

**METROPOLITAN MONTEVIDEO SANITATION PROGRAM
STAGE III**

(UR-0089)

EXECUTIVE SUMMARY

BORROWER AND GUARANTOR: The Eastern Republic of Uruguay

EXECUTING AGENCY: The Montevideo Municipal Government (IMM), through its executing unit, for the works located in the department of Montevideo. Execution of works in the department of Canelones will be the responsibility of the Development Projects Department (DIPRODE) of the Office of Planning and Budget (OPP).

AMOUNT AND SOURCE:

IDB (OC):	US\$153.3 million
Local counterpart funding:	<u>US\$ 65.7 million</u>
Total:	US\$219.0 million

FINANCIAL TERMS AND CONDITIONS:

Amortization period:	25 years
Disbursement period:	6 years
Interest rate:	Variable
Inspection and supervision:	1%
Credit fee:	0.75%

OBJECTIVES: The proposed program is designed to improve living conditions for the population in the Montevideo metropolitan area by increasing sewer service coverage and reducing industrial and household pollution in the city's bodies of water, particularly in the Pantanoso, Miguelete and Carrasco watersheds and Montevideo Bay.

DESCRIPTION: In order to achieve the above objectives, the program comprises the following components:

1. **Environmental sanitation (US\$129.5 million):**
(i) expansion of sanitary sewerage and storm drainage systems; (ii) construction or expansion of sewer mains, interceptors, pumping stations, outfalls and pretreatment plants; (iii) relocation of settlements located within hazardous areas or alongside watercourses and affected by the works; (iv) development of programs to control industrial pollution and water quality in receiving bodies; and (v) rehabilitation of existing sewer systems.
2. **Institutional strengthening of the IMM (US\$3 million):** (i) institutional upgrading of

the units responsible for environmental quality and control of industrial effluents; and (ii) reorganization of the Sanitation Division of the IMM to raise the efficiency and quality of operations and maintenance in all Montevideo's sewer systems. Support will also be provided for setting up a business cost accounting system to determine and monitor the actual cost of providing sanitation services, for purposes of full cost recovery via tariffs.

3. **Solid-waste master plan (US\$3.2 million):** Preparation of a master plan for solid waste management in metropolitan Montevideo, including the department of Montevideo and portions of the departments of Canelones and San José.

The program works are located in the department of Montevideo, except for the Paso Carrasco works, which are located in the department of Canelones on the eastern slope of the Carrasco watershed.

Since the IMM and OSE share jurisdiction over the program area, the program will be divided into two subprograms (A and B) for execution purposes, covering works in the departments of Montevideo and Canelones, respectively.

**ENVIRONMENTAL
CLASSIFICATION:**

The Environment Committee has classified this as a Category III operation. On April 9, 1996, the Committee approved the environmental summary for the program, which was forwarded to the PIC on June 13.

POVERTY TARGETING:

Under the terms of the Eighth Replenishment mandate on poverty alleviation and the Bank's criteria for implementing that mandate, this program does not qualify as a poverty-targeted investment.

**CONTRACTING OF
CIVIL WORKS, GOODS
AND CONSULTING
SERVICES:**

The Bank's current procedures will be followed in the procurement of goods and contracting of services to be financed with the loan proceeds. The threshold amounts above which international competitive bidding is required are US\$3 million for works and US\$250,000 for goods and related services (paragraph 3.19).

BENEFITS:

The following targets are to be met through program execution: (i) an increase in coverage of the Montevideo sewer system from 80% to 88%, to serve an additional 140,000 people; (ii) a decrease in organic pollution from industrial and household sources discharged into streams, from 85 t BOD₅/day to 40 t BOD₅/day; (iii) a decrease in the quantity of heavy metals dumped into streams and Montevideo Bay from

998 kg/day to 41 kg/day; (iv) an increase in the efficiency of the IMM Sanitation Division in operating and maintaining the sewer service; (v) resettlement of approximately 325 families living on the work sites and/or in hazardous areas, providing them with better housing solutions than they now have; and (vi) rehabilitation of sanitation system lines which are in poor operating condition or poorly maintained.

RISKS:

1. If the IMM does not perform effective monitoring and control of industry, the pollutants now being dumped into watercourses in the metropolitan region will not drop to the levels called for under the program. To minimize this risk, the IMM will receive institutional strengthening, and annual commitments authorized for program works will be tied to meeting the industrial pollution abatement targets. Also, the IMM is legally empowered to levy fines and ultimately close down industries that fail to comply with the program to reduce water pollution caused by the dumping of contaminants.
2. If the number of connections to the new sewer systems is fewer than projected, the anticipated project benefits will not materialize, and the IMM will suffer the financial effects. This risk will be minimized by the IMM's operation of a fund to finance in-house connections for low-income families, since cost is the major obstacle to connection.
3. If the Administration Unit of the Sanitation Division of the IMM is not created and set up, sanitation service revenues would not be used efficiently, in the absence of proper management of the Division's commercial, financial and accounting affairs. This risk is to be addressed by limiting funding commitments until the unit is created, and conducting a thorough analysis on the occasion of the mid-term program review.

**EXCEPTIONS TO
BANK POLICY:**

None.

**THE BANK'S
COUNTRY AND
SECTOR STRATEGY:**

The Bank's strategy for the 1996-1998 period seeks to support the government in promoting investment as the engine of development, thereby making the country more competitive. This is to be done by: (i) carrying structural reforms further, in order to rationalize public spending and balance the budget; (ii) improving the environment for private investment in order to restore competitiveness and foster increased investment; and (iii) improving service delivery and

quality by boosting efficiency and sharpening targeting, in particular modernizing education and health and developing sanitation infrastructure.

In the sanitation sector, the Bank is to support efforts to bring in an institutional framework that will make for efficient water and sewer service management, enabling systems to be expanded and to improve the quality of services, as the operations side is separated from monitoring and policy-setting. These changes would facilitate private-sector involvement in the delivery of sanitation services.

With respect to the environment, solving the problem of pollution from household and industrial effluents and solid waste is the Bank's priority in Uruguay, as reflected in activities under this program. In addition, the Bank will continue to support the Environment Directorate (DINAMA) of the Ministry of Housing, Land-use Planning, and Environment in its institutional development, to enable it to perform its statutory environmental control functions, especially in the prevention and control of adverse environmental impact generated by projects.

**SPECIAL
CONTRACTUAL
CONDITIONS:**

1. Before funds may be disbursed for subprogram A, the borrower is to present to the Bank:
 - a. Copies of agreements signed between: (i) the government and the IMM for the transfer of funds; and (ii) the IMM and DINAMA to coordinate environmental measures for the program (paragraph 3.10).
 - b. Evidence that consulting services have been hired for preparation and implementation of the definitive family resettlement plan (paragraph 3.15).
2. Before funds may be disbursed for subprogram B, the borrower must have provided the Bank with a copy of the agreement signed by the OPP and OSE for execution of works by DIPRODE (paragraph 3.10).
3. Other special conditions to be included in the contract are as follows:
 - a. Within 12 months after the contract is signed, IMM is to demonstrate that consulting services have been engaged (i) to support the creation and set-up of the Sanitation Services Administration Unit and the preparation and implementation of an institutional strengthening plan

for the IMM Sanitation Division (paragraph 3.6); (ii) to prepare a monitoring program for industrial pollution control and a health and environmental education program for execution by the IMM (paragraph 3.7); and (iii) to advise the IMM executing unit on bidding procedures, programming and control of works execution, and technical matters arising during works execution (paragraph 3.5). Within 18 months after signature of the contract, the OPP, through DIPRODE, must demonstrate that a consulting firm has been hired to produce a solid-waste master plan for metropolitan Montevideo, taking in part of the departments of San José and Canelones (paragraph 3.8).

- b. Commitments for works authorized at the beginning of each calendar year will be contingent on meeting targets for reduction of industrial pollution in the previous year, as agreed upon with the Bank. The findings of IMM and DINAMA effluent analyses of industries operating in the program area are to be published twice-yearly in the local press (paragraph 3.22b).
- c. Within 18 months after contract signing, the IMM is to present for Bank approval a plan to recover the costs of drainage works included in the program (paragraph 5.24).
- d. Within 30 months after contract signing, the IMM is to (i) demonstrate that the two operating and maintenance sections of the Sanitation Division have been merged into one (paragraph 4.17), and (ii) present a plan to bring together under a single section all activities relating to studies, designs and works supervision (paragraph 4.17).
- e. The IMM and DIPRODE will compile and process data for use in a subsequent ex post evaluation of the program results by the Bank. These data, once processed, are to be forwarded to the Bank in the form of reports submitted beginning in the second year of execution and continuing until two years after completion (paragraph 3.27).
- f. Within 36 months after contract signing, or once 50% of the funds earmarked for direct costs have been committed, whichever occurs first, a mid-term review is to be conducted to

evaluate program execution against the program benchmarks. Special attention is to be paid to institutional arrangements for tariffs for metered use of sanitation services, creation and set-up of the Administration Unit in the Sanitation Division, achievement of industrial pollution abatement targets, and general operating and maintenance status of the sanitation system, to determine whether outsourcing should be extended to activities now performed directly. If the review indicates a need for adjustments to be made in program execution, the IMM will have 60 days to present a plan to correct the shortcomings detected. Until this plan has been approved by the Bank, no new commitments will be allowed under the program (paragraph 3.25).

- g. The Bank is to have approved the final resettlement plan prior to the works being put out to tender. Evidence that the families have been resettled or compensated and that the IMM owns or holds a concession to the land will be required for the works to commence in each area (paragraph 3.22c).
- h. Within 24 months after contract signing, the IMM is to substantially cut down on the improper dumping of solid waste, as part of the effort to clean up the Miguelete and Pantanos streams (paragraph 3.22d).
- i. Authorization for the commitment of program funds in excess of US\$54 million to defray direct costs for subprogram A works will be contingent upon the institution of a tariff for metered use of IMM sanitation services which generates revenue sufficient to cover operating, maintenance, commercial and administrative expenses, including depreciation on restated fixed assets, as well as debt service, and to finance at least 30% of the annual capital investment plan for the sanitation services (paragraph 5.14).
- j. Within 30 months after signature of the contract, the IMM must have set up and staffed a sanitation services administration unit within the Sanitation Division, and the unit must be operating. To perform its financial, accounting, and commercial functions, the new unit will handle (i) accounting, using a business accounting system for sanitation services; (ii) selection, training, and

administration of sanitation service personnel; and (iii) commercial and financial matters relating to the sanitation services, and customer service. The IMM may not commit funds to defray direct costs for program works in excess of US\$54 million equivalent until the Administration Unit is equipped to operate, and until business accounting systems, including cost accounting, and billing and collection systems have been developed, tested, and implemented. In addition, the assets and liabilities associated with sanitation services must have been identified and evaluated, and the IMM must have begun to develop and implement customer service arrangements (paragraph 4.16).

- k. OSE is to comply, throughout the life of the prospective contract, with the requirements of the tariff covenant for loan 785/OC (paragraph 5.26).
- l. Until a use-based sewerage tariff is definitively in place in the department of Montevideo, the IMM will adhere to the tariff covenant for loan 575/OC (paragraph 5.21).
- m. Beginning in year four of the program, the IMM will maintain a collection rate for sanitary sewerage services of not less than 85% of amounts outstanding (paragraph 5.11).
- n. The IMM is to deposit the revenues from sanitary sewerage tariffs in a special bank account, for use exclusively to finance:
 - (i) operating and maintenance costs;
 - (ii) commercial and administrative expenses;
 - (iii) debt service associated with the sewer systems;
 - (iv) local counterpart funding for the program;
 - (v) rehabilitation of existing sewer systems during the first 10 years of the program; and
 - (vi) after the first 10 years, additional works required for system expansion (paragraph 5.16).
- o. Once the accounting system is operating in the Administration Unit of the Sanitation Division, the IMM will, throughout the life of the loan, present financial statements of the sanitation services, duly audited by the General Audit Office (paragraph 5.15).
- p. The Bank will recognize, as local counterpart funding for the program, expenses of up to

US\$2.8 million incurred by the IMM. The Bank will also recognize, as retroactive financing, expenses of up to US\$186,000 incurred by OSE (paragraph 3.21).

- q. The Uruguayan government will deliver to the Bank, after completion of the water and sanitation sector organization study it has commissioned, a report conveying the government's opinion as to the best organizational approach for the sector (paragraph 1.4).
- r. Where shown to be warranted, the IMM will outsource the operation and maintenance of sewer systems included in the program. Until the mid-term review, it will also conduct practical evaluations of different maintenance management approaches for existing sanitation systems that were not funded by the IDB, including contracting out to private firms and cooperatives. This evaluation will be done in different watersheds, and must cover at least 20% of the networks (paragraph 4.18).

I. FRAME OF REFERENCE

A. General background

- 1.1 Uruguay has a population of just over three million. The country features low demographic growth (0.6% per annum) with a predominantly urban (85%) population that is highly concentrated in Montevideo. The Montevideo metropolitan area, with a population of about 1.5 million, is home to 50% of the population and holds 46% of the country's industrial units, 78% of financial services, and 65% of industrial employment.

