

**COLOMBIA**

**IMPROVEMENT AND EXPANSION OF WATER SUPPLY AND  
SANITATION SERVICES IN THE CITY OF CALI**

**(CO-0060)**

**LOAN PROPOSAL**

**Contents:**

**Basic socioeconomic data**

**Loan proposal**

- Appendix I - Proposed Resolution (OC)**
- Appendix II - Proposed Resolution (SF)**
- Appendix III - Recommendations**
- Appendix IV - Description of the project  
(Annex A to the loan contract)**

# Basic Socioeconomic Data of Colombia

## 1. General

|   |         |
|---|---------|
| Total population (millions of inhabitants, 1987)            | 30.3    |
| Rural population (%)  | 32.8    |
| Land area (thousands of Km <sup>2</sup> )                   | 1,141.7 |
| Population per Km <sup>2</sup>                              | 26.5    |
| Birth rate per thousand (1984)                              | 28.5    |
| Population growth rate (average 1970-87) (%)                | 1.8     |
| Gross domestic product (GDP) per capita (1987) 1/ (Dollars) | 1,255   |
| Death rate per thousand (1984)                              | 5.1     |
| Infant mortality rate per thousand (1984)                   | 37.0    |
| Physicians per 10,000 inhabitants (1983)                    | 7.9     |
| Number of hospital beds per thousands (1983)                | 1.7     |
| Literacy rate (1985)  | 82.1    |
| Registration rate (%) 2/ (1985)                             |         |
| Primary   | 80.6    |
| Secondary   | 45.7    |
| Official exchange rate (Dec. 31, 1986) - Pesos per dollar - | 219.00  |
| Official exchange rate (Dec. 31, 1987) - Pesos per dollar - | 263.70  |
| Official exchange rate (May 31, 1988) - Pesos per dollar -  | 293.16  |
| Energy consumption per capita (1986) (Kwh)                  | 972     |
| Low income level per inhabitant (Dec. 1986 in pesos)        | 137,028 |
| Low income level per inhabitant (Dec. 1987 in pesos)        | 174,185 |
| Low income level per inhabitant (Apr. 1988 in pesos)        | 206,738 |

| <u>Size</u><br>(has.) | <u>Number of Farms (%)</u> |                | <u>Land Area (%)</u> |                |
|-----------------------|----------------------------|----------------|----------------------|----------------|
|                       | <u>1960</u>                | <u>1970-71</u> | <u>1960</u>          | <u>1970-71</u> |
| Less than 10          | 76.5                       | 73.1           | 8.7                  | 7.2            |
| From 10 to 100        | 20.5                       | 22.5           | 25.2                 | 25.3           |
| More than 100         | 3.5                        | 4.4            | 66.1                 | 67.5           |
| <u>Total</u>          | <u>100.0</u>               | <u>100.0</u>   | <u>100.0</u>         | <u>100.0</u>   |

| <u>Economically Active Population by Sectors (1985)</u> | <u>Thousands</u> | <u>%</u>     |
|---|------------------|--------------|
| <u>Total</u>  | <u>7,664</u>     | <u>100.0</u> |
| Agriculture and fishing                                 | 2,629            | 34.3         |
| Mining  | 69               | 0.9          |
| Manufacturing   | 1,357            | 17.7         |
| Construction  | 360              | 4.7          |
| Commerce, finance and insurance                         | 1,218            | 15.9         |
| Services  | 1,487            | 19.4         |
| Others  | 544              | 7.1          |
| Unemployment rate 3/ (December 1982)                    |                  | 8.9          |
| " " " (December 1983)                                   |                  | 12.5         |
| " " " (December 1984)                                   |                  | 13.4         |
| " " " (July 1985)                                       |                  | 14.7         |
| " " " (December 1985)                                   |                  | 13.0         |
| " " " (June 1986)                                       |                  | 15.0         |
| " " " (December 1986)                                   |                  | 12.5         |
| " " " (June 1987)                                       |                  | 12.1         |
| " " " (December 1987)                                   |                  | 10.1         |
| " " " (May 1988) 4/                                     |                  | 12.8         |

- 1/ Preliminary.  
2/ Registration total/population by eligible age group.  
3/ Four principal cities.  
4/ Seven principal cities.

| Domestic Product a/<br>Contribution of GDP | Composition |       |       |       |       |       |       |         | Real Annual Growth Rate (%) |       |      |      |      |      |
|--|-------------|-------|-------|-------|-------|-------|-------|---------|-----------------------------|-------|------|------|------|------|
|  | 1980        | 1981  | 1982  | 1983  | 1984  | 1985  | 1986  | 1987 b/ | 1980                        | 1981  | 1982 | 1983 | 1984 | 1985 |
| Domestic investment                        | 100.0       | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0   | 4.1                         | 2.3   | 0.9  | 1.6  | 3.4  | 3.1  |
| Consumption                                | 19.7        | 21.8  | 22.7  | 21.5  | 20.2  | 17.5  | 19.5  | 18.0    | 10.9                        | 13.2  | 5.3  | -2.2 | -5.9 | -9.6 |
| Exports                                    | 83.5        | 83.8  | 84.9  | 84.1  | 82.6  | 82.8  | 81.1  | 80.1    | 5.4                         | 3.0   | 1.9  | 0.3  | 3.0  | 2.2  |
| Imports                                    | 17.2        | 15.2  | 13.5  | 13.3  | 13.8  | 15.6  | 17.0  | 17.1    | 5.1                         | -11.8 | -1.6 | -1.6 | 10.3 | 14.3 |
| Services                                   | 20.4        | 20.7  | 21.1  | 19.0  | 16.6  | 15.9  | 15.6  | 15.2    | 18.8                        | 4.9   | 8.0  | -9.1 | -4.0 | -6.6 |
| Origin                                     |             |       |       |       |       |       |       |         |                             |       |      |      |      |      |
| Culture                                    | 22.7        | 22.9  | 22.3  | 22.4  | 22.2  | 21.9  | 21.4  | 21.3    | 2.2                         | 3.2   | -1.9 | 2.8  | 1.7  | 1.8  |
| Manufacturing                              | 1.3         | 1.3   | 1.3   | 1.5   | 1.6   | 2.3   | 3.3   | 3.7     | 18.4                        | 5.5   | 1.7  | 14.2 | 38.0 | 22.0 |
| Construction                               | 22.4        | 21.3  | 20.6  | 20.7  | 21.4  | 21.2  | 21.5  | 21.7    | 1.2                         | -2.6  | -1.5 | 1.1  | 3.0  | 6.0  |
| Transportation                             | 3.4         | 3.5   | 3.7   | 3.8   | 3.8   | 4.4   | 4.1   | 3.9     | 14.6                        | 7.1   | 4.0  | 13.0 | 8.6  | 6.4  |
| Commerce                                   | 9.3         | 9.5   | 9.7   | 9.7   | 9.6   | 8.9   | 9.7   | 9.6     | 4.0                         | 4.2   | 5.2  | -0.9 | 0.6  | 2.6  |
| Government                                 | 12.7        | 12.6  | 12.8  | 12.3  | 12.2  | 12.3  | 12.4  | 12.5    | 2.3                         | 1.7   | 1.4  | -0.4 | 1.4  | 2.0  |
| Financial services                         | 7.8         | 8.0   | 8.3   | 8.4   | 8.4   | 8.4   | 8.1   | 8.0     | 10.3                        | 5.8   | 2.4  | -1.8 | 4.3  | 8.8  |
| Other Services                             | 7.9         | 8.0   | 8.3   | 8.0   | 7.9   | 7.1   | 7.1   | 7.1     | 11.2                        | 4.4   | 3.1  | -0.1 | -5.2 | -0.9 |
| Services                                   | 12.7        | 12.8  | 13.3  | 13.2  | 12.9  | 13.5  | 13.4  | 13.2    | 2.7                         | 3.5   | 2.3  | 3.4  | 2.6  | 6.4  |

1975 constant prices.  
Primary.

Departamento Administrativo Nacional de Estadística (DANE).

| International Trade    | (In millions of US\$) |       |       |       |       |       |       |       |         | Annual Growth Rate |       |       |       |       |       |
|------------------------|-----------------------|-------|-------|-------|-------|-------|-------|-------|---------|--------------------|-------|-------|-------|-------|-------|
|                        | 1975                  | 1980  | 1981  | 1982  | 1983  | 1984  | 1985  | 1986  | 1987 a/ | 1980               | 1980  | 1982  | 1983  | 1984  | 1985  |
| Exports of Goods       |                       |       |       |       |       |       |       |       |         |                    |       |       |       |       |       |
| FOB 1/                 | 1,536                 | 4,062 | 3,219 | 3,215 | 3,147 | 3,623 | 3,782 | 5,332 | 5,291   | 15.8               | -20.8 | -0.1  | -2.1  | 15.1  | 4.4   |
| e                      | 680                   | 2,374 | 1,423 | 1,462 | 1,506 | 1,734 | 1,702 | 2,736 | 1,572   | 17.2               | -40.1 | 2.7   | 3.0   | 15.1  | -1.8  |
| a                      | 37                    | 108   | 122   | 152   | 148   | 196   | 194   | 199   | 213     | 28.6               | 13.0  | 24.6  | 2.6   | 32.4  | -1.0  |
| rs                     | 95                    | 175   | 77    | 55    | 69    | 36    | 38    | -     | -       | 250.0              | -56.0 | -29.8 | 25.5  | -47.8 | 5.5   |
| n                      | 19                    | 101   | 109   | 112   | 121   | 130   | 141   | 148   | 156     | -27.8              | 7.9   | 2.8   | 8.0   | 7.4   | 8.5   |
| t                      | 81                    | 64    | 148   | 67    | 23    | 46    | 47    | -     | -       | 77.8               | 131.3 | -54.7 | -65.7 | 100.0 | 2.2   |
| les, apparel           | 57                    | 33    | 54    | 46    | 31    | 11    | n.a.  | -     | -       | -10.8              | 63.6  | -14.8 | -32.6 | -64.5 | -     |
| shoes                  | 12                    | 53    | 31    | 34    | 20    | 16    | 30    | -     | -       | 70.9               | -41.5 | 9.7   | -41.2 | -20.0 | 87.5  |
| mechanic               | 103                   | 167   | 176   | 184   | 91    | 113   | n.a.  | -     | -       | 11.3               | 5.4   | 4.5   | -50.5 | 24.2  | -     |
| leum derivatives       | 21                    | 48    | 64    | 68    | 75    | 79    | n.a.  | -     | -       | -27.3              | 33.3  | 7.9   | 10.3  | 5.3   | -     |
|                        | -                     | -     | 34    | 213   | 434   | 478   | 417   | 631   | 1,370   | -                  | -     | 526.4 | 103.7 | 10.1  | -12.8 |
|                        | -                     | -     | 9     | 14    | 17    | 36    | 129   | 201   | 271     | -                  | -     | 55.6  | 21.4  | 11.7  | 230.8 |
| Imports of Goods (CIF) | 1,502                 | 5,413 | 6,094 | 5,478 | 4,968 | 4,492 | 4,131 | 3,852 | 4,228   | 16.9               | 12.5  | -10.1 | -9.3  | -9.6  | -8.0  |
| consumption goods      | 152                   | 517   | 770   | 691   | 539   | 431   | 333   | 383   | 502     | 35.0               | 48.9  | -10.3 | 22.0  | -18.3 | -1.1  |
| mediate goods          | 723                   | 1,942 | 2,210 | 2,114 | 1,697 | 2,022 | 2,010 | 1,951 | 2,115   | 15.2               | 13.8  | -4.3  | -19.7 | 14.1  | 19.9  |
| al goods               | 611                   | 2,225 | 2,172 | 2,016 | 1,886 | 1,574 | 1,307 | 1,377 | 1,503   | 52.8               | -2.4  | -7.2  | -6.4  | -14.5 | -2.6  |
|                        | 29                    | 663   | 902   | 657   | 641   | 465   | 481   | 141   | 108     | -                  | 36.0  | -27.2 | -2.4  | -6.2  | -35.3 |
|                        | 16                    | 16    | -     | -     | -     | -     | -     | -     | -       | -46.7              | -     | -     | -     | -     | -     |

inary.  
 es not include gold acquired by the Banco de la República.

