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資料10

キルギス  
チルボフタ子市水環境改善協

STATE COMMISSION FOR  
ARCHITECTURE AND CONSTRUCTION  
UNDER GOVERNMENT OF THE KYRGYZ REPUBLIC

APPLICATION FOR GRANT AID  
TO THE GOVERNMENT OF JAPAN

IMPROVEMENT OF THE WATER ENVIRONMENT  
IN  
CHOLPON-ATA CITY  
OF  
THE ISSYK-KUL OBLAST

AUGUST 2004

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	無償部 <input checked="" type="checkbox"/>	社会開発部 <input type="checkbox"/> JOCV <input type="checkbox"/>
	人間開発部 <input type="checkbox"/>	地球環境部 <input checked="" type="checkbox"/>
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## APPLICATION FORM FOR JAPAN'S GRANT AID GENERAL AND FISHERIES

1. Date August 2004

2. Project title, Program title, Sector/Sub-sector

Project Title: Improvement of the water environment in Cholpon-Ata city of the Issyk-Kul oblast in the Kyrgyz Republic

Sector/Sub-sector: Water supply, sewage (treatment facilities)

3. Background of the request

(1) Relationship between the project/program and the national development plan

(Name of the national development plan and the position of the proposed sector in the plan)

1) Name of the Plan:

Comprehensive Development Framework of the Kyrgyz Republic to 2010 (CDF)

2) Period: From 2001 to 2010

3) Outline:

This framework reflects a ten-year national development vision. The overarching goal of CDF is to achieve political and social well being, economic prosperity together with freedom, human dignity and equal opportunities for all the people of Kyrgyzstan. This can be broken down into three basic goals – effective and transparent state governance, a fair society providing human development and protection, and sustainable economic growth and development.

(2) Relationship between the project/program and the sector development plan

(Name of the sector development plan and the position of the proposed project/program/sub-sector in the plan)

1) Name of the Plan:

National Poverty Reduction Strategy (NPRS)

In order to build up a fair society, which is one of the strategies mentioned in the NPRS, this strategy proposes various policies including Rational Environmental Management.

2) Period: From 2003 to 2009

3) Outline

The Republic's Constitution provides an environmentally favorable life as the right of each individual. The environmental conservation development strategy is to be based on two fundamental principles: the principle of integration of economic and environmental policies and the principle of individual responsibility.

The most dangerous factor that causes depletion and degradation of water resources, especially of portable water – a strategic resource – is pollution by various chemical and organic substances. Increasing volumes of dangerously polluted waters containing nitrites, chlorides, chromium, sulfates, oil and oil products are discharged into open water reservoirs and water courses without any treatment. The most acute problem is pollution of the underground water mainly due to the absence of proper sanitary protection of water intake zones or non-observance of standards of economic activities in these zones.

Deterioration of public utilities, especially in rural areas, has resulted in declining living standards and aggravation of the social situation. Only 56% of total number of cities, towns and rayon centers in the country has centralized sewage networks with treatment facilities. At present, there are 350 sewage treatment facilities in the Republic of which only 20% comply with sanitary requirements, 60% do not function at all. At the same time, the effectiveness of the existing sewage treatment is low and does not satisfy standard requirements. A noticeable lag in the development of the systems supporting vital activities has had a significant impact on the sanitary, epidemiological and environmental situation in the region.

In urban area, 90.2% of the population has access to tap water, while in rural area only 19%. Only 15% of the population has access to sewer networks. The volume of capital investment for protection and rational use of water resources is annually decreasing.

The major principle underlying the strategy for stabilizing the use of nature is a comprehensive rationalization of the use of natural resources without damaging to sustainable long-term development. Water use and land cultivation methods with a view of biodiversity preservation should be beneficial for all strata of the society. To improve the efficiency of water resources use, the following action is necessary to be taken:

- (i) Develop measures to reduce the level of agricultural water intake to the amounts biologically required by various agricultural crops;
- (ii) Develop the National Water Resources Strategy, complete the formation of the Cadastre of Water Resources of the Kyrgyz Republic, and establish a unified national database on the conditions and use of water resources in the Republic;
- (iii) Implement a step by step transfer to advanced technologies of

arable land irrigation; introduce economic instruments for transfer to an effective use of water resources, water saving and water resources conservations technologies; introduce modern water management systems;

- (iv) Ensure access to high-quality potable water for 100% of the urban population and 45% of the rural population;
  - (v) Ensure access to sewage networks for 40% of the population by 2005; and
  - (vi) Increase the volume of capital investment for the purposes of water resources conservation to 10 million soms by 2005.
- (3) Sewage development in the Issyk-Kul oblast, especially Cholpon-Ata city.

The Government of the Kyrgyz Republic has been working on this issue since 1980, because development of the sewage utilization infrastructure was lagging behind the intensive development of the resort zone of the Issyk-Kul oblast around Cholpon-Ata city. For the last years the following decisions and decrees on the issue were made by the Government of the Kyrgyz Republic and oblast state administration:

- Order of the Government of the Kyrgyz Republic № 200-P to eliminate emergency conditions in the drainage system of Cholpon-Ata city, dated 4 June 2001;
- Decision of the board of Administration of the President of the Kyrgyz Republic dated 23 June 2001;
- Decree of the Issyk-Kul oblast state administration № 171 dated 8 August 2001;
- Protocol of the meeting at the Prime-Minister of the Kyrgyz Republic office № 56-18 on 'On designing and construction of engineering services and reconstruction of treatment facilities in Cholpon-Ata city of the Kyrgyz Republic' dated 4 June 2002;
- Decree of the Government of the Kyrgyz Republic № 802 'On the plan of measures to implement suggestions for comprehensive development of tourism in the Issyk-Kul region, worked out by Aga-Khan development organization', which tasks appropriate state agencies to take a number of measures aimed at obligatory availability of treatment facilities and perform constant monitoring of the condition of the sewage treatment facilities dated 25 June 2002;
- Decree of the Government of the Kyrgyz Republic № 815 'On designing for construction of engineering services and reconstruction of the treatment facilities in Cholpon-Ata city' dated 29 November 2002; etc.