B. The water and sanitation sector

1. Institutional framework

- 1.2 The State Sanitation Authority (OSE), which reports to the Ministry of Housing, Land-use Planning, and Environment (MVOTMA), is responsible for water supply throughout the country. It is also in charge of the collection, treatment, and final disposal of wastewater throughout Uruguay, except in the department of Montevideo, where this is the responsibility of the Montevideo Municipal Government (IMM) through the Urban Sanitation Division of the Environmental Development Department. The existence of two separate entities to operate water and sewer services in Montevideo implies overlap and therefore inefficiency in service delivery. The Bank has been supporting the rationalization of water and sewer services for Montevideo and the regionalization of OSE.
- 1.3 The separation of responsibility for water and sewer services in Montevideo dates back to the days of private ownership of the city's sewer system. The creation of a single water and sewer utility for the department of Montevideo, or the transfer of responsibility for sewerage services in the department to OSE, would require a lengthy process of largely political negotiations between authorities of the two levels of government. The proposed program thus constitutes a modest advance toward resolving existing institutional problems, but one that would help set in place the basic conditions needed for a business approach to management of the service, such as precise identification of asset values and of the costs of delivering the service, and for efficient operation and maintenance.
- 1.4 A study, slated for completion in September 1996, is now being conducted with World Bank funding to propose and recommend options for structuring the water and sewerage sector at the national level. The new structure will separate functions and encourage private-sector participation in the delivery of sanitation services, with an eye to raising efficiency. However, preparation and approval of a legal framework to support this new structure will take an estimated two to three years and require specialized

technical and financial resources. The Bank could make a valuable contribution at that stage given the leading role it has played in the sector and the knowledge it has acquired. In order for such involvement to be effective, the Uruguayan government will, once the aforementioned study has been completed, deliver to the Bank a report conveying the government's opinion as to the best organizational approach for the sector.

- 1.5 Activities have been planned under the program to make the delivery of sanitation services in Montevideo more efficient, and are compatible with any option that may be considered for the sector. Any subsequent merger of Montevideo's water and sewer services would be eased by the institutional and financial measures included herein.

2. Tariff considerations

- 1.6 OSE's tariff structure for water and sewer services within its jurisdiction differentiates between household, industrial, commercial and public-sector use. It provides for a fixed tariff and charges that vary according to metered consumption. Differential tariffs are also set for resort areas, and subsidized tariffs apply to retirees. Tariffs are set by the national government upon application by OSE. According to the most recent available financial statements, the tariffs are such that OSE is in compliance with the tariff covenant for contract 785/OC now in execution.
- 1.7 Up to the end of 1995, the IMM's sewerage services were financed with revenues from charges not directly related to use of the service. 1/ In December 1995, the IMM instituted a sanitation levy, 2/ charged on the basis of water consumption. Two types of tariffs were established, one for household and public sector consumers and the other for commercial and industrial consumers. An additional charge may also be levied on industries exceeding maximum pollution levels in effect in the department. The amount of the tariff is set by the Departmental Council at the mayor's request.
- 1.8 On July 25, 1996, the sanitation levy, in its original form, was repealed by the National Assembly, on the understanding that it could examine a new version after negotiations were held with the IMM. In the interim, the previous system of charging the various taxes referred to above is once again in place. For this reason, the contract will require that loan commitments be limited until a

1/ The charges include the system maintenance tax, betterment levy for paving and sanitation works, supplementary vehicle tax, and property tax.

2/ Also referred to herein as a tariff or rate, to which it better corresponds.

tariff based on metered use is defined, and in the interim that the covenant from the previous contract will apply.

3. Service coverage

- 1.9 Potable water coverage is 92% nationally, 97% for Montevideo, and 81% in cities in the country's interior. Sewer service coverage is an estimated 50% nationally and 40% in localities in the interior with more than 10,000 inhabitants. The Montevideo sewer system serves 80% of the population. 3/ In the interior of the country, 25% of sewage collected receives primary treatment and 25% secondary treatment. In Montevideo, 40% of sewage is disposed of through an underwater outfall following pretreatment to eliminate sand, oil and grease.
- 1.10 In areas lacking sewerage infrastructure, household septic tanks are used which must be pumped out periodically by vacuum trucks known as *barométricas*. 4/ This service solves the immediate problem for the households but generates pollution when the waste is discharged directly into watercourses. Montevideo has designated dumping points for use by the trucks, and many other localities have municipally-run plants for discharge and treatment of the sludge they carry. The Bank, under loan 785/OC, is providing part financing for the construction of sewage treatment plants in the major cities of the interior.
- 1.11 Except in coastal areas, most of the country's subsoil is low in permeability, which prevents effluents from septic tanks from being disposed of by filtration into the earth. For this reason, many users connect the septic tank to an overflow pipe that carries decanted household waste to the street, where it drains into the gutters.

4. System operation and maintenance

- 1.12 Operation and maintenance of OSE systems is excessively dependent on Montevideo. To remedy this, a component was included in loan 785/OC to regionalize these activities and achieve greater efficiency.
- 1.13 There are two situations prevailing in the Montevideo sewerage system. In the part of the system funded by the Bank, operation and maintenance is done by private companies hired by the IMM, and the results are satisfactory. In the rest of the system, operation and maintenance is done directly by IMM Sanitation Division staff,

3/ The greater part of the sewerage network in Montevideo is combined, carrying both wastewater and stormwater.

4/ This service is generally provided by private companies or municipal bodies. In the department of Montevideo, it is available privately.

and results are unsatisfactory owing to the scarcity of skilled human and material resources. In part for this reason, much of the system not financed by the Bank is now in need of rehabilitation.

C. Solid waste

- 1.14 The solid waste sector in Uruguay is decentralized, with the municipal authorities in charge of urban sanitation. The Bank is now considering a request for financing for a municipal development program that would provide support for municipalities in the interior to solve their solid waste problems.
- 1.15 The Urban Sanitation Division (DLU) of the IMM Environmental Development Department is in charge of collecting solid waste. This service is provided as follows: 79% on force account, 12% under a contract with a private company, and the remaining 9% through a private container service. Public street sweeping services are provided as follows: 80% directly by DLU and the remaining 20% by a private firm. Beach cleaning and hospital waste collection are done directly by DLU. In addition, DLU operates a sanitary landfill that takes all the metropolitan region's solid waste. This landfill, however, lacks adequate drainage and treatment facilities, so that leached liquids are polluting an adjacent watercourse.
- 1.16 Montevideo also has some 3,500 trash sorters, known as *hurgadores*, who use horse-drawn carts to pick up trash informally. An estimated 300 tons of waste are collected in this way each day, of which 140 tons are recycled. Unrecycled materials are dumped onto vacant land, usually near watercourses, or even in public thoroughfares within the periurban area. The IMM has identified 200 endemic dumps in the metropolitan area.
- 1.17 As a result of the above activities by trash sorters, approximately 160 tons of waste accumulates each day in the city's streets, streams, and in the drainage or sewer system itself, where it remains until it is washed away by rain. This creates an environmental problem with adverse effects on bodies of water and on sanitation and drainage systems.
- 1.18 A study is now being prepared with UNDP funding to seek solutions to the problem of trash sorters and implement a pilot plan. The IMM has signed agreements with NGOs to organize the trash sorters to collect unrecycled materials and sell them to the IMM at the municipal sanitary landfill.
- 1.19 The proposed program would finance the preparation of a solid-waste master plan for metropolitan Montevideo. The aim is to arrive at a comprehensive solution to the problem that would take into account the existing sanitary landfill and the trash sorters. This study was identified as one of the top priorities in a sectoral analysis

of solid waste in Uruguay produced by the Pan American Health Organization (PAHO).

D. Environmental considerations

1. Legal and institutional framework

- 1.20 The MVOTMA, through the Environment Directorate (DINAMA), has jurisdiction over all matters relating to: (i) the formulation, execution, supervision and evaluation of national environmental protection plans and the setting of national environmental policy; (ii) coordination with other national or departmental public-sector agencies in pursuance of their mandates; and (iii) control over public or private environmental protection activities, with the authority to levy sanctions.
- 1.21 Jurisdiction for these matters in Montevideo lies with the IMM, except for those matters that fall to the national agencies. Such jurisdiction is established in the Municipal Charter.
- 1.22 Uruguayan legislation on environmental impact assessment requires prior environmental authorization to be sought from DINAMA for any construction, activity or works with a potential for causing significant environmental impact. DINAMA requires an environmental impact assessment to be performed before issuing such authorization.
- 1.23 Specifically in connection with protection for bodies of water, national and municipal legislation and regulations have been in effect since the end of the 1970s.
- 1.24 Thus, extensive legislation now exists to underpin measures to control industrial liquid effluents. Up to the present, however, efforts have not been effectively mobilized to solve the problem of pollution in Montevideo's watercourses. The proposed program includes activities to mitigate this problem (see paragraph 3.22b).

2. Water pollution

- 1.25 The Pantanoso, Miguelete and Carrasco streams, which run through densely populated areas of Montevideo, have been polluted by direct and indirect dumping of household and industrial effluents. The first two drain into Montevideo Bay, which receives many other discharges as well. The estimated load now being discharged into the bay is 85 t BOD/day.
- 1.26 Industrial activity in Montevideo and the immediate surrounding area causes much environmental pollution, particularly of receiving bodies of water. Although the flow of effluents discharged by industry represents just 20% of total stream flow in the area under study, it carries 50% of the gross organic load.

- 1.27 In the area of the proposed program, 80% of industrial effluents are collected by the public system. Although some of the parameters set in the regulations are quite stringent, the lack of systematic controls leads to widespread noncompliance.
- 1.28 The fact that there are no regulations governing industrial sludge and the lack of infrastructure for treatment and drying make for inadequate management of industrial wastes. The sludge remaining after treatment of effluents is carried in pumping trucks and discharged into the sewers. Using funds from the proposed program, the IMM would prepare and carry out an industrial monitoring plan to control this problem, including the treatment and disposal of industrial sludge.

E. The Urban Sanitation Plan

- 1.29 In 1972, with Bank assistance, an urban sanitation plan (PSU) was drawn up for Montevideo for execution in stages. PSU I was completed in 1991, with the construction of the Punta Carretas underwater outfall and cleanup of the eastern part of the city. PSU II is now nearing completion, and consists basically of an interceptor to prevent dumping in the area between Montevideo Bay and Punta Carretas by conveying wastewater to the outfall built during PSU I. The preparation of designs and execution of works for both stages were financed in part by the Bank.
- 1.30 Beginning in 1992, the IMM contracted for the preparation of a new master plan for sanitation, also with financing from the Bank. This plan redefined Montevideo's sanitation priorities and accorded the highest priority to PSU III.

F. Government and Bank strategy

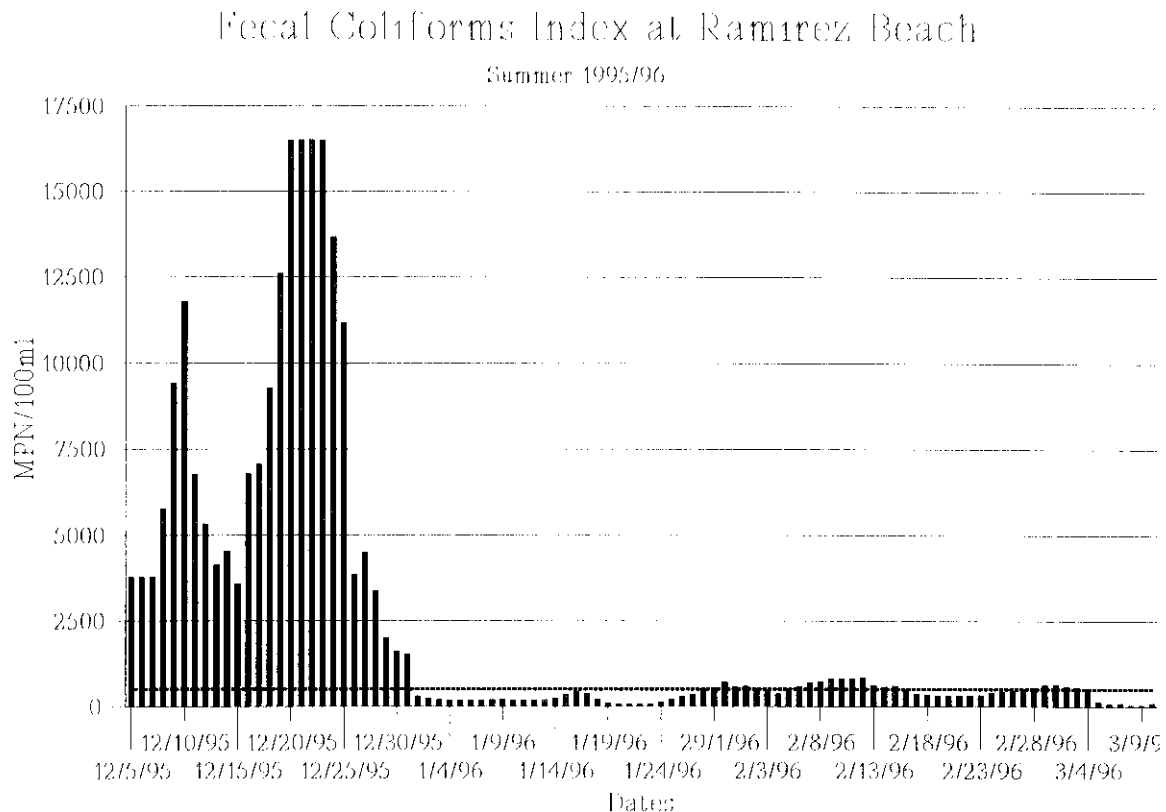
- 1.31 The government's policy for this sector stresses financial self-sustainability for public utilities, sanitation service coverage and quality, and promotion of various forms of private-sector involvement in the delivery of public services.
- 1.32 The Bank's strategy for the 1996-1998 period seeks to support the government in promoting investment as the engine of development, thereby making the country more competitive. This is to be done by: (i) carrying structural reforms further in order to rationalize public spending and balance the budget; (ii) improving the environment for private investment in order to restore competitiveness and foster increased investment; and (iii) improving service delivery and quality by boosting efficiency and sharpening targeting, in particular modernizing education and health and building up sanitary infrastructure.
- 1.33 In the sanitation sector, the Bank is to support efforts to bring in an institutional framework that will make for efficient water and sewer service management, enabling systems to be expanded and

to improve the quality of services, as the operations side is separated from monitoring and policy-setting. These changes would facilitate private-sector involvement in the delivery of sanitation services.

