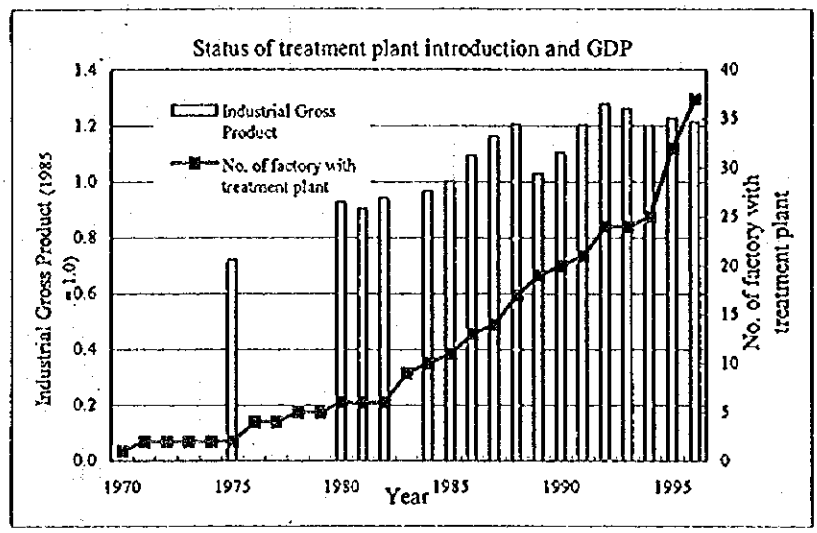
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-13 Water Qualities from Past Observations
JAPAN INTERNATIONAL COOPERATION AGENCY	

(Ocumare, Toma-de-Agua)

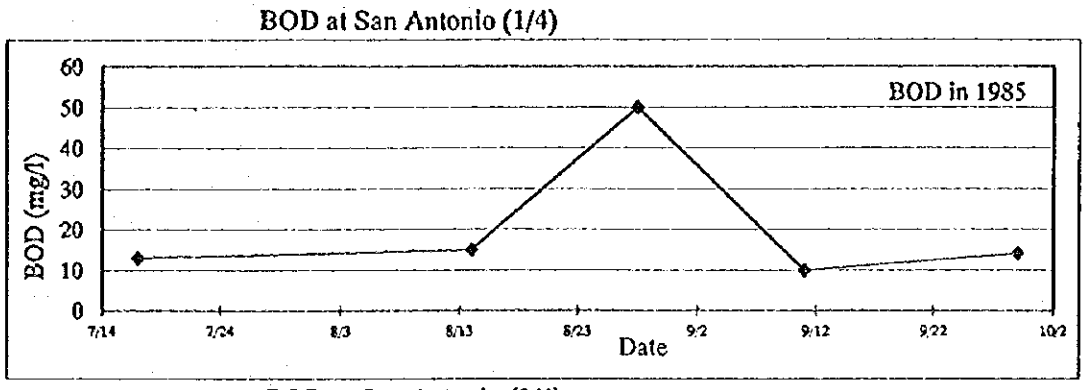


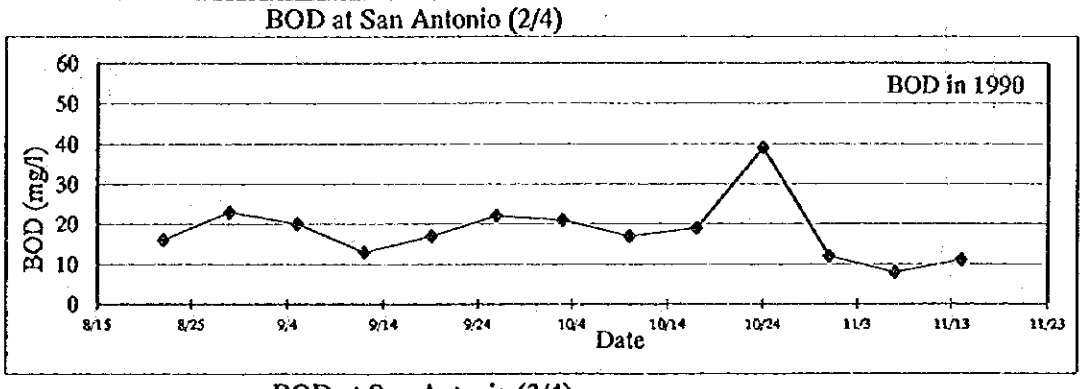
(Ocumare)

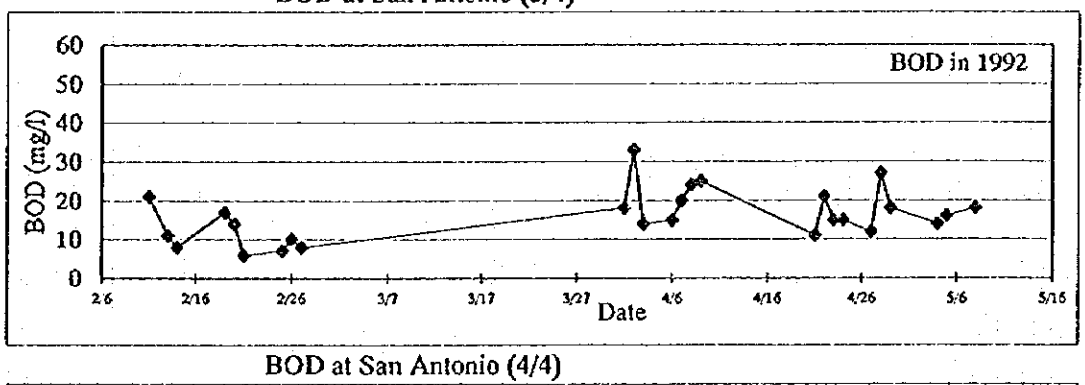


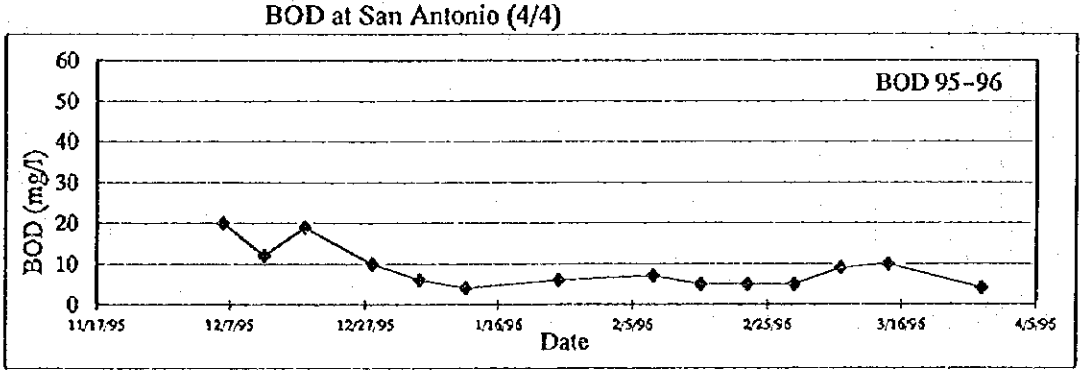


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-14 (1/2) Historical and Seasonal Changes of BOD in the Tuy River

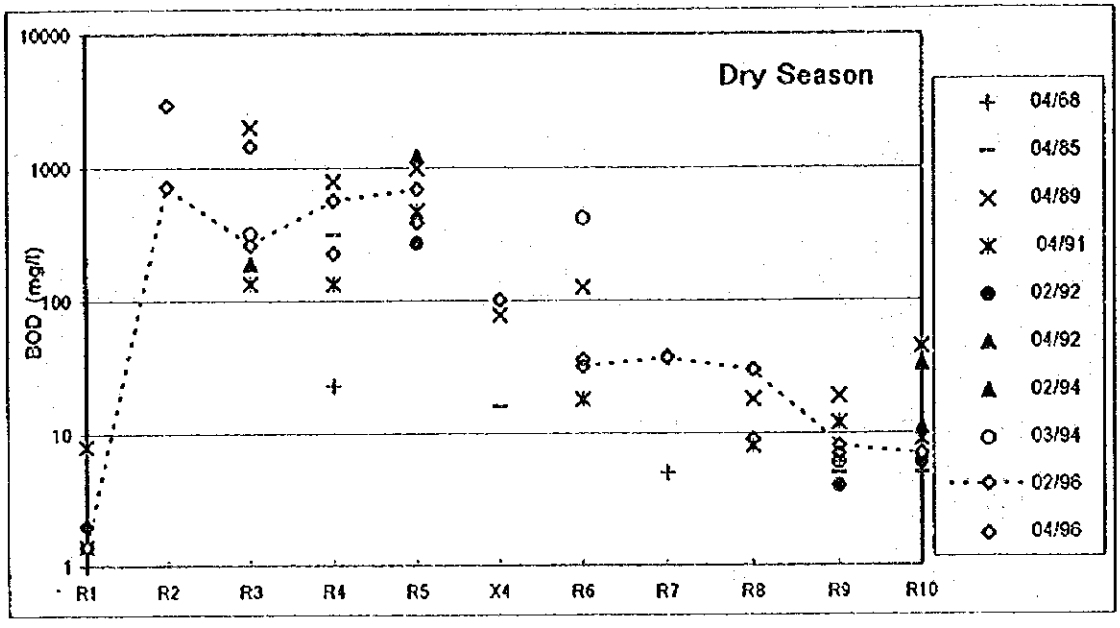


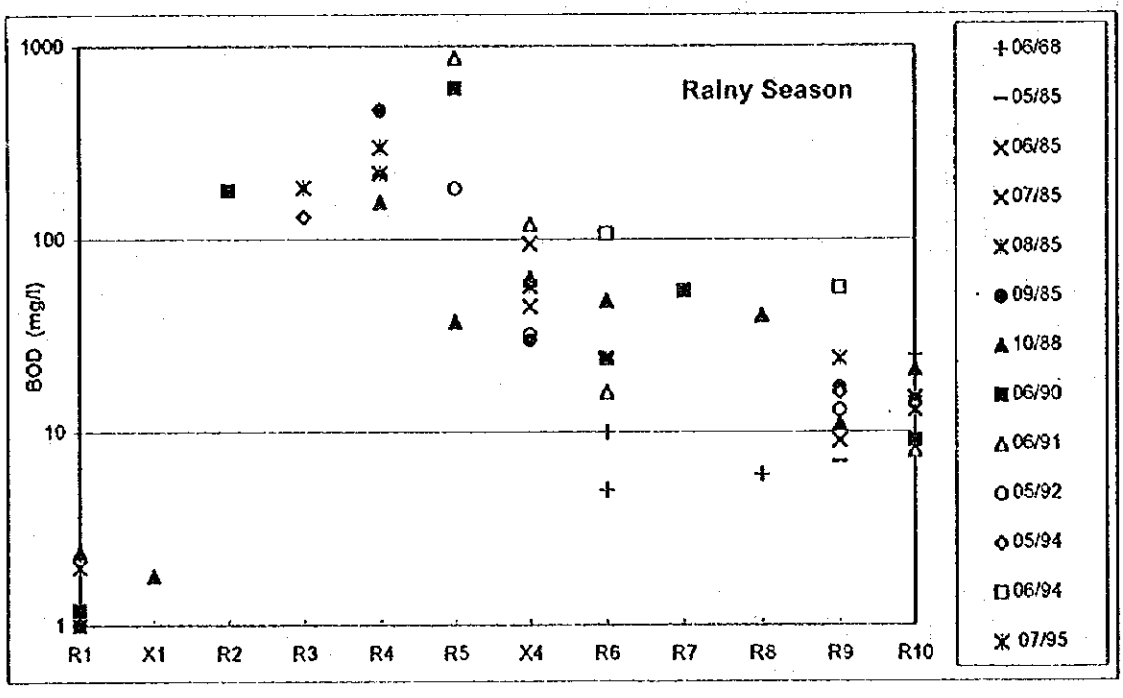




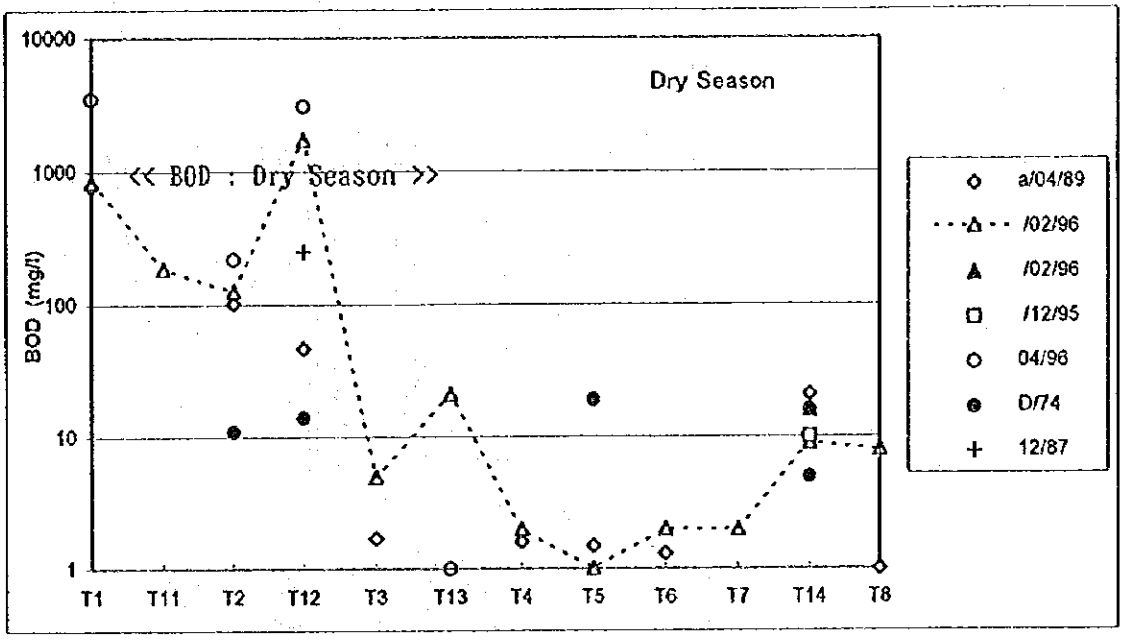


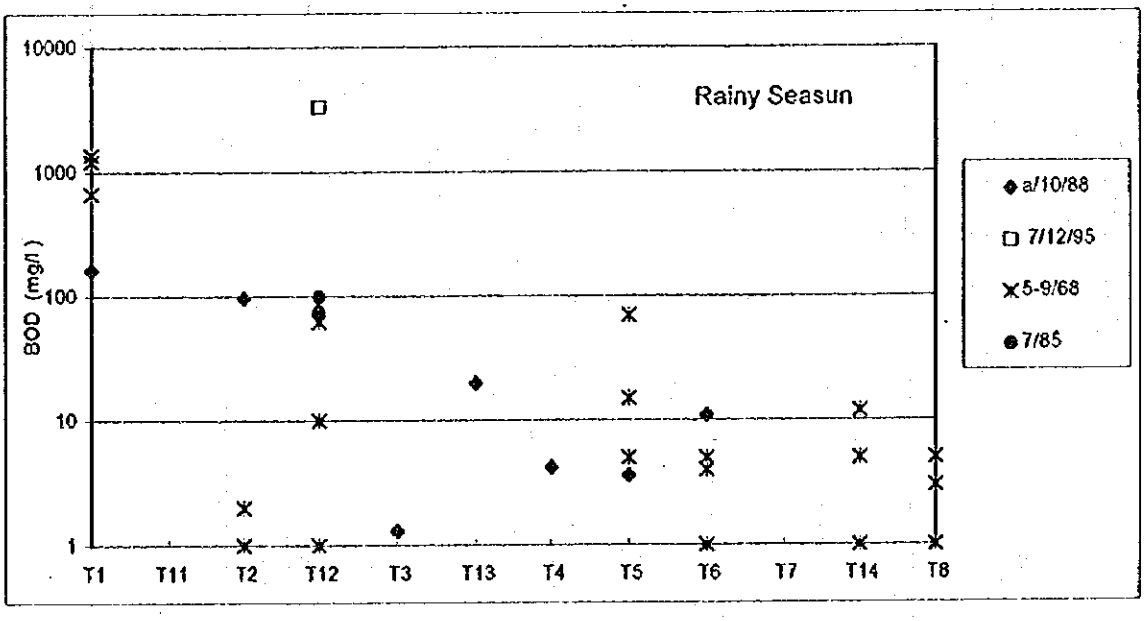
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-14 Historical and Seasonal Changes of BOD in the Tuy River (2/2)



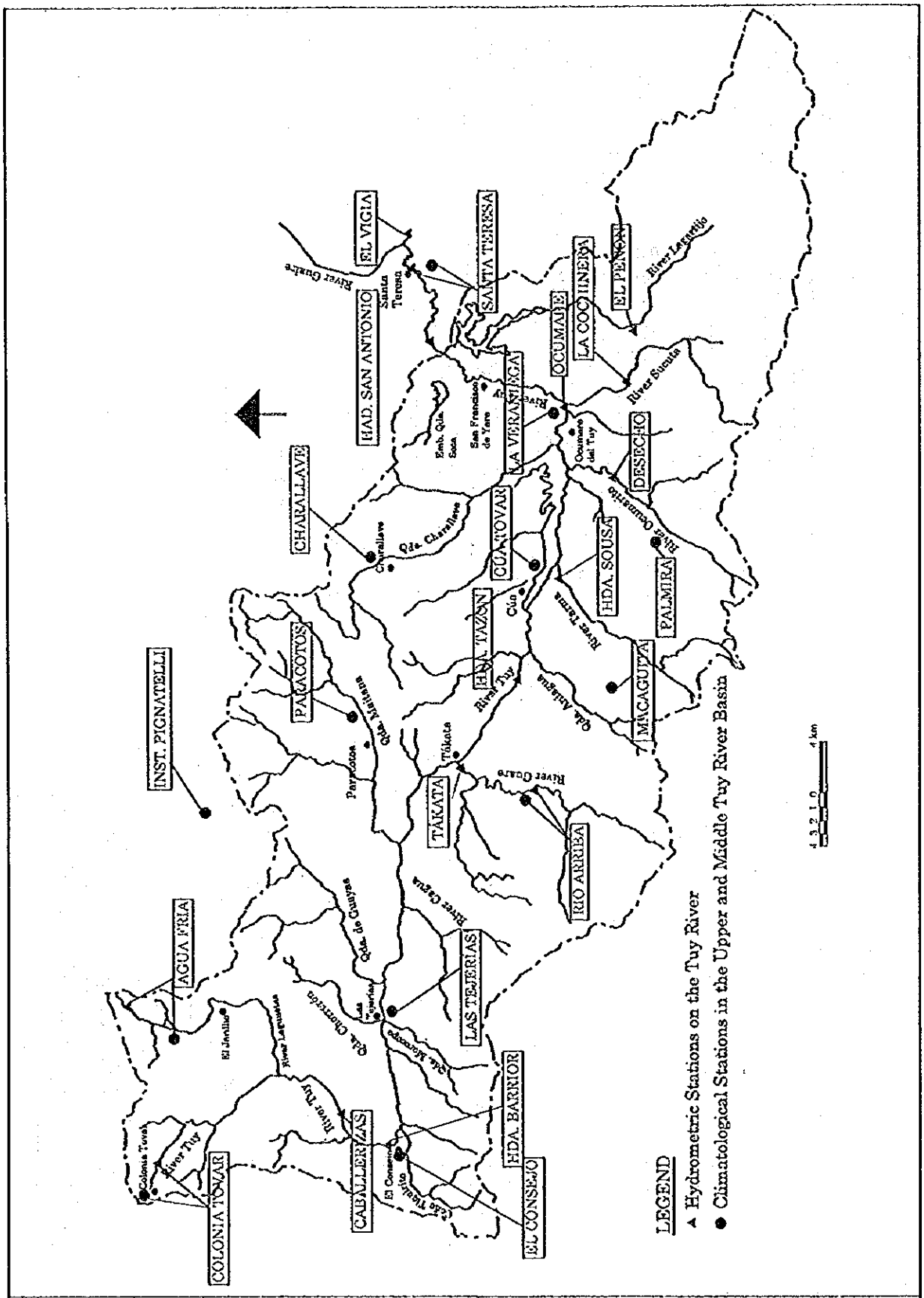


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.2-15 (1/2) Seasonal Changes of BOD in the Tuy River and Tributaries

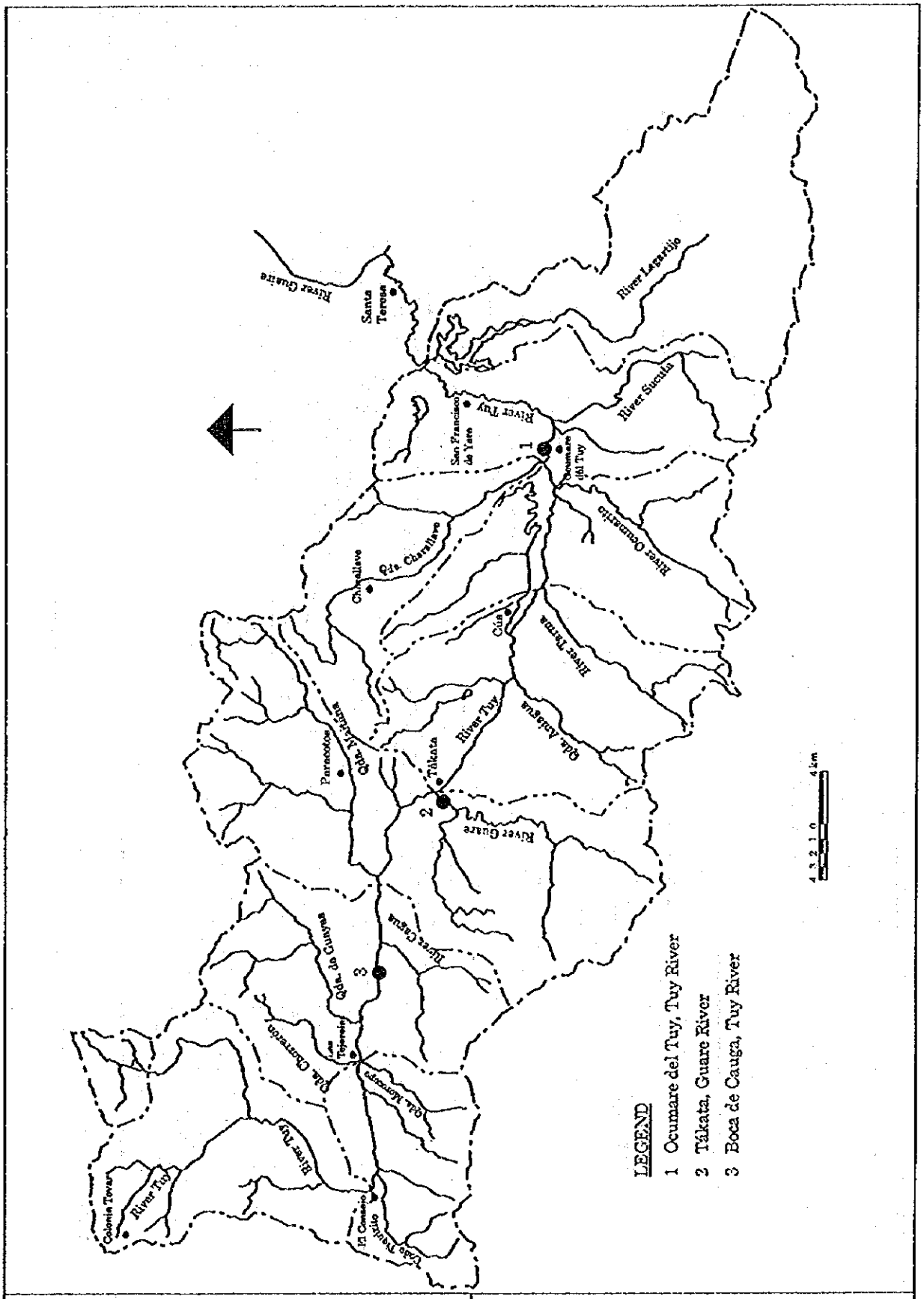




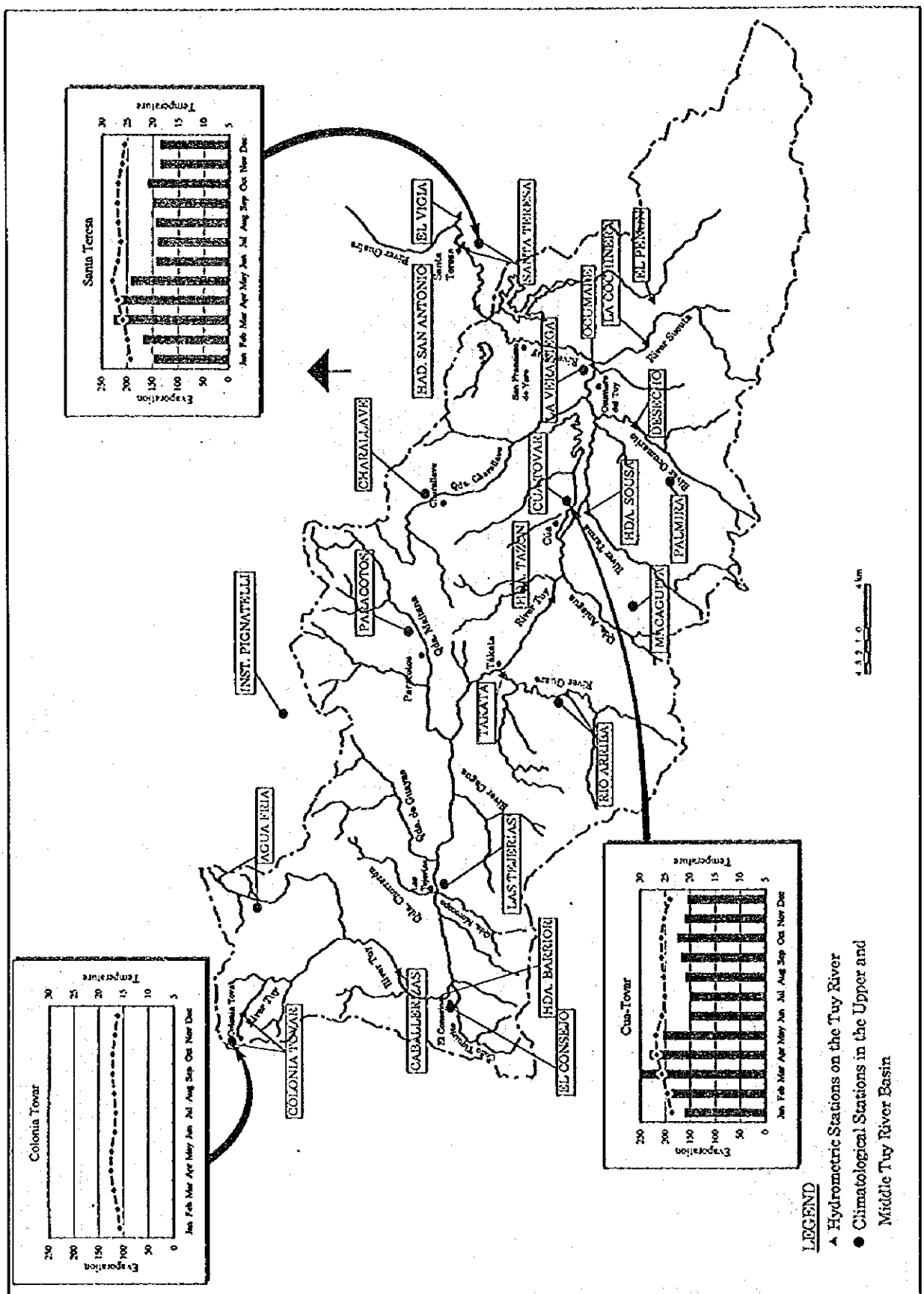
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.2-15 Seasonal Changes of BOD in the Tuy River and Tributaries (2/2)
JAPAN INTERNATIONAL COOPERATION AGENCY	