9 Decree of the Government of the Kyrgyz Republic No 426 dated 25 April 2003 'On measures to regulate land use, development, accomplishment and ensure protection of the environment in the Issyk-Kul resort and tourist area'

Due to financial limitations, implementation of the aforementioned decisions has not been possible up until now, with an exception of individual small financial investments in design and construction works for social facilities whose operation will result in increasing load on the existing facilities.

(4) Current situation of the proposed sector

Cholpon Ata city (population of about 9,000) is located within a four-hour drive east of Bishkek, at the northern shore of the Issyk-Kul lake; it is a centre of recreation and leisure activities (Please refer to Figure 1).

The Issyk-Kul lake (170 km long and 70 km wide), which is located 180 km east of Bishkek, is currently the most popular tourism destination in Kyrgyzstan. Cholpon-Ata city is the base for trekking and climbing to the Kungey Alatau range of the Tian Shan Mountains in the north and has wide sandy beaches in the south. More than 90 hotels and sanatoria have been built close to the shore of the Issyk-Kul lake and a lot of tourist stay here as summer visitors in summer.

(Water and wastewater facilities are operated and managed by Gorvodokanal, which is a state corporation under the Mayor House and a member of the Kyrgyz Housing and Communal Union (Zhilkomsyuz).)

With regard to water supply, 70% of water is supplied from groundwater, while the remaining 30% is provided from surface water. 77% of the total population is provided by Gorvodokanal through an 84 km long distribution network. The consumption in off peak season is about 5,000 m<sup>3</sup>/day.

Construction of the wastewater sewage system started in 1975. Currently, residential areas in the suburbs, resort zones and health facilities are covered by sewage network. The number of users in the residential areas is about 3,300 people and the remaining residents mainly use local septic tanks. Concerning the use by tourists, some of the sanatoria and hotels which have their own wastewater treatment facilities, discharge the wastewater into the public sewer system due to the lack of technology and finances to maintain their facilities. The remaining ones, which also have their own treatment facilities, discharge the wastewater into the surrounding areas after treatment, whether it is adequate or not.

The sewage system consists of sewer (45 km), two pumping stations and wastewater treatment facilities. The diameter of the sewer pipes is in the range of 100 mm to 600 mm. The wastewater is transferred to the treatment facilities through the main pumping station and a 600 mm parallel force main. Since the treatment facilities are located approximately 120 m above the wastewater level in the receiving tank of the main pumping station, it



consumes a lot of electricity for pumping up. The effluent after treatment is drained to a neighbouring garden, which is within the Issyk-Kul lake watershed.

4. Objectives of the project/program, including the importance, necessity, and urgency of the project/program in the light of the current situation of the proposed sector

(1) Present problems to be solved in the sector

The sewage system is not functioning properly and almost all of the facilities are in need of renovation.

Shortage of qualified specialists, engineers and technicians, imperfect tariff and pricing system of the region, as well as financing based on residual principle lead to poor maintenance and inadequate operation, lack of spare parts and financial resources for preventive measures.

1) Pumping station

The pumping stations, especially the main one, are in a critical condition due to the following reasons:

- (i) The electricity is frequently broken down due to large head of over 120 m with the loss of pressure from the station to the treatment facilities, significant wear of pump and power equipment as a result of hydraulic blows.
- (ii) The irrational distribution and use of electric power by consumers causes unapproved disconnection of electric power by rayon electric network services.
- (iii) Absence of screens/grates to remove the debris disrupts the work of the pumping unit and causes intense abrasive wear and tear of the propeller. Mechanical breakages are very common.

Three pumps out of five at the main pumping station are already out of use due to inadequate maintenance while the capacity of the two remaining pumps is insufficient in the peak season. If, for some reason, one pump were damaged and stopped, the raw wastewater might be spilled out into the Issyk-Kul lake. Two reservoirs with the each capacity of 2,500 m<sup>3</sup> are installed for emergencies.

2) Wastewater treatment facilities

The design capacity of the wastewater treatment facilities is 36,000 m<sup>3</sup>/day, while actual inflow is 1,500 m<sup>3</sup>/day in winter - spring, and up to 12,000 m<sup>3</sup>/day in summer - autumn. Sharp seasonal fluctuations of the inflow make the adequate operation and maintenance very difficult. Lack of fencing and identification of the sanitary protection zones of the facilities encourages robbery of mechanical and electrical equipment. The treatment facilities do not

perform disinfection of the effluent.

Further, all the equipment of the treatment facilities is almost out of order as shown below:

- (i) Power cable, registration and control instruments are absent.
- (ii) Compressor devices are disabled.
- (iii) Metal pipelines are significantly corroded.
- (iv) Collection and distribution systems are clogged up and cannibalized.

BOD of the effluent is more than 150 mg/l, which is nearly the same as that of the influent and almost five times the designed quality.

## (2) Importance, necessity, emergency

At present, the resort zone around Cholpon-Ata city in the Issyk-Kul Oblast is being intensively developed, but development of the sewage utilization infrastructure is lagging substantially.

Resolving this issue is especially important for the Government of the Kyrgyz Republic, because tourism is identified as one of the strategic directions of development of the country, and availability of strong and modern engineering infrastructure at tourist facilities is a foundation for tourism. If these problems are not solved expeditiously, environmental security is under significant threat from the current activity.

However, measures taken at the moment are local in their character, i. e. aimed at solving small tasks, whereas the main problem, which is beyond the competence of Gorvodokanal and depends on the plans and decisions of the Government and local authorities, remains unsolved.

## (3) Objective

The objective of this project is to design, engineer, construct, procure equipment and machinery, launch and adjust sewage facilities in Cholpon-Ata city. This project is a part of development of engineering infrastructure of the Issyk-Kul resort and health industry.