DANE.

| of Payments      | (In millions of US\$) |        |        |        |          |          |          |          | Annual Growth Rate |        |       |       |       |       |
|------------------|-----------------------|--------|--------|--------|----------|----------|----------|----------|--------------------|--------|-------|-------|-------|-------|
|                  | 1980                  | 1981   | 1982   | 1983   | 1984     | 1985     | 1986     | 1987 a/  | 1980               | 1981   | 1982  | 1983  | 1984  | 1985  |
| (FOB) b/         | 4,062                 | 3,219  | 3,215  | 3,147  | 3,623    | 3,782    | 5,332    | 5,291    | 15.8               | -20.8  | -0.1  | -2.1  | 15.1  | 4.4   |
| (FOB)            | 4,300                 | 4,762  | 5,405  | 4,464  | 4,027    | 3,673    | 3,409    | 3,804    | 43.5               | 10.7   | 13.5  | -17.4 | -9.8  | -8.7  |
| balance          | -238                  | -1,453 | -2,190 | -1,317 | -404     | 109      | 1,923    | 1,417    | -                  | 548.3  | -41.9 | -     | -     | -     |
| (net)            | -100                  | 595    | -872   | -1,673 | -1,983   | -2,156   | -2,244   | -2,536   | 17.3               | -495.0 | 46.6  | 91.9  | 18.5  | 8.7   |
| s (net)          | (-211)                | (-427) | (-787) | (-918) | (-1,086) | (-1,112) | (-1,269) | (-1,440) | -                  | -      | -     | -     | -     | -     |
| s                | 164                   | 242    | 169    | 164    | 299      | 461      | 785      | 1,002    | 54.7               | 47.5   | -30.2 | -0.3  | 82.3  | 55.2  |
| account balance  | -174                  | -1,896 | -2,893 | -2,826 | -2,088   | -1,586   | 464      | -117     | -                  | -      | -     | -     | -     | -     |
| account (net)    | 829                   | 1,904  | 1,979  | 1,103  | 827      | 1,871    | 1,002    | 88       | -7.0               | 129.7  | 3.9   | -44.3 | -25.0 | 126.2 |
| m                | 801                   | 1,631  | 1,607  | 1,528  | 1,822    | 2,356    | 2,633    | 210      | -                  | -      | -     | -     | -     | -     |
| t investment)    | (52)                  | (220)  | (337)  | (514)  | (561)    | (1,016)  | (562)    | (312)    | -                  | -      | -     | -     | -     | -     |
| rm               | 28                    | 273    | 372    | -425   | -995     | -485     | -1,631   | -122     | -                  | -      | -     | -     | -     | -     |
| and omissions    | 280                   | 234    | 213    | -266   | -137     | -326     | -129     | 68       | -                  | -      | -     | -     | -     | -     |
| in international |                       |        |        |        |          |          |          |          |                    |        |       |       |       |       |
| es (- increase)  | -1,235                | -242   | 701    | 1,723  | 1,261    | -284     | -1,466   | 29       | -                  | -      | -     | -     | -     | -     |

nary.  
not include gold acquired by the Banco de la República.

co de la República.

| finances          | Percentage of GDP  |       |       |       |               |       |       |         | Public Sector |        |        |        |        |        |
|-------------------|--------------------|-------|-------|-------|---------------|-------|-------|---------|---------------|--------|--------|--------|--------|--------|
|                   | Central Government |       |       |       | Public Sector |       |       |         |               |        |        |        |        |        |
|                   | 1980               | 1981  | 1982  | 1983  | 1984          | 1985  | 1986  | 1987 a/ | 1980          | 1981   | 1982   | 1983   | 1984   | 1985   |
| income b/         | 9.1                | 8.8   | 8.2   | 8.0   | 8.3           | 9.7   | 10.2  | 10.7    | 23.8          | 19.6   | 15.9   | 19.4   | 20.4   | 22.7   |
| venue             | (8.1)              | (7.7) | (7.4) | (7.8) | (7.9)         | (9.2) | (9.6) | (9.7)   | (14.3)        | (12.4) | (12.6) | (12.7) | (13.1) | (14.4) |
| expenditures      | 7.7                | 7.8   | 8.5   | 8.9   | 10.1          | 9.3   | 8.8   | 8.9     | 19.6          | 17.6   | 15.5   | 17.0   | 17.2   | 17.1   |
| account balance   | 1.4                | 1.0   | -0.3  | -0.9  | -1.8          | 0.4   | 1.4   | 1.8     | 4.2           | 2.0    | 0.4    | 2.4    | 3.2    | 5.6    |
| expenditures      | 2.6                | 3.1   | 3.2   | 2.7   | 3.2           | 3.0   | 2.8   | 2.5     | 5.5           | 7.9    | 8.3    | 10.2   | 10.1   | 9.9    |
| (-) Superavit (+) | -1.2               | -2.1  | -3.5  | -3.6  | -5.0          | -2.6  | -1.4  | -0.7    | -2.4          | -5.9   | -7.6   | -7.6   | -6.7   | -4.3   |
| g                 |                    |       |       |       |               |       |       |         |               |        |        |        |        |        |
| stic              | 0.2                | 1.1   | 2.9   | 3.3   | 4.2           | 2.0   | 0.2   | 0.9     | 0.4           | 3.1    | 3.1    | 2.5    | 1.9    | 0.1    |
| nal               | 1.0                | 1.0   | 0.6   | 0.3   | 0.8           | 0.6   | 1.6   | -0.2    | 2.0           | 2.8    | 4.5    | 5.1    | 2.6    | 4.2    |

nary.  
revenues of Special Exchange Account are not included.

co de la República, Ministerio de Hacienda and Contraloría General de la República.

- v -

| Financial System       | (Billions of Pesos) |       |       |         |         |         |         |         | Annual Growth Rate |      |      |      |       |      |
|------------------------|---------------------|-------|-------|---------|---------|---------|---------|---------|--------------------|------|------|------|-------|------|
|                        | 1980                | 1981  | 1982  | 1983    | 1984    | 1985    | 1986    | 1987 a/ | 1980               | 1981 | 1982 | 1983 | 1984  | 1985 |
| International reserves | 260.0               | 309.7 | 290.9 | 233.5   | 161.6   | 320.4   | 740.7   | 858.3   | 47.2               | 19.1 | -6.1 | -6.1 | -30.7 | 98.3 |
| credit                 | 437.4               | 607.6 | 805.7 | 1,069.2 | 1,756.3 | 2,233.3 | 3,144.7 | 4,330.3 | 36.9               | 38.9 | 32.6 | 32.7 | 64.2  | 27.2 |
| l Government (net)     | -15.4               | -16.5 | 25.0  | 67.6    | 220.4   | 245.3   | 217.7   | -       | -                  | -    | -    | -    | -     | -    |
| f public sector (net)  | -18.1               | -18.9 | -5.3  | -5.3    | -10.9   | -16.8   | 112.5   | -       | -                  | -    | -    | -    | -     | -    |
| e sector               | 412.8               | 559.7 | 699.1 | 885.8   | 1,550.7 | 2,017.5 | 2,809.2 | 3,525.5 | 40.0               | 35.6 | 24.9 | 26.7 | 75.1  | 30.1 |
| pply                   | 214.3               | 259.7 | 322.4 | 406.2   | 501.1   | 642.2   | 788.5   | 1,048.3 | 27.9               | 21.2 | 25.4 | 25.6 | 23.2  | 27.5 |
| GDP)                   | 13.8                | 12.8  | 13.0  | 13.9    | 13.6    | 13.2    | 12.1    | 12.3    | -                  | -    | -    | -    | -     | -    |
| ney                    | 210.4               | 336.0 | 417.6 | 564.0   | 704.6   | 987.3   | 1,260.1 | 1,608.4 | 70.0               | 56.7 | 24.3 | 35.0 | 24.9  | 40.1 |
| GDP)                   | 13.6                | 16.7  | 16.7  | 18.6    | 19.1    | 20.2    | 19.3    | 18.8    | -                  | -    | -    | -    | -     | -    |

nary.

co de la República.

| (Growth rate)       | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 |
|---------------------|------|------|------|------|------|------|------|------|------|
| flator              | 17.1 | 23.9 | 24.7 | 25.9 | 23.4 | 18.5 | 19.6 | 26.1 | n.a. |
| er prices           |      |      |      |      |      |      |      |      |      |
| ecember to December | 17.8 | 29.8 | 26.5 | 26.7 | 23.9 | 16.7 | 18.3 | 22.5 | 20.9 |
| annual rate         | -    | -    | -    | -    | 24.5 | 19.8 | 16.1 | 24.0 | 19.2 |
| ale b/              | 21.6 | 29.0 | 25.4 | 23.5 | 24.6 | 18.0 | 21.2 | 23.0 | 24.4 |

ional.

er to December rates.

available.

anco de la República.

| 8. External Debt                     | Outstanding Balance by Year-End |              |              |              |              |               |               |               |               |               |
|--------------------------------------|---------------------------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|
|                                      | 1970                            | 1975         | 1980         | 1981         | 1982         | 1983          | 1984          | 1985          | 1986          | 1987 a/       |
| <u>External Public Debt</u>          |                                 |              |              |              |              |               |               |               |               |               |
| Total disbursed                      | 1,250                           | 2,470        | 4,179        | 5,168        | 6,078        | 6,958         | 8,090         | 9,432         | 11,754        | 12,435        |
| By type of creditors                 |                                 |              |              |              |              |               |               |               |               |               |
| Suppliers                            | 209                             | 190          | 216          | 209          | 254          | 258           | 444           | 556           | 599           | 685           |
| Private banks                        | 100                             | 399          | 1,446        | 2,202        | 2,671        | 3,063         | 3,467         | 3,608         | 4,865         | 4,716         |
| International Organizations          | 716                             | 737          | 1,427        | 1,669        | 1,953        | 2,217         | 2,633         | 3,288         | 3,887         | 4,390         |
| IDB                                  | (94)                            | (233)        | (404)        | (471)        | (546)        | (654)         | (768)         | (1,010)       | (1,299)       | (1,660)       |
| Governments                          | 782                             | 939          | 1,059        | 1,059        | 1,177        | 1,400         | 1,529         | 1,963         | 2,357         | 2,529         |
| Others                               | 66                              | 52           | 31           | 29           | 23           | 20            | 17            | 19            | 46            | 105           |
| <u>External Private Debt</u>         |                                 |              |              |              |              |               |               |               |               |               |
| Total outstanding                    | 639                             | 1,033        | 2,278        | 2,874        | 3,450        | 3,596         | 3,521         | 3,415         | 3,005         | 3,133         |
| <u>Total Disbursed External Debt</u> | <u>1,889</u>                    | <u>3,503</u> | <u>6,457</u> | <u>8,042</u> | <u>9,528</u> | <u>10,554</u> | <u>11,611</u> | <u>12,847</u> | <u>14,759</u> | <u>15,568</u> |
| Preliminary.                         |                                 |              |              |              |              |               |               |               |               |               |
| As of June.                          |                                 |              |              |              |              |               |               |               |               |               |

Source: Banco de la República.

|                                     |                 | Contracted Amount by Year-End (%) |             |             |             |             |             |             |             |             |
|-------------------------------------|-----------------|-----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                     |                 | 1970                              | 1978        | 1979        | 1980        | 1981        | 1982        | 1983 a/     |             |             |
| By maturities:                      | 1 to 5 years    | 24.1                              | 33.3        | 34.9        | 34.8        | 35.2        | 36.3        | 34.4        |             |             |
|                                     | 5 to 10 years   | 22.5                              | 36.4        | 37.9        | 38.4        | 38.8        | 39.8        | 38.9        |             |             |
|                                     | + than 10 years | 53.4                              | 31.3        | 27.2        | 26.8        | 26.0        | 25.9        | 26.7        |             |             |
| <u>Total External Debt Service</u>  |                 | <u>1970</u>                       | <u>1975</u> | <u>1980</u> | <u>1981</u> | <u>1982</u> | <u>1983</u> | <u>1984</u> | <u>1985</u> | <u>1986</u> |
| Total service (in millions of US\$) |                 | 218.0                             | 385.0       | 812.0       | 1,116.0     | 1,418.0     | 1,573.0     | 1,644.0     | 1,881.0     | 2,269.0     |
| Serv./exp.of goods and services (%) |                 | 21.2                              | 18.6        | 14.8        | 25.1        | 30.7        | 40.6        | 37.7        | 40.2        | 35.1        |

/ Provisional.

Source: Banco de la República and Junta Monetaria.

| 9. | IDB loans                         | Millions of US\$ | %            |
|----|-----------------------------------|------------------|--------------|
|    | (Approved through 30-VI-88)       |                  |              |
|    | <u>T o t a l</u>                  | <u>3,666.1</u>   | <u>100.0</u> |
|    | Ordinary Capital                  | 2,964.3          | 80.9         |
|    | Fund for Special Operations       | 693.1            | 17.4         |
|    | SPTF                              | 49.0             | 1.3          |
|    | Other funds                       | 13.7             | 0.4          |
|    | <u>B y   S e c t o r</u>          | <u>3,666.1</u>   | <u>100.0</u> |
|    | Agriculture and fishing           | 333.7            | 9.1          |
|    | Industry and mining               | 209.6            | 5.7          |
|    | Transportation and communications | 305.5            | 8.3          |
|    | Energy                            | 1,956.1          | 53.4         |
|    | Education, science and technology | 110.1            | 3.0          |
|    | Urban development                 | 328.4            | 9.0          |
|    | Public health and environment     | 386.4            | 10.5         |
|    | Preinvestment                     | 36.3             | 1.0          |