- 1.34 With respect to the environment, solving the problem of pollution from household and industrial effluents and solid waste is the Bank's priority in Uruguay, as reflected in activities under this program. In addition, the Bank will continue to support DINAMA in its institutional development, to enable it to perform its statutory environmental control functions, especially in the prevention and control of adverse environmental impact generated by projects.

G. Bank participation

- 1.35 The Bank has played an important role in financing Uruguay's water and sewerage sector. During the years from 1961 to 1992, the Bank extended loans for more than US\$145 million, including 76/IC and 575/OC whereby the first and second stages of Montevideo's sanitation program were funded.
- 1.36 The two previous stages have been a success from the standpoint of environmental upgrading, especially in terms of cleaning up the city's most popular beaches. The effects of PSU II became apparent largely after December 1995, when the western interceptor, the major project under this stage, came on stream. As shown in the graph below, a significant reduction in bacteriological pollution was seen immediately in the waters of Ramírez beach, one of the city's most popular and hitherto most polluted beaches. During the summer of 1995/96, coliform indexes have consistently been under 500 MPN/100 ml, the maximum recommended for recreational use with body contact. The indexes rise above that ceiling after a rain, since this area is served by a single combined sewer system and runoff occurs during heavy or prolonged rainfall. The situation returns to normal within 48 hours after the storm, depending on the tides. Pocitos beach has shown a similar improvement. As a result, public use of the beaches increased by about 50% during the summer of 1995/96.



- 1.37 The national water and sewerage program (financed by loan 785/OC for US\$45 million), approved in 1993 with OSE as executing agency, is now at the early stages of execution. The purpose of the program is to support maintenance, improvement and expansion in coverage of water and sewerage services in the country's interior, with emphasis on sewage treatment, and to support the regionalization of OSE.
- 1.38 The Bank financed two technical cooperation projects in the environmental field. The object of the first was to draw up the National Environment Study, which equipped Uruguay with a comprehensive overview of the natural environment and the pressures being placed on it, identified priority environmental problems, put forward environmental policy proposals, and defined investment projects. The second, designed to strengthen DINAMA management, is now at an early stage of execution. The conditions precedent were fulfilled recently and the loan was declared eligible for disbursement.

H. Participation by other institutions

- 1.39 In 1988 the World Bank granted loan 2921-UR for US\$22.3 million to overhaul water systems and strengthen OSE as an institution. The World Bank is also supporting the government in examining

alternative ways of structuring the water and sanitation sector, as mentioned earlier.

- 1.40 The River Plate Basin Development Fund (FONPLATA) granted a US\$1.9 million loan to OSE in 1993 for preinvestment studies in sanitation for localities in the interior.

I. Lessons learned in executing PSU II

- 1.41 According to the evaluation done of the previous stage, the IMM executing unit needs to strengthen its capacity in the following areas: (i) tendering arrangements, contract administration, payments to contractors, and progress reports; (ii) following up on activities under the program work schedule (timely commencement, delays, etc.); and (iii) timely and adequate analysis and/or evaluation of bids in tendering processes. The proposed program design takes these elements into account.
- 1.42 The industrial pollution abatement targets set in stage II (40% of organic load discharged into the Carrasco stream, and some kind of treatment at all industries), since they were not very specific, were fulfilled principally through the reduction in industrial output that followed the closure of several plants in the Carrasco watershed. As to treatment facilities installed to fulfill the program requirements, in most cases they are not effective enough to bring effluents to prevailing standards. The proposed program includes pollution abatement targets for each type of industry which are to be met separately, and the quality of effluents will be monitored systematically.
- 1.43 The IMM contracted out operation and maintenance of the Bank-financed works to the private sector with good results, in marked contrast with the rest of the sanitation system. Under the proposed program, the IMM will be required to continue with this practice and gradually extend it to the rest of the system, including the works to be financed under the prospective operation. This would enable small and mid-sized companies and local cooperatives to be hired to perform the less complex services.

J. Conceptualization of the proposed program

- 1.44 The accomplishments of the two previous stages include cleaning up Montevideo's most popular beaches, building up the sanitary and storm sewer network, and providing for adequate disposal of wastewater collected. The problem of pollution persists in the city's main streams, which have been used as open sewers because they run through densely populated areas, and in Montevideo Bay, into which they empty. Coverage of Montevideo's sewer system is high compared to similar cities in the continent, but the outlying areas remain without service. Much of the system in the downtown area, which was built at the beginning of this century, is now in need of rehabilitation.

- 1.45 The proposed program, representing PSU III, is intended to:
(i) clean up the city's major watercourses by building priority works and making better use of the existing underwater outfall;
(ii) establish effective controls of industrial activity by the IMM to bring about a drastic reduction in polluting effluent;
(iii) expand coverage of the sewer network to the city's outskirts;
and (iv) overhaul collectors and networks. In the area of solid waste, the program would finance studies to seek a comprehensive solution to the problem in the metropolitan area.
- 1.46 The program was designed on the following basis: (a) users are to be charged for service on the basis of their usage; (b) operating and investment costs are to be determined and fully recovered via tariffs; (c) the system is to generate enough funds for future expansion; and taking into account (d) the importance of making progress on sector institutions; (e) the government's sector policy; and (f) the Bank's country strategy.
- 1.47 The program scaling took into account: (a) the sanitation needs identified for the metropolitan area, ranked by priority according to an update of the master plan; (b) the experience and lessons learned through execution of the previous stages of the PSU; and (c) the availability of local counterpart funding.

II. PROGRAM DESCRIPTION, COST AND FINANCING

A. Objective

- 2.1 The objective of the proposed program is to improve living conditions for people in metropolitan Montevideo by increasing coverage of sewerage service and by reducing industrial and household pollution in the city's streams, in particular in the Pantanoso, Miguelete and Carrasco basins.

B. Program goals

- 2.2 Execution of the program is expected to achieve the following goals: (i) an increase in coverage of the Montevideo sewer system from 80% to 88%, to serve an additional 140,000 people; (ii) a decrease in the organic load from industrial and household sources discharged into streams, from 85 t BOD₅/day to 40 t BOD₅/day; (iii) a decrease in the quantity of heavy metals dumped into the streams and Montevideo Bay from 998 kg/day to 41 kg/day; (iv) an increase in the efficiency of the IMM Sanitation Division in operating and maintaining the sewer service; (v) resettlement of approximately 325 families living on the work sites and/or in hazardous areas, providing them with better housing solutions than they now have; and (vi) rehabilitation of sanitation system lines which are in poor operating or maintenance condition.

C. Program description and location of works

- 2.3 In order to achieve the objectives set, the program includes the specific components described below:
1. **Environmental sanitation:** (i) expansion of sanitary sewerage and storm drainage systems; (ii) construction or expansion of sewer mains, interceptors, pumping stations, outfalls and pretreatment plants; (iii) relocation of settlements located alongside the watercourses affected by the works or within hazardous areas; (iv) development of programs to monitor industrial pollution and water quality in receiving bodies; and (v) rehabilitation of existing sewer systems and lines.
 2. **Institutional strengthening of the IMM:** (i) institutional upgrading of the units responsible for environmental quality and control of industrial effluents; and (ii) reorganization of the Sanitation Division of the IMM to raise the efficiency and quality of the operation and maintenance of all Montevideo's sewer systems. Support will also be provided for setting up a commercial cost accounting system for sanitation services in order to determine and monitor the actual costs of these services for purposes of full cost recovery via tariffs.

3. **Solid-waste master plan:** Preparation of a master plan for solid waste management in metropolitan Montevideo, including the department of Montevideo and portions of the departments of Canelones and San José.
- 2.4 The program works are located in the department of Montevideo, except for the Paso Carrasco works, which are located in the department of Canelones on the eastern slope of the Carrasco basin. The Costero-Carrasco system includes the Paso Carrasco projects and the Carrasco Norte works in the department of Montevideo.
- 2.5 Since the IMM and OSE share jurisdiction over the program area, the program will be divided into two subprograms (A and B) for execution purposes, covering works in the departments of Montevideo and Canelones, respectively.
- D. Program cost
- 2.6 The total cost of the program is an estimated US\$219 million equivalent. Distribution by financing sources and investment categories is shown in the following table. Annex II-1 presents separate cost tables for each subprogram.

[Table: PROGRAM COSTS (in US\$000s)]				
CATEGORY	IDB-OC	LOCAL	TOTAL BY SOURCE	
			TOTAL	%
ENGINEERING AND ADMINISTRATION	5,400	8,300	13,700	6.3
Studies and designs	1,400	2,900	4,300	2.0
Supervision and administration	4,000	5,400	9,400	4.3
DIRECT COSTS	103,932	28,218	134,250	61.3
Sanitation systems	65,085	16,915	82,000	37.4
Pantanosos	18,337	4,563	22,900	10.4
Miguelite	22,708	5,192	27,900	12.7
Paraguay	1,256	444	1,700	0.8
Costero-Carrasco	14,777	4,723	19,500	8.9
Chacarita and Canteras	8,007	1,993	10,000	4.6
Drainage systems	22,497	7,953	30,450	13.9
Pantanosos	4,422	1,578	6,000	2.7
Miguelite	11,298	3,702	15,000	6.9
Costero-Carrasco	2,893	1,057	3,950	1.8
Chacarita and Canteras	3,884	1,616	5,500	2.5
Rehabilitation of collectors	10,950	4,650	15,600	7.1
Institutional strengthening of the IMM	3,000	-	3,000	1.4
Solid-waste master plan	2,400	800	3,200	1.5
ASSOCIATED COSTS	-	13,900	13,900	6.3
Land and easements	-	7,900	7,900	3.6
Resettlement	-	6,000	6,000	2.7
UNALLOCATED	20,087	9,294	29,381	13.4
Contingencies	13,281	6,746	20,027	9.1
Cost escalation	6,806	2,548	9,354	4.3
FINANCE CHARGES	23,881	3,888	27,769	12.7
Interest	22,348	-	22,348	10.2
Credit fee	-	3,888	3,888	1.8
Inspection and supervision	1,533	-	1,533	0.7
TOTAL	153,300	65,700	219,000	100.0
%	70.0	30.0	100.0	

2.7 Below is a description of the major investment categories:

1. Engineering and administration (US\$13.7 million)

2.8 This heading, representing 6.3% of total program cost, comprises the following categories:

a. Studies and designs (US\$4.3 million). Includes consulting services needed to support the executing agencies in addressing technical issues that may come up during construction, including hiring a firm to prepare and execute a sanitary and environmental education program. More specifically, includes contracting out studies to: (i) verify operation of the underwater outfall under the new conditions; (ii) determine the

best option for the next stage of works and draw up the needed detailed designs; and (iii) establish the details of the collector rehabilitation component.

- b. **Supervision and administration** (US\$9.4 million). Includes hiring specific consulting services to support the executing agencies in program management and supervision, the cost of equipment needed for works supervision, and expenses of the respective executing units.

2. Direct costs (US\$134.2 million)

2.9 This category accounts for 61.3% of the total program cost, and breaks down into the following subcategories:

- a. **Sanitation systems** (US\$82 million). The estimate includes labor, materials and equipment needed for procurement, transport, laying and testing of lines and execution of civil works, manholes, and masonry structures for the expansion of the sanitary sewer system. It also includes labor, materials and equipment for execution of civil works and the supply and electromechanical assembly of pumping and pretreatment stations.
- b. **Drainage systems** (US\$30.5 million). The estimate includes labor, materials and equipment needed for execution of the civil works, tunnels and channels, manholes, and masonry structures; as well as procurement, transport, laying and testing of lines and expansion of the drainage system.
- c. **Rehabilitation of collectors** (US\$15.6 million). This amount includes labor, materials and equipment needed to rehabilitate the existing collectors, in particular in the Arteaga network of the Paraguay system.
- d. **Institutional strengthening of the IMM** (US\$3 million). This component calls for two consultancies to: (i) implement the reorganization of the IMM Sanitation Division, including staff training; the consulting firm would also suggest ways of optimizing operating and maintenance activities and designs and works, identifying activities relating to sanitation services that could be outsourced; and (ii) prepare an industrial pollution monitoring and control plan that includes specifications for the procurement of equipment and staff training, as well as support for implementing such control during the first three years.
- e. **Solid-waste master plan** (US\$3.2 million). This component includes contracting a study for preparation of a solid-waste master plan for the metropolitan Montevideo area.