### 1) Short-term objectives:

- (i) To establish the adequate operation and maintenance of the sewage system;
- (ii) To support the technical and financial empowerment of Gorvodokanal.

### 2) Medium and long term objectives:

- (i) To secure sound and sustainable community and tourism development with firm and adequate sewage system;

- (ii) To prevent and reduce the water and sanitation related diseases, and
- (iii) To ensure the availability of financial management for social services and to contribute to the community development sustainability.

## 5. Outline of the project/program

### (1) Outline of requested facilities or/and equipment

To achieve this goal, it is necessary to conduct the following activities:

#### I) Capacity building in Gorvodokanal

##### (i) Financial Improvement

###### ① Grasp the present condition of revenue and expenditure

- Preparation of a balance sheet of revenues and expenditures;
- Break down of revenues and expenditures into factors (collection recovery rate, personnel expense, electricity expense, etc.)

###### ② Analysis of factors leading to deficit;

###### ③ Investigation of measures for raising revenue and reducing expenditure based on the analysis;

###### ④ Enhancement of charging and collecting the sewage tariff to improve the collection recovery rate, which is assumed to be only 30%; and

- Review of the sewage tariff system based on 'Willingness to pay' and 'Affordability to pay', if necessary;
- Introduction of a tariff system based on the consumption of water by installing a meter in each household, if feasible.

###### ⑤ Seminars, participatory workshops, guidance and on-the-job training.

##### (ii) Technical improvement

###### ① Introducing an Operation and Maintenance (O&M) manual for the pumping station and treatment facilities;

###### ② Compiling a precise ledger of the pipes, pumping station and treatment facilities equipment in order to grasp the



present condition and history of repairs/replacements,

- ③ Extension of the service area to improve the living standards/public health conditions of the residents and strengthen the financial state of Gorvodokanal;
- ④ Seminar, participatory workshop, guidance and on-the-job training.

(iii) Others

- Environmental Education of the residents for water conservation
- Public Awareness of the importance of sewage system

2) Rehabilitation of the sewage facilities

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(i) Repair and/or replacement of individual sections of pipes, locking and regulating valves in order to ensure complete insulation of the sewage inflow to the treatment facilities;

(ii) Rehabilitation of the main pumping station for a reliable and uninterrupted feeding of sewage to the treatment facilities;

(iii) Construction of a relay pumping station in the vicinity of Kara-Oy village in order to reduce pressure in the delivery line up to 50-60 m;

(iv) Comprehensive reconstruction, assembling, repair and recovery works on the treatment facilities as well as accomplishment and fencing of the treatment facilities property;

(v) Construction of a chlorination station for disinfection of effluent in accordance with the requirements of the sanitary and epidemiologic service;

(vi) Construction of agricultural irrigation fields for utilization of the effluent at about 1 km away from the treatment facilities;

(vii) Construction of facilities for processing and utilizing sludge as fertilizer/soil conditioner.

(2) Rough requested amount: 1. up to US \$ 5,000,000; 2. from US \$ 5,000,000 to US \$ 10,000,000; 3. more than US \$ 10,000,000.

(3) Benefits/beneficiaries and expected results of the project/program

1) Beneficiaries from the project

Residents and tourists at the resort zones and health facilities in Cholpon-Ata city

2) Expected results of the project

Implementation of the project is socially important since the infrastructure such as sewage systems is assumed to be one of the components of the tourist business development. It also guarantees the safe use of natural resources, prevention of pollution of the lake shoreline zone, ethical and moral education of the residents regarding natural objects (rivers, lakes, soils, trees etc.). As a result, Cholpon-Ata city will acquire a reputation of an environmentally friendly resort.

The following direct benefits will be expected of this project:

- (i) Enhancement of reliability of the sewage system;
  - (ii) Possibility of extending the service area leading to the improvement of the sanitary condition in the residential zone;
  - (iii) Elimination of the danger of contamination of the groundwater and the Issyk-Kul lake water with wastewater;
  - (iv) Empowerment of the staff of Gorvodokanal
    - Upgrading the knowledge and skill on construction of sewage systems according to sanitary regulations;
    - Establishment of a levy collection system and increase of revenue;
    - Availability of sustainable O&M and contribution to upgrading of consciousness for sustainable O&M of sewage systems.
  - (v) Providing conditionally clean water for irrigation; and
  - (vi) Utilization of excess sewage sediment for fertilizer or soil conditioner
- (4) Location (attach maps, if available)  
Please refer to Figure 2.
- (5) Requested schedule of implementation, and its rationale
- 1) Capacity building at Gorvodokanal  
FY 2005-FY 2009
  - 2) Rehabilitation of the sewage facilities
 

Basic Design	FY 2005-FY 2006
Detailed Design/Supervision	FY 2006-FY 2008

The technical and financial autonomy of Gervodokanal is a pre-condition for sound O&M of a rehabilitated sewage system. Capacity building of the Gervodokanal staff will commence at the same time with the basic design and continue after completion of rehabilitation of the sewage facilities to check the results.

6. Name of implementing agency

State Commission for Architecture and Construction under the Government of the Kyrgyz Republic (SCAC)/Kyrgyz Scientific Research and Design Institute for Construction

7. Relationship with other assistance schemes of Japan's ODA

(1) Development study

The Study on Integrated Development Plan of the Issyk-Kul zone in the Kyrgyz Republic (2003.11-2006.2)

The study team is considering proposing the following items in the Environmental Management Plan:

i) Measures for Water Quality Conservation

Implementation of the following measurements will be considered:

- i) Rehabilitation and/or installation of a sewage system in the urban area;
- ii) Preparation of wastewater treatment facilities for sanatoria, hotels and other establishments;
- iii) Small-scale wastewater facilities for rural communities, including integrated septic treatment systems for domestic wastewater;
- iv) Recovery of self-cleaning systems utilizing aquatic vegetation;
- v) Measures for conservation of greenery areas and protection of the lake transition area;
- vi) Management of the river water quality;
- vii) Others.

