

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

ECUADOR

**METROPOLITAN QUITO ENVIRONMENTAL SANITATION
PROGRAM (PHASE II)**

(EC-L1022)

LOAN PROPOSAL

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Proposed resolution

Electronic Links and References	
Basic socioeconomic data	http://www.iadb.org/RES/index.cfm?fuseaction=externallinks.countrydata
Status of loans in execution	http://portal.iadb.org/approvals/pdfs/ECen.pdf
Tentative lending program	http://opsgs1/ABSPRJ/tentativelending.ASP?S=EC&L=EN
Information available in the RE3 technical files	http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=828390

ABBREVIATIONS

AWP	Annual Work Plans
CAF	Corporación Andina de Fomento (Andean Development Corporation)
DMMA	Dirección Metropolitana de Medio Ambiente (Metropolitan Environmental Authority)
DMQ	Municipal District of Quito
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EIRR	Economic Internal Rate of Return
EMAAP-Q	Empresa Metropolitana de Alcantarillado y Agua Potable de Quito (Metropolitan Quito Water and Sewage company)
EMASEO	Empresa Metropolitana de Aseo (Metropolitan Sanitation company)
ESMP	Environmental and social management plan
ESMR	Environmental and Social Management Report
ICAS	Institutional Capacity Assessment System
ICB	International Competitive Bidding
ICE	Impuesto al Consumo Específico (Specific Consumption Tax)
LTMC	Long-Term Marginal Cost
MDMQ	Metropolitan Municipal District of Quito
MEF	Ministry of Economy and Finance
MIDUVI	Ministry of Urban Development and Housing
NCB	National Competitive Bidding
PEP	Project Execution Plan
PEU	Program Executing Unit
PPMR	Project Performance Monitoring Report
PSA	Environmental Sanitation Program
TOR	Terms of Reference
WTP	Willingness to Pay

PROJECT SUMMARY

ECUADOR

METROPOLITAN QUITO ENVIRONMENTAL SANITATION PROGRAM (PHASE II) (EC-L1022)

Financial Terms and Conditions ¹				
Borrower:	Empresa Metropolitana de Alcantarillado y Agua Potable de Quito (EMAAP-Q)		Amortization period:	25 years
Guarantor:	Republic of Ecuador and Municipality of Quito		Grace period:	6 years
Executing agency:	EMAAP-Q		Disbursement period:	6 years
Source	Amount	%	Interest rate:	Variable
IDB (FSO/OC)	US\$ 70.00 million	62.1	Inspection and supervision fee:	0%
Local	US\$ 42.79 million	37.9	Credit fee:	0.010%
Total	US\$112.79 million	100.0	Currency:	U.S. dollars from the Single Currency Facility
Project at a glance				
<p>Project objective: The purpose of phase two is to enable EMAAP-Q to provide residents with efficient and sustainable long-term water, sewer and flood control services. The objectives are to ensure: (i) the long-term sustainability of water and sewer service in the DMQ; (ii) that investment in EMAAP-Q-operated systems is economically efficient and that the systems are operated efficiently; (iii) residents of the DMQ have universal access to water and sanitation service and flood control and no longer have to supply themselves with poor-quality water and dispose of their sewage inappropriately, in an effort to reduce the risk of waterborne diseases (see paragraph 2.1).</p> <p>Special contractual conditions: Conditions precedent to the first disbursement: (i) approval of the cost-reduction and rate adjustments plans by the company's General Manager (paragraph 1.23); (ii) eligibility of bidding on the meter reading contract by EMAAP-Q Procurement Committee (paragraph 1.23); (iii) Operating Regulations (paragraph 3.11) and Environmental and Social Management Plan (paragraph 3.12) in force; (iv) signature of the performance contract between the Municipality and the company (paragraph 4.3); and (v) signature of income trust agreement with the Central Bank of Ecuador and signature of a debt repayment agreement with the Ministry of Economy and Finance (paragraph 4.12).</p> <p>Execution conditions: (i) before any works begin, the company must demonstrate it has met the environmental conditions relating to the bidding documents, resettlement, environmental licenses, and appointment of an environmental supervisor (paragraph 3.4); (ii) before commitment of loan funds for works in the second stage, the company must demonstrate that it has met the performance indicators of Table III-1 agreed for the third year (paragraph 3.5); (iii) within 12 months after approval of the loan, it must be demonstrated to the Bank that the storm-sewer cost recovery study has been commissioned (paragraph 3.9); and (iv) before the disbursement of funds for the slope management component, the company must present a signed contract between the municipality and the company for executing the ESMP activities (paragraph 3.12)</p> <p>Exceptions to Bank policies: None.</p>				
<p>Project consistent with country strategy: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Project qualifies as: SEQ <input checked="" type="checkbox"/> PTI <input type="checkbox"/> Sector <input type="checkbox"/> Geographic <input type="checkbox"/> Headcount <input type="checkbox"/></p> <p>Procurement: See paragraph 2.10 for recognition of expenses and retroactive financing, and paragraph 3.14 for the procurement plan.</p> <p>Verified by CESI on: 1 September 2006</p>				

¹ The interest rate, credit fee, and inspection and supervision fee mentioned in this document are established pursuant to document FN-568-3 Rev. and may be changed by the Board of Executive Directors, taking into account the available background information, as well as the respective Finance Department recommendations. In no case will the credit fee exceed 0.75%, or the inspection and supervision fee exceed 1% of the loan amount.*

* With regard to the inspection and supervision fee, in no case will the charge exceed, in a given six-month period, the amount that would result from applying 1% to the loan amount divided by the number of six-month periods included in the original disbursement period.

I. FRAME OF REFERENCE

A. Water and sewer service delivery

- 1.1 The mission of the Metropolitan Quito Water and Sewage company (EMAAP-Q) is to provide water; to collect, treat and dispose of sewage; to collect and channel rainwater; to protect the ecological environment and help maintain water sources for the Canton of Quito; and to integrate water and sewer projects into the Municipal District of Quito (DMQ) environmental sanitation programs. Water is supplied in the DMQ by means of several integrated systems that provide service to the city and surrounding parishes, supplemented with independent systems in the parishes. The dependable flow available from the sources currently used in the DMQ is about 8.6 m³ per second, and comes from watersheds with surplus water cycles. There is installed treatment capacity of some 8.5 m³/s (wells and springs), which is currently producing about 7.3 m³/s. The Machángara and Monjas rivers are the receiving bodies for industrial and domestic sewage, which is dumped into these water bodies without treatment.
- 1.2 The average coverage of water and sewer services in the city of Quito is estimated at 93% and 88% respectively, and in the parishes at 73% and 67%. Over the last five years, the company has carried out an investment plan, installing 75,000 new water connections (1,900 km of water pipes) and 100,000 new sewer connections, and it has pursued an unaccounted for water control program (averaging 39%: 33% in Quito and 57% in the parishes). The company's operating revenues have benefited from higher average water rates (from US\$0.10/m³ per cubic meter to US\$0.40/m³), and adjustments to domestic consumption brackets, from 0-40 m³, 41-80 m³ and > 80 m³, to 0-20 m³, 21-30 m³ and > 30 m³. Even so, public consumption remains high when compared with cities of similar characteristics and socioeconomic development, and rationalizing that consumption would yield considerable benefits, given the high costs of expanding production capacity. The water service infrastructure and equipment is in an adequate state of repair. The significant increase in coverage allowed the number of employees per 1,000 connections to be reduced from 6.45 in 2000 to 5.2 in July 2006.
- 1.3 The hillsides around Quito, in the Pichincha and Atacazo massif, cover 17,700 hectares. Of these, 11,000 hectares (62%) correspond to natural areas, while 6,700 hectares (38%) are in urban areas, and are deemed a natural heritage of Quito and an important feature of the city's characteristic landscape and environment. The city's growth, the shortage of basic infrastructure services, and the scarcity of housing, among other factors, have led to progressive environmental degradation and increasing risk of disasters from flooding, landslides, mudslides, and land slippage, with loss of human life, damage to property, and interruption of economic activities. The Pichincha slope protection program (loan 935/OC-EC) (1997-2002) and loan 1424/OC-EC (phase I) (2003-2007), have financed protection activities in 40% of the hilly areas as far as the center of Quito, with major investments in engineering works, environmental stabilization, land use planning, green space restoration, risk mitigation activities, and family

resettlement. Interventions are still awaited in the southern zone of Quito, and a comprehensive approach to slope management is now needed, within an institutional and legal context that consolidates institutional, financial and social sustainability, aspects that will be part of phase two of the environmental sanitation program (PSA).

B. The Municipio's strategy in the sector

- 1.4 The delivery of water and sanitation service, including solid waste management is the responsibility of the Metropolitan Municipal District of Quito (MDMQ). Investment in water and sewer service in the last five years has enabled the company to meet its millennium targets and made the delivery of service to the entire DMQ a feasible target. After this second phase, the municipio and the company will concentrate investment mainly on sewage treatment and solid waste management. To accomplish this aim, the company will prepare, with the Bank's help, a river cleanup plan, for which the municipal council has set up a fund with the proceeds of income tax that will be used to finance mainly sewage treatment infrastructure. The Quito Metropolitan Council decided to place its solid waste management services for approximately one half of the city out to concession, thus substantially improving the level of service and reducing costs by about 65%. The mayor intends to extend the improvement to the entire DMQ through a concession for service to the rest of the city and eventually transferring administration of the concession contracts to the EMAAP-Q. The MDMQ as part of this operation has formally asked the Bank for support in preparing the plans and studies for carrying out this aim, and additional financing for this second phase estimated at US\$13 million.

C. The Bank's strategy in the sector

- 1.5 The program was approved on the basis of the 2002 strategy with the country insofar as it fulfilled the following objectives: "(ii) poverty relief and human capital development; (iii) efficient management of infrastructure with the participation of the private sector; and (iv) modernization and decentralization of the State and promotion of sustainable development". In November 2004, the Bank's strategy was revised and a sector strategy was prepared that highlighted the expansion of Bank support for intermediate cities, with the following specific objectives: (i) to achieve more effective governance and independent management of the companies; (ii) adjusting rates to levels that were high enough to cover operating, maintenance, and depreciation costs; (iii) to improve operating, business, and financial efficiency; (iv) to increase private sector participation; and (v) to expand service coverage. Both the present phase and the first phase of the program are consistent with the 2002 strategy and satisfies the specific objectives set out in the 2004 strategy. To address the MDMQ's request for support with solid waste management, assistance would be provided in preparing a project to permit the institutional reforms proposed by the municipality when the national government ratifies this request, and a proposal for supplemental financing for this initiative would be prepared in the context of this second phase.

D. Bank support to Quito in the sector

- 1.6 Phase I of the PSA was divided into two stages, and commitment of 40% of the funds was conditioned upon fulfillment of the performance indicators. A midterm evaluation found that the company had made satisfactory progress in implementing the project, and reviewed the studies of: costs and rates, subsidies, rates and management audits, and feasibility of private sector participation in the eastern parishes, and commercial activities. The company succeeded in meeting all of the 16 indicators and triggers, except the 2004 operating margin and the putting out to tender of 50% of commercial activities. For the unmet indicators, the company undertook to transfer 100% of commercial activities to the private sector through contracts for meter reading and billing, relocation and replacement of meters, and upgrading of the computer systems for the commercial area; to take the necessary steps to achieve the operating margin agreed for 2005; and to incorporate the observations agreed with the Bank during the review. Through its support, the Bank has enabled the company put its efforts into seeking efficiency and providing sustainable quality service to the entire community, in a manner consistent with the Bank's public utility service policy (OP-708). Accordingly, the Bank expects the company to eventually have access to capital markets on the strength of the Bank's guarantee and/or with nonsovereign guaranteed financing from the Bank. Fulfillment of the commitments agreed to under the program will make this attainable.

E. Evaluation of Phase I

- 1.7 Phase I of the loan was declared eligible for financing in March 2003, three months after the company signed the contract with the Bank. The Project Performance Monitoring Report (PPMR) of June 2006 shows that more than 85% of the total program has been executed, and more than 72% of the loan disbursed. As well, the company has committed 100% of the funding for Phase I, and expects to complete physical execution no later than the third quarter of 2007.¹ This sound performance under the PSA has encouraged the Bank to select it as a pilot project for implementing the new supervisory tools.² During Phase I, EMAAP-Q worked simultaneously on studies and designs for the second phase of the program, on the basis of which the Ministry of Economy and Finance (MEF) asked the Bank to support a project for US\$110 million, to be financed from a possible credit operation in the amount of US\$70 million that would be guaranteed by the national government and the MDMQ. For its part, the Bank has worked with the company to prepare and evaluate the second phase and to assess the performance of phase one of the PSA, for which it contracted an international consulting firm, DIPSA (Desarrollo Integral de Proyectos S.A.). DIPSA's final

¹ The company requested a nine-month extension for inclusion of the Tesalia project, which will be completed in June 2007.

² Integrated project management and supervision tools. 12GSP software developed by COF/CEC.

report also rated performance in Phase I of the program as satisfactory. The Bank's performance evaluation of Phase I of the PSA is based on the logical framework indicators, the PPMR, and the DIPSA evaluation.

1. Rate of advance and achievement of targets

- 1.8 **Slope Management and Flood Control.** This component includes control of flooding, landslides and mudslides, land use planning in the affected areas, management of ecologically fragile zones, and resettlement of families at risk in the Tejar and Jerusalén ravines, and studies of the Navarro and La Raya Sur ravines. The amount of US\$10.8 million has been invested in water regulation, and all collector works have been completed in the Tejar ravine, and 65% in the Jerusalén ravine (this delay caused by shortcomings on the part of the consultants during the studies stage. It should be noted that the benefits from these works are not affected by the missing 35%, which will be constructed during the second phase). The sum of US\$2.7 million has been invested in conservation of urban green spaces (83.4% more than scheduled) on 3.1 hectares of urban green spaces. Works have been undertaken on 4.8 hectares of natural areas within the Tejar watershed, at an investment of US\$176,500, or 88% more than initially programmed, and US\$494,592 has been invested in community development for the management of natural and urban green spaces in intervention zones, and improving trash and solid waste management, to the full program amount. Forty-six families have been resettled, at a cost of US\$1.5 million. Consistent with the original plan, there have been no new settlements in the intervention areas.
- 1.9 **Potable water and sewer works.** This component includes rehabilitation and expansion of water systems in priority areas, construction of trunk sewers, intercepting sewers, discharge works and branch lines for the existing sewer system in neighborhoods and parishes that already have water service. Water connections have exceeded the original targets by 56% for household connections. In Calderón and Los Pinos, 8,200 connections were completed, and in the Tesalia project 8,000 connections have been installed or improved. While originally planned for Phase II, this last project was moved forward because of delays in the studies for the Jerusalén works. At the end of phase I, estimated investments amounted to US\$20 million, well beyond the targets set for investment and connections. Sewer works have exceeded the original targets by 12%. A total of 5,022 connections were made, compared with 4,500 planned. This increase was funded with savings from the competitive bidding on the Los Pinos, El Arenal de Calderón and La Josefina sewers, which came in at US\$1.4 million below forecast as a result of competitive bidding procedures that combined the La Salle, Yanahuayco, Terán Jaramillo, Bahia-Barahona and Ermitas sewers.
- 1.10 **Institutional strengthening.** Agreement was reached on fulfillment of the following six targets:
- 1.11 (i) **Updated water and sewer service master plan.** The company has updated its water and sewer service master plan. The scope of that update was limited to

estimating demand with data from the 2001 population and housing census, and adjustments to the investment program made by the company's technical staff. It was agreed that for the second phase, the scope of this upgrading would be extended, and a specialized consulting firm hired for this purpose (see paragraph 2.4).