3. Associated costs (US\$13.9 million)

- 2.10 The value of the land was calculated on the basis of the area needed for the various works. The unit cost used was based on the value of recent purchases by the IMM.
- 2.11 The cost of the family resettlement component was calculated on the basis of a preliminary resettlement plan prepared by the IMM with assistance from a specialized firm.

4. Unallocated (US\$29.4 million)

- 2.12 This category, which accounts for 13.4% of the cost, includes a possible increase in costs in respect of contingencies under the specific program components. Contingencies were estimated at 13.5% of direct costs. Escalation was computed using RE1/OD1 exchange rate and inflation forecasts for the period.

5. Finance charges (US\$27.8 million)

- 2.13 This category, representing 12.7% of the total cost of the program, includes: (a) interest to accrue during the execution period; (b) the applicable credit fee; and (c) the Bank's inspection and supervision expenses for the program.

E. Program financing

- 2.14 The Bank would contribute 70% of the total cost through application of the country financing matrix, or US\$153.3 million equivalent from the ordinary capital, for disbursement in foreign exchange pursuant to Bank policy.
- 2.15 The local counterpart funding of US\$65.7 million equivalent, or 30% of the total program cost, would be contributed by the IMM, OSE, and the Uruguayan government.
- 2.16 The following terms would apply to the proposed loan: (i) variable interest rate; (ii) 0.75% credit fee; (iii) 1% inspection and supervision fee; (iv) 6-year disbursement period; (v) 6-year grace period; and (vi) 25-year amortization period.

III. PROGRAM EXECUTION

A. Executing agencies

- 3.1 Subprogram A would be executed by the IMM through the same executing unit as for stages I and II. The works for subprogram B would be executed by DIPRODE of the OPP, which would pass on the works, once concluded, to OSE for operating and maintenance purposes. The component to draw up a solid-waste master plan would be executed by the OPP Preinvestment Division.
- 3.2 OSE is currently executing the works for loan 785/OC and the fifth conveyance line to Montevideo. To avoid straining its resources, it was thought best to have DIPRODE execute the department of Canelones component, since it has executed Bank-financed programs in the past.

B. Execution modality

- 3.3 Expansion of the sanitary and storm sewerage system for the Montevideo metropolitan area has been prepared in the form of a specific program in view of the comprehensive and interrelated nature of the components needed to attain the objectives.

C. Project preparation status

- 3.4 A sanitation master plan was prepared for the department of Montevideo. Of all the alternatives analyzed for sewer system expansion, the one selected was the least-cost option in terms of operations and maintenance, with flexibility for further expansion in the future. Based on the master plan, final designs were drawn up for the various collector networks, mains, pumping stations, outfalls, and pretreatment. Most of these designs (80%) are complete, and the rest are expected to be completed by September 1996. The socioeconomic analysis was performed on the work quantities established in the master plan and the working designs available. The unit prices were revised in April 1996.

D. IMM executing unit

- 3.5 Considering that this program carries a significantly higher value than the previous stages, and to address the weak points encountered in the executing unit during stage II (see chapter I), the IMM, within 12 months after contract signing, is to hire an engineering firm to provide assistance in tendering arrangements, programming and monitoring of works execution, and any technical issues that may arise during execution.

E. Execution of the institutional strengthening component

- 3.6 Based on the master plan report and the results of the analysis, an institutional strengthening program was drawn up for the IMM Sanitation Division which is included as part of the program. This component would comprise several activities that could be executed by a single company with extensive international experience in the sanitation sector. The company is to be hired within 12 months after signing of the prospective loan contract.
- 3.7 Also, a consultancy will be hired to prepare a program to monitor industrial pollution. The same company is to recommend and specify the equipment needed for monitoring and train staff in its use, as well as oversee the execution of the monitoring program during the first three years and train IMM staff in the field. The company would be responsible for preparing a health and environmental education program to be carried out by the IMM. This consulting contract must be signed within 12 months after the loan contract signing.

F. Preparation of a solid-waste master plan

- 3.8 An international consulting firm would be hired, within 18 months after contract signing, to prepare a solid-waste master plan for the Montevideo metropolitan area. The OPP could use the program funds to hire an international consultant to assist in tendering, contract award, monitoring and approval of the master plan.

G. Preparation of further studies

- 3.9 International consulting contracts would also be concluded to perform studies for the following: (i) monitoring of water quality in Montevideo Bay and surrounding area in order to devise a mathematical model to simulate various alternatives for treatment and final disposal for a future stage, including formulation and calibration of the model; (ii) measuring water quality and using tracers to assess the performance of the underwater outfall and verify its efficiency in the new operating conditions; and (iii) preparation of detailed designs for sanitation systems under the next stage.

H. Agreements required prior to disbursement

- 3.10 Required prior to the first disbursement are copies of the agreements signed: (a) for subprogram A, (i) between the government and the IMM concerning transfer of the funds and (ii) between the IMM and DINAMA to coordinate environmental measures under the program; and (b) for subprogram B, between OPP and OSE in connection with works execution by DIPRODE.

I. Land and easements

- 3.11 Generally speaking, the proposed program poses no significant problems in terms of land acquisition, since a large part of the works, such as the sanitary and storm sewerage networks, would be built along public thoroughfares. Also, an attempt was made when preparing the program to minimize the number of expropriations needed for works construction. However, land valued at US\$7.4 million will need to be purchased. The IMM may use program funds to hire a law firm to advise the executing unit in the expropriation process and thus avoid the delays that arose in the previous stage.
- 3.12 No problems or conflicts are anticipated in acquiring the land needed for program execution, since the law permits expropriation of land in the public interest. Before calling for bids for specific works, however, the executing unit will need to show evidence of ownership and availability of the land needed for construction.

J. Family resettlement

- 3.13 In connection with the construction of some of the program works, it will be necessary to resettle families now living in squatter settlements in hazardous areas or adjacent to the work site.
- 3.14 According to the preliminary resettlement plan, which was drawn up following the Bank's guidelines, an estimated 325 families would need to be resettled, for a total of 1,100 persons. A full survey is now being prepared of all the families concerned so that the final plan may be prepared with the affected communities participating directly.
- 3.15 The resettlement project would be executed by the IMM Sanitation Division with assistance provided under a consulting contract similar to the contract for preparation of the preliminary and final resettlement plans. This consulting contract is to be signed prior to the first disbursement of local counterpart funding for subprogram A. The execution of this component would be monitored in accordance with the Bank's guidelines.
- 3.16 Once the survey is complete, the various housing alternatives and a social rehabilitation program would be identified. Since the groups to be resettled come from different areas, mass resettlement to a single location would be avoided. The IMM has already published notices for the purchase of private lots to resettle the families affected by public-interest works. The housing to be constructed would be expandable core housing (serviced sites with a basic unit), as per the parameters set forth in the National Housing Plan. Resettlement costs would be covered by the local counterpart funding.

K. Execution period and investment timetable

- 3.17 The disbursement period for the loan proceeds would be six years. This period has been determined on the basis of experience with execution of PSU I and II, availability of local counterpart funding, and the agreement between the IMM and the central government to keep program spending down to US\$100 million equivalent until the end of 1999.
- 3.18 The table below summarizes the program investment schedule. Detailed calculations are in the Region 1 technical files.

SCHEDULE OF PROGRAM INVESTMENTS (in US\$000)				
YEAR	IDB	LOCAL	TOTAL	%
1	11,900	12,050	23,950	10.9
2	19,000	12,550	31,550	14.4
3	22,900	13,050	35,950	16.4
4	29,400	12,450	41,850	19.1
5	36,900	9,300	46,200	21.1
6	33,200	6,300	39,500	18.1
TOTAL	153,300	65,700	219,000	100.0
%	70	30	100	

L. Bidding procedures and schedule

- 3.19 The procurement of goods and related services and contracts for construction works are to take place in accordance with the Bank's procedures as set forth in Annex B to the loan contract. International competitive bidding will be required for procurement of goods and related services in excess of US\$250,000 and for construction in excess of US\$3 million. These thresholds are consistent with those recommended by the Bank's procurement unit for the sanitation sector in Uruguay. Procurement in amounts under the specified thresholds will take place pursuant to national legislation, provided it is consistent with the Bank's procedures. An estimated 80% of the procurement planned for program execution will thus be subject to international competitive bidding. Consulting services will be contracted in accordance with the procedures set forth in Annex C to the loan contract.
- 3.20 Works contracts will be grouped as indicated in Annex III-2. As a prior requirement for putting the Paso Carrasco works out to

tender, the IMM and OSE are to sign an agreement to (i) coordinate the construction and subsequent operation and maintenance of the works and (ii) establish terms and conditions for use of the Montevideo sewer system for final disposal of Paso Carrasco sewage. In the case of the Carrasco system, the economic viability of the works is to be demonstrated as well (see paragraph 5.34).

M. Recognition of expenses and retroactive financing

- 3.21 The IMM has requested that the Bank recognize, as local counterpart funding for the program, expenses incurred in May 1995 or thereafter to hire consulting services for program preparation, in an amount of up to US\$2.8 million. Also, OSE has requested that the Bank recognize, as retroactive financing, expenses incurred during the same time period for up to US\$186,000 for contracting detailed designs for the Paso Carrasco works.

N. Environmental considerations

- 3.22 The Bank's Environment Committee has classified this as a Category III operation in view of its potential impact on the environment. The Committee considered the environmental summary on April 9, 1996, and the resulting recommendations were included in the program design. The most important of these are as follows:
- a. The IMM will prepare a document detailing the environmental control procedures to be observed during construction of the program works, for inclusion in tender documents. The executing unit is also to prepare an operating manual for the pretreatment plant before it begins to function.
 - b. New commitments relating to the program works will be tied to meeting the targets stipulated in IMM Resolution 761/96 concerning industrial pollution abatement in the department's watercourses (see Annex III-3). The findings of IMM and DINAMA effluent analyses of industries operating in the program area are to be published twice-yearly in the local press. The Bank will be sending a consultant in November of each year to review, along with the IMM, compliance with industrial pollution abatement targets during program execution.
 - c. Approval by the Bank of the detailed resettlement plan will be a condition precedent to tendering out the works. Evidence that the families have been resettled or compensated and that the IMM owns or holds a concession for the land will be required for the works in each sector to commence.
 - d. Within 24 months after signature of the contract, the IMM will substantially cut down on the improper dumping of solid waste, as part of the effort to clean up the Migulete and Pantanos streams.

e. A health and environmental education component will be included to enhance the benefits of the program.

f. The environmental summary was sent to the PIC on June 13, 1996.

O. Program monitoring and control

- 3.23 Monitoring and control of the program will be performed through the Bank's Country Office in Uruguay. The executing agencies will furnish the Bank with initial reports which are to include an update of the logical framework contained in Annex III-1. Annual progress reports are to be submitted as well. If program execution is found to be unsatisfactory, the executing agency is to submit to the Bank, within 60 days after the latter issues its recommendations, a proposal setting forth the corrective measures to be implemented along with the timetable for doing so. If deemed necessary, the Country Office will refrain from authorizing any new calls for bids until such corrective measures have been approved.
- 3.24 The reports to be prepared by the Country Office on the status of loans are to describe any problems arising during program execution and the solutions applied. A summary of these matters will be included in the annual report on the Bank's portfolio in Uruguay.
- 3.25 When 36 months have elapsed since the contract signing, or once 50% of the funds earmarked for direct costs have been committed, whichever occurs first, a mid-term review is to be performed to assess program execution. The program benchmarks are to be used as a basis for evaluation. Special attention will be given to institutional arrangements for tariffs reflecting metered use of the sanitation service, creation and implementation of the Administration Unit of the Sanitation Division, fulfillment of industrial pollution abatement targets, and the general operating and maintenance status of the sanitation system, to determine the advisability of extending outsourcing to activities being performed directly (see paragraph 4.18). If the review indicates a need for adjustments to be made in program execution, the IMM will have 60 days to submit a plan to remedy the shortcomings detected. No new commitments under the program will be permitted until that plan is approved by the Bank.

P. Program benchmarks

- 3.26 The achievement of the program goals will be evaluated on the basis of the benchmarks specified in the logical framework (see Annex III-1), as follows:

Performance indicator (unit)	Annual targets						
	Year 1	Year 2	Year 3	Mid-term review	Year 4	Year 5	Year 6
Additional house connections (units/yr)	--	--	5,000	5,000	10,000	10,000	10,000
Rehabilitation of collectors (km/yr)	--	10	25	25	35	35	35
Efficiency of customer service (minutes of waiting time)	60	60	30	30	20	10	5
Efficiency of collection (%)	70	75	80	80	85	85	85
Creation and implementation of Administration Unit *				Unit in place			
Tariff based on metered use of service formally in place *				Tariff in force			
Organic load discharged into streams (t BOD/day)	80	70	40	40	40	40	40
Heavy metals discharged into streams and Montevideo Bay (kg/day)	900	500	82	82	41	41	41

* Until these two conditions have been fulfilled, not more than US\$54 million may be disbursed for subprogram A (see paragraphs 4.16 and 5.14).

