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DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

CAPITAL ASSISTANCE PAPER

68 p.

Proposal and Recommendations
for the Review of the
Development Loan Committee

KOREA - Chong Gye Chun Sewage Treatment Project
Loan Amendment

489-22-250-657

A.I.D.
Reference Center
Room 1800 NS

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AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

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AID-DLC/P-~~2005~~ ^{427/2}

December 18, 1973

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Korea - Chong Gye Chun Sewage Treatment Project
Loan Amendment

Attached for your review are the recommendations for authorization of a loan in an amount not to exceed \$2,800,000 to the Government of Korea in order to meet the increase in costs resulting from price increases which have taken place in the period since undertaking the project. This amendment provides foreign exchange to finance the increased cost of equipment and to a limited extent the costs of training and construction supervision.

Please advise us as early as possible, but in no event later than noon on Friday, December 28, 1973. If you have a basic policy issue arising out of this proposal.

Development Loan Committee
Office of Development
Program Review

Attachments:
A through G
Annexes 1 - 4

KOREA - CHONG GYE CHUN SEWAGE TREATMENT PROJECT
LOAN AMENDMENT

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KOREA - CHONG GYE CHUN SEWAGE TREATMENT PROJECT
LOAN AMENDMENT

SUMMARY AND RECOMMENDATIONS

A. BORROWER:

The Borrower is the Government of the Republic of Korea; the Beneficiary is the Special City of Seoul.

B. PROJECT DESCRIPTION

The project includes two elements: (a) a sewage treatment plant the foreign exchange cost of which is to be financed by AID and (b) the related intercepting sewers to be entirely financed by Seoul City. Both of these elements are currently well along in civil works construction. The sewage treatment plant is designed to treat 66 million gallons per day of water-borne sewage from the 1,300,000 inhabitants (roughly 1/5 of Seoul's total population) of the Chong Gye Chun drainage basin.

C. TOTAL COSTS:

The total estimated cost of the project has risen from \$10.8 million equivalent in 1966 to \$16.0 million equivalent as of the present. During the same time span the estimated dollar cost has gone from \$3.5 million to \$6.3 million. Local currency cost estimates have risen from \$7.3 to \$9.7 million equivalent.

D. LOAN AMOUNT:

U.S. \$2.8 million Loan Amendment increasing Loan 489-H-038 from U.S. \$3.5 million to U.S. \$6.3 million.

E. TERMS:

Forty years maturity, including the ten-year grace period, with 2% interest during grace period and 3% thereafter. ROKG to reloan proceeds to Special City of Seoul on terms and conditions agreeable to A.I.D.

F. PURPOSE OF LOAN AMENDMENT:

In order to meet the increase in costs resulting from price increases which have taken place in the period since undertaking of the project, this amendment provides foreign exchange to finance the increased cost of equipment and, to a limited extent, the costs of training and construction supervision.

G. ISSUES: None.

H. STATUTORY CRITERIA:

This loan increase meets all statutory criteria. See Annexes 1 and 3.

I. EX-IM BANK INTEREST:

The Ex-Im Bank is not interested in financing this proposed add-on.

J. MISSION VIEWS:

The Mission recommends that the loan increase be made. See Annex 2.

K. RECOMMENDATIONS:

Authorization of a loan amendment to Loan 489-H-038 to increase the loan from U.S. \$3.5 million to U.S. \$6.3 million in accordance with the terms and conditions set forth in the draft authorization in Annex 4. An outline of conditions precedent and covenants is set forth in Section III.

USAID CAPITAL ASSISTANCE COMMITTEE MEMBERS:

Chairman and Loan Officer	Robert A. Cahn
Engineer	James K. Thomas
Legal Counsel	John W. Roxborough
Controller	William A. Chevoor

AID/W CAPITAL ASSISTANCE COMMITTEE MEMBERS:

Chairman and Loan Officer	M. Milburn Pehl
Engineer	Thomas Leahy
Legal Counsel	Jay A. Burgess
Desk Officer	Blaine Richardson

KOREA - CHONG GYE CHUN SEWAGE TREATMENT PROJECT
LOAN AMENDMENT

I. Purpose of Loan Amendment and Project Definition

Revised estimates for the sewage plant being financed under the original loan show a marked increase over the original estimates with additional foreign exchange required in the amount of \$2.8 million. The plant facilities and the services are the same as those covered by the original loan, and it is therefore proposed that the \$3.5 million original loan (No. 489-H-038) be increased to \$6.3 million to reflect this requirement. As defined by the Loan Agreement the project means the construction by the Special City of Seoul of (1) a Sewage Treatment Plant in Seoul designed to treat a minimum of 66 million gallons per day of water borne sewage and engineering services required in connection therewith including technical services during initial operation and (2) intercepting sewers required to convey the sewage to the treatment plant - costs relating to the intercepting sewers however are not eligible for financing under the loan.

II. Detailed Review.

By Seoul 4402, dated July 9, 1973, USAID advised AID/W that a critical review of the Seoul Sewage Project was being undertaken and, if justified by the review, a project paper would be prepared. The project, beset by extensive delays and problems, now requires extensive foreign exchange over and above that provided in A.I.D. Loan 038. A number of successive steps have been undertaken over the past two years in attempts to provide the additional foreign exchange needed to complete the project without resorting to an increase in the A.I.D. loan funds. During that period, the total project costs have greatly increased while no workable solution has been found.

The USAID has prepared this review paper to bring together all facts bearing on the project problems and to present the recommended solution which will permit needed steps to be taken to complete the project without further costly delays.

1. Background:

The following gives a chronology of early project actions:

October 4, 1965: The primary official step toward undertaking the project came with submission to A.I.D. of the Loan Application; the Feasibility Study prepared by Black and Veatch, International.

May 26, 1966: The Loan Paper (LAP) was issued.

July 13, 1966: The Loan Agreement was signed.

May 8, 1968: Notice to Proceed was given to Daniel, Mann, Johnson and Mendenhall as Project Engineer.

November 29, 1968: The Project Design Report was completed by DMJM.

May 1969: Detailed contract drawings for civil works contracts were completed by DMJM.

July 1969: Seoul City accepted contract drawings and DMJM submitted final cost estimates for the project.

March 1, 1970: DMJM initiated construction supervisory services.

June 5, 1970: The civil works contractor initiated work at the site.

January 21, 1972: IFBs for U.S. equipment procurement completed in acceptable form and transmitted to City by DMJM. (For a brief explanation of the above indicated delays see the second paragraph on page 11 of this paper.)

2. Current Status:

a. Construction: The sewage plant has been under construction since June of 1970. When work was suspended in September 1972 upon completion of work under Contract No. 4 the physical completion stood at 60%.

Work is now proceeding on Contract No. 5, for an amount of W 181,000,000, which provides for completion of the effluent pump station, the chlorine contact basin and additional yard piping which will advance physical completion to approximately 82%. No DMJM personnel are at the site since work being performed is not such as to require consultant supervision.

b. Procurement:

1) Local. The design called for certain equipment to be procured locally. As work on the plant proceeds, the necessary equipment is being procured and installed. No serious problems have arisen nor are any anticipated, in connection with this local procurement.

2) Import. Due largely to cost escalation, the passing of time has brought about a growing shortage of FX for completing the project. This is true for engineering services and training as well as procurement; however, the major element by far is that of equipment procurement.

When the IFBs were being revised and completed in 1971, a number of standard items; diesel engines, a diesel-electric generator and laboratory equipment; were grouped in a separate IFB with the idea that these might be financed by FX other than the A.I.D. loan funds and the FX shortage could thus be solved. By the time the IFBs were completed, it was obvious that the FX shortage was too large to be solved by that means, and issue of the IFBs was withheld until all needed FX could be assured.

The City was unable to provide FX in a reasonable time since, to obtain FX the City is required to deposit Won of equal value. With no such funds in its budget, the provision of Won required another budget cycle and a delay of as much as 18 months.

The City next turned to the U.S. Ex-Im Bank and to ADB. Neither bank was interested in a limited participation in this on-going project.

With shortages estimated at \$1,250,000, the City then undertook to find an alternate source of and financing for the sludge handling equipment then estimated to cost \$1,700,000. Hyundai offered a system to be provided by the BSP Division of Envirotech Corp. of the U.S. and indicated in the offer that Hyundai would finance the package on a seven-year credit plan. This fell through when BSP found that its Japanese licensee had Korea as part of its territory and BSP could, therefore, not enter into a direct supply contract.

Hyundai then sought out Japanese sources of equipment; Mitsubishi and Nigata Zimpro. DMJM reviewed the systems offered, approved Zimpro, but found Mitsubishi unacceptable. This time, Hyundai failed to come up with the financing. Meanwhile, Whashin Industries proposed to supply Ebara Infilco equipment from Japan. Their financing plan was not firm and, more important, the DMJM review showed the system unacceptable.

The Seoul City authorities have since dealt directly with Nigata Zimpro, but have failed to obtain the needed financing.

c. Interceptor Sewers: The Black and Veatch Feasibility Study delineated the interceptor sewers which would form the backbone of the collection system for the drainage basin being served. In the DMJM design report, it was recommended that Seoul City proceed with construction of the interceptor sewer system with the first step to be the run from the treatment plant to the end of the covered section of the Chong Gye Chun stream (the Ma Jang bridge). DMJM considered this adequate for proper plant operation and said the remainder of the interceptor system should subsequently progress upstream to serve areas which would be installing separate sanitary sewers.

In the City's final design, two closed sewers, one on each side of the stream, would be built and work is progressing on these. In 1973, the budgeted Won 90,000,000 will complete one sewer to the bridge and the other to within 300 meters of it; thus virtually completing the basic interceptors called for by DMJM.

Under Seoul's continuing plan, interceptors will be continued up the Chong Gye Chun and initiated on the Sung Buk, Chong Nung and Chun Nong Chuns.

The schedule for work in 1974 through 1978 is shown graphically on Attachment A. Thus, by the earliest date that the plant can be in operation (late 1976), the collection system will be completed far beyond the point specified as the minimum necessary for effective plant operation.

d. Project Costs and Financing: Despite the fact that only limited loan funds have been expended for engineering services, the City has expended a large amount of Won on the civil works at the plant and the interceptor sewers.