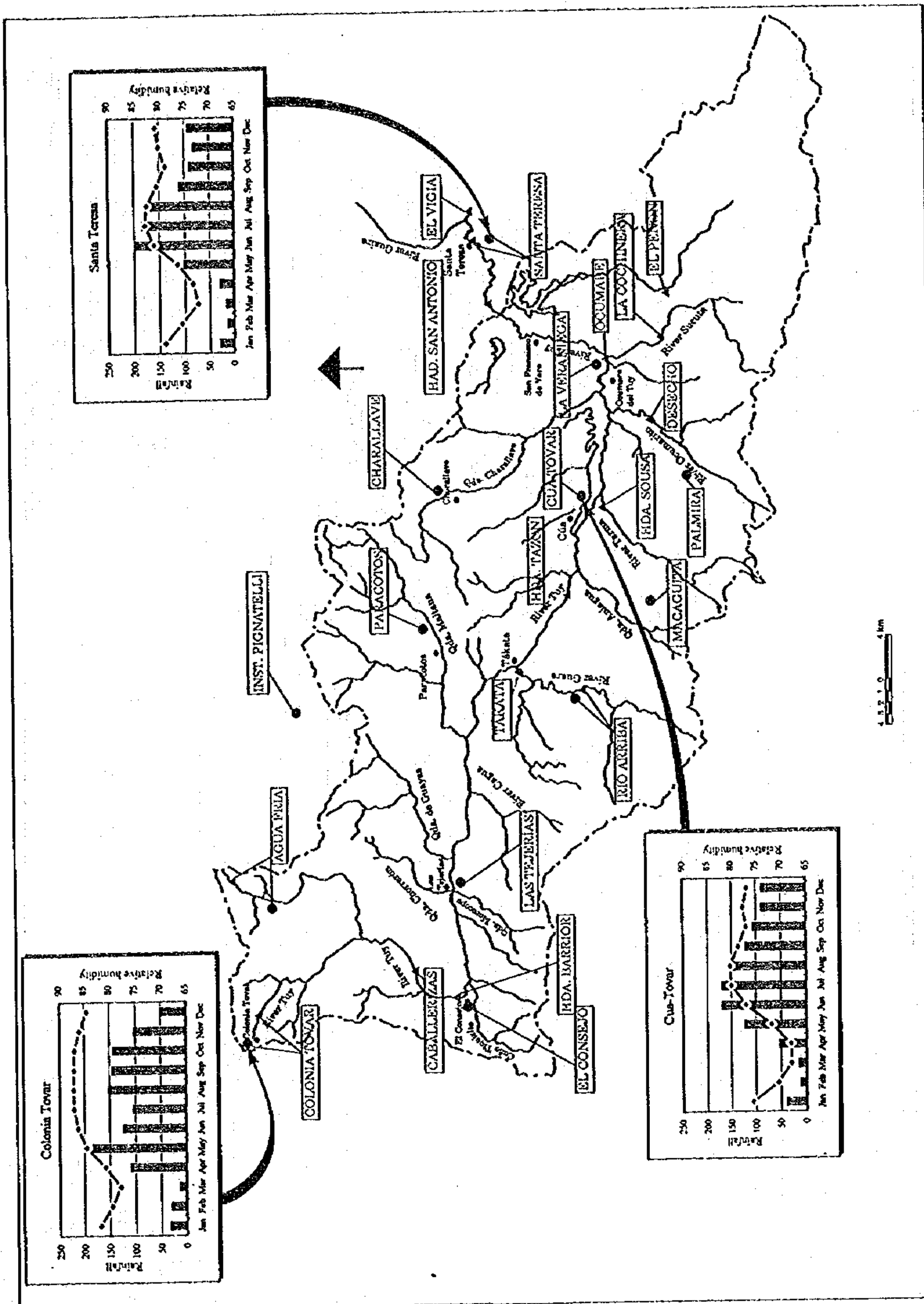
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.3-1 Location of Meteorological and Hydrometric Stations



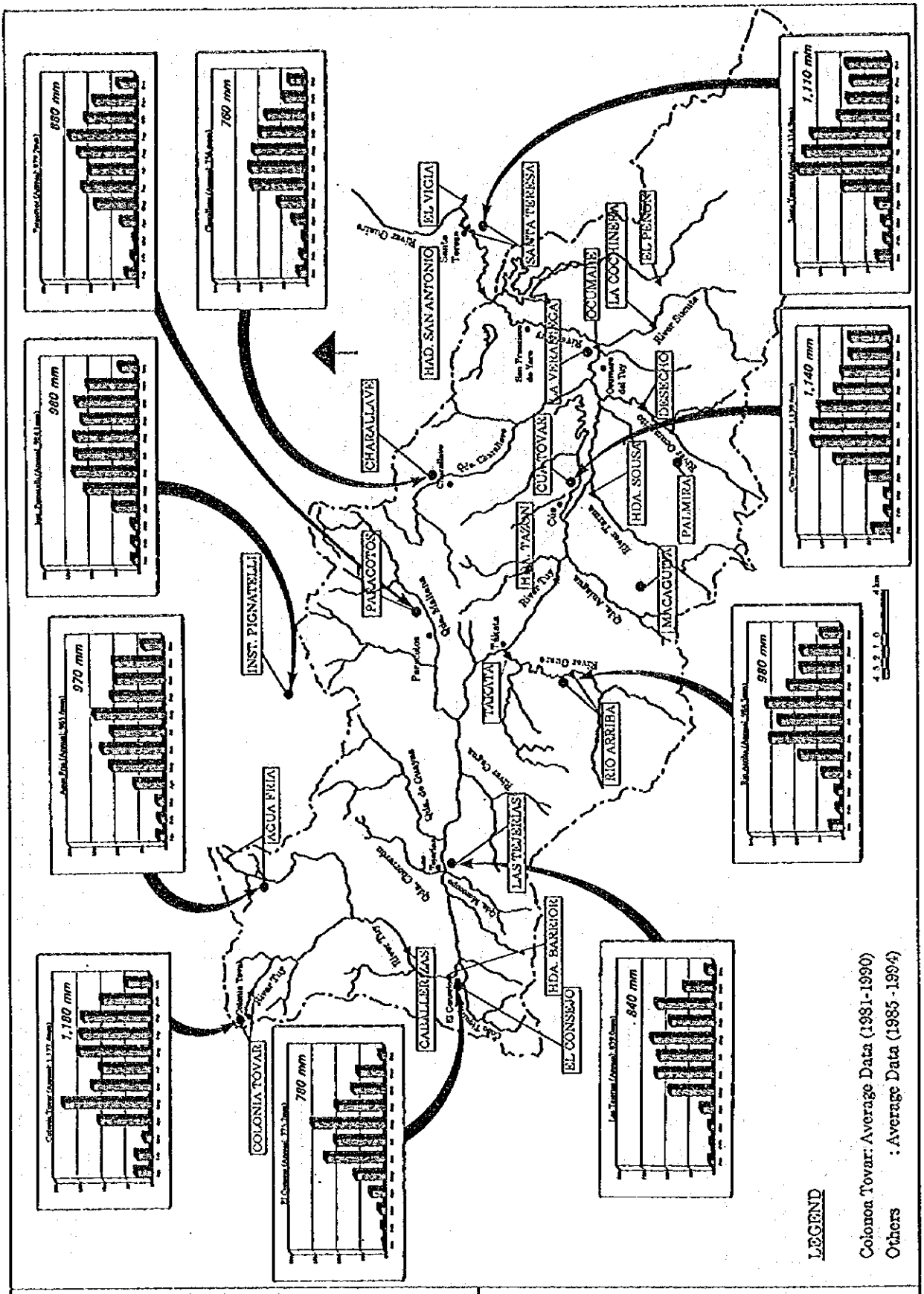
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.3-2 Location Map of Automatic Water Level Gage Installed in the Study Area During the Study
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.3-3 Climate in the Study Area (1/2)
JAPAN INTERNATIONAL COOPERATION AGENCY	



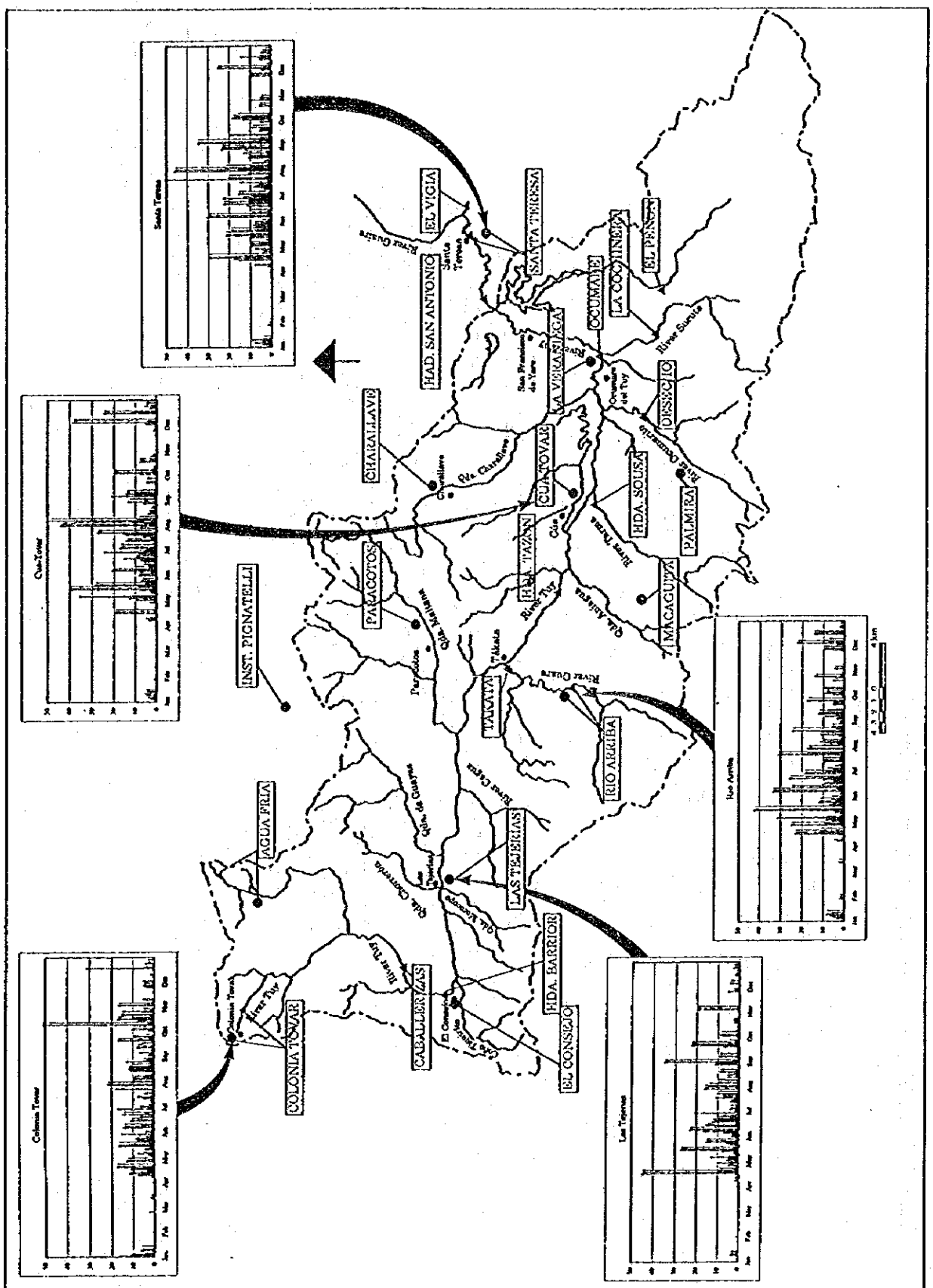
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.3-3 Climate in the Study Area (2/2)
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE STUDY ON
THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA

JAPAN INTERNATIONAL COOPERATION AGENCY

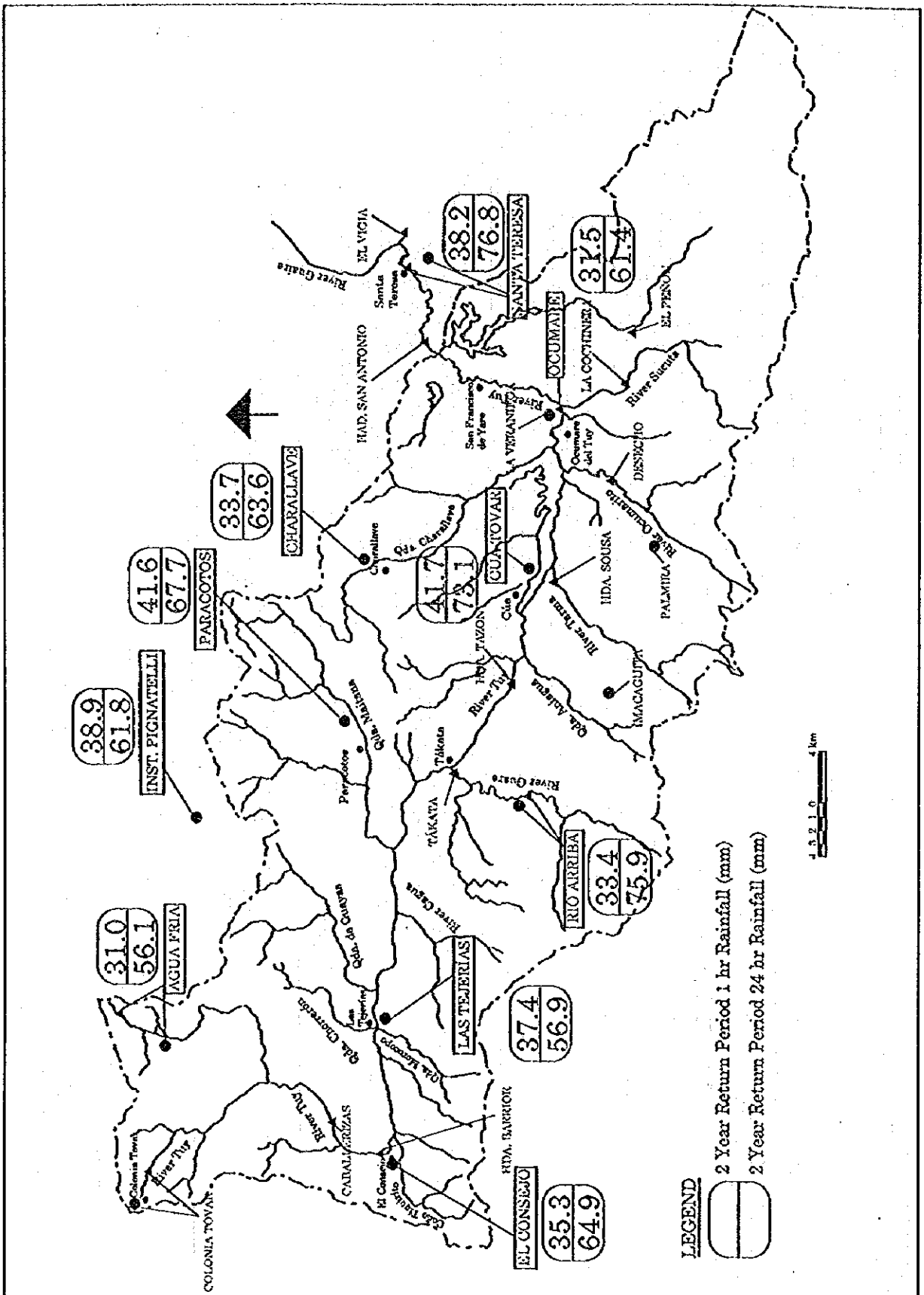
Fig. 2.3-4 Average Monthly Rainfall



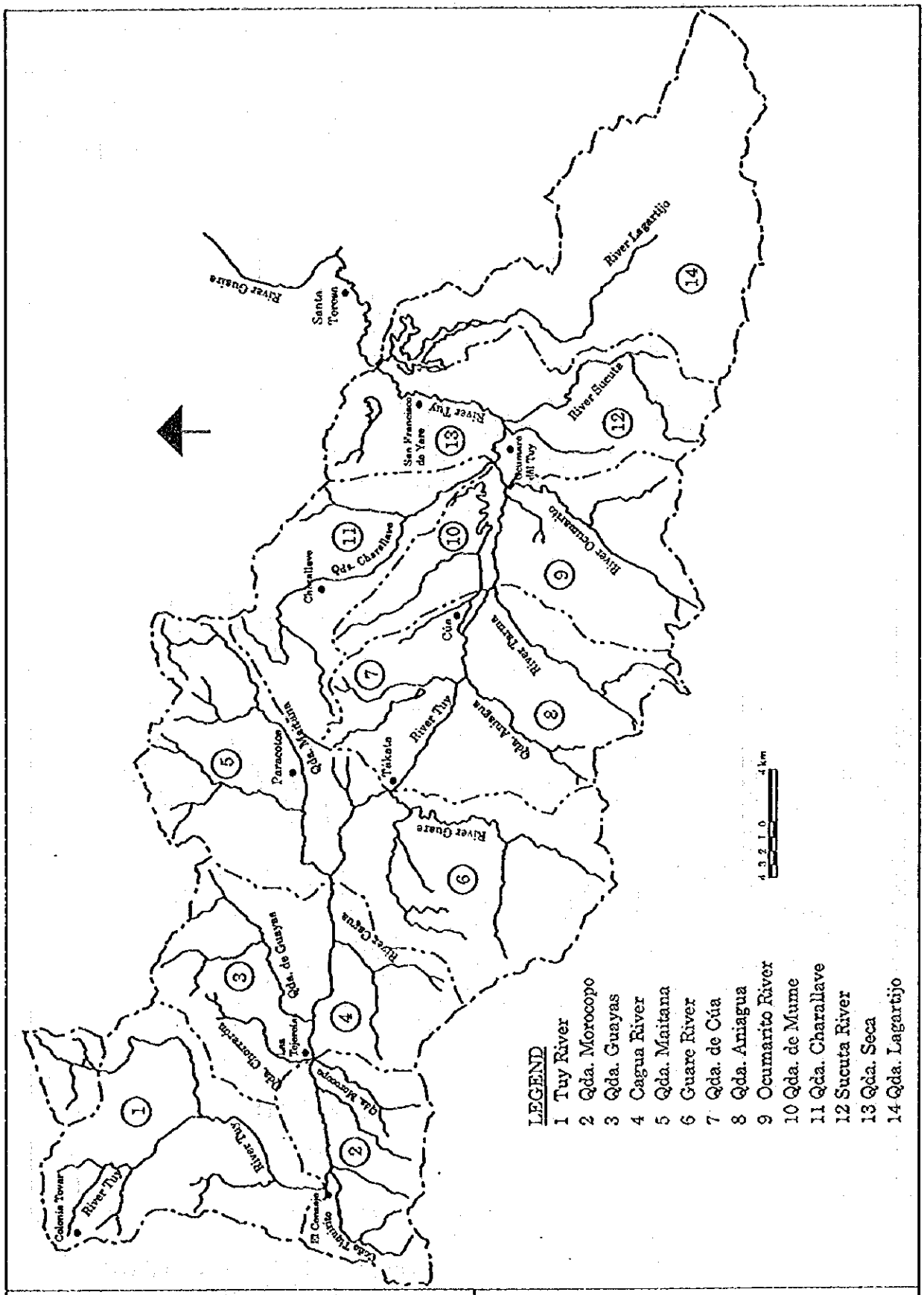
THE STUDY ON
THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 2.3-5 Daily Rainfall Distribution



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.3-6 Probable 1 hr and 24 hr Rainfall
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE STUDY ON
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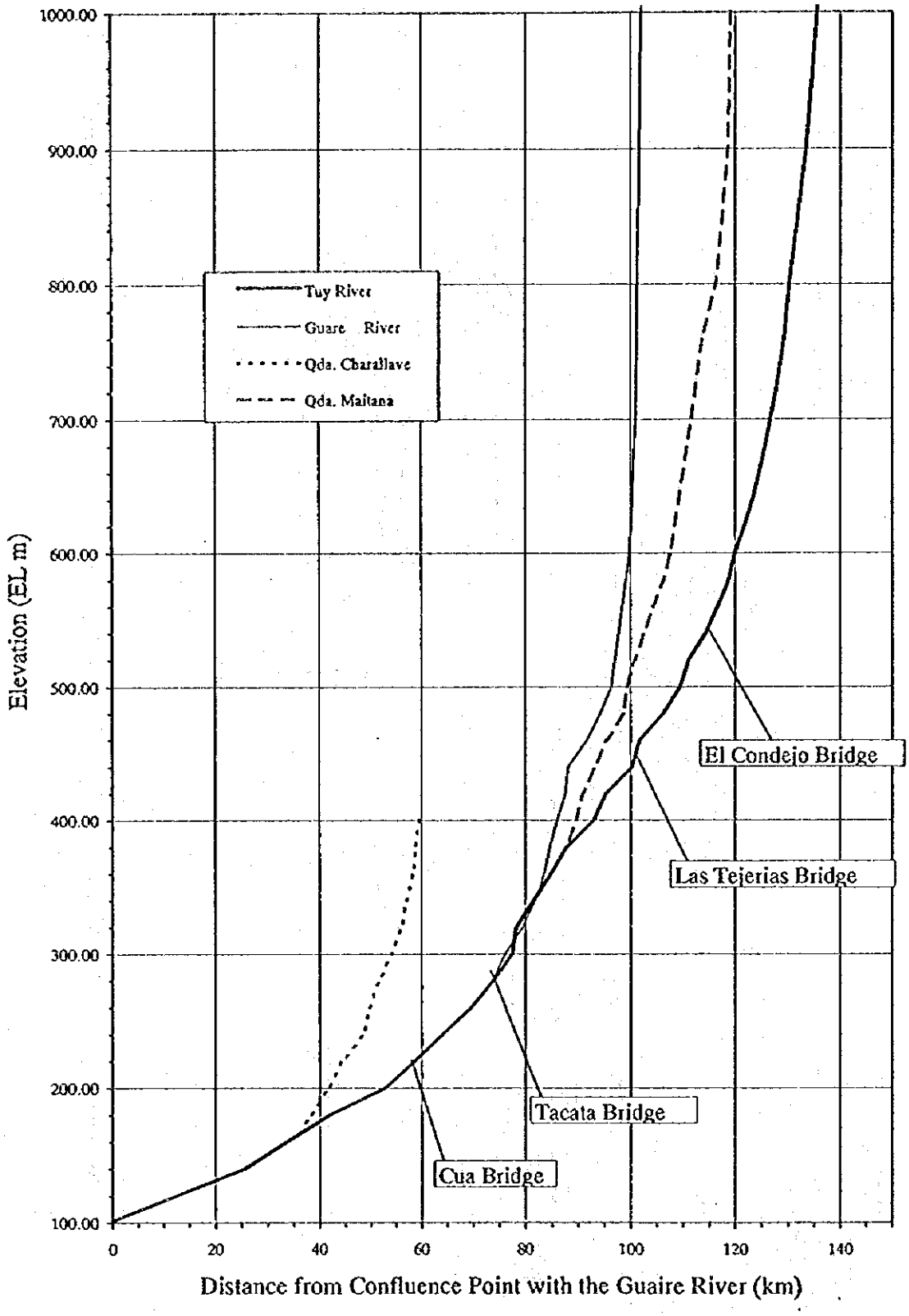
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 2.3-7 Division of the Catchment Basin



THE STUDY ON
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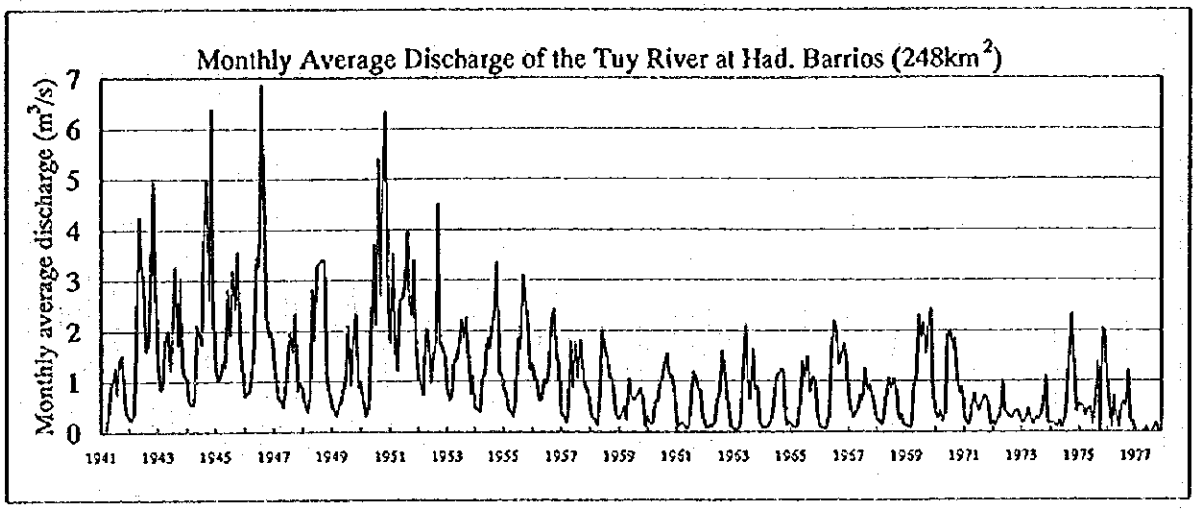
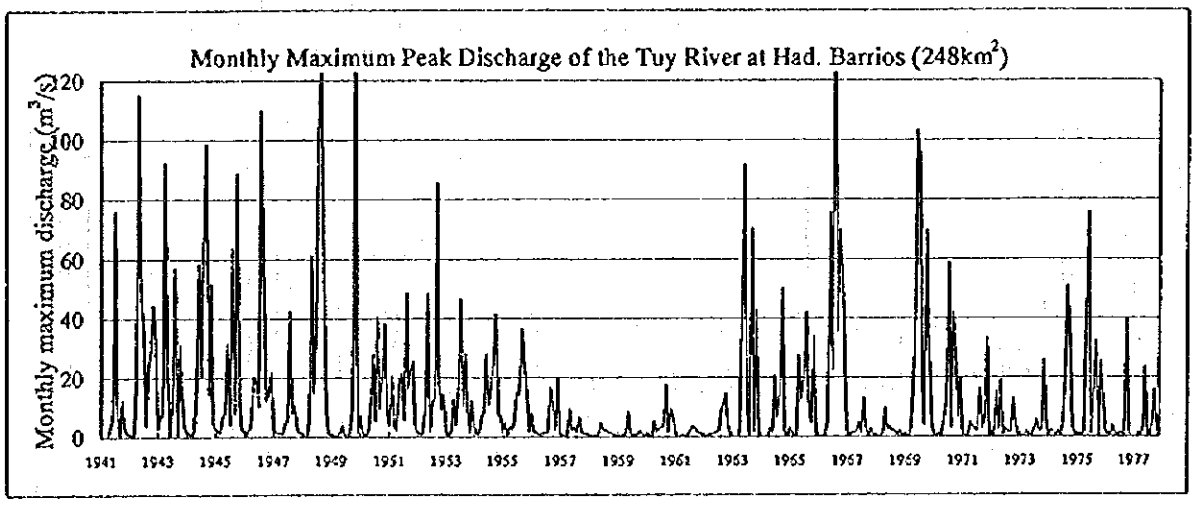
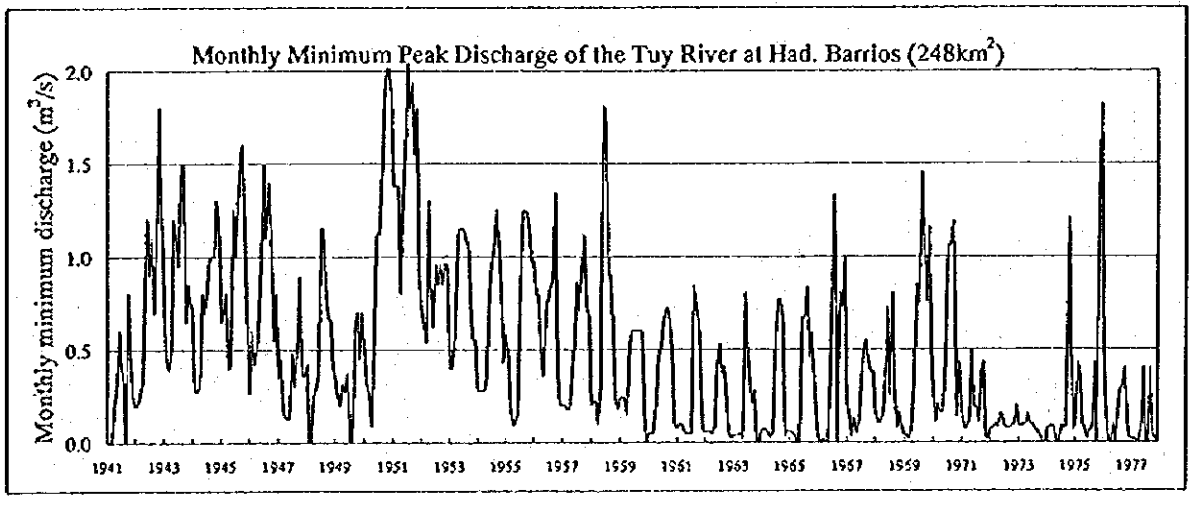
JAPAN INTERNATIONAL COOPERATION AGENCY