- 1.12 (ii) **Rate structure based on long-term marginal costs (LTMC).** Costs, rates and subsidies were analyzed and long-term marginal costs and long-term average economic costs were determined, as well as subsidy plan alternatives. The rates charged to industrial, commercial, and residential customers that consume more than 30 m³ are sufficient to cover the LTMC. LTMC-based rates are expected to be applied shortly to residential and government customers below 30 m³, and a subsidy mechanism will be introduced whereby the company will carry out a four-stage plan agreed with the Bank during the midterm evaluation.
- 1.13 (iii) **Regulation: annual management and rate audits starting in year one.** The management and rate audits were conducted as planned. In the absence of an independent regulatory agency, an ad hoc system was adopted, which consisted of technical audits that were posted on the company's website. The agreed system has been very effective in creating a culture of monitoring within the company, and for promoting management based on objective criteria. Users have benefited from access to company information through the audit reports posted on its website. The audit reports have also helped the company identify specific steps for improving operational processes linked to operations, maintenance, and customer service. The only evident constraint is that implementation of the actions proposed in the plan is not binding. For the second phase, it was agreed that this regulatory scheme should be reinforced through a performance contract between the company and the Metropolitan Quito Municipal Government, incorporating the performance targets which reflect the commitments in Table III-1. An independent auditing firm will perform a management and rate audit of the performance agreement (paragraph 3.16) and the financing of a study for eventual creation of a regulatory body and establishment of an institutional framework.
- 1.14 (iv) **Private sector participation in commercial operations.** Concessioning of 50% of commercial activities. The agreed studies were carried out, and they show that the company exceeded the targets set for residential meter installation, meter readings, shorter claim settlement, billing and collection times, and that it would not be cost-effective for the company to outsource 50% of its commercial activities. During the midterm evaluation mission, it was agreed to promote private sector participation in three ways: (i) outsourcing 100% of meter reading and billing work; (ii) outsourcing meter replacement and relocation work; and (iii) computerization of commercial operations. So far, the meter reading process

has been put out to tender,³ and the resulting contract is expected to be in force by June 2007; a contract has been signed for meter replacement and relocation (two contracts were signed in August 2006 and the third is at the pre-award stage); and computerization is now at the diagnosis and strategic planning stage.

- 1.15 **(v) Private sector participation in the eastern parishes, tendering water and sewer services to the private sector in the Municipal District of Quito (DMQ).** The studies were carried out by an advisory service that evaluated various alternatives for private sector participation in the eastern parishes. During the midterm mission, these alternatives were analyzed and it was agreed that the best scheme, from the company's viewpoint, would be to concession the services to a mixed public-private enterprise, so that the company can speed up its investment program and serve residents of the eastern parishes more efficiently. The company completed the process in January 2006. At the present time, four firms have been prequalified and the concession is expected to be awarded during the first half of 2007.
- 1.16 **(vi) Design and implement a training and technical assistance plan in land use and occupancy planning and regulation.** The studies were carried out and the targets were met. The company designed and implemented the Partial Land Use Plan for Calderón Parish and also the special plans for La Libertad and Los Pinos areas. Preparation of those plans included the purchase of equipment and software, technical assistance and training for the municipality and the publication of legislation governing the Planning and Urban Control System.

2. Compliance with development objectives and socioeconomic impact

- 1.17 The activities and projects undertaken in phase 1, the design criteria under which the works were planned and executed, and the progress achieved in making them sustainable will assure success and fulfillment of the project's objectives. Following is a comparison between the indicators selected and the outcomes obtained or expected.

³ The first call for tenders (July 2005) elicited 3 offers, two of which did not qualify and the third was not consistent with institutional interests. The competition was therefore declared null and void.

Table I-1
Fulfillment of purpose indicators

Purpose: To reduce flooding, mudslides, and landslides.	
Elimination of damage to public and private infrastructure caused by floods and mudslides in the project areas over four years for hydrometeorological events of less than 50 years.	The works that have been financed can withstand a 30-year event without negative impact. They are estimated to have protected about 260 ha of urban neighborhoods with a beneficiary population of 42,000 mostly poor people.
Purpose: To expand water and sewer services in priority areas.	
Increase in consumption from 8 m ³ a 25 m ³ a month per family for the 5,200 new water connections.	The target was exceeded, providing 11,210 new users in Calderón, Los Pinos and Tesalia with good-quality service. Average consumption recorded is 20.5 m ³ ⁴ .
Elimination of water rationing for 110,000 people (20,000 connections) living in Calderón. Monthly family consumption rises from an average of 14 m ³ to 25 m ³ .	The target was exceeded, with 24,790 connections, providing better service. Average consumption recorded is 20,5 m ³ ⁴ .
Improvement in the quality of life since the sewer system will stop dumping of sewage into public streets and eliminate offensive odors	Sewage dumping has been eliminated and odors have been controlled with installation of 5,022 sewer connections, verified by physical inspection at the work sites. Public opinion surveys are also planned.
Purpose: To build institutional capacity for efficient management of the services provided by EMAAP-Q. The Matrix of Performance Indicators in which indicators planned and achieved are set out for comparison, shows that for 11 of 14 indicators the target was met. This component gave the company the tools to be more efficient and sustainable over the long term, and to fulfill its mission.	

F. Fulfillment of the triggers for moving to the next phase

- 1.18 **Compliance with annual performance indicators.** The company met the agreed performance indicators, with the exception of operating margin, employees per 1,000 connections, and LTMC-based rates. The operating margin indicators fell short of expectations because: (i) the target set for Phase I was fairly high, (40%), and did not include ICE (consumption tax) revenues; (ii) the company did not keep its operating costs at the expected level; (iii) the number of connections in 2005, at approximately 80,000 (70,000 sewer connections), was higher than projected during Phase I and (iv) new customers were for the most part low-income families. The current level of the operating margin (25%) is comparable with that of similar firms operating efficiently in the region. The indicator for employees per 1000 connections was missed by a small fraction (5.2 versus 5.0). An analysis of performance against the LTMC-based rates is shown in paragraph 1.22.

⁴ The forecast overestimated user demand, apparently because of rate increases, which lowered demand, and an overestimate of the price elasticity of demand.

- 1.19 **Private sector participation in tendering for the eastern parishes. This condition is considered fulfilled.** The concessioning process was approved by the EMAAP-Q Board of Directors on June 21, 2005, with the establishment of a mixed (public-private) enterprise. An international call for expressions of interest was issued in January 2006. On April 5, submissions were received from four of the seven firms that purchased the bidding documents. On May 22, prequalification notices were issued for the firms that met the legal, technical and financial requirements established in the bidding documents. EMAAP-Q has decided to broaden social consultation on the project, before proceeding with the process, by creating roundtables with selected interest groups. This process has the support of the parish boards and residents of the beneficiary area. The concession is expected to be awarded in the first half of 2007.
- 1.20 **Commercial activities contracted out.** This target was amended during the midterm evaluation, because the planned benefits from this activity were achieved before that review, as indicated in paragraph 1.14. In addition to meeting the expected benefits, the proposed scheme for private sector participation is expected to improve the company's commercial activities still further. To meet the revised target, all that remains is to complete the tendering and award process for the meter reading contract for 100% of the company's customers. The meter reading contract is expected to come into effect in the first half of 2007.
- 1.21 **Compliance with the rates clause.** Considering funds generated by its commercial business alone (without considering ICE revenues), the company has complied fully with all service-related financial obligations, as established in the rates clause of the loan contract; however, performance in 2005 was 99%. This situation should be corrected during 2006, through the higher revenues that will flow from the adjustment to the consumption brackets, and implementation of a cost-reduction plan.
- 1.22 **LTMC-based rates in effect and the subsidy fund established and operating.** The agreed studies were carried out, both for rate-setting and for creating the subsidy fund. To meet this indicator, the rate for consumption of less than 30 m³ per month must cover the LTMC, and the subsidy fund must be established. The company is currently revising its rates in three steps: (i) identifying the subsidy for residential and government customers below 30 m³ per month, by showing it as a separate item on the water bill (in execution); (ii) gradual withdrawal or reduction of subsidies, and creating a trust fund for targeting subsidies at the poor (first half of 2007); and (iii) identifying new beneficiaries for the targeted subsidy, by making the EMAAP-Q database compatible with that of SELBEN (the low-income user identification system), and continuing the progressive reduction in subsidies (2008-2009). The subsidy fund will be introduced and operating in the first half of 2007. Fulfillment of this condition will be monitored during the second phase, against indicators 7 and 8 in Table III-1.
- 1.23 **Conclusions and recommendations.** The foregoing analysis suggests that the purpose of Phase I of the program has been met, and that compliance with the

previous conditions warrants triggering of the second phase. In order to consolidate the reforms, however, and to fulfill the targets set for Phase I, the following conditions precedent to the first disbursement of the financing are recommended for phase two: (i) approval of the cost-reduction plans (paragraph 1.21) and rate adjustments (paragraph 1.22) by the company's General Manager; and (ii) evidence that the EMAAP-Q Procurement Committee has declared eligible the proposals presented during the bidding on a consulting firm to provide meter reading services (paragraph 1.20). Accordingly, with the exception of the targets relating to operating margin, which will be fulfilled in accordance with the proposed performance indicators (Table III-1) and establishment and functioning of the subsidy fund proposed as a trigger for accessing the financing for this phase, all of the phase one targets that were not fulfilled will be fulfilled prior to disbursement of the proceeds of the financing for phase two.

G. Lessons learned during Phase I

- 1.24 The executing agency should be given full responsibility for key activities required to achieve certain targets (indicators), especially when disbursements are conditional upon those targets. Project execution encountered difficulties in: (i) delegating 50% of commercial business to the private sector and concessioning water and sewer services in the eastern parishes, because the consulting studies financed and commissioned by CONAM held up the pre-contracting processes; (ii) solid waste and trash management in the project area, responsibility for which falls to the Metropolitan Sanitation Enterprise (EMASEO); and (iii) the management plan for urban green spaces and implementation of the partial plans for land-use management, because these are the responsibility of the municipal government.
- 1.25 The process of reviewing and approving procurement documentation by the various authorities involved can be optimized through the use of standard documents agreed between the Bank and the program executing unit on the basis of Bank models. Similarly, the entire process was shortened because members of the Procurement Committees and the Evaluation Commissions received proper training.
- 1.26 It will be easier to evaluate and monitor all program projects if straightforward and systematic fact sheets are kept in a single and simplified registry. Similarly, in order to evaluate and keep track of physical programming, the pre-contract processes need to be planned separately from execution processes, with respect to both studies and works, while maintaining control of the program based on the Project Execution Plan (PEP) time schedule.
- 1.27 Storm drainage costs, including slope management, need to be assessed with more specific projections to ensure they are covered by the planned storm sewer charges. Dealing with the problem of slopes and its relationship to the city's storm sewers requires an integrated approach that will take into account the interaction of technical, social, economic and environmental aspects. The second phase of the

PSA will have an integrated focus, and a system for cost recovery and maintenance of these investments will be agreed.

- 1.28 The execution scheme designed for this program has allowed for smooth communication between the executing agency, members of the work team, and the sector specialist in the Bank's Country Office. The midterm evaluation and the disbursement conditions have allowed for comprehensive monitoring of the program, and the prompt adoption of corrective measures to ensure that it meets its objectives.
- 1.29 During phase one, it was found that the most appropriate type of private sector participation for the company would be to outsource the works under medium-term and fixed-term contracts since such contracts could be easily implemented and would enable the company to tap the efficiency of the private sector without losing control of the activities outsourced. During the phase two, the Bank support for private sector participation is to be expanded through the outsourcing of water service operations and maintenance in certain areas (paragraph 2.7).

H. The conceptual basis and strategy for the second phase

- 1.30 The structuring of this program in phases reflected the need to support the municipal government and the EMAAP-Q in financing the expansion of water and sewer services and slope management work associated with the storm sewers, as well as in pursuing the institutional and financial reforms for gradually improving the company's performance and promoting its long-term sustainability, which will make it possible to access alternative sources of financing. During Phase I, together with the financing of infrastructure, reforms were prepared with the view to setting LTMC rates, creating a basic consumption subsidy fund for poor families, establishing a regulatory mechanism, and promoting private sector participation in the commercial side of the business and in the eastern parishes. An important aspect of achieving the proposed objectives has been the execution plan, which included: (i) establishment of an executing unit; (ii) a midterm evaluation as part of the monitoring and tracking system, and (iii) the conditioning of disbursements on the achievement of targets. The MDMQ, the company and the Bank believe that, in light of the outcomes it has produced, the execution plan should be replicated in the second phase.

The loan proposal approved by the Bank for Phase I sets the following targets for the second phase: (i) consolidate EMAAP-Q as an efficient and financially viable enterprise over the long term; (ii) expand water and sewer services into priority areas of the city; and (iii) reduce damage to urban infrastructure and housing caused by torrential rains in the creek beds of south-central Quito. On this basis, the scope of the second phase calls for: (i) **Institution strengthening** that includes setting up an environmental management system, optimizing the organizational structure, introducing an operational efficiency plan, promoting the upgrading of water system operations and maintenance in some of the DMQ parishes under general services contracts. For the slopes component, it will

include the creation of an institutional structure for slope management, preparation of management instruments, and a training program. (ii) **Construction of flood control systems, sewer networks, and optimization of water systems in some DMQ neighborhoods**, for which financing will be provided for works prioritized in the master plan with a 2030 time horizon that is technically, economically, and socioenvironmentally viable according to the criteria in the Operating Regulations (paragraph 3.11) and in geographic coverage outlined in phase one. To ensure the company is able to meet its commitments sustainably the program will be carried out in two stages (with triggers for moving from one to the other), with independently functional works, and monitoring compliance with the targets agreed in the table of performance indicators (Table III-1). (iii) **The strengthening of the regulatory plan agreed on during phase one** by means of a performance agreement with the MDMQ and EMAAP-Q, which will be reviewed independently each year in an audit commissioned by the MDMQ, and the financing of a study to assess the feasibility of creating a municipal regulatory body.

II. THE PROGRAM

A. Program objective

- 2.1 The purpose of phase two is to enable EMAAP-Q to provide residents with efficient and sustainable long-term water, sewer and flood control services. The objectives are to make water and sewer services in the DMQ financially sustainable over the long term; to make investment in and operation of EMAAP-Q-operated systems economically efficient; to assure universal access to water, sanitation and flood control services for residents of the DMQ, many of whom now supply themselves with water of poor quality, and to provide for proper disposal of sewage, thereby reducing the risk of waterborne diseases.