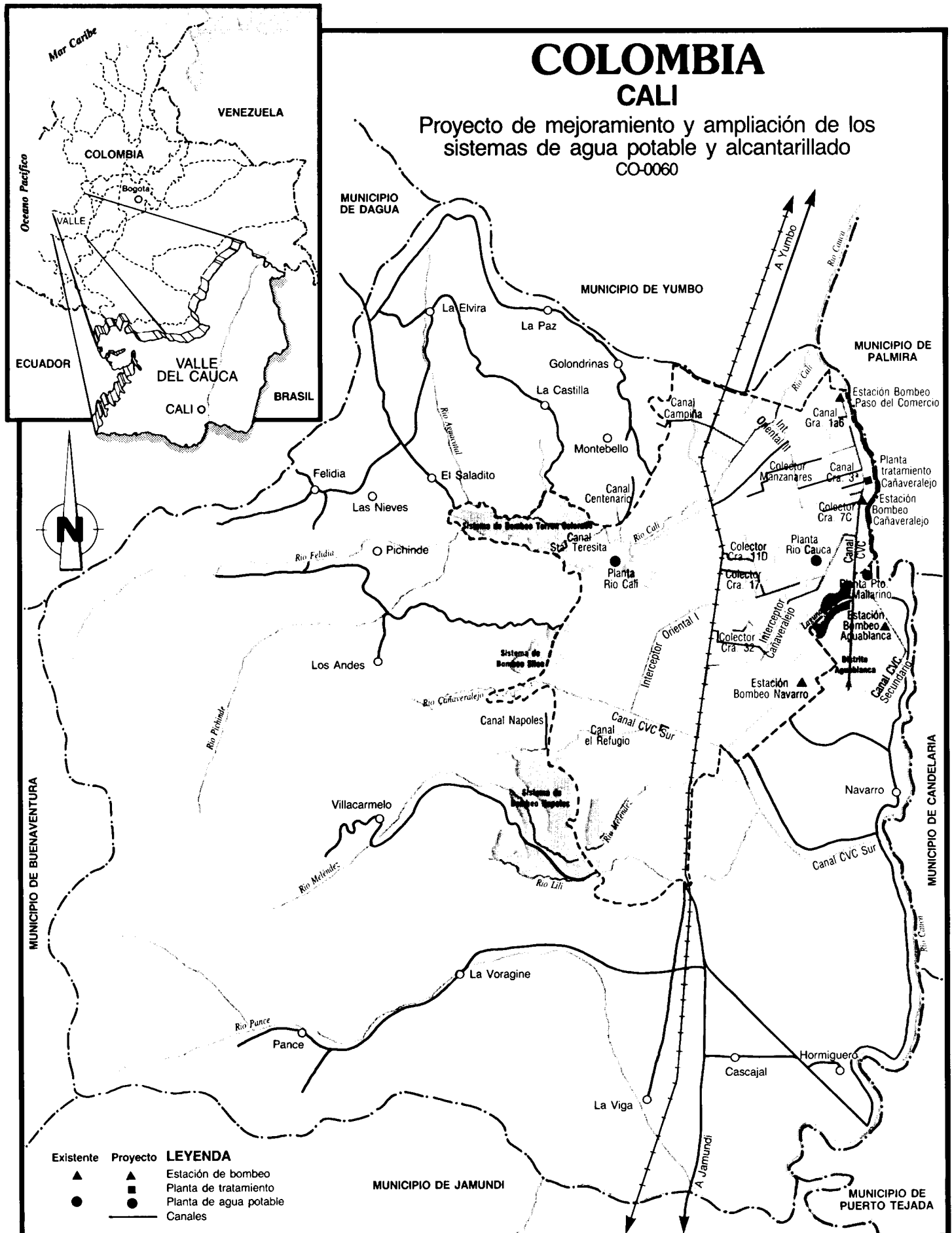
DOC: DATAO.TXT  
1-XI-88  
ECC/POOL



# COLOMBIA

## CALI

Proyecto de mejoramiento y ampliación de los  
sistemas de agua potable y alcantarillado  
CO-0060



COLOMBIA

IMPROVEMENT AND EXPANSION OF WATER SUPPLY  
AND SANITATION SERVICES IN THE CITY OF CALI  
(CO-0060)

LOAN PROPOSAL

I. BASIC INFORMATION

- 1.1 Borrower and Executing Agency: Cali Municipal Enterprises (EMCALI)
- 1.2 Guarantor: Republic of Colombia
- 1.3 Objectives and Description: Provide secure and steady water supply and sanitary services in Cali, especially in the city's less developed and marginal areas. The project would raise water supply and sanitation service from present coverage levels of 80% and 74% to 90% and 83%, respectively, by 1993, benefiting approximately 1.5 million people in the entire city, and particularly those who reside in the marginal areas of the city, presently amounting to approximately 280 thousand. Moreover, the project would assist in the goal of reducing unmetered water from the actual 40% level to 30% by said year. To achieve these targets, the project includes works to improve and expand water sewer and drainage systems, provide the necessary support services and equipment to reduce unmetered water levels and an institutional strengthening component comprising the improvement of internal information systems and data processing as well as training in the areas of water treatment, operation and maintenance systems, pitotmetry studies and metering systems.
- 1.4 Cost and Financing: The total cost of the project has been calculated to be US\$375.0 million and will be financed with two IDB loans totalling US\$100,0 million. Additionally, external financing will be provided by the Government of Italy and the Overseas Economic Cooperation Fund (OECF) of Japan. Local resources will be provided by the National Government, the Central Mortgage Bank (BCH) through its Urban Development Financial Fund (FFDU) and EMCALI, through internal generation of funds.
- 1.5 Other Relevant Aspects: The proposed project represents the major effort to modernize EMCALI's existing water, sewer and drainage systems. Works to improve the system will be implemented in the city's core area, while those to expand the system will be carried out principally in the Aguablanca district, the city's largest marginal community. Also, the project lays the foundation of an environment control solution in Cali and breaks new grounds to safeguard the city and its principal water source, the Cauca River, against adverse environmental effects caused by actual and future pollution loads. An issue of particular consideration is the financing of the project, with future counterpart derived from internally generated funds, for which EMCALI has already taken measures to increase internal resource generation capacity and is scheduled to take additional ones as the project proceeds.

1.6 Terms and Conditions of the Bank's Loan:

|                                       |                  |                             |
|---------------------------------------|------------------|-----------------------------|
| (i) Source:                           | Ordinary Capital | Fund for Special Operations |
| (ii) Amount:                          | US\$75.0 million | Eq.US\$ 25.0 million        |
| (iii) Amortization Period:            | 25 years         | 30 years                    |
| (iv) Grace Period:                    | 5 years          | 7 years                     |
| (v) Interest Rate:                    | Variable         | 2%                          |
| (vi) Credit Fee:                      | 1.25 per annum   | -                           |
| (vii) Inspection and Supervision Fee: | 1% of loan       | 1% of loan                  |
| (viii) Disbursement Period:           | 5 years          | 5 years                     |

II. FRAME OF REFERENCE

A. Recent Economic Situation

- 2.1 The performance of the Colombian economy in 1987 surpassed initial expectations with respect to output, employment and international reserves, all of which were up despite adverse external factors such as the steep fall in international coffee prices and uncertainty in the international financial markets. Real gross domestic product (GDP) grew rapidly for the second consecutive year (5.6%), and its rise was the greatest since 1978. Unemployment fell to the lowest level in four years, and international reserves stabilized at the equivalent of ten months of imports. During 1988 GDP is expected to grow at a rate close to 5%, with inflation approximating 24%, slightly higher than the 1987.
- 2.2 Short-term prospects for the Colombian economy are favorable. Proper use of the opportunities afforded by its domestic market, and maintenance of the upward trends of non-coffee exports, would make it possible to keep up a rate of economic growth close to that achieved in the last two years and to ensure sustained expansion of the medium term.

B. National Water Supply and Sewerage Sector

1. Public Health and Service Coverage

- 2.3 Colombia has made significant progress in reducing its general mortality rate from 10.1 deaths per 1,000 in 1970 to 5.1 in 1985 and reducing infant mortality from 86 per 1,000 live births in 1970 to 57 in 1985. Nevertheless, at present diseases associated with unsafe water and lack of adequate sanitation, still rank among the five most important primary causes of deaths in all age groups up to 14 years. Although these rates have shown improvement over the last decade, they still remain high in comparison to other countries of similar development levels.
- 2.4 While it can be said that coverage levels for water and sewer services in Colombia's four major cities is acceptable, their marginal areas, which have experienced an accelerated rate of spontaneous urbanization due both to normal population growth and significant rural migration

have not received adequate service coverage to satisfy population growth. Presently, of Colombia's estimated population, approximately 30.6 million, 57% have residential water service and 41% are connected to sewer systems. Urban coverage amounts to 79% for water and 62% for sewer systems. However, of the marginal urban areas and rural population, coverage level amounts only to 27% for water service and 13% for sewer. Although over the past decade Colombia has maintained an average annual investment level of US\$150 million, service levels for water and sewerage systems have not shown significant increases since 1969. Sector investments were basically enough to keep pace with population growth but insufficient for significant increases in service coverage.

## 2. Sector Action Plan

- 2.5 In view of the described situation and within the context of the Government's general development plans, by the year 2000, national coverage of water and sewerage systems are expected to increase from present levels to 90 and 80%, respectively. To meet these objectives, total investment needs in the Colombian water supply and sewerage sector over the 1988-2000 period would amount to approximately US\$4,600 million in 1988 prices requiring annual investments of about US\$350 million, more than twice as high as those in the past. Accordingly, between 1988 and 1992 plan investments would amount to US\$1,420 million which represents approximately 30% of the sector's financial needs up to the year 2000.
- 2.6 In terms of actual investments, development plans include projects in Bogotá, Medellín, Barranquilla and the presently proposed project for Cali, for which financing has been or is in the process of being secured. Additionally, for smaller and medium size cities the plan foresees investments to be channeled through the Central Mortgage Bank (BCH), with World Bank and IDB financing. All these actions would assure the financing of the above mentioned amount.

## 3. Institutional Structure

- 2.7 Until 1987 the institutional structure of the sector was highly centralized. In effect, the Health Ministry was responsible for sector policy formulation and regulatory activities. The National Planning Office was entrusted with investment planning and budgeting, for the whole sector with the exception of the utility companies which serve the four main cities in the country (Bogotá, Medellín, Cali and Barranquilla). With the passage of Law 12 in January 1986 and Decree 77 of January 1987, which set forth the basis for the on-going decentralization process in Colombia the Government made, among others, substantial changes in the organization and institutions of the water supply and sanitation sector by transferring the responsibility for decision making and administration from the Central Government to municipalities.
- 2.8 In effect, the National Institute for Urban Development (INSFOPAL) and the Division of Basic Rural Sanitation (DSRB) of the National Institute of Health (INS), in charge of rural water supply in most of

the country (with the exception of the large and some medium size urban centers) are being abolished as of January 15, 1989. In replacement of INSFOPAL and DSRB, a unit is being established in MOPT as the primary technical sector support agency with sector wide responsibilities for planning, setting and enforcing of technical norms, research assistance to operating companies and training to the municipalities (or their specialized agencies) which, according to the sector reorganization, must take over the provision of services. The BCH through its Urban Development Fund (FFDU), will take over as primary intermediary for sector investments. The major municipal utility companies were not affected by this reorganization. In addition to the above, the Colombian Congress is presently considering a bill for the creation of the Territorial Development Fund, which would act as the new financial agency for urban development including water and sewerage projects at the municipal level. If enacted, the Fund would absorb the functions of the FFUDU, permitting the BCH to concentrate its efforts on the fulfillment of its original purposes, that is housing financing.

#### 4. Rate Structure

- 2.9 In order that the consumers, through the respective utility agencies, contribute properly to sector development, the Government has recently embarked on a series of actions to rationalize water and sewer tariffs. Sector companies were encouraged to submit substantial tariff increases to the National Rate Board (JNT). The indexation of tariff levels was introduced and automatic monthly tariff adjustments, ranging from 1.5% to 2.5% were authorized. The JNT issued a unified tariff structure for all water and sewerage utilities, making basic consumption affordable to all strata of the population and introduced progressively higher tariffs in relation to the economic conditions of the consumer.
- 2.10 Although the JNT, within the new institutional sector framework, lacks authority to impose a particular tariff level on independent municipal utilities, the Government can exert certain conditionalities by indirectly participating in the respective utility's expansion or investment plan through the provision of national guarantees for external financing loans to large cities or loans through the BCH in the cases of smaller urban sectors.
- 2.11 In this respect, the Government has indicated its intention to require that water and sewer services in cities with more than 800,000 people (Bogotá, Cali, Medellín and Barranquilla) set tariff levels that produce sufficient income to allow the company to contribute approximately 25% of the total cost of a given project from its internally generated resources in addition to assuming loan obligations of around 50% of total project cost. Local authorities would be allowed to provide equity contributions up to 25% of project cost, primarily to support investments in poor unserved neighborhoods (for example Aguablanca in Cali and Southwestern areas in Barranquilla). In intermediate size cities (300,000 - 800,000), equity contributions by local governments should be limited to 50% of total project cost and project executing entities would be required to contribute around 15% of project cost from their internal generation.

Lesser contribution from internal resources of the utilities would be required in the case of smaller population centers, depending on each case.

C. Project Area

1. General Aspects

- 2.12 Cali is the third largest city in Colombia with an estimated population of 1.5 million and constitutes the major urban and economic center of southwestern Colombia. Its economic activities relate primarily to the paper and chemical industries, and include other minor consumer good manufacturing. Cali is the principal center for a significantly important agricultural production region in the Valle del Cauca. The city's population is projected to grow to 2.0 million by the turn of the century.
- 2.13 The area of influence of the proposed project is the city's metropolitan area, extending north up to the municipality of Yumbo. It includes a number of adjacent marginal areas on the western hills and eastern portion of the city along the Cauca river. The largest is known as the Aguablanca district.
- 2.14 Population in Cali has increased from 88,500 persons in 1938 to present day levels. In addition, since 1980 the city has been subjected to strong rural migration which have concentrated in the Aguablanca district, in which the population increased from 20,000 in 1980 to its present number of 180,000. This level, in addition to the population in other marginal areas totaling 100,000 has been projected to grow to over half a million by the year 2000. As can be expected, this population comprises mainly lower income families. Moreover, the marginal areas lack appropriate housing, sanitation and community services to properly accommodate their needs.

2. Service Provision Problems

(a) Coverage Deficits and Water Deficiencies

- 2.15 Presently 20% and 28% of potential users who respectively do not receive adequate water supply or sewer services live in the project area. Most of them reside in marginal areas of Cali, principally in the Aguablanca district. This coverage deficit poses two main problems: health hazards for population and a significant amount of unmetered water. Without house connected water in these areas, the vital necessities of the population have to be provided by other means. In Aguablanca for example, this means hose connections to limited water supply lines, public faucets and other precarious sources such as cisterns. These systems are unreliable and contribute to further contamination of water sources. The non-existence of sewer systems leads to use of latrines and open-air waste disposal in adjacent canals, streams and ponds, thereby adversely affecting the quality of public health, particularly for children and small infants. In addition to the need to increase the coverage, the projected demand of water could not be met by existing installations. The demand<sub>3</sub> at the water treatment plant level is projected to increase from 8.7m<sup>3</sup>/s

with 80% coverage in 1988 to around 12.0m<sup>3</sup>/s in the year 2000 with 90% coverage. Finally, various sectors of the city have unreliable water systems which lack pressure for proper service or require replacement due to poor operational conditions.