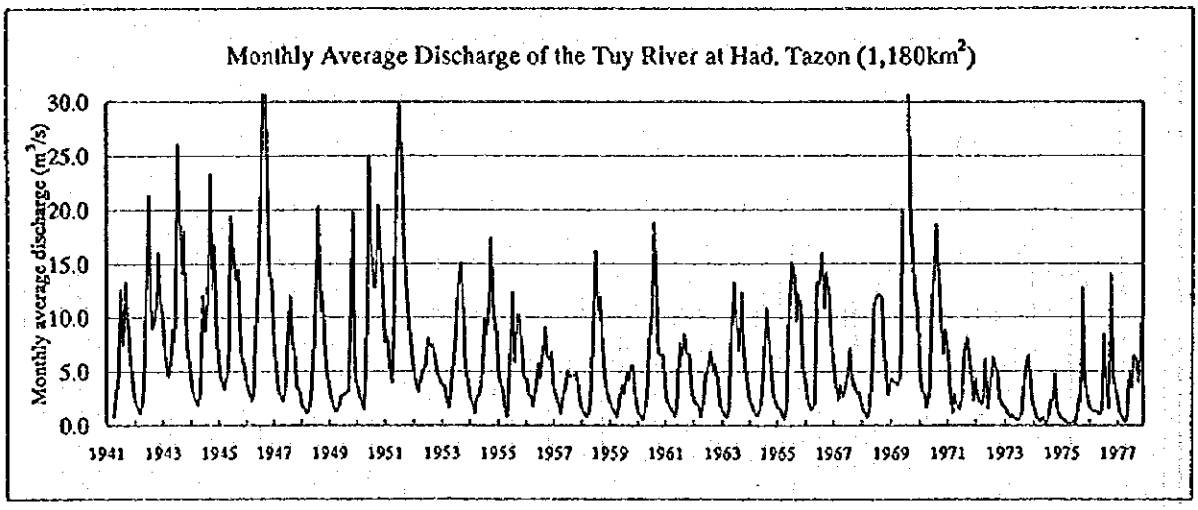
Fig. 2.3-8 Longitudinal Profile of the Tuy River and Tributaries

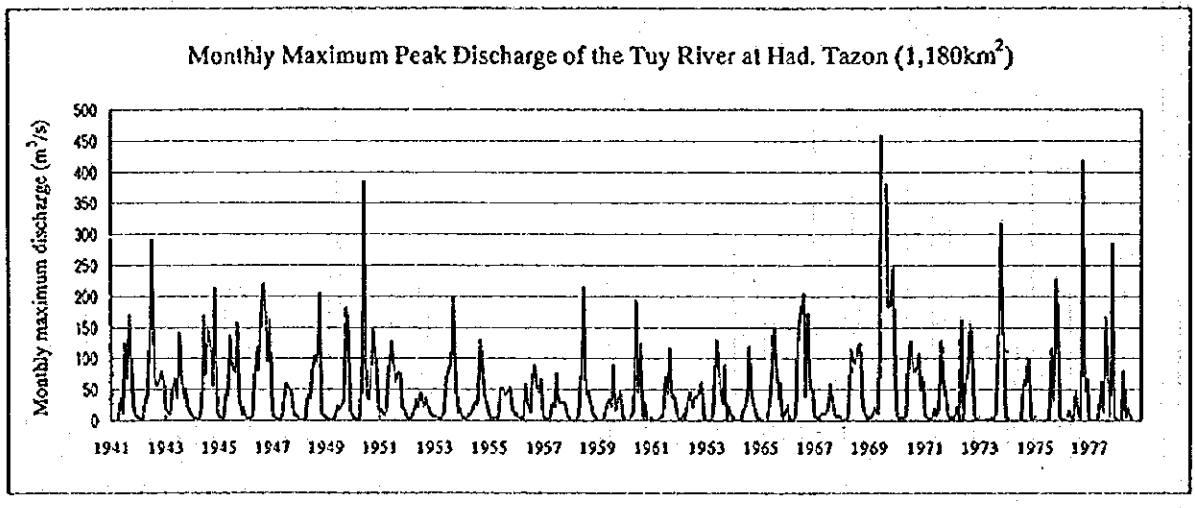


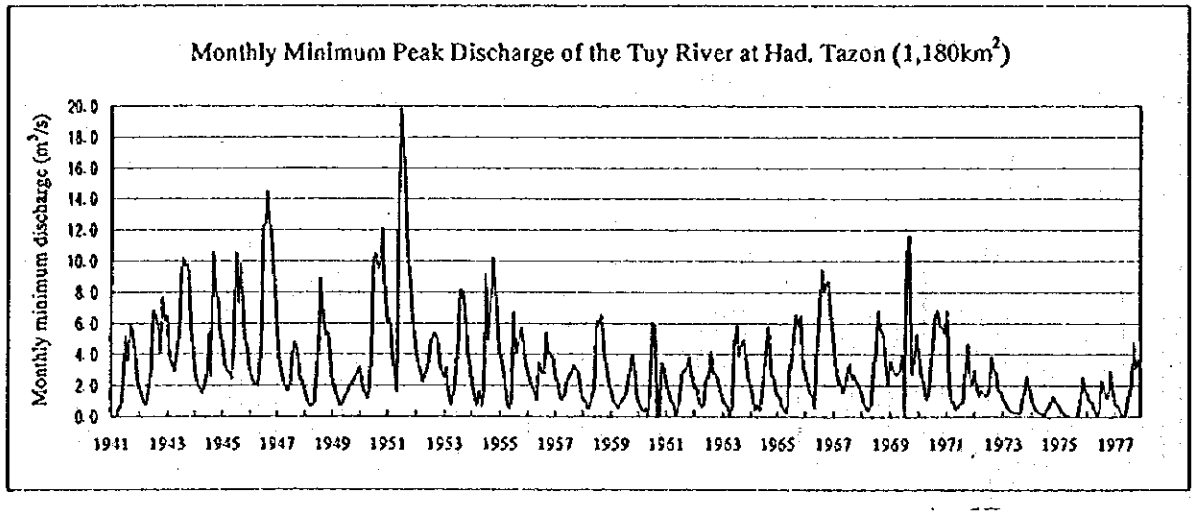




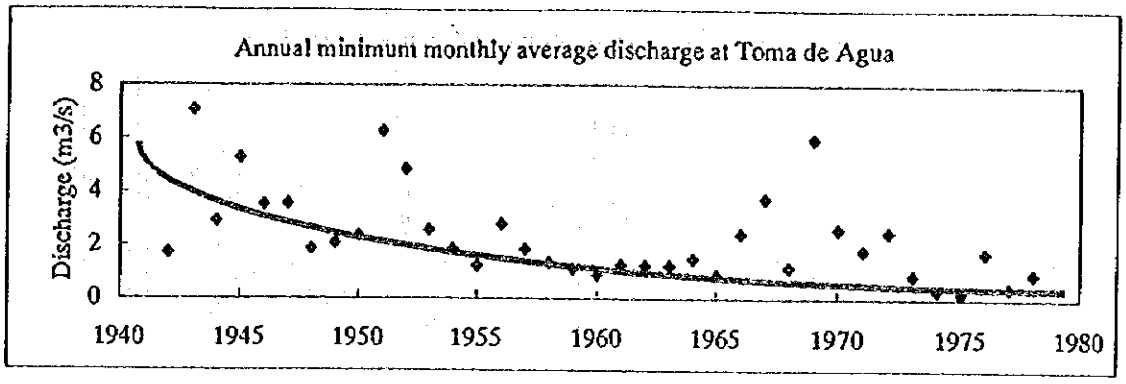
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.3-9 Monthly Discharge of the Tuy River (1/2)



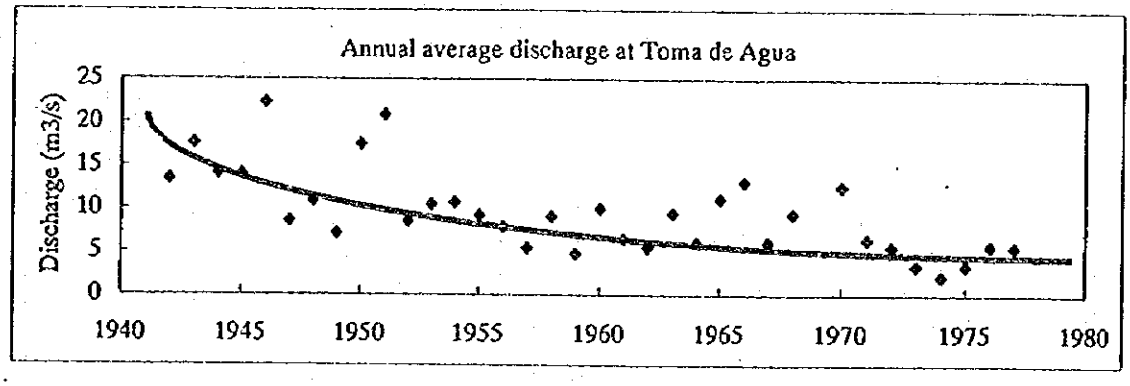




THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.3-9 Monthly Discharge of the Tuy River (2/2)

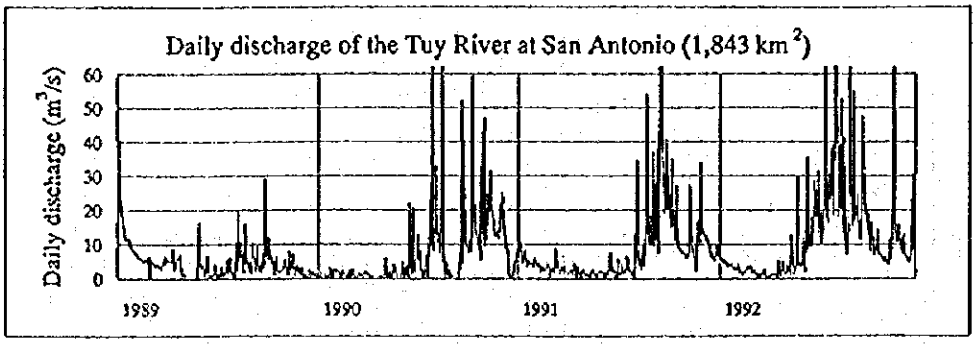


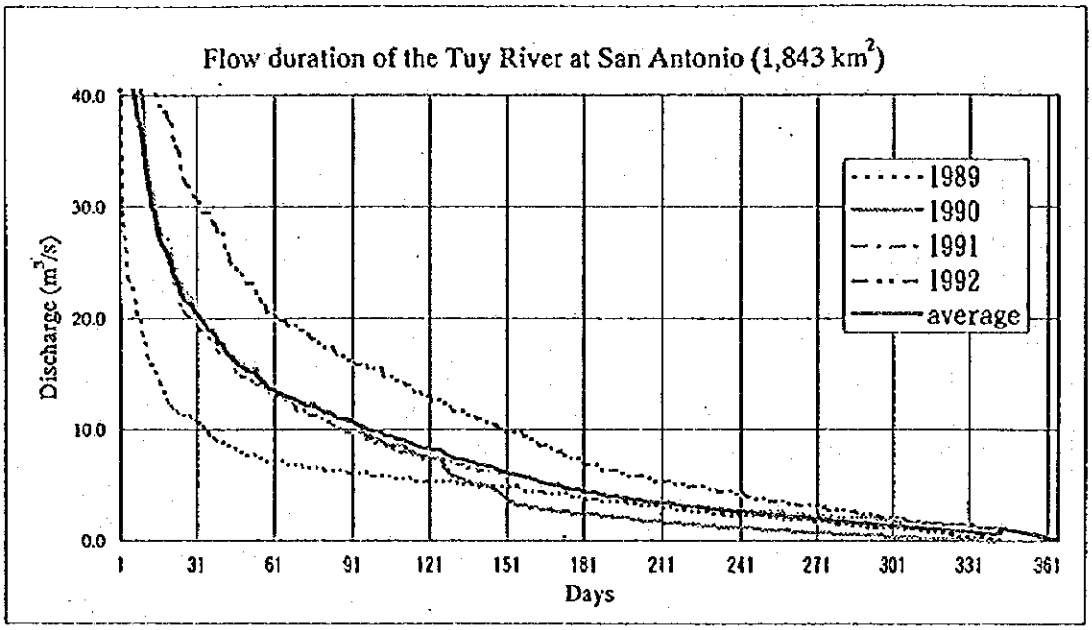
Note: Data is for Toma de Agua (1,856 km^2) calculated on data at Hda. Tazon (1,180 km^2)



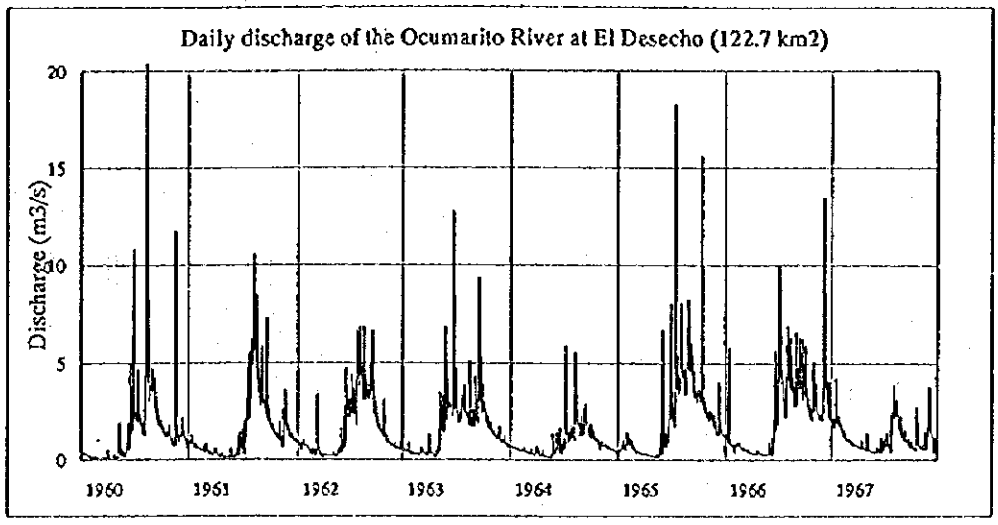
Note: Data is for Toma de Agua (1,856 km^2) calculated on data at Hda. Tazon (1,180 km^2)

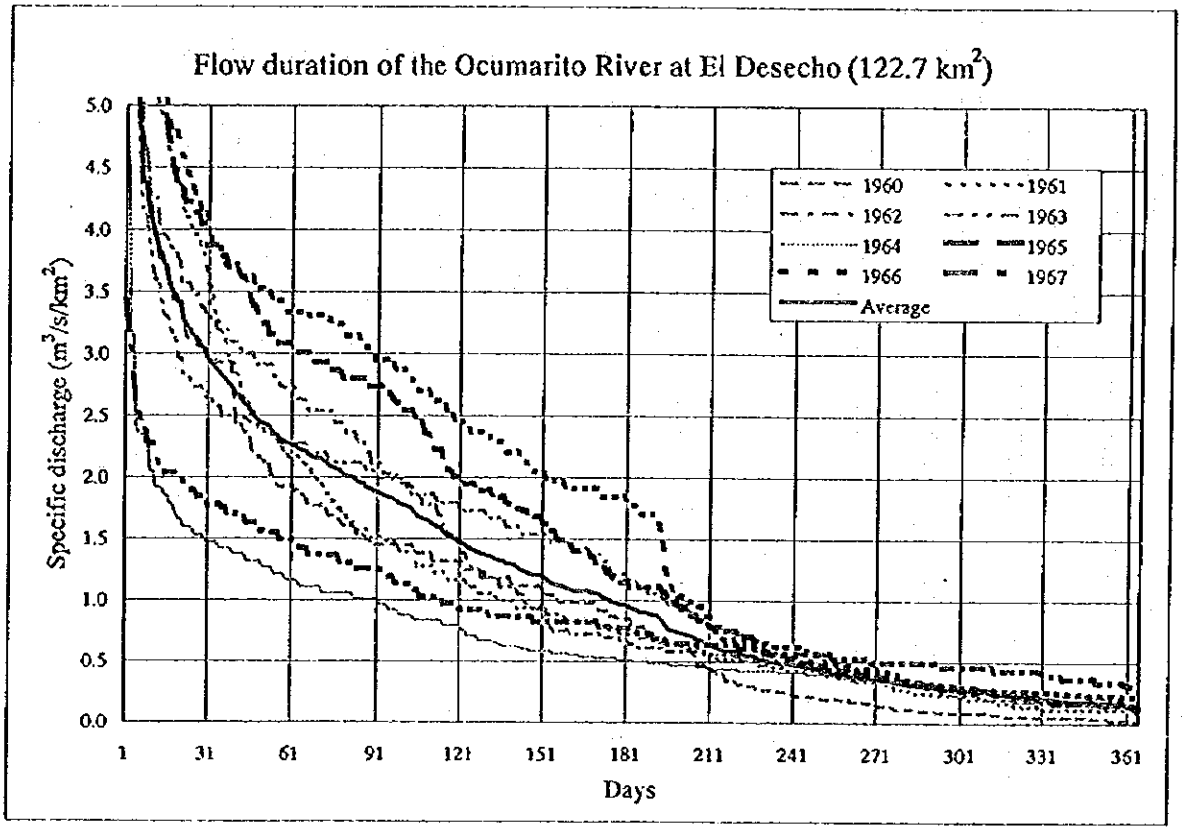
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.3-10 Annual Minimum Monthly and Annual Average Discharge at Toma de Agua



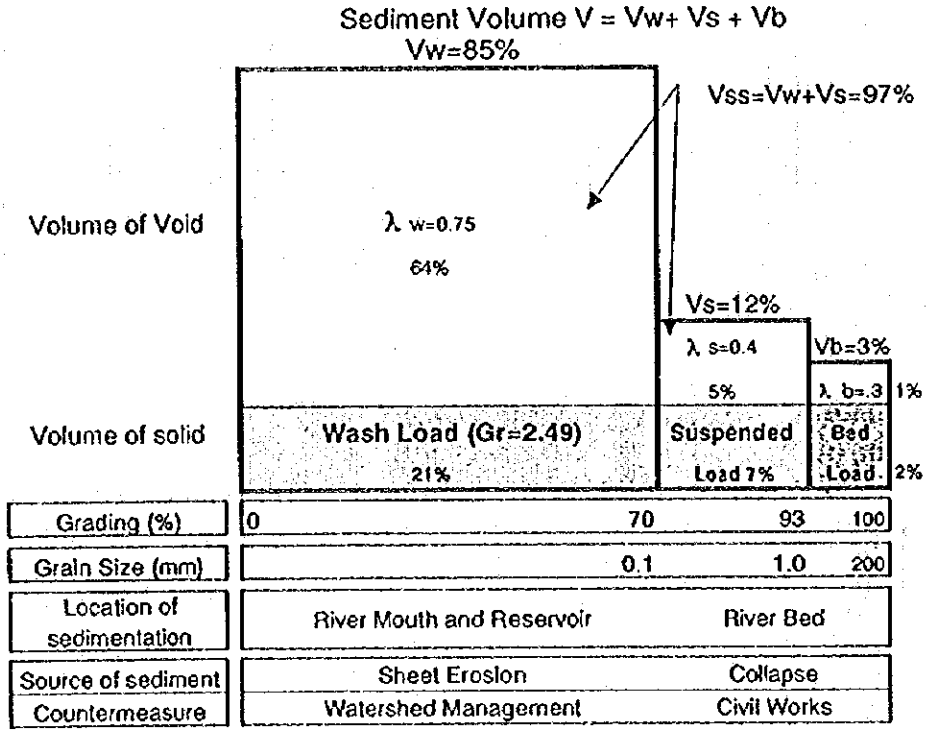


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.3-11 Discharge of the Tuy River at San Antonio

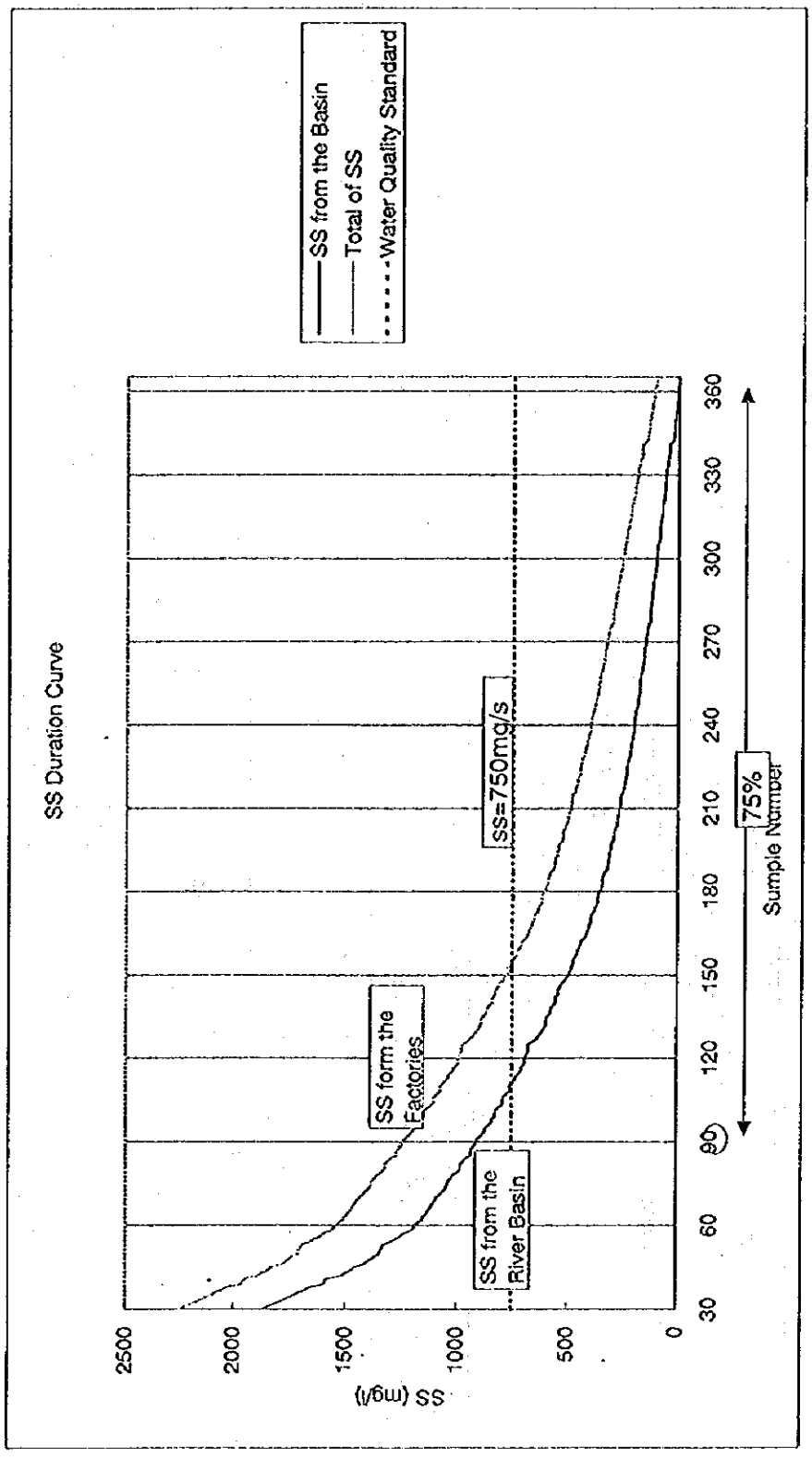




THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.3-12 Discharge of the Ocumarito River at El Desecho



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.4-1 Diagram of Suspended Solid
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.4-2 Suspended Solid Duration Curve

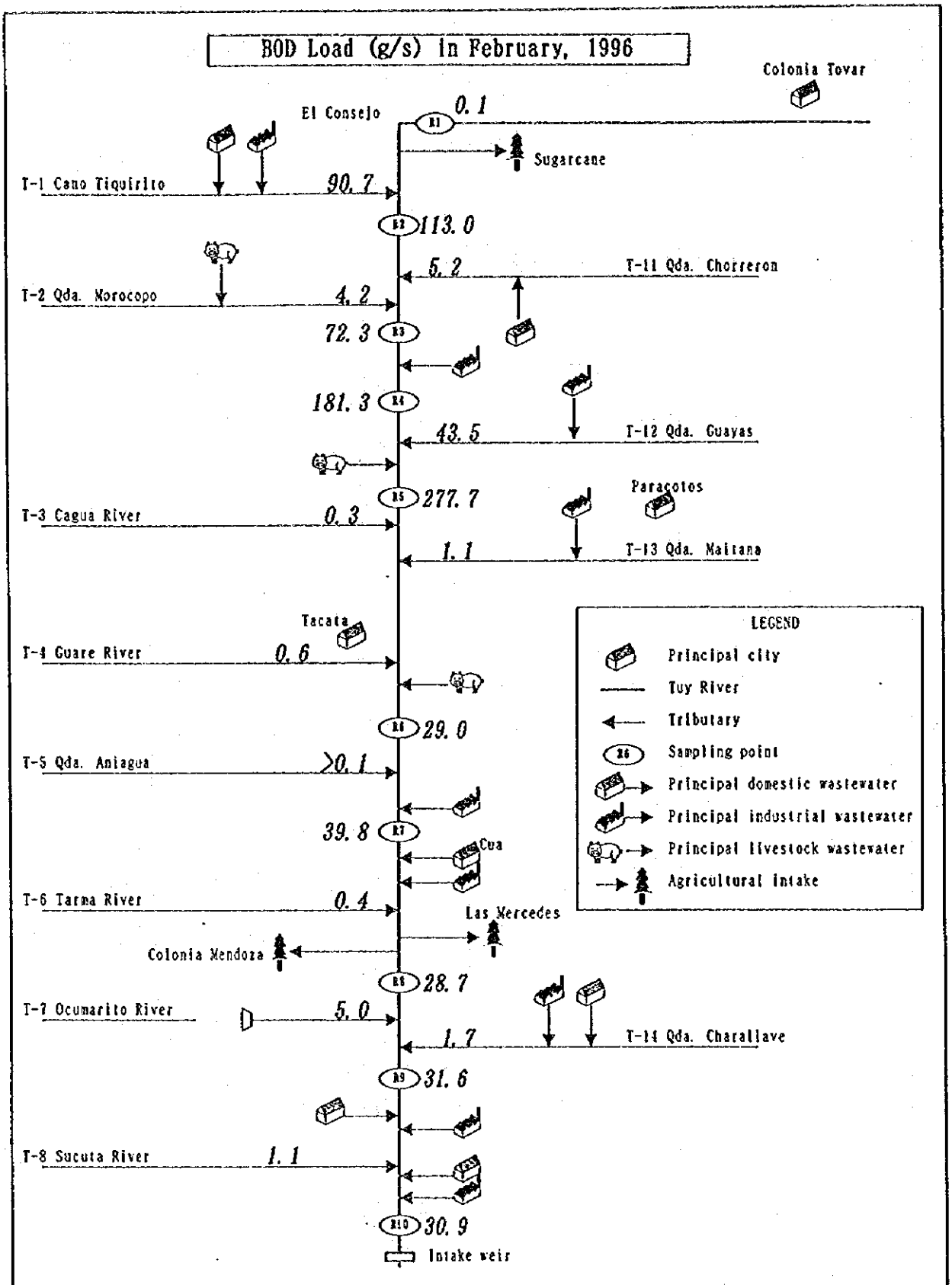


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Fig. 2.5-1 BOD Pollution Effluent Load before Intake Weir