B. Program components

- 2.2 **Potable Water Works** (US\$15.89 million). This includes upgrading the water production systems of El Troje, Chilibulo, Pichincha and Atacazo-Lloa, rationalizing consumption and reducing the proportion of unaccounted for water, in order to encourage efficient use of water resources and reduce pressures for system expansion. The unaccounted water program will help reduce commercial and physical losses through sectorization, control pressure network, and expansion of macro- and micro-metering. Studies will also be financed to update the water and sewer master plan, hydraulic modeling, and review and updating of design standards. These activities will cover labor, materials and equipment for the civil works, the purchase and assembly of piping and electromechanical equipment for rehabilitation and expansion of water supply systems, conveyance and distribution networks, and residential connections, as well as consulting services.

- 2.3 **Sewer Works** (US\$17.7 million). This includes the expansion of the combined sewer systems for the parishes of Amaguaña-Conocoto (Ontaneda, Las Peñas and 8 subsystems of San Gabriel-Mirasierra) and a portion of Calderón Norte (sectors 1 and 3) and Calderón Sur (interceptor line A, sections 1 and 2, interceptor line B, sections 1 and 2, collectors 1, 2 and 3), and studies to define and apply design standards for sewer works. Activities will include the procurement of supplies, labor, materials and equipment necessary for the construction and testing of sewer networks, collector lines, inspection chambers, etc., as well as the consulting services indicated.
- 2.4 **Flood Control Works** (US\$39.95 million). This covers improvement and expansion of the Anglo-French collector lines, and upgrades to the storm sewer system in the Jerusalén, Navarro-La Raya, Sunipamba-Saguanchi and Cuscungo-Clemencia ravines. It includes the purchase of supplies, labor, materials and equipment for construction and testing of the collector lines, inspection chambers, etc.
- 2.5 **Slope Management** (US\$12.06 million) has four subcomponents. **Slope Management** (US\$1.66 million) includes the creation of an institutional, legal and financial structure and a comprehensive slope management plan, an information system, a dissemination plan, and solid waste management in intervention areas; **Slope Stabilization** (US\$6.95 million) includes studies and environmental conditioning works in urban natural green spaces in the Jerusalén, Navarro-La Raya and Sunipamba-Saguanchi ravines, as well as priority works in natural areas of the Pichincha-Atacazo massif; **Community Development and Training** (US\$750,000) includes community development, environmental education and training for the beneficiary population and training for district administrations in land-use management; and **Risk Management and Family Resettlement** (US\$2.7 million), which includes managing the risk of damage from natural disaster to 500 family residences, and involves on-site mitigation measures and resettlement of 47 families in considered at risk to flooding from rain, and families whose dwellings are located at program work sites.
- 2.6 **Institutional Strengthening** (US\$3.74 million). This component covers reengineering of the Operations and Maintenance Department, including contracts for integrated operation and maintenance management in three zones; studies to upgrade planning, organizational structure and costs, modernize computer systems, define the municipal regulatory system for services, and strengthen land-use management in the MDMQ. This component includes two subcomponents.
- 2.7 **Strengthening EMAAP-Q** (US\$3.27 million). To strengthen business management, the following activities were identified: preparation of the 2007-2010 strategic plan, a study to upgrade the organizational structure, and design and implementation of a information technology plan (US\$1.5 million) for resource allocation and monitoring of outcomes against targets, and improving the flows of information; implementation of a plan to improve the technical efficiency of operations and maintenance, in an effort to reduce service delivery

costs and improve service quality;⁵ design of an integrated environmental management system; consulting services and studies for optimizing water service operations and maintenance by means of general services contracts (based on a company analysis, and consistent with the intention to improve operating efficiency) in Calderón, Mica-Sur and Tesalia, where there are approximately 20,000, 48,000 and 18,000 connections (more than 20% of the customer base). A study will be performed to identify the most efficient storm sewer cost recovery mechanism.

- 2.8 **Strengthening the municipal government** (US\$460,000), to establish a stable regulatory entity and to fulfill the legal mandates for the municipal government. This will involve a study on the creation of a municipal regulatory body for water and sewer services in DMQ, which could be expanded to cover other domestic utilities. Implementing instruments will also be prepared as will an analysis of the experiences of regulatory bodies in other countries and the extent to which they have been successful.

C. Costs and financing

- 2.9 The total project cost is US\$112.7 million, including US\$70 million from the Bank's Ordinary Capital and US\$42.7 million in local counterpart funding. The MDMQ will finance the portion relating to slope management and municipal strengthening. A breakdown by cost category and source of financing is shown in Table II-1, and in greater detail in Annex V.
- 2.10 EMAAP-Q has requested reimbursement of US\$2.22 million and recognition of US\$1.39 million in outlays incurred between October 2005 and September 2006. This is consistent with the feasibility criteria agreed on with the Bank, and the latter's procurement policy.

⁵ The area of the company with the most employees and the greatest portion of costs.

Table II-1
Cost and Financing

Category	(US\$000)		Total Cost (US\$000)	%
	IDB	Local		
1. Engineering and Administration	4,720	7,440	12,160	10.8
1.1 Works supervision	3,220	1,780	5,000	4.4
1.2 Studies and designs	-	1,770	1,770	1.6
1.3 Executing Unit and supervision studies	1,500	3,890	5,390	4.8
2. Direct Costs	64,880	24,456	89,336	79.2
2.1 Water supply works	6,900	8,990	15,890	14.1
2.2 Sewer works	14,890	2,810	17,700	15.7
2.3 Flood control works	33,690	6,260	39,950	35.4
2.4 Comprehensive slope management and ESMP	9,400	2,660	12,060	10.7
2.5 Business improvement (EMAAP-Q & DMQ)	-	3,736	3,736	3.3
3. Associated Costs	400	1,480	1,880	1.7
3.1 Lands and rights-of-way		1,480	1,480	1.3
3.2 Audits	400	-	400	0.4
4. Financial expenses	-	9,410	9,410	8.3
4.1 Interest	-	9,000	9,000	8.0
4.2 Credit fee	-	410	410	0.3
4.3 Inspection and Supervision	-	-	-	0.0
Total Project Cost	70,000	42,786	112,786	100.0

III. EXECUTION OF PHASE II OF THE PROGRAM

A. Institutional framework

1. Borrower, guarantor, and executing agency

- 3.1 The borrower and executing agency for Phase II will be EMAAP-Q, which will be legally responsible to the Bank for making the local contribution and for repaying the financing. The guarantors will be the Republic of Ecuador, for payment of principal, interest and fees, and the Metropolitan Municipal District of Quito (MDMQ), for fulfillment of the objectives and purposes of Phase II and for the local contribution. The MDMQ will also be responsible to EMAAP-Q for providing the local counterpart funding (US\$2.79 million) for the slope management component, and for reimbursing EMAAP-Q for the portion of debt service relating to this component (US\$9.4 million). To date, MDMQ has consistently met its financial obligations in Phase I, with respect to the local contribution for the slope management component.

2. The executing unit

- 3.2 EMAAP-Q will execute Phase II through the Executing Unit for the Environmental Sanitation Program (PSA). The PSA is supported by the company's operations departments and is responsible to the Bank for administration of the loan funds, implementation and monitoring of Phase II, and coordination with other institutions, as established in the Operating Regulations. The administrative and financial activities involved in Phase II are included in the general structure and procedures of EMAAP-Q. The PSA has four operating departments, reporting to the Executive Director (Studies, Institutional Strengthening, Supervision, and Slope Management) and two support departments (administration, finance, control, and programming and legal), and also has technical advisers to assist with procurement and river cleanup in Quito.
- 3.3 The PSA reports to the General Manager of EMAAP-Q, and during Phase I a close working relationship developed with the company's other departments. As a result, it has come to be seen as an integral part of the organizational structure, particularly since it took over financial, administrative and procurement responsibilities. Nevertheless, its activities need to be integrated more closely, particularly those relating to planning, contracting and works execution. The new organizational structure will integrate the PSA into EMAAP-Q.

B. Execution plan

- 3.4 This phase represents a continuation of the following aspects of Phase I: Slope Management, Water Supply Works, Sewer Works, Flood Control, and Institutional Strengthening. The works and consulting services for these components will be contracted through competitive bidding, in accordance with Bank procurement policies. The works will be supervised by the PSA, as agreed in the plan for Phase I. The loan contract will include the following conditions:

(i) the bidding documents for the civil works must include technical environmental specifications agreed with the Bank; (ii) when civil works involve the resettlement of families, the work must not begin until the persons affected have been resettled; (iii) before tenders are called, authorizations and environmental licenses must be obtained, as required by national legislation; (iv) before contracting out any program works, the company must demonstrate to the Bank that it has appointed an environmental supervisor for that undertaking.

1. Commitment of funds and scope of each phase

- 3.5 Financing for infrastructure works will be committed in two stages. Each stage consists of functionally independent subprojects (groups of works), that is their expected benefits are not dependent on other works to be financed in other stages. The financing for the first stage of the works will be committed over the first three years of the project, and amount to US\$43.7 million. The financing for the works in the second stage, amounting to US\$21.2 million, will be committed once the performance indicators in Table III-1 are met: this is expected for the third year. Before committing loan funds for works in the second stage, the company will be required to demonstrate that it has attained the year three performance indicators in Table III-1.
- 3.6 **First stage** (US\$43.7 million). This includes the following works, which will be financed out of the proceeds of the financing: (a) the potable water component: (i) upgrade of the Pichincha system, (ii) materials and equipment for the unmetered water plan in phase one; (b) sewer component: (i) Las Peñas; (ii) San Gabriel-Mirasierra; (iii) Calderón Norte system (sectors 1 and 3); (iv) Calderón Sur system (interceptor A, section 1); (c) flood control component: (i) Pomasqui collector in the Jerusalén ravine; (ii) Velasco-Atacazo, Río Verde, El Placer, La Libertad collectors in the Jerusalén watershed; (iii) minor works in the Jerusalén watershed; (iv) Anglo-French system; and (v) improvement to collectors and channels in the ravines of the Navarro-La Raya corridor; (d) slopes component: (i) the risk management and family resettlement program, (ii) environmental upgrading works in the Jerusalén ravine; (iii) phase one of priority projects in the Pichincha-Atacazo corridor; and (e) institutional strengthening component: all the studies for the component must be commissioned during the first 24 months of project execution.
- 3.7 **Second stage** (US\$21.2 million) includes the following works that will be financed out of the proceeds of the financing: (a) water supply component: (i) upgrading of the El Troje plant module I; (ii) the Chilibulo treatment plan expansion; (iii) the supply of the second group of materials and equipment for the unmetered water plan; (b) sewer component: Calderón Sur system (interceptor A, section 2, interceptor B, sections 1 and 2 and collectors 1, 2, and 3); (c) the flood control component: (i) improvement of collectors and channels in the ravines of the Cuscungo-Clemencia corridor; (d) the slope component: (i) environmental stabilization works in the watersheds of the Navarro-La Raya and Sunipamba-

Saguanchi corridors, and phase two priority projects in the Pichincha-Atacazo massif.

2. Readiness of the components

- 3.8 **Works and studies.** Design of the upgrade works has been completed for the Pichincha water supply system, the Calderón Norte and Sur and Amaguaña-Conocoto sewer systems (to be financed with the local counterpart), and for the flood control subcomponent the collector system for the Jerusalén Valley (Pomasqui, Velasco, Atacazo, Río Verde, El Placer and La Libertad), the Anglo-French system, and improvements to the collectors and channels in the Navarro-La Raya corridor. Designs for the second stage works are about to enter the bidding process, which means that during the initial stage all project works designs will be ready, and will be submitted to the Bank for the latter's no objection as specified in the Operating Regulations. The unmetered water program includes the purchase of materials and equipment for detecting leaks in the water system, and its scope will be defined by consultants and the company's specialized team: the results will be submitted to the Bank for its no objection.
- 3.9 **Institutional strengthening.** The PSA has moved forward with the following processes: implementation of a plan to improve the technical efficiency of operations and maintenance, in order to reduce service delivery costs and improve service quality (evaluation of expressions of interest); study and upgrading of strategic planning, including preparation of the 2007-2010 strategic plan, and the upgrading of the organizational structure (awarded); awarding of contracts for operations and maintenance activities to the private sector for water service in three areas of the DMQ (draft terms of reference ready for the Calderón and La Mica projects); study on creation of a regulatory body for sanitation services in the district, and the corresponding draft municipal ordinance (TOR approved); diagnostic assessment and preparation of an information technology plan (evaluation of bids); design and implementation of an Integrated Environmental Management System (TOR agreed). During the first six months, the company will prepare terms of reference for the study to determine the most efficient cost recovery mechanism for the storm sewer system, which will be subject to the Bank's no objection. The consulting services will have to be contracted and performed during the first stage of the program. The loan contract includes a clause requiring that within 12 months after approval of the loan, evidence must be submitted to the Bank that the study has been commissioned.

C. Monitoring and evaluation

- 3.10 The monitoring and evaluation system consists of: (i) the Project Execution Plan (PEP), which includes the procurement plan and a performance matrix for monitoring the indicators in the logical framework (Annex I); (ii) the Annual Work Plans (AWP), which include the agreed measures needed to mitigate the risks identified in the Institutional Capacity Assessment System (ICAS) and in the risk analysis, which will be reviewed periodically by the Bank; (iii) the

semiannual reports, which include progress achieved in the AWP, the results of the activities, and an action plan for the following six-month period covering those aspects where corrective actions are needed to improve the performance of Phase II and of EMAAP-Q; and (iv) a supervision plan for achieving results and evaluating performance under Phase II. The evaluation of progress under Phase II will be done using the indicators in the logical framework (Annex I). The achievement of business management results will be measured using the performance indicators in Table III-1. The company will compile and keep all information, indicators and parameters, including the annual plans, the midterm evaluation, and the final evaluation, so that the Bank can prepare the Project Completion Report.

When the rates and management audits (paragraph 3.16) show that the company has met the performance indicators of Table III-1 for year three, it will ask the Bank to perform a midterm evaluation of the program, to determine whether loan funds can be committed for the second stage. The company will prepare a plan, agreed with the Bank, for achieving the target for the following year, if it has fallen short of any indicator. Also, as part of the midterm evaluation, the recommendation contained in the study on establishing a municipal regulatory agency will be assessed and agreement will be reached before the second stage of this phase on actions that need to be taken with respect to regulation before the end of the program.

Table III-1
Performance Indicators and Phase II targets

Performance indicators (at end of each calendar year) Base line		Base Line	Stage I			Stage II		
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Efficiency	1. Operating margin (%)	23	25	25	30	30	30	30
	2. Annual collection efficiency (%)	83	85	85	90	90	95	95
	3. Employees per 1,000 connections (staff)*	5.2	5.2	5.0	5.0	4.8	4.6	4.5
	4. Unmetered water ratio (%)	38	36	35	34	33	32	31
Targets								
Rates	5. New LTMC rate structure	P/A	I	I	I	I	I	I
	6. Subsidy targeting	P/A	I	I	I	I	I	I
Regulation	7. Technical and management audit	R	R	R	R	R	R	R
	8. Municipal regulation		P					
Environmental	9. Environmental and social management report	A	I	I	I	I	I	I
	10. Institutional framework and cost recovery	P	A	I	I	I	I	I
Institutional	11. Upgrading the GOM structure	P	A	I	I	I	I	I
	12. Delivery of operations and maintenance services (R1, R2 and R3)	P	R1	R 2, R3				
	13. Strategic planning	P/A	I	I	I	I	I	I
	14. New organizational structure	P	A	I				
	15. Computerization plan	P/A	I	I	I	I	I	I

P: prepared, A: approved, I: implemented, R: done (R1 Calderón, R2 Mica Sur, R3 Tesalia)

* the targets include changes resulting from outsourcing of operations and maintenance services.