(b) Sewer System Deficiencies

- 2.16 In addition to coverage deficiency, it should be noted that the predominantly combined sewer systems which would normally channel waste water and stormwater into various city canals are deteriorated to the point of allowing raw sewerage to flow into the stormwater channels, even in the cases where no rain water exists for dilution purposes. Moreover, in the center city area, mortar and brick sewer system made 50 years ago are considerably deteriorated and require restructuring or replacement.

(c) Drainage Systems Deficiencies

- 2.17 The existing infrastructure for drainage systems was constructed by the Valle del Cauca Corporation (CVC) in order to protect what is now known as the Aguablanca district, from Cauca river floods, and to drain specific volumes of water from areas used primarily for agricultural purposes. These systems are presently insufficient for drainage. In many cases, flooding within the district, which tends to occur on an annual basis, reaches depths of 0.5 meters and lasts for several days with the obvious detrimental effect for the public. In order to lessen flooding effects for the city, CVC constructed two regulatory ponds whose usefulness and alleviatory effects have diminished considerably due to high levels of sedimentation.

(d) Unmetered Water

- 2.18 Unmetered water represents a financial loss for EMCALI and increases the actual cost of accounted water. In 1987 close to 210 million m<sup>3</sup> of water was produced in the treatment plants, of which 7 million were used internally by the company and, of the remaining 203 million m<sup>3</sup>, only 120 million m<sup>3</sup> were accounted for. Irrespective of the possibility that errors in the macrometering system could affect this data, EMCALI suffers important losses in the system. These losses originate partly from areas which, as a consequence of not being regularly served, revert to clandestine activities. The losses also stem from malfunctioning systems (pipes, valves, reservoir overflows).

(e) Water Contamination

- 2.19 Water quality within a 130 Km length of the Cauca river between the Cali and Frio rivers has deteriorated due to excessive waste water discharges and other waste disposal. Moreover, existing industries in Cali dump their waste into the sewer system which eventually flows to the Cauca river. This could be producing chemical pollution problems for the river as well as eventual corrosion of the system's existing pipes.

### 3. EMCALI Action Plan

- 2.20 In 1970 EMCALI developed a master plan for its potable water service area, setting forth general guidelines for future expansion of services. Based on this plan, design work was contracted for one of EMCALI's potable treatment plants and transmission and distribution systems. These studies and designs refer to investments included in the present project. In 1987, with funding from FONADE, EMCALI contracted a study for water service improvement and expansion to define the course of action in the subsector subsequent to the completion of this proposed project completion, i.e. beyond 1993. In reference to the sewerage and pollution problems previously referred to, in 1983 EMCALI created within its water and sewerage division, a contamination control office. During the same year, EMCALI contracted a feasibility study for waste water treatment which includes proposals for collection, transport and final disposal of waste water until the year 2023. It was completed in 1985. The present project includes a preliminary waste water treatment plant. The other proposed treatment facilities and their levels are under review pending further river water studies and the authorities would be required to inform the Bank of their plans for primary and/or secondary treatment to assure adequate river water quality. (See paragraph 4.22).
- 2.21 Regarding drainage, EMCALI has contracted a detailed study and the preparation of final designs for the necessary drainage works in the low lying areas of the city, all of which are included in the proposed project and are detailed in the following sections of this document.
- 2.22 In terms of unaccounted water reduction activities, with the collaboration of the Panamerican Sanitary Engineering Center, in 1984 EMCALI carried out a study in the field of macrometering. EMCALI has also undertaken tasks for optimizing group activities for network system and water meter repairs. In spite of these efforts, it has been concluded that a coherent reduction plan was needed to achieve better results. EMCALI already hired (June 1988) a specialized consulting firm to design said plan which is included in the present project.

### 4. Rationale for Bank Project Participation

- 2.23 Service deficiencies as outlined previously, and the actions which EMCALI has already taken to reach appropriate solutions for said problems, are the basis for the conceptualization and formulation of the proposed project.
- 2.24 Originally, project CO-0060, called Aguablanca Infrastructure, was identified and included in the Bank's lending program as a result of the September 1985 Programming Mission to Colombia. During its development and preparation, the project has evolved to its present state which comprises five components: potable water, sewer systems (including investments for preliminary waste water treatment),



drainage systems, reduction of unmetered water and institutional strengthening for certain operational areas of EMCALI.

- 2.25 The Colombian Government through the DNP assigned its priority to the project in August 1987. Priority was reconfirmed during the Bank's Programming Mission to Colombia in August 1988. Additionally, within the Bank's Programming Guidelines for its operations in Colombia as well as the sector strategy set forth in those guidelines, water and sewer projects are considered among those with the highest priority for Bank financing.

### III. THE PROJECT

#### A. Objectives and Targets

- 3.1 The project's main objective is to provide increased water supply, sewerage systems, and drainage capacity for the City of Cali. Coverage for water supply would increase from 80 to 90%, and unmetered water would be reduced from 40 to 30%. The targets for sewerage by the end of the project's execution period would be 83%, an increase of 9%. Moreover, preliminary treatment would be provided for 75% of the city's waste water. The drainage systems, upon project completion, would control flooding on about 8,000 Hectares on the eastern side of the city. In addition, the project would provide institutional strengthening for EMCALI in various operational and information system areas.

#### B. Description

- 3.2 The project would include the following 5 components:

##### 1. Water Supply

- 3.3 This component entails the following actions:

- (a) Increase the capacity of water treatment by  $3.3 \text{ m}^3/\text{s}$  to a total of  $12.0 \text{ m}^3/\text{s}$ .
- (b) Expand Cali's distribution network including: (i) installation of 17 Kms of water transmission lines; (ii) construction of three pumping stations with an aggregate capacity of 930 liters/s for water supply in the higher level areas of the city; (iii) construction of storage tanks with a total capacity of  $50,000 \text{ m}^3$ ; (iv) installation of 266 Kms of distribution network; and (v) installation of 46,500 house connections with their meters.

##### 2. Sewerage Systems

- 3.4 This component includes the following actions:

- (a) Install 310 Kms of sewer network, 66,600 house connections and 20 Kms of interceptors and sewer mains.

- (b) Construct a  $2.9 \text{ m}^3/\text{s}$  pumping station in the Aguablanca district.
- (c) Construct a  $7.0 \text{ m}^3/\text{s}$  preliminary waste water treatment plant at Cañaveralajo.

### 3. Drainage Systems

3.5 The drainage component includes the following actions:

- (a) Construct, expand and concrete line in 35 Kms of canals; construct 3 Kms of collectors.
- (b) Construct a  $16.4 \text{ m}^3/\text{s}$  pumping station in the Puerto Mallarino area and increase the capacity by  $17.8 \text{ m}^3/\text{s}$ , of the Paseo del Comercio pumping station.
- (c) Clear and dredge two regulatory ponds located in the Aguablanca district and relocate 1,020 families that presently reside on the periphery of the ponds.

### 4. Unmetered Water Reduction Program

3.6 This component includes personnel training activities, increase of macro and micro metering levels, and the repair, replacement and improvement of tanks, network systems and production plants. (See paragraphs 4.13 - 4.15). This program would require to:

- (a) Acquire and install 30 macrometers in production plants and storage tanks.
- (b) Acquire and instal 39,600 house water meters and spare parts for another 60,400.
- (c) Install 41 Kms of transmission lines and 7,630 house meters in areas with clandestine or precarious services.
- (d) Repair and replace 2,640 valves and 8,760 chambers.
- (e) Procure tools, equipment and machinery, including a meter testing system.

### 5. Institutional Strengthening

3.7 The project includes an institutional strengthening component for EMCALI to improve its information and data processing systems and technical capacity at various levels, in the fields of water treatment, water plant operation and maintenance, water pipe pressure and metering systems. To assist in carrying out this program, computers will be purchased and training courses will be offered. (See paragraphs 4.16 - 4.18).

### C. Total Cost and Financing

3.8 The total cost of the project is US\$375,000,000 and will be financed according to the following chart:

TOTAL COST AND PROJECT FINANCING 1/  
(equivalent US\$000)

| <u>INVESTMENT CATEGORIES</u>               | <u>IDB/OC</u> | <u>IDB/SF</u> | <u>OECF</u> | <u>Local Counterpart</u> |                 | <u>EMCALI</u> | <u>TOTAL</u> | <u>%</u>  |
|--|---------------|---------------|-------------|--------------------------|-----------------|---------------|--------------|-----------|
|  |               |               |             | <u>ITALY</u>             | <u>BCH/FFDU</u> |               |              |           |
| 1. <u>Engineering &amp; Administration</u> | -             | -             | 14,194      | -                        | -               | 13,887        | 28,081       | 7.5       |
| 1.1 Design & supervision                   | -             | -             | 14,194      | -                        | -               | 8,564         | 22,758       |           |
| 1.2 Administration                         | -             | -             | -           | -                        | -               | 5,323         | 5,323        |           |
| 2. <u>Direct Costs</u>                     | 48,404        | 20,422        | 97,176      | 5,015                    | 27,535          | 21,743        | 220,295      | 58.7      |
| 2.1 Water Supply                           | 3,044         | 2,637         | 36,967      | 1,919                    | 14,513          | 8,730         | 67,810       | 18.1      |
| 2.1.1 Expansion Treat. Plant               | -             | -             | 8,980       | 1,919                    | -               | 5,355         | 16,254       |           |
| 2.1.2 Distribution                         | 3,044         | 2,637         | 27,987      | -                        | 14,513          | 3,375         | 51,556       |           |
| 2.2 Sewer Systems                          | 17,368        | 8,295         | 60,209      | -                        | 13,022          | 5,311         | 104,205      | 27.8      |
| 2.2.1 Lines & Collectors                   | 17,368        | 8,295         | -           | -                        | 13,022          | 3,616         | 42,301       |           |
| 2.2.2 Pumping Stations                     | -             | -             | 22,682      | -                        | -               | 724           | 23,406       |           |
| 2.2.3 Treatment Plant                      | -             | -             | 37,527      | -                        | -               | 971           | 38,498       |           |
| 2.3 Drainage                               | 21,047        | 8,443         | -           | 3,096                    | -               | 7,237         | 39,823       | 10.5      |
| 2.3.1 Canals & Collectors                  | 16,944        | 7,922         | -           | -                        | -               | 3,738         | 28,604       |           |
| 2.3.2 Pumping Stations                     | 4,103         | 521           | -           | 3,096                    | -               | 2,155         | 9,875        |           |
| 2.3.4 Pond Improvement                     | -             | -             | -           | -                        | -               | 1,344         | 1,344        |           |
| 2.4 Unmetered Water                        | 6,945         | 1,047         | -           | -                        | -               | 465           | 8,457        | 2.3       |
| 3. <u>Associated Costs</u>                 | 2,516         | -             | -           | 3,235                    | -               | 7,354         | 13,105       | 3.5       |
| 3.1 Machinery and Op.& Maint.Equip.        | 1,743         | -             | -           | 3,235                    | -               | -             | 4,978        |           |
| 3.2 Technical Cooperation                  | 773           | -             | -           | -                        | -               | 255           | 1,028        |           |
| 3.3 Land                                   | -             | -             | -           | -                        | -               | 7,099         | 7,099        |           |
| 4. <u>Unallocated</u>                      | 10,029        | 4,328         | 37,470      | -                        | 2,465           | 11,763        | 66,055       | 17.6      |
| 4.1 Contingencies                          | 4,501         | 2,049         | 18,100      | -                        | 1,225           | 7,268         | 33,143       |           |
| 4.2 Escalation                             | 5,528         | 2,279         | 19,370      | -                        | 1,240           | 4,495         | 32,912       |           |
| 5. <u>Finance Charges</u>                  | 14,051        | 250           | -           | -                        | -               | 33,163        | 47,464       | 12.7      |
| 5.1 Interest                               | 13,301        | -             | -           | -                        | -               | 30,657        | 43,958       |           |
| 5.2 Credit Fee                             | -             | -             | -           | -                        | -               | 2,506         | 2,506        |           |
| 5.3 Inspection & Supervision               | 750           | 250           | -           | -                        | -               | -             | 1,000        |           |
| <br>TOTAL                                  | <br>75,000    | <br>25,000    | <br>148,840 | <br>8,250                | <br>30,000      | <br>87,910    | <br>375,000  | <br>100.0 |
| Percentages                                | 20.0          | 6.7           | 39.7        | 2.2                      | 8.0             | 23.4          | 100.0        |           |

1/ In June 1988 prices.

- 3.9 Each of the component costs were estimated based on June 1988 unit prices for labor, equipment, construction materials, etc. and on recent price quotations from suppliers. Latest Bank projections were applied for cost escalation and contingency calculations and current IDB loan conditions were used to project financial charges. It is considered that the analysis reflects actual and realistic project costs.
- 3.10 The Bank's financial participation in the project in dollars or other convertible currencies amounts to US\$75.0 million, which represents 20% of the total cost. Present IDB policy, as set forth in FP-33-1, would permit a maximum of 40% IDB financing of the project in said currencies. However, it has been the Government's specific request that the Bank provide only the indicated amount for this project, plus an additional loan in local currency amounting to the equivalent of US\$25.0 million.
- 3.11 In addition to IDB funding, the project will be financed with resources from the Japanese Government, OECF, the Central Mortgage Bank of Colombia (BCH), the Italian Government as well as local funds. The Japanese loan has already been approved and the loan contract from the Italian Government will be signed as soon as authorization from the Finance Ministry is obtained. The BCH will analyze the project within the next two months and the financing should be made available on a timely basis.