(2) Enforcement of Regulation

In order to conserve the water quality in the lake, the following items will be introduced to the management plan:

- i) Setting target values for water quality;
- ii) Application of area-wide total pollution load control;

- iii) Review of environmental administration and legislation;
- iv) Review and/or enforcement of wastewater discharge standards;
- v) Others.

3) Other measurements

- i) Formulate of a monitoring program for inner water of the lake and inflowing river waters;
- ii) secure participation of the local people;
- iii) Others.

4) Study on water level change

(2) Technical cooperation (expert, training, equipment)

None

8. Environmental and social considerations

Please refer to the attached screening format.

9. Request amount of the project

(1) Capacity building at Gorvodokanal

- 1) Grasp the current performance of Gorvodokanal (institution, finance, equipment, activity etc.);
- 2) Segmentation and proposals for solving the problem;
- 3) Implementation according to the proposal.

(2) Rehabilitation of the sewage facilities

- 1) Review of the previous design, research documents, actual data on quality and quantity of influent and effluent;
- 2) Preparation of a basic design based on the above mentioned review;
- 3) Preparation of a detailed design and cost estimate for reconstruction of the facilities, procurement of equipment and machinery etc.;
- 4) Arrangement of tender documents;
- 5) Selection of a contractor through bidding; and
- 6) Supervising the project.

10. Any relevant information of the project from gender perspective.

None

## II. The detailed contents of the project

### (1) The facility

#### 1) Site address:

- (i) The main pumping station is located at the western entrance to Cholpon-Ata city, 800 m south from Bishkek-Karakol highway. The distance from the station to lakeshore is 80-100 m.
- (ii) The relay pumping station is situated not more than 300 m from the lakeshore and about 3 km from the main pumping station.
- (iii) The treatment facilities are located at Kara-Oy village, 1.5 km north from Bishkek-Karakol highway; north-west of Cholpon-Ata city.
- (iv) The territory required for irrigation fields with the surface area of up to 10 ha will be situated about 1 km away from the treatment facilities.

#### 2) Rationale for the selected sites (Please specify the priority of the candidate sites)

There is no need to select a site for the treatment facilities and main pumping station since reconstruction of these facilities is conducted at the site of the existing facilities.

The new relay pumping station is constructed in order to reduce the pressure in the delivery line up to 50-60 m. The vicinity of Kara-Oy village is selected because of its location on the way of the force main as well as the ideal ratio of altitude change relative to the facilities. The owner of the site is the local government. The surface area to be acquired for construction is up to 0.3 ha. The site is selected in accordance with sanitary regulations.

#### 3) The capacity, number, dynamic head and other specifications:

- (i) Capacity: 800 m<sup>3</sup>/hr;
- (ii) Dynamic head: up to 80 m;
- (iii) Pumps: 3 (2 working and 1 back-up);
- (iv) Transformer substations: 2 units 650 kilovolt-ampere each;
- (v) Fencing of reinforced concrete slabs: up to 260 running meters; and
- (vi) Lodge building: 3 m × 3 m

#### 4) Number and size of the facility

Please refer to [Table 1].



Table 1 List of equipment for reconstruction of sewage system

Facility, Equipment or device	Main features	Notes
<b>Gravity lines</b>		
Pipeline repair, replacement and cleaning	d = 150-600 mm	Quantity to be determined based on survey
Pipeline monitoring equipment (robots)	L <sub>total</sub> = 20,140 running meters	
<b>Pumping stations</b>		
Main Pumping Station (MSPS)	Q = 50-800 m <sup>3</sup> /hr	MSPS: n = 3, Q = 800 m <sup>3</sup> /hr, H = up to 80 m RSPS: n = 2, Q = up to 100 m <sup>3</sup> /hr, H = up to 40 m TF: n = 1,2 according to specification
Relay Pumping Station (RSPS)	H = 80-100 m	
Treatment facilities (TF)	N = 10-250 kWt	
<b>Treatment facilities</b>		
Mechanical screens	Q = 1500-2000 m <sup>3</sup> /hr	2 pcs
Sewage flowmeters		5 pcs
Equipment for primary and secondary sedimentation tanks, air tanks and mineralizers		Repair of water supply, drainage, sediment, and airway systems
Pectinated spill ways, mechanical screens, aeration systems		For all sedimentation tanks, air tanks and mineralizers
Air compressors, "D1" type, 15-8235 m <sup>3</sup> /hr		5 pcs, Q = up to 2000 m <sup>3</sup> /hr
Automated screens		12 pcs
Gauging equipment for sewage and treated water quality control		3 sets
<b>Disinfection installations</b>		
UV-irradiation	Q = up to 1500 m <sup>3</sup> /hr	2 sets
Chlorination plant AHV-1000		2 sets
UF-decontaminator		2 sets
Chlorine dioxide installation		2 sets
Electric motors	N = 5-250 kWt/hr	20 pcs
<b>Locking/regulating and supervisory fittings</b>		
Force main: d = 50-600 mm		200 pcs (to be determined based on survey)
Mineralizers, Venturi mixer flume, air compressors at TF and SPS		
KITUP system sensors to measure the water level, pressure, TC, pH-medium, BOD, NOK, O <sub>2</sub> , NH <sub>4</sub> , Cl <sub>2</sub> , heavy metal salts etc.		
<b>Transmission reducer</b>		
Scrapers and electric motors at primary and secondary sedimentation tanks	Electric motor capacity N = 10-50 kWt/hr	10 pcs
Sand catchers		
Mineralizers		
Mechanical screens etc		
<b>Equipment and machinery</b>		
Truck crane, MAZ, 'Ivanovets'-based	5-10 tons	1 pc
Dump truck, KAMAZ, ZIL or MAZ-based	3-10 m <sup>3</sup>	2 pcs
Bulldozer		1 pc
Excavator with bucket, 'Belarus'-type	0.2-0.3 m <sup>3</sup>	1 pc
Cesspoolage truck	3 m <sup>3</sup>	15 pcs
Grigating machine	3-5 m	15 pcs
Pipelaying crane	10 tons	1 pc
Dual-purpose vehicle	3-5 tons	2 pcs
Compressor station (diesel/electrical)		2 pcs
Welding machine (electrical/gas)		4 pc
Filling gun for repairs		1 pc

4) Cost of construction (Cost breakdown)

It is assumed to be 6.8 million US\$ provisionally. More detailed information will be provided based on the technological regulations for operation of the treatment system.