1. Operating Regulations

- 3.11 The Operating Regulations for Phase II, which were reviewed and agreed on with the Bank, include lessons learned from Phase I. The annexes to the Operating Regulations include the terms of reference for the studies mentioned above and the interagency agreements. As a condition precedent to the first disbursement, the company will submit evidence that the Operating Regulations are in effect. The Bank will establish a revolving fund for up to 5% of the loan amount. The works will be operated and maintained by EMAAP-Q, which has the technical staff and means for those tasks. The company will present to the Bank, during program execution and for three years after completion of the last program works, annual reports on the status of conservation and a plan for maintenance of the works.

2. Environmental and social management plan

- 3.12 The company will restructure the Environmental Management Department and implement the Environmental and Social Management Plan (ESMP), which includes an Environmental Management System and a Resettlement Plan, both of which are components of the Environmental and Social Management Report

(ESMR) agreed on with the Bank. The PSA director will coordinate planning and implementation with other entities of the social and environmental programs included in the ESMR; and ensure that the works contracts contain environmental control measures. As a condition precedent to the first disbursement of the financing, the company will present evidence that the ESMR has been approved by its Board. As a condition precedent to the first disbursement of financing for the slope management component, the company will present a signed contract with the municipality stipulating the obligations of the parties for the execution and scheduling of activities in the ESMR.

3. Contracting of works, goods and consulting services

- 3.13 Goods and services, civil works, and consulting services financed wholly or in part from the program will be procured in accordance with Bank policies (documents GN-2349-7 and GN-2350-7). International competitive bidding (ICB) will be required for procurement of goods in amounts of more than US\$250,000. National competitive bidding (NCB) will be used for the procurement of goods in amounts between US\$50,000 and US\$250,000, and amounts below US\$50,000 will be procured by shopping (minimum of three valid quotes). In the case of works, the ICB threshold is US\$3 million. NCB will be used for works between US\$100,000 and US\$3 million, and shopping for contracts in lesser amounts. For consulting services of US\$200,000 or more, a short list with international expressions of interest will be used, while no international advertising will be required for lesser amounts.
- 3.14 *Procurement plan* (see Annex II). The borrower has agreed with the Bank on a procurement plan, detailing contracts for the first 18 months of the program. If the borrower makes any changes to the plan, it must be submitted for the Bank's no objection. Project procurement will be subject to ex-ante review. The review method will be reassessed six months into the project, based on the company's procurement performance evaluation. A review will be carried out at least once every six months.

4. External audits

- 3.15 The financial statements for the program and those of the company will be submitted annually, pursuant to the general contractual conditions with the Bank, duly audited by a firm of independent auditors acceptable to the Bank, and contracted with loan funds, in accordance with Bank policies and procedures and terms of reference previously approved (policies AF-100 and AF-500). Those audits will also include an operational verification of the degree to which the company has satisfied its contractual obligations, the extent to which program resources have been disbursed, and the procurement and disbursement processes.
- 3.16 The company will also be required to hire an independent firm acceptable to the Bank to perform an annual rate and management audit during program execution, to verify compliance with the performance contract between the company and the municipal government, including the company's management and the extent to

which rate targets have been met. The reports of these audits will need to be presented to the Bank within three months after the close of each calendar year, and must be made available to the public on the company's website.

D. Execution period and disbursement schedule

3.17 The disbursement period for Phase II will be six years. Box III-1 contains the planned disbursement schedule.

Box III-1: Disbursement Schedule (US\$000s)

Year/ source	IDB	Local	Total	%
1	14,000	5,800	19,800	17.6%
2	11,900	7,500	19,400	17.2%
3	10,150	7,486	17,636	15.7%
4	12,600	6,000	18,600	16.5%
5	11,550	7,200	18,750	16.5%
6	9,800	8,800	18,600	16.5%
Total	70,000	42,786	112,786	100.0%
%	62.1%	37.9%	100%	

IV. FEASIBILITY AND RISKS

A. Institutional feasibility

- 4.1 The institutional viability of the company was evaluated on the basis of existing legislation (Business Ordinance, Charter of the DMQ and Municipal Code) and the institutional framework, technical and management audit reports, compliance with annual work plans, results of the Institutional Capacity Assessment System and the Risk Analysis. The company's governance is consistent with the Bank's Public Utilities Policy (OP-708) and is based on: (i) the legal framework gives the Board of Directors clear authority in matters of planning and control, while the functions of administration and organization, including service delivery and financial solvency, with economic efficiency criteria, lie with the company's management; (ii) the company's executive and technical personnel are selected on the basis of their professional capacities, and they enjoy the necessary degree of autonomy and stability within their field of competence; (iii) corporate planning and the organizational and operational structure have encouraged good coordination between departments and between the intermediate and operating levels, as necessary to carry out projects and meet business goals; (iv) the company has demonstrated it has the capacity to implement significant institutional reforms, which have translated into better service delivery, and will have a positive impact on the company's long-run sustainability; (v) the Board of Directors has six directors (the mayor, director of municipal planning), two councilors elected by the city council, and two members from civil society.
- 4.2 During the second phase, the institutional strengthening activities will focus on the company's technical capacity. On one hand, the PSA structure will be reinforced by incorporating a new department responsible for slope management, reflecting the growing importance of this component. In addition, the following three areas will be strengthened: implementation of an information technology plan, incorporation of an environmental management plan, and implementation of a plan for improved technical efficiency in the operations and maintenance area, through comprehensive operations and maintenance contracts in Calderón, Mica Sur and Tesalia. Finally, changes in the organizational structure and improvements in strategic planning and business operations will be reviewed and formalized.
- 4.3 The necessary studies will be performed to strengthen the legal and institutional framework for slope management and flood control. These studies will be financed during the first two years, and their implementation and monitoring will be included in the indicator matrix. Additionally, in order to improve the institutional framework in which the company operates, the current regulatory scheme will be strengthened, through a Performance Contract between the DMQ and the company, which will serve as a regulatory instrument establishing quality commitments for service delivery, economic efficiency, and financial sustainability. A draft text of this contract has been prepared by the company, and

includes performance indicators from Table III-1. That draft was agreed with the Bank and the parties. As a condition precedent to the first disbursement the Performance Contract must be signed between the DMQ and the company.

B. Financial feasibility

- 4.4 The company has the capacity to finance the local counterpart contribution during the project execution period, and to cover its financial obligations for the term of the loan. The company's operating income is sufficient to cover all its operating and maintenance costs, as well as capital expenditure, and debt service for all its liabilities, pursuant to policy OP-708. Moreover, the Municipality of Quito is in a position to guarantee the local counterpart contribution, pursuant to OP-303.
- 4.5 The financial analysis of the company was conducted using a financial model developed by the Bank, and prepared on the basis of the audited financial statements for the last five years, together with historical information on operations. The projections cover the duration of the dollar loan, and include operating revenues and expenses, capital investments, external financing, fixed assets, and working capital. This analysis indicates that the company is solvent and is forecasting average earnings of US\$27.1 million during the first five years of the projections, with an average cash balance of US\$5.9 million, and adequate efficiency ratios (operating margin of 35.5%, billing recovery of 85%, liquidity ratio 2.8, and borrowing ratio 26.2%).

1. Income statement

- 4.6 In 2006, the company expects to have 345,000 registered customers, and to invoice 140,000,000 m³ at an average rate of US\$0.73/m³ (US\$0.51 for water, US\$0.16 for sanitation, and US\$0.06 for other services). The company's operating revenues during the last five years increased from US\$32.8 million in 2001 to US\$90.5 million in 2005, reflecting primarily the increase in water and sewer connections (75,000 and 100,000 respectively). During the first five years of the projection, operating revenues grow at an average rate of 3.1% mainly through the addition of more than 47,000 new water connections and 42,000 sewer connections. Average residential consumption is expected to decline by around 6.1%, as a result of changes to the current billing tranches. Operating and maintenance expenses during the last five years rose from US\$30 million to US\$69 million (the cost per cubic meter increased from US\$0.30 to US\$0.49), and these costs are expected to decline by 5.7% as a result of the cost optimization plan; and thereafter grow at an average rate of 1.8% a year. The average cost per cubic meter in 2011 is estimated at US\$0.47.
- 4.7 EBITDA operating margin during the last five years has been around 29.3%, reflecting the company's financial strength, which is comparable to that of the more efficient utilities in the region. During the first five years, operating margin is projected to increase to an average of 35.5%. Earnings for the year, net of other

revenues and expenses, will average US\$27.1 million over the first five years. Financial expenses commencing in the sixth year will increase to US\$10 million, as a result of projected borrowings. Tax revenues from the ICE are an important source of funds (US\$30 million). Some 15% will be used to finance a targeted subsidy mechanism, starting in 2007.

2. Flow of funds

- 4.8 The company's main sources of financing during the next six years are its cash flow from operations (US\$140 million) and external borrowings (US\$92.7 million), and revenues from the Specific Consumption Tax (ICE) (US\$136 million). The company's revenue is sufficient to ensure timely financing of the local counterpart contribution. The main sources of external financing are the IDB project and a US\$25 million loan with the Andean Development Corporation (CAF). This loan began disbursement in 2006, and is expected to be fully disbursed by 2009. The company's funds are used primarily for the investment program (US\$297 million) and debt amortization (US\$74.1 million).
- 4.9 Cash flow from operations during the projection period is sufficient to cover the company's financial obligations. The debt service coverage ratio during the first five years is 1.8, and 2.0 during the project period. The operating cash flow net of debt service during the first five years is sufficient to finance 22.2% of investments. It is recommended that the rates clause in the loan contract include a provision requiring the company to finance at least 20% of its expansion program with its own funds, and to update its financial projections annually.

3. Balance sheet

- 4.10 The projected balance sheet shows an average liquidity ratio of 2.8 for the first five years, and a leverage ratio of 26.2%. The average cash balance during the projection remains at US\$6.3 million. The annual billing to collection ratio is 95%, and collection efficiency is 85%. The company's long-term borrowing requirements for the next six years include: IDB US\$70 million (25 years, six years' grace, and 5.5% interest), CAF US\$25 million (10 years, three years' grace, and 8% interest). The company is projected to be borrowing US\$10 million on average per year, beginning in 2014 (15 years, one year's grace, and 9% interest).

4. Guarantee of the local counterpart contribution and debt repayment

- 4.11 The financial analysis of the Municipality of Quito, guarantor of the loan and of the local counterpart contribution, shows annual current revenues and capital revenues of approximately US\$200 million, and an unused borrowing capacity of approximately US\$6.2 million per year, which would be sufficient to guarantee the outstanding financial contributions for this operation. However, in order to prevent the municipality from encumbering its borrowing capacity, the company and the MDMQ would include a clause in the performance agreement specifying that the company commits the ICE revenues and funds of its own to finance the

local contributions. Average annual revenue from the ICE is US\$30 million. Signature of this contract will be a condition precedent to the first disbursement.

- 4.12 The company has agreed to sign an income trust agreement with the Republic of Ecuador and the Central Bank of Ecuador, and a debt repayment agreement with the Ministry of Economy and Finance, guaranteeing repayment of principal, interest, and fees so that the Republic can stand surety for the company, pursuant to the Regulations to the Fiscal Responsibility, Stabilization and Transparency Act of the Republic of Ecuador (12 October 2005). The signature of the income trust agreement and the debt repayment agreement will be conditions precedent to the first disbursement.

C. Technical Feasibility

- 4.13 **Design standards and technical feasibility.** From a technical viewpoint, the proposed works are considered to be feasible: they respond to a public need, the proposed solutions have emerged from an analysis of various alternatives, and the design parameters used were agreed in the program phase (the studies for the works sampled from the present phase were financed with program funds). The cost calculations are based on real unit costs in international and domestic markets, and reasonable care has been taken to cover contingencies. Moreover, the planned engineering works present no special complexities.
- 4.14 In the water subcomponent, the technical evaluation of the Pichincha system, the sample project, included an analysis of the balance between the projected supply (installed capacity) and demand (residential consumption at current rates) over a planning horizon of 30 years, for each of the main components of the system; an analysis of alternative solutions to coverage and quality problems; and the technical parameters used in the final engineering designs for the works, which were redesigned using the least-cost expansion methodology included in the Operating Regulations for the other projects of this component. For the sewer works in Calderón Norte, Calderón Sur, and Amaguaña-Conocoto, the design parameters used in the rational model for determining flows, and the maximum velocities in the systems, were analyzed, and it was found that in general the support studies have followed the provisions of the Operating Regulations agreed for Phase I of the program, although some modifications have been introduced to optimize the designs of the other works in this component.
- 4.15 For the flood control subcomponent, a design analysis was conducted for the collector systems in the Jerusalén ravine (Pomasqui, Velasco, Atacazo, Río Verde, El Placer and La Libertad), and a feasibility analysis was performed on the Anglo-French and Navarro-La Raya systems, for which final designs are available. With respect to the flood control works, the Operating Regulations were amended to include a modeling of the optimum design period for the alternative selected in the feasibility study during the main collector design phase, and modern technical specifications were adopted to allow the use of new construction methods, which will generate savings in executing the works. The

least-cost methodology is retained as value added from the technical analysis, by expanding the components of the water systems by stages, modeling the optimum recurrence period for the design of the principal collectors, and including the studies for updating the design standards for water and sewer works, generating added value in the planning of the company's investments, and significant savings in its investments.

- 4.16 **Scheduling of program execution.** The execution schedule reflects the times required to move forward with the planned activities and works: the proposed construction methods are widely used in the country, and they minimize negative social and environmental impacts. The six-year term proposed for disbursements is considered realistic and feasible, in light of the executing unit's previous experience with Bank projects.

D. Socioeconomic feasibility

- 4.17 The aspects evaluated were: (i) balance between supply and demand; and (ii) benefit-cost analysis of the least-cost solution. The baseline data for the analysis, the estimated econometric models, projections of demand and population growth, and the results of running the models can be found in the files of RE3.
- 4.18 **Potable water component.** One project (Pichincha) was analyzed, costing a total of US\$1.2 million. The other projects to be included in the program will be evaluated using the same methodology. It is based on the public works simulation model (SIMOP) developed by the Bank. The population, the number of existing connections provided by EMAAP-Q and the projections made in Quito's master plan were used to estimate demand. The demand curve established in the master plan, where price elasticity is -0.29, was also used. Supply without the project was also determined. (The zones in which service will be provided currently have systems with restricted capacity). A benefit-cost analysis was performed at December 2005 prices, using shadow price ratios determined by Banco del Estado de Ecuador. The costs included were incremental investment and operations and maintenance costs. The increase in consumption owing to the end of rationing was considered a benefit. The project is feasible with an economic internal rate of return (EIRR) of 18%. An analysis of sensitivity to cost and to price elasticity of demand was performed. The analysis indicates that the feasibility results for the potable water projects are robust against reasonable changes in those variables.
- 4.19 **Sewer works component.** Nineteen projects worth US\$22.5 million were evaluated, from Calderón Norte, Calderón Sur, and Amaguaña-Conocoto. Fourteen projects proved feasible, for a total value of US\$16 million. The remaining projects are viable only if their construction is postponed for at least five years, and they would therefore not be financed under this program. The other projects to be included in the program will be evaluated using the same methodology. *Demand.* Demand for the combined sewer program is attributable to an appreciable number of families with water but no sewer service. *Benefits.*

The neighborhoods that will benefit from the sewer systems already have water service. The current system of sewage disposal relies on latrines and septic tanks, with some houses dumping sewage directly into the streets. The “gray” water from the individual sewage disposal systems runs off into public roads or into gulleys that cut across the city, adversely affecting the environment and the health of residents. Runoff also flows through the streets, creating traffic problems due to flooding from rains, with a low return period (every four months).