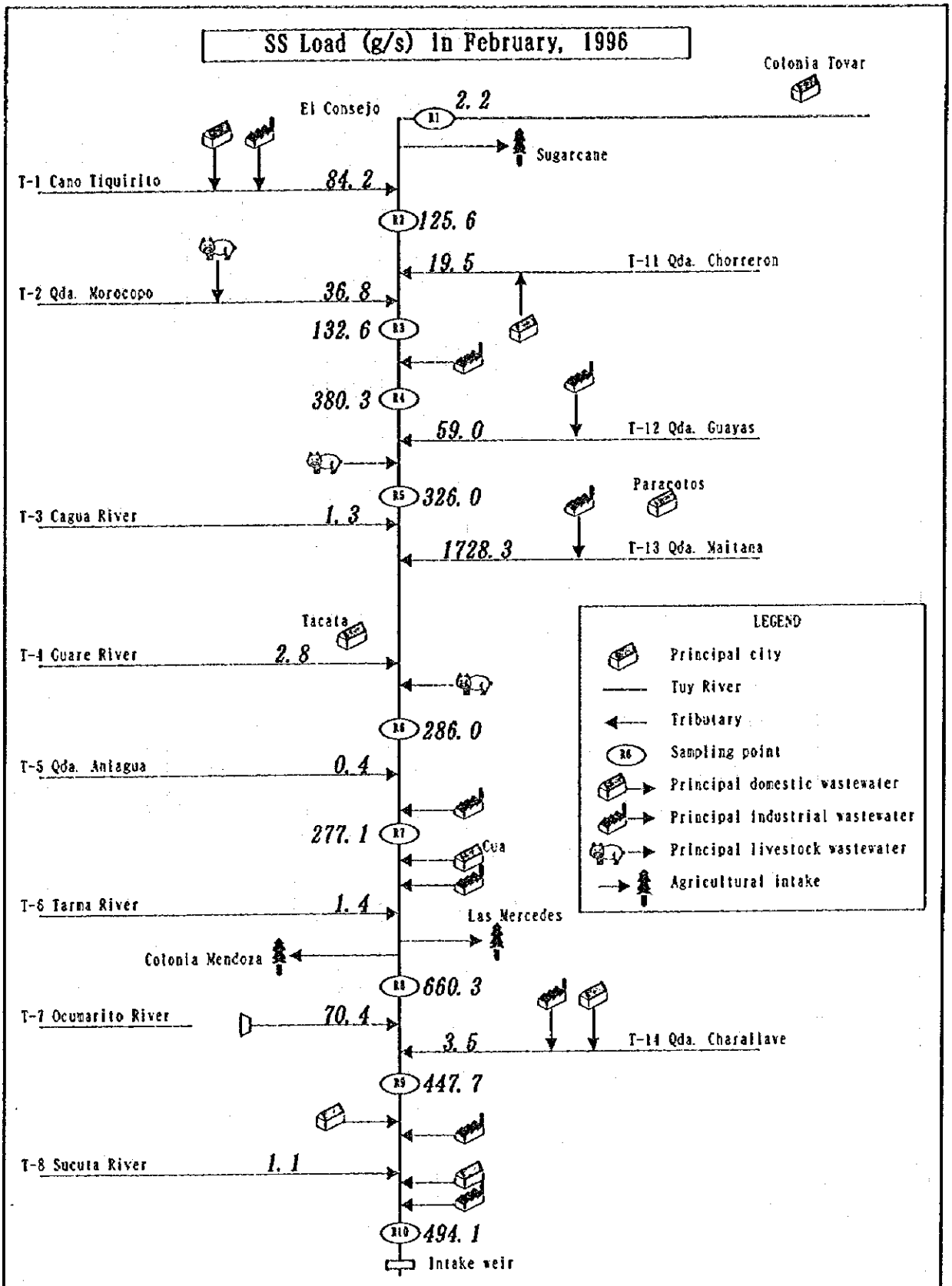

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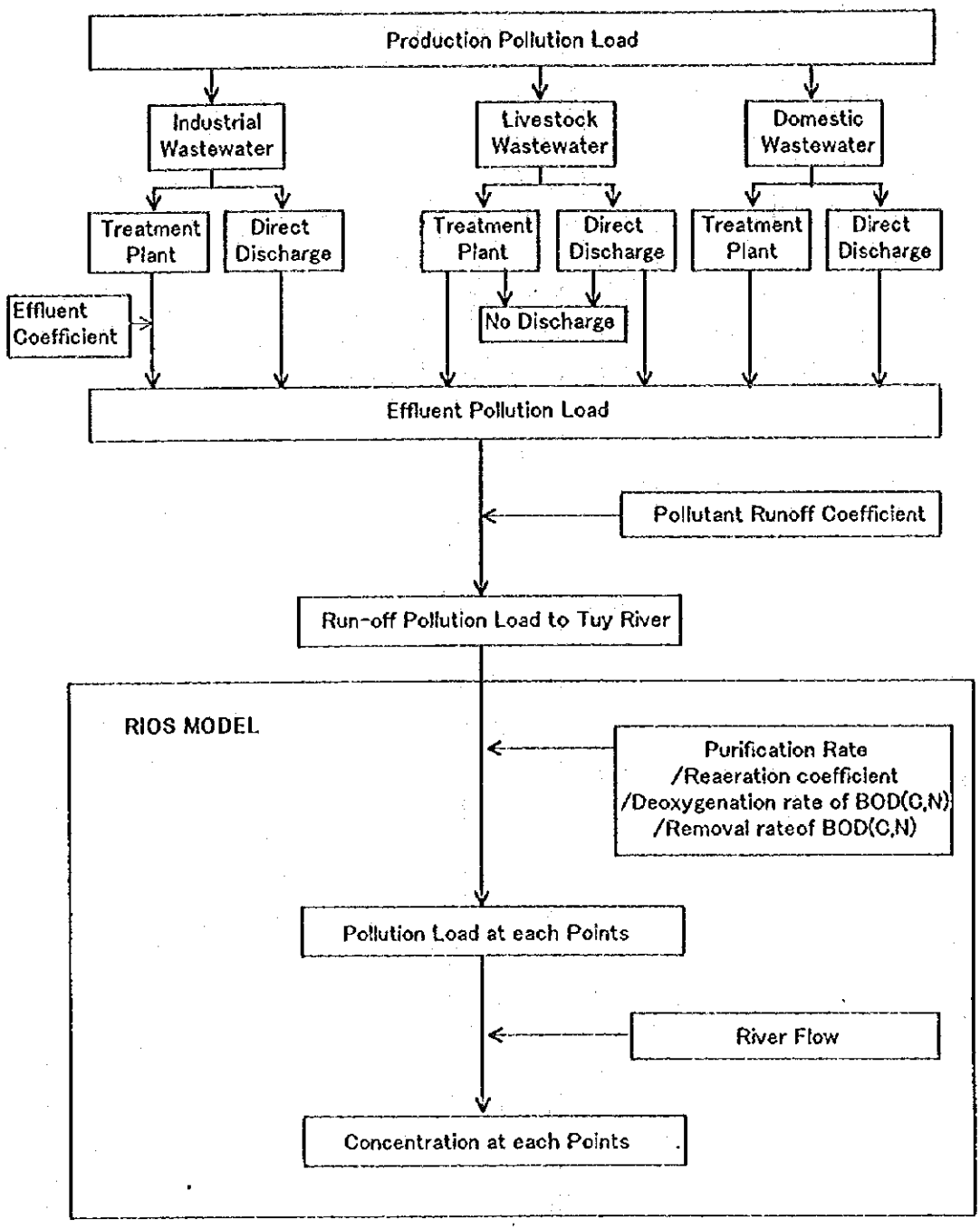
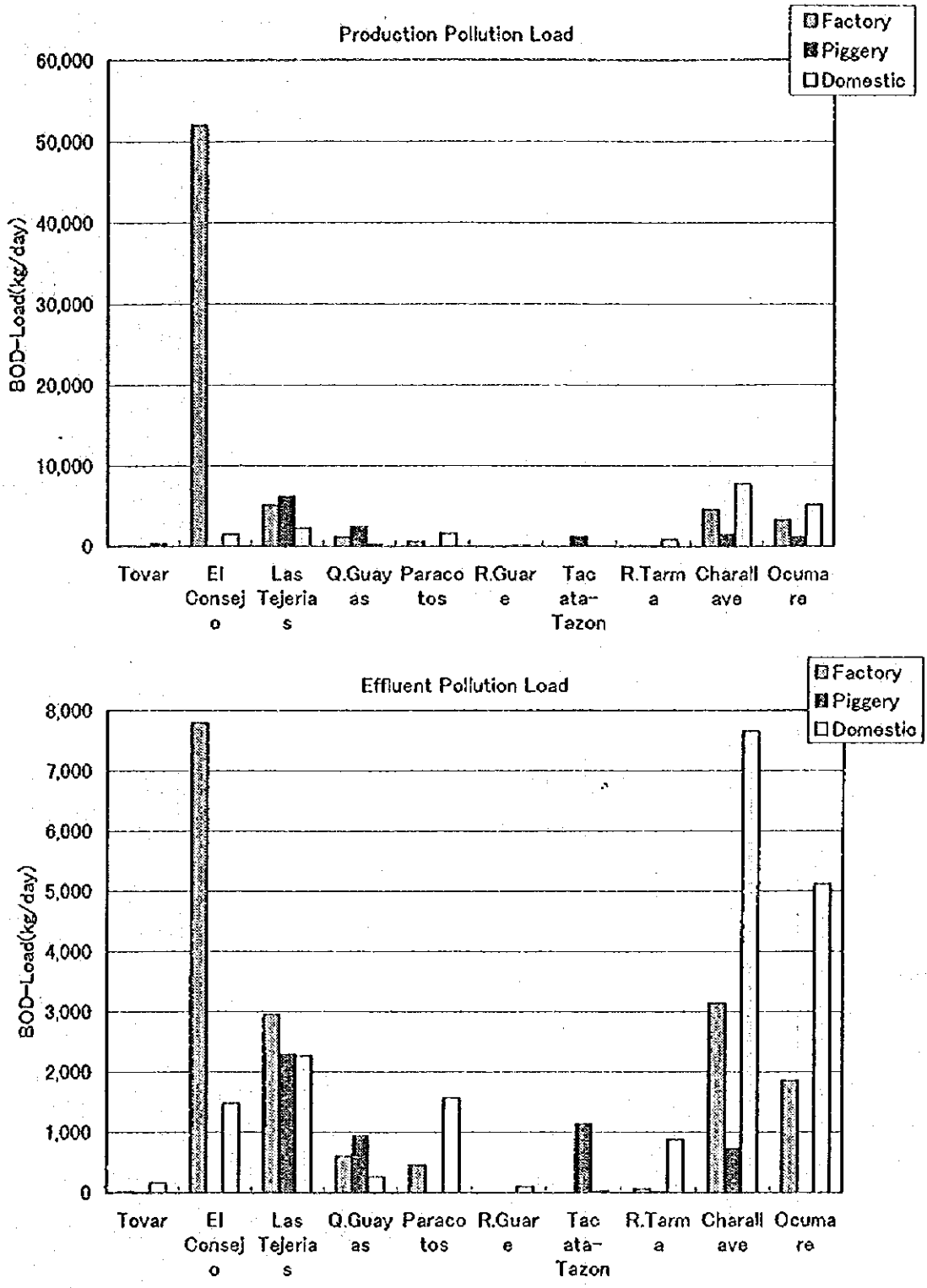
Fig. 2.5-2 SS Pollution Effluent Load before Intake Weir



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.5-3 Flow Chart of Pollution Analysis
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.5-4 Production and Effluent Pollution Load
JAPAN INTERNATIONAL COOPERATION AGENCY	

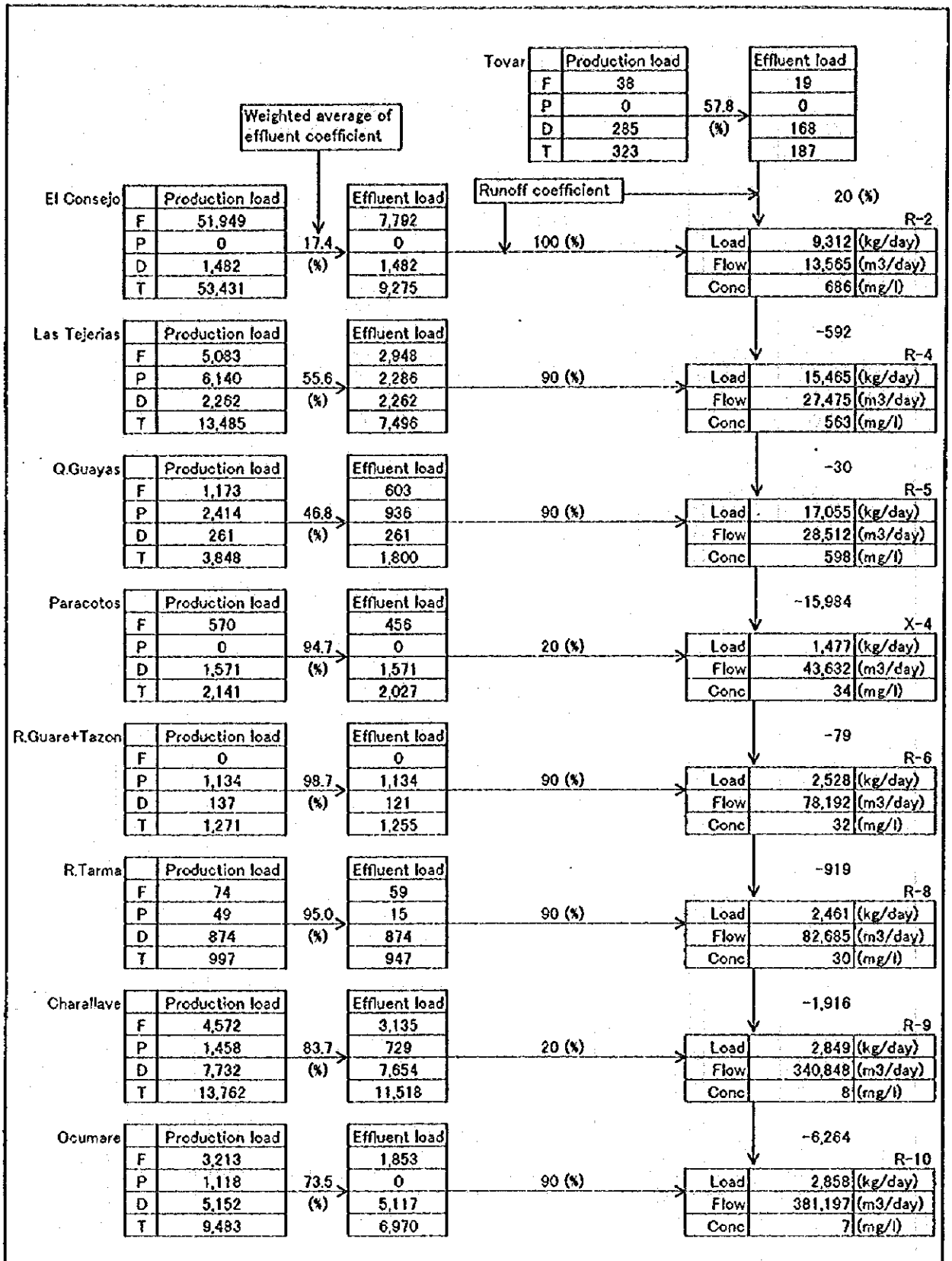


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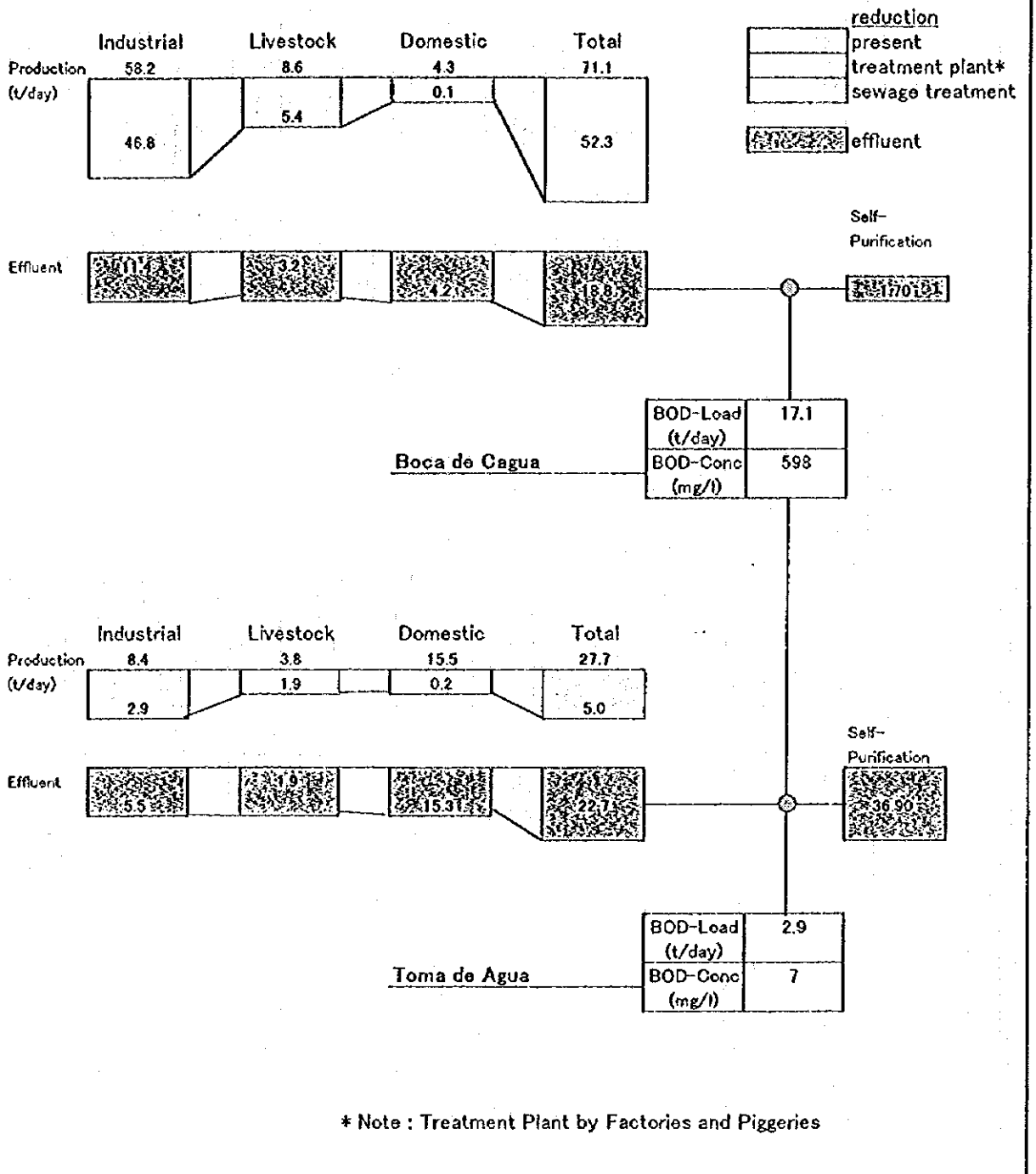
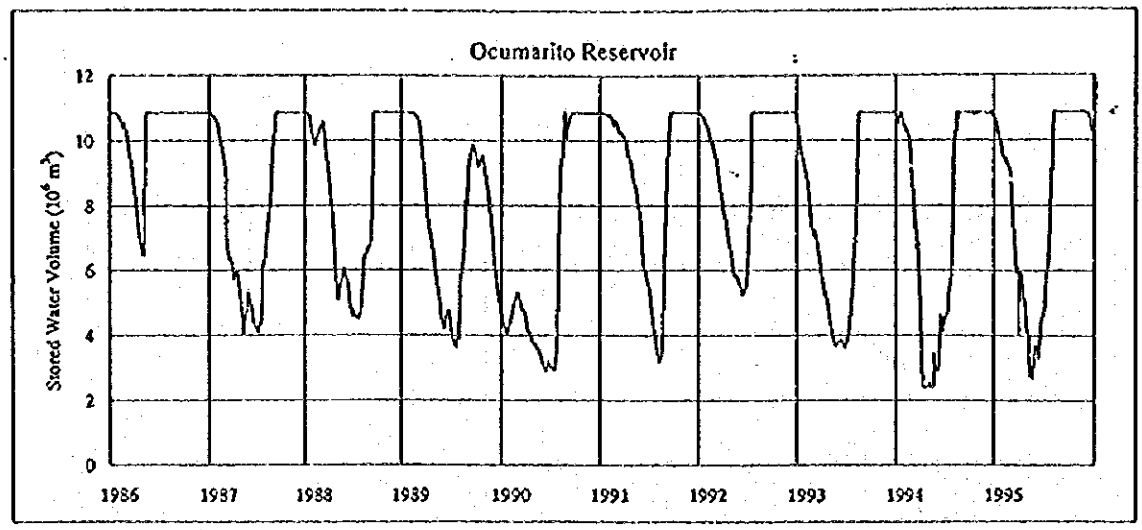
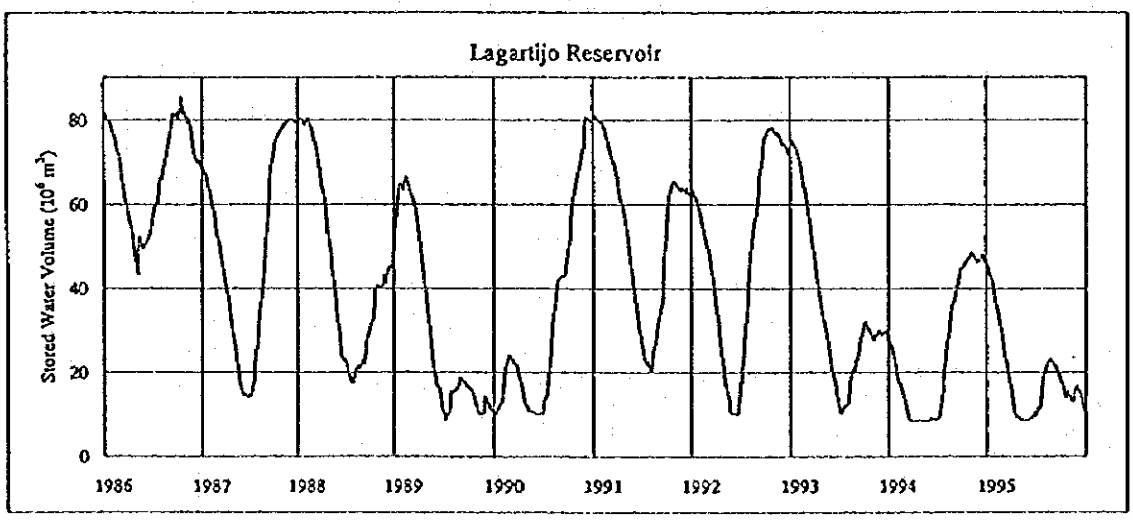
Fig. 2.5-5 Balance of BOD Load in the Tuy River

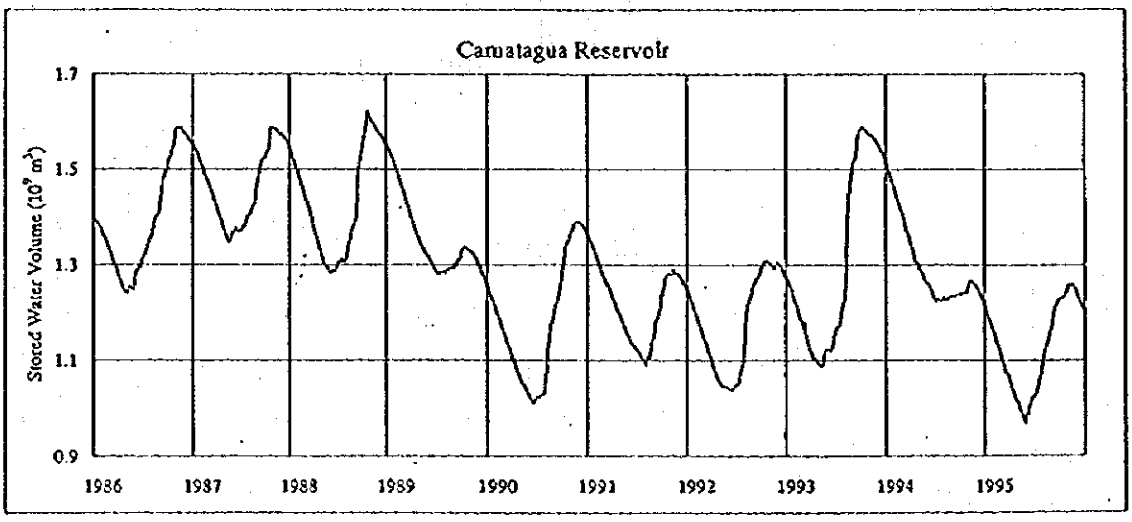


* Note : Treatment Plant by Factories and Piggeries

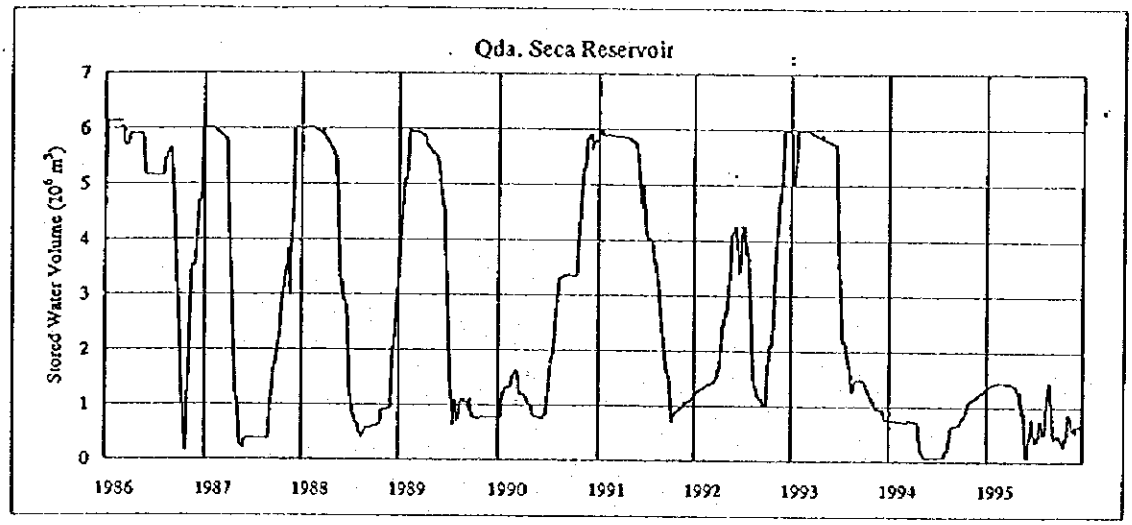
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.5-6 BOD Pollution Load Balance (Present)
JAPAN INTERNATIONAL COOPERATION AGENCY	

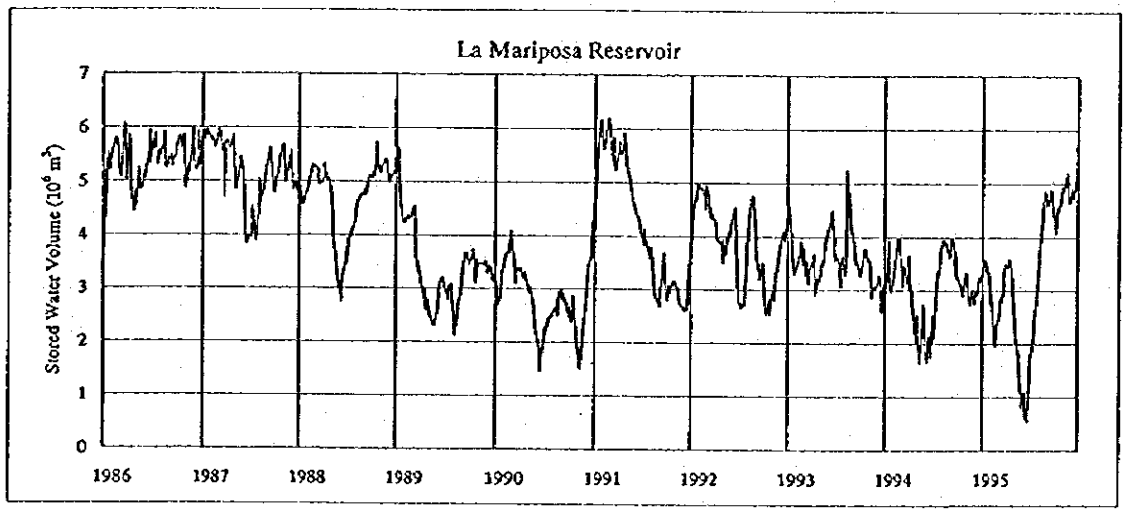


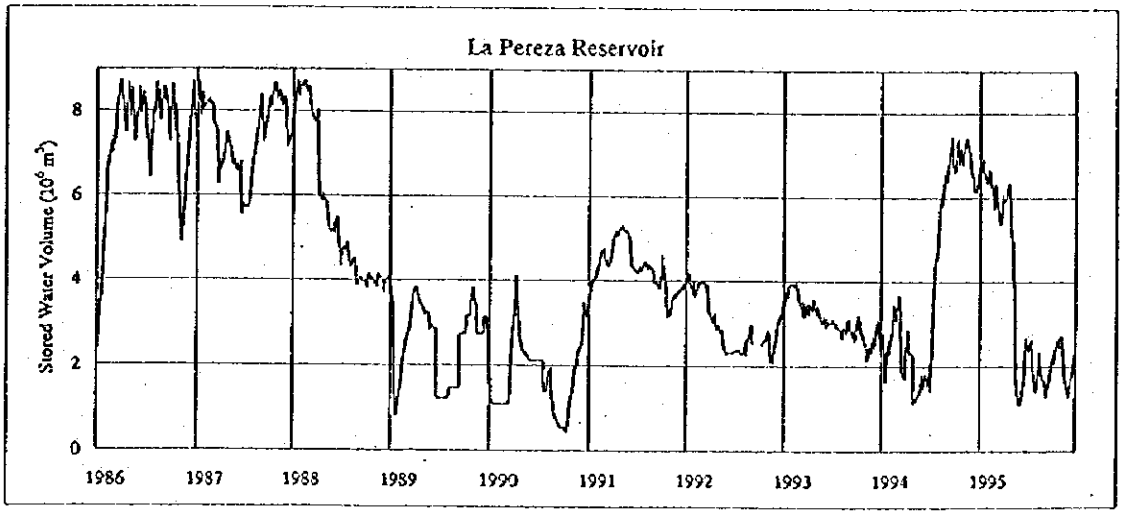




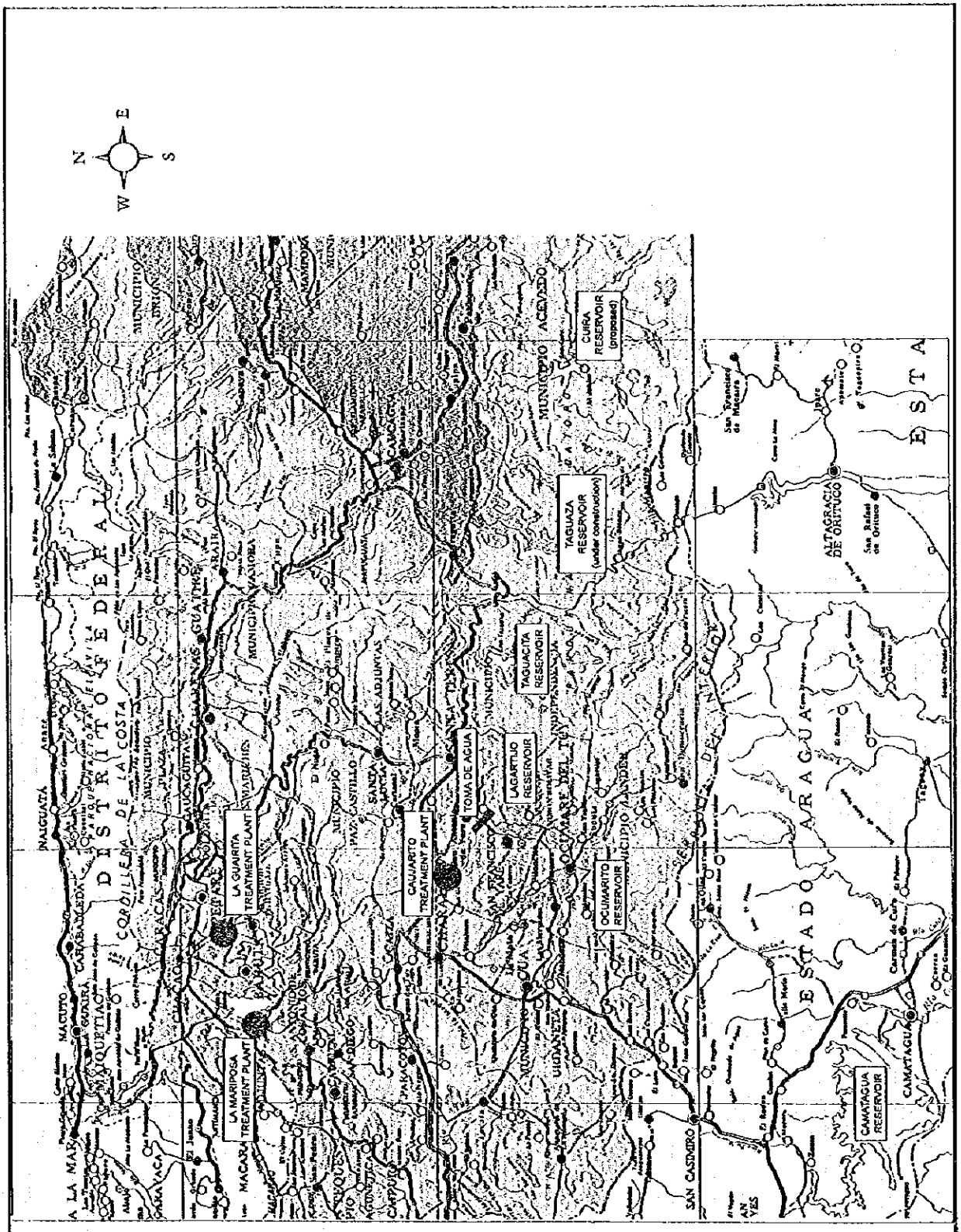
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.6-1 (1/2) Historical Daily Operation Record of Related Reservoirs