Q. Compilation of data

- 3.27 The executing agencies will compile and process data to be forwarded to the Bank in the form of annual reports commencing in the second year of execution and continuing until two years after completion. The first report will contain a detailed description of the procedure for compiling and processing such data, including: (i) budgeted and actual cost of the works; (ii) number of households actually connected; (iii) bacteriological quality of water in the streams affected by the program; (iv) physical-chemical quality of pretreatment plant effluents; (v) impact of industrial monitoring on water quality in streams and bay, measured in terms of the drop in chromium, sulfur compounds, ammonia and organic loading; (vi) cost and effectiveness of measures to mitigate environmental impact; (vii) incidence of acute diarrhea in children under the age of five treated at health centers in the program areas; and (viii) incidence of other waterborne diseases treated or reported at health centers in the program areas.

IV. INSTITUTIONAL AND FINANCIAL ANALYSIS

A. Borrower and executing agency

- 4.1 The borrower would be the Eastern Republic of Uruguay. The Montevideo Municipal Government (IMM) would be executing agency for the works planned for the department of Montevideo, and would furnish the local counterpart resources. Funds would be passed on to the IMM on the same terms and conditions governing the Bank's loan to Uruguay.
- 4.2 The executing agency for works in the department of Canelones would be the Office of Planning and Budget (OPP), through the Development Projects Department (DIPRODE). The local counterpart would be supplied by Obras Sanitarias de la Nación [State Sanitation Authority] (OSE), which would also service the debt. The component to produce a solid-waste master plan would fall to the OPP's Preinvestment Division. Responsibility for counterpart funding and repayment of the debt would rest with the Uruguayan government.

B. Institutional analysis

1. The IMM

a. Functions and responsibilities

- 4.3 Under the Uruguayan Constitution, the nation's territorial divisions (*departamentos*) are governed and administered, in all matters other than public order and safety, by a Departmental Council of 31 members headed by a mayor, who are elected by popular suffrage.
- 4.4 The Departmental Council has legislative powers and oversees the workings of the departmental government. It approves budgets put forward by the mayor; at the mayor's direction, it creates or sets taxes, utility rates, and other levies, and approves public-works concessions. The mayor is the departmental executive officer.

b. IMM organization

- 4.5 The IMM is headed by the mayor. It has departments in charge of decentralization, cultural affairs, urban development, environmental development, human resources and facilities, finance, and income-generating and business operations. Attached to the mayor's office are a secretariat, internal audit unit, chief accountant's office, finance committee, and planning bureau. In 1995 the IMM had a staff of 10,800.
- 4.6 The municipality's Environmental Development Department is responsible for environmental affairs, sanitary and storm sewer

services, and environmental controls and monitoring of industry, watercourses, and beaches. It has divisions and units in charge of water supply and sewerage, urban sanitation, and mechanical and electrical facilities, and an environmental hygiene laboratory. The executing unit of the Urban Sanitation Plan (PSU) also works out of this department.

c. External and internal audits

- 4.7 External audits of the IMM are performed by the nation's General Audit Office. The Municipality's own internal audit unit, attached to the mayor's office, assesses work methods, systems, and procedures, checks adherence to government requirements, audits financial statements, and reports any deficiencies observed to the Secretariat and to heads of audited units. This internal audit unit came in for institutional strengthening during the second phase of the PSU (loan 575/OC), through a reorganization program which raised its level in the organization structure, provided training for personnel, and added two professional accountants to its staff. The unit is operating adequately at present.

d. Accounting

- 4.8 The IMM uses a government accounting system, pursuant to the State Accounting and Financial Administration Act.

2. Development Projects Department

- 4.9 The Municipality's Development Projects Department (DIPRODE), headed by a director, is made up of the Operations Division (DTO), the Financial and Accounting Division (DAFC), and a unit providing legal counsel. The DTO oversees and monitors the technical side of works projects; the DAFC is in charge of accounting and financial and budgetary control of operations. DIPRODE currently has a staff of 67.

- 4.10 Internal audits of DIPRODE are conducted by the Central Accounting Bureau of the Office of the President of the Republic; external audits are the responsibility of the nation's General Audit Office. DIPRODE has executed IDB-financed projects efficiently; its capacity will be further bolstered through loan 914/OC (dairy region development program).

3. Assessment of the Environmental Development Department

- 4.11 The IMM's Environmental Development Department, which is in charge of sanitation for the city of Montevideo, has no administrative or financial autonomy. Personnel and procurement matters are handled by the Human Resources and Facilities Department; financial planning, billing, and collections are the purview of the Finance Department, and accounting is done by the Central Accounting Bureau.

- 4.12 The governmental accounting system in use in the Municipality is not geared to a sanitation utility. Commercial accounting systems would be needed to portray revenues, costs, and net income, restated plant in service and depreciation thereon, accounts receivable, short- and long-term liabilities, working capital, and internal cash generation.
- 4.13 There likewise is a need for staff to be assigned full-time to the commercial, financial, accounting, and human resources areas, to administer sewerage services effectively.
- 4.14 Two separate sections in this department share responsibility for system operation and maintenance: one handles the Coast System, for which services are outsourced, and the other deals with the rest of the system using IMM staff. ^{5/} Studies, designs, and supervision of works projects are likewise split between two units: one for IDB-financed programs (PSU I and II), the other for other Montevideo sanitation projects. These two sections could work more efficiently if they were combined.
- 4.15 To address the weak points described in the preceding paragraphs, the program described in this proposal includes a component for institutional strengthening of the IMM's Sanitation Division. Technical assistance would be furnished to (i) reorganize the division, creating an Administration Unit and merging the section in charge of operations and maintenance with the studies, designs, and works section; (ii) evaluate sewer system assets and liabilities; (iii) assess the possibility of outsourcing operations and maintenance services; and (iv) monitor tariff levels.
- 4.16 Within 30 months after signature of the contract, the IMM must have set up and staffed a sanitation services administration unit within the Sanitation Division, and the unit must be operating. To perform its financial, accounting, and commercial functions, the new unit will handle (i) accounting, using a business accounting system for sanitation services; (ii) selection, training, and administration of sanitation service personnel; and (iii) commercial and financial matters relating to the sanitation services, and customer service. Given the importance of this reorganization, the IMM may not commit funds to defray direct costs for program works in excess of US\$54 million equivalent until the Administration Unit is equipped to operate, and until business accounting systems, including cost accounting, and billing and collection systems have been developed, tested, and implemented. In addition, the assets and liabilities associated with sanitation services must have been

^{5/} The Coast System encompasses sewers and outfalls along the waterfront (*Ramblas*) and all Montevideo pumping stations. The rest of the system takes in sewer mains and sewers of the Montevideo system.

identified and evaluated, and the IMM must have begun to develop and implement customer service arrangements.

- 4.17 As a further contractual requirement, within 30 months of contract signature: (i) the two Sanitation Division sections currently handling operations and maintenance must have been combined into a single unit, and (ii) a plan must have been presented for a single section to be in charge of studies, designs, and project supervision.
- 4.18 In light of the IMM's success in outsourcing the operation and maintenance of sanitation systems funded in part by the Bank under the PSU I and II programs, it intends to continue with the outsourcing of sewer systems built under the program, and of the rest of the system when considered warranted. To that end, until the mid-term review, the IMM will conduct practical evaluations of different maintenance management approaches for existing sanitation systems that were not funded by the IDB, including contracting out to private firms and cooperatives. This evaluation will be done in different watersheds, and must cover at least 20% of the networks (see paragraph 3.25).

C. Financial analysis

1. IMM finances

a. General considerations

- 4.19 The IMM's internally generated revenues come primarily from property and vehicle taxes, a general municipal tax, sundry fees and levies, and income-producing commercial activities (casinos, hotels). Its external sources of funds are central government transfers and loans from commercial banks and international organizations.
- 4.20 As was noted earlier, the sanitation levy was repealed in July 1996, but negotiations are continuing regarding a metered-use system, to be adopted before a large share of system resources are committed.
- 4.21 Under the terms of an IMM/OSE agreement, OSE furnishes the IMM with monthly water consumption and the IMM in return pays the OSE a minimum of US\$20,000 a month (to a maximum of US\$500,000 a year), based on half the cost of the meters changed by OSE in Montevideo. When this agreement comes up for renewal, a clause will be inserted to provide for automatic renewal every three years.

b. IMM financial performance in recent years

- 4.22 The following table shows IMM budget performance from 1990 to 1995, expressed in constant December 1995 currency. Figures for 1995 are preliminary.

4.24 The net saving in internal cash generation over this five-year period gave the IMM a cumulative surplus of US\$267 million, leaving it, on average, with US\$45 million a year for capital expenditures. External funding, mainly the proceeds of loan 575/00, totaled

4.23 Most of the funds the IMM raised directly came from vehicle and property taxes, which accounted respectively for 37% and 25% of internal cash generation over the period examined. Revenues rose 36% between 1990 and 1995. During the same interval, operating expenses went up 34%, equaling 77% of internally generated funds. The IMM payroll increased by 54% during these years, accounting for 66% of total expenditures.

MONTEVIDEO MUNICIPAL GOVERNMENT		FUNDS FLOW						(in millions of constant December 31, 1995 dollars)	
		1990	1991	1992	1993	1994	1995	1990/95	
INTERNAL CASH GENERATION	193.1	226.1	238.6	238.2	261.8	261.7	1,419.9		Vehicle taxes
	65.6	82.1	93.4	89.1	90.4	100.9	521.5		Sanitation levy
	4.8	5.4	8.4	7.2	7.7	7.6	41.1		Property taxes
	47.9	54.5	58.9	57.9	63.9	72.7	355.8		Sundry
	74.8	84.1	77.9	84.0	99.8	80.5	501.1		OPERATING COSTS
	153.7	172.0	184.0	181.6	195.5	205.7	1,092.5		Remuneration — general
	90.1	104.3	116.2	117.8	124.0	138.2	690.7		Remuneration — sanitation
	3.3	4.1	4.6	4.5	4.7	5.3	26.4		Other expenses
DEPARTMENTAL COUNCIL	8.4	10.0	9.5	8.8	9.3	9.9	55.9		SAVING BEFORE DEBT SERVICE
	31.0	44.1	45.1	47.8	57.0	46.4	271.1		DEBT SERVICE
	0.2	0.6	0.5	0.5	0.6	1.9	4.3		NET SAVING
	30.8	43.5	44.6	47.3	56.4	44.2	266.8		EXTERNAL FUNDING
	7.6	5.7	0.5	2.2	10.3	19.6	45.9		FUNDS AVAIL. FOR CAP. INVESTM.
	38.4	49.2	45.1	49.5	66.7	63.8	312.7		CAPITAL INVESTMENTS
	42.3	58.1	60.0	58.0	89.7	86.9	395.0		Sanitation
	12.8	7.4	11.8	14.2	13.9	28.9	89.0		Other
	29.5	50.7	48.2	43.8	75.8	58.0	306.0		Surplus (deficit) for year
	(3.9)	(8.9)	(14.9)	(8.5)	(23.0)	(23.1)			Accounting adjustments
	0.9	1.0	(3.7)	1.0	(1.3)	20.4			Surplus (deficit) for year, adjusted
	(3.0)	(7.9)	(11.2)	(7.5)	(24.3)	(2.7)			Accum. surplus (deficit)
	(25.9)					(28.6)			

US\$46 million, for an annual average of US\$7.7 million. On average, then, the Municipality had US\$53 million a year available for capital projects, but spent US\$66 million.

- 4.25 The annual deficits shown in the table were funded, or adjusted for unused commitments, in each subsequent year. The accumulated deficit at December 31, 1994, stood at US\$25.9 million. The IMM balance sheet at that date shows US\$10 million in current assets and US\$27.4 million in receivables, sufficient to offset accounts payable at the same date. According to preliminary estimates, the IMM will report a deficit of US\$2.7 million for 1995. The resulting cumulative book deficit of US\$28.6 million would likewise be adjusted the following year by defraying costs with monies taken in or through the lapsing of unconfirmed commitments.
- 4.26 The IMM has demonstrated that it has the capacity to continually generate, from its own revenues, net resources sufficient for a capital spending program on the order of \$45 million a year. Definitive institutional arrangements for sanitation services, already under way, will ensure recovery of the costs of these services and the financial sustainability of Montevideo's sewer system.

2. Development Projects Department

- 4.27 From 1992 to 1994, DIPRODE executed projects worth US\$76 million. According to projections, it will implement operations costing \$77 million between 1995 and 1999. The rice region and dairy region development projects for which the Bank is providing funding will account for US\$71 million of that total.