- 4.20 Public and private benefits will ensue from the construction of sanitary and storm sewers and sewage disposal systems. The private benefit is the increase in well-being owing to the improved environment in each dwelling, better public health, and reduced traffic congestion during heavy rains. The public benefits are the improvement and preservation of the environment in the project area. The direct benefits of the system were estimated using the contingent valuation method based on estimated willingness to pay (WTP) for the services. Representative surveys (500 observations each), calling for yes/no answers, were conducted in the neighborhoods that will benefit from the works and the results were fed into the WTP econometric model. WTP averaged between US\$11 and US\$15 per month per household. The value of WTP for each of the observations was capped at 5 percent of family income, since higher values would be unrealistic. The costs include investment and operations and maintenance costs. To convert market prices to economic prices the components were broken down and shadow prices were applied.
- 4.21 *Analysis.* The feasible projects have an EIRR between 12% and 37%. The Calderón Norte Sector 2, Calderón Sur Interceptor A, sections 3 and 4, and the Amaguaña-Conocoto La Florida and Carapungo projects will not be financed owing to their low rate of return. These projects will have to be postponed for at least four years if they are to be viable, since they are in low population density zones. An analysis of sensitivity to cost and WTP was performed for the feasible projects. The analysis found that the Ontaneda project for the Amaguaña-Conocoto system and the Collector 1 and Interceptor A, Section 2 projects should be put off to the third year in order to ensure they are viable.
- 4.22 **Flood management (slope component).** The project will prevent damage caused by floods, high water and mudslides with a once-in-50-year recurrence or less, and will reduce the damages caused by events of longer recurrence. The channeling projects in the Navarro and La Raya Sur and the Anglo-French valleys were used as the program samples. Benefits were quantified according to the following criteria: (i) damage to fixed assets; (ii) damage to personal property and vehicles; (iii) damage caused by changes to urban traffic patterns; and (iv) damage to drains and the cost of cleaning and repairing roads. The 50-year recurrence period was selected by maximizing the net benefits for projects with recurrence intervals of 10, 25, 50 and 100 years.
- 4.23 The analysis did not include savings in time lost waiting in traffic, since the floods last for relatively short periods and many of the activities can easily be

rescheduled with no significant economic loss. Although lives have been lost in the past and the project may have a favorable impact in this regard, the information available is insufficient to associate the loss of life with the magnitude of hydrological events. It should be noted that the exclusion of these potential benefits is an additional security factor in the economic evaluation. The costs considered were the incremental investment costs and operations and maintenance costs of flood control. The market costs were converted to economic costs using shadow prices determined by the Banco del Estado de Ecuador. The sensitivity analysis shows that the projects would be viable even if the costs increase by 25 percent or the benefits are reduced by 25 percent, scenarios that have a probability of less than 1%.

E. Environmental and social impact

- 4.24 At its meeting on 3 August 2001, the Committee on Environment and Social Impact (CESI) asked for a Limited Environmental Assessment of the Quito Environmental Sanitation Program, Phase I (PSA I). The Environmental and Social Management Report (ESMR), including a preliminary plan for resettlement of 46 families, was submitted for public consultation at the offices of EMAAP-Q, as required by Bank policies. The program is designed to be executed in two phases, with completion scheduled for 2012. For Phase II, a new ESMR was prepared, and a new resettlement plan, incorporating the lessons learned from PSA I, as summarized below. The ESMR and the resettlement plan are attached to this document.
- 4.25 Lessons learned from execution of PSA I were of various kinds. With respect to resettlement, improvements are needed in: (i) coordination between the removal of persons and the beginning of works; (ii) the resettlement agreements and solutions in advance of the works; (iii) the technical details in the final resettlement plan for avoiding setbacks during execution; (iv) revisions to the resettlement plan to include options for hold-out families, the flexibility needed for coordination, partial solutions with respect to socioeconomic changes and the involvement of other relevant institutional players. Of particular importance were the initiatives taken by the company, such as issuing tenders for the purchase of low-cost dwellings, which helped to mobilize the real estate market and assure a greater supply of housing alternatives.
- 4.26 With respect to execution of the operation's components, it is important to: reinforce the community's involvement, which facilitated relocation and work on the slopes; require contractors to be more careful in applying mitigation and industrial safety measures; develop measures for the care and conservation of cleared areas; resolve the sustainability and effectiveness of drainage works through: solid waste management and EMAAP-Q responsibility for maintenance, even without specific sources of funding in the rates; use more advanced technical environmental specifications; and reform and strengthen EMAAP-Q's environmental management.

- 4.27 Given the gaps in local environmental legislation, the PSA will submit to the Metropolitan Environmental Authority (DMMA) for review all the project works and resettlement projects, so that it can determine the requirements for the Environmental Certificate or License as appropriate. The DMMA is the body responsible for issuing all environmental permits in the DMQ. The Operating Regulations require that: (i) Bank disbursements be subject to verification of full compliance with local environmental obligations; (ii) Phase II continue beyond the midterm evaluation only if all projects have the required local environmental authorization, bearing in mind the needs for consultation and publicity, in accordance with Bank policies and procedures; (iii) no project be executed under PSA II unless such authorization has been formally issued; and (iv) slope improvements begin only after resettlement is completed. The regulations include targets and goals for environmental management.
- 4.28 The major environmental and social impacts expected are similar to those from Phase I. In terms of positive impacts, the slope management component will produce benefits for more than 116,000 people, including 47 families who will be resettled, and a further 500 families who will see their at-risk status resolved, in addition to the control of flooding and landslides and the protection of infrastructure, erosion control in green areas, rationalized rural land-use and reforestation, creation of public spaces including parks, preparation of partial land-use plans, elimination of trash dumping in ravines, involving people in the management of green spaces, improving solid waste management with community participation, and strengthening slope management through the creation of a Slope Management Board (*Instancia de Manejo de Laderas*).
- 4.29 With respect to water and sewer systems, the program is expected to reduce losses and increase the rational use of water, producing water savings of at least 5% during the program, providing water in sufficient quantity and of sufficient quality for approximately 124,000 people, and benefiting another 63,700 with expanded sewerage cover, greater collector capacity, and the creation of 710 new jobs during project execution. The negative impacts of the works relating to water, sewers and slope stabilization will be felt before and during construction. They are temporary and reversible, without synergies, all are specific or localized and in general can be mitigated by good engineering practices based on the new Environmental Technical Specifications and through a social coaching program. The updating of the Integrated Water and Sewer Master Plan will define the location and construction specifications of the sewage treatment plants, and the timetable for execution to the year 2012. While the works budgets include measures to mitigate negative impacts, the operation also earmarks US\$2.71 million for this purpose, and to take advantage of the positive impacts, which are described in the ESMR.

F. Risks

- 4.30 **Financial risks:** (a) Delay or elimination of subsidies from the ICE, transferred to the company through the MEF. These revenues have been slow to be transferred,

and there is an initiative within the MEF and the Ministry of Urban Development and Housing (MIDUVI) to reallocate the funds from the subsidy, and this could affect the company's financial position over the longer term. The financial impact of eliminating 50% of the subsidy starting in 2008 was modeled, and was found to produce a 15% cut in operating revenues. To restore the necessary levels of financial strength, the company would have to postpone its storm sewer investment plan for two years, and start charging for storm sewer services an amount equivalent to 12% of operating revenues. (b) financial mismatch between the company's obligations and its sources of operating revenue, for which the company set up a reserve fund to provide such funding as is necessary each month to meet its financial obligations with the Bank. Also, it was agreed with the company: (i) to include a provision in the regulations on the rate calculation methodology, whereby the effects of inflation and of exchange rate should be transferred to users, and (ii) to sign an income trust agreement with the Central Bank of Ecuador and a debt repayment agreement with the MEF guaranteeing payment of principal, interest, and fees. The income trust agreement and signature of the debt repayment agreement are a contractual condition precedent to the first disbursement.

- 4.31 **Institutional risks.** There is a risk of political interference, with a subsequent deterioration in service delivery. To mitigate this risk, the program provides for strengthening the regulatory system agreed in Phase I, by means of a performance contract between EMAAP-Q and the municipal government, with indicators, and the possible creation of a regulatory body within the MDMQ.
- 4.32 **Slope management activities.** The funds needed to assure sustainability of the green space management and trash collection projects are not currently available. To mitigate this risk, an authority will be established as a policy-setting body to manage the slopes. It will include representatives of the community and of the institutions involved, and will be responsible for managing the slopes and for designing and implementing a cost recovery mechanism.

METROPOLITAN QUITO ENVIRONMENTAL SANITATION PROGRAM (PHASE II)

LOGICAL FRAMEWORK

GOAL	i) Assure the financial sustainability of water and sewer services over the long term in DMQ; ii) Achieve capital and operating efficiency in the systems run by EMAAP-Q; iii) Provide the people in the DMQ with universal access to water, sanitation, and flood control services, so that they no longer have to rely on poor-quality water and improper sewage disposal, thereby reducing the risk of waterborne diseases.			
PURPOSE	EMAAP-Q delivers water, sewer and flood control services efficiently and sustainably over the long term.			
SUBPROGRAMS	PURPOSE 1	PURPOSE 2	PURPOSE 3	PURPOSE 4
1. Integrated slope management 2. Water works 3. Sewer works 4. Institutional strengthening	The slopes are well managed (clean, with green spaces and with no settlements in high-risk areas), with the support of local people, and they have an institutional structure and cost recovery mechanism.	EMAAP-Q satisfies economic and social demand for water in the DMQ efficiently.	Reduce the dumping of sewage in public streets and green spaces, reduce seepage and infiltration from latrines in project area.	EMAAP-Q provides water and sewer services at costs comparable to those of efficient utilities elsewhere.
COMPONENTS				
	1. Legal instrument prepared for institutionalizing integrated slope management.	1. First module of the El Troje water treatment plant reaches design capacity.	1. Combined sewer systems expanded for the parishes of Conocoto and Alangasí.	1. Plan implemented for reducing administrative, financial and operating costs.
	2. Integrated slope management plan developed.	2. Chilibulo potable water system expanded.	2. Combined sewer system of the Zona Norte of Calderón parish expanded.	2. Plan prepared for improving EMAAP-Q management.
	3. A system for providing information on the slopes of Quito is in place	3. Pichincha potable water system expanded and improved.	3. Combined sewer system of the Zona Sur of Calderón parish expanded.	3. Operations and maintenance outsourcing plan implemented.
	4. Stakeholders trained in slopes management	4. Atacazo-Lloa potable water system expanded and improved.	4. Study on the sources of pollution in the rivers of Quito completed.	4. System of technical and financial planning by objectives implemented.
	5. Slope demonstration projects executed.	5. Studies and works implemented for reducing unaccounted for water.		5. Study on Regulatory Body and legislation on the establishment of such a body drafted.
	6. Study on trash collection services payment system.	6. New rate structure proposed.		6. Institutional strengthening studies prepared.
		7. Pilot project implemented for ISO 14000 certification of environmental quality in the La Mica system.		
		8. Studies on planning support.		

Year y: project completion date

Year x: project eligibility date

FLOOD CONTROL AND SLOPE MANAGEMENT

Narrative summary	Indicator	Means of verification	Assumptions
GOAL Reduced damage to public and private infrastructure from flooding and mudslides in project areas.	1. Likelihood of damage from torrential rains (flooding, mudslides, landslides, ravine wall collapse) reduced from 1.00 to 0.04 occurrences a year in the Jerusalén, Navarro La Raya, Sunipamba Saguanchi, and Cuscungo Clemencia basins, starting in December 2012.	1. Data reported by the Hydrometeorological Monitoring System and the EMAAP-Q disaster registry.	
PURPOSE Slopes are well managed (clean, with green spaces and no one living in areas at risk) with the support of the community and have the institutional structure and a cost recovery mechanism.	1.1 Slope Management Agency (OML) established and operating within two years after project eligibility, representing local and national public stakeholders, NGOs, private interests and community organizations having jurisdiction and an executive arm.	1.1 Ordinance of the Concejo Metropolitano de Quito.	
	1.2 OML is allocated funds for managing green spaces on the slopes financed by the project, and funds are used for operations and maintenance of the slopes. (years y, and y + 2).	1.2 OML revenue accounts.	
	1.3 No change in occupancy of slopes in project areas. High-risk areas are no longer occupied one year after project completion.	1.3 Visual inspection.	
	1.4 Solid wastes are collected from the slopes and delivered to EMASEO. Year Quantity (Tons/day) 2006 0 y + 2 50	1.4 EMASEO records.	
	1.3 Integrated Management Plan approved and in execution by the end of project execution (Year y, y + 2).	1.2 Ordinance of the Concejo Metropolitano de Quito.	The responsible agency is enforcing the management plan.
	1.4 The slopes management charge is collected and used for operations and maintenance on the slopes. (Years y, and + 2).	1.3 OML revenue accounts.	The rates charged cover the costs of the management plans. The funds collected are credited to the account of the Management Agency
OUTPUTS			
1. Legal instrument prepared for institutionalizing integrated slope management	1. Legal instrument with operational and institutional provisions designed and delivered to the Concejo Metropolitano, by June 2008.	1. Acceptance of the study.	Concejo Municipal de Quito approves creation and funding of a slopes management agency by December 2008.
2. Integrated slope management plan developed	2.1 Environmental, social, economic and institutional analysis delivered by the second half of 2007.	2.1 Acceptance of the study.	
	2.2 Land-use Plan and Regulations delivered by the first half of 2008.	2.2 Acceptance of the study.	
	2.3 System of charges and source of financing delivered by the first half of 2008.	2.3 Acceptance of the study.	People are prepared to pay the slopes management charge.