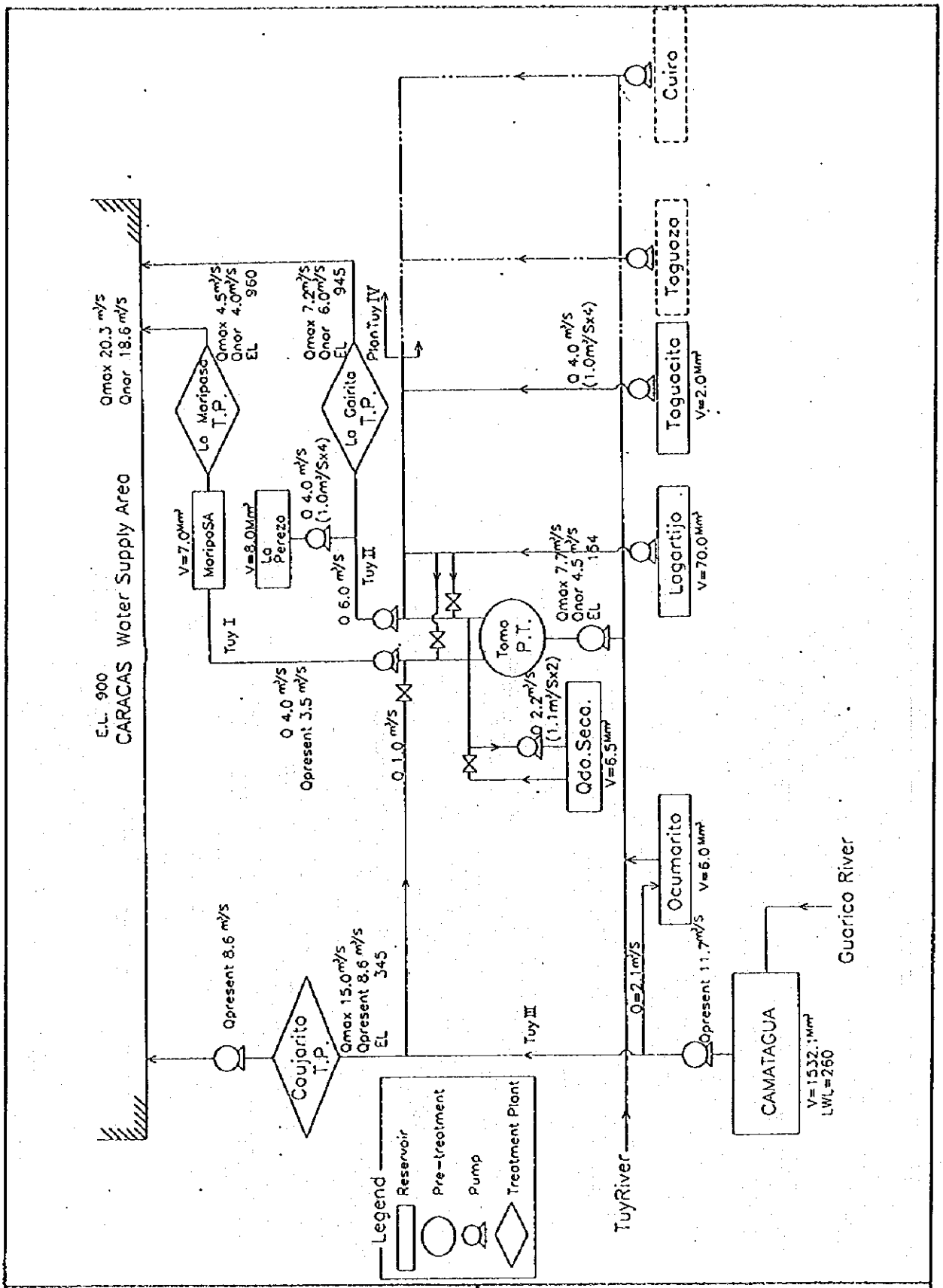




THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.6-1 (2/2) Historical Daily Operation Record of Related Reservoirs



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.8-1 Metropolitan Caracas Water Supply Map
JAPAN INTERNATIONAL COOPERATION AGENCY	



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IN THE REPUBLIC OF VENEZUELA

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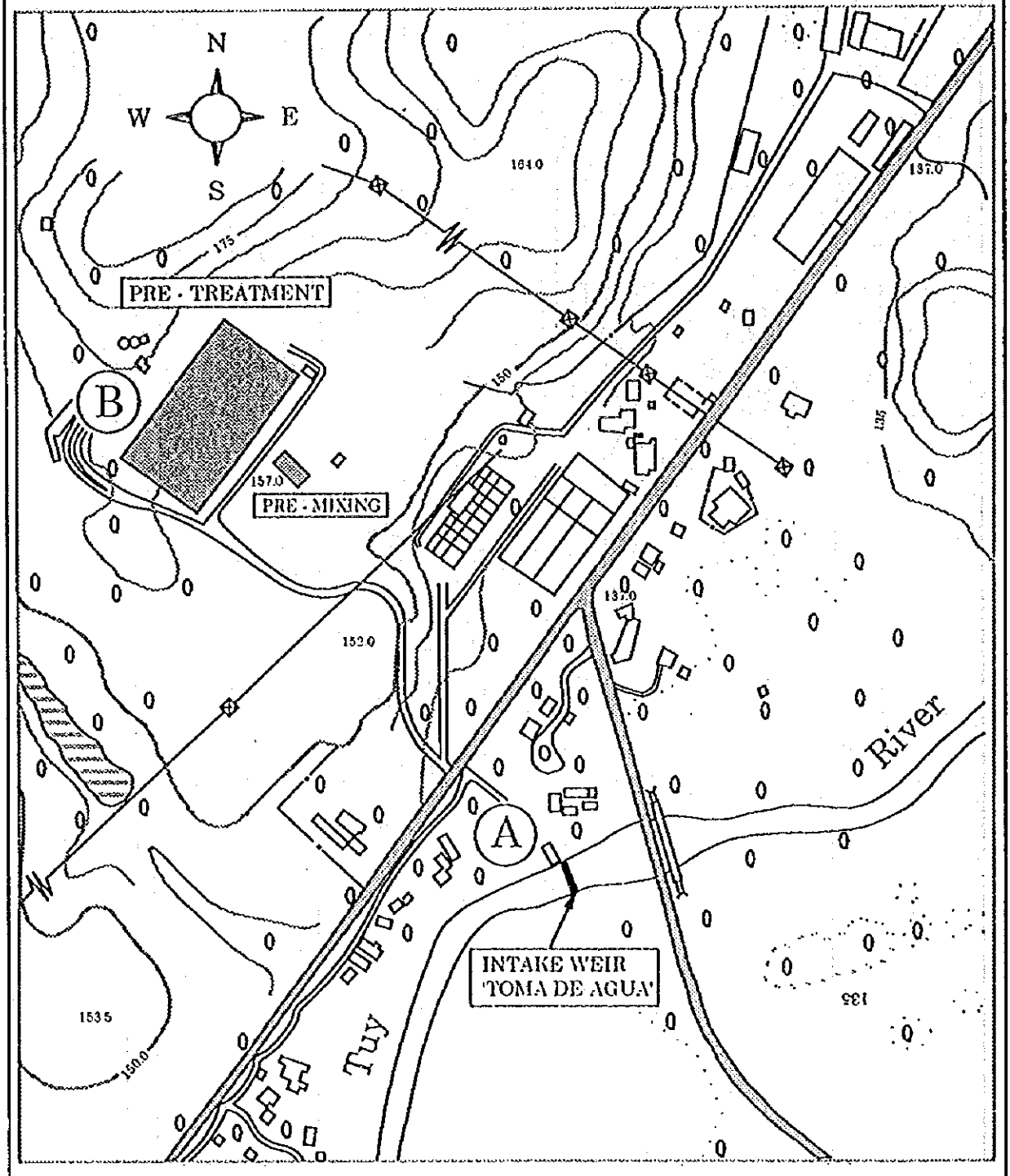
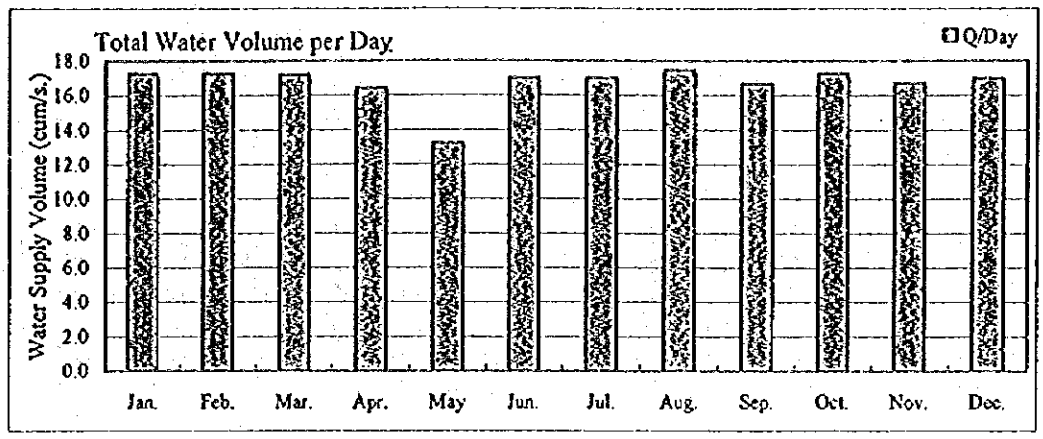
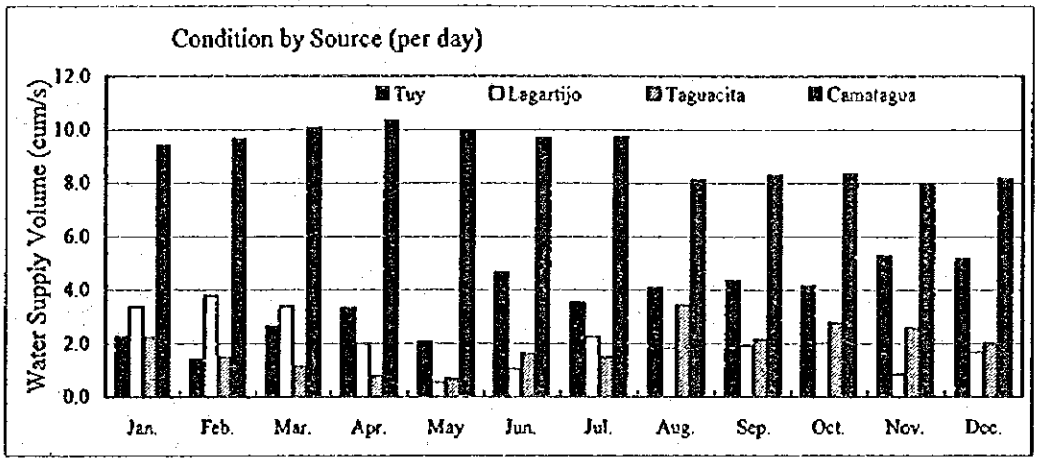
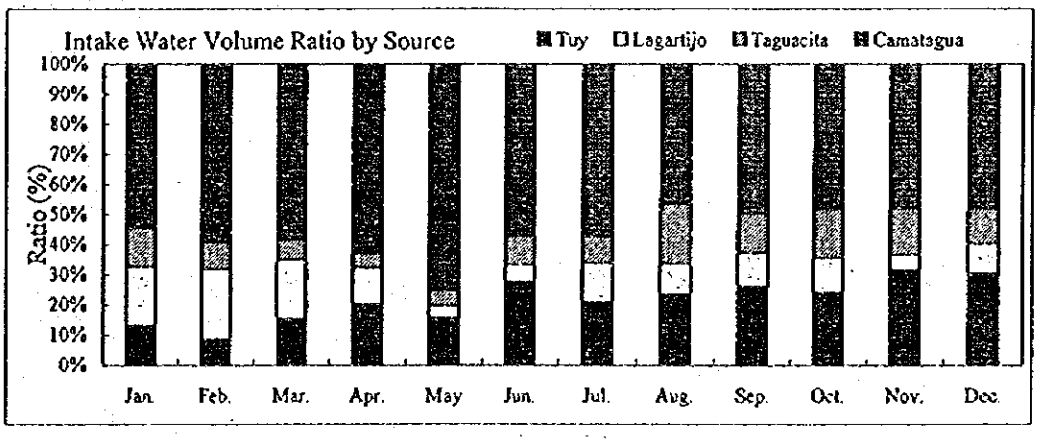
Fig. 2.8-2 Diagram of Water Supply System for Metropolitan Caracas



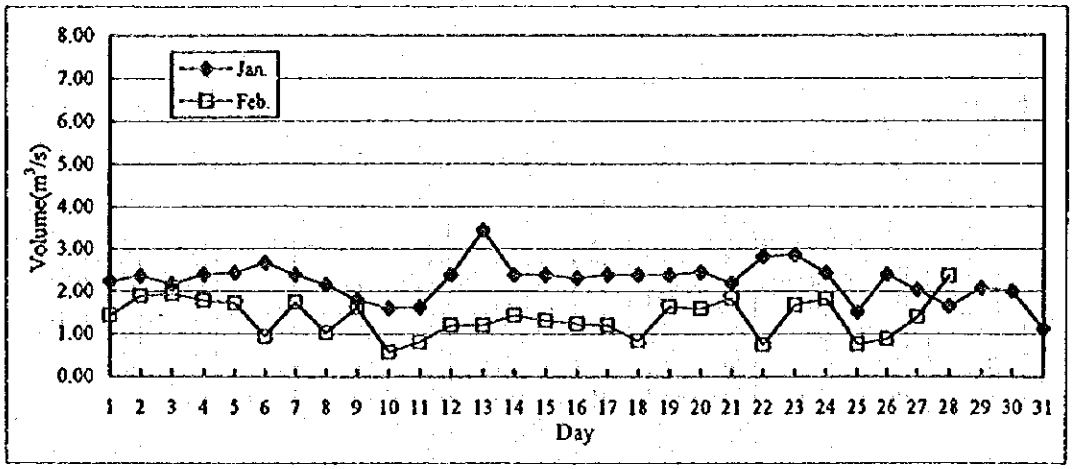
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.8-3 Layout of Pre-treatment Plant of Intake Station (Toma de Agua)

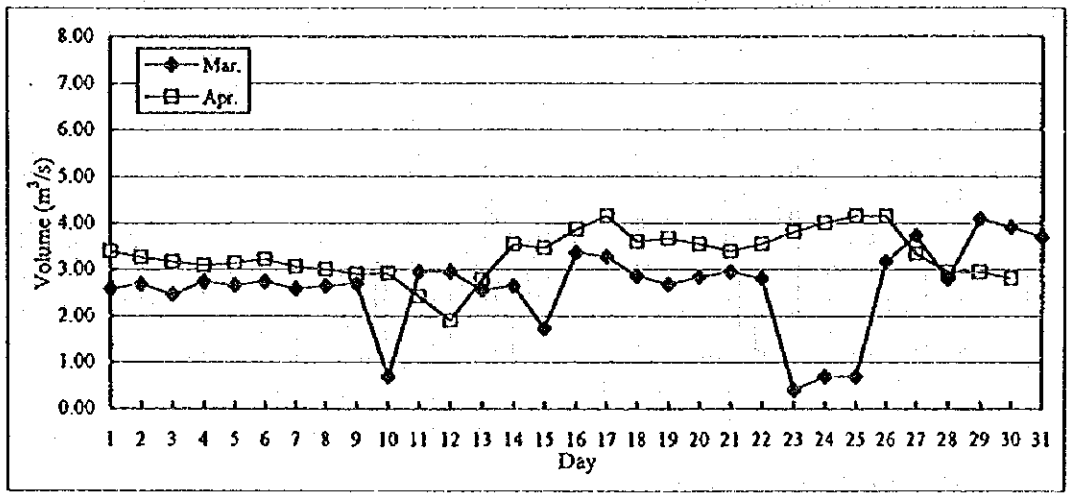


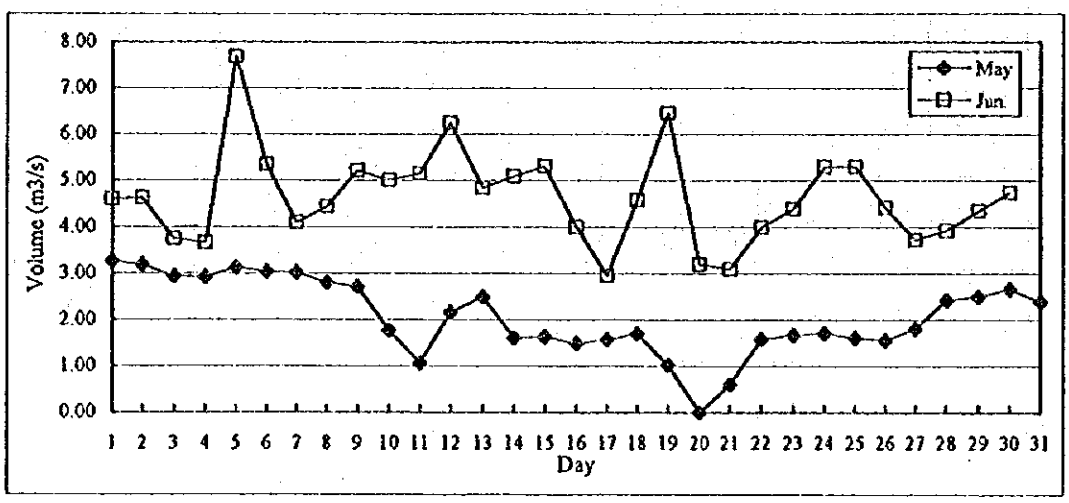




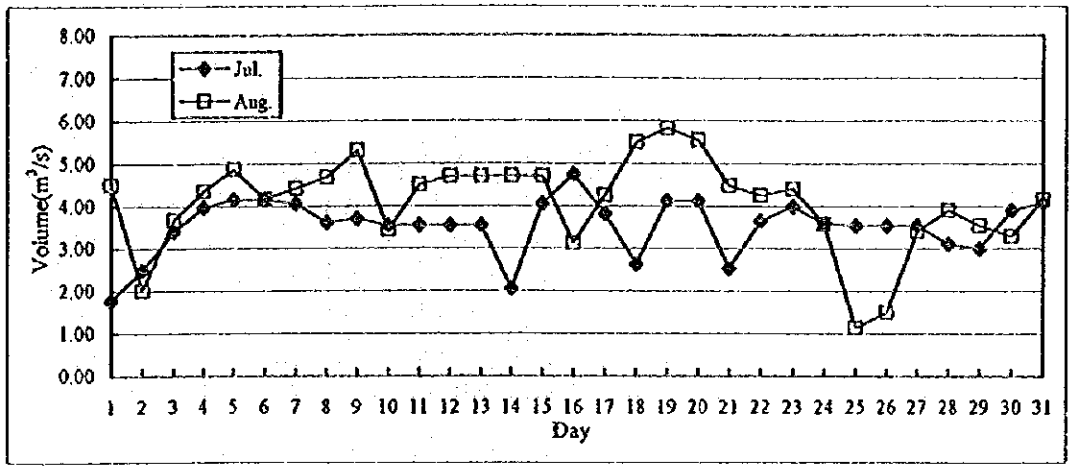
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.8-4 Monthly Average Intake of Tuy I, II and III Systems
JAPAN INTERNATIONAL COOPERATION AGENCY	

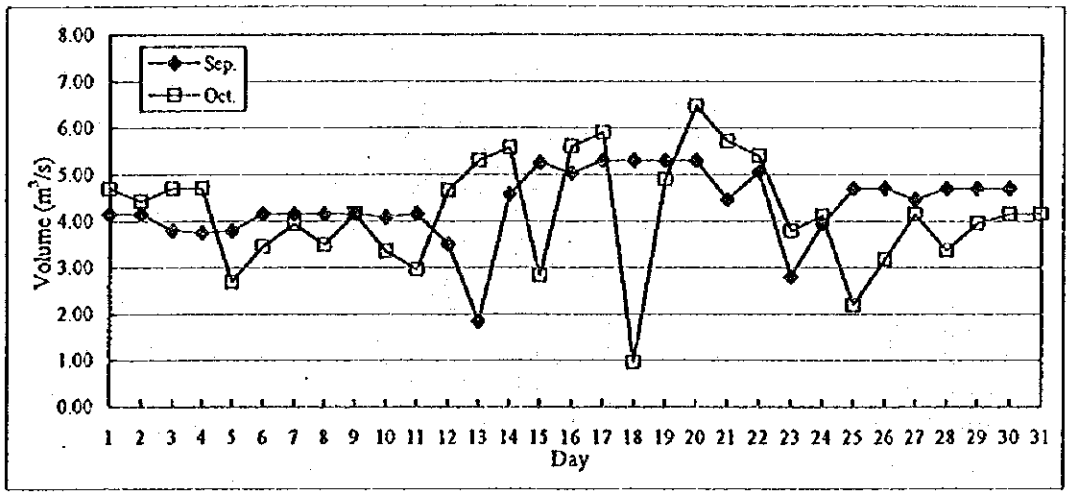


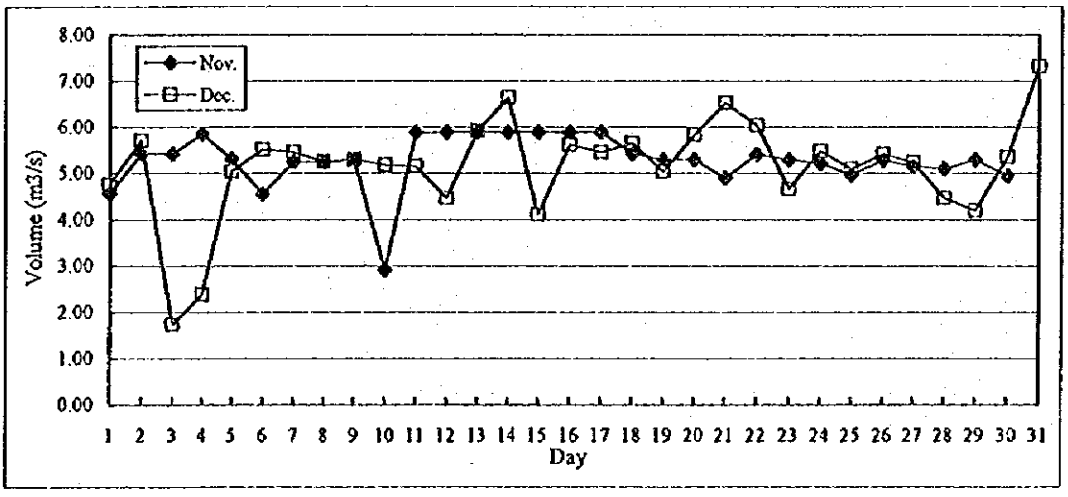




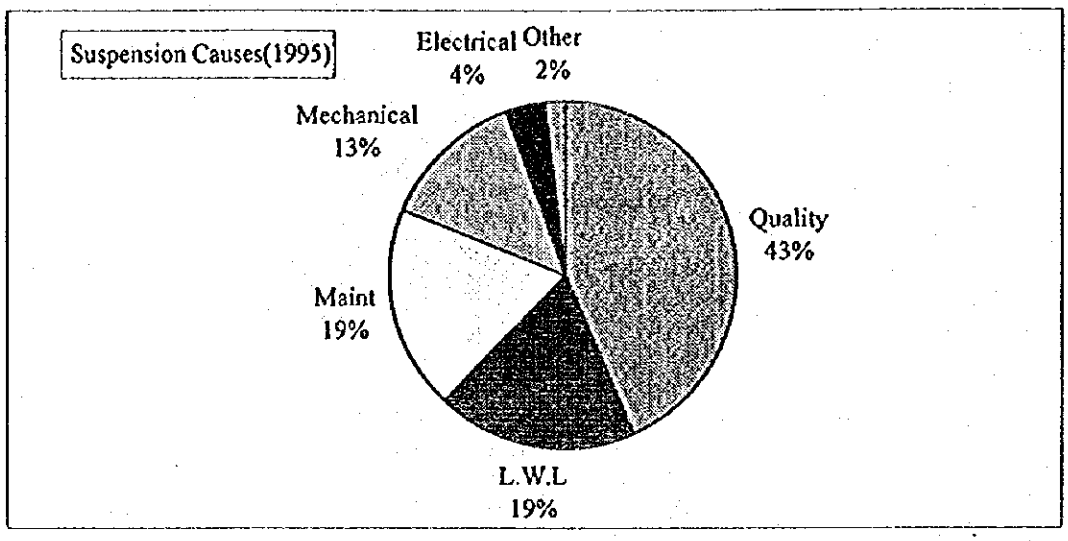
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.8-5 (1/2) Daily Average Intake Water Volume at Toma de Agua in 1995