5) Layout plan

Please refer to Figures 2 and 3.

6) Specification of construction materials

Cement, fittings, inert materials, timber, rolled and sheet metal, painting, and etc. will be used. More detailed information will be provided during based on the technological regulations for operation of the treatment system.

(2) Equipment

1) Site Address for installation:

The equipment will be installed at the relay and main pumping stations, treatment facilities etc., according to the technological regulations and design.

2) Function:

The equipment will be installed to provide the following functions:

- (i) transfer of sewage, sediment and treated sewage;
- (ii) supply of air to the aeration tanks and mineralizers to promote biochemical reaction;
- (iii) fragment coarse impurities;
- (iv) transport the dried sediment to irrigation fields;
- (v) repair/replace the pipelines, various devices;
- (vi) disinfect the effluent; and
- (vii) measure the quality and quantity parameters of sewage during the treatment process.

3) Names of main equipment

- (i) Pumps and electric motors;
- (ii) Sludge compressors for the Aere-tank and mixer;
- (iii) Various pipes (polyethylene, Vinyl chloride, metal);
- (iv) Pectinated spill ways;
- (v) Water flow meters;
- (vi) Chlorine dioxide devices;
- (vii) Air compressors and distribution systems and devices;
- (viii) Airlifts;
- (ix) Hydro elevators;

(x) Sewage and sediment quality measuring systems; and

(xi) Others.

4) Cost of purchase of the equipment.

Provisionally 2 million US\$

5) Specifications for the unit number and prices (if available)

Details will be determined based on technological regulations and design.

6) Invoice

No information at the moment.

(3) How to operate and maintain the facility/equipment, including the staff and technical level of the responsible organization

Gorvodokanal bears the responsibility for operation of the water supply and sewage systems. The total staff number is 70 and among them, 53 are engaged in the operation and maintenance of the sewage system (3 in the administrative sector, 7 in sewer, 13 at the pumping station, and 10 at the treatment facilities). At present, the sewage system does not function properly due to technical, financial and management problems.

In line with the reconstruction of the sewage system, empowerment of staff will be carried out through the capacity building of Gorvodokanal in cooperation with Japanese experts.

Strengthening of the financial situation is also important for ensuring sustainability. Low efficiency of the pricing and tariff systems, payment for services, fee collection from the population, as well as the system of fund distribution brought to a lack of financial resources. It is impossible to cover all the expenditures with the sewage tariff from the users if sound operation and maintenance of the sewage systems is to be achieved. Based on the tariff structure of 2.3 soms/m<sup>3</sup> for domestic use and 19.12 soms/m<sup>3</sup> for entities, the total revenue in 2003 was 1,500,800 soms, while the annual operation and maintenance cost was 1,918,700 soms. The deficit is 417,900 soms or 21.8% of annual expenditure. It means that the total revenue cannot cover even the routine O&M works, to say nothing of the reconstruction, replacement and repair of the facilities/equipment in breakage. On the other hand, from 1980 to 2004, the Kyrgyz Government allocated only about one million and two thousand US\$ in this field.

The following items are examined and improved for the purposes of sound management of the sewage systems.

(4) Preparation and environment of the site

All the activity will be conducted according to the laws of the Kyrgyz Republic in the field of environment protection.

1) Land secured or to be secured

All the land for the sewage facilities is already secured by Gorvodokanal.

- 2) Leveling, drainage, availability of electricity, water, and telephone.

The site of the sewage facilities is almost level. Drainage, electricity, water and telephone services are partially available.

- 3) Natural condition:

The Issyk-Kul lake greatly affects the climate. Its non-freezing surface makes the basin's climate a bit softer compared to other intermountain troughs of Tyan-Shan located on the same altitude.

The spring in western Issyk-Kul is cool, with hot summer. The autumn is long, winter cold and snowless. The frost-free period lasts 158-186 days. Frosts begin in October and end in April-May. Vegetation period lasts 151 days. The relative air humidity is 57-62%.

In eastern Issyk-Kul frost-free period lasts 115-151 days. Frosts come in September and end in May. The vegetation period lasts 152 days. A permanent snow cover of 20-30 cm keeps for 140 days. Relative air humidity is 60-65%.

Maximum precipitation falls in summer, minimum in winter everywhere. There are lots of bright sunny days in the basin. Issyk-Kul syrts are notable for their harshly continental, dry and severe climate. The average annual temperature fluctuates from 3 to -7°C. The winter is prolonged (frosts up to -40°C), average January temperature -21°C. The summer is short, cool (average temperature 7°C). Along with permafrost, seasonal frost of soil occurs. 200-300 mm of precipitation falls out annually, mostly as snow (even in the summer). There are almost no frost-free days. The average temperature in Sary-Dzhaz river valley in July is 11°C, January -16°C. The average annual precipitation is 180 mm.

- 4) Security condition

No problems.