As of December 31, 1972, project expenditures were as follows:

U.S. Engineering Services	\$411,498.00	₩ 55,449,000
Plant Site Development Construction & Local Procurement		1,430,850,000
Interceptor Sewer Construction		280,000,000
Totals	<u>\$411,498.00</u>	<u>1,766,299,000</u>

Being Expended in 1973:

Plant Construction & Procurement		₩ 180,000,000
Interceptor Sewers		<u>91,000,000</u>
Grand Total	<u>\$411,498.00</u>	<u>₩2,037,299,000</u>

Thus, Seoul City will have spent at the end of this season, the equivalent of \$5,093,250.00 in Won on the project.

A current review of overall costs (estimated as of June 30, 1974 for FX) shows the following remaining requirements:

1) Foreign Exchange:

Total Required	\$5,884,570
Available from Loan	<u>3,084,570</u>
Additional Required	<u>\$2,800,000</u>

See Attachment B for detailed derivation.

When the USAID-prepared draft loan paper was received in Washington, it was decided to double-check the revised cost estimate because (a) it was developed by applying cost escalation factors to a 1969 cost estimate apparently without direct checks with manufacturers, and (b) ASIA/CD's recent experience of substantial overruns above engineer's recent cost estimates in bidding on electrical/mechanical equipment for projects. Spot checks were made with U.S. equipment suppliers on all of the major items where this is possible. The results of this double-checking are given in Attachment E. Although this effort substantially confirmed the ROKG/USAID developed estimates the Project Committee feels it prudent to include an additional \$300,000 for contingencies. This has been done. It raises the contingency percentage from 12 $\frac{1}{2}$ % to 18.2%.

2) Local Currency - Won:

Total Required-Plant	₩ 2,346,000,000	
Sewers*	<u>1,555,000,000</u>	₩3,901,000,000
Expended To Date-Plant	1,667,000,000	
Sewers	<u>371,000,000</u>	₩2,038,000,000
Required to Complete-Plant	₩ 679,000,000	
Sewers	<u>1,184,000,000</u>	₩1,863,000,000

* Backbone system to be completed by the end of 1978.
See Attachment C for details.

A comparison of the original project summary cost estimates with the current ones are given by the tables below:

US Dollar Requirements (in thousands)

	<u>1966 Est</u>	<u>Increase</u>	<u>1974 Est</u>
Imported Equipment and Materials	\$2,542	2,087	\$4,629
Engineering & Training	640	125	765
Contingencies	<u>318</u>	<u>588</u>	<u>906</u>
Totals	\$3,500	\$2,800	\$6,300

All of this increase is attributable to price escalation of the equipment involved.

Local Currency Requirements (in millions of Won*)

	<u>1966 Est</u>	<u>Increase</u>	<u>1973 Est</u>
Treatment Plant Civil Works & Local Supply	1,066))	
Land Purchase	77)	1,114)	2,346
Engineering	25))	
Contingencies	64))	
4 Interceptor Sewer Construction & Contingencies	<u>738</u>	<u>817</u>	<u>1,555</u>
Totals	1,970	1,931	3,901

* In 1966 Won 270 = US\$1.00
In 1973 Won 400 = US\$1.00

During this approximate period the wholesale price index for Korea, about doubled. This fact apparently explains the Won increases indicated above.

3. Prospects for Successful Completion:

The desire to complete the project is being demonstrated by the ROKG and particularly by Seoul City. Serious and continuing efforts have been made by the City to obtain suitable sludge handling equipment and accompanying financing, but in each potential arrangement final agreement has not been reached, either because the equipment did not meet standards of acceptability or because the proposed supplier was unable to provide the promised financial package. Despite this, Seoul's 1973 budget carried ₩ 591,000,000 for the project, work on the plant is proceeding, and completion of the basic minimum interceptor sewers will be effected long before the plant is ready, as noted in 2.a and 2.c above. The physical plant already constructed represents an investment of more than \$5 million by the ROKG.

The Seoul City plan for sewer construction will effectively complete, by 1978, the major trunk system laid out in the original Black and Veatch Study. Although the planning for construction of sewers is covered here only through 1978, the City plans to continue the expansion and extension of the system to cover the entire drainage area served by the sewage plant.

Required legislative actions are covered in Section 6.1(c) of the Loan Agreement: "The Borrower and the Beneficiary will seek the enactment of appropriate legislation and ordinances necessary to carry out the Project and to reasonably require, in areas serviced by sanitary sewers, the termination of the present system for the collection of human wastes, the conversion from cesspools to flush toilets, and the necessary plumbing connections into the sewerage system."

On February 8, 1973, an Amendment to the Sewer Law, Law No. 2513, was promulgated. This provides for use of sewers and requires City Mayors, after approval by the Ministry of Construction, to announce the requirement for use of the sewers.

On July 12, 1973, the Seoul Metropolitan Government Regulation No. 790 was enacted. This provides that the Mayor may designate specific districts for improvement of toilets when such areas have waterworks and public sewer facilities. When so designated, all toilets within the treatment district will be flush toilets. Thus, the Federal Government and the City have now, in anticipation of completion of the sewage plant and sewer system, enacted the legislation necessary to ensure use of the sewage system.

Commencing in 1974, Seoul City is levying a "sewage fee" to be charged all water users at a rate of 20% of the water charges. The City has determined that the revenues realized will be sufficient to finance administration, operation and maintenance of the Chong Gye Chun plant and sewer system, together with its debt servicing and, in addition, provide funds for the on-going sewage collection and treatment development program. These funds will not flow into the general revenue pot, but will be specifically allocated to the sewage program of the City.

Thus, we have concluded that the project will not only be successfully completed, but that its continued effective operation and maintenance is very well assured.

4. Meeting of Project Objectives:

The project objectives described in the CAP in Section I-A are as follows:

"This project is directly related to the A.I.D. goal in Korea of improving socio-economic planning and actual conditions. As the first step in Seoul City's long-range plan to install a modern sewage collection and treatment system to replace the present outmoded and unsanitary traditional sewage disposal methods, the project would constitute an innovation for Korea and would serve as the model for the

"development of modern sewage handling systems in the other major cities of Korea. Thus, the experience gained from this project with respect to planning and implementation and the development of citizen acceptance would be valuable for future developments in this area."

Since the project was initiated in 1965 and cannot be completed before late 1976, one may well question whether or not it can be expected to meet the stated objectives and, more fundamentally, whether the objectives remain valid.

There is no question that it will replace the outmoded and unsanitary traditional system in the collection area. Regarding the second objective, that of serving as a model for development of modern sewage handling facilities in other areas, there are several factors to be considered.

Seoul City has recently purchased several night-soil treatment plants from Nigata Zimpro of Japan, and the first of these has been placed in operation. These plants treat collected night-soil under high pressure and temperature, producing a sterile sludge and a clear effluent with a BOD below the limits established in Japan and elsewhere for direct discharge into streams and rivers. As additional night-soil plants are placed in operation, a growing percentage of the City's night-soil will be properly treated, thus reducing the quantity of night-soil being collected in holding tanks and periodically being dumped into the Han River without treatment. The unsanitary and odorous collection by truck must be continued with use of the Zimpro treatment plants and this can be eliminated only by installation of sewers and adoption of a water-borne system.

In our judgment, installation of the Zimpro plants is not contrary to the objective of having this project serve as a model for sewage collection and treatment and may very well

further that objective if we can draw on Japan's experience. Facing the major problems, ethnic, technical and financial, of converting to water-borne sewage, Tokyo has adopted a form of two-stage transition; moving first to the night-soil treatment system and then, as sewers can be laid, building the water-borne treatment plants. The night-soil treatment plants so displaced are then reinstalled in new areas or other cities not previously served by a modern treatment plant. In its recent actions of installing night-soil treatment facilities while pushing the Chong Gye Chun plant to completion, Seoul is following the pattern adopted by Tokyo and other Japanese cities. This procedure and its ramifications are described in detail in the paper entitled, Disposal of Human Wastes for Greater Seoul, dated October 1972, carried as Attachment D.

This two-stage conversion meets the immediate sanitation needs at least in a minimal manner and provides time for the authorities to lay sewers and, more important, to "sell" the water-borne system and its costs to the citizens. In adopting this approach, Seoul authorities retain their objective of eventual conversion to water-borne sewage and remain very anxious to complete and place in operation the Chung Gye Chun plant as the model it was originally planned to be.

The interceptor sewer construction, as detailed in (3) above, will continue and be completed as outlined in the Black and Veatch Study (Loan Request). At the time the plant is completed, the sewers feeding it will extend far beyond the minimums set by DMJM in the design report as necessary to make the plant serve its basic purpose.

Thus, we conclude that; the basic objectives remain valid and if pushed to completion in spite of the delays which have been encountered, the project will meet the objectives set for it.

5. Alternatives Open to A.I.D.:

The project cannot be completed without the provision of additional money, both FX and Won. The Seoul authorities have given acceptable assurance that the necessary additional Won will be provided; however, they have been unsuccessful in finding alternate means of providing foreign exchange needed over and above the loan amount.

It hardly seems necessary to review in detail the many elements which contributed to the long delays and resultant, and growing, foreign exchange shortage. It is important to note, however, that the ROKG, DMJM and A.I.D. are all culpable to some degree with DMJM responsible in a very considerable measure through its failure over a long period of time to prepare adequate and suitable bid documents as required by its contract.

Today, Seoul City is proceeding with project civil works and has already invested more than \$5,000,000 in the project. A.I.D. has insisted that funds be available for all procurement before initiating procurement action on the equipment to be funded under the loan. Since there appears to be little likelihood that Seoul City can obtain a firm source of financing for the balance of the procurement without further costly delays, it is necessary that some positive action be initiated. The ROKG has again requested that A.I.D. provide the necessary additional loan funds. We must, therefore, explore the alternatives now open to A.I.D. We consider these to be:

- a. Consider the ROKG in default and withdraw from the project.
- b. Hold the ROKG to the Loan Agreement requirement that they provide the additional foreign exchange funding.
- c. Agree to the ROKG request for additional loan funds.