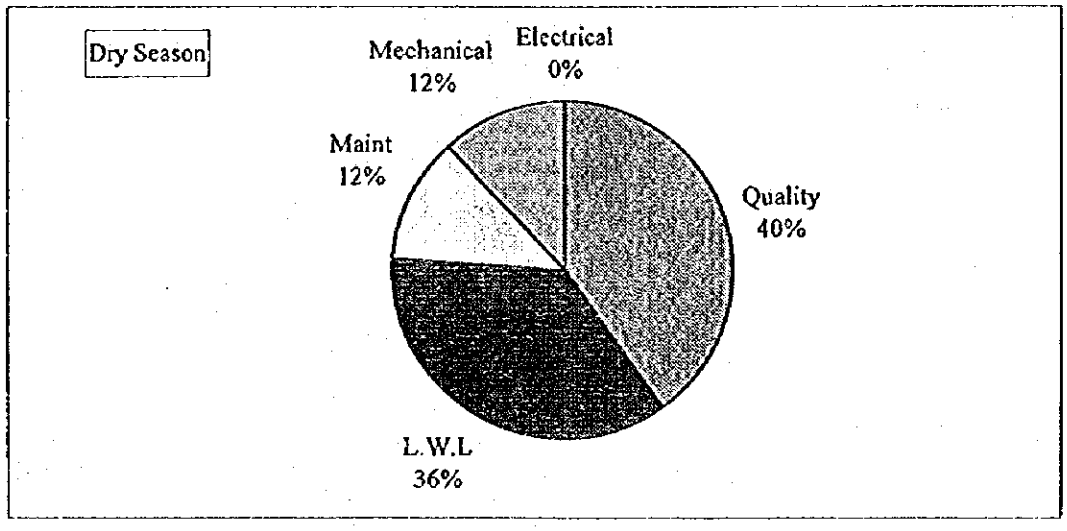


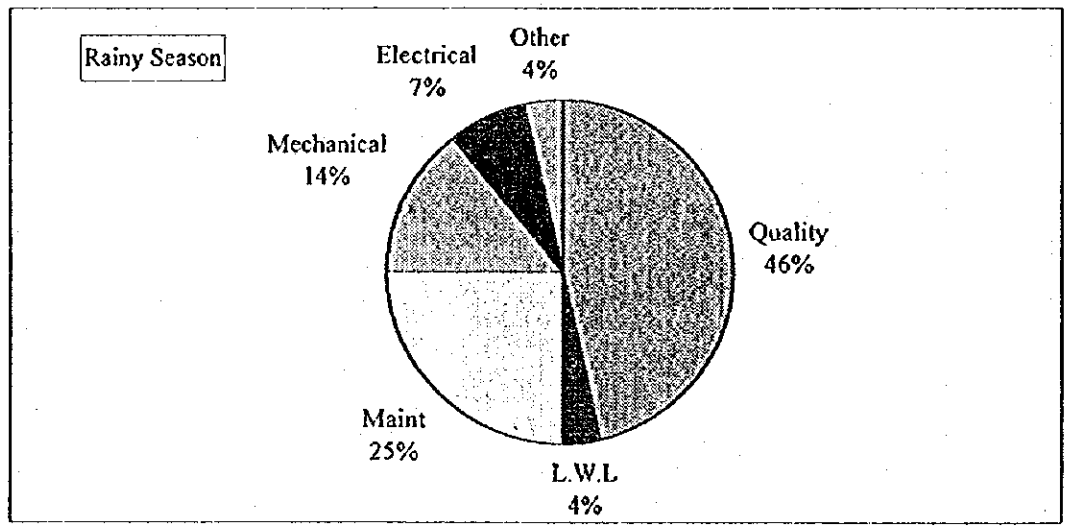




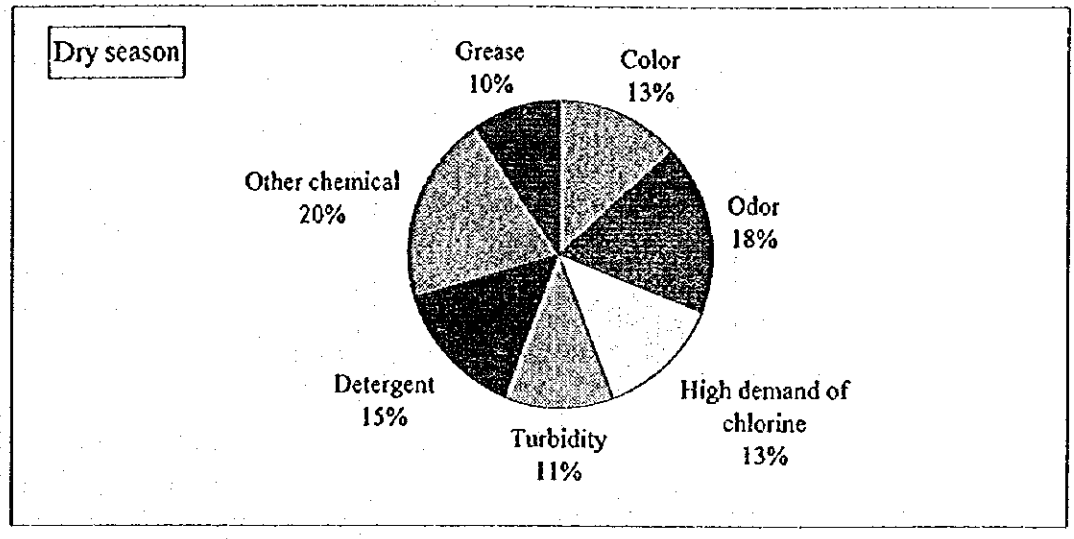
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.8-5 (2/2) Daily Average Intake Water Volume at Toma de Agua in 1995

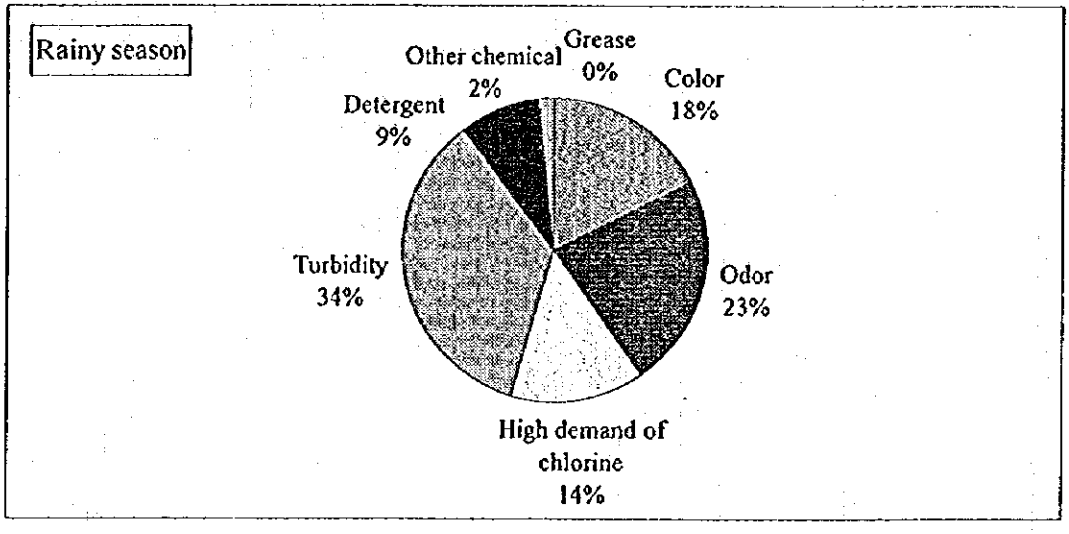


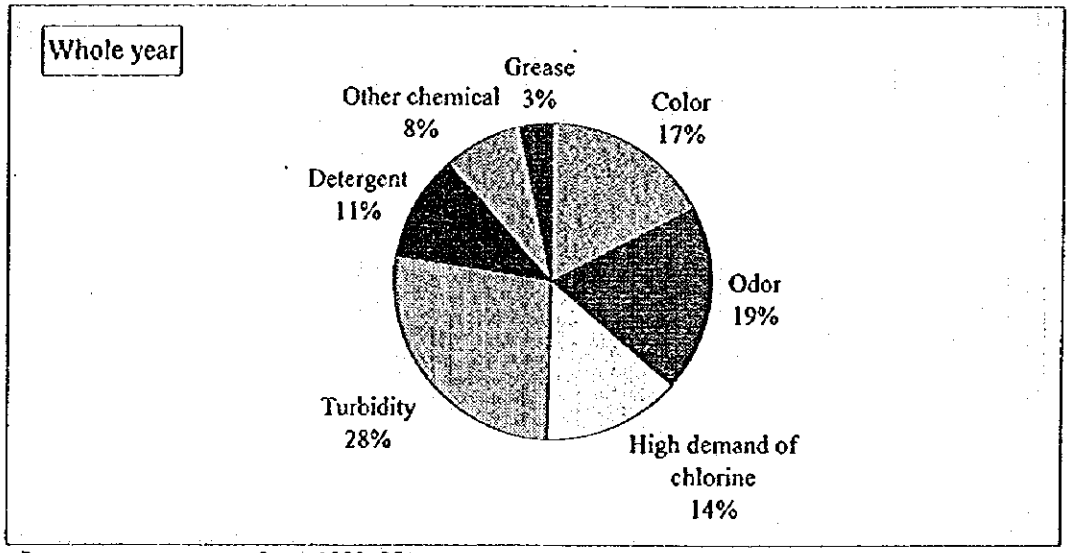




THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.8-6 Rate of Causes of Water Intake Suspension at Toma de Agua (1995)







Note: Data are averages from 1993-95

THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 2.8-7 Suspension of Water Intake Due to Water Quality

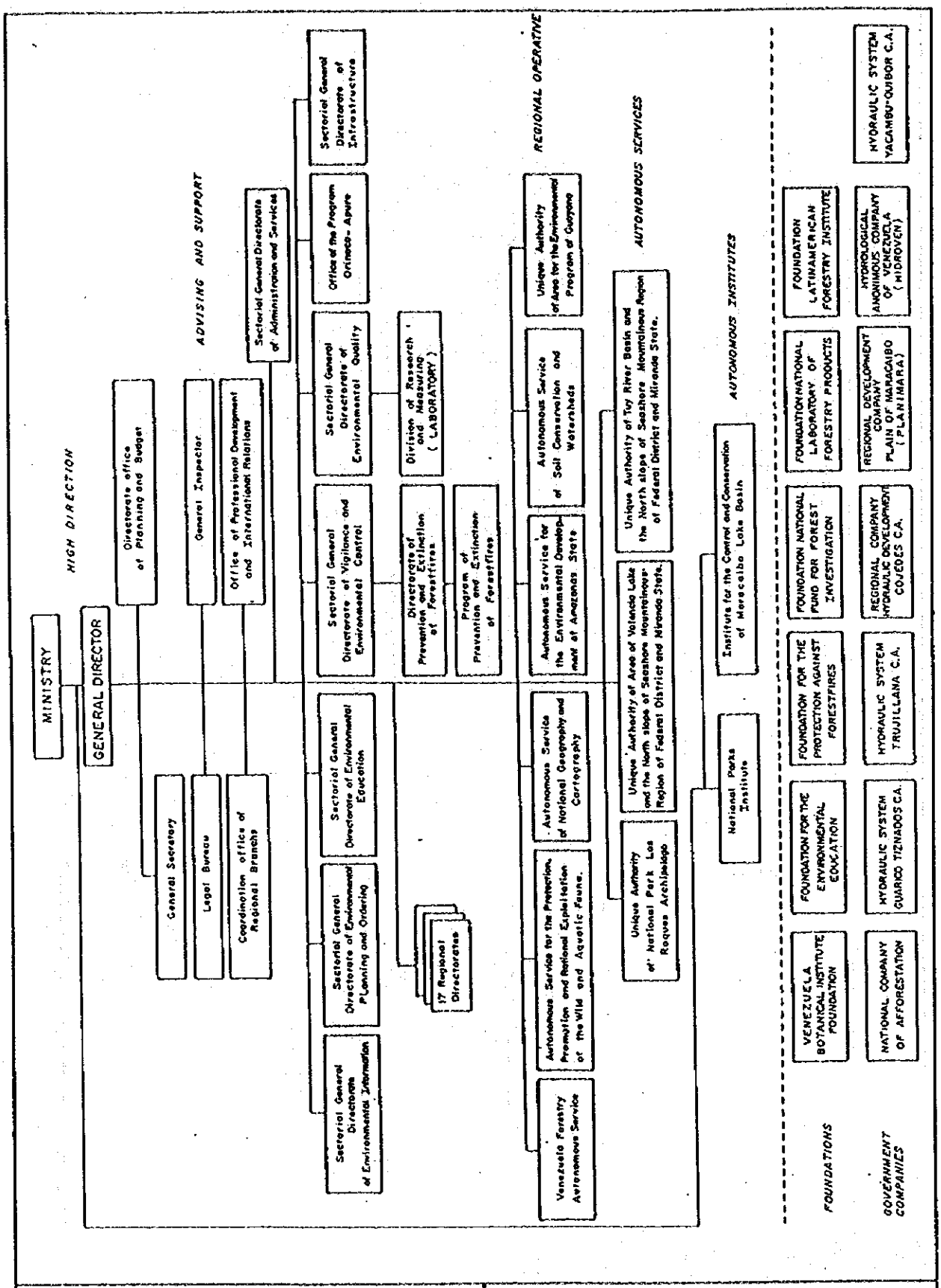


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Fig. 2.10-1 Organization Chart of the Ministry of Environment and Natural Renewable Resources

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Fig. 2.10-2 Organization Chart of the Tuy River Basin Agency

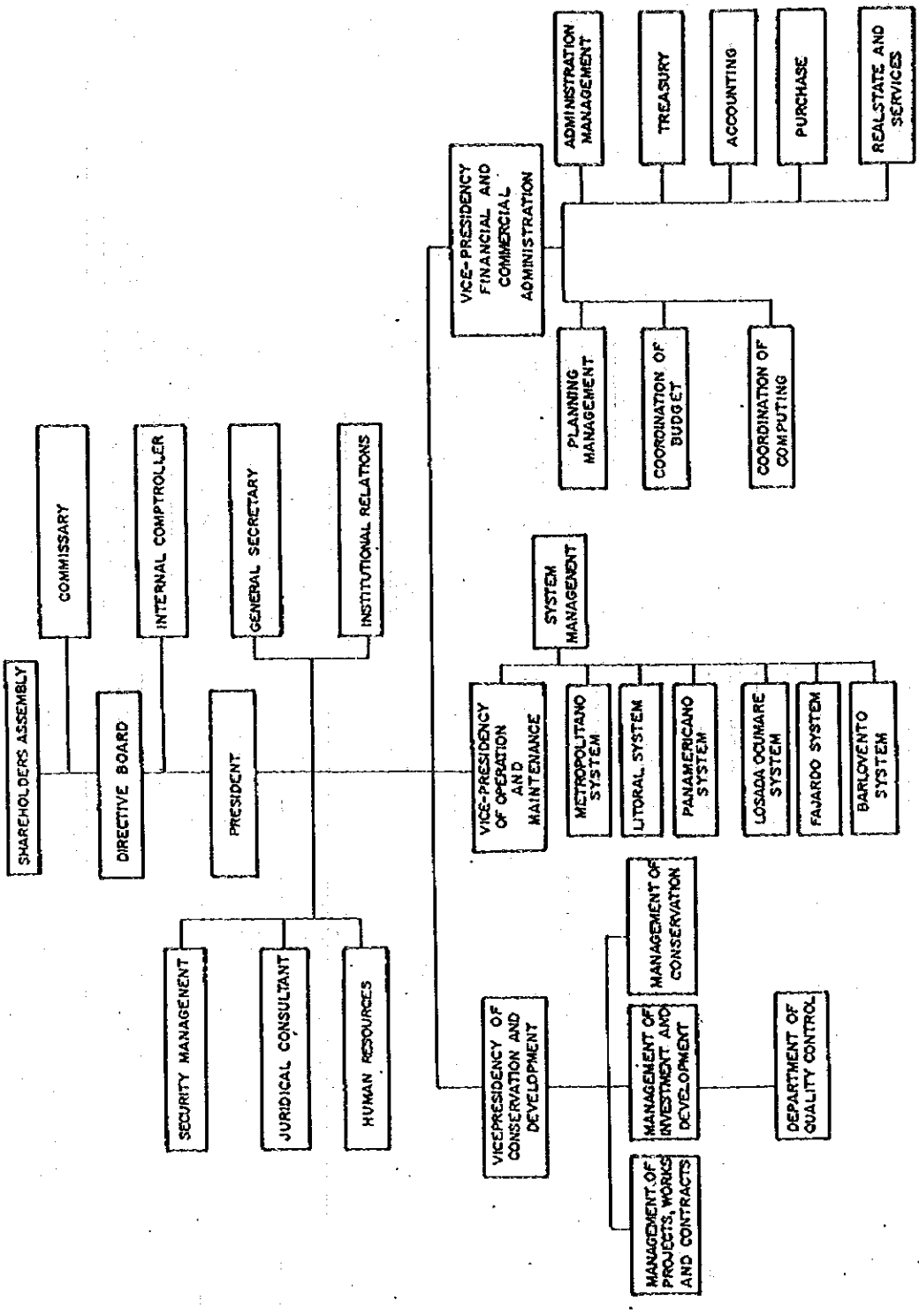

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Fig. 2.10-3 General Organizational Structure of Hidrocapital

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Fig. 2.10-4 Organizational Structure of Hidrocapital System

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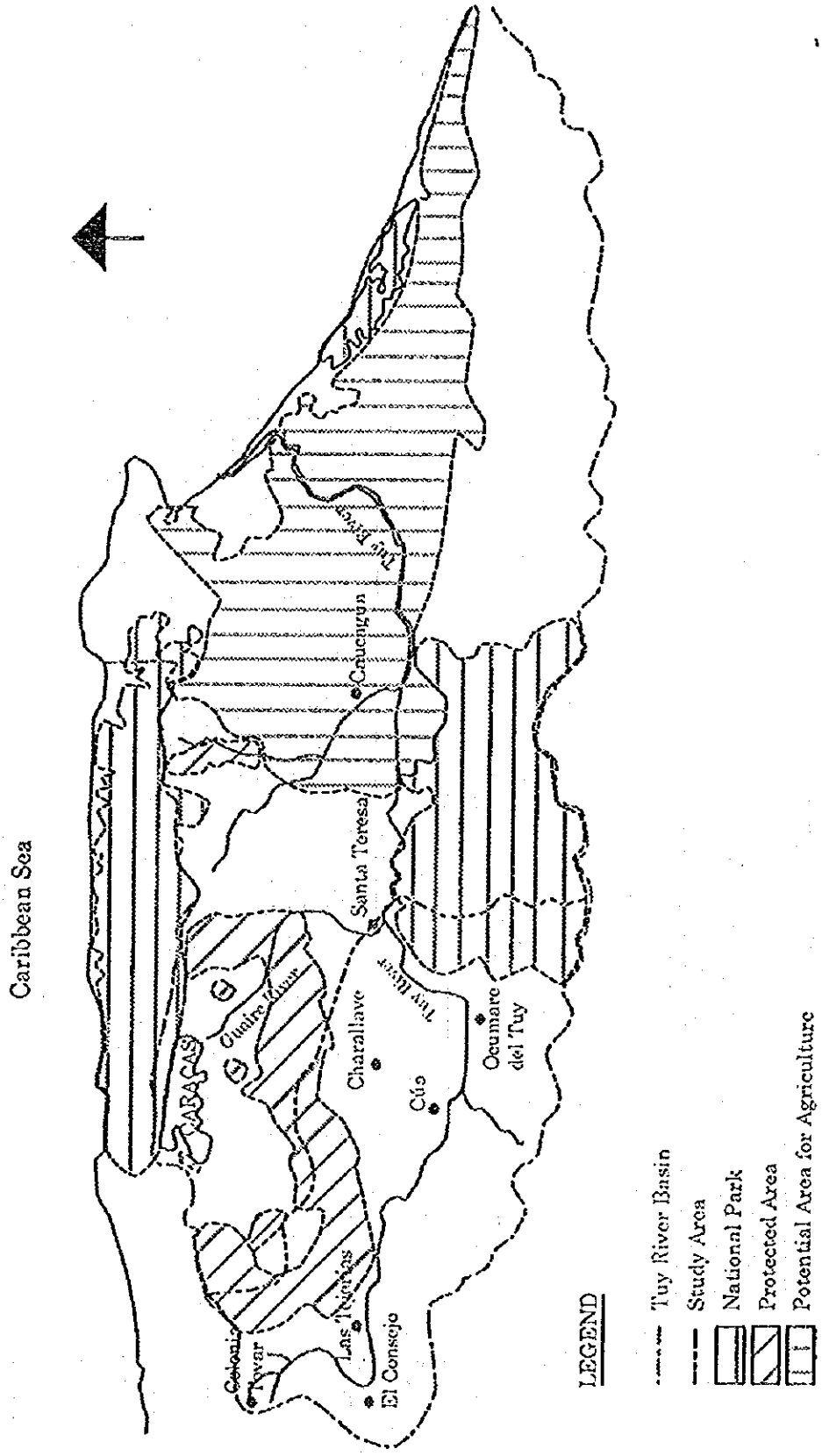
Fig. 2.10-5 Improvement Schedule of Treatment Facility in Ron Sánta Teresa Company



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 2.12-1 Areas under Special Administrative Regime
JAPAN INTERNATIONAL COOPERATION AGENCY	

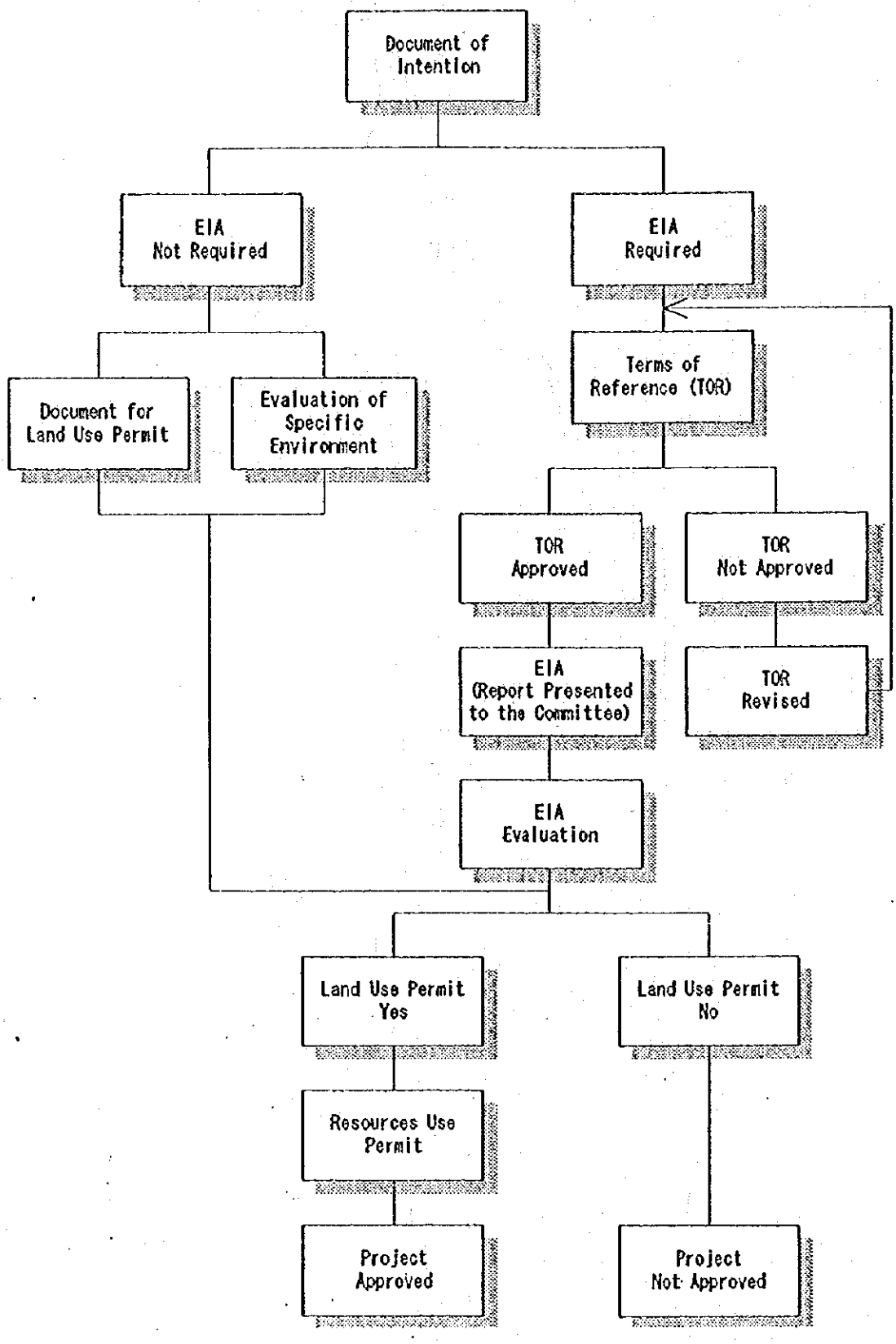


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Fig. 2.12-2 Procedure of EIA

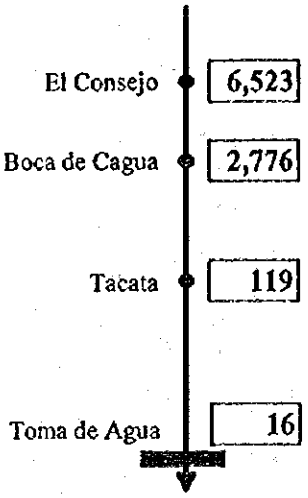
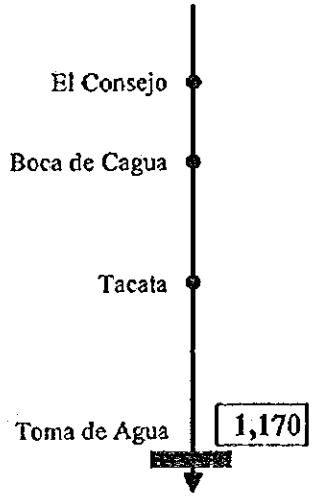
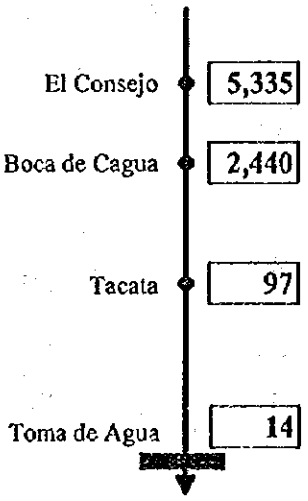
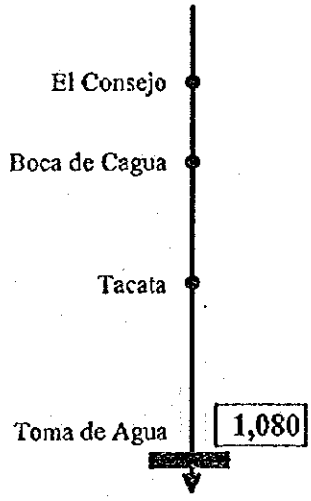
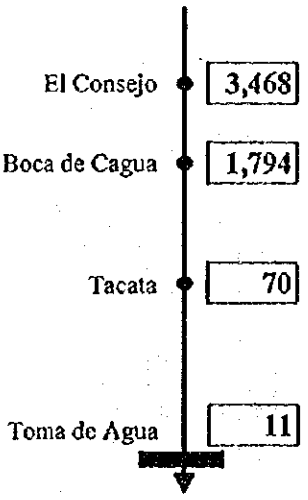
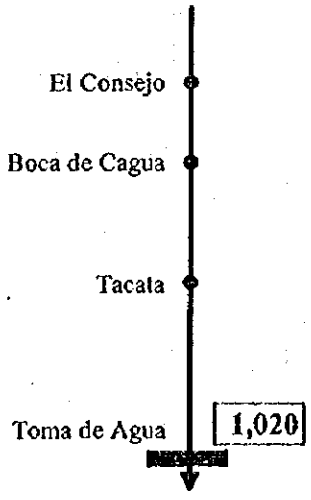
Pattern	BOD (mg/l)	SS (mg/l)
1 High		
2 Standard		
3 Low		

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Fig. 3.3-1 Baseline Projection Pollution