Narrative summary	Indicator	Means of verification	Assumptions
	2.4 Integrated Management Plan for the Pichincha-Atacazo slopes (natural and urban areas) that includes the system of charges and source of financing, land-use management, and regulations, prepared through a participatory process by December 2008.	2.4 Acceptance of the study.	Concejo Metropolitano de Quito approves the integrated slopes management plan. Management plan and records reflect stakeholder agreements.
3. Slope information plan implemented.	3.1 Proposed information system prepared by December 2008, with mechanisms and information contents for the different target groups (including women and indigenous people) and a budget and implementation timetable	3.1 Acceptance of the study.	
	3.2 Information website designed and implemented by December 2012.	3.2 Access to the website.	
4. Stakeholders are trained in slopes management	4.1 16 technicians from 4 Administraciones Zonales trained in controlling slope use and occupancy by December 2008.	4.1 Training certificates.	Municipal employees complete the training cycle.
	4.2 1500 families from the demonstration project zones are invited for a training program in solid waste management and rational land use of the slopes by December 2007.	4.2 Invitations issued.	1200 families from the demonstration project zones attend the first 3 training workshops in solid waste management and rational land use of the slopes by the first half of 2008.
5. Water regulation projects for the slopes executed	5.1 Quebrada Jerusalén with 10 km of collectors, 1.4 km of marginal collectors, 1.4 km of drains, 1 dike of 31m rehabilitated and 1 dike of 31m built for water control. 82m of pipe barriers, 380m of walls, 0.5 ha of rubble stabilized and 0.78m for protection of slopes and risk mitigation. 10 ha of creek bed and banks restored with reforestation, protection, roads and basic urban facilities in the bottom of the ravine, completed by December 2009.	5.1 Acceptance of the works and interventions.	Community and stakeholders respond to the management model and the program implementation strategy
	5.2 Quebradas between Navarro – La Raya: 8.3 km of collectors, 2.3 km of interceptors, 9 laminated dikes and 3 mud dikes; 220 m of walls and 1088 m of low protective drains built; 90,000 m3 of fill; 4 ha of urban ravine lands restored through co-management and with basic equipment; 120 ha of urban ravine lands replanted and protected. Completed by the first half of 2011.	5.2 Acceptance of the works and interventions.	
	5.3 Quebradas between Sunipamba - Suguanchi: 6 km of collectors, 6 km of interceptors, 4 laminated dikes and 4 mud dikes; 2 ha of rubble stabilized; 200 m of walls and 3000 m of protective drains built; 4 ha of urban ravine lands restored through co-management and with basic equipment; 130 ha of urban ravine lands replanted and protected. Completed by June 2012.	5.3 Acceptance of the works and interventions.	
	5.4 Quebradas between Cuscungo - Clemencia: 5 km of collectors, 1 km of interceptors; 3 ha of rubble stabilized; 200 m of steps and 1,000 m of protective drains built; 2 ha of urban ravine lands restored through co-management and with basic equipment; 10 ha of urban ravine lands replanted and protected. Completed by June 2012.	5.4 Acceptance of the works and interventions.	

Narrative summary	Indicator	Means of verification	Assumptions
	5.5 Four protection and conservation projects in the natural area: 1. Definition of physical boundaries of the natural area, 2. Control over land-use and management, expanding and strengthening the Comisaría de Laderas; 3. Reforestation and protection of 100 ha in State and municipal ownership; 4. Environmental education and training for owners and the community in proper land - use in the communities of Tarma, San Francisco, Chilibulo and Rosa de los Andes, by June 2012.		
6. Resettlement and risk management plan implemented in the project ravines	6.1 47 families resettled and 400 families with on-site mitigating measures by the first half of 2010	6.1 On-site inspection.	
7. Study delivered on systems for charging for trash collection services.	7. A study analyzing ways of financing a sustainable trash collection service on the slopes recommends a viable alternative by December 2007.	7. Acceptance of the study.	The municipality implements the proposed trash collection system and charges for the slopes starting in January 2010.
ACTIVITIES See Physical Execution Schedule)	BUDGET (US\$000s) 1. 190 2. 525 3. 430 4. 835 5. 36,846 6. 2,645 7. 450 Total 41,921		Counterpart contribution available as programmed. Lands in the works area are cleaned up and have legal title.

POTABLE WATER SUBPROGRAM

Narrative summary	Indicator	Means of verification	Assumptions
GOAL EMAAP-Q delivers water, sewer and flood control services in a manner that is efficient and sustainable over the long run.	1. Net internally-generated funds/capital investments in the expansion plan increases and is maintained at more than 20% as of 2011: Year Net Int. Gen/Cap. Inv. 2006 6 % x + 3 17% y 19% y + 2 19%		
	2. Population with potable water service of acceptable quality (pressure > 10 m). Year Connections (5.6 persons/con.) 2006 351,557 y 394,000 y + 2 407,000		
PURPOSE EMAAP-Q meets the economic and social demand for water in the Distrito Metropolitano de Quito (DMQ) with efficiency.	1.1 Volume of household water use in DMQ increases by at least: Year m3/year (000) 2006 y 13,300 y + 2 13,300		
	1.2 Unmetered water index in DMQ does not exceed: Year % 2006 39 x + 3 36 y 34 y + 2 34	1.2 Unmetered Water Program records.	
	1.3 Unmetered water index in 13 suburban parishes of DMQ does not exceed: Year % 2006 47.4 x + 3 40.0 y 37.4 y + 2 37.4	1.3 Unmetered Water Program records.	
	1.4 Average water consumption in the city of Quito in the wake of rate increases and water savings awareness campaign does not exceed: Year m³ per year/connect 2006 36.5 y 34.1 y + 2 34.1	1.4 Consumption records from the Business Management Office.	
	1.5 Subsidies targeted at poor people and rate schedules calculated on the basis of LTMC by 6 months after loan eligibility.	1.5 New rates schedule posted on the EMAAP-Q website, and billing records under the new system.	
OUTPUTS			
1. First module of the El Troje water treatment plant reaches design capacity.	1. Four hydraulic flocculators replaced by mechanical ones, change of filter bed (6 filters) and civil works for 4 sediment separators to increase the treatment plant capacity from 650 l/s to 850 l/s by December 2009.	1. Delivery and acceptance and operating records.	

Narrative summary	Indicator	Means of verification	Assumptions
2. Potable water system of Chilibulo expanded.	2. Expansion of: intake and quick mix structure, 4 flocculating units, 4 sediment units and change of filter bed (6 filters) to increase the treatment plant capacity from 60 l/s a 90 l/s by December 2009.	2. Delivery and acceptance plant operating records.	
3. Potable water system of Pichincha expanded and improved.	3. Installation of 4.5 km of PVC piping between 250 and 350 mm, construction of a de-sander, construction of 5 pressure break tanks, construction of 2 reserve tanks with total capacity of 1,100 m3 (one of 600 m3 and one of 500 m3) to ensure 100% quality and volume of raw water fed into the Toctiucio plant by first quarter of 2009.	3. Delivery and acceptance plant operating records.	
4. Potable water system of Atacazo-Lloa expanded and improved.	4. Construction of 11 intakes, installation of 12 km of PVC piping between 200 and 400 mm and construction of 3 reserve tanks of 2,000 m3 to increase the flow of raw water supply from 240 l/s to 440 l/s by first half of 2011.	4. Delivery and acceptance plant operating records.	
5. Studies and works implemented for reducing unmetered water.	5.1 Hydraulic modeling study of the water systems concluded by December 2007.	5.1 Delivery and acceptance.	
	5.2 Hydraulic sectorization with change of piping, installation of new valves, control systems in the reserve tanks in 100% of the main water systems of Calderón, San Antonio, Pomasqui, Conocoto, Calacalí, Llano Chico, Zámiza, Nayón, Amaguaña, Alangasí, Guangopolo, La Merced and Pintag parishes by second half of 2011.	5.2 Delivery and acceptance.	
	5.3 Studies for the unmetered water control programs in suburban parishes completed by first half of 2008.	5.3 Delivery and acceptance.	
	5.4 60 macrometers installed by December 2009.	5.4 Delivery and acceptance.	
	5.5 50,000 residential meters installed or replaced according to the following schedule: Year Meters 2008 10,000 2009 20,000 2010 20,000	5.5 Delivery and acceptance.	EMAAP-Q can quickly detect residential meter tampering or malfunctioning
6. The new rates structure proposed.	6. Study proposing a rates structure based on long-term marginal costs and targeting subsidies at low income families with low consumption, and a billing system that makes the subsidy transparent delivered during the second half of 2007.	6. Acknowledgment of delivery and draft resolution.	Resolutions on rates adopted by the EMAAP-Q manager by first half of 2008. Approval is given to reallocation of the telephone tax to subsidies for low-income families with low consumption.

Narrative summary	Indicator	Means of verification	Assumptions
7. Studies completed in support of planning.	7.1 Water and sewer master plan provides projections of demand, updates information on the exploitation capacity of current and future water sources, analyzes water use conflicts, presents alternatives for water supply and an expansion plan for water, and sewer and drainage services, and a sewage treatment plan for the short, medium and long term, delivered in December.	7.1 Delivery and acceptance.	The Municipio de Quito enforces the land-use plan in support of medium and long-term planning
	7.2 Participatory partial land-use plans including (a) land use and occupancy plan, (b) arterial roads network, c) identification of priority programs and projects for Cumbayá, Tumbaco, Parroquias Orientales (Puembo, Pifo, Tababela, Checa, Yaruquí, El Quinche and Guayllabamba), Los Chillos (Amaguaña, Conocoto, Guangopolo, Alangasí and La Merced) prepared by end of 2006 and those for San Antonio, Pomasqui and Calacalí by first quarter of 2008.	7.2 Delivery and acceptance.	The Municipio de Quito assigns adequate personnel and budget as of first-quarter 2009 to carry out the projects and enforce the partial plans.
	7.3 Pilot plan for land use control in Parroquia de Calderón formulated by December 2008.	7.3 Delivery and acceptance.	The Municipio de Quito assigns adequate personnel and budget as of first-half 2009 to carry out the pilot control system.
	7.4 Management Plan for Cerro Ilaló and the Paluguillo sector, including land-use planning, socioeconomic aspects, environmental plan, investment programs and plan, identifying the main projects, prepared by first quarter of 2008.	7.4 Delivery and acceptance.	The Municipio de Quito assigns adequate personnel and budget as of first-quarter 2009 to carry out the projects and enforce the plans.
	7.5 Training plan for municipal technical staff involved in enforcement of land-use provisions in the project area, implemented by the end of 2008.	7.5 Delivery and acceptance.	The Municipio de Quito assigns technical staff and organizes training by first half of 2009.
8. Potable water system design standards formulated and in effect	8.1 Study containing analysis and identification of needs, proposed thesaurus, standards, advice on approval and recommendations for application, by second quarter of 2007.	8.1 Delivery and acceptance of the study.	
	8.2 Standards come into effect by fourth quarter of 2007.	8.2 Decision of General Manager's Office.	
ACTIVITIES	BUDGET (US\$000s)		
1. Output 1	1. 900		Lands in the works area are cleaned up and have legal title.
2. Output 2	2. 740		The weather allows the works to be executed.
3. Output 3	3. 1,300		Budget flows are as programmed.
4. Output 4	4. 4,870		
5. Output 5	5. 6,920		
6. Output 6	6. 675		
7. Output 7	7. 2,195		
8. Output 8	8. 245		
	Total 17,845		

SEWERS SUBPROGRAM

Narrative summary	Indicator	Means of verification	Assumptions
GOAL			
EMAAP-Q delivers water, sewer and flood control services efficiently and sustainably over the long run.	1. Net internally-generated funds/capital investments in the expansion plan increases and is maintained at more than 20% commencing in 2011: Year Net Int. Gen/Cap. Inv. Cap. x + 3 17% y 19% y + 2 19%		
PURPOSE			
EMAAP-Q meets unmet social demand for sewer connections in the Distrito Metropolitano de Quito (DMQ) efficiently.	1.1 4.300 new residential connections operating without blockage by June 2010	EMAAP-Q customer registry.	
OUTPUTS			
1. Combined sewer systems for Parroquias of Conocoto and Alangasí expanded.	1.1 Construction of 6.4 Km of sewer trunks and 250 residential connections in the Ontaneda sector completed by the first half of 2009.	1.1 Delivery and acceptance connection records.	
	1.2 Construction of 2 Km of sewer trunks and 60 residential connections in the Las Peñas and Hospitalaria sectors completed by September 2007.	1.2 Delivery and acceptance connection records.	
	1.3 Construction of 28 Km of sewer trunks and 1200 residential connections in the San Gabriel and Mirasierra sectors completed by the first quarter of 2009.	1.3 Delivery and acceptance connection records.	
2. Combined sewer system of the Zona Norte of Calderón expanded.	2. Construction of 25 Km of sewer trunks and 1,200 residential connections by June 2010.	2. Delivery and acceptance connection records.	
3. Combined sewer system of the Zona Sur of Calderón expanded.	3. Construction of 35 Km of sewer trunks and 1,600 residential connections by June 2010.	3. Delivery and acceptance connection records.	
4. Repair and expansion of the Anglo-French collector completed.	4.1 Study of improvements to the Anglo-French collector delivered by Dec. 2006.	4.1 Delivery and acceptance of the study.	
	4.2 Construction of 4.5 km of new collector and repair of 4 km of existing collector completed by June 2012.	4.2 Delivery and acceptance of works.	
5. Study of river pollution sources in the Quito area	5. Cleanup study for the rivers of Quito (Machángara, San Pedro, Monjas and Guayllabamba) and characterization of effluents from the most polluting industries, completed by the end of the fourth quarter of 2008.	5. Delivery and acceptance.	
6. Design standards for sewer systems prepared and in effect.	6.1 Study containing wording of standards, advice on approval and recommendations for application, by fourth quarter of 2007.	6.1 Delivery and acceptance of the study.	
	6.2 Standards come into effect by June 2008.	6.2 Decision of the General Manager’s Office.	

Narrative summary	Indicator	Means of verification	Assumptions
ACTIVITIES	BUDGET (US\$000s)		
1. Output 1	1. 4,991		Lands in the works area are cleaned up and have legal title. Budget flows are as programmed.
2. Output 2	2. 4,500		
3. Output 3	3. 7,500		
4. Output 4	4. 13,247		
5. Output 5	5. 2,735		
6. Output 6	6. 100		
	Total 33,073		

INSTITUTIONAL STRENGTHENING SUBPROGRAM

Narrative summary	Indicator	Means of verification	Assumptions
GOAL			
EMAAP-Q delivers water, sewer and flood control services in a manner that is efficient and sustainable over the long run.	1. Net internally-generated funds/capital investments in the expansion plan increases and is maintained at more than 20% as of 2011: Year Net Int. Gen/Inv. Cap. x + 3 17% y 19% y + 2 19%		
PURPOSE			
EMAAP-Q provides cost-efficient water and sewer services (2002 costs adjusted for inflation equal to US\$147/connection).	1. Cost of billed water reduced Year US\$/m³ 2006 0.51 x + 3 0.46 y 0.45 y + 2 0.45	1. EMAAP-Q accounting system	
	2. Cost of commercial management per connection Year Costs/connection (US\$) 2005 29.4 x 27.9 y 27.0 y + 2 27.0	1. EMAAP-Q accounting system.	
	3. Operating margin of at least: Year Percentage 2006 23% x + 3 30% y 30% y + 2 30%	2. EMAAP-Q accounting system.	
	4. Number of direct employees per 1,000 connections declines: Year Empl/1,000 conn 2006 5.2 x + 3 5.0 y 4.5 y + 2 4.5	4. EMAAP-Q payroll data.	
	5. Collection efficiency may not be lower than: Year Percentage 2006 83% x + 3 90% y 95% y + 2 95%		
	6. Meter reading and invoicing ratios may not be lower than: Year Percentage 2006 94% x + 3 97% y 97% y + 2 97%		
	7. Households (as a % of connections) with meters less than 10 years old may not be less than: Year Percentage 2006 85% x + 3 95% y 96% v + 2 96%		