If A.I.D. were to invoke alternative (a) and withdraw, Seoul City would, of necessity, take all possible steps to find an alternate means to complete the project. There is no question that this would, at the least, involve additional extensive delays and further marked cost increases. For A.I.D. to justify such withdrawal at this time in view of what has transpired to date and the extensive delays which would result, would be very difficult and would, in our judgment, have an unacceptable adverse effect on our relations with the ROKG. Further, if Seoul City should be successful in finding a funding source, there is little doubt that engineering and equipment would be of other than U.S. origin, thus replacing U.S. products for this plant and probably succeeding plants as well.

Thus, A.I.D. withdrawal from the project at this time is not considered a sound approach to the problem.

When the City faced the need to raise additional FX, authorities explored the alternatives cited earlier because they believed the funds could be provided in a much more expeditious manner than would be the case if they followed the time consuming process of budgeting the Won equivalent of the needed FX and, when approved and available, obtaining Ministry of Finance authorization to convert this into dollars.

Unfortunately, none of the alternate avenues have produced the FX and the City, to raise the funds, would now have no alternative but to start with a budget request. It is already too late to include this item in the 1974 budget, so the earliest date funds could be available would be from the 1975 budget at approximately April 1975. If there was to be a 1974 supplemental budget (there will not be one in 1973), or if collections from the new sewerage fee became available, the Won might be generated as early as November 1974. This would introduce an additional delay of eighteen months or, at the very least, a year with costs escalated by an

additional \$500,000 to \$750,000 and availability of the plant likewise further delayed. Thus, this provides a very undesirable alternative.

There remains alternative (c); the provision of additional required funds by A.I.D. as an increase of loan funds. This offers the only course open at this time which gives any reasonable assurance the project can proceed to completion without further costly delays. If this course is followed, the project will be completed as planned, utilizing the U.S. design and all U.S. imported equipment, thus meeting all project objectives fully.

This project (a) is clearly within one of AID's current areas of primary emphasis - the health sector, and (b) will benefit healthwise the lower income group as much as, if not more than, the higher income groups working or living in the area served. There is substantial low income level housing in the mixed commercial - light industry - residential area served by the project. The proposed loan amendment if authorized will assist in meeting the US commitment for concessional dollar financing to Korea in FY 74.

6. Completion Schedule:

Equipment procurement is now the governing element in developing a completion schedule. If alternative (c) is adopted and funds are made available so that procurement can be initiated prior to the end of 1973, we estimate that all equipment could be delivered at site by March 1976 and plant startup could be initiated by August 1976. This is based on information that some major items now require 18 months from receipt of the L/C by the manufacturer for delivery at factory. A firmer schedule cannot be developed until procurement actions are underway.

7. Recommendations:

The Korean Government has requested that the additional amount of \$2,800,000 to be provided as an A.I.D. loan from the total presently planned for development lending; thus, it will not be an addition to the Korea lending program.

The \$2,800,000 figure is based on estimates which require that bids be solicited by the end of 1973. If there should be a delay in providing the funds and procurement cannot be initiated by that time, further cost increases will be encountered and further additional funds will be required. USAID strongly recommends that A.I.D. authorize the requested loan, and that action be expedited so that procurement may be initiated without extensive further delay.

III. Covenants and Conditions Precedent

There is no change from the original Chong Gye Chun Loan Agreement in conditions precedent and covenants except: As separate conditions precedent to initial financing under the amendment, legal opinions of the Minister of Justice of the Borrower and of the principal legal officer of the Beneficiary, or of other counsel satisfactory to A.I.D. attesting to the validity and legally binding character of the amendment will be required.

IV. Environmental Considerations

Environmental improvement is the primary objective of the project. It will be instrumental in providing more sanitary collection of human wastes in Seoul and, through treatment of the collected sewage, will reduce the pollution of the Han River. It will serve as the model for sanitary sewage collection and disposal for Seoul and other cities of Korea.

The project is being carried out with full regard to environmental considerations. In its design, construction and subsequent operation, the values being considered include visual esthetics, drainage, toxicity or pollutant nature of plant discharges, safeguards against contamination of the air, surrounding land, and waterways, etc.

V. Economic Analysis

An economic analysis of the proposed additional expenditures involved in completing the project and the measurable economic benefits has been made by ASIA/CD and the results are given in Attachment F. The resultant internal rate of return is found to be 7%. There are, however, unmeasurable or currently difficult to measure benefits in the form of a lower incidence of disease and improved quality of river water that are not included in the benefits assigned to this project.

In addition the analysis indicates that completion of the present project is the least cost method of providing adequate sewerage services for that portion of Seoul City to be served by the project.

VI. Financial Analysis

As stated in the second paragraph on page 8, starting in 1974 a sewerage fee of 20% of water charges is being levied on all water users served by the city of Seoul. The revenue flow from this source, which is segregated and can only be used for sewerage activities, will be adequate to finance all remaining local costs not already budgeted for this project as well as the subsequent operation and maintenance, administration and debt service charges. In addition there will be a significant surplus to finance the sewerage development program for the rest of the city. Since Seoul City is already collecting water use fees from its customers, its projection of sewerage revenue based on a 20% "surcharge" is considered to be realistic. The projection of this revenue stream and the application of funds so generated for the years 1974 to 1981 are given in Attachment G.

VII. Other Considerations

In the process of review of this paper the following questions concerning this project were raised by PPC/DPRE staff office:

- (1) What is its impact on employment?
- (2) What are its social equity implications?
- (3) What will be its impact on health?

These questions are dealt with below.

(1) Impact on Employment

While the construction of the civil works for the sewage treatment plant is practically complete there will be a continuing need to extend the interceptor sewer system until at least 1978. The collector system network and installation of related indoor plumbing will continue to require expansion for the foreseeable future. Maintenance for both the collector and interceptor networks will of course be required indefinitely. Much of this work is labor intensive.

It is undoubtedly true that fewer people will be employed to operate the water-borne sewage treatment system than now are employed in human waste collection and removal from the area to be served by the new system. When the labor requirement for maintenance of the two systems, however, are added to the operating personnel requirements, it is believed that employment would be roughly the same although more highly skilled for the new system. Displaced unskilled workers would presumably be able to find other employment since there has been a growing demand for both unskilled and skilled workers in the Seoul area as a result of the Korean economic boom beginning in the mid 1960's.

(2) Social Equity

On page 24 of the original Capital Assistance Paper (AID-DLC/P-427), there is a statement that the then estimated \$26.00 equivalent cost of toilet and plumbing connections is within the means of the average family living in the project area. It goes on to state that the City is prepared to assist an estimated 20 percent of the (poorer) citizens in the area through extension of 5-year term loans at eight percent interest per annum to cover half of the total cost of the equipment and installation if such proves necessary.

(3) Impact on Health

The health benefits solely attributable to adding a water-borne sewerage system to an urban area already served by a safe water supply system have not to AID's knowledge been researched and isolated. Needless to say the sanitary condition of many dwellings and other buildings as well as yards, streets, alleys and play areas would be significantly improved by the planned new sewerage system. It is also believed that such sanitary improvement of

the environment will redound to the health benefit of the lower income segment of the population as much as, if not more than, the higher income groups since the former live and work in the less desirable locations which are more likely to be adversely affected by current unsanitary collection systems including open waste water disposal.

INTERCEPTOR SEWER PLAN

UNIT: METERS

<u>Year:</u>	<u>Thru '73</u>	<u>'74</u>	<u>'75</u>	<u>'76</u>	<u>'77</u>	<u>'78</u>	<u>Total</u>
Chung Gye Chun	4,300	2,100	--	700	2,000	2,000	11,100
Sung Buk Chun	--	--	1,400	--	--	--	1,400
Chong Nung Chun	--	--	1,200	--	--	--	1,200
Chun Nong Chun	--	--	--	2,000	200	--	2,200
Total	4,300	2,100	2,600	2,700	2,200	2,000	15,900

UNCLASSIFIED
ATTACHMENT A

CHONG GYE CHUN SEWAGE TREATMENT PROJECT

Loan 489-H-038

Foreign Exchange Requirements
(a/o June 30, 1974)

Requirements to Complete

A. Services:

- | | |
|--|---------------|
| 1. DMJM Field Supervision 18 Mo at \$5,000/Mo | \$ 90,000 |
| 2. Supplier Representations (not included in DMJM 3/72 Equipment Cost Estimate | 160,000 |
| 3. Plant Modification and Redesign | <u>50,000</u> |

Total Services

\$ 300,000

B. Training in U.S. for Korean Technicians

50,000

- C. Equipment Procurement (including sludge handling equipment) estimated as of 12/31/73
- | | |
|----------------------------|----------------|
| Spareparts | \$4,121,290 |
| Escalation to 6/30/74 (4%) | 329,700 |
| | <u>178,040</u> |

Estimate as of 6/30/74

\$4,629,030

D. Contingency (18.2% of A + B + C)

905,540

FX Requirements as of 6/30/74

\$5,884,570

Funds Available

Provided in Loan

\$3,500,000

Expended to Date - DMJM Services

415,430

Balance Available

Net Additional Needed

\$3,084,570

\$2,800,000

CHONG GYE CHUN SEWAGE TREATMENT PLANT

Loan 489-H-038

Local Currency Requirements

(₩ x 1000,000)

<u>Sewage Plant</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Civil Works and Local Procurement	500*	100	260

* Of the total, 181,000,000 is contracted, 319,000,000 is for construction of the sludge treatment building. If requirements are not sufficiently definite to permit construction to be undertaken this year, the sum will be carried forward to 1974.

<u>Interceptor Sewers</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>Total</u>
Chung Gye Chun	242	--	80	230	230	782
Sung Buk Chun	--	111	--	--	--	111
Chong Nung Chun	--	116	--	--	--	116
Chun Nong Chun	--	--	159	16	--	175
Total	<u>242</u>	<u>227</u>	<u>239</u>	<u>246</u>	<u>230</u>	<u>1184</u>

UNCLASSIFIED
ATTACHMENT C

UNCLASSIFIED
ATTACHMENT D

DISPOSAL
OF
HUMAN WASTES
FOR
GREATER SEOUL

James K. Thomas
Chief Engineer
USAID/Korea

Seoul, Korea
October 1972

The Cities of Seoul and Incheon draw domestic water from the Han River. There are currently seven plants--five for Seoul and two for Incheon--drawing water at various points along the lower river. A.I.D. has supported this water development through two recent loan projects--489-H-034, Seoul Water, signed June 2, 1966, to expand the Bok Wang Dong Plant; and 489-H-048, Incheon Water, signed June 30, 1967, to expand an existing intake and build a new treatment plant at Bu Pyong. Supported by an ADB loan, another Seoul water plant--Kooui Ri--is being approximately doubled in capacity.