#### IV. PROJECT EXECUTION

##### A. Borrower and Executing Agency

- 4.1 The borrower and executing agency will be the Cali Municipal Enterprises (EMCALI). Actual responsibility for project execution will be entrusted to the Technical Directorate of Water and Sewerage Department of EMCALI. The Technical Directorate will be responsible for project coordination, including the activities among different financing sources, supervision, controlling the procurement process, preparation and presentation of periodic reports and updating the execution plan as well as other activities to insure proper project implementation. This unit will receive support services from other technical, operative, administrative and legal offices within EMCALI. In addition, EMCALI will contract consulting firms to assist in project supervision.
- 4.2 Presently, this unit has adequate personnel to comply with its current functions. However, in view of the additional responsibility of the execution of the proposed project, it will be necessary to reinforce the unit's personnel during the period of execution, with additional engineers and other technical and administrative staff. Accordingly, it is recommended that, prior to the first disbursement of the loan, the borrower present the Bank with evidence that it has temporarily contracted the necessary personnel for proper project execution. (See Proposed Resolutions).

**B. Design Status**

- 4.3 The final designs for the components of the IDB financed portion of the project have been completed, with the exception of the storage tanks. These tanks, which represent 2% of the cost of the Bank's portion, have an advance of 40% and will be completed in early 1989. Regarding the designs for the remainder of the project, these have been contracted in their entirety and for the most part are well advanced (i.e. greater than 50%) and will be completed by March 1990, which is in accordance with the preliminary execution plan. All the designs have for the most part been prepared by consulting firms and contain the necessary specific information required for proper project implementation.

**C. Investment Schedule**

- 4.4 An investment schedule has been prepared for each of the project's components and has been consolidated by source. The following chart summarizes investments:

| <u>Sources<br/>of Funds</u> | <u>Year 0</u>         | <u>Year 1</u>        | <u>Year 2</u>         | <u>Year 3</u>         | <u>Year 4</u>        | <u>Year 5</u>        | <u>Total</u>          |
|-----------------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|----------------------|-----------------------|
| IDB/OC                      |                       | 3,953                | 26,033                | 23,378                | 14,783               | 6,853                | 75,000                |
| IDB/SF                      |                       | 1,515                | 5,875                 | 10,066                | 6,337                | 1,207                | 25,000                |
| OECF                        | 1,073                 | 9,069                | 64,278                | 66,231                | 8,189                |                      | 148,840               |
| Italy                       | 678                   | 7,367                | 205                   |                       |                      |                      | 8,250                 |
| BCH                         |                       | 1,973                | 5,210                 | 15,574                | 6,600                | 643                  | 30,000                |
| Local                       | 6,047                 | 17,175               | 17,270                | 21,300                | 17,260               | 8,858                | 87,910                |
| <b>Total</b>                | <b><u>7,798a/</u></b> | <b><u>41,052</u></b> | <b><u>118,871</u></b> | <b><u>136,549</u></b> | <b><u>53,169</u></b> | <b><u>17,561</u></b> | <b><u>375,000</u></b> |

a/ This amount corresponds to investments and costs incurred during 1988.

**D. Advance of Funds**

- 4.5 An advance of funds amounting up to 10% of the Bank's eventual loans has been recommended to facilitate the execution of the project.

**E. Procurement of Goods and Services**

- 4.6 Procurement of goods and services for those items financed with IDB resources, in amounts greater than US\$200,000, will be carried out by public international competitive bidding in accordance with Bank procedures agreed upon between the borrower and the IDB. Moreover, for the contracting of consultants, EMCALI will apply Bank procedures. Procurement of goods and services with resources from Japanese financing (OECF) and the Italian Government will be carried out by the application of rules and procedures agreed upon between EMCALI and the respective financial agencies. In the case of the financing from BCH-FFDU, if these resources are provided from the IBRD loan already granted to this institution, procurement procedures will adhere to World Bank policy.

**F. Recognition of Incurred Costs and Retroactive Financing**

- 4.7 In view of EMCALI's necessity to advance certain bidding procedures and initiate some of the works pertaining to water supply and sewer systems network, the institution has requested that the Bank recognize these investments and retroactively finance them. The Bank has reviewed the procedures applied for the procurement of the services and considers them analogous to those which will be included in the future loan contracts. Furthermore, it has been verified that these investments have been incurred within the time frame set forth in Bank policy.
- 4.8 Accordingly, it is recommended that the Bank recognize up to a total of US\$5,000,000 as part of the local counterpart and other sources of financing (see Recomendations), and finance retroactively, with IDB funds, an amount of up to the equivalent of US\$2,000,000 from the proposed local currency loan, due to the fact that procurement was restricted to the national level. (See Proposed FSO Resolution)

**G. Sites, Right of Way and Easements**

- 4.9 EMCALI has presented a plan for obtaining the necessary rights of way and land for project implementation. This plan contemplates activities in the following fields: topography and surveying, property owners census, title searches, property negotiations and legalization of titles. This plan has been initiated and should conclude in September of 1989, which coincides with the project execution plan. The Bank has reviewed this plan and its timetable and considers it acceptable. It should be noted that the Bank has not experienced problems pertaining to land acquisitions, right of ways or easements in other water and sewerage projects financed in major cities in Colombia such as Medellin and Bogota. In any case, the standard IDB clause establishing legal possession of property and rights of way prior to procurement of goods or letting of construction contracts will insure proper control of EMCALI's plan for obtaining said property.

**H. Operation and Maintenance**

- 4.10 EMCALI continuously carries out operational and maintenance activities through its corresponding units. However, the effectiveness of this activity has decreased due mainly to lack of proper machinery and equipment. This area would be fortified and strengthened, not only through purchasing of adequate machinery and equipment for sewer system and pipe cleaning, removal of debris from canals and regulatory ponds but also, through training courses included in the institutional strengthening program described below.
- 4.11 Notwithstanding, in order to insure that these activities are fulfilled satisfactorily, it is recommended that the future loan contracts include a condition whereby the borrower would maintain the project works and all other works of its water, sewerage and drainage systems in accordance with standard acceptable technical norms, and that during a 10 year period subsequent to the completion of the first

work included in the project, present the Bank, within the first trimester of each year, a report regarding the conditions of the works. (See Recommendations and Annex A.)

- 4.12 In addition to the above and in view of the fact that 68% of the water distribution system is comprised of asbestos-cement pipe, in accordance with IDB policy, the ionic balance of the water should be monitored. Accordingly, it is recommended that future loan contracts, include a condition whereby the borrower will annually inform the Bank in this regard. (See Recommendations).

I. Unmetered Water Reduction Program

- 4.13 Cali's water supply system, over the last 10 years, has deteriorated to the point that unmetered or unaccounted water has increased from 25% in 1975 to 40% in 1980. In addition to actual technical deficiencies in the system, the mentioned increase in unmetered water can be attributed to the spontaneous and disorderly urban development of the city during that time, particularly in the marginal areas, where clandestine water connections consume high levels of water.
- 4.14 While EMCALI has attempted to remedy this situation, to date it has not achieved positive results. Aware of the problem, the institution has prepared an unmetered water reduction plan which will be carried out with the participation of specialized consultants. The general scope of this plan is to reduce the unmetered water rate from 40% to 30% over the next five years. The work of the consultants, initiated in July of 1988 for a one year period, includes studies relating to pitotmetry, micro and macrometering, loss control and operational controls, and also training of their local counterparts.
- 4.15 To achieve the reduction target, works including residential meter installation, distribution system valve repair and replacement, installation of macrometering systems, construction of transmission lines in the marginal areas and the construction of a control center will be carried out during the implementation of the project. This plan is considered realistic and, in order to monitor its progress, it is recommended that a condition be included in the loan contracts, so that, during the first semester of each year during the project execution period, the Bank will receive a report that includes information regarding the measures and progress achieved during said year and how those relate to the total foreseen targets included in the plan. (See Recommendations)

J. Institutional Strengthening

- 4.16 The institutional strengthening program is divided into two components, one, to improve the information and data processing systems of the Water and Sewerage Department of EMCALI and the other, personnel training in the same department. The former component is geared to assist the department, through the purchase of computers and corresponding software, in managing statistical information relating to operation, maintenance systems, water production and billing, cost

accounting, inventory control as well as the actual status of the proposed project implementation.

- 4.17 In order to revise the computing services required, a consultant will be contracted during a 4 month period to examine the existing and required information systems. Accordingly, the consultant will recommend the appropriate characteristics of hard and software which are best suited to the institution's requirements.
- 4.18 The training component comprises a total of 38 graduate and specialty courses and 8 short visits, all of which are outside of Colombia. The fields include water treatment, system planning, urban drainage, pumping station design construction, operation and maintenance, pitotmetry, macrometering, instrumentation and control center management. The candidates for these courses and training will be permanent employees of the institution and the selection criteria will be submitted to the Bank.

K. Environmental Aspects

- 4.19 In general, the quality of water presently provided by the system is satisfactory and complies with city sanitary codes for human consumption. The waste water from the city this is deposited in the Cauca river without any treatment.
- 4.20 The majority of the 200 industries located within the city limits, apply preliminary treatment to their discharges and, in some cases, primary treatment. These industries dump their waste in the Cali river and the general city collection system. In the absence of secondary treatment, this industrial waste further contaminates the river.
- 4.21 By law, EMCALI has been entrusted to monitor the contamination levels of the Cauca River caused within the area of its sewerage service. It has accordingly created the office of contamination control, with the necessary personnel and appropriate laboratory equipment. Presently, this office is adequately performing its duties. However, in order to program future activities, insofar as treatment plants were concerned, EMCALI contracted a study which in 1985 recommended the construction of two treatment plants, one in Cañaveralejo and the other in Acopi, both downstream from the potable water treatment plant at Puerto Mallarino.
- 4.22 The proposed project contemplates the construction of the first stage of the Cañaveralejo treatment plant with a 7.0 m<sup>3</sup>/s capacity. Treatment would be at the preliminary level and the plant would satisfy demand to the year 2000. The designs for this plant are being carried out by a Colombian/Japanese consultant firm financed by the OECF and will be completed by March of 1990. Therefore, it is recommended that within 24 months of the loan contract date, the borrower should present the Bank with the designs for the treatment plant including a time frame and financing plan to increase the level of treatment from preliminary to primary or secondary. (See Recommendations).



- 4.23 Additionally, it is recommended that the borrower present the Bank within the first trimester of each year during the project execution period, a report which includes information regarding the quality level of the Cauca river. (See Recommendations). In order to monitor the industrial waste disposal, it is also recommended that the loan contracts include the obligation that the borrower present the Bank within the first trimester of the year during the project execution period, a report whereby it informs the results of industrial waste monitoring and of the measures to be taken in case of non compliance with the respective regulations. (See Recommendations).
- 4.24 The Bank's Environment Committee reviewed these aspects of the project in detail and, with the precautions taken through the indicated contractual conditions, it is concluded that the project's impact on the environment is positive since numerous waste discharges would be eliminated and a preliminary waste water plant will be constructed. Moreover, the project would signify the consolidation and improvement of environmental control activities in Cali, safeguarding the city and its principal water source.

L. Relocation Program

- 4.25 The drainage component of the project includes the cleaning and dredging of two regulatory ponds located in the Aguablanca district. As a result of these activities, it will be necessary to relocate 1,021 families who presently reside around these ponds.
- 4.26 For this purpose, EMCALI, in coordination with the Municipal Housing Authorities (INVICALI) community development offices, the National Family Welfare Institute (ICFB), Municipal planning office, the Territorial Credit Institute (ICT) and the Valle University prepared and initiated a relocation plan for these families.
- 4.27 The plan, which has been discussed with the affected community and who are in agreement, basically consists of relocating families from their present location within the same neighborhood. The new area would include adequate water and sewer service, thereby avoiding further pollution of the regulatory ponds. Moreover, since it is basically within the same area, advantage can be taken of other existing community services such as schools and medical assistance.
- 4.28 In order to implement the relocation program, EMCALI will form an interdisciplinary group including members of the above mentioned entities. This group will coordinate the various activities for the actual transfer of the families, plan timetables and the self help construction programs and any other related activities. Additional social workers, already contracted by EMCALI will work as liaison between the community, their representatives and leaders and the EMCALI management.
- 4.29 This preliminary plan has been reviewed by the Bank, including the Environmental Committee, and it is considered acceptable. In order to monitor the relocation process, information has been included in the ex-post evaluation process. Additionally, it is recommended that

prior to the first disbursement of the loan resources, EMCALI should present for the Bank's approval the definitive relocation plan, including evidence that land acquisition has been fulfilled, the necessary inter-institutional agreements have been signed and evidence that the required personnel and financial resources have been assigned to complete the relocation process. (See Proposed Resolution)

M. Ex-Post Evaluation

- 4.30 An ex-post evaluation of the project will be conducted by the borrower. Accordingly, the initial data will be collected and presented with the proposed methodology for future data collection within 18 months of the loan contract signature. Likewise, this information will be updated and presented to the Bank within 36 months of said date and then annually until 3 years after the last disbursement. At the end of the fourth year after final disbursement EMCALI should present the ex-post evaluation, in accordance with the agreed upon methodology. (See Recommendations and Annex A)

V. THE BORROWER AND EXECUTING AGENCY

A. Background

- 5.1 The borrower and executing agency will be the Cali Municipal enterprises (EMCALI), a decentralized municipal organization created in 1931. EMCALI's fundamental purpose is to organize, administrate, expand, conserve and maintain water supply and sewer systems, electric energy and telephone services. Additionally, EMCALI has been authorized to provide these same services to surrounding municipalities including Yumbo, Puerto Tejada, Jamundi, Candelaria and Palmira.

B. Organization of the Services

- 5.2 In EMCALI, three self-contained operating divisions (water and sanitation, telephones, electrical energy) function independently to provide their corresponding services and report directly to the General Manager. A number of support units within the organizational structure provide these divisions with financial, general administration, planning and commercialization services.
- 5.3 EMCALI views the utility as a single public sector enterprise. Consequently, it manages its funds on the basis of a single fund for covering all three divisions. Under this arrangement, the internally generated funds from one division can be used to support the others and, therefore, help the enterprise meet its overall financial objectives. In effect, a portion of the cash surplus produced by the power division has been transferred to the others, mainly to the water and sanitation division. These transfers have been used to cover a part of the debt payment as well as expansion programs. There are no legal impediments to these transfers.