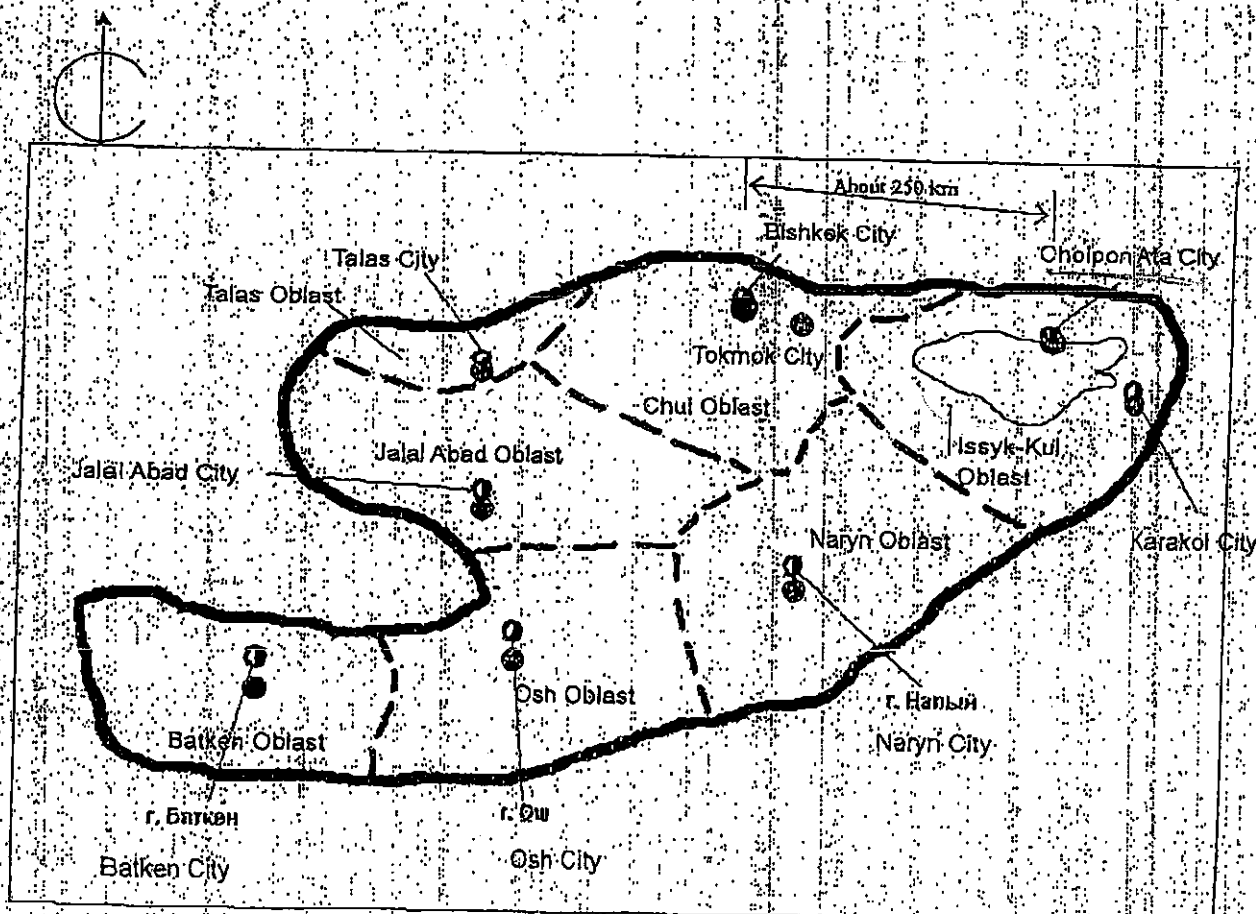
## 12. Aid by third countries or international organizations in the related field

Works on this design are planned to be funded from various sources. The information on actual and planned volumes and sources of financing is shown in Table 2.

Table 2. Aid by third countries or international organizations

	Country	Period	Volumes (Million US\$)	Note
1	USA (USAID, Urban Institute, UNDP)	2004-2006	≈ 0.200	<p>USAID is an organization responsible for training of experts in different areas, including wastewater treatment systems. On grant terms, conducts training in U.S. institutes.</p> <p>Urban Institute implements projects on partial repair and reconstruction of water supply and drainage systems on grant basis; conducts seminars and training in the field of water supply, drainage and sanitation systems.</p> <p>UNDP provides grant and credit assistance including reconstruction of water supply systems.</p>
2	Germany (GTZ)	2004-2006	≈ 0.500	<p>GTZ renders consultative and donor assistance to local organizations in the issues of ecology, sanitation, and sewage treatment at particular facilities as part of support to the Issyk-Kul biosphere territory.</p>