The ADB has under consideration a preliminary request for a loan to support a new project to bring domestic water for Seoul and Incheon from Paldang Dam, now being constructed some 17 kilometers upstream of Seoul. The stated basis for the Paldang project is the already excessive and growing pollution of the lower Han River for which corrective action cannot be effected in the near future and which thus makes it necessary, in ROKG judgment, to go upstream for domestic water. Only five domestic water plants are to be supplied from Paldang since the remaining two, Kooui Ri and Tukdo, are upstream of the highly polluted area and it is not anticipated that pollution at these intakes will reach levels which cannot be handled in the treatment plants.

A Korean engineering firm has been employed to conduct a study of the problems of water supply and pollution. The scope of work calls for comparative study of two alternative plans for providing acceptable municipal water to Seoul and Incheon: one to treat the flow of seventeen drainage channels which discharge highly polluted waters into the Han from areas of greater Seoul; and, the other to move upstream to Paldang or one of several intermediate points on the river as the water source. The contract also requires the contractor to make recommendations and to prepare the formal loan application to support the selected alternative.

The request of ADB support of the Paldang project obviously anticipates the outcome of the study and it is evident that the responsible Koreans do not foresee the possibility of early reduction in Han River pollution, at least in a time frame and of a magnitude which would obviate the necessity of drawing water from an upstream point.

This is not to say that Korean officials are ignoring the problems of pollution of the Han River. On July 13, 1966, they signed the A.I.D. Loan Agreement 489-H-038, Seoul Sewage, to carry out the first step in reducing the river pollution. The basic rationale for support of the Seoul Sewage loan was that this would be the first step in converting Seoul to water-borne sewage (conversion of cesspool collection of night-soil to flush toilets discharging into a closed sewer network), a move which, according to the studies, would in itself reduce pollution of the Han River to acceptable levels.

Pollution of the Han River arises from disposal of general wastes, including some human wastes, from Seoul and vicinity into storm sewers and streams discharging into the river. Generally, human wastes (night-soil) are collected and trucked to one of nine storage tank or basin sites. From these farmers drew for agricultural use using all collected night-soil in the past. More recently, for a number of reasons, agricultural demand has not kept pace with rapidly growing generation and the City has found it expedient to dump the holding tanks into the river periodically, thus further increasing the pollution. Also the rapid expansion of the Seoul population with concurrent growth of "shack cities" has greatly intensified pollution of the tributary streams along which these shack dwellers largely reside.

It has become obvious that levels of Han River pollution from human wastes and other pollutants are far exceeding those envisioned when the studies were undertaken.

The population of Seoul was projected in the sewage loan paper to reach 5,555,000 in 1984. It has already exceeded 5,800,000 and continues to grow at an alarming rate. This has required reassessment of the problems of water pollution (and safe water supply), sewage handling, waste collection, air pollution, etc. Thus, the rationale for the Seoul Sewage project as the means to induce rapid conversion of Seoul to a water-borne sewage system and, in so doing, to remove the Han River pollution problem is now open to serious questions on several counts.

The plan to adopt the water-borne sewage system presupposed the ability of the City to finance the sewer networks and treatment plants for the entire City as well as acceptance by the residents of the cost and change of traditional patterns in rapidly converting to flush toilets. Further, it did not satisfactorily address pollution arising from other than human wastes, sources which are contributing in growing measure to the river pollution. Despite this variety of pollutants, however, there is little question that human wastes constitute the largest and most pressing problem. With night-soil accumulating at a rate of 1.0 to 1.1 liters per person per day, Seoul, on a conservative basis, must now dispose of 6,500 tons of night-soil per day. I, therefore, intend to limit this paper to an examination of the problems of human waste disposal and the role which can or should be played by the sewage plant now being developed with A.I.D. loan financing.

In tackling the human waste problems in a metropolis such as Seoul, one must first consider traditional systems and practices. The Western world has utilized water-borne sewage systems for thousands of years and, following extensive development during the days of the Roman Empire, as major Western cities have grown and developed, water-borne sewage systems have concurrently been installed. In

the Orient, although the term sewer is used, it refers to conduits, open trenches, ditches, etc., which have served for storm drains and the Western style water-borne human waste system utilizing closed sanitary sewers did not develop. Rather an entirely different method evolved in which the undiluted human wastes (night-soil) have been collected, transported to agricultural lands and used as fertilizer. In virtually all of Asia at the present time, this traditional night-soil method is the accepted practice and even in highly industrialized and urbanized Japan, the most common means of handling human waste is in the form of night-soil.

The night-soil system obviously developed and has continued primarily because of its agricultural use. Today with growing availability and acceptance of chemical fertilizers and with the magnitude of problems of delivery to agricultural land, this traditional method of human waste disposal has become impractical for large urban areas.

We of the Western world tend to apply familiar technology and, if called upon to recommend solutions, consider conversion to flush toilets and a water-borne treatment system the most practical, if not the only, solution. However, despite experience in the Western world and the natural prejudice of Western sanitary engineers, it does not necessarily follow for Asia that immediate or even rapid conversion to water-borne systems in urban areas is, in fact, the proper solution. There are arguments against this and a good case can be made for an alternative course of action. This might better be termed an intermediate course of action since, in the framework of existing technology, there seems little doubt that a water-borne system must remain the best ultimate solution.

As a case in point for the alternative course, we find that Tokyo, the largest and one of the most modern of Asian metropolises, still collects the majority of human wastes in the form of night-soil. At present, Tokyo is only 25%

equipped with sanitary sewers and has adopted other means to dispose of its daily collection of night-soil. Meanwhile, the conversion to sanitary sewers and water-borne treatment plants continues, albeit slowly. In my judgment, the Japanese practice, particularly in Tokyo, can well be applied to Seoul and other Asian cities.

In making the case for the two-step procedures of first developing effective night-soil collection and treatment and then gradually moving into the water-borne system, there are a number of major considerations which should be evaluated. These are not necessarily in order of relative importance, although cost and speed of implementation may well have overriding importance in Seoul.

1. Cost: If one compares costs of a night-soil system with that of a water-borne treatment system, odds are overwhelmingly in favor of the night-soil method. In a review paper written by Louis A. Pradt of Zimpro Corp. for the magazine "Water Research", he lists the comparative costs. A complete water-borne system, including sewers and secondary treatment plants, based on present conditions in Japan, he concluded would have costs as follows:

Capital Cost	\$80.00 per capita
Yearly Operating & Maintenance Costs	\$ 5.00 per capita

The corresponding costs of the night-soil system as developed in his paper are:

Capital Cost	\$ 4.50 per capita
Yearly Operating & Maintenance Costs	\$ 1.63 per capita

Mr. Pradt goes on to point out that the costs of the water-borne system do not include the extra cost to the householder for the installation of the flush toilets nor the continuing extra cost of water. He estimates the flush toilet installation will cost \$40.00 per capita more than the night-soil facilities. Thus, he derives a figure of \$115.50 per capita as the excess cost of the sewer system over a complete night-soil system.

2. Speed of Installation: A night-soil system can be installed and put into operation in a period of one to two years and be serving the public during the time involved in the lengthy engineering study, water and toilet installation, laying of sewers, plant construction, and other preparations for the water-borne system. The night-soil system thus provides a more immediate solution and also provides a much more satisfactory means of disposal during the period of time required to develop the water-borne system and to gain acceptance and a willingness on the part of the users to pay the cost.

3. Public Acceptance: While in Europe or the U.S., a major community would undoubtedly not accept a night-soil system, in many underdeveloped countries the reverse is true. There people may very well be unwilling to install flush toilets even when sewers are available. In these countries, the simple privy has been the accepted or standard facility for countless generations and the collected night-soil has rated as a very valuable commodity. Thus, the people do not only fail to consider a flush toilet a necessity, but require considerable conditioning to accept it and pay the cost with their limited funds which they would much prefer to spend for, let us say, a television set or Honda motorcycle. Therefore, "selling" the water-borne system requires a fairly long period of conditioning with probably a reasonably large form of subsidy to cover the original costs to the householders.

4. Effectiveness: There are many reasons why a night-soil treatment plant can be considered as effective as a water-borne system. It not only can produce an effluent equal to that of modern water-borne systems, but can do it with greater consistency, particularly for the following reasons:

a. There is no industrial waste problem to upset the biological process.

b. The collected night-soil of a reasonably uniform consistency can be fed through the treatment plant at a steady rate twenty-four hours a day.

c. The system is not affected by rainfall or other elements which can increase flow in a regular sewage system by two or three times the normal and thus upset the process.

d. With the characteristics of steady feed and proper levels of storage, it is never necessary to bypass untreated wastes directly into the receiving waters.

e. During the electrical outages and other interruptions, disruption to the treatment plant operation is much less in the case of night-soil and the normal operation can be more readily resumed after the interruption has been corrected.

5. Conservation Water: Since flush toilets for the water-borne system require a great deal of water not required by the night-soil system, this becomes an important consideration, particularly in the rapidly expanding City of Seoul. City authorities are currently hard-pressed to meet the normal water supply needs of the City and for some time to come the general increase associated with water-borne sewage would be difficult for them to cope with. There is a growing concern about pollution which will undoubtedly bring pressures to rapidly do something about the sewage

problem and this can be more readily handled as night-soil than by the rapid development of the sewage system with its coincident large water demand.

6. Objectionable Characteristics: It is true that the handling of night-soil may provide more of a nuisance than the water-borne system since in the handling objectionable odors do escape. Nevertheless, this is a limited problem as compared with the existing situation where smelly cess-pools overflow into open drains with a constant and serious odor problem.

Thus, I must conclude that the rapid conversion to a closed water-borne sewage system throughout Seoul which was the apparent basis for proceeding with the Seoul Sewage project at the time the loan was signed, is not a valid objective today. Seoul City is undergoing very rapid growth and is concurrently short of funds to meet ongoing costs and essential development programs. Even if the water-borne system was otherwise desirable or even acceptable, the large cost, extensive disruptions for installation and the time required to complete the systems would rule out its immediate adoption by Seoul.