3. Obras Sanitarias de la Nación

- 4.28 At December 31, 1994, OSE had a net worth of \$562 million equivalent and liabilities of US\$80 million. During 1994 it took in the equivalent of US\$164 million in operating revenues, with a profit of US\$27 million. In the course of the year it collected 83% of the accounts owing to it, and adhered to the tariff covenant in the contract.

V. PROGRAM VIABILITY AND RISKS

A. Technical viability

- 5.1 The program is feasible and justified from a technical standpoint, addressing as it does the public health and environmental pollution problems stemming from the absence or inadequacy of sewage collection, treatment, and final disposal. Studies and final designs for the proposed projects were prepared in accordance with generally accepted engineering standards. The designs represent the least-economic-cost technically viable alternatives.
- 5.2 Thanks to the experience built up by the IMM executing unit during previous stages, and by DIPRODE in other IDB-financed programs, both have the technical and administrative capabilities needed for the works projects envisaged in the proposed operation. There are local and foreign companies equipped to perform the construction work required and supply materials and equipment.
- 5.3 The implementation timetable was drawn up with due regard to the nature of the works projects, the time required for prequalification and tendering arrangements, and experience acquired during the previous stages.
- 5.4 The proposed IMM institution-strengthening component will help ensure that the new works are properly operated and maintained.

B. Institutional and financial viability

1. Institutional viability

- 5.5 The proposed program would be institutionally viable. The IMM, and specifically its Urban Sanitation Executing Unit, has the necessary staff to carry through the program, and from its work with the PSU I and II operations it also has the requisite experience. With proceeds from the loan, the executing unit would hire specialized firms to help with the tendering, programming, supervision, and inspection of construction projects and with expropriations, easements, resettlement arrangements, and accounting.
- 5.6 As indicated in paragraph 4.16, to help the IMM's Sanitation Division manage sanitation services more effectively, it will be given the autonomy needed to adopt a commercial accounting system for those services, along with direct responsibility for its staff and its commercial affairs. The institutional strengthening of the Division planned as part of the proposed program will bolster its capabilities to that end.
- 5.7 The executing unit for the Paso Carrasco works will be DIPRODE, which has shown that it has the capacity to implement projects

entrusted to it. One component of loan 914/OC is providing institution-strengthening assistance to this department to improve its project-management capabilities.

- 5.8 The Paso Carrasco works are to be operated and maintained by OSE, which has the required capacity. Since OSE currently is carrying through the National Water and Sewerage Program and other major projects in and affecting Montevideo, it was felt that it would be best to have these works executed by DIPRODE, so as not to strain OSE's resources.

2. Financial viability

- 5.9 Two main sets of IMM financial projections were done to examine the financial feasibility of the proposed program: (i) projected financial situation of sanitary sewerage services alone, and (ii) projected IMM financial situation including the storm drainage system but not sanitary sewerage. All amounts are shown in constant December 1995 currency.

a. Financial projections: sanitary sewer system

- 5.10 The funds-flow projections for Montevideo's sanitary sewer system are based on: (i) current volumes of water being billed by OSE, and industrial water use from the industries' own sources; (ii) an assumed 1% annual growth in demand; (iii) a narrowing of OSE commercial losses as individual metering improves; (iv) collection ratios of 70% in 1997, 75% in 1998, 80% in 1999, and 85% thereafter; (v) a sewerage tariff of US\$0.387/m³ for residential customers and US\$0.63/m³ for industry; 6/ (vi) operating, maintenance, marketing, and administration costs based on 1996 levels, adjusted for increases ensuing from the program and improved operating and maintenance efficiency; (vii) rehabilitation projects in addition to the work planned in the proposed program; and (viii) inclusion in the debt service of half the IDB loan for PSU II and the entire loan for the operation proposed herein.
- 5.11 To make for acceptable collection ratios, the contract will require the collection of least 85% of utility accounts receivable. Compliance with this condition will have to be demonstrated starting the fourth year of the program.
- 5.12 It is estimated that a sanitation levy in Montevideo would push down water consumption levels, when consumers had to pay the higher

6/ Average January 1994 sewer rates charged by OSE in its service delivery areas outside Montevideo, expressed in December 1995 prices, were US\$0.70/m³ for residential consumers, US\$0.96/m³ for government users, and US\$0.37/m³ to US\$2.11/m³ for commercial and industrial customers.

cost of a package of water and sewerage services. Based on the demand curve used for the National Water Supply Program, water consumption in the city would drop by about 24%.

5.13 The following table shows funds flows for the sewer system.

MONTEVIDEO SEWER SYSTEM FUNDS FLOW (in millions of December 31, 1995 dollars)								
	1996	1997	1998	1999	2000	2001	2002	2004
Gross income	23.2	27.6	30.1	32.7	33.7	34.5	34.9	35.6
Income net of overdues	16.3	22.1	25.6	27.8	28.6	29.3	29.7	30.2
Expenditures	14.7	17.8	19.7	23.6	23.1	20.3	22.2	20.7
O&M, comm., admin.	12.7	13.4	15.3	17.8	18.3	18.8	19.0	19.4
Capital exp.-rehabil.	2.0	4.4	4.4	5.8	4.8	1.5	3.2	1.3
Debt service	1.7	2.1	2.0	1.9	1.9	1.8	1.8	14.3
Principal	0.5	0.9	0.9	0.9	0.9	0.9	0.9	6.5
Interest	1.2	1.2	1.1	1.0	1.0	0.9	0.9	7.8
Recovery overdues	0.0	2.4	3.3	3.7	4.6	4.5	4.7	4.8
Funds available (yr)	(0.1)	4.6	7.2	6.0	8.2	11.7	10.4	0.0
Capital expenditure		15.2	23.9	20.0	27.3	39.1	34.5	
Funding of capital exp.:								
IDB loan		10.6	16.8	14.0	19.1	27.4	24.1	
Counterpart - system		4.6	7.2	6.0	8.2	11.7	10.4	
Accum. funds available	(0.1)							

5.14 According to the projections, at this tariff level, and if sewer service accounts are duly collected, the system would generate enough funds to defray all its operating costs, provide the local counterpart for the program, pay for rehabilitation projects in addition to those envisaged in the program, and service the debt. Authorization for the commitment of program funds in excess of US\$54 million to defray direct costs for subprogram A works will be contingent upon the institution of a tariff for metered utility use which generates revenue sufficient to cover operating, maintenance, commercial and administrative expenses, including depreciation on restated fixed assets, as well as debt service, and to fund at least 30% of the capital investment plan.

- 5.15 The program's financial statements are to show compliance with the contractual covenant regarding IMM sanitation system tariffs. This will be demonstrated, once a business accounting system is in place (see paragraph 4.16), through audited financial statements of the sanitation services submitted throughout the life of the loan.
- 5.16 The contract will likewise require the IMM to place sewer-system tariff revenues on deposit in a special bank account, which would be earmarked to pay only the following: (i) operating and maintenance costs; (ii) commercial and administrative expenses; (iii) the debt of the sanitation systems; (iv) the local counterpart for the program; (v) rehabilitation of existing sewer systems during the first 10 years of the program (an estimated US\$150 million in such work is pending); 7/ and (vi) after the first 10 years, other works needed to expand the system.
- 5.17 In order to quantify the financial impact of rescinding the tariff previously in effect (see paragraphs 1.7 and 1.8), two scenarios were examined, assuming a maximum interval of 18 months after contract signature for the entry into force of a tariff that would satisfy the requirements of the preceding paragraph and be charged on the basis of metered utility use.
- 5.18 The worst scenario assumed annual tariff revenues from 1996 to 1998 comparable to 1995 levels. In this instance, to defray capital costs and the costs of operating and maintaining the sewer system, the IMM would have to put in a total of US\$32 million from general revenues to supply the \$12 million counterpart for the program and make up a US\$20 million operating deficit over that period.
- 5.19 The other scenario fell midway between the tariff base case and the worst case. It assumed that annual revenues would rise gradually, to cover only the sanitary sewer system's operating and maintenance costs. Here again, the funds generated internally would not be enough to fulfill the tariff covenant, and the IMM would have to fund the US\$12 million program counterpart and make up a US\$8 million operating deficit, using a total of \$20 million in general revenues.
- 5.20 In both of the above-described scenarios, the IMM would be able to furnish the local counterpart for the program and meet other sewer-system needs that could not be defrayed with the system's own cash generation. But, in order to do so, between 1996 and 2004 the IMM would have to lower its other capital spending, on average, from US\$50 million a year to about US\$45 million (worst case) or US\$47 million (intermediate case).

7/ These works were prioritized in the Master Plan; the most pressing of them have been included in the program proposed herein.

5.21 Until a sewerage tariff based on sewer use is definitively in place in the department of Montevideo, the tariff covenant of loan 575/OC, which is funding PSU II, will be extended. According to audited data available to 1994, the IMM has been adhering to that contractual requirement.

b. IMM financial projections not counting sewer services

MONTEVIDEO MUNICIPAL GOVERNMENT FUNDS FLOW PROJECTIONS (without sewer system) (in millions of constant December 31, 1995 dollars)								
	1996	1997	1998	1999	2000	2001	2002	96-2004
INTERNAL CASH GENERATION	280,5	298,4	307,7	314,3	320,5	326,7	333,1	2.867,1
Vehicle taxes	103.9	108.1	114.0	117.2	119.5	121.9	124.4	1,065.3
Drainage levy	0.6	0.6	0.5	0.4	0.4	0.4	0.3	3.9
Property taxes	74.2	75.6	77.2	78.7	80.3	81.9	83.5	723.4
Sundry	101.8	114.1	116.0	118.0	120.3	122.5	124.9	1,074.5
OPERATING EXPENSES	242.4	244.7	240.8	244.4	248.0	251.8	255.5	2,250.1
IMM remuner.	150.0	152.6	155.1	157.5	159.8	162.2	164.6	1,438.6
Other costs	92.4	92.1	85.7	86.9	88.2	89.6	90.9	811.5
DEPARTMENTAL COUNCIL	12.2	12.4	12.6	12.8	13.0	13.2	13.4	116.9
SAVING before debt service	25.9	41.3	54.3	57.1	59.5	61.8	64.2	500.1
DEBT SERVICE	11.2	13.7	5.1	1.1	8.2	1.9		47.7
NET SAVING	14.7	27.6	49.2	56.0	51.3	59.9	64.2	452.4
EXTERNAL FUNDING	3.2	2.7	4.5	6.4	6.4	4.4	3.5	31.2
Central govt.	3.2							3.2
IDB		2.7	4.5	6.4	6.4	4.4	3.5	28.0
Available for capital expend.	17.9	30.3	53.7	62.4	57.7	64.2	67.8	483.6
CAPITAL EXPENDITURE	3.6	3.9	6.5	9.2	9.2	6.2	5.1	43.6
Drainage III		3.9	6.5	9.2	9.2	6.2	5.1	40.0
Other	3.6	0	0	0	0	0	0	3.6
Surplus(deficit) for the year 8/	14.3	26.4	47.2	49.3	48.5	58.0	62.7	440.0
Accum. surplus (def.)	(14.3)	12.1	59.3	112.6	161.1	219.3	282.0	411.4

8/ To be used for other capital projects.

- 5.22 The above table shows basic IMM funds-flow projections. Consideration was given only to storm-drainage investments that would be funded in part with the proceeds of the proposed IDB loan. Also calculated were the net resources available for other, additional investments, after deducting the local counterpart for the program's storm-sewer component.
- 5.23 According to these projections, the annual counterpart contribution to the program would be respectively 4.3%, 4%, 5.3%, 5.4%, 3.1%, and 2.4% of net funds available for capital outlays in the successive years of program implementation.
- 5.24 On average, between 1996 and 2004, US\$50 million in net internal cash generation would be available each year for other investments; this is similar to the average for the 1990-1995 period. Accordingly, the IMM would have the financial capacity to provide counterpart funding for storm drainage and to repay the debt and the operating and maintenance costs of the system.
- 5.25 Though the projections did not look at revenues from the recovery of costs of the drainage works completed under the program, the contract will require the IMM to recover those costs according to a plan to be presented to the Bank for approval within 18 months after signature of the loan contract.

c. Obras Sanitarias de la Nación

- 5.26 The estimated drop in water consumption in Montevideo if a combination tariff for water and sewer services were brought in, based on volume of water consumed, would bring with it about a 9% drop in OSE operating revenues (down US\$14 million from 1994 revenues of US\$164 million). Variable costs would be expected to decline by US\$2 million, for the same reason.
- 5.27 Although this situation would reduce OSE's internal cash generation proportionately, from 1997 onward the company should be able to raise about US\$42 million annually through its own operations, compared with US\$54 million in 1994. Over the course of the program, after deducting debt service and the local counterpart for loan 785/OC and other ongoing projects, it would be left with approximately US\$18 million a year in internally generated funds for investment spending. The proposed US\$1.5 million a year in counterpart funding is 8% of that amount. Payments on the proposed IDB loan in the first year of amortization would require about US\$1.5 million. OSE thus would be in a financial position to furnish the local counterpart for the program and repay the Bank's loan. OSE will extend the effectiveness of the tariff clause for loan 785/OC to apply it to the works for the proposed program.