C. External Auditing

- 5.4 External Audits are presently performed for EMCALI as a whole including financial information for all three services provided by the institution. These audits are carried out by an independent certified public accounting firm. For the proposed project, it is recommended that EMCALI's and its Water and Sewer Division's financial statements during the effectiveness of the loan contract and those relating to the project during its execution be presented to the Bank, audited by an independent certified public accounting firm. (See Recommendations)

D. Tariff Aspects and Investment Recovery

- 5.5 EMCALI's tariffs are prepared by its planning office and subsequently examined by the Board of Directors and then presented to JNT for approval. Tariffs have been increased during the last four years by approximately 2% per month which has reasonably maintained value in terms of inflation. Additionally, in April 1988, EMCALI increased its water supply and sewer system tariffs by approximately 17% in real terms and received authorization from JNT for tariff increases of 4% in real terms for 1989 and 1990. For its part, it should be pointed out that the sewerage system rate is based on water consumption levels and is charged at half the rate of that charged for water. In 1988, the average tariff for water in Cali is approximately US\$15 cents/m<sup>3</sup>, which is similar to that of Medellín and represents, in relative terms with other Latin American cities, a middle range tariff.
- 5.6 By law the municipality has the right to recover investment costs through a land assessment system. In effect, property owners who receive economic benefit derived from social interest projects implemented by the state, department or municipality, are assessed a charge which allows the public entity to recover a portion of the actual investment. Historically, the actual percentage recovered by the system has been 50% for treatment and pumping stations, 70% for distribution networks and 100% for residential water connections.
- 5.7 This system is an important factor within the analysis of EMCALI's debt service coverage and investment program financing plan. Accordingly, for the last two years, the investment recovery system for water supply and sewer works represented 12% of operational income, and for the next five years EMCALI projects that this system will generate annually approximately US\$9 million. In view of the foregoing, EMCALI is presently taking steps in order to further implement this system by 1989. It is therefore recommended that the loan contracts for the proposed project include a condition whereby within a year from its effective date EMCALI demonstrates, to the Bank's satisfaction, that the investment recovery system is functioning within the institution and that during the first three years of project execution, recovery levels should reach at least 75% and thereafter 85% of the annual balances due and recoverable. (See Recommendations).

E. Historical Financial Analysis

- 5.8 Given the nature of the project, the present information will focus on the Water and Sewer Division (SAA) of EMCALI. Between 1985 and 1987, the SAA played an important role in terms of EMCALI's capital and asset structure and contributed with approximately 20% of its operating income. Likewise, during the 1983-1987 period, operational income (approximately US\$25 million per annum) covered all operational costs including those related to depreciation of revalued assets. However, the division suffered net losses from 1984-1987 (averaging some US\$1.8 million per annum) due mainly to increases in financial charges and non-operative costs, such as those due to variations in exchange rates.
- 5.9 The result of the Sources and Application of Funds analysis indicates that the internal generation of funds for the period 1983-87 represented 30% of total resources. Internally generated resources amounted to US\$11.0 million in 1983, decreased to US\$5.3 million in 1985 before increasing again to US\$8.4 million in 1987. The remaining 70% of funds available were provided by loans (55%) and the remainder from transfers by the company's electrical division. The funds were applied to investments programs (63%) and debt service (33%). Total investments during the period amounted to US\$78 million and debt service to US\$41 million. During the last three years internally generated funds were not sufficient to cover debt service.
- 5.10 Effective collection rates increased from 78% in 1986 to 82% in 1987. The institution has drawn up plans to strengthen its collection activities in order to further increase this rate which is deemed feasible. Accordingly, it is recommended that the loan contracts include a condition which establishes the obligation of the borrower to maintain an adequate level of collection effectiveness in the understanding that it should collect at least 85% of the required balances of the respective year. This information should be presented 120 days subsequent to the close of the fiscal year. (See Recommendations).

F. Financial Projections

- 5.11 The financial projections were carried out for the water and sewer division of the company (SAA), based only on the already approved JNT real increases for 1989-1990 and projected investment recoveries. The results indicate a relatively sound enterprise during project execution with some US\$84 million of internally generated resources left over for investment needs after debt service. However, without further tariff rate increases in real terms, coverage of the debt service will be increasingly difficult beginning in 1993, as financial charges begin taking their toll. During 1994-1997, the internal generation of funds is not adequate to meet the debt service of US\$125 million for the same period, leaving a deficit in the order of US\$39 million. It is noted that this period is also characterized by almost no new investments, a scenario that may not hold true given the sewerage treatment needs in the future.

- 5.12 A sensitivity analysis was performed to determine the required tariff levels for the period 1991-1997 to satisfy Bank financial policy and practices in major urban water systems. The analysis shows if the annual tariff rate increase were to continue in real terms at 4% from 1991 through 1993 and at 5% from 1994 through 1997, SAA would generate adequate resources to service debt and provide for some US\$5.6 million for investment needs. This coverage of debt service and proportion coverage of investment needs would also be consistent with Government water service guidelines, which seek sectorial self-sufficiency, avoiding intersectorial transfers and subsidies to achieve sound resource allocation. Thus, the contract calls for a clause which recommends that the SAA, taking into account the circumstances of the proposed project, generate internally sufficient resources to cover its debt service as well as 15% of its investment program until 1991 inclusively and 20% thereafter during the life of the loans. (See proposed Resolutions and Appendix IV).
- 5.13 Given the relatively precarious projected financial situation of the SAA, and the apparent need for additional financial measures after 1990, it is also recommended that EMCALI provide the Bank, on an annual basis during project execution, with reports on its financial situation and five year financial projections. This information will form the basis for continued dialogue with the company as to possible additional measures that may be needed to assure the financial viability of the SAA and compliance with contractual conditions. (See Recommendations). Furthermore, it is recommended that the borrower be required, during the disbursement period and for three years thereafter, to seek Bank approval prior to initiating new projects or works that would require a level of annual investments in addition to those contemplated in the project, which exceed 5% of gross fixed assets including works in execution. (See Recommendations). Finally, in order to comply with internal Colombian practices, the borrower should provide evidence that the annual debt service for IDB loans has been included in the enterprise's budget. (See Recommendations).

## VI. PROJECT JUSTIFICATION

### A. Technical Justification

- 6.1 The project corresponds to a general systematic investment plan for the improvement and expansion of water and sanitation services within the city of Cali, thereby assisting EMCALI in reaching not only its own coverage targets but also those set forth by the national government for the nation as a whole. In terms of water supply, construction works would allow for increased coverage and efficiency in the provision of services. For the sewer component, in addition to increasing coverage, a first stage of waste water treatment would be initiated for the city. As for the drainage aspects, once the project is completed, further extensive flooding of low lying marginal areas would be avoided, permitting orderly urban development for lower income families.

- 6.2 The advance stage in the preparation of the final designs for the project allow for an adequate estimation of the amount of work required, the timely initiation of those works as well as project completion. The unit prices updated to June of 1988 ensure a reasonable cost estimate of the project.
- 6.3 The implementation system by public internationally bidding for contracting of goods and services specified for the project will allow for reasonable price quotations for construction contracts from qualified firms, as well as the provision of supplies and construction materials on a timely basis. Additionally, the supervision system to be implemented by the executing unit and consultant firms would permit the works to be carried out according to their designs, plans and specifications. Finally, the preliminary project execution plan has been adequately prepared and represents a reasonable basis to estimate the project's implementation period.
- 6.4 It is considered that EMCALI is adequately organized to operate and maintain these systems upon completion. The measures that would be implemented to strengthen operation and maintenance during the course of project execution will insure that these activities are carried out effectively.

B. Financial Viability

- 6.5 EMCALI will provide counterpart from two sources. The first, will be from the sale of EMCALI's interest in the Rio Anchicaya Hydroelectric Power Plant (CHIDRAL) to CVC. This sale will amount to US\$53.5 million to be paid over the 1988-1993 period. It should be noted, however, that the payment agreement between CVC and EMCALI is presently under review in order to include a payment extension period to start in 1989. Accordingly, given the importance of this source, prior to the first disbursement of the future IDB loan proceeds, EMCALI should demonstrate that the institution has signed the new payment agreement with the CVC. (See Proposed Resolutions). The second source of local counterpart is to be provided from internal generation of funds of the Water Supply and Sewer Division (SAA) and amounts to US\$34.4 million. As indicated in Section V of this proposal, the ability of SAA to generate such resources is pretty much assured with the already approved tariff rate increases and additional measures foreseen to generate investment recoveries from the project beneficiaries.
- 6.6 Given the possible rate increases required past 1990 to assure the financial viability of the service and comply with contractual covenants, water rates only, by the end of the period would be at approximately US\$20 cents/m<sup>3</sup>. This level is still adequate from the consumer acceptability point of view, as may be concluded from the surveys made in relation to the socioeconomic evaluation of the project. The possibility of this tariff increase was considered when projecting the demand for services in the economic evaluation of the project.

C. Economic Viability

1. Economic Evaluation

- 6.7 For the purpose of the economic evaluation, the project has been divided in the following three components: (i) water and sewer; (ii) reduction and control of unmetered water; and (iii) drainage systems. To evaluate components (i) and (ii) the public work simulation model was applied and for component (iii) a conventional cost-benefit analysis was carried out. Additionally, distributive impact on low income families was calculated.
- 6.8 The analysis of the water and sewer component indicates that its implementation would be positive. In effect, the net present value discounted at 12% reaches Col\$2,638 million and an internal rate of return of 13.2%. The sensitivity analysis indicates that by modifying demand elasticity by plus or minus 30% the rate of return varies between 12.4 and 15.6%. Likewise, by increasing costs and/or decreasing savings to the users by 30%, the net present value is always positive and the rate of return is reduced to a minimum of 12.1%.
- 6.9 Regarding the economic evaluation for the unmetered water reduction component, its rate of return reaches 18.6% with a net present value of Col\$4,676 million. As in the case of the previous component, the sensitivity analysis indicates that the rates of return varied between 16.6 and 23.0% when the elasticity of the demand is changed by plus or minus 30%. Likewise, with a 30% increase in investment, operation and maintenance costs, the internal rate of return is reduced to 17.5%. Finally, if the reduction unmetered water reaches 35% instead of the expected 30%, the internal rate of return would be 15.7%.
- 6.10 The methodology applied for the analysis of the drainage component compares benefits as a result of avoided damages in the direct area of influence and the quantifying of rent for the indirect area of influence including investment and maintenance costs. The present value of the benefits is Col\$8,047 million as compared to the economic investment and maintenance cost for the storm drainage works results in a net present value of Col\$1,714 million and an internal rate of return of 15.8%. In the case that the direct and indirect area of influence of the project or the population therein were to be reduced by 20%, the rate of return would decrease to 13%. If this were to occur only in the direct area of influence, the rate would be 15.5%. The sensitivity analysis indicates that the rate of return for this component would vary between 12.8 and 14.7%.
- 6.11 In addition to the evaluation for each one of the project's components, an economic analysis for the whole project was carried out and as a result, the net present value discounted at 12% reaches Col\$9,027 million and the internal rate of return is 14.4%. The sensitivity analysis indicates that the net present value remains positive in all cases including those considered most unfavorable.

2. Low Income Distribution

- 6.12 According to estimates for each component and taking into consideration the nature of the benefits and how resources will be transferred to each of the different socioeconomic strata, 64% of the net economic benefits to the private sector would accrue to the lower income population.

VII. RECOMMENDATIONS

- 7.1 In view of the above, it is considered that the project is viable from the technical, legal, institutional, financial and economic point of view. Therefore, it is recommended that the proposed financing be approved. In this regard, the following documents are enclosed for the consideration of the Board of Executive Directors:

|              |   |   |
|--------------|---|---|
| Appendix I   | - | Proposed Resolution OC  |
| Appendix II  | - | Proposed Resolution FSO                                       |
| Appendix III | - | Recommendations   |
| Appendix IV  | - | Description of the project<br>(Annex A to the loan contracts) |



PROPOSED RESOLUTION 1/

COLOMBIA. LOAN /OC-CO TO EMPRESAS MUNICIPALES DE CALI (EMCALI)  
(Project for the Expansion and Improvement of the  
Water Supply and Sewerage Systems of Cali)

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 Empresas Municipales de Cali (EMCALI), of Cali, Colombia, as borrower, and the República de Colombia, as guarantor, for the purpose of granting the former a loan to cooperate in the financing of a project for the expansion and improvement of the water supply and sewerage systems of Cali. This financing shall be subject substantially to the following conditions:

1. Amount and currencies: Up to US\$75,000,000 or its equivalent in other currencies (except that of Colombia) which are part of the ordinary capital of the Bank, to pay for goods and services acquired through international competition in the member countries of the Bank and for such other purposes as may be specified in the loan contract. Payments of amortization and interest shall be made in the currency or currencies specified by the Bank in a quantity equivalent to the corresponding amount owed, calculated in units of account in terms of dollars of the United States of America, in accordance with provisions to be included in the loan contract.
2. Source of funds: The ordinary capital resources of the Bank.
3. Guarantee: Joint and several guarantee of the República de Colombia.
4. Credit fee: 1-1/4% per annum on the undisbursed portion of the financing, commencing to accrue 60 days after the date of the

---

1/ The provisions contained in this Appendix I and in Appendix II shall only be final when the Board of Executive Directors has approved the loan proposal.

contract and payable in dollars of the United States of America on the same dates as the interest.