The plant now being built is designed to serve approximately 1,300,000 persons when completed in perhaps two more years. Installation of the closed sewer system and the house connections to serve this first plant will take considerably more time. Even if this plant were completed and in operation today, some 4,500,000 residents of Seoul would still be relying on comparatively primitive and highly polluting methods of human waste disposal.

City officials have lacked a comprehensive plan to correct these deficiencies and have been seeking to devise acceptable courses of action. We have participated in or are aware of discussions of a large number of possibilities ranging from a crash water-borne program to the other

extreme of piping all sewage to a point well downstream and there dumping the raw sewage. The decision has been made by the ROKG to proceed with night-soil treatment plants and equipment for the first of five plants planned for Seoul is already in country.

I recently visited several plants in Japan where night-soil was being treated utilizing both the digestion and wet-air oxidation (Zimpro) processes. I also observed the process of collection and truck delivery to receiving tanks at the treatment plants. I was very surprised at the clean and effective manner in which all steps of the process were conducted and the lack of objectionable odors in both the collection and the treatment operations. Based on admittedly very limited observation and discussions, I gathered that the responsible Japanese prefer the oxidation process to the digestion, despite the higher first cost and the complex and difficult to maintain treatment equipment involved. Immediately adjacent to one Zimpro plant, a water-borne plant was under construction. The sewage authorities advised that sufficient sewer installations to justify initiation of the plant were being made and that, upon complete conversion to the water-borne plant some time in the future, the night-soil plant would be discontinued and the equipment used elsewhere.

I believe Seoul is taking the wise course in going to night-soil treatment and hopefully they will also adopt the more sanitary collection methods employed by the Japanese. With the delays now foreseen in completing the Seoul Sewage Plant due to fund shortages, I explored with the DMJM Resident Engineer the possibility of temporarily converting the already constructed structures to treating of night-soil. We concluded that this is a completely impracticable step because of the great difference in required facilities even for the night-soil digestion process.

The Seoul Sewage Project should be completed as planned so it may fulfill its primary purpose of serving the planned collection area. It will also serve to point the way toward gradual adoption of the water-borne system although on a much less rapid timetable than envisioned in the feasibility studies and loan paper. It will thus meet loan objectives and, in turn, the long-range needs of Seoul City.

UNITED STATES GOVERNMENT

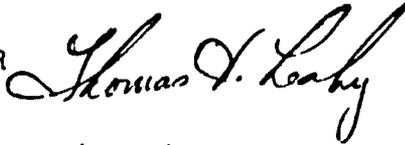
Memorandum

UNCLASSIFIED
ATTACHMENT E
Page 1 of 6

TO : Mr. M. Pehl, ASIA/CD

DATE: Nov. 15, 1973

FROM : T. V. Leahy, SER/ENGR



SUBJECT: Proposed Chong Gye Chun (Seoul) Sewage Treatment Plant.
Loan Amendment 389-H-038.

I have reviewed the financial requirements outlined in attachment B of the CAP in conjunction with DMJM cost estimates of 18 April 1972 and the item specification.

After contacting several manufacturers' representatives, it was possible to obtain up-to-date costs on several of the major items with the understanding that such commodities would be bid within the next six months. It should be noted that delivery on equipment requiring steel may be a problem.

One manufacturer reported that their equipment prices were under "price control" for the past year hence there was not very much difference from 1972 prices. However, they did indicate that equipment costs are presently escalating at about 8% per year.

In obtaining the prices from the equipment manufacturers they indicate that a minimum or no spare parts are included in the quoted prices. The specifications require that a list of spare parts for two years operation shall be submitted but such costs shall not be included in the base bid proposal. Hence it is assumed that an average of 8% of all the costs of equipment should be included for spare parts as the Government would order such parts with bid.

Attached (Exhibit 'B') is my analysis of the cost of the equipment to be procured from the spot checks that were possible to obtain from various suppliers along with the previous estimates of costs and in the same order.

Also attached (Exhibit 'B') is my analysis of the costs of equipment in accordance with bid items as shown in the three procurement packages. It will be noted that I estimated some additional costs for (a) surface skimmers for the primary tank mechanism, (b) accessories for air blowers and (c) hold down anchors which were not included in the suppliers quotations but were included in the specifications.



- 2 -

The request for an additional \$2.5 million appears adequate to provide for the equipment and services. However, I would be inclined to provide an additional cushion in view of the uncertainty of present conditions,

ESTIMATED COST OF EQUIPMENT AND SERVICES

<u>Description</u>	<u>Quantity</u>	<u>1969 Costs</u>	<u>1972 Costs</u>	<u>Present 1973 Costs (CIF)</u>
Primary Sludge Mechanism	1.4	150,000	185,000	195,000
Secondary " "	6	192,000	250,000	270,000
Sludge Thickeners "	4	110,000	193,000	150,000
Comminutors	7	98,000	217,000	175,000
Raw Sewage Pumps	6	141,000	171,000	171,000
175 KW Diesel Gen.	1	19,100	26,000	28,800
Diesel Engines (Eff Pumps)	2	25,000	52,000	52,000
Diesel Engines (Blowers)	3	90,000	120,000	120,000
Air Blowers & Accessories	9	225,000	168,000	255,200
Air Diffusers	1-Lot	89,540	217,000	49,500
	Sub-total	1,141,340	1,599,000	1,466,500
Sludge Handling System	1-Lot	1,370,000	1,700,000	1,900,000
	Sub-total	2,511,340	3,299,000	3,366,500
Skimmers for Primary Sludge	4	-	-	20,000
Trash Rake	1	36,500	52,130 *	54,200 **
Grit Collectors	2	13,000	18,560 *	28,000
Primary Sludge Pumps	4	12,000	17,130 *	19,000
Scum Return Pumps	4	8,000	11,420 *	11,900 **
RAS Pumps & Drivers	3	25,500	36,400 *	37,850 **
Was Drives	1	4,000	5,700 *	5,950 **
Sluice Gate Operators	4	6,400	9,130 *	9,500 **
Air Relief Valves	6	900	1,280 *	1,350 **
Hi & Lo Volt. Control Panel	1-Lot	227,810	325,400 *	338,400 **
Various Flow Meters	1-lot	54,200	77,400 *	80,500 **
Adm Bldg Panel	1-Lot	25,000	35,700 *	37,150 **
Sludge Blanket Indicator	1-Lot	7,560	10,800 *	11,250 **
Hold Down Anchors	1000	-	-	1,000 (Est)
Chlorination System	Lot	26,600	38,000 *	39,500 **
Air lift Pump	3	5,100	7,250 *	7,540 **
Header lift Assembly	Lot	5,000	7,130 *	7,400 **
Split Couplings	Lot	1,280	1,820 *	1,900 **
Spray Nozzles	Lot	5,460	7,800 *	8,100 **
Lab. Equipment	Lot	23,070	32,950 *	34,300 **
	Sub-total	488,070	697,000 *	754,790 **
	Grand total	2,999,410	3,996,000	4,121,290

Legend * Escalation of 42.86% increase from 1969 to 1972 prices as applied DMJM.

** Applied 4% to 1972 estimated prices. This was based upon the average increase of present prices (obtained from suppliers) over the 1972 prices.

To the above equipment costs, the following items must be added to determine the total dollar requirements:

Equipment Costs	4,121,290
Spare Parts & Special tools (8%)	329,700
	<hr/>
	4,450,990
Escalation for 6 months 4%	178,040
Supervision Installation & training	160,000
Plant Modifications & Redesign	50,000
Training in U.S. for Koreans	50,000
DMJM field supervision	90,000
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	4,979,030
Contingencies on above (12½%)	622,380
Total required	5,601,410
Amount available	3,084,570
	<hr/>
Amount required for new Loan	2,516,840



Estimate prepared by: Thomas V. Leahy
11/15/73

ESTIMATED COST OF BID ITEMS

<u>Item</u>	<u>For Procurement Pkg #1</u>	<u>Item</u>	<u>Bid Pkg</u>
		<u>Prices</u>	<u>Total (CIF)</u>
Lot	Sludge Handling, Conditioning & dewatering	1,900,000	1,900,000
	<u>For Procurement Pkg #2</u>		
1.	175 KW Diesel Generator (one)	28,800	
2.	Diesel Engines 340 Hhp (two) 52,000		
	Diesel Engines 500 Hhp (three) <u>120,000</u>		
	Total Item #2.	172,000	
3.	Laboratory Equipment	<u>34,300</u> *	
	Total Pkg. #2		235,100
	<u>For Procurement Pkg #3</u>		
1.	Trash Rake (one)	54,200 *	
2.	Comminutors (seven)	175,000	
3.	Grit Collectors (two)	28,000	
4.	Pumps Raw Sewage (six) 171,000		
	Primary Sludge (four) 19,000		
	Scum Return (four) 11,900 *		
	RAS Pumps (three) 37,850 *		
	WAS Drive (one) <u>5,950</u> *		
	Total Item #4	245,700	
5.	Air Diffusers		
	Channel 2" (660) 7,000		
	Aeration Tank 3" (4000) <u>42,500</u>		
	Total Item #5	49,500	
6.	Air lift Pumps (three)	7,540 *	
7.	Sedimentation Tank Mechanism		
	Primary (four) 195,000		
	Secondary (six) 270,000		
	Surface Skimmers (four)		
	(see spec) <u>20,000</u>		
	Total Item #7	485,000	
8.	Sludge Thickners (four)	150,000	
9.	Sluice Gate Operating Units (four)	9,500 *	
10.	Air Blowers		
	Driven by Electricity		
	(motor by owner) (six) 136,800		
	Driven by diesel (engine by owner)		
	(3) 68,400		
	Accessories - valves etc. 50,000 (est) (see spec)		
	Total Item #10	255,200	

11.	Process Control Instrumentation Systems (10)		
	Hi & lo Volt. control panels	338,400 *	
	Various flow meters	80,500 *	
	Adm Bldg. Panel	37,150 *	
	Sludge Blanket Indicator	<u>11,250 *</u>	
	Total Item 11		467,300 *
12.	Chlorination Equipment (1-Lot)		39,500 *
13.	Motorized Air Relief Valves (six)		1,350 *
14.	Misc. Mechanical Equip.		
	Couplings (425)	1,900 *	
	Spray Nozzles (1000)	8,100 *	
	Diffuser lift Mechanism (4)	7,400 *	
	Hold down Anchors (1000)	<u>1,000 (est) (see spec)</u>	
	Total Item 14		18,400
	Total Package #3		<u>1,986,190</u>
	Grand Total (3 packages)		4,121,900

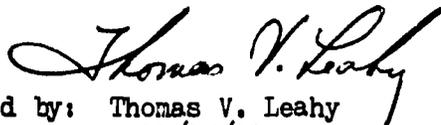
Legend

(est) These prices were estimated by analyzer.