3. Conclusions

- 5.28 The analysis performed shows that the IMM and OSE both have the financial capacity to provide local counterpart funding and repay the debt incurred for the proposed program. With the tariff considered, the revenues generated by the sanitary-sewer system would make it financially sustainable. According to a sensitivity analysis, without the tariff, the IMM would be able to defray the financial costs of the sewer system until a tariff based on use metering is formally in place, such as would satisfy the requirement set out in paragraph 5.14.

C. Environmental feasibility

- 5.29 For the most part, the program would enhance the environment, by helping to improve solid-waste collection, treatment, and final disposal. Likewise, in parallel with the works projects planned, the program will institute industrial effluent control measures. Since some localized, short-term negative impacts could nevertheless be triggered, environmental impact assessments were done for all projects during the program preparation stage, and mandatory standards and rules designed to alleviate any harmful environmental impact are to be set out in the bidding documents for works projects. A preliminary resettlement plan is in place for families that will need to be relocated, and the program budget includes funding for implementation of the final resettlement plan, which is to be submitted to the Bank for approval. A further element of the proposed operation is a sanitary education program, to draw the maximum possible benefit from program activities and devise a solid-waste master plan to help Metropolitan Montevideo overcome its problems in this area. For all of these reasons, the program is considered to be environmentally viable.

D. Socioeconomic feasibility

- 5.30 The works projects to be financed by the program on the outskirts of Montevideo will connect a total of 35,000 households to the public sewer system, and 82% of these families will also reap the benefits of improved storm drainage. The program will take initial steps to restore the Pantanoso and Miguelete streams, which traverse densely populated areas and, at some points, run through a park that is an important recreation outlet for city residents.
- 5.31 As part of the preparatory work for a master sanitation plan, 16 sewage conveyance and disposal alternatives were examined. The option selected uses idle capacity of the Punta Carretas underwater outfall to discharge sewage from the east, and takes advantage of the natural topography to move effluent from the north and west through sewer mains along the banks of the Pantanoso and Miguelete

streams, thereby avoiding the need for local treatment. 9/ Sewage from the Pantanoso and Miguelete watersheds is pretreated at a central facility and then discharged into Montevideo Bay. At a future stage, an intercepting sewer plus another outfall will be built to do away with discharges into the bay.

5.32 Because of poor filtration conditions of the soil, households would have to have septic tanks pumped out frequently, and this costs more than low-income families can afford. As a result, most installations are unregulated, and waste is channeled into the nearest receiving body or public way. Illustrating the magnitude of this problem is the fact that 50% of those interviewed in the socioeconomic survey named sanitation (from among 10 possible replies) as the most serious urban problem in their neighborhood. Given the emphasis placed by individual low-income households on their own sanitation problems, vis-à-vis the community, there is little incentive for such families to hook up to the system, and hence a real possibility that many will not do so. To counter this risk, the IMM is funding the cost of house connections for low-income families.

5.33 A survey administered to 2,160 households in eight neighborhoods on the outskirts of Montevideo estimated their willingness to pay (WTP) for installation of a conventional sewer system and for a decantation or settling system. 10/ For the conventional system, monthly WTP per household ranged from US\$49.7 to US\$23.8; for the decantation approach, figures varied from US\$22 down to US\$7.4. The estimates depend on income level, education, and specific conditions in each neighborhood; they are comparable to those elicited in studies in Argentina and Brazil. 11/ Since

9/ Two of the 16 alternatives yielded roughly the same "least cost", including capital, operating, and maintenance costs. The one chosen will afford greater flexibility for future effluent discharge from one part of downtown Montevideo through the west outfall.

10/ This system costs less because smaller-diameter pipes can be used, laid closer to the surface.

11/ WTP and income levels from several studies:

Study	Date	Household income (US\$/month)	WTP (US\$/month)
Montevideo master plan	July 1993		
Paso Carrasco		1,087	49.7
Cerro Norte-La Paloma		611	25.9
Nuevo París		636	41.9
Studies in other countries			
Guarapiranga, Brazil	March 1991	811	26.9
Gral. Belgrano, Argentina	May 1994	1,351	45.2
Montecarlo, Argentina	May 1994	608	28.6

the survey for the master plan did not look at drainage for most of the areas covered by the program, the survey data had to be supplemented with information from other cities with similar conditions. The WTP elicited for the various districts, after adjusting for income differences, ranged from a high of US\$26 to a low of US\$17.

- 5.34 The following table shows the findings of a cost-benefit analysis. Costs and benefits were expressed in efficiency prices, using the following adjustment factors: skilled labor 0.75; semiskilled and unskilled labor 0.61; domestic goods 0.76. 12/

Findings of the cost-benefit analysis		
Functional unit	Economic internal rate of return (%)	
	Wastewater	Stormwater
PANTANOSO	14.0	30.5
MIGUELETE	18.7	14.5
CARRASCO	11.5	26.5

- 5.35 Because Carrasco Norte and Paso Carrasco are less densely populated, investments in these districts yield an economic rate of return (EIRR) slightly below 12%. The projects for those areas are the only ones for which final designs have yet to be produced. From what has been observed in other projects of the program, the cost per beneficiary family can probably be lowered through adjustments of the target area and system designs, which will boost project economic returns. To ensure that these works will be economically viable, the Bank will authorize tendering where the cost per beneficiary household is under US\$3,000. 13/
- 5.36 Initially, the program was to have laid sewers in two towns near Montevideo: Santa Catarina and Santiago Vásquez. However, with a cost per beneficiary family of over US\$4,000 at market prices, the EIRRs for these systems were well under 12%. Likewise, because of the high cost of drainage works in Cerro Norte and La Paloma, which

12/ Costs of sewage conveyance and final disposal were apportioned between new systems, existing systems, and industrial effluents based on surface area and flows.

13/ Costs will be calculated at market prices and will take in the cost of sewer lines and systems and final disposal. The number of households will be computed from the 1996 census.

would benefit a relatively small area, the economic return of that project is considerably below 12%. These projects thus were taken out of the program.

E. Risks

- 5.37 If the IMM does not effectively monitor and control industries, the pollution load now being dumped into watercourses in Metropolitan Montevideo could not be brought down to the levels sought under the program. To minimize this risk, the program includes institutional strengthening of the IMM in this area, and annual commitment authorizations for program works will be contingent upon compliance with the industrial pollution abatement targets. Furthermore, the IMM has the authority to levy fines and ultimately close down industries that fail to adhere to the program to reduce polluting effluents being released into watercourses.
- 5.38 If the number of households that actually hook in to the new sewer systems is lower than estimated, the anticipated benefits of the projects would not materialize, and the IMM's finances would suffer accordingly. To counter this risk, the IMM will operate a fund to finance house connections for low-income families. According to the surveys conducted, the main obstacle for most households is in fact the cost of the utility connection.
- 5.39 Unless the Administration Unit is set up and operating effectively within the IMM's Sanitation Division, the commercial, financial, and accounting duties falling to that division cannot be performed adequately, and sanitation revenues will not be used efficiently. This risk is to be addressed by limiting funding commitments until the unit is created, and conducting a thorough analysis on the occasion of the mid-term program review.

COST PER SUBPROGRAM

SUBPROGRAM A (in thousands of U.S. dollars)				
COST ITEM	IDB-OC	LOCAL	TOTAL	%
ENGINEERING AND ADMINISTRATION	5,300	6,700	12,000	6.0
Studies and designs	1,300	2,700	4,000	2.0
Supervision and administration	4,000	4,000	8,000	4.0
DIRECT COSTS	94,149	27,451	121,600	60.8
Sanitation systems	58,335	15,165	73,500	36.8
Pantanoso	18,337	4,563	22,900	11.5
Miguelote	22,708	5,192	27,900	14.0
Paraguay	1,256	444	1,700	0.8
Costero-Carrasco	8,027	2,973	11,000	5.5
Chacarita / Canteras	8,007	1,993	10,000	5.0
Drainage systems	21,864	7,636	29,500	14.7
Pantanoso	4,422	1,578	6,000	3.0
Miguelote	11,298	3,702	15,000	7.5
Costero-Carrasco	2,260	740	3,000	1.5
Chacarita / Canteras	3,884	1,616	5,500	2.7
Rehabilitation — collectors	10,950	4,650	15,600	7.8
IMM institution-strengthening	3,000		3,000	1.5
ASSOCIATED COSTS	-	13,650	13,750	6.8
Land and easements		7,650	7,650	3.8
Resettlement		6,000	6,000	3.0
UNALLOCATED	18,393	8,507	26,900	13.5
Contingencies	11,947	6,109	18,056	9.0
Price escalation	6,446	2,398	8,844	4.5
FINANCIAL EXPENSES	22,158	3,692	25,850	12.9
Interest	20,758	-	20,758	10.4
Credit fee	-	3,692	3,692	1.8
Inspection and supervision	1,400	-	1,400	0.7
T O T A L	140,000	60,000	200,000	100.0
%	70.0	30.0	100.0	

SUBPROGRAM B (in thousands of U.S. dollars)				
ITEM	IDB-OC	LOCAL	TOTAL	%
ENGINEERING AND ADMINISTRATION	100	1,600	1,700	8.9
Studies and designs	100	200	300	1.5
Supervision and administration	-	1,400	1,400	7.4
DIRECT COSTS	9,883	2,767	12,650	66.6
Sanitation systems	6,850	1,650	8,500	44.7
Drainage systems	633	317	950	5.0
Solid-waste master plan	2,400	800	3,200	16.9
ASSOCIATED COSTS	-	250	250	1.3
Land and easements	-	250	250	1.3
UNALLOCATED	1,694	787	2,481	13.1
Contingencies	1,334	637	1,971	10.4
Price escalation	360	150	510	2.7
FINANCIAL EXPENSES	1,723	196	1,919	10.1
Interest	1,590	-	1,590	8.4
Credit fee	-	196	196	1.0
Inspection and supervision	133	-	133	0.7
T O T A L	13,300	5,700	19,000	100.0
%	70.0	30.0	100.0	

**METROPOLITAN MONTEVIDEO SANITATION PROGRAM, STAGE III
(UR-0089)**

LOGICAL FRAMEWORK

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<u>Goal:</u> Quality of life improved from an environmental standpoint			
<u>Purpose:</u> Environmental quality of beaches, land, and streams improved	* Extension of sewer system coverage from 80% to 88%, serving 140,000 new users * Reduction in organic loading of industrial and household waste discharging into water-courses, from 85 to 40 tons DBO ₅ /day * Decrease in heavy-metal loading of effluent released into streams and Montevideo Bay, from 998 to 41 kg/day	Annual reviews	
The program includes three projects:			
P1: Sewerage	P2: Cleanup of receiving bodies	P3: Improvement of sanitation service delivery	
Project 1: SEWERAGE			
<u>Goal:</u> Environmental quality of beaches, land, and streams improved			
<u>Purpose:</u> Sewer system extended and upgraded	* Hookup of 140,000 additional users	Sanitation Division and DIPRODE	
<u>Components:</u> C1 - Sanitary sewer system extended; number of house connections increased	* Number of new connections in place	Monitoring of project implementation	C1 - Routine system upkeep
C2 - Storm drainage systems extended	* 600-hectare increase in area drained	IMM/DIPRODE	

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
C3 - Mains, outfalls, pumping stations built	* Completion certificates	Sanitation Division and DIPRODE	C3 - IMM-DINAMA jurisdictional issues resolved - Adequate solid-waste disposal - Sanitation and industrial effluent policing in effect
C4 - Pretreatment plants completed and operating	* Completion certificates * Increase in volume treated from 1.7 to 4.3m ³ /s	Sanitation Division	C4 - C6 completed in due time
C5 - Existing collector lines rehabilitated	* Increase in km rehabilitated from 0 to 140 in 6 years	Sanitation Division	
C6 - Affected population living alongside streams resettled	* 325 families resettled	Sanitation Division	
C1 - Sanitary sewer system and house connections * Studies and bid documents * Prequalification of firms * Tendering; receipt and analysis of offers; contract awards * Information campaign on house connections		Sanitation Division	* Firms interested in and qualifying for the construction contracts * No restrictions as to entry or availability of local or foreign companies, materials, equipment * Manpower available for house-connection component * Financing available for house connections
C4 - Pretreatment plants completed and operating * Terms of reference for designs * Contract award * Quality control, approval * Working designs * Prequalification of firms * Tendering, contract award * Monitoring of work * Certification and acceptance of works * Equipment testing * Training of staff for plant operation and maintenance		Sanitation Division	* Companies interested and prequalifying
C5 - Collector lines rehabilitated * Interagency coordination * Resurveying of status of system * Diagnosis, rehabilitation proposal * Execution of works		IMM	* Companies interested and prequalifying * Existing networks clean and maintained * Appropriate technologies accessible