Figure 1 Map of Location of Cholpon-Ata city, Bishkek





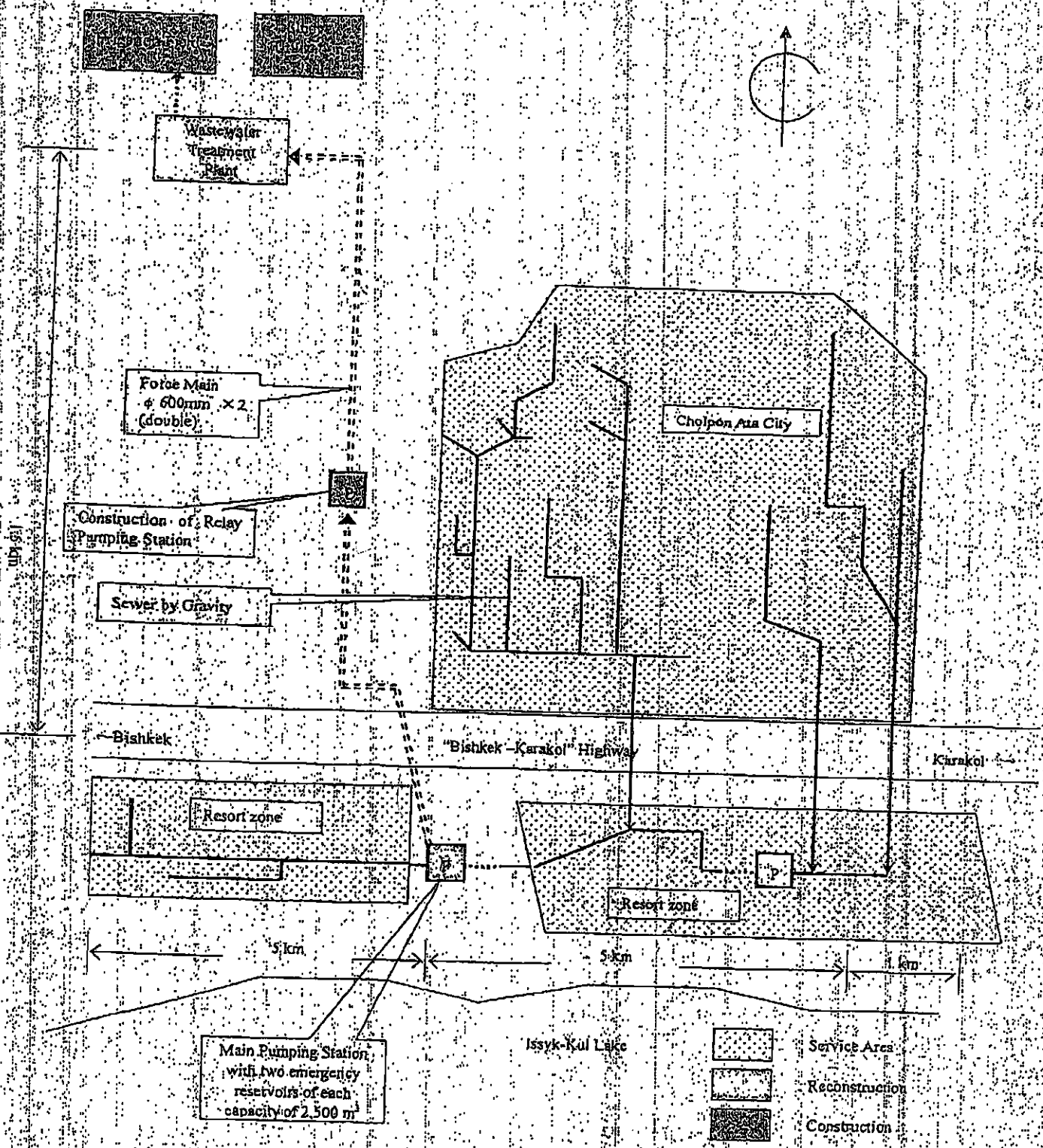


Figure 2. Diagram of Cholpon -Ata City Sewerage System

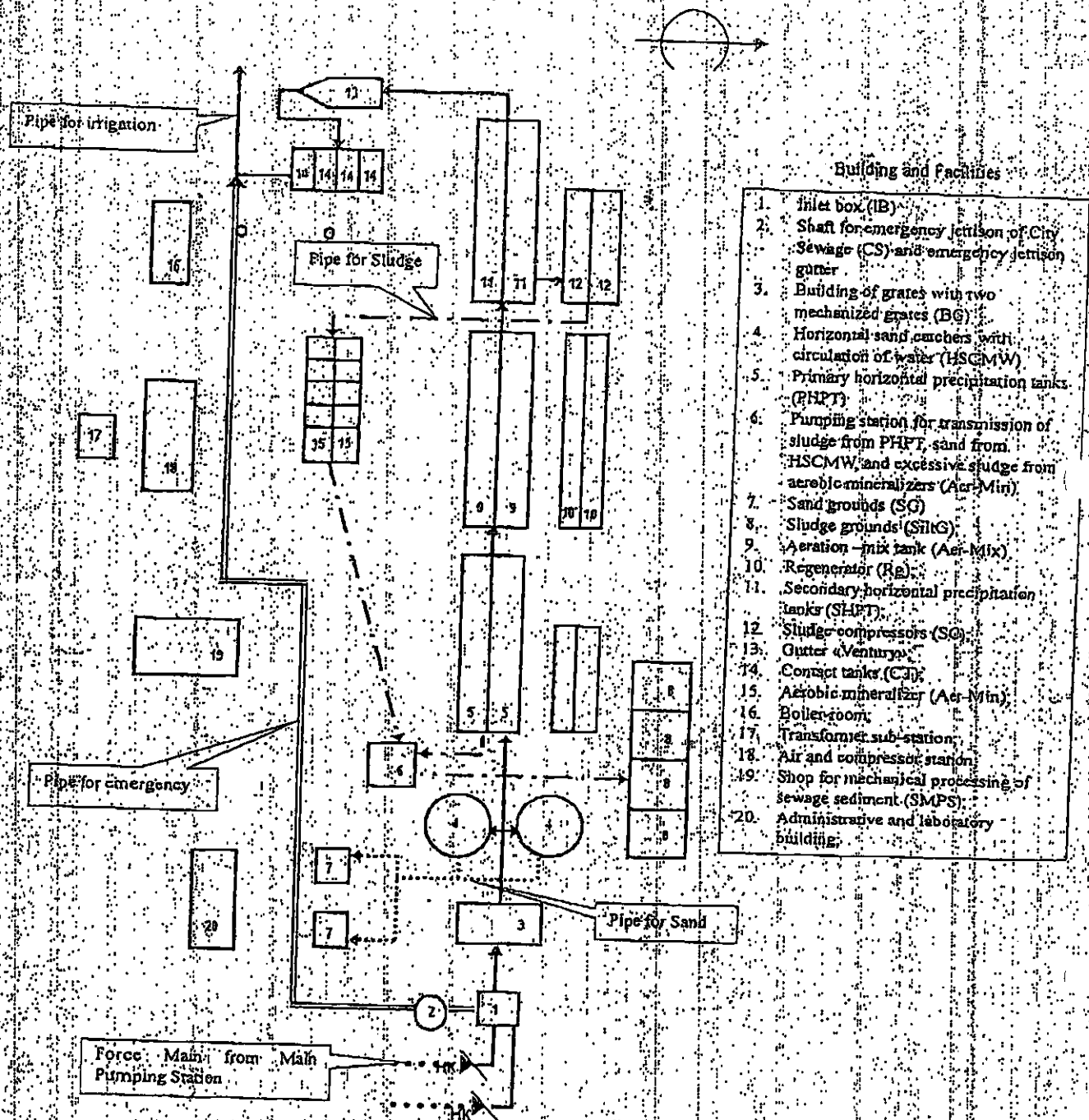


Figure 3: Layout of the Treatment Plant

### Screening Format

#### Question 1: Outline of the project

1-1 Does the project come under following sectors?