- * Applied 4% to 1972 estimated prices. This was based upon the average increase of present prices obtained from suppliers over the 1972 prices.

To the above equipment costs, the following items must be added to determine the total dollar requirements.

Equipment Costs	4,121,290
Spare Parts & Special tools (8%)	329,700
	<u>4,450,990</u>
Escalation for 6 months (4%)	178,040
Supervision-Installation & training (Suppliers)	160,000
Plant Modification & Redesign	50,000
Training in U.S. for Koreans	50,000
DMJM Engineering Supervision	<u>90,000</u>
	4,979,030
Contingencies on above (12½%)	622,380
	<u>5,601,410</u>
Total amount required	5,601,410
Amount available	<u>3,084,570</u>
Amount required	2,516,840



Estimate prepared by: Thomas V. Leahy
11/15/73

Economic Analysis

An economic analysis of a sewage collection and treatment plant project can be handled in a two-staged approach. The initial stage is the determination of the least cost alternative of meeting (a) the service requirements and (b) the standards of effluent discharge appropriate to the project. The assumption that completing the present plant will result in the least cost alternative appears to have sound basis in fact. The only reasonable alternative, as discussed in Attachment D, would be use of the Zimpro system or its equivalent as currently being used in Japan and elsewhere in Seoul. Since this system does not provide for waste water collection and treatment, it is considered as only a transitional phase prior to the installation of a water-borne sanitary sewage collection and treatment system. Meanwhile sanitary and pollution problems remain relating the waste water disposal. For the present project the site chosen and the facilities already under erection were considered by Black & Veatch as the least-cost alternative for a water-borne sewerage system for the Chong Gye Chun drainage area of the city.

Although the foregoing is believed sufficient to justify the expenditure of necessary funds to complete the project, the question still must be asked "can we be sure that the resulting benefits will be worth the cost of completing the project?" This is the second phase in the analysis.

What people are willing to pay is one minimal measure of the economic "benefits" they conceive as arising from the project. A sewerage charge is to be levied by Seoul city at 20% of the water - use charge. The anticipated revenue collections of sewerage charges in the area to be served by the Chong Gye Chun project provides a proxy of one measure of the quantifiable benefits of the project.

In the present economic analysis all costs incurred and disbursements made through calendar year 1973, estimated at \$5,504,000, are regarded as "sunk costs" and therefore are excluded from the cost calculations. This amount does not include the cost of land purchased for the plant site since the "present value" of the land (in constant-terms) at the time the plant is decommissioned may not be more than the original acquisition price. It is also assumed that the scrap value of the plant equipment would offset the cost of restoring the plant site to open land condition.

The results from the calculations of cost and benefits are set forth in the table reproduced on page 3. The disbursement stream for uncommitted capital cost is reduced during the three (3) years 1974-1976 by revenues anticipated in advance of benefits. These revenues result from a 20% sewerage charge added to the bills of water users and prorated strictly on a per capita basis for the total population of the project area. (The advance revenues to be realized for the rest of the city are earmarked to go for the capital cost of sewage lines and disposal plants for the other areas of the city.) This allocated revenue stream is picked up from 1977 onward in column r of the table page 3 of this

attachment. On the cost side in addition to capital cost, operations and maintenance costs as well as allocated administration cost (both as estimated by the executing agency) have been added to give a total adjusted cost stream.

In comparing the resultant adjusted cost stream with the allocated revenue stream, the internal rate of return is found to be 7.0% assuming an average economic life for the project at 25 years.

This internal rate of return is on the low side when compared to the opportunity cost of capital in Korea, which may exceed 20 percent. There are however unmeasurable, or at least currently difficult to measure, benefits in the form of a lower incidence of disease and improved quality of the water in the Han River downstream from Seoul that are not included as benefits assigned to this project. In the latter respect, there are at least two water supply systems for Incheon whose water intake points are downstream from the discharge point for the Chong Sye Chun sewage treatment plant. The operating costs of these water supply systems should be significantly reduced by the proper operation of the Chong Sye Chun sewage treatment plant.

REVENUE FROM AND APPLICATION OF SEOUL CITY SEWERAGE FEE

UNIT : 1,000,000 Won

<u>Year</u>	<u>Estimated Revenue</u>	<u>Operating & Maintenance</u>	<u>Administration (Fee Collection)</u>	<u>Debt Service</u>	<u>Development Program</u>
1974	1,883	2	94	203	1,584
1975	2,030	2	101	203	1,724
1976	2,227	137	111	222	1,757
1977	2,423	272	121	222	1,808
1978	2,570	272	128	222	1,948
1979	2,717	272	135	262	2,048
1980	2,864	272	143	262	2,187
1981	3,012	272	150	261	2,329

NOTE: FEE COLLECTION COST ASSUMED 5% OF THE ESTIMATED REVENUE.

A.I.D. LOAN NO. 489-H-038
CHONG GYE CHUN SEWAGE TREATMENT PLANT
LOAN AMENDMENT

CERTIFICATION PURSUANT TO SECTION 611(e) OF THE
FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, Michael H.B. Adler, the principal officer of the Agency for International Development in Korea, having taken into account among other things:

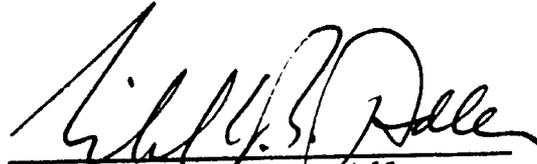
- A. The work already carried out by the Special City of Seoul in executing the civil works of the plant and the interceptor sewers and in assigning trained personnel to the plant;
- B. the constructive attitude of the Government of the Republic of Korea as expressed in the efforts made to solve the financial problems related to project completion, and in establishing and undertaking implementation of a sound program for solving Seoul City's growing problems of human waste disposal;
- C. the inclusion in subject capital assistance project of provisions for A.I.D. financed engineering services to carry out design, preparation of procurement documents, construction supervisory services, and startup supervision;
- D. the inclusion in subject capital assistance project of provisions for training for operation and maintenance, and for local currency availability;

do hereby certify that in my judgment both the Special City of Seoul and the Government of the Republic of Korea will have the financial capability and the human resources capability to implement, maintain and utilize effectively subject capital assistance project.

This judgment is based on the facts that:

1. The Government of the Republic of Korea and the Special City of Seoul have enacted legislation making mandatory the use of flush toilets where sewers and treatment facilities exist.
2. The Special City of Seoul will collect a sewage fee from all water users commencing in 1974. These funds will be used to finance operation, maintenance and debt servicing of this project and to finance expansion of water-borne sewage facilities for the City.
3. Adequate planning for project implementation and sufficient financial support for timely execution of the balance of the project will be provided if the Government of the Republic of Korea and the Special City of Seoul comply with the implementation programs set forth in the CAP and since revised to accord with existing conditions and costs.

4. Implementation of the balance of the project will be based on A.I.D. approved engineering and construction supervisory services, including design, preparation of IFBs, bid awards and contracting for goods and services.



Michael H. E. Adler
Director, USAID Korea

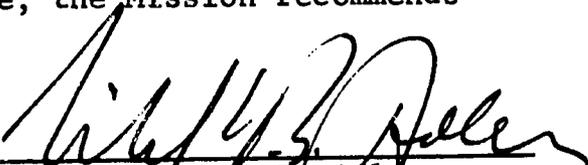


Dated:

A.I.D. LOAN NO. 489-H-038
CHONG GYE CHUN SEWAGE TREATMENT PLANT
LOAN AMENDMENT

MISSION RECOMMENDATION

Subject loan will be of substantial economic and social benefit to Korea, will constitute an important element of the United States Assistance Program in Korea and will be consonant with the overall United States objectives in Korea. Therefore, the Mission recommends approval.



Michael H. B. Adler

Director, USAID and Counselor of
Embassy for Economic Affairs

28 September 1973

Dated:

STATUTORY CHECKLIST

I. COUNTRY PERFORMANCE

A. Progress Towards Country Goals

1. FAA §§201(b)(5), 201(l)(7), 201(b)(8), 208. Discuss the extent to which the country is:

(a) Making appropriate efforts to increase food production and improve means for food storage and distribution.

(a) From 1962 through 1971 the National Income accounts show that the value added in the agriculture sector increased by approximately 50% (an average growth of 5% per year or a growth rate of 4.2%). Significantly, this decade included the two drought years of 1967 and 1968; however, significant investments have been and are being made in irrigation facilities which will minimize future weather influences on production.

In the past two years, rice prices have been allowed to increase 29.3% substantially more than the 10.2% increase allowed in the previous three years. This increase will provide additional incentive for farmers to use fertilizer and other inputs required to increase production.

Under a concurrent proposed AID loan for agricultural research, substantial effort and expenditure would be made to develop and introduce new crop varieties. Under previous A.I.D. assistance, Korea's food storage capacity was improved and increased.

(b) Creating a favorable climate for foreign and domestic private enterprise and investment;

(b) Korea has taken a number of effective steps to create a favorable investment climate. A liberal foreign investment law was enacted, and intensive study is being undertaken by the ROKG of means of expanding capital markets. An investment center has been established, and domestic investment has been assisted by a number of A.I.D. loans such as the loan to the Korea Development Bank.

(c) Increasing the people's role in the developmental process;

(c) Koreans are basically a homogeneous people whose society is relatively free and politically stable. Korea does not possess deep sectional, religious or social cleavages. Korea's rapid economic development benefits increasingly larger segments of the population.

(d) Allocating expenditures to development rather than to unnecessary military purposes or intervention in other free countries' affairs;

(d) Korea has wisely allocated its resources in such a way as to maximize its economic development while maintaining sufficient military forces to insure a relative freedom from threatened external aggression. Korea is not intervening in other free and independent nations' affairs.