5. Amortization: The borrower shall amortize the loan in a period of 25 years from the date of the loan contract by means of semiannual, consecutive, and, insofar as possible, equal installments. The first installment shall be paid six months after the date scheduled for the last disbursement of the financing. The Bank may credit the amortization installments proportionally to the outstanding balance of each of the portions of the loan which accrue different rates of interest.
6. Interest: The borrower shall pay interest semiannually on the outstanding balances of the loan. The first payment shall be made six months after the date of the loan contract. During the disbursement period, the Bank: (a) shall determine the rate of interest to be applied as of the first day of January of each year and for the life of the loan to any amount disbursed during the ensuing year, and (b) may modify the interest rate, in accordance with the policy of the Bank, to be applied to disbursements of the loan made during the second half of the year. At the request of the borrower, resources of the financing may be used to pay interest during the period of disbursement thereof.
7. Disbursement: The term for disbursement of the financing shall expire 5 years after the date of the loan contract.
8. General conditions:
  - (a) The resources of the loan shall be used in their entirety by the borrower, through the Dirección Técnica of the Gerencia de Acueducto y Alcantarillado. If modifications in the legal provisions or the basic regulations concerning the borrower are approved which, in the opinion of the Bank, may substantially affect the project, the Bank shall have the right to require the borrower to provide explanatory and detailed information in order to determine whether such modification or modifications may have an adverse impact on the execution of the project. Only after hearing the borrower and assessing its information and clarifications may the Bank take such measures as it deems appropriate, in accordance with provisions to be set forth in the loan contract and in the guarantee contract.
  - (b) The resources of the loan, together with those of Loan /SF-CO, shall be used to participate in the execution of a project estimated at the equivalent of US\$375,000,000. Consequently, the loan and guarantee contracts shall contain such provisions as the Bank deems appropriate to ensure that such additional resources as may be necessary, in addition to the two loans, for the complete execution of the project shall be duly provided, in an amount estimated at the equivalent of US\$275,000,000, which may include financing from the Government

of Italy, the Overseas Economic Cooperation Fund (OECF), of Japan, and the Banco Central Hipotecario, of Colombia, in accordance with a schedule of investments satisfactory to the Bank.

- (c) Prior to the first disbursement of the financing, the borrower shall present to the satisfaction of the Bank: (i) evidence that it has staffed the Dirección Técnica of the Gerencia de Acueducto y Alcantarillado with the additional personnel needed for the execution of the project, as previously agreed upon with the Bank; (ii) evidence that it has signed the new payments agreement with the Corporación Autónoma Regional de Cauca (CVC), relating to the sale of the borrower's equity interest in CHIDRAL; and (iii) the definitive plan, together with its corresponding timetable, for the resettlement of inhabitants living on the banks of the regulation ponds and in areas adjacent to canals and streets to be widened in the Distrito de Aguablanca; such plan to include the cooperation agreements entered into with other institutions and governmental and/or municipal agencies for its implementation, as well as a breakdown of the human and financial resources allocated to that end.
- (d) The borrower and the guarantor shall take appropriate measures acceptable to the Bank to ensure that, beginning in 1989, the tariff rates for the water supply and sewerage services, including income earned from the system of recovery on investments shall produce revenues sufficient, at least to cover all operating costs, including those relating to administration, operation, maintenance and depreciation of revalued fixed assets. If the application of the foregoing does not generate sufficient revenues to cover the timely service of all the obligations of the borrower corresponding to its Servicio de Acueducto y Alcantarillado and to finance a proportion of that Servicio's investment program, the guarantor and the borrower shall take the necessary measures, which may include increases in the tariff rates, to obtain the additional resources as may be required to achieve that purpose.
- (e) In the acquisition of machinery, equipment and other materials for the project, and in the awarding of construction contracts, the system of public bids shall be followed in each case in which the value of such acquisitions or contracts exceeds the equivalent of US\$200,000. The bidding shall be subject to the procedures to be included as an annex to the loan contract. This provision shall not apply to the acquisitions to be made with resources from the credits of the Government of Italy, the Overseas Economic Cooperation Fund (OECF), of Japan, or the Banco Central Hipotecario of Colombia, referred to in Clause 8(b) of this resolution.

- (f) The Bank shall establish such inspection procedures as it deems necessary to assure the satisfactory execution of the project, and the borrower and the guarantor shall extend all cooperation required for the most effective accomplishment of this purpose. From the amount of the financing, the sum of US\$750,000 shall be allocated for credit to the general income accounts of the Bank to meet expenses of general inspection and supervision.

PROPOSED RESOLUTION 1/

COLOMBIA. LOAN /SF-CO TO EMPRESAS MUNICIPALES DE CALI (EMCALI)  
(Project for the Expansion and Improvement  
of the Water Supply and Sewerage Systems of Cali)

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 Empresas Municipales de Cali (EMCALI), of Cali, Colombia, as borrower, and the República de Colombia, as guarantor, for the purpose of granting the former a loan to cooperate in the financing of a project for the expansion and improvement of the water supply and sewerage systems of Cali. This financing shall be subject substantially to the following conditions:

1. Amount and Currencies: Up to the equivalent of US\$25,000,000 in Colombian pesos which are part of the Fund for Special Operations of the Bank to cover local expenses and for such other purposes as may be specified in the loan contract. Payments of amortization and interest shall be made in Colombian pesos.
2. Source of Funds: The Fund for Special Operations.
3. Guarantee: Joint and several guarantee of the República de Colombia.
4. Amortization: The borrower shall amortize the loan in a period of 30 years from the date of the loan contract by means of 46 semiannual, consecutive, and, insofar as possible, equal installments. The first installment shall be paid 7-1/2 years after the date of the loan contract.

---

1/ The provisions contained in this Appendix II and in Appendix I shall only be final when the Board of Executive Directors has approved the loan proposal.

5. Interest: 2% per annum, payable semiannually on the outstanding balances of the loan. The first payment shall be made six months after the date of the loan contract.
6. Disbursement: The term for disbursement of the financing shall expire 5 years after the date of the loan contract.
7. Special Conditions:
  - (a) The resources of the loan shall be used in their entirety by the borrower, through the Dirección Técnica of the Gerencia de Acueducto y Alcantarillado. If modifications in the legal provisions or the basic regulations concerning the borrower are approved which, in the opinion of the Bank, may substantially affect the project, the Bank shall have the right to require the borrower to provide explanatory and detailed information in order to determine whether such modification or modifications may have an adverse impact on the execution of the project. Only after hearing the borrower and assessing its information and clarifications may the Bank take such measures as it deems appropriate, in accordance with provisions to be set forth in the loan contract and in the guarantee contract.
  - (b) The resources of the loan, together with those of Loan /OC-CO, shall be used to participate in the execution of a project estimated at the equivalent of US\$375,000,000. Consequently, the loan and guarantee contracts shall contain such provisions as the Bank deems appropriate to ensure that such additional resources as may be necessary, in addition to the two loans, for the complete execution of the project shall be duly provided, in an amount estimated at the equivalent of US\$275,000,000, which may include financing from the Government of Italy, the Overseas Economic Cooperation Fund (OECE), of Japan, and the Banco Central Hipotecario, of Colombia, in accordance with a schedule of investments satisfactory to the Bank.
  - (c) Prior to the first disbursement of the financing, the borrower shall present to the satisfaction of the Bank: (i) evidence that it has staffed the Dirección Técnica of the Gerencia de Acueducto y Alcantarillado with the additional personnel needed for the execution of the project, as previously agreed upon with the Bank; (ii) evidence that it has signed the new payments agreement with the Corporación Autónoma Regional de Cauca (CVC), relating to the sale of the borrower's equity interest in CHIDRAL; and (iii) the definitive plan, together with its corresponding timetable, for the resettlement of inhabitants living on the banks of the regulation ponds and in areas adjacent to canals and streets to be widened in the Distrito de Aguablanca; such plan to include the cooperation agreements entered into with other institutions and governmental and/or municipal agencies for its implementation, as well as a

breakdown of the human and financial resources allocated to that end.

- (d) The borrower and the guarantor shall take appropriate measures acceptable to the Bank to ensure that, beginning in 1989, the tariff rates for the water supply and sewerage services, including income earned from the system of recovery on investments shall produce revenues sufficient, at least to cover all operating costs, including those relating to administration, operation, maintenance and depreciation of revalued fixed assets. If the application of the foregoing does not generate sufficient revenues to cover the timely service of all the obligations of the borrower corresponding to its Servicio de Acueducto y Alcantarillado and to finance a proportion of that Servicio's investment program, the guarantor and the borrower shall take the necessary measures, which may include increases in the tariff rates, to obtain the additional resources as may be required to achieve that purpose.
- (e) Up to the equivalent of US\$2,000,000 of the resources of the financing may be utilized to cover expenses incurred in the project in the construction of water supply and sewerage networks within 12 months prior to the date of this resolution, provided that requirements substantially similar to those of this resolution and the loan contract have been fulfilled.
- (f) In the acquisition of machinery, equipment and other materials for the project, and in the awarding of construction contracts, the system of public bids shall be followed in each case in which the value of such acquisitions or contracts exceeds the equivalent of US\$200,000. The bidding shall be subject to the procedures to be included as an annex to the loan contract. This provision shall not apply to the acquisitions to be made with resources from the credits of the Government of Italy, the Overseas Economic Cooperation Fund (OECF), of Japan, or the Banco Central Hipotecario of Colombia, referred to in Clause 7(b) of this resolution.
- (f) The Bank shall establish such inspection procedures as it deems necessary to assure the satisfactory execution of the project, and the borrower and the guarantor shall extend all cooperation required for the most effective accomplishment of this purpose. From the amount of the financing, the sum of US\$250,000 shall be allocated for credit to the general income accounts of the Bank to meet expenses of general inspection and supervision.

RECOMMENDATIONS

- A. It is recommended that the following conditions, to be fulfilled to the satisfaction of the Bank, be included in the loan and guarantee contracts, as appropriate, in addition to the conditions set forth in the proposed resolutions:
1. Unless the Bank agrees otherwise, prior to each public call for bids, or in the absence of bidding, prior to the initiation of works, the borrower shall submit to the Bank: (a) the general plans, specifications, budgets, specific bidding conditions, and other documents necessary for the call for bids; and (b) in the case of works, evidence of legal possession, easements or other rights to the land on which the works of the project are to be built.
  2. The borrower shall submit to the Bank: (a) within 12 months after the date of the loan contract, evidence that it has implemented the systems necessary for the effective collection of the betterment levy; and (b) before April 30 of each year, during the life of the loan contract, commencing in the year of initiation of project execution, evidence that it has reached a level of collection of the betterment levy equal to, at least, 75% of the balances due and payable for the respective year, during the first 3 years of project execution, and 85% of the same balances, thereafter, including, in both cases, the balance outstanding at the beginning of the corresponding fiscal year.
  3. From the first year of project execution and thereafter throughout its execution, the borrower shall submit to the Bank within the first quarter of each calendar year: (a) a report on the result of monitoring of industrial waste water discharged into the EMCALI networks and, should certain plants fail to comply with the admissible levels of pollution established in Regulation 14 of 1976 of the Corporación Autónoma Regional del Cauca (CVC), the report shall include the measures to be adopted for due compliance; and (b) a water quality report for the Cauca river showing the test results for dissolved oxygen, biochemical oxygen demand and fecal matter per 100 ml at the following four pre-selected checkpoints: (a) the outfall of the CVC canal south; (b) the outfall of the Cañaveralejo plant, (c) Juanchito, and (d) Mediacanoa.
  4. Within 24 months after the date of the loan contract, the borrower shall submit to the Bank: (a) the designs of the preliminary treatment plant to be located at Cañaveralejo; (b) the findings of the Cauca river characterization study; and (c) a schedule of investments, including the respective timetable and financing plan,



to extend sewage treatment to primary or secondary level depending on the findings of the preceding study and the water quality standards established for the Cauca river by the applicable provisions of law.

5. Within 18 months after the date of the loan contract, and as part of the ex post evaluation process of the project, the borrower shall submit to the Bank:
  - (a) the baseline data of the categories described in Appendix IV, paragraph 7.01; and
  - (b) a description of the system to be used to compile and process the data that will be utilized in the yearly comparisons with the baseline data in order to evaluate the results of the execution of the project.
6. Within 36 months from the date of the loan contract and yearly thereafter until three years after the date of the last disbursement, the borrower shall submit to the Bank the yearly comparative data for the same categories as the baseline data.
7. At the end of the fourth year after the date of the last disbursement of the financing, the borrower shall submit to the Bank an ex post socioeconomic evaluation report of the project, in accordance with the same methodology and standards agreed upon with the Bank, as stipulated in Appendix IV, paragraph 7.03.
8. Prior to June 30 of each year of the project execution, and during the execution period thereof, the borrower shall submit to the Bank a report specifying the tasks implemented as part of the program to reduce the volume of unmetered water and a founded estimate of the progress achieved as of the date of each report in regard to the final goal of said program, as previously agreed upon with the Bank.
9. Prior to April 30 of each year during the life of the loan contract, commencing in the year of initiation of project execution, the borrower shall submit evidence to the Bank that it has obtained a level of collections for consumption billing in the Servicio de Acueducto y Alcantarillado equal to at least 85% of the balances due and payable for the respective year, including the balance outstanding at the beginning of the fiscal year.
10. During the period of the project execution and within the first 120 days of each year, commencing in the second year after the date of the loan contract, the borrower shall submit to the Bank a report, prepared in accordance with the methodology previously agreed upon with the Bank, up-dating the financial projections of the Servicio de Acueducto y Alcantarillado for the next five years and indicating the financial measures that shall be taken in the coming year, if necessary, to ensure the financial viability of the Servicio de Acueducto y Alcantarillado and compliance with Clauses 8(d) and 7(d) of Appendices I and II, respectively, and paragraph 8.01 of Appendix

IV. Such report shall be accompanied by comparative data and comments on the performance of the financial plan in the preceding year. The first report, if any, shall necessarily include up-dated data and projections for the fiscal year starting on January 1, 1989.