Narrative summary	Indicator	Means of verification	Assumptions
	4. New organizational structure that meets the strategic and operational objectives of the upgraded EMAAP-Q implemented within two years after contract eligibility.	4. Operational audit.	
	8. The municipal water and sewer regulatory body begins operations with qualified staff and equipment within 30 months after contract eligibility.	8. Physical inspection by COF/CEC.	
	9. Annual management audits are performed with recommendations that are implemented within six months' time.	9. Audit reports and EMAAP-Q minutes.	
	10. Operations and maintenance outsourced for three systems: Year Calderón 2007 Tesalia 2008 La Mica-Quito Sur 2008	10. The signed outsourcing contracts.	
	11. Annual strategic planning completed	11. Annual strategic planning reports.	
OUTPUTS			
1. Plan implemented for reducing administrative, financial and operating costs.	1.1 Study for upgrading the operations and maintenance department so as to identify overlapping duties, rationalize vehicle use, and integrate teams, assess the potential for outsourcing, improve the budget control system and supervision, and prepare staff manuals and procedures, delivered by third quarter of 2008.	1.1 Acceptance of the study	
2. EMAAP-Q management improvement plan prepared	2.1 Organizational structure study, with recommendations for improving information flow for decision-making, eliminating duplication of functions, and decentralizing decision-making for established functions, and implementation plan, delivered by first quarter of 2008.	2.3 Acceptance of the study.	New organizational structure approved by the EMAAP-Q Board by October 2008.
3. operations and maintenance service plan implemented.	3.1.a Pre-contract documents prepared for operations and maintenance in Calderón water system by March 2007. 3.1.b operations and maintenance contract for the Calderón water system signed by Dec. 2007.	3.1.a Copy of documents. 3.1.b Copy of the signed contract.	There is political will to deal with union protests
	3.2.a Pre-contract documents prepared for operations and maintenance in Mica-Quito Sur water system by June 2007. 3.2.b operations and maintenance contract for Mica-Quito Sur water system signed by March 2008.	3.2.a Copy of documents. 3.2.b Copy of the signed contract.	There is political will to deal with union protests
	3.3.a Pre-contract documents prepared for operations and maintenance in Tesalia water system by March 2008. 3.3.b operations and maintenance contract for Tesalia water system signed by Oct. 2008.	3.3.a Copy of documents. 3.3.b Copy of the signed contract.	There is political will to deal with union protests

Narrative summary	Indicator	Means of verification	Assumptions
4. System implemented for technical and financial planning by objectives.	4.1 Short, medium and long-term planning system that allows allocation of resources and monitoring of results by objectives, targets and activities that includes: software procurement, preparation of procedures, manuals and guides, and training for planning and finance personnel in the system of evaluation indicators, the system of activities-based costs, and prioritization of activities and projects, financial reporting and controls, delivered by June 2007.	4.1 Acceptance of the study.	
	4.3 Strategic Plan 2007-2010 prepared in accordance with the new system by staff trained and advised by the consultant who developed the system, by March 2007.	4.3 Copy of the strategic plan containing indicators of targets, prioritization of investments and activities according to the system, and the monitoring system.	
5. Study and draft ordinance prepared for creating the Regulatory Body.	5. Study for creation of a regulatory body for water services in DMQ, including: analysis of service delivery costs, rate setting and monitoring the quality of customer service, including physical and bacteriological quality as measured at the faucet, completed and delivered to the Concejo Metropolitano for consideration by March 2008.	5. Delivery of the study, with the proposed ordinance.	Concejo Metropolitano de Quito approves creation of the Regulatory Body by the second half of 2008. Concejo Municipal assigns adequate budget and personnel to the Regulatory Body by the first half of 2009.
6. Strategic information technology plan formulated.	6.1 Study of information systems completed, with recommendations for improving processes, security, hardware and software, by June 2007.	6.1 Delivery and acceptance of the study.	
	6.2 Implementation of the strategic plan begins in the first half of 2008.	6.2 Decision by the General Manager approving the plan.	The authorities approve the plan by December 2007
7. Comprehensive environmental management plan formulated for EMAAP-Q	7.1 Environmental management guidelines that meet the requirements of ISO 14000 certification : [guidelines for (a) environmental impact studies, (b) environmental design of works and interventions, (c) environmental control during works and interventions and (d) environmental control of operations and maintenance] delivered by September 2008.	7.2 Copy of the guidelines.	The authorities approve the system by the first half of 2009.
ACTIVITIES 1. Output 1 2. Output 2 3. Output 3 4. Output 4 5. Output 5 6. Output 6 7. Output 7	BUDGET (US\$000s) 1. 910 2. 60 3. 150 4. 500 5. 145 6. 1,540 7. 240 Total 3,545		

ECUADOR
METROPOLITAN QUITO ENVIRONMENTAL SANITATION PROGRAM, PHASE II
EC-L1022

PROCUREMENT PLAN

Borrower: Empresa Municipal de Alcantarillado y Agua Potable de Quito EMAAP-Q	Program: EC-L1022
Executing Agency: EMAAP-Q	Date Publication General Procurement Notice: November 2006
Date of Approval of Procurement Plan: October 2006, estimated	Period covered by plan: 18 months in detail, remainder tentative.
Estimated date of project approval by the Board of Executive Directors: October 2006	Estimated date of Loan Contract signature: January 2007
Estimated date of last disbursement: January 2013	

1. Introduction

- 1.1 Procurement under the program will comply with the Policies for the Procurement of Goods and Works Financed by the IDB (document GN-2349-7) and Policies for Selection and Contracting of Consultants Financed by the IDB (document GN-2350-7), approved on 19 January 2005, as well as the terms and conditions stipulated in the loan contract between the Bank and the borrower.
- 1.2 This document establishes the various methods for the procurement of works, goods and consulting services, the estimated costs, the required prior reviews, and the agreements reached with the executing agency on procurement, presented in Appendix 1. The initial procurement plan covers the first 18 months of project execution, and will be updated at least once a year, or sooner if necessary, to reflect project implementation needs and improvements in institutional capacity.
- 1.3 The detailed procurement plan is available at the Empresa Municipal de Alcantarillado y Agua Potable de Quito EMAAP-Q (Avenida Mariana de Jesús N32-132 y Carvajal, Quito-Ecuador, Quito, Ecuador; Tel. 593-XXXX. The procurement plan is also available on the website of the executing agency (<http://www.emaapq.com.ec/>) and on the Bank's website (www.iadb.org)

2. Brief description of project objectives and components

- 2.1 **Component 1: Potable Water Works** (US\$16.2 million). This includes upgrading the water production systems of El Troje, Chilibulo, Pichincha and Atacazo-Lloa, programs for reducing unmetered water), and studies to update the water and sewer master plan, hydraulic modeling, and revision and updating of design standards.
- 2.2 **Component 2: Sewer Works** (US\$14.7 million). This includes the expansion of the combined sewer systems for the parishes of Amaguaña-Conocoto (Ontaneda, Las Peñas and 8 subsystems of San Gabriel-Mirasierra) and a portion of Calderón Norte (sectors 1 and 3) and Calderón Sur (interceptor line A, sections 1 and 2, interceptor line B, sections 1 and 2, collectors 1, 2 and 3), and studies to define and apply design standards for sewer works.
- 2.3 **Component 3: Flood Control Works** (US\$39.7 million). This covers improvement and expansion of the Anglo French collector lines, and upgrades to the storm sewer system in the Jerusalén, Navarro-La Raya, Sunipamba-Saguanchi and Cuscungo-Clemencia gullies.
- 2.4 **Component 4: Slope Management** (US\$12.06 million) has four subcomponents: **Slope Management** (US\$1.66 million) includes creating the institutional, legal and financial structure for comprehensive slope management, and studies for an integrated management plan, an information system, a dissemination plan, and solid waste management in project areas; **Slope Stabilization** (US\$6.95 million) includes studies and works for environmental conditioning of hillsides in urban and natural green spaces in the Jerusalén, Navarro-La Raya and Sunipamba-Saguanchi gullies, as well as priority works in natural areas of the Pichincha-Atacazo area; **Community Development and Training** (US\$750,000) includes a program for community development, environmental education and training for local residents; **Risk Management and Family Resettlement** (US\$2.7 million) provides risk management for 500 families and relocation of about 47 families.
- 2.5 **Component 5: Institutional Strengthening** (US\$3.8 million). This component covers reengineering of the Operations and Maintenance Department, including contracts for integrated operations and maintenance management in three zones; studies to upgrade planning, organizational structure and costs, modernize computer systems, define the municipal regulatory system for services, and strengthen land-use management in the DMQ. This component includes three subcomponents: (i) institutional strengthening of EMAAP-Q; (ii) outsourcing of operations and maintenance activities; and (iii) institutional strengthening of the municipal government.

3. Procurement for the project

- 3.1 **Contracting of Works.** The civil works contracts are associated with subcomponents 1, 2, 3 and 4 (potable water, sewer, flood control works) and include rehabilitation and expansion of water treatment plants, storage, water conveyance and distribution; sewer networks, collectors and interceptors; and collectors, channel protection, and slope management. Procurement will be by ICB and NCB, using standard program documents agreed with the Bank.
- 3.2 **Procurement of goods.** The goods to be purchased for the project relate to the unmetered water subcomponent of component 2, and include metering equipment, master meters, valves and equipment for detecting and controlling unmetered water, computer software and hardware for the "information technology upgrade" subproject, and vehicles. Procurement will be by ICB and NCB, using standard program documents agreed with the Bank.
- 3.3 **Selection of consultants.** Consultants will be required for the study and design activities of components 1, 2, 3, 4 and 5. For the selection of consulting firms, EMAAP-Q has asked that the possibility be left open for using all selection methods, with the specific method to be determined in each case at the time the procurement plan is negotiated. Individual consultants will be selected in light of their qualifications for the required work, based on profiles previously agreed with the Bank in the Operating Regulations.
- 3.4 **Procurement of services other than consulting services.** Outsourcing (private-sector involvement) of operations and maintenance services for the water systems in three parishes (Calderón, and the areas covered by the La Mica-Quito and Tesalia projects). In those projects, the PSA Phase II commitment is to handle the pre-contracting process up to signature of the respective contracts.
- 3.5 **Others.** Under the program for family relocation from high-risk zones or construction sites, tenders will be called for the construction of 47 single-family dwellings. The bidders selected by EMAAP-Q will participate in an event called "Choose Your Home", where the selected housing proposals will be exhibited, and the families to be relocated under the PSA will be able to choose from among them. The benchmark cost for each single-family dwelling must not exceed US\$18,000, and will be covered by the PSA, as compensation for the expropriation of dwellings and lands to be used by the PSA. This procedure has been approved by the Bank and was used successfully in PSA Phase I.
- 3.6 Procurement of lands and rights-of-way for the project. According to the action plan for the second phase, the lands needed for the project will be expropriated in the following manner: (i) identify the owners or occupants of the lands, including tenants, with full legal documentation demonstrating ownership or possession; (ii) once the properties have been appraised, sign agreements for takeover and payment with the owners or occupants; (iii) request the DMQ to issue the

- expropriation order; (iv) if the owners or occupants agree, proceed with payment of the assessed value; and (v) if they do not agree, proceed with court-ordered expropriation.
- 3.7 The procedure for securing the necessary rights-of-way is: (i) establish the status of the land (ownership, possession, lease); (ii) determine the respective value; (iii) sign the act of intervention and conformity with the right-of-way; (iv) make payment, if the owner or occupant agrees; and (v) if there is no agreement, request the competent authority (National Water Resources Council) to declare the right-of-way.
- 3.8 As agreed with the Bank in the preparation of Phase I of the program, the works will be supervised by the PSA, through the contracting of qualified personnel.

4. Capacity of the executing agency to implement the project

- 4.1 EMAAP-Q will execute Phase II through the Executing Unit for the Environmental Sanitation Program (PSA). The PSA reports to the General Manager of the Company, and will be responsible to the Bank for administration of the loan funds, for planning, programming, administration, control and supervision of works, engineering studies, procurement of goods and services, and all activities necessary for proper implementation and monitoring of the project, and for coordination with other divisions and departments of the Company, and with other institutions related to the project. The PEU has an executive director, three operational departments (Studies, Institutional Strengthening, Inspection and Slope Management) and two support departments (one for administrative, financial and program control services, and the other for legal services), and also has advisers for procurement and for river cleanup in Quito.
- 4.2 The PSA has experience in working under Bank procurement rules and procedures, as it was responsible for execution of Phase I of this program. It has developed cooperative relations with other departments of the Company, and has come to be seen as an integral part of the organizational structure, particularly since it took over financial, administrative and procurement responsibilities. Nevertheless, its activities need to be integrated more closely, particularly in areas of planning, contracting and works execution. The new organizational structure will examine the feasibility of its integration.
- 4.3 The project team assessed the executing agency's procurement management capacity, using the ICAS methodology, and concluded that the overall risk to the project is low, and relates to EMAAP-Q's structure and installed capacity. The "Public Procurement Act" tends to limit procurement efficiency, particularly in terms of scheduling. In addition, there is room for improvement in the way the Procurement Committee processes acquisitions. It is expected that the new Operating Regulations of program will detail the process for reducing down time. As well, delays were noted during the first phase in the contracting of some of the

works. To correct the situation, the mission asked the Company to explore the possibility of strengthening the Procurement Committee Secretariat through the following measures: (i) hold meetings devoted exclusively to program procurement, and do not include other Company processes in the documents submitted to the Bank (minutes, reports etc.) on PSA processes for the second Phase; (ii) delegate responsibility to the Program Executing Unit for providing secretarial support to the Procurement Committee for projects under Phase II of the PSA; and (iii) International Competitive Bidding for works will be subdivided into no more than two bidding packages. So as not to discourage foreign firms from bidding, it will be possible to include in the bidding documents a clause indicating that if they do not come first in the two bidding packages, and are not interested in just one, their bid bond will not be called.

5. Procurement methods

- 5.1 Table 1 shows the methods to be followed for the procurement of works, goods, and consulting services for the project, depending on the amount.
- 5.2 In the case of **works**, the provisions of Section II of the Bank's Procurement Policies will be followed. When the expected amount of the tender is US\$3 million or more, International Competitive Bidding (ICB) will be used. The procurement of works for less than US\$3 million and more than US\$100,000 will use NCB procedures agreed with the Bank. For contracts of less than US\$100,000, shopping will be used, comparing at least three valid quotations.
- 5.3 The **goods** will be procured in accordance with the provisions of section II of the procurement policies. When the amount of the purchase is US\$250,000 or more, ICB procedures will be followed. Purchases between US\$50,000 and US\$250,000 will use National Public Bidding (NCB), while shopping will be used for purchases less than US\$50,000 (minimum three valid quotations).
- 5.4 For the contracting of **consulting services** of US\$200,000 or more, a short list will be compiled following a request for international expressions of interest; for lesser amounts, international advertising will not be required. ETAPA has asked that quality-based selection be used for inspection, business modernization, and other consulting services. Nevertheless, before the loan contract is negotiated, the selection methods to be used in each case will be defined.