(e) Willing to contribute funds to the project or program;

(e) The City of Seoul has already expended over \$5 million equivalent for the construction of the project and will provide all remaining local currency requirements.

(f) Making economic, social and political reforms such as tax collection improvements and changes in land tenure arrangement; and making progress toward respect for the role of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise;

(f) Korean land reform programs have eliminated the large landholding class and have created a large number of independent farmers who own their own small farms. The ROKG has assisted in the establishment of a number of farm and fishery cooperatives which have been of significant assistance to the independent farm and fishery communities.

Our Mission has also assisted the ROKG in its efforts to reform the equity of tax rates and collection procedures. These reforms have greatly increased both the amount of taxes collected and the equity with which the program is administered.

On October 17, 1972, the President of Korea declared martial law, giving as reasons domestic and international political developments. Under the martial law, political liberties were restricted and the Korean press was placed under tight control. A new constitution has since been adopted and martial law lifted on December 13, 1972, but restrictions on political activity and press freedom continue.

(g) Responding to the vital economic, political and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.

(g) The ROKG has made significant progress in its efforts to provide a better life for the average Korean citizen. The Government has encouraged the rapid expansion of small and medium industry, stimulated the development of farmer credit unions and fishing cooperatives and has helped in many other ways to better the lot of its people.

B. Relations with the United States

1. FAA Sec. 620(c). Is the government indebted to any U.S. citizen for goods or services furnished or ordered where: (a) such citizen has exhausted available legal remedies, including arbitration, or (b) the debt is not denied or contested by the government, or (c) the indebtedness arises under such government's or a predecessor's unconditional guarantee?

1. No such situation is known to exist.

2. FAA Sec. 620(d). If the loan is intended for construction or operation of any productive enterprise that will compete with U.S. enterprise, has the country agreed that it will establish appropriate procedures to prevent export to the U.S. of more than 20% of its enterprises annual production during the life of the loan?

2. The loan is not intended for such purposes.

3. FAA B620(e)(1). Has the country's government, or any agency or subdivision thereof, (a) nationalized or expropriated property owned by U.S. citizens or by any business entity not less than 50% beneficially owned by U.S. citizens, (b) taken steps to repudiate, or nullify existing contracts or agreements with such citizens or entity, or (c) imposes or enforced discriminatory taxes or other exactions, or restrictive maintenance or operation conditions? If so, and more than six months has elapsed since such occurrence, identify the document indicating that the government, or appropriate agency or subdivision thereof, has taken appropriate steps to discharge its obligations under international law toward such citizen or entity? If less than six months has elapsed, what steps if any has it taken to discharge its obligations?

3. No such actions are known to have occurred.

4. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action of U.S. property, and failed to take appropriate measures to prevent a recurrence and to provide adequate compensation for such damage or destruction?

4. No such situation is known to have occurred.

5. FAA Sec. 620(l). Has the government instituted an investment guaranty program under FAA Sec. 221 (b)(1) for the specific risks of inconvertibility and expropriation or confiscation?

5. Yes.

6. FAA §620(o), Fisherman's Protective Act of 1954, as amended, Section 5. Has the country seized, or imposed any penalty or sanction against, any U.S. fishing vessel on account of its fishing activities in international waters? If, as a result of a seizure, the U.S.G. has made reimbursement under the provisions of the Fisherman's Protective Act and such amount has not been paid in full by the seizing country, identify the documentation which describes how the withholding of assistance under the FAA has been or will be accomplished.

6. No.

7. FAA Sec. 620(g). Has the country been in default, during a period in excess of six months, in payment to the U.S. on any FAA loan?

7. No.

8. FAA Sec. 620(t). Have diplomatic relations between the country and the U.S. been severed? If so, have they been renewed?

8. Diplomatic relations between Korea and the United States have not been severed.

C. Relations with Other Nations and the U.N.

1. FAA Sec. 620(i). Has the country been officially represented at any international conference when that representation included planning activities involving insurrection or subversion directed against the U.S. or countries receiving U.S. assistance?

1. Korea is not known to have been so represented.

2. FAA Secs. 620(a), 620(n);

Has the country sold, furnished, or permitted ships or aircraft under its registry to carry to Cuba or North Vietnam, items of economic, military or other assistance?

2. No.

3. FAA Sec. 620(u); App. Sec. 108. What is the status of the country's U.N. dues, assessments or other obligations? Does the loan agreement bar any use of funds to pay U.N. assessments, dues or arrearages?

3. The Republic of Korea is not a member of the United Nations. The loan agreement will stipulate that only eligible commodities and services can be procured with the proceeds of the loan.

D. Military Situation

1. FAA Sec. 620(i). Has the country engaged in or prepared for aggressive military efforts directed against the U.S. or countries receiving U.S. assistance?

1. No.

2. FAA Sec. 620(s). What is (a) the percentage of the country's budget devoted to military purposes, and (b) the amount of the country's foreign exchange resources used to acquire military equipment, and (c) has the country spent money for sophisticated weapons systems purchased since the statutory limitation became effective?

2. (a) For the period 1970-1973, Korean defense budget expenditures have averaged 4.2 percent of GNP. In 1973, these expenditures were budgeted at 4.2 percent of GNP. Defense accounted for 26 percent of the national budget during 1970-1973 and 28 percent in 1973.

(b) Foreign exchange purchases of military items have averaged less than \$1 million annually in recent years, a negligible portion of both the defense budget and total imports.

(c) No.

Is the country diverting U.S. development assistance or PL 480 sales to military expenditures? Is the country diverting its own resources to unnecessary military expenditures? (Findings on these questions are to be made for each country at least once each fiscal year and, in addition, as often as may be required by a material change in relevant information.)

The Department of State and A.I.D. have reviewed Korean actions under the Symington Amendment and have concluded that Korea is not diverting U.S. development assistance or PL 480 sales to military purposes. They also determined that Korea is not diverting its own resources to unnecessary military expenditures to a degree which materially interferes with its development. The Country Team concurs.

II. CONDITION OF THE LOAN

A. General Soundness

Interest and Repayment

1. FAA §§201(d), 201(b)(2).

Is the rate of interest excessive or unreasonable for the borrower? Are there reasonable prospects for repayment? What is the grace period interest rate; the following period interest rate? Is the rate of interest higher than the country's applicable legal rate of interest?

The proposed loan contains a rate of interest which is concessionary. The borrower has the capacity to repay the loan at the rates of interest to be required. The rates in the proposed loan are 2% per annum during the grace period and 3% per annum thereafter for the remaining thirty years of the repayment period. The proceeds are being relent to the City of Seoul at an interest rate of 5 3/4 % per annum. Repayment is to be made over a 15 year period following a 5 year grace period. These interest rates are not higher than the country's applicable legal rate of interest.

Financing

1. FAA § 201(b)(1). To what extent can financing on reasonable terms be obtained from other free-world sources, (including private sources within the U.S.?)

Financing of this activity on terms comparable to those proposed for this loan is believed not to be available from other free-world sources, including private sources within the U.S.

Economic and Technical Soundness

1. FAA §§201(b)(2), 201(e).

The activity's economic and technical soundness to undertake loan; does the loan application, together with information and assurances, indicate that funds will be used in an economically and technically sound manner?

2. FAA §611(a)(1). Have engineering, financial, and other plans necessary to carry out assistance, and a reasonable firm estimate of the cost of assistance to the U.S., been completed?

3. FAA §611(b); App. §101.

If the loan or grant is for a water or related land-resources construction project or program, do plans include a cost-benefit computation? Does the project or program meet the relevant U.S. construction standards and criteria used in determining feasibility?

4. FAA §611(e). If this is a Capital Assistance Project with U.S. financing in excess of \$1 million, has the principal A.I.D. officer in the country certified as to the country's capability effectively to maintain and utilize the project?

1. The activity is economically and technically sound, and the loan application and other information available to the Mission indicates that the loan funds will be used in an economically and technically sound manner.

2. Yes.

3. **Not applicable.** However a cost-benefit computation has been made and found to be favorable.

4. **The principal A.I.D. officer** in Korea has so certified (see Annex I).

**B. Relation to Achievement of
Country and Regional Goals**

Country Goals

1. FAA §§207, 281(a). What is this loan's relation to:

a. Institutions needed for a democratic society and to assure maximum participation on the part of the people in the task of economic development.

b. Enabling the country to meet its food needs both from its own resources and through development, with U.S. help, of infrastructure to support increased agricultural productivity.

c. Meeting increasing need for trained manpower.

d. Developing programs to meet public health needs.

e. Assisting other important economic, political, and social development activities, including industrial development; growth of free labor unions; cooperatives and voluntary agencies; improvement of transportation and communication systems; capabilities for planning and public administration; urban development; and modernization of existing laws.

1. This loan will assist local government to meet the public health (sanitation) needs of that part of the city of Seoul served by the sewage disposal system. It will also train Koreans to operate the constructed facilities. Approximately 1.3 million persons will be served by the system.

There is no other direct relationship between the loan and the other institutional and developmental goals cited in these sections (207,281(a)) of the FAA.

2. FAA §201(b)(4). Describe the activity's consistency with and relationship to other development activities, and its contribution to realizable long-range objectives
3. FAA §201(b)(9). How will the activity to be financed contribute to the achievement of self-sustaining growth?
4. FAA §201(f). If this is a project loan, describe how such project will promote the country's economic development, taking into account the country's human and material resource requirements and the relationship between ultimate objectives of the project and overall economic development.
5. FAA §201(b)(3). In what ways does the activity give reasonable promise of contributing to development of economic resources, or to increase of productive capacities?
6. FAA §281(b). How does the program under which assistance is provided recognize the particular needs, desires, and capacities of the country's people; utilize the country's intellectual resources to encourage institutional development; and support civic education and training in skills required for effective participation in political processes.
2. The completion of this project is included in Korea's Third Five Year Plan. It is a first step in the realization of adequate sewage disposal systems for urban areas of the country.
3. Korea is rapidly achieving self-sustaining growth. The realization of this project will be a significant beginning toward raising sanitation standards in urban areas with resultant beneficial effects on public health and productivity.
4. See 2. and 3. above.
5. See 2. and 3. above.
6. The people's need for a sanitary environment is a "given" which the city of Seoul has recognized by undertaking the project. The city has demonstrated its capacity to have the project constructed and to assure its proper operation.