Yes  No

If yes, please mark corresponding items.

- Mining development
- Industrial development
- Thermal power (including geothermal power)
- Hydropower, dams and reservoirs
- River/erosion control
- Power transmission and distribution lines
- Roads, railways and bridges
- Airports
- Ports and harbors
- Water supply, sewage and waste treatment
- Waste management and disposal
- Agriculture involving large-scale land-clearing or irrigation
- Forestry
- Fishery
- Tourism

1-2 Does the project include the following items?

Yes  No

If yes, please mark following items.

- Involuntary resettlement (scale: households, persons)
- Groundwater pumping (scale: m<sup>3</sup>/year)
- Land reclamation, land development and land-clearing (scale: 10 hectares)
- Logging (scale: hectares)

1-3 Did the proponent consider alternatives before request?

Yes: Please describe outline of the alternatives

(Comparison of the result between "with project" and "without project")

1-4 Did the proponent have meetings with the related stakeholders before request?

Yes  No

If yes, please mark the corresponding stakeholders.

- Administrative bodies
- Local residents
- NGO
- Others (JICA, Other design and construction agencies)

## Question 2

Is the project a new or an on-going one? In case of an on-going one, have you received strong complaints etc. from local residents?

- New  On-going (there are complaints)  On-going (there are no complaints)  
 Others

## Question 3 Names of laws or guidelines:

Is Environmental Impact Assessment (EIA) including Initial Environmental Examination (IEE) required for the project according to laws or guidelines in the host country?

- Yes  No

If yes, please mark the corresponding items.

- Required only IEE (  Implemented,  on going,  planning )  
 Required both IEE and EIA (  Implemented,  on going,  planning )  
 Required only EIA (  Implemented,  on going,  planning )  
 Others

## Question 4

In case of that EIA was taken steps, was EIA approved by relevant laws in the host country? If yes, please mark date of approval and the competent authority.

- Approved without a supplementary condition  Approved with a supplementary condition  Under appraisal

(Date of approval: \_\_\_\_\_ Competent authority: \_\_\_\_\_)

- Not yet started an appraisal process

- Others: ( \_\_\_\_\_ )

## Question 5

If a certificate regarding the environment and society other than EIA is required, please indicate the title of certificate.

- Already certified  Required a certificate but not yet done

Title of the certificate: ( \_\_\_\_\_ )

- Not required

- Others

Question 6

Are the following areas located inside or around the project site?

- Yes  No  Not identified

If yes, please mark corresponding items.

- National parks, protected areas designated by the government (coast line, wetlands, reserved area for ethnic or indigenous people, cultural heritage) and areas being considered for national parks or protected areas
- Virgin forests, tropical forests
- Ecological important habitat areas (coral reef, mangrove wetland, tidal flats)
- Habitat of valuable species protected by domestic laws or international treaties
- Likely salts cumulus or soil erosion areas on a massive scale
- Remarkable desertification trend areas
- Archaeologically, historically or culturally valuable areas
- Living areas of ethnic, indigenous people or nomads who have a traditional lifestyle, or special socially valuable area

Question 7

Does the project have adverse impacts on the environment and local communities?

- Yes  No  Not identified

Reasons: Noise, turbulence and increase of traffic in case of construction  
Little offensive odor and noise/turbulence in adequate operation

Question 8

Please mark related environmental and social impacts, and describe their outline

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Air pollution</li> <li><input type="checkbox"/> Water pollution</li> <li><input type="checkbox"/> Soil pollution</li> <li><input type="checkbox"/> Waste</li> <li><input checked="" type="checkbox"/> Noise and vibration</li> <li><input type="checkbox"/> Ground subsidence</li> <li><input checked="" type="checkbox"/> Offensive odors</li> <li><input type="checkbox"/> Geographical features</li> <li><input type="checkbox"/> Bottom sediment</li> <li><input type="checkbox"/> Biota and ecosystem</li> <li><input checked="" type="checkbox"/> Water usage</li> <li><input type="checkbox"/> Accidents</li> <li><input type="checkbox"/> Global warming</li> <li><input type="checkbox"/> Involuntary resettlement</li> <li><input type="checkbox"/> Local economy such as employment and livelihood etc.</li> </ul> | <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Land use and utilization of local resources</li> <li><input type="checkbox"/> Social institutions such as social infrastructure and local decision-making institutions</li> <li><input checked="" type="checkbox"/> Existing social infrastructures and services</li> <li><input type="checkbox"/> The poor, indigenous or ethnic people</li> <li><input type="checkbox"/> Maldistribution of benefit and damage</li> <li><input type="checkbox"/> Local conflict of interests</li> <li><input type="checkbox"/> Gender</li> <li><input type="checkbox"/> Children's rights</li> <li><input type="checkbox"/> Cultural heritage</li> <li><input type="checkbox"/> Infectious diseases such as HIV/AIDS etc.</li> <li><input type="checkbox"/> Others ( )</li> </ul> |
|---|--|



Outline of related impacts:

- Production of waste after screening
- Offensive odor in bad O&M
- Water usage for irrigation

Question 9

Information disclosure and meetings with stakeholders

9-1 If the environmental and social considerations are required, does the proponent agree on information disclosure and meetings with stakeholders in accordance with JICA Guidelines for Environmental and Social Considerations?

- Yes
- No

9-2 If no, please describe reasons below.