11. The Bank may recognize up to the equivalent of US\$5,000,000 as part of the local counterpart to finance expenses incurred in the project prior to the date of the resolutions (Appendices I and II) but after August 28, 1987, in designs and supervision; expansion of the Puerto Mallarino potable water treatment plant; water lines; sewer mains; drainage ditches; Puerto Mallarino storm water pumping station; improvement of the regulation ponds and purchase of sites, provided that requirements substantially similar to those set forth in the proposed resolutions and in the loan contract have been fulfilled.
12. The borrower shall: (a) assure that the works of the Servicio de Acueducto y Alcantarillado, including those involved in the project will be adequately maintained in accordance with generally accepted technical standards; and (b) present for the consideration of the Bank, during the 10 years following completion of the first of the works of the project and within the first quarter of each calendar year, the annual maintenance plan for the equipment and works of the project, as well as a report on their maintenance status, as provided for in Appendix IV, Section VI. Should it be found, from inspections conducted by the Bank or reports received by it, that actual maintenance is below the agreed-upon levels, the borrower shall take appropriate action to have the deficiencies fully corrected.
13. The borrower shall undertake to submit to the Bank, commencing the first year of project execution and during 10 years after completion of the works of the project, within the first quarter of each year, statistical data on chemical quality of water in order to verify, by applying the Langelier index, the level of ionic equilibrium of water delivered for consumption. Said information shall be presented in terms of monthly averages and results obtained in the higher acidity days of the year.
14. The borrower shall undertake that, unless the Bank agrees otherwise, commencing in 1990 and up to 3 years after the date of the last disbursement, it shall not initiate new works within the Servicio de Acueducto y Alcantarillado entailing yearly investments other than those foreseen in the project in excess of 5% of gross fixed assets in service, plus construction in progress. Such requests for authorization shall be accompanied by the expected financing plan and financial projections for the ensuing ten years.
15. During the life of the loan contract and within the first 120 days of each calendar year, commencing the second year after the date of the loan contract, the borrower shall submit to the Bank evidence that it has included in its budget for the corresponding year, the necessary allocations and appropriations for the debt service originating in

the financings authorized in the proposed Resolutions (Appendices I and II).

16. The financial statements of the borrower and, separately, those of the Servicio de Acueducto y Alcantarillado during the life of the loan contract, and those of the project during its execution, shall be submitted annually to the Bank, audited by an independent public accounting firm acceptable to the Bank, and in accordance with standards and procedures equally acceptable to the latter.
- B. The loan contract shall include an annex substantially similar in content to Appendix IV (The Project).

**THE PROJECT**  
**(Annex A to the Loan Contract)**

**I. Purpose**

- 1.01 The purpose of the project is the expansion and improvement in the coverage of water supply, sanitary sewerage, and drainage services in the city of Cali. The water supply goal is to raise coverage from 80% today to approximately 90% by the year 1993 and to reduce the rate of unmetered water from 40% to approximately 30% during the same interval. The sanitary sewerage goal is to raise coverage from 74% to approximately 83% and to begin processing of 75% of the city's sewage with the preliminary treatment needed to reduce suspended solids and grit with approximately 80% efficiency. In so far as drainage is concerned, the project sets out to prevent flooding in an extensive area on the eastern side of Cali, some 8,000 ha in area, especially in the District of Aguablanca. The project is complemented by a plan for institutional strengthening of the borrower.

**II. Description**

In order to attain the goals described above, the project is divided into the following five components:

- (i) Water supply: expansion of the capacity of the Puerto Mallarino treatment plant and expansion of the Cali water supply distribution system;
- (ii) Sanitary sewerage: expansion of the city's sewage disposal system; construction of a pumping station in the District of Aguablanca; and construction of a preliminary treatment plant in Cañaveralajejo;
- (iii) Drainage: construction, expansion and relining of ditches and construction of primary sewers; construction of a pumping station in Puerto Mallarino and expansion of the pumping capacity of the Paso del Comercio station; clearing and dredging of two regulation ponds in the District of Aguablanca, which includes a program to resettle around 1,000 families who live on the banks of the ponds;
- (iv) Program for the reduction of unmetered water, which will require the procurement and installation of main-line and customer meters; installation of networks and in-house connections in neighborhoods where service is irregular or illegal connections are common; repair and replacement of valves and chambers; and the procurement

of machinery and pitometers, leakage control equipment, and a meter test bank; and

- (v) Institutional-strengthening program, with a training and development component which includes graduate studies, advanced courses and field trips in such areas as water treatment, system and plant operation and maintenance, pitometry and measurement, economic and financial appraisal of projects, and services administration. The institution-strengthening also includes a component for the improvement of data processing systems of the borrowers's Gerencia de Acueducto y Alcantarillado.

### III. Cost of the Project and Plan of Financing

- 3.01 The total cost of the project is estimated at the equivalent of US\$375,000,000, broken down by category of investment and source of funds as follows:

| COST AND FINANCING OF THE PROJECT<br>(in US\$ thousands equivalent) |        |        |         |       |                   |        |         |       |
|---|--------|--------|---------|-------|-------------------|--------|---------|-------|
| INVESTMENT CATEGORIES   | IDB/OC | IDB/SF | OECF    | ITALY | LOCAL COUNTERPART |        | TOTAL   | %     |
|   |        |        |         |       | BCH/FFDU          | EMCALI |         |       |
| 1. <u>Engineering and Administration</u>                            | -      | -      | 14,194  | -     | -                 | 13,887 | 28,081  | 7.5   |
| 1.1 Designs and supervision   | -      | -      | 14,194  | -     | -                 | 8,564  | 22,758  |       |
| 1.2 Administration  | -      | -      | -       | -     | -                 | 5,323  | 5,323   |       |
| 2. <u>Direct Costs</u>  | 48,404 | 20,422 | 97,176  | 5,015 | 27,535            | 21,743 | 220,295 | 58.7  |
| 2.1 Water Supply  | 3,044  | 2,637  | 36,967  | 1,919 | 14,513            | 8,730  | 67,810  | 18.1  |
| 2.1.1 Expansion treatment plant                                     | -      | -      | 8,980   | 1,919 | -                 | 5,355  | 16,254  |       |
| 2.1.2 Distribution system   | 3,044  | 2,637  | 27,987  | -     | 14,513            | 3,375  | 51,556  |       |
| 2.2 Sewerage  | 17,368 | 8,295  | 60,209  | -     | 13,022            | 5,311  | 104,205 | 27.8  |
| 2.2.1 Networks and primary sewers                                   | 17,368 | 8,295  | -       | -     | 13,022            | 3,616  | 42,301  |       |
| 2.2.2 Pumping station   | -      | -      | 22,682  | -     | -                 | 724    | 23,406  |       |
| 2.2.3 Treatment plant   | -      | -      | 37,527  | -     | -                 | 971    | 38,498  |       |
| 2.3 Drainage  | 21,047 | 8,443  | -       | 3,096 | -                 | 7,237  | 39,823  | 10.5  |
| 2.3.1 Ditches and mains   | 16,944 | 7,922  | -       | -     | -                 | 3,738  | 28,604  |       |
| 2.3.2 Pumping station   | 4,103  | 521    | -       | 3,096 | -                 | 2,155  | 9,875   |       |
| 2.3.4 Pond upgrading  | -      | -      | -       | -     | -                 | 1,344  | 1,344   |       |
| 2.4 Reduction unmetered water                                       | 6,945  | 1,047  | -       | -     | -                 | 465    | 8,457   | 2.3   |
| 3. <u>Associated Costs</u>  | 2,516  | -      | -       | 3,235 | -                 | 7,354  | 13,105  | 3.5   |
| 3.1 Machinery, vehicles, operating and maintenance equipment        | 1,743  | -      | -       | 3,235 | -                 | -      | 4,978   |       |
| 3.2 T/C for institution-strengthening                               | 773    | -      | -       | -     | -                 | 255    | 1,028   |       |
| 3.3 Sites   | -      | -      | -       | -     | -                 | 7,099  | 7,099   |       |
| 4. <u>Unallocated</u>   | 10,029 | 4,328  | 37,470  | -     | 2,465             | 11,763 | 66,055  | 17.6  |
| 4.1 Contingencies   | 4,501  | 2,049  | 18,100  | -     | 1,225             | 7,268  | 33,143  |       |
| 4.2 Escalation  | 5,528  | 2,279  | 19,370  | -     | 1,240             | 4,495  | 32,912  |       |
| 5. <u>Finance Costs</u>   | 14,051 | 250    | -       | -     | -                 | 33,163 | 47,464  | 12.7  |
| 5.1 Interest  | 13,301 | -      | -       | -     | -                 | 30,657 | 43,958  |       |
| 5.2 Credit Fee  | -      | -      | -       | -     | -                 | 2,506  | 2,506   |       |
| 5.3 Inspection and supervision                                      | 750    | 250    | -       | -     | -                 | -      | 1,000   |       |
| TOTAL   | 75,000 | 25,000 | 148,840 | 8,250 | 30,000            | 87,910 | 375,000 | 100.0 |
| Percent   | 20.0   | 6.7    | 39.7    | 2.2   | 8.0               | 23.4   | 100.0   |       |

IV. Procurement

- 4.01 Whenever the goods or services to be contracted are financed totally or partially by foreign exchange from the loan, the procedures and specific guidelines governing the bidding or other forms of acquisition or contracting shall allow for the free competition of goods and services, including those relating to any means of transportation, originating from member countries of the Bank. Consequently, those procedures and specific bases shall not include conditions that impede or restrict the supply of goods or services or the participation of contractors from those countries.

V. Consulting Services

- 5.01 In the selection and contracting of consulting services to be financed totally or partially with the resources of the financing, no conditions or requirements may be imposed that would restrict or preclude the participation of consultants from the member countries of the Bank.
- 5.02 With respect to the consulting services to be financed with the resources of the local counterpart, the borrower shall submit for the approval of the Bank, prior to the contracting of the consulting services, the names of the consulting firms or individual consultants selected, the terms of references of the consultants and the fees agreed upon. This provision is not applicable to contracts to be financed out of the proceeds of the loans granted by the Government of Italy, the Overseas Economic Cooperation Fund (OECF) of Japan, or the Banco Central Hipotecario, of Colombia, referred to in clauses 8(b) and 7(b) of Appendices I and II, respectively.

VI. Maintenance

- 6.01 The purpose of maintenance shall be to preserve the works included in the project in substantially the same condition as at the time of completion, and the remaining works in the system run by the Servicio de Acueducto y Alcantarillado at a level compatible with the services they are intended to provide.
- 6.02 The yearly maintenance plan of the project shall be submitted to the Bank for consideration within the first quarter of each calendar year, beginning in the next fiscal year after the first work in the project is brought on stream.
- 6.03 The yearly maintenance plan shall include: (i) details of the organization responsible for maintenance, the personnel in charge, and the number, type and condition of equipment for use in maintenance; (ii) the location, size and condition of repair shops, warehouses and maintenance depots; (iii) information on the resources to be spent on maintenance during the current year and the amount of such funds to be allocated in the budget of the following year for the maintenance program; and (iv) a report on maintenance conditions, based on the sufficiency evaluation system established by the borrower.

VII. Ex post evaluation

- 7.01 For purposes of the provisions set forth in paragraph A.5(a) of Appendix III, the information to be complied shall include the following, among other possible aspects:

For the sanitation component:

- (a) population of each subarea in the project, number of water and sewer connections, and percentage of the population served;
- (b) tariff rates paid for water and sewerage;
- (c) water consumption by subarea;

For the drainage component:

- (d) number of houses located in sectors serviced with the project, classified as follows: (i) zones with a high flooding risk; (ii) zones with moderate flooding risk; (iii) flooding-free zones.
- (e) rental payments and market value of real property in the sector; and
- (f) maintenance cost of the system.

Social aspects (resettlement monitoring study)

- (g) economic data: (expenses for food, power, clothing, durable goods; earnings, employment, education);
  - (h) epidemiological: (diseases, visits to the doctor, etc.);
  - (i) social: (family composition, social networks--household and non-household, vertical and horizontal dependency ties--, exchange or interchange modalities, distance and cost of transportation to work, school, and social services);
  - (j) attitudes: (towards the municipality, optimistic outlook on the future, etc.).
- 7.02 For purposes of the provisions set forth in paragraph A.5(b) of Appendix III, yearly comparative data shall be submitted from the time the project is brought on stream for the same headings as indicated for the baseline data.
- 7.03 The ex post evaluation referred to in paragraph A.7 of Appendix III shall be made in accordance to the following methodology: the data used shall deal with the specific areas of the project. The final evaluation shall follow the same methodology as that used in the ex ante analysis of the project and shall include an analysis of the following types: (i)



benefit/cost; (ii) distributive impact, (iii) other relevant sociocultural and health effects.

For paragraph 7.01(g), (h), (i) and (j), a family sample shall be established for use during project execution. The sample shall be representative of the following groups:

- (a) resettled families;
- (b) families not resettled from the project area;
- (c) families outside the project area (control group).

The information for this study shall be compiled on the basis of interviews with the families involved conducted at six-month intervals under the direction of a social scientist.

#### VIII. Rates

- 8.01 For the purposes of clause 8(d) and 7(d) of Appendices I and II, respectively, the percentage of the investment plan of the Servicio de Acueducto y Alcantarillado to be covered by revenues from tariff rates charged for services provided through said Servicio shall not be less than 15%, from 1989 through 1991, inclusive, and 20%, from 1992 on, and shall be calculated on the basis of the ratio of net internal generation of funds to the total construction program of the Servicio, including its finance charges. Internal generation is construed as total operating income, including income from recoveries on investments net of operating costs and before considering depreciation allowances and amortization payments, finance charges, or non-operating income, plus the headings corresponding to fees for in-house connections.