7. FAA §601(a). How will this loan encourage the country's efforts to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture, and commerce; and (f) strengthen free labor unions?

8. FAA §202(a). Indicate the amount of money under the loan which is: going directly to private enterprise; going to intermediate credit institutions or other borrowers for use by private enterprise; being used to finance imports from private sources; or otherwise being used to finance procurements from private sources.

9. FAA §611(a)(2). What legislative action is required within the recipient country? What is the basis for a reasonable anticipation that such action will be completed in time to permit orderly accomplishment of purposes of loan?

Regional Goals

1. FAA §619. If this loan is assisting a newly independent country, to what extent do the circumstances permit such assistance to be furnished through multilateral organizations or plans?

2. FAA §209. If this loan is directed at a problem or an opportunity that is regional in nature, how does assistance under this loan encourage a regional development program? What multilateral assistance is presently being furnished to the country?

7. There is no direct relationship between this loan and the objectives stated in Sec. 601(a) of the Foreign Assistance Act, except for improving the public health environment of one part of the city of Seoul.

8. All of the funds provided under this loan will be used to finance imports from private US sources of goods and services.

9. All required legislation has previously been enacted and is now in force.

1. Korea is not a newly independent nation.

2. This loan is not directed specifically at a regional problem, but it is anticipated that the project will be replicated within Seoul and elsewhere in Korea.

Korea is a member of the Asian Development Bank (ADB) and is receiving

assistance from the World Bank. Both of these organisations are becoming increasingly active in Korea.

C. Relation to U.S. Economy

**Employment, Balance of Payments,
Private Enterprise.**

1. FAA §§201(b)(6); 102, Fifth. What are the possible effects of this loan on U.S. economy, with special reference to areas of substantial labor surplus? Describe the extent to which assistance is constituted of U.S. commodities and services, furnished in a manner consistent with improving the U.S. balance of payments position.
 1. There is no adverse effect from this loan on the U.S. economy or on areas of substantial labor surplus. Only goods and services of US source and origin will be financed by the loan.
2. FAA §§612(b); 636(h). What steps have been taken to assure that, to the maximum extent possible, foreign currencies owned by the U.S. and local currencies contributed by the country are utilized to meet the cost of contractual and other services, and that U.S. foreign owned currencies are utilized in lieu of dollars?
 2. The loan proceeds will be used exclusively to finance foreign exchange costs. All local currency costs will be financed by the host country.
3. FAA §601(d); App. §109. If this loan is for a capital project, to what extent has the Agency encouraged utilization of engineering and professional services of U.S. firms and their affiliates? If the loan is to be used to finance direct costs for construction, will any of the contractors be persons other than qualified nationals of the country or qualified citizens of the U.S.? If so, has the required waiver been obtained?
 3. A US engineering firm has been retained by the Koreans to provide detailed engineering and construction supervision. No direct costs for construction other than supervision of equipment installation by major US suppliers is planned.

4. FAA §608(a). Provide information measures to be taken to utilize U.S. Government excess personal property in lieu of the procurement of new items.

5. FAA §602. What efforts have been made to assist U.S. small business to participate equitably in the furnishing of commodities and services financed by this loan?

6. FAA §621. If the loan provides technical assistance, how is private enterprise on a contract basis utilized? If the facilities of other Federal agencies will be utilized, in what ways are they particularly suitable; are they competitive with private enterprise (if so, explain); and how can they be made available without undue interference with domestic programs?

7. FAA §611(c). If this loan involves a contract for construction that obligates in excess of \$100,000, will it be on a competitive basis? If not, are there factors which make it impracticable.

8. FAA §601(b). Describe the efforts made in connection with this loan to encourage and facilitate participation of private enterprise in achieving the purposes of the Act.

Procurement

1. FAA §604(a). Will commodity procurement be restricted to U.S. except as otherwise determined by the President?

4. Required by Section 6.1(d) of the loan agreement.

5. Appropriate notice of this activity will be made so as to encourage participation by U.S. small businesses. Procurement procedures will follow normal commercial trade practices to the maximum extent allowable.

6. A portion of the loan will be used to finance technical assistance. Most if not all of it will be provided by the US consulting engineer.

7. The loan does not involve such a construction contract.

8. All procurement of loan financed services and commodities (excluding any USG excess property items) will be from private US enterprises. Local private contractors have been and will continue to be employed in the construction of the project.

1. Yes.

2. FAA §604(b). Will any part of this loan be used for bulk commodity procurement at adjusted prices higher than the market price prevailing in the U.S. at time of purchase?

2. No.

3. FAA §604(e). Will any part of this loan be used for procurement of any agricultural commodity or product thereof outside the U.S. when the domestic price of such commodity is less than parity?

3. No.

4. FAA §604(f). Will the agency receive the necessary pre-payment certification from suppliers under a commodity import program agreement as to description and condition of commodities, and on the basis of such, determine eligibility and suitability for financing?

4. Not applicable

D. Other Requirements

1. FAA §201(b). Is the country among the 20 countries in which development loan funds may be used to make loans in this fiscal year?

1. Yes.

2. App. §106. Does the loan agreement provide, with respect to capital projects, for U.S. approval of contract terms and firms?

2. Any contracts financed by the loan will have such approval.

3. FAA §620(k). If the loan is for construction of a production enterprise, with respect to which the aggregate value of assistance to be furnished will exceed \$100 million, what preparation has been made to obtain the express approval of the congress?

3. Not applicable.

4. FAA §620(b), 620(f).

Has the President determined that the country is not dominated or controlled by the international Communist movement? If the country is a Communist country (including, but not limited to, the countries listed in FAA §620(f)) and the loan is intended for economic assistance, have the findings required by FAA §620(f) and App. §109(b) been made and reported to the Congress?

4. Yes, the required determination has been made.

5. FAA §620(h). What steps have been taken to insure that the loan will not be used in a manner which, contrary to the best interest of the United States, promotes or assists the foreign aid projects of the Communist-bloc countries?

5. The Loan Agreement will contain a provision covering this requirement.

6. App. §110. Will any funds be used to finance procurement of iron and steel products for use in Vietnam other than as contemplated by §110?

6. No.

7. FAA §636(1). Will any part of this loan be used in financing non-U.S.-manufactured automobiles? If so, has the required waiver been obtained?

7. Non-U.S.-manufactured automobiles will not be financed.

8. FAA §§620(a)(1) and (2), 620(p). Will any assistance be furnished or funds made available to the government of Cuba or the United Arab Republic?

8. No.

9. FAA §620(g). Will any part of this loan be used to compensate owners for expropriated or nationalized property? If any assistance has been used for such purpose in the past, has appropriate reimbursement been made to the U.S. for sums diverted?

9. No. No assistance has been used for such purposes in the past.

10. FAA §201(f). If this is a project loan, what provisions have been made for appropriate participation by the recipient country's private enterprise?

10. Local private contractors are and will continue to provide construction and installation services on this project.

11. App. §104. Does the loan agreement bar any use of funds to pay pensions, etc., for persons who are serving or who have served in the recipient country's armed forces?

11. Yes. The Loan Agreement will cover this requirement.

12. MMA §901, b. Does the loan agreement provide for compliance with U.S. shipping requirements, that at least 50% of the gross tonnage of all commodities financed with funds made available under this loan (computed separately by geographic area for dry bulk carriers, dry cargo liners, and tankers) be transported on privately owned U.S. flag commercial vessels to the extent such vessels are available at fair and reasonable rates for U.S. flag vessels and that at least 50% of the gross freight revenue generated by all shipments financed with funds made available under this loan and transported on dry cargo liners be paid to or for the benefit of privately owned U.S. flag commercial vessels?

12. Yes.

13. App. §102. Have obligations for engineering and architectural fees and services over \$25,000 on any one project been reported to Congress bi-annually?

13. Yes.

14. FAA §481. Has the President determined that the recipient country has failed to take adequate steps to prevent narcotic drugs produced or procured in, or transported through, such country from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents or from entering the United States unlawfully? 14. No.
15. App. §111. Is the loan being used to transfer funds to world lending institutions under FAA §209(d) and §251(h)? 15. No.
16. App. §501. Are any of these funds being used for publicity or propaganda within the United States? 16. No.
17. FAA §612(d). Does the United States own host country excess foreign currency and, if so, what arrangements have been made for its release? 17. Korea is not an excess currency country.
18. FAA §604(d). Will provisions be made for placing marine insurance in the U.S. if the recipient country discriminates against any marine insurance company authorized to do business in the U.S.? 18. Yes. An appropriate provision is included in the loan agreement.

Annex 4
AID Loan No. 489-H-038
Amendment No. 1

CAPITAL ASSISTANCE LOAN AUTHORIZATION AMENDMENT
Provided from: Development Loan Funds
(Korea: Chong Gye Chun Sewage Treatment Project)

Pursuant to the authority vested in the Administrator of the Agency for International Development (A.I.D.) by the Foreign Assistance Act of 1961, as amended, and delegations of authority issued thereunder, I hereby authorize pursuant to Part I, Chapter 2, Title I, the Development Loan Fund, the amendment of the Capital Assistance Loan Authorization for A.I.D. Loan No. 489-H-038, dated 13 July 1966, to the Government of the Republic of Korea ("Borrower") for relloan to the Special City of Seoul, as follows:

- a. The amount of the Loan is increased by Two Million Eight Hundred Thousand Dollars (\$2,800,000) to a total amount not to exceed Six Million Three Hundred Thousand Dollars (\$6,300,000);
- b. The interest on this increase shall be two percent (2%) per annum for the first ten (10) years of the loan and three percent (3%) per annum for the remainder of the loan. The loan increase shall be repaid within forty (40) years from the date of the first disbursement under the loan increase, including a grace period of ten (10) years, on the basis of approximately equal semi-annual installments covering principal and interest during the repayment period.
- c. The loan increase shall be subject to such other terms and conditions as A.I.D. may deem advisable consistent with the terms and conditions of the original Loan Authorization, signed 9 June 1966.

D.G. MacDonald
Assistant Administrator for Asia

Date