Table No.1 Methods of Procurement for Works, Goods and Consulting Services			
Procurement category	Method of procurement	Threshold value (us\$)	Review procedure
Works	ICB	Contract Value \geq US\$3 million	Ex-ante for all contracts
	NCB	3 million $>$ Contract Value \geq US\$100.000	Ex-post, unless the Bank adopts another procedure in the periodic reviews.
	PC	Contract Value $<$ US\$100.000	Ex-post, unless the Bank adopts another procedure in the periodic reviews.
Goods	ICB	Contracts \geq US\$250 000	Ex-ante for all contracts
	NCB	US\$ 250 000 $>$ Contract Value \geq US\$ 50.000	Ex-post, unless the Bank adopts another procedure in the periodic reviews.
	PC	Contract Value $<$ US\$ 50.000	Ex-post, unless the Bank adopts another procedure in the periodic reviews.
Consulting firms	All	Contract Value \geq US\$ 200 000	Ex-ante for all contracts, with international call for expressions of interest.
	All	US\$ 200 000 $>$ Contract Value	Ex-post, except for small contracts where the Bank so agrees.
Individual consultants	SCI	Contract Value \geq US\$ 50 000	Ex-ante. Ex-post for small contracts (review of TOR; evaluation report; CVs; final draft of Contract).

Meaning of symbols:

Goods & Services: **ICB:** International Competitive Bidding
 NCB: National Competitive Bidding
 PC: Shopping (comparison of proposals/prices)

Consulting Firms **QBS:** Quality-based Selection
 QCBS: Quality- and Cost-based Selection

Individual Consultants **SCI:** Selection of Individual Consultant

5.5 **Advance procurement and retroactive financing:** ETAPA has asked for recognition of expenditures as a charge to the local contribution for certain works that were executed during preparation of this operation, amounting to US\$7.5 million, and for retroactive financing of expenditures made before the loan

is considered by the Bank's Board of Executive Director's, estimated at US\$3 million.

6. Bank review of project procurement

- 6.1 This Procurement Plan will form the basis for supervision of the borrower's procurement. The borrower will update the Procurement Plan on an annual basis or as needed, always covering the next 18-month period of project implementation. Any revisions proposed to the Procurement Plan must be presented to the Bank for prior approval. All procurement in any period must be included in the Procurement Plan approved by the Bank, and will observe the methods and thresholds established therein.
- 6.2 Project procurement will be reviewed ex-post, except for those transactions requiring International Competitive Bidding. The Company's procurement performance will be reviewed every six months during the project, and the review method will be adjusted. Nevertheless, works contracts for less than US\$100,000, goods contracts for less than US\$50,000, consulting services contracts for less than US\$200,000, and individual consultant contracts for less than US\$50,000 will be reviewed ex-post, except in cases where ex-ante review is agreed. As well, contracts to be awarded through International Competitive Bidding for works estimated to cost US\$3 million or more, and for goods estimated to cost US\$250,000 or more, will be reviewed ex-ante, in accordance with paragraphs 2 and 3 of Appendix 1 to the Procurement Policies.
- 6.3 In addition to the Bank's prior review, the Bank will send at least one supervisory mission to the PSA every six months, as shown in Table 1, for an ex-post review of a sample of contracts.

7. Procurement Plan

- 7.1 Following is the Procurement Plan for goods and consulting services for the next 18 months, indicating the required Bank review procedures. Note that bidder prequalification is not required for the goods planned, given their nature, nor is there any provision for a margin of domestic preference.

PROCUREMENT ACTION PLAN (PAA) OF THE PSA - PHASE II

Ref. No.	Description of contract and estimated procurement cost (US\$000s)	Procurement method	Review (ex-ante or ex-post)	IDB Financing	Pre-qualification (Yes/No)	Estimated dates for publication of specific procurement notice	Estimated dates for completion of contract	Status	Comments
	1. Works								
	Component I: Slopes								
1.1	Environmental stabilization of Quebrada Jerusalén.	800.00	NCB	Ex-post	0%	No	Feb-08	Feb-10	Pending
	Value: 800.00								
	Component II: Potable Water								
	Upgrade of first module for the El Troje treatment plant	800.00	NCB	Ex-post	100%	No	Jan-07	May-08	Pending
	Upgrade of the Pichincha water system	1,000.00	NCB	Ex-post	100%	No	Jan-07	Oct-08	Pending
	Expansion of the Chilibulo water treatment plant	600.00	NCB	Ex-post	100%	No	Nov-07	Sep-09	Pending
	Upgrade of the Atacazo-Lloa water system	4,500.00	ICB	Ex-ante	0%	No	Apr-08	Jun-11	Pending
	Component III: Sewers								
	AMAGUAÑA-CONOCOTO								
	Construction of the combined sewer system for the Ontaneda-La Esperanza sector, Conocoto parish	507.39	NCB	Ex-ante	0%	No	Sep-05	Sep-07	Under way
	Construction of the combined sewer system for the Las Peñas sector, Conocoto parish	338.53	NCB	Ex-ante	0%	No	Dec-05	Jun-07	Under way

Ref. No.	Description of contract and estimated procurement cost (US\$000s)		Procurement method	Review (ex-ante or ex-post)	IDB Financing	Pre-qualification (Yes/No)	Estimated dates for publication of specific procurement notice	Estimated dates for completion of contract	Status	Comments
	Construction of the combined sewer system for the San Gabriel-Mirasierra sectors, Zamora Alto, Río Pita, Napo-Pastaza, Putumayo, Zamora-amazonas and Curaray Alto subsystems, Alangasí parish.	1,626.45	NCB	Ex-ante	100%	No	Dec-05	Jul-08	Under way	
	Construction of the combined sewer system for the San Gabriel-Mirasierra sectors, Galaxias-Cisne, Argentina-Círculo Mayor subsystems, Alangasí parish.	2,427.04	NCB	Ex-ante	100%	No	Dec-05	Sep-08	Under way	
	CALDERON									
	Expansion of the combined sewer system for the Calderón Norte sector	4,500.00	ICB	Ex-ante	100%	No	Mar-07	May-10	Pending	
	Expansion of the combined sewer system for the Calderón Sur sector	7,500.00	ICB	Ex-ante	100%	No	Mar-07	May-10	Pending	
	ANGLO-FRENCH									
	Expansion and improvement of the urban watershed for the Anglo-French collector	3,000.00	ICB	Ex-ante	100%	No	Apr-07	May-10	Pending	
	QUEBRADA JERUSALEN									
	Construction of the new Cumandá collector and Maldonado discharge	192.00	NCB	Ex-ante	0%	No	Oct-05	Jan-07	Awarded	

Ref. No.	Description of contract and estimated procurement cost (US\$000s)		Procurement method	Review (ex-ante or ex-post)	IDB Fin-ancing	Pre-qualification (Yes/No)	Estimated dates for publication of specific procure-ment notice	Estimated dates for completion of contract	Status	Comments
	Construction of the new Velasco-Atacazo, Río Verde, Libertad 2 and El Placer collectors in the Quebrada Jerusalén watershed	2,684.56	ICB	Ex-ante	0%	No	Oct-05	Jan-08	Awarded	Works under way
	Construction of the new Pomasqui collector in the Quebrada Jerusalén watershed.	3,249.03	ICB	Ex-ante	100%	No	Dec-05	Mar-09	Under way	
	Construction of minor works in the Quebrada Jerusalén watershed	760.00	NCB	Ex-post	100%	No	Jul-07	Jun-09	Pending	
	NAVARRO - LA RAYA WATERSHED									
	Construction of water regulation works in the Navarro-La Raya watershed	7,000.00	ICB	Ex-ante	100%	No	Jan-07	Mar-10	Pending	
	2. Goods									
	Component III: Sewers									
	Purchase of materials and glassware for Quito Cleanup Plan	50.00	NCB	Ex-ante	0%	No	Jun-06	Oct-06	Under way	
	Purchase of sampling devices for Quito Cleanup Plan	100.00	NCB	Ex-ante	0%	No	Jul-06	Dec-06	Under way	

Ref. No.	Description of contract and estimated procurement cost (US\$000s)		Procurement method	Review (ex-ante or ex-post)	IDB Financing	Pre-qualification (Yes/No)	Estimated dates for publication of specific procurement notice	Estimated dates for completion of contract	Status	Comments
	3. Services other than consulting services									
	Component IV: Institutional Strengthening									
	Outsourcing of operations and maintenance for the Calderón water system	-	NCB	Ex-ante	0%	No	Sep-06	Jun-10	Pending	PSA is responsible for pre-contract process until signature of contract
	Outsourcing of operations and maintenance for the Tesalia water system	-	NCB	Ex-ante	0%	No	Sep-06	Jun-10	Pending	PSA is responsible for pre-contract process until signature of contract
	Outsourcing of operations and maintenance for the La Mica-Quito Sur water system	-	ICB	Ex-ante	0%	No	Jan-07	Dec-10	Pending	PSA is responsible for pre-contract process until signature of contract.
	4. Consulting Services									
	Component I: Slopes									
	Environmental stabilization of the Quebrada Jerusalén.	80.00		Ex-post	0%	No	Oct-06	Nov-07	Pending	
	Environmental stabilization of the Navarro-La Raya watershed	100.00		Ex-post	0%	No	Jan-07	Dec-08	Pending	
	Environmental stabilization of the Sunipamba-Saguanchi watershed	80.00		Ex-post	0%	No	Jan-07	Dec-08	Pending	

Ref. No.	Description of contract and estimated procurement cost (US\$000s)	Procurement method	Review (ex-ante or ex-post)	IDB Financing	Pre-qualification (Yes/No)	Estimated dates for publication of specific procurement notice	Estimated dates for completion of contract	Status	Comments
	Environmental stabilization of the Ell Rancho and Cucho Hacienda ravines	50.00	Ex-post	0%	No	Jan-07	Dec-07	Pending	
	Integrated slopes management	430.00	Ex-ante	0%	No	Oct-06	Oct-08	Pending	
	Managing Body and Legal Instrument	150.00	Ex-post	0%	No	Sep-06	Feb-08	Pending	
	Slopes Information Plan	30.00	Ex-post	0%	No	Oct-06	Feb-08	Pending	
	Slopes Dissemination Plan	30.00	Ex-post	0%	No	Oct-06	Feb-08	Pending	
	Resettlement Plan (Navarro-La Raya, Sunipamba-Sguanchi, Cuscungo-Clemencia)	100.00	Ex-post	0%	No	Jan-07	Oct-08	Pending	
	Component II: Potable Water								
	Upgrade of the Chilibulo treatment plant	31.90	Ex-ante	0%	No	Aug-06	Aug-07	Under way	
	Upgrade of the Atacazo-Lloa water system	130.00	Ex-post	0%	No	Apr-07	Mar-08	Pending	
	Evaluation, modeling and design studies for hydraulic sectorization of the water distribution networks of the parishes of San Antonio de Pichincha, Pomasqui, Calderón, Calacalí, Llano Chico, Zámiza and Nayón	196.57	Ex-ante	0%	No	Sep-06	Apr-08	Pending	

Ref. No.	Description of contract and estimated procurement cost (US\$000s)		Procurement method	Review (ex-ante or ex-post)	IDB Financing	Pre-qualification (Yes/No)	Estimated dates for publication of specific procurement notice	Estimated dates for completion of contract	Status	Comments
	Evaluation, modeling and design studies for hydraulic sectorization of the water distribution networks of the parishes of Conocoto, Amaguaña, Alangasí, Guangopolo, La Merced and Pintag	167.88		Ex-post	0%	No	Sep-06	Apr-08	Pending	
	Potable water standards	150.00		Ex-ante	0%	No	Jan-06	Mar-07	In execution	
	Hydraulic modeling of the potable water systems	400.00		Ex-ante	0%	No	Oct-05	Nov-07	Under way	
	Update of the Integrated Water and Sewer Master Plan	1,350.00		Ex-ante	0%	No	Nov-05	Aug-08	Under way	
	Studies for targeting of the demand subsidy	50.00		Ex-post	0%	No	Jan-07	Dec-07	Pending	
	Design of a Strategic Land Use Plan for the Eastern Parishes of the DMQ	68.60		Ex-ante	0%	No	Jan-06	Jul-06	In execution	
	Design of a Partial Land Use Plan for the Cumbayá and Tumbaco sectors	79.41		Ex-ante	0%	No	Jan-06	Jul-06	In execution	
	Design of a Partial Land Use Plan for the Amaguaña, Conocoto, Guangopolo, Alangasí and La Merced sectors	67.50		Ex-ante	0%	No	Jan-06	Jul-06	In execution	
	Cerro Ilaló Management Plan	63.30		Ex-ante	0%	No	Aug-06	Feb-08	Under way	

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	Paluguillo Sector Management Plan	43.30		Ex-ante	0%	No	Aug-06	Feb-08	Under way	
	Component III: Sewers									
	Improvement and expansion of the Anglo-French collector	205.00	QBS	Ex-ante	0%	No	Apr-04	Oct-06	Awarded	Contract signed XXXX
	Cleanup and Characterization Studies for the Rivers of Quito	1,850.00		Ex-ante	0%	No	Apr-06	Jan-09	Under way	
	Protection of slopes, channels and collector for the Sunipamba-Saguanchi watershed	700.00		Ex-ante	0%	No	Sep-05	Mar-08	Under way	
	Protection of slopes, channels and collector for the Cuscungo-Clemencia watershed	700.00		Ex-ante	0%	No	Nov-05	Jun-08	Under way	
	Minor works in the Quebrada Jerusalén	36.78		Ex-ante	0%	No	May-06	Mar-07	Under way	
	Component IV: Institutional Strengthening									
	Medium- and long-term technical and financial planning studies	400.00		Ex-ante	0%	No	Nov-05	Apr-07	Under way	
	New organization structure studies	60.00		Ex-post	0%	No	Jan-07	Jul-07	Pending	
	Studies for upgrading and strengthening the operations and maintenance Department	600.00		Ex-ante	0%	No	Jun-06	Jul-08	Under way	
	Base-line survey for Phase II PSA and Monitoring System	80.00		Ex-post	0%	No	Jul-06	May-07	Pending	

Ref. No.	Description of contract and estimated procurement cost (US\$000s)		Procurement method	Review (ex-ante or ex-post)	IDB Financing	Pre-qualification (Yes/No)	Estimated dates for publication of specific procurement notice	Estimated dates for completion of contract	Status	Comments
	Studies for introducing municipal regulation of water and sewer services	100.00		Ex-post	0%	No	Jan-07	Jun-09	Pending	
Slopes	Training Plan for the Dirección de Territorio y Vivienda y Administraciones Zonales del Municipio de Quito (urban planning and housing departments)	300.00		Ex-ante	0%	No	Aug-06	Jun-08	Pending	
	Studies for the Integrated Environmental Management System of EMAAP-Q	200.00		Ex-ante	0%	No	Jan-07	Jun-08	Pending	

Symbols:

International Competitive Bidding ICB

National Competitive Bidding NCB

Quality-Based Selection QBS

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/06

Ecuador. Loan ___/OC-EC to the Empresa Municipal de Alcantarillado
y Agua Potable de Quito (EMAAP-Q)
Metropolitan Quito Environmental Sanitation Program (Phase II)

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 Empresa Municipal de Alcantarillado y Agua Potable de Quito (EMAAP-Q), as Borrower, and with the Republic of Ecuador and the Municipality of Quito, as Guarantors, for the purpose of granting the Borrower a financing to cooperate in the execution of the Metropolitan Quito environmental sanitation program (Phase II). Such financing will be for an amount of up to US\$70,000,000 from the Single Currency Facility of the Ordinary Capital resources of the Bank, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

LEGIII/EC-828447-06
EC-L1022