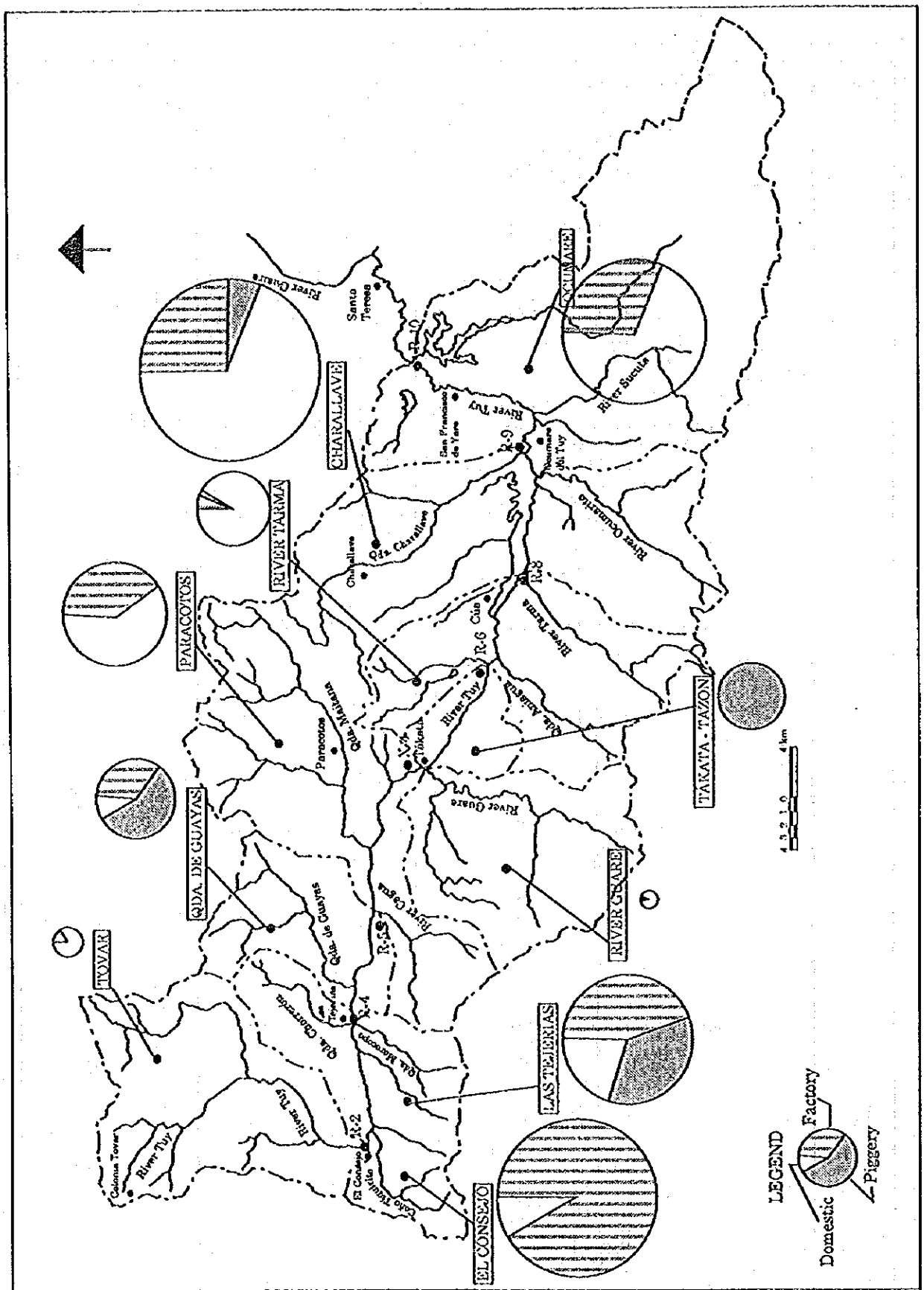

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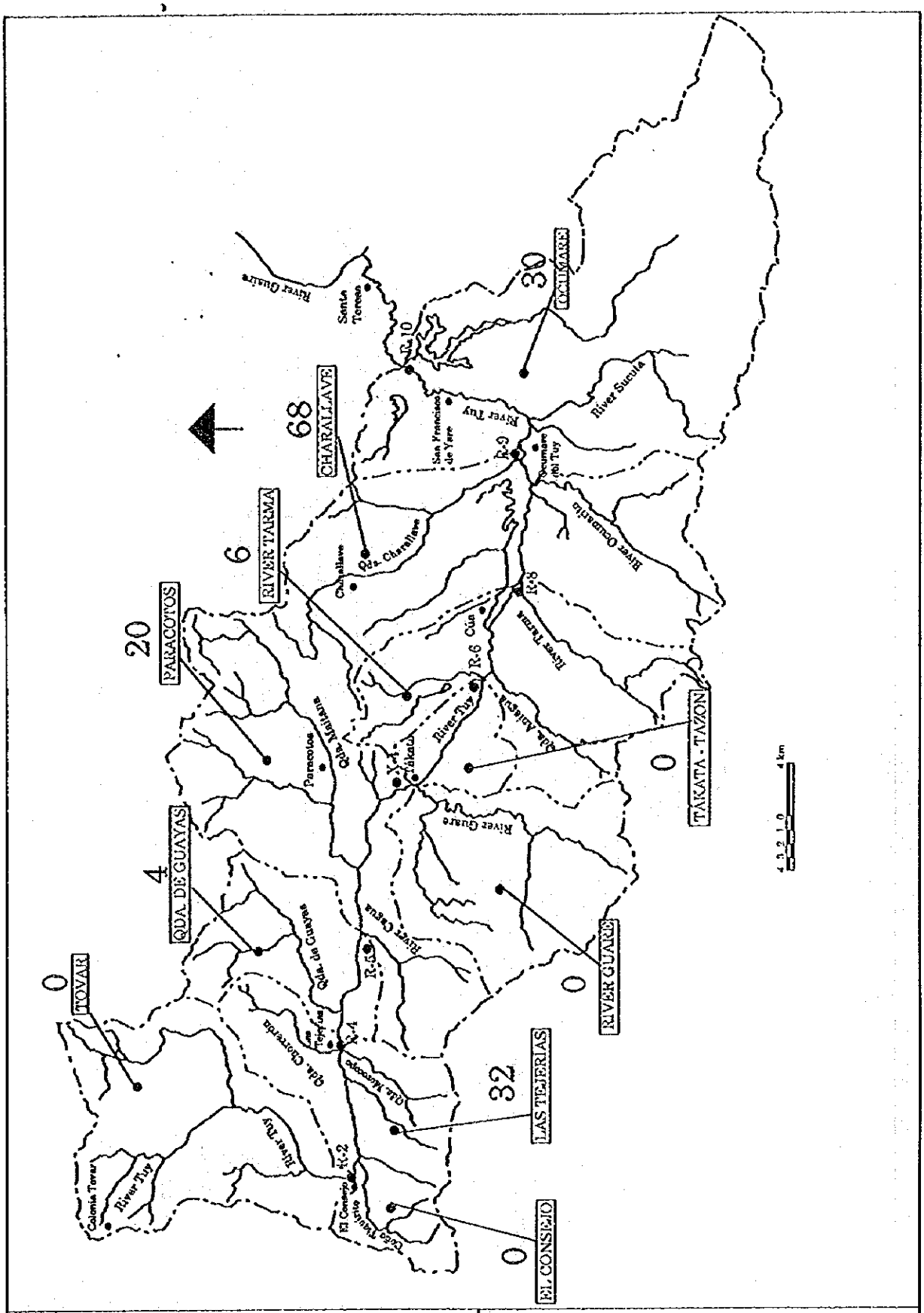
Fig. 4.1-1 Spatial Distribution of BOD Effluent Load



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 4.1-2 Spatial Distribution of Non-Food Factory Numbers

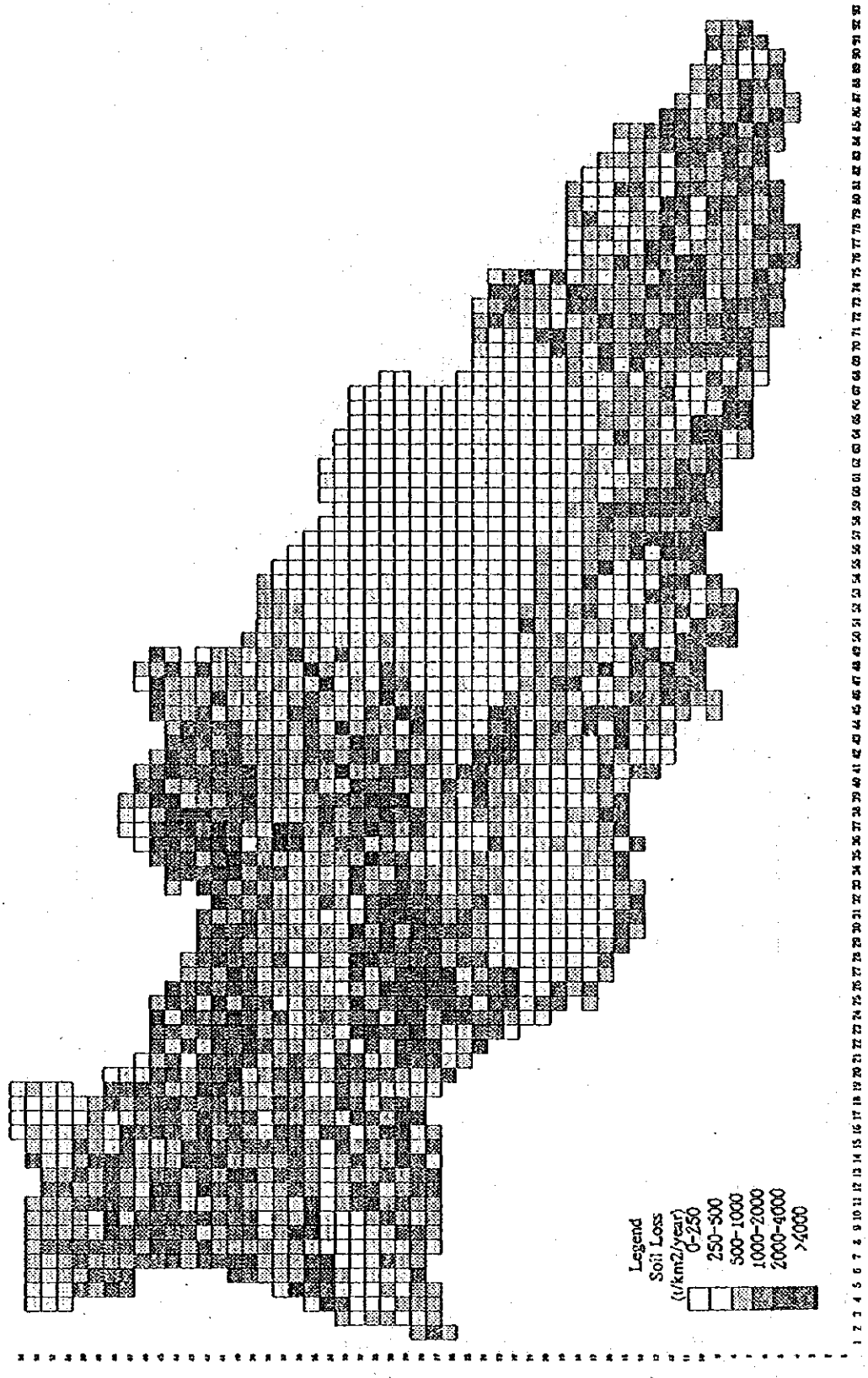


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Fig. 4.1-3 Basin's Erosion by 1 x 1 km Mesh

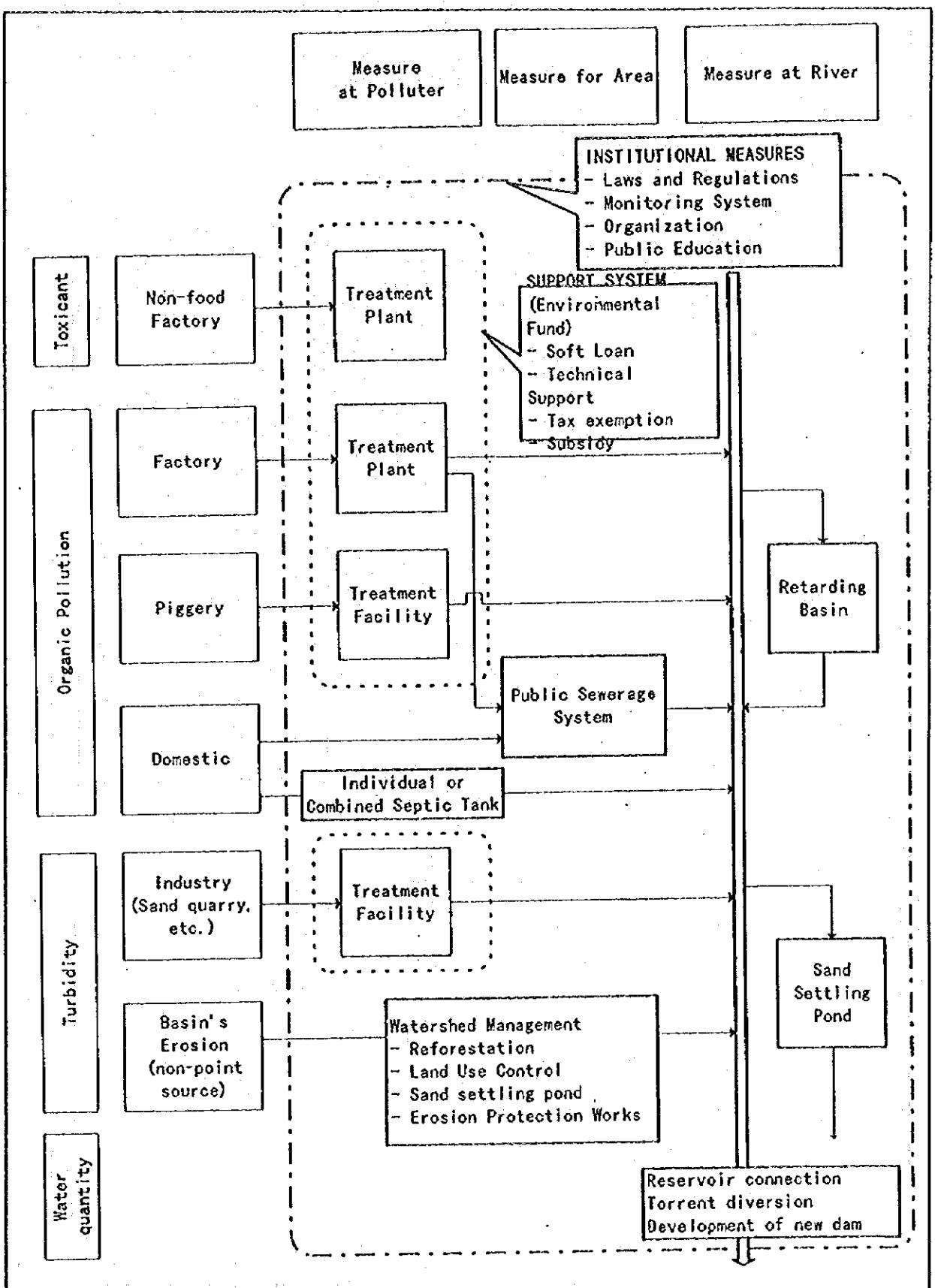

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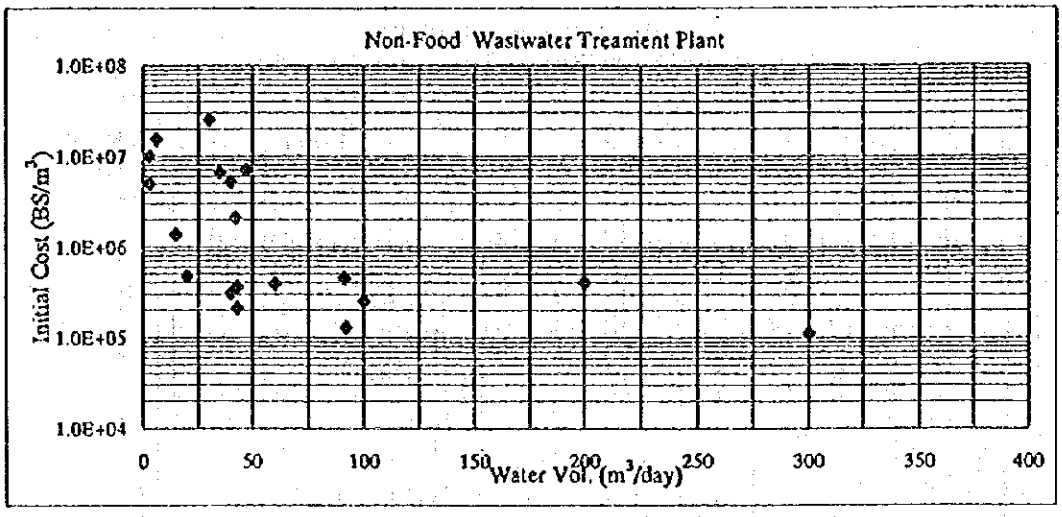
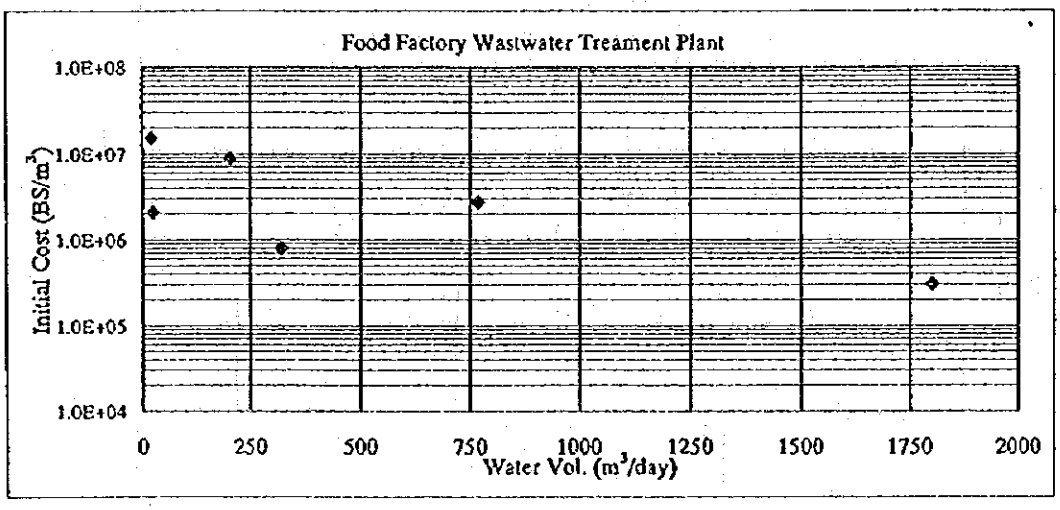
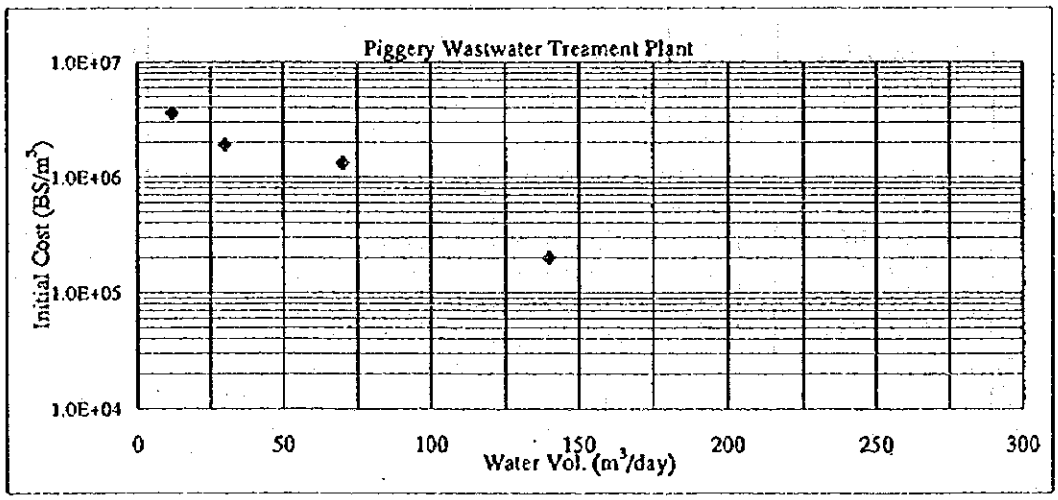
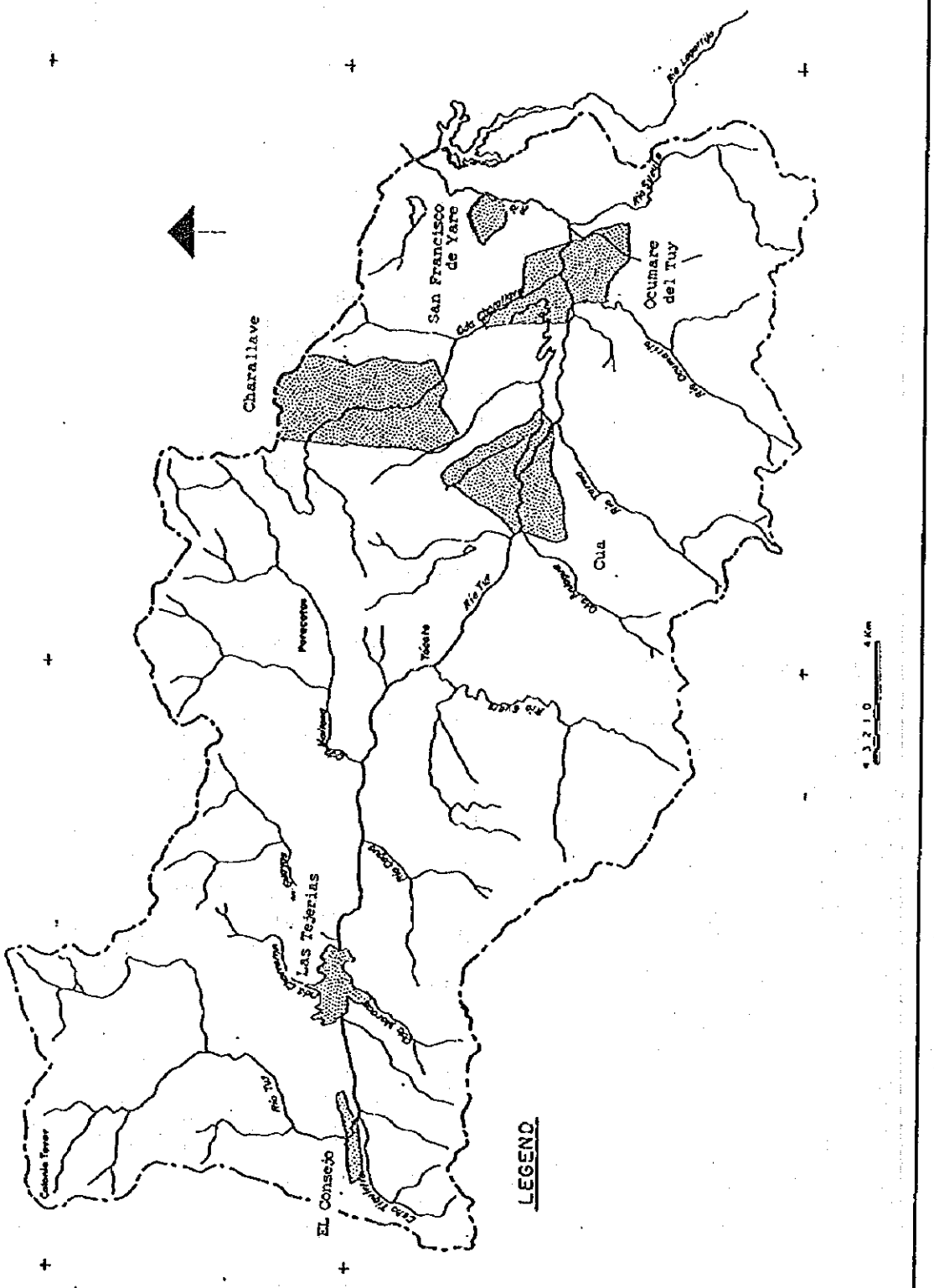
Fig. 5.2-1 Strategic Application of Countermeasures



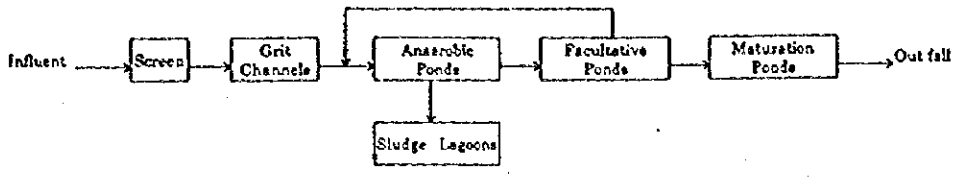




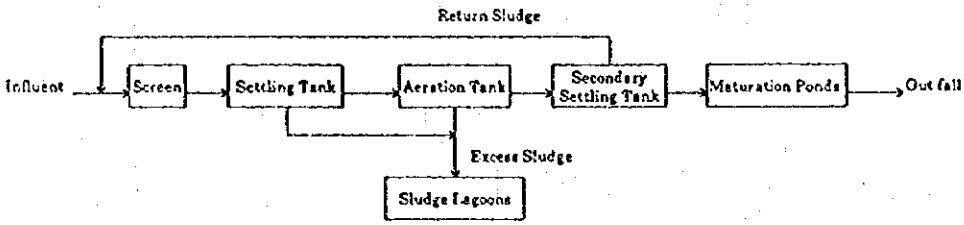
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 6.1-1 Unit Cost of Wastewater Treatment



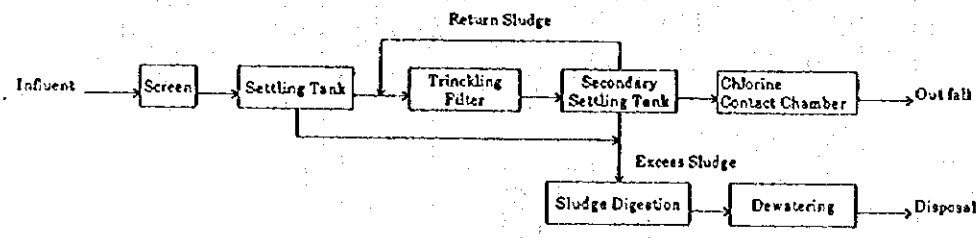
THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 6.1-2 Areas Covered by Planned Public Sewerage System



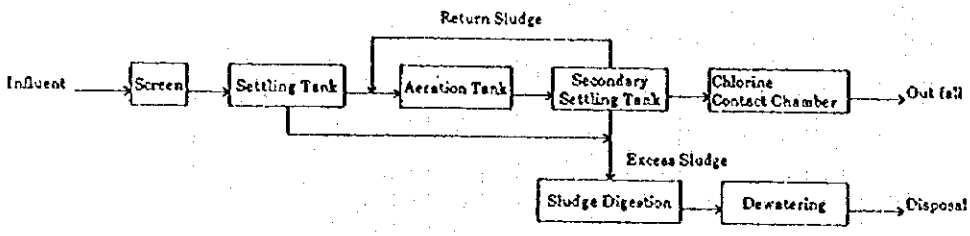
Flow sheet of Stabilization Pond System



Flow sheet of Simplified Activate Sludge Process



Flow sheet of Trickling Filter Process



Flow sheet of Conventional Activated Sludge Process

THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 6.1-3 Flow Chart of Sewerage Treatment Process
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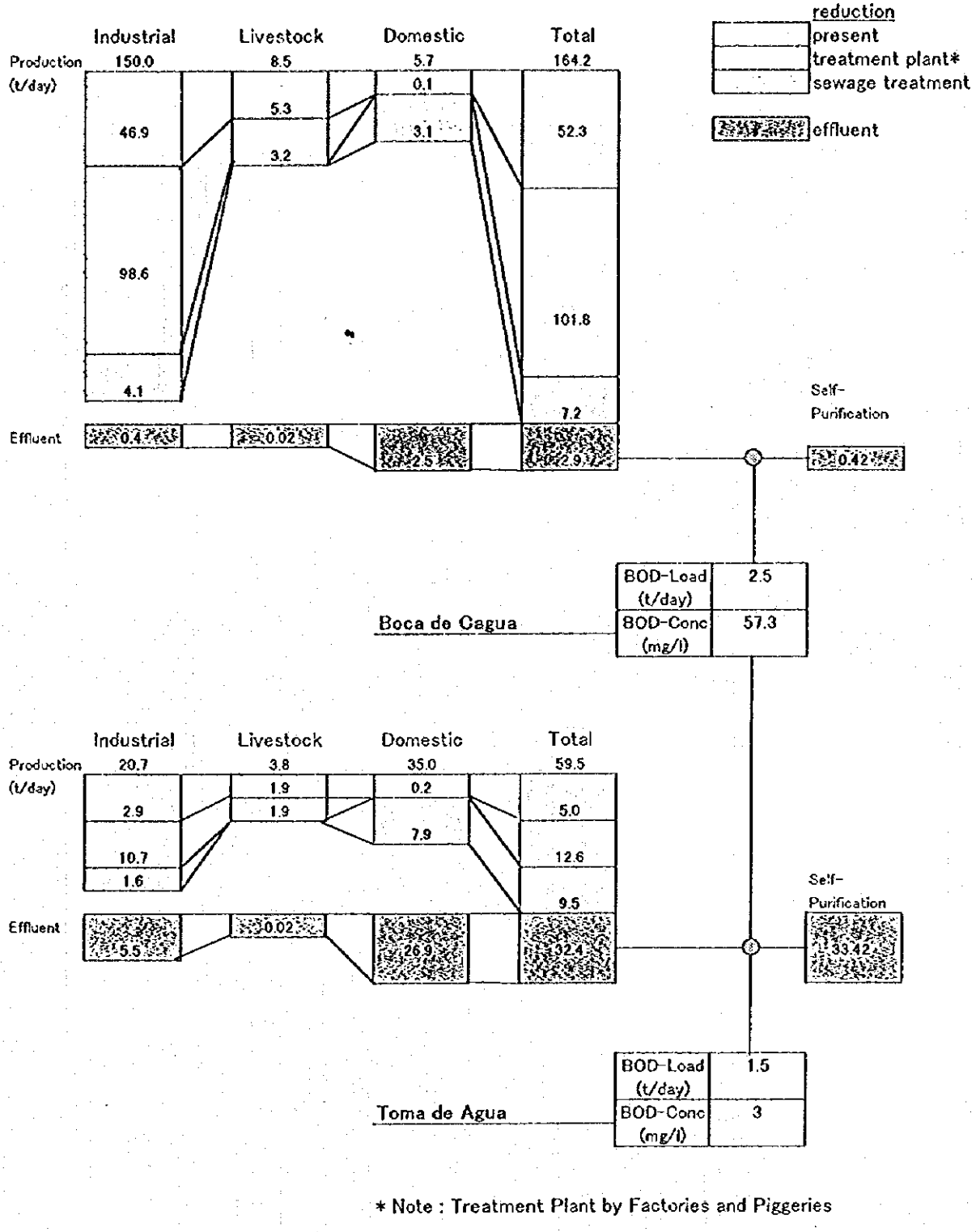

THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 6.1-4 Pollution Load Balance (2010)
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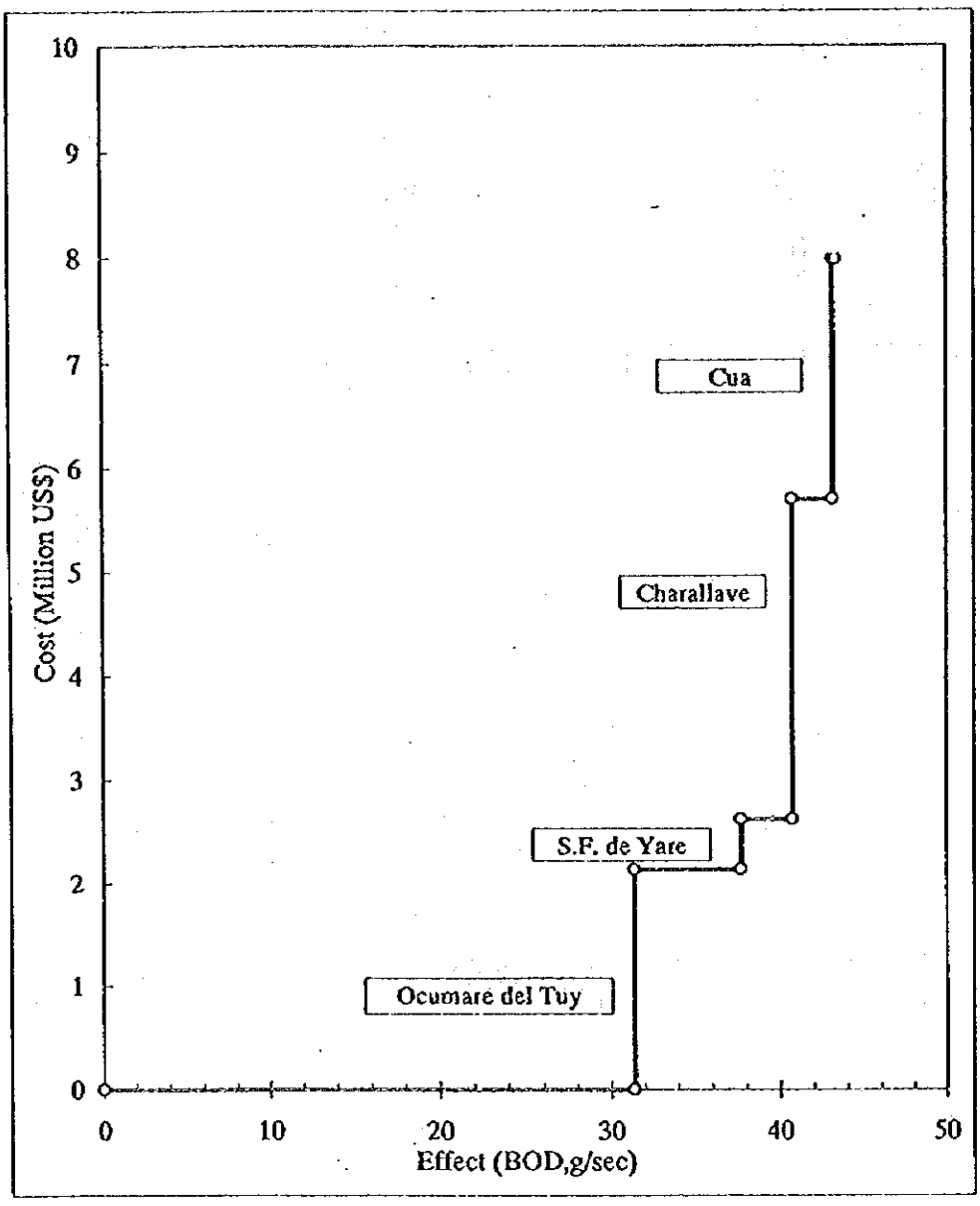
Sewer: Effect and Cost



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 6.1-5 Effect and Cost of Wastewater Treatment by Sewage System
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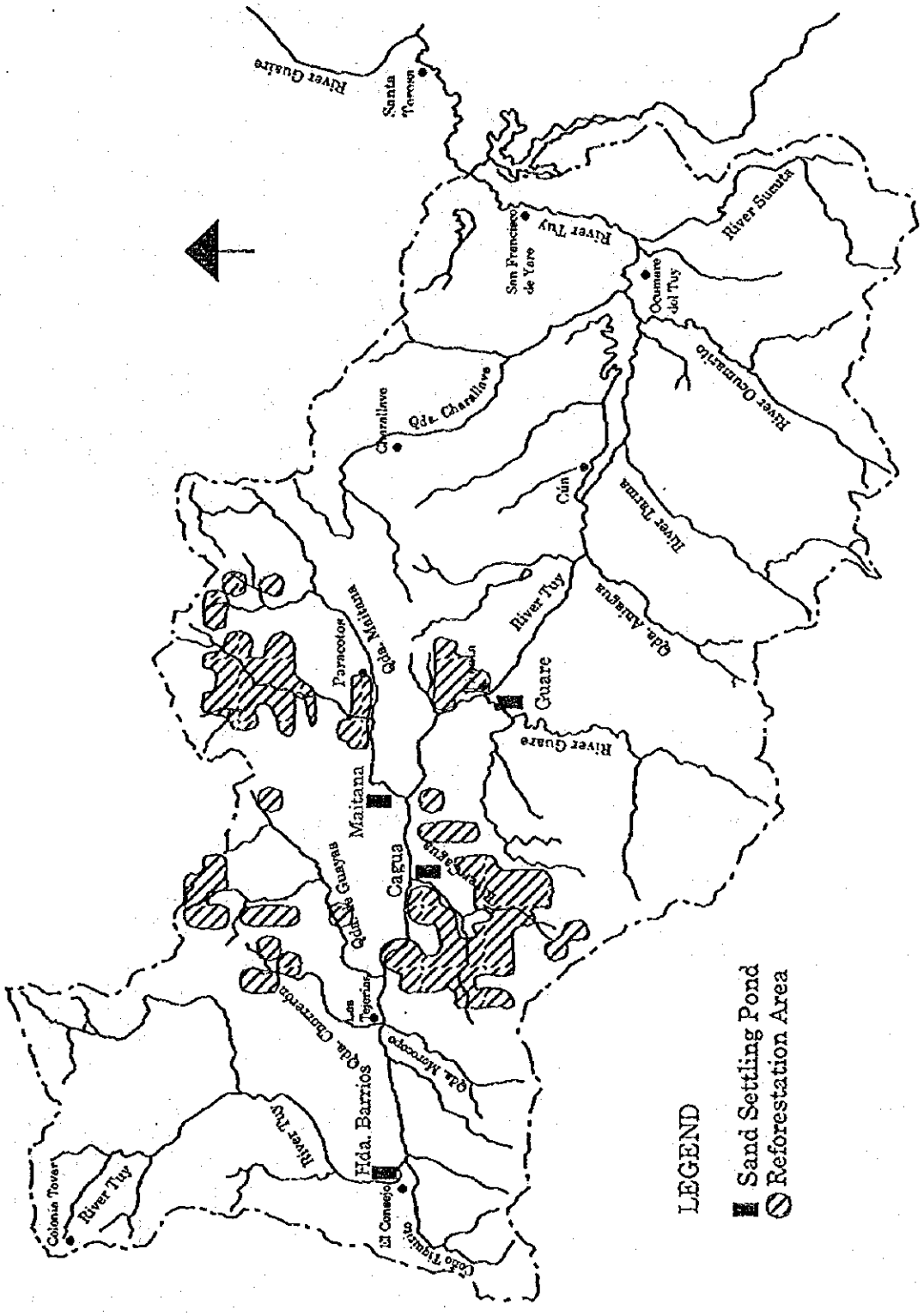

THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 6.1-6 Location of Reforestation Area and Sand Settling Pond
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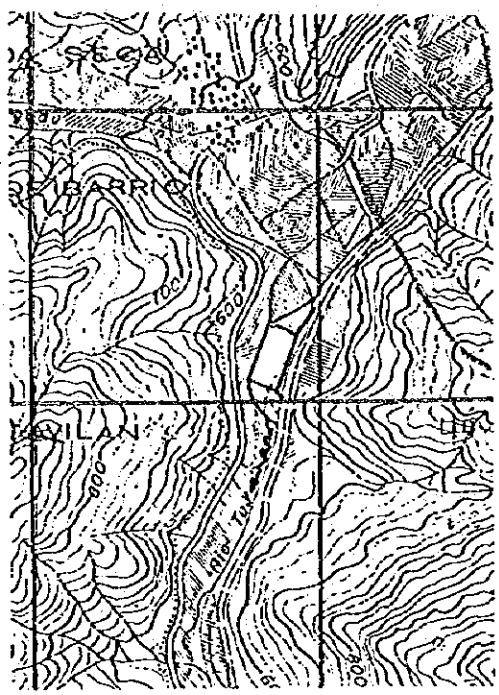
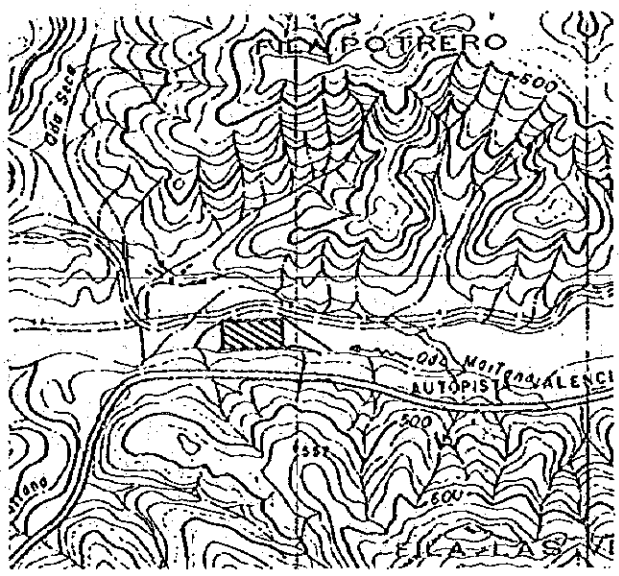
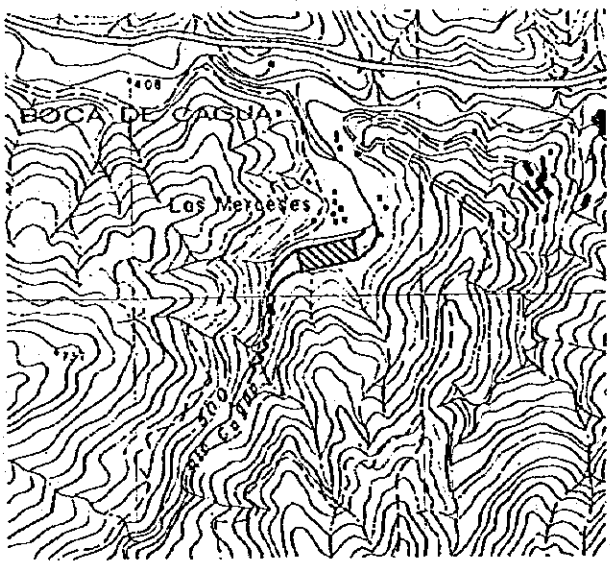
Upper Tuy(Hda. Barrios)



Qda Maitana



Cagua



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THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 6.1-7 Location Of Sand Setting Pond on Tributaries
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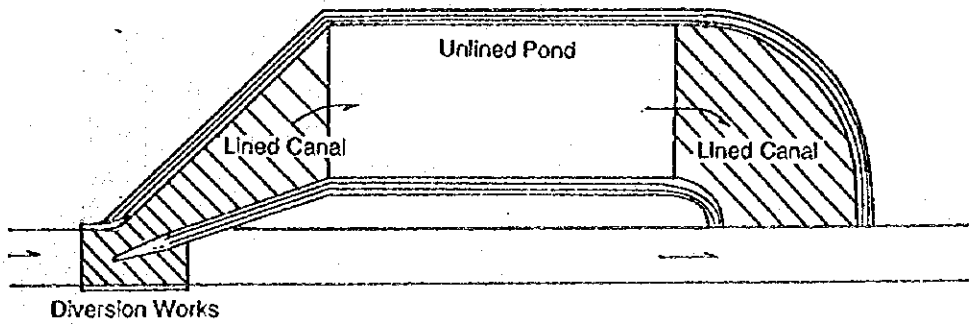
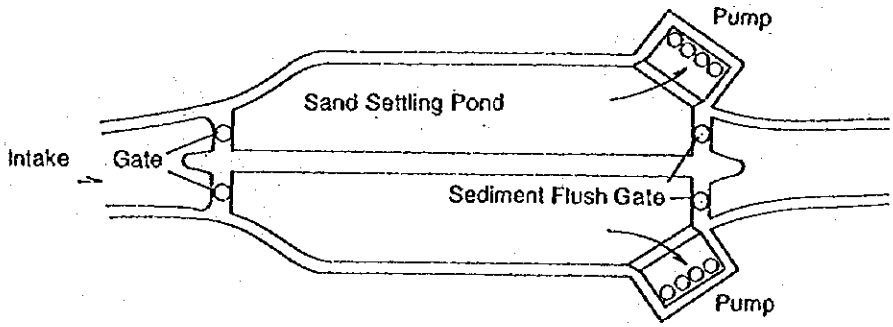
Sand Settling Pond on Tributaries



Sand Settling Pond at Intake



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 6.1-8 Sketch of Sand Settling Pond on Tributaries and at Intake
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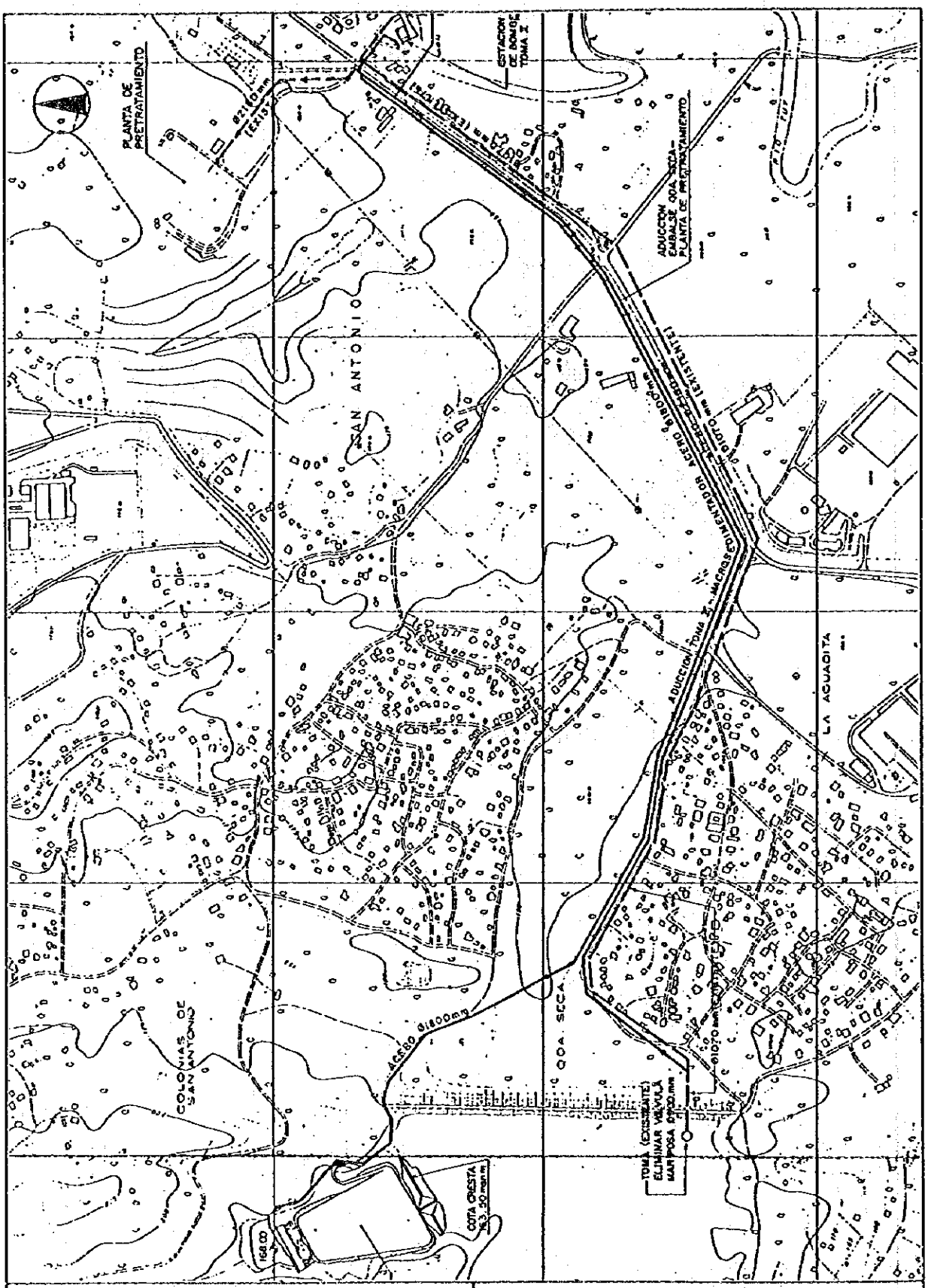

THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 6.1-9 Plan of Pipeline from Intake to Settling Pond in Qda.Seca
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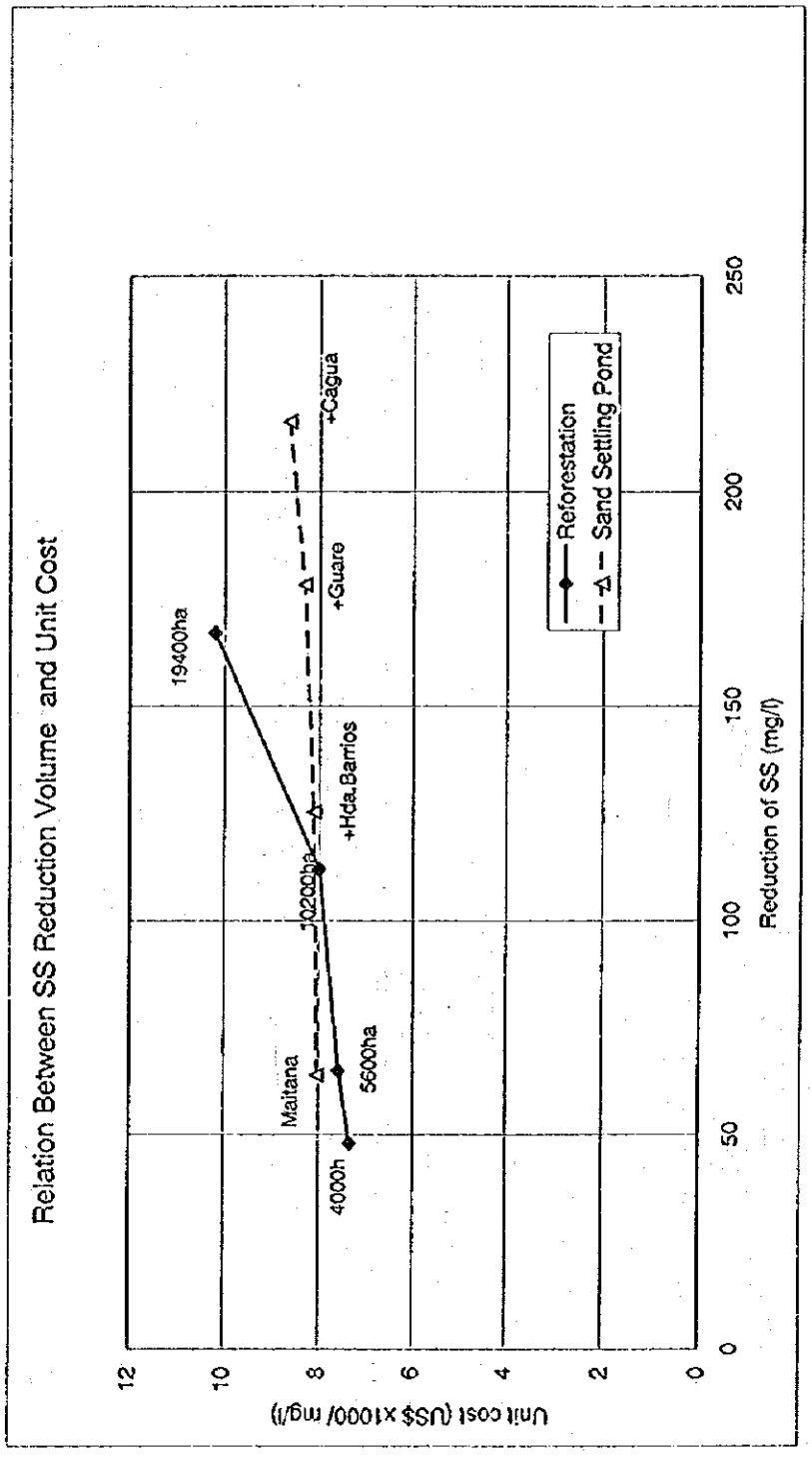
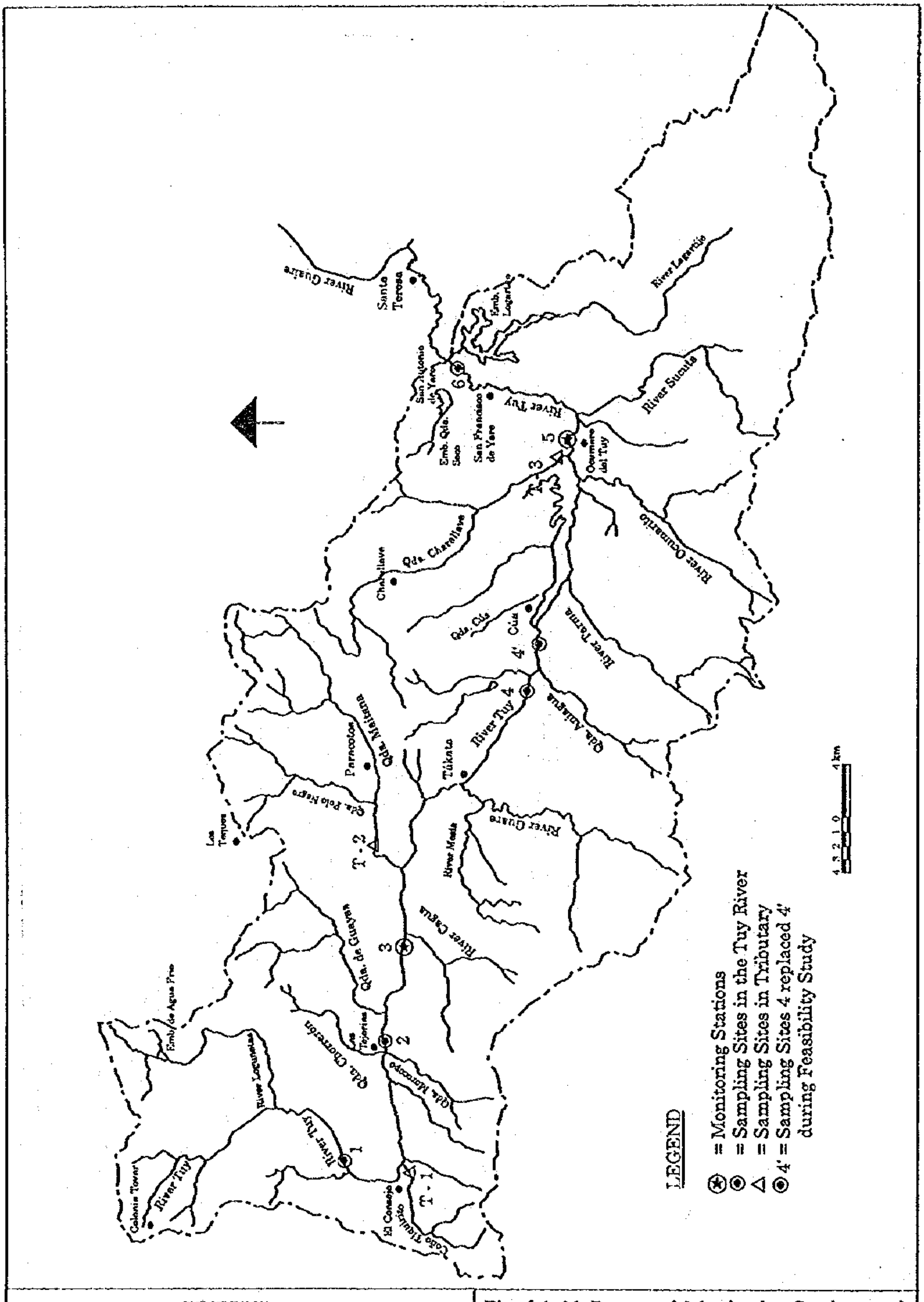


THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA JAPAN INTERNATIONAL COOPERATION AGENCY	Fig. 6.1-10 Relation Between SS Reduction Volume and Unit Cost



THE STUDY ON THE ENVIRONMENTAL IMPROVEMENT PROGRAM OF THE UPPER AND MIDDLE STREAM OF THE TUY RIVER BASIN IN THE REPUBLIC OF VENEZUELA	Fig. 6.1-11 Proposed Monitoring Stations and Sampling Points
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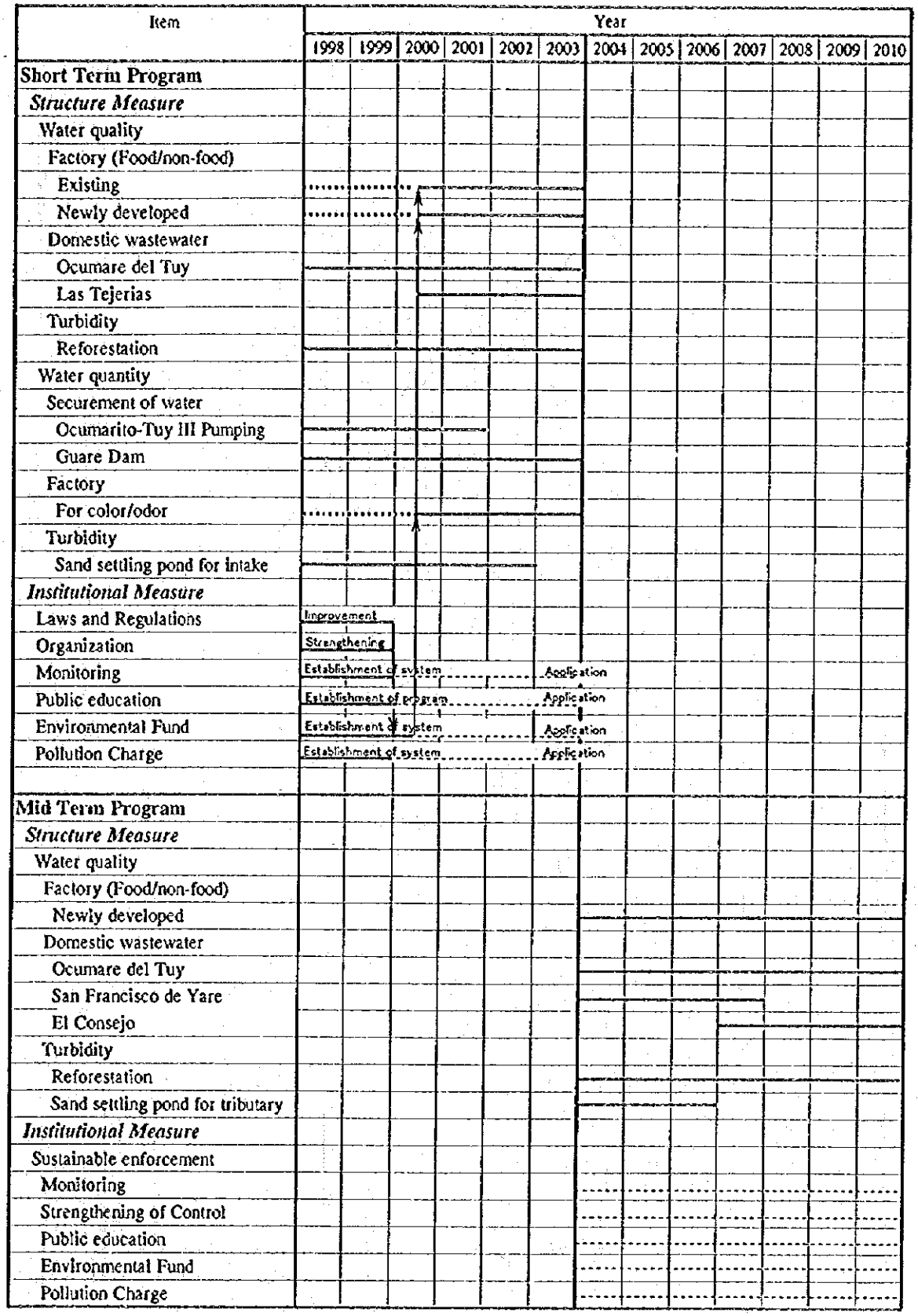

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Fig. 6.3-1 Implementation Schedule

THE STUDY ON
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Fig. 6.5-1 Location of Counternieasures