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
C6 - Affected population resettled * Preparation of technical resettlement proposal * Execution of resettlement plan - Acquisition of lots - Construction tendering, awarding of housing units * Promotional efforts, information campaign for affected population		IMM	* Startup of Joint Committee (communities/IMM) * Counterpart resources available as needed * Stability of affected population
Project 2: CLEANUP OF RECEIVING BODIES OF WATER			
<u>Goal:</u> Environmental quality of beaches, land, and streams improved			
<u>Purpose:</u> Quality of receiving bodies of water upgraded	Standards in Resolution 761/96	Data from Environmental Quality and Industrial Effluent Control Unit (UCACEI)	*Funds generated for debt repayment and for operation and maintenance
<u>Components:</u> C1 - Industrial effluent controlled	* Emission standards	UCACEI data	* Systems extended (P1) * Mains and intercepting sewers built (P1)
C2 - Streambanks improved	* Resettled population - 325 families * 10-hectare increase in green areas	Years 1 to 6, aerial survey recording, Servicio Geográfico Militar	Resettlement completed (P1)
C4 - Solid-waste master plan produced and delivered	* Progress reports * Final approval	Activities set out in the contract	
			<u>Note:</u> (P1) denotes assumptions pertaining to project P1

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p><u>Activities:</u></p> <p><u>For C1:</u></p> <ul style="list-style-type: none"> * Train staff that will be in charge of industrial effluent control * Strengthen the legal framework * Bring requirements into line with current discharge standards * Bring in industrial zoning in the IMM * Arrange and promote lines of credit * Afford technical and technological support * Create a bipartite climate (IMM/industry) 		Sanitation Division	<ul style="list-style-type: none"> * Staff discharging duties for which it was trained * IMM fostering coordination between agencies having responsibility in this area (IMM-OSE-MVOTMA-MGAP) * Banks making available loans to modify treatment plants in each industry * Tax incentives for industries to locate in special zones * Willingness of industry groups to participate in bipartite groups
<p><u>For C2:</u></p> <ul style="list-style-type: none"> * Arrange expropriations * Develop streambanks: <ul style="list-style-type: none"> - Designs - Drawings - Tender calls * Education campaign: <ul style="list-style-type: none"> - In schools - General public 		Sanitation Division	<ul style="list-style-type: none"> * Formalities required to obtain land completed in due time and form * Cooperation with CODICEN for education campaign * Funds available for utility installation / development * Funds available for education campaign
<p><u>For C3:</u></p> <ul style="list-style-type: none"> * Design, tender, award contracts, build industrial sludge treatment plants * Regulate use; issue standards * Coordinate standards with MVOTMA * Determine financing for operation and maintenance of new treatment plant * Train staff in operations control at plant 		IMM	<ul style="list-style-type: none"> * Plant operation and maintenance contracted out * Maintenance staff discharging duties for which it was trained * IMM fostering coordination with MVOTMA
<p><u>For C4:</u></p> <ul style="list-style-type: none"> * Produce terms of reference * Engage consultants * Monitor and oversee drafting of plan * Define priorities * IMM startup of plan implementation * Prepare documentation for borrowings to carry through the plan 		IMM	<ul style="list-style-type: none"> * Sanitation master plan prepared for the city * Adequate monitoring of consulting firm in charge of the plan

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
IMM: Montevideo Municipal Government MGAP: Ministry of Agriculture and Fisheries MVOTMA: Ministry of Housing, Land-use Planning, and Environment OSE: Obras Sanitarias del Estado			
Project 3: IMPROVEMENT OF SANITATION SERVICE DELIVERY			
<u>Goal:</u> Improve environmental quality of beaches, land, and water			
<u>Purpose:</u> Improve efficiency and quality of sanitation service delivery	* Drop in queries and complaints from 300 to 100/day		* Sanitation Division given operational autonomy by the IMM * IMM and Departmental Council backing for institutional reforms
<u>Components:</u> C3 - Organization and operation of the Administration and Accounting Unit	* Accounting system computerized		* Sanitation Division given operational autonomy by the IMM * Situation of staff normalized * IMM and Departmental Council backing for institutional reforms in component C1 * Unions/trade associations accept institutional revamping
C5 - Organization and operation of the Tariff Unit	* Tariffs adjusted periodically in line with operating costs * Balance sheet		
C6 - Customer Service Unit	Shorter customer service times: * Shortening of waiting time from 60 to 5 minutes * 10 phone lines for customer service		
C2 - Optimal functioning of operation and maintenance services	* Operation and maintenance integrated * 40% of operation and maintenance outsourced		
C4 - Optimal operation of design and construction services			

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
C1 - Improvement of the Environmental Quality and Industrial Effluent Control Unit	* Increase in monitored industries from 10 to 50 * 200 analyses/month		
<p><u>Activities:</u></p> <p><u>For C3:</u></p> <p>1.1 Verification of original analysis and current status</p> <p>1.2 Call for offers for consulting services</p> <p>1.2.1 Preparation of terms of reference, on basis of analysis performed</p> <p>1.2.2 Call for preselection/qualification submissions</p> <p>1.2.3 Selection, contract signature</p> <p>1.2.4 Supervision, monitoring, final approval</p> <p>1.2.5 Coordination with IMM of implementation of consultants' recommendations</p> <p>1.2.6 Staff training</p> <p><u>For C1-C2-C4-C5 y C6:</u></p> <p>idem supra</p> <p><u>For C1:</u></p> <p>Hiring of consulting firm for industrial pollution monitoring program</p>		Sanitation Division and DIPRODE	

PLANNED CALLS FOR TENDERS FOR THE PROGRAM							
ITEM		Lots	Financing (%)		Method	Cost US\$000	SPN publication half/year
			IDB	Local			
SANITATION AND DRAINAGE WORKS							
1	Cerro Norte and La Paloma	1	70	30	ICB	2,500	II/96
2	Cañada Jesús María (1)	1	70	30	ICB	11,000	
3	Conciliación	1	70	30	ICB	6,000	II/98
4	Pantanoso, La Boyada and Haiti mains	1	70	30	ICB	3,000	II/96
5	Peñarol A and sewer line (1)	1	70	30	ICB	9,000	
6	Peñarol B	1	70	30	ICB	10,500	II/98
8	Casavalle B	1	70	30	ICB	6,500	II/98
9	Modification of overflow structure, intersection; reinforcement of Miguelete interceptor; Miguelete-Capurro PTP line	1	70	30	ICB	4,500	II/96
10	Capurro pretreatment plant	1	70	30	ICB	8,500	II/98
11	Modification of overflow structures, lines, pumping station, Paraguay system	1	70	30	CB	1,500	I/97
12	Carrasco Norte and sewer lines	1	70	30	ICB	8,500	I/98
13	La Chacarita lines and pumping station, strengthening of Malvin-Buceo diversion	1	70	30	CB	1,900	I/98
14	Strengthening of coastal collector, expansion of Colombes, Punta Gorda and Punta Carretas pumping stations. Expansion of Punta Carretas pretreatment plant	1	70	30	ICB	2,100	I/98
15	Headwaters, Chacarita and Canteras streams (1)	1	70	30	ICB	15,000	-
16	Pumping stations and conveyance lines Cerro Norte and La Paloma, Cañada Jesús María, Colón, Pantanoso, La Boyada and Haiti	1	70	30	ICB	8,000	II/96
17	Pumping stations and conveyance lines Belvedere-Victoria, La Teja, Yañez-Pinzón	1	70	30	CB	2,000	II/98
18	Paso Carrasco and lines	1	70	30	ICB	10,000	II/97
19	Bank improvement Miguelete	1	-	100	CB	500	II/99
REHABILITATION OF COLLECTORS AND SYSTEMS							
1	Pantanoso	1	70	30	CB	1,200	I/98
2	Miguelete	3	70	30	ICB	2,600	I/98
3	Paraguay (Arteaga system)	6	70	30	ICB	9,000	I/98 and I/00
4	Costero-Carrasco	3	70	30	ICB	2,800	II/99
CONSULTING SERVICES							
1	Montevideo solid-waste master plan	1	70	30	ICB	3,500	I/97
2	Institutional strengthening	1	100	-	ICB	1,500	II/96
3	Monitoring program	1	100	-	ICB	1,500	II/96
4	Studies designs, advisory support	3	100	-	ICB	4,000	II/96
(1) Tendering already begun ICB: International competitive bidding CB: Competitive bidding							

(1) Tendering already begun ICB: International competitive bidding CB: Competitive bidding

POLLUTION ABATEMENT TARGETS: LIQUID INDUSTRIAL WASTE

On February 26, 1996, the Montevideo Municipal Government (IMM) in coordination with the Environment Directorate (DINAMA) issued Resolution 761/96 governing liquid industrial effluent discharges for the eight leading sectors of economic activity in the department of Montevideo. The resolution set deadlines by which such waste was to be in compliance with certain quality standards (allowed maximums for specified parameters). The standards differ depending on whether waste is being discharged into sewer systems or watercourses.

Commitments associated with civil works for the program will be tied to compliance with the targets prescribed in the aforementioned resolution. Using program resources, the IMM and DINAMA will develop means of tracking and controlling industrial effluent, to enable them to monitor the cleanup plan. If industries do not voluntarily comply with the standards and deadlines set out in the resolution, the IMM and DINAMA will turn to existing control measures, which range from fines and cancellation of haulage licenses to the closing down of industrial establishments.

The following branches of industry are covered by the IMM-DINAMA order: wool scouring and tops fabrication; leather tanning and finishing; petroleum refining; yeast manufacturing; livestock and poultry slaughterhouses and packing plants; dairy products; fish processing and allied industries; manufacture of vegetable and animal fats and oils; and manufacture of animal feed. The following table shows the allowed maximums for industrial waste, and the compliance deadlines for industry. Exceptions for certain activities are shown as well.

LIQUID WASTE DISCHARGED INTO SEWERS				
ALLOWED MAXIMUMS: INDUSTRY GENERALLY				
PARAMETER	UNIT	DATE OF ENTRY INTO FORCE		
		01/03/1997	31/07/1998	31/12/1999
BOD _{5,20}	mg/l	--	1,000	700
Settleable solids	ml/l in 1 hour	20	20	10
Oils and grease	mg/l	200	200	200
Total chromium	mg/l	10	10	5
Sulfur compounds	mg/l	25	15	5
Temperature	°C	35	35	35
pH	--	5.5 < pH < 9.5	5.5 < pH < 9.5	5.5 < pH < 9.5
Flow	--	$Q_{\max} = < 2.5Q_{av}$	$Q_{\max} = < 2.5Q_{av}$	$Q_{\max} = < 2.5Q_{av}$

The following exceptions have been made for wool scouring and leather tanning:

LIQUID WASTE DISCHARGED INTO SEWERS				
ALLOWED MAXIMUMS: WOOL SCOURING AND TANNERIES				
PARAMETER	UNIT	DATE OF ENTRY INTO FORCE		
		01/03/1997	31/07/1998	31/12/1999
WOOL SCOURING				
BOD _{5,20}	mg/l	--	--	3,000
Oils and grease	mg/l	100	100	100
TANNERIES				
BOD _{5,20}	mg/l	--	2,000	2,000

These requirements apply to effluents of all types discharged into sewer systems, including those emptied by vacuum trucks; the sole exception is effluent from cleaning out on-site household systems.

LIQUID WASTE DISCHARGED INTO WATERCOURSES				
ALLOWED MAXIMUMS: INDUSTRY GENERALLY				
PARAMETER	UNIT	DATE OF ENTRY INTO FORCE		
		01/03/1997	31/07/1998	31/12/1999
BOD _{5,20}	mg/l	150	100	60
Total suspended solids	mg/l	250	200	150
Oils and grease	mg/l	50	50	50
Fecal coliform	MPN/100 ml	--	--	5,000
Total chromium	mg/l	5	5	1
Sulfur compounds	mg/l	25	10	1
Detergents	mg/l	--	--	4
Phenols	mg/l	--	--	0.5
Temperature	°C	30	30	30
pH	--	6 < pH < 9	6 < pH < 9	6 < pH < 9
Flow	--	$Q_{\max} = < 1.5Q_{av}$	$Q_{\max} = < 1.5Q_{av}$	$Q_{\max} = < 1.5Q_{av}$

Exceptions have likewise been made, for effluent released into watercourses, for wool scouring facilities and tanneries:

LIQUID WASTE DISCHARGED INTO WATERCOURSES				
ALLOWED MAXIMUMS: WOOL SCOURING AND TANNERIES				
PARAMETER	UNIT	DATE OF ENTRY INTO FORCE		
		01/03/1997	31/07/1998	31/12/1999
WOOL SCOURING				
BOD _{5,20}	mg/l	300	150	60
TANNERIES				
Oils and grease	mg/l	100	100	50

BOD_{5,20} = biological oxygen demand, 5-day incubation at 20°C

MPN = most probable number

Q_{av} = average flow

Q_{max} = maximum flow

PROPOSED RESOLUTION

URUGUAY. LOAN ____/OC-UR. TO THE REPUBLICA
ORIENTAL DEL URUGUAY
(Metropolitan Montevideo Sanitation Program, Stage III)

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the República Oriental del Uruguay, as Borrower, for the purpose of granting it a financing to cooperate in the execution of a Metropolitan Montevideo Sanitation Program, Stage III. Such financing will be for the amount of up to US\$153,300,000, or its equivalent in other currencies, except that of Uruguay, which are part of the ordinary capital resources of the Bank, and will be subject to the "Terms and Financial Conditions" and the "Special Contractual Conditions" of the Executive Summary of the Loan Proposal.